

P802.3z Draft 3.1 Comments

Cl 00 SC P L # 1275
 Howie Johnson Signal Consulting
 Comment Type E Comment Status A global
 Fix mis-use of 8B/10B terminology.
 SuggestedRemedy
 Proposed Response Response Status C
 ACCEPT. Globally, replace all occurrences of "8B/10B pattern" or "8B/10B code" with "8B/10B code-group"

Cl 00 SC P L # 271
 Colin Mick The Mick Group
 Comment Type E Comment Status A global
 This is a general comment dealing with all proposed changes to existing clauses.
 Changes should be made so than one who is not familiar with the standards documents can figure out what is going on. This is not the case (nor, honestly, has it been the case with previous changes.) The problem is greatest when figures are changed, since modifications are often subtle and require careful comparison.
 I have enclosed a "change protocol" as a suggested remedy. This change protocol was developed to guide the production of a new publication to contain 802.3x and 802.3y. It was prepared with inputs from Geoff and Dave Law.
 SuggestedRemedy
 These editing instructions define how to define changes to existing clauses.
 The editing instructions are shown in bold italic. Four editing instructions are used: change, delete, insert and replace.
 Change is used to make small corrections in existing text or tables. The editing instruction specifies the location of the change and describes what is being changed either by using strikeout (old material) and underscore (new material).
 EXAMPLE: Change 22.3.4.3 to read as follows:
 (Followed by the change in strikeout (old material) and underscore (new material)).
 Delete removes existing material. The editing instruction for the deletion defines the material to be deleted. Deletions may require renumbering. If so, renumbering instructions are given in the editing instruction.
 EXAMPLE: Delete note in 22.2.4.2.4.
 Insert adds new material without disturbing the existing material. The editing instruction defines the point of insertion. Insertions may require renumbering. If so, renumbering instructions are given in the editing instruction.
 EXAMPLE: Insert the following material as 22.2.1.7:
 Replace is used to make large changes in existing text, subclauses, tables, or figures by removing existing material and replacing it with new material. The editing instruction specifies the material to be replaced. The content of the change may be described in the editing instruction or may be shown with strikeout and underscore.
 EXAMPLE: Replace Table 22-8 with the following:
 All changes to clauses 1-30 should follow the protocol defined above.

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The following style should be used for headings for changed clauses:

Changes to:
2. MAC service specification
(ISO/IEC8802-3, 5th Edition, 1996)

Changes to:
21. Introduction to 100 Mb/s baseband networks, type 100BASE-T
(IEEE802.3, June 1996)

Changed figures should include an editorial note to inform the user of what has changed.

Proposed Response *Response Status* **C**

ACCEPT. Changes to clauses 1-30 are already (hopefully) so marked. We will attempt to fix any discrepancies. We will attempt to add editorial notes indicating what has been changed in the figures to clauses 1-30.

Clauses 34-42 are new as of this working group ballot. According to existing precedent within 802.3, clauses 34-42 are not marked with change bars from previous (non-approved) revisions of the draft. Working group recirculation ballots will show changes from the working group ballot. At the sponsor ballot level, changes to 34-42 will be again wiped clean.

Cl 00 *SC* *P01.3 and els* *L19 and oth* # 94

Bruce B. Barrow IEEE Standards Coord

Comment Type **E** *Comment Status* **A** *global*

A space is used between the number and a unit symbol. Write "1000Mb/s" with a space.

SuggestedRemedy

Write "1000 Mb/s". Check globally. Elsewhere 6dB is written without a space. Etc.

Proposed Response *Response Status* **C**

ACCEPT IN PLACES WHERE NOTED. P1.3/L19,23,26,27. Will search for other occurrences.

Cl 00 *SC* *P35.20 and el* *L Table 35-7* # 95

Bruce B. Barrow IEEE Standards Coord

Comment Type **E** *Comment Status* **A** *global*

The symbols for quantities (e.g., V for voltage and I for current) are set in italic type; those for units (e.g. V for volt and mA for milliampere) are set in upright type.

SuggestedRemedy

Do it.

Proposed Response *Response Status* **C**

ACCEPT.
[However, as they say in the Steely Dan song, I can't do it without my fez on . . .]

Cl 00 *SC* *Pi* *L 16* # 854

Rich Seifert Networks & Communic

Comment Type **E** *Comment Status* **A**

SuggestedRemedy
Capitalize LAN

Proposed Response *Response Status* **C**
ACCEPT. Thank you.

Cl 00 *SC* *Pi* *L 27* # 855

Rich Seifert Networks & Communic

Comment Type **E** *Comment Status* **A**

SuggestedRemedy
Insert "copper" between balanced and cabling.

Proposed Response *Response Status* **C**
ACCEPT.

Cl 00 *SC* *Piii* *L 43* # 92

Bruce B. Barrow IEEE Standards Coord

Comment Type **T** *Comment Status* **A**

Symbol for degree Celsius is oC, where "o" represents the degree sign.

SuggestedRemedy
Use oC.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This table is merely a lexicographic aid to the interpretation of possible printing errors. It will be removed prior to final publication. For now, change the wording on line 43 to read: "Degrees (as in degrees Celsius)"

Cl 00 *SC* *Piii* *L 48* # 93

Bruce B. Barrow IEEE Standards Coord

Comment Type **E** *Comment Status* **A**

"Little" not "Littel"

SuggestedRemedy
Big error. Correct it.

Proposed Response *Response Status* **C**
ACCEPT.

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Cl 00 SC 00 P00 L # 1264
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

It is unclear at this time whether the text of the changes to existing clauses are accurately reflected as changes against the text of "the approved standard", i.e. 8802-3 1996 including Maint #4/DAM20 (including minor editorial corrections) plus added text and changes to existing clauses from 802.3u : 1995, 802.3r : 1996, and 802.3x&y : 1997 (yet to be published). The chief editor has worked hard on this.

SuggestedRemedy

As new material becomes available (i.e. pre-pub proof of 802.3x&y and hopefully a baseline merged version of the entire standard) cross check against new versions of the 802.3z draft. (Caution! You will be helping me check the validity of the pre-pub proof of 802.3x&y also)

Proposed Response Response Status C

NO EXPLICIT ACTION RESULTS FROM THIS COMMENT. However, I will gladly do what I can to help cross-check things as they become available.

Cl 00 SC 31B.3.7, 31B.4.6 P Multiple, se L Multiple, # 553
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

big ticket

Support for full duplex flow control at 1000Mb/s speed has implications on the timing considerations for pause operation.

SuggestedRemedy

* Include sub-clause 31B.3.7 in the changes to the existing clauses, and replace the second paragraph with the following paragraphs:

"Reception of a PAUSE frame shall not affect the transmission of a frame that has been submitted by the MAC Control sublayer to the underlying MAC (i.e., the TransmitFrame function is synchronous, and is never interrupted).

At operating speeds of 100Mb/s or less, a station that implements an exposed MII, shall not begin to transmit a (new) frame (assertion of TX_EN at the MII, see 22.2.2.3) more than one pause_quantum after the reception of a valid PAUSE frame (de-assertion of RX_DV at the MII, see 22.2.2.6) that contains a non-zero value of pause_time. Stations that do not implement an exposed MII, shall measure this time at the MDI, with the timing specification increased to (pause_quantum + 64) bit times.

At operating speeds above 100Mb/s, a station shall not begin to transmit a (new) frame more than two pause_quantum bit times after the reception of a valid PAUSE frame that contains a non-zero value of pause_time, as measured at the MDI".

* Include sub-clause 31B.4.6 in the changes to the existing clauses, and add and entry in the table to reflect the change to 31B.3.7.

Proposed Response Response Status C

ACCEPT.
 Make sure we use "pause_quanta" or "pause_quantum" as appropriate.

Cl 00 SC general P general L # 1263
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

global

The state machine diagram style need to be harmonized with the existing style and there is quite a bit of clean-up needed to tidy them up, particularly in the arrow-head department

SuggestedRemedy

Do editorial clean-up on state machines

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. However, please provide examples of the problems and I will endeavor to clean them up. For example, the arrowheads look OK to me. Marked-up copies showing the problems would be greatly appreciated.

Cl 00 SC global Pglobal Lglobal # 131
Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R global

The line numbers don't precisely line up with the lines, and are in any case hard to correlate with the lines because the column of line numbers is often at the right margin, far from the text if the lines are short. I had to resort to a straightedge in places. Having the line numbers restart on every page makes them effectively non-redundant, making it harder for the reviewers to detect or compensate for balloters' mistakes of citation. Specifying only a starting line number (and page number in some cases) makes it more difficult for the reviewers to tell precisely what the target of an objection is. The lack of effective line numbers on some tables also makes precise citation difficult.

SuggestedRemedy

Put line numbers on the left margin (or both margins). Ensure that line numbers in fact align with the lines they identify. Number the lines in a clause, not restarting on each page, so that there is some redundancy in the clause/subclause/page/line cites. Require balloters to specify beginning and ending line numbers. If the range straddles multiple pages, beginning and ending page numbers are also necessary. Add line numbers to all tables; including portrait-mode tables, if possible.

Proposed Response Response Status C

REJECT. Sorry, we have no flexibility to fix this particular problem. Page numbering is determined by FrameMaker, which is mandated by the IEEE standards office. FrameMaker provides no way (that we know of) to fix this problem.

Cl 00 SC global Pglobal Lglobal # 130
Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A global

The word "insure" is used where "ensure" is appropriate. To insure is to get an insurance policy. To ensure is to make sure of something.

SuggestedRemedy

Scan document changing all occurances of "insure" to "ensure". Unless we really do have an insurance policy.

Proposed Response Response Status C

ACCEPT.

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Cl 01 SC 1.1 P01.1 L24-30 # 519
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The text in this paragraph seems to reflect the necessary changes based on the 802.3u version of the standard. In fact, the changes should be based on 802.3x which is the later version of the standard.

SuggestedRemedy

- * On line 24 replace "1.1.1" with "1.1".
- * On line 26 insert "(LANs)" after "Networks".
- * On lines 26-28 insert "International" before "standard" in three places.

Proposed Response Response Status C

ACCEPT.
 Also, capitalize the word "Standard" as used in the phrase "International Standard" in three places.

Cl 01 SC 1.1.1 P01.1 L27 # 664
 Paul Nikolich SDC

Comment Type E Comment Status R

Perhaps the 802.3z ballot is not the correct place to bring this up, but I think 802.3 should consider retiring the 1Mb/s sections (as well as 10Broad36) from the base standard. There is no significant installed base, and the base standard is becoming somewhat cluttered with the continued inclusion of out-of-date sections.

SuggestedRemedy

Delete 1 Mb/s sections of the base standard.

Proposed Response Response Status C

REJECT. Not within the scope of our PAR.

Cl 01 SC 1.1.2.2 P01.2 L39 # 663
 Paul Nikolich SDC

Comment Type TR Comment Status A

The first sentence explains 'It is anticipated over time several physical layer standards will emerge...' This standard should be 'time independant', one day it will be 'old', and this sentence will not apply.

SuggestedRemedy

Delete the sentence.

Proposed Response Response Status C

ACCEPT.

Cl 01 SC 1.1.2.2 P01.2 L40 # 520
 Shimon Muller Sun Microsystems

Comment Type E Comment Status R

Spelling of "transference".

SuggestedRemedy

Replace "transference" with "transference".

Proposed Response Response Status C

REJECT. This line of text has been deleted per comment 663.

Cl 01 SC 1.1.2.2 P01.2 L42 # 521
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A big ticket

For the sake of commonality with previous paragraphs, add the following sentence before the last one in this paragraph:
 "While conformance with implementation of this interface is not strictly necessary to ensure communication, it is highly recommended, since it allows maximum flexibility in intermixing PHYs and DTEs at gigabit speeds".

SuggestedRemedy

See body of the comment.

Proposed Response Response Status C

ACCEPT.

Cl 01 SC 1.1.2.2 P1.2 L28 # 1015
 David Law 3Com

Comment Type E Comment Status A

The PMD is not specified for 100BASE-T2 either, suggest reword 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.'

SuggestedRemedy

Suggest 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.' should just read 'PMD is specified for 100BASE-X and 1000BASE-X only', there is no need to list the PHY's that do not use a PMD.

Proposed Response Response Status C

ACCEPT.

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Cl 01 **SC 1.1.2.2** **P 1.2** **L 40** # **72**

Nand Arggarwal PCA

Comment Type **E** *Comment Status* **R**

"transference" should be "transfer"

Note - keyed in by H. Frazier from fax submission.

SuggestedRemedy

replace "transference" with "transfer"

Proposed Response *Response Status* **C**

REJECT. This line of text has been deleted per comment 663.

Cl 01 **SC 1.1.2.2** **P 1.2** **L 40** # **856**

Rich Seifert Networks & Communic

Comment Type **E** *Comment Status* **R**

"transference" is misspelled

SuggestedRemedy

"transference"

Proposed Response *Response Status* **C**

REJECT. This line of text has been deleted per comment 663.

Cl 01 **SC 1.1.2.2** **P 1.2** **L 40-43** # **857**

Rich Seifert Networks & Communic

Comment Type **T** *Comment Status* **A**

The GMII is stated to be a "compatibility interface", yet it is explicitly said that it is not intended to be exposed. How can an unexposed interface be used for "compatibility"?

SuggestedRemedy

Change statement, "The GMII is a fourth tibility interface designed to Š" to "The GMII is designed to Š"

Proposed Response *Response Status* **C**

ACCEPT.

Cl 01 **SC 1.1.2.2** **P 1.2** **L 41** # **1014**

David Law 3Com

Comment Type **T** *Comment Status* **A**

The GMII can be used to connect a PHY to both a repeater or a DTE, suggest '... to connect a gigabit-capable MAC to ...' should be reworded.

SuggestedRemedy

Suggest '... to connect a gigabit-capable MAC to ...' should read '... to connect a gigabit-capable MAC or repeater to ...'

Proposed Response *Response Status* **C**

ACCEPT. Will read " . . . to connect a gigabit-capable MAC or repeater unit to . . . "

Cl 01 **SC 1.1.2.2d** **P 1.2** **L 40** # **1237**

Geoff Thompson Bay Networks, Inc.

Comment Type **E** *Comment Status* **R**

The current text is time sensitive and should be changed to durable text

SuggestedRemedy

Change "It is anticipated that over time several physical layer standards will emerge for the transference of data at gigabit rates."

To "The GMII is designed to accomodate different physical layer standards for the transference of data at gigabit rates."

Proposed Response *Response Status* **C**

REJECT. Sentence is superfluous and has been deleted in response to comment 663.

Cl 01 **SC 1.1.3** **P N/A** **L N/A** # **522**

Shimon Muller Sun Microsystems

Comment Type **T** *Comment Status* **R**

Clause 5 has been reinstated, therefore the reference to clause 30 as the only clause for network management functions in sub-clause 1.1.3 is no longer valid.

SuggestedRemedy

Include sub-clause 1.1.3 in the changes to clause 1, and change the last sentence of this sub-clause to read as follows:
"Network management functions will be discussed in clauses 5 and 30".

Proposed Response *Response Status* **C**

REJECT.
Clause 30 has adequate pointers back to the sections of clause 5 that has not been deprecated.
Since much of clause 5 has been deprecated it may be confusing to reference it in this section.

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Cl 01 SC 1.2 P01.2 L1-34 # 272
 Colin Mick The Mick Group
Comment Type E Comment Status A
 Figure replaced without explanation.
SuggestedRemedy
 Add a note to figure 1-1 to specify what has changed. E.g: "Editor's note: Figure 1-1 is changed by the addition of an additional set of layers below the MAC to accommodate 1000Mb/s operation."
Proposed Response Response Status C
 ACCEPT. P01.1/L22 append after the word "following" this parenthetical expression: "Figure 1-1 is changed by the addition of an additional set of layers below the MAC to accommodate 1000Mb/s operation."
 Move this editorial note to appear above the figure -- try placing it inside the figure frame.

Cl 01 SC 1.2 P01.2 L39/40 # 273
 Colin Mick The Mick Group
Comment Type E Comment Status A
 First sentence under d) seems extraneous
SuggestedRemedy
 Delete first sentence
Proposed Response Response Status C
 ACCEPT IN PRINCIPLE. It is supposed to be a heading, but was not properly italicized to make it look like the other headings in this section.
 P01.2/L39 Italicize the first sentence under d)

Cl 01 SC 1.2.2 P01.2 L43 # 1148
 Jim Mangin Bay Networks
Comment Type E Comment Status R
 intended is too vague for this concept
SuggestedRemedy
 changeis not intended for.....
 tois not defined for.....
Proposed Response Response Status C
 REJECT. The phrase "not intended for" is stronger than the word "not defined for" , and the stronger definition is precisely what we mean. The standard makes no allowance for, and arguably could not be made to work with, a connectorized, exposed interface.

Cl 01 SC 1.3 P01.3 L40 # 102
 Pat Thaler Hewlett-Packard
Comment Type E Comment Status A
 "Appendage" is being used here as a verb, but it is a noun.
SuggestedRemedy
 Use "addition"
Proposed Response Response Status C
 ACCEPT. This error is located on P01.3/L40. It is important that we explain that carrier extension symbols are appended to the frame (that is, they occur at the end). The word "addition" by itself is a little less specific.
 Change "The appendage of non-data symbols to frames..." to read "The addition of non-data symbols to the end of frames..."

Cl 01 SC 1.3 P1.2 L52 # 1238
 Geoff Thompson Bay Networks, Inc.
Comment Type E Comment Status A *global*
 The IEC has changed its numbering system to add 60000 to all of the existing numbers. See <http://www.iec.ch/pubnose.htm> for information
SuggestedRemedy
 Update references to latest number
Proposed Response Response Status C
 ACCEPT. See resolution of comment 71.

Cl 01 SC 1.4 P01.3 L31 # 924
 John M. Cagle Compaq Computer Co
Comment Type E Comment Status A
 No definition for 1000Base-T, yet this term is used throughout the draft.
SuggestedRemedy
 Add "1000Base-T: IEEE802.3 Physical Layer specification for a 1000Mb/s CSMA/CD LAN using Four-pair Category 5 UTP to be defined in clause 40."
Proposed Response Response Status C
 ACCEPT. P01.3/L32 Insert a new definition gleaned from clause 34:
 "1000BASE-T: IEEE 802.3 Physical Layer specification for a 1000Mb/s CSMA/CD LAN using four pairs of balanced copper cabling (see Clause 40)."
 P34.3/L1 Insert after the word "balanced" the word "copper"

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CI 01 SC 1.4 P01.3 L 35 # 523
 Shimon Muller Sun Microsystems
 Comment Type E Comment Status A
 Style.
 SuggestedRemedy
 Delete "function" after "Transmit".
 Proposed Response Response Status C
 ACCEPT. Also done by comment 4.

CI 01 SC 1.4 P01.4 L 12/13 # 274
 Colin Mick The Mick Group
 Comment Type E Comment Status A
 Definition appears to refer to fiber only operation. Definitions are common to all of 802.3.
 SuggestedRemedy
 Made definition specific to fiber operation.
 Proposed Response Response Status C
 ACCEPT. This comment appears to apply to P01.5/L12
 Change: "The static loss.." to "For fiber optic links, the static loss.."

CI 01 SC 1.4 P01.4 L 35 # 103
 Pat Thaler Hewlett-Packard
 Comment Type E Comment Status A
 I think "a connector" should be "the connector" as it is referring to the connector mentioned earlier.
 SuggestedRemedy
 Proposed Response Response Status C
 ACCEPT IN PRINCIPLE. Change "a connector" to "that connector"

CI 01 SC 1.4 P01.4 L 41 # 104
 Pat Thaler Hewlett-Packard
 Comment Type E Comment Status A
 The definition of eye opening penalty is not particularly understandable. For starters, I would expect the definition to be: "The difference between the optical power ... and the power" or "The additional optical power ... compared to the power"
 Secondly, I didn't think that received power min was for zero eye opening.

One alternative is to state this similar to the other power penalties: "The power penalty produced by ..."
 SuggestedRemedy
 Proposed Response Response Status C
 ACCEPT. Reword totally:
 See comment 1234.

CI 01 SC 1.4 P01.5 L 15 # 105
 Pat Thaler Hewlett-Packard
 Comment Type E Comment Status R
 I think power penalty also needs a definition.
 SuggestedRemedy
 Proposed Response Response Status C
 REJECT, but attempt to do something reasonable.
 In the definition of link penalties, change "It includes.." to read "These power penalties include"

CI 01 SC 1.4 P01.5 L 15/16 # 275
 Colin Mick The Mick Group
 Comment Type E Comment Status A
 Definition appears to refer to fiber only operation. Definitions are common to all of 802.3.
 SuggestedRemedy
 Made definition specific to fiber operation.
 Proposed Response Response Status C
 ACCEPT.
 P01.5/L15 Change: "The power penalties.." to "For fiber optic links, the power penalties.."

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Cl 01 SC 1.4 P01.5 L8 # 524
 Shimon Muller Sun Microsystems
 Comment Type E Comment Status A
 Style.
 SuggestedRemedy
 Insert "of" after "consisting".
 Proposed Response Response Status C
 ACCEPT.

Cl 01 SC 1.4 P01.6 L 14 to 15 # 106
 Pat Thaler Hewlett-Packard
 Comment Type T Comment Status A
 The definition of receiver eye opening may be accurate for fiber optic systems. It doesn't seem to me to be broadly applicable. It appears to assume that the entire contribution to BER is from the receiver mistaking the sampled data value. For the electrical transceivers such as 10BASE-T, external noise can be a major contributor to BER and the relationship of eye opening to BER in this definition doesn't necessarily hold.
 SuggestedRemedy
 Indicate that the definition is for fiber optics.
 Proposed Response Response Status C
 ACCEPT. reword to read:
 "receiver eye opening: For fiber optic systems, the interval.."

Cl 01 SC 1.4 P01.6 L 5/6 # 276
 Colin Mick The Mick Group
 Comment Type E Comment Status A
 Priority resolution function also applies to Auto-Negotiation (Clause 28)
 SuggestedRemedy
 . . . (see Clauses 28, 37)
 Proposed Response Response Status C
 P01.6/L6 Change "(see Clause 37)" to "(see Clauses 28 and 37)"

Cl 01 SC 1.4 P1.3 L 12 # 1233
 Geoff Thompson Bay Networks, Inc.
 Comment Type TR Comment Status A global
 In the editorial note it says that "Some items provide additional meanings for previously defined terms"
 This is not precise enough. For example how are we supposed to handle "IDLE" vs "idle".
 SuggestedRemedy

For all previously defined terms please show the entire new definition with the conventional notation of underscore for new text and strikethrough for deleted text.
 Proposed Response Response Status C
 Items about which the commentator may be concerned include:
 (1) code-group (802.3u, with a hyphen) and code_group (802.3z, with an underscore) these are different terms and the new definition clearly delineates its applicability to 802.3z. NOTE that as an editorial item, all occurrences of code_group will be changed to code-group. Show the full definition, with amendments.
 (2) idle (802.3u, lower case), and IDLE (802.3z, upper case) . The term IDLE is an internal variable used within the 1000BASE-X PCS layer and does not need a global definition. P1.5/L1 delete the heading IDLE and the definition that goes with it.
 (3) extinction ratio: this is a redundant definition. P1.4/L38 delete the heading extinction ratio and the definition that goes with it.
 (4) Physical Coding Sublayer (PCS), clearly indicates that we are adding a new item to the list of references (also PMA, PHY, and remote fault). Show the full definition, with amendments.
 P1.3/L14 Delete the sentence: "some items provide additional meanings for previously defined terms."

Cl 01 SC 1.4 P1.3 L 20 # 1239
 Geoff Thompson Bay Networks, Inc.
 Comment Type E Comment Status A
 And elsewhere throughout the document
 All of the references to Fibre Channel as ANSI X3.230 etc. need to be internationalized.
 SuggestedRemedy
 Add as parenthetical references after ANSI X3.230 etc. the JTC-1 designation including progression status (PDAM, DAM, etc.) These will be updated throughout the approval process and will become primary as the document is internationalized.
 Proposed Response Response Status C
 ACCEPT.

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CI 01 SC 1.4 P1.3 L23 # 1240
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A
 Definition does not sufficiently distinguish 1000BASE-CX cable from screened UTP.

SuggestedRemedy
 Change to read: "...LAN over speciality shielded balanced copper cable."
 Note: This should remain "cable" not "cabling" as most of the others as there are no intermediate connections allowed.
 The following text would also be acceptable:
 "...LAN over speciality shielded balanced copper cable assemblies."

Proposed Response Response Status C
 ACCEPT.
 Change end of sentence to read:
 "over speciality shielded balanced copper jumper cable assemblies (see Clause 39)."

CI 01 SC 1.4 P1.3 L23-29 # 858
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy
 In three places, change "IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN, to "1000BASE-X", for simplicity.

Proposed Response Response Status C
 ACCEPT.
 P01.3/L19 Leave as is.
 P01.3/L23 Change "IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN", to "1000BASE-X"
 P01.3/L26 Change "IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN", to "1000BASE-X"
 P01.3/L29 Change "IEEE 802.3 Physical Layer specification for a 1000 Mb/s CSMA/CD LAN", to "1000BASE-X"

CI 01 SC 1.4 P1.3 L35 # 4
 Kevin Daines Packet Engines

Comment Type E Comment Status A
 Wording on line 35 is awkward.

SuggestedRemedy
 Change line 35 to read
 "...PCS Transmit and Receive functions ..."

Proposed Response Response Status C
 Accept.

CI 01 SC 1.4 P1.3 L37 # 859
 Rich Seifert Networks & Communic

Comment Type E Comment Status R
 Why is the term "Bit Error RATIO" used, rather than the more common "Bit Error RATE"?

SuggestedRemedy
 Use Bit Error Rate throughout.

Proposed Response Response Status C
 REJECT. In a previous draft, we received a comment to the effect that the term "bit error rate" was misleading, in that it might imply a measurement in units of bits-errors-per-second, as opposed what we mean, which is the ratio of the number of bits in error to total number bits transmitted. At that time we changed our terminology from the term "bit error rate" to the present term "bit error ratio". The IEEE Standard Dictionary of Electrical and Electronic Terms (IEEE Std 100-1996) defines the terms bit error rate and bit error ratio to be essentially the same thing. Technically, we could use either one. The chief editor agrees with Rich that bit error rate is the more commonly accepted term, however, we get fewer disapproving comments if we use the term bit error ratio. We should stick with the term bit error ratio.

CI 01 SC 1.4 P1.3 L38 # 1241
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A
 The abbreviation BER does not appear in the definition for bit error ratio in line with the established convention for 802.3 standards (ref: 802.3u 1.4.99)

SuggestedRemedy
 fix it.

Proposed Response Response Status C
 ACCEPT.
 P1.3/L38 change heading to read, in bold font: "bit error ratio (BER):"
 also,
 P1.6/L42 append to the heading to read, in bold font, "worst case modal bandwidth (WCMB)"

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Cl 01 SC 1.4 P1.3 L 45 # 1242
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A global

The contextual information presented in parentheses does not conform to the current convention for definitions. Parens immediately after the term are for abbreviations/memnonics. The contextual information should appear as a "see" statement in parens at the end of the definition

SuggestedRemedy
 fix everywhere.

Proposed Response Response Status C
 ACCEPT.

Cl 01 SC 1.4 P1.4 L 11 # 427
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A
 "That" should be "the". "ppd" should be spelled out.

SuggestedRemedy
 Change beginning of sentence to
 "The peak to peak differential amplitude necessary ..."

Proposed Response Response Status C
 ACCEPT.

Cl 01 SC 1.4 P1.4 L 11 # 1243
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A
 ppd is an undefined term

SuggestedRemedy
 Change to "peak-to-peak differential (ppd)"

Proposed Response Response Status C
 ACCEPT. P1.4/L11 change "ppd" to "peak-to-peak differential (ppd)"

Cl 01 SC 1.4 P1.4 L 19 # 1223
 Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A

Effective modal bandwidth is an undefined term that is of no use in purchasing fiber on the open market nor does it have any utility in terms of any established industry standard test method in characterizing the installed base of multi-mode fiber.

Further the definition offered here would not be useful as an industry parameter since it is tied to a specific source and fiber combination. This definition is contrary to any notion of plug and play interoperability.

SuggestedRemedy
 Delete it or change it to something that has use in an an environment of interoperability.

Proposed Response Response Status C
 ACCEPT. Annex 38D has been deleted by the PMD group.
 P1.4 (approx) Delete the heading "Effective modal bandwidth" and the text that goes with it.

Cl 01 SC 1.4 P1.4 L 22 # 7
 Kevin Daines Packet Engines

Comment Type E Comment Status A

Definition of 'encapsulation' is inconsistent with terminology of Clause 36. Refer to SPD, EPD definitions. The PCS encapsulates the preamble, SFD and MAC frame which together form a packet.

SuggestedRemedy
 Change line 22 to read
 "...by which a MAC packet is enclosed ..."

Proposed Response Response Status C
 Accept.

P802.3z Draft 3.1 Comments

Cl 01 SC 1.4 P1.4 L3 # 428
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

There are already two definitions in the IEEE dictionary that are similar to this:

Differential Signal

- (1) The instantaneous algebraic difference between two signals.
- (2) A signal that is conveyed between two separate conductors, instead of one active conductor and signal ground. The magnitude of the differential signal is the difference between the two signals, rather than the voltages between the two individual signals and ground.

differential voltage signal: The voltage difference between the true and complementary signals from a driver with two single-ended outputs whose signals always complement each other. Differential signals are also referred to as "balanced signals."

I don't think we need to redefine these terms.

SuggestedRemedy

Delete definition from lines 3-10, second choice would be to copy existing definition.

Proposed Response Response Status C

ACCEPT. Definition deleted by comment 132.

Cl 01 SC 1.4 P1.4 L43 # 861
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

TP4 is undefined here.

SuggestedRemedy

Use a reference to the figure or subclause that defines TP4.

Proposed Response Response Status C

ACCEPT.
 See comment 1234.

Cl 01 SC 1.4 P1.4 L43 # 1234
 Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A

TP4 has no obvious meaning in a definitions clause context and would be even less meaningful if this definition were to eventually appear in IEEE Std. 100. I didn't find it until I got to page 39.3!

SuggestedRemedy

Provide a replacement for the term "TP4" that is generic.

Proposed Response Response Status C

ACCEPT.

Use following wording:

- "The difference, in dB, between (a) the optical power measured at the center of the data eye, and
- (b) the optical power measured at a point defined by the total worst case peak-to-peak jitter at the receiver."

Cl 01 SC 1.4 P1.4 L43 # 429
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

TP4 is vague. Reader does not know where TP4 is.

SuggestedRemedy

Change end of sentence to "jitter at TP4 as shown in figure 38-1."

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

See comment number 1234.

Cl 01 SC 1.4 P1.4 L48 # 862
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

global

SuggestedRemedy

The correct spelling is "Fibre Channel", not "Fiber Channel". This is a global comment.

Proposed Response Response Status C

ACCEPT.

P802.3z Draft 3.1 Comments

Cl 01 SC 1.4 P1.4-1.6 L # 860
 Rich Seifert Networks & Communic

Comment Type T Comment Status A
 Many definitions are provided that reflect standard terminology. We don't include definitions for many other common, technical terms used throughout the document; why are we doing that here?

SuggestedRemedy
 Delete definitions for: differential skew, equalizer, fiber attenuation, modal bandwidth, skew.

Proposed Response Response Status C
 ACCEPT IN PRINCIPLE. Delete definitions that are adequately covered in IEEE Std. 100-1996, or elsewhere in commonly available fiber optic literature.
 P01.4/L29 delete heading and entire definition for "Equalizer".
 P01.4/L45 delete heading and entire definition for "fiber attenuation"
 P01.5/L21 delete heading and entire definition for "modal bandwidth"
 P01.6/L32 delete heading and entire definition for "skew"
 Retain definitions for: differential skew

Cl 01 SC 1.4 P1.5 L18 # 996
 David Law 3Com

Comment Type E Comment Status A
 Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'

SuggestedRemedy
 See above

Proposed Response Response Status C
 ACCEPT. P1.5/L18 delete the word "interface"

Cl 01 SC 1.4 P1.5 L2 # 995
 David Law 3Com

Comment Type E Comment Status A
 Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'

SuggestedRemedy
 See above

Proposed Response Response Status C
 ACCEPT. P1.5/L2 delete the word "interface"

Cl 01 SC 1.4 P1.5 L26 # 430
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status R
 The term "mode" is referred to in many of the definitions but is not defined. I think it should have a definition.

SuggestedRemedy
 Add a definition for mode. I defer to the fiber PMD group to write the definition.

Proposed Response Response Status C
 REJECT. The term "mode" is adequately defined in IEEE Std. 100-1996, and this usage of the term is consistent with that definition.

Cl 01 SC 1.4 P1.5 L38 # 864
 Rich Seifert Networks & Communic

Comment Type E Comment Status A
 The definition provided for "ordered set" appears to imply that ALL code groups are ordered sets.

SuggestedRemedy
 change to "Single or multiple code groups used for non-data signaling in 1000BASE-X PCS."

Proposed Response Response Status C
 ACCEPT IN PRINCIPLE. A better definition can be gleaned from clause 36.2.4.7. Change definition to read:
 "(As used in the 1000BASE-X PCS) A single special code_group, or a combination of special and data code_groups, used for the delineation of a packet and synchronization between the transmitter and receiver circuits at opposite ends of a link."

Cl 01 SC 1.4 P1.5 L44 # 865
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy
 Change definition of "pause" to "A mechanism for full duplex flow control, as specified in IEEE 802.3X Clause 31B."

Proposed Response Response Status C
 ACCEPT.

P802.3z Draft 3.1 Comments

Cl 01 SC 1.4 P1.5 L5-9 # 863
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

i
 The definitions of "intersymbol interference penalty" and "jumper cable assembly" have no context.

SuggestedRemedy

Add a reference for the sections to which these definitions apply.

Proposed Response Response Status C

ACCEPT. P01.5/L5 Insert at the head of the first sentence of the definition the phrase "(Clause 38)"
 P01.5/L7 Insert at the head of the first sentence of the definition the phrase "(Clause 39)"

Cl 01 SC 1.5 P1.7 L1 # 1244
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

If you move all of the definitions in 21.2 to 1.5 how are you going to avoid renumbering all of the following subclauses in 21 (YUK) ?

SuggestedRemedy

Not clear, consult with chair and IEEE Editorial staff

Proposed Response Response Status C

The chief editor plans to leave in clause 21.2 a little editorial note explaining that the abbreviations have been moved.
 Let's so stipulate in the editorial note at the top of page 01.7 so we don't forget.
 P01.7/L7 append to the end of the editorial note the words:
 "At the time that existing definitions are moved from clause 21.2 a note will be left in their place reading: abbreviations previously found in this subclause have been moved to 1.5"

Cl 01 SC 1.5 P1.7 L11 # 9
 Kevin Daines Packet Engines

Comment Type E Comment Status A

EPD acronym capitalization is incorrect. Refer to 36.2.4.14

SuggestedRemedy

Change line 11 to read
 "...End_of_Packet delimiter ..."

Proposed Response Response Status C

Accept.

Cl 01 SC 1.5 P1.7 L12 # 10
 Kevin Daines Packet Engines

Comment Type E Comment Status A

SPD acronym capitalization is incorrect. Refer to 36.2.4.13

SuggestedRemedy

Change line 12 to read
 "...Start_of_Packet delimiter ..."

Proposed Response Response Status C

Accept.

Cl 01 SC 1.5 P1.7 L18 # 8
 Kevin Daines Packet Engines

Comment Type E Comment Status A

Punctuation error

SuggestedRemedy

Remove "." from line 18.

Proposed Response Response Status C

Accept

Cl 01 SC 1.note 1 P1.1 L6 # 1236
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

Note 1 does not reflect the basis of the document with complete accuracy

(This comment applies to equivalent notes anywhere in the draft)

SuggestedRemedy

Change the text: "...changes apply to ISO/IEC.."
 to: "...changes apply to the approved IEEE Std 802.3 which consists of ISO/IEC.."
 Also add to the list of approved supplements: 802.3r, 802.3s and changes to 802.3 from 1802.3d : 1993
 (FYI: 802.3s and changes to 802.3 from 1802.3d : 1993 appear in the back of ISO/IEC 8802-3:1996 as Draft AMendment (DAM) 20 on page 509

Proposed Response Response Status C

ACCEPT. New sentence to read:
 "The following changes apply to the approved IEEE Std 802.3 which consists of ISO/IEC 8802-3 : 1996 [ANSI/IEEE Std 802.3, 1996 Edition], and its approved supplements, 802.3u-1995, 802.3x-1997, 802.3y-1997, 802.3r, 802.3s, and changes to 802.3 from 1802.3d : 1993."

P802.3z Draft 3.1 Comments

Cl 01 SC 3 P01.03 L1 # 71

Geoff Thompson Bay Networks

Comment Type E Comment Status A

Reference numbers for all IEC documents are to the old numbering system. See notices attached below: http://www.iec.ch/pubnose.htm

Change of IEC publication numbers

As from 1997 all new IEC publications and parts, as well as new editions, revisions and amendments to existing publications are being issued with a designation in the 60000 series. It will be necessary to add 60000 to the existing base number.

Renumbering of all IEC publications, including amendments has taken place in all bibliographic reference material (the IEC databases used to source information on the IEC web site and the IEC Catalogue in particular).

All users should be aware that older publications, printed before 1997 will continue to carry the old series of numbers on printed copies, until they are revised, but that these older publications will appear with the new 60000 numbers in both bibliographic reference material and on invoices.

At the same time, all the project numbers relating to work in progress in the IEC have also been renumbered in accordance with the same principles (i.e. with a number in the 60000 series).

If you have any difficulty in finding information on the IEC web site, please do not hesitate to contact IEC Customer Services,

Telephone: +41 22 919 0211
Telefax: +41 22 919 0300
Internet: custserv@iec.ch

ftp://ftp.iec.ch/pub/press_rel_english/pr7001.doc

A block of numbers ranging from 60000 to 79999 is now to be used by the IEC when assigning numbers to its publications. Thus, the present IEC 950 will become IEC 60950 and IEC 1158-2 will become IEC 61158-2, to give but two examples from the current catalogue.

This is the system similar to the one used at the European level 158-2, to give but two examples from the current catalogue.

This is the system similar to the one used at the European level where, when IEC standards are harmonized by the European Committee for Electrotechnical Standardization (CENELEC) and adopted for use within the European Union, they have 60 000 added to their numeric identifier.

The debate over a harmonized international alphanumeric system for

standards identification has been going on for some time (see also Bulletins 158, May/June 1996 and 146, May/June 1994). But in the summer of 1996 JTAB recommended to both the IEC and the International Organization for Standardization, ISO that a unified system for numbering of international standards be adopted (ISO will employ numbers ranging from 1 to 59999).

At the IEC General Meeting in Dresden last September, the Committee of Action, which oversees the technical aspects of the IEC's work, accepted JTAB's recommendation. The go-ahead to put the new system into operation at the start of 1997 came in mid-December.

For more information, contact:
Public Information Department
IEC Central Office
Tel: +41 22 919 0211
Fax: +41 22 919 0300
WWW: http://www.iec.ch

Suggested Remedy

Renumber all IEC references throughout the standard to the 1997 IEC numbering system. Check to see if CISPR and other numbers have changed under the new unified system.

Proposed Response Response Status C

CHANGE ALL IEC REFERENCES TO USE THE NEW SYSTEM.
(partial list of reference changes needed to clause 01)
p01.3/L1 Change to 61754-4
p01.3/L3 Change to 61196-1
p01.3/L5 Change to 60807-3
other sections to be checked prior to final publication.

P802.3z Draft 3.1 Comments

Cl 01 SC 34.1 P34.1 L26 # 666
Paul Nikolich SDC

Comment Type E Comment Status R big ticket

There are several instances where the term 'gigabit ethernet' is used. This is industry trade nomenclature, but not the proper standards nomenclature. I believe text is referring to 1000BASE-X in most of these instances.

SuggestedRemedy

Change 'gigabit ethernet' phrase to '1000BASE-X' throughout the document.

Proposed Response Response Status C

REJECT.

We will use the term 1000BASE-X where appropriate, however, the group would like to continue to use the term "Gigabit Ethernet " as an umbrella term.

The 802.3 working group has made a conscious decision to use the phrase "Gigabit Ethernet" in our document. It is a widely understood term, coined specifically for this project. It has been prominently used, among other places, on the cover of the introductory presentations given to all working groups at the time the 802.3z PAR was approved. The standard benefits from the use of this term and it should be retained. Also, the designation 1000BASE-X does not include the planned 1000BASE-T PHY standard for which a PAR has been approved, and which falls under this same general "Gigabit Ethernet" umbrella.

Cl 01 SC 38.11.1 P38.12 L51 # 258
Colin Mick The Mick Group

Comment Type E Comment Status A

Reference for IEC 1754-4 is missing

SuggestedRemedy

provide

Proposed Response Response Status C

<approved at 09/11 interim> ACCEPT IN PRINCIPLE.
P38.12/L50

Change "IEC 1754-4" to

"IEC 61754-4 and IEC 61754-4 Part 4.2"

(NOTE -- This text has been moved by the clause 38 subgroup to a different position)

J. Paul (Chip) Benson to verify new reference by SantaClara meeting

The committee agrees to accept this comment if there are no changes pending Chip's investigation.

NEW INFORMATION AS OF 9/30/97: Mr. Benson reports that the new references are correct.

Also, P1.3/L1

Change "IEC 1754-4" to

"IEC 61754-4 and IEC 61754-4 Part 4.2"

Cl 01 SC 38.4 P39.8 L47 # 268
Colin Mick The Mick Group

Comment Type E Comment Status A

Add IEC1196-1 to references in Annex A

SuggestedRemedy

As above

Proposed Response Response Status C

ACCEPT. See comment 258

Cl 01 SC 39.8.4.4 P39.19 L13 # 270
Colin Mick The Mick Group

Comment Type E Comment Status A

Add reference for IEC 71076-3-103 to Annex A (add this comment to 39.5.1.2 as well)

SuggestedRemedy

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Add IEC 61076-3-103 to Annex A. see 268

Cl 01 SC 39.8.4.4 P39.19 L8 # 269
Colin Mick The Mick Group

Comment Type E Comment Status A

Annex A shows IEX 807-3 to be an ANSI/EIA/TIA document

SuggestedRemedy

Correct Reference

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The OR-2 PIC is correct. If Annex A makes reference to an ANSI/EIA/TIA document then the Annex needs to be corrected. See 268.

P802.3z Draft 3.1 Comments

Cl 01 SC 4 P01.4 L 38 to 39 # 133
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

What is divided by what to form the ratio isn't specified. The numerical range of the extinction ratio is not specified.

SuggestedRemedy

Copy the text from page 38.24 lines 1-2 (in section 38A.6) for a better definition of extinction ratio. Add the following sentence: "The extinction ratio is a number between zero (zero modulation depth) and one (full modulation depth)."

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. The term extinction ratio is deinfed in IEEE Std. 100-1996 as: "the ratio of the low optical power level to the high optical power level on an optical segment."

That seems sufficient, and consistent with clause 38.
 Expunge from this clause the definition of extinction ratio.

Cl 01 SC 4 P01.4 L 6 # 132
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

The electromagnetic field isn't just between the conductors, although the bulk of the field is nearby.

SuggestedRemedy

Change "between" to "surrounding".

Proposed Response Response Status C

REJECT.
 The terms "differential signaling" and "differential voltage signal" and "balanced" are defined in IEEE std 100-1996. They need no further definition.
 Expunge the definition of "differential:", parts (1) and (2).

Cl 01 SC 4 P01.6 L 8 # 134
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

The definition of Q is incomplete.

SuggestedRemedy

Change the sentence to read: "... RMS noise voltages, measured at the sampling instant, nominally at the eye center.

Proposed Response Response Status C

REJECT. Definition is OK as it stands. We do, however, need to adjust the definition to avoid conflict with other commonly accepted definitions for this term.
 Change to read:
 "Q: In the context of a fiber optic communication system, one half of the ratio.."

Cl 01 SC several Pna L # 665
 Paul Nikolich SDC

Comment Type TR Comment Status R global

There are many sections in which operation at 1000 Mb/s is referred to as 'above 100 Mb/s' (e.g. page 04.10 line 5). This implied reference may not be true in the future. Since 1000Mb/s is the only mode above 100 Mb/s, and this standard was written for 1000Mb/s only, it is more precise to use 1000 Mb/s in all instances.

SuggestedRemedy

Change 'above 100 Mb/s' phrase to '1000 Mb/s' throughout the document.

Proposed Response Response Status C

REJECT. The wording is correct as it stands, and consistent with commonly accepted views of the path of anticipated future improvements. Changes can be made at a later date if it turns out to conflict with future developments.

ADDITIONAL RESPONSE GENERATED ON 9/30/97

This phrase "above 100 Mb/s" is used in clauses 22 and 4. In clause 22, it is used in the description of the jabber bit, in the context of saying that jabber is no longer used at 100 Mb/s and above. There is a general technical consensus that this will continue to be true at all times in the future.

In clause 4, the term is used in 20 places in the context of describing carrier extension and packet bursting. It is the feeling of this group that, because the bit budget is so tight at 100 Mb/s, operation at any speed greater than 100 Mb/s would necessarily entail usage of both carrier extension and packet bursting. Therefore, after a review of this situation, the committee still believes that the phrase "above 100 Mb/s" is correct.

Cl 02 SC 2 P2.1 L 50 # 1016

David Law 3Com

Comment Type E Comment Status A

The PMD is not specified for 100BASE-T2 either, suggest reword 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.'

SuggestedRemedy

Suggest 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.' should just read 'PMD is specified for 100BASE-X and 1000BASE-X only', there is no need to list the PHY's that do not use a PMD.

Proposed Response Response Status C

ACCEPT.

Cl 02 SC 2.1 P02.1 L 21, 52 # 525

Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The changes to the figure are referenced relative to 802.3u and not 802.3x.

SuggestedRemedy

Replace "Figure 2-1" with "Figure 2-1a" in both places.

Proposed Response Response Status C

ACCEPT.

P802.3z Draft 3.1 Comments

Cl 03 SC P03.1 L22/47 # 277
 Colin Mick The Mick Group

Comment Type E Comment Status R
 Extent of figure change is unclear to the uninformed

SuggestedRemedy
 Add editor's note to Figure 3.1 to describe change

Proposed Response Response Status C
 Reject.
 Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document

Cl 03 SC 3 P3.1 L24 # 27
 Kevin Daines Packet Engines

Comment Type E Comment Status R
 Arrow indicating octets within frame is misleading. It should start with the destination address. Refer to Figure 4-7 in 4.2.3.4 and the arrow indicating the fields within the frame. Further evidence includes "frameSize" in 4.2.7.1, which contains the formula for calculating the size of a frame:
 $2 \times \text{addressSize} + \text{lengthOrTypeSize} + \text{dataSize} + \text{crcSize}$

I realize that there are conflicting references within the standard. I say it's time to fix them.

SuggestedRemedy
 Change vertical arrow to begin with destination address rather than preamble.

Proposed Response Response Status C
 Reject. Change drawing to adhere to the existing precedent in ISO 8802-3 1996-07-29, which shows the arrow starting near the PREAMBLE/SFD boundary (barely sticking up into the PREAMBLE box).

Cl 03 SC 3.1.1 P/N/A L/N/A # 526
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A
 The prose in this sub-clause needs to be revised due to the addition of the Extension field to the 1000Mb/s frame.

SuggestedRemedy
 Include sub-clause 3.1.1 in the changes to clause 3, and change the first paragraph to read as follows:
 "Figure 3-1 shows the nine fields of a frame: the preamble, the Start of Frame Delimiter (SFD), the addresses of the frame's source and destination, a length or type field to indicate the length or protocol type of the following field that contains the MAC Client data, a field that contains padding if required, the frame check sequence field containing a cyclic redundancy check value to detect errors in a received frame, and an extension field if required (for 1000Mb/s half duplex operation only). Of these nine fields, all are of fixed size except for the data, the pad and the extension fields, which may contain an integer number of octets between the minimum and the maximum values that are determined by the specific implementation of the CSMA/CD MAC. See 4.4 for particular implementations".
 The remainder of the sub-clause remains unchanged.

Proposed Response Response Status C
 Accepted.
 Thank you for the detailed remedy.

Response revised 10/2/97

Applying the editor's discretion, the following change must also be made for the sake of editorial consistency.

Include subclass 3.2.8 in the changes to clause 3, and change the first paragraph to read as follows:

3.2.8 Frame Check Sequence Field

A cyclic redundancy check (CRC) is used by the transmit and receive algorithms to generate a CRC value for the FCS field.
 The frame check sequence (FCS) field contains a 4-octet (32-bit) cyclic redundancy check (CRC) value. This value is computed as a function of the contents of the source address, destination address, length, LLC data and pad (that is, all fields except the preamble, SFD, FCS, and extension). The encoding is defined by the following generating polynomial.

P802.3z Draft 3.1 Comments

Cl 03 SC 3.2.9 P3.1 L51 # 1245
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A Global. Keven Please Read

Extension "bits", well not really. A bit has a value of zero or one. An extension bit doesn't map to that when you decode it. We could say "units" of octet duration which have no data value. It is sort of a tar pit.

SuggestedRemedy

There probably needs to be a definition added to 1.4:

extension bit: A bit decoded from the received carrier stream that does not map into the data space but none the less denotes the present of carrier for the purposes of CSMA/CD.

Proposed Response Response Status C

Accept in principle.
 The exact text of the definition could use some additional word-smithing.

NOTE - The chief editor suggests that you re-word this section to refer to extension "code-groups" instead of "bits". That should get you around the problem.

Response revised 9/30/97.

Accept commenters suggested text.

Cl 03 SC 3.2.9 P3.1 L52 # 866
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Change to "The length of the field is in the range of zero to (slotTime - minFrameSize) bits, inclusive."

Proposed Response Response Status C

Accepted.

Cl 03 SC 3.2.9 P3.2 L1-4 # 867
 Rich Seifert Networks & Communic

Comment Type E Comment Status R

This paragraph is confusing.

SuggestedRemedy

Change to: "The extension field is used exclusively by the carrier extension function of half-duplex mode 1000 Mb/s systems (4.2.3.4)."

Proposed Response Response Status C

Rejected.
 The paragraph as it appears in D3.1 is perfectly acceptable standardseeze. The suggested remedy is unnecessarily exclusive, whereas the rest of clause 3 and clause 4 have been carefully crafted to not preclude the application of carrier extension and bursting to other operating speeds.

P802.3z Draft 3.1 Comments

CI 04 SC P04.2 L 3/41 # 278
Colin Mick The Mick Group
Comment Type E Comment Status R global
Extent of figure change is unclear to the uninformed
SuggestedRemedy
Add editor's note to Figure 4-1 to describe change (see comment to Figure 1-1)
Proposed Response Response Status C
Rejected.
Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

CI 04 SC P04.4 L 1/30 # 279
Colin Mick The Mick Group
Comment Type E Comment Status R
Extent of figure change is unclear to the uninformed
SuggestedRemedy
Add editor's note to Figure 4-2 to describe change
Proposed Response Response Status C
Rejected.
Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

CI 04 SC P04.5 L 1/46 # 280
Colin Mick The Mick Group
Comment Type E Comment Status R
Extent of figure change is unclear to the uninformed
SuggestedRemedy
Add editor's note to Figure 4-31 to describe change
Proposed Response Response Status C
Rejected.
Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

CI 04 SC P04.6 L 1/52 # 281
Colin Mick The Mick Group
Comment Type E Comment Status R
Extent of figure change is unclear to the uninformed
SuggestedRemedy
Add editor's note to Figure 4-4(a) to describe change
Proposed Response Response Status C
Rejected.
Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

P802.3z Draft 3.1 Comments

CI 04 SC P04.7 L1/52 # 282
 Colin Mick The Mick Group

Comment Type E Comment Status R
 Extent of figure change is unclear to the uninformed

SuggestedRemedy
 Add editor's note to Figure 4-4(b) to describe change

Proposed Response Response Status C
 Rejected.
 Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

CI 04 SC P04.8 L1/52 # 283
 Colin Mick The Mick Group

Comment Type E Comment Status R
 Extent of figure change is unclear to the uninformed

SuggestedRemedy
 Add editor's note to Figure 4-5(b) to describe change

Proposed Response Response Status C
 Rejected.
 Editor's notes will not appear in the published standard, and a deliberate effort has been made to minimize their use in 802.3z, so that the balloted drafts are as close as possible to the final version.

The sort of editor's note requested by the commenter would unnecessarily clutter the document.

CI 04 SC 04.1.4 P04.4 L17 # 41
 Howie Johnson Signal Consulting

Comment Type T Comment Status A
 labels in figure are incorrect (comment transcribed from G. Thompson)

In the list in 4.1.4 the "capabilities" are listed as follows:

- i) Enforces collision to ensure propagation throughout network by sending jam message (The JAM function which is part of the TRANSMISSION functions) ("i" now appears in the RECEIVE MEDIA ACCESS MANAGEMENT box which is wrong) ("i" should appear in the TRANSMIT MEDIA ACCESS MANAGEMENT box which is correct)
- j) Discards received transmissions that are less than a minimum length (Obviously part of the RECEIVE functions) ("j" now appears in the TRANSMIT MEDIA ACCESS MANAGEMENT box which is wrong) ("j" should appear in the RECEIVE MEDIA ACCESS MANAGEMENT box which is correct)

SuggestedRemedy
 swap "i" and "j" on line 17.

Proposed Response Response Status C
 Accepted.
 Will be fixed in next draft.
 Note that this comment is a duplicate of comment 37 from T. Mathey.

CI 04 SC 4 P4.2 L33 # 1017
 David Law 3Com

Comment Type E Comment Status A
 The PMD is not specified for 100BASE-T2 either, suggest reword 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.'

SuggestedRemedy
 Suggest 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.' should just read 'PMD is specified for 100BASE-X and 1000BASE-X only', there is no need to list the PHY's that do not use a PMD.

Proposed Response Response Status C
 Accepted.

P802.3z Draft 3.1 Comments

Cl 04 SC 4.1.2.1.1 P04.4 L17 # 122
 Don Wong 3Com Corporation

Comment Type E Comment Status A
 Fig 4-2 doesn't indicate where (b3) is located in.

SuggestedRemedy
 Place (b3) in the Receive Data Decapsulation block since address filtering occurs here.

Proposed Response Response Status C
 Accepted.

Cl 04 SC 4.1.2.1.1 P04.4 L17 # 123
 Don Wong 3Com Corporation

Comment Type E Comment Status A
 (i) enforces collision by sending Jam and it's located in the receive path (Receive Media Access Management)

SuggestedRemedy
 Place (i) in the Transmit Media Access Management

Proposed Response Response Status C
 Accepted.
 Will be fixed in next draft.
 Note that this comment is a duplicate of comment 37 from T. Mathey.

Cl 04 SC 4.1.2.1.1 P04.4 L17 # 124
 Don Wong 3Com Corporation

Comment Type E Comment Status A
 (j) discards frames that are less than minimum length and it's located in the transmit path (Transmit Media Access Management).

SuggestedRemedy
 Place (j) into Receive Media Access Management.

Proposed Response Response Status C
 Accepted.
 Will be fixed in next draft.
 Note that this comment is a duplicate of comment 37 from T. Mathey.

Cl 04 SC 4.1.2.1.1 P4.4 L28 # 1050
 David Law 3Com

Comment Type E Comment Status A
 The figure references were changed from numbers to letters during the production of 8802-3:1996 yet the note was not updated.

SuggestedRemedy
 Suggest text 'NOTE: Numbers ...' should read 'NOTE: Letters ...'

Proposed Response Response Status C
 Accepted in principle.

Please see response to comment number 423 from S. Brewer.

Cl 04 SC 4.1.2.1.2 P N/A L N/A # 527
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A
 This sub-clause needs a short description of how Carrier Extension is handled on receive when no contention occurred on the medium.

SuggestedRemedy
 Include sub-clause 4.1.2.1.2 in the changes to clause 4, and add the following at the end of the first paragraph:
 "In half-duplex mode at operating speeds above 100Mb/s, some frames which are less than slotTime bits in length may be extended by the transmitting station using a sequence of extension bits. These extension bits are discarded by the MAC sublayer of the receiving station".

Proposed Response Response Status C
 Accept in principle.
 The commenter's suggested remedy is just a little too vague.
 The following will be added to the next draft:

Add the following paragraph to subclause 4.1.2.1.2:

"In half-duplex mode at operating speeds above 100 Mb/s, frames may be extended by the transmitting station under the conditions described in 4.2.3.4. The extension is discarded by the MAC sublayer of the receiving station, as defined in the procedural model in 4.2.9."

P802.3z Draft 3.1 Comments

CI 04 SC 4.1.4 P04.4 L18 # 528
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

Figure 4-2 has a bug that has been around for a long time --- the "i" and "j" identifiers do not correspond to the text that follows it. Since this figure has to change anyway, this seems like a good opportunity to fix it.

SuggestedRemedy

Swap the "i" and "j" identifiers in Figure 4-2.

Proposed Response Response Status C

Accepted.
 Will be fixed in next draft.
 Note that this comment is a duplicate of comment 37 from T. Mathey.

CI 04 SC 4.2 P04.4 L28 # 423
 Steve Brewer 3Com

Comment Type E Comment Status A

Note in figure 4.2 reads 'NOTE : Numbers refer to functions listed in 4.1.4'
 The numbers are actually letters.

SuggestedRemedy

Change the note to read 'NOTE : Letters refer to functions listed in 4.1.4'

Proposed Response Response Status C

Accepted in principle.
 In fact, there are both letters and numbers inside the boxes, so let's reword the note to read:

NOTE: "a1, b2, etc" refer to functions listed in 4.1.4

CI 04 SC 4.2.2.3 P04.5 L1-46 # 529
 Shimon Muller Sun Microsystems

Comment Type T Comment Status R

Figure 4-3 has a bug that has been around for a long time --- it does not show the procedure StartRealTimeDelay. Since this figure has to change anyway, this seems like a good opportunity to fix it.

SuggestedRemedy

Add a box titled StartRealTimeDelay below RealTimeDelay, and draw an arrow to it from Deference.
 Also, for the sake of completeness, the procedure Initialize should be shown somewhere.

Proposed Response Response Status C

Reject.
 While this might be a nice thing to do for the sake of completeness, it is an editorial nightmare. This figure is overcrowded as it is, and the addition of "StartRealTimeDelay" adds no value. The editor spent many, many hours cleaning this figure up for 802.3z, and he can say with absolute certainty that the commenter's suggested remedy can not be implemented unless the figure is split down the middle into two parts, one for transmit and one for receive, which seems like an inappropriate change.

CI 04 SC 4.2.2.3 P04.5 L42 to 43 # 107
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status R

I'm probably being picky here, but it bothers me that these notes could be more parallel and aren't.

SuggestedRemedy

Change the first note from "Not applicable to full-duplex operation" to "Applicable only to half-duplex operation".

Proposed Response Response Status C

Rejected.

The notes were worded differently for the express purpose of calling the reader's attention to them. Furthermore, the statement "Not applicable to full-duplex operation" is plain, obvious, and easy to understand.

P802.3z Draft 3.1 Comments

CI 04 SC 4.2.2.3 P04.6 L 36 # 530
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

See SuggestedRemedy.

SuggestedRemedy

Add a "*" near the decision block for "late collision and > 100Mb/s".

Proposed Response Response Status C

Reject.
 The asterisk is not necessary, since the decisions inside the boxes explicitly deal with the case of "late collision and > 100 Mb/s".

CI 04 SC 4.2.2.3 P04.8 L 28 # 532
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

The action block on this line in the BitReceiver process modifies the value of the status indicator receiveOK which is generated by the ReceiveDataDecap function. This is incorrect. The correct value that needs to be modified in this block should be the variable extensionOK. See the Pascal code for BitReceiver.

SuggestedRemedy

Replace "receiveOK" with "extensionOK" in the action block on line 28.

Proposed Response Response Status C

Accepted.
 You are correct, Sir.

CI 04 SC 4.2.3 P N/A L N/A # 533
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

Due to the addition of carrier extension and packet bursting, the functionality of the Transmit Media Access Management has expanded.

SuggestedRemedy

Include sub-clause 4.2.3 in the changes to clause 4 and change item b) to read as follows:
 "Transmit Media Access Management includes carrier deferenence, interframe spacing and signaling, collision detection and enforcement, collision backoff and retransmission, and carrier extension and packet bursting".

Proposed Response Response Status C

Accepted.
 You are correct, Sir.

CI 04 SC 4.2.3.1.1 P N/A L N/A # 534
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

Since the new frame format includes an extension field, it needs to be mentioned in this sub-clause.

SuggestedRemedy

Include sub-clause 4.2.3.1.1 in the changes to clause 4, and change the text to read as follows:
 "The fields of the CSMA/CD MAC frame are set to the values provided by the MAC client as arguments to the TransmitFrame operation (see 4.3), with the following exceptions: the padding field, which is necessary to enforce the minimum frame size, the extension field, which is necessary to enforce the minimum carrier event on the medium in the half-duplex mode at operating speeds above 100Mb/s, and the frame check sequence, which is set to the CRC value generated by the MAC sublayer".

Proposed Response Response Status C

Accept in principle.
 The suggested sentence is too wordy.
 We should try to cleanly divide it into two parts.
 "The fields of the CSMA/CD MAC frame are set to the values provided by the MAC client as arguments to the TransmitFrame operation (see 4.3), with the following exceptions: the padding field, the extension field, and the frame check sequence. The padding field is necessary to enforce the minimum frame size. The extension field is necessary to enforce the minimum carrier event on the medium in the half-duplex mode at operating speeds above 100Mb/s. The frame check sequence is set to the CRC value generated by the MAC sublayer."

CI 04 SC 4.2.3.2.7 P04.10 L 19 # 212
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Grammar problem

SuggestedRemedy

"a late collision" should be "late collisions".

Proposed Response Response Status C

Accepted. Sentence will be reworded as follows:

"Therefore, the MAC will treat any collision which occurs after the first frame of a burst, or which occurs after the slotTime has been reached in the first frame of a burst, as a late collision."

This wording was chosen in an attempt to satisfy comment number 42 from Mohan Kalkunte.

P802.3z Draft 3.1 Comments

CI 04 SC 4.2.3.2.7 P04.10 L19 # 925
 John M. Cagle Compaq Computer Co

Comment Type E Comment Status A

The last sentence implies that there may be multiple collisions in a burst.

SuggestedRemedy

Reword last sentence as follows: "Therefore, the MAC will treat any collision which occurs after the first frame of a burst as a late collision."

Proposed Response Response Status C

Accepted.
 Please see response to comment number 212 from P. Thaler

CI 04 SC 4.2.3.2.7 P4.10 L18 # 871
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Insert "(including any extension)" between "burst" and "has been transmitted".

Proposed Response Response Status C

Accept in principle. The insertion should be performed between "frame" and "of".

CI 04 SC 4.2.3.2.7 P4.10 L18 # 42
 Mohan Kalkunte AMD

Comment Type E Comment Status R

"cannot occur during the burst at any time after the first frame of a burst has been transmitted"

This implies that the first frame of the burst is less than or equal to slotTime.

SuggestedRemedy

Replace "first frame" in the above line by "first frame or slotTime" whichever occurs first.

Proposed Response Response Status C

Rejected.
 It is not clear where the implication comes from.
 However, please see the response to comment number 212 from Pat Thaler.
 Note that the extension is considered part of the frame according to the definition of a frame.

CI 04 SC 4.2.3.2.7 P4.10 L2-5, 30-32 # 869
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

For editorial consistency with 802.3X, change the title to "Frame Bursting (Half Duplex Mode only)" and eliminate the opening phrase "In half duplex mode". Same for 4.2.3.4 Carrier Extension.

Proposed Response Response Status C

Accepted.

CI 04 SC 4.2.3.2.7 P4.10 L9-10 # 870
 Rich Seifert Networks & Communic

Comment Type E Comment Status R

SuggestedRemedy

Change "Šit does not allow the medium to assume an idle conditionŠ" to "Šcarrier sense does not become de-assertedŠ" for clarity.

Proposed Response Response Status C

Rejected.
 The sentence describes the actions taken in the transmitting station.
 The transmitting station does not have direct control over the carrierSense variable in a receiving station. It would be inappropriate, and confusing, to mix the behavior of transmitters and receivers in this sentence.

CI 04 SC 4.2.3.4 P04.10 L43 # 926
 John M. Cagle Compaq Computer Co

Comment Type TR Comment Status A

It is unclear why collisions which occur before the end of slotTime are considered 'late'. Isn't the purpose of the increased slotTime to allow for a larger collision domain? Why would collisions be late that occur *before* the end of the carrier extension? Is Figure 4-7 incorrect in its placement of the beginning of slotTime?
 The definition of late collision in Subclause 30.3.1.1.10 is inconsistent with this description.

SuggestedRemedy

Reword line 43: "...treat any collision which occurs after the slotTime as a late collision."

Proposed Response Response Status C

Accepted.
 Please see response to comment number 212 from P. Thaler.
 Also, please see response to comment number 129 from D. Wong concerning figure 4-7.

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Cl 04 SC 4.2.3.4 P04.10 L47 # 927
 John M. Cagle Compaq Computer Co

Comment Type E Comment Status A
 HeaderSize, although used in this Subclause, does not appear on the drawing.

SuggestedRemedy
 Add an object to Figure 4-7 that shows headerSize, which includes the Preamble and the SFD.

Proposed Response Response Status C
 Accepted in principle.
 The value "headerSize" is used incorrectly in both the text and in figure 4-7.
 The figure will be redrawn, and the text reworded in such a fashion that the value "headerSize" is eliminated.
 Please see response to comment number 129 from D. Wong.

Cl 04 SC 4.2.3.4 P04.10 L48 # 129
 Don Wong 3Com Corporation

Comment Type E Comment Status A
 Fig 4-7 indicates that the slotTime starts at DA.
 While the slotTime should start at the preamble

SuggestedRemedy
 modify fig 4-7 to indicate start of slotTime at the beginning of Preamble

Proposed Response Response Status C
 Accepted in principle.
 The drawing is in error, in that the single ended arrow labeled "late collision threshold" should either specify the quantity "slotTime" rather than "slotTime - headerSize", or the arrow should be redrawn to start at the beginning of the DA.

For the purposes of determining the minimum valid transmission, a frame must be at least "slotTime" bits in length counting from the first bit of the DA to the end of the extension (if present). Thus, the double ended arrow labeled "slotTime" is correct.

Change caption on single ended arrow to read "slotTime".
 Also change corresponding text in sentence which begins on page 4.10, line 42 to delete "-headerSize".

Please see also comment # 80 from Mark Gerhold.

Cl 04 SC 4.2.4.2.1 P4.11 L21 # 872
 Rich Seifert Networks & Communic

Comment Type E Comment Status A
 CSMA/CD is not a sublayer, it is an algorithm.

SuggestedRemedy
 Change "CSMA/CD" to "MAC".

Proposed Response Response Status C
 Accepted.

Cl 04 SC 4.2.4.2.2 P4.11 L30 # 873
 Rich Seifert Networks & Communic

Comment Type TR Comment Status A
 All conformance requirements for this clause should be in the Pascal code exclusively.

SuggestedRemedy
 Change "shall be" to "must be".

Proposed Response Response Status C
 Accepted.
 Same change will be made on line 37 of same page.

Cl 04 SC 4.2.5 P N/A L N/A # 535
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A
 There is a discrepancy between the prose in this sub-clause and the Pascal code regarding the behavior of the transmitter in the presence of a collision during the transmission of the preamble.

SuggestedRemedy
 Include sub-clause 4.2.5 in the changes to clause 4, and change the last sentence of the first paragraph to read as follows:
 "If, while transmitting the preamble, the PLS asserts the collision detect signal, any remaining preamble and Start Frame Delimiter bits shall be sent".

Proposed Response Response Status C
 Accept in principle.
 Will we get the Nobel Prize for performing this service to humanity?
 The suggested sentence still lacks the desired precision. Therefore, the following change will be added to the next draft:

Replace the last sentence of the first paragraph of subclause 4.2.5 with the following:

"If, while transmitting the preamble or Start Frame Delimiter, the variable collisionDetect becomes true, any remaining preamble and Start Frame Delimiter bits shall be transmitted."

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CI 04 SC 4.2.7.1 P04.12 L15 # 126
 Don Wong 3Com Corporation

Comment Type E Comment Status R

The name "extensionErrorBit" is misleading, since the extensionErrorBit is transmitted when extendError is set. ExtendError is set upon collisionDetect during interFrameSize. An collisions are not considered as errors.

SuggestedRemedy

Change "extensionErrorBit" to "extensionJamBit"
 Change "extendError" to "extendJam"

at page 4.12, line 15
 page 4.13, line 37
 page 4.21, line 10
 page 4.21, line 15
 page 4.21, line 16
 page 4.21, line 24

Proposed Response Response Status C

Reject.

The extensionErrorBit gets mapped into the "Carrier Extend Error" by the RS, and it is mapped into a /V/ symbol in the 1000BASE-X PCS. Repeaters will also jam with /V/ symbols when a collision occurs in the extension.

While it is true that the term "extensionErrorBit" reflects a certain amount of paranoia on the part of the Task Force, the overriding concern has been to ensure that collision fragments are always recognized and discarded. The receipt of these bits within a fragment that is shorter than slotTime will not result in any error counters being incremented.

CI 04 SC 4.2.7.1 P04.12 L 21-23 # 511
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

The preambleSize is specified as "physical-medium-dependent". This contradicts sub-clauses 4.2.5, 7.2.3.2, 22.2.3.2.1 and 35.2.3.2.1, where the preamble has been defined as a 56-bit sequence of alternating 1s and 0s. Furthermore, none of the "implementation-dependent" tables in sub-clause 4.4 specify this parameter.

SuggestedRemedy

Change line 21 to read as follows:
 "preambleSize = 56; {in bits, see 4.2.5}"
 Change line 22 to read as follows:
 "sfdSize = 8; {in bits, see 4.2.6}"
 Change line 22 to read as follows:
 "headerSize = 64; {sum of preambleSize and sfdSize}"

Proposed Response Response Status C

Accept.

Response revised 10/1/97.

Accept in Principle.

The proposed change would create normative specifications for the preambleSize and headerSize in clause 4, which would duplicate requirements already stated in clauses 7, 22, and 35. Thus, The suggested remedy will be modified to put the value of preambleSize and headerSize inside the comment brackets on the referenced lines.

CI 04 SC 4.2.7.1 P04.12 L 4, 7, 9 # 125
 Don Wong 3Com Corporation

Comment Type E Comment Status A

clientDataSize, dataSize & frameSize definition doesn't indicate the units (bits or octets)

SuggestedRemedy

Modify
 clientDataSize = ...; {in bits
 dataSize = ...; {in bits, = clientDataSize ...
 frameSize= ...; {in bits, = 2 x addressSize ...

Proposed Response Response Status C

Accepted.

P802.3z Draft 3.1 Comments

CI 04 SC 4.2.7.2 P04.13 L 31-32 # 514
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A
 The halfDuplex variable is used in SetExtending, which is a receive process.
 Therefore, it does not belong in this sub-clause.

SuggestedRemedy
 Move the halfDuplex variable definition to the end of sub-clause 4.2.7.1 as
 a "var".
 Change the title for sub-clause 4.2.7.1 to read as follows:
 "Common Constants, Types and Variables".

Proposed Response Response Status C
 Accepted.

CI 04 SC 4.2.7.2 P04.13 L 33 # 515
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A
 The nature of the burstMode variable is very similar to halfDuplex. Therefore,
 its definition should provide the same amount of detail.

SuggestedRemedy
 Change the definition of the burstMode variable to read as follows:
 "burstMode: Boolean; {Indicates the desired mode of operation, and enables the
 transmission of multiple frames in a single carrier event.
 burstMode is a static variable. Its value does not change
 between invocations of the Initialize procedure)".

Proposed Response Response Status C
 Accepted.

CI 04 SC 4.2.7.2 P04.13 L 37 # 516
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A
 The extendError variable indicates ANY collision that occurred while sending
 extension bits, and not just late collisions. See StartJam.

SuggestedRemedy
 Change the definition of extendError to read as follows:
 "extendError: Boolean; {Indicates that a collision has occurred while sending
 extension bits)".

Proposed Response Response Status C
 Accepted.

CI 04 SC 4.2.7.2 P04.13 L 6 # 512
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A
 The Pascal uses the term interFrameSpacing, while sub-clause 4.4 defines it as
 interFrameGap. For the sake of clarity, it would be nice to indicate that the
 two terms refer to the same parameter.

SuggestedRemedy
 Change line 6 to read as follows:
 "interFrameSpacing = ...; {minimum time between frames, implementation depen-
 dent. Equal to interFrameGap, see 4.4}".

Proposed Response Response Status C
 Accept.
 It's about time we fixed this.

CI 04 SC 4.2.7.2 P04.13 L 7 # 513
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A
 A " " (space) is missing between "interFrame" and "timing".

SuggestedRemedy
 See Comment.

Proposed Response Response Status C
 Accept in principle.
 Replace "timing" with "Spacing" on line 7, page 04.13.
 Also, insert "Spacing" after second occurrence of "interFrame" on line 9, page 04.13.

CI 04 SC 4.2.7.2 P 4.13 L 34 & 36 # 1025
 David Law 3Com

Comment Type E Comment Status A
 Suggest that the space between the variable name and the ':' should
 be removed.

SuggestedRemedy
 Suggest that 'bursting :' should read 'bursting:' and that
 'burstStart :' should read 'burstStart:'

Proposed Response Response Status C
 Accepted.

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CI 04 SC 4.2.7.2 P4.13 L5-10 # 874
 Rich Seifert Networks & Communic

Comment Type T Comment Status A
 The code uses the term "interFrameSpacing", while the parameter tables use "interframeGap".

SuggestedRemedy
 Change either one for consistency. (I suggest that it is easier and safer to change the parameter tables to InterFrameSpacing.) Also, change the term interFrameGap used in the comment on line 11-12.

Proposed Response Response Status C
 Accepted in principle.
 Even though this is another "service to humanity" mission.
 Please see response to comments number 512 and 513 from S. Muller.

CI 04 SC 4.2.7.5 P04.15 LN/A # 517
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A
 The burstMode variable is not initialized.

SuggestedRemedy
 Add the following text to this sub-clause on line 16:
 "burstMode := ...; {true for half-duplex operation at operating speeds above 100Mb/s when multiple frames' transmission in a single carrier event is desired, false otherwise. burstMode is a static variable. Its value does not change between invocations of this procedure)".

Proposed Response Response Status C
 Accepted.

CI 04 SC 4.2.7.5 P4.14 L 50 # 78
 Mark Gerhold Unisys

Comment Type T Comment Status A
 The NOTE seems unnecessarily negative, and aggrandizes an implementation detail that's not a real world problem for 10 or 100 Mb/s. Deferring starts after Initialize, and is an asynchronous process, feeding into the transmit process.

SuggestedRemedy
 Remove the Note. If you feel it is absolutely necessary to have a note, how about
 "NOTE: To avoid a short interframe gap before the first frame transmission, the time from the completion of the Initialize process to when the first packet transmission begins should be at least an interpacket gap."

Proposed Response Response Status C
 Accepted. Reword note as follows:

"NOTE: Care should be taken to ensure that the time from the completion of the Initialize process to when the first packet transmission begins is at least an interFrameGap."

CI 04 SC 4.2.7.5 P4.14 L 50 # 875
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy
 Change "half duplex operation" to "half duplex mode".

Proposed Response Response Status C
 Accept in principle.
 The note is being totally re-written, in response to comment number 78 from M. Gerhold. The re-write eliminates any reference to half duplex mode or operation.

CI 04 SC 4.2.7.5 P4.15 L 2 # 1049
 David Law 3Com

Comment Type E Comment Status A
 The reference to clause 5 should be to clause 30.

SuggestedRemedy
 Suggest text '... (5.2.2.2.1).' should read '... (30.3.1.2.1).'

Proposed Response Response Status C
 Accepted.

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CI 04 SC 4.2.7.5 P4.15 L 20 # 79
 Mark Gerhold Unisys
Comment Type E Comment Status A
 Remove "see NOTE above": Unnecessary
SuggestedRemedy
 Remove "see NOTE above":
Proposed Response Response Status C
 Accepted. Remove "see NOTE above" on page 04.15, line 21.

CI 04 SC 4.2.8 P04.21 L 28-30 # 518
 Shimon Muller Sun Microsystems
Comment Type TR Comment Status A
 Based on the existing definition of the BitTransmitter and TransmitLinkMgmt, late collisions that occur during the IFS in the absence of a TransmitFrame invocation, are not reported to management.

SuggestedRemedy
 Change the relevant section of the BitTransmitter to read as follows:
 " if extendError then
 if transmitting then transmitting := false
 else
 begin
 lateCollisionCount := lateCollisionCount + 1;
 LayerMgmtTransmitCounters;
 end
 "

Proposed Response Response Status C
 Needs more work.
 Commenter needs to verify that other statistics won't get incremented erroneously if call LayerMgmtTransmitCounters at this time.
 The response to this comment also affects comment numbers 539 and 540, also from S. Muller.
 Response revised 9/30/97.
 Commenter has submitted a new suggested remedy as follows:

```

if extendError then
  if transmitting then transmitting := false
  else
    begin
      lateCollisionCount := lateCollisionCount + 1;
      deferred := false;
      LayerMgmtTransmitCounters;
    end
  
```

CI 04 SC 4.2.8 P4.17 L 19-21 # 876
 Rich Seifert Networks & Communic
Comment Type E Comment Status R
 The "begin-end" construct here is unnecessary.
SuggestedRemedy
 Change line 18 to"
 while deferring do if halfDuplex then deferred :- true; {defer to passing frame, if any}

Proposed Response Response Status C
 REJECT. Another step in the quest for a Nobel Prize!
 Guess this one slipped by in 802.3x, huh?
 This is another charming feature of 802.3, and it should be preserved, encased in amber, for future generations to ponder and enjoy.

CI 04 SC 4.2.8 P4.18 L 38 # 670
 Mitsuji Okada NEC Corp.
Comment Type TR Comment Status A
 The collision window size is wrong.
 The collision window begins at the first bit of preamble.
 Therefore, the size should be equal to slotTime bits, not slotTime - headerSize.

SuggestedRemedy
 If the collision occurs later than a collision window of slotTime bits into the packet, it is considered as evidence of a late collision.
Proposed Response Response Status C
 Accepted.
 Please see response to comment number 80 from M. Gerhold.
 The sentence will be reworded as follows:

If the collision occurs later than a collision window of slotTime bits into the packet, it is considered evidence of a late collision.

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CI 04 SC 4.2.8 P4.18 L 38 # 80
 Mark Gerhold Unisys

Comment Type TR Comment Status A

Replacing 512 bit times with (slotTime - headerSize) seems wrong (and unnecessarily confusing) for 10/100. Since a packet begins at the preamble, late collision is after 512 bit-times into the packet, not 512 - 32.

SuggestedRemedy

How about "less than a collision window of one slot time into the packet, it is considered..."

Proposed Response Response Status C

Accepted. The commenter correctly points out that while the comparison of currentTransmitBit versus the quantity (slotTime - headerSize) is correct in the procedure WatchForCollision, it is used incorrectly in the text.

The sentence will be corrected to read:

If the collision occurs later than a collision window of slotTime bits into the packet, it is considered evidence of a late collision.

CI 04 SC 4.2.8 P4.19 L 26 # 1023
 David Law 3Com

Comment Type E Comment Status A

Suggest 'burstCounter =burstCounter + 1' should read 'burstCounter = burstCounter + 1', that is add a space after the = symbol.

SuggestedRemedy

See above

Proposed Response Response Status C

Accepted.

CI 04 SC 4.2.8 P4.20 L 2 # 877
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Change "across" to "throughout".

Proposed Response Response Status C

Accepted.

CI 04 SC 4.2.8 P4.22 L 2 # 3
 Sailesh K. Rao Level One Communica

Comment Type T Comment Status R

In the sentence, "InterFrameSignal also monitors the variable collisionDetect ...," it appears that a late late collision (during the burst transmission) is a normal occurrence within the context of the standard. This is inconsistent with lines 42-43 on page 4.18.

SuggestedRemedy

Please clarify the intent on pages 4.22 and 4.18.

Proposed Response Response Status C

Reject.

These statements do not appear to be inconsistent. We request that the commenter please elaborate on his comment, and suggest text that would clarify the requirements, if the commenter feels that further clarification is necessary.

The commenter is referred to the second paragraph of 4.2.3.2.7, which states:

"In a properly configured network, and in the absence of errors, collisions cannot occur during a burst at any time after the first frame of a burst has been transmitted. Therefore, the MAC will treat all collisions which occur after the first frame of a burst as a late collision."

The text the commenter references on 4.18 states:

"While operating at speeds above 100 Mb/s, an implementation shall end retransmission attempts after a late collision is detected."

The text the commenter references on 4.22 states:

"InterFrameSignal also monitors the variable collisionDetect during the interframe interval between the frames of a burst, and will end a burst if a collision occurs during the interframe interval."

The philosophy is that even though a collision during the InterFrameSignal interval is an error, it still must be detected and acted upon.

P802.3z Draft 3.1 Comments

CI 04 SC 4.2.8 P4.22 L6 # 878
 Rich Seifert Networks & Communic

Comment Type E Comment Status R

SuggestedRemedy

Change "be able to avoid sending" to "eliminate"

Proposed Response Response Status C

REJECT. Hmmm.

The commenter's suggested remedy reads nicely, but it isn't really accurate. There is nothing you can do in a receiver, for instance, to "eliminate" this extraneous sequence.

CI 04 SC 4.2.9 P04.25 L23 # 128
 Don Wong 3Com Corporation

Comment Type E Comment Status A

"end" on line 23 doesn't line up with
 "begin" on line 13.

SuggestedRemedy

add 2 spaces in front of "end"

Proposed Response Response Status C

Accepted.

In fact, both the "end" on line 23 and the
 "end" on line 24 need to be indented by one tab each.

CI 04 SC 4.2.9 P04.25 L24 # 127
 Don Wong 3Com Corporation

Comment Type E Comment Status A

"end" on line 24 doesn't line up with
 "begin" on line 11.

SuggestedRemedy

add 2 spaces in front of "end"

Proposed Response Response Status C

Accepted.

In fact, both the "end" on line 23 and the
 "end" on line 24 need to be indented by one tab each.

CI 04 SC 4.2.9 P04.27 L9-10 # 536
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Clarify that the variable "extending" is set by SetExtending only in the Burst Mode.

SuggestedRemedy

Change the last sentence of the paragraph to read as follows:

"SetExtending sets the extending variable to true whenever receiveDataValid is de-asserted, when in half-duplex mode at operating speeds above 100Mb/s".

Proposed Response Response Status C

Accepted.

CI 04 SC 4.2.9 P4.25 L4 to 17 # 1048
 David Law 3Com

Comment Type T Comment Status R

According to this the variable validLength is random for a length/type field that is greater than maxValidFrame (1500 bytes) and less than minTypeValue (1536 bytes). This therefore means that the action of the outOfRangeLengthField counter is random.

SuggestedRemedy

Provide a defined action for validLength. From this decide if the outOfRangeLengthField attribute (30.3.1.1.24) should be deprecated or not.

Proposed Response Response Status C

Reject.

This is another "service to humanity" issue that should have been addressed in 802.3x. The appropriate mechanism for making this change is to submit a maintenance comment or refer to 802.3ac.

P802.3z Draft 3.1 Comments

CI 04 SC 4.3.3 P04.28 L 46-47 # 537
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

What is the meaning of this NOTE???

SuggestedRemedy

Delete the NOTE.

Proposed Response Response Status C

Accept.
 This NOTE has been there since before the flood.
 It is a bit of history, and one of the things which makes
 802.3 so charming, and so profitable for consultants.

Since you wish to ask 802.3 to perform this change as
 a "service to humanity", be prepared to assume responsibility
 for the personal well-being
 of all the consultants who will be left unemployed as a result.

CI 04 SC 4.3.3 P4.28 L 46 # 1259
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

The underscore on this note is either misplaced or shouldn't be there at
 all. The only difference that I find with the established text is an extra
 "its" (the 2nd one) which crept in during 802.3x without a change bar and
 therefore shouldn't be there.

Style note: I discovered upon examining this note character by character
 that we have used a different style for notes, i.e. "NOTE" followed by an
 colon and a space. Please do a gobal change to the IEEE/ISO style of
 "NOTE" followed by an EM quad. Our goal is for minimal touching by the
 IEEE Editor.

SuggestedRemedy

Change the note back to precisely what it is in ISO/IEC 8802-3 by showing
 the approved 802.3x text with the second "its" deleted with strikeout.

Update all notes to the IEEE/ISO style as noted above.

Proposed Response Response Status C

Accept in principle.
 We're gonna nuke the note.

Please see response to comment number 537 from S. Muller.

CI 04 SC 4.3.3 P4.29 L 18 # 1260
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

The new note text should be shown in underscore.

SuggestedRemedy

Set note text to underscore.

Proposed Response Response Status C

Accepted.

CI 04 SC 4.4.2.1 P4.30 L 22 # 81
 Mark Gerhold Unisys

Comment Type T Comment Status R

Remove "burstLimit not applicable " from the parameter table. That
 bursting is applicable only above 100 Mb/s is clearly stated elsewhere, such
 as 4.3.2.7. The absence of burstLimit in the table is enough to show that it
 is not a "parameter value that shall be used in the 10 Mbps implementation of
 CSMA/CD"

SuggestedRemedy

Remove the burstLimit table entry

Proposed Response Response Status C

Rejected.

In discussions which took place at the San Diego interim meeting in January, 1997, the
 Task Force
 concluded that it would be best to include the burstLimit parameter in the tables for each
 implementation,
 and to state the value as not applicable.

P802.3z Draft 3.1 Comments

Cl 04 SC 4.4.2.2 P4.31 L21 # 82
 Mark Gerhold Unisys

Comment Type T Comment Status R

Remove "burstLimit not applicable " from the parameter table. That bursting is applicable only above 100 Mb/s is clearly stated elsewhere, such as 4.3.2.7. Its absence in the table is enough to show that it is not a 1Base5 parameter.

SuggestedRemedy

Remove the burstLimit table entry

Proposed Response Response Status C

Rejected.

In discussions which took place at the San Diego interim meeting in January, 1997, the Task Force concluded that it would be best to include the burstLimit parameter in the tables for each implementation, and to state the value as not applicable.

Cl 04 SC 4.4.2.3 P4.32 L21 # 83
 Mark Gerhold Unisys

Comment Type T Comment Status R

Remove "burstLimit not applicable " from the parameter table. That bursting is applicable only above 100 Mb/s is clearly stated elsewhere, such as 4.3.2.7. Its absence in the table is enough to show that it is not a 100Mbps parameter.

SuggestedRemedy

Remove the burstLimit table entry

Proposed Response Response Status C

Rejected.

In discussions which took place at the San Diego interim meeting in January, 1997, the Task Force concluded that it would be best to include the burstLimit parameter in the tables for each implementation, and to state the value as not applicable.

Cl 04 SC 4.4.2.4 P04.33 L 21 # 1081
 Scott Mason Plaintiff Systems Inc.

Comment Type T Comment Status R

A burst limit of 65536 bits (> 100 frames) introduces unnecessary risk to the correct and optimal operation of half-duplex networks. IMO, the impact of this choice on real networks has not been sufficiently investigated. For example, potential problems may arise in the interaction with upper-level protocols, particularly those with window sizes less than or on the same order as the burst limit. As well, such a limit may unnecessarily penalize nodes which are not able to sustain line rate operation across a large number of frames. Beyond these examples is the very real possibility of unforeseen behaviour in the same way that capture effect was unforeseen when CSMA/CD was first developed.

Bursting was introduced to address bandwidth lost to carrier extension. Reports to the task force indicate that 12000 bits is sufficient for this function.

SuggestedRemedy

Restore the burst limit to 12000 bits.

Proposed Response Response Status C

Reject.

The burstLimit length was investigated very thoroughly before the decision to increase to 64 kbit was made. The simulation material presented in March and May, 1997 by M. Kalkunte was not disputed, and the decision to make the increase was unanimous (13-0-5).

The commenter presents no data which contradicts the results published by M. Kalkunte. Unless and until such data is made available to the Task Force, the burstLimit will remain at 64 kbits.

P802.3z Draft 3.1 Comments

Cl 04 SC 4.4.2.4 P4.33 L16 # 5
Sailesh K. Rao Level One Communica

Comment Type T Comment Status A
Is jamSize of 32bits sufficient for 1000BASE-T?

SuggestedRemedy
Please verify and use appropriate number.

Proposed Response Response Status C
Accept.
The committee has discussed the value and believes that it is an appropriate number independent of the PHY, so no change is required. jamSize is a fairly arbitrary value. In loss-less, continuously clocked links, with no possibility of "destructive interference" resulting in carrier dropouts, it appears that jamSize could in fact be zero. However, for the sake of minimizing the extent of changes to the MAC, both the 100BASE-T and 802.3z projects have elected to preserve the value of jamSize. The Task Force is unaware of any scenario which would necessitate an increase in jamSize for 1000BASE-T. If the commenter is aware of any such scenario, the Task Force would be happy to evaluate it.

Cl 04 SC 4.4.2.4 P4.33 L16 # 669
Mitsuji Okada NEC Corp.

Comment Type TR Comment Status A
I'm not sure whether or not the jam size (32 bits) does work.

SuggestedRemedy
Please make sure the number to appropriate number.

Proposed Response Response Status C
Accept.
The committee believes the current number to be appropriate so no changes are required. please see response to comment number 5, from S. Rao.

Cl 04 SC 4.4.2.4 P4.33 L24 # 1261
Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A
The new note text should be shown in underscore.

SuggestedRemedy
Set note text to underscore.

Proposed Response Response Status C
Accepted.

Cl 04 SC 4.4.2.4 P4.33 L24 # 84
Mark Gerhold Unisys

Comment Type T Comment Status R
The parameter table is one of the few clear, straightforward sections in 802.3. Keep it clean.

The Note contains useful information. It should go somewhere else, somewhere in 1000Base-X. Because it's a derived number, not a parameter. There are lots of derived numbers.

Also, I cannot find where this value is calculated. Or, where the bit-budget table is located.

SuggestedRemedy
If you feel it's absolutely necessary to have a note, how about "Note, the received interframe gap may be as small as 64 bit times. See xx.x.x for more detail." And move the current Note to xx.x.x. If xx.x.x doesn't exist, build a subclause called "1000Base-X timing"

Proposed Response Response Status C
Rejected.

Bit budget information for 1000BASE-X is located in clause 42. Bit budget related timing parameters for 1000BASE-X can be found in clauses 35 and 36.

The note is consistent, both in style and location, with the note that was provided for 10 Mb/s operation. The note was unfortunately omitted when 100BASE-T was written. Because the information in the note is of primary value to MAC designers, it should be placed in a prominent position in the MAC clause, such as right below the parameter table.

Cl 04 SC 4.4.3 PNA LNA # 538
Shimon Muller Sun Microsystems

Comment Type E Comment Status A
The text in this sub-clause needs to refer to TWO Auto-Negotiation functions: clauses 28 and 37.

SuggestedRemedy
Include sub-clause 4.4.3 in the changes to clause 4, and change the first sentence in this sub-clause to read as follows:
"The operational mode of the MAC may be determined either by the Auto-Negotiation functions specified in clauses 28 and 37, or through manual configuration".

Proposed Response Response Status C
Accepted.
You are correct, Sir.

P802.3z Draft 3.1 Comments

Cl 04 **SC 4.Fig 4-2** **P 4.4** **L 17** # **1235**
 Geoff Thompson Bay Networks, Inc.

Comment Type **TR** **Comment Status** **A**

Long standing error:
 In the box TRANSMIT MEDIA ACCESS MANAGEMENT item j calls out a receive process.
 In the box RECEIVE MEDIA ACCESS MANAGEMENT item i calls out a transmit process.

SuggestedRemedy
 swap characters "i" and "j" in Fig 4-2

Proposed Response **Response Status** **C**
 Accept.

Cl 04 **SC 5.2.4.1** **P 5.1** **L 48** # **6**
 Sailesh K. Rao Level One Communica

Comment Type **E** **Comment Status** **A**

{maximum value of (232 - 1) of wraparound 32-bit counter}

SuggestedRemedy
 (232-1) should be changed to (2^32 - 1)

Proposed Response **Response Status** **C**
 Accepted. Will be fixed in next draft.
 Also note that the description of max64 has a similar problem, and should be changed from (264 -1) to (2^64 -1), in other words, the superscripts got lost on the road to Gadolfo.

Cl 04 **SC 5.2.4.1** **P 5.1** **L 50** # **11**
 Sailesh K. Rao Level One Communica

Comment Type **E** **Comment Status** **A**

{maximum value of (264 - 1) of wraparound64-bit counter}

SuggestedRemedy
 Change to
 {maximum value of (2^64 - 1) of wraparound 64-bit counter}

Proposed Response **Response Status** **C**
 Accepted.
 Will be fixed in next draft. See also response to comment 6.

Cl 04 **SC Fig 4-4** **P 4.6** **L 36-50** # **868**
 Rich Seifert Networks & Communic

Comment Type **TR** **Comment Status** **A** *CollisionError*

It is not appropriate to report late collisions as an excessiveCollisionError. The latter can occur in properly operating networks under transient congestion conditions, while the former is a significant error event for management purposes.

SuggestedRemedy
 In my order of preference, either:

- (1) Treat a late collision the same as a normal collision in the flow chart and code (but still increment the management error counters)
- (2) Add a new encoding to the service interface, to signal a Late Collision as a value for the return of the TransmitFrame function
- (3) Report a late collision as "Done: transmitOK" (but still increment the management error counters)

#1 is consistent with how we have treated these events for 10/100 Mb/s systems. A text note could show that 1000 Mb/s systems by necessity cannot actually backoff and retransmit for a late collision (similar to the note that says that 10/100 Mb/s MAY not be able to backoff and retransmit a late collision).

Proposed Response **Response Status** **C**
 Accept in principal.
 See response to comment #531 from Shimon Muller.

Cl 04 SC Figure 4.2 P04.4 L17 # 37
 Tom Mathey Baynetworks

Comment Type E Comment Status A

802.3z is updating Figure 4-2 in the base document, but this figure is in error. This error is a carry-over from the base document (1996).

Figure 4-2, line 17 in the 802.3x Full Duplex supplement has item i and item j reversed.

Item i in the text is a transmit function, but is shown in the figure as a receive function. Item j in the text is a receive function, but is shown in the figure as a transmit function.

SuggestedRemedy

Change figure to match text.

Change line 17 for:

TRANSMIT MEDIA ACCESS MANAGEMENT entry from a2 c d f g h j k to a2 c d f g h i k.
 RECEIVE MEDIA ACCESS MANAGEMENT entry from b1 e i l to b1 e j l.

Note: GOT still has access to the 802.3x Full Duplex drafts, and is able to change this error in the supplement prior to final publication. This submittal provides the "official" documentation.

Proposed Response Response Status C

Accepted.

Will be fixed in next draft.

Cl 04 SC Multiple, see Suggeste P Multiple, se L Multiple, # 531
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

CollisionError

The status code for excessiveCollisionError on Figure 4-4(a) and in the other indicated sections (including the Pascal, see below) is misleading and technically incorrect. It requires that both excessive and late collisions be reported to the MAC Client as excessive collisions.

SuggestedRemedy

One alternative for resolving this issue would be to define a new status code for a "lateCollisionError" and incorporate it in all relevant sections. This would unnecessarily complicate the Pascal TransmitLinkMgmt function. Since from both the architectural and interoperability perspectives it is not strictly necessary for the MAC Client to know the precise reason why its frame transmission was aborted, a much cleaner approach from the editorial and clarity standpoint would be to redefine the "excessiveCollisionError" as a general "collisionError", and describe in section 4.3.2 the precise conditions for setting this code.

Following are the editorial changes required to accommodate the fix:

1. On page 04.6, line 51:

Replace "excessiveCollisionError" with "collisionError".

2. On page 04.14, line 7:

Replace "excessiveCollisionError" with "collisionError".

3. On page 04.17, line 46:

Replace "excessiveCollisionError" with "collisionError".

4. Include sub-clause 4.3.2 in the changes to clause 4, and change the relevant paragraph to read as follows:

```
" type TransmitStatus = (transmitOK, collisionError);
++ type TransmitStatus = (transmitDisabled, transmitOK, collisionError);
The transmitDisabled status code indicates that the transmitter is not enabled. Successful transmission is indicated by the status code transmitOK. The code collisionError indicates that the transmission attempt was aborted due to either an excessive or a late collision, because of heavy traffic or an illegal network configuration, respectively.
```

An implementation shall set the collisionError code after an excessive collision while operating at all speeds, or after a late collision while operating at speeds above 100Mb/s. While operating at speeds of 100Mb/s or lower, an implementation may optionally elect to set the collisionError code after a late collision is detected".

Proposed Response Response Status C

Accept.

Accept the editorial changes as written except changing "excessiveCollisionError" to "transmitError" instead of "collisionError."

Response revised 10/1/97.

In order to satisfy both this comment and seifert comment 868, add a new transmit status indication, "lateCollisionErrorStatus". As a consequence, must modify Pascal for TransmitLinkMgmt to report lateCollisionErrorStatus for 1000Mb/s only. Also

add text stating that the reporting of lateCollisionErrorStatus is optional for 10 and 100 Mb/s.

P802.3z Draft 3.1 Comments

CI 05 SC 5 P05.1 L15 # 53

Howie Johnson Signal Consulting

Comment Type E Comment Status A

As a result of the latest ISO/IEC 8802-3 DAM 21 ballot, we may have a problem with one of the corrections listed on page iv. Since we are again changing the same subclause, it seems appropriate to say something about it in our draft.

Here's what we did in the DAM 21 ballot:

(In the section listing corrections to IEEE 802.3u as of July 97)
Page 21: "Clause 5 is deprecated by clause 30"
is changed to
"clause 5 through 5.2.3.1.1 is deprecated by clause 30"

Here's what we say about the same clause in IEEE P802.3z/D3.1:

Page 5.1: Change the first line of clause 05 to read:
"All parts of Clause 05, except for subclause 5.2.4 and its subclauses are deprecated by Clause 30."

It appears at first reading that we are attempting to delete the same material with two different wordings, BUT WE AREN'T.

Here's what the table of contents looked like prior to 802.3u clause 5:
(ISO/IEC 8802-3 fifth edition 1996-07-29)
5.2.3 DTE Physical Sublayer Management facilities
5.2.3.1 DTE Physical Sublayer attributes
5.2.3.1.1 aPHYID
5.2.3.1.2 aSQETestErrors
5.2.4 DTE Mangement procedural model
...(5.2.4 is the last major heading)

It looks to me like the DAM 21 wording fails to deprecate subclause 5.2.3.2.1, aSQETestErrors.

SuggestedRemedy

Add to the editorial note (to be removed prior to final publication) that appears in the front of clause 05. Insert after the words "deprecated by 802.3u", the phrase:
"and also clearly deprecate subclause 5.4.3.1.2, which was mistakenly re-instated as part of ISO 8802-3 DAM 21 ballot."

Proposed Response Response Status C

Accept in principle.
The commenter's suggested remedy is in error because it refers to 5.4.3.1.2, when it should refer to 5.2.3.1.2.

Therefore, the following phrase will be added to the editor's note (to be removed

prior to final publication) that appears in the front of clause 05, inserted after the words "deprecated by 802.3u":

"and will also clearly deprecate subclause 5.2.3.1.2 aSQETestErrors, which was inadvertently re-instated as part of the ISO 8802-3 DAM 21 ballot."

CI 05 SC 5.2.4.1 P05.1 L48 # 1093

Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: super-script is at normal

SuggestedRemedy

Change from "232" to "equivalent of 2**32".
Change line 50 to "equivalent of 2**64".
Line 50: Add space between wraparound and 64-bit.

Proposed Response Response Status C

Accept.

CI 05 SC 5.2.4.1 P05.1 L50 # 682

Walter Thirion Jato Technologies, Inc

Comment Type E Comment Status A

'maximum value (264 - 1)' is incorrect. 64 is supposed to be the exponent of 2.

SuggestedRemedy

Format 64 as the exponent of the 2.

Proposed Response Response Status C

Accepted.
Please see response to comment number 11 from S. Rao.

CI 05 SC 5.2.4.1 P5.1 L48 # 680

Walter Thirion Jato Technologies, Inc

Comment Type E Comment Status A

" maximum value (232 - 1)" is incorrect. It is supposed to be 2 superscript 32, ie. 2 to the power 32.

SuggestedRemedy

Change 232 to 2 superscript 32

Proposed Response Response Status C

Accepted.
Please see response to comment number 6 from S. Rao.

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Cl 05 SC 5.2.4.1 P5.1 L 48 # 431
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A
 maximum value of a 32 bit counter is 2**32 - 1 not 232 - 1.,
 similarly for line 50 and the 64 bit counter.

SuggestedRemedy
 line 48:
 change 232 - 1 to 2**32 -1.
 line 50:
 change 264 - 1 to 2**64 - 1

Proposed Response Response Status C
 Accepted.
 Please see responses to comment numbers 6 and 11.

Cl 05 SC 5.2.4.2 P N/A L N/A # 540
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A
 The last paragraph on page 57 of the base standard indicates that TransmitLink
 Mgmt is the only function that invokes the LayerMgmtTransmitCounters procedure.
 In fact, this procedure should also be invoked by the BitTransmitter process.

SuggestedRemedy
 Include sub-clause 5.2.4.2 in the changes to clause 5, and change the above-
 mentioned paragraph to read as follows:
 "Procedure LayerMgmtTransmitCounters is invoked from the TransmitLinkMgmt func-
 tion and from the BitTransmitter process in 4.2.8 to update the transmit and
 transmit error counters".

Proposed Response Response Status C
 Affected by response to comment 518 from S. Muller

 Response revised 9/30/97.

 Accepted suggested remedy.

Cl 05 SC 5.2.4.2 P N/A L N/A # 539
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A
 Late collisions are counted by the TransmitLinkMgmt and the BitTransmitter in
 clause 4.

SuggestedRemedy
 Include sub-clause 5.2.4.2 in the changes to clause 5, and change the variable
 lateCollisionCount definition to read as follows:
 "lateCollisionCount: 0...attemptLimit-1; {count of late collisions that is
 used in clause 4 TransmitLinkMgmt
 and BitTransmitter}

Proposed Response Response Status C
 Reject.
 This is *very tricky* from an editorial standpoint, and adds
 very little value. Given the problems which tend to
 occur every time we touch an existing clause, it would
 be wiser to simply leave this alone.

Affected by response to comment 518 from S. Muller

 Response revised 9/30/97.

Accept suggested remedy.

Cl 05 SC 5.2.4.3 P 60 L # 1024
 David Law 3Com

Comment Type E Comment Status R
 Note that this is a comment on the clause 5 within ISO/IEC8802-3. Due
 to the 802.3x change of the term LLC to MAC Client, suggest that the
 text '... number of LLC data octets ...' should read '... number of
 MAC Client data octets ...'

SuggestedRemedy
 See above

Proposed Response Response Status C
 Reject.
 This is another "service to humanity" issue that should have been addressed in
 802.3x. The appropriate mechanism for making this change is to submit a
 maintenance comment.

P802.3z Draft 3.1 Comments

Cl 05 SC 5.2.4.3 P 60 L # 1021
 David Law 3Com

Comment Type E Comment Status R

Note that this is a comment on the clause 5 within ISO/IEC8802-3. The length field has been updated to be the type/length field by 802.3x. Suggest the text '... {length field value between ...}' should be changed to read '... {Length/Type field value between ...}'

SuggestedRemedy

Suggest text should read '... {Length/Type field value between ...}'

Proposed Response Response Status C

Reject.
 This is another "service to humanity" issue that should have been addressed in 802.3x. The appropriate mechanism for making this change is to submit a maintenance comment.

Cl 05 SC 5.2.4.3 P 60 L # 1022
 David Law 3Com

Comment Type E Comment Status R

Note that this is a comment on the clause 5 within ISO/IEC8802-3. The LLCDataSize const has been renamed clientDataSize by 802.3x. Suggest that the four occurrences of the text LLCDataSize should be changed to clientDataSize.

SuggestedRemedy

See above

Proposed Response Response Status C

Reject.
 This is another "service to humanity" issue that should have been addressed in 802.3x. The appropriate mechanism for making this change is to submit a maintenance comment.

Cl 05 SC 5.2.4.3 P N/A L N/A # 542
 Shimon Muller Sun Microsystems

Comment Type E Comment Status R

Procedure LayerMgmtReceiveCounters contains multiple references to LLC.

SuggestedRemedy

In the section that deals with lengthError in this procedure, replace all references to LLC with "MAC Client".

Proposed Response Response Status C

Reject.
 Please submit as a maintenance request.

Cl 05 SC 5.2.4.3 P n/a L n/a # 40001
 Howard Frazier cisco systems, inc.

Comment Type T Comment Status A

As a result of resolution of comment 719 from P. Thaler, the pascal in clause 5 must be changed to prevent incrementing the aOutOfRangeLengthErrors

SuggestedRemedy

In procedure LayerMgmtReceiveCounters move "end; {lengthError}" and "end; {case status}" to below "inclLargeCounter{outOutOfRangeLengthField)". Also, add a begin after "case status of".

Proposed Response Response Status C

ACCEPT.

Cl 05 SC 5.2.4.3 P N/A L N/A # 541
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The first paragraph on page 60 of the base standard erroneously indicates that ReceiveLinkMgmt is the procedure that invokes the LayerMgmtReceiveCounters procedure.

SuggestedRemedy

Include sub-clause 5.2.4.3 in the changes to clause 5, and change the above-mentioned paragraph to read as follows:
 "Procedure LayerMgmtReceiveCounters is called by the ReceiveDataDecap function in 4.2.9 and increments the appropriate receive counters".

Proposed Response Response Status C

Reject.
 Please submit as a maintenance request.
 Response revised 10/2/97.
 Accept suggested remedy as written.

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Cl 06 SC P06.1 L19/51 # 284
 Colin Mick The Mick Group
Comment Type E Comment Status R
 Make change clear
SuggestedRemedy
 Add editor's note to describe change
Proposed Response Response Status C
 REJECT.
 Response revised 9/30/97.
 Editor's notes such as that suggested by the commenter should not appear in the published standard. A deliberate effort has been made to avoid cluttering the document.

Cl 06 SC 6 P6.1 L47 # 1018
 David Law 3Com
Comment Type E Comment Status A
 The PMD is not specified for 100BASE-T2 either, suggest reword 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.'
SuggestedRemedy
 Suggest 'PMD is specified for 100BASE-X and 1000BASE-X only; 100BASE-T4 does not use this layer.' should just read 'PMD is specified for 100BASE-X and 1000BASE-X only', there is no need to list the PHY's that do not use a PMD.
Proposed Response Response Status C
 ACCEPT.

Cl 06 SC 6.1 P6.1 L19 # 1262
 Geoff Thompson Bay Networks, Inc.
Comment Type E Comment Status A
 The provide figure is correct. The one that is in the currently published edition is not correct. A note for clarity of that would help. (Maybe we will finally get it right)
SuggestedRemedy
 Change:
 "Replace figure 6-1 with the following:"
 to:
 "Replace figure 6-1 with the following:
 (NOTE- The figure in the current edition of ISO/IEC 8802-3 is incorrect, the figure substituted by 802.3x is not technically correct.)"
Proposed Response Response Status C
 ACCEPT.

P802.3z Draft 3.1 Comments

CI 22 SC P22.1 L27 # 668
 Satoshi Obara Fujitsu Limited
 Comment Type E Comment Status A
 There is a wrong title in close 22.
 (e.g. Reconciliation Syblayer (RS))
 ~~~~~  
 SuggestedRemedy  
 Use the correct word.  
 Proposed Response Response Status C  
 Accept. Duplicate of comment #12.

CI 22 SC 2.4 P22.1 L37 # 1157  
 Jim Mangin Bay Networks  
 Comment Type E Comment Status A  
 awkward sentence  
 SuggestedRemedy  
 change ..basic register set for 1000Mb/s operation is extended with..  
 to ..basic register set is extended for 1000 Mb/s operation with..  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. See #286

CI 22 SC 2.4 P22.3 L12 # 1158  
 Jim Mangin Bay Networks  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Proposed Response Response Status C  
 ACCEPT. isn't it obvious? (Comments #216, 545 address this line.)

CI 22 SC 2.4.1.10 P22.4 L37 # 1162  
 Jim Mangin Bay Networks  
 Comment Type E Comment Status A  
 change to keep more inline with the current  
 extended register set nomenclature  
 SuggestedRemedy  
 change the following  
 22.4.1.10 Speed Selection 1000 Mb/s  
 to  
 22.4.1.10 Extended Speed Selection  
 and change wherever referenced  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. See #216, 545.

CI 22 SC 2.4.1.10 P22.4 L39 # 1163  
 Jim Mangin Bay Networks  
 Comment Type T Comment Status A  
 dont need to refer to bit 0.12 in this paragraph. Refer  
 back to 22.4.1.3  
 SuggestedRemedy  
 change the following  
 with bits 0.13 and 0.12 to select the speed  
 to  
 with bit 0.13 to select the speed  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. Bits 0.6 and 0.13 only select speed if bit 0.12 is zero as  
 explained in the recommended reference.

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**Cl 22**    **SC 2.4.1.3**                      **P 22.3**    **L 33**                      # **1159**  
 Jim Mangin                                      Bay Networks  
*Comment Type*    **T**                      *Comment Status*    **A**  
     Need more bits for speed resolution  
*SuggestedRemedy*  
     change the following  
     ..the value of bit 0.13 shall correspond to a speed at which the PHY..  
     to  
     ..the value of bits 0.13 and 0.6 shall correspond to a speed at which the PHY..  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT. see comment #1 for text.

**Cl 22**    **SC 2.4.1.3**                      **P 22.3**    **L 45**                      # **1161**  
 Jim Mangin                                      Bay Networks  
*Comment Type*    **T**                      *Comment Status*    **A**  
     deleted too much  
*SuggestedRemedy*  
     change the following  
     shall have no effect on station operation  
     to  
     shall have no effect on link configuration and station operation  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT. The "plain text" on line 46 to end of sentence should also be underlined.

**Cl 22**    **SC 2.4.1.3**                      **P 22.3**    **L 39**                      # **1160**  
 Jim Mangin                                      Bay Networks  
*Comment Type*    **T**                      *Comment Status*    **A**  
     Need more bits for speed resolution  
*SuggestedRemedy*  
     change the following  
     ..the default value of bit 0.13 is consistent with the highest..  
     to  
     ..the value of bits 0.13 and 0.6 are consistent with the highest..  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT. see comment #1 for text.

**Cl 22**    **SC 2.4.2.11**                      **P 22.6**    **L 17**                      # **1164**  
 Jim Mangin                                      Bay Networks  
*Comment Type*    **E**                      *Comment Status*    **A**  
     bad reference  
*SuggestedRemedy*  
     change the following  
     can be found in 37.2.1.2.4, 28.2.1.2.  
     to  
     can be found in 37.2.1.4, 28.2.1.2.  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT. see #547.

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**Cl 22**     **SC 2.4.3.2-2.4.3.6**     **P 22.6**     **L 34-50**     # **1165**  
 Jim Mangin     Bay Networks  
*Comment Type*   **E**     *Comment Status*   **A**  
     bad references  
*SuggestedRemedy*  
     change the following  
     See 28.2.4.1 and 37.2.6.  
     to  
     See 28.2.4.1 and 37.2.4.  
*Proposed Response*     *Response Status*   **C**  
     ACCEPT IN PRINCIPLE. See #549. 37.2.6.1

**Cl 22**     **SC 2.4.3.9**     **P 22.7**     **L 2-4**     # **1166**  
 Jim Mangin     Bay Networks  
*Comment Type*     **T**     *Comment Status*   **R**  
     The Auto\_Negotiation clauses do not use up all  
     of the reserved registers defined in clause 22.  
*SuggestedRemedy*  
     change sentence from  
     The definition of registers 4 through 14 are dependent..  
     to  
     The definition of registers 4 through 8 are dependent..  
     add the following sentence after the above sentence  
     Register addresses 11 through 14 ( decimal ) are reserved for future standardization.  
*Proposed Response*     *Response Status*   **C**  
     REJECT. The proposed text is more forward looking. For example, registers 9 and 10 are  
     defined for clause 28 but not clause 37.

**Cl 22**     **SC 22**     **P 22.1**     **L 27**     # **12**  
 Kevin Daines     Packet Engines  
*Comment Type*     **E**     *Comment Status*   **A**     *typo*  
     Spelling error  
*SuggestedRemedy*  
     Change "Syblayer" to "Sublayer"  
*Proposed Response*     *Response Status*   **C**  
     Accept.

**Cl 22**     **SC 22**     **P 22.1**     **L 27**     # **120**  
 Henricus Koeman     Fluke  
*Comment Type*     **E**     *Comment Status*   **A**     *typo*  
     correct spelling Sylayer to Sublayer?  
*SuggestedRemedy*  
     Correct spelling  
*Proposed Response*     *Response Status*   **C**  
     Accept, duplicate of #12.

**Cl 22**     **SC 22**     **P 22.1**     **L 27**     # **13**  
 Kevin Daines     Packet Engines  
*Comment Type*     **E**     *Comment Status*   **A**     *typo*  
     Spelling error  
*SuggestedRemedy*  
     Change "Reconcillation" to "Reconciliation"  
*Proposed Response*     *Response Status*   **C**  
     Accept.

**Cl 22**     **SC 22.**     **P 05.1**     **L 50**     # **681**  
 Walter Thirion     Jato Technologies, Inc  
*Comment Type*     **E**     *Comment Status*   **A**  
     Sublayer is misspelled as Syblayer  
*SuggestedRemedy*  
     Correct the spelling.  
*Proposed Response*     *Response Status*   **C**  
     Accept. Duplicate of comment #12.

P802.3z Draft 3.1 Comments

Cl 22 SC 22.1 P N/A L N/A # 543  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The new version of clause 22 will include some functionality that is relevant to 1000Mb/s operation, while most of the clause still relates to only the lower speeds. For the sake of clarity it would be useful to state this up front, in the overview section.

SuggestedRemedy

- \* Include sub-clause 22.1 in the changes to clause 22, and change the second paragraph (after figure 22-1) to read as follows:  
 "The purpose of this interface is to provide a simple, inexpensive and easy-to-implement interconnection between Media Access Control (MAC) sublayers and PHYs for data transfer at 10Mb/s and 100Mb/s, and between PHYs and Station Management (STA) entities for 10Mb/s, 100Mb/s and 1000Mb/s operation (see 22.2.4)".
- \* Change item a) in the next paragraph to read as follows:  
 "It is capable of supporting 10Mb/s and 100Mb/s rates for data transfer, and 10Mb/s, 100Mb/s and 1000Mb/s rates for management functions (see 22.2.4)".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. Modify recommended text to read: "The purpose of this interface is to provide a simple, inexpensive and easy-to-implement interconnection between Media Access Control (MAC) sublayers and PHYs for data transfer at 10Mb/s and 100Mb/s, and between PHYs and Station Management (STA) entities for all speeds of operation (see 22.2.4)".

\* Change item a) in the next paragraph to read as follows:  
 "It is capable of supporting 10Mb/s and 100Mb/s rates for data transfer, and all speeds of operation for management functions (see 22.2.4)".

Response revised 9/30/97.

Accept suggested remedy as originally supplied by commenter.

Cl 22 SC 22.2.4 P 22.1 L 36/37 # 286  
 Colin Mick The Mick Group

Comment Type E Comment Status A minor editorial

Added sentence at end of 2nd paragraph is awkward

SuggestedRemedy

"1000Mb/s operation adds a third register to those required for lower speed operation."

Proposed Response Response Status C

Accept in principle. Change line 34 to include GMII. Change last sentence of paragraph (line 37) to read "The MII uses two basic registers. The GMII also uses the same two basic registers and adds a third basic register."

Cl 22 SC 22.2.4 P 22.1 L 40-43 # 879  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status R

There is considerable overlap between Clause 35 and 22. It is not always clear, for functions common across all speeds, which clause is the controlling specification. In theory, Clause 22 specifies the 10/100 MII only, while Clause 35 specifies a "superset" GMII with two modes of operation. Clause 35 sometimes refers back to clause 22, and sometimes re-specifies identical behaviors.

There are also references to GMII within clause 22, where they are not appropriate; from a pure Clause 22 perspective, there IS no GMII. (specifically, the reference on line 41-42, and the discussion of AutoNegotiation in lines 44-46 are out of context in Clause 22; this clause is ONLY for 10/100.)

SuggestedRemedy

In order of preference, either:

- (1) Have Clause 35 include all of the requirements for 10/100/1000 Mb/s MII/GMII, and deprecate Clause 22.
- (2) Keep Clause 22 and 35 completely separate; use clause 22 for 10/100 exclusively, and clause 35 for 1000 Mb/s exclusively, without extensive cross-referencing. This requires duplicating all of the common functions into Clause 35.
- (3) Create an Annex to Clause 22 for 1000 Mb/s operation, and eliminate Clause 35.

Proposed Response Response Status C

The following motion was passed in 802.3z on 9/8/97:

Keep current overall structure of clauses 22 and 35. Perform changes as necessary to reduce overlap of clause 22 and 35.

M: Dineen  
 S: Albrecht

Y: 50, N:0, A:1 >= 75% passed

(EDITOR'S NOTE: The commenter is unsatisfied with the above response. The editor wishes the committee to consider the additional response text.)

Replace 22.1 second paragraph with the following:  
 The purpose of this interface is to provide a simple, inexpensive, and easy-to-implement interconnection between Media Access Control (MAC) sublayers and PHYs for data transfer at 10Mb/s and 100Mb/s, and between PHYs and Station Management (STA) entities for all speeds of operation (see 22.2.4).

P802.3z Draft 3.1 Comments

Replace item a) following the third paragraph of 22.1 with the following:  
It is capable of supporting both 10 Mb/s and 100 Mb/s rates for data transfer, and all speeds of operation for management functions (see 22.2.4) rates.

Insert new 22.1.5 with the following:

22.1.5 Relationship of MII and GMII

The Gigabit Media Independent Interface (GMII) is similar to the MII. The GMII uses the MII management interface and register set specified in 22.2.4. These common elements of operation allow Station Management to determine PHY capabilities for any speed of operation and configure the station based on those capabilities. In a station supporting both MII and GMII operation, configuration of the station would include enabling either the MII or GMII operation as appropriate for the data rate of the selected PHY.

Most of the MII and GMII signals use the same names, but the width of the RXD and TXD data bundles and the semantics of the associated control signals differ between MII and GMII operation. The GMII transmit path clocking also differs significantly from MII clocking. MII operation of these signals and clocks is specified within clause 22 and GMII operation within clause 35.

Replace 22.2.4 second and third paragraphs with the following:

The management interface consists of a pair of signals that physically transport the management information across the MII or GMII, a frame format and a protocol specification for exchanging management frames, and a register set that can be read and written using these frames. The register definition specifies a basic register set with an extension mechanism. The MII uses two basic registers. The GMII also uses the same two basic registers and adds a third basic register.

The MII basic register set consists of two registers referred to as the Control register Register (register 0) and the Status register Register (register 1). All PHYs that provide an MII shall incorporate the basic register set. All PHYs that provide a GMII shall incorporate an extended basic register set consisting of the Control register (register 0), Status register (register 1) and Extended Status register (register 15). The status and control functions defined here are considered basic and fundamental to 100 Mb/s and 1000 Mb/s PHYs. Registers 2 through 7 10 are part of the extended register set. The format of registers 4 through 8 are defined for the specific Auto-negotiation protocol used (clause 28 or clause 37). The format of these registers is selected by the bit settings of registers 0 and 1.

Responses to other clause 22 comments also add references to the GMII in bit descriptions for example the Isolate and Loopback bits.

Response revised 9/30/97.

Resolved by text above and by responses to comments 543 and 564.

|              |                  |               |                  |        |
|--------------|------------------|---------------|------------------|--------|
| <i>Cl</i> 22 | <i>SC</i> 22.2.4 | <i>P</i> 22.1 | <i>L</i> 42 & 43 | # 1028 |
| David Law    |                  | 3Com          |                  |        |

*Comment Type* E *Comment Status* A

Suggest that the 'R' of the word register should be capitalized as it is done in the existing text of this clause.

*SuggestedRemedy*

Suggest that the text 'Control register' should read 'Control Register' and the two instances of 'Status register' should read 'Status Register'.

*Proposed Response* *Response Status* C

ACCEPT IN PRINCIPLE. There is no consistent register name capitalization in clause 22 (e.g., "Status Register" in 22.2.4, "Status register" in 22.2.4.2, "status register" in 22.2.4.1.1), but it should at least be consistent within a paragraph. The most common style seems to be "register". Change capitalization on lines 40 & 41.

|              |                  |               |          |        |
|--------------|------------------|---------------|----------|--------|
| <i>Cl</i> 22 | <i>SC</i> 22.2.4 | <i>P</i> 22.2 | <i>L</i> | # 1027 |
| David Law    |                  | 3Com          |          |        |

*Comment Type* T *Comment Status* A

The Isolate bit isolates the PHY from the MII or GMII depending on the implementation.

*SuggestedRemedy*

Suggest the text 'electrically Isolate PHY from MII' should read 'electrically Isolate PHY from MII or GMII'

*Proposed Response* *Response Status* C

ACCEPT.

|              |                  |               |             |        |
|--------------|------------------|---------------|-------------|--------|
| <i>Cl</i> 22 | <i>SC</i> 22.2.4 | <i>P</i> 22.2 | <i>L</i> 27 | # 1026 |
| David Law    |                  | 3Com          |             |        |

*Comment Type* E *Comment Status* A

Suggest that 'E-Reserved' should read 'E', remove the text '- reserved' from the column 'MII'.

*SuggestedRemedy*

See above

*Proposed Response* *Response Status* C

ACCEPT IN PRINCIPLE. List as "Reserved".



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CI 22 SC 22.2.4 P 22.8 L 5 # 1061  
 David Law 3Com

Comment Type T Comment Status A

Text should be added that forces the unused bits to be set to zero by the PHY for future use.

SuggestedRemedy

Suggest new subclause, 22.2.4.4.5, is added, text should read 'Bits 15.11:0 are reserved for future standardization. They shall be written as zero and shall be ignored when read; however, a PHY shall return the value zero in these bits.'

Proposed Response Response Status C

ACCEPT. Add 3 PICS items per accepted text.

CI 22 SC 22.2.4 P N/A L N/A # 544  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A Technical

Most of the references to MII in this sub-clause should also refer to the GMII.

SuggestedRemedy

Do a global search for MII in sub-clause 22.2.4 and replace by MII/GMII, where appropriate.

Proposed Response Response Status C

Accept. A global search on 22.2.4 for MII produced no additional changes to those requested in detailed comments by Mr. David Law.

CI 22 SC 22.2.4.1 P Multiple, se L Multiple, # 545  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The functionality of bits 0.13 and 0.6 is tightly coupled, and both of them deal with speed selection. Therefore, the description of these bits in Table 22-7 and sub-clause 22.2.4.1.3 should reflect this, and there is no need for the "new" sub-clause 22.2.4.1.10.

SuggestedRemedy

- \* In Table 22-7, rename bit 0.13 to be "Speed Selection, LSB" and bit 0.6 to be ""Speed Selection, MSB".
- \* On lines 30-40 on page 22.3, replace "bit 0.13" with "bits 0.13 and 0.6" in five instances.
- \* Delete lines 35-42 on page 22.4.

Proposed Response Response Status C

Accept in principle. The name change should be implemented as described in the response to comment #216. With bit by bit description, the minimal subclause pointing to the description is appropriate.

CI 22 SC 22.2.4.1.10 P 22.4 L 35 # 486  
 Howard Frazier Cisco Systems

Comment Type E Comment Status A

There is no need to renumber the subclauses of clause 22 to accomodate the new bits introduced by the GMII. This renumbering causes unnecessary editorial changes which ripple through the clause, all the way to the PICS tables, and present too many opportunities for errors to creep in.

Note that the subclause referenced in this comment contains a shining example of the sort of error which can occur (22.4.1.10).

SuggestedRemedy

Rather than renumbering 22.2.4.1.10 to 22.2.4.1.11, simply describe the behavior of bit 0.6 in 22.2.4.1.11, and update the specification of the reserved bits in 22.2.4.1.10. In other words, put the additions at the logical end of the set of subclauses, rather than inserting them in the middle.

Proposed Response Response Status C

Reject. Section order corresponds to bit order of the register. This one is particularly innocent. All that is renumbered is the paragraph on reserved bits. There are no cross references to the section.

CI 22 SC 22.2.4.1.10 P 22.4 L 35 # 287  
 Colin Mick The Mick Group

Comment Type E Comment Status A minor editorial

Delete second half (and renumber . . .) as it is redundant with the next editorial note (line 42)

SuggestedRemedy

See above

Proposed Response Response Status C

Accept in principle. However, request that we not renumber the clauses will change the editing instructions. No action needed for this comment. See # 486.

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CI 22 SC 22.2.4.1.3 P22.3 L 30 # 432  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status R

The text for the auto-negotiation enabled case needs to be updated to treat bit 0.6 in a similar manner to bit 0.13.

SuggestedRemedy

Change remainder of paragraph to:  
 When Auto-Negotiation is enabled, bits 0.6 and 0.13 can be read or written, but the states of the bits have no effect on the link configuration, and it is not necessary for the bits to reflect the operating speed of the link when read. If a PHY reports via bits 1.15:9 and bits 15.15:12 that it is not able to operate at all speeds, the values of bits 0.6 and 0.13 shall correspond to a speed at which the PHY can operate, and any invalid attempt to change the setting of bits 0.6 and 0.13 shall be ignored.

Proposed Response Response Status Z

Withdrawn by editor. Identical to comment #433.

CI 22 SC 22.2.4.1.3 P22.3 L 30 # 1  
 Brad Booth Jato Technologies, Inc

Comment Type E Comment Status A speed selection

>From line 30 down to line 40 is missing any reference to bit 0.6.

SuggestedRemedy

Change to include bit 0.6.

Proposed Response Response Status C

Modify paragraphs to read:

Link speed can be selected via either the Auto-Negotiation process, or manual speed selection. Manual speed selection is allowed when Auto-Negotiation is disabled by clearing bit 0.12 to zero. When Auto-Negotiation is disabled and bit 0.6 is cleared to a logic zero, setting bit 0.13 to a logic one configures the PHY for 100 Mb/s operation, and clearing bit 0.13 to a logic zero configures the PHY for 10 Mb/s operation. When Auto-Negotiation is disabled and bit 0.6 is set to a logic one, clearing bit 0.13 to a logic zero selects 1000 Mb/s operation. The combination of both bits 0.6 and 0.13 set to a logic one is reserved for future standardization. When Auto-Negotiation is enabled, bits 0.6 and 0.13 can be read or written, but the state of bits 0.6 and 0.13 have no effect on the link configuration, and it is not necessary for bits 0.6 and 0.13 to reflect the operating speed of the link when read. If a PHY reports via bits 1.15:9 and bits 15.15:12 that it is not able to operate at all speeds, the value of bits 0.6 and 0.13 shall correspond to a speed at which the PHY can operate, and any invalid attempt to change the setting of the bits shall be ignored.

The default values of bits 0.6 and 0.13 are the encoding of the highest data rate at which the PHY can operate as indicated by bits 1.15:9 and 15.15:12.

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Cl 22 SC 22.2.4.1.3 P22.3 L 30 # 433

Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

The text for the auto-negotiation enabled case needs to be updated to treat bit 0.6 in a similar manner to bit 0.13.

SuggestedRemedy

Change remainder of paragraph to:

When Auto-Negotiation is enabled, bits 0.6 and 0.13 can be read or written, but the states of the bits have no effect on the link configuration, and it is not necessary for the bits to reflect the operating speed of the link when read. If a PHY reports via bits 1.15:9 and bits 15.15:12 that it is not able to operate at all speeds, the values of bits 0.6 and 0.13 shall correspond to a speed at which the PHY can operate, and any invalid attempt to change the setting of bits 0.6 and 0.13 shall be ignored.

Proposed Response Response Status C

Accept. See comment #1 for text.

Cl 22 SC 22.2.4.1.3 P22.3 L 30 to 32 # 1032

David Law 3Com

Comment Type T Comment Status A

The action of bit 0.6 when auto-negotiation is enabled should be described in this sub-clause.

SuggestedRemedy

Suggest text should read 'When Auto-Negotiation is enabled, bits 0.13 and 0.6 can be read or written, but the state of bits 0.13 and 0.6 have no effect on the link configuration, and it is not necessary for bit 0.13 and 0.6 to reflect the operating speed of the link when it is read.'

Proposed Response Response Status C

ACCEPT. See comment #1 for text.

Cl 22 SC 22.2.4.1.3 P22.3 L 32 to 34 # 1033

David Law 3Com

Comment Type T Comment Status A

This action of bit 0.6 should be defined here. Also suggest that a defined action should be given in the case where a PHY cannot operate at all speeds, that is report the highest speed it can operate, not just a speed which it can operate.

SuggestedRemedy

Suggest text should read 'If a PHY reports via bits 1.15:9 and bits 15.15:12 that it is not able to operate at all speeds, the value of bits 0.13 and 0.6 shall correspond to the highest speed at which the PHY can operate, and any invalid attempt to change the setting of the bit shall be ignored.'

Proposed Response Response Status C

ACCEPT. See comment #1 for text. The highest speed should only apply to default values of bits.

Cl 22 SC 22.2.4.1.3 P22.3 L 33 # 213

Pat Thaler Hewlett-Packard

Comment Type T Comment Status A speed selection

change "bit 0.13" to "bits 0.13 and 0.6"

SuggestedRemedy

Proposed Response Response Status C

Accept, see comment #1 for text.

Cl 22 SC 22.2.4.1.3 P22.3 L 39 # 214

Pat Thaler Hewlett-Packard

Comment Type T Comment Status A speed selection

change "bit 0.13" to "bits 0.13 and 0.6". Also, I think that "is consistent with" is not as clear as it could be. Perhaps "is the representation of" would be better.

SuggestedRemedy

Proposed Response Response Status C

Accept, see comment #1 for text.

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Cl 22 SC 22.2.4.1.3 P 22.3 L 39 # 1080  
 Sampath Kumar Sun Microsystems Inc.

Comment Type T Comment Status A

The highest data rate at which PHY can operate now includes 1000 Mbps.  
 The default value of 0.13 alone cannot indicate this.

SuggestedRemedy

Change this line to read as follows:

The default values of bits 0.13 and 0.6 are consistent with the highest  
 data rate at which the PHY can operate as indicated by bits  
 1.15:9 and 15.15:12.

Proposed Response Response Status C

ACCEPT. See comment #1 for text.

Cl 22 SC 22.2.4.1.5 P 22.3 L 51 # 1052  
 David Law 3Com

Comment Type T Comment Status A

Suggest that a requirement be added that no spurious signals appear  
 on the GMII.

SuggestedRemedy

Suggest that text '... the PHY shall not generate spurious signals on  
 the MII.' should read '... the PHY shall not generate spurious  
 signals on the MII/GMII.'

Proposed Response Response Status C

ACCEPT. See comment #1 for text.

Cl 22 SC 22.2.4.1.5 P 22.3 L 53 # 1094  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: signal GTX\_CLK is included where it should be absent since GTX\_CLK is sourced  
 from the RS, not the PHY.

SuggestedRemedy

Change from "A PHY is not required to meet the RX\_CLK and TX\_CLK or GTX\_CLK signal  
 functional"  
 to "A PHY is not required to meet the RX\_CLK and TX\_CLK signal functional".  
 Note same error on page 22.4: line 1, line 9.

Proposed Response Response Status C

REJECT. The PHY is required to sample TXD<0:7>, TX\_EN and TX\_ER as a functional  
 requirement. This is not required when in power down state.

Response revised 9/30/97.

Accept.

As a consequence, it is no longer necessary for 802.3z to make changes to  
 22.2.4.1.5. Or PICS item MF20.

Cl 22 SC 22.2.4.1.6 P 22.4 L 8 to 9 # 215  
 Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

This appears to be the only use of the term "data bundle" and  
 it isn't defined anywhere that I can find. There are other places  
 where just "bundle" is used. Bundle has physical connotations that  
 don't seem entirely appropriate. If a term is necessary, I would  
 prefer something like "set".

SuggestedRemedy

Delete "data bundle" as TXD inputs and RXD outputs  
 make sense without it. If not deleted than a definition should be  
 supplied.

Proposed Response Response Status C

Reject. Bundle is defined in 1.4.38 of the base 802.3 document.

Cl 22 SC 22.2.4.2.11 P 22.6 L 17 # 1101  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

The abbreviation PRBS is used in .3z without a definition in either .3u or .3z.

SuggestedRemedy

Add definition of PRBS to list in .3z, page 01.7.

Proposed Response Response Status C

ACCEPT. Resubmitted to clause 38 where the term is used. # 22,001

P802.3z Draft 3.1 Comments

CI 22 SC 22.2.4.2.11 P22.6 L17 # 1096  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo: reference to wrong clause.  
 SuggestedRemedy  
 Change from "37.2.1.2.4, 28.2.1.2," to "37.2.1.4, 28.2.1.2.3,".  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. See #547.

CI 22 SC 22.2.4.2.12 P22.6 L17 # 547  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 The reference to "37.2.1.2.4" is incorrect.  
 SuggestedRemedy  
 Replace the abovementioned reference by "37.2.1.4".  
 Proposed Response Response Status C  
 Accept.

CI 22 SC 22.2.4.2.12 P22.6 L17 # 1054  
 David Law 3Com  
 Comment Type E Comment Status A  
 The reference to clause 37.2.1.2.4 seems to be incorrect.  
 SuggestedRemedy  
 Suggest text '... in 37.2.1.2.4, ...' should read '... in 37.2.1.4, ...'  
 Proposed Response Response Status C  
 ACCEPT. See #547.

CI 22 SC 22.2.4.2.8 P22.5 L51 # 487  
 Howard Frazier Cisco Systems  
 Comment Type TR Comment Status A  
 There is no need to renumber the subclauses of clause 22 to accomodate the new bits introduced by the GMII. This renumbering causes unnecessary editorial changes which ripple through the clause, all the way to the PICs tables, and present too many opportunities for errors to creep in.

802.3z appears to be following the example of 100BASE-T2, which is a particularly egregious example of the sort of problem that can occur. 802.3y chose to perform wholesale renumbering in clause 22, which resulted in numerous errors, and this has caused no small amount of confusion and delay in the publication of the 802.3y standard. Let's not repeat the mistake.

SuggestedRemedy  
 Do not renumber 22.2.4.2.8-22.2.4.2.15 as 22.2.4.2.9-22.2.4.2.16. Put the description of the extended status bit in 22.2.4.2.16.

In other words, put the additions at the logical end of the set of subclauses, rather than inserting them in the middle.

Proposed Response Response Status C  
 ACCEPT.

CI 22 SC 22.2.4.2.8 P22.6 L2 # 288  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A minor editorial  
 Change "in these bits" to "in this bit"  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 Accept. See # 548

P802.3z Draft 3.1 Comments

Cl 22 SC 22.2.4.2.8 P22.6 L7-12 # 962  
 Ian Crayford Bay Networks, Inc.

Comment Type T Comment Status A

The statement is incorrect (as it was in the original Clause 22) with respect to the validity of registers depending on bit 1.5. When 1.5 is set, registers 4, 5, 6, 7 and 8 are indeed valid. But it is incorrect to make the statement that these registers are invalid when bit 1.5 is not set. Explicitly, since bit 6.1 is Page Received, and since it is the only valid bit in Reg 6 for 1000BASE-X, then by definition Reg 6 is valid at all times even if bit 1.5 is cleared. Also, since when 1.6 is set (which is cleared when reg 5, the AN expansion reg is read), then reg 8 may also be valid if a next page has been received, but Auto-Ned has not yet completed. So again, bit 1.5 will be clear, but 1.6 indicates that reg 8 has valid data.

SuggestedRemedy

Reslove text for the cases mentioned above.

Proposed Response Response Status C

ACCEPT. When read as a logic one, bit 1.5 indicates that the Auto-Negotiation process has been completed, and that the contents of the extended registers implemented by the Auto-Negotiation protocol (either clause 28 or clause 37) are valid. When read as a logic zero, bit 1.5 indicates that the Auto-Negotiation process has not been completed, and that the contents of the extended registers are as defined by the current state of the Auto-Negotiation protocol, or as written for manual configuration. A PHY shall...

Cl 22 SC 22.2.4.2.9 P22.6 L1-2 # 546  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A Technical

Typos and style of the sentence.

SuggestedRemedy

Change the abovementioned sentence to read as follows:  
 "Bit 1.7 is reserved for future standardization and shall be ignored when read; however, a PHY shall return the value zero in this bit".

Proposed Response Response Status C

Accept. Also the restriction on writing the bit needs to be added..  
 "Bit 1.7 is reserved for future standardization and shall be written as zero and shall be ignored when read;  
 however, a PHY shall return the value zero in this bit".  
 Verify appropriate PICS entry.

Cl 22 SC 22.2.4.2.9 P22.6 L2 # 1053  
 David Law 3Com

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Suggest text '... these bits ...' should read '... this bit ...'

Proposed Response Response Status C

ACCEPT. See #288.

Cl 22 SC 22.2.4.3 P22.6 L25 # 548  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The current editor's change instructions eliminate the second paragraph of the sub-clause.

SuggestedRemedy

Change the editor's instructions to read as follows:  
 "Replace the first paragraph of 22.2.4.3 with the following:".

Proposed Response Response Status C

Accept.

Cl 22 SC 22.2.4.3 P22.6 L28 # 1055  
 David Law 3Com

Comment Type E Comment Status R

I believe there are ten registers defined within the extended address space. These are registers 2 to 10 inclusive and register 15.

SuggestedRemedy

Suggest text 'Nine registers ...' should read 'Ten registers ...'

Proposed Response Response Status C

REJECT. Register 15 is added to the basic register set (i.e., we stole a register from the extended space). Register 15 cannot be used for PHY specific purposes.

P802.3z Draft 3.1 Comments

CI 22 SC 22.2.4.3.2 - 22.2.4.3.6 P 22.6 L 32-50 # 549  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

All the references to clause 37 are incorrect.  
 On line 50 the reference to 28.2.4.1 is incorrect.

SuggestedRemedy

- \* On line 34 the reference should be "37.2.6.1.3".
- \* On line 38 the reference should be "37.2.6.1.4".
- \* On line 42 the reference should be "37.2.6.1.5".
- \* On line 46 the reference should be "37.2.6.1.6".
- \* On line 50 the references should be "28.?????" and "37.2.6.1.7".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. 28.7.4.1 is a subclause poorly edited for 802.3u and insufficiently modified by 802.3y (a subclause 28.2.4.1.7 should have been added for register 8). It is still a good pointer for context on usage of the register. Drop lowest level of reference. All will be 37.2.6.1.

CI 22 SC 22.2.4.3.3 to 22.2.4.3.6 P 22.6 L 34 to 50 # 1056  
 David Law 3Com

Comment Type E Comment Status A

Suggest a better reference than 37.2.4 is 37.2.6.1, 37.2.4 is 'Receive function requirements', 37.2.6.1 is 'Management registers'.

SuggestedRemedy

Suggest text 'See 28.2.4.1 and 37.2.4.' should read 'See 28.2.4.1 and 37.2.6.1.'

Proposed Response Response Status C

ACCEPT. See #549.

CI 22 SC 22.2.4.3.9 P 22.6 L 52 to 54 # 218  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Is this clause number correct? I don't see 22.2.4.3.7 and 22.2.4.3.8 but perhaps they were added by .3y.

SuggestedRemedy

Proposed Response Response Status C

Accept. They were added by .3y and numbering is correct. No action required.

CI 22 SC 22.2.4.3.9 P 22.7 L 1 # 219  
 Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

The statement that a particular PHY may provide a subset of the registers is misleading as it makes it sound like it is the PHY's option to provide any subset. Clause 28 and Clause 37 each require that a particular subset be provided. The statement also is not necessary as the prior register subclauses all refer to 28 and 37 where the details will be found.

SuggestedRemedy

Delete "a subset of or"

Proposed Response Response Status C

Accept.

CI 22 SC 22.2.4.3.9 P 22.7 L 3 # 1057  
 David Law 3Com

Comment Type E Comment Status R

Suggest only registers 4 through 8 are dependent on the auto-negotiation type, 9 through 14 are reserved.

SuggestedRemedy

Suggest text '... 4 through 14 ...' should read '... 4 through 8 ...'

Proposed Response Response Status C

REJECT. See #1166.

CI 22 SC 22.2.4.4 P 22.7 L 11 # 550  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Based on recent history of 802.3, it would be more appropriate not to limit ourselves to 1000Mb/s.

SuggestedRemedy

Change the first sentence of the paragraph to read as follows:  
 "The Extended Status register shall be implemented for all PHYs that are capable of operating at speeds above 100Mb/s".

Proposed Response Response Status C

Accept.

P802.3z Draft 3.1 Comments

**Cl 22 SC 22.2.4.4 P 22.7 L 11 # 1058**  
 David Law 3Com  
**Comment Type E Comment Status R**  
 Suggest that the mandatory requirement for the Extended register is if there is a GMII provided, this will match the PICS entry MF71 which is dependent on GM:M.  
**SuggestedRemedy**  
 Suggest text '... for all PHYs capable of 1000 Mb/s operation.' should read '... for all PHYs that provide a GMII.'  
**Proposed Response Response Status C**  
 REJECT. Text of comment #550 is preferred. See also comment #604.

**Cl 22 SC 22.2.4.4 P 22.7 L 23 # 289**  
 Colin Mick The Mick Group  
**Comment Type E Comment Status A** *formatting*  
 Wrong font in "Name" column of 15.13  
**SuggestedRemedy**  
 correct  
**Proposed Response Response Status C**  
 Accept.

**Cl 22 SC 22.2.4.4 P 22.7 L 6 # 488**  
 Howard Frazier Cisco Systems  
**Comment Type E Comment Status A**  
 I agree that the correct thing to do in this case is to renumber 22.2.4.4 and its subclauses to 22.2.4.5, but I still don't like it. It appears that the editor has correctly flagged the necessary changes to the PICS.  
**SuggestedRemedy**  
 congratulations  
**Proposed Response Response Status C**  
 Accept.

**Cl 22 SC 22.4.1.10 P 22.4 L 37 # 1031**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 I believe that the subclause number is incorrect and should be 22.2.4.1.10.  
**SuggestedRemedy**  
 Suggest '22.4.1.10 Speed ...' should read '22.2.4.1.10 Speed ...'  
**Proposed Response Response Status C**  
 ACCEPT.

**Cl 22 SC 22.4.1.10 P 22.4 L 37 to 40 # 216**  
 Pat Thaler Hewlett-Packard  
**Comment Type E Comment Status A** *speed selection*  
 The name "Speed selection: 1000 Mb/s is not accurate as both bits 13 and 6 are necessary in combination to select a speed. Also, this name could go out of date someday.  
**SuggestedRemedy**  
 Label both bits "speed selection". Delete this subclause as both bits are described in 22.2.4.1.3.  
**Proposed Response Response Status C**  
 Accept in principle. See related comment #545. Label bits as speed selection (MSB) and (LSB), but preserve the subclause as a pointer to text. This is the first usage of discontinuous bits as a binary encoded value. Name change affects 22.3 line 12, 22.4 line 37.

**Cl 22 SC 22.4.1.10 P 22.4 L 40 # 1095**  
 Tom Mathey Baynetworks  
**Comment Type E Comment Status A**  
 Typo: reference to wrong subclause.  
**SuggestedRemedy**  
 Change from "22.4.1.3." to "22.2.4.1.3."  
**Proposed Response Response Status C**  
 ACCEPT. Duplicate of comment #1163.



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Cl 22 SC 22.4.1.10 P 22.4 L 40 # 1029  
 David Law 3Com

Comment Type E Comment Status A

I believe the reference to subclause 22.4.1.3 is incorrect, it should be to 22.2.4.1.3.

SuggestedRemedy

Suggest '... in 22.4.1.3.' should read '... in 22.2.4.1.3.'

Proposed Response Response Status C

ACCEPT. Duplicate of comment #1163.

Cl 22 SC 22.4.1.10 P 22.4 L 41 # 1030  
 David Law 3Com

Comment Type T Comment Status A

Suggest that a default definition should be provided for bit 0.6 as is provided for all other bits in registers.

SuggestedRemedy

Suggest that the text 'The default value of bit 0.6 is consistent with the highest data rate at which the PHY can operate as indicated by bits 1.15:9 and 15.15:12.' should be added.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. Default is already specified in 22.2.4.1.3 with corrections of comment #1.

Cl 22 SC 22.4.1.2 P 53 L # 1051  
 David Law 3Com

Comment Type E Comment Status A Technical

(Comment on 802.3u) Suggest that in the loopback description the three instances of MII should be changed to MII or GMII.

SuggestedRemedy

See above

Proposed Response Response Status C

ACCEPT.

Cl 22 SC 22.4.3.6 P 22.6 L 50 # 217  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A minor editorial

I don't see why this clause names the register when the others don't. Also, the name given doesn't exactly match the name in 37. The reference to clause 28.2.4.1 should not be included as it does not mention register 8.

SuggestedRemedy

Replace with "Register 8 provides 16 bits that are used by the 1000BASE-X Auto-Negotiation process. See 37.2.4."

Proposed Response Response Status C

Accept in principle. Subclause 22.2.4.3.6 was added by 802.3y. Edit for consistency to read:

Register 8 provides 16 bits that are used by the Auto-Negotiation process. See 28.2.4.1 and 37.2.4.

Cl 22 SC 22.7.3.4 P 22.8 L 24 to 26 # 1060  
 David Law 3Com

Comment Type T Comment Status A

Item MF1. Suggest that the Extended Status register is only mandatory if the GMII (1000Mb/s operation) is implemented. At the moment this register is mandatory for all PHY's according to the PICS.

SuggestedRemedy

Suggest the text ' and for GMII a third 16-bit register Extended Status register (register 15)' should be deleted from MF1. A new item should be added. The contents are Item 'MFXX', Feature, 'Incorporate Extended Status Register', Subclause '22.2.4.4'. ,Status 'GM:M', Support, 'Yes[], N/A[]', value/comment ' One 16-bit register as Extended Status register (register 15)'.

Proposed Response Response Status C

ACCEPT.

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Cl 22 SC 22.7.3.4 P 22.8 L 39 # 1097  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A Technical  
 Typo: signal GTX\_CLK is included where it should be absent since GTX\_CLK is sourced from the RS, not the PHY.  
 SuggestedRemedy  
 Remove signal GTX\_CLK from PICS list.  
 Proposed Response Response Status C  
 ACCEPT. Delete GTX\_CLK from the PICS, and move GTX\_CLK from the PHY output list to the PHY input list in the text of (22.2.4.1.6).

Cl 22 SC 22.7.3.4 P 22.8 L 46 # 489  
 Howard Frazier Cisco Systems  
 Comment Type T Comment Status A  
 Item MF69 seems to be extraneous now that the bit has been removed.  
 SuggestedRemedy  
 remove MF69.  
 Proposed Response Response Status C  
 Accept, see comment #290.

Cl 22 SC 22.7.3.4 P 22.8 L 46/50 # 290  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A minor editorial  
 Subclause reference for MF69 and MF70 is wrong  
 SuggestedRemedy  
 Find correct reference and insert (I couldn't find it)  
 Proposed Response Response Status C  
 Accept in principle. Remove both references, referenced text was removed from draft.

Cl 22 SC 22.7.3.4 P 22.8 L 51 # 1059  
 David Law 3Com  
 Comment Type E Comment Status A  
 Item MF71. Suggest the subclause reference for MF71 is incorrect.  
 SuggestedRemedy  
 Suggest text '22.4.2.8' should read '22.2.4.4'  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. Reference corrected to 22.2.4.2.8.

Cl 22 SC 22.7.3.4 P 22.8 L 51 # 291  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A cross ref  
 Subclause reference for MF71 is wrong  
 SuggestedRemedy  
 Correct to 22.2.4.2.8  
 Proposed Response Response Status C  
 Accept.

Cl 22 SC clause title P 22.1 L 27 # 285  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A typo  
 Typo-"Syblayer"  
 SuggestedRemedy  
 Correct  
 Proposed Response Response Status C  
 Accept, duplicate of #12.

P802.3z Draft 3.1 Comments

**Cl 30 SC 30.2.1 P 30.4 L 42 to 43 # 714**  
 Pat Thaler Hewlett-Packard  
*Comment Type E Comment Status R*  
 I think the structure of this sentence is rather unwieldy.  
*SuggestedRemedy*  
 Replace "operation, and have...indicated" with "operation. Unless otherwise indicated, counters for 100 and 1000 Mb/s operation have ten and 100 times the stated maximum increment rate, respectively."  
*Proposed Response Response Status Z*  
 Withdrawn by the editor as it is a duplicate (refer 623) from the same commentor!

**Cl 30 SC 30.2.1 P 30.4 L 42 to 43 # 623**  
 Pat Thaler Hewlett-Packard  
*Comment Type E Comment Status A*  
 I think the structure of this sentence is rather unwieldy.  
*SuggestedRemedy*  
 Replace "operation, and have...indicated" with "operation. Unless otherwise indicated, counters for 100 and 1000 Mb/s operation have ten and 100 times the stated maximum increment rate, respectively."  
*Proposed Response Response Status C*  
 Accepted.  
 Will fix this in the next draft.

**Cl 30 SC 30.2.2.1 P 30.6 L 15 # 434**  
 Alan Albrecht Hewlett-Packard  
*Comment Type E Comment Status A*  
 Do we still need this note?  
*SuggestedRemedy*  
 Delete note if work has been done, else do changes for reconciliation.  
*Proposed Response Response Status C*  
 ACCEPT.  
 The action has been completed. The note will be deleted in the next draft.

**Cl 30 SC 30.2.2.1 P 30.6 L 16 # 15**  
 Kevin Daines Packet Engines  
*Comment Type E Comment Status A*  
 Remove mention of extinct "Link Configuration"  
*SuggestedRemedy*  
 Change "Link Configuration" to "Auto Negotiation"  
*Proposed Response Response Status C*  
 Accepted in principle.  
 The reference to Link Configuration is indeed outdated. We are removing the whole note since the reconciliation work has already been done.

**Cl 30 SC 30.2.2.1 P 30.6 L 16 # 1088**  
 Scott Mason Plaintree Systems Inc  
*Comment Type E Comment Status A*  
 The reference to Link Configuration is outdated.  
*SuggestedRemedy*  
 Strike the note.  
*Proposed Response Response Status C*  
 Accepted.  
 This action has been completed. The note will be deleted in the next draft.  
 Note that this comment is a duplicate of comment 434 from Alan Albrecht.

**Cl 30 SC 30.2.2.1 P 30.6 L 16 to 18 # 715**  
 Pat Thaler Hewlett-Packard  
*Comment Type TR Comment Status R*  
 This appears to be an editor's note. It is not appropriate for the final standard.  
*SuggestedRemedy*  
 Verify that the reconciliation requested by the note has been performed and delete the note.  
*Proposed Response Response Status Z*  
 Withdrawn by the editor as it is a duplicate (refer 624) from the same commentor!

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**Cl 30 SC 30.2.2.1 P 30.6 L 16 to 18 # 624**  
 Pat Thaler Hewlett-Packard  
**Comment Type TR Comment Status A**  
 This appears to be an editor's note. It is not appropriate for the final standard.  
**SuggestedRemedy**  
 Verify that the reconciliation requested by the note has been performed and delete the note.  
**Proposed Response Response Status C**  
 ACCEPT.  
 This action has been completed. The note will be deleted in the next draft. Also, this comment is a duplicate of comment 434 from Alan Albrecht.

**Cl 30 SC 30.2.2.1 P 30.6 L 16 to 18 # 1065**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 Please remove this note as it should no longer be needed and should not appear in the final document.  
**SuggestedRemedy**  
 See above  
**Proposed Response Response Status C**  
 Accepted.  
 The action has been completed. The note will be deleted in the next draft. Note that this comment is a duplicate of comment 434 from Alan Albrecht.

**Cl 30 SC 30.2.2.1 P 30.6 L 16-20 # 880**  
 Rich Seifert Networks & Communic  
**Comment Type T Comment Status A**  
 This note seems unnecessary. First, there is no "link configuration" clause, it is all Auto-Negotiation now, and second, it appears to be an apology or an internal editor's note.  
**SuggestedRemedy**  
 Delete the note.  
**Proposed Response Response Status C**  
 Accepted.  
 Will fix in the next draft.  
 Note that this comment is a duplicate of comment 434 from Alan Albrecht.

**Cl 30 SC 30.2.2.2.2 P 30.6 & 30.7 L Various # 1066**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 Suggest that we be absolutely clear that the Start of Packet resets functions in addition to other reasons. Fix in Cyclic Redundancy Check Function, Octet Counting function and Source Address function.  
**SuggestedRemedy**  
 Suggest text '... or, in the case ...' should read '... and, additionally in the case ...'  
**Proposed Response Response Status C**  
 Accepted.

**Cl 30 SC 30.2.2.2.2 P 30.7 L 50 & 53 # 1062**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 The word 'CarrierEvent' when related to the function is two words.  
**SuggestedRemedy**  
 Suggest text in both instances '... CarrierEvent function ...' should read '... Carrier Event function ...'  
**Proposed Response Response Status C**  
 ACCEPT.

**Cl 30 SC 30.2.2.2.2 P 30.8 L 21 # 1064**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 The text '... the FCSError signal is asserted and the FCSError signal is cleared and ...'  
**SuggestedRemedy**  
 Suggest the text should read '... the FCSError signal is asserted. The FCSError signal is cleared and ...'  
**Proposed Response Response Status C**  
 Accepted.  
 Will be fixed in next draft.  
 Note that this comment is a duplicate of comment 435 from Alan Albrecht.

P802.3z Draft 3.1 Comments

Cl 30 SC 30.2.2.2.2 P 30.8 L 21 # 716

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

There isn't any benefit to making this a run-on sentence. Also, by changing "asserted. The" to "asserted and the" the clause at the front, "If the FCS generated... is not the same...", applies now to the reinitialization of the Cyclic Redundancy Check function. The CRC function should be reinitialized at the start of a carrier event regardless of the outcome of the last CRC check.

SuggestedRemedy

Replace "asserted and the" with "asserted. The"

Proposed Response Response Status C

Accepted.  
Will fix in the next draft.  
Note that this comment is a duplicate of comment 435 from Alan Albrecht.

Cl 30 SC 30.2.2.2.2 P 30.8 L 21 # 625

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

There isn't any benefit to making this a run-on sentence. Also, by changing "asserted. The" to "asserted and the" the clause at the front, "If the FCS generated... is not the same...", applies now to the reinitialization of the Cyclic Redundancy Check function. The CRC function should be reinitialized at the start of a carrier event regardless of the outcome of the last CRC check.

SuggestedRemedy

Replace "asserted and the" with "asserted. The"

Proposed Response Response Status Z

Withdrawn. Duplicate of 716.

Cl 30 SC 30.2.2.2.2 P 30.8 L 21 # 435

Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Run on sentences.

SuggestedRemedy

Change line 21 to:  
"asserted. The FCSError signal is cleared and the Cyclic"

Proposed Response Response Status C

ACCEPT.

Cl 30 SC 30.2.2.2.2 P 30.8 L 25 # 1063

David Law 3Com

Comment Type E Comment Status A

Typo, also can reduce text.

SuggestedRemedy

Text '... delimiter(as defined in 35.2.3.6) ...' should read '... delimiter (35.2.3.6) ...'

Proposed Response Response Status C

Accepted in principle.  
The editor will correct the Typo in the next draft, and change the text inside the parenthesis to read as "(see 35.2.3.6)" instead of "(as defined in 35.2.3.6)".

Cl 30 SC 30.2.2.2.2 P 30.8 L 32 # 1067

David Law 3Com

Comment Type E Comment Status R

I think the original text was correct. This function should strip preamble and SFD.

SuggestedRemedy

Delete all new text on lines 32 to 35, text should just read 'The framing function strips preamble and start of frame delimiter from the received data stream.'

Proposed Response Response Status C

Rejected.

Please be advised that in the discussions that took place few months ago at the task force meeting at Santa Clara, the group deliberated on this subject and came up with the new text on lines 32 to 35. One of the reason for changing the original text was that the " start of frame delimiter" phrase was ambiguous and required changing it to "start of Packet delimiter" that could be referred in subclause 35.2.3.6.

Cl 30 SC 30.2.2.2.2 P 30.8 L 52 # 1068

David Law 3Com

Comment Type E Comment Status R

Typo, also can reduce text.

SuggestedRemedy

Text '... delimiter(as defined in 35.2.3.6) ...' should read '... delimiter (35.2.3.6) ...'

Proposed Response Response Status Z

Withdrawn by the editor as it is a duplicate (refer 1063) from the same commentor!

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Cl 30 SC 30.2.5 P 30.11 L 53 # 1069  
 David Law 3Com  
 Comment Type E Comment Status A  
 Typo.  
 SuggestedRemedy  
 Text '...aRepeaterType= other) ...' should read '...aRepeaterType = other) ...', missing space before equal sign.  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.2.5 P 30.12 L 5 # 626  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status R  
 Delete "as"  
 SuggestedRemedy  
 Proposed Response Response Status Z  
 Withdrawn by the editor as it is a duplicate comment (refer comment 717) from the same commentor !

Cl 30 SC 30.2.5 P 30.12 L 5 # 717  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status A  
 Delete "as"  
 SuggestedRemedy  
 remove "as" in line 5.  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.2.5 P 30.12 L 8 # 718  
 Pat Thaler Hewlett-Packard  
 Comment Type TR Comment Status A  
 What does "It is expected" mean? Is this intended as a conformance requirement?  
 SuggestedRemedy  
 Make it clear whether it is required, recommended or whatever.  
 Proposed Response Response Status C  
 Accepted.  
 Will replace the word "expected" with "recommended" on line 8.

Cl 30 SC 30.2.5 P 30.12 L 8 # 627  
 Pat Thaler Hewlett-Packard  
 Comment Type TR Comment Status R  
 What does "It is expected" mean? Is this intended as a conformance requirement?  
 SuggestedRemedy  
 Make it clear whether it is required, recommended or whatever.  
 Proposed Response Response Status Z  
 Withdrawn. Duplicate of 718.

Cl 30 SC 30.3.1.1.10 P 30.20 L 34 # 1047  
 David Law 3Com  
 Comment Type T Comment Status R  
 The definition of a Late Collision used here is not the same as that used in clause 4 Pascal and therefore will not match the counter supplied by clause 5.  
 SuggestedRemedy  
 Suggest text '... one slotTime, from the start of the packet transmission' should read '... (slotTime - headerSize) BT from the start of the packet transmission.'

Proposed Response Response Status Z  
 Withdrawn by commenter.

Cl 30 SC 30.3.1.1.10 P 30.20 L 34 # 928  
 John M. Cagle Compaq Computer Co  
 Comment Type TR Comment Status A  
 This definition of late collision is inconsistent with Subclause 4.2.3.4, which will treat as late any collision which occurs after the threshold (slotTime - headerSize) from the beginning of DA.

SuggestedRemedy  
 Reword Subclause 4.2.3.4 as suggested in my comment on that Subclause.  
 Proposed Response Response Status C  
 Accepted in principle.  
 The editor of clause 4 has accepted your suggested remedy (per comment #926) and will fix this in the next draft.

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Cl 30 SC 30.3.1.1.2.4 P 30.24 L 40/41 # 293  
Colin Mick The Mick Group

Comment Type E Comment Status A

Make this an editorial note, not a reminder.

SuggestedRemedy  
See above

Proposed Response Response Status C

Accepted in principle.  
Please see the text adopted by the editor suggested by commentor Geoff Thompson (comment 1248).

Cl 30 SC 30.3.1.1.2.3 P 30.23 L 51 # 713  
Samba Murthy XaQti Corporation

Comment Type T Comment Status R

alnRangeLengthErrors - Counter: The intent of this counter is unclear. Another related counter - aOutOfRangeLengthField counter in subclause 30.3.1.1.24 has already been deprecated as result of type field issues due to VLAN and 802.3x work.

SuggestedRemedy  
Deprecate this counter also to be consistent

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of 622.

Cl 30 SC 30.3.1.1.2.3 P 30.23 L 51 # 622  
Samba Murthy XaQti Corporation

Comment Type T Comment Status R

alnRangeLengthErrors - Counter: The intent of this counter is unclear. Another related counter - aOutOfRangeLengthField counter in subclause 30.3.1.1.24 has already been deprecated as result of type field issues due to VLAN and 802.3x work.

SuggestedRemedy  
Deprecate this counter also to be consistent

Proposed Response Response Status C

Rejected.

While the type field has been legitimized by 802.3x, the length test remains valid for length interpretation of the length/type field.

Cl 30 SC 30.3.1.1.2.3 P 30.23 L 52 # 942  
Ariel Hendel Sun

Comment Type T Comment Status R

alnRangeLengthErrors is affected by the inclusion of Type Fields in 802.3x. The aOutOfRangeLengthField was deprecated due to the same reason.

SuggestedRemedy  
Deprecate alnRangeLengthErrors

Proposed Response Response Status C

Rejected.

While the type field has been legitimized by 802.3x, the length test remains valid for length interpretation of the length/type field. Duplicate of comment #622.

Cl 30 SC 30.3.1.1.2.3 P 30.24 L 6 # 1020  
David Law 3Com

Comment Type E Comment Status A

Suggest that '(as defined in 3.2.6 of 802.3x standard)' should simply read '(see 3.2.6)'. The 802.3x standard is part of the same standard.

SuggestedRemedy  
Suggest text should read '(see 3.2.6)'.

Proposed Response Response Status C

Accepted in principle.  
Please see the proposed remedy text provided in comment 1246 by Geoff Thompson.

Cl 30 SC 30.3.1.1.2.3 P 30.24 L 6 # 1246  
Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

Reference to the 802.3x standard is this way won't work over the long haul

SuggestedRemedy  
Change to read: "(see: 3.2.6\*)"  
And then add a footnote along the following lines  
\*The "Type" interpretation of this field was added to the standard by 802.3x:1997  
(The footnote can then fall away when x&y are merged into the main book)

Proposed Response Response Status C

Accepted.

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Cl 30 SC 30.3.1.1.23 P 30.24 L 6 to 9 # 1034  
 David Law 3Com

Comment Type E Comment Status A  
 Due to the 802.3x change of the term LLC to MAC Client, suggest that the text '... LLC data ...' should read '... MAC Client data ...' in all occurrences.

SuggestedRemedy  
 See above

Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.3.1.1.24 P 30.24 L 15 # 1019  
 David Law 3Com

Comment Type T Comment Status A  
 Suggest 'NOTE-This object is deprecated as a result ...' should read 'NOTE-This attribute is deprecated as a result ...' as aOutOfRangeLengthField is an attribute, not an object.

SuggestedRemedy  
 Suggest text should read 'NOTE-This attribute is deprecated as a result ...'

Proposed Response Response Status C  
 Accepted in principle.

Please see the suggested remedy text by Pat Thaler in comment 719.

Cl 30 SC 30.3.1.1.24 P 30.24 L 15 # 1247  
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A  
 Reference to the 802.3x standard is this way won't work over the long haul

SuggestedRemedy  
 Change to read:  
 "Note-This object is deprecated as a result of the inclusion of "Type" interpretation of the length/type field."  
 And then add a footnote along the following lines  
 \*The "Type" interpretation of this field was added to the standard by 802.3x:1997  
 (The footnote can then fall away when x&y are merged into the main book)

Also set the style for this note to match that of other notes.

Proposed Response Response Status C  
 Accepted in principle.

Please see the suggested remedy text by Pat Thaler in comment 719.

Cl 30 SC 30.3.1.1.24 P 30.24 L 15 to 16 # 719  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A  
 I don't see how we can deprecate an object that is required by one of the packages. The good news is that tracing back through 5.2.4.3, you will see that this counter only gets incremented if lengthError was set. Tracing that back to 4.2.9, receiveOK rather than lengthError should now be set frames with Type fields. Thus, this counter never gets incremented.

SuggestedRemedy  
 Remove the note. Replace the first sentence of behaviour with "This counter exists for historic reasons. It will not be incremented."

Proposed Response Response Status C  
 Accepted in Principle.

The note will be replaced with the following:  
 "In the past, this counter was incremented by frames containing type fields. Due to the modification to legitimize type fields, such frames will now increment aFramesReceivedOK and this counter will not increment."

Comment #40001 has been accepted to make the following changes in 5.2.4.3:  
 In procedure "LayerMgmtReceiveCounters", move "end; {lengthError}" and "end; {case status}"  
 to below "InclLargeCounter(outOfRangeLengthField)".

Cl 30 SC 30.3.1.1.24 P 30.24 L 15 to 16 # 628  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R  
 I don't see how we can deprecate an object that is required by one of the packages. The good news is that tracing back through 5.2.4.3, you will see that this counter only gets incremented if lengthError was set. Tracing that back to 4.2.9, receiveOK rather than lengthError should now be set frames with Type fields. Thus, this counter never gets incremented.

SuggestedRemedy  
 Remove the note. Replace the first sentence of behaviour with "This counter exists for historic reasons. It will not be incremented."

Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of comment #719 by same commenter.



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Cl 30 SC 30.3.1.1.25 P 30.24 L 40 # 943  
 Ariel Hendel Sun

Comment Type T Comment Status A

aFrameTooLongErrors might change due to the frame tagging accommodation, however implementers would benefit from guidance and reassurance that the nature of the change will be just a threshold change that can be satisfied via programmability, rather than a more convoluted mechanism for counting tagged vs. untagged frames

SuggestedRemedy

Change the Note to:  
 "This attribute will work with 1000 Mb/s operation, but the value used for frameTooLong status determination might be affected by 802.1q frame tagging".

Proposed Response Response Status C

Accepted in principle.

Note will now read:  
 "Note -- The parameter maxFrameSize is being considered for revision in project 802.3ac to accommodate the requirements of two bridging projects under development, P802.1p and P802.1Q."

Cl 30 SC 30.3.1.1.25 P 30.24 L 40 # 1090  
 Scott Mason Plaintree Systems Inc

Comment Type E Comment Status R

If I understand 30.2.2.2.1 correctly, the FCS errors counter should not include frames that have frameTooLong errors or frame fragments. I also note that these are receive frames.

The note in this sub-clause describes an issue not specifically related to GbE. It is also addressed by project 802.3ac.

SuggestedRemedy

Strike the note.

Proposed Response Response Status C

Rejected.  
 We need the note, however, the text has to changed to reflect the fact that project 802.3ac will be addressing it. Also, for revised text of the note pls see comment 1248 by Geoff Thompson.

Cl 30 SC 30.3.1.1.25 P 30.24 L 40 # 1248  
 Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status A

Text of the note is not appropriate for a standard. It would be okay to move it into an editor's note or a note to balloters. There needs to be new text for the real note. See below.

This comment also applies to 30.4.3.1.6, 30.4.3.1.8

SuggestedRemedy

Change note to read:  
 "Note-The parameter maxFrameSize is being considered for revision in project 802.3ac to accomodate the requirements of two bridging projects under development, P802.1p and P802.1Q."

Proposed Response Response Status C

Accepted.

Will adopt the above text in the next draft.

Cl 30 SC 30.3.1.1.25 P 30.24 L 40 & 41 # 1070  
 David Law 3Com

Comment Type E Comment Status A

Suggest the present note is replaced with the same text that we are already using for clause 4.4 in 802.3x

SuggestedRemedy

Suggest note should read 'NOTE:-Current approved projects that are in development in IEEE 802 may result in an increase in maxFrameSize'

Proposed Response Response Status C

Accepted in principle.

Similar comment was submitted by Geoff Thompson (see comment 1248 for the "text").

Cl 30 SC 30.3.1.1.25 P 30.24 L 40 to 41 # 720  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status R

I would prefer a more formal and definitive wording for this note which reflects the creation of 802.3ac.

SuggestedRemedy

Note: revision of this counter to accommodate 802.1q frames is under consideration.

Proposed Response Response Status Z

Withdrawn by the editor as it is a duplicate comment (refer comment 629) from the same commentor !

P802.3z Draft 3.1 Comments

CI 30 SC 30.3.1.1.25 P 30.24 L 40 to 41 # 629  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

I would prefer a more formal and definitive wording for this note which reflects the creation of 802.3ac.

SuggestedRemedy

Note: revision of this counter to accommodate 802.1q frames is under consideration.

Proposed Response Response Status C

Accepted in principle.

Similar comment was submitted by Geoff Thompson (see comment 1248 for the "text").

CI 30 SC 30.3.1.1.25 P 30.24 L 41 # 436  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Second sentence should be updated to refer to project 802.3ac rather than leaving the appearance of this issue not being addressed.

SuggestedRemedy

Change second sentence to:  
 "This is an open issue and project 802.3ac is addressing it.;"

Proposed Response Response Status C

Accepted in principle.

Will change the note to read as: The parameter maxFrameSize is being considered for revision in project 802.3ac to accomodate the requirements of two bridging projects under development, P802.1p and P802.1Q.

CI 30 SC 30.3.1.1.25, 30.4.3.1.6, P L # 881  
 Rich Seifert Networks & Communic

Comment Type T Comment Status A

The notes appear to be editorial, and should be removed.

SuggestedRemedy

Remove the current note. A note may be placed there instead that indicates that the work in 802.3ac may change the semantics of these attributes.

Proposed Response Response Status C

Accepted in principle.

Note will now read:  
 "Note -- The parameter maxFrameSize is being considered for revision in project 802.3ac to accommodate the requirements of two bridging projects under development, P802.1p and P802.1Q." See comment #1248.

CI 30 SC 30.3.1.1.26 P 30.24 L 53 # 1091  
 Scott Mason Plaintree Systems Inc

Comment Type T Comment Status R

This sub-clause makes mention of a reset of the PLS. Please indicate if this is also intended to include the 1000 Base-X PCS.

SuggestedRemedy

Add text describing the impact or lack of impact on the 1000 Base-X PCS.

Proposed Response Response Status C

REJECT.  
 This action is not intended to perform a reset of the PCS. There is no need to change the text because the standard does not specify actions that are not taken.

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Cl 30 SC 30.3.1.1.6 P 30.19 L 23 # 1089  
 Scott Mason Plaintree Systems Inc

Comment Type E Comment Status A

If I understand 30.2.2.2.1 correctly, the FCS errors counter should not include frames that have frameTooLong errors or frame fragments. I also note that these are receive frames.

One could say that the suggested description is redundant with 30.2.2.2.1. However, I observed that "an integral number of octets in length", which could be said to be equally redundant, is already called out in the behaviour. I favour the trend toward complete description.

*SuggestedRemedy*

Change the behaviour to:

A count of receive frames that are greater than or equal to the minimum permitted frame size, are less than or equal to the maximum permitted frame size, are an integral number of octets in length, and do not pass the FCS check.

Proposed Response Response Status C

Accepted in principle.

The behaviour text was modified to read as follows:-

"A count of receive frames that are integral number of octets in length and do not pass the FCS check.

This does not include frames received with frame-too-long or frame-too-short (frame fragment) error."

Cl 30 SC 30.3.1.1.6 P 30.19 L 32-33 # 551  
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

For 100Mb/s and 1000Mb/s operation, a CRC error is also reported when a coding error was detected by the Physical Layer.  
 For 1000Mb/s operation, a CRC error is also reported when an error occurred in the carrier extension field.  
 The same comment applies to sub-clause 30.4.3.1.6.

*SuggestedRemedy*

Change the first sentence of the behavior description to read as follows:  
 "A count of frames that are an integral number of octets in length and do not pass the FCS check, or a coding error was detected by the Physical Layer at operating speeds above 10Mb/s, or an error occurred in the carrier extension field of a frame at operating speeds above 100Mb/s".

Proposed Response Response Status C

Accepted in principle.

Will include a "Note-" at the bottom of the Behaviour text that clarifies coding error detection.

The note will say the following:

"Note -- coding errors detected by the physical layer for speeds above 10 Mb/s will cause the frame to fail the FCS check."

Cl 30 SC 30.3.1.1.7 P 30.19 L 47-48 # 552  
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

The added text in the behavior description is technically incorrect. The assumptions made here rely on existing 1000Mb/s implementations that utilize 8B/10B block coding in the PHY and a guaranteed implementation of a byte-wide GMII. In fact, there is nothing in the MAC that will prevent this counter from incrementing at any speed, and for future implementations of the standard the above-mentioned assumptions may or may not be correct.  
 The same comment applies to sub-clause 30.4.3.1.7.

*SuggestedRemedy*

Delete the added text in the behavior description on lines 47-48.

Proposed Response Response Status C

Accepted in principle.

Will change the wording of the added text to say the following:

"This counter will not increment for 8 bit wide group encoding schemes."

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**Cl 30 SC 30.3.1.2.1 P 30.26 L 43 # 1092**  
 Scott Mason Plaintree Systems Inc  
**Comment Type T Comment Status R**  
 This sub-clause makes mention of initialization of the PLS. Please indicate if this is also intended to include the 1000 Base-X PCS.  
**SuggestedRemedy**  
 Add text describing the impact or lack of impact on the 1000 Base-X PCS.  
**Proposed Response Response Status Z**  
 Withdrawn by editor. This is a duplicate of comment #1091 from the same commentor.

**Cl 30 SC 30.3.2.1.2 P 30.28 L 17 # 437**  
 Alan Albrecht Hewlett-Packard  
**Comment Type E Comment Status A**  
 The editorial convention seems to be to refer to "an MII" not "a MII".  
**SuggestedRemedy**  
 Undo change on line 17 to read "where an MII exists"  
**Proposed Response Response Status C**  
 Accepted.

**Cl 30 SC 30.3.2.1.2 P 30.28 L 7 # 1249**  
 Geoff Thompson Bay Networks, Inc.  
**Comment Type E Comment Status A**  
 Update to somewhat more formal style appropriate for a standard Use also for line 38.  
 This comment also applies to 30.6.1.1.5  
**SuggestedRemedy**  
 Change to read:  
 "Note- 1000BASE-T is under development in P802.3ab. Clause 40 has been allocated for the use of P802.3ab. No approved specification of clause 40 is available at this time."  
**Proposed Response Response Status C**  
 Accepted.

**Cl 30 SC 30.3.2.1.2 P 30.28 L 7 & 8 # 1073**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 Suggest reword of note. Also use same wording for 30.3.2.1.3  
**SuggestedRemedy**  
 Suggest note should read 'NOTE:- Clause 40 is reserved for the specifications of 1000BASE-T.'  
**Proposed Response Response Status C**  
 Accepted in principle.  
 Please see comment 1249 by Geoff Thompson for the revised text.

**Cl 30 SC 30.3.2.1.5 P 30.29 L 15 # 1075**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 Suggest re-word for consistency with the remainder of this subclause.  
**SuggestedRemedy**  
 Suggest text 'In the case of 100 Mb/s it is a count ...' should read 'For 100 Mb/s operation it is a ...'  
**Proposed Response Response Status C**  
 Accepted.

**Cl 30 SC 30.3.2.1.5 P 30.29 L 16 # 1076**  
 David Law 3Com  
**Comment Type T Comment Status A**  
 Suggest we need a reference that will include T2 and T4 as well as TX/FX.  
**SuggestedRemedy**  
 Suggest '(see 24.2.2.1.6)' should read '(see 23.2.1.4, 24.2.2.1.6, 32.3.4.1)'  
**Proposed Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 The reference for clause 32 should be 32.3.5.2.

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**Cl 30**    **SC 30.3.2.1.5**    **P 30.29**    **L 16**    # **1074**  
 David Law    3Com  
**Comment Type E**    **Comment Status A**  
 Typo.  
*SuggestedRemedy*  
 Suggest text 'For a 1000 Mb/s ...' should read 'For 1000 Mb/s ...'  
**Proposed Response**    **Response Status C**  
 Accepted.

**Cl 30**    **SC 30.3.2.1.5**    **P 30.29**    **L 19**    # **1143**  
 Scott Mason    Plaintree Systems Inc.  
**Comment Type T**    **Comment Status A**  
 The behaviour reference valid carrier and valid CarrierEvent. I could only find the carrier event function defined for repeaters. I assume that valid carrier is intended to exclude false carrier indications.

>From the maximum increment rate, I infer that symbol errors during carrier events are ignored when the duration of the carrier event is less than the time required to receive a minimum length frame. This may be a consequence of 30.2.2.2.1 but it would be nice to call it out specifically.

To accomodate bursting, the restriction to increment at most once per carrier event should probably change to at most once per frame. The change would allow this count to continue to be used to explain invalid receive frames.

*SuggestedRemedy*

Define valid carrier to be normal data reception, data reception error, carrier extend, or carrier extend error received across the GMII (or equivalent).

Modify the behaviour to:

For half-duplex 1000 Mb/s operation, it is a count of the number of times when valid carrier was present for one slotTime or greater and there was one or more occurrences of either an invalid data symbol (see 36.2.4.6) or the *N/* ordered\_set (see 36.2.4.15). This can only increment once for each frame received.

For full-duplex 1000 Mb/s operation, ... one minFrameSize or greater ...

**Proposed Response**    **Response Status C**  
 Accepted in principle

The commenter is correct that the valid carrier is only defined for repeaters and as this counter is for a PHY another reference should be used. The commenter suggest the false carrier definition provided by the PHY will be used. Alternatively I suggest using the definition "the receiving media is non-idle" to derive carrier event from. Additionally by the use of the encoding "Data reception error" across the GMII (see above) as the indication of an error we have excluded false carrier events from incrementing the counter. This is due to the fact that "Data reception error" can never occur during a false carrier event (See table 35-2), if a false carrier event occurs the "False carrier indication" is signalled across the GMII for the entire carrier event.

I therefore propose to change the text:-

'For a 1000 Mb/s operation it is a count of the number of times when valid carrier was present and there was at least one occurrence of either an invalid data symbol (see 36.2.4.6) or the *N/* ordered\_set (see 36.2.4.15). This can increment only once per valid CarrierEvent. If a collision is present this attribute will not increment.'

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to read:-

'For a 1000 Mb/s operation it is a count of the number of times the receiving media is non-idle (a carrier event) for a period of time greater than or equal to slotTime (see 4.2.4) and during which there was at least one occurrence of an event that causes the PHY to indicate "Data reception error" on the GMII (see table 35-2).

At all speeds this counter shall be incremented only once per valid carrier event and if a collision is present this counter shall not increment.'

CI 30 SC 30.3.2.1.5 P 30.29 L 20 # 1077  
David Law 3Com

Comment Type E Comment Status A

I believe the reference is incorrect.

SuggestedRemedy

Suggest '(see 36.2.4.15)' should read '(see 36.2.4.16)'.

Proposed Response Response Status C

Accepted in principle.

The behaviour text has been modified, pls see comment 1143 from Scott Mason.

CI 30 SC 30.3.2.1.5 P 30.29 L 20 # 945  
Ariel Hendel Sun

Comment Type T Comment Status A

aSymbolErrorDuringCarrier -  
Not clear if counter should not increment if a collision is present during the entire Carrier Event, or during the occurrence of the invalid data symbol.

SuggestedRemedy

Clarify.

Proposed Response Response Status C

Accepted in principle.

See comment # 1143

CI 30 SC 30.3.2.1.5 P 30.29 L 20 # 1098  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to wrong clause.

SuggestedRemedy

Change from "36.2.4.15" to "36.2.4.16".

Proposed Response Response Status C

Accepted in principle.

The behaviour text has been modified, pls see comment 1143 from Scott Mason.

CI 30 SC 30.3.2.1.6 P 30.29 L 38 # 1224  
Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A

Notes are not formally part of the standard. This should be part of the formal behaviour definition.

SuggestedRemedy

Move note text into BEHAVIOUR definition.

Proposed Response Response Status C

Accepted.

Delete the note and add the following to the behavior text:

"In case of GMII that is capable of operating in MII mode, but is not currently doing so, it is present and not connected. If the GMII is operating in MII mode and it is connected, then it is present and connected. Finally, if the GMII is not capable of operating in MII mode, then it is absent."

CI 30 SC 30.3.2.1.6 P 30.29 L 38 # 721  
Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

This statement should be part of the actual description, not a note. Also, it is not clear to me that the note is correct. If a GMII interface is capable of operating as an MII, why should this return "absent"?

SuggestedRemedy

Proposed Response Response Status C

Accepted.

Delete the note and add the following to the behavior text:

"In case of GMII that is capable of operating in MII mode, but is not currently doing so, it is present and not connected. If the GMII is operating in MII mode and it is connected, then it is present and connected. Finally, if the GMII is not capable of operating in MII mode, then it is absent."

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CI 30 SC 30.3.2.1.6 P 30.29 L 38 # 630  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

This statement should be part of the actual description, not a note. Also, it is not clear to me that the note is correct. If a GMII interface is capable of operating as an MII, why should this return "absent"?

SuggestedRemedy

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of comment #721 from the same commentor.

CI 30 SC 30.3.3.2 P 30.30 L 38 # 1106  
 Scott Mason Plaintree Systems Inc.

Comment Type T Comment Status R

A 1000 Mb/s device can separately elect to support sending and/or repending to pause. I can foresee that management would want to be able to separately enable or disable each pause capability.

SuggestedRemedy

Add the enumerations:

SEND\_PAUSE  
 RESPOND\_PAUSE

Define the existing enumeration PAUSE to mean both SEND\_PAUSE and RESPOND\_PAUSE.

Indicate that all of these are associated with the same MAC Control Function Entity object class.

Proposed Response Response Status C

Rejected.  
 The enumeration here lists the attribute "aMACControlFunctionSupported " as defined in Table 31A-1. The single MAC control function defined is PAUSE. Sending and responding are operations performed by the MAC control function. The aAutoNegLocalTechnologyAbility attribute defined in 30.6.1.1.5 provides the capabilities of a specific DTE with respect to pause.

CI 30 SC 30.4.1.1.8 P 30.34 L 33 # 614  
 Bob Faulk HP

Comment Type E Comment Status A

Looking at the name of this counter ("aTransmitCollisions"), a network management implementor would expect it to increment only when collisions occur. However, its definition causes false carriers, which are not collisions, to have the side effect of incrementing this counter.

SuggestedRemedy

A note should be added saying that some non-collision events such as false carriers will cause the repeater unit to enter the JAM state and increment this counter.

Proposed Response Response Status C  
 ACCEPT.

CI 30 SC 30.4.1.14 P 30.41 L 40 # 1185  
 David Law 3Com

Comment Type E Comment Status A

Typo. Also same typo in 30.4.3.1.15, page 30.42, line 19.

SuggestedRemedy

Suggest text '... counter.' should read '... counter'. Remove the period at the end of the sentence.

Proposed Response Response Status C  
 Accepted.

CI 30 SC 30.4.3 P 30.37 to 30. L Several # 1182  
 David Law 3Com

Comment Type E Comment Status A

We should consistently use the terms 'clause 9', 'clause 27' and 'clause 41' OR '10Mb/s repeater', '100Mb/s repeater' and '1000Mb/s repeater'. At the moment half the attributes use one term and the other half use the other terms.

SuggestedRemedy

Proposed Response Response Status C  
 Accepted in principle.

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Cl 30 SC 30.4.3.1.10 P 30.40 L 35 # 1183  
 David Law 3Com  
 Comment Type E Comment Status A  
 Typo.  
 SuggestedRemedy  
 Suggest the text 'For 1000 Mb/s repeater, ...' should read 'For 1000 Mb/s repeaters, ...'  
 Proposed Response Response Status C  
 ACCEPT.

Cl 30 SC 30.4.3.1.10 P 30.40 L 36 # 1184  
 David Law 3Com  
 Comment Type E Comment Status A  
 The statement that ' ValidPacketMinTime has tolerances included to provide for circuit losses between a conformance test point at the AUI and the measurement point within the state diagram.'  
 SuggestedRemedy  
 Suggest the text ' ValidPacketMinTime has tolerances ...' should read ' For 10Mb/s repeaters, ValidPacketMinTime has tolerances ...'  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.4.3.1.12 P 30.41 L 15 # 1186  
 David Law 3Com  
 Comment Type E Comment Status A  
 Clarify the definition of Late Event for clause 27 and 41 repeaters. The description should include that this is a CarrierEvent. Also 'collisionEvent' should read 'CollisionEvent'  
 SuggestedRemedy  
 Suggest the text '... for each assertion of the collisionEvent signal which occurs while the ActivityDuration ...' should read '... for each CarrierEvent in which the CollisionEvent signal assertion occurs while the ActivityDuration ...'  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.4.3.1.12 P 30.41 L 16 # 1187  
 David Law 3Com  
 Comment Type E Comment Status A  
 Clarify in text that a late collision is counted twice, as both a aCollision and as a aLateEvent in the case of all speeds.  
 SuggestedRemedy  
 Suggest text 'Such a CarrierEvent is counted twice, as both a aCollision and as a aLateEvent.' should read 'In both cases such a CarrierEvent is counted twice, as both a aCollision and as a aLateEvent.'  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.4.3.1.2 P 30.37 L 50 and 53 # 1179  
 David Law 3Com  
 Comment Type E Comment Status A  
 Clarify the statement 'reinitialized whenever acPortAdminControl is enable.'  
 SuggestedRemedy  
 Suggest text 'reinitialized whenever acPortAdminControl is enable.' should read 'reinitialized upon acPortAdminControl taking the value enabled.' in both cases.  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.4.3.1.20 P 30.43 L 34 # 883  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Change "1000 Mb/s operation." to "1000 Mb/s operation only."  
 Proposed Response Response Status C  
 Accepted.



P802.3z Draft 3.1 Comments

Cl 30 SC 30.4.3.1.20 P 30.43 L 35 to 39 # 1188  
 David Law 3Com

Comment Type T Comment Status R

The present definition of this attribute will not guarantee that only a burst will increment the counter. The timer at the moment is set to just a slotTime, I believe this would have to be set to slotTime + jamSize to be accurate. A better approach may be to detect a valid Start of Packet delimiter (see 35.2.3.6) once the duration of the CarrierEvent is greater than a slotTime.

SuggestedRemedy

Suggest the text '... for each CarrierEvent with ActivityDuration greater than or equal to slotTime during which the COLLISION COUNT INCREMENT state of the partition state diagram (figure 41.4) has not been entered should read '... for each CarrierEvent in which a valid Start of Packet delimiter (see 35.2.3.6) is detected while the ActivityDuration is greater than slotTime.'

Proposed Response Response Status Z

Withdrawn by commenter.

Cl 30 SC 30.4.3.1.4 P 30.38 L 28 # 1181  
 David Law 3Com

Comment Type E Comment Status A

Suggest that the reference to 4.4.2.4 should be changes to 4.4.2. 4.4.2.4 is the 1000Mb/s specific, 4.4.2 is more generic covering all speeds. Also change similar reference in 30.4.3.1.6 and 30.4.3.1.7

SuggestedRemedy

Suggest text '(see 4.4.2.4)' should read '(see 4.4.2)'

Proposed Response Response Status C

Accepted.

Cl 30 SC 30.4.3.1.4 P 30.38 L 30 & 31 # 1180  
 David Law 3Com

Comment Type E Comment Status A

Clarify the statement 'within a CarrierEvent which has a duration of greater than or equal to slotTime plus Jam size.' to use the ActivityDuration function. Also believe Jam size should be JamSize (see 4.4.2).

SuggestedRemedy

Suggest text should read 'within a CarrierEvent which has a ActivityDuration of greater than or equal to (slotTime + JamSize) BT (see 4.4.2).'

Proposed Response Response Status C

Accepted.  
 Will update the draft with the suggested remedy.

Cl 30 SC 30.4.3.1.4 P 30.38 L 31 # 882  
 Rich Seifert Networks & Communic

Comment Type T Comment Status A

Question: What is the relevance of JamSize in determining whether a frame is counted as readable?

SuggestedRemedy

None required if this is correct, but it is not obvious why JamSize should be added.

Proposed Response Response Status C

Accept in principle.  
 The value is correct , however a note will be added for clarification:  
 "Note -- At 1000 Mb/s,  
 the maximum carrier event resulting from a in-window collision is slot-time + jam-size, and the minimum carrier event for a valid frame is slot-time + header-size - preamble shrinkage.  
 The former is used as the boundary for readable frames."

Cl 30 SC 30.4.3.1.6 P 30.39 L 8 # 478  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Max frame size note. Can we be more specific on this now? Also applies to line 39. Perhaps reference 802.3ac work is in progress.

SuggestedRemedy

Proposed Response Response Status C

Accepted by principle.  
 See the suggested remedy text offered by comment 1248 by Geoff Thompson.

P802.3z Draft 3.1 Comments

Cl 30 SC 30.4.3.1.6 P 30.39 L 8 & 9 # 1072  
 David Law 3Com

Comment Type E Comment Status A

Suggest the present note is replaced with the same text that we are already using for clause 4.4 in 802.3x

SuggestedRemedy

Suggest note should read 'NOTE:-Current approved projects that are in development in IEEE 802 may result in an increase in maxFrameSize'

Proposed Response Response Status C

Accepted in principle.  
 Please see the text adopted by the editor suggested by commentator Geoff Thompson (comment 1248).

Cl 30 SC 30.4.3.1.6 P 30.39 L 8 and 39 # 722  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

The note used for items that may be updated by 802.3ac should be more consistent. See my earlier comment. Also, when mentioning that the update is for frame tagging, a reference to 802.1q is appropriate.

SuggestedRemedy

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of comment #631 from same commentator.

Cl 30 SC 30.4.3.1.6 P 30.39 L 8 and 39 # 631  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The note used for items that may be updated by 802.3ac should be more consistent. See my earlier comment. Also, when mentioning that the update is for frame tagging, a reference to 802.1q is appropriate.

SuggestedRemedy

Proposed Response Response Status C

ACCEPT.  
 Add the following:  
 "Note-The parameter maxFrameSize is being considered for revision in project 802.3ac to accommodate the requirements of two bridging projects under development, P802.1p and P802.1Q."

Cl 30 SC 30.4.3.1.8 P 30.39 L 40 & 41 # 1071  
 David Law 3Com

Comment Type E Comment Status R

Suggest the present note is replaced with the same text that we are already using for clause 4.4 in 802.3x

SuggestedRemedy

Suggest note should read 'NOTE:-Current approved projects that are in development in IEEE 802 may result in an increase in maxFrameSize'

Proposed Response Response Status Z

Withdrawn by the editor as this is duplicate of comment 1070 from the same commentator !

Cl 30 SC 30.4.3.1.9 P 30.40 L 13 # 632  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status R

This note seems a little misleading for 1000 Mb/s since repeaters are not interconnected within a collision domain.

SuggestedRemedy

Delete "and 41". Add at the end of the note: "Clause 41 repeaters normally support one repeater per collision domain and do not perform fragment extension.

Proposed Response Response Status Z

Withdrawn by the editor as it is a duplicate comment (refer comment 723) from the same commentator !

Cl 30 SC 30.4.3.1.9 P 30.40 L 13 # 723  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

This note seems a little misleading for 1000 Mb/s since repeaters are not interconnected within a collision domain.

SuggestedRemedy

Delete "and 41". Add at the end of the note: "Clause 41 repeaters normally support one repeater per collision domain and do not perform fragment extension.

Proposed Response Response Status C

Accepted.

P802.3z Draft 3.1 Comments

Cl 30 SC 30.5.1.1.10 P 30.48 L 27 # 634  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

I don't understand why the increment rate on an idle network is so low. It diminishes the usefulness of the object as an indicator of line quality.

SuggestedRemedy

Replace the last sentence of the behaviour with "For 100BASE-X, it can increment after a valid carrier completion at a maximum rate of once per 100 ms until the next carrier eventCarrierEvent. For 1000BASE-X, it can increment after a valid carrier completion at a maximum rate of once per 10 us until the next carrier eventCarrierEvent."

Where the u in us is intended to be a mu for microseconds. I would be happy with any value between 1 and 10 us.

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of comment #725 by same commentor.

Cl 30 SC 30.5.1.1.10 P 30.48 L 27 # 725  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

I don't understand why the increment rate on an idle network is so low. It diminishes the usefulness of the object as an indicator of line quality.

SuggestedRemedy

Replace the last sentence of the behaviour with "For 100BASE-X, it can increment after a valid carrier completion at a maximum rate of once per 100 ms until the next carrier eventCarrierEvent. For 1000BASE-X, it can increment after a valid carrier completion at a maximum rate of once per 10 us until the next carrier eventCarrierEvent."

Where the u in us is intended to be a mu for microseconds. I would be happy with any value between 1 and 10 us.

Proposed Response Response Status C

Accept.  
 Will incorporate the text in the suggested remedy and use a value of 5 us.

Cl 30 SC 30.5.1.1.2 P 30.45 L 24 to 26,4 # 1041  
 David Law 3Com

Comment Type E Comment Status A

It would be cleared if the note for 1000BASE-T was tied directly to the text it was related to. Also the text description says that 1000BASE-T is to be defined, it read to be specified.

SuggestedRemedy

Change text '... UTP PHY to be defined in clause 40 ... ' to read '... UTP to be specified in clause 40 ...'. Also add superscript 'a' to the end of the three 1000BASE-T text descriptions. Remove the present note and replace with 'aClause 40 is reserved for the specifications of 1000BASE-T.' (where again a is a superscript)

Proposed Response Response Status C

Accepted.  
 Will update the text in the next draft

Cl 30 SC 30.5.1.1.2 P 30.45 L 3 to 5 # 1037  
 David Law 3Com

Comment Type E Comment Status A

Clause 36 does not specify a PMD. Also in the case of 1000BASE-X, XHD and XFD the PMD by definition must be unknown for this to be reported.

SuggestedRemedy

Suggest that the text 'X over PMD as specified in clause 36, ...' should read '--X over unknown PMD, ...'

Proposed Response Response Status Z

REJECT. Withdrawn by the editor as it is a duplicate comment (refer comment 1036) from the same commentor !

Cl 30 SC 30.5.1.1.2 P 30.45 L 33 # 1144  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status R

The term AutoFiber-Negotiation is outdated.

SuggestedRemedy

Add the enumerations:

Change to Auto-Negotiation

Proposed Response Response Status Z

Duplicate of 1145.. Withdrawn per commenter request.

P802.3z Draft 3.1 Comments

Cl 30 SC 30.5.1.1.2 P 30.45 L 33 # 1040  
 David Law 3Com  
 Comment Type E Comment Status A  
 Typo.  
 SuggestedRemedy  
 Suggest that text 'If clause 28, Auto-Negotiation or clause 37 AutoFiber-Negotiation ...' should read 'If clause 28 or clause 37, Auto-Negotiation ...'  
 Proposed Response Response Status C  
 Accepted.  
 Pls see similar comment (1145) from the commentor Scott Mason.

Cl 30 SC 30.5.1.1.2 P 30.45 L 33 # 1145  
 Scott Mason Plaintiff Systems Inc.  
 Comment Type E Comment Status A  
 The term AutoFiber-Negotiation is outdated.  
 SuggestedRemedy  
 Add the enumerations:  
 Change to Auto-Negotiation  
 Proposed Response Response Status C  
 Accepted.  
 In the next draft all references to the term 'AutoFiber-Negotiation' will be replaced by the term 'Auto-Negotiation'.

Cl 30 SC 30.5.1.1.2 P 30.45 L 38 # 724  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status A  
 1000BASE-X is listed twice here.  
 SuggestedRemedy  
 Delete "1000BASE-X or".  
 Proposed Response Response Status C  
 ACCEPT.

Cl 30 SC 30.5.1.1.2 P 30.45 L 38 # 633  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status R  
 1000BASE-X is listed twice here.  
 SuggestedRemedy  
 Delete "1000BASE-X or".  
 Proposed Response Response Status Z  
 Withdrawn by the editor as it is a duplicate comment (refer comment 724) from the same commentor !

Cl 30 SC 30.5.1.1.2 P 30.45 L 38 & 39 # 1039  
 David Law 3Com  
 Comment Type T Comment Status A  
 The first sentence of this note should be promoted to be part of the behavior definition as this is what it is. The sentence should also be cleaned up.  
 SuggestedRemedy  
 Suggest the text 'The MAU types of 1000BASE-X or 1000BASE-X, XHD and XFD should only be reported if the underlying PMD type is unknown.' should be moved to be an additional paragraph of the behavior definition and should read 'The types 1000BASE-X, 1000BASE-XHD and 1000BASE-XFD shall only be returned if the underlying PMD type is unknown.'  
 Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.5.1.1.4 P 30.46 L 28 # 1042  
 David Law 3Com  
 Comment Type T Comment Status A  
 A reference should be added for 100BASE-T2 here, all the other 100Mb/s PHYs are included.  
 SuggestedRemedy  
 Suggest text 'For 100BASE-T4, ...' should read 'For 100BASE-T2, 100BASE-T4, ...' and that the text '... figure 23-12 and ...' should read '... figure 32-16, figure 23-12 and ...'  
 Proposed Response Response Status C  
 Accepted.

P802.3z Draft 3.1 Comments

**Cl 30**    **SC 30.5.1.1.4**                      **P 30.46**                      **L 29 to 31**                      # **1046**  
 David Law                                              3Com  
**Comment Type**    **E**                      **Comment Status**    **R**  
 Remove the sentence 'Any MAU that implements management of clause 28 Auto-Negotiation or clause 37 Auto-Negotiation will map remote fault indication to MediaAvailable remote fault.' as this duplicates the text of the final paragraph without the detail.  
**SuggestedRemedy**  
 See above  
**Proposed Response**                      **Response Status**    **Z**  
 Withdrawn by commenter.

**Cl 30**    **SC 30.5.1.1.4**                      **P 30.46**                      **L 32**                      # **1045**  
 David Law                                              3Com  
**Comment Type**    **E**                      **Comment Status**    **A**  
 The description of the remote fault meaning for 10BASE-FB and 100BASE-FX needs clarified.  
**SuggestedRemedy**  
 Suggest the text '...applies to 10BASE-FB, 100BASE-X far-end fault indication ...' should read '...applies to the 10BASE-FB remote fault indication, the 100BASE-X far-end fault indication ...'  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

**Cl 30**    **SC 30.5.1.1.4**                      **P 30.46**                      **L 36**                      # **1043**  
 David Law                                              3Com  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Due to the renumbering of clause 22 for the GMII the subclause reference 22.2.4.2.9 is now incorrect, it should be to subclause 22.2.4.2.12.  
**SuggestedRemedy**  
 Change text '(22.2.4.2.9)' to read '(22.2.4.2.12)'.  
**Proposed Response**                      **Response Status**    **C**  
 Accepted.

**Cl 30**    **SC 30.5.1.1.4**                      **P 30.46**                      **L 37**                      # **1044**  
 David Law                                              3Com  
**Comment Type**    **E**                      **Comment Status**    **R**  
 Due to the renumbering of clause 22 for the GMII the subclause reference 22.2.4.2.11 is now incorrect, it should be to subclause 22.2.4.2.14.  
**SuggestedRemedy**  
 Change text '(22.2.4.2.11)' to read '(22.2.4.2.14)'.  
**Proposed Response**                      **Response Status**    **Z**  
 Withdrawn by the editor as it is a duplicate comment (refer comment 1043) from the same commentor !

**Cl 30**    **SC 30.6.1.1.2**                      **P 30.50**                      **L 1**                      # **1146**  
 Scott Mason                                              Plaintree Systems Inc.  
**Comment Type**    **T**                      **Comment Status**    **R**  
 I don't understand the reason for the strike-out of text in this sub-clause. What replaces the strike-out text as a description of how to perform manual configuration?  
**SuggestedRemedy**  
 Restore the strike-out text. Also add a reference to 30.3.3.2 for Pause.  
**Proposed Response**                      **Response Status**    **C**  
 Rejected.  
 The answer to your question is," If disabled then the interface will act as if it would if it had no Auto-Negotiation signaling." (see page 30.49 line 54)

P802.3z Draft 3.1 Comments

Cl 30 SC 30.6.1.1.5 P 30.50 L 46-51 # 726

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The values listed do not fully represent the range of Auto-Negotiation abilities. For instance a device offering PAUSE support may or may not accept a connection without PAUSE. Also, a device may support asymmetric pause as the pause frame receiver or sender. Since the syntax allows a sequence, I don't see any reason for FDX BPAUSE. A device which offers both should send both FDX APAUSE and FDX SPAUSE.

SuggestedRemedy

Add:
FDX NOPAUSE Full duplex without PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.
FDX ARPAUSE Receiver of asymmetric PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.
FDX ATPAUSE Transmitter of asymmetric PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.
Remove: FDX BPAUSE

Proposed Response Response Status C

Accept in principle.

Proposed response:-
When the resolution of the pause capabilities is not acceptable to one of the link partners it should set the remote fault to the encoding Auto-Negotiation\_Error as per subclause 37.2.1.4.4 :-

'A Remote Fault encoding of 0b11 indicates that the local device has detected a Auto-Negotiation\_Error. Resolution which precludes operation between a local device and link partner shall be reflected to the link partner by the local device by indicating a Remote Fault code of Auto-Negotiation\_Error.'

It was however noted that the attribute that reflects the remote fault state, aMediaAvalible has not been updated correctly in 802.3z to support the additional evaluations provided by 802.3z remote fault as defined in table 37-2. Due to this the following change will be made to aMediaAvalible:-

Add the following enumerations:-

offline offline, applies only to clause 37
auto-negotiation
auto negotiation error auto negotiation, applies only to clause 37
auto-negotiation

Also add these to subclause 30B.2 (page 30B.4, line 43 to 51).

Change text ' Any MAU that implements management of clause 28 Auto-Negotiation or clause 37 Auto-Negotiation will map remote fault

indication to aMediaAvailable remote fault.' to read

'Any MAU that implements management of clause 28 Auto-Negotiation will map remote fault indication to aMediaAvailable "remote fault". Any MAU that implements management of clause 37 Auto-Negotiation maps to the received RF1 and RF2 bits, decode as specified in Table 37-2, as follows. Offline maps to the enumeration "offline", Link\_Failure maps to the enumeration "remote fault" and Auto-Negotiation\_Error maps to the enumeration "auto negotiation error".'

P802.3z Draft 3.1 Comments

Cl 30 SC 30.6.1.1.5 P 30.50 L 46-51 # 635  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

The values listed do not fully represent the range of Auto-Negotiation abilities. For instance a device offering PAUSE support may or may not accept a connection without PAUSE. Also, a device may support asymmetric pause as the pause frame receiver or sender. Since the syntax allows a sequence, I don't see any reason for FDX BPAUSE. A device which offers both should send both FDX APAUSE and FDX SPAUSE.

SuggestedRemedy

Add:  
 FDX NOPAUSE Full duplex without PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.  
 FDX ARPAUSE Receiver of asymmetric PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.  
 FDX ATPAUSE Transmitter of asymmetric PAUSE operation for full-duplex links as defined in Clause 37 and Annex 31B.  
 Remove: FDX BPAUSE

Accept in principle.

When the resolution of the pause capabilities is not acceptable to one of the link partners it should set the remote fault to the encoding Auto-Negotiation\_Error as per subclause 37.2.1.4.4 :-

'A Remote Fault encoding of 0b11 indicates that the local device has detected a Auto-Negotiation\_Error. Resolution which precludes operation between a local device and link partner shall be reflected to the link partner by the local device by indicating a Remote Fault code of Auto-Negotiation\_Error.'

It was however noted that the attribute that reflects the remote fault state, aMediaAvalible has not been updated correctly in 802.3z to support the additional evaluations provided by 802.3z remote fault as defined in table 37-2. Due to this the following change will be made to aMediaAvalible:-

Add the following enumerations:-

offline offline, applies only to clause 37  
 auto-negotiation  
 auto negotiation error auto negotiation, applies only to clause 37  
 auto-negotiation

Also add these to subclause 30B.2 (page 30B.4, line 43 to 51).

Change text ' Any MAU that implements management of clause 28 Auto-Negotiation or clause 37 Auto-Negotiation will map remote fault indication to aMediaAvailable remote fault.' to read

'Any MAU that implements management of clause 28 Auto-Negotiation will map remote fault indication to aMediaAvailable "remote fault". Any MAU that implements management of clause 37 Auto-Negotiation maps to the received RF1 and RF2 bits, decode as specified in Table 37-2, as follows. Offline maps to the enumeration "offline", Link\_Failure maps to the enumeration "remote fault" and Auto-Negotiation\_Error maps to the enumeration "auto negotiation error".

Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of comment #726 by the same commentor.

Cl 30 SC 30.6.1.1.5 P 30.51 L 47-48 # 30001  
 Sumesh Kaul

Comment Type T Comment Status A

Extend the range of readable/writeable bits for Auto Negotiation attributes to include bits D12 and D13.

SuggestedRemedy

To make D12 and D13 bits readable/writeable, the suggested remedy is as follows:-

Add 2 new enumeratios in 30.6.1.1.5 for extended status register RF1 and RF2 bits (see clause 22) so that they are readable/writeable by management and map directly to D12 and D13 bits. Modify the behaviour text of sub-clause 30.6.1.1.6 & 30.6.1.1.7 to extend bits of Config\_reg base page to include bits D12 & D13.

Also, add the same enumerations in Annex 30-B, page 30B.3, line 31-32

Proposed Response Response Status C  
 Accepted.

Cl 30 SC 30.6.1.1.6 P 30.51 L 21 # 1147  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

The reference to 37.2.1.2 should be to 37.2.1.

This also applies to 30.6.1.1.7.

SuggestedRemedy

Update the reference.

Proposed Response Response Status C

Accepted.  
 Will fix in the next draft.  
 Note that this comment is a duplicate of comment 616 from Bob Faulk.  
 Also, will correct the reference to 37.2.1 on line 42, page 30.51.

P802.3z Draft 3.1 Comments

Cl 30 SC 30.6.1.1.6 P 30.51 L 22 # 1099  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to wrong clause.

SuggestedRemedy

Change from "page(see 37.2.1.2)" to "page (see 37.2.1)". Note additions of space after word page.  
Note same reference error on line 42.

Proposed Response Response Status C

Accepted.  
Will fix in the next draft.  
Note that this comment is a duplicate of comment 616 from Bob Faulk.  
Also, will correct the reference to 37.2.1 on line 42, page 30.51.

Cl 30 SC 30.6.1.1.6 P 30.51 L 22 # 616  
Bob Faulk HP

Comment Type E Comment Status A

Reference to 27.2.1.2 is incorrect.

SuggestedRemedy

Refer to clause 37.2.1 instead of clause 37.2.1.2

Proposed Response Response Status C

Accepted. Will be fixed in next draft.

Cl 30 SC 30.6.1.1.6 P 30.51 L 22 # 1189  
David Law 3Com

Comment Type E Comment Status A

Incorrect reference, also typo. Error also in 30.6.1.1.7, page 30.51, line 43.

SuggestedRemedy

Suggest reference '... page(see 37.2.1.2)' should read '... page (see 37.2.1)'.

Proposed Response Response Status C

ACCEPT.

Cl 30 SC 30.6.1.1.6 P 30.51 L 22 # 1190  
David Law 3Com

Comment Type E Comment Status A

Typo. Error also in 30.6.1.1.7, page 30.51, line 43.

SuggestedRemedy

Suggest '... config\_Reg ...' should read '... Config\_Reg ...'

Proposed Response Response Status C

Accepted.

Cl 30 SC 30.6.1.1.7 P 30.51 L 42 # 615  
Bob Faulk HP

Comment Type E Comment Status R

Reference to 27.2.1.2 is incorrect.

SuggestedRemedy

Refer to clause 37.2.1 instead of clause 37.2.1.2

Proposed Response Response Status Z

Withdrawn by the editor as it is a duplicate comment (refer comment 616) from the same commentor !

Cl 30 SC 30.6.1.1.8 P 30.52 L 5 to 6 # 727  
Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

Clause 37 may not support this field, but the object is mandatory.  
Therefore, there should be a defined value returned by Clause 37 devices.

SuggestedRemedy

Add "Clause 37 devices will return the value ethernet."  
Modify 30.6.1.1.9 and 30.6.1.1.10 similarly.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
Accept the suggested remedy for 30.6.1.1.8 and 30.6.1.1.10.

Will add the following to 30.6.1.1.9.  
"For Clause 37 devices, a set of this attribute will have no effect, and a get will return the value 'ethernet'."



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**Cl 30**    **SC 30.6.1.1.8**                      **P 30.52**    **L 5 to 6**    # **636**  
 Pat Thaler                                      Hewlett-Packard

*Comment Type*    **TR**            *Comment Status*    **R**

Clause 37 may not support this field, but the object is mandatory.  
 Therefore, there should be a defined value returned by Clause 37 devices.

*SuggestedRemedy*

Add "Clause 37 devices will return the value ethernet."  
 Modify 30.6.1.1.9 and 30.6.1.1.10 similarly.

*Proposed Response*                      *Response Status*    **Z**

Withdrawn by editor. Duplicate of comment # 727 from same commenter.

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**Cl 30**    **SC 30.6.1.1.9**                      **P 30.52**    **L 24**    # **294**  
 Colin Mick                                      The Mick Group

*Comment Type*    **E**            *Comment Status*    **A**

punctuation

*SuggestedRemedy*

Delete colon at end of note

*Proposed Response*                      *Response Status*    **C**

Accept.  
 Will remove the semi-colon at the end of line 20.

---

**Cl 30**    **SC all**                                      **P 30.1-30.54**    **L**    # **292**  
 Colin Mick                                      The Mick Group

*Comment Type*    **E**            *Comment Status*    **R**

I see no reason to incorporate all of Clause 30 (far less than 10 percent of the text is changed)

*SuggestedRemedy*

Please follow the style shown in other changed clauses and follow the protocol cited in my comment on this topic (to Clause 1.)

*Proposed Response*                      *Response Status*    **C**

Rejected.

Please be advised that in the discussions that took place at the Ft. Lauradale interim meeting in May, 1997, the task force decided to publish the whole clause 30, the value of this being to insure that folks will be able to look at the consolidated text of 802.3u+x+y+z in one place.

P802.3z Draft 3.1 Comments

**Cl 30A**    **SC 30A**                      **P 30A.1**    **L 38**                      # **1191**  
 David Law                                      3Com  
*Comment Type*    **E**                      *Comment Status*    **A**  
     Typo.  
*SuggestedRemedy*  
     Suggest '... 30B1.' should read '... 30B.1.'  
*Proposed Response*                      *Response Status*    **C**  
     Accepted.

**Cl 30A**    **SC 30A.1.1**                      **P 30A.2**    **L 24**                      # **1250**  
 Geoff Thompson                              Bay Networks, Inc.  
*Comment Type*    **E**                      *Comment Status*    **A**  
     What is the change bar for?  
*SuggestedRemedy*  
     Define the change or remove the change bar.  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT. Will remove the change bar in the next draft.

**Cl 30A**    **SC 30A.7.1**                      **P 30A.27**    **L 43**                      # **692**  
 Pat Thaler                                      Hewlett-Packard  
*Comment Type*    **E**                      *Comment Status*    **A**  
     Perhaps this package could be labeled just "pBurst". It is possible that someday in the future we will do an additional speed that supports burst and there is no reason to put the speed in the package name.  
*SuggestedRemedy*  
  
*Proposed Response*                      *Response Status*    **C**  
     Accepted.

**Cl 30A**    **SC 30A.7.2**                      **P 30A.33**    **L 27**                      # **1008**  
 David Law                                      3Com  
*Comment Type*    **T**                      *Comment Status*    **A**  
     The arc for aBurst {iso(1) member-body(2) us(840) 802dot3(10006) csmacdmgt(30)attribute(7) bursts(64)} appears to be a duplicate of the arc for alsolates 27 {iso(1) member-body(2) us(840) 802dot3(10006) csmacdmgt(30) attribute(7) bursts(64)}  
*SuggestedRemedy*  
  
*Proposed Response*                      *Response Status*    **C**  
     ACCEPT.  
     Change bursts(64) to bursts(68).

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**Cl 30B SC 30B.2 P 30B.3 L 19 to 24 # 693**  
 Pat Thaler Hewlett-Packard

**Comment Type TR Comment Status A**  
 See my comment on 30.6.1.1.5. This list should be updated to match the resolution of it.

*SuggestedRemedy*

**Proposed Response Response Status C**  
 Accept in principle.  
 Tied to resolution of comment #726.

**Cl 30B SC 30B.2 P 30B.5 L 25 # 1035**  
 David Law 3Com

**Comment Type E Comment Status A**  
 There is a comma missing after the close brackets.

*SuggestedRemedy*  
 The text '(36)' should read '(36),'

**Proposed Response Response Status C**  
 Accepted.

**Cl 30B SC 30B.2 P 30B.5 L 26 # 1038**  
 David Law 3Com

**Comment Type E Comment Status A**  
 Rather than say Clause 40 is TDB (and just in case somebody thinks this is yet another coding scheme) suggest that a note be added.

*SuggestedRemedy*  
 Change text '--clause 40 1000 Mb/s TBD' to read '--clause 40 1000Mb/s<sup>a</sup>' (where a is a superscript) and add the text 'aClause 40 is reserved for the specifications of 1000BASE-T.' (where again a is a superscript)

**Proposed Response Response Status C**  
 Accepted.

**Cl 30B SC 30B.2 P 30B.6 L 6 # 1007**  
 David Law 3Com

**Comment Type T Comment Status A**  
 Reference '-- see 20.2.2.3' is incorrect, update to clause 30 reference.

*SuggestedRemedy*  
 Update text to read '--see 30.2.5'

**Proposed Response Response Status C**  
 ACCEPT.

**Cl 30B SC 30B.2 P 30B.7 L 9 to 11 # 1036**  
 David Law 3Com

**Comment Type E Comment Status A**  
 Clause 36 does not specify a PMD. Also in the case of 1000BASE-X, XHD and XFD the PMD by definition must be unknown for this to be reported.

*SuggestedRemedy*  
 Suggest that the text '--X over PMD as specified in clause 36, ...' should read '--X over unknown PMD, ...'

**Proposed Response Response Status C**  
 Accepted in principle.

Actual text will read as follows:-

X PCS/PMA as specified in clause 36 over unknown PMD.

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CI 34 SC 34.1 P34.1 L26-30 # 884  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Make these two paragraphs one. Change "between" to "among".  
 Proposed Response Response Status C  
 ACCEPT.

CI 34 SC 34.1 P34.1 L33 # 14  
 Kevin Daines Packet Engines  
 Comment Type E Comment Status A  
 Punctuation error  
 SuggestedRemedy  
 Remove "-" to read "...Media Independent Interface layer..."  
 Proposed Response Response Status C  
 Accept.

CI 34 SC 34.1 P34.1 L33 # 1012  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest that 'Gigabit Media-Independent Interface' should read 'Gigabit Media Independent Interface' (remove the hyphen).  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 ACCEPT. Already deleted in response to comment 14.

CI 34 SC 34.1 P34.1 L33-34 # 555  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 1000BASE-T has a reserved clause in our document and it is an approved project, therefore, it should be mentioned in the introduction as one of the PHYs.  
 SuggestedRemedy  
 See Comment.  
 Proposed Response Response Status C  
 ACCEPT. Will do per Geoff Thompson's comment number 1254

CI 34 SC 34.1 P34.1 L34/35 # 295  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A  
 Add 1000BASE-T.  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 ACCEPT. P34.1/L34 at end of sentence delete the word "and", then append to the sentence the phrase "and 1000BASE-T".

CI 34 SC 34.1 P34.1 L36-42 # 885  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status R  
 This entire paragraph just doesn't read well. It could easily be eliminated without any loss of content.  
 SuggestedRemedy  
 Reword or eliminate. If there were no other comments about this paragraph with suggested wordings, I am willing to write it myself.  
 Proposed Response Response Status C  
 REJECT. No suggested remedy. Please bring one to the London meeting.

CI 34 SC 34.1 P34.2 L1-28 # 554  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 \* The PHYs on Figure 34-1 should include an AUTONEG block, which is mandatory for 1000Mb/s operation.  
 \* The PHYSICAL layer in the OSI stack should include the entire PHY and not part of it.  
 SuggestedRemedy  
 \* Add an "AUTONEG" block to each PHY on Figure 34-1.  
 \* Add an additional note that reads as follows:  
 "AUTONEG is mandatory for 1000Mb/s systems, and is optional otherwise".  
 \* Stretch the bottom line coming out of the PHYSICAL block to include all of the PHY components. See Figure 22-1.  
 Proposed Response Response Status C  
 REJECT part about AUTONEG. The layer diagrams for 1000BASE-X will not show autonegotiation.  
 ACCEPT part about PHYSICAL layer designation.  
 P34.2/L15 On the left side of the figure, the line leading from the lower-right-hand corner of the block labelled PHYSICAL is wrong. The left end of the line is OK. The right end o the line should not go into the PMA block. It should instead point to the top-left-hand corner of the MEDIUM block, ending somewhere to the left of the word MDI.

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Cl 34 SC 34.1.1 P 34.1 L 49 # 35002  
 Bob Grow  
 Comment Type E Comment Status A Global Keven please read this  
 Change sentence starting on line 49 to read:  
 The GMII supports 1000 Mb/s operation through its eight bit wide (octet wide) transmit and receive paths.  
 SuggestedRemedy See above  
 Proposed Response Response Status C ACCEPT.

Cl 34 SC 34.1.2 P 34.2 L 38 # 556  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status R Spelling.  
 SuggestedRemedy Replace "adapted" with "adopted".  
 Proposed Response Response Status C REJECT. To adopt another standard would imply that we have accepted all of its terms and conditions. We have adapted the standard, which implies that we started with it, mucked around with the details, and ended up with something similar, but different.

Cl 34 SC 34.1.2 P 34.2 L 39 # 1251  
 Geoff Thompson Bay Networks, Inc.  
 Comment Type E Comment Status A global missing slash in "8B10B"  
 SuggestedRemedy Change to "8B10B"  
 Proposed Response Response Status C P34.2/L39 change "8B10B" to read "8B/10B"

Cl 34 SC 34.1.2 P 34.2 L 47 # 1252  
 Geoff Thompson Bay Networks, Inc.  
 Comment Type E Comment Status A Entries in table are obscure  
 SuggestedRemedy Add a new column at the left with the following entries:  
 "Short Wave Length Optical"  
 "Long Wave Length Optical"  
 "Shielded Jumper Cable"  
 Proposed Response Response Status C ACCEPT IN PRINCIPLE. Rather than add a new column, change the definitions in column two to read:  
 P34.2/L47 "Short wavelength signaling over duplex multimode fiber"  
 P34.2/L49 "Long wavelength signaling over duplex single mode fiber or duplex multimode fiber"  
 P34.2/L51 "Basband signaling over speciality shielded balanced copper jumper cable assemblies"

Cl 34 SC 34.1.2 P 34.2 L 51 # 1253  
 Geoff Thompson Bay Networks, Inc.  
 Comment Type E Comment Status A Extra cap in "CLause"  
 SuggestedRemedy Change to "Clause"  
 Proposed Response Response Status C ACCEPT.

Cl 34 SC 34.1.2 P 34.2 L 51 # 1011  
 David Law 3Com  
 Comment Type E Comment Status A 'CLause 39' should read 'Clause 39' (The 'L' should be lower case).  
 SuggestedRemedy See above  
 Proposed Response Response Status C ACCEPT.

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**Cl 34**    **SC 34.1.2**                      **P34.2**                      **L51/52**                      # **296**  
 Colin Mick                                      The Mick Group  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Change "Clausue" to "Clause"  
**SuggestedRemedy**  
 See above  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

**Cl 34**    **SC 34.1.2**                      **P34.3**                      **L1**                      # **30**  
 Sailesh K. Rao                                      Level One Communica  
**Comment Type**    **E**                      **Comment Status**    **A**  
 The 1000BASE-T PHY (clause 40) uses four pairs of balanced cabling with a PCS that is unique.?  
**SuggestedRemedy**  
 Change to  
 The 1000BASE-T PHY (clause 40) uses four pairs of balanced Category-5 twisted pair cabling.  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT. See comment number 228.

**Cl 34**    **SC 34.1.2**                      **P34.3**                      **L1**                      # **1254**  
 Geoff Thompson                                      Bay Networks, Inc.  
**Comment Type**    **E**                      **Comment Status**    **A**  
 The last line in this sub-clause is sort of an orphan  
**SuggestedRemedy**  
 Pump up the text to say something like 1000BASE-T is a separate approved project. Clause 40 has been reserved for 100BASE-T or better yet why not put it in the table and just note that it is under development as a separate project. That way the table size won't change and shuffle pagination when 1000BASE-T is approved.  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

In response to comment 30, the line has been changed to read: "The 1000BASE-T PHY (clause 40) uses four pairs of balanced copper cabling. Clause 40 defines its own PCS, which does not use 8B10B coding."  
 P34.2/L52 append new row to the table, which shall read:  
 "1000BASE-T | Advanced multilevel signaling over four pairs of balanced copper cabling | Clause 40 (under development) "

**Cl 34**    **SC 34.1.2**                      **P34.3**                      **L1**                      # **228**  
 Colin Mick                                      The Mick Group  
**Comment Type**    **TR**                      **Comment Status**    **A**  
 Should be "fours pairs of Category 5 balanced cabling"  
**SuggestedRemedy**  
 See above  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT. This line will be changed to read "The 1000BASE-T PHY (clause 40) uses four pairs of Category 5 balanced copper cabling. Clause 40 defines its own PCS, which does not use 8B10B coding."

**Cl 34**    **SC 34.1.2**                      **P34.3**                      **L51**                      # **226**  
 Tom Mathey                                      Baynetworks  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Typing error: letter L is upper case; should be lower case  
**SuggestedRemedy**  
 Change line 51 from "CLause" to "Clause". Editors choice for use of upper/lower case for c of Clausein lines 47, 49, and 51.  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT. P34.2/L51 change "CLause" to "Clause"

**Cl 34**    **SC 34.1.2-34.1.5**                      **P34.3**                      **L1-22**                      # **886**  
 Rich Seifert                                      Networks & Communic  
**Comment Type**    **E**                      **Comment Status**    **A**  
**SuggestedRemedy**  
 Line 1: Change "that is unique" to "different from 1000BASE-X". (We don't yet know how "unique" the PCS will be.)  
 Line 7: Change to "Only one repeater is permitted within a given collision domain."  
 Lines 12, 20: Change "end of the link" to "end of a link segment"  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.

In response to comment 30, the line at the top of page 34.3 has been changed to read: "The 1000BASE-T PHY (clause 40) uses four pairs of balanced copper cabling. Clause 40 defines its own PCS, which does not use 8B10B coding."  
 P34.3/L7 Change "One repeater.." to "Only one repeater.."  
 P34.3/L12 Change "end of the link" to "end of a link segment"  
 P34.3/L20 Change "end of the link" to "end of a link segment"

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**Cl 34**      **SC 34.1.4**                      **P34.3**              **L 10**              # **223**  
 Tom Mathey                                      Baynetworks

*Comment Type*    **E**                      *Comment Status*    **R**  
 Clause 34.1.4 with title "34.1.4 Auto-Negotiation" is same title as that used by "34.1.5 Auto-Negotiation"

*SuggestedRemedy*  
 Change line 10 from "34.1.4 Auto-Negotiation" to "34.1.4 Auto-Negotiation, type 1000BASE-X".  
 Change line 18 from "34.1.5 Auto-Negotiation" to "34.1.5 Auto-Negotiation, type 1000BASE-T".

*Proposed Response*                      *Response Status*    **C**  
 REJECT. Comment 85 implements a different, and more comprehensive solution to this general naming problem.  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**      **SC 34.1.4**                      **P34.3**              **L 11**              # **947**  
 Ariel Hendel                                      Sun

*Comment Type*    **E**                      *Comment Status*    **R**  
 Both subclauses 34.1.4 and 34.1.5 have the same name (Auto-Negotiation)

*SuggestedRemedy*  
 Rename 34.1.4 : 1000BASE-X Auto-Negotiation and  
 34.1.5: 1000BASE-T Auto-Negotiation

*Proposed Response*                      *Response Status*    **C**  
 REJECT. Comment 85 implements a different, and more comprehensive solution to this general naming problem.  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**      **SC 34.1.4**                      **P34.3**              **L 14**              # **382**  
 Scott Carter                                      IBM

*Comment Type*    **E**                      *Comment Status*    **R**  
 Fix capitalization

*SuggestedRemedy*  
 uncapitalize Clause

*Proposed Response*                      *Response Status*    **C**  
 REJECT.

**Cl 34**      **SC 34.1.4**                      **P34.3**              **L 17**              # **1256**  
 Geoff Thompson                                      Bay Networks, Inc.

*Comment Type*    **E**                      *Comment Status*    **R**  
 Sub-clause has non-unique heading

*SuggestedRemedy*  
 Change sub-clause title to "Auto-Negotiation for 1000BASE-T"

*Proposed Response*                      *Response Status*    **C**  
 REJECT. Comment 85 implements a different, and more comprehensive solution to this general naming problem.  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**      **SC 34.1.4**                      **P34.3**              **L 9**              # **85**  
 Mark Gerhold                                      Unisys

*Comment Type*    **E**                      *Comment Status*    **R**  
 Clause 37 should have a different name from clause 28. It's confusing that they are both called Auto-negotiation.

Also, The descriptions of 34.1.4 and 34.1.5. are almost the same.

Also, Clause 28 doesn't seem to include any changes for Gigabit Ethernet, so why reference 34.1.5 at all? (If there are changes, why aren't they included as voting material? )

*SuggestedRemedy*  
 Remove 34.1.5. If it is deemed necessary to keep 34.1.5, rename 34.1.4 Link Code Word Auto-negotiation and 34.1.5 Link Pulse Autonegotiation?

*Proposed Response*                      *Response Status*    **C**  
 REJECT. The committee has already debated and approved the AutoNegotiation name. The purpose of sections 34.1.4 and 34.1.5 is to highlight and explain precisely the differences between clause 37 and clause 28. It is noted that these sections do not reference the exact titles of clauses 37 and 28. Change section headings to read:  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

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**Cl 34**    **SC 34.1.4**    **P 34.3**    **L 9**    # **1255**  
 Geoff Thompson    Bay Networks, Inc.  
**Comment Type E**    **Comment Status R**  
 Sub-clause has non-unique heading  
**SuggestedRemedy**  
 Change sub-clause title to "Auto-Negotiation for 1000BASE-X"  
**Proposed Response**    **Response Status C**  
 REJECT. Comment 85 implements a different, and more comprehensive solution to this general naming problem.  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**    **SC 34.1.4 and 34.1.5**    **P 34.3**    **L 10 and 18**    # **694**  
 Pat Thaler    Hewlett-Packard  
**Comment Type E**    **Comment Status A**  
 It isn't right to have two subclauses with the same name.  
**SuggestedRemedy**  
 Use "1000BASE-X Auto-Negotiation" and "1000BASE-T Auto-Negotiation".  
**Proposed Response**    **Response Status C**  
 ACCEPT IN PRINCIPLE. In response to comment 85, these section headings will be changed to reference the exact titles of clauses 37 and 28, respectively:  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**    **SC 34.1.4 and 34.1.5**    **P 34.3**    **L 9 - 22**    # **1265**  
 Alan Flatman    LAN Technologies  
**Comment Type E**    **Comment Status A**  
 2 subclauses with same title  
**SuggestedRemedy**  
 Either qualify titles to reflect differences in content or merge 2 subclauses.  
**Proposed Response**    **Response Status C**  
 ACCEPT IN PRINCIPLE. In response to comment 85, these section headings will be changed to reference the exact titles of clauses 37 and 28, respectively:  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**    **SC 34.1.4, 34.1.5**    **P 34.3**    **L 9, 17**    # **557**  
 Shimon Muller    Sun Microsystems  
**Comment Type E**    **Comment Status A**  
 The two sub-clauses have the same title. For the sake of clarity it would be nice to differentiate between the two.  
**SuggestedRemedy**  
 Rename 34.1.4 to be "Auto-Negotiation over Fiber Links".  
 Rename 34.1.5 to be "Auto-Negotiation over Copper Links".  
**Proposed Response**    **Response Status C**  
 ACCEPT IN PRINCIPLE. The committee has already debated and approved the AutoNegotiation name. The purpose of sections 34.1.4 and 34.1.5 is to highlight and explain precisely the differences between clause 37 and clause 28. It is noted that these sections do not reference the exact titles of clauses 37 and 28. Change section headings to read:  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**    **SC 34.1.4, 34.1.5**    **P 34.3**    **L 9-22**    # **887**  
 Rich Seifert    Networks & Communic  
**Comment Type E**    **Comment Status A**  
 These two subclauses can be combined. Alternatively, they should be titled, "Auto-Negotiation for 1000BASE-X" and "Auto-Negotiation for 1000BASE-T"  
**SuggestedRemedy**  
**Proposed Response**    **Response Status C**  
 ACCEPT IN PRINCIPLE. In response to comment 85, these section headings will be changed to reference the exact titles of clauses 37 and 28, respectively:  
 34.1.4 Auto-Negotiation function, type 1000BASE-X  
 34.1.5 Physical Layer line signaling for 10 Mb/s and 100 Mb/s Auto-Negotiation on twisted pair

**Cl 34**    **SC 34.1.5**    **P 34.3**    **L 17**    # **383**  
 Scott Carter    IBM  
**Comment Type E**    **Comment Status A**  
 Title heading for sections 34.1.4 and 34.1.5 are the same. One of them should be changed or else the sections should be merged.  
**SuggestedRemedy**  
 change one or both section titles or merge sections  
**Proposed Response**    **Response Status C**  
 ACCEPT. Use full titles from clauses 37 and 28, respectively (see comment 887)



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Cl 34 SC 34.1.5 P34.3 L 19 # 328  
 Scott Carter IBM  
 Comment Type E Comment Status A global  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 ACCEPT. The editor will fix this according to the appropriate 802.3z conventions.

Cl 34 SC 34.1.5 P34.3 L 19 # 225  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A global  
 Use of upper case for "(Clause 28)" should be lower case to match similar uses in 100BASE clauses.  
 SuggestedRemedy  
 Change line 19 from "(Clause 28)" to "(clause 28)".  
 Perform a global search of this clause and change, except when used at start of a sentence or other proper noun, all usage of upper case to lower case  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.1.5 P34.3 L 19 # 1192  
 David Law 3Com  
 Comment Type E Comment Status A  
 Add a note that 1000BASE-T is future work. Also add this note to 34.1.2, page 34.3, line 1.  
 SuggestedRemedy  
 Change text '... is used by 1000BASE-T devices ...' to read '... is used by 1000BASE-T[a] devices ...' (where [a] is a superscript) and add the text '[a]Clause 40 is reserved for the future specifications of 1000BASE-T.' (where again [a] is a superscript)  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE. In response to comment 1254, we will append a new row to the table at the bottom of page 34.2, which shall read:  
 "1000BASE-T | Four pairs of balanced copper cabling | Clause 40 (under development) "

Cl 34 SC 34.1.5 P34.3 L 20 # 109  
 Alan Albrecht Hewlett-Packard  
 Comment Type E Comment Status A  
 Typo: 'th'  
 SuggestedRemedy  
 replace with 'the'  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.1.5 P34.3 L 20 # 224  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typing error: letter e is missing from word "the" in sentence "end of th link,".  
 SuggestedRemedy  
 Change line 19 from "end of th link," to "end of the link,".  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.1.5 P34.3 L 20 # 946  
 Ariel Hendel Sun  
 Comment Type E Comment Status A  
 Typo : "th link"  
 SuggestedRemedy  
 "the link"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.1.5 P34.3 L 20 # 381  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 "the" misspelled  
 SuggestedRemedy  
 change "th" to "the"  
 Proposed Response Response Status C  
 ACCEPT.

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Cl 34 SC 34.1.5 P34.3 L21 # 29  
 Sailesh K. Rao Level One Communica  
 Comment Type E Comment Status A  
 at the other end of th link  
 SuggestedRemedy  
 Change to  
 at the other end of the link  
 Proposed Response Response Status C  
 Accept

Cl 34 SC 34.1.5 P34.3 L21 # 477  
 Alan Albrecht Hewlett-Packard  
 Comment Type E Comment Status A  
 Typo: th  
 SuggestedRemedy  
 Change to "the"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.1.6 P34.3 L28 # 948  
 Ariel Hendel Sun  
 Comment Type T Comment Status A  
 I fail to see what the speed of the network management station  
 has to do with this section.  
 SuggestedRemedy  
 Replace "existing 10 Mb/s-only network management stations"  
 with "existing network management stations"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.2 P34.3 L31-33 # 888  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status R  
 SuggestedRemedy  
 Change the first paragraph to "Many functions are specified using a State  
 Machine formalization, plus a textual description. In all cases, state  
 machine diagrams take precedence over text."  
 Proposed Response Response Status C  
 REJECT. The text in 34.2 is lifted almost verbatim from the approved IEEE standard  
 802.3u.

Cl 34 SC 34.3 P34.3 L41 # 1013  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest that '... clauses 34 through 42 shall ...' should read '...  
 clause 35 through 41 shall ...' as neither 34 nor 42 contain nor  
 require PICS.  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 ACCEPT.

Cl 34 SC 34.4 P34.3 L50 # 1257  
 Geoff Thompson Bay Networks, Inc.  
 Comment Type E Comment Status A  
 This area needs some work. First of all Gigabit Ethernet would not go into  
 table G1 at this point it would go into Table G2 as an "emerging  
 application" whihc is not to say that it shouldn't go into G1 nor that we  
 shouldn't provide the text for that.  
 Specifically the designation on line 53 should be:  
 ISO/IEC 8802-3/PDAM 26  
 as well as on Line 1 of page 34.4  
 SuggestedRemedy  
 Have Geoff work with editor. Cross check against new CENELEC annex being  
 generated by Alan Flatman  
 Proposed Response Response Status C  
 ACCEPT.  
 P34.3/L53 change "DAD 2" to read "PDAM 26"  
 P34.4/L1 change "DAD 2" to read "PDAM 26"

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Cl 34 SC 34.4 P34.3 L53 # 1266  
Alan Flatman LAN Technologies

Comment Type E Comment Status A

I think DAD # is twenty-something, not 2

SuggestedRemedy

Insert correct DAD # (also for item b)

Proposed Response Response Status C

As a result of comment 1257, the references have been changed:  
P34.3/L53 change "DAD 2" to read "PDAM 26"  
P34.4/L1 change "DAD 2" to read "PDAM 26"

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Cl 34 SC 34.4 P34.4 L22 # 1225  
Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A

I have trouble with the table entries under "Fibre per 5, 7, and 8" being called out as "N" for normative when we do not support all of the topologies that are called out in 11801.

SuggestedRemedy

Change to Informative, i.e.:  
| |  
| | |

Proposed Response Response Status C

ACCEPT.  
P34.4/L22 Change entries in second and third columns from "N" to "I"  
P34.4/L24 Change entries in second, third and fourth columns from "N" to "I"

---

Cl 34 SC 34.4 P34.4 L22 # 1230  
Geoff Thompson Bay Networks, Inc.

Comment Type T Comment Status A

Shouldn't the 50 micron, building backbone LX entry be N if we can make 550 meters?

SuggestedRemedy

Change to "N" if appropriate

Proposed Response Response Status C

ACCEPT.  
  
P34.4/L22 and L24 change entry for column "Building backbone 50/125um MMF" from "I" to "N"

---

Cl 34 SC 34.4 P34.4 L22 to 25 # 695  
Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

Why is the indication for building backbone 50 u fiber I?  
Shouldn't it be N as we make the distance on 50 u?

SuggestedRemedy

Proposed Response Response Status C

ACCEPT.  
  
P34.4/L22 and L24 change entry for column "Building backbone 50/125um MMF" from "I" to "N"

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Cl 35 SC P L # 1151  
 Jim Mangin Bay Networks

Comment Type E Comment Status R  
 When referncing the TXD or RXD signals should they be called signals or bundle as referenced elsewhere in clause 22 and in clause 35 itself. Seems inconsistent to me.

SuggestedRemedy  
 Provide either signals or bundle.

Proposed Response Response Status C  
 REJECT. Usage is RXD bundle or RXD<7:0> signals.

Cl 35 SC P22.1 L 42 # 604  
 Robert Curtis

Comment Type E Comment Status R  
 What if a GMII is not implemented? Do you still implement the extended basic register?

SuggestedRemedy  
 Not sure the GMII will be a basic interface for GbE.

Proposed Response Response Status C  
 Reject.  
 The document is written such that the MII/GMII management registers, or their equivalents, must be provided in any compliant implementation. Clause 37 AutoNegotiation and Clause 30 Layer Management make use of the resources provided in the MII/GMII management registers.

Implementers are free to provide the required functionality through other means.

Cl 35 SC 35.1 P35.2 L 1-30 # 558  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status R  
 The PHY on Figure 35-1 should include an AUTONEG block, which is mandatory for 1000Mb/s operation.

SuggestedRemedy  
 \* Add an "AUTONEG" block to the PHY on Figure 35-1.  
 \* Add an additional note that reads as follows:  
 "AUTONEG is mandatory for 1000Mb/s systems, and is optional otherwise".

Proposed Response Response Status C  
 Reject. The block was removed per Task Force ballot. Clause 37 auto-negotiation and clause 28 autonegotiation cannot be represented the same. For example, 37 uses the PCS layer while 28 uses FLP which logically resides below the PCS layer. Since GMII is generic to both AN methods, leaving the function off this figure is best.

Cl 35 SC 35.1 P35.2 L 25 # 16  
 Kevin Daines Packet Engines

Comment Type E Comment Status A Global Keven Please read.  
 The picture in this clause defines PHY as physical layer entity. This is the only clause in .z that defines it this way. I checked .u and found that clause 22 also has "entity". Clause 1.4 Definitions says entity.

SuggestedRemedy  
 My goal is to make the PHY acronym consistent ( assuming that makes sense ).

It would easier to edit the layer stack in 22 and 35 and the defintion in 1.4 to read "device", simply because I found many more references to "device".

Proposed Response Response Status C  
 Accept. Edit figures 22-1, 35-1, and correct defintion of PHY in 1.4

Response revised 9/30/97.

Check all instances of PHY Entity and change to PHY device.

Cl 35 SC 35.1 P35.2 L 28 # 57  
 Dalit Sagi GEC Plessey

Comment Type E Comment Status A minor editorial  
 There are too many "and"s in this line

SuggestedRemedy  
 "GMII is optional for 10Mb/s DTEs, 100Mb/s and 1000 Mb/s systems and is not..."  
 i.e. take the first "and for" away

Proposed Response Response Status C  
 Accept.

Cl 35 SC 35.1 P35.2 L 43 # 637  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A  
 The GMII electrical interface has been tailored to be compatible with both common CMOS ASIC processes and some bipolar processes, but there is no mention of the bipolar compatibility.

SuggestedRemedy  
 Change line 43 to read  
 "It uses signal levels compatible with common CMOS digital ASIC processes and some bipolar processes."

Proposed Response Response Status C  
 ACCEPT.

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**Cl 35**      **SC 35.1**                      **P 35.2**      **L 43**                      # **728**  
 Bill Quackenbush                      cisco Systems, Inc.

*Comment Type*    **E**                      *Comment Status*    **R**

The GMII electrical interface has been tailored to be compatible with both common CMOS ASIC processes and some bipolar processes, but there is no mention of the bipolar compatibility.

*SuggestedRemedy*  
 Change line 43 to read  
 "It uses signal levels compatible with common CMOS digital ASIC processes and some bipolar processes."

*Proposed Response*                      *Response Status*    **Z**  
 Withdrawn by editor. Identical to 637.

**Cl 35**      **SC 35.1.1**                      **P 35.2**      **L 48-50**                      # **889**  
 Rich Seifert                                      Networks & Communic

*Comment Type*    **E**                      *Comment Status*    **A**

*SuggestedRemedy*  
 In (b), change "serviced with" to "served by". Also add the word "signals" to the end of the sentence.

*Proposed Response*                      *Response Status*    **C**  
 ACCEPT.

**Cl 35**      **SC 35.1.1**                      **P 35.3**      **L 1**                                      # **890**  
 Rich Seifert                                      Networks & Communic

*Comment Type*    **E**                      *Comment Status*    **A**

The whole comprises its parts. The parts compose the whole.

*SuggestedRemedy*  
 Change "comprised" to "composes". Also 36.1.7.

*Proposed Response*                      *Response Status*    **C**  
 ACCEPT. "composed".

**Cl 35**      **SC 35.1.2**                      **P 35.3**      **L 19**                                      # **601**  
 Kosilek Josef                                      Siemens AG

*Comment Type*    **T**                      *Comment Status*    **A**

The listed type of copper media is confuse. The ISO/IEC 11801:1995 defines a balanced cable as: "a cable consisting of one or more metallic symmetrical cable elements". According to this definition, the twisted -pair cable and the twinax-cable are members of the same big family.

*SuggestedRemedy*  
 Use for this sentence the following wording:  
 "This interface is used to provide media independence for various PHY types using unshielded or shielded balanced cabling, single mode and multimode fiber optic cabling, and .....

*Proposed Response*                      *Response Status*    **C**

Accept in principle. This is a particular sentence that has generated comments on every draft. Universal agreement on a two or three word description of each of the PHY media types has eluded the editor and the task group. Recommend removing allusions to the known PHY types and replacing with the generic: "This interface is used to provide media independence for various PHY types using different copper and optical cabling types, so that identical media access controllers may be used with any of the defined PHY media."

**Cl 35**      **SC 35.1.2**                      **P 35.3**      **L 19 to 20**                      # **700**  
 Pat Thaler                                              Hewlett-Packard

*Comment Type*    **T**                      *Comment Status*    **A**

Unshielded twisted-pair wiring is a type of balanced wiring and the list therefore seems somewhat redundant. Also, I expect 1000BASE-T to run on both shielded and unshielded Cat 5 cables. 11801 uses the term balanced wiring rather than twisted-pair.

*SuggestedRemedy*  
 Change to "... using four-pair balanced wiring, shielded two-pair balanced wiring, single mode ...."

*Proposed Response*                      *Response Status*    **C**  
 Accept in principle. See comment #601.

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Cl 35 SC 35.1.2 b P 35.3 L 18 # 54

Dalit Sagi GEC Plessey

Comment Type E Comment Status A daughterboard

This description is for exposed GMII and I think we do not want to have this option.

SuggestedRemedy

Take b away...

Proposed Response Response Status C

Accept in principle. The option is allowed, see 35.4. It is specified as chip to chip but motherboard to daughterboard is allowed. Edit to read:

This clause applies to the interface between the MAC and PHYs, and between PHYs and Station Management entities. The implementation of the interface is primarily intended as a chip-to chip (integrated circuit to integrated circuit) interface implemented with traces on a printed circuit board; but a motherboard to daughterboard interface between two or more printed circuit boards is not precluded.

Cl 35 SC 35.1.2 b P 35.3 L 28 # 55

Dalit Sagi GEC Plessey

Comment Type E Comment Status A daughterboard

This description is for exposed GMII and I think we do not want to have this option.

SuggestedRemedy

Take b away...

Proposed Response Response Status C

Accept in principle. Though not identical, appears to be a duplicate of #54.

Cl 35 SC 35.1.3 P 35.3 L 30 to 33 # 696

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

There needs to be a similar statement about what speeds a MAC/reconciliation sublayer GMII must support to be compliant. I suggest that it shall support 1000 Mb/s and may support additional speeds.

SuggestedRemedy

Add a paragraph: " Reconciliation sublayers that provide a GMII shall support 1000 Mb/s, and may support additional rates."

Proposed Response Response Status C

Accept. Requires an addition to the PICs in 35.5.2.3 "G1, Reconciliation sublayer support of 1000 Mp/s operation, 35.1.3, Yes [ ]".

Cl 35 SC 35.1.3 P 35.3 L 30 to 33 # 696

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

By this statement, all PHYs with MIIs have GMII since 1000 Mb/s support is not required of a GMII. I think that this will be confusing. An interface supporting only 10 and 100 Mb/s is just an MII. A GMII should support 1000 Mb/s and optionally 10 and/or 100 Mb/s.

SuggestedRemedy

Replace the paragraph with: "PHYs that provide a GMII shall support 1000 Mb/s, and may support additional rates. PHYs must report the rates they are capable of operating at via the management interface, as described in 22.2.4."

Proposed Response Response Status C

Accept. Requires an addition to the PICs in 35.5.2.3 "G2, PHY support of GMII, 35.1.3, Yes [ ]".

Cl 35 SC 35.2 P 35.3 L 51 to 53 # 698

Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

These sentences are both of the form "The definition of signals ... is defined in ...." I think the signals rather than their definition are defined.

SuggestedRemedy

Either delete "defined" or delete "definition of" and change "is defined" to "are defined". I prefer the latter.

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.1 P 35.4 L 10-30 # 559

Shimon Muller Sun Microsystems

Comment Type T Comment Status A

Based on 35.2.1.2, Figure 35-2 should show an arrow that comes from RX\_DV and enters the block that performs the mapping of PLS\_DATA.indicate. Based on 35.2.1.7, Figure 35-2 should show arrows that come from RX\_DV, RX\_ER and RXD<7:0>, and enter the block that performs the mapping of PLS\_DATA\_VALID.indicate.

SuggestedRemedy

Add the abovementioned arrows.

Proposed Response Response Status C

Accept in principle. Merge PLS\_DATA.indicate and PLS\_DATA\_VALID.indicate blocks into one block.

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**Cl 35**    **SC 35.2.1**                      **P 35.4**        **L 3**                      # **891**  
 Rich Seifert                                      Networks & Communic

**Comment Type**    **TR**            **Comment Status**    **A**  
 You can't have a conformance requirement on an abstract service interface.

**SuggestedRemedy**  
 Eliminate the "shall" in this sentence.

**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.  
 Also delete PICs item PL1

**Cl 35**    **SC 35.2.1**                      **P 35.4**        **L 5**                      # **699**  
 Pat Thaler                                      Hewlett-Packard

**Comment Type**    **E**                      **Comment Status**    **A**  
 We don't usually self-reference a clause by number and I don't see what it accomplishes.

**SuggestedRemedy**  
 Delete "in 35.2.1".

**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

**Cl 35**    **SC 35.2.1.1.2**                      **P 35.4**        **L 43-51**                      # **560**  
 Shimon Muller                                      Sun Microsystems

**Comment Type**    **T**                      **Comment Status**    **A**  
 The term DATA\_COMPLETE as one of the values for the OUTPUT\_UNIT parameter is not appropriate in the context of the GMII. Its purpose is to indicate the completion of a transmission event, which may have included data and/or extension bits. Also, the description of this value has been omitted.

**SuggestedRemedy**  
 \* On line 43 replace "DATA\_COMPLETE" with "TRANSMIT\_COMPLETE".  
 \* Add the following sentence to the second paragraph:  
 "The value TRANSMIT\_COMPLETE is conveyed by the the de-assertion of either TX\_EN or TX\_ER at the end of a MAC's transmission".  
 \* In Table 35-1 replace "DATA\_COMPLETE" with "TRANSMIT\_COMPLETE".

**Proposed Response**                      **Response Status**    **C**  
 Accept.  
 Search/replace DATA\_COMPLETE/TRANSMIT\_COMPLETE in clause 35

**Cl 35**    **SC 35.2.1.1.3**                      **P 35.5**        **L 6**                      # **561**  
 Shimon Muller                                      Sun Microsystems

**Comment Type**    **E**                      **Comment Status**    **R**  
 The last portion of this sentence is confusing.

**SuggestedRemedy**  
 Delete "the equivalent of eight bits" from the sentence.

**Proposed Response**                      **Response Status**    **C**  
 Reject. Removing the phrase makes timing ambiguous for carrier extension. A single GMII clock will result in eight indications for either data or Carrier Extend, hence the eight data bit equivalents.

**Cl 35**    **SC 35.2.1.2 and Table 35-2**    **P 35.5 and 35.**    **L**                      # **702**  
 Pat Thaler                                      Hewlett-Packard

**Comment Type**    **TR**                      **Comment Status**    **A**  
 There is a discrepancy between the semantics of the PLS\_DATA.indicate primitive described in 35.2.1.2 and the values for it shown in Table 35-2. The table shows EXTEND\_ERROR for Carrier Extend Error, but only values of ONE, ZERO, and EXTEND defined in the semantics. Further, the MAC has no ability to process an EXTEND\_ERROR value and relies on getting ONE or ZERO during a carrier extend error.

Moving down the table, we see "No applicable parameter" during "Data reception error." However, the MAC must get ZERO or ONE values during such an error so as to have an accurate frame size. Otherwise, for instance, an error in a minimum size frame would cause the MAC to receive fewer than minFrameSize octets and discard the frame as a collision fragment rather than a CRC error. This will cause inaccurate network statistics.

**SuggestedRemedy**  
 On page 35.13 line 31, replace "EXTEND\_ERROR" with "ZERO, ONE" and, on line 36, replace "No applicable parameter" with "ZERO, ONE (eight bits)". A note to the table referencing 35.2.1.5 could also be added, though it isn't absolutely necessary as that section is referenced in the text that references the table.

**Proposed Response**                      **Response Status**    **C**  
 Accept. No note added. Also see comments #567, 313.

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Cl 35 SC 35.2.1.2.2 P 35.5 L 19 & 25 # 56  
 Dalit Sagi GEC Plessey

Comment Type E Comment Status R  
 EXTEND\_ERROR does not appear in here for RCV.

SuggestedRemedy  
 add in line 19 " EXTERND\_ERROR" and in lne 25 "and EXTERND\_ERROR"

Proposed Response Response Status C  
 Reject EXTEND-ERROR should not appear in the indicate primitive. See 4.2.9 and 35.2.1.5.

Cl 35 SC 35.2.1.2.3 P 35.5 L 32 # 562  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 RXD<7:0> conveys both data and control octets.

SuggestedRemedy  
 Delete "of data" from the sentence.

Proposed Response Response Status C  
 Accept.

Cl 35 SC 35.2.1.5 P 35.6 L 31 # 892  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy  
 Change "good" to "valid".

Proposed Response Response Status C  
 ACCEPT.

Cl 35 SC 35.2.1.5 P 35.6 L 35.6 # 701  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A  
 We modified the MAC BitReceiver process (pg. 4.26 lines 26-27) and function ReceiveDataDecap (pg. 4.24 lines 21-30) so that a transition from extend back to data during the slot time will cause the extended frame to be rejected and be logged as a CRC error. Therefore, the Reconciliation layer does not need to force a CRC error for the extended frame. This is good, as the Reconciliation sublayer really shouldn't have to have knowledge of slot time.

SuggestedRemedy  
 Replace the second sentence of the second paragraph with:  
 When a Carrier Extend Error is received during the extension the Reconciliation sublayer shall send PLS\_DATA.indicate values of ONE or ZERO and ensure that MAC will detect a FrameCheckError in the sequence. If this occurs while carrier is being extended for a single extended frame or the first frame of a burst, the MAC will BitReceiver process ensures that that frame is interpreted as having a CRC error.

Proposed Response Response Status C  
 ACCEPT. Replace second sentence of second paragraph with:

When a Carrier Extend Error is received during the extension the Reconciliation sublayer shall send PLS\_DATA.indicate values of ONE or ZERO and ensure that MAC will detect a FrameCheckError in the sequence.

Cl 35 SC 35.2.1.6 P 35.6 L 48 # 563  
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A  
 The first sentence of the second paragraph in this sub-clause is not necessary and may be misleading. There are plenty of cases where a DTE could make use of TX\_ER.

SuggestedRemedy  
 Delete the first sentence of the second paragraph.

Proposed Response Response Status C  
 Accept is principle. Reword first sentence of second paragraph to read:

"This capability has additional use within a repeater."



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Cl 35 SC 35.2.2.1 P 35.7 L 20-22 # 893  
 Rich Seifert Networks & Communic

Comment Type T Comment Status R

This is just one (of dozens) of places within Clause 35 where an unnecessary cross-reference is made to Clause 22. This is addressed in my earlier comment on Clause 22. In this particular case, why is there a subclause describing a signal that is not used for 1000 Mb/s, in the clause on 1000 Mb/s GMII?

SuggestedRemedy

See earlier TR comment in Clause 22.

Proposed Response Response Status C

REJECT. see #879.

The signal TX\_CLK is included in clause 35 to show the full set of signals which are necessary to implement a GMII which also supports the MII. In addition, the inclusion of TX\_CLK demonstrates that GTX\_CLK is a distinct and different clock signal.

Cl 35 SC 35.2.2.10 P 35.13 L 45-46 # 739  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R

The driver of CRS is inferred, but not explicitly stated.

SuggestedRemedy

Change the first sentence of the paragraph to read "CRS is driven by the PHY and shall be asserted when either the transmit or receive media is non-idle."

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of number 648.

Cl 35 SC 35.2.2.10 P 35.13 L 45-46 # 648  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status A

The driver of CRS is inferred, but not explicitly stated.

SuggestedRemedy

Change the first sentence of the paragraph to read "CRS is driven by the PHY and shall be asserted when either the transmit or receive media is non-idle."

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.2.10 P 35.13 L 51 # 766  
 Gerard Nadeau UNH InterOperability L

Comment Type E Comment Status A

Missing PICS. The statement below contains shall statements that are not covered in the PICS proforma tables.

"When used in a repeater, the PHY shall assert CRS when the receive medium is non-idle and shall deassert CRS when the receive medium is idle."

SuggestedRemedy

Add PICS to table 35.5.3.2 GMII signal functional specifications:

Item, Feature, Subclause, Status, Support, Value/Comment

SF?x, CRS assertion, 35.2.2.10, M, Yes [ ], By PHY when receive in a repeater, medium is NON-IDLE

SF?x, CRS de-assertion, 35.2.2.10, M, Yes [ ], By PHY when receive in a repeater, medium is IDLE

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.2.10 P 35.15 L 8 # 309  
 Tom Mathey Baynetworks

Comment Type E Comment Status R hex values

In Figure 35.14, line 7 shows text "JAM" for TXD<7:0> during collision in carrier extension. Table 35-1 seems to use hex value 1F for this condition.

SuggestedRemedy

Replace text " JAM " with value "1F".

Proposed Response Response Status C

Reject. This and similar illustration items have gone back and forth between the logical names and encoded values. When encoded values were introduced, more and more fields were requested to be changed from logical names to encodings, thus destroying much of the value of the illustrations. After discussion in committee, the logical name approach won out with binary only used where space requires.

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Cl 35 SC 35.2.2.10, 35.2.2.11 P 35.13 L 45-49 # 894  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A technical

Qualify the behavior with half-duplex mode, even though there is a (somewhat obscure) statement about unspecified behavior in full duplex mode.

SuggestedRemedy

Change to, "In half duplex mode, CRS shall be assertedŠ". In the second paragraph, change to "Except when used in a repeater, a PHY in half duplex mode shall assert Š". Similar changes are needed in 35.2.2.11 (Collision).

Proposed Response Response Status C

NEEDS WORK. Remedy is not complete.

Response revised 10/1/97  
 Accept.

Implement suggested remedy as written.

Cl 35 SC 35.2.2.11 P 35.14 L 41 # 740  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R

The driver of COL is inferred, but not explicitly stated.

SuggestedRemedy

Change the paragraph to read "COL is driven by the PHY. COL shall be asserted upon the detection of a collision on the medium and shall remain asserted while the collision condition persists."

Proposed Response Response Status Z

Withdrawn by editor. This is a duplicate of comment number 649.

Cl 35 SC 35.2.2.11 P 35.14 L 41 # 649  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status A

The driver of COL is inferred, but not explicitly stated.

SuggestedRemedy

Change the paragraph to read "COL is driven by the PHY. COL shall be asserted upon the detection of a collision on the medium and shall remain asserted while the collision condition persists."

Proposed Response Response Status C

Cl 35 SC 35.2.2.2, 35.2.2.3 P 35.7 L 25-42 # 564  
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

As claimed in the Overview section of clause 35, the GMII "is capable of supporting 10Mb/s, 100Mb/s and 1000Mb/s data rates". Therefore, this should be reflected in the specification of the GTX\_CLK and RX\_CLK signals.

SuggestedRemedy

All references to 1000Mb/s and 125MHz should be modified to address all three speeds of operation. See 22.2.2.1 and 22.2.2.2 for the precise required text.

Proposed Response Response Status C

Reject. As stated in 35.1.3, 10 and 100 Mb/s operation is specified in clause 22. GTX\_CLK is not used at 10 or 100 Mb/s, so recommended modifications to this section would be wrong.

Response revised 9/30/97.

Based on additional input from commenter, make the following changes.

Modify bullet a) in 35.1 to read:  
 a) it is capable of supporting 1000 Mb/s operation.

Modify bullet a) in 35.1.1 to read:  
 a) The GMII is based on the MII defined in Clause 22.

Modify bullet d) in 35.1.1 to read:  
 d) The GMII uses the MII management interface composed of two signals which provides access to management parameters and services specified in Clause 22.

Modify subclause heading for 35.1.3 to be:

35.1.3 Rate of operation

Modify first paragraph of 35.1.3 to read:

The GMII can support only 1000 Mb/s operation and is defined within this clause. Operation at 10 Mb/s and 100 Mb/s is supported by the MII defined in Clause 22.

Cl 35 SC 35.2.2.3 P 35.7 L 42 # 229  
 Colin Mick The Mick Group

Comment Type E Comment Status A typo

Change "signal.," to "signal,"

SuggestedRemedy

See above

Proposed Response Response Status C

Accept, duplicate of comment #17.

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Cl 35 SC 35.2.2.3 P 35.7 L 42 # 655  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status A  
 As written, the sentence is at best unclear as to whether 125 MHz is the RX\_CLK frequency, one eighth of the data rate of the received signal or the data rate of the received signal.  
 SuggestedRemedy  
 Follow the example of clause 35.2.2.2 and delete "which is nominally 125 MHz".  
 Proposed Response Response Status C  
 ACCEPT.

Cl 35 SC 35.2.2.3 P 35.7 L 42 # 746  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status R  
 As written, the sentence is at best unclear as to whether 125 MHz is the RX\_CLK frequency, one eighth of the data rate of the received signal or the data rate of the received signal.  
 SuggestedRemedy  
 Follow the example of clause 35.2.2.2 and delete "which is nominally 125 MHz".  
 Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of # 655.

Cl 35 SC 35.2.2.3 P 35.7 L 42 # 17  
 Kevin Daines Packet Engines  
 Comment Type E Comment Status A typo  
 Punctuation error  
 SuggestedRemedy  
 Remove "." to read "... the received signal, which is ..."  
 Proposed Response Response Status C  
 Accept.

Cl 35 SC 35.2.2.3 P 35.7 L 51 # 31  
 Sailesh K. Rao Level One Communica  
 Comment Type E Comment Status R Reject  
 Since all 1000BASE PHYs use active idle, is this sentence necessary?  
 SuggestedRemedy  
 I suggest we remove this so that no one is tempted to switch clocks between CRS and Rx\_DV valid states.  
 Proposed Response Response Status C

Reject. No textual change is needed. The referenced text is there for those times where no received clock can be recovered, not for clock switching between frames. This is pointed out in the preceding paragraph:

Cl 35 SC 35.2.2.3 P 35.7 L 42 # 227  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A typo  
 Typing error: period and comma before end of sentence.  
 SuggestedRemedy  
 Change line 42 from "signal., which" to "signal, which".  
 Proposed Response Response Status C  
 Accept, duplicate of comment #17.

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Cl 35 SC 35.2.2.4 P 35.8 L 11 # 321  
 Bruce D. Miller Bay Networks

Comment Type T Comment Status R

The following line appears in this subclause:

"TX\_EN shall be negated prior to the first GTX\_CLK following the final data octet of a frame"

A strict interpretation of this statement would indicate that TX\_EN can be deasserted anytime prior to the GTX\_CLK following the final data octet. The intent is that TX\_EN should deassert uniquely during this cycle.

SuggestedRemedy

Reword the sentence:

TX\_EN shall be negated during the the first GTX\_CLK following the final data octet of a frame.

{Note that a corresponding change will have to be made in the PICS proforma

Proposed Response Response Status C

Reject. The description is consistent with 802.3 language. The span of TX\_EN is clearly specified.

When referencing clock timing it is consistently a reference to the active edge of the clock, therefore, the phrase "prior to the first GTX\_CLK" implies "during the first clock period".

Cl 35 SC 35.2.2.5 P 35.8 L 37-44 # 565  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The text needs some more clarification regarding the functionality of TXD<7:0>.

SuggestedRemedy

- \* Change the third sentence of the first paragraph to read as follows:  
 "For each GTX\_CLK period while TX\_EN is asserted, Data code groups are presented on TXD<7:0> to the PHY for transmission".
- \* Change the first sentence of the second paragraph to read as follows:  
 "While TX\_EN is de-asserted and TX\_ER is asserted, TXD<7:0> is used to request the PHY to generate Carrier Extend or Carrier Extend Error code groups".

Proposed Response Response Status C

Accept.

Cl 35 SC 35.2.2.5 P 35.8 L 43 # 307  
 Tom Mathey Baynetworks

Comment Type E Comment Status A global

Sentence with words "code groups" should have underscore symbol "\_" between code and groups. Also, perform a global search of this clause and replace all other usages including: p35.9, line 39, 42; p35.26, line 19.

SuggestedRemedy

Replace "code groups" with "code\_groups".

Proposed Response Response Status C

Accept in principle. The base document uses code-groups (i.e., 1.4.59 in 802.3u). Consistency should be to the base document. Search for code groups, code\_groups and replace with code-groups.

Cl 35 SC 35.2.2.5 P 35.8 L 43 # 21  
 Kevin Daines Packet Engines

Comment Type E Comment Status R Reject

I am concerned by the "code group" wording in this clause. It seems to imply Clause 36 centrlicity. I would prefer a more generic term unless the .ab taskforce is going to use "code group".

SuggestedRemedy

Change "code groups" to "codes".

Proposed Response Response Status C

Reject. See comment 33

Cl 35 SC 35.2.2.5 P 35.8 L 43 # 33  
 Sailesh K. Rao Level One Communica

Comment Type E Comment Status R Reject

"Carrier Extend code groups" appears to refer to the 8B-10B method for transmitting carrier extend signalling

Same comment on Page 35.9, lines 38-45.

SuggestedRemedy

Change to  
 Carrier Extend signalling.

Proposed Response Response Status C

Reject. Code group clearly does not apply only to clause 36. The definition of code group in the base document (1.4.59), with the addition specified on 01.3 will list 802.3 general usage, 100BASE-T4, 100BASE-TX, 100BASE-FX, 100BASE-T2 and 1000BASE-X

P802.3z Draft 3.1 Comments

Cl 35 SC 35.2.2.5 P 35.8 L 43 # 32  
 Sailesh K. Rao Level One Communica

Comment Type E Comment Status R Reject

"Carrier Extend code groups" appears to refer to the 8B-10B method for transmitting carrier extend signalling

Same comment on Page 35.9, lines 38-45.

SuggestedRemedy

Change to Carrier Extend signalling.

Proposed Response Response Status C

Reject. See comment 33

Cl 35 SC 35.2.2.5 P 35.8 L 44 to 45 # 703  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The meaning of this shall statement is unclear to me. Clause 4 already controls when the MAC signals carrier extension. This clause is specifying the reconciliation sublayer. The presence of the shall statement here might be interpreted as a requirement that the reconciliation sublayer ensures that it will not send carrier extension when not following a frame even if the MAC signals it. I doubt that is the intent.

SuggestedRemedy

Either delete the sentence, or change "shall" to "will" so that it merely informs about what is normal.

Proposed Response Response Status C

Accept in principle.  
 Rerword sentence to read:  
 "Carrier extension shall only be signalled immediately following the transmission of the data portion of a frame."

Cl 35 SC 35.2.2.5 P 35.8 L 47 # 638  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A

Table 35-1 does more than "summarize" the permissible encoding, it specifies them.

SuggestedRemedy

Change "summarizes" to "specifies".

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.2.5 P 35.8 L 47 # 729  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

Table 35-1 does more than "summarize" the permissible encoding, it specifies them.

SuggestedRemedy

Change "summarizes" to "specifies".

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 638

Cl 35 SC 35.2.2.6 P 35.8 L 52 # 640  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status A

The driver of TX\_ER is not specified.

SuggestedRemedy

Change the first sentence of the paragraph to read "TX\_ER is driven by the Reconciliation sublayer and shall transition synchronously with respect to GTX\_CLK."

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.2.6 P 35.8 L 52 # 731  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R

The driver of TX\_ER is not specified.

SuggestedRemedy

Change the first sentence of the paragraph to read "TX\_ER is driven by the Reconciliation sublayer and shall transition synchronously with respect to GTX\_CLK."

Proposed Response Response Status Z

Reject.  
 Withdrawn by editor  
 Duplicate of 640.

P802.3z Draft 3.1 Comments

Cl 35 SC 35.2.2.6 P35.9 L 39 # 22  
 Kevin Daines Packet Engines  
 Comment Type E Comment Status R Reject  
 I am concerned by the "code group" wording in this clause. It seems to imply Clause 36 centrality. I would prefer a more generic term unless the .ab taskforce is going to use "code group".  
 SuggestedRemedy  
 Change "code groups" to "codes".  
 Also on line 41.  
 Proposed Response Response Status C  
 Reject. See comment 33.

Cl 35 SC 35.2.2.6 P35.9 L 5-16 # 641  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status A  
 The reader must infer that the values in the TXD column of table 35-1 are in hex, it is not explicitly stated.  
 SuggestedRemedy  
 Prefix each value in the TXD column with "0x". Or, if there is an ISO standard way of indicating that a value is in hex, use that.  
 Proposed Response Response Status C  
 Accept.  
 Add footnote to table identifying the values in this column as hexadecimal numbers.

Cl 35 SC 35.2.2.6 P35.9 L 5-16 # 732  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status R  
 The reader must infer that the values in the TXD column of table 35-1 are in hex, it is not explicitly stated.  
 SuggestedRemedy  
 Prefix each value in the TXD column with "0x". Or, if there is an ISO standard way of indicating that a value is in hex, use that.  
 Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of # 641

Cl 35 SC 35.2.2.6 P35.9 L 51-52 # 643  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type T Comment Status A  
 What I believe the sentence is trying to say is that a Reconciliation sublayer or a repeater with an GMII port must drive TX\_ER to a valid logic level even if the logic level is always LOW (unasserted). The exposition needs improvement.  
 SuggestedRemedy  
 Change the sentence to read  
 "A Reconciliation sublayer or repeater with an GMII port shall drive TX\_ER to a valid logic state even if that state is always deasserted (LOW)."  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Repeaters must actively drive TX\_ER to both high and low logic levels. Rework sentence as follows:  
 "A Reconciliation sublayer with a GMII port shall drive TX\_ER to a valid logic state even if that state is always deasserted (LOW)."

Cl 35 SC 35.2.2.6 P35.9 L 51-52 # 734  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type T Comment Status R  
 What I believe the sentence is trying to say is that a Reconciliation sublayer or a repeater with an GMII port must drive TX\_ER to a valid logic level even if the logic level is always LOW (unasserted). The exposition needs improvement.  
 SuggestedRemedy  
 Change the sentence to read  
 "A Reconciliation sublayer or repeater with an GMII port shall drive TX\_ER to a valid logic state even if that state is always deasserted (LOW)."  
 Proposed Response Response Status Z  
 Rejected.  
 Withdrawn by editor.  
 Duplicate of 643

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Cl 35 SC 35.2.2.6 P 35.9 L 52 # 704  
 Pat Thaler Hewlett-Packard  
 Comment Type **TR** Comment Status **A**  
 A repeater must be able to actively drive TX\_ER.  
 SuggestedRemedy  
 Delete "or a repeater"  
 Proposed Response Response Status **C**  
 Accept.  
 See response to comment 643.  
 Also add the words "and repeater units with a GMII port" to the end of the second sentence of the last paragraph of 35.2.2.6.

Cl 35 SC 35.2.2.7 P 35.11 L 1 # 20  
 Kevin Daines Packet Engines  
 Comment Type **E** Comment Status **A** minor editorial  
 RX\_DV definition capitalization inconsisten with all other GMII definitions.  
 SuggestedRemedy  
 Change "Receive Data Valid" to "receive data valid".  
 Proposed Response Response Status **C**  
 Accept

Cl 35 SC 35.2.2.7 P 35.11 L 3 # 19  
 Kevin Daines Packet Engines  
 Comment Type **E** Comment Status **A** minor editorial  
 Re-definition of RX\_DV in text unnecessary.  
 SuggestedRemedy  
 Remove (Receive Data Valid) to read "RX\_DV is driven by the PHY..."  
 Proposed Response Response Status **C**  
 Accept

Cl 35 SC 35.2.2.7 P 35.11 L 5 # 320  
 Bruce D. Miller Bay Networks  
 Comment Type **T** Comment Status **R**  
 The following line appears in this subclause:  
 "RX\_DV shall remain asserted continuously from the first recovered octet of the frame through the final recovered octet and shall be shall be negated prior to the the first RX\_CLK that follows the final octet"  
 The intent is that RX\_DV should deassert uniquely during this cycle.

SuggestedRemedy  
 Reword the sentence:  
 RX\_DV shall be negated during the the first RX\_CLK following the final data octet of a frame.  
 {Note that a corresponding change will have to be made in the PICS proforma  
 Proposed Response Response Status **C**  
 Reject. The description is consistent with 802.3 language. The span of RX\_DV is clearly specified.

When referencing clock timing it is consistently a reference to the active edge of the clock, therefore, the phrase "prior to the first RX\_CLK" implies "during the first clock period".

Cl 35 SC 35.2.2.8 P 35.11 L 30-31 # 735  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type **TR** Comment Status **R**  
 A "shall" is missing with respect to the transitioning of RXD.  
 SuggestedRemedy  
 Change the first two sentences to read  
 "RXD is a bundle of eight data signals (RXD<7:0>) that are driven by the PHY. RXD<7:0> shall transition synchronously with respect to RX\_CLK."  
 This replicates the form of the definition TXD.  
 Proposed Response Response Status **Z**  
 Reject.  
 Withdrawn by editor  
 Duplicate of 644.

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Cl 35 SC 35.2.2.8 P 35.11 L 30-31 # 644  
 Bill Quackenbush cisco Systems, Inc.

Comment Type TR Comment Status A

A "shall" is missing with respect to the transitioning of RXD.

SuggestedRemedy

Change the first two sentences to read  
 "RXD is a bundle of eight data signals (RXD<7:0>) that are driven by the PHY. RXD<7:0> shall transition synchronously with respect to RX\_CLK."  
 This replicates the form of the definition TXD.

Proposed Response Response Status C

Accept. Add PICs item, "SFxx, RXD<7:0> transitions, 35.2.2.8, M, Yes [ ], Synchronous with RX\_CLK".

Cl 35 SC 35.2.2.8 P 35.11 L 36 # 312  
 Tom Mathey Baynetworks

Comment Type E Comment Status A cross ref

Reference to sub-clause 36.2.6 is incorrect. This sub-clause does not exist. The best reference I could find was sub-clause 36.2.5.2.3 on p36.31, lines 9 thru 15. I will defer to editors choice for any better reference and/or addition of specific text to sub-clause 35.2.2.8.

There is another reference to sub-clause 36.2.6 in sub-clause 35.2.2.8, p35.13, line 39.

SuggestedRemedy

Replace "36.2.6" with "36.2.5.2.3".

Proposed Response Response Status C

Accept

Cl 35 SC 35.2.2.8 P 35.11 L 39-43 # 736  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

I believe that the first sentence of the paragraph should be in a paragraph by itself.

SuggestedRemedy

Separate the first sentence into its own paragraph.

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 645

Cl 35 SC 35.2.2.8 P 35.11 L 39-43 # 645  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A

I believe that the first sentence of the paragraph should be in a paragraph by itself.

SuggestedRemedy

Separate the first sentence into its own paragraph.

Proposed Response Response Status C

ACCEPT.

Cl 35 SC 35.2.2.8 P 35.12 L 34 # 730  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

Table 35-2 does more than "summarize" the permissible encoding, it specifies them.

SuggestedRemedy

Change "summarizes" to "specifies".

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 639

Cl 35 SC 35.2.2.8 P 35.12 L 34 # 639  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A

Table 35-2 does more than "summarize" the permissible encoding, it specifies them.

SuggestedRemedy

Change "summarizes" to "specifies".

Proposed Response Response Status C

Accept



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CI 35 SC 35.2.2.8 P 35.13 L 18-36 # 567  
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A  
 Table 35-2 contains values for the PLS\_DATA.indicate parameter that have not been defined in 35.2.1.2.

SuggestedRemedy  
 \* In the first entry in the table replace "DATA\_COMPLETE" with "No applicable parameter".  
 \* In the seventh entry in the table replace "EXTEND\_ERROR" with "No applicable parameter".

Proposed Response Response Status C  
 Accept in principle. Line 1 has no applicable PLS parameter, line 7 is mapped to "ZERO, ONE (eight bits)"

CI 35 SC 35.2.2.8 P 35.13 L 22 # 313  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 In Table 35.2, entry "DATA\_COMPLETE" under column "PLS\_DATA.indicate parameter" appears incorrect. There is no text for "DATA\_COMPLETE" in sub-clause 35.2.1.2.2 Semantics of the service primitive, p 35.5.

There is a similar case for "EXTEND\_ERROR (eight bits)" on line 31.

SuggestedRemedy  
 Replace entry "DATA\_COMPLETE" with editors choice of "No applicable parameter" or "-".  
 Replace entry "EXTEND\_ERROR (eight bits)" with editors choice of "No applicable parameter" or "-".

Proposed Response Response Status C  
 Accept--No applicable parameter for first line of the table, but 7th line should be "ZERO, ONE, (eight bits)".

CI 35 SC 35.2.2.8 P 35.13 L 25 # 310  
 Tom Mathey Baynetworks

Comment Type E Comment Status A *typo*  
 In Table 35.2, entry "01 through 1D" under column RXD<7:0> appears incorrect. The hex value 1D should be 0D to match sequence thru rest of the table.

SuggestedRemedy  
 Replace entry "01 through 1D" with "01 through 0D".

Proposed Response Response Status C  
 Accept.

CI 35 SC 35.2.2.8, 35.2.2.9 P 35.11, 35 L 36, # 566  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 Sub-clause 36.2.6, used here as a reference, is non-existent.

SuggestedRemedy  
 TBD.

Proposed Response Response Status C  
 Accept. See comment #312.

CI 35 SC 35.2.2.9 P 13 L 39 # 43  
 Linda Cheng Sun Microsystems

Comment Type E Comment Status A *minor editorial*  
 The reference 36.2.6 is out of date. It doesn't exist anymore.

SuggestedRemedy  
 The reference 36.2.6 should be changed to 36.2.5.2.3. It might be good to make a cross reference to save from having to update it in the future.

Proposed Response Response Status C  
 Accept.

CI 35 SC 35.2.2.9 P 35.12 L 39 # 568  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 Clarity.

SuggestedRemedy  
 Insert in front of the second sentence of the first paragraph the following:  
 "When RX\_DV is asserted, RX\_ER shall be asserted.....".

Proposed Response Response Status C  
 Accept.  
 Insert in front of the second sentence of the first paragraph the following:  
 "While RX\_DV is asserted, RX\_ER shall be asserted.....".

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Cl 35 SC 35.2.2.9 P 35.12 L 39 # 737

Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R

The definition of RX\_ER does not specify the clock it is synchronous to.

SuggestedRemedy

Change the first sentence of the paragraph to read "RX\_ER (Receive Error) is driven by the PHY and shall transition synchronously with respect to RX\_CLK."

Proposed Response Response Status Z

Reject  
Withdrawn by editor.  
Duplicate of 646.

Cl 35 SC 35.2.2.9 P 35.12 L 39 # 18

Kevin Daines Packet Engines

Comment Type E Comment Status A

Re-definition of RX\_ER in text unnecessary.

SuggestedRemedy

Remove (Receive Error) to read "RX\_ER is driven ..."

Proposed Response Response Status C

Accept.

Cl 35 SC 35.2.2.9 P 35.12 L 39 # 646

Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status A

The definition of RX\_ER does not specify the clock it is synchronous to.

SuggestedRemedy

Change the first sentence of the paragraph to read "RX\_ER (Receive Error) is driven by the PHY and shall transition synchronously with respect to RX\_CLK."

Proposed Response Response Status C

ACCEPT.  
Must also add a PICS entry.  
SFXF , RX\_ER transitions, 35.2.2.9, M, Yes[], synchronous with RX\_CLK

Cl 35 SC 35.2.2.9 P 35.12 L 39 # 949

Ariel Hendel Sun

Comment Type T Comment Status A

First paragraph implies RX\_ER is driven to indicate errors, while this is only the case when RX\_ER and RX\_DV are both driven active.

SuggestedRemedy

Modify first paragraph:  
"RX\_ER shall be asserted simultaneously with RX\_DV for one or more RX\_CLK..."

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
See response to comme 568 from S. Muller

Cl 35 SC 35.2.2.9 P 35.12 L 44 # 705

Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Delete "Response to error indication from GMII" since we normally just use the subclause number and not the title in a reference.

SuggestedRemedy

Proposed Response Response Status C

Accept.

Cl 35 SC 35.2.2.9 P 35.12 L 49 # 647

Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R

The sentence contains a "shall" on the behavior of the Reconciliation sublayer. Since the Reconciliation layer is a mythical creature, there probably should be no "shalls" related to it.

SuggestedRemedy

Change the "shall" to something weaker or get rid of the sentence.

Proposed Response Response Status C

Reject.  
The Reconciliation Sublayer, though largely an artifact of standardization, is necessary to link the bit serial MAC with services to the GMII. Therefore a shall is necessary and appropriate.

P802.3z Draft 3.1 Comments

Cl 35 SC 35.2.2.9 P 35.12 L 49 # 738  
 Bill Quackenbush cisco Systems, Inc.

Comment Type T Comment Status R  
 The sentence contains a "shall" on the behavior of the Reconciliation sublayer. Since the Reconciliation layer is a mythical creature, there probably should be no "shalls" related to it.

SuggestedRemedy  
 Change the "shall" to something weaker or get rid of the sentence.

Proposed Response Response Status Z  
 Reject  
 Withdrawn by Editor  
 duplicate of 647

Cl 35 SC 35.2.2.9 P 35.13 L 2 # 319  
 Bruce D. Miller Bay Networks

Comment Type T Comment Status A  
 Figure 35-11 shows reception with two errors. The interpretation could be that all error notification requires both error notifications.

SuggestedRemedy  
 I would suggest that Figure 35-11 be split into two figures. One figure should show error notification within the body of a frame. The other figure should show error notification during a Carrier Extension.

Proposed Response Response Status C  
 Accept in principle.  
 Add text to 35.2.2.9. "Two independent error cases are illustrated. When RX\_DV is asserted, assertion of RX\_ER indicates an error within the data octets of a frame. An error within carrier extension is indicated by driving the appropriate value on RXD<7:0> while keeping RX\_ER asserted."

Also, change caption on figure 35-11 to "Two examples of reception with error"

Cl 35 SC 35.2.2.9 P 35.13 L 22-36 # 733  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R  
 The reader must infer that the values in the RXD column of table 35-2 are in hex, it is not explicitly stated.

SuggestedRemedy  
 Prefix each value in the RXD column with "0x". Or, if there is an ISO standard way of indicating that a value is in hex, use that.

Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of #642.

Cl 35 SC 35.2.2.9 P 35.13 L 22-36 # 642  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A  
 The reader must infer that the values in the RXD column of table 35-2 are in hex, it is not explicitly stated.

SuggestedRemedy  
 Prefix each value in the RXD column with "0x". Or, if there is an ISO standard way of indicating that a value is in hex, use that.

Proposed Response Response Status C  
 Reject. It is explicitly stated in 35.2.2.8.

Response revised 9/30/97.

Accept.  
 Add footnote to table identifying the values in this column as hexadecimal numbers.

Cl 35 SC 35.2.2.9 P 35.13 L 39 # 35  
 Sailesh K. Rao Level One Communica

Comment Type E Comment Status A  
 There is a reference to Section 36.2.6 on Line 39. Such a section does not exist.

SuggestedRemedy  
 I only see False Carrier Indication in the State Diagram of Fig. 36.7b, but this does not appear to have been described in the text of Clause 36.

Proposed Response Response Status C  
 Accept in principle. See comment 43.

Cl 35 SC 35.2.2.9 P 35.13 L 39 # 58  
 scott murphy Alteon Networks

Comment Type E Comment Status A minor editorial  
 cross reference to false carrier info in claus 36 is wrong

SuggestedRemedy  
 change See 36.2.6 to See 36.2.5.2.3

Proposed Response Response Status C  
 Accept, duplicate of #43

P802.3z Draft 3.1 Comments

**Cl 35**      **SC 35.2.3.1**                      **P 35.16**      **L 3**                      # **656**  
 Bill Quackenbush                              cisco Systems, Inc.  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Change "provides" to "is". The interframe period provides nothing.  
**SuggestedRemedy**  
 See comment.  
**Proposed Response**                      **Response Status**    **C**  
 Accept.

**Cl 35**      **SC 35.2.3.1**                      **P 35.16**      **L 3**                      # **747**  
 Bill Quackenbush                              cisco Systems, Inc.  
**Comment Type**    **E**                      **Comment Status**    **R**  
 Change "provides" to "is". The interframe period provides nothing.  
**SuggestedRemedy**  
 See comment.  
**Proposed Response**                      **Response Status**    **Z**  
 Withdrawn by editor. Duplicate of # 656.

**Cl 35**      **SC 35.2.3.1**                      **P 35.16**      **L 4**                      # **748**  
 Mark W. Bohrer                                      Micro Linear Corp.  
**Comment Type**    **E**                      **Comment Status**    **R**  
 An unsophisticated reader of 802.3z could misinterpret 35.2.3.1 to mean that interframe idles are silences at the media. I would place a reference to the IDLE ordered set description in 36.2.4.12 somewhere in 35.2.3.  
**SuggestedRemedy**  
 Add the following verbiage to 35.2.3.1:  
 "Description of interpacket idles and their appearance on the media may be found in section 36.2.4.12."  
**Proposed Response**                      **Response Status**    **Z**  
 Withdrawn by editor. Duplicate of # 657.

**Cl 35**      **SC 35.2.3.1**                      **P 35.16**      **L 4**                      # **657**  
 Mark W. Bohrer                                      Micro Linear Corp.  
**Comment Type**    **E**                      **Comment Status**    **R**  
 An unsophisticated reader of 802.3z could misinterpret 35.2.3.1 to mean that interframe idles are silences at the media. I would place a reference to the IDLE ordered set description in 36.2.4.12 somewhere in 35.2.3.  
**SuggestedRemedy**  
 Add the following verbiage to 35.2.3.1:  
 "Description of interpacket idles and their appearance on the media may be found in section 36.2.4.12."

**Proposed Response**                      **Response Status**    **C**  
 Reject. This describes the GMII, not the media, it is intended to work with PHYs other than 1000BASE-X. A future PHY may not use the term Idle for what is transmitted in the IPG.

**Cl 35**      **SC 35.2.3.2.1**                      **P 35.16**      **L 21-34**                      # **895**  
 Rich Seifert                                              Networks & Communic  
**Comment Type**    **TR**                      **Comment Status**    **R**  
 This is a duplication of the requirements of Clause 3, and is not needed here.  
**SuggestedRemedy**  
 Delete all but the last paragraph of this subclause.  
**Proposed Response**                      **Response Status**    **C**  
 Reject.  
 Clause 7 (for the PLS and AUI), clause 22 (for the MII), and clause 35 (for the GMII) are the places where the requirements for the preamble and sfd are specified. Clause 3, does not contain any specification of the contents of the preamble field. Because the AUI, MII, and GMII are mutually exclusive, they each need a normative description of the contents of the preamble.

P802.3z Draft 3.1 Comments

Cl 35 SC 35.2.3.2.1 P 35.16 L 22 # 706  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R

The preamble generated by the MAC is already specified in Clause 4. It isn't appropriate or necessary to have such a MAC "shall" in this clause.

SuggestedRemedy

Change "shall" to "is".

Proposed Response Response Status Z

Reject.

Response updated 9/30/97.

Clause 7 (for the PLS and AUI), clause 22 (for the MII), and clause 35 (for the GMII) are the places where the requirements for the preamble and sfd are specified. Clause 3, does not contain any specification of the contents of the preamble field. Because the AUI, MII, and GMII are mutually exclusive, they each need a normative description of the contents of the preamble.

Cl 35 SC 35.2.3.2.1 P 35.16 L 33 # 24  
 Kevin Daines Packet Engines

Comment Type E Comment Status R

Is "leftmost" a word? If not, let's fix it.

SuggestedRemedy

Change "leftmost" to read "...each octet the left most bit ..." unless "leftmost" is a 'technical' word.

Proposed Response Response Status C

Reject. It is a word at least two dictionaries.

Cl 35 SC 35.2.3.2.2 P 35.16 L 44 # 897  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status R

A Gigabit MAC may have to deal with no preamble bytes, but a 10/100 MAC does not currently have such a constraint.

SuggestedRemedy

Change to "conveyed across the 1000 Mb/s GMII."

Note: This is also a good example of the confusion arising from the clause 22/35 overlap. While the sentence says "GMII", which would seem to imply 1000 Mb/s only, it is stated earlier that the GMII operates at 10/100/1000 Mb/s, which makes it cover all speeds every time the term is used. We must carefully separate the specifications of MII and GMII.

Proposed Response Response Status C

Reject.

The commenter is encouraged to study the 100BASE-T4 specification in clause 23, and to contemplate the design of a 10 Mbps PHY implementing an MII. (Hint- Think about how you would perform nibble alignment.)

By the way, this advice is provided free of charge.

Cl 35 SC 35.2.3.2.2 P 35.17 L 6-46 # 650  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A

The direction of time flow in tables 35-3 and 35-4 can be inferred, but is not explicitly stated.

SuggestedRemedy

Somehow indicate the direction of time flow.

Proposed Response Response Status C

Accept. Add a footnote on the title "Leftmost octet is the first received."

Cl 35 SC 35.2.3.2.2 P 35.17 L 6-46 # 741  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

The direction of time flow in tables 35-3 and 35-4 can be inferred, but is not explicitly stated.

SuggestedRemedy

Somehow indicate the direction of time flow.

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 650.

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**Cl 35**    **SC 35.2.3.3**                      **P 35-17**    **L 53**                      # **230**  
Colin Mick                                      The Mick Group  
*Comment Type*    **E**                      *Comment Status*    **A**                                      *typo*  
Change "well formed frame" to well-formed frame"  
*SuggestedRemedy*  
See above  
*Proposed Response*                      *Response Status*    **C**  
Accept.

---

**Cl 35**    **SC 35.2.3.5**                      **P 35.18**    **L 12**                      # **898**  
Rich Seifert                                      Networks & Communic  
*Comment Type*    **TR**                      *Comment Status*    **A**  
It is possible that all frames WILL have carrier extension (if someone is just sending tinygrams all the time).  
*SuggestedRemedy*  
Change "is not" to "may not be".  
*Proposed Response*                      *Response Status*    **C**  
Accepted with a certain amount of whining and gnashing of teeth.  
Also add  
"See 4.2.3.4"

---

**Cl 35**    **SC 35.2.3.5**                      **P 35.18**    **L 12**                      # **569**  
Shimon Muller                                      Sun Microsystems  
*Comment Type*    **E**                      *Comment Status*    **A**  
Style.  
*SuggestedRemedy*  
Change the last sentence of the paragraph to read as follows:  
"Carrier extension may not be present on all frames".  
*Proposed Response*                      *Response Status*    **C**  
Accept.  
See 968.

---

**Cl 35**    **SC 35.2.3.6**                      **P 35.18**    **L 16-17**                      # **899**  
Rich Seifert                                      Networks & Communic  
*Comment Type*    **TR**                      *Comment Status*    **A**  
The End of Packet delimiter is defined with respect to RXDV only. This is applicable only to receive operation, however this subclause covers receive and transmit.  
*SuggestedRemedy*  
Include a proper definition for both the receive and transmit case. Also, include a more specific reference, rather than just "Clause 30".  
*Proposed Response*                      *Response Status*    **C**  
Accept in principle.  
This definition is intended only for use by clause 30 repeater management functions which only monitor receive activity.  
Add to end of paragraph: "See 30.2.2.2"

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CI 35 SC 35.2.4 P 35.18 L 21 # 707

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

Currently, the delay of a MAC and a DTE with a GMII is unspecified. There is only this table of "assumptions." Delay for a PHY with a GMII is specified in 36.5.1 and delay of a DTE (MAC and PHY) with no GMII is specified in 36.5.2. The total delay of a DTE with a GMII needs to be constrained to ensure interoperability over the topologies specified in systems considerations.

SuggestedRemedy

Change "assumptions" to "constraints" in the title of table 35-5. Change the text of 35.2.4 to "A 1000BASE-T MAC with a GMII shall comply with the delay constraints in Table 35-5.

A minimally acceptable alternative would be to require that all DTEs (exposed GMII or not) comply with 36.5.2.

Proposed Response Response Status C

Accept.  
Use commenter's first suggestion.  
David Law is on the hook to write PICs items for this change.

Response revised 9/30/97.

Change "assumptions" to "constraints" in the title of table 35-5. Change the text of 35.2.4 to "A 1000Mb/s MAC with a GMII shall comply with the delay constraints in Table 35-5.

PIC table updated (supplied by Bob Grow): insert new subclause 35.5.3.4 Delay Constraints:

DC1, MAC delay, 35.2.4, M, Yes[ ], Comply with Table 35-5

CI 35 SC 35.2.4 P 35.18 L 39-45 # 570

Shimon Muller Sun Microsystems

Comment Type T Comment Status A

The note marked with a "\*" under Table 35-5 should not apply to the COL signal.

SuggestedRemedy

Remove the "\*" on lines 39-41.

Proposed Response Response Status C

Accept.  
Move footnote anchor to "Event" column on lines 33 and 34, and make footnote style conform to IEEE style guide, i.e. use "a" instead of "\*".

CI 35 SC 35.2.8 P 35.11 L 36 # 329

Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy

uncapitalize Table

Proposed Response Response Status C

The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

CI 35 SC 35.3 P 35.19 L 3 # 997

David Law 3Com

Comment Type E Comment Status A

Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'

SuggestedRemedy

See above

Proposed Response Response Status C

ACCEPT. GMII

CI 35 SC 35.3 P 35.19 L 3, 5 # 571

Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Spelling.

SuggestedRemedy

Replace "implementers" with "implementors" in two instances.

Proposed Response Response Status C

Accept.

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CI 35 SC 35.3 P 35.19 L 4 # 331  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

CI 35 SC 35.3 P 35.19 L 5 # 330  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Table  
 Proposed Response Response Status C  
 The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

CI 35 SC 35.4 P 35.19 L 36-38 # 36  
 Sailesh K. Rao Level One Communica  
 Comment Type E Comment Status A  
 Language?  
 SuggestedRemedy  
 On Line 36, change to "This includes applications where"  
 On Line 38, change to "mother to daughter board interconnections"  
 Proposed Response Response Status C  
 Accept.

CI 35 SC 35.4.1 P 35.19 L 42-44 # 742  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status R  
 I find the sentence confusing. Is the Physical layer the PHY?  
 SuggestedRemedy  
 Change the sentence to read"  
 All GMII drivers and receivers shall comply with the DC parametric attributes specified in Table 35-7."  
 Or at least change "Physical layer" to "PHY".  
 Proposed Response Response Status Z  
 Withdrawn by editor. Duplicate of # 651.

CI 35 SC 35.4.1 P 35.19 L 42-44 # 651  
 Bill Quackenbush cisco Systems, Inc.  
 Comment Type E Comment Status A  
 I find the sentence confusing. Is the Physical layer the PHY?  
 SuggestedRemedy  
 Change the sentence to read"  
 All GMII drivers and receivers shall comply with the DC parametric attributes specified in Table 35-7."  
 Or at least change "Physical layer" to "PHY".  
 Proposed Response Response Status C  
 Accept the primary recommendation.  
 Also change "Physical layer to PHY" on line 46.  
 Note to editor, perform global search for "Physical layer" and check for appropriate usage.

CI 35 SC 35.4.1 P 35.19 L 44 # 335  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Table  
 Proposed Response Response Status C  
 The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.



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Cl 35 SC 35.4.2 P 35.20 L 10 # 322  
 Andre Szczepanek Texas Instruments

Comment Type T Comment Status R

The entry for VIL value reads 0.9V

This is too high. 'Everyone' these days designing high integration CMOS ASICS for gigabit networking will be using approx 0.35 to .4u CMOS processes (or better). This will impose core voltages of 2.5V probably with level shifting IO buffers capable of interfacing to 3.6v signals or so.

Even with level shifting IOs, we (and probably other ASIC vendors to slightly varying extents) require a VIL of 0.2 VDD max. Now VDD(nom) = 2.5V and VDD(min) = 2.3V, so we have a VIL requirement of 0.46V max.

SuggestedRemedy

I should suggest that table 35.7 has a VIL value of 0.4V max.

Proposed Response Response Status C

Reject. The voltage levels were selected by the committee considering both current and future technologies. Considerable discussion and simulation was used in getting agreement on these numbers. It was recognized during development of the specifications that some logic technologies will use lower voltages for internal logic but can meet the specifications with an appropriate voltage conversion in the IO ring.

Cl 35 SC 35.4.2 P 35.20 L 12-14 # 211  
 Dan Essig Rockwell

Comment Type T Comment Status A

The Vin conditions for lih and lil need to be updated to reflect the changes to the voltage levels made in Maui.

SuggestedRemedy

For lih, change Vin=2.0V to Vin=2.1V  
 For lil, change Vin=2.0V to Vin=0.5V

Proposed Response Response Status C

Accept. Vin for lih changed to 2.1V, and Vin for lil changed to 0.5V.

Cl 35 SC 35.4.2 P 35.20 L 18 # 339  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy

uncapitalize Figure

Proposed Response Response Status C

The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

Cl 35 SC 35.4.2 P 35.20 L 26 # 337  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy

uncapitalize Figure

Proposed Response Response Status C

The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

Cl 35 SC 35.4.2 P 35.20 L 30-37 # 301  
 Steve Dreyer Seeq Technology

Comment Type T Comment Status A

No definition of where tHIGH, tLOW, and tPERIOD in Figure 35-17 is to be measured, at input or output.

SuggestedRemedy

Specify where tHIGH, tLOW, and tPERIOD should be measured, either at GMII transmitter or receiver.

Proposed Response Response Status C

Accept in principle.  
 Add "at input" to caption on Figure 35-17

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Cl 35 SC 35.4.3 P21 L26 # 44  
 Linda Cheng Sun Microsystems

Comment Type E Comment Status A  
 It would be helpful to have the figure number referenced when the "GMII Receiver Input Potential Template" is mentioned.

SuggestedRemedy  
 Add "shown in Figure 35-19," after "GMII Receiver Input Potential Template".

Proposed Response Response Status C  
 Accept.

Cl 35 SC 35.4.3 P22 L17 # 59  
 Lomelino Level One Comm.

Comment Type E Comment Status A  
 The voltages of Vil\_ac max and Vih\_ac min appear to be reversed in table 35-8

SuggestedRemedy  
 change Vil\_ac to .7 and Vih\_ac to 1.9

Proposed Response Response Status C  
 Accept.  
 See response to comment 220.

Cl 35 SC 35.4.3 P35.21 L25-50 # 302  
 Steve Dreyer Seeq Technology

Comment Type T Comment Status R  
 Could implement a 1ns transmission line in Figure 35-30 with different equivalent circuits and get different templates. Since this is going to be a test circuit that has to be met for compliance, the transmission line should be more specific.

Why not replace it with equivalent circuit that was used in simulations to produce 35-19?

SuggestedRemedy  
 Provide equivalent circuit for transmission line in Figure 35-20.

Proposed Response Response Status C  
 Reject. The intent is to meet the template with a minimum 1 ns, 50 ohm transmission line. To use the equivalent circuit would mean that there would be no opportunity for vendors to adjust their termination networks to meet the template.

Cl 35 SC 35.4.3 P35.21 L26 # 338  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Figure

Proposed Response Response Status C  
 The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

Cl 35 SC 35.4.3 P35.21 L34-35 # 652  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status A  
 The reference of "actual implementations" is ambiguous. "Actual implementations" of the test topology or "actual implementations" of GE in systems.

SuggestedRemedy  
 Change the paragraph to read  
 "The test topology is a 1 ns transmission line. In products, the pcb traces between the PHY and Reconciliation sublayer are not restricted to a delay of 1 ns."

Proposed Response Response Status C  
 Accept, with change to subject of second sentence, "In a DTE implementation, the PCB traces...".

Response revised 9/30/97 to modify paragraph to read:

The test topology specifies a 1 ns transmission line. In a GMII implementation, the circuit board traces between the PHY and Reconciliation sublayer are not restricted to a delay of 1 ns.

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Cl 35 SC 35.4.3 P 35.21 L 34-35 # 743  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

The reference of "actual implementations" is ambiguous. "Actual implementations" of the test topology or "actual implementations" of GE in systems.

*SuggestedRemedy*

Change the paragraph to read  
 "The test topology is a 1 ns transmission line. In products, the pcb traces between the PHY and Reconciliation sublayer are not restricted to a delay of 1 ns."

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 652.

Cl 35 SC 35.4.3 P 35.21 L 5 # 930  
 Bruce D. Miller Baynetworks

Comment Type TR Comment Status A

The template for the GMII Receiver Input establishes a maximum for edge rates but does not mandate a minimum.

Drivers may use edgerates which are as fast as technology allows. This was done in deference to the silicon vendors who did not want to implement production testing to validate compliance with minimum edge rate mandates.

There are two potential problems with unrestricted (fast) edge rates:

1. Bill Quackenbush showed frequency domain simulation which revealed that signal integrity measurements taken at the pin of a receiver could be markedly different than what actually appeared at the physical receiver. It is quite possible that system level implementations might display improper operation, but appear to have valid signalling at the pin level. The information to validate this behavior (packaging characteristics etc..) is not in the public domain. Therefore it may be difficult to simulate this particular behavior.
2. This creates the potential for exacerbating emissions problems. Preliminary indications are that there is a significant emissions challenge with the current MAC/SERDES/Transceiver implementations. GMII signalling with extremely fast edge rates could easily cause incremental emissions problems.

*SuggestedRemedy*

Modify the standard to require a minimum edge rate. I would propose something on the order of .3 ns (10% <-> 90%).

Proposed Response Response Status C

Reject.  
 Standard design practice will require designers to control the edge rate in order to meet the template. It is unnecessary to specify a minimum edge rate.

Response revised 9/30/97.  
 Bill is working on proposed text to be reviewed Wednesday am.

Response revised 10/1/97.

Insert at the end of 35.4.2:

Designers of components containing GMII receivers should note that the magnitude of the slew rate of signals that may be applied to the input of a GMII receiver has no upper bound. The high frequency energy in a high slew rate (short rise time) signal can excite the parasitic reactances of the receiver package and input pad to such a degree that the signal at the receiver input pin and

the signal at the input pad differ significantly. This is particularly true for GTX\_CLK and RX\_CLK which transition at twice the rate of other signals in the interface. The GMII receiver designer must insure that GMII receiver operation is reliable for all permissible input signal slew rates.

CI 35 SC 35.4.3 P 35.21 L 5 # 710  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

This is a driver specification, but only the receiver is mentioned.

*Suggested Remedy*

Delete the paragraph as the next paragraph states the specification clearly and references the test circuit.

(This also resolves my other comment on this paragraph.)

I would prefer an organization that separated Transmit requirements and receive requirements into separate subclauses.

Proposed Response Response Status C

Accept in principle. Text will need to be added to clarify these paragraphs in question. NEEDS WORK

Pat and Bill to wordsmith and report back Wednesday am.

Response revised 10/1/97 based on input from WLQ.

Replace the first paragraph in 35.4.3 with:

The GMII AC electrical characteristics are specified in a manner that allows the implementor flexibility in selecting the GMII topologies its devices support and the techniques used to achieve the specified characteristics.

The electrical length of the circuit board traces used to implement these links can be long enough to exhibit transmission line effects and require some form of termination. The implementor is allowed the flexibility to select the driver output characteristics and the termination technique and components to be used with its drivers in point-to-point links.

Implementors may elect to support other GMII topologies in addition to the point-to-point topology and may specify different termination techniques and components for each supported topology.

Since the output characteristics and output Voltage waveforms of GMII drivers depend on the termination technique and the location of the termination components, the AC output characteristics of GMII drivers are not explicitly specified. These characteristics are independent of the topology and termination technique and apply uniformly to all GMII applications.

A GMII driver, when used in combination with the termination components specified by the implementor of the driver for a specific GMII topology shall produce a potential at the input pin of a GMII

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receiver that complies with the input potential template shown in Figure 35-19. This template applies for all GMII data and clock signals.

Add the following to the end of the second paragraph of 35.4.3:

This requirement insures that all GMII devices support the point-to-point topology.

CI 35 SC 35.4.3 P35.21 L 6 # 333  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Figure

Proposed Response Response Status C

The chief editor will work with the IEEE editor to select a consistent style and apply it throughout 802.3z.

CI 35 SC 35.4.3 P35.21 L 6 to 7 # 709  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

I don't see any way a device designer can ensure that the template is met "for any topology of interconnected GMII drivers and receivers." It isn't even clear what is meant to be included in this phrase. Delete this sentence and reference the test circuit instead.

SuggestedRemedy

Proposed Response Response Status C

Accept. Replace second sentence of 35.4.3 with the following:

"All valid topologies of interconnected GMII drivers and receivers will produce data and clock signals which match this template at the input of each receiver."

Response revised 9/30/97.

Instead of rewriting second sentence of 35.4.3, delete second sentence.

CI 35 SC 35.4.3 P35.22 L 1 # 304  
 Steve Dreyer Seeq Technology

Comment Type E Comment Status A

The word "table" is not capitalized here. Other clauses have this word capitalized. Also, some clauses have "Figure" capitalized, others do not. Should be consistent, either way.

SuggestedRemedy

Make capitalization/noncapitalization of "Table" and "Figure" consistent in all clauses.

Proposed Response Response Status C

Accept. Capitalization generally follows 802.3u style, but is inconsistent with the current IEEE style guide. Capitalization will be changed as directed by the IEEE editor.

CI 35 SC 35.4.3 P35.22 L 1 to 3 # 711  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Why isn't this sentence just "A GMII implementation shall comply with table 35-8, which documents the required AC parametric attributes required of the GMII clock signals GTX\_CLK and RX\_CLK."

It doesn't really apply to all GMII clocks as MDC has totally different specs elsewhere and TX\_CLK is not used in GMII mode.

SuggestedRemedy

Proposed Response Response Status C

Accept. Reword sentence as follows:  
 "A GMII implementation shall comply with table 35-8, which documents the AC parametric attributes required of the GMII clock signals GTX\_CLK and RX\_CLK."

CI 35 SC 35.4.3 P35.22 L 1-3 # 744  
 Bill Quackenbush cisco Systems, Inc.

Comment Type E Comment Status R

By Physical layer, do you mean PHY?

SuggestedRemedy

Change "Physical layer" to "PHY".

Proposed Response Response Status Z

Withdrawn by editor. Duplicate of # 53.

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**Cl 35 SC 35.4.3 P35.22 L1-3 # 653**  
 Bill Quackenbush cisco Systems, Inc.  
**Comment Type E Comment Status A**  
 By Physical layer, do you mean PHY?  
**SuggestedRemedy**  
 Change "Physical layer" to "PHY".  
**Proposed Response Response Status C**  
 Accept. Offending text deleted by acceptance of comment #711.

**Cl 35 SC 35.4.3 P35.22 L14 # 305**  
 Steve Dreyer Seeq Technology  
**Comment Type TR Comment Status R**  
 Table 35-8. A min clock slew rate of 0.6v/ns translates to a min tR and tF of  $(1\text{ns}/0.6\text{v}) * (1.9\text{v}-0.7\text{v}) = 2\text{ns}$ . This is slower than the max spec for tR and tF of 1.0ns. Clock slew rate is new to me, have never seen it before in a spec, why is it needed if tR and tF is specified?  
**SuggestedRemedy**  
 Make min clock slew rate consistent with tR and tF or eliminate it.

**Proposed Response Response Status C**  
 Reject. Clock slew rate cannot be used to calculate tR and tF. Clock slew rate is used to prevent stepping or oscillating of the clock during the transition period. The minimum slope of that transition is specified as 1/2 of the average slew rate  $([1.9\text{V} - 0.7\text{V}]/1\text{ns} = 1.2\text{ V/ns})$  to permit ramping in to and out of the transition.  
 We will apply the suggested remedy from comment 654, which reads:  
 Create two lines in the table for clock slew rate as follows.  
 Clock Slew Rate (rising) Between Vil\_ac(max) and Vih\_ac(min) 0.6 v/ns min  
 Clock Slew Rate (falling) Between Vih\_ac(min) and Vil\_ac(max) -0.6 v/ns max  
 Add a note that "clock slew rate" is defined as the instantaneous value of the slope of the clock potential with respect to time (dV\_clk/dt), not the average value over some interval. Conformance with this specification guarantees that the clock signal will rise and fall monotonically.  
 Response revised 9/30/97 to slightly modify note:  
 Add a note that "clock slew rate" is defined as the instantaneous value of the slope of the clock potential with respect to time (dV\_clk/dt), not the average value over the entire rise or fall time interval. Conformance with this specification guarantees that the clock signal will rise and fall monotonically.

**Cl 35 SC 35.4.3 P35.22 L14 # 479**  
 Alan Albrecht Hewlett-Packard  
**Comment Type E Comment Status R**  
 In Table 35-8 is the Clock Slew Rate spec needed. It seems the rise and fall time specs combined with AC voltage specs specify a slew rate of 1.2V/ns.  
**SuggestedRemedy**  
 Delete Clock Slew Rate spec.  
**Proposed Response Response Status C**  
 Reject. See response to comment #305.

**Cl 35 SC 35.4.3 P35.22 L14 # 480**  
 Alan Albrecht Hewlett-Packard  
**Comment Type E Comment Status R**  
 In Table 35-8 is the Clock Slew Rate spec needed. It seems the rise and fall time specs combined with AC voltage specs specify a slew rate of 1.2V/ns.  
**SuggestedRemedy**  
 Delete Clock Slew Rate spec.  
**Proposed Response Response Status Z**  
 Withdrawn by editor. Duplicate of # 479.

**Cl 35 SC 35.4.3 P35.22 L14-15 # 745**  
 Bill Quackenbush cisco Systems, Inc.  
**Comment Type TR Comment Status R**  
 Clock slew rate in table 35-8 needs two take entries, one for rising and one for falling, to correctly state the "minimum" required slew rates. A note needs to be added to make clear that the "Clock slew rate" is the instantaneous value of the slope (dV/dt), not an average value.  
**SuggestedRemedy**  
 Create two lines in the table for clock slew rate as follows.  
 Clock Slew Rate (rising) Between Vil\_ac(max) and Vih\_ac(min) 0.6 v/ns min  
 Clock Slew Rate (falling) Between Vih\_ac(min) and Vil\_ac(max) -0.6 v/ns max  
 Add a note that "clock slew rate" is defined as the instantaneous value of the slope of the clock potential with respect to time (dV\_clk/dt), not the average value over some interval.  
**Proposed Response Response Status Z**  
 withdrawn by editor.  
 Identical to comment #654.

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Cl 35 SC 35.4.3 P 35.22 L 14-15 # 654  
 Bill Quackenbush cisco Systems, Inc.

Comment Type TR Comment Status A

Clock slew rate in table 35-8 needs two take entries, one for rising and one for falling, to correctly state the "minimum" required slew rates. A note needs to be added to make clear that the "Clock slew rate" is the instantaneous value of the slope (dV/dt), not an average value.

*SuggestedRemedy*

Create two lines in the table for clock slew rate as follows.

Clock Slew Rate (rising) Between Vil\_ac(max) and Vih\_ac(min) 0.6 v/ns min

Clock Slew Rate (falling) Between Vih\_ac(min) and Vil\_ac(max) -0.6 v/ns max

Add a note that "clock slew rate" is defined as the instantaneous value of the slope of the clock potential with respect to time (dV\_clk/dt), not the average value over some interval. Conformance with this specification guarantees that the clock signal will rise and fall monotonically.

Proposed Response Response Status C

Accept.

Response revised 9/30/97 to slightly modify note:

Add a note that "clock slew rate" is defined as the instantaneous value of the slope of the clock potential with respect to time (dV\_clk/dt), not the average value over the entire rise or fall time interval. Conformance with this specification guarantees that the clock signal will rise and fall monotonically.

Cl 35 SC 35.4.3 P 35.22 L 17 - 18 # 220  
 Thomas Dineen LSI Logic, 1551 McCar

Comment Type TR Comment Status A

Referring to Table 35-8 General AC Specifications.  
 Presently Line 17 States: Vil\_ac Max = 1.90 V and  
 Presently Line 18 States: Vih\_ac Min = 0.70 V

I believe these values are column swapped!

The table should state:

Line 17 States: Vil\_ac Max = 0.70 V and  
 Line 18 States: Vih\_ac Min = 1.90 V

Lets be clear, I am NOT contesting the values 0.70V and 1.90V at this time.

*SuggestedRemedy*

Swap the values on lines 17 and 18 as follows.  
 The table should state:

Line 17 States: Vil\_ac Max = 0.70 V and  
 Line 18 States: Vih\_ac Min = 1.90 V

Proposed Response Response Status C

Accepted.

Cl 35 SC 35.4.3 P 35.22 L 22 # 308  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

The word "and" is repeated twice

typo

*SuggestedRemedy*

Replace text "attributes, and and shall" with "attributes, and shall".

Proposed Response Response Status C

Accept

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Cl 35 SC 35.4.3 P 35.22 L 39-40 # 303  
 Steve Dreyer Seeq Technology

Comment Type TR Comment Status A

Table 35-9, Table 35-10. I don't understand why there is a tSETUP and tHOLD spec and then a note 2 that has a different setup and hold time spec. Which one is the actual spec?

SuggestedRemedy

Make one spec for tSETUP and tHOLD

Proposed Response Response Status C

Accept in principle  
 See response to comment 712, which reads:

Change title of table 35-9 to read "AC specification for GMII transmit signals"  
 Change title of table 35-10 to read "AC specification for GMII receive signals"  
 Replace note 2 on both table 35-9 and table 35-10 the following:  
 "Provides 0.50 ns of margin"

Change Tsetup on line 35 of table 35-9 to "Tsetup(driver)"  
 Change Thold on line 37 of table 35-9 to "Thold(driver)"

Add two rows to table 35-9:

Tsetup(rcvr) TXD,TX\_EN,TX\_ER Setup to ^ GTX\_CLK 2.00 - ns  
 Thold(rcvr) TXD,TX\_EN,TX\_ER hold from ^ GTX\_CLK 0.00 - ns

Change Tsetup on line 10 of table 35-10 to "Tsetup(driver)"  
 Change Thold on line 11 of table 35-10 to "Thold(driver)"

Add two rows to table 35-10:

Tsetup(rcvr) RXD,RX\_DV,RX\_ER Setup to ^ RX\_CLK 2.00 - ns  
 Thold(rcvr) RXD,RX\_DV,RX\_ER hold from ^ RX\_CLK 0.00 - ns

Change numbered footnotes to lettered footnotes to align with style guide.

Two tables are used since the timing reference is GTX\_CLK in table 35-9 and RX\_CLK in table 35-10.

Cl 35 SC 35.4.3 P 35.22 and 3 L # 712  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

Why are there two tables when their contents seem to be identical.  
 More significantly, note 2 on both tables indicates that the receiver set-up and hold are 2 ns and 0 ns respectively, but Table 35-10 shows them as 2.5 ns and 0.5 ns.

SuggestedRemedy

Proposed Response Response Status C

Accept.  
 Change title of table 35-9 to read "AC specification for GMII transmit signals"  
 Change title of table 35-10 to read "AC specification for GMII receive signals"  
 Replace note 2 on both table 35-9 and table 35-10 the following:  
 "Provides 0.50 ns of margin"

Change Tsetup on line 35 of table 35-9 to "Tsetup(driver)"  
 Change Thold on line 37 of table 35-9 to "Thold(driver)"

Add two rows to table 35-9:

Tsetup(rcvr) TXD,TX\_EN,TX\_ER Setup to ^ GTX\_CLK 2.00 - ns  
 Thold(rcvr) TXD,TX\_EN,TX\_ER hold from ^ GTX\_CLK 0.00 - ns

Change Tsetup on line 10 of table 35-10 to "Tsetup(driver)"  
 Change Thold on line 11 of table 35-10 to "Thold(driver)"

Add two rows to table 35-10:

Tsetup(rcvr) RXD,RX\_DV,RX\_ER Setup to ^ RX\_CLK 2.00 - ns  
 Thold(rcvr) RXD,RX\_DV,RX\_ER hold from ^ RX\_CLK 0.00 - ns

Change numbered footnotes to lettered footnotes to align with style guide.

Two tables are used since the timing reference is GTX\_CLK in table 35-9 and RX\_CLK in table 35-10.



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CI 35 SC 35.4.3 P 35.22, 35.23 L 21-41, 1-1 # 572  
 Shimon Muller Sun Microsystems

Comment Type T Comment Status R  
 Tables 35-9 and 35-10 are completely identical. Therefore, there is no need to have them both. This only adds confusion to a sub-clause that is already confused enough.

SuggestedRemedy  
 Combine all the information into Table 35-9 and delete Table 35-10.

Proposed Response Rejected. Response Status C  
 See response to comment 712.

CI 35 SC 35.5.3.2 P 35.25 L 46 # 311  
 Tom Mathey Baynetworks

Comment Type E Comment Status A RX\_CLK  
 The text "RX\_CLK transitions only while RX\_DV deasserted" is misleading. The word "transitions" means between recovered and nominal clock. A possible but incorrect interpretation is that the clock is only active while RX\_DV deasserted.

SuggestedRemedy  
 Add text "between recovered and nominal clock" either under Feature column or under Value/Comment column.

Proposed Response Accepted, add to Feature column. Response Status C

CI 35 SC 4.3 P 35.21 L 10 # 1152  
 Jim Mangin Bay Networks

Comment Type T Comment Status R  
 Concern:

Unlike 100Mb/s MII interface in which edge rates were judged to be at best reasonable but not very fast, the edge rates for GMII can and do approach the idea step function.

This requires considerable time and effort in simulation of the system so that possible reflections at the receiver could cause incorrect data.

SuggestedRemedy  
 Provide a min and max edge rate on the interface so that interoperability can be maintained.

Proposed Response Withdrawn by commenter. Response Status Z

CI 35 SC many P L # 896  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status R  
 A "shall" is used (conformance requirement) in text that is already covered by the state machine formulations. We should only state a conformance requirement once, preferably in the state machines.

SuggestedRemedy  
 Eliminate all such redundant shalls. I found two, at p16, line 22, and 45 There may be others.

Proposed Response Rejected. Response Status C

Response updated 9/30/97.

Clause 7 (for the PLS and AU1), clause 22 (for the MII), and clause 35 (for the GMII) are the places where the requirements for the preamble and sfd are specified. Clause 3, does not contain any specification of the contents of the preamble field. Because the AU1, MII, and GMII are mutually exclusive, they each need a normative description of the contents of the preamble.

CI 35 SC Table 35-2 P 13 L 25 # 1107  
 Devendra Tripathi XaQti Corporation

Comment Type E Comment Status A  
 Table 35-2, Page 35.13 Line 25

01 through 1D should change to 01 through 0D. It seems to be a typo.

SuggestedRemedy  
 Fix Typo

Proposed Response ACCEPT. Duplicate of comment #310. Response Status C

CI 35 SC Table 35-2 P 35.13 L 3618 # 959  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

SuggestedRemedy  
 In table 35-2 and sub-clause 35.2.1.2.3, specify that PLS\_DATA.indicate is not generated for normal inter-frame.

Proposed Response ACCEPT IN PRINCIPLE. See comment #313. Response Status C

Cl 35 SC Table 35-2 P 36.13 L 3618 # 950

Scott Mason Plaintiff Systems Inc.

Comment Type E Comment Status A

Table 35-2 indicates that for carrier extend error PLS\_DATA.indicate takes on the parameter EXTEND\_ERROR. However, 35.2.1.2.2 indicates that the parameter can only take on one of three values: ONE, ZERO, or EXTEND.

*SuggestedRemedy*

In table 35-2, replace EXTEND\_ERROR with a reference to sub-clause 35.2.1.5.

In sub-clause 35.2.1.2.2, add a reference to sub-clause 35.2.1.5.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE. See comments #567, #313.

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Cl 36 SC P L # 360010

Rich Taborek

Comment Type T Comment Status A Technical Change

SYNC\_UNITDATA.indicate must be generated at all times; currently in state LOSS\_OF\_SYNC it is not.

SuggestedRemedy

Add new function in 36.2.5.1.4

signal\_detectCHANGE

In the Synchronization process, this function monitors the signal\_detect variable for a state change. The function is set to TRUE upon state change detection and reset explicitly.

Values: TRUE; A signal\_detect variable state change has been detected.

FALSE; A signal\_detect variable state change has not been detected (default).

Note- signal\_detectCHANGE is set by this function definition; it is not explicitly set in the state diagrams. Signal\_detectCHANGE evaluates to its default value upon state entry.

Change transition from LOSS\_OF\_SYNC to COMMA\_DETECT\_1 to be:  
(signal\_detect = OK + mr\_loopback = TRUE) \* PUDI(!/[COMMA/])

Add a transition from LOSS\_OF\_SYNC to itself, with the condition:  
(PUDI \* signal\_detect = FAIL \* mr\_loopback = FALSE) + PUDI(!/[COMMA/])

Change the global entry condition to be:  
signal\_detectCHANGE = TRUE \* mr\_loopback = FALSE

Add an action to the LOSS\_OF\_SYNC state:  
SYNC\_UNITDATA.indicate

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC P36.17 L48 # 603

Robert Curtis

Comment Type E Comment Status A

type /C1 to /C1/

SuggestedRemedy

type /C1 to /C1/

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC P36.41 L19 # 1195

David Law

3Com

Comment Type E Comment Status A

I believe the table reference is incorrect.

SuggestedRemedy

Suggest '... table 36-6 ...' should read '... table 36-7 ...'

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 1.7 P36.7 L8 # 1149

Jim Mangin

Bay Networks

Comment Type E Comment Status A

delete reference to 802.3u

SuggestedRemedy

change 802.3u to 802.3

Proposed Response Response Status C

Accepted. Global change of "802.3u" to refer to the subclause by number only.

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CI 36 SC 2.4.4 P36.10 L34 # 1150

Jim Mangin Bay Networks

Comment Type TR Comment Status A

there seems to major confusion on how to generate the correct running disparity and i have to admit that i cannot glean that information out of the table easily without referring to some of the email comments for guidance. this needs to be fixed to provide somewhat easy implmentation of the standard

SuggestedRemedy

add a state diagram for running disparity generation. in the past when text has not been enough to provide reasonable implementation then we have always added a state diagram for clarity. I believe that one here is required.

Proposed Response Response Status C

Accepted. The following changes are made:

The "ENDING RD" columns in tables 36-1 and 36-2 have been deleted per comment 206. The consensus of the task force is that the remaining text describing running disparity is clear. The task group would be happy to consider text clarifications and/or state diagrams for running disparity generation provided by the commentor.

Informative annex 36B is added to include unning disparity examples. The contents of that annex are as follows:

ANNEX 36B - 8B10B CODE RUNNING DISPARITY CALCULATION EXAMPLES

EXAMPLE 1:

|                              |           |           |           |                     |                       |      |    |
|------------------------------|-----------|-----------|-----------|---------------------|-----------------------|------|----|
|                              | Character | Character | Character |                     |                       |      |    |
| Transmitted character stream | D21.1     | D10.2     | D23.5     |                     |                       |      |    |
| Running disparity            | RD        | RD        | RD        | RD                  | RD                    | RD   | RD |
| Transmitted bit stream       | 101010    | 1001      | 010101    | 0101                | 111010                | 1010 |    |
|                              | -         | -         | -         | -                   | +                     | +    |    |
| Bit stream after error       | 101010    | 1011      | 010101    | 0101                | 111010                | 1010 |    |
|                              | -         | -         |           | +                   | +                     | +    | +  |
|                              |           |           |           |                     |                       |      |    |
|                              |           |           |           | error               |                       |      |    |
|                              |           |           |           | introduce bit error | (nonzero disparity    |      |    |
|                              |           |           |           |                     | blocks must alternate |      |    |
|                              |           |           |           |                     | in polarity)          |      |    |
| Decoded character stream     | D21.0     | D10.2     | D23.5     |                     |                       |      |    |
|                              |           |           |           |                     | coding violation      |      |    |

This example demonstrates how a single bit error in the receive data stream, that converts one valid 10 bit character into another valid 10 bit character, is detected by updating running disparity.

EXAMPLE 2:

|                              |           |           |           |                     |                       |      |
|------------------------------|-----------|-----------|-----------|---------------------|-----------------------|------|
|                              | Character | Character | Character |                     |                       |      |
| Transmitted character stream | D21.1     | D23.4     | D23.5     |                     |                       |      |
| Running disparity            | RD        | RD        | RD        | RD                  | RD                    | RD   |
| Transmitted bit stream       | 101010    | 1001      | 111010    | 0010                | 111010                | 1010 |
|                              | -         | -         | -         | +                   | +                     | +    |
| Bit stream after error       | 101010    | 1011      | 111010    | 0010                | 111010                | 1010 |
|                              | -         | -         |           | +                   | +                     | +    |
|                              |           |           |           |                     |                       |      |
|                              |           |           |           | error               |                       |      |
|                              |           |           |           | introduce bit error | (nonzero disparity    |      |
|                              |           |           |           |                     | blocks must alternate |      |
|                              |           |           |           |                     | in polarity)          |      |
| Decoded character stream     | D21.0     | D23.4     | D23.5     |                     |                       |      |
|                              |           |           |           |                     | coding violation      |      |

This example is similar to the previous one, with the difference that the running disparity error occurs with the first subsymbol of a 10 bit code.

CI 36 SC 26.2.4.2 P26.9 L28 # 1114

Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

Why is ENCODED in caps? Why is it even there as I don't think we transmit unencoded code groups?

SuggestedRemedy

Proposed Response Response Status C

Accepted. Delete the word ENCODED.

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Cl 36 SC 36-7b P 36.3 L 9 # 50  
 Brad Booth Jato Technologies, Inc

Comment Type T Comment Status D Withdrawn

carrier\_detect is not dependent on the synchronization state machine sync\_status=OK, only upon the EVEN/ODD indication and the difference between the currently latched value /x/ and /K28.5/

SuggestedRemedy

Make carrier\_detect also dependent on the synchronization state machine sync\_status=OK

Proposed Response Response Status Z

Withdrawn. The suggested remedy mixes the link integrity checking functions performed by the Synchronization state machines with the normal Receive functions performed by the Receive state machine.

Detection of carrier is not substantially different than the detection of any other code\_group required for movement between Receive state machine states. A consistent philosophy would require the additional checking of sync\_status=OK for each Receive state machine transition where code\_group comparison is performed.

Implementing the suggested remedy does not alter the processing of the received packet (i.e. the packet is discarded), and does not simplify PCS state machine operation.

See also comment #117

Cl 36 SC 36.1.1 P 36.3 L 34 # 900  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Change to "copper medium using two pairs"

Proposed Response Response Status C

Accepted as a duplicate of comment #231. Please refer to comment #231. I like Mick's words ;^)

Cl 36 SC 36.1.1 P 36.3 L 34 # 231  
 Colin Mick The Mick Group

Comment Type E Comment Status A

Change "single copper media: two pairs of 150-ohm balanced cabling" to "two pairs of 150-ohm balanced copper cabling"

SuggestedRemedy

See above

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.1.1 P 36.3 L 45-46 # 1111  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

The function claimed in this sentence as provided by 1000BASE-X, mapping from the PMD to the MAC seems to be the function actually provided by the reconciliation sublayer.

SuggestedRemedy

reword to make it clear what this is other than the reconciliation sublayer. Also, I expect that the function intended is performed by PCS rather than by 1000BASE-X as a whole which includes the PMD.

Proposed Response Response Status C

Accepted. Change the sentence from "1000BASE-X maps the interface characteristics of the PMD sublayer (including MDI) to the services expected by the MAC." to "1000BASE-X PCS and PMA sublayers map the interface characteristics of the PMD sublayer (including MDI) to the services expected by the Reconciliation sublayer."

Cl 36 SC 36.1.2 P 36.4 L 1-10 # 901  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

(b) is not a sentence. I have no idea what it is trying to say.  
 (c) Change "devices" to "PMDs"  
 (f) Change to "network extent of up to 3 km"  
 (f2, f3, f4) Delete "approximately"

Proposed Response Response Status C

Accepted.  
 Change (b) to read: "Support the 1000 Mb/s repeater;".  
 Change (c) and (f)s as per suggested remedy.

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CI 36 SC 36.1.4.1 P 36.4 L 27-28 # 902  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status R  
 1000BASE-X does not really provide the same services to GMII as 100BASE-X does to MII. There is no AutoNegotiation in 100BASE-X PCS.  
 SuggestedRemedy  
 Delete the sentence.  
 Proposed Response Response Status C  
 Rejected. The operative words in this sentence are "in a manner analogous". "Same" is not used in this sentence. This sentence is descriptive as it is under the subclause 36.1.4, Summary of 1000BASE-X sublayers.

CI 36 SC 36.1.4.1 P 36.4 L 30 # 903  
 Rich Seifert Networks & Communic  
 Comment Type TR Comment Status A Technical Change  
 You can't have a conformance requirement on an abstract service interface.  
 SuggestedRemedy  
 Change "shall realize" to "provides". Same problem in 36.3.1.  
 Proposed Response Response Status C  
 Accepted per suggested remedy.Deleted PICS entry CC2.

CI 36 SC 36.1.4.1 P 36.4 L 34 # 904  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Qualify (b) with "for half duplex PHYs".  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.1.4.3 P 36.5 L 10 # 1112  
 Pat Thaler Hewlett-Packard  
 Comment Type T Comment Status A  
 I don't think the Medium Dependent Interface defines the actual medium attachment. It \_is\_ the actual medium attachment.  
 SuggestedRemedy  
 Change "defines" to "is"  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.1.5 P 36.6 L 4 # 332  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.1.5 P 36.6 L 4 # 314  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Use of upper case for "(Clause 35)" should be lower case to match similar uses in 100BASE clauses.  
 SuggestedRemedy  
 Change line 4 from "(Clause 35)" to "(clause 35)".  
 Perform a global search of this clause and change, except when used at start of a sentence or other proper noun, all usage of upper case to lower case.  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.1.5 P 36.6 L figure 36- # 401  
 Don Wong 3Com Corporation  
 Comment Type E Comment Status A  
 Add signal name "sync\_status" onto path between Auto-Negotiation & Synchronization  
 SuggestedRemedy  
 Add signal name "sync\_status" onto path between Auto-Negotiation & Synchronization  
 Proposed Response Response Status C  
 Accepted. See comment #400.

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**Cl 36**    **SC 36.1.5**                      **P 36.6**                      **L figure 36-**                      **# 402**  
 Don Wong                                      3Com Corporation

**Comment Type E**                      **Comment Status A**  
 Missing signal names between path between  
 Auto-Negotiation & Receive

**SuggestedRemedy**  
 Add missing signal names between path between  
 Auto-Negotiation & Receive

**Proposed Response**                      **Response Status C**  
 Accepted. See comment #400

**Cl 36**    **SC 36.1.5**                      **P 36.6**                      **L figure 36-**                      **# 400**  
 Don Wong                                      3Com Corporation

**Comment Type E**                      **Comment Status A**  
 Add signal name "xmit" onto path between  
 Auto-Negotiation & Transmit

**SuggestedRemedy**  
 Add signal name "xmit" onto path between  
 Auto-Negotiation & Transmit

**Proposed Response**                      **Response Status C**  
 Accepted.Deleted the terms "receiving" and "transmitting as an inappropriate level  
 of detail for figure 36-2.

**Cl 36**    **SC 36.1.6**                      **P 36.6**                      **L 13**                      **# 38**  
 Sailesh K. Rao                                      Level One Communica

**Comment Type E**                      **Comment Status A**  
 What is the rationale for the double arrows vs. normal arrows in  
 Fig. 36-2? In particular, why is COL a double arrow and CRS a normal  
 arrow in the block diagram?

**SuggestedRemedy**  
 Change COL to normal arrow.

**Proposed Response**                      **Response Status C**  
 Accepted per suggested remedy.

**Cl 36**    **SC 36.1.6**                      **P 36.6**                      **L 18**                      **# 318**  
 Tom Mathey                                      Baynetworks

**Comment Type E**                      **Comment Status A**  
 Figure 36-2 shows:  
 1. a double line for for a single signal COL. Other usage of double line  
 is for multiple signals.  
 2. unidirectional line from block AUTO-NEGOTIATION to block TRANSMIT is  
 without a name. To match Figure 37-5 on p37.15, the name should be xmit  
 and should also go to block RECEIVE.  
 3. bidirectional line from block AUTO-NEGOTIATION to/from block RECEIVE  
 is without a name. To match Figure 37-5 on p37.15, the line should be  
 unidirectional, or not shown at all since there is a line from block  
 SYNCHRONIZATION to block AUTO-NEGOTIATION.

**SuggestedRemedy**  
 Editors choice for actual  
 1. Change double line to single line  
 2. Add name "xmit" to line and extend to block RECEIVE.  
 3. Delete bidirectional line, or editors choice for signal name

**Proposed Response**                      **Response Status C**  
 1. Accepted as a duplicate of comment #38. Please refer to comment #38.  
 2. Accepted as a duplicate of comment #400. Please refer to comment #400.  
 The text associated with similar blocks in figure 37-5 is not appropriate  
 for inclusion in figure 36-2. Figure 36-2 depicts the functional blocks of  
 all of 1000BASE-X. If "xmit" were to be included, "tx\_Config\_Reg<D15:D0>"  
 would also need to be included. Including both would be an inappropriate  
 level of detail for figure 36-2. The unidirectional nature of the line in  
 figure 36-2 matches that of the associated lines in figure 37-5.  
 3. Accepted as a duplicate of comment #402. Please refer to comment #402.  
 The bidirectional nature of the line in figure 36-2 matches that of the  
 associated lines in figure 37-5.

**Cl 36**    **SC 36.1.7, oithers**                      **P 36.7**                      **L 1-8**                      **# 906**  
 Rich Seifert                                      Networks & Communic

**Comment Type TR**                      **Comment Status R**                      **TR Reject**  
 The discussion of state diagram conventions was already made in Clause 34.  
 There is no need to repeat it for every state diagram in the standard.

**SuggestedRemedy**  
 State the state machine conventions once, in Clause 34. Eliminate it from  
 all other 802.3z clauses (global issue).

**Proposed Response**                      **Response Status C**  
 Rejected. State machine conventions vary from clause to clause. This is  
 certainly true in clauses 28 and 37 where variables assume a default value.  
 In addition, state machine conventions are also specified in clause 21, and  
 perhaps also in one or more base 802.3 clauses.

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Cl 36 SC 36.2.1 P 36.7 L 18 # 334  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.1 P 36.7 L 21 # 336  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.2 P 36.7 L 25 # 317  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

It would be helpful to the reader if the text for "36.2.2 Functions within the PCS" subclause followed a logical set of steps from transmit to receive. Present text is not in sequential order. Editors choice for actual order of process description, just make it match the paragraph sequence.

SuggestedRemedy  
 Change line 25 to an order of "PCS Transmit, Carrier Sense, Synchronization, PCS Receive, and Auto-Negotiation processes". Move matching text within subclause to be in the same order.

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.2 P 36.7 L 53 # 1105  
 Tom Mathey Baynetworks

Comment Type E Comment Status R

I believe that the use of sync\_status and signal\_detect are interchanged. Signal\_detect indicates whether the PMA is functioning. The internal flag sync\_status indicates code\_group alignment.

SuggestedRemedy  
 Change from:  
 The PCS Synchronization process sets the sync\_status flag to indicate whether the PMA is functioning dependably (as well as can be determined without exhaustive error-rate analysis).

to something like:  
 The PCS Synchronization process uses the signal\_detect flag to indicate whether the PMA is functioning dependably (as well as can be determined without exhaustive error-rate analysis). The PCS Synchronization process generates the sync\_status flag, which indicates code\_group alignment, to the PCS Auto-Negotiation process.

Proposed Response Response Status C  
 Rejected. The current sentence is correct, and signal\_detect comes from the PMD, not the PMA.

Cl 36 SC 36.2.2 P 36.7 L 53 # 315  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Text for PCS Synchronization process is split into two pieces (ie., in two places). It would be helpful to the reader if the pieces were together. Editors choice for actual order of process description.

SuggestedRemedy  
 Move PCS Synchronization process text for lines 53, 54 to end of sentence on line 44.

Proposed Response Response Status C  
 Accepted per suggested remedy.



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**Cl 36 SC 36.2.2 P36.8 L3 # 340**  
 Scott Carter IBM  
**Comment Type E Comment Status A**  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
**SuggestedRemedy**  
 uncapitalize Clause  
**Proposed Response Response Status C**  
 Accepted per suggested remedy.

**Cl 36 SC 36.2.3 P36.8 L8 # 316**  
 Tom Mathey Baynetworks  
**Comment Type E Comment Status A**  
 Line 8 states "The PCS maps eight-bit data octets and special code\_groups from the GMII into ten-bit". I believe the words "from the GMII" imply that the PCS receives code\_groups, special or otherwise, from the GMMI.  
**SuggestedRemedy**  
 Change line to read "The PCS maps eight-bit data octets and transmit control signals (TX\_EN, TX\_ER) from the GMII into ten-bit". Editors choice for how to word the vice versa condition.  
**Proposed Response Response Status C**  
 Accepted. Changed the first sentence of 36.2.3 as follows:  
 "The PCS maps GMII signals into ten-bit code groups, and vice versa, using an 8B/10B block coding scheme."

Note the usage of "GMII signals" in 35.2.1.  
**Cl 36 SC 36.2.3 P36.8 L8 # 952**  
 Ariel Hendel Sun  
**Comment Type E Comment Status A**  
 "The PCS maps eight-bit data octets and special code\_groups from the GMII ..."  
 The term code\_groups is not really used for the GMII. Clause 35 uses "encodings" for non-data values at the GMII.  
**SuggestedRemedy**  
 replace "special code\_groups" with "special encodings" in its first instance of line 8  
**Proposed Response Response Status C**  
 Accepted. See comment #316

**Cl 36 SC 36.2.3 P36.8 L8 # 779**  
 Jon Frain UNH InterOperability L  
**Comment Type T Comment Status A Technical Change**  
 Missing "shall" in PICS items CG3 and CG4 of subclause 36.7.4.4.  
**SuggestedRemedy**  
 Modify 36.2.3 line 8 from:  
 "The PCS maps eight-bit data octets and special code\_groups from the GMII into ten-bit code\_groups, and vice versa, using a 8B/10B block coding scheme."  
 To:  
 "The PCS shall map eight-bit data octets and special code\_groups from the GMII into ten-bit code\_groups, and vice versa, using an 8B/10B block coding scheme."  
**Proposed Response Response Status C**  
 Accepted. PICS PCS4 covers the PCS state machine which includes the ENCODE and DECODE functions. PICS items CG3 and CG4 are deleted.

**Cl 36 SC 36.2.4 P36.8 L36 # 1113**  
 Pat Thaler Hewlett-Packard  
**Comment Type E Comment Status A**  
 Delete GMII Management as this is the GMII data interface not the management one.  
**SuggestedRemedy**  
**Proposed Response Response Status C**  
 Accept per suggested remedy.

**Cl 36 SC 36.2.4 P36.8 to 36.2 L # 1124**  
 Pat Thaler Hewlett-Packard  
**Comment Type TR Comment Status A Technical Change**  
 This section needs to be checked for proper use of shall. I've found several places where it was used to casually. I doubt I've caught them all.  
**SuggestedRemedy**  
**Proposed Response Response Status C**  
 Accepted. I believe that the following comments and their associated responses address this comment adequately: #780, 788, 907.

P802.3z Draft 3.1 Comments

CI 36 SC 36.2.4.10 P36.17 L 48 # 842  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo error, missing "/".  
 SuggestedRemedy  
 Change from "sets /C1 and" to "sets /C1/ and".  
 Proposed Response Response Status C  
 Accepted as a duplicate of comment #483. Please refer to comment #483.

CI 36 SC 36.2.4.10 P36.17 L 48 # 483  
 Alan Albrecht Hewlett-Packard  
 Comment Type E Comment Status A  
 Missing "/" after "/C1"  
 SuggestedRemedy  
 Change to "/C1/".  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.2.4.10 P36.17 L 49 # 344  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.2.4.10 P36.17 L 52 to 53 # 1120  
 Pat Thaler Hewlett-Packard  
 Comment Type T Comment Status A  
 The statements made by the second and third sentences of this paragraph are true regardless of whether the Config\_Reg value remains constant or not. The first two code\_groups of /C1/ always cause a flip and the first two of /C2/ never cause a flip.

SuggestedRemedy  
 Delete "For a constant Config\_Reg value," at the start of each sentence. After that could be added, "Therefore, for a constant Config\_Reg value, the running disparity after transmitting the sequence /C1/ /C2/ will be the opposite of what it was at the start of the sequence. This ensures that K28.5's containing comma+ will be sent during configuration.

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.2.4.12 P36.18 L 14 # 998  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'

SuggestedRemedy  
 See above

Proposed Response Response Status C  
 Accepted per suggested remedy. Changed "GMII Interface" to "GMII".

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Cl 36 SC 36.2.4.12 P 36.18 L 23 # 1121  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

We can be specific here about which /I/ is sent. Also, it does not really retain negative running disparity as the disparity flips twice during each /I2/. It makes the disparity at the start of the K28.5 negative so that the comma+ will be sent.

SuggestedRemedy

Replace with "All subsequent /I/s shall be /I2/ to ensure that comma+ is transmitted."

Proposed Response Response Status C

Accepted. The intention of an /I/ stream is to ensure a constant ENDING running disparity for each /I/ transmitted. The disparity chosen is negative. Comma+ is transmitted as a result. A consistent running disparity allows for the addition and removal of /I/. Rewrote the sentence as follows: "All subsequent /I/s are /I2/ to ensure negative ending running disparity"

Cl 36 SC 36.2.4.12 P 36.18 L 25 to 26 # 1122  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

Delete the second sentence or remove the shall. We should not be specifying behavior that is more completely and accurately specified in the state machine. The statement here is incorrect. The receiver will not immediately drop carrier. It will send TX\_ER and then drop carrier.

SuggestedRemedy

Proposed Response Response Status C

Accepted. Deleted the second sentence. The associated PICS entry, ED2, is also deleted.

Cl 36 SC 36.2.4.12 P 36.18 L 33, 34 # 404  
 Don Wong 3Com Corporation

Comment Type T Comment Status A

The sentence on line 33 & 34 reads, "An ordered set which consists of two code\_groups, first of which is /K28.5/ and the second of which is a data code\_group other than /D21.5 or /D2.2/, shall be treated as an /I/ order\_set"

I'm a bit concerned with the meaning of this statement since it seems to imply that a transmitting station can sent this code group in place of /I1/ and /I2/. Also the receiving station would be required decode these code group as /I/."

This sentence has been added into the D3.1 verison. This will impose a compatibility issue with PCS that have been designed prior to D3.1. While I would agree that 802.3z has not been an approved spec and implementations prior to approval runs this risk. I don't see the need to break existing implementations.

SuggestedRemedy

Proposed Response Response Status C

Accepted. Change the sentence from "An ordered set" to "A received ordered set."

Cl 36 SC 36.2.4.12 P 36.18 L 33-34 # 1123  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status R TR Reject

Delete this. It is not true. The code group described will not be treated as an Idle as it will cause a START\_AN indication.

SuggestedRemedy

Proposed Response Response Status C

Rejected. The transition which specifies this operation it that from IDLE\_K to IDLE\_D in figure 36-7b.

Cl 36 SC 36.2.4.13 P 36.18 L 41 # 767  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A

missing the word "the"

SuggestedRemedy

Replace "delimiter with data octet associated with..." with "delimiter with the data octet value associated with..."

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 36.2.4.13 P36.18 L45 # 1125  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A  
 The only packet in a burst of packets is certainly the first one if we consider that to be a burst. Also, I don't see why we use "burst of packets" rather than just "burst."

SuggestedRemedy  
 Replace with "SPD shall follow // for a single packet or the first packet in a burst."

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.4.14 P36.18 L54 # 768  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A  
 "A" should be replaced with "An"

SuggestedRemedy  
 Replace "A EPD delimiter consists of ..." with "An EPD delimiter consists of ..."

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.4.14.1 P36.19 L 14-15 # 1126  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A  
 The bulleted list is written as if it was code with an else between b and c, but that is not explicitly stated and is not generally true of our bulleted lists.

SuggestedRemedy  
 If we can go another level deep on bulleting, create a "c)  
 If the MAC does not indicate the Carrier\_Extend function to the PCS, perform the following:" and turn c) and d) into subbullets under it.

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.4.15 P36.19 L # 755  
 YUN-CHE WANG Cypress Semiconductor

Comment Type E Comment Status A  
 line 27-28: "Carrier\_Extend is emitted and interpreted by the MAC .."  
 The "Carrier\_Extend" is defined to be "/R/" and it is only understood by the PCS, not the MAC. The MAC only understands "carrier extension".

SuggestedRemedy  
 change "Carrier\_Extend is emitted and interpreted by the MAC " to "carrier extension is requested and interpreted by the MAC"

Proposed Response Response Status C  
 Accepted. Changed b) to read:  
 "Packet separation: "Carrier extension is used by the MAC to separate packets within a burst of packets. When used for this purpose, carrier extension is requested and interpreted by the MAC and coded to and decoded from the corresponding code\_group by the PCS;"

Cl 36 SC 36.2.4.15.1 P36.19 L # 760  
 YUN-CHE WANG Cypress Semiconductor

Comment Type E Comment Status A  
 Carrier\_Extend rules a) is not "Carrier-Extend rules"; it is part of the EPD rules from 36.2.4.14.1

SuggestedRemedy  
 Remove rule a)

Proposed Response Response Status C  
 Accepted per suggested remedy.

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Cl 36 SC 36.2.4.15.1 P36.19 L 49-55 # 780  
 Jon Frain UNH InterOperability L

Comment Type T Comment Status A Technical Change

Missing "shall" for PICS item ED7 in subclause 36.7.4.7.

SuggestedRemedy

Modify the lines of 36.2.4.15.1 as follows:

- b) "... the initial /T/R/ shall be followed by ..."
- c) "...the PCS shall append ..."

Add PICS entry ED8 to 36.7.4.7 to cover case (c).

| Item Feature       | Subclause     | Status  | Support                                       | Comment |
|--------------------|---------------|---------|-----------------------------------------------|---------|
| ED8 Idle Alignment | 36.2.4.15.1 M | Yes [ ] | Last /R/ transmitted in odd-numbered position |         |

Proposed Response Response Status C

Accepted. PICS item ED7 deleted because it is covered in the state machines, PICS item PCS4.

Cl 36 SC 36.2.4.15.1 P36.19 L 50-51 # 1127  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

This makes it sound like the MAC sends a request with a time interval.

SuggestedRemedy

"... is followed by one /R/ for each 8 bits of Carrier\_Extend received from the MAC."

Proposed Response Response Status C

Accepted. Change lines 50-51 to:  
 "... is followed by one /R/ for each octet of carrier extension received from the MAC."

Cl 36 SC 36.2.4.16 P36.20 L 12 # 843  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

I believe that the PCS indicates the reception of /V/ or an invalid code\_group to the GMII as a data reception error per table 35-2, and thus the description in line 12 is incorrect.

SuggestedRemedy

Change from "the use of the RX\_ER signal and the RXD<7:0> value, as described in Clause 35." to "the use of the RX\_DV signal asserted, the RX\_ER signal asserted, and any encoding of the RXD<7:0> value, as described in 35.2.2.9 and table 35-2."

Proposed Response Response Status C

Accepted.  
 Rewrite in a general fashion.  
 Change from "the use of the RX\_ER signal and the RXD<7:0> value, as described in Clause 35." to "the use of the RX\_DV signal asserted and the RX\_ER signal asserted as described in 35.2.2.9 and table 35-2."

Cl 36 SC 36.2.4.16 P36.20 L 13 # 343  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.4.16 P36.20 L 6 # 341  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 36.2.4.17 P 36.20 L 18 # 26  
Kevin Daines Packet Engines

Comment Type E Comment Status A

The paragraph begins by mentioning "frames" and then ends up talking about "packets". Since the PCS has delimiters like SPD Start\_of\_Packet delimiter and EPD End\_of\_Packet delimiter, I strongly feel that the PCS encapsulates packets. Further evidence is that fact a frame does not include the preamble and Start Frame Delimiter (SFD).

SuggestedRemedy

Change line to read "The 1000BASE-X PCS accepts packets from the MAC..."

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.4.17 P 36.20 L 21 # 769  
Jon Frain UNH InterOperability L

Comment Type E Comment Status A

Missing the word "the"

SuggestedRemedy

Replace "The PCS decodes the code\_group ... and passes it to MAC via the ..."  
with "The PCS decodes the code\_group ... and passes it to the MAC via the ..."

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.4.17 P 36.20 L 42 # 844  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Drawing error, break symbol is missing

SuggestedRemedy

for the tx\_code\_group line, add the break symbol on the bottom line.

Proposed Response Response Status C

Accepted per suggested remedy.  
Also realign tx\_code\_group label

Cl 36 SC 36.2.4.2 P 36.9 L 31 # 789  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Use of plural noun "contents" with singular verb "is".

SuggestedRemedy

Change line 31:  
from "The contents of a packet is transmitted"  
to "The contents of a packet are transmitted".

Proposed Response Response Status C

Accepted as a duplicate of comment #25. Please refer to comment #25.

Cl 36 SC 36.2.4.2 P 36.9 L 31 # 25  
Kevin Daines Packet Engines

Comment Type E Comment Status A

Grammar problem

SuggestedRemedy

Change line to read "The contents of a packet are ..."

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.4.2 P 36.9 L 31 # 782  
Jon Frain UNH InterOperability L

Comment Type E Comment Status A

"is" should be replaced with "are".

SuggestedRemedy

Replace "The contents of a packet is transmitted ..."  
with "The contents of a packet are transmitted ..."

Proposed Response Response Status C

Accepted as a duplicate of comment #25. Please refer to comment #25.

Cl 36 SC 36.2.4.2 P 36.9 L 31 # 1115  
Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"The contents ... is" should be "The contents ... are".

SuggestedRemedy

Proposed Response Response Status C

Accepted. See comment #25

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Cl 36 SC 36.2.4.4 P 36.10 L 32 # 485  
 Howard Frazier Cisco Systems

Comment Type TR Comment Status A

The sentence "For valid code groups..." is insufficient to alleviate the confusion caused by the presence of the "Ending RD" column in tables 36-1 and 36-2.

*SuggestedRemedy*

Strike this sentence, and strike the column labeled "Ending RD" from tables 36-1 and 36-2.

Proposed Response Response Status C

Accepted as a duplicate of comment #206. Deleted the Ending RD column in tables 36-1 and 36.2. Deleted the last paragraph of 36.2.4.4.

Cl 36 SC 36.2.4.4, 36.2.4.5, 36.2. P 36.9 and 36. L line 54 of # 788  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A Technical Change

Redundant shalls pertaining to running disparity calculations.

1) Transmitter  
 page 36.9 (line 50)

"Upon transmission of any code\_group, the transmitter shall calculate a new value for its running disparity based on the contents of the transmitted code\_group."

page 36.10 (line 39)

"For each code\_group transmitted, a new value of the running disparity is calculated. This new value shall be used as the transmitter's current running disparity for the next octet to be encoded and transmitted."

2) Receiver  
 page 36.9 (line 54)

"Upon reception of any code\_group, the receiver shall determine whether the code\_group is valid or invalid and shall calculate a new value for its running disparity based on the contents of the received code\_groups."

Page 36.10 (line 45)

"The column in tables 36-1 and 36-2 corresponding to the current value of the receiver's running disparity shall be searched for the received code\_group. If the received code\_group is found in the proper column, according to the current running disparity, then the code\_group shall be considered valid, and for data code\_groups, the associated data octet determined (decoded). If the received code\_group is not found in that column, then the code\_group shall be considered invalid. Independent of the code\_group's validity, the received code\_group shall be used to calculate a new value of running disparity. The new value shall be used as the receiver's current running disparity for the next received code\_group."

*SuggestedRemedy*

Modify line 50 of page 36.9 to read:

"Upon the transmission of any code\_group, the transmitter calculates a new value for its running disparity based on the contents of the transmitted code\_group."

Modify line 54 of page 36.9 to read:

"Upon the reception of any code\_group, the receiver determines whether the code\_group is valid or invalid and calculates a new value for its running disparity based on the contents of the received code\_groups."

Remove PICS item CG10 (Received code\_group match running disparity). Change the Subclause field for PICS item CG7(Validating received code\_group) to subclause 36.2.4.6.

Proposed Response Response Status C

Accepted. Remove shalls from page 36.10 as follows:

Page 36.10 (line 8)

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"Running disparity for a code\_group is calculated based on sub-blocks,..."

Page 36.10 (line 15)

"Running disparity for the sub-blocks is calculated as follows:"

Page 36.10 (line 39)

"For each code\_group transmitted, a new value of the running disparity is calculated. This new value is used as the transmitter's current running disparity for the next octet to be encoded and transmitted."

Page 36.10 (line 49)

"Independent of the code\_group's validity, the received code\_group is used to calculate a new value of running disparity. The new value is used as the receiver's current running disparity for the next received code\_group."

**Cl 36 SC 36.2.4.4, etc. P36.9 L 50, 54 # 907**  
 Rich Seifert Networks & Communic

**Comment Type TR Comment Status A Technical Change**

A "shall" is used (conformance requirement) in text that is already covered by the state machine formulations. We should only state a conformance requirement once, preferably in the state machines.

*SuggestedRemedy*

Eliminate all such redundant shalls. I found:

- p9, line 50, 54
- p10, line 1, 4, 8, 15, 46, 47, 49, 50 (2x)
- p18, line 22, 26, 33, 40, 41, 45, 51

There may be others.

**Proposed Response Response Status C**

Accepted where relevant. The following "shall" usages are deleted:  
 p10, line 8, 15, 50 (2x)  
 p18, line 22, 26, 33, 40, 41, 45, 51  
 Associated PICS entries are deleted.

The following "shall" usages are not deleted as they are not covered by state machine formulations:

- p9, line 50, 54
- p10, line 1, 4, 46, 47, 49

**Cl 36 SC 36.2.4.5 P36.10 L 37 # 403**  
 Don Wong 3Com Corporation

**Comment Type E Comment Status A**

Within Table 36 there is a column RD- Transition Density & RD+ Transition Density, but I failed to locate the definition of these two columns

*SuggestedRemedy*

Add definition of RD- Transition Density & RD+ Transition Density

**Proposed Response Response Status C**

Accepted. Deleted the columns. See comment #482.

**Cl 36 SC 36.2.4.5 P36.12 to 36. L # 1116**  
 Pat Thaler Hewlett-Packard

**Comment Type TR Comment Status A**

The transition density tables don't serve any useful purpose. If a designer needs to know any thing about transition density, it is that the minimum transition density is 3 per octet.

Also, combined transition density is just the sum of the RD- and RD+ density which does not appear to accurate. For instance, the transition density of D18.7 is 5 for each and the combined transition density is listed as 10. But, if you sent a string of D18.7's, you would actually have 12 transitions per pair of octets because there is a transition between each octet. The transition density figures only account for transitions within an octet, not those between octets.

*SuggestedRemedy*

Delete these columns.

**Proposed Response Response Status C**

Accepted per suggested remedy.



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CI 36 SC 36.2.4.6 P 36.12 L # 206

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The ending RD column on the table is misleading. Readers are missing the statement at the end of 36.2.4.4 that it only applies when the code group was valid.

No reader who understands the running disparity rules of 36.2.4.4 needs this column and any reader who doesn't understand the rules will be misled by the column. Therefore, it serves no useful purpose.

SuggestedRemedy

The following alternatives are acceptable to me (most preferred first):

Delete the Ending RD column.

Provide two Ending RD columns; one for each current RD and indicate "+" or "-" rather than "same" or "flip".

Either on each page of the table or at each place where the table is referenced provide a statement indicating that the content of Ending RD is only valid when the code group was valid and referencing 36.2.4.4 for the calculation of running disparity.

Proposed Response Response Status C

Accepted. Deleted the Ending RD column in tables 36-1 and 36.2. Deleted the last paragraph of 36.2.4.4.

CI 36 SC 36.2.4.7 P 36.11 L 10 # 790

Tom Mathey Baynetworks

Comment Type E Comment Status A

Text says there are eight ordered\_sets, corresponding table has ten entries.

SuggestedRemedy

Change text from "Eight Ordered\_sets, consisting" to "Ten ordered\_sets, consisting" and note change of letter "O" from upper to lower case.

Proposed Response Response Status C

Accepted. Actually, table 36-5 defines only eight ordered\_sets. The /C/ and /I/ rows serve as sub-header rows for the /C1/, /C2/ and /I1/, /I2/ entries, respectively. Added shading to the /C/ and /I/ rows to distinguish these rows as sub-headers. Also deleted the "Number of Code\_Groups" column entries for these rows to further distinguish these rows as sub-headers. No change is made to the text of 36.2.4.7 except for changing the letter "O" of "Ordered\_sets" on line 10 from upper to lower case. Also see comment #822.

CI 36 SC 36.2.4.7 P 36.11 L 12 # 841

Tom Mathey Baynetworks

Comment Type E Comment Status A

Add another forward pointer, which provides more information than existing pointer, to sub-clause.

SuggestedRemedy

Change from "(see 36.2.4.9)" to "(see 36.2.4.9, 36.3.2.4)".

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.2.4.7.1 P 36.11 L 20 # 781

Jon Frain UNH InterOperability L

Comment Type E Comment Status A

"consists" should be replaced with "consist".

SuggestedRemedy

Replace "Ordered\_sets consists of ..." with "Ordered\_sets consist of ..."

Proposed Response Response Status C

Accepted as a duplicate of comment #23. Please refer to comment #23.

CI 36 SC 36.2.4.7.1 P 36.11 L 20 # 23

Kevin Daines Packet Engines

Comment Type E Comment Status A

Grammar problem

SuggestedRemedy

Change line to read "Ordered\_sets consist of either one, two..."

Proposed Response Response Status C

Accepted per suggested remedy.

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CI 36 SC 36.2.4.7.1 P36.12 L1 # 482  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Combined Transition density seems to be simply the sum of RD+ and RD-. I don't see the relevance of having this in the table. What would one do with combined transition density?  
 RD+ and RD- transition density are also not needed by the implementer. It was useful to think about transition density as we picked codes, but an implementer does not need it to be this easily available and could calculate it on their own if they had a specific need. Typically they would not need to know it.  
 It might be useful for PLL designers to know that the minimum transition density is three.  
 Octet Value and Octet Bits column seem redundant but they do help clarify the relationship of the three different ways we have of representing a byte of data. The committee could consider dropping one of the two, but we would need to add a figure or text that ensures the A to lsb mapping is clear. I am ok with leaving these two as is.

SuggestedRemedy

Delete Combined, RD+ and RD- Transition Density columns in Tables 36-1a to 36-1e.  
 Add the following sentence at the end of the first paragraph of 36.2.4. The transition density of the 8B/10B symbols ranges from 3 to 8 transitions per symbol.

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.2.4.9 P36.17 L32 - 33 # 1117  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"insure" should be "ensure" 2 places. This continues throughout 36 so a search and replace should be done.

SuggestedRemedy

Proposed Response Response Status C  
 Accepted per comment text.

CI 36 SC 36.2.4.9 P36.17 L34 # 1118  
 Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

I realize that casual use of "standard" as in "industry standard components" is common, but we need to be more careful about the word's use.

SuggestedRemedy

Replace "industry standard components" with "available components" or "common components".

Proposed Response Response Status C  
 Accepted. "industry standard components" is replaced with "common components".

CI 36 SC 36.2.4.9 P36.17 L40 # 481  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Extra space of indent on lines 40-45.

SuggestedRemedy

Delete extra space.

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 36 SC 36.2.4.9 P36.17 L40 to 44 # 1119  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Since this subclause seems to be largely informative anyway, we might help the reader by adding "The /K28.7/ special code\_group is not used by 1000BASE-X."

SuggestedRemedy

Proposed Response Response Status C  
 Accepted. Add sentence to third paragraph of 36.2.4.9:  
 " The /K28.7/ special code\_group is used by 1000BASE-X for diagnostic purposes only (see annex 36A)."  
 Change next sentence to read: "This code group.."

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CI 36 SC 36.2.44, 36.2.4.6, Figur P36.9-36.16 L Multiple # 963  
 Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A

The description of the rules for determination of running disparity in general is very hard to parse, requiring use of several references which at time appear to conflict. In particular the receiver behaviour for running disparity on receipt of an invalid code\_group.

SuggestedRemedy

Either clean the text up to form a better flow of the logical operation, or better still, add a state diagram that eliminates the confusion and is used as the definitive reference.

Proposed Response Response Status C

Accepted. The following changes are made:

The "ENDING RD" columns in tables 36-1 and 36-2 have been deleted per comment 206.

Informative annex 36B is added to include running disparity examples. The contents of that annex are as follows:

ANNEX 36B - 8B10B CODE RUNNING DISPARITY CALCULATION EXAMPLES

EXAMPLE 1:

|                              |           |           |           |                     |                       |      |    |
|------------------------------|-----------|-----------|-----------|---------------------|-----------------------|------|----|
|                              | Character | Character | Character |                     |                       |      |    |
| Transmitted character stream | D21.1     | D10.2     | D23.5     |                     |                       |      |    |
| Running disparity            | RD        | RD        | RD        | RD                  | RD                    | RD   | RD |
| Transmitted bit stream       | 101010    | 1001      | 010101    | 0101                | 111010                | 1010 |    |
|                              | -         | -         | -         | -                   | +                     | +    |    |
| Bit stream after error       | 101010    | 1011      | 010101    | 0101                | 111010                | 1010 |    |
|                              | -         | -         |           | +                   | +                     | -    | +  |
|                              |           |           |           |                     |                       |      |    |
|                              |           |           |           | error               |                       |      |    |
|                              |           |           |           | introduce bit error | (nonzero disparity    |      |    |
|                              |           |           |           |                     | blocks must alternate |      |    |
|                              |           |           |           |                     | in polarity)          |      |    |
| Decoded character stream     | D21.0     | D10.2     | D23.5     |                     |                       |      |    |
|                              |           |           |           |                     | coding violation      |      |    |

This example demonstrates how a single bit error in the receive data stream, that converts one valid 10 bit character into another valid 10 bit character, is detected by updating running disparity.

EXAMPLE 2:

|                              |           |           |           |    |    |    |    |
|------------------------------|-----------|-----------|-----------|----|----|----|----|
|                              | Character | Character | Character |    |    |    |    |
| Transmitted character stream | D21.1     | D23.4     | D23.5     |    |    |    |    |
| Running disparity            | RD        | RD        | RD        | RD | RD | RD | RD |

Transmitted bit stream 101010 1001 111010 0010 111010 1010  
 - - - + - + +

Bit stream after error 101010 1011 111010 0010 111010 1010  
 - - | + + - + +

error  
 introduce bit error (nonzero disparity  
 blocks must alternate  
 in polarity)

Decoded character stream D21.0 D23.4 D23.5  
 coding violation

This example is similar to the previous one, with the difference that the running disparity error occurs with the first subsymbol of a 10 bit code.

CI 36 SC 36.2.5 P36.21 L 18 # 990  
 David Law 3Com

Comment Type E Comment Status A

Suggest '... in IEEE802.3u 21.5.' should read '... in 21.5.' IEEE802.3u is part of the same standard, do not need to include supplements name in this reference.

SuggestedRemedy

Change text to read '... in 21.5.'

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.2.5.1 P36.21 L 36 # 954  
 Ariel Hendel Sun

Comment Type E Comment Status A

Subclause refers to itself (36.2.5.1)

SuggestedRemedy

Fix it :)

Proposed Response Response Status C

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

*Cl* 36      *SC* 36.2.5.1.1      *P* 36.21      *L* 35      # 1134  
 Pat Thaler      Hewlett-Packard  
*Comment Type*    **E**      *Comment Status*    **A**  
     The reference is wrong (since it references this same subclause).  
*SuggestedRemedy*  
     36.2.5.1.2?  
*Proposed Response*      *Response Status*    **C**  
     Accepted per suggested remedy.

*Cl* 36      *SC* 36.2.5.1.1      *P* 36.21      *L* 36      # 690  
 Bob Noseworthy      UNH InterOperability L  
*Comment Type*    **E**      *Comment Status*    **A**  
     The text of the standard defines the running disparity process, how valid codes are selected for transmission (36.2.4.5) and how valid received codes are determined (36.2.4.6); however, there is no reference to this process in the state diagrams or state variables.  
     While the definitions of /COMMA/, /C/, /D/, /Dx.y/, /I/, /Kx.y/, /R/, /S/, /T/, and /V/ could be expanded to clearly reference the checking of running disparity, a more concise edit could be applied to the definition of /x/ (excluding the constant /INVALID/)  
     Why is this necessary?  
     Consider the following: The transition from CARRIER\_DETECT to START\_OF\_PACKET is governed by the reception of [/S/]  
     "/S/ The code\_group corresponding to the Start\_of\_Packet delimiter (SPD) as defined in 36.2.4.13"  
     36.2.4.13 defines "A SPD delimiter consists of the code\_group /S/, as defined in table 36-3."  
     Table 36-3 defines /S/ as /K27.7/  
     referring to Table 36-2,  
     /K27.7/ is defined as 110110 1000 for RD- and 001001 0111 for RD+  
     now, with the \_unreferenced\_ knowledge of 36.2.4.6, we know that for the reception of /S/ to be considered valid, 001001 0111 must be received when the RD is +, or 110110 1000 must be received when the RD is - , whereas the reception of 001001 0111 received when RD is - is invalid, as is 110110 1000 when RD is +. note- 'invalid', NOT an /S/ received in error!  
*SuggestedRemedy*  
     Change:  
     "/x/ denotes the constant code\_group in 36.2.5.1.1"  
     to:  
     "/x/ denotes the constant code\_group in 36.2.5.1.2  
     (Valid code\_groups must follow the rules of running disparity as per 36.2.4.5 and 36.2.4.6)"  
*Proposed Response*      *Response Status*    **C**  
     Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

Cl 36 SC 36.2.5.1.2 P 36.22 L 27 # 845  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Reference to wrong table  
 SuggestedRemedy  
 Change from "table 36-3" to "table 36-2".  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.22 L # 360011  
 Rich Taborek G2 Networks, Inc.  
 Comment Type T Comment Status A Technical Change  
 Define the variable BEGIN as follows:  
 "a signal used to initialize the PCS state machines".  
 SuggestedRemedy  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.22 L 42 # 349  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table  
 capitalized and should not be, assuming the convention is consistent with  
 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.22 L 42 # 908  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Delete the "informative" sentence. It is unnecessary.  
 Proposed Response Response Status C  
 Accepted. Deleted the sentence

Cl 36 SC 36.2.5.1.3 P 36.22 L 46 # 345  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table  
 capitalized and should not be, assuming the convention is consistent with  
 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.22 L 48 # 346  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a bunch of places where the words clause, figure, and table  
 capitalized and should not be, assuming the convention is consistent with  
 802.3u.  
 SuggestedRemedy  
 uncapitalize Clause  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.23 L 26 # 846  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Reference to wrong sub-clause.  
 SuggestedRemedy  
 Change from "38.2.1.2" to "38.1.1.2".  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

Cl 36 SC 36.2.5.1.3 P 36.23 L 44 # 347  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.23 L 47 # 348  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.23 L 50 # 847  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Variable rx\_even, which is set by Synchronization process, has reference to wrong process.

SuggestedRemedy  
 Change from "A boolean set by the PCS Receive process" to "A boolean set by the PCS Synchronization process".

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.24 L 2 # 342  
 Scott Carter IBM

Comment Type E Comment Status A

There are a bunch of places where the words clause, figure, and table capitalized and should not be, assuming the convention is consistent with 802.3u.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P 36.24 L 24 # 848  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Reference to wrong sub-clause.

SuggestedRemedy  
 Change from "38.2.1.1" to "38.1.1.1".

Proposed Response Response Status C  
 Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

Cl 36 SC 36.2.5.1.3 P36.24 L3 # 609  
David Cunningham Hewlett-Packard

Comment Type TR Comment Status A

Signal detect is an optional function. Some PMD's may not implement signal detect. There are no electrical specifications for the PMD service interface and associated signals in Clauses 36, 38 or 39.

In the current draft, PMD's with no signal detect function must physically set signal\_detect to OK? How is signal\_detect set to OK by PMD's that have no signal detect function and no physical PMD\_SIGNAL.indicate(signal\_detect) interface?

This issue can be resolved by adding the default condition of signal\_detect=OK to be returned when there is no physical PMD\_SIGNAL.indicate(signal\_detect) signal or when an undefined PMD\_SIGNAL.indicate(signal\_detect) signal is present.

This comment is relevant to both PMA and PMD sub-groups.

SuggestedRemedy

Add the following sentence on line 5 of page 36.24.

'The default condition of signal\_detect=OK shall be returned when there is no PMD\_SIGNAL.indicate(signal\_detect) message or when an undefined PMD\_SIGNAL.indicate(signal\_detect) message is detected.'

Proposed Response Response Status C

Accepted. Overtaken by events in the 802.3z taskforce, where it was decided that signal\_detect would be a mandatory signal.

Cl 36 SC 36.2.5.1.3 P36.24 L42 # 849  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Usage of variable tx\_o\_set in state diagram does not match text. State diagram uses /R/, /T/ for assignment to tx\_o\_set; text uses EPD1, EPD2, EPD3. Text refers to /D/ as an ordered\_set instead of as a code\_group.

SuggestedRemedy

Change from "defined ordered\_sets: /C/, /D/, EPD1, EPD2, EPD3, /I/, /S/, or /V/." to "defined ordered\_sets: /C/, /T/, /R/, /I/, /S/, or /V/.". Add something like: defined\_code\_group(s) /D/ with code\_group(s) as specified in table 36-2.

Proposed Response Response Status C

Accepted. Changed the definition for the variable tx\_o\_set as follows: "One of the following defined ordered\_sets: /C/, /T/, /R/, /I/, /S/, or /V/ or the code-group /D/."

Cl 36 SC 36.2.5.1.3 P36.24 L48 # 351  
Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.5.1.3 P36.24 L50 # 940  
Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

The definition for tx\_o\_set is outdated.

SuggestedRemedy

Change to:

tx\_o\_set

One of the following defined ordered sets: /C/, /I/, /S/, /D/, /T/, /R/, or /V/. Ordered\_sets are defined in table 36-3.

Proposed Response Response Status C

Accepted as a duplicate of comment #849. Please refer to comment #849.

Cl 36 SC 36.2.5.1.3 P36.25 L2 # 350  
Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

CI 36 SC 36.2.5.1.4 P36.25 L14 # 118  
 Alan Albrecht Hewlett-Packard

Comment Type T Comment Status A Technical Change

Draft is ambiguous on carrier detect. carrier\_detect is defined as a two or more bit difference between /x/ and /K28.5/. There are two 10 bit values for /K28.5/ depending on the current running disparity. One could choose two bits different from either value or two bits different from the expected value.  
 I think carrier detect should be a two bit difference from the expected /K28.5/.

SuggestedRemedy

Change end of sentence to read:  
 ' between [/x/] and the expected /K28.5/ based on current running disparity exists.'

Proposed Response Response Status C

Accepted. Change end of sentence to read:  
 ' between [/x/] and the expected /K28.5/ based on the receiver's current running disparity exists.'

CI 36 SC 36.2.5.1.4 P36.25 L24 # 850  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo error, ] and / are reversed.

SuggestedRemedy

Change from "DECODE ([/x/])" to "DECODE ([/x/])".  
 Change line 26 from "([/x/])" to "([/x/])".

Proposed Response Response Status C

Accepted as a duplicate of comment #764. Please refer to comment #764.

CI 36 SC 36.2.5.1.4 P36.25 L26 # 764  
 YUN-CHE WANG Cypress Semiconduct

Comment Type E Comment Status A

"[/x/]" seems like a typo, should be "[/x/]".

SuggestedRemedy

change to "[/x/]"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.2.5.1.4 P36.25 L37 # 770  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A

Missing the word "the"

SuggestedRemedy

Replace "Substitutes /V/ on a per code\_group basis as requested by GMII." with  
 "Substitutes /V/ on a per code\_group basis as requested by the GMII."

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.2.5.1.4 P36.25 L37 # 851  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Usage of function VOID(x) in state diagram does not match text. State diagram uses /R/, /T/ for (x); text uses EPD1, EPD2, EPD3.

SuggestedRemedy

Change text from "EPD1, EPD2, EPD3" to "/T/, /R/".

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.2.5.1.4 P36.25 L37 # 938  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

The definition for VOID is outdated.

SuggestedRemedy

Strike EPD1, EPD2, EPD3, and /K28.5/. Add /T/ and /R/.

Proposed Response Response Status C

Accepted as a duplicate of comment #851. Please refer to comment #851.



P802.3z Draft 3.1 Comments

**Cl 36 SC 36.2.5.1.6 P 36.26 L 11 # 783**  
 Jon Frain UNH InterOperability L  
**Comment Type E Comment Status A**  
 Missing the definition of PMA\_UNITDATA.indicate.  
**SuggestedRemedy**  
 Insert the following definition of PMA\_UNITDATA.indicate:  
 "A signal sent by the PMA Receive process to the PCS Synchronization process conveying the next code\_group ready for reception."  
**Proposed Response Response Status C**  
 Accepted. Added PMA\_UNITDATA.indicate to 36.2.5.1.6 as follows:  
 PMA\_UNITDATA.indicate(rx\_code-group<9:0>)  
 A signal sent by the PMA Receive process conveying the next code-group received over the medium.  
 Added a pointer to 36.3.1.2.  
 Added the alias PUDI.  
 Added a pointer to 36.3.1.1 for  
 PMA\_UNITDATA.request(tx\_code-group<9:0>).

**Cl 36 SC 36.2.5.2.1 P 36.26 L 43-55 # 1129**  
 Pat Thaler Hewlett-Packard  
**Comment Type E Comment Status R**  
 I don't see the usefulness of this paragraph which just summarizes the content of the state machine and is not particularly easy to understand.  
**SuggestedRemedy**  
 Delete it.  
**Proposed Response Response Status C**  
 Rejected. This paragraph contains summary descriptive text of the PCS Transmit state machine. Other paragraphs which follow contain summary descriptive text of the other PCS state machine. Deleting it would result in a document inconsistency.

**Cl 36 SC 36.2.5.2.1 P 36.26 L 47 # 34**  
 Mark Fishburn Netcom Systems  
**Comment Type E Comment Status A**  
 at the end of the line, the phrase ....  
 "the SPD\_ordered set is sourced. "  
 is repeated erroneously.  
**SuggestedRemedy**  
 Remove repeated text  
**Proposed Response Response Status C**  
 Accepted per suggested remedy.

**Cl 36 SC 36.2.5.2.1 P 36.26 L 47 # 110**  
 Alan Albrecht Hewlett-Packard  
**Comment Type E Comment Status A**  
 Duplicated text: 'the SPD ordered\_set is sourced'  
**SuggestedRemedy**  
 Delete duplicate text.  
**Proposed Response Response Status C**  
 Accepted as a duplicate of comment #34. Please refer to comment #34.

**Cl 36 SC 36.2.5.2.1 P 36.26 L 47 # 111**  
 Alan Albrecht Hewlett-Packard  
**Comment Type E Comment Status A**  
 Duplicated text: 'the SPD ordered\_set is sourced'  
**SuggestedRemedy**  
 Delete duplicate text.  
**Proposed Response Response Status C**  
 Accepted as a duplicate of comment #34. Please refer to comment #34.

**Cl 36 SC 36.2.5.2.1 P 36.26 L 47 # 821**  
 Tom Mathey Baynetworks  
**Comment Type E Comment Status A**  
 Typo error, text in sentence is repeated twice.  
**SuggestedRemedy**  
 Remove text "the SPD ordered\_set is sourced,"  
**Proposed Response Response Status C**  
 Accepted as a duplicate of comment #34. Please refer to comment #34.

P802.3z Draft 3.1 Comments

**Cl 36**    **SC 36.2.5.2.1**    **P 36.26**    **L 47**    # **956**  
 Ariel Hendel    Sun  
**Comment Type**    **E**    **Comment Status**    **A**  
 redundant text: "the SPD ordered\_set is sourced"  
**SuggestedRemedy**  
 remove redundant text  
**Proposed Response**    **Response Status**    **C**  
 Accepted as a duplicate of comment #34. Please refer to comment #34.

**Cl 36**    **SC 36.2.5.2.1**    **P 36.26**    **L 48**    # **822**  
 Tom Mathey    Baynetworks  
**Comment Type**    **E**    **Comment Status**    **A**  
 Text uses ordered\_sets instead of code\_group(s). EPD is defined on page 36.22, line 3 thru 16 as code\_group(s).  
**SuggestedRemedy**  
 line 48: change from "/D/ ordered\_sets are sourced" to "/D/ code\_groups are sourced".  
 line 49: change from "EPD ordered\_sets are sourced." to "EPD code\_groups are sourced".  
 line 51: change from "first source the EPD1 and EPD2 ordered sets." to "first source the EPD1 and EPD2 code\_groups".  
 line 52: change from "the EPD3 ordered\_set is sourced" to "the EPD3 code\_group is sourced".  
**Proposed Response**    **Response Status**    **C**  
 Accepted. This is the first of many comments pointing out an inconsistency with the usage of code\_groups and ordered\_sets. Ordered\_sets are defined as single special code\_group or combinations of special and data code\_groups in 36.2.4.7.  
 In 36.2.5.1 delete EPD, EPD1-3, and all references.  
 In 36.2.5.2.1 change text to read, "/D/ code\_groups are sourced"  
 In 36.2.5.2 replace all references to EPD and EPDx, to their code\_group equivalents (/X/).

**Cl 36**    **SC 36.2.5.2.1**    **P 36.26**    **L 54**    # **112**  
 Alan Albrecht    Hewlett-Packard  
**Comment Type**    **E**    **Comment Status**    **A**  
 The paragraph tries to cover all the cases of tx\_en and tx\_err. The case of a carrier extend error is missed.  
**SuggestedRemedy**  
 Change the sentence "If TX\_ER is asserted when TX\_EN is deasserted, /R/ ordered\_sets are ..."  
 to:  
 "If TX\_ER is asserted when TX\_EN is deasserted and carrier extend error is not indicated by TXD, /R/ ordered\_sets are ..." and add after this sentence:  
 "IF Carrier extend error is indicated by TXD during carrier extend /N/ ordered\_sets are sourced."  
**Proposed Response**    **Response Status**    **C**  
 Accepted per suggested remedy.

**Cl 36**    **SC 36.2.5.2.1**    **P 36.28**    **L 1**    # **113**  
 Alan Albrecht    Hewlett-Packard  
**Comment Type**    **E**    **Comment Status**    **A**  
 State machine conventions are that variables hold value until specifically changed. Redundant assignments needlessly complicate diagrams and hides the actual transitions which are significant. For example, in EPD3 there is no need to set transmitting to FALSE since the only way to get there is from a state that set it to false. This method is what I used to identify unnecessary assigns.  
**SuggestedRemedy**  
 Delete assignments to transmitting in EPD3, EPD2\_NOEXT, CARRIER\_EXTEND, END\_OF\_PACKET\_EXT, TX\_DATA\_ERROR and TX\_DATA.  
 Delete assignments to COL in EPD3 and EPD2\_NOEXT.  
**Proposed Response**    **Response Status**    **C**  
 Accepted per suggested remedy, except don't delete in EPD2\_NOEXT, due to comment #405

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Cl 36 SC 36.2.5.2.1 P 36.28 L 2 # 1136  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change

The condition for the global transition into TX\_TEST\_WAIT needs an operator. I think it is an \*.

SuggestedRemedy

Proposed Response Response Status C

Accepted as a duplicate of comment #933.  
 Change the global entry conditions to become:

xmitChange = TRUE \* TX\_OSET.indicate

Cl 36 SC 36.2.5.2.1 P 36.29 L 22 # 823  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo error, /s are missing from K28.5.

SuggestedRemedy

Change from "tx\_code\_group <- K28.5" to "tx\_code\_group <- /K28.5/".

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.2.5.2.2 P 30 L 26 # 45  
 Linda Cheng Sun Microsystems

Comment Type TR Comment Status A

This refers to the Receive state diagram, figure 36.7b. Currently disparity errors detected during packet reception do not result in the flagging of the error with rx\_er. Data which has experienced a known error (or data previous to it) should not be passed over the GMII as good data. Currently, decode errors are checked for but bit corruptions will not always cause decode errors.

SuggestedRemedy

Add \*disparity=OK to the transition from RECEIVE to RX\_DATA so that it is "e[D/] \* disparity=OK". Define disparity to mean "a boolean set by the PCS Receive process to indicate the absense or presence of disparity errors.

Values: FAIL: a disparity error is detected on the rx\_code\_group[9:0]  
 OK : no disparity error is detected on the rx\_code\_group[9:0]"

Proposed Response Response Status C

Accepted. The receiver currently behaves as described in the suggested remedy. For clarification, the last sentence of 36.2.4.11 is changed as follows:

"Successful decoding of the data code\_groups depends on proper receipt of the Start\_of\_Packet delimiter, as defined in 36.2.4.13 and the checking of validity, as defined in 36.2.4.6."

P802.3z Draft 3.1 Comments

Cl 36 SC 36.2.5.2.2 P 30 L 26 # 46  
 Linda Cheng Sun Microsystems

Comment Type T Comment Status A Technical Change

It would be more consistent with the philosophy that the sync state machine checks for alignment if we removed the checks for comma alignment in the receive state machine.

SuggestedRemedy

Remove "\*\*EVEN" from FALSE\_CARRIER to IDLE\_K transition, from RCV\_C\_CODE to IDLE\_K transition, and RECEIVE to EARLY\_END transition.

If this comment is rejected then add "\*\*EVEN" to transition from TRI+RRI to IDLE\_K transition.

Proposed Response Response Status C

As written, this comment is difficult to accept, but I'll try my best :-)  
 Accepted. The checks in the Receive state machine are to insure that next state transitions occur on the correct even/odd boundary. The checks in the Synchronization state machine are error checks. Since the checks for the two state machines serve different purposes, consistency is not relevant.

However, the intention of the second part of your suggested remedy provides consistency for alignment checking within the Receive state machine. It seems that this consistency is already provided by the exit from TRI+RRI as a result of the EVEN check upon entry to TRI+RRI. The same may not be true of state EXTEND\_ERR, and I propose a modification to your suggested remedy to add an "\*\*EVEN" term to the transition from EXTEND\_ERR to IDLE\_K.

ED NOTE: the commenter is not satisfied with this response

Cl 36 SC 36.2.5.2.2 P 36.27 L # 399  
 Don Wong 3Com Corporation

Comment Type E Comment Status A

Fig 36-7a is before figure 36-5 & 36-6

SuggestedRemedy

Reorder fig 36-7a

Proposed Response Response Status C

Accepted as a duplicate of comment #2. Please refer to comment #2.

Cl 36 SC 36.2.5.2.2 P 36.27 L 22 to 55 # 1128  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

The two halves of the PCS receive state diagram need to be placed together and in the right order with the other figures.

SuggestedRemedy

Proposed Response Response Status C

Accepted as a duplicate of comment #2. Please refer to comment #2.

Cl 36 SC 36.2.5.2.2 P 36.27 L 22-55 # 235  
 Colin Mick The Mick Group

Comment Type E Comment Status A

State machine style is ugly and conflicts with style shown in clauses 1-30.

SuggestedRemedy

Harmonize style with that shown in clauses 1-30

Proposed Response Response Status C

Accepted as a duplicate of comment #232. Please refer to comment #232.

Cl 36 SC 36.2.5.2.2 P 36.27 L 22-55 # 306  
 Steve Dreyer Seeq Technology

Comment Type E Comment Status A

Figure 36-7a out of order (it is between Figure 36-4 and 36-5).

SuggestedRemedy

Put Figure 36-7a between Figure 36-6 and 36-7b.

Proposed Response Response Status C

Accepted as a duplicate of comment #2. Please refer to comment #2.

Cl 36 SC 36.2.5.2.2 P 36.27 L 22-55 # 232  
 Colin Mick The Mick Group

Comment Type E Comment Status A

State machine style is ugly and conflicts with style shown in clauses 1-30.

SuggestedRemedy

Harmonize style with that shown in clauses 1-30

Proposed Response Response Status C

Accepted. The alias SUDI is specified for SYNC\_UNITDATA.indicate allowing less clutter. State diagram is redrawn.

P802.3z Draft 3.1 Comments

Cl 36 SC 36.2.5.2.2 P36.27 L23 # 2  
 Brad Booth Jato Technologies, Inc

Comment Type E Comment Status A  
 "Figure 36-7a - PCS receive state diagram, part a" should be located between Figure 36-6 and Figure 36-7b.

SuggestedRemedy  
 Move Figure 36-7a to the proper location.

Proposed Response Response Status C  
 Hmmm. It's not like that in my source. Accepted.

Cl 36 SC 36.2.5.2.2 P36.28 L figure 36- # 405  
 Don Wong 3Com Corporation

Comment Type T Comment Status A Technical Change  
 In END\_OF\_PACKET\_NOEXT state transmitting <= FALSE, within this state is where the /T/ code\_group is being transmitted. However the variable transmitting will determine when CRS is asserted and based upon the assertion of CRS will determine the IPG.

On page 36.19 line 5-8, indicates that CRS should be deasserted  
 1) during /T/R/ if the frame ends with /T/R//  
 2) during /R/R/ if the frame ends with /T/R/R/

therefore the assertion of transmitting <= false, in END\_OF\_PACKET\_NOEXT state is not correct, if /T/ falls on tx\_even = odd.

SuggestedRemedy  
 qualify the assert of transmitting with END\_OF\_PACKET\_NOEXT as follows:  
 if (tx\_even = odd)  
   transmitting = true  
 else /\* tx\_even = even \*/  
   transmitting = false

Proposed Response Response Status C  
 Accepted. Agree with comment, but there are two things wrong with it: First, the sense of the tx\_even check is backwards -- due to the timing of tx\_even changing relative to TX\_OSET.indicate and the exit tests, and second, the same modification needs to apply to state EXTEND\_BY\_1.

So, change should be:  
 Change the "transmitting <= FALSE" line in the states END\_OF\_PACKET\_NOEXT and EXTEND\_BY\_1 to the following:  
 if (tx\_even = FALSE)  
   transmitting <= false

Cl 36 SC 36.2.5.2.2 P36.29 L1-55 # 233  
 Colin Mick The Mick Group

Comment Type E Comment Status A  
 State machine style is ugly and conflicts with style shown in clauses 1-30.

SuggestedRemedy  
 Harmonize style with that shown in clauses 1-30

Proposed Response Response Status C  
 Accepted. State diagram is redrawn.

Cl 36 SC 36.2.5.2.2 P36.30 L1-55 # 234  
 Colin Mick The Mick Group

Comment Type E Comment Status A  
 State machine style is ugly and conflicts with style shown in clauses 1-30.

SuggestedRemedy  
 Harmonize style with that shown in clauses 1-30

Proposed Response Response Status C  
 Accepted. The alias SUDI is specified for SYNC\_UNITDATA.indicate allowing less clutter. State diagram is redrawn.

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Cl 36 SC 36.2.5.2.2 P36.30 L29 # 1142  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

It currently takes only a single bad received octet (a D21.5 or D2.2) to initiate auto negotiation. The D16.2 sent as part of the normal idle is only 4 bits different in the 6 bit sub-block from the D2.2. This is much to sensitive. It should take a stronger indication before a potentially working link is taken off-line for ten of ms for auto-negotiation.

SuggestedRemedy

Add a counter that is incremented when RCV\_C\_CODE is entered and reset to zero when IDLE\_D is entered. Add a check that the counter has reached 4 to the if statement that generates START\_AN. I chose 4 because that is the same number that the sync machine uses, but I would also be comfortable with a higher number.

An alternative would be to put a counting function into the auto-negotiation state machine that required multiple START\_AN signals within a time period before it would start autonegotiation.

Proposed Response Response Status C

Accepted as a duplicate of comment #689. The following summary changes are made:

Changed PCS Receive and AN state machines to prevent too quick of an entry into AutoNegotiation from normal operation.

Proposed changes to PCS state diagrams are located at the following URL to be made available on or before September 30, 1997:  
[ftp://stdsbbs.ieee.org/pub/802\\_main/802.3/gigabit/comments/d3.1/pcssd.pdf](ftp://stdsbbs.ieee.org/pub/802_main/802.3/gigabit/comments/d3.1/pcssd.pdf)

Cl 36 SC 36.2.5.2.2 P36.30 L38 # 119  
 Alan Albrecht Hewlett-Packard

Comment Type T Comment Status A Technical Change

Transitions out of RCV\_C\_CODE are not clearly independent and deterministic. If my comment related to changing the xmit variable goes through then it is possible both exit conditions could be met.

SuggestedRemedy

add: "\* xmit=DATA" to exit condition going to IDLE\_K.

Proposed Response Response Status C

Accepted. State RCV\_C\_CODE was deleted per response to comment #689. Also see comment #116.

Cl 36 SC 36.2.5.2.2 P36.30 L44 # 1135  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change

As defined here, an error during extension in a burst will prevent the MAC from receiving the next packet in the burst. The error will cause EXTEND\_ERR to be entered. The PCS will send the GMII a Carrier Extend Error as long as it is in that state. That will cause the reconciliation sublayer to receive data that forces a CRC error.

Since the EXTEND\_ERR state is not exited until the /S/ is received, there will be no gap between the data caused by the extend error and the next packet. The next packet will not be properly received. It also may be counted as an oversize frame since two packets have been concatenated.

SuggestedRemedy

Add an exit from EXTEND\_ERR to TRR+EXTEND based on the condition check\_end=/R/R/R/.

Proposed Response Response Status C

Accepted. Add an arc from EXTEND\_ERR to EPD2\_CHECK\_END with the condition "SYNC\_UNITDATA.indicate(![S/] \* !(/[K28.5] \* EVEN))"

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Cl 36 SC 36.2.5.2.2 P 36.30 L 9 # 689  
 Jon Frain UNH InterOperability L

Comment Type T Comment Status A Technical Change

The PCS receive state diagram (part b) restarts auto-negotiation when a code\_group with less than a two bit difference from /K28.5/ is received in the IDLE\_D state that is followed by /(D21.5+D2.2)/. The receive state machine should be more robust in regard to actions which restart auto-negotiation.

*SuggestedRemedy*

Change the transition condition from the IDLE\_K state to the RCV\_C\_CODE state from:

SYNC\_UNITDATA.indicate(/D21.5/ + /D2.2/)

to:

check\_end=/K28.5/(D21.5 + D2.2)/D/

Checking for just /D/ as the third code\_group allows for the possibility of a nonconformant device which restarts auto-negotiation by transmitting /C/ ordered\_sets with its abilities or some other non-/D0.0/ code\_group as the third code\_group of the /C/ ordered\_set.

Change the transition from the IDLE\_K state to the CARRIER\_DETECT state from:

SYNC\_UNITDATA.indicate(!/[D21.5/ \* !/[D2.2/])

to:

SYNC\_UNITDATA.indicate

The check\_end function will be completed prior to the next SYNC\_UNITDATA.indicate signal arrives. This is required for the receive state diagram to function properly.

*Proposed Response* Response Status C

Accepted. The following summary changes are made:

Changed PCS Receive and AN state machines to prevent too quick of an entry into AutoNegotiation from normal operation.

Proposed changes to PCS state diagrams are located at the following URL to be made available on or before September 30, 1997:

[ftp://stdsbbs.ieee.org/pub/802\\_main/802.3/gigabit/comments/d3.1/pcssd.pdf](ftp://stdsbbs.ieee.org/pub/802_main/802.3/gigabit/comments/d3.1/pcssd.pdf)

Cl 36 SC 36.2.5.2.2 P 37.27 L 22 # 117  
 Alan Albrecht Hewlett-Packard

Comment Type T Comment Status A Technical Change

If we lose sync, the PCS receive machine will continue to forward up errored data until Idle's or C codes start to come in as the link begins to recover again. This could result in an infinitely long packet being forwarded up to the MAC in the case of a disconnected or badly errored link.

We should add a link\_failed and two global transitions similar to the method used in Figure 24-11, page 174 of the 802.3u standard.

*SuggestedRemedy*

In Figure 36-7a add the following:

Global entry to IN\_CONFIG:

sync\_status = FALSE \* !receiving \* SYNC\_UNITDATA.indicate

New State to invalidate packet being received.

LINK\_FAILED with action in state RX\_ER <= TRUE

Global entry in LINK\_FAILED:

sync\_status = FALSE \* receiving \* SYNC\_UNITDATA.indicate

Transition out of LINK\_FAILED to IN\_CONFIG:

SYNC\_UNITDATA.indicate

*Proposed Response* Response Status C

Accepted. The following changes are made to PCS Receive State Machine, figure 36-7a:

Add LINK\_FAILED state, which turns off "receiving" and turns on RX\_ER for one cycle when sync\_status fails, then turns off RX\_DV.

Proposed changes to PCS state diagrams are located at the following URL to be made available on or before September 30, 1997:

[ftp://stdsbbs.ieee.org/pub/802\\_main/802.3/gigabit/comments/d3.1/pcssd.pdf](ftp://stdsbbs.ieee.org/pub/802_main/802.3/gigabit/comments/d3.1/pcssd.pdf)

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Cl 36 SC 36.2.5.2.2 (Figure 36-7 P 36.30 L 14 # 687  
 Jon Frain UNH InterOperability L

Comment Type T Comment Status A Technical Change

Currently the PCS receive process is able to receive incoming packets even if synchronization has been lost. This isn't a problem if synchronization is lost during the reception of a packet because when the PCS synchronization process moves to the LOSS\_OF\_SYNC state, SYNC\_UNITDATA.indicate is not asserted. And so at least one code\_group is lost thus corrupting the received frame.

But if synchronization has not been acquired and an /S/ is received in the IDLE\_D state the packet can be received as long as the synchronization process doesn't return to the LOSS\_OF\_SYNC state. An example of this is:

The synchronization process loses synchronization during the reception of IDLE due to receiving /INVALID/ rather than /D/ for several IDLEs. The synchronization state diagram is now in the LOSS\_OF\_SYNC state and it receives /K28.5/ followed by a /D/ which places it in the ACQUIRE\_SYNC\_1 state. The PCS receive process is currently in the IDLE\_D state.

The next code\_group received is /S/ which keeps the synchronization state diagram in the ACQUIRE\_SYNC\_1 state. The receive process moves to the CARRIER\_DETECT state and since /S/ was received it moves on to the START\_OF\_PACKET state.

The remainder of the packet contains /D/ code\_groups followed by /T/R/. The synchronization state diagram remained in the ACQUIRE\_SYNC\_1 state while all of these code\_groups were received. Synchronization will not be acquired until two more valid IDLEs are received.

This situation makes verifying that manually configured devices conform to the synchronization diagram very difficult. This is because the transmit process of manually configured devices is not controlled by the synchronization process. Whereas auto-negotiating devices are required to transmit /C/ ordered\_sets upon the loss of synchronization. The only way to verify that a manually configured device has lost synchronization is by checking what is received. Preventing incoming packets from being received while synchronization is lost will allow for verification of a device's conformance to the synchronization state diagram.

*SuggestedRemedy*

Change the condition of the transition from CARRIER\_DETECT to START\_OF\_PACKET to be:

/S/\*(sync\_status=OK)

Change the transition from CARRIER\_DETECT to FALSE\_CARRIER to:  
 ELSE

These changes will cause the MAC to receive a false carrier event when receiving a packet with a valid /S/ while synchronization is lost. Which allows for the verification of a manually-negotiating

device's conformance to the synchronization state diagram.

Proposed Response Response Status C

Accepted. Fixed by comment #117, which says: The following changes are made:

State Machine, figure 36-7a:

Add LINK\_FAILED state, which turns off "receiving" and turns on RX\_ER for one cycle when sync\_status fails, then turns off RX\_DV.

Proposed changes to PCS state diagrams are located at the following URL to be made available on or before September 30, 1997:

[ftp://stdsbbs.ieee.org/pub/802\\_main/802.3/gigabit/comments/d3.1/pcssd.pdf](ftp://stdsbbs.ieee.org/pub/802_main/802.3/gigabit/comments/d3.1/pcssd.pdf)



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CI 36 SC 36.2.5.2.2 (Figure 36-7) P 36.30 L 19 # 688  
 Jon Frain UNH InterOperability L

Comment Type T Comment Status R T Reject

The PCS receive state diagram part b checks for the reception of an /I/ or /C/ ordered\_set (early end event) prior to the reception of /T/ or /R/. If the receive process receives the following three code\_groups prior to receiving /T/ or /R/, the receive process moves to the EARLY\_END state with the assumption that a /C/ ordered\_set is being received:

check\_end=(/K28.5/(D21.5+D2.2)/D0.0/)

The third code\_group tested is /D0.0/ because a conformant device will transmit /K28.5/(D21.5+D2.2)/D0.0/D0.0/ when restarting auto-negotiation. The problem that exists with this test condition is that if a nonconformant device restarts auto-negotiation by transmitting its abilities or any non-/D0.0/ code\_group as the third code\_group, the receive state diagram will continue to loop through either the RECEIVE and RX\_DATA\_ERROR states or the RECEIVE and RX\_DATA states when receiving such nonconformant /C/ ordered\_sets transmitted upon restarting auto-negotiation. The receive state diagram will become deadlocked in those states because the PCS will never enter into auto-negotiation with the other device. The receive state diagram should be more robust and capable of handling such transmission errors.

The original purpose of the addition of the checkend from Receive to Early\_End was to avoid any possible single-bit errors that could create a false /K28.5/ (which was all that was checked prior to the change). A checkend=(/K28.5/(D21.5+D2.2)/D) still accomplishes this purpose.

SuggestedRemedy

Replace check\_end=(/K28.5/(D21.5+D2.2)/D0.0/) in the entrance test for the EARLY\_END state with check\_end=(/K28.5/(D21.5+D2.2)/D/).

Proposed Response Response Status C

Rejected. The draft requires that a transmitter will send 10ms of /C/ with D0.0 as data when it restarts autonegotiation. The draft does not cover non-conformant devices.

CI 36 SC 36.2.5.2.3 P 36.31 L 5-7 # 1130  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Grammar problem. Also, I don't think indicated is precisely right in this context.

SuggestedRemedy

"A carrier event, sidgnaled .... receivign, is detected by a difference of at least two bits between ...."

Proposed Response Response Status C

Accepted. Rewrote this sentence as follows: "A carrier event, signaled by the assertion of receiving, is indicated by the detection of a two bit difference between the received code\_group and /K28.5/ for code\_groups received in an even-numbered position."

CI 36 SC 36.2.5.2.4 P 36.31 L 22 # 1131  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The negative logic in this sentence doesn't convey the right meaning. A code group would have to both be an invalid code group and violate the EPD rules to cause ER by this sentence.

SuggestedRemedy

"that is either not a valid /D/ ... or violates the EPD ...."

Proposed Response Response Status C

Accepted. Change "or" to "nor" and swap "is neither" to "neither is".

CI 36 SC 36.2.5.2.4 P 36.31 L 22 # 824  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Grammar: use of neither with or should be neither with nor.

SuggestedRemedy

Change from "neither a valid /D/ code\_group or" to "neither a valid /D/ code\_group nor".

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 36.2.5.2.4 P36.31 L27 # 352  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.2.4 P36.31 L28 # 115  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Sentence that describes premature packet termination and the following two sentences are inaccurate.

SuggestedRemedy

To be readable and coordinate with my other comments replace this paragraph and the preceding paragraph with:

The PCS Receive process performs the check\_end function to preserve the ability of the MAC to properly delimit the FCS at the end of a packet. If the check\_end function detects a /T/R/R/ or /T/R/K28.5/ these both indicate a non-errored packet termination.

If the check\_end function detects /R/R/R/ then the link is in carrier extend, the packet has ended, but with error and the receive machine continues to process the carrier extend. If the check\_end function detects /K28.5/D/K28.5/ then it appears the link is back in idle so the machine flags the packet as bad and it transitions to the idle states. If the check\_end function detects /K28.5/D21.5 or D2.2/D0.0 then the link is receiving link disconnect code groups, the packet is terminated and the state machine transitions up to idle and will then go on to the receive the C code state.

Proposed Response Response Status C

Accepted. Replaced the third paragraph of 36.2.5.2.4 with the following text. Note that this response does not alter the response to comment #114.

"Detection of /T/R/R/ or /T/R/K28.5/ by the check\_end function denotes normal (i.e. non-error) packet termination. Detection of /R/R/R/ by the check\_end function denotes packet termination with error and Carrier\_Extend processing. Detection of /K28.5/D/K28.5/ by the check\_end function denotes packet termination with error. Detection of /K28.5/(D21.5 or D2.2)/D0.0 by the check\_end function denotes packet termination with error."

Cl 36 SC 36.2.5.2.4 P36.31 L28 # 114  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

Sentence that indicates receiving is de-asserted immediately following the reception of EPD is incorrect. Receiving is deasserted based on detecting the start of the idles between packets or C codes.

SuggestedRemedy  
 Simplest fix is to delete sentence since this info is available in the state diagram.

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.2.4 P36.31 L35 # 771  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A

Missing the words "to begin the"

SuggestedRemedy

Replace "The conditions sync\_status=FAIL or signal\_detect=FAIL cause the PCS Auto-Negotiation process to begin and the PCS Transmit process transmission of /C/" with "The conditions sync\_status=FAIL or signal\_detect=FAIL cause the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin the transmission of /C/."

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.2.5.2.4 P36.31 L35 # 825  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Grammar: sentence with noun and subject but without verb.

SuggestedRemedy

Change from "and the PCS Transmit process transmission of /C/." to something like "and the PCS Transmit process xxxx transmission of /C/." where xxxx is initiates, begins, starts, etc.

Proposed Response Response Status C  
 Accepted as a duplicate of comment #771. Please refer to comment #771.

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Cl 36 SC 36.2.5.2.4 P 36.31 L 36 # 826  
Tom Mathey Baynetworks

Comment Type E Comment Status A

Grammar: incomplete sentence. Add "in" or rearrange sentences.

SuggestedRemedy

Change from "signal receiving is de-asserted when the IN\_CONFIG state." to "signal receiving is de-asserted when in the IN\_CONFIG state.", or rearrange sentences as "Upon reception of /C/ from the link partner, the PCS Receive process transitions to the IN\_CONFIG state, and the internal signal receiving is de-asserted."

Proposed Response Response Status C

Accepted. The IN\_CONFIG state is deleted per response to comment #689. The last two sentences of paragraph 4 of 36.2.5.2.4 are rewritten as follows:

"Upon reception of three matching /C/s from the link partner, the PCS Auto-Negotiation process is started. The internal signal receiving is de-asserted in the PCS Receive process LINK\_FAILED state when sync\_status=FAIL and a code-group is received."

Cl 36 SC 36.2.5.2.5 P 36.31 L 40 # 765  
YUN-CHE WANG Cypress Semiconductor

Comment Type E Comment Status R

please captitalize "sense" in the section title to be consistent with the rest of the paragraph.

SuggestedRemedy

capitailize "sense" in "Carrier sense"

Proposed Response Response Status C

Rejected. Capitalization specified is proper per IEEE Style Guide.

Cl 36 SC 36.2.5.2.6 P 36.33 L 31 to 55 # 1132  
Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

The state machines in 802.3 don't have any concept of a clock. This creates a problem with the use of ELSE in this state machine. It really is used here to mean "PMA\_UNIDATA.indicate \* none of the other exits are satisfied".

SuggestedRemedy

Two alternatives: define in notational conventions a term which means a PMA\_UNIDATA.indicate was received and none of the other exit conditions were satisfied. You might call it DATA\_ELSE. ELSE won't do since it is used in timeless state in the receive machine.

Alternately define an internal message of CODE\_SYNC.indicate which is produced with a value of BAD when ((rx\_code\_group=/COMMA\*rx\_even=TRUE)+rx\_code\_group=/INVALID)\* PMA\_UNIDATA.indicate.

GOOD otherwise.

This would reduce the space needed for the conditions to a size that would allow not using else. It should also make the state machine a little easier to read. Even the transitions from comma detect states could test this term for their conditions. They don't test for even right now because even is always TRUE in those states, but they could use the full condition with the same result.

Proposed Response Response Status C

Accepted.  
Create two new aliases:

```
cgbad = ((rx_code_group=/INVALID/) + (rx_code_group=/COMMA*rx_even=TRUE))*
PMA_UNITDATA.indicate
cggood = !((rx_code_group=/INVALID/) + (rx_code_group=/COMMA*rx_even=TRUE))*
PMA_UNITDATA.indicate
```

Replace exit conditions that match cgbad with cgbad, for example transition from ACQUIRE\_SYNC\_1 to LOSS\_OF\_SYNC.  
Replace else's from SYNC\_ACQUIRED\_1,2,3,4 with cggood.  
Replace else's from SYNC\_ACQUIRED\_2A,3A,4A to self with cggood \* good\_cgs != 3.  
Replace transitions from SYNC\_ACQUIRED\_2A to SYNC\_ACQUIRED\_1 with cggood \* good\_cgs = 3  
Replace transitions from SYNC\_ACQUIRED\_3A to SYNC\_ACQUIRED\_2 with cggood \* good\_cgs = 3  
Replace transitions from SYNC\_ACQUIRED\_4A to SYNC\_ACQUIRED\_3 with cggood \* good\_cgs = 3

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Cl 36 SC 36.2.5.2.6 P36.33 L6 # 787  
Jon Frain UNH InterOperability L

Comment Type T Comment Status A Technical Change

rx\_even = ! rx\_even is not necessary in the LOSS\_OF\_SYNC state

SuggestedRemedy

Strike rx\_even = ! rx\_even from LOSS\_OF\_SYNC

Proposed Response Response Status C

Accepted. This term and an additional term, SYNC\_UNITDATA.indicate, is required to in state LOSS\_OF\_SYNC since the PMA still sends code-groups to the PCS regardless to whether sync is acquired or not. The clock provided by SYNC\_UNITDATA.indicate is required for several reasons including:

1) ensuring that the loopback function receives clocks when signal\_detect=FAIL;

2) ensure that frame data continues to be passed to the MAC, even in the event of loss of sync (i.e. received data should not be substituted as would be the case if receive clocks stopped).

Accepted. The following summary changes are made per response to comment #360012:

Make the following changes to the PCS Synchronization state machine:

Define the variable signal\_detectCHANGE in 36.2.5.1.4 as follows:

signal\_detectCHANGE

In the PCS ynchronization process, this function monitors the signal\_detect variable for a state change. The function is set upon state change detection and reset explicitly.

Values: TRUE; A signal\_detect variable state change has been detected.

FALSE; A signal\_detect variable state change has not been detected

(default).

NOTE—Signal\_detectCHANGE is set by this function definition; it is not set explicitly in the state diagrams. Signal\_detectCHANGE evaluates to its default value upon state entry.

Add the global condition:

signal\_detectCHANGE=TRUE \* mr\_loopback=FALSE \* PUDI

Change the transition condition from state LOSS\_OF\_SYNC to state COMMA\_DETECT\_1 to: (signal\_detect=OK + mr\_loopback=TRUE) \* PUDI(!/COMMA/)

Add a branch from state LOSS\_OF\_SYNC back to itself upon the condition (signal\_detect=FAIL \* mr\_loopback=FALSE \* PUDI) + PUDI(!/COMMA/)

Cl 36 SC 36.2.5.2.7 P36.32 L # 909  
Rich Seifert Networks & Communic

Comment Type TR Comment Status A Technical Change

There appears to be no requirement to implement the Auto-Negotiation process! There is no "shall" statement in this subclause.

SuggestedRemedy

Transplant one of the redundant shalls discussed earlier to this clause. ;^)

Proposed Response Response Status C

Accepted. Changed the first sentence of 36.2.5.2.7 to read: "The Auto-Negotiation process shall provide the means..."

Deleted PICS entry CC1 from 37.5.3.1

Added the following PICS entry to 36.7.4.2:  
PCSx, Auto-Negotiation, 36.2.5.2.7, M, Yes, Described in clause 37

Cl 36 SC 36.2.5.2.7 P36.32 L26 # 772  
Jon Frain UNH InterOperability L

Comment Type E Comment Status A

Missing the letter "s" at the end of provide.

SuggestedRemedy

Replace "The Auto-Negotiation process provide the means ..." with "The Auto-Negotiation process provides the means to ..."

Proposed Response Response Status C

Accepted. The text of this sentence is changed per response to comment #909

Cl 36 SC 36.2.5.2.7 P36.32 L28 # 353  
Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

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**Cl 36**    **SC 36.2.5.2.7**                      **P 36.33**    **L 1-55**                      # **236**  
 Colin Mick                                      The Mick Group  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Ugly state machine, particularly arrow layout  
**SuggestedRemedy**  
 Harmonize with state machines in clauses 1-30  
**Proposed Response**                      **Response Status**    **C**  
 Accepted. State diagram is redrawn. Arrows are cleaned up.

**Cl 36**    **SC 36.3.1**                                      **P 36.34**    **L 10**                      # **852**  
 YUN-CHE WANG                                      Cypress Semiconduct  
**Comment Type**    **E**                      **Comment Status**    **A**  
 The first paragraph clearly states that the PMA interface is an abstract, and does not imply any implementation. Then immediately following it, fig 36-10 shows the exact opposite (as a very specific implementation).  
**SuggestedRemedy**  
 Move Fig 36-10 to section 36.3.3 (where it really belongs); then provide a very simple diagram in 36.3.1 without any signal name, nor functional block. A diagram may not be necessary here in 36.3.1.  
**Proposed Response**                      **Response Status**    **C**  
 Accepted per suggested remedy. Figure 36-10 will be moved and tied, in a floating manner, to the reference to figure 36-10 at 36.3.3, page 36.37, lines 7-8. Deleted the second sentence in 36.3.1.

**Cl 36**    **SC 36.3.1**                                      **P 36.34**    **L 20**                      # **39**  
 Sailesh K. Rao                                      Level One Communica  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Block diagram shows "TXCMU", while explanatory text shows "TXCRU" in Fig. 36-10  
**SuggestedRemedy**  
 Change "TXCMU" to "TXCRU" in block diagram  
**Proposed Response**                      **Response Status**    **C**  
 Accepted. The term "TXCMU" is correct and stands for "Transmit Clock Multiplier Unit". An example of the usage of this term is in the third paragraph of 36.3.3. The modified suggested remedy is to correct the explanatory text.

**Cl 36**    **SC 36.3.1**                                      **P 36.34**    **L 39**                      # **827**  
 Tom Mathey                                      Baynetworks  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Wrong text in figure.  
**SuggestedRemedy**  
 Change from "TXCRU = Transmit Clock Recovery Unit" to "TXCMU = Transmit Clock Multiplier Unit".  
**Proposed Response**                      **Response Status**    **C**  
 Accepted as a duplicate of comment #39. Please refer to comment #39.

**Cl 36**    **SC 36.3.1.1.1**                                      **P 36.35**    **L 3715**                      # **941**  
 Scott Mason                                      Plaintree Systems Inc.  
**Comment Type**    **E**                      **Comment Status**    **A**  
 36.3.1.1.1 and figure 36-10 indicate that PMA\_UNITDATA.request is generated by the PCS and used by the PMA. However, figure 36-6 shows the transmit PCS checking PMA\_UNITDATA.request, not generating it.  
**SuggestedRemedy**  
 Update 36.3.1.1.1 and figure 36-2 to show the generation of PMA\_UNITDATA.request and to indicate its application in the transmit PCS.  
**Proposed Response**                      **Response Status**    **C**  
 Accepted. 36.3.1.1 is updated to indicate that PMA\_UNITDATA.request is used by the PCS Transmit process. 36.3.1.2 is updated to indicate that PMA\_UNITDATA.request is used by the PCS Receive process.

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CI 36 SC 36.3.2 P 36.36 L 1 # 1104  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

To me, the text "After code\_group alignment is achieved, based on comma detection, the PMA conveys ten-bit code\_groups to the PCS, ...." STRONGLY implies that there is NOTHING transmitted from the PMA to the PCS until the PMA achieves code\_group alignment. I do not think that is the intent. (P.S., I do understand the difficulties of writing this kind of text, and the editor gets my vote of appreciation)

SuggestedRemedy

Change text to something like:  
 The PMA continuously conveys ten-bit code\_groups to the PCS, independent of code\_group alignment. The PCS discards unaligned code\_groups since the flag sync\_status is set to FAIL during this condition. After code\_group synchronization is achieved, based on comma detection, the ten-bit code\_groups conveyed from the PMA to the PCS are aligned, and the PCS converts code\_groups into GMII data octets, according to 36.2.5.2.2.

Proposed Response Response Status C

Accepted. Changed the sentence on lines 1-3 of page 36.36 as follows:  
 "The PMA continuously conveys ten-bit code\_groups to the PCS, independent of code\_group alignment. After code\_group alignment is achieved, based on comma detection, the PCS converts code\_groups into GMII data octets, according to 36.2.5.2.2."

CI 36 SC 36.3.2.2 P 36.36 L 25 # 1167  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

Grammar

SuggestedRemedy

"... shall serialize ... and transmit ...."

Proposed Response Response Status C

Accepted as a duplicate of comment #773. Please refer to comment #773.

CI 36 SC 36.3.2.2 P 36.36 L 38 # 773  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A

The word "transmits" should be "transmit".

SuggestedRemedy

Replace " ... the PMA Transmit function shall serialize the ten bits of the tx\_code\_group<9:0> parameter and transmits them to the PMD ..."

with " ... the PMA Transmit function shall serialize the ten bits of the tx\_code\_group<9:0> parameter and transmit them to the PMD ..."

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.2.3 P 36.36 L 38 # 774  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A

The word "passes" should be "pass".

SuggestedRemedy

Replace "... the PMA shall assemble the ten received rx\_bits into a single ten-bit value and passes that value ..."

with "... the PMA shall assemble the ten received rx\_bits into a single ten-bit value and pass that value ..."

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.2.3 P 36.36 L 41 # 828  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Missing word "in".

SuggestedRemedy

Change from "bit installed rx\_code\_group<9>." to "bit installed in rx\_code\_group<9>."

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 36.3.2.4 P 36.31 L 43 # 829  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Change sub-clause title to better reflect text description.

SuggestedRemedy  
 Change from "36.3.2.4 Comma detect function" to "36.3.2.4 Code\_group alignment".

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.3.2.4 P 36.36 L 45 - 55 # 1169  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change  
 The comma detect function needs to mention the effect of EN\_CDET on its operation.

SuggestedRemedy

Proposed Response Response Status C  
 Accepted. Modify the title of clause 36.3.2.4 to be "Code Group Alignment" .  
 The following changes are made:

Added the following text after the second sentence in 36.3.2.4:  
 "The code\_group alignment function shall be operational when the EN\_CDET signal is active (see 36.3.3.1)."

Added PICS entry PMA4 in 36.7.4.8 as follows:  
 Item Feature Subclause Status Support Value/Comment

PMA4 Code\_Group Alignment 36.3.2.4 M Yes[] When EN\_CDET is active

Cl 36 SC 36.3.2.4 P 36.36 L 46 # 1168  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change  
 This needs to be a shall statement.

SuggestedRemedy  
 "In the event the PMA sublayer detects a comma+ not aligned to the code\_group boundry, it shall realign its current code\_group boundary to that of the received comma+...."

Proposed Response Response Status C  
 Accepted as a duplicate of comment #500. The following changes are made:

Added the following text after the second sentence in 36.3.2.4:  
 "The code\_group alignment function shall be operational when the EN\_CDET signal is active (see 36.3.3.1)."

Added PICS entry PMA4 in 36.7.4.8 as follows:  
 Item Feature Subclause Status Support Value/Comment

PMA4 Code\_Group Alignment 36.3.2.4 M Yes[] When EN\_CDET is active

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Cl 36 SC 36.3.3 P36.37 L1-7 # 910

Rich Seifert Networks & Communic

Comment Type TR Comment Status A Technical Change

There are a few problems here. First, you don't really make a "service interface" accessible; you provide a physical instantiation of the interface (subtle architectural point).

More importantly, this subclause appears to mandate that the ONLY 802.3z-permissible physical instantiation is the one presented here.

If someone builds a product with a different physical instantiation of the PMA interface (e.g., a 20B interface) between chips, yet meets the MDI specifications, why shouldn't that product be considered conformant with the standard?

SuggestedRemedy

Eliminate the requirement that the specified PMA is the ONLY one permitted as a physical instantiation; make it a recommendation instead.

Proposed Response Response Status C

Accepted.  
 Changed the heading of subclause 36.3.3 to: "A physical instantiation of the PMA service interface".

Replace the first paragraph of 36.3.3 with:

"The ten-bit interface (TBI) is defined to provide compatibility among devices designed by different manufactures. There is no requirement for a compliant device to implement or expose the TBI. A TBI implementation shall behave as described in subclauses 36.3.3 through 36.3.6."

Replace the second paragraph of 36.3.3 with:

"Figure 36-10 illustrates the PMA functions and interfaces."

In the final paragraph of 36.3.3, replace "The physical instantiation of the PMA Service Interface" with "The TBI".

In PICS item \*PMA in 36.7.3, replaced the Feature "Exposed PMA service interface" with "Ten-bit interface (TBI)".

Add PICS entry TBI1 to 36.7.4.12 as follows:

| Item | Feature         | Subclause | Status | Support | Value/Comment |
|------|-----------------|-----------|--------|---------|---------------|
| TBI1 | TBI requirement | 36.3.3    | PMA:M  | Yes[ ]  |               |
|      |                 |           |        |         | N/A[ ]        |

Replaced the first sentence of 36.3.3.2 with: "Table 36-5 lists the permitted combinations of control signals on the TBI".

Changed the title of table 36-5 to "TBI permitted combinations of

control signals".

Changed the heading of subclause 36.7.4.12 to "TBI".

Changed the beginning of the third paragraph of 36.3.3 to read: "As depicted in figure 36-10, the TBI..."

Deleted PICS entry PMA5.

Replaced the first sentence of 36.3.3.1 with: "In the event the TBI is made accessible".

Changed the title of table 36-4 to: "TBI required signals"

In 36.3.3.1 for EWRAP, changed "PMA" to "TBI".

In 36.3.3.1 for COM\_DET, changed all instances of "PMA" alone to "TBI".

In 36.3.3.1 for -LCK\_REF, changed all instances of "PMA" alone to "TBI".

In 36.3.3.1 for EN\_CDET, changed the first instance of "PMA" to "TBI".

Changed the heading of subclause 36.3.4 to: "General electrical characteristics of the TBI".

Replaced the first sentence of 36.3.4 with: "In the event the TBI is made accessible".

In 36.3.4.1, changed all instances of "PMA" to "TBI".

Changed the heading of subclause 36.3.5 to "TBI transmit interface electrical characteristics".

Replace the text of 36.3.5 with: "In the event the TBI is made accessible, the electrical characteristics of the TBI transmit interface shall be met."

Changed the heading of subclause 36.3.5.2 to: "TBI transmit interface timing".

Replace the text of 36.3.5.2 with: "The TBI transmit interface timings in table 36-7 defines the TBI input. All transitions in figure 36-13 are specified from the midpoint of the rising edge of the PMA\_TX\_CLK to valid input signal levels."

Changed the title of figure 36-13 to: "TBI transmit interface timing diagram".

Changed the heading of subclause 36.3.6 to "TBI receive interface electrical characteristics".

Replace the text of 36.3.6 with: "In the event the TBI is made



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accessible, the electrical characteristics of the TBI receive interface shall be met."

"The TBI receive interface timings in figure 36-14 define the TBI output. All transitions in figure 36-14 are specified from the Receive Clock reference level (1.4V) to valid output signal levels."

Changed the title of figure 36-14 to: "TBI receive interface timing diagram".

|                     |                  |                       |             |              |
|---------------------|------------------|-----------------------|-------------|--------------|
| <b>CI 36</b>        | <b>SC 36.3.3</b> | <b>P 36.37</b>        | <b>L 34</b> | <b># 911</b> |
| Rich Seifert        |                  | Networks & Communic   |             |              |
| <i>Comment Type</i> | <b>E</b>         | <i>Comment Status</i> | <b>A</b>    |              |

*SuggestedRemedy*

Change "The physical?" to "this physical?". Similar changes are needed on line 44 ("this PMA Service"), p36.39 line 8 ("on THIS physical instantiation"), p36 line 33 ("event this physical instantiation of the PMA?"), p41 line 7 ("event this physical instantiation of the PMA?"), p42 line 3 ("event this physical instantiation of the PMA?").

|                                |                        |          |
|--------------------------------|------------------------|----------|
| <i>Proposed Response</i>       | <i>Response Status</i> | <b>C</b> |
| Accepted per suggested remedy. |                        |          |

|                     |                  |                       |            |              |
|---------------------|------------------|-----------------------|------------|--------------|
| <b>CI 36</b>        | <b>SC 36.3.3</b> | <b>P 36.39</b>        | <b>L 4</b> | <b># 853</b> |
| YUN-CHE WANG        |                  | Cypress Semiconduct   |            |              |
| <i>Comment Type</i> | <b>E</b>         | <i>Comment Status</i> | <b>R</b>   |              |

For the EN\_CDET signal, the definition allows it "always enabled" in the PMA, which is fine in itself. Then down in Table 36-5, line 3-4, and line 7-8, the "COM\_DET function is "disabled/enabled" based on the "L/H" value of the EN\_CDET signal. Is the text correct (allow it to be always enabled), or is the table correct (must be disabled) ???

Also for syntactical reason, how is COM\_DET (which is a signal name) disabled or enabled ? Is "disabled" the same as "always LOW"; and "enabled" the same as "always HIGH" ?

*SuggestedRemedy*

Need consistency. Either modify the text on line 10, or change Table 36-5.

Also, COM\_DET (used 4 times in Table 36-5) should be changed to "common detection function".

|                          |                        |          |
|--------------------------|------------------------|----------|
| <i>Proposed Response</i> | <i>Response Status</i> | <b>C</b> |
|--------------------------|------------------------|----------|

Rejected. EN\_CDET is an input and COM\_DET is an output to an accessible PMA Service Interface per 36.3.3. The text for EN\_CDET allowing it to be always enabled is correct. The COM\_DET output is enabled by setting EN\_CDET high (H) per the definition of COM\_DET on page 37.38 lines 43-48, 36.3.2.4, and table 36-5. No text exists on page 36.39 line 10. COM\_DET is enabled when high, and disabled when low.

|              |                    |                       |          |               |
|--------------|--------------------|-----------------------|----------|---------------|
| <b>CI 36</b> | <b>SC 36.3.3.1</b> | <b>P 36.37 to 36.</b> | <b>L</b> | <b># 1175</b> |
| Pat Thaler   |                    | Hewlett-Packard       |          |               |

|                     |           |                       |          |
|---------------------|-----------|-----------------------|----------|
| <i>Comment Type</i> | <b>TR</b> | <i>Comment Status</i> | <b>A</b> |
|---------------------|-----------|-----------------------|----------|

There seems to be a determined effort to avoid using "shall" in this subclause even when stating items that can not be ensured without a requirement such as "The PMA attains frequency lock within 500 us."

Are these items all specified elsewhere? If not, why not use shall?

*SuggestedRemedy*

|                          |                        |          |
|--------------------------|------------------------|----------|
| <i>Proposed Response</i> | <i>Response Status</i> | <b>C</b> |
|--------------------------|------------------------|----------|

Accepted. The shall for subclauses 36.3.3 through 36.3.6 is specified in 36.3.3, page 36-37, line 5. Reword this sentence to be: "shall behave as described in subclauses. . ."

|              |                    |                 |             |               |
|--------------|--------------------|-----------------|-------------|---------------|
| <b>CI 36</b> | <b>SC 36.3.3.1</b> | <b>P 36.38</b>  | <b>L 25</b> | <b># 1170</b> |
| Pat Thaler   |                    | Hewlett-Packard |             |               |

|                     |          |                       |          |
|---------------------|----------|-----------------------|----------|
| <i>Comment Type</i> | <b>E</b> | <i>Comment Status</i> | <b>A</b> |
|---------------------|----------|-----------------------|----------|

Delete "primary"; it hasn't been defined and the sense is fine without it.

*SuggestedRemedy*

|                          |                        |          |
|--------------------------|------------------------|----------|
| <i>Proposed Response</i> | <i>Response Status</i> | <b>C</b> |
|--------------------------|------------------------|----------|

Accepted per suggested remedy.

|              |                    |                 |             |               |
|--------------|--------------------|-----------------|-------------|---------------|
| <b>CI 36</b> | <b>SC 36.3.3.1</b> | <b>P 36.38</b>  | <b>L 29</b> | <b># 1172</b> |
| Pat Thaler   |                    | Hewlett-Packard |             |               |

|                     |           |                       |          |                         |
|---------------------|-----------|-----------------------|----------|-------------------------|
| <i>Comment Type</i> | <b>TR</b> | <i>Comment Status</i> | <b>A</b> | <i>Technical Change</i> |
|---------------------|-----------|-----------------------|----------|-------------------------|

I don't see how this statement can be assured to be true. When EN\_CDET is off, realignment does not occur and a comma could occur on the other clock. I also don't see why we would care which phase of the clock a comma occurs on.

*SuggestedRemedy*

Either delete or state under PMA\_RX\_CLK<0> that when comma detect is enabled commas shall only occur on this clock.

|                          |                        |          |
|--------------------------|------------------------|----------|
| <i>Proposed Response</i> | <i>Response Status</i> | <b>C</b> |
|--------------------------|------------------------|----------|

Accepted. Add the statement "When code\_groups are properly aligned" to the beginning of the second sentence in line 29, and delete second sentence of PMA\_RX\_CLK<1>, lines 38-40. See also 1173.

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CI 36 SC 36.3.3.1 P36.38 L34 and 42 # 1171  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

These two lines appear to be the only use of the term sliver. It hardly seems worth the effort to define the term for this use. Also, this should be a shall.

SuggestedRemedy

"... and shall not be shortened."

Proposed Response Response Status C

Accepted. Changed both instances to read: "...and is not shortened." The PICS entry TBI1 contains the requirement for the TBI, removing the need for a "shall" here.

CI 36 SC 36.3.3.1 P36.38 L41 # 830  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Grammar: delete word "be".

SuggestedRemedy

Change from "and is not be truncated or slivered." to "and is not truncated or slivered."

Proposed Response Response Status C

Accepted as a duplicate of comment #484. Please refer to comment #484.

CI 36 SC 36.3.3.1 P36.38 L41 # 484  
 Alan Albrecht Hewlett-Packard

Comment Type E Comment Status A

text says " and is not be truncated or slivered."

SuggestedRemedy

Change to "and may not be truncated or slivered."  
 Also to remain parallel in intent, change line 33 the same way.

Proposed Response Response Status C

Accepted. Changed both instances to read: "...and is not shortened."

CI 36 SC 36.3.3.1 P36.38 L45 # 811  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Incomplete description of requirement.

SuggestedRemedy

Change from "to the comma+ bit sequence." to "to the comma+ bit sequence when EN\_CDET is asserted."

Proposed Response Response Status C

Accepted. This sentence is corrected in a manner similar to this suggested remedy by the response to comment #1174.

CI 36 SC 36.3.3.1 P36.38 L46 # 1174  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

Technical Change

"When EN\_CDET is asserted, the PMA is required to detect...."

SuggestedRemedy

Proposed Response Response Status C

Accepted per comment text.

CI 36 SC 36.3.3.1 P36.39 L2 # 812  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Add additional pointer to best sub-clause description.

SuggestedRemedy

Change from "(see 36.2.4.9)." to "(see 36.2.4.9 and 36.3.2.4)."

Proposed Response Response Status C

Accepted per suggested remedy.

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CI 36 SC 36.3.3.1 P 38.38 L 38 to 40 # 1173  
 Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

This rambles on about commas, but does not draw a conclusion. A possible conclusion, is that in the absence of errors or when comma alignment is enabled a comma will never occur on this clock. I'm not sure what the usefulness of this fact is. PCS seems to go to efforts to check for commas occurring on odd bytes so PCS does not treat a comma on an odd clock as impossible.

SuggestedRemedy

Proposed Response Response Status C

Accepted. Deleted the Rrrrammbbbllingggg second sentence.

CI 36 SC 36.3.4.1 P 36.39 L 41 # 1193  
 David Law 3Com

Comment Type E Comment Status A

I believe the table reference is incorrect.

SuggestedRemedy

Suggest '... table 36-5 ...' should read '... table 36-6 ...'

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.4.3 P 36.40 L 46 # 1194  
 David Law 3Com

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Suggest '2.0V to.8V' should read '2.0V to 0.8V'

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.5.2 P 36.41 L 19 # 813  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Reference is to wrong table

SuggestedRemedy

Change from "table 36-6" to "36-7".

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.5.2 P 36.41 L 20 # 1197  
 David Law 3Com

Comment Type T Comment Status A Technical Change

Are we going to use the 'midpoint of the rising edge' or are we going to use the absolute value 1.4V. Suggest that 1.4V should be used as this is used in the fig and that there can then be no interpretation of which midpoint, the define or the measured.

SuggestedRemedy

Suggest the text '... midpoint of the rising edge ...' should read '... Transmit Clock reference level (1.4V) ...'

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.3.6 P 36.42 L 7 # 1196  
 David Law 3Com

Comment Type E Comment Status A

I believe the reference is incorrect.

SuggestedRemedy

Suggest '... figure 36-14 ...' should read '... table 36-8 ...'

Proposed Response Response Status C

Accepted per suggested remedy. The first occurrence of "figure 36-14" in 36.3.6, line 7, is changed to "table 36-8".

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Cl 36 SC 36.3.6.1 P 36.42 L 35 # 814  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Text appears to be in wrong font size.  
 SuggestedRemedy  
 Font size for "(rx\_code\_group<9:0>)" appears to be a point size or 2 smaller than matching text in 36.3.5.1.  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.3.6.1 P 36.42 L 38 # 815  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Incorrect description of rising edge.  
 SuggestedRemedy  
 Change from "(i.e., PMA\_RX\_CLK<1> is HIGH)." to "(i.e., PMA\_RX\_CLK<1> transitions from LOW to HIGH)."  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.3.6.2 P 36.42 L 44 # 816  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Sentence is mis-structured.  
 SuggestedRemedy  
 Change from "The receive clocks are supplied to the PCS and GMII from and are derived from the recovered bit clock."  
 to something like "The receive clocks supplied to the PCS and GMII are derived from the recovered bit clock."  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.3.6.2 P 36.42 L 45-47 and # 1176  
 Pat Thaler Hewlett-Packard  
 Comment Type T Comment Status A  
 This sentence appears twice in this subclause. Also, the stretching can be one of at least 9 amounts.  
 SuggestedRemedy  
 Delete the first instance and delete "a fixed amount".  
 Proposed Response Response Status C  
 Accepted per suggested remedy. Also deleted the last sentence of the first paragraph of 36.3.6.2 as it is incorrect and essentially duplicates the text of the first sentence.

Cl 36 SC 36.3.7 P 36.42 L 28 # 818  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Note is in conflict with earlier requirement. Note says loopback can be either in parallel or serial circuitry.  
 Page 36.38 line 24 says "loop serialized transmit data".  
 SuggestedRemedy  
 Follow usage of industry standard parts (which is unknown to me).  
 Proposed Response Response Status C  
 Accepted per suggested remedy. Also deleted the last sentence of the first paragraph of 36.3.6.2 as it is incorrect and essentially duplicates the text of the first sentence.

Cl 36 SC 36.3.7 P 36.43 L 22 # 817  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Font size for the first part of the sentence appears to be a point size or 2 smaller than remaining part of sentence.  
 SuggestedRemedy  
 Use matching font size.  
 Proposed Response Response Status C  
 Accepted per suggested remedy. Corrected font size problem in 36.3.7 on page 36.43, line 22.

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Cl 36 SC 36.3.7.2 P 36.43 L 3615 # 944  
 Scott Mason Plaintree Systems Inc.

Comment Type T Comment Status D Withdrawn

36.3.7.2 indicates that the transmitter does not send data while in Loopback mode. For a continuously signalled link such as 1000 Base-X, it would be more clear if the sub-clause indicated what is sent rather than what is not sent.

SuggestedRemedy

Send /I2/ during loopback. IDLE is sent so that carrier sense is not activated in the receiver. Not activating carrier sense allows loopback testing to be performed on a node in a shared network.

Allow the transmitter to introduce one disparity violation when entering Loopback mode and one disparity violation when leaving Loopback mode. These allowances enable an implementation to source the IDLE from a layer below the endec. This, in turn, allows the endec to be included in the loopback datapath, increasing the fault coverage provided by Loopback mode.

Putting all this together, send a continuous pattern of:

001111 1010  
 100100 0101

while in Loopback mode.

Proposed Response Response Status Z

Rejected. The key here is that neither the MAC nor PCS drive the media when in loopback mode. Received data should be passes directly to the transmittter when in loopback. The ENDEC should not be employed in loopback mode although looping back of either serialized or parallel information should be allowed.

Cl 36 SC 36.3.8 P 36.43 L 48 # 819  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Grammar, add word "to"

SuggestedRemedy

Change from "Compliance with the standard is not be affected by" to "Compliance with the standard is not to be affected by".

Proposed Response Response Status C

Accepted. Changed the second sentence in the second paragraph of 36.3.8 as follows:

"Compliance with the standard is affected by" to "Compliance with the standard is not affected by".

Cl 36 SC 36.4 P 36.44 L 14 # 984  
 David Law 3Com

Comment Type E Comment Status A

Suggest '... in IEEE802.3u Clause 21.' should read '... in Clause 21.' IEEE802.3u is part of the same standard, do not need to include supplements name in this reference.

SuggestedRemedy

Change text to read '... in Clause 21.'

Proposed Response Response Status C

Accepted per suggested remedy and per comment #354 to lower capitalize the "c" in "clause".

Cl 36 SC 36.4 P 36.44 L 5 # 354  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC 36.4 P 36.44 L 6 to 7 # 1004  
 David Law 3Com

Comment Type T Comment Status A Technical Change

The text '... if an exposed interface is provided to the PMA, it shall comply with the requirements for the PMA Service Interface, ...' duplicates the text and in particular the 'shall' statement in subclause 36.3.3, lines 3 to 5.

SuggestedRemedy

Please correct so there is only one shall statement and correct the PICS as required. In my comments I have assumed that the shall will be removed from 36.3.3 and remain in 36.4. An alternative would be to remove 36.4 altogether and place text similar to 35.3.3 into 36.2 for the exposed PCS and GMII case.

Proposed Response Response Status C

Accepted. Changed per response to comment #910. Two PICS entries are necessary, one for the "optional TBI" the other for the "mandatory features of the optional TBI".

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Cl 36 SC 36.5 P 36.44 L 14 # 708  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A  
 The MAC constraints for Gigabit Ethernet are actually in 35.2.4, not Clause 21.

SuggestedRemedy

Proposed Response Response Status C  
 Accepted. Page 36.44 line 15 change "IEEE 802.3 Clause 21" to "35.2.4 and table 35-5".

Cl 36 SC 36.5 P 36.44 L 15 # 820  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 I believe that reference to IEEE 802.3u Clause 21 is incorrect. The only MAC constraints that I could find in clause 21 is table 21-2 which refers to MAC delay assumptions. The matching Gigabit constraints seem to be in table 35-5, clause 35.2.4, on page 35.18

SuggestedRemedy  
 Change from "MAC constraints are contained in IEEE 802.3u Clause 21." to "MAC constraints are contained in 35.2.4 and table 35-5".

Proposed Response Response Status C  
 Accepted as a duplicate of comment #708. Please refer to comment #708.

Cl 36 SC 36.5 P 36.44 L 15 # 355  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.5 P 36.44 L 16 # 357  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.5.1 P 36.44 L 24 to 50 # 993  
 David Law 3Com

Comment Type T Comment Status A  
 I cannot find the PICS Item for the shall in this clause. If I understand the clause correctly these delays are only required where the PHY provides an exposed GMII.

SuggestedRemedy  
 Item PCS1 should be moved from 36.7.4.2 to 36.7.3 as a major option, rename Item to be 'GMII', reword Feature to read 'PHY provides exposed GMII'. Add a new Item to 36.7.4.1, Item 'CC4' (renumber the remaining items), Feature 'PHY Delay Constraints', subclause '36.5.1', Status 'GMII:M', Support 'Yes[] N/A[]' Note this item should be remain with the other timing related items if my other comment about grouping these into their own sub-clause is accepted.

Proposed Response Response Status C  
 Accepted. Resolved per response to comment #988. Please refer to comment #988.

Cl 36 SC 36.5.1 P 36.44 L 24, 53 # 912  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy  
 Change "associated with a" to "with an exposed". Same on line 53 ("without an exposed GMII")

Proposed Response Response Status C  
 Accepted. The following changes are made:

Line 24 left as is to prevent the use of the term "exposed" as no "exposed" GMII is defined.

Line 53 now reads: "Every DTE with a 1000BASE-X PHY shall..." per response to comment #994

P802.3z Draft 3.1 Comments

**Cl 36 SC 36.5.1 P 36.44 L 46-47 # 1137**  
 Pat Thaler Hewlett-Packard

**Comment Type TR Comment Status A Technical Change**

Change the note to text in the subclause and change the musts to shalls.

*SuggestedRemedy*

**Proposed Response Response Status C**

Accepted. Page 36.44 line 47 change "must" to "shall", delete "and also the assertion and deassertion delays on COL must be equal", and move the footnote into the text.

Added PICS Item: TIM1, Feature "Carrier de-assertion/assertion delays", Subclause 36.5.1, Status HDGM:M, Support Yes[] N/A [].

**Cl 36 SC 36.5.2 P 36.44 L 53 # 994**  
 David Law 3Com

**Comment Type T Comment Status A**

I believe the text 'Every 1000BASE-X DTE not associated ...' is not correct, a 1000BASE-X DTE does not exist within 802.3, only DTE's and 1000BASE-X PHY's.

*SuggestedRemedy*

Suggest text should read '1000BASE-X PHY's embedded within DTE's without an exposed GMII shall ...'

**Proposed Response Response Status C**

Accepted. Line 53 is changed to : "Every DTE with a 1000BASE-X PHY shall...".

**Cl 36 SC 36.5.2.6 P 36.33 L The whole # 1133**  
 Pat Thaler Hewlett-Packard

**Comment Type TR Comment Status A**

This state diagram does not use the same conventions as the other ones in the clause and as defined in 36.2.5.1.1. For instance, the transition from COMMA\_DETEC\_1 to ACQUIRE\_SYNC\_1 would be

PMA\_UNIDATA.indicate(/D/)

*SuggestedRemedy*

Use a consistent notation.

**Proposed Response Response Status C**

Accepted. PMA\_UNIDATA.indicate should actually be specified as PMA\_UNIDATA.indicate(tx\_code\_gorup<9:0>). Shorthand is being used here. However, the particular code-group need not be specified for the transition. An alias of PMA\_UNIDATA.indicate (PUDI) is created for PMA\_UNIDATA.indicate(tx\_code\_gorup<9:0>). Note that the message SYNC\_UNITDATA.indicate is a special case.

P802.3z Draft 3.1 Comments

CI 36 SC 36.7 P36.45 L # 360013

Rich Taborek

Comment Type E Comment Status A

Duplicate PICS entries.

SuggestedRemedy

- 1) Deleted OS1 and its corresponding shall in 36.2.4.12 as it is covered by SD3.
- 2) Deleted OS2, OS3 and OS4 as ordered\_set rules are informational.
- 3) Deleted OS5 and its corresponding shall in 36.2.4.12 as it is covered by SD3.
- 4) Deleted ED1 and its corresponding shall in 36.2.4.12 as it is covered by SD1 and SD2.
- 5) Deleted ED3 and its corresponding shall in 36.2.4.13 as it is covered by SD1 and SD2.
- 6) Deleted ED4 and its corresponding shall in 36.2.4.13 as it is covered by SD3.
- 7) Deleted ED5 and its corresponding shall in 36.2.4.13 as it is covered by SD1 and SD2.
- 8) Deleted ED6 and its corresponding shall in 36.2.4.14 as it is covered by SD1 and SD2.
- 9) Deleted ED7 and ED8 and their corresponding shalls in 36.2.4.15.1 as they are covered by SD1 and SD2.

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.7.1 P36.46 L 13 # 985

David Law

3Com

Comment Type E Comment Status A

Suggest '... in IEEE802.3u Clause 21.' should read '... in Clause 21.' IEEE802.3u is part of the same standard, do not need to include supplements name in this reference.

SuggestedRemedy

Change text to read 'See Clause 21.'

Proposed Response Response Status C

Accepted per suggested remedy and per comment #354 to lower capitalize the "c" in "clause".

CI 36 SC 36.7.2.2 P36.46 L 48 # 986

David Law

3Com

Comment Type E Comment Status A

Suggest 'See Clause 31.' should read 'See Clause 21.' The instruction for completing a PICS are contained in Clause 21, not Clause 31 as stated.

SuggestedRemedy

Change text to read 'See Clause 21.'

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC 36.7.3 P36.47 L 6 # 1001

David Law

3Com

Comment Type T Comment Status A

Technical Change

For Item '\*PMA' the subclause reference should be corrected as the only place I can find a reference to the exposed PMA being optional is in clause 36.4 '... if an exposed interface is provided to the PMA, ...'.

SuggestedRemedy

In Item \*PCS the subclause reference should read '36.4'.

Proposed Response Response Status C

Accepted. Changed per response to comment #910. Two PICS entries are necessary, one for the "optional TBI" the other for the "mandatory features of the optional TBI". The one for the "optional TBI" is \*PMA and the shall and subclause reference is in 36.4.

CI 36 SC 36.7.3 P36.47 L 7 # 989

David Law

3Com

Comment Type T Comment Status A

Technical Change

Yes[] N/A[]' should read 'Yes[] No[]'. Yes[] N/A[] is appropriate when the option is dependent on another option, if there is just a straight choice between implementing the option of not the support field should be Yes[] No[].

SuggestedRemedy

Change the support field to read 'Yes[] No[]'

Proposed Response Response Status C

Accepted as a duplicate of comment #683.  
Change PICS entry \*PMA column "Support" second row to "No[]".



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Cl 36 SC 36.7.4.1 P 36.47 L 22 # 1003  
 David Law 3Com

Comment Type T Comment Status A Technical Change

Item CC2 should be calling out compliance with the PMA interface if an exposed PMA interface is provided. I believe the Subclause reference should be 36.4 as this is the subclause that sets this requirement and believe that this requirement is only mandatory if the PMA is exposed.

SuggestedRemedy

Item 'CC2', should read, feature 'Compliance with PMA Interface requirements', subclause '36.4', Status 'PMA:M', support 'Yes[] N/A[]'.

Proposed Response Response Status C

Accepted. Deleted PICS item CC2.

Cl 36 SC 36.7.4.1 P 36.47 L 22 # 1002  
 David Law 3Com

Comment Type T Comment Status A Technical Change

Item CC1 should be calling out compliance with the GMII if an exposed PCS interface is provided. I believe the Subclause reference should be 36.4 as this is the subclause that sets this requirement and believe that this requirement is only mandatory if the PCS is exposed.

SuggestedRemedy

Item 'CC1', should read, feature 'Compliance with GMII requirements', subclause '36.4', Status 'GMII:M', support 'Yes[] N/A[]' and Comment 'See clause 35'.

Proposed Response Response Status C

Accepted. Resolved per response to comment #988. Please refer to comment #988.

Cl 36 SC 36.7.4.1 P 36.47 L 28 # 991  
 David Law 3Com

Comment Type T Comment Status A

If I understand the text of 36.5.2 these delays are ONLY required for 1000BASE-X PHY associated with DTE's without GMII's, in other words DTE's with embedded 1000BASE-X PHYs. The delays are not required for stand alone 1000BASE-X PHYs nor repeaters. If this is correct item CC4 cannot be 'M', i.e. mandatory for ALL but is dependent on the PHY being embedded within the DTE.

SuggestedRemedy

Suggest that a new option be added to subclause 36.7.3. Item '\*DTE', Feature 'PHY Embedded within DTE without exposed GMII', Subclause '36.2.1', Status 'O', Support 'Yes[] No[]'. Item CC4, change Status to 'DTE:M' and its Support to 'Yes[] N/A[]'

Proposed Response Response Status C

Accepted. Added a new entry to 36.7.3 Major Capabilities/Options. Item: \*DTE, Feature "DTE with PHY not associated with GMII", Subclause 36.5.2, Status O, Support Yes[] No []. Deleted item PCS1. Aspect of comment dealing with CC4 is resolved by comment #992.

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Cl 36 SC 36.7.4.1 P 36.47 L 28 # 778

Jon Frain UNH InterOperability L

Comment Type T Comment Status A

PICS item CC4 is unclear. The test is mandatory only if a GMII doesn't exist.  
 PICS item GI5 is mandatory if a GMII does exist. Both items are dependent upon PICS item PCS1 (GMII interface), and their status should reflect that fact.

SuggestedRemedy

Modify PICS reference, status and feature to PICS item CC4.

| Item | Feature                            | Subclause | Status   | Support | Comment                   |
|------|------------------------------------|-----------|----------|---------|---------------------------|
| CC4  | DTE without GMII delay constraints | 36.5.1    | PCS1:O/1 | Yes[]   | complies with Table 36-10 |
|      |                                    |           |          | N/A []  |                           |

Move PICS item GI5 to subclause 36.7.4.1 and rename it CCx. This will make it clear that either CC4 or CCx is mandatory. But not both. Separating them between tables will only add confusion.

| Item | Feature                       | Subclause | Status  | Support | Comment                  |
|------|-------------------------------|-----------|---------|---------|--------------------------|
| CCx  | MDI to GMII delay constraints | 36.5.2    | PCS:O/1 | Yes[]   | complies with Table 36-9 |
|      |                               |           |         | N/A []  |                          |

Proposed Response Response Status C

Accepted. Resolved by response to comments #991, 992, 993.

Cl 36 SC 36.7.4.1 P 36.47 L 28 to 32 # 992

David Law 3Com

Comment Type T Comment Status A

Suggest items CC4, CC5 and CC6 are delay constraints rather than compatibility constraints and as should be separated out into their own subclause.

SuggestedRemedy

Move Items CC4, CC5 and CC6 to a new subclause titled 'Timing', rename CC4, CC5 and CC6 to be TIM1, TIM2 and TIM3. Also note I have made additional comments on these items.

Proposed Response Response Status C

Accepted. The following change are made:  
 Added a new subclause table to PICS. Table has the following four entries:  
 a) . Item: TIM1, Feature "MDI to GMII delay constraints for half duplex", Subclause 36.5.1, Status HDGM:M, Support Yes[] N/A [], Comment Table 36-9a.  
 b) . Item: TIM2, Feature "MDI to GMII delay constraints for full duplex", Subclause 36.5.1, Status FDGM:M, Support Yes[] N/A [], Comment Table 36-9b.  
 c) . Item: TIM3, Feature "DTE delay constraints for half duplex", Subclause 36.5.2, Status HDTE:M, Support Yes[] N/A [], Comment Table 36-10.  
 d) . Item: TIM4, Feature "Carrier de-assertion/assertion constraints", Subclause 36.5.3, Status HDTE:M, Support Yes[] N/A [].

Added the following below the 36.7.3 Major Capabilities/Options table:  
 "The following abbreviations are used:  
 \*HDGM: HDX and GMII  
 \*FDGM: FDX and GMII  
 \*HDTE: HDX and DTE"

Deleted item CC4 and GI5.

Cl 36 SC 36.7.4.1.9 P 36.51 L 10 # 784

Jon Frain UNH InterOperability L

Comment Type E Comment Status A

PICS item PMR3 is missing a subclause reference and clause 36 doesn't contain any shall statements which refer to clock recovery.

SuggestedRemedy

Add subclause reference to PMR3 of 36.3.3. Modify line 23 of page 36.37 to read:

"Two recovered clocks ... and 180degrees out-of-phase with one another, shall be used by the PMA to latch the received 10-bit code\_groups."

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 36.7.4.11 P 36.52 L 20 # 786  
 Jon Frain UNH InterOperability L  
 Comment Type E Comment Status A  
 PICS items CDT1 and CDT4 appear to have conflicting Support column information.  
 SuggestedRemedy  
 Change the support column of CDT1 to read: Yes [ ]  
 No [ ]  
 Proposed Response Response Status C  
 Accepted. Changed the support column for CDT4 to read Yes[ ], N/A[ ] since the parent entry, PMA4 has a status of "O" representing optional. The support column for CDT1 is correct.

Cl 36 SC 36.7.4.11 P 36.52 L 21 # 785  
 Jon Frain UNH InterOperability L  
 Comment Type E Comment Status A  
 PICS items CDT2 and CDT3 are redundant.  
 SuggestedRemedy  
 Remove PICS item CDT2.  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.7.4.12 P 36.52 L 42 # 987  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest '36.3.536.3.6' should read '36.3.6' in the subclause column. This item checks conformance to the receive interface which is specified in subclause 36.3.6.  
 SuggestedRemedy  
 Change text to read '36.3.6'  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 36 SC 36.7.4.2 P 36.48 L 6 # 999  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 Accepted per suggested remedy. Changed "GMII Interface" to "GMII".

Cl 36 SC 36.7.4.2 P 36.48 L 6 # 988  
 David Law 3Com  
 Comment Type T Comment Status A  
 Isn't the GMII interface a 'Major Capability/Option' and therefore should be in subclause 36.7.3. The subclause reference should also be corrected as the only place I can find a reference to the exposed GMII being optional is in clause 36.4 '... if an exposed interface is provided to the PCS, ...'.  
 SuggestedRemedy  
 Move Item PCS1 to be a new item 'GMII' in subclause 36.7.3. Change subclause reference to be '36.4'  
 Proposed Response Response Status C  
 Accepted per suggested remedy. Change the feature field from "GMII interface" to "PHY associated with GMII".

Cl 36 SC 36.7.4.3 P 36.48 L 15 # 1000  
 David Law 3Com  
 Comment Type E Comment Status A  
 Suggest that '...GMII Interface ...' should read '... GMII ...' or '... GMI Interface ...'  
 SuggestedRemedy  
 See above  
 Proposed Response Response Status C  
 Accepted. Changed "GMII Interface" to "GMII"

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Cl 36 SC 36.7.4.8 P 36.51 L 34 # 1006  
David Law 3Com

Comment Type T Comment Status R T Reject

Item PMA4 seems to be a duplicate of Item CDT4 (subclause 36.7.4.1) except for a slight difference in the 'Feature' text.

SuggestedRemedy

Remove item PMA4, renumber remaining items as required.

Proposed Response Response Status C

Rejected. PICS entry PMA4 is the "parent" entry for all CDTx entries. PMA4 is also changed per response to comment #500.

Cl 36 SC 36.7.4.8 P 36.51 L 37 # 1005  
David Law 3Com

Comment Type T Comment Status A Technical Change

The item PMA5 is a duplicate of the Item \*PMA in 36.7.3.

SuggestedRemedy

Remove item PMA5, renumber remaining items as required.

Proposed Response Response Status C

Accepted per suggested remedy. Duplicate of comment #1004

Cl 36 SC 36.Table 1 P 36.12 L 1 # 1258  
Geoff Thompson Bay Networks, Inc.

Comment Type E Comment Status R

Is there some convention that I don't know about that calls for octets to be expressed in binary in 3/5 groups instead of 4/4. I always thought octet bits should be expressed 4 at a time to correspond to the hex value in the adjacent column

SuggestedRemedy

Fix it unless there is a more established convention that is being adhered to.

Proposed Response Response Status C

Rejected. 8B/10B transmission code is composed of 3B/4B and 5B/6B sub-blocks. These sublocks are discussed in 36.2.4.4, Running disparity rules. Tables 36-1 and 36-2 indicate the mapping of data octets arranged as 3 and 5-bit values into 10-bit code\_groups consisting of 4 and 6-bit values

Cl 36 SC 36A.4 P 36A.2 L 50 # 619  
Bruce LaVigne Hewlett-Packard

Comment Type T Comment Status A Technical Change

Pattern should be repeated continuously, thus needs (at least) an IPG. In order for the test to be consistent between devices, we should specify a fixed IPG. The easiest fixed IPG to use is minimum IPG. This, however, presents problems with devices being able to source this if it uses software instead of hardware to accomplish this. To mitigate this effect, I propose we lengthen the packet from 64 iterations of the modified RPAT sequence to 126 iterations. This yields a full 1518 byte packet.

SuggestedRemedy

- Change the first sentence of the third paragraph to read:  
"The continuous random test pattern consists of a continuous stream of identical packets, separated by a minimum IPG."

- Change the (only) sentence in the fourth paragraph to read:  
"Each packet in the continuous random test pattern consists of 8 octets of PREAMBLE/SFD, followed by 1514 data octets (two initial octets plus 126 repetitions of the 12-octet modified RPAT sequence), plus 4 CRC octets, followed by a minimum IPG of 12 octets of IDLE."

- Change page 36A.3 line 9 to read:  
"MODIFIED RPAT SEQUENCE (LOOP 126 TIMES)

- Change page 36A.3 line 14-15 to read:  
(note: we need the correct CRC values here, but I haven't had the opportunity to compute them yet)  
"CRC  
xx xx xx xx"

- Add the following after page 36A.3 line 15:  
"IPG (TXEN and TXER low)  
00 00 00 00 00 00 00 00 00 00 00 00"

Proposed Response Response Status C

Accepted per suggested remedy. CRC value is 94 D2 54 AC.

Cl 36 SC 37.7.3 P 37.47 L 7 # 683  
Rich Taborek G2 Networks, Inc.

Comment Type E Comment Status A

PICS entry \*PMA column "Support" should indicate "No[ ]" instead of "N/A[ ]".

SuggestedRemedy

Change PICS entry \*PMA column "Support" second row to "No[ ]".

Proposed Response Response Status C

Accepted per suggested remedy.

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Cl 36 SC 7.4.8 P 36.51 L 34 # 500  
 mark sankey 3Com

Comment Type T Comment Status A

(PMA4)  
 The comma detect function in the PMA receiver is only optional once code alignment has been achieved. Line 34 implies that the comma detect may optionally be implemented. This is incorrect, since if this were the case, code alignment would never be achieved.

SuggestedRemedy

change "Comma Detect" to "Enable Comma Detect"

OR

change "Optional" to "Mandatory"

Proposed Response Response Status C

Accepted. The following changes are made:

Added the following text after the second sentence in 36.3.2.4:  
 "The code\_group alignment function shall be operational when the EN\_CDET signal is active (see 36.3.3.1)."

Added PICS entry PMAx in 36.7.4.8 as follows:

| Item | Feature                       | Subclause | Status | Support | Value/Comment |
|------|-------------------------------|-----------|--------|---------|---------------|
| PMAx | Code_Group Alignment Function | 36.3.2.4  | M      | Yes[]   |               |

Cl 36 SC f36.2.5.1.3 P 36.22 L 50 # 939  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

It would be more consistent and more clear if disparity was renamed tx\_disparity.

SuggestedRemedy

Rename disparity to tx\_disparity, where appropriate, throughout the clause.

Proposed Response Response Status C

Accepted. The variable "disparity" is renamed to "tx\_disparity".

Cl 36 SC Fig 36-2 P 36.6 L # 905  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Include a double-line for the PMA (10B) interface, similar to GMII and MDI.

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 36 SC figure 36-5 P 36.28 L 2 # 936  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status R

The transition from state CONFIGURATION to state TX\_TEST\_XMIT and the transition from state IDLE to state TX\_TEST\_XMIT are not needed. Exit from states CONFIGURATION and IDLE is via xmitCHANGE.

SuggestedRemedy

Delete these transmissions.

Proposed Response Response Status C

Rejected. These transitions are required to keep transmitting /C/ and /I/ when xmit = CONFIGURATION and IDLE, respectively.

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CI 36 SC figure 36-5 P36.28 L2 # 937  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

This state diagram assigns FALSE to xmitCHANGE. xmitCHANGE is defined as a function. I am not aware of any conventions that permit a state diagram to assign values to a function.

SuggestedRemedy

Change xmitCHANGE to become a variable. Define a new function, monitor\_xmit. Use xmitCHANGE as a shared variable. Define monitor\_xmit to assign xmitCHANGE <= TRUE when the variable xmit changes state. Retain the assignment of FALSE in the PCS tx ordered\_set state diagram. In resolving concurrent assignments, give priority to the monitor\_xmit function.

Proposed Response Response Status C

Accepted. Deleted all assignments of values to xmitCHANGE in the state diagrams.

Put a default value (FALSE) in the definition of the function.

Add the following note to the function:

Note- xmitCHANGE is set by this function definition; it is not explicitly set in the state diagrams. xmitCHANGE evaluates to its default value upon state entry.

CI 36 SC figure 36-5 P36.28 L2 # 932  
 Scott Mason Plaintree Systems Inc.

Comment Type T Comment Status A Technical Change

xmitChange may result in sending mis-aligned // or /C/ ordered sets.

SuggestedRemedy

Change the global entry conditions to become:

xmitChange = TRUE \* TX\_OSET.indicate \* tx\_even = FALSE

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC figure 36-5 P36.28 L2 # 935  
 Scott Mason Plaintree Systems Inc.

Comment Type E Comment Status A

In states TX\_DATA\_ERROR, TX\_DATA, EPD2\_NOEXT, EPD3, END\_OF\_PACKET\_EXT, and CARRIER\_EXTEND, assignments to the variables transmitting and COL are redundant.

SuggestedRemedy

Delete these assignments.

Proposed Response Response Status C

Accepted as a duplicate of comment #113.

CI 36 SC figure 36-5 P36.28 L2 # 933  
 Scott Mason Plaintree Systems Inc.

Comment Type TR Comment Status A Technical Change

The logical "AND" symbol is missing from the global entry conditions for the PCS transmit ordered\_set state diagram.

SuggestedRemedy

Change the global entry conditions to become:

xmitChange = TRUE \* TX\_OSET.indicate

Proposed Response Response Status C

Accepted per suggested remedy.

CI 36 SC general P L # 929  
 Bruce LaVigne Hewlett-Packard

Comment Type TR Comment Status A Technical Change

The following comments, I believe, should be required to be resolved for my disapprove to become an approve. Rather than duplicate thier text, I refer to them by Comment ID: 405, 116, 117

Also, the following (already required) comments are important to my changing my "disapprove" to an "approve": 492, 504.

SuggestedRemedy

Resolve above comments satisfactorily

Proposed Response Response Status C

Accepted. Please see your referenced comments.

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Cl 36 SC Table 36-9, 36-10 P 36.44 L 35-45 # 913  
 Rich Seifert Networks & Communic

36.5, Status O, Support Yes[] No [].  
 10) Corrected Table 9a column "Max" entries to 136, 192, 192, 192, 192..., respectively per comment #580.

Comment Type TR Comment Status A Technical Change

With the exception of the first entry, the table requirements are for half duplex mode only.

SuggestedRemedy

Qualify the entries with "half duplex mode".

In addition, some specification is needed for MDI-RXDV in full duplex mode, to bound the receive path propagation delay, both to the GMII and to the MAC.

Proposed Response Response Status C

Accepted. The following changes are made.

Will follow precedent of 802.3x by creating a table for MDI to GMII delay constraints in full-duplex mode. This implies:

- 1) Change title of Table 36-9 to "Table 36-9a - MDI to GMII delay constraints (half-duplex mode)"
- 2) Add a new table entitled "Table 36-9b - MDI to GMII delay constraints (full-duplex mode)". The format and column headings of the table are the same as the current 36-9. It will contain two entries:
  - a) "TX\_EN sampled to MDI output" with a max of "136" bit times, input timing reference of "PMA\_TX\_CLK rising" and output timing reference of "1st bit of /S/".
  - b) "MDI Input to RX\_DV de-assert" with a max of "192" bit times, input timing reference of "1st bit of /T/" and output timing reference of "RX\_CLK rising".
- 3) In 36.5.1 page 36.44 line 24 change "specified in table 36-9" to "specified in table 36-9a for half-duplex operation and table 36-9b for full duplex operation"
- 4) Add "(half-duplex mode)" to the end of the subclause headings for 36.5.2 and 36.5.3 and to the end of the title of table 36-10.
- 5) In 36.5.2 page 36.44 line 54 change "in table 36-10" to "in table 36-10 for half-duplex operation"
- 6) In 36.5.3 page 36.45 line 18 change "each DTE" to "each DTE operating in half-duplex mode"
- 7) In the first sentence of 36.5 on page 36.44 line 11 change "Proper operation" to "In half-duplex mode, proper operation"
- 8) Insert the following paragraph from 802.3x between the first two paragraphs of 36.5 (page 36.44 line 17): "In full-duplex mode, predictable operation of the MAC Control PAUSE operation (clause 31, annex 31B) also demands that there be an upper bound on the propagation delays through the network. This implies that MAC, MAC Control sublayer, and PHY implementors must conform to certain delay maxima, and that network planners and administrators conform to constraints regarding the cable topology and concatenation of devices."
- 9) Add two entries to the PICS 36.7.3 Major Capabilities/Options:
  - a) . Item: \*FDX, Feature "PHY supports full-duplex mode", Subclause 36.5, Status O, Support Yes[] No [].
  - b) . Item: \*HDX, Feature "PHY supports half-duplex mdoe", Subclause

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**Cl 36A SC 36A P36A.1 L 25 # 1198**  
 David Law 3Com  
**Comment Type E Comment Status A**  
 Typo.  
**SuggestedRemedy**  
 Suggest text '... 1000Base-X ...' should read '... 1000BASE-T ...'  
**Proposed Response Response Status C**  
 Accepted. "1000Base-X" changed to read "1000BASE-X".

**Cl 36A SC 36A.4 P36A.2 L 38 # 763**  
 Amrit Kalla VLSI Technology Inc.  
**Comment Type T Comment Status D Duplicate**  
 The SFD pattern described on line 38 is 5D, while the pattern for SFD described on line 3, page 36A.3 is given as D5. This is inconsistent. Pattern D5 maintains the same disparity while pattern 5D flips disparity. Assuming D5 is the correct pattern for SFD, then  
 i) bullet (c) (line 38, page 36A.2) is incorrect because SFD pattern D5 does not flip disparity  
 ii) There is no need to add the two octect (BE, 59) disparity flip pattern.  
 iii) The CRC pattern needs to be changed.

**SuggestedRemedy**  
 i) Bullet (c) (line 38, page 36A.2) needs to be deleted.  
 ii) The second sentence beginning on line 30 on page 36A.2 would read:  
 The Fiber Channel Jitter Working Group Technical report specifically stated that the beginning disparity for this pattern should be negative, which would be true if we simply embedded the modified RPAT at the beginning of an 802.3z packet.  
 The sentence on line 50 to 52 on page 36A.2 would read:  
 Each packet in the continuous random test pattern consists of 8 octets of PREAMBLE/SFD, followed by 768 data octets ( 12 x 64 repetitions of modified RPAT sequence), plus 4 CRC octets.  
 Delete lines 5 to 7 on page 36A.3.  
 iii) Replace line 14 on page 36A.3 with a new recalculated CRC number.  
**Proposed Response Response Status Z**  
 Accepted as a duplicate of comment #762. Please refer to comment #762.

**Cl 36A SC 36A.4 P36A.2 L 38 # 762**  
 Amrit Kalla VLSI Technology Inc.  
**Comment Type T Comment Status A Technical Change**  
 The SFD pattern described on line 38 is 5D, while the pattern for SFD described on line 3, page 36A.3 is given as D5. This is inconsistent. Pattern D5 maintains the same disparity while pattern 5D flips disparity. Assuming D5 is the correct pattern for SFD, then  
 i) bullet (c) (line 38, page 36A.2) is incorrect because SFD pattern D5 does not flip disparity  
 ii) There is no need to add the two octect (BE, 59) disparity flip pattern.  
 iii) The CRC pattern needs to be changed.

**SuggestedRemedy**  
 i) Bullet (c) (line 38, page 36A.2) needs to be deleted.  
 ii) The second sentence beginning on line 30 on page 36A.2 would read:  
 The Fiber Channel Jitter Working Group Technical report specifically stated that the beginning disparity for this pattern should be negative, which would be true if we simply embedded the modified RPAT at the beginning of an 802.3z packet.  
 The sentence on line 50 to 52 on page 36A.2 would read:  
 Each packet in the continuous random test pattern consists of 8 octets of PREAMBLE/SFD, followed by 768 data octets (12 x 64 repetitions of modified RPAT sequence), plus 4 CRC octets.  
 Delete lines 5 to 7 on page 36A.3.  
 iii) Replace line 14 on page 36A.3 with a new recalculated CRC number.

**Proposed Response Response Status C**  
 Accepted.  
 1. Deleted the note on page 36A.2 lines 18-43.  
 2. Changed lines 50 to 52 per the suggested remedy to comment #619.  
 3. Retained lines 5 to 7 per the suggested remedy to comment #619.  
 4. Changed the CRC per response to comment #619.

**Cl 36A SC 36A.4 P36A.2 L 38 # 831**  
 Tom Mathey Baynetworks  
**Comment Type E Comment Status A**  
 The SFD value is D5.  
**SuggestedRemedy**  
 Change from "the 5D of the SFD" to "the D5 of the SFD".  
**Proposed Response Response Status C**  
 Accepted as a duplicate of comment #762. Please refer to comment #762.



P802.3z Draft 3.1 Comments

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*Cl* **36A**    *SC* **36A.4**                      *P* **36A.2**    *L* **41**                      # **832**

Tom Mathey                                      Baynetworks

*Comment Type*    **E**                      *Comment Status*    **A**

Typo, change upper case to lower case.

*SuggestedRemedy*

Change from "The" to "The".

*Proposed Response*                      *Response Status*    **C**

Accepted per suggested remedy.

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*Cl* **36A**    *SC* **36A.4**                      *P* **36A.2**    *L* **46**                      # **1199**

David Law                                              3Com

*Comment Type*    **E**                      *Comment Status*    **A**

Typo.

*SuggestedRemedy*

Suggest text '... 8B10B ...' should read '... 8B/10B ...', also do a global search for this one.

*Proposed Response*                      *Response Status*    **C**

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

CI 37 SC P L # 918  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status A

A "shall" is used (conformance requirement) in text that is already covered by the state machine formulations. We should only state a conformance requirement once, preferably in the state machines.

SuggestedRemedy

Eliminate all such redundant shalls. I found:

- p37.6 line 5, 6, 34, 44, 48
- p37.7 line 23, 46, 49, 54
- p37.8 line 7, 35, 45, 51
- p37.9 line 53
- p37.10 line 6
- p37.14 line 1, 4
- p37.15, line 20

There may be others.

Proposed Response Response Status C

Accepted where relevant. The following "shall" usages are deleted:  
 p37.6, line 6: "shall be" changed to "is" per comment #1140  
 p37.6, line 44: "shall be" changed to "is" per comment #360007  
 p37.6, line 48: "shall be" changed to "is" per comment #360007  
 p37.7, line 46: paragraph containing this "shall" deleted per comment #1083  
 p37.7, line 49: paragraph containing this "shall" deleted per comment #1083  
 p37.8, line 7: "shall generated" changed to "generates". Associated PICS entry RX2 deleted as it is covered by AN8.  
 p37.8, line 35: "shall cause" changed to "causes". Associated PICS entry AN4 deleted as it is covered by AN8.  
 p37.8, line 51: "shall be required" changed to "is required" per comment #1208.

The following "shall" usages are not deleted as they are not covered by state machine formulations:

- p37.6, line 5: required for PICS entry RF3 per comment #360002
- p37.6, line 34: required for PICS entry RF6 per comment #360002
- p37.7, line 23: required for PICS entry TX1
- p37.7, line 54: required for PICS entry RX1
- p37.8, line 45: required for PICS entry PR2
- p37.9, line 53: required for PICS entry NP2
- p37.14, line 1: required for PICS entry MR2
- p37.14, line 4: required for PICS entry MR3
- p37.15, line 20: required for PICS entry AN8

CI 37 SC P L # 917  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

p37.4, line 14: Change "Interoperability with?" to "Interoperability Between?"  
 line 25, Change "provide" to "implement"

p37.5 line 20-23, Change to "The PAUSE bit indicates that the device is capable of providing the symmetric PAUSE functions as defined in IEEE 802.3X. The ASM\_DIR bit indicates that asymmetric PAUSE operation is supported. The value of the PAUSE bit when the ASM\_DIR bit is set indicates the direction PAUSE frames are supported for flow ?".

Proposed Response Response Status C

Accepted per suggested remedy. Note that the remainder of the paragraph will remain as is (Re: ?).

CI 37 SC 35.2.2 P37.7 L 18 # 60  
 Lomelino Level One Comm.

Comment Type E Comment Status A

The remote fault entry in table 37-3 is (RF1,RF1)

SuggestedRemedy

It should be (RF1,RF2)

Proposed Response Response Status C

Accepted as a duplicate of comment #47. Please refer to comment #47.

P802.3z Draft 3.1 Comments

CI 37 SC 36.2.5.2.6 P 36.31 L Fig 36-9 # 360012  
 Rich Taborek G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

Loopback mode does not operate properly when signal\_detect is not active.

SuggestedRemedy

Make the following changes to the PCS Synchronization state machine:

Define the variable signal\_detectCHANGE in 36.2.5.1.4 as follows:

signal\_detectCHANGE

In the PCS ynchronization process, this function monitors the signal\_detect variable for a state change. The function is set upon state change detection and reset explicitly.

Values: TRUE; A signal\_detect variable state change has been detected.

FALSE; A signal\_detect variable state change has not been detected

(default).

NOTE—Signal\_detectCHANGE is set by this function definition; it is not set explicitly in the state diagrams. Signal\_detectCHANGE evaluates to its default value upon state entry.

Add the global condition:

signal\_detectCHANGE=TRUE \* mr\_loopback=FALSE \* PUDI

Change the transition condition from state LOSS\_OF\_SYNC to state COMMA\_DETECT\_1 to: (signal\_detect=OK + mr\_loopback=TRUE) \* PUDI(!/[COMMA/])

Add a branch from state LOSS\_OF\_SYNC back to itself upon the condition (signal\_detect=FAIL \* mr\_loopback=FALSE \* PUDI) + PUDI(!/[COMMA/])

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.1 P 37.2 L 1 # 86  
 Mark Gerhold Unisys

Comment Type E Comment Status A

Change to "The Auto-Negotiation function exchanges information between two devices that share a link segment and automatically configures both devices ..."

SuggestedRemedy

Proposed Response Response Status C

Accepted per comment text.

CI 37 SC 37.1.1 P 37.2 L 16 # 358  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.1 P 37.2 L 17 # 75  
 Koichiro Seto Hitachi Cable

Comment Type E Comment Status D Withdrawn

"Each device capable of Auto-Negotiation issue /C/..."

The phrase "capable of Auto-Negotiation" is redundant when Auto-Negotiation is mandatory to all 1000Base-X PCS.

SuggestedRemedy

Remove the phrase "capable of Auto-Negotiation".

Proposed Response Response Status Z

Withdrawn. Duplicate of comment # 73.

CI 37 SC 37.1.1 P 37.2 L 17 # 73  
 Koichiro Seto Hitachi Cable

Comment Type E Comment Status A

"Each device capable of Auto-Negotiation issue /C/..."

The phrase "capable of Auto-Negotiation" is redundant when Auto-Negotiation is mandatory to all 1000Base-X PCS.

SuggestedRemedy

Remove the phrase "capable of Auto-Negotiation".

Proposed Response Response Status C

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

CI 37 SC 37.1.1 P37.2 L 20-21 # 964  
 Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

The statement "/C/ ordered sets yield a rx\_Config\_Reg<D15:D0> value that identifies the operational modes supported by the link partner" is not quite correct.

SuggestedRemedy

Change to "Reciept of multiple identical copies of /C/ ordered sets by a Local Device, yield a rx\_Config\_Reg<D15:D0> value that identifies the operational modes supported by the link partner"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.1 P37.2 L 3 # 356  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.1, 37.1.2 P37.1, 37.2 L # 914  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

p37.1, lines 53, 54, Delete "enhanced". (Auto-Negotiation negotiates all modes of operation, not just "enhanced" modes.)

p37.2 line 4, Change "packet" to "frame"  
 line 12, change "ordered" to "orderly"  
 line 17 change "on copper media" to "on unshielded twisted pair media".  
 line 28, change to "mandatory for 1000BASE-X devices"  
 line 47, delete "The Auto-Negotiation function"  
 line 49, add at end, "(assuming no errors)"

Proposed Response Response Status C

Accepted. The following changes are made:

1. p37.1, lines 53, 54, Deleted "enhanced".
2. p37.2 line 4, left "packet" as is to maintain consistency. See comment #26.
3. p37.2 line 17, changed "on copper media" to "on two pairs of 150-ohm balanced copper cabling" per resonse to comment #231. Unshielded twisted pair media is not supported by 1000BASE-X.
4. p37.2 line 28, this sentence is deleted per response to comment #238.
5. p37.2 line 47, deleted "The Auto-Negotiation function". Item g) starts as "May be enabled..."
6. p37.2 line 49, no change. Timers guarantee a bounded time period assuming errors. No hang conditions are assumed to exist.

CI 37 SC 37.1.1: P37.2 L 7-21 # 239  
 Colin Mick The Mick Group

Comment Type E Comment Status R

Paragraphs 2 & 3 on this page consist of long, awkward, compound sentences.

SuggestedRemedy

Rewrite for clarity

Proposed Response Response Status C

Rejected. The Task Group would be happy to consider a clarification provided by the commenter.

P802.3z Draft 3.1 Comments

CI 37 SC 37.1.2 P37.2 L 27-28 # 965  
 Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A  
 "Implementation of the Auto-Negotiation function is mandatory" is too broad  
 - under what conditions is it mandatory?

SuggestedRemedy  
 Change to ""Implementation of the Auto-Negotiation function is mandatory  
 for 1000BASE-X and 1000BASE-T PHYs"

Proposed Response Response Status C  
 Accepted as a duplicate of comment #238. Deleted this sentence. It's said better in  
 37.1.4.1, or 36.2.5.2.7 as modified by comment #909

CI 37 SC 37.1.2 P37.2 L 28 # 237  
 Colin Mick The Mick Group

Comment Type TR Comment Status A  
 Use of Auto-Negotiation is for a different mechanism that that defined in  
 Clause 28 and is specific only to 1000BASE-X operation.

SuggestedRemedy  
 1. Distinguish Clause 37 Auto-Negotiation from Clause 28  
 Auto-Negotiation.

Proposed Response Response Status C  
 Accepted. In the first sentence in 37.1.2, replace "The" with "This", and replace "IEEE  
 802.3" with "1000BASE-X".

CI 37 SC 37.1.2 P37.2 L 28 # 238  
 Colin Mick The Mick Group

Comment Type TR Comment Status A  
 Auto-Negotiation is defined as mandatory but for what is not specified.  
 1000BASE-X and 1000BASE-T use different forms.

SuggestedRemedy  
 Delete sentence-it's said better in 37.1.4.1

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.1.2 P37.2 L 42 # 87  
 Mark Gerhold Unisys

Comment Type E Comment Status A  
 Change e) "Must not preclude" to "Must allow". Double negative.

SuggestedRemedy

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.1.2 P37.2 L 49 # 960  
 Ariel Hendel Sun

Comment Type TR Comment Status A  
 Objective h) "Completes the base page Auto-Negotiation function  
 in a bounded time period" is meaningless when Next Page exchange  
 is mandatory and not bounded. Note that the bounded completion stated  
 in h) is just an intermediate step occurring before reaching the  
 Link OK state and being able to actually USE the link.

I submit that no useful bound is satisfied by the Auto-negotiation scheme.

Furthermore, the dual Ack mechanism allow implementations  
 that can handshake next pages but are not able to make any  
 use of the next page information, therefore limiting the  
 value of the next page for "future proofing Auto-negotiation".

SuggestedRemedy  
 I am willing to accept any alternative that bounds the link bring-up,  
 assuming reasonable storage resources on the PCS, and does not push  
 implementers to direct CPU involvement in Auto-negotiation (i.e. open  
 ended sequential next page exchanges).

Option 1 - Eliminate Next Page

Option 2 - Limit Next Page to 1 or 2 exchanges after the Base page.

Proposed Response Response Status C  
 Accept. Next Page will be made optional per the outcome of Motion#1  
 in Santa Clara Interim meeting. Yes: 20 No: 0 Abstain: 13

P802.3z Draft 3.1 Comments

CI 37 SC 37.1.3 P37.3 L19 # 1078  
 Ariel Hendel Sun

Comment Type E Comment Status A

Figure 37-1 "Location of the Auto-negotiation function" does not really show where the function is.

SuggestedRemedy

Indicated via text/arrows the placement of the function in the PCS.

Proposed Response Response Status C

Accepted as a duplicate of comment #240.

CI 37 SC 37.1.3 P37.3 L3 # 390  
 Scott Carter IBM

Comment Type E Comment Status A

I think the text in line 3 and the figure 37-1 are not perfectly consistent and it makes it less readable. The text says AN is in the Physical Layer of the OSI model, but the figure has the PCS layer of the LAN CSMA/CD model highlighted. OK, so it isn't tough to figure it out, but it may cause the casual reader a little more work to associate the two models

SuggestedRemedy

change line 3 to say "is provided at the PCS sublayer of the Physical Layer of the OSI ...." or something like that.

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.3 P37.3 L5 # 88  
 Mark Gerhold Unisys

Comment Type E Comment Status A

Change "The actual transfer of information of ability is.." to "The transfer of information is ..."

SuggestedRemedy

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.3 P37.3 L6-36 # 240  
 Colin Mick The Mick Group

Comment Type E Comment Status A

Figure doesn't clearly show the location of the Auto-Negotiation function

SuggestedRemedy

Annotate or use call-out

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.4.1 P37.3 L43-45 # 915  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status A

The conformance requirement ("shall be") is redundant. It has already been stated. Also, it is NOT true that A-N is guaranteed to establish a compatible mode without manual override. A half-duplex-only device will not communicate with a full-duplex-only device.

SuggestedRemedy

Change "shall be" to "is".  
 Delete the second sentence of this paragraph.

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.4.1 P37.3 L44 # 1138  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

This reads like a conformance requirement for the standard not for the devices.

SuggestedRemedy

"1000BASE-X devices shall provide the auto-negotiation function." Or Auto-Negotiation is a mandatory function for 1000BASE-X."

Proposed Response Response Status C

Accepted as duplicate of comment #238

P802.3z Draft 3.1 Comments

CI 37 SC 37.1.4.1 P37.3 L45 # 934  
 John M. Cagle Compaq Computer Co

Comment Type TR Comment Status A

A problem exists today with some 100Base-T devices which, when manual override is in effect, do not advertise their currently selected ability. This causes interoperability problems when the link partner does \*not\* have manual override in effect.

SuggestedRemedy

Add the following sentence after the first sentence on line 45: "Even if manual override is in effect, 1000Base-X devices shall continue to advertise their currently selected ability in the event that their link partner is attempting to auto-negotiate."

Proposed Response Response Status C

Accepted. Add the following text into clause 37:

37.1.4.4 User Configuration with Auto-Negotiation  
 Rather than disabling Auto-Negotiation, the following behavior is suggested in order to improve interoperability with other Auto-Negotiation devices. When a device is configured for one specific mode of operation (e.g. 1000BASE-X Full Duplex), it is recommended to continue using Auto-Negotiation but only advertise the specifically selected ability or abilities. This can be done by the Management agent only setting the bits in the advertisement registers that correspond to the selected abilities.

Motion #2 in 802.3z for this: Yes: 32 No: 1 Abstain: 5

CI 37 SC 37.1.4.2 P37.3 L54 # 961  
 Ariel Hendel Sun

Comment Type E Comment Status A

Typo: "links p[rtner"

SuggestedRemedy

"link partner"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.4.2 P37.3 L54 # 916  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A

SuggestedRemedy

Change "links" to "link"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.1.4.2 P37.3 L54 # 1082  
 Ariel Hendel Sun

Comment Type E Comment Status A

Typo: "links partner"

SuggestedRemedy

"link partner"

Proposed Response Response Status C

Accepted as a duplicate of #981

CI 37 SC 37.1.4.2.1 P37.4 L3-6 # 241  
 Colin Mick The Mick Group

Comment Type E Comment Status R

Very awkward. The main point is that the Auto-Negotiation function does not rise to the GMII unless required for management

SuggestedRemedy

Rewrite and make clear

Proposed Response Response Status C

Rejected. The operative word is "signaling" in "Auto-Negotiation signaling...".

CI 37 SC 37.1.4.2.1 P37.4 L6 # 1201  
 David Law 3Com

Comment Type E Comment Status A

In general reference should be just to a subclause and should not include the 802.3 supplement. Also perform a global search for this.

SuggestedRemedy

Suggest text '... in IEEE802.3u Clause 22 ...' should read '... in clause 22 ...'

Proposed Response Response Status C

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

CI 37 SC 37.1.4.2.1 P37.4 L6 # 366  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.1.4.2.2 P37.4 L11 # 367  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.1.4.2.2, P37.4, 37.27 L # 360003  
 Rich Taborek G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

D3.0 Comment #53, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. Table 37-9 on page 37.17 defines Clause 37 - Manual Configuration as bits 0.12 and 0.5 both being set to 0.

37.1.4.2.2 states that Manual Configuration is "recommended" if GMII Management is not present.

But, the PICS in 37.5.3.1 list Manual Configuration as Optional. It would appear to be mandatory, at least if GMII Management is in use.

SuggestedRemedy  
 Make support for Manual Configuration Mandatory, or at least, Mandatory if GMII Management is present.

Proposed Response Response Status C  
 Accepted. Deleted subclause 37.1.4.2.2 per response to comment 360001. Manual configuration is required by the state diagram, and has PICS entry AN8. PICS entry CC2 is deleted.

CI 37 SC 37.1.4.3 P37.4 L16 # 966  
 Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

"A Auto-Negotiation..."

SuggestedRemedy  
 "An Auto-Negotiation..."

Proposed Response Response Status C  
 Accepted per suggested remedy as a duplicate of comment #28

CI 37 SC 37.1.4.3 P37.4 L16 # 89  
 Mark Gerhold Unisys

Comment Type E Comment Status A

Change "A Auto..." to "An Auto..."

SuggestedRemedy

Proposed Response Response Status C  
 Accepted as a duplicate of comment #28. Please refer to comment #28.

CI 37 SC 37.1.4.3 P37.4 L16 # 28  
 Kevin Daines Packet Engines

Comment Type E Comment Status A

Grammar problem

SuggestedRemedy  
 Change line to read "An Auto Negotiation compatible device ..."

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.1.4.3 P37.4 L16 # 931  
 John M. Cagle Compaq Computer Co

Comment Type E Comment Status A

I think that the beginning of the sentence is improperly constructed.

SuggestedRemedy  
 Change the first word from "A" to "An".

Proposed Response Response Status C  
 Accepted per suggested remedy as a duplicate of comment #28.



P802.3z Draft 3.1 Comments

**Cl 37**    **SC 37.1.4.3**                      **P37.4**            **L16**            # **387**  
 Scott Carter                                      IBM  
*Comment Type*    **E**            *Comment Status*    **A**  
     fix grammar  
*SuggestedRemedy*  
     change "A" to "An"  
*Proposed Response*                      *Response Status*    **C**  
     Accepted as a duplicate of comment #28. Please refer to comment #28.

**Cl 37**    **SC 37.2**                                      **P37.4**            **L25**            # **833**  
 Tom Mathey                                      Baynetworks  
*Comment Type*    **E**            *Comment Status*    **A**  
     Typo, change placement of comma.  
*SuggestedRemedy*  
     Change from "Receive and, Arbitration" to "Receive, and Arbitration".  
*Proposed Response*                      *Response Status*    **C**  
     Accepted per suggested remedy.

**Cl 37**    **SC 37.2**                                      **P37.4**            **L25**            # **834**  
 Tom Mathey                                      Baynetworks  
*Comment Type*    **E**            *Comment Status*    **A**  
     There is no specific place in this clause that says that the received Config\_Reg base page maps to the encoding as shown in figure 37-2. Yes, I realize that for every transmit there is a receive and they must match. However, I wish to add to the crispness of definition (without any intended technical change) with this modification.  
*SuggestedRemedy*  
     Change from "The Config\_Reg base page transmitted within a /C/ ordered\_set shall convey the encoding shown in figure 37-2." to "The Config\_Reg base page, transmitted by a local device or received from a link partner, shall be encapsulated within a /C/ ordered\_set and shall convey the encoding shown in figure 37-2."  
*Proposed Response*                      *Response Status*    **C**  
     Accepted. Changed the wording to: "The Config\_Reg base page, transmitted by a local device or received from a link partner, is encapsulated within a /C/ ordered\_set and shall convey the encoding shown in figure 37-2.". The first shall is undesirable since the encapsulation is part of the general PCS encoding function already required in clause 36.

**Cl 37**    **SC 37.2**                                      **P37.4**            **L27**            # **362**  
 Scott Carter                                      IBM  
*Comment Type*    **E**            *Comment Status*    **A**  
     There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
*SuggestedRemedy*  
     uncapitalize Clause  
*Proposed Response*                      *Response Status*    **C**  
     Accepted per suggested remedy.

**Cl 37**    **SC 37.2.1**                                      **P37.4**            **L33/45**            # **242**  
 Colin Mick                                      The Mick Group  
*Comment Type*    **E**            *Comment Status*    **R**  
     Config\_Reg seems an artifact  
*SuggestedRemedy*  
  
*Proposed Response*                      *Response Status*    **C**  
     Rejected. The Task Group would be happy to consider a remedy provided by the commenter.

**Cl 37**    **SC 37.2.1**                                      **P37.4**            **L42**            # **90**  
 Mark Gerhold                                      Unisys  
*Comment Type*    **TR**            *Comment Status*    **A**  
     Figure 37-2 contains several bits labeled "rsvd". Reserved bits should be set to "0", so that future uses of the bits will operate unambiguously with current Clause 37 implementations. Future-proofing.  
*SuggestedRemedy*  
     Suggested wording "Bits reserved (rsvd) shall be set to 0"  
*Proposed Response*                      *Response Status*    **C**  
     Accepted. The following text is added to the end of 37.2.1: "Config\_Reg bits labeled as "rsvd" are reserved and are written to 0 and ignored on read (see table 37-5) ."

P802.3z Draft 3.1 Comments

Cl 37 SC 37.2.1 P37.7 L # 244  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A  
 Table 37-3 should be tied to 37.2.1  
 SuggestedRemedy  
 Link table to text  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 37 SC 37.2.1.3 P37.5 L 20 # 1200  
 David Law 3Com  
 Comment Type E Comment Status A  
 Pause definition reference should be to a subclause, not to a 802.3 supplement. Also on line 24.  
 SuggestedRemedy  
 Suggest text '... in IEEE802.3x.' should read '... in Annex 31B.'  
 Proposed Response Response Status C  
 Accepted. Changed "IEEE802.3x" to "annex 31B".

Cl 37 SC 37.2.1.3 P37.5 L 21 # 1139  
 Pat Thaler Hewlett-Packard  
 Comment Type T Comment Status A  
 The text and table do not match. According to the table, the PAUSE bit when ASM\_DIR bit is set indicates whether or not Symmetric PAUSE is supported in addition to Asymmetric, not the direction of the Asymmetric PAUSE. I believe the table correctly states what we intended and the text needs to change to match.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 Accepted. Text replaced by the suggested remedy for comment #916 as follows:  
 p37.5 line 20-23, Changed to "The PAUSE bit indicates that the device is capable of providing the symmetric PAUSE functions as defined in IEEE 802.3X. The ASM\_DIR bit indicates that asymmetric PAUSE operation is supported. The value of the PAUSE bit when the ASM\_DIR bit is set indicates the direction PAUSE frames are supported for flow across the link."

Cl 37 SC 37.2.1.3 P37.5 L 24 # 243  
 Colin Mick The Mick Group  
 Comment Type E Comment Status R  
 Citation to 37.2.5.2 is wrong  
 SuggestedRemedy  
 Find, specify correct citation  
 Proposed Response Response Status C  
 Rejected. The reference is correct.

Cl 37 SC 37.2.1.4.3 P37.6 L 29 # 775  
 Jon Frain UNH InterOperability L  
 Comment Type E Comment Status A  
 The word "TRUE" should be "OK".  
 SuggestedRemedy  
 Replace "When sync\_status becomes TRUE ..."  
 with "When sync\_status becomes OK ..."  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 37 SC 37.2.1.4.3 P37.6 L 29 # 835  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Use of TRUE does not match sync\_status definition of OK in 36.2.5.1.3 on page 36.24.  
 SuggestedRemedy  
 Change from "sync\_status becomes TRUE," to "sync\_status becomes OK,".  
 Proposed Response Response Status C  
 Accepted as a duplicate of comment #775. Please refer to comment #775.

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CI 37 SC 37.2.1.4.4 P37.6 L34 # 1140

Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change

This shall statement contradicts 37.2.1.4 which states that setting of remote fault is optional.

SuggestedRemedy

Remove the shall or change 37.2.1.4 to require that the Auto-Negotiation Error fault condition be supported.

Proposed Response Response Status C

Accepted. Move first sentence of second paragraph of 37.2.1.4 above first paragraph. Change "are encoded" to "shall be encoded" on line 33, add "if the remote fault function is supported" to the end of the first paragraph, change "shall be" to "is" on 37.6 line 34. Associated PICs changes as well.

CI 37 SC 37.2.1.6 P37.6 L53 # 1141

Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"no next page" should be "no more next page".

SuggestedRemedy

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.2 P37.7 L13 # 836

Tom Mathey Baynetworks

Comment Type E Comment Status A

Type: FD is used instead of HD.

SuggestedRemedy

Change from "Half Duplex (FD)" to "Half Duplex (HD)".

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.2 P37.7 L17 # 47

Brad Booth Jato Technologies, Inc

Comment Type E Comment Status A

Entry in Config\_Reg base page bits column is incorrect. Remote Fault bits are (RF2, RF1) not (RF1, RF1).

SuggestedRemedy

Correct to (RF2, RF1)

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.2 P37.7 L18 # 837

Tom Mathey Baynetworks

Comment Type E Comment Status A

Type: RF1 is used instead of RF2.

SuggestedRemedy

Change from "Remote Fault (RF1, RF1)" to "Remote Fault (RF2, RF1)".

Proposed Response Response Status C

Accepted as a duplicate of comment #47. Please refer to comment #47.

CI 37 SC 37.2.3 P37.7 L24-32 # 245

Colin Mick The Mick Group

Comment Type E Comment Status A

Would read better if two paragraphs were transposed

SuggestedRemedy

Transpose paragraphs

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.3.1 P37.18 L11 # 792

Tom Mathey Baynetworks

Comment Type E Comment Status A

Type: delete extra letter "t".

SuggestedRemedy

Change from "in t" to "in".

Proposed Response Response Status C

Accepted per suggested remedy.

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CI 37 SC 37.2.3.1 P37.7 L 46 & 48 (2) # 967  
 Ian Crayford Bay Networks, Inc.

Comment Type **TR** Comment Status **A**  
 As stated, the text and the Fig 37-5 are in conflict. ""the Transmit function shall modify tx\_Config\_Reg<D15:D0> such that the Acknowledge bit is set" is incorrect since the Transmit function only handles the tx\_Config\_Reg<D15:D0> value it is given by the Auto-Negotiation function.

SuggestedRemedy  
 Change "Transmit function" to "Auto-Negotiation function" in both places.

Proposed Response Response Status **C**  
 Accepted per suggested remedy.

CI 37 SC 37.2.3.1 P37.7 L 47 # 840  
 Tom Mathey Baynetworks

Comment Type **E** Comment Status **A**  
 I believe that enable and disable of AN is controlled by a single bit, 0.5.

SuggestedRemedy  
 Change from "is enabled when both Control register bits 0.5 and 0.12 are set to one." to "is enabled when Control register bit 0.5 is set to one."

Proposed Response Response Status **C**  
 Accepted as a duplicate of comment #776. Please refer to comment #776.

CI 37 SC 37.2.3.1 P37.7 L 47 # 838  
 Tom Mathey Baynetworks

Comment Type **E** Comment Status **A**  
 The Acknowledge bit is set within the Auto-Negotiation process, not by the Transmit function. Replace "Transmit function" with "Auto-Negotiation process".

SuggestedRemedy  
 Change lines 47 thru 50 to: When the transmit\_ack variable is set to TRUE by the Auto-Negotiation process, then the Auto-Negotiation process shall modify tx\_Config\_Reg<D15:D0> such that the Acknowledge bit is set. When the transmit\_ack variable is set to FALSE by the Auto-Negotiation process, then the Auto-Negotiation process shall modify tx\_Config\_Reg<D15:D0> such that the Acknowledge bit is not set.

Proposed Response Response Status **C**  
 Accepted. Changed the text of the third paragraph of 37.2.3.1 as follows: "When the transmit\_ack variable is set to TRUE by the Auto-Negotiation process, the Auto-Negotiation process shall modify tx\_Config\_Reg<D15:D0> such that the Acknowledge bit is set. When the transmit\_ack variable is set to FALSE by the Auto-Negotiation process, the Auto-Negotiation process shall modify tx\_Config\_Reg<D15:D0> such that the Acknowledge bit is not set."

CI 37 SC 37.2.4 P37.7-8 L 55-02 # 246  
 Colin Mick The Mick Group

Comment Type **E** Comment Status **A**  
 Transpose two paragraphs-what, then shall

SuggestedRemedy  
 transpose

Proposed Response Response Status **C**  
 Accepted per suggested remedy.

CI 37 SC 37.2.5.1.7 P37.14 L 17 # 975  
 Ian Crayford Bay Networks, Inc.

Comment Type **TR** Comment Status **A** Non Technical Change  
 I am not sure if the reference to 802.3x is correct. I think it was 802.3y which last modified the Auto-Neg clause 28 and added the need for a dedicated next page receive register. In addition, I do not believe this register is mandatory for anything except 802.3y.

SuggestedRemedy  
 Determine most up to date and appropriate modification that references the original 28.2.4.1.4 and confirm or change to use this. Also check optional/mandatory requirement for this register.

Proposed Response Response Status **C**  
 Accepted. Change reference from 802.3x 28.2.4.1.4 to 802.3y 32.5.4.2 for changes to 28.2.4.1.4.

CI 37 SC 37.2.5.2 P37.8 L 44-48 # 968  
 Ian Crayford Bay Networks, Inc.

Comment Type **TR** Comment Status **A**  
 The last sentence of the paragraph indictes Remote Fault is signalled if incompatibility exists between the negotiating partners. But my reading of 37.2.1.4 (page 37.5, lines 47-50) indicates that the sensing of faults versus the association of this fault with a particular Remote Fault encoding is optional. If this is the case, the wording is imprecise.

SuggestedRemedy  
 Add at end of sentence "if this association is supported (see 37.2.1.4).

Proposed Response Response Status **C**  
 Accepted. Add at the end of sentence "if the remote fault function is supported (see 37.2.1.4)."

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CI 37 SC 37.2.5.2 P 37.8-9 L # 247  
Colin Mick The Mick Group

Comment Type E Comment Status R

Table 37-4 should be kept with 37.2.5.2

SuggestedRemedy

Proposed Response Response Status C

Rejected. "Floating" tables and figures eliminate blank spaces on pages. This is under the control of the chief editor.

CI 37 SC 37.2.5.2 P 37.9 L 6 to 27 # 1207  
Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

We have added asymmetric pause to auto-negotiation, but I don't see any changes to the clauses added by 802.3x. These currently only allow symmetric pause. Don't we need to make a change to legitimize asymmetric PAUSE there?

SuggestedRemedy

Proposed Response Response Status C

Accepted. Add to the beginning of the second sentence 31B.3.3 "For operation at 100Mb/s or below the," and change PICs entry PSD2 in 31B.4.5 to be optional for above 100Mb/s.

CI 37 SC 37.2.5.2 P 37.9 L 6-27 # 1217  
Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A

There doesn't seem to be any provision for a device to consider auto-negotiation unsuccessful based on PAUSE resolution. However, some devices such as buffered distributors will need to do that if their link partner indicates no support for PAUSE (or perhaps if their link partner indicates only symmetric PAUSE.

SuggestedRemedy

Proposed Response Response Status C

Accepted. The sentence on page 37.8, line 45 describes this case.

CI 37 SC 37.2.5.2 P 37.9 L Table 37-4 # 74  
Koichiro Seto Hitachi Cable

Comment Type E Comment Status A

Definition and implementation of "Don't Care" is unclear.

SuggestedRemedy

If "Don't Care" is just an implementation issue, remove rows which include "Don't Care" from the table.

Proposed Response Response Status C

Accepted. Changed all instances of "Don't Care" to "-" in table 37-4.

CI 37 SC 37.2.5.3 P 37.37.8 L 53 # 969  
Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

The text "to allow exchange of arbitrary pieces of data" is misleading. The data in next pages is certainly not arbitrary!

SuggestedRemedy

Change "arbitrary data" to "user or application specific data"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.5.3 P 37.8 L 51-52 # 1208  
Pat Thaler Hewlett-Packard

Comment Type T Comment Status A

"shall be required" should be "is required" or change the whole sentence to "Transmission and reception ... shall be supported."

SuggestedRemedy

Proposed Response Response Status C

Accepted. Change "shall be required" to "is required". Also delete PICS entry AN6 Next Page Function on page 37.22 as it is covered by PICS entry AN8

CI 37 SC 37.2.5.3 P 37.9 L 1-27 # 970  
Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

The placement of Table 37-4 would be much better if it immediately followed the test to which it applies in 37.2.5.2.

SuggestedRemedy

Move Table 37-4 ahead of 37.2.5.3

Proposed Response Response Status C

Accepted as a duplicate of comment #247.

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Cl 37 SC 37.2.5.3 P 37.9 L 40 # 971  
Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A

Text "after the base page been exchanged" does not make sense.

*SuggestedRemedy*

Change text to read "after the base page exchange has been completed"

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 37 SC 37.2.5.3.5 P 37.10 L 50 - 55 # 752  
Thomas Dineen LSI Logic, 1551 McCar

Comment Type TR Comment Status A

Duplicate

Referring to D3.1 section 37.2.5.3.5 Acknowledge 2 and figure 37-6 Auto-Negotiation State Diagram.

Please clarify the details of the protocol and timing for the ACK2 bit.

"The Acknowledge 2 (Ack2) bit is used by the next page function to indicate that a device has the ability to comply with the message."

This part is clear from reading D3.1, but the use and timing of the ACK2 bit exchange is not clear to me.

First: Each time your local station passes through the state sequence shown below, your station handshakes a page to your link partner. But to do this your link partner also passed through the same state sequence and simultaneously transmits a page to you. This is the basic process of next page exchange.

COMPLETE\_ACK -> NEXT\_PAGE\_WAIT -> ACK\_DETECT -> COMPLETE\_ACK

Second: Message processing. If as a result of a pass through the above process your local station receives a Message Page. The local station will parse the message and decide if the message will be acknowledged with an ACK2. If ACK2 is desired, this signaling is accomplished by asserting the ACK2 bit in the following "next page transfer" to the link partner.

So if you receive a message page in page transfer N you acknowledge your ability to comply with the message by asserting the ACK2 bit for page transfer N+1.

If you agree the above discussion is correct, I would suggest using this text or something like it to enhance the ACK2 description.

The above commentary also supports the discussions presented in Clause 37 comment 1. The last next page transfer of a sequence MUST be a NULL page. This provides a page transfer which your link partner can use to ACK2 your last message.

*SuggestedRemedy*

Add text describing the function and timing of the ACK2 bit.

If you agree the above discussion is correct, I would suggest using this text or something like it to enhance the ACK2 description.

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*Proposed Response*      *Response Status* **C**  
 Accepted as a duplicate of comment #661. Please refer to comment #661.

*Cl* **37**      *SC* **37.2.5.3.5**      *P* **37.10**      *L* **50 - 55**      # **661**  
 Thomas Dineen      LSI Logic, 1551 McCar

*Comment Type*    **TR**      *Comment Status*    **A**      *Technical Change*

Referring to D3.1 section 37.2.5.3.5 Acknowledge 2 and figure 37-6 Auto-Negotiation State Diagram.

Please clarify the details of the protocol and timing for the ACK2 bit.

"The Acknowledge 2 (Ack2) bit is used by the next page function to indicate that a device has the ability to comply with the message."

This part is clear from reading D3.1, but the use and timing of the ACK2 bit exchange is not clear to me.

First: Each time your local station passes through the state sequence shown below, your station handshakes a page to your link partner. But to do this your link partner also passed through the same state sequence and simultaneously transmits a page to you. This is the basic process of next page exchange.

COMPLETE\_ACK -> NEXT\_PAGE\_WAIT -> ACK\_DETECT -> COMPLETE\_ACK

Second: Message processing. If as a result of a pass through the above process your local station receives a Message Page. The local station will parse the message and decide if the message will be acknowledged with an ACK2. If ACK2 is desired, this signaling is accomplished by asserting the ACK2 bit in the following "next page transfer" to the link partner.

So if you receive a message page in page transfer N you acknowledge your ability to comply with the message by asserting the ACK2 bit for page transfer N+1.

If you agree the above discussion is correct, I would suggest using this text or something like it to enhance the ACK2 description.

The above commentary also supports the discussions presented in Clause 37 comment 1. The last next page transfer of a sequence MUST be a NULL page. This provides a page transfer which your link partner can use to ACK2 your last message.

*Suggested Remedy*

Add text describing the function and timing of the ACK2 bit.

If you agree the above discussion is correct, I would suggest using this text or something like it to enhance the ACK2 description.

*Proposed Response*      *Response Status*    **C**

Accepted. Ack2 applies to the previous "next page" .  
 Add the following text to the end of paragraph 37.2.5.3 (page 37.10 line 3):  
 "A local device which requires or expects an Ack2 response from its Link Partner

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(to indicate a Next Page transaction has been received and can be acted upon), must terminate the Next Page sequence with a Null Message Code, in order to allow the Link Partner to transport the final Ack2 status.

Also add the same text to the end of paragraph 28.2.3.4 to clarify the operation consistently in both cases.

CI 37 SC 37.2.5.3.6 P37.11 L 4 # 1209

Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"This bit always takes...."

SuggestedRemedy

Proposed Response Response Status C

Accepted. Deleted the "always".

CI 37 SC 37.2.5.3.6 P37.11 L 6 # 972

Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A

I do not understand the text "the base page associated with the current next page exchange".

SuggestedRemedy

Change to "the base page which preceeded the next page exchange".

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.5.3.7 P37.11 L 16 # 973

Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

"Two-thousand and forty-eight" - you jest!

SuggestedRemedy

Chage to "2048" just like in line 22 below.

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.5.3.8 P37.11 L 22-25 # 248

Colin Mick The Mick Group

Comment Type TR Comment Status D Withdrawn

Must specify a mechanism for assigning message code fields. This has been left open since 1000BASE-T

SuggestedRemedy

Set policy for assigning message codes

Proposed Response Response Status Z

Withdrawn by commentor

CI 37 SC 37.2.5.3.9 P37.11 L 25 # 974

Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

The text "may take on an arbitrary value" while correct (and indeed identical to the original text in Clause 28) could be better defined.

SuggestedRemedy

Change to "are interpreted based on the preceeding message page"

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.6 P37.12 L 5 # 1210

Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"... an equivalent to ... is recommended...."

SuggestedRemedy

Proposed Response Response Status C

Accepted as a duplicate of comment #360003.

Changed 37.2.6, page 37.12, lines 5-7 to read: "Where no physical embodiment of the GMII exists, an equivalent to management registers 0,1,4,5,6,7,8 and 15 must be provided."



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CI 37 SC 37.2.6 P37.12 L5-6 # 360001  
 Rich Taborek G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

D3.0 Comment #48, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. "Where no physical embodiment of the GMII exists, an equivalent to management registers 0,1,4,5,6,7,8 and 15 are recommended to be provided." The problem, as I see it, is that there are several cases where specific management registers are referenced for mandatory behavior (Aneg complete bit 1.5 // AN Next Page // etc).

SuggestedRemedy

Replace "are recommended to be provided." to "shall be provided", I see this as a necessity for testing purposes as the meaning of, and access to, "bit 1.5", and any other management register, would then be consistent across any implementation

Alternative remedy - convert all references to management functionality to an appropriate Optional reference

Proposed Response Response Status C

Accepted. "Must" is used instead of "shall" to denote an unavoidable consequence of mandatory support for the next page function per the IEEE 1996 Style Manual, 1.3. Section 37.2.6.1 requires the use of 8 management registers, therefore management access must exist in some form. The following changes are made:

Changed 37.2.6, page 37.12, lines 5-7 (last two sentences) to read:

"Mandatory functions specified here reference bits in GMII registers 0, 1, 4, 5, 6, 7, 8, 15. Where an implementation does not use a GMII, equivalent functions to these bits must be included."

Also strike subclause 37.1.4.2.2

Also see Comment #360003.

CI 37 SC 37.2.6 P37.12 L7 # 363  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.6.1.1 P37.12 L25-27 # 360009  
 Rich Taborek G2 Networks, Inc.

Comment Type TR Comment Status A Technical Change

D3.0 Comment #121, Steve Dreyer, Seeq Technology, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. This paragraph seems to say that when a device has Autonegotiation disabled, the base page in Register 5 would control the operational modes that the device should be in (Full/Half Duplex, Pause, Offline etc.).

However, Clause 22 says on P. 22.4, L18-25 (of D3) that Register 0 controls the operation of full and half duplex when AutoNegotiation is off. This seems to be a conflict.

It would make sense to follow the old Fast Ethernet way (Register 0 rules when AutNeg=disabled), but Register 0 doesn't contain all the necessary bits for gigabit, such as PAUSE, ASYM\_DIR, RF (Offline), and any new bits that will be defined later.

SuggestedRemedy

Open for discussion.

Proposed Response Response Status C

Accepted. Replace sentence in 37.12 line 30-31 with "When manual configuration is in effect, values for the PAUSE bits (PS1, PS2) should result in a valid operational mode between the local device and the link partner."

CI 37 SC 37.2.6.1.1 P37.12 L27 # 368  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.2.6.1.1 P37.12 L30 # 1211  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A

"insure" should be "ensure"

SuggestedRemedy

Proposed Response Response Status C

Accepted per suggested remedy.

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CI 37 SC 37.2.6.1.2 P37.12 L 36 # 369  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Clause

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.2.6.1.5 P37.13 L 48 # 388  
 Scott Carter IBM

Comment Type E Comment Status A

table values inconsistent

SuggestedRemedy  
 change "A" to "a"

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.2.6.1.7 P37.14 L 17 # 1100  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to IEEE 802.3x 28.2.4.1.4 for definition of management register 8 appears incorrect. I can not find any reference to management register 8 in the full duplex document. Nor is there any reference to management register 8 in the 802.3u document. The only references I can find are:  
 1. in the T2 document, Part 1/D7.0 of December 28, 1996 which adds Register 8, but provides no definition of the bits (see page C-9, 22.2.4.3.6).  
 2. in the T2 document, Part 2 of 802.3y/D7.0 of December 27, 1996, subclause 32.5.4.2 which provides a change to 28.2.4.1.4 and provides register 8 bit definitions as table 32-6.

SuggestedRemedy  
 Change from "IEEE 802.3x 28.2.4.1.4" to something like "IEEE 802.3y 32.5.4.2 for changes to 28.2.4.1.4 which added definition of register 8 and table 32-6."  
 Note to the proper editor: Register 8, for link partner ability next page register, really needs its own subclause and matching text (in .3u and/or in .3z) rather than the present method of text addition to register 4, link partner ability base page register in subclause 28.2.4.1.4.

Proposed Response Response Status C  
 Accepted as a duplicate of comment #975. Please refer to comment #975. Changed reference from to "IEEE 802.3x 28.2.4.1.4" to "IEEE 802.3y 32.5.4.2 for changes to 28.2.4.1.4".

CI 37 SC 37.2.6.1.7 P37.14 L 17 # 392  
 Scott Carter IBM

Comment Type E Comment Status A

DUPLICATE TO LAST COMMENT, forgot to change line number to 17 reference to 802.3x is incorrect

SuggestedRemedy  
 change "802.3x" to "802.3u"

Proposed Response Response Status C  
 Accepted. Reference should be to Annex 31B per response to comment 1200

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**Cl 37**    **SC 37.2.6.1.7**    **P37.14**    **L 48**    # **389**  
 Scott Carter    IBM  
**Comment Type**    **E**    **Comment Status**    **A**  
 reference to 802.3x is incorrect  
**SuggestedRemedy**  
 change "802.3x" to "802.3u"  
**Proposed Response**    **Response Status**    **C**  
 Accepted as a duplicate of comment #392. Please refer to comment #392.

**Cl 37**    **SC 37.2.6.1.9**    **P37.14**    **L 54**    # **492**  
 Howard Frazier    Cisco Systems  
**Comment Type**    **TR**    **Comment Status**    **A**    **Technical Change**  
 The MII status register bit 1.2 should not be mapped to the sync\_status variable in PCS. This variable is not a reliable indication of the health of a link, since brief bursts of errors can cause a transient loss of synchronization, and this is not sufficient cause to report a link failure. It should be observed that bit 1.2 is defined to be a "sticky-low, clear on read" bit, which means that a little burp on the line will be seen as a link failure of exaggerated duration.  
**SuggestedRemedy**  
 Create a new variable which is set in the state "LINK\_OK" in the Auto-Negotiation state diagram, and cleared in all other states of this state machine. This variable can be defined as follows:  
 link\_ok\_state  
     Status indication that the link is available for data transmission and reception.  
 Values:    True; The Auto-Negotiation state machine is in the LINK\_OK state.  
             False; The Auto-Negotiation state machine is not in the LINK\_OK state.  
 Then, replace "sync\_status" with "link\_ok\_state" in the last row of table 37-8.  
**Proposed Response**    **Response Status**    **C**  
 Accepted. Change "sync\_status" to "xmit==DATA" in Table 37-8, line 54.

**Cl 37**    **SC 37.2.6.2**    **P37.15**    **L 3**    # **365**  
 Scott Carter    IBM  
**Comment Type**    **E**    **Comment Status**    **A**  
 There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
**SuggestedRemedy**  
 uncapitalize Clause  
**Proposed Response**    **Response Status**    **C**  
 Accepted per suggested remedy.

**Cl 37**    **SC 37.3**    **P37.15**    **L 13**    # **91**  
 Mark Gerhold    Unisys  
**Comment Type**    **E**    **Comment Status**    **A**  
 There is no reference to Figure 37-5 in the text that I can find.  
**SuggestedRemedy**  
 Please add something like " The functional diagram of Figure 37-5 shows the interfaces between Auto-Negotiation and PCS transmit , PCS receive, and management." or "An overall functional reference diagram of Auto-negotiation is shown in Figure 37-5"  
**Proposed Response**    **Response Status**    **C**  
 Accepted. Added the following sentence to the end of 37.3:  
 "A functional reference diagram of Auto-Negotiation is shown in figure 37-5".

**Cl 37**    **SC 37.3---**    **P37.20**    **L 1/47**    # **251**  
 Colin Mick    The Mick Group  
**Comment Type**    **E**    **Comment Status**    **A**  
 Clean up state machine as per earlier comment  
**SuggestedRemedy**  
**Proposed Response**    **Response Status**    **C**  
 Accepted. State diagram is redrawn.

P802.3z Draft 3.1 Comments

Cl 37 SC 37.3.1 P37.15 L 50-55 # 1212  
 Pat Thaler Hewlett-Packard

Comment Type E Comment Status A  
 Can't x also be a set of integers as in <D15:D0>?

SuggestedRemedy

Proposed Response Response Status C  
 Accepted. Changed text on line 51 from "Any integer" to "Any integer or set of integers".

Cl 37 SC 37.3.1.1 P37.16 L 10 # 839  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Use of TRUE does not match sync\_status definition of OK in 36.2.5.1.3 on page 36.24.

SuggestedRemedy

Change from "sync\_status defined in 36.2.5.1.3 is TRUE." to "sync\_status defined in 36.2.5.1.3 is OK."

Proposed Response Response Status C  
 Accepted as a duplicate of comment #777. Please refer to comment #777.

Cl 37 SC 37.3.1.1 P37.16 L 10 # 777  
 Jon Frain UNH InterOperability L

Comment Type E Comment Status A  
 Variable "TRUE" should be replaced with "OK"  
 Variable "FALSE" should be replaced with "FAIL"

SuggestedRemedy

Replace "TRUE: The variable sync\_status defined in 36.2.5.1.3 is TRUE."  
 With "OK: The variable sync\_status defined in 36.2.5.1.3 is OK."

Replace "FALSE: The variable sync\_status defined in 36.2.5.1.3 is FALSE  
 for" ...  
 With "FALSE: The variable sync\_status defined in 36.2.5.1.3 is FAIL for" ...

Proposed Response Response Status C  
 Accepted per suggested remedy.

Cl 37 SC 37.3.1.1 P37.16 L 14, 32, 38 # 753  
 Thomas Dineen LSI Logic, 1551 McCar

Comment Type TR Comment Status A Duplicate  
 Clause 37 Comment 4.

Why are the Variables mr\_adv\_ability, mr\_lp\_adv\_ability, mr\_lp\_np\_rx, and mr\_np\_tx declared with a radix of <16:1>?????

The registers they are associated with in clauses 20 and 37 are declared as <15:0>.

The busses or variables they are associated with in clause 37 are declared as <15:0>.

Jumping between these radii is very error prone.

SuggestedRemedy

Normalize the 16 bit bus radii shown above to <15:0>.

Proposed Response Response Status C  
 Accepted. This is a duplicate of comment #662. Please refer to comment #662.

Cl 37 SC 37.3.1.1 P37.16 L 14, 32, 38 # 662  
 Thomas Dineen LSI Logic, 1551 McCar

Comment Type TR Comment Status D Withdrawn  
 Clause 37 Comment 4.

Why are the Variables mr\_adv\_ability, mr\_lp\_adv\_ability, mr\_lp\_np\_rx, and mr\_np\_tx declared with a radix of <16:1>?????

The registers they are associated with in clauses 20 and 37 are declared as <15:0>.

The busses or variables they are associated with in clause 37 are declared as <15:0>.

Jumping between these radii is very error prone.

SuggestedRemedy

Normalize the 16 bit bus radii shown above to <15:0>.

Proposed Response Response Status Z  
 Withdrawn by commentor.  
 Management registers (mrx) are specified with a radix of <16:1> in IEEE 802.3u clause 28. Changing the radix would create an incompatibility with that clause and with software associated with these registers.

P802.3z Draft 3.1 Comments

CI 37 SC 37.3.1.1 P 37.16 L 27 # 776  
 Jon Frain UNH InterOperability L  
 Comment Type E Comment Status A  
 Refers to bits 0.5 and 0.12 when it should only refer to bit 0.12.  
 SuggestedRemedy  
 Replace "...is enabled when both Control register bits 0.5 and 0.12 are set to one."  
 With "... is enabled when Control register bit 0.12 is set to one."  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.3.1.1 P 37.16 L 45-48 # 1213  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status A  
 One resets the state machine, not the state diagrams.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 Accepted. Changed "state diagram" to "function"

CI 37 SC 37.3.1.1 P 37.17 L 23 # 791  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Grammer: delete word "with".  
 SuggestedRemedy  
 Change from "Flag to hold value of with rx\_Config\_Reg<NP> upon entry" to "Flag to hold value of rx\_Config\_Reg<NP> upon entry".  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.3.1.1 P 37.17 L 30 # 1214  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status A  
 The device contains the state machine not the state diagram.  
 SuggestedRemedy  
 Proposed Response Response Status C  
 Accepted. Changed "state diagram" to "function"

CI 37 SC 37.3.1.1 P 37.17 L 31-32 # 1215  
 Pat Thaler Hewlett-Packard  
 Comment Type E Comment Status A  
 The grammar doesn't quite work here because the "until" applies to the first condition but not the second.  
 SuggestedRemedy  
 "... region. The condition is also true when the device has low...."  
 Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.3.1.1 P 37.17 L 43 # 977  
 Ian Crayford Bay Networks, Inc.  
 Comment Type E Comment Status R  
 The NOTE is superfluous - this is covered in the text under 37.3.  
 SuggestedRemedy  
 Delete NOTE.  
 Proposed Response Response Status C  
 Rejected. This note is required to describe deviation from standard state machine conventions (default).

P802.3z Draft 3.1 Comments

CI 37 SC 37.3.1.1 P37.17 L9-16 # 976  
 Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A

The variable mr\_page\_rx means two things to management - either the base page has completed, or a next page has completed. How does management know, which register (mr\_lp\_adv\_ability or mr\_lp\_np\_rx) is valid? Presumably by understanding some kind of "state" about whether this is the first, or a subsequent setting of mr\_page\_rx. This is not clear to the reader/implementor.

SuggestedRemedy

Add text to indicate that mr\_page\_rx must be read in order for a transaction with next pages to be progressed correctly, and that for the first setting on mr\_page\_rx, the mr\_lp\_adv\_ability reg is valid but need not be read at that time (it is preserved during next page operation), but that on subsequent setting of mr\_page\_rx, the mr\_lp\_np\_rx reg must be read prior to the mr\_np\_tx reg being loaded, to progress the Auto-Neg function to completion.

Proposed Response Response Status C

Accepted. The following text is added as a note to the definition of the mr\_page\_rx variable:

"The register containing mr\_page\_rx must be read in order for a next page exchange to progress. For the first setting of mr\_page\_rx, mr\_lp\_adv\_ability is valid but need not be read as it is preserved through a next page operation. On subsequent settings of mr\_page\_rx, mr\_lp\_np\_rx must be read prior to loading mr\_np\_tx reg being loaded in order for a next page exchange to progress to completion."

CI 37 SC 37.3.1.1 P37.19 L24 # 1216  
 Pat Thaler Hewlett-Packard

Comment Type TR Comment Status A Technical Change

This says that consistency match is not explicitly set in the state diagrams, but it is set in the ABILITY\_DETECT state.

SuggestedRemedy

Remove it from the state diagram. If necessary, add to the definition that it is only set true when acknowledge\_match is true (because I assume that setting it FALSE in ABILITY\_DETECT was an attempt to clear it until matches had been received.).

Proposed Response Response Status C

Accepted. Remove the statement "consistency\_match <= FALSE" from the state machine.

CI 37 SC 37.3.1.2 P37.19 L40 # 249  
 Colin Mick The Mick Group

Comment Type E Comment Status A

36.2.5.1.5 should be 36.2.5.1.6

SuggestedRemedy

fix

Proposed Response Response Status C

Accepted as a duplicate of comment #40. Please refer to comment #40.

CI 37 SC 37.3.1.3 P37.19 L39 # 793  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to wrong sub-clause.

SuggestedRemedy

Change from "Defined in 36.2.5.1.5." to "Defined in 36.2.5.1.6."

Proposed Response Response Status C

Accepted as a duplicate of comment #40. Please refer to comment #40.

CI 37 SC 37.3.1.3 P37.19 L39 # 40  
 Brad Booth Jato Technologies, Inc

Comment Type E Comment Status A

Incorrect reference.

SuggestedRemedy

Change "Defined in 36.2.5.1.5." to "Defined in 36.2.5.1.6."

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.3.1.4 P37.19 L # 978  
 Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A

"msec" is not an SI unit, "ms" in the correct form.

"seconds" is normally abbreviated to be "s".

Also, what does a tolerance of "+10msec - 0 seconds" mean. Is the intent to have a timer of 15 ms +/- 5 ms as is the more usual 802.3 definition?

SuggestedRemedy

Make units consistent with SI/IEEE terminology.

Modify timer range, or explain -0s requirement.

Proposed Response Response Status C

Accepted as a duplicate of comment #979.

P802.3z Draft 3.1 Comments

CI 37 SC 37.3.1.4 P37.19 L11 # 794  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Typo: reference to wrong sub-clause; delete letter "u"

SuggestedRemedy  
 Change from "IEEE 802.3u 14.2.3.2." to "IEEE 802.3 14.2.3.2."

Proposed Response Response Status C  
 Accepted. Changed from "IEEE 802.3u 14.2.3.2" to "14.2.3.2" on page 37.19, line 44.

CI 37 SC 37.3.1.4 P37.19 L44 # 250  
 Colin Mick The Mick Group

Comment Type E Comment Status A  
 Citation should be to IS)/IEC8802-3, not 802.3u

SuggestedRemedy  
 fix

Proposed Response Response Status C  
 Accepted per suggested remedy.

CI 37 SC 37.3.1.4 P37.19 L50 # 979  
 Ian Crayford Bay Networks, Inc.

Comment Type E Comment Status A  
 "msec" is not an SI unit, "ms" in the correct form.  
 "seconds" is normally abbreviated to be "s".  
 Also, what does a tolerance of "+10msec - 0 seconds" mean. Is the intent to have a timer of 15 ms +/- 5 ms as is the more usual 802.3 definition?

SuggestedRemedy  
 Make units consistent with SI/IEEE terminology.  
 Modify timer range, or explain -0s requirement.

Proposed Response Response Status C  
 Accepted changes to units for consistency with SI/IEEE terminology. Timer resolution allows a range of 10-20 ms.

CI 37 SC 37.3.1.5 P37.20 L1 # 504  
 Howard Frazier Cisco Systems, Inc.

Comment Type TR Comment Status A Technical Change

If my previous comment concerning the derivation of the Link Status bit (bit 1.2) is accepted, then a provision must be made for setting the variable link\_ok\_state to true in the event of manual configuration.

SuggestedRemedy  
 I propose adding a state named "LINK\_OK\_MANUAL" to the AutoNegotiation state diagram in figure 37-6 The state would be a parallel to the LINK\_OK state that is reached when AutoNegotiation is enabled.

There should be an arc from the AN\_ENABLE state to LINK\_OK\_MANUAL, with the transition condition being "mr\_an\_enable=FALSE".

Within the LINK\_OK\_MANUAL state, two actions are performed:

```
xmit <= DATA
link_ok_state <= TRUE
```

Proposed Response Response Status C  
 Accepted. Change "sync\_status" to "xmit==DATA" in Table 37-8, line 54.

P802.3z Draft 3.1 Comments

CI 37 SC 37.3.1.5 P 37.20 L 15 # 116  
 Alan Albrecht Hewlett-Packard

Comment Type T Comment Status A Technical Change

The case where autonegotiation is disabled needs further work. With current status of xmit=DATA regardless of sync\_status we are at risk of the following.

A link is up and running, then the receive cable is disconnected. The MAC continues to transmit packets as it desires, but is now totally out of sync with rest of network and corrupts the operation of the network that it is blindly transmitting into.

We should send IDLE's instead in this case. The idles will provide the signal need to regain sync without negatively affecting the rest of the network.

SuggestedRemedy

```
Replace xmit<=DATA on line 15 with
If an_sync_status = FALSE,
THEN
    xmit <= IDLE
ELSE
    xmit <= DATA
```

Proposed Response Response Status C

Accepted.  
 Change Figure 37-6 pg. 37.20

Add " + an\_enableCHANGE = TRUE " to global entry into AN\_ENABLE

Change "xmit <=DATA" to "xmit<=IDLE" in state AN\_ENABLE

Add new state, "AN\_DISABLE\_LINK\_OK", with the following action: "xmit <= DATA"

Add branch from AN\_ENABLE to AN\_DISABLE\_LINK\_OK with the condition "mr\_an\_enable = FALSE"

Add new function in 37.3.1.2

```
an_enableCHANGE
In the Auto-negotiation process, this function monitors the
mr_an_enable variable for a state change. The function is set
to TRUE upon state change detection and reset explicitly.
Values: TRUE; A mr_an_enable variable state change has been detected.
FALSE; A mr_an_enable variable state change has not been detected (default).
```

Note- an\_enableCHANGE is set by this function definition; it is not explicitly set in the state diagrams.

An\_enableCHANGE evaluates to its default value upon state entry.

CI 37 SC 37.3.1.5 P 37.20 L 203 # 1084  
 Ariel Hendel Sun

Comment Type T Comment Status A Technical Change

Figure 37-6 Auto-negotiation State Diagram

Exit conditions from state NEXT\_PAGE\_WAIT are not mutually exclusive

SuggestedRemedy

Reconcile terms to be mutually exclusive.

Proposed Response Response Status C

Accepted. Add "(rx\_Config\_Reg<D15:0> != 0)" to the transition from NEXT\_PAGE\_WAIT to ACKNOWLEDGE\_DETECT

CI 37 SC 37.3.1.5 P 37.20 L 22 # 393  
 Scott Carter IBM

Comment Type E Comment Status A

need to make state diagram transition value consistent

SuggestedRemedy

change "ability\_match \* " to "ability\_match=TRUE \* " in transition to be consistent with same parameter in several other places in this state diagram

Proposed Response Response Status C

Accepted per suggested remedy.

CI 37 SC 37.3.1.5 P 37.20 L 23 # 795  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: function is used in equation without TRUE/FALSE test.

SuggestedRemedy

Change from "(ability\_match \*" to "(ability\_match=TRUE \*".

Proposed Response Response Status C

Accepted as a duplicate of comment #393. Please refer to comment #393.



P802.3z Draft 3.1 Comments

Cl 37 SC 37.3.1.5 P 37.20 L 24 - 31 # 751  
 Thomas Dineen LSI Logic, 1551 McCar

Comment Type **TR** Comment Status **A** Duplicate  
 Clause 37 Comment 2 On Figure 37-6

Referring to figure 37-6. I believe we have a another bug in the next page transfer protocol!

First assume the scenario where you have a series of next pages to transfer but your link partner has none, or numerically less than you do. The handshake of next pages proceeded until first your link partner runs out of next pages to send. When this occurs your link partner responds to your next page transfer request with the transfer of NULL next pages with the NP bit reset to zero.

But, but, but how dose your link partner execute a NULL page transfer???

Now for the details. See the COMPLETE\_ACKNOWLEDGE state in figure 37-6. We have assumed that if your link partner has NO next pages to send that the link partner resets the mr\_np\_loaded state variable.

See D3.1 page 37-16 lines 50 - 55 for details.

The transition to NEXT\_PAGE\_WAIT is shown below:

link\_timer\_done \* mr\_np\_loaded=TRUE \* (tx\_Config\_reg<NP>=>1 + np\_rx=1)

See the equation above. Notice that if mr\_np\_loaded=FALSE the link partner is not allowed to transition to NEXT\_PAGE\_WAIT and participate in the required NULL page transfer!!!

Again, now lets ne nice and finish with our partner!

*SuggestedRemedy*

There are two.

1) Change the equation to:

link\_timer\_done \* (mr\_np\_loaded=TRUE + tx\_Config\_reg<NP>=>1) + link\_timer\_done \* np\_rx=1)

or

2) Drop this usless next page protocol. If you have anything to send to your link partner put it in a frame and send it, damit.

Proposed Response Response Status **C**  
 Accepted as a duplicate of comment #660 (Withdrawn). Please refer to comment #660.

Cl 37 SC 37.3.1.5 P 37.20 L 24 - 31 # 660  
 Thomas Dineen LSI Logic, 1551 McCar

Comment Type **TR** Comment Status **D** Withdrawn  
 Clause 37 Comment 2 On Figure 37-6

Referring to figure 37-6. I believe we have a another bug in the next page transfer protocol!

First assume the scenario where you have a series of next pages to transfer but your link partner has none, or numerically less than you do. The handshake of next pages proceeded until first your link partner runs out of next pages to send. When this occurs your link partner responds to your next page transfer request with the transfer of NULL next pages with the NP bit reset to zero.

But, but, but how dose your link partner execute a NULL page transfer???

Now for the details. See the COMPLETE\_ACKNOWLEDGE state in figure 37-6. We have assumed that if your link partner has NO next pages to send that the link partner resets the mr\_np\_loaded state variable.

See D3.1 page 37-16 lines 50 - 55 for details.

The transition to NEXT\_PAGE\_WAIT is shown below:

link\_timer\_done \* mr\_np\_loaded=TRUE \* (tx\_Config\_reg<NP>=>1 + np\_rx=1)

See the equation above. Notice that if mr\_np\_loaded=FALSE the link partner is not allowed to transition to NEXT\_PAGE\_WAIT and participate in the required NULL page transfer!!!

Again, now lets ne nice and finish with our partner!

*SuggestedRemedy*

There are two.

1) Change the equation to:

link\_timer\_done \* (mr\_np\_loaded=TRUE + tx\_Config\_reg<NP>=>1) + link\_timer\_done \* np\_rx=1)

or

2) Drop this usless next page protocol. If you have anything to send to your link partner put it in a frame and send it, damit.

Proposed Response Response Status **Z**  
 Withdrawn by commentor

P802.3z Draft 3.1 Comments

Cl 37 SC 37.3.1.5 P 37.20 L 24 - 31 # 659

Thomas Dineen

LSI Logic, 1551 McCar

Comment Type

TR

Comment Status

D

Withdrawn

Referring to figure 37-6. I believe we have a bug in the next page transfer protocol! Specifically the problem occurs when hand shaking the last page of a series of next pages to your link partner.

First assume the scenario where you have a series of next pages to transfer but your link partner has none, or numerically less than you do. The handshake of next pages proceeded until first your link partner runs out of next pages to send. When this occurs your link partner responds to your next page transfer request with the transfer of NULL next pages with the NP bit reset to zero. Next you run out of next pages to transfer. But, but, but how do you end the transfer????

I believe you are required to send a NULL message page with the NP bit reset to zero this informs your link partner of your intention to end the next page transfer! By the way this extra transfer also allows your link partner to ACK2 your last message. The last paragraph will also reenforce why we need to do this.

To support this position see D3.1:

Page 37.9 lines 48 - 55  
Page 37-6 lines 52 - 55

Now for the details. See the COMPLETE\_ACKNOWLEDGE state in figure 37-6. When in COMPLETE\_ACKNOWLEDGE there seems to be no way to transition to the NEXT\_PAGE\_WAIT state to send a NULL message page with the NP equal to zero.

The transition to NEXT\_PAGE\_WAIT is shown below:

$link\_timer\_done * mr\_np\_loaded=TRUE * (tx\_Config\_reg<NP>=1 + np\_rx=1)$

See the equation above. The "tx\_Config\_reg<NP>=1" term will not allow a transition to NEXT\_PAGE\_WAIT if your NP bit is not set. Also note np\_rx will not handle this because it is reset to zero. Remember your partner had no more pages to send.

Also note: If you prematurely end the transfer with without sending a NULL next page you still have a bug! Your link partner when in the COMPLETE\_ACKNOWLEDGE state with your last next page, sees the np\_rx=1 and transitions to the NEXT\_PAGE\_WAIT state and gets stuck! Meanwhile you transition to the IDLE\_DETECT state. You think you are done, but, but, but, you didn't signal your partner. Now lets ne nice and finish with our partner!

*SuggestedRemedy*

There are several.

1) Drop the tx\_Config\_reg<NP>=1 term from the equation.

or

2) Change the equation to:

$link\_timer\_done * (mr\_np\_loaded=TRUE + tx\_Config\_reg<NP>=1) + link\_timer\_done * np\_rx=1$

or

3) Drop this useless next page protocol. If you have anything to send to your link partner put it in a frame and send it, damit.

*Proposed Response*

*Response Status* Z

Withdrawn by commentor

P802.3z Draft 3.1 Comments

CI 37 SC 37.3.1.5 P 37.20 L 24 - 31 # 750

Thomas Dineen

LSI Logic, 1551 McCar

Comment Type TR Comment Status A Duplicate

Referring to figure 37-6. I believe we have a bug in the next page transfer protocol! Specifically the problem occurs when hand shaking the last page of a series of next pages to your link partner.

First assume the scenario where you have a series of next pages to transfer but your link partner has none, or numerically less than you do. The handshake of next pages proceeded until first your link partner runs out of next pages to send. When this occurs your link partner responds to your next page transfer request with the transfer of NULL next pages with the NP bit reset to zero. Next you run out of next pages to transfer. But, but, but how do you end the transfer????

I believe you are required to send a NULL message page with the NP bit reset to zero this informs your link partner of your intention to end the next page transfer! By the way this extra transfer also allows your link partner to ACK2 your last message. The last paragraph will also reinforce why we need to do this.

To support this position see D3.1:

Page 37.9 lines 48 - 55  
Page 37-6 lines 52 - 55

Now for the details. See the COMPLETE\_ACKNOWLEDGE state in figure 37-6. When in COMPLETE\_ACKNOWLEDGE there seems to be no way to transition to the NEXT\_PAGE\_WAIT state to send a NULL message page with the NP equal to zero.

The transition to NEXT\_PAGE\_WAIT is shown below:

$link\_timer\_done * mr\_np\_loaded=TRUE * (tx\_Config\_reg<NP>=1 + np\_rx=1)$

See the equation above. The "tx\_Config\_reg<NP>=1" term will not allow a transition to NEXT\_PAGE\_WAIT if your NP bit is not set. Also note np\_rx will not handle this because it is reset to zero. Remember your partner had no more pages to send.

Also note: If you prematurely end the transfer with without sending a NULL next page you still have a bug! Your link partner when in the COMPLETE\_ACKNOWLEDGE state with your last next page, sees the np\_rx=1 and transitions to the NEXT\_PAGE\_WAIT state and gets stuck! Meanwhile you transition to the IDLE\_DETECT state. You think you are done, but, but, but, you didn't signal your partner. Now lets ne nice and finish with our partner!

SuggestedRemedy

There are several.

1) Drop the tx\_Config\_reg<NP>=1 term from the equation.

or

2) Change the equation to:  
 $link\_timer\_done * (mr\_np\_loaded=TRUE + tx\_Config\_reg<NP>=1) + link\_timer\_done * np\_rx=1)$

or

3) Drop this useless next page protocol. If you have anything to send to your link partner put it in a frame and send it, damit.

Proposed Response Response Status C

Accepted as a duplicate of comment #659 (Withdrawn). Please refer to comment #659.

CI 37 SC 37.3.1.5 P 37.20 L 36 # 691

Bob Noseworthy

UNH InterOperability L

Comment Type T Comment Status A Technical Change

The aneg state machine can deadlock if one-side is restarted while the other is in IDLE\_DETECT.

Note: this comment was extracted from a similar unofficial comment by Steve Haddock, Extreme Networks, 5/21/97

SuggestedRemedy

Add the transition condition (ability\_match=TRUE \* rx\_Config\_Reg<D15:D0>=0) from state IDLE\_DETECT to state AN\_ENABLE

Proposed Response Response Status C

Accepted as a duplicate of comment #686.  
Add the transition condition (ability\_match=TRUE \* rx\_Config\_Reg<D15:D0>=0) from state IDLE\_DETECT to state AN\_ENABLE.

CI 37 SC 37.3.2.5 P 37.20 L Figure 37- # 686

Rich Taborek

G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

Original comment from Steve Haddock, Extreme Networks, 5/21/97. A transition from IDLE\_DETECT to AN\_ENABLE based on rx\_Config\_Reg = 0 is necessary to prevent deadlock if the other side restarted (mr\_restart\_AN = TRUE or some other reason) while we were in COMPLETE\_ACKNOWLEDGE or IDLE\_DETECT.

SuggestedRemedy

Add the transition condition (ability\_match=TRUE \* rx\_Config\_Reg<D15:D0>=0) from state IDLE\_DETECT to state AN\_ENABLE.

Proposed Response Response Status C

Accepted per suggested remedy.

P802.3z Draft 3.1 Comments

Cl 37 SC 37.4 P37.20 L 50 # 796

Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to wrong sub-clause; delete letter "u"

SuggestedRemedy

Change from "IEEE 802.3u 14.7" to "IEEE 802.3 14.7".

Proposed Response Response Status C

Accepted. Changed from "IEEE 802.3u 14.7" to "14.7".

Cl 37 SC 37.5.1 P37.21 L 13 # 364

Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

uncapitalize Clause

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 37 SC 37.5.3.1 P37.22 L 16-17 # 684

Rich Taborek G2 Networks, Inc.

Comment Type E Comment Status A

PICS entry CC2, GMII Management Interface, belongs in a table entitled "Major Capabilities/Options" as 37.5.3.

SuggestedRemedy

Move entry CC2 from table 37.5.3.1, Compatibility Considerations, to new subclause 37.5.3 as follows:

| Item  | Feature                   | Subclause  | Status | Support |
|-------|---------------------------|------------|--------|---------|
| *GMII | GMII Management Interface | 37.1.4.2.1 | O      | Yes[]   |

\*GMII GMII Management Interface 37.1.4.2.1 O Yes[]

Proposed Response Response Status C

Accepted per suggested remedy.

Cl 37 SC 37.5.3.1, 37.2.1.4 P37.23, 37.5, L # 360002

Rich Taborek G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

D3.0 Comment #50, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. Remote fault functionality is not included in PICS.

SuggestedRemedy

Add the following PICS entry to 37.5.3.2, Auto-Negotiation functions, in order of subclause number:

| Item | Feature               | Subclause | Status | Support | Value/Comment |
|------|-----------------------|-----------|--------|---------|---------------|
| ANX  | Remote Fault function | 37.2.1.4  | O      | Yes[]   | No[]          |

Add table entitled "Remote Fault functions" after the table entitled "Config\_Reg encoding":

| Item | Feature                 | Subclause  | Status | Support | Value/Comment            |
|------|-------------------------|------------|--------|---------|--------------------------|
| RF1  | Default encoding        | 37.2.1.4   | ANX:M  | Yes[]   | N/A[]                    |
| RF2  | Notification duration   | 37.2.1.4   | ANX: M | Yes[]   | N/A[]                    |
| RF3  | Notification reset      | 37.2.1.4   | ANX:M  | Yes[]   | N/A[]                    |
| RF4  | Status Register RF bit  | 37.2.1.4   | ANX:M  | Yes[]   | N/A[]                    |
| RF5  | Offline indication      | 37.2.1.4.2 | ANX:M  | Yes[]   | N/A[]                    |
| RF6  | Link_Failure indication | 37.2.1.4.2 | ANX: M | Yes[]   | N/A[]                    |
| RF7  | Auto-Negotiation_Error  | 37.2.1.4.4 | ANX:M  | Yes[]   | Upon priority resolution |

Delete PR3 entry in 37.5.3.2.4, as it has been moved to RF7.

Proposed Response Response Status C

Accepted. The following changes are made:

Added the following PICS entry to 37.5.3, Major Capabilities/Options:

| Item | Feature | Subclause | Status | Support |
|------|---------|-----------|--------|---------|
|------|---------|-----------|--------|---------|

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Value/Comment

\*RF Remote Fault function 37.2.1.4 O Yes[]  
No[]

Added table entitled "Remote Fault functions" after the table entitled "Config\_Reg encoding":

| Item | Feature                                                      | Subclause  | Status | Support | Value/Comment         |
|------|--------------------------------------------------------------|------------|--------|---------|-----------------------|
| RF1  | Default encoding                                             | 37.2.1.4   | RF:M   | Yes[]   | N/A[]                 |
| RF2  | Use of Remote Fault additional Message Page code information | 37.2.1.4   | RF:O   | Yes[]   | To signal No[] fault  |
| RF3  | Notification duration                                        | 37.2.1.4   | RF:M   | Yes[]   | N/A[]                 |
| RF4  | Status Register RF bit                                       | 37.2.1.4   | RF:M   | Yes[]   | N/A[]                 |
| RF5  | Offline indication                                           | 37.2.1.4.2 | RF:O   | Yes[]   | No[]                  |
| RF6  | Link_Failure indication                                      | 37.2.1.4.3 | RF:O   | Yes[]   | No[]                  |
| RF7  | Auto-Negotiation_Error priority failure                      | 37.2.1.4.4 | RF:M   | Yes[]   | Upon N/A[] resolution |

Delete PR3 entry in 37.5.3.2.4, as it has been moved to RF7.

Cl 37 SC 37.5.3.2.1, P 37.23 L 17, 32 # 360007  
Rich Taborek G2 Networks, Inc.

Comment Type T Comment Status A Technical Change

D3.0 Comment #58, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. CR4 and TX3 appear to reference the same functionality, which is covered in AN8, the Auto-Negotiation state diagram.

SuggestedRemedy  
strike CR4 or TX3, or both.

Proposed Response Response Status C  
Accepted. Transmit\_ack deleted in response to comment #1083  
PICS entry TX3 deleted, now covered by AN8.  
CR4 "Acknowledge (ACK) bit setting" is now covered by AN8 also. Deleted CR4 entry in 37.5.3.2.1. Deleted "shall" in associated subclause.

Cl 37 SC 37.5.3.2.2, P 37.23 L 30, 41 # 360008  
Rich Taborek G2 Networks, Inc.

Comment Type E Comment Status A  
D3.0 Comment #59, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. TX2 and RX1 Subclause references are incorrect

SuggestedRemedy  
Change TX2 reference from 37.2.3.1 to 37.2.3  
Change RX1 reference from 36.2.5.2.1 to 36.2.5.2.2

Proposed Response Response Status C  
Accepted.  
Changed reference of TX2 from 37.2.3.1 to 37.2.3.  
Changed reference of RX1 from 36.2.5.2.1 to 37.2.4.  
Also change reference of TX1 from 36.2.5.2.1 to 37.2.3.  
Note that both 37.2.4 and 37.2.3 reference the appropriate sections in clause 36, and thus avoids the oddity of one clause's PICS referencing another clause.

Cl 37 SC 37.5.3.2.3 P 37.23 L 41 # 252  
Colin Mick The Mick Group

Comment Type E Comment Status A  
Citation should be to 36.2.5.2.2

SuggestedRemedy  
fix

Proposed Response Response Status C  
Accepted per suggested remedy.

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**Cl 37**    **SC 37.5.3.2.5**    **P 37.24**    **L 15**    # **685**  
 Rich Taborek    G2 Networks, Inc.  
**Comment Type E**    **Comment Status A**  
 The "P" in Next Page should not be capitalized.  
**SuggestedRemedy**  
 Change the "P" in Next Page to lower case.  
**Proposed Response**    **Response Status C**  
 Accepted per suggested remedy.

**Cl 37**    **SC 37.5.3.2.5**    **P 37.24**    **L 32, 33**    # **360006**  
 Rich Taborek    G2 Networks, Inc.  
**Comment Type E**    **Comment Status A**  
 D3.0 Comment #57, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. Clarify Feature name for NP6 "Unformatted Page Ordering"  
**SuggestedRemedy**  
 Rename NP6 "Message Code Referencing Unformatted pages"  
**Proposed Response**    **Response Status C**  
 Accepted per suggested remedy.

**Cl 37**    **SC 37.5.3.2.6, 37.5.3.2.1**    **P 37.24, 37.23**    **L**    # **360004**  
 Rich Taborek    G2 Networks, Inc.  
**Comment Type T**    **Comment Status A**    **Technical Change**  
 D3.0 Comment #55, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. In NC6 - The Next Page bit will be set for as long as the station has next pages to transmit, not just for a duration of link\_timer.  
 The functionality referenced in NC6 is covered in AN8 - Auto-Negotiation state diagram  
 Similarly for CR5, the functionality referenced is covered in AN8  
**SuggestedRemedy**  
 strike Item NC6 and CR5  
**Proposed Response**    **Response Status C**  
 Accepted per suggested remedy. Deleted "shall's" in associated subclauses.

**Cl 37**    **SC 37.5.3.2.7**    **P 37.25**    **L 6**    # **360005**  
 Rich Taborek    G2 Networks, Inc.  
**Comment Type T**    **Comment Status A**  
 D3.0 Comment #56, Bob Noseworthy, UNH InterOperability Lab, resubmitted against D3.1 per 802.3z motion at 1997 Maui plenary. MR1 "Register Usage", the comment specifies that "Eight dedicated registers" must be used. I do not see how the presence of 8 distinct registers can be externally verified.  
**SuggestedRemedy**  
 Strike, or restate the comment as "Management Registers 0,1,4,5,6,7,8 and 15 are accessible"

**Proposed Response**    **Response Status C**  
 Accepted. Change comment of MR1 to:  
 "Logical equivalent of registers 0,1,4,5,6,7,8 and 15"

**Cl 37**    **SC Figure 37-6**    **P 20**    **L 17**    # **1108**  
 Devendra Tripathi    XaQti Corporation  
**Comment Type T**    **Comment Status A**    **Technical Change**  
 Clause 37 page 37.20 state machine diagram  
 While operating in manual configuration mode, by the time autonegotiation is disabled and manual mode is entered, the state machine would already have entered AN\_RESTART or beyond. The only way to make it work is now to give re-autonegotiate request. This can be avoided if the mr\_an\_enable = false is used as one of the global reset condition.  
**SuggestedRemedy**  
 Add one more condition in the global reset of the state machine as mr\_an\_enable = FALSE. Delete mr\_an\_enable = TRUE as condition from AN\_ENABLE to AN\_RESTART (make this branch unconditional).  
**Proposed Response**    **Response Status C**  
 Accepted. Resolved by response to comment #116

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**Cl 37**    **SC Figure 37-6**    **P 20**    **L 5**    # **1109**  
 Devendra Tripathi                      XaQti Corporation

*Comment Type*    **T**                      *Comment Status*    **R**                      *T Reject*

Clause 37 page 37.20 state machine diagram  
 I do not want to hold onto this, but I do not like the INVALID term in the primary reset condition. I think this term is unnecessary and it makes the machine delicate at no extra gain.

*SuggestedRemedy*  
 Remove INVALID term from primary reset condition.

*Proposed Response*                      *Response Status*    **C**

Rejected. Without the INVALID message, invalid code\_groups would not be detected by the Auto-Negotiation function. The current operation allows Auto-Negotiation to complete even in the presence of a high bit error rate, relative to required bit error rate.

**Cl 37**    **SC Figure 37-6**    **P 20**    **L 8**    # **1110**  
 Devendra Tripathi                      XaQti Corporation

*Comment Type*    **T**                      *Comment Status*    **R**                      *T Reject*

Clause 37 page 37.20 state machine diagram  
 In one of the comment resolution (on 3.1) it has been mentioned that in AN\_ENABLE state value of "xmt" will be set to IDLE if an\_sync\_status is false. The condition cited applies if receive side is broken. I think this change is not called for. There is no reason to hold transmit just because receive side is broken. It may make some higher level diagnostics impossible.

*SuggestedRemedy*  
 Do not change the value of "xmt" variable in AN\_ENABLE state from what it is now.

*Proposed Response*                      *Response Status*    **C**

Rejected. The other comment referred to is #116. It is more important to insure the integrity of the network by preventing the transmission of packets on a link which is not operational than allowing the unreliable transport of higher level diagnostics, especially in half duplex mode.

**Cl 37**    **SC Figure 37-6**    **P 37.20**    **L 21**    # **1085**  
 Scott Mason                                      Plaintree Systems Inc.

*Comment Type*    **E**                      *Comment Status*    **A**

Typo.

*SuggestedRemedy*  
 In the transition from state ACKNOWLEDGE\_DETECT to state COMPLETE\_ACKNOWLEDGE, change  
 ability\_match  
 to  
 ability\_match = TRUE

*Proposed Response*                      *Response Status*    **C**

Accepted as a duplicate of #393

**Cl 37**    **SC Figure 37-6**    **P 37.20**    **L 31**    # **1086**  
 Scott Mason                                      Plaintree Systems Inc.

*Comment Type*    **T**                      *Comment Status*    **A**                      *Technical Change*

Break link is not detected during state IDLE\_DETECT.

*SuggestedRemedy*  
 Add a transition from state IDLE\_DETECT to state AN\_ENABLE under the condition:  
 ability\_match = TRUE \* rx\_Config\_Reg = 0

*Proposed Response*                      *Response Status*    **C**

Accepted per suggested remedy as a duplicate of comment #686.

**Cl 37**    **SC Figure 37-6**    **P 37.20**    **L 31**    # **1079**  
 Scott Mason                                      Plaintree Systems Inc.

*Comment Type*    **T**                      *Comment Status*    **A**                      *Technical Change*

The exit conditions from state COMPLETE\_ACKNOWLEDGE are not mutually exclusive.

*SuggestedRemedy*  
 Add:  
 \* (ability\_match = FALSE + rx\_Config\_Reg != 0)

to the conditions for transition from state COMPLETE\_ACKNOWLEDGE to states NEXT\_PAGE\_WAIT and IDLE\_DETECT.

*Proposed Response*                      *Response Status*    **C**

Accepted per suggested remedy.

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Cl 37 SC Figure 37-6 P 37.20 L 31 # 1083

Scott Mason

Plaintree Systems Inc.

Comment Type E Comment Status A Technical Change

Setting tx\_Config\_Reg bit D14 both explicitly in the state diagram and implicitly via the variable transmit\_ack (often by allowing the variable to default), does not clearly indicate the acknowledge operation. The resulting value is ambiguous when both mechanisms are used at the same time, as in state ABILITY\_DETECT. The notation is also not consistent with the handling of tx\_Config\_Reg<D11>.

SuggestedRemedy

In state ABILITY\_DETECT, add

tx\_Config\_Reg<D14> <= 0

In state ACKNOWLEDGE\_DETECT, add

tx\_Config\_Reg<D14> <= 1

(In state COMPLETE\_ACKNOWLEDGE, I interpret tx\_Config\_Reg<D14> to hold the previous value, 1, since it has no default value.)

In state NEXT\_PAGE\_WAIT, add

tx\_Config\_Reg<D14> <= 0

Strike the variable transmit\_ack.

Proposed Response Response Status C

Accepted. In state ABILITY\_DETECT, change tx\_Config\_Reg<D15:D0> <= mr\_adv\_ability<16:1>

to:

tx\_Config\_Reg<D15> <= mr\_adv\_ability<16>

tx\_Config\_Reg<D14> <= 0

tx\_Config\_Reg<D13:D0> <= mr\_adv\_ability<14:1>

In state ACKNOWLEDGE\_DETECT, add

tx\_Config\_Reg<D14> <= 1

In state NEXT\_PAGE\_WAIT, change

tx\_Config\_Reg<D15:D12> <= mr\_adv\_ability<16:13>

to:

tx\_Config\_Reg<D15> <= mr\_adv\_ability<16>

tx\_Config\_Reg<D14> <= 0

tx\_Config\_Reg<D13:D12> <= mr\_adv\_ability<14:13>

Strike the variable transmit\_ack.

Delete the final paragraph of 37.2.3.1

Cl 37 SC Figure 37-6 P 37.20 L 4 # 1087

Scott Mason

Plaintree Systems Inc.

Comment Type E Comment Status R

>From the other state diagrams, "BEGIN" would seem to be sufficient to include the case power\_on = TRUE.

SuggestedRemedy

Delete the variable power\_on.

Proposed Response Response Status C

Rejected. No benefit apparent in deleting this variable. One disadvantage is that making this change would create an inconsistency with clause 28 AN.



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Cl 38 SC ?? P?? L? # 412  
 Khaled Amer Rockwell Semiconduct

Comment Type T Comment Status R  
 My understanding is that data is transmitted and received in NRZ.  
 However, there is no clear reference to that fact in the draft standard.

SuggestedRemedy  
 I think this needs to be added in.

Proposed Response Response Status C  
 REJECT.  
 The transmitted data is not NRZ. It is 8B/10B encoded as required by clause 36, 37, and 38  
 (see page 38.1, line 53).

Cl 38 SC 1.1.3 P38.3 L3-4 # 135  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A  
 Generation of PMD\_SIGNAL.indicate(SIGNAL\_DETECT) should be mandatory. In real data closets, stuffed full of wires and boxes, we would have no real way to quickly detect open paths, greatly hindering support, without elimination of false signal-present indications. Nor can I believe that this function is so hard to implement.

Just last week, I saw a marginal (noisy) optical link cause a Fibre-Channel based system to hang up. I could make it happen repeatedly.

SuggestedRemedy  
 Change wording throughout document to make this mandatory. Section 38.2.4.x is relevant.

Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
 YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
 A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

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The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Signal       |
|------------------------------------------------|--------------|
|                                                | Detect Value |
| P_input, RX < -30 dBm (a)                      | FAIL         |
| Other conditions                               |              |
| Examples:                                      |              |
| 1) Receiving a non-8B/10B encoded data stream  | Unspecified  |
| 2) PMA on other end of link in loopback        |              |
| 3) Other end of link undergoing POR transients |              |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| 4) -30 dBm < P_input, RX < Receive power (min)                                     |    |
| Receiving 8B/10B Code (b)                                                          |    |
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power

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defined by Table 38.3.

b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                             | Detect Value | Signal      |
|----------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                   |              | FAIL        |
| Other conditions                                               |              |             |
| Examples:                                                      |              |             |
| 1) Receiving a non-8B/10B encoded data stream                  |              | Unspecified |
| 2) Other end of link undergoing POR transients                 |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |              |             |
| 4) One of the differential lines is open                       |              |             |
| Receiving 8B/10B Code (b)                                      |              |             |
| AND                                                            |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and         |              | OK          |
| <= to Maximum Differential Sensitivity(c)                      |              |             |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description     | Value  | Unit    |
|-----------------|--------|---------|
| Type            | (P)ECL |         |
| Data Rate       | 1000   | Mbits/s |
| Clock tolerance | +/-100 | ppm     |

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| Nominal Baud Rate       | 1250 | MBaud   |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

| CI 38                    | SC 1.1.3.1                                                        | P 38.3                 | L 15     | # 136 |
|--------------------------|-------------------------------------------------------------------|------------------------|----------|-------|
| Joe Gwinn                |                                                                   | Raytheon, Sudbury, M   |          |       |
| <i>Comment Type</i>      | <b>E</b>                                                          | <i>Comment Status</i>  | <b>A</b> |       |
|                          | Guarantee is misspelled.                                          |                        |          |       |
| <i>SuggestedRemedy</i>   | Fix spelling.                                                     |                        |          |       |
| <i>Proposed Response</i> |                                                                   | <i>Response Status</i> | <b>C</b> |       |
|                          | ACCEPT.<br>Guarantee is misspelled. Change guaranty to guarantee. |                        |          |       |

| CI 38                    | SC 10                                                                                                                                                                                 | P 38.13                | L 1-55   | # 157 |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------|
| Joe Gwinn                |                                                                                                                                                                                       | Raytheon, Sudbury, M   |          |       |
| <i>Comment Type</i>      | <b>TR</b>                                                                                                                                                                             | <i>Comment Status</i>  | <b>A</b> |       |
|                          | Table 38-8: Is the 0.5 dB/Km fiber attenuation for 10-micron SMF at 1300 nm correct? It seems rather low, especially compared to the other 1300-nm attenuations, listed at 1.5 dB/Km. |                        |          |       |
| <i>SuggestedRemedy</i>   | Verify value.                                                                                                                                                                         |                        |          |       |
| <i>Proposed Response</i> |                                                                                                                                                                                       | <i>Response Status</i> | <b>C</b> |       |
|                          | ACCEPT. Value verified--is correct.                                                                                                                                                   |                        |          |       |

| CI 38                    | SC 10                                                                            | P 38.13                | L 1-55   | # 158 |
|--------------------------|----------------------------------------------------------------------------------|------------------------|----------|-------|
| Joe Gwinn                |                                                                                  | Raytheon, Sudbury, M   |          |       |
| <i>Comment Type</i>      | <b>TR</b>                                                                        | <i>Comment Status</i>  | <b>A</b> |       |
|                          | Table 38-8: Footnote b, the reference to IEC 11801, is not sufficiently precise. |                        |          |       |
| <i>SuggestedRemedy</i>   | Also cite the specific paragraph, by number and title.                           |                        |          |       |
| <i>Proposed Response</i> |                                                                                  | <i>Response Status</i> | <b>C</b> |       |
|                          | ACCEPT.<br>Add text of "clause 7.3, Optical Fiber Links" to IS11801 reference.   |                        |          |       |

| CI 38                    | SC 10                                                                                                                                                                                                                                    | P 38.13                | L 1-55   | # 160 |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------|-------|
| Joe Gwinn                |                                                                                                                                                                                                                                          | Raytheon, Sudbury, M   |          |       |
| <i>Comment Type</i>      | <b>TR</b>                                                                                                                                                                                                                                | <i>Comment Status</i>  | <b>A</b> |       |
|                          | Table 38-8: Does "Link attenuation, including connectors (max)" include the fiber, or not? It appears that the fiber is included, but the language is ambiguous.                                                                         |                        |          |       |
| <i>SuggestedRemedy</i>   | Add the phrase "and fiber" to the description, if this is correct. Otherwise, add the phrase "excluding fiber".                                                                                                                          |                        |          |       |
| <i>Proposed Response</i> |                                                                                                                                                                                                                                          | <i>Response Status</i> | <b>C</b> |       |
|                          | ACCEPT IN PRINCIPLE.<br>Link attenuation was changed to channel attenuation, and moved to its own table in clause 38.10. Based on the definition of channel as shown in figures 38-1 and 39-4, it does include all fibre and connectors. |                        |          |       |

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Cl 38 SC 10 P 38.13 L 1-55 # 159  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A

Table 38-8: It's not obvious how many connectors are included in the "Connector return loss". This is in fact the per-connector return loss (reflection strength).

SuggestedRemedy

Change the description to read: "Connector return loss, per connector".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

This has been removed from the referenced table. Text describing this issue is now found in clause 38.11.2.3. The specific verbiage is:

The 1000BASE-SX and 1000BASE-LX PMD is coupled to a physical transmission medium by the MDI Optical Receptacle.

The 1000BASE-SX and 1000BASE-LX optical connector (plug and receptacle) shall be the duplex SC, meeting the following requirements:

Cl 38 SC 10 P 38.13 L 1-55 # 162  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

Table 38-8: In the "Dispersion slope (max)" description, it would be useful to also mention that this is also known as "S0" (S-subscript-zero), to better tie it to the Annex 38A model's parameters.

SuggestedRemedy

Add the phrase "(S0)" to the description.

Proposed Response Response Status C

ACCEPT.

Cl 38 SC 10 P 38.13 L 1-55 # 161  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A

Where is the entire link flux budget laid out just so, and explained? The data is scattered about, being at least in Tables 38-1 through 38-6, 38-8, and the informative Tables 38B-2 and 38B-3. How do the various bits and pieces fit together? How are the table entries mathematically related? How does the reader figure out the final operating link flux margin? Which are fundamental, and which are derived?

One should not have to guess at the answers. The experts have spent a great deal of effort generating these tables, and they should tell us how this was done. The lack of this information also makes review needlessly difficult.

SuggestedRemedy

Pull all physical link related data into one big table. Explain that table item by item, providing where appropriate a worked numerical example (which is easier to do than text alone, as the numbers help solve the many little misunderstandings). Note that I am not asking that the normative/informative status of any item be changed. I am simply asking that the information be collected and explained, not scattered and ambiguous. Please connect the dots.

Proposed Response Response Status C

Suggested remedies for Comment #506 as submitted by Ray Lin of Digital Equipment Corp etal:

Remedy#1

Clause: 38  
 Subclause: 38.3  
 Page: 38.5  
 Line: 11,12, and 13  
 CommentType: T

Suggested remedy: Modify the second sentence in Clause 38.3 to read:

A 1000BASE-SX compliant transceiver is capable of supporting both multimode fiber media types listed in Table 38-1 (i.e. both 50/125 mm and 62.5/125 mm multimode fiber) according to the specifications defined in 38.11.

Remedy#2

Clause: 38  
 Subclause: 38.4  
 Page: 38.7  
 Line: 7,8  
 CommentType: T

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Suggested remedy: Modify the second sentence of Clause 38.4, lines 6, 7 and 8 to read:

A 1000BASE-LX compliant transceiver is capable of supporting every media type listed in Table 38-4 (i.e. 50/125 mm and 62.5/125 mm multimode fiber and single-mode fiber) according to the specifications defined in 38.11.

Remedy#3

Clause: 38
Subclause: 38.11
Page: 38.12
Line: 40
CommentType: T

Suggested remedy: Change Clause 38.11 to "Characteristics of the fiber optic medium" which will include the MDI specification (keep existing 38.11 text in the connector subclause -- it goes to 38.11.2) and the following text:

38.11, Characteristics of the fiber optic medium

The fiber optic medium consists of one or more sections of fiber optic cables with any intermediate connectors required to connect sections together and terminated at each end in the optical connector plug as specified in 38.11.2. The fiber optic medium spans from one MDI to another MDI.

38.11.1, Optical fiber and cable

The optical medium requirements are satisfied by the fibers specified in IEC 793-2: 1992. Types A1a (50/125 mm multimode), A1b (62.5 125 mm multimode), and B1 (10/125 mm singlemode) with the exceptions noted in the Table below.

Include a modified Table 38.8 - Optical fiber and cable characteristics as follows:

- Operating range is deleted
Fiber attenuation as is with 3.75 dB/km instead of 3.5 dB/km
Modal bandwidth as is
Dispersion slope as is
Zero dispersion slope as is
Connector return loss goes to 38.11.2.2
Link Attenuation goes to Table 38-9
Link penalties is is moved to a new subclause 38.3.x for SX and 38.4.x for LX (del's table)

38.11.2, Optical fiber connector

38.11.2.1 Multi-mode connector insertion loss

The maximum link distances for multimode fiber are calculated based on an allocation of 1.5 dB total connector loss. This allocation supports a minimum of three connectors with an average insertion loss equal to 0.5dB (or less) per connector or two connectors (as shown in Figure X. )with a maximum attenuation of 0.75dB. Connectors with different loss characteristics may be used provided the requirements of Table 38.8 and Table 38.9 are met.

After the figure "Optical channel cabling model", add the following line: "Connectors with different loss characteristics may be used provided the requirements of Table 38.8 and Table 38.9 are met."

38.11.2.2 Single mode connector insertion loss

The maximum link distances for single-mode fiber are calculated based on an allocation of 2.0 dB total connector loss. This allocation supports a minimum of 4 connectors with an average insertion loss per connector of 0.5 dB.

38.11.2.3 Optical connector return loss

The return loss for multimode connectors shall be greater than 20 dB.

The return loss for single-mode connectors shall be greater than 26 dB.

Replace the existing text of 38.10 with the following text:

38.10 Optical channel cabling model

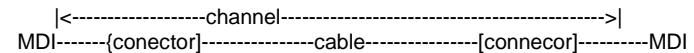
The optical insertion loss for the channel is given in the table below:

Table 38.9 - Channel insertion loss

Table with 4 columns: Description, Unit, 50 mm MMF, 62.5 mm MMF, SMF. Rows include @ 850 nm, @ 1300 nm, @ 850 nm, @ 1300 nm, @ 1300 nm, and Channel attenuation (1), dB.

(1) The channel attenuation numbers above are based on the nominal operating wavelength.

FIGURE X.



NOTE.: Refer to TIA/EIA-526-14A for multimode and TIA/EIA-526-7 for single mode.

38.4.3 Worst case 1000BASE-LX power budget and link penalties (informative)

Table with 4 columns: PARAMETER, UNIT, 50µm MMF, 62µm MMF, 10µm SMF. Rows include Optical Power Budget, Operating Distance, Wavelength, Channel Insertion Loss, Link Power Penalties, and Margin in Link Power Budget.

38.3.3 Worst case 1000BASE-SX power budget and link penalties (informative)

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PARAMETER, UNIT, 50µm MMF, 62µm MMF,  
 Optical Power Budget, dB, 7.0, 7.0,  
 Operating Distance, m, 550, 260,  
 Wavelength, nm, 830, 830,  
 Channel Insertion Loss, dB, 3.56, 2.47,  
 Link Power Penalties, dB, 2.86, 4.41,  
 Margin in Link Power, dB, 0.58, 0.12,  
 Budget

Cl 38 SC 12.3 P 38.17 L 12 # 1154  
 Jim Mangin Bay Networks

Comment Type TR Comment Status A

One thing that is in the standard as being optionally implemented is SIGNAL\_DETECT. I think we should require that this be mandatory. All of the optical transceivers that I know about do so.

SuggestedRemedy

change "O" in status to "M".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50

NO - 0

ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.

A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

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Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                      | Signal       |
|-----------------------------------------------------------------------------------------|--------------|
|                                                                                         | Detect Value |
| P_input, RX < -30 dBm (a)                                                               | FAIL         |
| Other conditions                                                                        |              |
| Examples:                                                                               |              |
| 1) Receiving a non-8B/10B encoded data stream                                           | Unspecified  |
| 2) PMA on other end of link in loopback                                                 |              |
| 3) Other end of link undergoing POR transients                                          |              |
| 4) -30 dBm < P_input, RX < Receive power (min)                                          |              |
| Receiving 8B/10B Code (b)<br>AND<br>Receive power (min) is < or = to<br>P_input, RX and | OK           |

< or = to Receive power (max) (c) |  
-----+-----

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.



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Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions | Signal |
|--------------------|--------|
| Detect             |        |
| Value              |        |

VINPUT, RX < 200 mV(p-p) (a) | FAIL

Other conditions |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) Other end of link undergoing POR transients |
- 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |
- 4) One of the differential lines is open |

Receiving 8B/10B Code (b) |  
 AND |  
 Minimum Differential Sensitivity <= to V\_input, RX and | OK  
 <= to Maximum Differential Sensitivity(c) |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description            | Value  | Unit    |
|------------------------|--------|---------|
| Type                   | (P)ECL |         |
| Data Rate              | 1000   | Mbits/s |
| Clock tolerance        | +/-100 | ppm     |
| Nominal Baud Rate      | 1250   | MBaud   |
| Differential Amplitude |        |         |
| Max (peak)             | 2000   | mv(p-p) |
| Min (opening)          | 1100   | mv(p-p) |
| Max (OFF) (a)          | 70     | mv(p-p) |

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|                         |     |    |
|-------------------------|-----|----|
| Rise/Fall Time (20-80%) |     |    |
| maximum                 | 327 | ps |
| minimum                 | 85  | ps |
| Differential (Skew)     | 25  | ps |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

Cl 38 SC 2.1 P38.3 L 39 # 137

Joe Gwinn Raytheon, Sudbury, M

Comment Type T Comment Status A

We never quite come out and say that TP1 and TP4 are digital, while TP2 and TP3 are analog. Nor do we say exactly where the transmit and receive eye diagrams are taken.

SuggestedRemedy

In Clause 38.2, say that TP1 and TP4 are digital, while TP2 and TP3 are analog. In each section of Clause 38, where appropriate, specify from which TP the data is to be taken. Don't depend on the reader figuring it out.

Proposed Response Response Status C

PARTIAL ACCEPT.  
 -->Make TP2 and TP3 clear in 38.2.1  
 -->TP1 and TP4 are not "digital" per se. This distinction is not correct.

On p. 38.3 line 42 add after ".defined in 38.11.1." the following words:  
 "Unless specified otherwise, all transmitter measurements and tests defined in 38.6 are made at TP2."

On p. 38.3 line 43 add after "defined in 38.11.1." the following: "Unless specified otherwise, all receiver measurements and tests defined in 38.6 are made at TP3."

Cl 38 SC 3 P38.5 L 24 # 138

Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

We never quite mention what minimum fiber modal bandwidth is assumed in Table 38-1.

SuggestedRemedy

Add a footnote pointing the reader to Table 38-8 on page 38.13.

Proposed Response Response Status C

REJECT.  
 Bandwidth is specified elsewhere

Cl 38 SC 3.1 P38.6 L 24 # 140

Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

The sentence is confusing.

SuggestedRemedy

Change to read "... of OFF transmitter (max)", where OFF is all caps, the style used elsewhere in this document for such things.

Proposed Response Response Status C

ACCEPT.  
 Change to read "... of OFF transmitter (max)", where OFF is all caps, the style used elsewhere in this document for such things.

Cl 38 SC 3.1 P38.6 L 4 # 139

Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

The sentence doesn't end with a period.

SuggestedRemedy

Replace strange ending character with a period.

Proposed Response Response Status C

ACCEPT.  
 Replace strange ending character with a period.

Cl 38 SC 3.2 P38.6 L 35-36 # 141

Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A

The last sentence isn't quite a sentence. Nor can I tell what it means. Some words are missing. I have guessed what they are, as shown in the remedy below, but that leads to a question: Why does sampling at the eye center cause the receive penalty to include the extinction ratio? This appears to be a non sequiter. Isn't the answer simply that the receiver sensitivity is tested with a signal of the specified 9-dB extinction ratio, a matter of choosing where to take the hit? The receiver chooses the optimum sampling instant, so the location of the sampling instant is of no direct consequence.

SuggestedRemedy

Figure out what the correct technical answer is. If the current theory (expressed in this section) is correct, change to read: "The sampling instant is taken to occur at the eye center. The receive sensitivity inherently includes the extinction ratio penalty."

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 Change the sentence to read "The sampling instant is defined to occur at the eye center. The receive sensitivity inherently includes the extinction ratio penalty."

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**Cl 38 SC 3.3 P38.7 L1 # 142**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type E Comment Status A**  
 The last sentence lacks a period, and any suggestion as to what the named clause contains.  
**SuggestedRemedy**  
 Complete the sentence as follows: "... comply with paragraph 38.5, which covers jitter specifications."  
**Proposed Response Response Status C**  
 ACCEPT PARTIAL:  
 Period OK; reject rest. Not consistent with overall style.

**Cl 38 SC 38.1 P38.1 L41 # 464**  
 John Bowerman Corning  
**Comment Type E Comment Status R**  
 Add hyphen for single-mode fiber designation  
**SuggestedRemedy**  
 change to 'single-mode' from 'singlemode'  
**Proposed Response Response Status C**  
 Reject:  
 singlemode is used in IEC11801

**Cl 38 SC 38.1 P38.1 L41 # 438**  
 Steven E. Swanson Corning Incorporated  
**Comment Type E Comment Status R**  
 Add hyphen for single-mode fiber designation.  
**SuggestedRemedy**  
 Change "singlemode" to "single-mode."  
**Proposed Response Response Status C**  
 Reject:  
 singlemode is used in IEC 11801

**Cl 38 SC 38.1.1 P38.1 L43 # 61**  
 Nick Esser Canoga Perkins  
**Comment Type E Comment Status R**  
 The last phrase ", which are hereby incorporated by reference" is improper. While it is useful to know what else a complete physical layer includes, this clause specifies only the PMD. It does not need to, nor should it "incorporate" the PCS, PMA, and Management Interfaces. These are already in the spec in their own appropriate clauses.  
**SuggestedRemedy**  
 Delete ", which are hereby incorporated by reference".  
**Proposed Response Response Status C**  
 Reject: Clause 35 and 36 include definitions used by clause 38

**Cl 38 SC 38.1.1 P38.1 L49 # 573**  
 Shimon Muller Sun Microsystems  
**Comment Type E Comment Status A**  
 1000BASE-X is not a subset of 1000BASE-T.  
**SuggestedRemedy**  
 Replace "1000BASE-T PHY" with "1000Mb/s PHY".  
**Proposed Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 Change first two sentences of this paragraph to read: The following specifies the services provided by the 1000BASE-LX and 1000BASE-SX PMDs. These PMDs are sublayers within 1000BASE-X.

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Cl 38 SC 38.1.1.3 & 38.2.4 P38.3-38.5 L # 62  
Nick Esser Canoga Perkins

Comment Type T Comment Status A

I am very disappointed that the Signal Detect function is not mandatory. All other optical PHYs and twisted pair PHYs in 802.3, I believe, \*require\* a similar function. Is there a valid technical reason for allowing this instance to be optional (and wishy-washy)? Is it too difficult to specify the requisite parameters such as response time, adequate margins, (and hysteresis so it won't chatter,) or is there so little implementation margin in the specified optical budgets that these can't be squeezed in practically? Making this optional is tantamount to insuring it won't be widely implemented, if at all.

SuggestedRemedy

Make PMD\_SIGNAL.Indicate, and the Signal Detect function mandatory. Remove all "Optional" and "if implemented" references.  
Specify appropriate values for Response Time, ON and OFF threshold margins and hysteresis values.

Proposed Response Response Status C

PARTIAL ACCEPT.  
Signal detect was made mandatory per resolution of comment #48.  
The PMD task group discussed the additional issues and determined that these should not be included.

Cl 38 SC 38.1.1.3. P38.3 L 1-17 # 953  
Larry Miller Bay Networks

Comment Type TR Comment Status A

Implementation of PMD\_SIGNAL.indicate(SIGNAL\_DETECT) is optional. Virtually all of the transceivers on the market do implement it in varying degrees of accuracy.

With such high data traffic there needs to be a simple way for the network MACs to know if they should be trying to synchronize to inputs without having to analyze the incoming data stream. The overhead of this is simply too much of a performance hit. The MACs known to me all use the PMD\_SIGNAL.indicate as a simple switch to decide whether a channel is worth spending time on.

SuggestedRemedy

Make the PMD\_SIGNAL.indicate function mandatory and tightly specified as to threshold.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
The 802.3z task force accepted motion number 5 at the London meeting.  
This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
YES - 50  
NO - 0  
ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

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The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Signal       |
|------------------------------------------------|--------------|
|                                                | Detect Value |
| P_input, RX < -30 dBm (a)                      | FAIL         |
| Other conditions                               |              |
| Examples:                                      |              |
| 1) Receiving a non-8B/10B encoded data stream  | Unspecified  |
| 2) PMA on other end of link in loopback        |              |
| 3) Other end of link undergoing POR transients |              |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| 4) -30 dBm < P_input, RX < Receive power (min)                                     |    |
| Receiving 8B/10B Code (b)                                                          |    |
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power

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defined by Table 38.3.

b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                             | Detect Value | Signal      |
|----------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                   |              | FAIL        |
| Other conditions                                               |              |             |
| Examples:                                                      |              |             |
| 1) Receiving a non-8B/10B encoded data stream                  |              | Unspecified |
| 2) Other end of link undergoing POR transients                 |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |              |             |
| 4) One of the differential lines is open                       |              |             |
| Receiving 8B/10B Code (b)                                      |              |             |
| AND                                                            |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and         |              | OK          |
| <= to Maximum Differential Sensitivity(c)                      |              |             |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description     | Value  | Unit    |
|-----------------|--------|---------|
| Type            | (P)ECL |         |
| Data Rate       | 1000   | Mbits/s |
| Clock tolerance | +/-100 | ppm     |

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| Nominal Baud Rate       | 1250 | MBaud   |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

| CI 38                                | SC 38.1.1.3.1          | P 38.3                         | L 15     | # 574 |
|--------------------------------------|------------------------|--------------------------------|----------|-------|
| Shimon Muller                        |                        | Sun Microsystems               |          |       |
| <i>Comment Type</i>                  | <b>E</b>               | <i>Comment Status</i> <b>A</b> |          |       |
| Spelling.                            |                        |                                |          |       |
| <i>SuggestedRemedy</i>               |                        |                                |          |       |
| Replace "guaranty" with "guarantee". |                        |                                |          |       |
| <i>Proposed Response</i>             | <i>Response Status</i> |                                | <b>C</b> |       |
| ACCEPT.                              |                        |                                |          |       |
| Replace "guaranty" with "guarantee". |                        |                                |          |       |

| CI 38          | SC 38.10 | P 38.12            | L 31 | # 1231 |
|----------------|----------|--------------------|------|--------|
| Geoff Thompson |          | Bay Networks, Inc. |      |        |

*Comment Type* **T** *Comment Status* **A**

Referencing the objectives:

11. Provide a family of Physical Layer specifications which support a link distance of:
  - a. At least 500 m on multimode fiber
13. Support media selected from ISO/IEC 11801

While the group has squeezed its way through and they have exactly one configuration that meets the above objectives I have great difficulty voting in favor of a application standard for North America that will cause as much heartburn as this one will in terms of requiring the conversion of the backbone from 62.5/125 to single mode.

I feel that this and the "effective modal bandwidth" FUD will have a significant impact on the acceptance of this standard in the marketplace.

*SuggestedRemedy*

Eliminate the concept of "Effective Modal Bandwidth" or get commitment from SC25/WG3 that it will work it into ISO/IEC 11801

*Proposed Response* *Response Status* **C**

ACCEPT.  
While the effective modal BW issue is physics (not FUD), the EMB reference has been removed per removal of annex 38B.

| CI 38             | SC 38.10 | P 38.12              | L 33 | # 455 |
|-------------------|----------|----------------------|------|-------|
| Steven E. Swanson |          | Corning Incorporated |      |       |

*Comment Type* **E** *Comment Status* **A**

Clarification needed that link characteristics are based on fiber cable.

*SuggestedRemedy*

Change "...fiber plant.." to "fiber cable plant.."

*Proposed Response* *Response Status* **C**

ACCEPT.

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Cl 38 SC 38.10 P 38.12 L 33 # 474  
 John Bowerman Corning  
 Comment Type E Comment Status A  
 link characteristics are based upon fiber cable not fiber  
 SuggestedRemedy  
 change to 'fiber cable plant' from 'fiber plant'  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.10 P 38.12 L 33 # 375  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table,  
 are capitalized and should not be, assuming the convention is to be  
 consistent with 802.3u clauses 21-30.  
 SuggestedRemedy  
 uncapitalize Table, change 38.8 to 38-8  
 Proposed Response Response Status C  
 ACCEPT. ACCEPT.  
 uncapitalize Table, change 38.8 to 38-8

Cl 38 SC 38.10 P 38.12 L Table 38.8 # 754  
 Ray Lin Digital Equipment Cor  
 Comment Type T Comment Status A  
 The Annex 38A physical media dependent link model used to establish link  
 penalties may need to include a differential mode delay (DMD)  
 parameter and measurement specification. Measurements performed at  
 Digital have shown eye pattern closure due to what may be the  
 differences in the differential model delay (DMD) characteristics of  
 multimode fibers not addressed in the link model i.e., as a power penalty.

SuggestedRemedy  
 Lab measurements will be performed at Digital Equipment Corporation  
 to characterize the DMD parameter relative to 802.3/z operation.  
 Preliminary data should be available by the September Interim.  
 Proposed Response Response Status C  
 ACCEPT.  
 <approved at 09/11 interim> The committee directs Del Hanson t bring response/plan to  
 Santa Clara Meeting  
 Additional response 9/30/97:  
 Add an editorial note to the document, under each table that shows operating range:  
 "An Ad hoc Modal Bandwidth Investigation (MBI) Group was formed at the  
 London Interim Meeting to respond to comment # 754.  
 IEEE 802.3z should be aware that multi-mode fiber link lengths may need to be reduced to  
 assure worst case operation. The Ad hoc MBI group will report its results at the November  
 Plenary meeting."



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*Cl* 38      *SC* 38.10                      *P* 38.12      *L* Table 38.8      # 505  
 Ray Lin                                      Digital Equipment Cor

*Comment Type*    **TR**              *Comment Status*    **A**

Change Fiber Attenuation Max 62.5 micron @850 nm for compatibility with:

1. 10BASE-FL
2. 100BASE-FX
3. TIA/EIA-568-A

Based on the link penalty calculations the additional .25 dB will not change the Table 38-8 operating range of 260 m @850 nm.

*SuggestedRemedy*

Change Fiber Attenuation Max 62.5 micron @850 nm from 3.5 dB/km to 3.75 dB/km in Table 38.8 and Table 38B-2, page 38.27, line 23-24.

Add the note from 10BASE-FL 15.3.1.1. provided below.

Note: This value of attenuation is a relaxation of the standard (IEC Publication 793-2 [14], type A1b, category less than or equal to 3.5 dB/km).

*Proposed Response*              *Response Status*    **C**

ACCEPT.  
 Changes will be implemented to match suggestions.

*Cl* 38      *SC* 38.10                      *P* 38.12      *L* Table 38.8      # 416  
 Christopher Di Minico                      Digital Equipment Cor

*Comment Type*    **TR**              *Comment Status*    **A**

Change Fiber Attenuation Max 62.5 micron @850 nm for compatibility with:

1. 10BASE-FL
2. 100BASE-FX
3. TIA/EIA-568-A

Based on the link penalty calculations the additional .25 dB will not change the Table 38-8 operating range of 260 m @850 nm.

*SuggestedRemedy*

Change Fiber Attenuation Max 62.5 micron @850 nm from 3.5 dB/km to 3.75 dB/km in Table 38.8 and Table 38B-2, page 38.27, line 23-24.

Add the note from 10BASE-FL 15.3.1.1. provided below.

Note: This value of attenuation is a relaxation of the standard (IEC Publication 793-2 [14], type A1b, category less than or equal to 3.5 dB/km).

*Proposed Response*              *Response Status*    **C**

ACCEPT.  
 Changes will be implemented as suggested, with the exception that changes to 38B will not since this clause was removed per resolution of comment #608.

*Cl* 38      *SC* 38.10                      *P* 38.13      *L*                      # 761  
 J. Paul Benson, Jr.                      Lucent Technologies

*Comment Type*    **E**              *Comment Status*    **A**

In Table 38-8, is the "Connector return loss" requirement a minimum, mean, median, etc?

*SuggestedRemedy*

In Table 38-8, change "Connector return loss" to "Connector return loss (min)".

*Proposed Response*              *Response Status*    **C**

ACCEPT IN PRINCIPLE.  
 The return loss requirements were removed from the table and placed in a new clause 38.11.2.3.

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**Cl 38**    **SC 38.10**                      **P 38.13**    **L Huh?**    # **1219**  
 Pat Thaler                                      Hewlett-Packard

*Comment Type*    **TR**            *Comment Status*    **A**

By placing it in this table, link penalties is a link segment specification that must be tested to qualify a link segment. However, a number of the components of the link penalties are transmitter and receiver contributions and not characteristics of the link segment at all. Also, no measurement method is defined and making such a measurement is non-trivial.

*SuggestedRemedy*

Take it out of the table. The information could be listed informatively to let the reader know what link penalty was budgeted.

*Proposed Response*                      *Response Status*    **C**  
 ACCEPT.

Add the word "(informative)" to the Link Penalties table entry. Also add table footnote to the entry stating Link penalties are used for link budget calculations, are not requirements, and are not meant to be tested.

**Cl 38**    **SC 38.11.1**                      **P 38.12**    **L 45**                      # **503**  
 John McCool                                      Cisco Systems

*Comment Type*    **TR**            *Comment Status*    **R**                      *PROVAL from John 10/10/97*

If the SC receptacle is keyed to for single mode, it will not accept multimode fiber. For 100BASE-X, connectors should be keyed for multimode. In that way, they can accept either single or multimode fiber.

*SuggestedRemedy*

add text specifying plug and receptacle shall be keyed for multimode fiber

*Proposed Response*                      *Response Status*    **C**  
 REJECT.

The IEC 1754-4 and IEC 1754-4 part 4.2 do not differentiate between multimode and singlemode connectors.

New resolution as of 9/30/97: A note will be added to Figure 38-4 to read: The connector keys are used for transmit/receive polarity only. The connector keys do not differentiate between single mode and multi-mode fibers.

In addition, we will delete page 38.14/line 4 which previously read: "The 1000BASE-SX and 1000BASE-LX connectors are identical, including keying."

**Cl 38**    **SC 38.11.1**                      **P 38.12**    **L 50**                      # **108**  
 Bob Musk                                              Hewlett Packard

*Comment Type*    **E**                      *Comment Status*    **A**

Recent IEC numbering changes affect optical connector reference

*SuggestedRemedy*

Change IEC 1754-4 to read IEC 61754-4

*Proposed Response*                      *Response Status*    **C**

<approved at 09/11 interim> ACCEPT IN PRINCIPLE.  
 Change IEC 1754-4 and IEC 1754-4 Part 4.2 to IEC 61754-4 and IEC 61754-4 Part 4.2 respectively  
 Chip to verify new reference by SantaClara meeting  
 This also effects clause 1.  
 The committee agrees to accept this comment if there are no changes pending Chip's investigation.

**Cl 38**    **SC 38.11.1**                      **P 38.12**    **L 50**                      # **758**  
 J. Paul Benson, Jr.                                      Lucent Technologies

*Comment Type*    **T**                      *Comment Status*    **A**

To completely specify the duplex SC connector, it should be referenced as IEC 1754-4 & Part 4.2.

*SuggestedRemedy*

Change IEC 1754-4 to IEC 1754-4 & Part 4.2.

*Proposed Response*                      *Response Status*    **C**

ACCEPT IN PRINCIPLE.  
 Change IEC 1754-4 and IEC 1754-4 Part 4.2 to IEC 61754-4 and IEC 61754-4 Part 4.2 respectively  
 Chip to verify new reference by SantaClara meeting

**Cl 38**    **SC 38.11.2**                      **P 38.14**    **L 8**                      # **476**  
 John Bowerman                                      Corning

*Comment Type*    **E**                      *Comment Status*    **A**

Figure number repeated

*SuggestedRemedy*

delete a 38-

*Proposed Response*                      *Response Status*    **C**

ACCEPT.

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Cl 38 SC 38.11.2 P 38.14 L 8 # 460  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 Figure number is repeated.  
 SuggestedRemedy  
 Delete first "38-"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.11.2 P 38.14 L 8 # 801  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo: repeated number.  
 SuggestedRemedy  
 Change from "Figure 38-38-4." to "Figure 38-4."  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.11.2 P 38.14 L 8 # 386  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
 SuggestedRemedy  
 uncapitalize Figure, remove extra "38-"  
 Proposed Response Response Status C  
 ACCEPT.  
 Uncapitalize "Figure", remove extra "38-"

Cl 38 SC 38.11.2 P 38.14 L 8 # 472  
 John Bowerman Corning  
 Comment Type E Comment Status A  
 Figure number repeated  
 SuggestedRemedy  
 delete a 38-  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.11.2 P 38.14 L 8, 27, and # 459  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status R  
 Clarify optical interface.  
 SuggestedRemedy  
 Change "receptacle" to "active interface" three places.  
 Proposed Response Response Status C  
 REJECT.  
 This drawing is intended to show the plug and receptacle as "black boxes".

Cl 38 SC 38.12.3 P 38.17 L 9 # 208  
 Bryan R. Gregory Molex  
 Comment Type T Comment Status A  
 Please see the comment in the Value/Comment area that is "( 850nm )".  
 This note seem to suggest that 850nm is the only acceptable wavelength for short wavelength ethernet optical transceivers. This table should also mention the 780nm window. This is a very serious omission.  
 SuggestedRemedy  
 Change the note to read "770nm-860nm" or "Short Wavelength" with a note at the bottom of the page that defines Short Wavelength as 770nm - 860nm.  
 Proposed Response Response Status C  
 ACCEPT.  
 Change the note to read "770nm-860nm" and LW changed from 1300 to 1270-1355nm

Cl 38 SC 38.12.4.4 P 38.19 L 34 # 759  
 J. Paul Benson, Jr. Lucent Technologies  
 Comment Type T Comment Status R  
 OFSTP-9 is considered to be the reference method for extinction ratio measurement, while OFSTP-4 is a method for "estimating" extinction ratio.  
 SuggestedRemedy  
 Identify OFSTP-9 as the extinction ratio test method. OFSTP-4 could be mentioned as a less accurate option.  
 Proposed Response Response Status Z  
 The commenter has withdrawn this comment.

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Cl 38 SC 38.12.4.4 P 38.20 L 28 # 502  
 Vince Melendy Methode Electronics

Comment Type T Comment Status R

In my understanding of PIC statements this statement should have an INS in the status column. This is because the PMD manufacturer has no control over the total environment the unit is being installed. To be able to guarentee that the system will pass any EMI regulations is beyond the scope of the PMD manufacturer.

SuggestedRemedy

Add INS to the Status column of the PIC statement.

Proposed Response Response Status C

REJECT.  
 New response as of 9/30/97:

Compliance with EMC requirements is incumbent upon the manufacturer of a PMD, not necessarily the supplier of an individual component of that PMD.

While it is true that the equipment installer must guarantee good practice in order to meet FCC requirements, it is still mandatory for the PMD to comply with EMC requirements.

Cl 38 SC 38.2.1 P 38.4 L 4-21 # 253  
 Colin Mick The Mick Group

Comment Type E Comment Status R

Missing text in 38-1

SuggestedRemedy

fix

Proposed Response Response Status C

REJECT. Text present in current copy.

Cl 38 SC 38.2.4 P 38.4 L 35 # 1178  
 Bryan R. Gregory Molex

Comment Type TR Comment Status A

There has been a lot of discussion about Signal Detect and Transmitter Off Power requirements. Because the "Signal Detect" function is optional, there is concern about monitoring the status of an optical link. It would appear that the simplest way to address this issue is to remove the "(Optional)" statement. This simple remedy would probably cause the least number of problems for the manufacturers of optical transceivers.

SuggestedRemedy

On line 35: "PMD signal detect function (optional)"  
 --> Remove the word "(Optional)"

Also, to be consistent, remove section 38.2.4.2 (page 38.5)

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

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The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions        | Signal       |
|---------------------------|--------------|
|                           | Detect Value |
| P_input, RX < -30 dBm (a) | FAIL         |
| Other conditions          |              |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) PMA on other end of link in loopback |
- 3) Other end of link undergoing POR transients |
- 4) -30 dBm < P\_input, RX < Receive power (min) |

| Receiving 8B/10B Code (b)                                                          |    |
|------------------------------------------------------------------------------------|----|
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.

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b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Signal Detect Value |
|--------------------------------------------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     | FAIL                |
| Other conditions                                                                                 |                     |
| Examples:                                                                                        |                     |
| 1) Receiving a non-8B/10B encoded data stream                                                    | Unspecified         |
| 2) Other end of link undergoing POR transients                                                   |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |                     |
| 4) One of the differential lines is open                                                         |                     |
| Receiving 8B/10B Code (b)                                                                        |                     |
| AND                                                                                              |                     |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) | OK                  |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

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|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 38 SC 38.2.4 P 38.4 L 35 # 1177

Bryan R. Gregory

Molex

Comment Type TR Comment Status A

There has been a lot of discussion about Signal Detect and Transmitter Off Power requirements. Because the "Signal Detect" function is optional, there is concern about monitoring the status of an optical link. It would appear that the simplest way to address this issue is to remove the "(Optional)" statement. This simple remedy would probably cause the least number of problems for the manufacturers of optical transceivers.

*SuggestedRemedy*

On line 35: "PMD signal detect function (optional)"  
--> Remove the word "(Optional)"

Also, to be consistent, remove section 38.2.4.2 (page 38.5)

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
The 802.3z task force accepted motion number 5 at the London meeting.  
This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50  
NO - 0  
ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

P802.3z Draft 3.1 Comments

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions        | Signal       |
|---------------------------|--------------|
|                           | Detect Value |
| P_input, RX < -30 dBm (a) | FAIL         |
| Other conditions          |              |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) PMA on other end of link in loopback |
- 3) Other end of link undergoing POR transients |
- 4) -30 dBm < P\_input, RX < Receive power (min) |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| Receiving 8B/10B Code (b)                                                          |    |
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.



P802.3z Draft 3.1 Comments

b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                                                                                                                                                                                                                                                          | Signal Detect Value |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                                                                                                                                                                                                                                                | FAIL                |
| Other conditions                                                                                                                                                                                                                                                                                                            |                     |
| Examples:                                                                                                                                                                                                                                                                                                                   |                     |
| 1) Receiving a non-8B/10B encoded data stream                                                                                                                                                                                                                                                                               | Unspecified         |
| 2) Other end of link undergoing POR transients                                                                                                                                                                                                                                                                              |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                                                                                                                                                                                                                                              |                     |
| 4) One of the differential lines is open                                                                                                                                                                                                                                                                                    |                     |
| Receiving 8B/10B Code (b)                                                                                                                                                                                                                                                                                                   |                     |
| AND                                                                                                                                                                                                                                                                                                                         |                     |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c)                                                                                                                                                                                                                            | OK                  |
| a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin. |                     |
| b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.                                                                                                                                                                               |                     |
| c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.                                                                                                                                                                                  |                     |

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

Cl 38 SC 38.2.4 P 38.4 L 35 # 610  
 David Cunningham Hewlett-Packard

Comment Type TR Comment Status A

Delete sub-clause 38.4 OR specify signal detect more rigorously and make it normative.

Reasons,

- a) The higher layer state diagrams have been designed on the assumption that signal detect may not be present. This is because signal detect is an optional function.
- b) The higher layer state diagrams are robust even when signal detect is not implemented.
- c) The PCS, PMA and Auto-negotiation state machines will reliably detect link failures.
- d) The PCS, PMA and Auto-negotiation state machines will reliably detect link failures much faster than any reasonable signal detect circuit could.
- e) No failure conditions or test conditions have been identified and presented to the committee that would favour the use of signal detect over the state machines provide by PCS, PMA and Auto-negotiation layers.

f) Marginal or noisy optical links will be detected by the PCS, PMA and Auto-negotiation state machines. Systems will not hang up since these state machines are robust.

g) There has been no convincing technical justifications presented to the Optical PMD sub-group for including the signal detect function in the standard .

h) However, signal detect should be rigorously specified and made normative if it can be shown to provide some of the following, faster detection of link failure, more robust detection of link failure, detection of additional failure modes when compared to PCS, PMA or Auto-negotiation state machines.

SuggestedRemedy

Delete sub-clause 38.4.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

- YES - 50
- NO - 0
- ABSTAIN - 1

P802.3z Draft 3.1 Comments

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                 | Signal       |
|------------------------------------------------------------------------------------|--------------|
|                                                                                    | Detect Value |
| P_input, RX < -30 dBm (a)                                                          | FAIL         |
| Other conditions                                                                   |              |
| Examples:                                                                          |              |
| 1) Receiving a non-8B/10B encoded data stream                                      | Unspecified  |
| 2) PMA on other end of link in loopback                                            |              |
| 3) Other end of link undergoing POR transients                                     |              |
| 4) -30 dBm < P_input, RX < Receive power (min)                                     |              |
| Receiving 8B/10B Code (b)                                                          |              |
| AND                                                                                |              |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK           |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description           | 50 mm and 62.5 mm MMF value | Unit |
|-----------------------|-----------------------------|------|
| Transmitter type      | Shortwave Laser             |      |
| Baud rate (range)     | 1.25 +/- 100 ppm            | GBd  |
| Wavelength (l, range) | 770 to 860                  | nm   |

P802.3z Draft 3.1 Comments

|                                                   |                  |          |
|---------------------------------------------------|------------------|----------|
| Trise/Tfall (max; 20%-80%; $\lambda > 830$ nm)    | 0.26             | ns       |
| Trise/Tfall (max; 20%-80%; $\lambda \geq 830$ nm) | 0.21             | ns       |
| Spectral width (max)                              | 0.85             | ns, RMS  |
| Launch power (max)                                | See footnote (a) | dBm, avg |
| Launch power (min)                                | -10              | dBm, avg |
| Launch power of OFF transmitter(max)(b)           | -30              | dBm, avg |
| Extinction ratio (min)                            | 9                | dB       |
| RIN (max)                                         | -117             | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives

a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                             | Signal       |
|----------------------------------------------------------------|--------------|
|                                                                | Detect Value |
| VINPUT, RX < 200 mV(p-p) (a)                                   | FAIL         |
| Other conditions                                               |              |
| Examples:                                                      |              |
| 1) Receiving a non-8B/10B encoded data stream                  | Unspecified  |
| 2) Other end of link undergoing POR transients                 |              |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |              |
| 4) One of the differential lines is open                       |              |
| Receiving 8B/10B Code (b)                                      |              |
| AND                                                            |              |
| Minimum Differential Sensitivity <= to V_input, RX and         | OK           |
| <= to Maximum Differential Sensitivity(c)                      |              |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning

normally.  
 c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description             | Value  | Unit    |
|-------------------------|--------|---------|
| Type                    | (P)ECL |         |
| Data Rate               | 1000   | Mbits/s |
| Clock tolerance         | +/-100 | ppm     |
| Nominal Baud Rate       | 1250   | MBaud   |
| Differential Amplitude  |        |         |
| Max (peak)              | 2000   | mv(p-p) |
| Min (opening)           | 1100   | mv(p-p) |
| Max (OFF) (a)           | 70     | mv(p-p) |
| Rise/Fall Time (20-80%) |        |         |
| maximum                 | 327    | ps      |
| minimum                 | 85     | ps      |
| Differential (Skew)     | 25     | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 38 SC 38.2.4 P 38.4 L 35 # 491  
 Howard Frazier Cisco Systems

Comment Type TR Comment Status A

The PCS receive state machines can not operate reliably without the signal detect function. This function must be made mandatory.

SuggestedRemedy

remove "optional". Also remove "when implemented" on line 37, and "if implemented" on line 39.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

P802.3z Draft 3.1 Comments

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                      | Signal      |
|-----------------------------------------------------------------------------------------|-------------|
| Detect Value                                                                            |             |
| P_input, RX < -30 dBm (a)                                                               | FAIL        |
| Other conditions                                                                        |             |
| Examples:                                                                               |             |
| 1) Receiving a non-8B/10B encoded data stream                                           | Unspecified |
| 2) PMA on other end of link in loopback                                                 |             |
| 3) Other end of link undergoing POR transients                                          |             |
| 4) -30 dBm < P_input, RX < Receive power (min)                                          |             |
| Receiving 8B/10B Code (b)<br>AND<br>Receive power (min) is < or = to<br>P_input, RX and | OK          |

< or = to Receive power (max) (c) |  
-----+-----

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

P802.3z Draft 3.1 Comments

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions | Signal |
|--------------------|--------|
| Detect             |        |
| Value              |        |

VINPUT, RX < 200 mV(p-p) (a) | FAIL

Other conditions |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) Other end of link undergoing POR transients |
- 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |
- 4) One of the differential lines is open |

Receiving 8B/10B Code (b) |

AND  
 Minimum Differential Sensitivity <= to V\_input, RX and  
 <= to Maximum Differential Sensitivity(c) | OK

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description            | Value  | Unit    |
|------------------------|--------|---------|
| Type                   | (P)ECL |         |
| Data Rate              | 1000   | Mbits/s |
| Clock tolerance        | +/-100 | ppm     |
| Nominal Baud Rate      | 1250   | MBaud   |
| Differential Amplitude |        |         |
| Max (peak)             | 2000   | mv(p-p) |
| Min (opening)          | 1100   | mv(p-p) |
| Max (OFF) (a)          | 70     | mv(p-p) |

|                         |     |    |
|-------------------------|-----|----|
| Rise/Fall Time (20-80%) |     |    |
| maximum                 | 327 | ps |
| minimum                 | 85  | ps |
| Differential (Skew)     | 25  | ps |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

Cl 38 SC 38.2.4 P 38.4 L 35-53 # 980  
 Ian Crayford Bay Networks, Inc.

Comment Type TR Comment Status A

The draft indicates SIGNAL\_DETECT as being optional. Since the optical transceivers that I am aware of provide this, this should be no obstacle to change this to mandatory. This is a simple and valuable indication that should be required for "link pass" LED drive signal (as well as internally for logic). Much of the success of 10BASE-T and 100BASE-T was its simplicity to provide a raw "link OK" indication without the use of management.

SuggestedRemedy

Make the SIGNAL\_DETECT function mandatory, and sufficiently robust so as to be a reasonably good indication of "link OK" status.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

- YES - 50
- NO - 0
- ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)



P802.3z Draft 3.1 Comments

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions        | Signal       |
|---------------------------|--------------|
|                           | Detect Value |
| P_input, RX < -30 dBm (a) | FAIL         |
| Other conditions          |              |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) PMA on other end of link in loopback |
- 3) Other end of link undergoing POR transients |
- 4) -30 dBm < P\_input, RX < Receive power (min) |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| Receiving 8B/10B Code (b)                                                          |    |
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.

P802.3z Draft 3.1 Comments

b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Signal Detect Value |
|--------------------------------------------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     | FAIL                |
| Other conditions                                                                                 |                     |
| Examples:                                                                                        |                     |
| 1) Receiving a non-8B/10B encoded data stream                                                    | Unspecified         |
| 2) Other end of link undergoing POR transients                                                   |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |                     |
| 4) One of the differential lines is open                                                         |                     |
| Receiving 8B/10B Code (b)                                                                        |                     |
| AND                                                                                              |                     |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) | OK                  |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

P802.3z Draft 3.1 Comments

|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

|                                            |                        |                       |                |               |
|--------------------------------------------|------------------------|-----------------------|----------------|---------------|
| <b>CI 38</b>                               | <b>SC 38.2.4.1</b>     | <b>P 38.4</b>         | <b>L 45-51</b> | # <b>1218</b> |
| Pat Thaler                                 |                        | Hewlett-Packard       |                |               |
| <i>Comment Type</i>                        | <b>E</b>               | <i>Comment Status</i> | <b>A</b>       |               |
| "guarantee" should be "ensure"             |                        |                       |                |               |
| <i>SuggestedRemedy</i>                     |                        |                       |                |               |
| <br>                                       |                        |                       |                |               |
| <i>Proposed Response</i>                   | <i>Response Status</i> |                       | <b>C</b>       |               |
| ACCEPT IN PRINCIPLE.                       |                        |                       |                |               |
| Clause 38.2.4.1 removed from the document. |                        |                       |                |               |

|                                                                                                                            |                    |                       |               |              |
|----------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------|---------------|--------------|
| <b>CI 38</b>                                                                                                               | <b>SC 38.2.4.1</b> | <b>P 38.4</b>         | <b>L 38.4</b> | # <b>254</b> |
| Colin Mick                                                                                                                 |                    | The Mick Group        |               |              |
| <i>Comment Type</i>                                                                                                        | <b>TR</b>          | <i>Comment Status</i> | <b>A</b>      |              |
| <i>recirculate to Colin</i>                                                                                                |                    |                       |               |              |
| Is this a required level of performance? If so, quantify, insert shalls as appropriate and insert in PICs. If not, delete. |                    |                       |               |              |

*SuggestedRemedy*

*Proposed Response*      *Response Status* **C**  
 ACCEPT. New information added 9/30/97:  
 Signal detect is now mandatory. Activation/deactivation levels are now specified.  
 Par 38.2.4 line30 strike the word "rough" line 29 change "PMD\_SIGNAL" to  
 PMD\_SIGNAL.indicate".

- Correct PICs as follows:
1. Page 38.17, line 13, change "Status" from Optional(0) to Mandatory[M].
  2. Page 38.18, line 22, change subclause to 38.2.4;change ststus to "M"; remove support "N/A"
  3. Page 38.18, line 26, change subclause to 38.2.4;change ststus to "M"; remove support "N/A"; add value ". . . , no false negatives"
  4. Page 38.18, line 30, change subclause to 38.2.4;change ststus to "M"; remove support "N/A"; add value ". . . , no false positivies"; change feature to "Signal detect indicate OK under normal operation"
  5. Page 38.17, lines13-15, replace Value/Comment with "device supports signal detect function"

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Cl 38 SC 38.2.4.2 P38.5 L4 # 490

Howard Frazier Cisco Systems

Comment Type TR Comment Status A

The PCS receive state machines can not operate reliably without the signal detect function. This function must be made mandatory.

SuggestedRemedy

Remove this subclause.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50  
NO - 0  
ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                               | Signal       |
|--------------------------------------------------|--------------|
|                                                  | Detect Value |
| P_input, RX < -30 dBm (a)                        | FAIL         |
| Other conditions                                 |              |
| Examples:                                        |              |
| 1) Receiving a non-8B/10B encoded data stream    | Unspecified  |
| 2) PMA on other end of link in loopback          |              |
| 3) Other end of link undergoing POR transients   |              |
| 4) -30 dBm < P_input, RX < Receive power (min)   |              |
| Receiving 8B/10B Code (b)                        |              |
| AND                                              |              |
| Receive power (min) is < or = to P_input, RX and | OK           |
| < or = to Receive power (max) (c)                |              |

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- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions | Signal Value |
|--------------------|--------------|
|                    | Detect       |
|                    | Value        |

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VINPUT, RX < 200 mV(p-p) (a) | FAIL

Other conditions |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) Other end of link undergoing POR transients |
- 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |
- 4) One of the differential lines is open |

Receiving 8B/10B Code (b) |  
AND |

Minimum Differential Sensitivity <= to V\_input, RX and <= to Maximum Differential Sensitivity(c) | OK

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description            | Value  | Unit    |
|------------------------|--------|---------|
| Type                   | (P)ECL |         |
| Data Rate              | 1000   | Mbits/s |
| Clock tolerance        | +/-100 | ppm     |
| Nominal Baud Rate      | 1250   | MBaud   |
| Differential Amplitude |        |         |
| Max (peak)             | 2000   | mv(p-p) |
| Min (opening)          | 1100   | mv(p-p) |
| Max (OFF) (a)          | 70     | mv(p-p) |

|                         |     |    |
|-------------------------|-----|----|
| Rise/Fall Time (20-80%) |     |    |
| maximum                 | 327 | ps |
| minimum                 | 85  | ps |
| Differential (Skew)     | 25  | ps |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 38 SC 38.3 P 38.3 L 21 # 465  
John Bowerman Corning

Comment Type E Comment Status R  
I was confused by the two notes above Table 38-1

SuggestedRemedy  
Combine the two notes into a single note

Proposed Response Response Status C  
REJECT.  
Combining does not clarify.

CI 38 SC 38.3 P 38.5 L 11 # 359  
Scott Carter IBM

Comment Type E Comment Status A  
There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
uncapitalize Table

Proposed Response Response Status C  
ACCEPT.

CI 38 SC 38.3 P 38.5 L 12 # 360  
Scott Carter IBM

Comment Type E Comment Status A  
There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
uncapitalize Table

Proposed Response Response Status C  
ACCEPT. Same as 359

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Cl 38 SC 38.3 P 38.5 L 14 - 17 # 1267  
 Alan Flatman LAN Technologies

Comment Type E Comment Status R  
 Final sentence in para 1 is unnecessary and potentially confusing.

SuggestedRemedy  
 Delete final sentence in para 1.

Proposed Response Response Status C  
 REJECT.  
 Sentence clarifies meaning of "minimum range."  
 (new response as of 9/30/97)  
 We maintain the use of the term "minimum range".  
 This usage of the term "range" is consistent with that in  
 prior 802 standards.  
 Manufacturers are permitted to make compliant devices  
 which operate in excess of the "minimum range".

Cl 38 SC 38.3 P 38.5 L 21 # 439  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R  
 The two notes above Table 38-1 could be confusing to a reader  
 of the standard; rewording of the notes and combining Annexes 38B and  
 38D (covered in a subsequent comment) is recommended.

SuggestedRemedy  
 Delete the second note and reword the first note as  
 follows:

"NOTE - Worst case link lengths are based on experimental data available  
 at the time of publication. The specific method of calculation and  
 system model parameter values can be found in Annex 38A."

Proposed Response Response Status C  
 REJECT.  
 Combination provides no additional value

Cl 38 SC 38.3 P 38.5 L 26-27 # 255  
 Colin Mick The Mick Group

Comment Type E Comment Status R  
 "minimum range" seems an extremely poor way to define. Why not minimum  
 distance?

SuggestedRemedy

Proposed Response Response Status C  
 REJECT.  
 (new response as of 9/30/97)  
 We maintain the use of the term "minimum range".  
 This usage of the term "range" is consistent with that in  
 prior 802 standards.  
 Manufacturers are permitted to make compliant devices  
 which operate in excess of the "minimum range".

P802.3z Draft 3.1 Comments

Cl 38 SC 38.3 P 38.5 L 9 # 417

Christopher Di Minico Digital Equipment Cor

Comment Type T Comment Status A

Specifications for the fiber optic cabling medium and the link characteristics including optical insertion loss available to the user i.e., link segment insertion loss (attenuation) should be provided in separate subclauses not specified together as shown in Table-38-8 (link characteristics).

SuggestedRemedy

Insert subclause for characteristics of the fiber optic medium as in 10BASE-FL Clause 15 subclause 15.3..

Insert diagram of link segment and definition as in 10BASE-FL Clause 15 subclause 15.1.2. to 38.8.

Revise Table 38-8 to reflect 'only' link segment characteristics.

Insert link segment insertion loss subclause as in 10BASE-FL Clause 15 subclause 15.3.3 and 15.3.3.2. to 38.8 including a table of link attenuation vs fiber type and wavelength i.e., move table entry Link attenuation from Table 38-8 into the link segment insertion loss subclause.

Revise 38.3 line 11-16 and 38.4 line 5-10 to include linkages to fiber optic medium subclause, the link segment diagram and the link characteristic Table 38-8.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Suggested remedy: Modify the second sentence in Clause 38.3 to read:

A 1000BASE-SX compliant transceiver is capable of supporting both multimode fiber media types listed in Table 38-1 (i.e. both 50/125 mm and 62.5/125 mm multimode fiber) according to the specifications defined in 38.11.

Remedy#2

Clause: 38
Subclause: 38.4
Page: 38.7
Line: 7,8
CommentType: T

Suggested remedy: Modify the second sentence of Clause 38.4, lines 6, 7 and 8 to read:

A 1000BASE-LX compliant transceiver is capable of supporting every media type listed in Table 38-4 (i.e. 50/125 mm and 62.5/125 mm multimode fiber and single-mode fiber) according to the specifications defined in 38.11.

Remedy#3

Clause: 38
Subclause: 38.11
Page: 38.12
Line: 40
CommentType: T

Suggested remedy: Change Clause 38.11 to "Characteristics of the fiber optic medium" which will include the MDI specification (keep existing 38.11 text in the connector subclause) and the following text:

38.11, Characteristics of the fiber optic medium
The fiber optic transmission medium consists of one or more sections of fiber optic cables with any intermediate connectors required to connect sections together and terminated at each end in the optical connector plug as specified in 38.11.2. The fiber optic medium spans from one MDI to another MDI.

38.11.1, Optical fiber and cable
The optical medium requirements are satisfied by the fibers specified in IEC 793-2: 1992. Types A1a (50/125 mm multimode), A1b (62.5 125 mm multimode), and B1 (10/125 mm singlemode) with the exceptions noted in the Table below.

Include a modified Table 38.8 - Optical fiber and cable characteristics as follows:

Operating range is deleted
Fiber attenuation as is with 3.75 dB/km instead of 3.5 dB/km
Modal bandwidth as is
Dispersion slope as is
Zero dispersion slope as is
Connector return loss goes to 38.11.2.2
Link Attenuation goes to Table 38-9
Link penalties is is moved to a new subclause 38.3.x for SX and 38.4.x for LX (del's table)

38.11.2, Optical fiber connector

38.11.2.1 Optical connector insertion loss

The maximum link distances for multimode fiber are calculated based on an allocation of 1.5 dB total connector loss. This allocation supports a minimum of three connectors with an average insertion loss equal to 0.5dB (or less) per connector or two connectors (as shown in Figure X. )with a maximum attenuation of 0 .75dB. Connectors with different loss characteristics may be used as long as the requirements of Table 38.8 and Table 38.9 are met.

The maximum link distances for single-mode fiber are calculated based on an allocation of 2.0 dB total connector loss. This allocation supports a minimum of 4 connectors with an average insertion loss per connector of 0.5 dB.

38.11.2.2 Optical connector return loss



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The return loss for multimode connectors shall be greater than 20 dB.

The return loss for single-mode connectors shall be greater than 26 dB.

38.10 Optical channel cabling model

38.10.1 Channel insertion loss

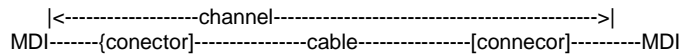
The optical insertion loss for the channel is given in the table below:

Table 38.9 - Channel insertion loss

| Description             | Unit | 50 mm MMF | 62.5 mm MMF | SMF              |
|-------------------------|------|-----------|-------------|------------------|
| Channel attenuation (1) | dB   | 3.43      | 2.33        | 2.41, 2.16, 3.50 |

(1) The channel attenuation numbers above are based on the nominal operating wavelength.

FIGURE X.



NOTE.: Refer to TIA/EIA-526-14A for multimode and TIA/EIA-526-7 for single mode.

|              |                |                       |            |       |
|--------------|----------------|-----------------------|------------|-------|
| <i>Cl</i> 38 | <i>SC</i> 38.3 | <i>P</i> 38.5         | <i>L</i> 9 | # 506 |
| Ray Lin      |                | Digital Equipment Cor |            |       |

| <i>Comment Type</i> | <i>T</i> | <i>Comment Status</i> | <i>R</i> |
|---------------------|----------|-----------------------|----------|
|                     |          |                       |          |

Specifications for the fiber optic cabling medium and the link characteristics including optical insertion loss available to the user i.e., link segment insertion loss (attenuation) should be provided in separate subclauses not specified together as shown in Table-38-8 (link characteristics).

*Suggested Remedy*

Insert subclause for characteristics of the fiber optic medium as in 10BASE-FL Clause 15 subclause 15.3..

Insert diagram of link segment and definition as in 10BASE-FL Clause 15 subclause 15.1.2. to 38.8.

Revise Table 38-8 to reflect 'only' link segment characteristics.

Insert link segment insertion loss subclause as in 10BASE-FL Clause 15 subclause 15.3.3 and 15.3.3.2. to 38.8 including a table of link attenuation vs fiber type and wavelength i.e., move table entry Link attenuation from Table 38-8 into the link segment insertion loss subclause.

Revise 38.3 line 11-16 and 38.4 line 5-10 to include linkages to fiber optic medium subclause, the link segment diagram and the link characteristic Table 38-8.

| <i>Proposed Response</i> | <i>Response Status</i> | <i>C</i> |
|--------------------------|------------------------|----------|
| REJECT. Duplicate of 417 |                        |          |

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Cl 38 SC 38.3, 38.4 P 38.5, 38.7 L 21 , 14 # 507  
Ray Lin Digital Equipment Cor

Comment Type TR Comment Status A

The notes of 38.3/38.4 link clause 38 to Annex 38B Table 38B-1 with the implication that users of this clause can adjust their operating distance by table look-up reference i.e., with a known effective modal bandwidth one looks-up the minimum link length.

My understanding is that the table is a place holder for 'yet to be determined' procedures so as link lengths (other than those based on worst case) can be anticipated.

If Table 38B-1 is to be informative this section must include recommendations on how to determine effective modal bandwidth. If 'we' can not produce such guidance, remove the notes and the Table 38B-1.

SuggestedRemedy

suggestion one:  
-----

Remove Note of 38.3 page 38.5 line 21 and note of 38.4 page 38.7 line 12.

Remove effective bandwidth vs link length Table 38B-1.  
Delete all references to effective modal bandwidth.

suggestion two:  
-----

Change effective modal bandwidth in Table 38B-1 to WCMB.  
Move revised Table 38B-1 to 38A.10.  
Delete all references to effective modal bandwidth.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
See Comment 410

Change note on line 21, p38.5 and line 14 on p38.7 from "specific fiber bandwidths" to "worst case modal bandwidths"

ED NOTE: On Sept. 26, 1997 The commenter indicated via email that he will approve this response "Based on removal of Effective Modal Bandwidth as resolution"

As of 9/30/97: we have removed all references to effective modal bandwidth. Therefore, this comment will be marked as "closed"

Cl 38 SC 38.3, 38.4 P 38.5, 38.7 L 21 , 14 # 418  
Christopher Di Minico Digital Equipment Cor

Comment Type TR Comment Status A

The notes of 38.3/38.4 link clause 38 to Annex 38B Table 38B-1 with the implication that users of this clause can adjust their operating distance by table look-up reference i.e., with a known effective modal bandwidth one looks-up the minimum link length.

My understanding is that the table is a place holder for 'yet to be determined' procedures so as link lengths (other than those based on worst case) can be anticipated.

If Table 38B-1 is to be informative this section must include recommendations on how to determine effective modal bandwidth. If 'we' can not produce such guidance, remove the notes and the Table 38B-1.

SuggestedRemedy

suggestion one:  
-----

Remove Note of 38.3 page 38.5 line 21 and note of 38.4 page 38.7 line 12.

Remove effective bandwidth vs link length Table 38B-1.  
Delete all references to effective modal bandwidth.

suggestion two:  
-----

Change effective modal bandwidth in Table 38B-1 to WCMB.  
Move revised Table 38B-1 to 38A.10.  
Delete all references to effective modal bandwidth.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
See Comment 410

Change note on line 21, p38.5 and line 14 on p38.7 from "specific fiber bandwidths" to "worst case modal bandwidths"

P802.3z Draft 3.1 Comments

**Cl 38**      **SC 38.3, Table 38-1, Table P38.5**      **L 29**      # **97**  
 Bruce B. Barrow      IEEE Standards Coord

**Comment Type T**      **Comment Status A**      *global*

Regarding "micron" -- The name of this unit and the symbol "mu" were abolished by the General Conference of Weights and Measures (CGPM) in 1967, and I suppose that by now we can get rid of them.

*SuggestedRemedy*

Use the name "micrometer" and the symbol "(mu)m". Even if the industry is accustomed to terms like "50 micron multimode fiber" we need to make this change. There is no standards body in the world senior to the CGPM, an international treaty organization, and IEEE needs to follow their formal recommendations.

**Proposed Response**      **Response Status C**

ACCEPT.  
 Change the word "micron" to the concatenation of [symbol font m] and [regular font m] which should, if the gods of FrameMaker are smiling upon us that day, result in the symbol "(mu)m" that Mr. Barrow has requested.

**Cl 38**      **SC 38.3.1**      **P38.6**      **L 13**      # **96**  
 Bruce B. Barrow      IEEE Standards Coord

**Comment Type T**      **Comment Status A**      *global*

The term "baud rate" is jargon. The correct term is "signaling speed". Signaling speed is expressed in bauds or, as in your example, in gigabauds.

*SuggestedRemedy*

Make the change, globally.

**Proposed Response**      **Response Status C**

ACCEPT IN PRINCIPLE.  
 Agreed that "baud rate" is not a good term. The correct term, according to definition item 1.4.29 of IEEE 802.3u-1995 is "signaling speed".  
 Substitute the term "signaling" for the existing term "baud rate".

**Cl 38**      **SC 38.3.1**      **P38.6**      **L 19**      # **951**  
 Robert Dahlgren      Fujikura America, Inc.

**Comment Type TR**      **Comment Status R**

In Table 38.2 which describes the 1000BASE-SX optical transmitter characteristics, the maximum permitted laser spectral linewidth is: 0.85 nm, rms, maximum.

This one item precludes CD-type lasers from meeting the standard. FWIW the Fibre Channel standard FC-PH requires 4.0 nm, rms, maximum.

*SuggestedRemedy*

Increase the laser linewidth requirement to the following value: 3.0 nm, rms, maximum.

Looking at the optical physical media dependent model spreadsheet, an increase of linewidth to 3 nm would reduce 62.5 micron fiber operating distance from 260 meters to 240 meters.

**Proposed Response**      **Response Status C**

REJECT:  
 This would impact 50micron MMF solution to not meet 500m objective

Cl 38 SC 38.3.1 P 38.6 L 24 # 756

Dan Brown AMP  
 Comment Type TR Comment Status R

The -30 dBm requirement for "Launch power of off transmitter (max)" is not necessary for interoperability. If a transmitter and receiver are properly designed, there will be no false triggering of Signal Detect (SD) in the presence of relatively large continuous wave (CW) optical signals. The same comment is intended to apply for the longwave transmit characteristics as well (pg. 38.7, line 49).

*SuggestedRemedy*

Remove the "Launch power of off transmitter (max.)" parameter from Tables 38.2 and 38.5.

Proposed Response Response Status C

REJECT.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

- YES - 50
- NO - 0
- ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL,

indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions        | Signal Detect Value |
|---------------------------|---------------------|
| P_input, RX < -30 dBm (a) | FAIL                |
| Other conditions          | Unspecified         |

Examples:

- 1) Receiving a non-8B/10B encoded data stream | Unspecified
- 2) PMA on other end of link in loopback |
- 3) Other end of link undergoing POR transients |
- 4) -30 dBm < P\_input, RX < Receive power (min) |

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Receiving 8B/10B Code (b) |  
 AND |  
 Receive power (min) is < or = to | OK  
 P\_input, RX and |  
 < or = to Receive power (max) (c) |

laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD,

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

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| Receive Conditions                                                                               | Detect Value | Signal      |
|--------------------------------------------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     |              | FAIL        |
| Other conditions                                                                                 |              |             |
| Examples:                                                                                        |              |             |
| 1) Receiving a non-8B/10B encoded data stream                                                    |              | Unspecified |
| 2) Other end of link undergoing POR transients                                                   |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |              |             |
| 4) One of the differential lines is open                                                         |              |             |
| Receiving 8B/10B Code (b)                                                                        |              |             |
| AND                                                                                              |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) |              | OK          |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 38 SC 38.3.1 P 38.6 L 24 # 658  
 Mark W. Bohrer Micro Linear Corp.

Comment Type T Comment Status R

Launch power of off transmitter is specified as -30dBm. Minimum launch power is specified as -10dBm. Extinction ratio is specified as 9dB, yet the off transmitter and min launch power specs imply a 20dB extinction ratio (optical swing). The same comment applies to table 38-5. Am I missing something here?

SuggestedRemedy

Define what the terms mean in Tables 38-2 and 38-5. Make the extinction ratio specification consistent with the launch power specs, if necessary.

Proposed Response Response Status C

REJECT.  
 Problem cleared up per comment #48 resolution

CI 38 SC 38.3.1 P 38.6 L 24 # 749  
 Mark W. Bohrer Micro Linear Corp.

Comment Type T Comment Status R

Launch power of off transmitter is specified as -30dBm. Minimum launch power is specified as -10dBm. Extinction ratio is specified as 9dB, yet the off transmitter and min launch power specs imply a 20dB extinction ratio (optical swing). The same comment applies to table 38-5. Am I missing something here?

SuggestedRemedy

Define what the terms mean in Tables 38-2 and 38-5. Make the extinction ratio specification consistent with the launch power specs, if necessary.

Proposed Response Response Status C

REJECT.  
 Redundant to comment # 658

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**Cl 38 SC 38.3.1 P 38.6 L 24 # 618**  
 Jim Tatum Honeywell  
**Comment Type T Comment Status A**  
 Transmitter off specification is vague.  
**SuggestedRemedy**  
 Remove line from table. Same for table 38.5.  
**Proposed Response Response Status C**  
 ACCEPT.  
 Cleaned up per comment #48 resolution

**Cl 38 SC 38.3.1 P 38.6 L 24 # 667**  
 Vince Melendy Methode Electronics  
**Comment Type T Comment Status R**  
 The specification Launch Power of Off Transmitter (max) should be deleted. This specification is not necessary to define the operation of Signal Detect.  
**SuggestedRemedy**  
 Remove the specification Launch Power of Off Transmitter (max).  
**Proposed Response Response Status C**  
 REJECT.  
 Problem cleared up per comment #48 resolution

**Cl 38 SC 38.3.1 P 38.6 L 25 # 957**  
 Robert Dahlgren Fujikura America, Inc.  
**Comment Type T Comment Status R**  
 In Table 38.2 which describes the 1000BASE-SX optical transmitter characteristics, the mininum permitted laser extinction ratio is: 9 dB, minimum.  
 9 dB is not easily achievable for every type of laser diode at 1.25 Gbps.  
**SuggestedRemedy**  
 Decrease the extinction ratio requirement to the following value: 6 dB, minimum.  
 Looking at the optical physical media dependent model spreadsheet, the reduction of ER adds about 1.13 dB power penalty. This would reduce operating distance from 260 meters to roughly 250 meters.  
**Proposed Response Response Status C**  
 REJECT.  
 This would impact 50 micron MMF solution to not meet 500m objective

**Cl 38 SC 38.3.1 P 38.6 L 29 # 379**  
 Scott Carter IBM  
**Comment Type E Comment Status A**  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
**SuggestedRemedy**  
 uncapitalize Table, change 38.3 to 38-3  
**Proposed Response Response Status C**  
 ACCEPT.

**Cl 38 SC 38.3.1 P 38.6 L 3 # 374**  
 Scott Carter IBM  
**Comment Type E Comment Status A**  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
**SuggestedRemedy**  
 uncapitalize Table, change 38.2 to 38-2  
**Proposed Response Response Status C**  
 Identical to #379

**Cl 38 SC 38.3.1 P 38.6 L 34 # 378**  
 Scott Carter IBM  
**Comment Type E Comment Status A**  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
**SuggestedRemedy**  
 uncapitalize Table, change 38.3 to 38-3  
**Proposed Response Response Status C**  
 ACCEPT.

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**Cl 38**      **SC 38.3.1**                      **P 38.6**      **L 4**                      # **466**  
 John Bowerman                              Corning  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Footnote symbols (\*\*) at end of sentence but no noticable footnote  
**SuggestedRemedy**  
 Either reference a footnote if one has been left off or remove the symbols  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.  
 Remove the symbols

**Cl 38**      **SC 38.3.1**                      **P 38.6**      **L 4**                      # **797**  
 Tom Mathey                                      Baynetworks  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Typo: " ends sentence.  
**SuggestedRemedy**  
 End sentence with a "." instead of a ".  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

**Cl 38**      **SC 38.3.1**                      **P 38.6**      **L 4**                      # **441**  
 Steven E. Swanson                              Corning Incorporated  
**Comment Type**    **E**                      **Comment Status**    **A**  
 Incorrect symbols at end of last sentence.  
**SuggestedRemedy**  
 Replace "....as defined in 38.6.5\*\*\*" with "....as defined in 38.6.5."  
**Proposed Response**                      **Response Status**    **C**  
 ACCEPT.

**Cl 38**      **SC 38.3.1&38.4.1**                      **P 38.6&38.7**      **L 24&49**                      # **327**  
 Paul Pace                                              Sumitomo Electric  
**Comment Type**    **TR**                      **Comment Status**    **R**  
 A "Launch Power of off transmitter (max)" specification would be a new requirement to electro-optic module suppliers that would require major development and redesign that would increase module cost and delay introduction of gigabit modules to the market. The modules presently designed to meet Fibre Channel, Sonet, and other industry standards could not be used for Gigabit Ethernet applications.

**SuggestedRemedy**  
 Delete "Launch Power of off transmitter (max)" specification from Tables 38-2 and 38-5 per subclauses listed.  
**Proposed Response**                      **Response Status**    **C**  
 REJECT. Problem cleared up per comment #48 resolution  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states  
 That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
 YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.  
 The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate  
 This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL,



P802.3z Draft 3.1 Comments

indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Detect Value | Signal      |
|------------------------------------------------|--------------|-------------|
| P_input, RX < -30 dBm (a)                      |              | FAIL        |
| Other conditions                               |              |             |
| Examples:                                      |              |             |
| 1) Receiving a non-8B/10B encoded data stream  |              | Unspecified |
| 2) PMA on other end of link in loopback        |              |             |
| 3) Other end of link undergoing POR transients |              |             |
| 4) -30 dBm < P_input, RX < Receive power (min) |              |             |

|                                                                                    |  |    |
|------------------------------------------------------------------------------------|--|----|
| Receiving 8B/10B Code (b)                                                          |  |    |
| AND                                                                                |  |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) |  | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD,

laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Signal Detect Value |
|--------------------------------------------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     | FAIL                |
| Other conditions                                                                                 |                     |
| Examples:                                                                                        |                     |
| 1) Receiving a non-8B/10B encoded data stream                                                    | Unspecified         |
| 2) Other end of link undergoing POR transients                                                   |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |                     |
| 4) One of the differential lines is open                                                         |                     |
| Receiving 8B/10B Code (b)                                                                        |                     |
| AND                                                                                              |                     |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) | OK                  |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

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|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| -----                   |      |         |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| -----                   |      |         |
| Differential (Skew)     | 25   | ps      |
| -----                   |      |         |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

Cl 38 SC 38.3.1&38.4.1 P 38.6&38.7 L 24&49 # 326  
 Paul Pace Sumitomo Electric

Comment Type TR Comment Status R

A "Launch Power of off transmitter (max)" specification would be a new requirement to electro-optic module suppliers that would require major development and redesign that would increase module cost and delay introduction of gigabit modules to the market. The modules presently designed to meet Fibre Channel, Sonet, and other industry standards could not be used for Gigabit Ethernet applications.

SuggestedRemedy

Delete "Launch Power of off transmitter (max)" specification from Tables 38-2 and 38-5 per subclauses listed.

Proposed Response Response Status C

REJECT.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
 YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL,

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indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Detect Value | Signal      |
|------------------------------------------------|--------------|-------------|
| P_input, RX < -30 dBm (a)                      |              | FAIL        |
| Other conditions                               |              |             |
| Examples:                                      |              |             |
| 1) Receiving a non-8B/10B encoded data stream  |              | Unspecified |
| 2) PMA on other end of link in loopback        |              |             |
| 3) Other end of link undergoing POR transients |              |             |
| 4) -30 dBm < P_input, RX < Receive power (min) |              |             |

|                                                                                    |  |    |
|------------------------------------------------------------------------------------|--|----|
| Receiving 8B/10B Code (b)                                                          |  |    |
| AND                                                                                |  |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) |  | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD,

laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Signal Detect Value |
|--------------------------------------------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     | FAIL                |
| Other conditions                                                                                 |                     |
| Examples:                                                                                        |                     |
| 1) Receiving a non-8B/10B encoded data stream                                                    | Unspecified         |
| 2) Other end of link undergoing POR transients                                                   |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |                     |
| 4) One of the differential lines is open                                                         |                     |
| Receiving 8B/10B Code (b)                                                                        |                     |
| AND                                                                                              |                     |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) | OK                  |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description       | Value  | Unit    |
|-------------------|--------|---------|
| Type              | (P)ECL |         |
| Data Rate         | 1000   | Mbits/s |
| Clock tolerance   | +/-100 | ppm     |
| Nominal Baud Rate | 1250   | MBaud   |

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|                         |      |         |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| -----                   |      |         |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| -----                   |      |         |
| Differential (Skew)     | 25   | ps      |
| -----                   |      |         |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

Cl 38 SC 38.3.1, .4.1 P 38.6, L 24.49 # 48  
 Robert P. Friedman Molex Fiber Optics

Comment Type T Comment Status A

Dear Sirs,

Molex Fiber Optics is in support to Mr. Paul Pace's proposal to drop the D3 spec which defines, in Tables 38.2 and 38.5 Lines 24 & 49 (D3.1), "Launch Power of off Transmitter (max) of -30 dBm avg max". Mr. Paul Pace, representing Sumitomo Electric specifically requested:

>The D3 spec, as presented prior to the Maui meeting, defines 'Launch  
 >Power of off Transmitter (max) of -30dBm (max)' in Tables 38.3 & 38.8  
 >Lines 24 &19. On behalf of Sumitomo Electric, I requested that the  
 >specification be dropped completely from the D3 spec. This was not a  
 >part of the D2 spec.

Molex agrees with Sumitomo for similar reasons. Briefly from our point of view the specification would require the addition of a "transmitter off" function to be implimented in hardware, and since there is no additional pins available in the 1x9 connector, this would have to be done internal to the transceiver module. This would involve a major redesign, since the function requires the laser bias be turned off in addition to the modulation. We would like some additional comments to enlighten us (and myself in particular) on this specification and its underlying motivation.

Yours Sincerely

- Robert Friedman Sr. RF engineer on behalf of Molex Fiber Optics

*SuggestedRemedy*

Molex Fiber Optics is in support to Mr. Paul Pace's proposal to drop the D3 spec which defines, in Tables 38.2 and 38.5 Lines 24 & 49 (D3.1), "Launch Power of off Transmitter (max) of -30 dBm avg max". We would like additional input to this proposal before the next meeting in London.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Recommend adding a footnote to table 38.2 for "launch power of OFF transmitter (MAX)" that says:

Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, and activation of a "transmit disable" or other module laser shut down function. During all conditions whenever the PMA is powered the AC signal (data) into the transmit port will be valid 8/10 code (this is a requirement of the PMA and PCS layers) except for short durations during system power-on-reset (POR) or diagnostics when the PMA is placed in loopback mode.

In addition, in response to other comments, we have:

(1) made signal detect mandatory.

(2) See section 38.2.4 for a definition of the operating conditions for signal detect.

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Cl 38 SC 38.3.2 P 38.6 L 36 # 406  
 Del Hanson Hewlett Packard Comp

Comment Type T Comment Status A  
 The meaning of receiver sensitivity is not adequately defined.

SuggestedRemedy  
 Add following sentence to line 36, "Sensitivity is defined with a patch cord link at TP2 in Figure 38-1."

Proposed Response Response Status C  
 ACCEPT.

Footnote to table 38-3 and 38-6 for Rx sensitivity: "receive sensitivity is measured with a patch cord per 38.6.7."  
 At 38.6.7: replace paragraph with "Receive sensitivity (average receive power (min)) shall be measured using a worst case extinction ratio penalty while sampling at the eye center. It is measured using a patch cord between 2 and 5 meters in length."

Cl 38 SC 38.3.3 P 37.7 L 1 # 391  
 Scott Carter IBM

Comment Type E Comment Status A  
 add period at end of sentence

SuggestedRemedy  
 add period

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.3.3 P 38.6 L 52 # 1268  
 Alan Flatman LAN Technologies

Comment Type E Comment Status A  
 This subclause is addressed by subclause 38.5. It should not be necessary to forward reference another clause.

SuggestedRemedy  
 Delete subclause 38.3.3.

Proposed Response Response Status C  
 ACCEPT.  
 Also delete 38.4.3

Cl 38 SC 38.4 P 38.7 L 10 # 798  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Typo: no period at end of sentence.

SuggestedRemedy  
 Add period at end of sentence "of 2 to 3000 meters)".

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.4 P 38.7 L 10 # 443  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R  
 Add hyphen for single-mode fiber designation.

SuggestedRemedy  
 Change "singlemode" to "single-mode."

Proposed Response Response Status C  
 REJECT.  
 consistant with IEC 11801

Cl 38 SC 38.4 P 38.7 L 10 # 470  
 John Bowerman Corning

Comment Type E Comment Status R  
 Add hyphen for single-mode fiber

SuggestedRemedy  
 change to 'single-mode' from 'singlemode'

Proposed Response Response Status C  
 REJECT. Redundant to #443

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CI 38 SC 38.4 P38.7 L12 # 444  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A  
 The two notes above Table 38-4 could be confusing to a reader of the standard; rewording of the notes and combining Annexes 38B and 38D (covered in a subsequent comment) is recommended.

SuggestedRemedy  
 Delete the second note and reword the first note as follows:

"NOTE - Worst case link lengths are based on experimental data available at the time of publication. The specific method of calculation and system model parameter values can be found in Annex 38A."

Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Annex 38A was removed per resolution of comment #606  
 See Comment 418

CI 38 SC 38.4 P38.7 L20 # 256  
 Colin Mick The Mick Group

Comment Type E Comment Status R  
 Prefer minimum distance to minimum range

SuggestedRemedy

Proposed Response Response Status C  
 REJECT. Minimum distance (</=440m) is incomplete

CI 38 SC 38.4 P38.7 L5 # 370  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Table, change 38.4 to 38-4

Proposed Response Response Status C  
 ACCEPT.

CI 38 SC 38.4 P38.7 L6 # 371  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Table, change 38.4 to 38-4

Proposed Response Response Status C  
 ACCEPT.

CI 38 SC 38.4 P38.7 L8 # 469  
 John Bowerman Corning

Comment Type E Comment Status R  
 Add hyphen for single-mode fiber

SuggestedRemedy  
 change to 'single-mode' from 'singlemode'

Proposed Response Response Status C  
 REJECT. See resolution of 464

CI 38 SC 38.4 P38.7 L8 # 442  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R  
 Add hyphen for single-mode fiber designation.

SuggestedRemedy  
 Change "singlemode" to "single-mode."

Proposed Response Response Status C  
 REJECT. See 464



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CI 38 SC 38.4 P38.7 L8 - 10 # 1269  
 Alan Flatman LAN Technologies

Comment Type E Comment Status R  
 Final sentence in para 1 is unnecessary and potentially confusing.

SuggestedRemedy  
 Delete final sentence in para 1.

Proposed Response Response Status C  
 REJECT.  
 Sentence clarifies meaning of minimum range.  
 (new response as of 9/30/97)  
 We maintain the use of the term "minimum range".  
 This usage of the term "range" is consistent with that in  
 prior 802 standards.  
 Manufacturers are permitted to make compliant devices  
 which operate in excess of the "minimum range".

CI 38 SC 38.4 and Table 38-4 P38.7 L3-26 # 981  
 Ian Crayford Bay Networks, Inc.

Comment Type T Comment Status A  
 When I review the task force objectives:

11. Provide a family of Physical Layer specifications which support a link distance of:
  - a. At least 500 m on multimode fiber
13. Support media selected from ISO/IEC 11801

While I appreciate the great efforts that have been made to try to achieve the above goal, I am concerned at the commercial viability of a draft that only meets its objective for a single media type (50 micron), particularly when that media type is used in a minority of applications in North America (as I understand current backbone fiber deployment, it is predominantly 62.5/125 micron). In this case, is objective 12 met at all in North America without requirement 50 micron fiber to be deployed?

SuggestedRemedy

Proposed Response Response Status C  
 ACCEPT.  
 No. Per 802.3z meeting in Maui, HI, 802.3z agreed that the objectives had been met. Thank you for your comment.

CI 38 SC 38.4.1 P38.7 L30 # 377  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Table, change 38.5 to 38-5

Proposed Response Response Status C  
 ACCEPT.

CI 38 SC 38.4.2 P38.8 L3 # 373  
 Scott Carter IBM

Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Table, change 38.6 to 38-6

Proposed Response Response Status C  
 ACCEPT.

CI 38 SC 38.4.2 P38.8 L5 # 407  
 Del Hanson Hewlett Packard Comp

Comment Type T Comment Status A  
 The meaning of receiver sensitivity is not adequately defined.

SuggestedRemedy  
 Add following sentence to line 5, "Sensitivity is defined with a patch cord link at TP2 in Figure 38-1.

Proposed Response Response Status C  
 ACCEPT. Per Comment # 406

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**Cl 38 SC 38.5 P 38.8 L 19 # 620**  
 Myles Kimmitt 3Com  
*Comment Type T Comment Status A*  
 Normative statements on total jitter have been removed making this section inconsistent with 39.3.3.  
*SuggestedRemedy*  
 Add back bold text on total jitter and the statement declaring bold numbers are normative per section 39.3.3  
*Proposed Response Response Status C*  
 ACCEPT.

**Cl 38 SC 38.5 P 38.8 L 25 # 398**  
 Scott Carter IBM  
*Comment Type E Comment Status A*  
 remove period from end of section title  
*SuggestedRemedy*  
 remove period  
*Proposed Response Response Status C*  
 ACCEPT.

**Cl 38 SC 38.5 P 38.8 L 26 # 501**  
 Vince Melendy Methode Electronics  
*Comment Type T Comment Status R*  
 This clause on jitter does not specify the units of jitter. These should be peak to peak values.  
*SuggestedRemedy*  
 Specify the unit values.  
*Proposed Response Response Status C*  
 REJECT:  
 See "us & ps" in Table 38-7

**Cl 38 SC 38.5 P 38.8 L 28 # 372**  
 Scott Carter IBM  
*Comment Type E Comment Status A*  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
*SuggestedRemedy*  
 uncapitalize Table, change 38.7 to 38-7  
*Proposed Response Response Status C*  
 ACCEPT.

**Cl 38 SC 38.5 P 38.8 L 32 # 1270**  
 Alan Flatman LAN Technologies  
*Comment Type E Comment Status R*  
 Compliance Points unclear.  
*SuggestedRemedy*  
 Add backwards reference to figure 38-1.  
*Proposed Response Response Status C*  
 REJECT.  
 Implies need to backward reference everywhere

**Cl 38 SC 38.5 P 38.8 L 32 # 425**  
 Steve Joiner HP  
*Comment Type T Comment Status R*  
 see previous comment - repeated here  
 Random Jitter as stated in in table 38.7 is only an example of the allowed random jitter for a particular value of deterministic jitter. Having these low values for random jitter is confusing implementors. Engineers have specifically called to ask if a specific product meets these random jitter numbers.  
*SuggestedRemedy*  
 Add note to table 38.7 which states that the allowed Random jitter equals the allowed Total jitter minus the Actual Deterministic jitter at that point. Specifically state that the Random jitter numbers in the table are an example when the actual deterministic jitter is at the maximum allowed deterministic jitter.  
*Proposed Response Response Status C*  
 ACCEPT IN PRINCIPLE.  
 See Comment 424  
 Add note to jitter table stating "Total jitter is composed of both deterministic and random components. The allowed random jitter equals the allowed total jitter minus the actual deterministic jitter at that point."

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Cl 38 SC 38.5 P38.8 L 32 # 424  
 Steve Joiner Hewlett-Packard

Comment Type T Comment Status A

Random Jitter as stated in in table 38.7 is only an example of the allowed random jitter for a particular value of deterministic jitter. Having these low values for random jitter is confusing implementors. Engineers have specifically called to ask if a specific product meets these random jitter numbers.

SuggestedRemedy

Remove random jitter columns. Add note to table 38.7 which states that the allowed Random jitter equals the allowed Total jitter minus the Actual Deterministic jitter at that point.

This matches the original proposal presented to 802.3z by Steve Joiner, co-editor of the T11 Methodology for Jitter Specification technical report.

Proposed Response Response Status C  
 ACCEPT.  
 Delete 38.6.10 and associated references to it

Cl 38 SC 38.5 P38.8 L 37 # 325  
 Richard Dugan Hewlett Packard

Comment Type E Comment Status A

Table 38-7 does not show Total jitter values or compliance points in bold type, nor does it reference that bold values are normative and all others are informative.

SuggestedRemedy

Show Total jitter values and compliance points in bold type, and text:

Normative values are highlighted in bold. All other values are informative.

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.5 P38.8 L 37, 40, 43 # 408  
 Del Hanson Hewlett Packard Comp

Comment Type T Comment Status A

Total jitter at TP1, TP2, TP3, TP4 is not indicated as being normative by showing the values in BOLD

SuggestedRemedy

Make Total jitter valuse at TP1, TP2, TP3, TP4 BOLD

Proposed Response Response Status C  
 ACCEPT.  
 Correct bolding in the table to previous D3.0 release, using the numbers in the D3.1 release.

Cl 38 SC 38.5 P38.8 L 50 # 361  
 Scott Carter IBM

Comment Type E Comment Status A

There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy

change 38.7 to 38-7

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.1 P38.9 L 2 # 446  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

References to TIA documents should use publication numbers rather than designation titles.

SuggestedRemedy

Change "FOTP-127" to "TIA/EIA-455-127"

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.10 P38.11 L 10 # 454  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

"FC-PH" is poor reference for those unfamiliar with the standard.

SuggestedRemedy

Change "...FC-PH Appendix A..." to "...ANSI X3.230 FC-PH Appendix A..."

Proposed Response Response Status C  
 ACCEPT.

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Cl 38 SC 38.6.2 P38.9 L8 # 447  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 References to TIA documents should use publication numbers rather than designation titles.  
 SuggestedRemedy  
 Change "FOTP-95" to "TIA/EIA-455-95"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.3 P38.9 L13 # 448  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 References to TIA documents should use publication numbers rather than designation titles.  
 SuggestedRemedy  
 Change "OFSTP-4" to "TIA/EIA-526-4"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.4 P38.9 L21 # 449  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 "FC-PH" is poor reference for those unfamiliar with the standard.  
 SuggestedRemedy  
 Change "...FC-PH Appendix A..." to "...ANSI X3.230 FC-PH Appendix A..."  
 Proposed Response Response Status C  
 ACCEPT

Cl 38 SC 38.6.4 P38.9 L21 # 257  
 Colin Mick The Mick Group  
 Comment Type E Comment Status A  
 No citation for FC-PH  
 SuggestedRemedy  
 Provide citation in references  
 Proposed Response Response Status C  
 ACCEPT. See comment 454

Cl 38 SC 38.6.5 P38.9 L28 # 799  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo: repeated number.  
 SuggestedRemedy  
 Change from "Figure 38-38-2." to "Figure 38-2."  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.5 P38.9 L28 # 376  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
 SuggestedRemedy  
 uncapitalize Figure, remove extra "38-"  
 Proposed Response Response Status C  
 ACCEPT

Cl 38 SC 38.6.5 P38.9 L28 # 468  
 John Bowerman Corning  
 Comment Type E Comment Status A  
 Repeated figure number  
 SuggestedRemedy  
 Remove a '38-'  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.5 P38.9 L28 # 1271  
 Alan Flatman LAN Technologies  
 Comment Type E Comment Status A  
 Figure reference is incorrect.  
 SuggestedRemedy  
 Change to Figure 38-2.  
 Proposed Response Response Status C  
 ACCEPT.

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**Cl 38 SC 38.6.5 P38.9 L28 # 450**  
 Steven E. Swanson Corning Incorporated  
*Comment Type E Comment Status A*  
 Figure number is repeated.  
*SuggestedRemedy*  
 Delete first "38-"  
*Proposed Response Response Status C*  
 ACCEPT.

**Cl 38 SC 38.6.5 P38.9 L33-49 # 1220**  
 Pat Thaler Hewlett-Packard  
*Comment Type TR Comment Status A*  
 Okay, if I'm making this measurement on a signal that uses the height variability allowed by this eye, how can I identify the level for a ZERO and a ONE level so as to get the normalization done? An instruction like this can be a real bear when attempting to conformance test.  
*SuggestedRemedy*  
 The solution we adopted in 10BASE-T was to allow the normalization to be adjusted to fit the signal within the eye. I don't know if that would work here.  
*Proposed Response Response Status C*  
 ACCEPT.  
 This is already implied/allowed per the definition of normalized.

**Cl 38 SC 38.6.5 P38.9 L54 # 68**  
 Nick Esser Canoga Perkins  
*Comment Type E Comment Status A*  
 "The mask of the eye shall be measured..." is not correct. The mask is specified; it is the eye that is being measured, not the mask.  
*SuggestedRemedy*  
 Change to read, "The eye shall be measured with respect to the mask...".  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change to read, "The eye shall be measured with respect to the mask...".

**Cl 38 SC 38.6.5, 38.6.8, 38.11. P38.9, 38 L28, # 575**  
 Shimon Muller Sun Microsystems  
*Comment Type E Comment Status A*  
 Typos.  
*SuggestedRemedy*  
 Replace "38-38-2" with "38-2", "38-38-3" with "38-3" and "38-38-4" with "38-4" in specified places.  
*Proposed Response Response Status C*  
 ACCEPT.

**Cl 38 SC 38.6.5, 39.3.1, 39.3.2, P38.9, 39.4, L31, 20, 1, # 613**  
 Myles Kimmitt 3Com  
*Comment Type T Comment Status R*  
 Do the eye masks represent random jitter at 6-7 sigma as would be expected by a 'scope measurement or 14 sigma as represented by a BER of <10^-12?  
*SuggestedRemedy*  
 Eye masks should have text added stating exactly how much random jitter is represented in the eye closure.  
*Proposed Response Response Status C*  
 REJECT.  
 per 38.9 line 28 mask is not used for jitter

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Cl 38 SC 38.6.5-6 P 38.9-10 L 11-15 # 617

Robert P. Friedman Molex Fiber Optics

Comment Type T Comment Status A

I would like to edit my comment by withdrawing comment 76 and submitting a new comment.

All the text below effectively replaces comment 76 (which has replaced comment 49):

"Transmit rise/fall times shall be measured from 20 to 80% of average maximum value using a scope (with a Bessel Thompson filter) as defined in 38.6.5." The BT-4 (4th order Bessel-Thompson) low-pass filter specified has a -6dB (or -3dB half power) frequency of 0.9375 GHz which is certainly NOT SUITABLE for the measurement of 260-210 picosecond 20-80% risetimes as specified in Tables 38-2.5. A -6dB frequency of 0.9375 GHz for the BT-4 filter is suitable for a system rise/fall time measurement where the MINIMUM 20-80% rise/fall time would be greater than 335 picoseconds [ref 1,2] (provided we also employ the mathematical extraction of the BT-4 filter response).

To reinforce my point I will provide some calculations for system bandwidths: First we convert the 20-80% rise/fall times to 10-90% rise/fall times with a conversion factor k = 1.53 (Gigabit Ethernet Annex 38A, Sec. 38A.2 and ref [2])

Tr(10-90%) = k\*210 ps = 321 picoseconds,

Tr(10-90%) = k\*260 ps = 398 picoseconds

Rearranging equation 4 and 6 (Annex 38A, Sec. 38A.2 and ref[2]) and assuming a

Gaussian response rise/fall time allows us to determine the system bandwidth

BW = Cg / Tr

where Tr = (10-90%) rise/fall time, BW is the 6dB electrical bandwidth, and the conversion coefficient is Cg = 0.48 for a gaussian response.

Thus, the minimum bandwidth for the specified system rise/fall times are calculated to be:

Tr(20-80%) = 210 nanosec , Tr(10-90%) = 321 picosec, , BW = 1.4953 GHz

Tr(20-80%) = 260 nanosec , Tr(10-90%) = 398 picosec, , BW = 1.2060 GHz

Conversely consider the equivalent rise/fall time of the BT-4 filter with BW = 0.9375 GHz. A (10-90%) rise/fall time is calculated to be Tr = 512 picoseconds which translates into a (20-80%) rise/fall time of 335 picoseconds. For an example, adding the specified BT-4 filter (Tf = 335 picoseconds) into our system (Ts = 210 or 260 picoseconds) the new rise/fall time on the waveform present at the input of the digital oscilloscope is calculated from eq. 6 as:

Tc = SQRT[Tf \* Tf + Ts \* Ts] = 395 or 424 picoseconds respectively. Clearly this specified bandwidth results in a filter that does not reasonably preserve the system rise/fall time response for a time domain measurement. Further this has been recognized in Section 38.6.5 that the filter is intended for the transmitter optical eye pattern and NOT for response time as quoted in 38.6.5: "The transmit eye is not used for response time and jitter".

In Section 38.6.6 it is stated: "Measurement values should be corrected to full bandwidth". This is a questionable procedure when one considers the amount of attenuation that the significant high frequency components of a 210 to 260 picosecond system rise-time (20-80%) undergo with a 0.9375 GHz low-pass filter. The high frequency loss will add uncertainty. Consider the BT-4 and other quasi-gaussian filters amplitude response over frequency which is approximated by the simple equation [3]:

Atten(dB) = 6dB \* (f/fo \* f/fo),

where fo = 0.9375 Ghz for our case and for our minimum 6dB bandwidths calculated above

we can calculate the amplitude attenuation for significant higher frequencies:

, f = 1.2060 GHz: , Atten(dB) = 9.93 dB

, f = 1.4953 GHz: , Atten(dB) = 15.26 dB

, f = 2.0000 GHz: , Atten(dB) = 24.00 dB

Section 38.6.6 effectively forbids me from making a SIMPLE, DIRECT and ACCURATE rise-time measurement with a BT-4 (or another suitable filter with a approximate gaussian response) with a reasonable 3dB frequency bandwidth for a direct time response measurement such as:

, f(-6dB) = 3.0/T = 3.75 Ghz

(as recommended in the OFSTP-4 specification [1] for risetime measurements ) for gigabit ethernet frequencies. An equivalent BT-4 filter with a 3.75 GHz bandwidth has an equivalent 20-80% rise/fall time of 84 picoseconds which can be extracted with good accuracy. It would slightly slow down a system rise/fall time of 210 picoseconds to a composite rise/fall time of 226 picoseconds, a increase of 8%.

References used in addition to Section 38 and Annex 38A in Gigabit Ethernet

[1], OFSTP-4 ANSI/TIA/EIA-526-4-1995 Standard, pages 1, 4-7, 10, 13-15

[2], H.W. Johnson and M. Graham, High Speed Digital Design (1993) Prentice-Hall PTR, New Jersey, pages 2-3, 8-10, 399-407

[3], J.R. Andrews, "Low-Pass Risetime Filters for Time Domain Applications", Application note: AN-7, Dec. 1996, Picosecond Pulse Labs, Boulder CO. USA.

Suggested Remedy

We must specify two separate filters, and I propose we specify these filters following OFSTP-4:

(1), Rise/fall time low-pass filter

Specify a BT-4 and permit other suitable filters based on their approximate gaussian response. with a suitable rise/fall time 3dB frequency: f(-3dB) = 3.0/T = 3.75 Ghz - as recommended in the TIA/EIA-564-4 Standard OFSTP-4.

(2), Eye Pattern low-pass filter

This is the filter specified in Section 38.6.5 with a -3dB frequency: f(-3dB) = 0.75/T = 0.9375 Ghz. Again we specify a BT-4 filter or equivalent based on their approximation to a gaussian response.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Clause: 38.6.6

Optical response time specifications are based on unfiltered waveforms. Some lasers have overshoot and ringing on the optical waveforms which, if unfiltered, compromise the accuracy of the measured 20-80% response times. For the purpose of standardizing the measurement method, measured waveforms must conform to the mask defined in Figure 38-2. If a filter is needed to conform to the mask, the filter response should be backed out using the equation:

Tr,f = (tr,f\_measured^2 - Tfilter\_r,f^2)^0.5

where the filter may be different for rise and fall. The fourth-order Beseel Thompson filter defined in 38.6.5 may be a convenient filter for this measurement, however, its low bandwidth adversely impacts the accuracy of the Tr,f measurement.

Clause 38.6.5:

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Insert on line 10 of page 38.10:

"Note: The BT-4 filter is reactive. In order to suppress high frequency ringing, a 6dB attenuator should be used at the BT-4 filter input.

CI 38 SC 38.6.6 P38.10 L 11 # 422  
Jonathan Thatcher IBM

Comment Type T Comment Status A

It is not necessary to use a BT filter to measure the fall time on most lasers. These can typically be measured directly.

*SuggestedRemedy*

Optical rise and fall time measurements can be done directly if the rise and fall time signal does not violate the eye mask defined in 38.6.5 (this does not necessarily require the use of the BT filter). If a filter is required in order to pass either the top or the bottom of the eye mask, that same filter should be used to measure the respective rise or fall times. If necessary, the measurement can be corrected by mathematically "backing out" the filter.

Proposed Response Response Status C

ACCEPT.  
Resolved per comment #617

CI 38 SC 38.6.6 P38.10 L 11-16 # 76  
Robert P. Friedman Molex Fiber Optics

Comment Type T Comment Status A

I would like to edit comment 49 before the London meeting, based on Dr. Howard Frazier's recommendation.

I withdraw my previous comment on this issue (comment number 49), and I submit the following comment on the same issue.

, "Transmit rise/fall times shall be measured from 20 to 80% of average maximum value using a scope as defined in 38.6.5." The BT-4 (4th order Bessel-Thompson) low-pass filter specified has a -3dB frequency of 0.9375 GHz which is suitable for risetimes of approximately 400 picoseconds at best but certainly not for 260-210 picosecond risetimes (Table 38-2,5). Section 38.6.5 implies in the note that the specified BT-4 filter is for purposes of smoothing out the response and not to represent the noise filter within the optical filter (which I interpret to mean it is not meant to be a matched filter for minimum noise and distortion for an accurate rise/fall time measurement and therefore must be a smoothing filter for eye pattern measurement).

, "Measurement values should be corrected to full bandwidth." I have more trouble with this single line than any other in D3.1 38. If I have removed the high frequency components of a 210 to 260 picosecond risetime with a 937.5 MHz low-pass filter where my measurement waveform has a risetime around 400 picoseconds after filtering, then extraction of the device under test response will be uncertain and useless. This sentence effectively forbids me from making a direct and accurate rise-time measurement with a BT-4 with a suitable -3dB frequency for a rise/fall time measurement  $f_{-3dB} = 3.0/T = 3.75$  Ghz - as recommended in the TIA/EIA-564-4 Standard OFSTP-4 specification.

, In addition the filters should be specified based on their approximate gaussian response, to permit other suitable filters with a approximate gaussian response. The BT-4 as a reactive filter reflects rejected power and must be padded to suppress high frequency ringing with typically a 6dB or at least a 3dB attenuator.

*SuggestedRemedy*

We must specify two separate filters:

(1), Rise/fall time low-pass filter

Specify a BT-4 and permit other suitable filters based on their approximate gaussian response. with a suitable rise/fall time -3dB frequency -  $f_{-3dB} = 3.0/T = 3.75$  Ghz - as recommended in the TIA/EIA-564-4 Standard OFSTP-4.

(2), Eye Pattern low-pass filter

This is the filter specified in Section 38.6.5 with a -3dB frequency  $f_{-3dB} = 0.75/T = 0.9375$  Ghz. Again we specify a BT-4 filter or equivalent based on their approximation to a gaussian response.

In addition the BT-4 filter is a reactive filter and reflects rejected power. In practice one must add a matched attenuator, typically 6dB to suppress ringing caused by high frequency reflections. These filters should have a return loss specification. Perhaps 15db over the filter band and 12db for immediate frequencies above the band

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for both types of filters - 1&2.

*Proposed Response*      *Response Status* **Z**  
 Withdrawn per Comment 617

**CI 38**      **SC 38.6.6**      **P 38.10**      **L 13-15**      # **49**  
 Robert P. Friedman      Molex Fiber Optics

*Comment Type*    **T**      *Comment Status*    **A**

"Transmit rise/fall times shall be measured from 20 to 80% of average maximum value using a scope as defined in 38.6.5."

The BT-4 (4th order Bessel-Thompson) low-pass filter specified has a -3dB frequency of 0.9375 GHz which is suitable for risetime of 350-400 picoseconds at best but certainly not for 260-210 picosecond risetimes (Table 38-2,5). Section 38.6.5 implies in the note that the specified BT-4 filter is for purposes of smoothing out the response and not to represent the noise filter within the optical filter (which I interpret as a matched filter for minimum noise and distortion for accurate rise/fall time measurement.

"Measurement values should be corrected to full bandwidth" I have more trouble with this single line than any other in D3.1 38. If I have removed the high frequency components of a 210 to 260 picosecond rise-time with a 937.5 MHz low-pass filter where my measurement waveform is only 350-400 picoseconds, then extraction of the BT-4 response will be uncertain and useless. This sentence effectively forbids me from making a direct and accurate rise-time measurement with a BT-4 (and permit other suitable filters with a approximate gaussian response, the BT-4 as a reactive filter reflects rejected power and must be padded to suppress high frequency ringing!) with a reasonable -3dB frequency - f-3dB = 3.0/T = 3.75 Ghz - as recommended in the Fibre Channel specification. This is nonsense

*SuggestedRemedy*

Specify a BT-4 (and permit other suitable filters with a approximate gaussian response, the BT-4 as a reactive filter reflects rejected power and is not perfect!) with a with a reasonable -3dB frequency - f-3dB = 3.0/T = 3.75 Ghz - as recommended in the Fibre Channel specification. I have just started observing and I wish I was a voter to stop this terrible clause! Please respond.

*Proposed Response*      *Response Status* **Z**

Withdrawn by request of commenter, and replaced by comment 76.

**CI 38**      **SC 38.6.7**      **P 38.10**      **L 19**      # **612**  
 Myles Kimmitt      3Com

*Comment Type*    **T**      *Comment Status*    **R**

Receiver sensitivity should be measured using worst case transmitter rise and fall times as well as extinction ratio to guarantee 7dB link budget under worst case conditions.

*SuggestedRemedy*

Add "and using worst case transmitter rise and fall times" to end of sentence in 38.6.7.

*Proposed Response*      *Response Status*    **C**

REJECT.

While this is a good idea, there is no practical way to implement. The impairments for worst case waveforms are already included in the link budget penalties.

**CI 38**      **SC 38.6.8**      **P 10**      **L 27**      # **22001**  
 Bob Grow

*Comment Type*    **E**      *Comment Status*    **A**

The abbreviation PRBS is used in .3z without a definition. (Resubmission of 1101.)

*SuggestedRemedy*

Add definition or at least add to abbreviations section: Psuedorandom bit sequence?

*Proposed Response*      *Response Status*    **C**

ACCEPT.

P38.10/27 Change "PRBS" to read "PRBS (pseudo-random bit sequence)"

**CI 38**      **SC 38.6.8**      **P 38.10**      **L 24**      # **451**  
 Steven E. Swanson      Corning Incorporated

*Comment Type*    **E**      *Comment Status*    **A**

"FC-PH" is poor reference for those unfamiliar with the standard.

*SuggestedRemedy*

Change "...FC-PH Appendix A..." to "...ANSI X3.230 FC-PH Appendix A..."

*Proposed Response*      *Response Status*    **C**

ACCEPT



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Cl 38 SC 38.6.8 P 38.10 L 26 # 64  
 Nick Esser Canoga Perkins  
 Comment Type E Comment Status A  
 "References to use of the Bessel-Thompson filter should substitute in the BT filter defined in this clause (see 38.6.5)" uses poor grammar. One does not "substitute (something) in." This is redundant.  
 SuggestedRemedy  
 Change sentence to read, "References to use of the Bessel-Thompson filter should substitute use of the BT filter defined in this clause (see 38.6.5)."  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.8 P 38.10 L 26 # 63  
 Nick Esser Canoga Perkins  
 Comment Type T Comment Status A  
 "References to use of the Bessel-Thompson filter should substitute in the BT filter defined in this clause (see 38.6.5)" does not mandate the use of the BT filter, due to the use of the word "should."  
 SuggestedRemedy  
 Replace the word "should" with "shall."  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Replace Bessel-Thompson filter should substitute in" with  
 "Bessel-Thompson filter shall substitute use of"  
 Insert PIC OR-X between OR-10 and OR-11.  
 ITEM Feature S/C Status Support Value/Comment  
 OR-X Total Jitter 38.6.8 M Yes[ ] Reference BT filter  
 measurement For jitter measurement  
 Conditions

Cl 38 SC 38.6.8 P 38.10 L 29 # 1272  
 Alan Flatman LAN Technologies  
 Comment Type E Comment Status A  
 "clock recover unit ("golden PLL") does not make sense. Forgive my ignorance, but what is a "golden PLL"?  
 SuggestedRemedy  
 Replace with "clock recovery unit" and add any necessary qualification more clearly.  
 Proposed Response Response Status C  
 ACCEPT.  
 change "golden PLL" to " commonly referred to in the industry as a 'golden PLL' ".  
 Also correct "clock recover" to "clock recovery"

Cl 38 SC 38.6.8 P 38.10 L 30 # 473  
 John Bowerman Corning  
 Comment Type E Comment Status A  
 Repeated figure number  
 SuggestedRemedy  
 Remove a '38-'  
 Proposed Response Response Status C  
 ACCEPT

Cl 38 SC 38.6.8 P 38.10 L 30 # 409  
 Del Hanson Hewlett Packard Comp  
 Comment Type E Comment Status A  
 Figure 39-38-3 in improperly referenced  
 SuggestedRemedy  
 Change Figure 39-38-3 to Figure 39-3  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.8 P 38.10 L 30 # 452  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 Figure number is repeated.  
 SuggestedRemedy  
 Delete first "38-"  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.8 P 38.10 L 30 # 380  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.  
 SuggestedRemedy  
 uncapitalize Figure, remove extra "38-"  
 Proposed Response Response Status C  
 ACCEPT.

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Cl 38 SC 38.6.8 P 38.10 L 30 # 1273  
 Alan Flatman LAN Technologies  
 Comment Type E Comment Status A  
 Figure reference is incorrect.  
 SuggestedRemedy  
 Change to Figure 38-3.  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.8 P 38.10 L 30 # 800  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo: repeated number.  
 SuggestedRemedy  
 Change from "Figure 38-38-3." to "Figure 38-3."  
 Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 38.6.8 P 38.9 L 13 # 757  
 J. Paul Benson, Jr. Lucent Technologies  
 Comment Type T Comment Status A  
 OFSTP-9 is considered to be the reference method for extinction ratio measurement, while OFSTP-4 is a method for "estimating" extinction ratio.  
 SuggestedRemedy  
 Identify OFSTP-9 as the extinction ratio test method. OFSTP-4 could be mentioned as a less accurate option.  
 Proposed Response Response Status Z  
 The commenter has withdrawn this comment.

Cl 38 SC 38.6.9 P 38.11 L 1 # 453  
 Steven E. Swanson Corning Incorporated  
 Comment Type E Comment Status A  
 "FC-PH" is poor reference for those unfamiliar with the standard.  
 SuggestedRemedy  
 Change "...FC-PH Appendix A..." to "...ANSI X3.230 FC-PH Appendix A..."  
 Proposed Response Response Status C  
 ACCEPT

Cl 38 SC 38.7.3 P 38.11 L 38-42 # 493  
 Mark Nowell HP Labs  
 Comment Type T Comment Status R  
 The 802.3 standard does not cover or specify installation.  
 SuggestedRemedy  
 Remove this subclause.  
 Proposed Response Response Status C  
 REJECT:  
 This is common practice in 802

Cl 38 SC 38.8 P 38.11 L 4642 # 495  
 Mark Nowell HP Labs  
 Comment Type T Comment Status A  
 I have a number of points about this subclause.  
 It could be argued that the life of a product ends when it stops meeting the normative specifications in this clause. This makes this statement redundant.  
 Do we need to recommend what manufacturers include in their documentation?  
 If specific requirements regarding temperature, humidity and handling are beyond the scope of this standard why are they discussed?  
 SuggestedRemedy  
 Remove from this subclause all text except 38.8.1 (Electromagnetic Emission).  
 Remove corresponding PICs entry OR-17 (pg 38.20 line 24)  
 Proposed Response Response Status Z

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CI 38 SC 38.8 P 38.11 L 4642 # 494  
 Mark Nowell HP Labs

Comment Type T Comment Status A

I have a number of points about this subclause.

It could be argued that the life of a product ends when it stops meeting the normative specifications in this clause. This makes this statement redundant.

Do we need to recommend what manufacturers include in their documentation?

If specific requirements regarding temperature, humidity and handling are beyond the scope of this standard why are they discussed?

SuggestedRemedy

Remove from this subclause all text except 38.8.1 (Electromagnetic Emission).

Proposed Response Response Status Z

Withdrawn per commenter. Comment 495 is the correct version of the comment.

CI 38 SC 38.9 P 38.12 L 24 # 66  
 Nick Esser Canoga Perkins

Comment Type T Comment Status A

Data rate capability should be expressed in Gbits/sec (1), not Gbd (1.25). Such a labelling requirement would generate confusion in the marketplace. It is the system-level data rate that is known to the user, not the underlying raw data rate.

SuggestedRemedy

Change "Gbd" to "Gb/s" (or whatever the currently acceptable abbreviation for "gigabits per second" is.)

Proposed Response Response Status C

ACCEPT.  
 Replace item a) on line 25 of page 38.12 with "a) 1000BASE-SX or 1000BASE-LX" and remove line b).

CI 38 SC 38.9 P 38.12 L 25 # 98  
 Bruce B. Barrow IEEE Standards Coord

Comment Type T Comment Status A

Data rate is expressed in bits per second. This specification cites GBd, and I assume that what is meant is signaling speed.

SuggestedRemedy

Make it "Signaling speed capability in GBd" or "Data rate in Gb/s", whichever is intended.

Proposed Response Response Status C

ACCEPT.  
 Replace item a) on line 25 of page 38.12 with "a) 1000BASE-SX or 1000BASE-LX" and remove line b).

CI 38 SC 38B, 38B.1, 38B.2 P 38.26, 38.27 L 7, 3, # 576  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Table numbers have been omitted from the text.

SuggestedRemedy

Replace "Table" with "Table 38B-1", "Table 38B-2" and "Table 38B-3" respectively in specified places.

Proposed Response Response Status C

ACCEPT.

CI 38 SC 38D.1 P 38.30 L 14, 16 # 411  
 Del Hanson Hewlett Packard Comp

Comment Type T Comment Status A

It is not correct to state that "the EMB in not a reliable value ...". It is the OFL Modal Bandwidth which is not a reliable value.

SuggestedRemedy

Change "EMB" in lines 14 and 16 to "OFL modal bandwidth"

Proposed Response Response Status C

ACCEPT.

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Cl 38 SC 38D.1, 38D.6, 38D.6 P 38.30, 38. L14, 2 # 577  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 Typos.

SuggestedRemedy

Replace all references to 38E with the corresponding references to 38D, in specified places.

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 39.3.3 P L # 1276  
 Jonathan Thatcher IBM

Comment Type E Comment Status A global

A global search needs to be conducted for "shall" statements within the notes in both cls 38 and cls 39. If we need the shall, then we take it out of the note and put it in the text.

SuggestedRemedy

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 39.3.3 P 39.7 L 13 # 415  
 Jonathan Thatcher IBM

Comment Type E Comment Status A

Per editors note in D3.1, Table 39-4 should include one additional digit of accuracy so that the round off error matches clause 38.

SuggestedRemedy

See comment

Proposed Response Response Status C  
 ACCEPT.

Cl 38 SC 4 P 38.7 L 12 # 143  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

We never quite mention what minimum fiber modal bandwidth is assumed in Table 38-4.

SuggestedRemedy

Add a footnote pointing the reader to Table 38-8 on page 38.13.

Proposed Response Response Status C  
 REJECT.

Bandwidth is specified elsewhere. Operating range is determined by every parameter, definition, and test method specified in this clause.

Cl 38 SC 4.2 P 38.8 L 4-5 # 144  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type T Comment Status R

The last sentence isn't quite a sentence. Nor can I tell what it means. Some words are missing. I have guessed what they are, as shown in the remedy below, but that leads to a question: Why does sampling at the eye center cause the receive penalty to include the extinction ratio? This appears to be a non sequiter. Isn't the answer simply that the receiver sensitivity is tested with a signal of the specified 9-dB extinction ratio, a matter of choosing where to take the hit? The receiver chooses the optimum sampling instant, so the location of the sampling instant is of no direct consequence.

SuggestedRemedy

Figure out what the correct technical answer is. If the current theory (expressed in this section) is correct, change to read: "The sampling instant is taken to occur at the eye center. The receive sensitivity inherently includes the extinction ratio penalty."

Proposed Response Response Status C  
 REJECT.  
 Redundant with comment 141. See also 38.6.7

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Cl 38 SC 5 P38.8 L33-47 # 145  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type T Comment Status R

Table 38-7 is both confusing and wrong. Confusing because nowhere is it stated that ordinary sums work horizontally, but not vertically. The vertical sums instead follow the "square root of the sum of the squares" rule. When one tries to generate the table values from one another, the picosecond values don't work, because of roundoff to too few digits. The UI values do appear to check, although I didn't check all values.

SuggestedRemedy

Add nearby text explaining the arithmetic of the table, and stating that the UI values are primary, and that the picosecond values were generated from the UI values. Provide at least three and perhaps four significant digits all around, to make the roundoff problems insignificant.

Proposed Response Response Status C

REJECT.

It is not the intent of the working group to explain the sources or history of the various specifications. This has been done in some instances to the degree that future work on this standard requires a minimum "sprinkling of crumbs" to assist future standards writers.

In no case are we attempting to write a textbook or design manual. Attention is focused strictly on creating a specification which provides for interoperability. In all cases, it is assumed that the reader/implementer is skilled in the art.

In addition, the random component (which adds as the RMS sum) has been removed from the table and replaced with a footnote to clarify its interaction with the other jitter components.

Cl 38 SC 6.1 P38.9 L4 # 146  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type T Comment Status R

Do we need to specify the (minimum?) length of the "random 8B/10B pattern"? Does the pattern need to be a legal FC-PH pattern, or can it be truly random?

SuggestedRemedy

Specify the minimum or maximum length of the pattern, and if it must be a legal PC-PH pattern.

Proposed Response Response Status C

REJECT.  
 but...

There is no length requirement. It would be absurd to have to include the word "legal" with every reference in the standard. "Legal" must be assumed. Globally, in clauses 38 and 39, "8B/10B pattern" should be replaced "encoded 8B/10B pattern." Ditto "8B/10B code" or other. In all cases it is encoded.

Cl 38 SC 6.10 P38.11 L14-15 # 154  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

Huh? What does the last sentence mean? Specifically, what is the "synthesizer repetition rate"? Is this the rate at which the BERT pattern repeats, rather than the bitrate?

SuggestedRemedy

Expand and clarify this sentence. Be sure all terms are defined in Clause 1, or explained here in Clause 38.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 References to random jitter were removed per resolution of comment #424

Cl 38 SC 6.3 P38.9 L17 # 147  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type T Comment Status A

Why make every reader do the arithmetic? We should complete the thought.

SuggestedRemedy

Complete the sentence as follows: "... baud rate, which is a 250-MHz square wave".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 Add in the text but use the correct number of 125 MHz square wave.  
 Also replace "will be" with "is", and change "baud rate" with "signalling rate".

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**Cl 38 SC 6.5 P38.9 L28 # 148**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type E Comment Status A**  
 Figure number is wrong, the "38-" appearing twice.  
**SuggestedRemedy**  
 Fix figure number.  
**Proposed Response Response Status C**  
 ACCEPT.  
 Remove the extra -38 from the figure reference in line 28.

**Cl 38 SC 6.6 P38.10 L14-15 # 149**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type TR Comment Status A**  
 We say that the measurement values should be corrected to the full bandwidth, but fail to specify exactly how this shall be done. Everybody will do it a little bit different, or even fail to do it at all.

**SuggestedRemedy**  
 Specify exactly how to correct measurement values to the full bandwidth.  
**Proposed Response Response Status C**  
 ACCEPT IN PRINCIPLE.  
 See comment 617, which reads:  
 Replace Clause: 38.6.6 with  
 Optical response time specifications are based on unfiltered waveforms. Some lasers have overshoot and ringing on the optical waveforms which, if unfiltered, compromise the accuracy of the measured 20-80% response times. For the purpose of standardizing the measurement method, measured waveforms shall conform to the mask defined in Figure 38-2. If a filter is needed to conform to the mask, the filter response should be backed out using the equation:  

$$Trise,fall = (Trise,fall\_measured^2 - Trise,fall\_filter^2)^{0.5}$$
 where the filter may be different for rise and fall. Any filter should have an impulse response equivalent to a fourth order Bessel-Thompson filter. The fourth-order Bessel-Thompson filter defined in 38.6.5 may be a convenient filter for this measurement, however, its low bandwidth adversely impacts the accuracy of the Tr,f measurement.  
 Clause 38.6.5:  
 Insert on line 10 of page 38.10:  
 "Note: The BT-4 filter is reactive. In order to suppress reflections, a 6dB attenuator may be required at the BT-4 filter input.

**Cl 38 SC 6.7 P38.10 L19-20 # 150**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type TR Comment Status R**  
 We fail to specify if the receiver sensitivity shall be measured with a distorted input signal, or merely an attenuated replica of the transmitted signal. This paragraph allows use of attenuated but undistorted signals, an unrealistic situation. It should be a both distorted and attenuated signal, not simply attenuated, as distortion is real-world.

**SuggestedRemedy**  
 Expand receiver sensitivity measurement requirement to require a specified kind and significant amount of distortion, in addition to the extinction ratio penalty and attenuation. At the very least, significant modal distortion should be present. Chromatic distortion can probably be neglected.  
**Proposed Response Response Status C**  
 REJECT.  
 Penalties are built into the budget. Only extinction ratio needs to be used during receive sensitivity testing.

**Cl 38 SC 6.8 P38.10 L25-26 # 151**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type E Comment Status A**  
 When I first read this sentence, I couldn't tell who did what to who. On third reading, I see the problem is the phrase "substitute in". If this is replaced with the word "use", the meaning becomes clear.

**SuggestedRemedy**  
 Replace the phrase "substitute in" with the word "use".  
**Proposed Response Response Status C**  
 ACCEPT.  
 Per comments 63, 64

**Cl 38 SC 6.8 P38.10 L30-31 # 152**  
 Joe Gwinn Raytheon, Sudbury, M  
**Comment Type E Comment Status A**  
 In line 30, the figure number is incorrect.  
 In line 31, "roll off" should be one word.

**SuggestedRemedy**  
 Fix as indicated.  
**Proposed Response Response Status C**  
 ACCEPT.

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Cl 38 SC 6.9 P38.11 L6 # 153  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

There are some missing words in the last sentence.

SuggestedRemedy

Change to read as follows: "... should have a frequency of 1/20th of ...".

Proposed Response Response Status C

ACCEPT.

Change to read: "... should have a frequency equivalent to 1/20th of the signaling speed."

Cl 38 SC 7.2 P38.11 L29 # 155  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A

On line 29, Adjacent hyphens were used where an em dash (long dash) is indicated. On line 32, "geographies" was used to mean "geographic regions".

SuggestedRemedy

Replace adjacent hyphens with an em dash (long dash). Replace "geographies" with "geographic regions".

Proposed Response Response Status C

ACCEPT.

Cl 38 SC 9 P38.12 L25-27 # 156  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A

In the list of required label information, the required/expected fiber type or types (50 micron or 62.5 micron MMF, SMF) is not listed. It matters, as one for instance generally cannot use a MMF transmitter for SMF fiber.

SuggestedRemedy

Add an item for expected fiber type.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Insert a new line between b) and c) to line 27, page 38.12 stating " if 1000BASE-SX, include 62.5 um MMF, 50 um MMF"

Cl 38 SC A.1 P38.21-38.25 L # 1153  
 Jim Mangin Bay Networks

Comment Type E Comment Status R

The optical link budget calculations furnished as Annex 38 A appear to have been lifted from someone's presentation(s) and are not up to editorial standards for technical publication in terms of completeness, clarity, and consistency of style with the rest of the standard.

One can argue that "it's a standard, not a tutorial", but in this case many of the numbers in various tables were calculated from the equations in this annex. Since there are various ways to do these calculations (including initial assumptions made) I think that it is appropriate to put the actual math in the annex because you cannot simply reference any standard method to get the 802.3z table data.

SuggestedRemedy

Clean up the document and furnish the actual math in the annex.

Proposed Response Response Status C

REJECT.

See response #145

Cl 38 SC Annex 38A, B, C, and D P38.21 L1 # 461  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R

For additional clarification, I recommend restructuring the contents of the Annexes to include information in its proper placement. As written now, Annex 38B provides link model parameter values which is the subject of Annex 38A and the Table of EMB vs. link length is provided prior to defining EMB (which is contained in 38D).

SuggestedRemedy

Restructure the Annexes as follows:

38B.1 becomes 38A.11

38B.2 becomes 38A.12

38A.11 becomes 38A.13

Annex 38D becomes Annex 38B

The text and Table on Effective modal bandwidth v link length follows the text currently in 38D.1.

Proposed Response Response Status C

REJECT.

We do not wish tomix modal with data/measurments.

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Cl 38 SC Annex 38A,B,C, and D P38.21 L1 # 413  
 Gregory E. Smith Corning

Comment Type E Comment Status R

For additional clarification, I recommend restructuring the contents of the Annexes to include information in its proper placement. As written now, Annex 38B provides link model parameter values which is the subject of Annex 38A and the Table of EMB vs. link length is provided prior to defining EMB (which is contained in 38D).

SuggestedRemedy

Restructure the Annexes as follows:

- 38B.1 becomes 38A.11
- 38B.2 becomes 38A.12
- 38A.11 becomes 38A.13
- Annex 38D becomes Annex 38B
- The text and Table on Effective modal bandwidth v link length follows the text currently in 38D.1.

Proposed Response Response Status C

REJECT.  
 Duplicate of 461

Cl 38 SC Annex 38B P38.26 L5, 8, 14, # 410  
 Del Hanson Hewlett Packard Comp

Comment Type T Comment Status R

Defining this table in terms of "Effective Modal Bandwidth (EMB)" is not useful to the user since the actual laser in the transceiver (which is a condition of defining EMB) will not be used to characterize the fiber modal bandwidth in order to project an extended link length.

SuggestedRemedy

Change "Effective Modal Bandwidth" in lines 5, 8, 14, 18 to "Worst Case Modal Bandwidth" so that the test method in Annex 38D is applied to evaluate the expected length.

Proposed Response Response Status C

REJECT.  
 Annex 38B was removed per comment #608

Cl 38 SC Annex 38D P38.30 L18 # 414  
 Gregory E. Smith Corning

Comment Type E Comment Status A

There is no definition for OFL; defining OFL would make the Annex more complete

SuggestedRemedy

Add a new paragraph defining Overfilled Launch (OFL) as follows:

"38D.1 Overfilled Launch (OFL)

Overfilled launch (OFL) is the standard launch used to define optical fiber bandwidth. This launch uniformly overfills the fiber both angularly and spatially. It excites both radial and azimuthal modes of the fiber equally, thus providing a reproducible bandwidth which is insensitive to small misalignments of the input fiber. It is also relatively insensitive to microbending and macrobending when they are not sufficient to affect power distribution carried by the fiber. A restricted launch gives a less reproducible bandwidth number and is dependent on an exact definition of the launch."

Proposed Response Response Status C

ACCEPT. Implement changes per the suggested remedy.

Also change title:  
 Modal Bandwidth and Launch Conditions

Also added reference to TIA-455-54A in the description for Overfilled Launch.

Add phrase after third sentence "this method is commonly used to measure the bandwidth of LED-based links.

38.4.3 Worst case 1000BASE-LX power budget and link penalties (informative)

PARAMETER, UNIT, 50µm MMF, 62µm MMF, 10µm SMF  
 Optical Power Budget, dB, 7.5, 7.5, 5.5  
 Operating Distance, m, 550, 440, 3000  
 Wavelength, nm, 1270, 1270, 1270  
 Channel Insertion Loss, dB, 2.35, 2.18, 3.54  
 Link Power Penalties, dB, 4.55, 5.32, 1.20  
 Margin in Link Power, dB, 0.60, 0.00, 0.76  
 Budget

38.3.3 Worst case 1000BASE-SX power budget and link penalties (informative)

PARAMETER, UNIT, 50µm MMF, 62µm MMF,  
 Optical Power Budget, dB, 7.0, 7.0,  
 Operating Distance, m, 550, 260,  
 Wavelength, nm, 830, 830,  
 Channel Insertion Loss, dB, 3.56, 2.47,  
 Link Power Penalties, dB, 2.86, 4.41,  
 Margin in Link Power, dB, 0.58, 0.12,



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Budget

CI 38 SC Annex 38D P 38.30 L 18 # 462

Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

There is no definition for OFL; defining OFL would make the Annex more complete.

SuggestedRemedy

Add a new paragraph defining Overfilled Launch (OFL) as follows:

"38D.1 Overfilled Launch (OFL)

- > Overfilled launch (OFL) is the standard launch used to define optical
- > fiber bandwidth. This launch uniformly overfills the fiber both
- > angularly and spatially. It excites both radial and azimuthal modes of
- > the fiber equally, thus providing a reproducible bandwidth which is
- > insensitive to small misalignments of the input fiber. It is also
- > relatively insensitive to microbending and macrobending when they are
- > not sufficient to affect power distribution carried by the fiber. A
- > restricted launch gives a less reproducible bandwidth number and is
- > dependent on an exact definition of the launch."
- >

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
Duplicate of #414

CI 38 SC Annex 38D P 38.31 L 27 and 45 # 463

Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

There are two references to 38E.

SuggestedRemedy

Change the reference to correctly reflect the Annex.

Proposed Response Response Status C

ACCEPT.

CI 38 SC Annex D P 38.30 L 5 # 380002

Jonathan Thatcher

Comment Type E Comment Status A

Title not clear

SuggestedRemedy

Modify title of annex D on page 38.30 line 5 to read: "Worst case modal bandwidth and radial overfilled launch" Also, delete lines 8-16, the entire subclause on effective modal bandwidth. (see comment 414)

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
Title of clause 38D changed to "Modal bandwidth and launch conditions".  
Two subclauses in this annex document WCMB and ROFL.

CI 38 SC Table 38-1 P 38.5 L 27 # 467

John Bowerman Corning

Comment Type E Comment Status R

I was confused by the minimum range. I assume (probably incorrectly) that this refers to the minimum operating range but wasn't sure.

SuggestedRemedy

My assumption is that this refers to minimum operating range so I suggest that it be changed from 'Minimum Range' to 'Minimum Operating Range'

Proposed Response Response Status C

REJECT.  
(new response as of 9/30/97)  
We maintain the use of the term "minimum range".  
This usage of the term "range" is consistent with that in prior 802 standards.  
Manufacturers are permitted to make compliant devices which operate in excess of the "minimum range".

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Cl 38 SC Table 38-1 P 38.5 L 27 # 440  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

Minimum range is confusing.

*SuggestedRemedy*

Change "Minimum range" to "Minimum operating range."

Proposed Response Response Status C

REJECT.

(new response as of 9/30/97)

We maintain the use of the term "minimum range".

This usage of the term "range" is consistent with that in prior 802 standards.

Manufacturers are permitted to make compliant devices which operate in excess of the "minimum range".

Cl 38 SC Table 38-2 P 38.6 L 24 # 621  
 Bryan R. Gregory Molex Fiber Optics

Comment Type TR Comment Status R

I believe that the addition of a "maximum off" launch power requirement to the spec at this time would cause problems for most of the optical transceiver manufacturers. I would like this line removed. I feel that these problems would include:

1) Increase in the cost of optical transceivers --- Besides the basic cost increase that the additional circuitry would incur, the Gigabit Ethernet transceiver would be substantially different from the Fibre Channel devices. This segmentation of the physical layer transceiver market would drive up costs.

2) Substantial re-design problems for manufacturers of Optical Transceiver modules --- Most manufacturers are in the final stages of releasing these products. This technical requirement would cause significant delays in the release of these products. This would detrimentally affect the general gigabit ethernet market and the timely release of systems.

3) Problems with existing systems --- Most system and NIC manufacturers have already designed their optical interfaces. Making them re-qualify new devices would be a burden. (Note: In order to add the off power requirement, the basic transceiver drive circuitry would probably have to change. In most cases, this changed product would have to be treated as a new device or a significant re-design by the systems and NIC manufacturers -- hence requiring requalification and new expensive EMI testing).

4) Specific problems for 1x9 Form Factor -- This style of module does not have space or additional pins to enable this functionality.

I feel that the specification provides acceptable performance without the addition of this line in the specification.

*SuggestedRemedy*

Remove line 24 on page 38.6, which states:

"Launch power of off transmitter (max) -30 dBm, avg."

Proposed Response Response Status C

REJECT.

This problem should go away with the change of the Signal\_detect function from optional to mandatory.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50

NO - 0

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ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
 A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the

receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                 | Signal       |
|------------------------------------------------------------------------------------|--------------|
|                                                                                    | Detect Value |
| P_input, RX < -30 dBm (a)                                                          | FAIL         |
| Other conditions                                                                   |              |
| Examples:                                                                          |              |
| 1) Receiving a non-8B/10B encoded data stream                                      | Unspecified  |
| 2) PMA on other end of link in loopback                                            |              |
| 3) Other end of link undergoing POR transients                                     |              |
| 4) -30 dBm < P_input, RX < Receive power (min)                                     |              |
| Receiving 8B/10B Code (b)                                                          |              |
| AND                                                                                |              |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK           |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description       | 50 mm and 62.5 mm MMF value | Unit |
|-------------------|-----------------------------|------|
| Transmitter type  | Shortwave Laser             |      |
| Baud rate (range) | 1.25 +/- 100 ppm            | GBd  |

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|                                         |                  |          |
|-----------------------------------------|------------------|----------|
| Wavelength (l, range)                   | 770 to 860       | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26             | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21             | ns       |
| Spectral width (max)                    | 0.85             | ns, RMS  |
| Launch power (max)                      | See footnote (a) | dBm, avg |
| Launch power (min)                      | -10              | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30              | dBm, avg |
| Extinction ratio (min)                  | 9                | dB       |
| RIN (max)                               | -117             | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

|                     |                  |          |
|---------------------|------------------|----------|
| Description         | Value            | Unit     |
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled

continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                             | Signal       |
|----------------------------------------------------------------|--------------|
|                                                                | Detect Value |
| VINPUT, RX < 200 mV(p-p) (a)                                   | FAIL         |
| Other conditions                                               |              |
| Examples:                                                      |              |
| 1) Receiving a non-8B/10B encoded data stream                  | Unspecified  |
| 2) Other end of link undergoing POR transients                 |              |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |              |
| 4) One of the differential lines is open                       |              |
| Receiving 8B/10B Code (b)                                      |              |
| AND                                                            |              |
| Minimum Differential Sensitivity <= to V_input, RX and         | OK           |
| <= to Maximum Differential Sensitivity(c)                      |              |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.

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- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description             | Value  | Unit    |
|-------------------------|--------|---------|
| Type                    | (P)ECL |         |
| Data Rate               | 1000   | Mbits/s |
| Clock tolerance         | +/-100 | ppm     |
| Nominal Baud Rate       | 1250   | MBaud   |
| Differential Amplitude  |        |         |
| Max (peak)              | 2000   | mv(p-p) |
| Min (opening)           | 1100   | mv(p-p) |
| Max (OFF) (a)           | 70     | mv(p-p) |
| Rise/Fall Time (20-80%) |        |         |
| maximum                 | 327    | ps      |
| minimum                 | 85     | ps      |
| Differential (Skew)     | 25     | ps      |

- a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 38 SC Table 38-4 P38.7 L21 # 445  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R  
 Minimum range is confusing.

SuggestedRemedy  
 Change "Minimum range" to "Minimum operating range."

Proposed Response Response Status C

REJECT.  
 (new response as of 9/30/97)  
 We maintain the use of the term "minimum range".  
 This usage of the term "range" is consistent with that in prior 802 standards.  
 Manufacturers are permitted to make compliant devices which operate in excess of the "minimum range".

CI 38 SC Table 38-4 P38.7 L21 # 471  
 John Bowerman Corning

Comment Type E Comment Status R  
 Minimum range is confusing

SuggestedRemedy  
 Replace 'minimum range' with 'Minimum Operating Range'

Proposed Response Response Status C

REJECT.  
 (new response as of 9/30/97)  
 We maintain the use of the term "minimum range".  
 This usage of the term "range" is consistent with that in prior 802 standards.  
 Manufacturers are permitted to make compliant devices which operate in excess of the "minimum range".

P802.3z Draft 3.1 Comments

CI 38 SC Table 38-8 P38.13 L19/28 # 210  
 Bryan R. Gregory Molex

Comment Type T Comment Status A

Please see the two titles that read "@ 850nm" in table 38-8.

These short wavelength titles in table 38-8 seem to suggest that 850nm is the only acceptable wavelength for short wavelength gigabit ethernet optical transceivers. This table should also mention the 780nm window. This is a very serious omission.

SuggestedRemedy

Change the title to read "770nm-860nm" or "Short Wavelength" with a note at the bottom of the page that defines Short Wavelength as 770nm - 860nm.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Extend the wavelength specification in table 38-8 to a full row, with the description "Nominal fiber specification wavelength" Units column will be set to nm.

CI 38 SC Table 38-8 P38.13 L47 # 475  
 John Bowerman Corning

Comment Type E Comment Status A

link characteristics are based upon fiber cable not fiber

SuggestedRemedy

Change to 'Fiber cable attenuation(max)' instead of 'Fiber attenuation(max)'

Proposed Response Response Status C

ACCEPT.

CI 38 SC Table 38-8 P38.13 L47 # 456  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status A

Clarification needed that link characteristics are based on fiber cable.

SuggestedRemedy

Change "Fiber attenuation (max)" to "Fiber cable attenuation (max)"

Proposed Response Response Status C

ACCEPT.

CI 38 SC Table 38-8 P38.13 L48 # 457  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R

Footnote b serves no apparent purpose since it should be clear that if the requirement is minimum modal bandwidth, then a number greater than or equal to that specified in Table 38-8 meets the requirement. In addition, JTC1 SC25/WG3 is in the process of addressing higher bandwidth fiber and separation of the specification of 62.5 and 50 um fiber to reflect the actual performance of the respective fibers.

SuggestedRemedy

Delete footnote b.

Proposed Response Response Status Z

REJECT.

This footnote was accepted per comment previously to make clear that what is in table 38-8 meets the objectives of the group. While this may not add any significant technical value, it is not without benefit.

CI 38 SC Table 38-8 P38.13 L48 # 458  
 Steven E. Swanson Corning Incorporated

Comment Type E Comment Status R

The link attenuation numbers are incorrect.

SuggestedRemedy

Change the link attenuation numbers as follows:

- Change 3.56 dB to 3.43 dB
- Change 2.35 dB to 2.33 dB
- Change 2.47 dB to 2.41 dB
- Change 2.18 dB to 2.16 dB
- Change 3.54 dB to 3.50 dB

Proposed Response Response Status Z

REJECT.

These calculations must be done at the low end of the wavelength.

*Cl* **38**      *SC* **Table 38-8**      *P* **38.13**      *L* **5**      # **958**

Scott Mason      Plaintiff Systems Inc.

*Comment Type*    **E**      *Comment Status*    **R**

As I understand it, the best estimates are that 99% of IEC 11801 fibres meet the modal bandwidth requirements of this table.

*Suggested Remedy*

Change footnote b to read:

200/500 MHz-km fibre, as specified in IEC 11801, typically meets this requirement.

*Proposed Response*      *Response Status*    **C**

REJECT.  
See comment 161

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Cl 38A SC 01 P38.21 L1-26 # 164  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

The expected accuracy and intended domain of applicability are not stated. I recall something about +/- 10% accuracy in predicting range, and 0.25 dB on penalties. Are these still true?

SuggestedRemedy

Add a paragraph stating the expected accuracy and intended domain of applicability.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 01 P38.21 L1-26 # 163  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

A little block diagram defining a link and its components, and where this model fits into the link as shown in Figure 38-1 on page 38.4 is needed. How does it all fit together? Exactly what is the link model predicting? I gather that the section 38A model's link is from TP1 to TP4, with TP3 being the transmitter output and TP3 being the "fiber exit" of section 38A.2. This block diagram should also show where "Q" is defined and receiver eye diagrams are taken -- call it TP3.5?

My attempt at this has four inner boxes (for the model) and three outer boxes (for Figure 38-1). The outer boxes are the "Optical PMD Transmitter" (containing only the model's "Tx" box), the "Optical Fiber Media" (containing only the model's "fiber" box), and the "Optical PMD Receiver" (containing both the model's "raised-cosine receiver" and the model's "sampler and decision logic"). Point TP3.5 is between the "raised-cosine receiver" and the "sampler and decision logic" boxes. Above all this is a big black arrow labeled "signal flow", from left to right.

Such a diagram can also be labeled with numbered points that can then be referenced in the model description, as needed.

SuggestedRemedy

Add block diagram as discussed. Pin down the relationship between the section 38A model and the Figure 38-1 block diagram. Tie the text to the diagram.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 01 P38.21 L23-24 # 166  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

The last sentence isn't quite as clear and precise as it should be.

SuggestedRemedy

Change sentence to read: "In this annex, equations for penalties or losses are linear power ratios, not decibels, unless otherwise stated".

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 01 P38.21 L36-47 # 167  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

This part is too hard to follow. What are sigma(BW) and sigma(T)? They appear to be the one-sigma bandwidths and risetimes respectively, but are never defined or discussed. Nor is how we get from one-sigma risetimes to 10%-90% risetimes.

SuggestedRemedy

Be a little more generous with words. Explain what the sigmas are and what the equations mean.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 01 P38.21 L48 # 168  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

This is the proper place to introduce the constant "C1=0.48", because it's easy to point out that "ai\*bi=C1=0.48", which solves two problems. First, ai and bi were introduced, and then just dropped, never to be seen again. Second, C1 appeared to just fall from Mars when it was introduced on the next page, after equation 7.

SuggestedRemedy

Introduce C1 as described above. Change page 38.22 line 26 to a "recall that C1=0.48".

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.



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CI 38A SC 01 P38.22 L12 # 169  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

This would be a good place to mention that the 3-dB optical bandwidth becomes the 6-dB electrical bandwidth because the receiver converts optical power directly into electrical voltage (not power).

SuggestedRemedy

Add a sentence to this effect.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

CI 38A SC 03 P38.22 L39 # 170  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status R

We fail to mention if Pisi is a power ratio, or something else. Everywhere else, we use the phrase "power penalty", or something else specific.

SuggestedRemedy

Change sentence to read: "The ISI power penalty, Pisi, for a channel ...", adding the word "power".

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

CI 38A SC 03 P38.22 L41 # 171  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

The derivation of equation 9 is not given. It was developed by the small group by numerical approximation of a complicated integral from reference 3 (not referenced), as shown in an appendix to the original link model white paper. This should be fully explained, or subsequent readers will be totally stumped; the jump is simply too large.

This numerical approximation is also a source of the 0.25-dB accuracy.

SuggestedRemedy

Add necessary explanation and reference.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

CI 38A SC 04 P38.23 L17 # 172  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

We have a loose end. Where is the dispersion "D", used in equation 12, computed in this model? Only D1 and D2 are computed, in equations 14 and 15. There is a missing step and equation:  $D = \sqrt{D1^2 + D2^2}$ . This square root appears in equation 13. Note that the computation of D requires that both D1 and D2 be computed using wavelengths in nanometers.

SuggestedRemedy

Add a new equation, "D = Sqrt[D1^2 + D2^2]". Change equation 13 to use D rather than the current "Sqrt[D1^2 + D2^2]".

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

CI 38A SC 07 P38.24 L10-16 # 174  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

For the purpose of RIN calculation, what is a "link"? What components does it include? Specifically, does it include the laser risetime, or only the fiber and receiver? From the "BWc" in equation 17, it appears that transmitter, fiber, and receiver are all included.

SuggestedRemedy

State exactly what is and is not included, and why.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

CI 38A SC 07 P38.24 L10-16 # 173  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

We have another loose end. Where is "BWc", used in equation 17, computed in this model? It appears to be the bandwidth corresponding to "Tc" from equation 8. Is this so? If yes, there needs to be a new equation saying that "BWc = 0.48/Tc".

SuggestedRemedy

Add a new equation, "BWc = 0.48/Tc", near equation 17.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

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Cl 38A SC 08 P 38.24 L 33 # 175  
Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

The units of lambda-c are not stated, and one would assume that they are nanometers, which is used everywhere else in this model. Wrong! For equation 19, the units are microns. It matters a lot.

SuggestedRemedy

Change equation 19 to use nanometers, for consistency.

Proposed Response Response Status C

REJECT.  
PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 09 P 38.25 L 6-14 # 176  
Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

It would be useful to tie W0 (W-subscript-zero), the Window Opening Ratio, to the "Receiver Eye Opening" item of table 38B-2. They are one and the same, are they not? The statement that "Twin= Required Eye Opening" sounds like it's saying that "Twin= Receiver Eye Opening", which it isn't, as one has units of time, while the other is a fraction of the unit interval.

SuggestedRemedy

State near equation 20 that W0 is identical to the "Receiver Eye Opening" item of table 38B-2; and that "Receiver Eye Opening" is not the same as "Required Eye Opening", despite the similarity in names.

Proposed Response Response Status C

REJECT.  
PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 10 P 38.25 L 21-23 # 177  
Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status R

The last sentence, which talks about worst-case modal noise and connector loss, raises an issue, and then just drops the reader. It sounds like a serious issue, but what to do? In fact, we have already included these effects (albeit scattered about), but it sounds like there is something major the reader must do, but not a clue is given on just how the reader might do this.

SuggestedRemedy

Rewrite offending sentence. Give specific pointers to the relevant sections and table items. Reassure the reader.

Proposed Response Response Status C

REJECT.  
PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

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Cl 38A SC 38A P 38.21 L 1 # 606  
 David Cunningham Hewlett-Packard

Comment Type TR Comment Status A

Delete Annex 38A and all references to it.

Reasons,

- a) There is no normative information in Annex 38A. It contains no information vital to inter-operation or implementation.
- b) The IEEE 802.3 standard is a specification not a tutorial, textbook or journal.
- c) The link model was a tool used by the IEEE 802.3z PMD Optical sub-group to determine some of the normative specifications in Clause 38. It is not an IEEE 802 requirement that the working out of these normative specifications be documented in the standard.
- d) It is an abuse of committee members and officer's valuable time to include informative Annex 38A given the level of work required maintaining it and resolving comments that would be generated on it. Especially when it contains no information vital to inter-operation or implementation.

SuggestedRemedy

Delete Annex 38A and all references to it.  
 References to Annex 38A to be deleted are page 38.26, lines 8 and 9 suggest deletion of last sentence preceding table 38B-1. Delete sub-clauses 38B.1, 38B.2 and associated tables 38B-2 and 38B-3 on pages 38.27 and 38.28

Proposed Response Response Status C

ACCEPT.  
 Delete Annex 38A and all references to it.  
 References to Annex 38A to be deleted are page 38.26, lines 8 and 9 suggest deletion of last sentence preceding table 38B-1. Delete sub-clauses 38B.1, 38B.2 and associated tables 38B-2 and 38B-3 on pages 38.27 and 38.28

Cl 38A SC 38A P 38.24 L 33 # 499  
 Mark Nowell HP Labs

Comment Type T Comment Status R

The equation for attenuation in its current form requires lambda\_c to have the units of um whereas it has been defined to have the units of nm earlier.

Therefore change the 0.94 coefficient to account for this and leave the definition of lambda\_c alone.

SuggestedRemedy

Change 0.94 to either  $0.94 * 10^{-3}$   
 or  $9.4 * 10^{-4}$

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 38A.11 P 38.25 L 27-55 # 260  
 Colin Mick The Mick Group

Comment Type E Comment Status R

Shouldn't references be in Annex A?

SuggestedRemedy

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 38a.8 P 38.24 L 33 # 323  
 mark sankey 3com

Comment Type T Comment Status R

The units in equation 19, do not work out correctly. Is lambda\_c really the laser center wavelength in nm as defined on the previous page? It seems like it should be a wavelength ratio. If that is true, then C\_lambda should be unitless, and then the units work out to be db for the whole equation.

SuggestedRemedy

Make lambda\_c be a ratio.  
 Remove units from c\_lambda.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

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Cl 38A SC 38A1 P 38.21 L 11 # 259  
 Colin Mick The Mick Group

Comment Type E Comment Status R  
 If model is for 802.3z, why include? If it is for users or manufacturers, say so.

SuggestedRemedy

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC 8 P 38.24 L 30 # 1221  
 mark sankey 3Com

Comment Type T Comment Status R  
 It appears that the units of lambda\_c are nanometer, since the closest previous definition is on page 38.23 line 41.

However, in order to make the equation produce the correct attenuation, the unit must be micrometer.

SuggestedRemedy  
 add

"where lambda\_c is laser center wavelength in micrometers"

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

Cl 38A SC All P 38.21 throu L # 99  
 Bruce B. Barrow IEEE Standards Coord

Comment Type T Comment Status R global

The entire annex needs careful editing to conform to standards for technical publishing. Many, perhaps most, of the problems stem from use of a word processing program that tries to think for the author.

SuggestedRemedy  
 Follow the recommendations of IEEE Std 260.1, IEEE Std 260.3, and IEEE Std 280. The major points, which are also embodied in the ISO and IEC standards on symbols and mathematical notation, are as follows:  
 Italic (sloping) type fonts are used for symbols for physical quantities, mathematical variables, indices, and general functions;  
 Roman (upright) type fonts are used for unit symbols, mathematical constants, specific mathematical functions, operators, all numerals, and punctuation marks;  
 With very few exceptions (none of which apply to 802), symbols for physical quantities are single letters, with subscripts used to distinguish among variants.

In the following I shall attempt to indicate specific problems and suggest remedies:

p. 38.21, line 19: The symbol for bandwidth is italic B, which should be used throughout the annex. Use appropriate subscripts if needed to distinguish between 6-dB bandwidth and 3-dB bandwidth. It was not clear to me why sometimes the text refers to a 3-dB bandwidth, and other times the bandwidth is the 6-dB bandwidth.  
 Line 26 to end of page: Numerals 1 and 2 are roman subscripts; h, t, T, a, and b are italic; the subscript i, being an index, is italic. The subscript sys, being an abbreviation, is roman. It seems inappropriate to use the notation BW(6dB), which makes the bandwidth appear to be a function of the definition. Why not just define B to be the 6-dB bandwidth?  
 p. 38.22: In addition to the above points, T[sub]sys, we have italic T and roman subscript sys. Subscript i is italic, but subscripts e, ch, m, isi, and r are all abbreviations and are roman.  
 Equation 7 uses 3-dB bandwidths, but it follows from eq. 6, which uses 6-dB bandwidths???  
 Equation 9 uses unnecessary raised dots to indicate multiplication, which is unconventional but not incorrect. In line 46, change "baud period" to "unit interval" or "duration of a signal element."  
 p. 38.23: Set mpn, ps, km, nm2 all in roman. Set D and L in italic in the text as well as in the equations. The raised dots to indicate multiplication of quantity symbols are superfluous; they are needed with the unit symbols in lines 20 and 42. Use "bit error ratio" not "bit error rate"

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in line 8 and elsewhere, and use a reasonable symbol, e.g., R in equations, rather than the abbreviation BER.

p. 38.24: RIN is OK as an abbrev. if one is needed. But use  $N_{ri}$ , or something like it as a symbol in equations. Also use A or alpha for attenuation.

p. 38.25: In equation 20 use either lg or  $\log_{10}$ , in roman font, for the logarithm function. I assume base 10 is what was wanted. Set subscripts and superscripts in roman. Delete line 12

because T was already defined and in any case we need a better term than "baud period" (see above).

*Proposed Response*                      *Response Status*    **C**

REJECT.  
PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

|               |                  |                      |                 |          |            |
|---------------|------------------|----------------------|-----------------|----------|------------|
| <b>Cl 38A</b> | <b>SC global</b> | <b>P38.21 throu</b>  | <b>L global</b> | <b>#</b> | <b>165</b> |
| Joe Gwinn     |                  | Raytheon, Sudbury, M |                 |          |            |

*Comment Type*            **TR**                      *Comment Status*    **R**

Some equations lack precise supporting references, making review and use of the model difficult. Specifically, equations [missing ref] 7 [2], 8 [2], 9 [3], 17 [?], 18 [?], and 19 [ISO 11801? Need section; I couldn't find it. Or, Refi?].

*SuggestedRemedy*

Provide precise references, to the section number or equation number of the referenced article or book, for all equations in section 38A. These references are well known to the authors, so it's simply a matter of writing them down before they are forgotten and lost.

*Proposed Response*                      *Response Status*    **C**

REJECT.  
PMD subtaskforce voted to accept comment #606, which removed annex 38A in its entirety.

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**Cl 38B SC P38.26 L5, 14 # 65**  
 Nick Esser Canoga Perkins  
*Comment Type E Comment Status R*  
 Use of the letter "v" (without a period) as an abbreviation of the word "versus" is a strange thing to behold. Is this a new international standard English usage?  
*SuggestedRemedy*  
 Either use "vs." or spell out the word. (Or at least add a period.)  
*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC P38.26-38-28 L # 261**  
 Colin Mick The Mick Group  
*Comment Type E Comment Status R*  
 References to "table" in text should be linked to specific tables (i.e., 38B-1, 38B-2, 38B-3)  
*SuggestedRemedy*  
 fix  
*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 00 P38.26 L 23 to 49 # 179**  
 Joe Gwinn Raytheon, Sudbury, M  
*Comment Type TR Comment Status R*  
 How were the entries in this table (38B-1) generated? It isn't enough to simply say that the model in Annex 38A was used. In addition, a few worked numerical examples are required, as few will be able to understand that model without some worked examples to guide them.  
*SuggestedRemedy*  
 Add two detailed worked numerical examples, covering both 850-nm and 1300-nm operation over 62.5-micron multimode fiber, the most common cases, and indicative of the other multimode cases. Although the table makes no mention of single-mode fiber, a worked 1300-nm over single-mode fiber example is also needed.  
*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 00 P38.26 L 5 and 14 # 178**  
 Joe Gwinn Raytheon, Sudbury, M  
*Comment Type E Comment Status R*  
 The abbreviation "v" may be a bit too telegraphic.  
*SuggestedRemedy*  
 Replace "v" with "versus".  
*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 01 P38.27 L 30 # 180**  
 Joe Gwinn Raytheon, Sudbury, M  
*Comment Type TR Comment Status R*  
 Isn't this item, "exit response time" <dot> "optical bandwidth coefficient" identical to "C1" in Annex 38A, but scaled differently? If so, this should be pointed out. The wording of the item itself is a bit hard to understand, as only the floating dot (which looks like a stray spot, a bit of reproduction process dirt) gives any indication that multiplication is involved.  
*SuggestedRemedy*  
 Add a footnote saying that this is a scaled version of C1. The scaling is given in the "Unit" column.  
*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

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**Cl 38B SC 02 P 38.28 L 31-32 # 181**  
 Joe Gwinn Raytheon, Sudbury, M

**Comment Type TR Comment Status R**

Isn't this item, "exit response time" \* "optical bandwidth coefficient" identical to "C1" in Annex 38A, but scaled differently? If so, this should be pointed out. The wording of the item itself is a bit hard to understand, as only the floating dot (which looks like a stray spot, a bit of reproduction process dirt) gives any indication that multiplication is involved.

**SuggestedRemedy**

Add a footnote saying that this is a scaled version of C1. The scaling is given in the "Unit" column.

**Proposed Response Response Status C**

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 38B P 38.26 L 1 # 608**  
 David Cunningham Hewlett-Packard

**Comment Type TR Comment Status A**

Delete Clause 38B and all references to it.

- Reasons,
- a) There is no normative information in annex 38B. No information vital to inter-operation or implementation is contained in annex 38B.
  - b) The IEEE 802.3z worst-case link lengths for the multimode fibre-based PMD's are specified in Clause 38 based on the output of the 'Effective Modal Bandwidth Taskforce'.
  - c) The effective modal bandwidth, ROFL test and associated terminology was useful to the committee for the purposes of understanding and determining the worst-case link lengths. However, there is no need to include this information in the specification.
  - d) It is unclear how users and implementers could use the information in annex 38B.

**SuggestedRemedy**

Delete Clause 38B and all references to it.

**Proposed Response Response Status C**

ACCEPT.  
 Delete Clause 38B and all references to it.

**Cl 38B SC 38B P 38.26 L 20 # 496**  
 Mark Nowell HP Labs

**Comment Type E Comment Status R**

Typo in column heading in Table 38B-1.

The units for Effective modal bandwidth should be MHz<dot>km where <dot> is either a dot or an \*

**SuggestedRemedy**

Fix as above

**Proposed Response Response Status C**

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 38B P 38.26 L 9 # 497**  
 Mark Nowell HP Labs

**Comment Type E Comment Status R**

Missed word and incorrect reference in line:

"...using worst case parameter values specified in 38B.1 and 38B.2."

**SuggestedRemedy**

Change to

"...using worst case parameter values specified in Tables 38B.2 and 38B.3."

**Proposed Response Response Status C**

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

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**Cl 38B SC 38B P 38.27 L 18 # 498**  
 Mark Nowell HP Labs

*Comment Type T Comment Status R*  
 In Table 38B-2 there should be an additional row for 20-80% rise time for the 780nm window.

*SuggestedRemedy*  
 Add row:  
 20-80% response time (max)  $\lambda \leq 830\text{nm}$  0.21 0.21 ns

edit existing row to specify  $\lambda > 830\text{nm}$

*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 38B.1 P 38.27 L 3 # 384**  
 Scott Carter IBM

*Comment Type E Comment Status R*  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

*SuggestedRemedy*  
 uncapitalize Table and add table number

*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 38B.1 P 38.27 L Table 38B- # 508**  
 Ray Lin Digital Equipment Cor

*Comment Type T Comment Status R*  
 The link model parameter values for worst case link length (Table 38B-2) should be moved to a 38A subclause that addresses the link characteristics.

*SuggestedRemedy*  
 Move Table 38B2-2 to 38A.10 subclause that addresses the link characteristics.

Add a note in 38.3 pointing to this table.

Note: Worst case link lengths were developed using both theoretical and measured data. The theoretical model and the values used for 1000BASE-SX worst case link length calculations are provided in Annex 38A.

*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

**Cl 38B SC 38B.1 P 38.27 L Table 38B- # 419**  
 Christopher Di Minico Digital Equipment Cor

*Comment Type T Comment Status R*  
 The link model parameter values for worst case link length (Table 38B-2) should be moved to a 38A subclause that addresses the link characteristics.

*SuggestedRemedy*  
 Move Table 38B2-2 to 38A.10 subclause that addresses the link characteristics.

Add a note in 38.3 pointing to this table.

Note: Worst case link lengths were developed using both theoretical and measured data. The theoretical model and the values used for 1000BASE-SX worst case link length calculations are provided in Annex 38A.

*Proposed Response Response Status C*  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.



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CI 38B SC 38B.2 P 38.28 L 27 # 77  
 Mark Nowell Hewlett-Packard Labs

Comment Type T Comment Status R  
 Worst case modal bandwidth (WCMB) of single mode fiber is infinite

SuggestedRemedy  
 change 10000 MHz.km to infinity MHz.km

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

CI 38B SC 38B.2 P 38.28 L 3 # 385  
 Scott Carter IBM

Comment Type E Comment Status R  
 There are a number of places where the words clause, figure, and table, are capitalized and should not be, assuming the convention is to be consistent with 802.3u clauses 21-30.

SuggestedRemedy  
 uncapitalize Table and add table number

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

CI 38B SC 38B.2 P 38.28 L Table 38B- # 420  
 Christopher Di Minico Digital Equipment Cor

Comment Type T Comment Status R  
 The link model parameter values for worst case link length (Table 38B-3) should be moved to a 38A subclause that addresses the -LX link characteristics.

SuggestedRemedy  
 Move Table 38B2-3 to 38A.10 subclause that addresses the link characteristics.

Add a note in 38.4 pointing to this table.

Note: Worst case link lengths were developed using both theoretical and measured data. The theoretical model and the values used for 1000BASE-LX worst case link length calculations are provided in Annex 38A.

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

CI 38B SC 38B.2 P 38.28 L Table 38B- # 509  
 Ray Lin Digital Equipment Cor

Comment Type T Comment Status R  
 The link model parameter values for worst case link length (Table 38B-3) should be moved to a 38A subclause that addresses the -LX link characteristics.

SuggestedRemedy  
 Move Table 38B2-3 to 38A.10 subclause that addresses the link characteristics.

Add a note in 38.4 pointing to this table.

Note: Worst case link lengths were developed using both theoretical and measured data. The theoretical model and the values used for 1000BASE-LX worst case link length calculations are provided in Annex 38A.

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

CI 38B SC 38B.2, 38B-3 P 38.27, 38.28 L Table 38B- # 510  
 Ray Lin Digital Equipment Cor

Comment Type T Comment Status R  
 Is the WCMB description correct here ? Launch condition not assumed in the theoretical analysis.

SuggestedRemedy  
 Change WCMB to Modal Bandwidth and then add the note below describing the launch relative to the theoretical analysis and the measured data.

Note: The modal bandwidth used in the analysis is based on measurements of multimode fiber using a wide range of launch conditions including OFL and ROFL (in accordance with Annex 38B) and is considered representative of Worst Case.

Proposed Response Response Status C  
 REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

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Cl 38B SC 38B.2, 38B-3 P 38.27, 38.28 L Table 38B- # 421  
 Christopher Di Minico Digital Equipment Cor

Comment Type T Comment Status R

Is the WCMB description correct here ? Launch condition not assumed in the theoretical analysis.

SuggestedRemedy

Change WCMB to Modal Bandwidth and then add the note below describing the launch relative to the theoretical analysis and the measured data.

Note: The modal bandwidth used in the analysis is based on measurements of multimode fiber using a wide range of launch conditions including OFL and ROFL (in accordance with Annex 38B) and is considered representative of Worst Case.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

Cl 38B SC 5 P 38.23 L 41 # 1222  
 mark sankey 3Com

Comment Type T Comment Status R

units for lambda\_0 and lambda\_c must be micrometer, not nanometer to make this equation produce the correct result!

SuggestedRemedy

replace "nm" with "um"

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

Cl 38B SC Table 38B-1 P 38.26 L 19 # 209  
 Bryan R. Gregory Molex

Comment Type T Comment Status R

Please see the title for columns #2 and #3 "1000Base-SX; 850 nm source"

This title seems to suggest that 850nm is the only acceptable wavelength for gigabit ethernet optical transceivers. This table should also mention the 780nm window. This is a very serious omission.

SuggestedRemedy

Change the title to read "770nm-860nm source " or "Short Wavelength" with a note at the bottom of the page that defines Short Wavelength as 770nm - 860nm.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

Cl 38B SC Table 38B-2 P 38.27 L 13 # 207  
 Bryan R. Gregory Molex

Comment Type T Comment Status R

Please see the "Laser wavelength, min" row. This lists the minimum wavelength as 830nm.

This value is INCORRECT. The minimum wavelength should be listed as 770nm. Leaving the value as 830nm gives the perception that the standard does not support the 780nm window.

SuggestedRemedy

Change the minimum value to 770nm.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

Cl 38B SC Table 38B-2 P 38.27 L 14 # 100  
 Bruce B. Barrow IEEE Standards Coord

Comment Type T Comment Status R

"RMS" appears in the wrong column. It is the laser spectral width that is rms. The nanometer does not vary -- it is always a nanometer.

SuggestedRemedy

"Laser spectral width (rms)" in first column, "nm" in fourth.

Proposed Response Response Status C

REJECT.  
 PMD subtaskforce voted to accept comment #608, which removed annex 38B in its entirety.

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Cl 38D SC 01 P 38.30 L 14 # 182  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A  
 There is no paragraph "38E.2". I assume that 38D.2 was intended.

SuggestedRemedy  
 Fix as discussed.

Proposed Response Response Status C  
 ACCEPT.  
 Change reference from 38E.2 to 38D.2. (will renumber to 38B.2)

Cl 38D SC 06 P 38.31 L 25 and 32 # 184  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type TR Comment Status A  
 The phrase "spot size" is ambiguous, as it could mean either a radius or a diameter. It's a diameter.

SuggestedRemedy  
 Change all occurrences of "spot size" or "spot sizes" to "spot diameter" or "spot diameters".

Proposed Response Response Status C  
 ACCEPT.  
 Change all occurrences of "spot size" or "spot sizes" to "spot diameter" or "spot diameters" in all locations in the clause.

Cl 38D SC 06 P 38.31 L 27 and 45 # 183  
 Joe Gwinn Raytheon, Sudbury, M

Comment Type E Comment Status A  
 There is no "Table 38E-1". Likewise, section "38E.3". I assume that Table 38D-1 and section 38D.3 were intended.

SuggestedRemedy  
 Fix as discussed.

Proposed Response Response Status C  
 ACCEPT.  
 Replace references to Table 38E-1 and 38E.3 with Table 38D-1 and 38D.3.

Cl 38D SC 38D P 38.30 L 1 # 607  
 David Cunningham Hewlett-Packard

Comment Type TR Comment Status A  
 Delete annex 38D and all references to it.

- Reasons,
- a) There is no normative information in annex 38D. No information vital to inter-operation or implementation is contained in annex 38D.
  - b) The IEEE 802.3z worst-case link lengths for the multimode fibre-based PMD's are specified in Clause 38 based on the output of the 'Effective Modal Bandwidth Taskforce'.
  - c) The ROFL test and associated terminology was useful to the committee for the purposes of understanding and determining the worst-case link lengths. However, there is no need to include this information in the specification.
  - d) It is unclear how users and implementers could use the information in annex 38D.
  - e) It is an abuse of committee members and officer's valuable time to include informative Annex 38D given the level of work required maintaining it and resolving comments that would be generated on it. Especially when it contains no information vital to inter-operation or implementation.
  - f) The TIA FO 2-2 committee is investigating the bandwidth of laser based multimode fibre links. That committee is likely to develop test procedures that will replace or strengthen the ROFL test method. TIA FO 2-2 is where this issue should be addressed.

SuggestedRemedy  
 Delete Annex 38D and all references to it.

Proposed Response Response Status Z  
 Partially accept:  
 Modify title of annex D on Page 38.30 line 5 to read:

"Modal bandwidth and launch conditions"

Also, delete lines 8-16, the entire subclause on effective modal bandwidth.

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**Cl 38D SC 38D.1 P 38.30 L 14 # 802**  
 Tom Mathey Baynetworks  
*Comment Type E Comment Status A*  
 Typo: reference to wrong clause  
*SuggestedRemedy*  
 Change from "38E.2" to "38D.2".  
 Also change reference on page 38.31, line 46.  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change from "38E.2" to "38D.2".  
 Also change reference on page 38.31, line 46.

**Cl 38D SC 38D.1 P 38.30 L 14 # 262**  
 Colin Mick The Mick Group  
*Comment Type E Comment Status A*  
 Reference 38E.2 should be to 38D.2  
*SuggestedRemedy*  
 fix  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change reference from 38E.2 to 38D.2

**Cl 38D SC 38D.1 P 38.30 L 5,14 # 67**  
 Nick Esser Canoga Perkins  
*Comment Type E Comment Status A*  
 Reference to "38E" should be "38D." (Also on p. 38.31, Lines 26 and 45.)  
*SuggestedRemedy*  
 Change all "38E" references to "38D."  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change all "38E" references to "38D."  
 With the removal of clauses 38A and 38B these effectively become  
 references to 38B (after renumbering)

**Cl 38D SC 38D.6 P 38-31 L 26 # 263**  
 Colin Mick The Mick Group  
*Comment Type E Comment Status A*  
 Reference to 38E-1 should be to 38D-1  
*SuggestedRemedy*  
 fix  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change reference from 38E-1 to 38D-1

**Cl 38D SC 38D.6 P 38.31 L 46 # 264**  
 Colin Mick The Mick Group  
*Comment Type E Comment Status A*  
 Reference to 38E.3 should be to 38D.3  
*SuggestedRemedy*  
 fix  
*Proposed Response Response Status C*  
 ACCEPT.  
 Change reference for 38E.3 to 38D.3

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Cl 39 SC P L # 1156  
 Jim Mangin Bay Networks  
 Comment Type T Comment Status A

*SuggestedRemedy*

It is my recommendation that, if it is not possible to scotch the TDR callouts entirely, that a standard methodology for adjusting for different TDR instruments be specified, either as an informative annex or by reference to a readily-available published standard method. This is because there are various ways to adjust for rise time: putting a filter on the TDR module or by mathematically processing the results in a DSP fashion. This demand is consistent with other portions of the standard in which specific test setups or techniques are called out for measuring under standardized conditions.

Proposed Response Response Status C

Partial Accept  
 Numerous examples of TDR test data have been presented and reviewed at ANSI T11 meetings, as well as at 802.3z meetings. In no case was any significant discrepancy found between different pieces of test equipment. However, improper test fixturing can have significant impact on the results. It is the responsibility of the implementer of such a fixture to ensure, through testing with known loads, that their fixture produces accurate results.

A note will be added to the clause at line 55, page 39.11, stating that:  
 " Any test fixture used with these TDR tests must be calibrated with standard loads and verified to produce accurate results."

We will investigate the existance of international test methodologies for TDR. If found, we will include this in 39.6.4.

Additional response as of 9/30/97: The committee has determined that no interantional standard test methodolgies exist for TDR measurements of 150-ohm balanced cabling.

Cl 39 SC P 39.8 L 16 # 605  
 Robert Curtis  
 Comment Type E Comment Status A

Why is there 253 bt end to end delay for copper and considerably more for fiber- is this a spec limit based on timing requirements or a cable consideration?

*SuggestedRemedy*

Should remove if not a spec limit or put the spec limit

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 Change "end to end delay" to "round trip delay" with table footnote "used in clause 42"

Cl 39 SC 2.3 P 39.2 L 13-38 # 185  
 Joe Gwinn Raytheon, Sudbury, M  
 Comment Type TR Comment Status A

Generation of PMD\_SIGNAL.indicate(SIGNAL\_DETECT) should be mandatory. In real data closets, stuffed full of wires and boxes, we would have no real way to quickly detect open circuits, greatly hindering support, without elimination of false signal-present indications. Nor can I believe that this function is so hard to implement.

Just last week, I saw a marginal (noisy) optical link cause a Fibre-Channel based system to hang up. I could make it happen repeatedly. I have to assume that an electrical link is no better protected.

*SuggestedRemedy*

Change wording throughout document to make this mandatory.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
 YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here.  
 A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

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The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Signal       |
|------------------------------------------------|--------------|
|                                                | Detect Value |
| P_input, RX < -30 dBm (a)                      | FAIL         |
| Other conditions                               |              |
| Examples:                                      |              |
| 1) Receiving a non-8B/10B encoded data stream  | Unspecified  |
| 2) PMA on other end of link in loopback        |              |
| 3) Other end of link undergoing POR transients |              |

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| 4) -30 dBm < P_input, RX < Receive power (min)                                     |    |
| Receiving 8B/10B Code (b)                                                          |    |
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power

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defined by Table 38.3.

b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                             | Signal Detect Value |
|----------------------------------------------------------------|---------------------|
| VINPUT, RX < 200 mV(p-p) (a)                                   | FAIL                |
| Other conditions                                               |                     |
| Examples:                                                      |                     |
| 1) Receiving a non-8B/10B encoded data stream                  | Unspecified         |
| 2) Other end of link undergoing POR transients                 |                     |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity |                     |
| 4) One of the differential lines is open                       |                     |
| Receiving 8B/10B Code (b)                                      |                     |
| AND                                                            |                     |
| Minimum Differential Sensitivity <= to V_input, RX and         | OK                  |
| <= to Maximum Differential Sensitivity(c)                      |                     |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description     | Value  | Unit    |
|-----------------|--------|---------|
| Type            | (P)ECL |         |
| Data Rate       | 1000   | Mbits/s |
| Clock tolerance | +/-100 | ppm     |

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| Nominal Baud Rate       | 1250 | MBaud   |
|-------------------------|------|---------|
| Differential Amplitude  |      |         |
| Max (peak)              | 2000 | mv(p-p) |
| Min (opening)           | 1100 | mv(p-p) |
| Max (OFF) (a)           | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) |      |         |
| maximum                 | 327  | ps      |
| minimum                 | 85   | ps      |
| Differential (Skew)     | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

**Cl 39 SC 39.1 P 39.1 L 39 # 578**  
 Shimon Muller Sun Microsystems  
*Comment Type E Comment Status A*  
 The reference to 38.2 is incorrect.  
*SuggestedRemedy*  
 Replace "38.2" with "38.1.1".  
*Proposed Response Response Status C*  
 ACCEPT.  
 Replace "38.2" with "38.1.1".

**Cl 39 SC 39.1 P 39.1 L 41 # 602**  
 Kosilek Josef Siemens AG  
*Comment Type T Comment Status R*  
 The specification of a minimum operating range of 0.1 m is not realistic for copper media.  
*SuggestedRemedy*  
 Change this sentence so it's become in accordance with the objectives of the Gigabit Task Force (Page 11 of 16 from the presentation of Mr. Howard M. Frazier, Jr. Lahaina 7-July-1997, "Agenda and general Information"). The wording should be:  
 "1000BASE-CX has a minimum operating range of 25 meters.  
*Proposed Response Response Status C*  
 REJECT.  
 Though rare, there is no reason to exclude short distance (very short distance) jumpers. Cable manufacturers indicated that this was a reasonable and manufacturable minimum length.  
 Please note that minimum range means that the transceiver must be able to operate up to 25 m and must also be able to operate down to 0.1 m. It may also operate beyond 25m and less than 0.1 m.

**Cl 39 SC 39.1 P 39.1 L 41 # 579**  
 Shimon Muller Sun Microsystems  
*Comment Type T Comment Status R*  
 The operating range defined here is both minimum and maximum.  
*SuggestedRemedy*  
 Delete "minimum".  
*Proposed Response Response Status C*  
 Reject  
 Minimum range is the correct method for specification.  
 Operation over a larger range (either longer than the upper bound or less than the lower bound) is acceptable.

**Cl 39 SC 39.2 & 39.3 P 39.2 to 39.6 L # 222**  
 Carlos Tomaszewski NetVantage  
*Comment Type E Comment Status A*  
 Typographical error Table 39-5 page 39.8 Jumper cable assembly characteristics  
 Impedance units Lines 7,9 & 10 are listed as W  
*SuggestedRemedy*  
 Change impedance units Lines 7,9 and 10, to Ohm, omega cap (alt-0234)  
*Proposed Response Response Status C*  
 ACCEPT.  
 Replace W with Omega.



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Cl 39 SC 39.2 & 39.3 P 39.2 to 39.6 L # 221  
 Carlos Tomaszewski NetVantage

Comment Type T Comment Status R  
 Both 39.3.1 Transmitter electrical specs and 39.3.2 Receiver electrical specs indicate that "output driver (&receiver) shall be AC-coupled to the media through a transmission (receive) network"

SuggestedRemedy  
 The characteristics of both networks must be defined in relation to isolation test voltages. Suggested value of 500 V minimum.

Add isolation requirement to PICS Proforma Clause 39.8.4.2 page 39.19 PM-3 Transmitter Coupling and PM-5 Receiver Coupling

Proposed Response Response Status C  
 Reject  
 A 500 Volt minimum operating voltage is suitable for unshielded cables (e.g., UTP), but not for shielded cables. Per IS 11801, shielded cables shall not be interconnected if the voltage potential exceeds 2.5 volts. For the cables specified in clause 39, it is only necessary to pass the EMC requirements for ESD and other induced transients as required by IEC 801-4.

Cl 39 SC 39.2.2 P 39.2 L 13-38 # 955  
 Larry Miller Bay Networks

Comment Type TR Comment Status A  
 Implementation of PMD\_SIGNAL.indicate(SIGNAL\_DETECT) is optional. Virtually all of the transceivers on the market do implement it in varying degrees of accuracy.

With such high data traffic there needs to be a simple way for the network MACs to know if they should be trying to synchronize to inputs without having to analyze the incoming data stream. The overhead of this is simply too much of a performance hit. The MACs known to me all use the PMD\_SIGNAL.indicate as a simple switch to decide whether a channel is worth spending time on.

SuggestedRemedy  
 Make the PMD\_SIGNAL.indicate function mandatory and tightly specified as to threshold. The 1000BASE-CX Receive Network (Between TP3 and TP4) would be the place to detect this signal.

Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:  
 YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

P802.3z Draft 3.1 Comments

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                            | Signal       |
|-----------------------------------------------|--------------|
|                                               | Detect Value |
| P_input, RX < -30 dBm (a)                     | FAIL         |
| Other conditions                              |              |
| Examples:                                     |              |
| 1) Receiving a non-8B/10B encoded data stream | Unspecified  |

- 2) PMA on other end of link in loopback
- 3) Other end of link undergoing POR transients
- 4) -30 dBm < P\_input, RX < Receive power (min)

| Receiving 8B/10B Code (b)                                                          |    |
|------------------------------------------------------------------------------------|----|
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

P802.3z Draft 3.1 Comments

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input

level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Detect Value | Signal      |
|--------------------------------------------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     |              | FAIL        |
| Other conditions                                                                                 |              |             |
| Examples:                                                                                        |              |             |
| 1) Receiving a non-8B/10B encoded data stream                                                    |              | Unspecified |
| 2) Other end of link undergoing POR transients                                                   |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |              |             |
| 4) One of the differential lines is open                                                         |              |             |
| Receiving 8B/10B Code (b)                                                                        |              |             |
| AND                                                                                              |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) |              | OK          |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description | Value  | Unit    |
|-------------|--------|---------|
| Type        | (P)ECL |         |
| Data Rate   | 1000   | Mbits/s |

P802.3z Draft 3.1 Comments

|                         |        |         |
|-------------------------|--------|---------|
| Clock tolerance         | +/-100 | ppm     |
| Nominal Baud Rate       | 1250   | MBaud   |
| Differential Amplitude  |        |         |
| Max (peak)              | 2000   | mv(p-p) |
| Min (opening)           | 1100   | mv(p-p) |
| Max (OFF) (a)           | 70     | mv(p-p) |
| Rise/Fall Time (20-80%) |        |         |
| maximum                 | 327    | ps      |
| minimum                 | 85     | ps      |
| Differential (Skew)     | 25     | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

**Cl 39**    **SC 39.2.3**    **P 39.2**    **L 13-38**    # **982**  
 Ian Crayford    Bay Networks, Inc.

*Comment Type*    **TR**    *Comment Status*    **A**

The draft indicates that SIGNAL\_DETECT is optional. Unlike the case for Clause 38 (see my related comment), there is no simple way to currently provide this this capability since transceivers do not currently provide it (for free). However, I still fell that this should be a mandatory function that gives a reasonable reliable indication on "link OK" status. Certainly this should be able to detect whether the link is physically connected.

If the eaquivalent of the SIGNAL\_DETECT from the Optics is either unavailable or not reliable, then we need to somehow derive or imply link presence and quality in another part of the solution.

*SuggestedRemedy*

Make the SIGNAL\_DETECT function mandatory, and sufficienctly robust so as to be a reasonably good indication of "link OK" status.

*Proposed Response*    *Response Status*    **C**

ACCEPT IN PRINCIPLE.

The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

YES - 50  
 NO - 0  
 ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

P802.3z Draft 3.1 Comments

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined, but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

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The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

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Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                            | Signal       |
|-----------------------------------------------|--------------|
|                                               | Detect Value |
| P_input, RX < -30 dBm (a)                     | FAIL         |
| Other conditions                              |              |
| Examples:                                     |              |
| 1) Receiving a non-8B/10B encoded data stream | Unspecified  |

- 2) PMA on other end of link in loopback
- 3) Other end of link undergoing POR transients
- 4) -30 dBm < P\_input, RX < Receive power (min)

| Receiving 8B/10B Code (b)                                                          |    |
|------------------------------------------------------------------------------------|----|
| AND                                                                                |    |
| Receive power (min) is < or = to P_input, RX and < or = to Receive power (max) (c) | OK |

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
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| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

P802.3z Draft 3.1 Comments

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input

level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions                                                                               | Detect Value | Signal      |
|--------------------------------------------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     |              | FAIL        |
| Other conditions                                                                                 |              |             |
| Examples:                                                                                        |              |             |
| 1) Receiving a non-8B/10B encoded data stream                                                    |              | Unspecified |
| 2) Other end of link undergoing POR transients                                                   |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |              |             |
| 4) One of the differential lines is open                                                         |              |             |
| Receiving 8B/10B Code (b)                                                                        |              |             |
| AND                                                                                              |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) |              | OK          |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description | Value  | Unit    |
|-------------|--------|---------|
| Type        | (P)ECL |         |
| Data Rate   | 1000   | Mbits/s |

P802.3z Draft 3.1 Comments

|                         |        |         |
|-------------------------|--------|---------|
| Clock tolerance         | +/-100 | ppm     |
| Nominal Baud Rate       | 1250   | MBaud   |
| Differential Amplitude  |        |         |
| Max (peak)              | 2000   | mv(p-p) |
| Min (opening)           | 1100   | mv(p-p) |
| Max (OFF) (a)           | 70     | mv(p-p) |
| Rise/Fall Time (20-80%) |        |         |
| maximum                 | 327    | ps      |
| minimum                 | 85     | ps      |
| Differential (Skew)     | 25     | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

|                                                                                                            |                    |                        |                |              |
|------------------------------------------------------------------------------------------------------------|--------------------|------------------------|----------------|--------------|
| <b>Cl 39</b>                                                                                               | <b>SC 39.2.3.1</b> | <b>P 39.2</b>          | <b>L 23-28</b> | <b># 265</b> |
| Colin Mick                                                                                                 | The Mick Group     |                        |                |              |
| <b>Comment Type</b>                                                                                        | <b>E</b>           | <b>Comment Status</b>  | <b>R</b>       |              |
| If this is a performance requirement, make it so, quantify it, shall it and insert in PICs. If not, delete |                    |                        |                |              |
| <b>SuggestedRemedy</b>                                                                                     | As above           |                        |                |              |
| <b>Proposed Response</b>                                                                                   |                    | <b>Response Status</b> | <b>C</b>       |              |
| REJECT.<br>Addressed by signal detect, comment 48.                                                         |                    |                        |                |              |

|                                                        |                |                        |             |              |
|--------------------------------------------------------|----------------|------------------------|-------------|--------------|
| <b>Cl 39</b>                                           | <b>SC 39.3</b> | <b>P 39.2</b>          | <b>L 48</b> | <b># 266</b> |
| Colin Mick                                             | The Mick Group |                        |             |              |
| <b>Comment Type</b>                                    | <b>E</b>       | <b>Comment Status</b>  | <b>A</b>    |              |
| Citation to 39.7 should be to 39.6                     |                |                        |             |              |
| <b>SuggestedRemedy</b>                                 | fix            |                        |             |              |
| <b>Proposed Response</b>                               |                | <b>Response Status</b> | <b>C</b>    |              |
| ACCEPT.<br>Change citation from 39.7 should be to 39.6 |                |                        |             |              |

|                                        |                             |                        |             |              |
|----------------------------------------|-----------------------------|------------------------|-------------|--------------|
| <b>Cl 39</b>                           | <b>SC 39.3</b>              | <b>P 39.2</b>          | <b>L 48</b> | <b># 580</b> |
| Shimon Muller                          | Sun Microsystems            |                        |             |              |
| <b>Comment Type</b>                    | <b>E</b>                    | <b>Comment Status</b>  | <b>A</b>    |              |
| The reference to 39.7 is incorrect.    |                             |                        |             |              |
| <b>SuggestedRemedy</b>                 | Replace "39.7" with "39.6". |                        |             |              |
| <b>Proposed Response</b>               |                             | <b>Response Status</b> | <b>C</b>    |              |
| ACCEPT.<br>Replace "39.7" with "39.6". |                             |                        |             |              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                      |                        |             |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------|-------------|---------------|
| <b>Cl 39</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>SC 39.3.1</b>                                                                     | <b>P 39.5</b>          | <b>L 22</b> | <b># 1226</b> |
| Geoff Thompson                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Bay Networks, Inc.                                                                   |                        |             |               |
| <b>Comment Type</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR</b>                                                                            | <b>Comment Status</b>  | <b>A</b>    |               |
| TDR measurements are called out without a reference that I can find to a standardized measurement technique with standardized test equipment setup.                                                                                                                                                                                                                                                                                                                           |                                                                                      |                        |             |               |
| Or perhaps since all of the references to TDR are in notes the objection is that there is no specified measurement procedure.                                                                                                                                                                                                                                                                                                                                                 |                                                                                      |                        |             |               |
| <b>SuggestedRemedy</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | All measurements that are called for should reference a standardized test procedure. |                        |             |               |
| <b>Proposed Response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                      | <b>Response Status</b> | <b>U</b>    |               |
| Partial Accept<br>Numerous examples of TDR test data have been presented and reviewed at ANSI T11 meetings, as well as at 802.3z meetings. In no case was any significant discrepancy found between different pieces of test equipment. However, improper test fixturing can have significant impact on the results. It is the responsibility of the implementer of such a fixture to ensure, through testing with known loads, that their fixture produces accurate results. |                                                                                      |                        |             |               |
| A note will be added to the clause at line 55, page 39.11, stating that:<br>" Any test fixture used with these TDR tests must be calibrated with standard loads and verified to produce accurate results."                                                                                                                                                                                                                                                                    |                                                                                      |                        |             |               |
| We will investigate the existance of international test methodologies for TDR. If found, we will include this in 39.6.4.                                                                                                                                                                                                                                                                                                                                                      |                                                                                      |                        |             |               |
| Additional response as of 9/30/97: The committee has determined that no international standard test methodolgies exist for TDR measurements of 150-ohm balanced cabling.                                                                                                                                                                                                                                                                                                      |                                                                                      |                        |             |               |

P802.3z Draft 3.1 Comments

Cl 39 SC 39.3.1 and 39.3.2 P 39.3 and 39. L Table 39-1 # 101  
 Bruce B. Barrow IEEE Standards Coord

Comment Type E Comment Status A global

Standard symbol for megabit per second is Mb/s; standard symbol for megabaud is MBd. Proper term for "Nominal Baud Rate" is "Nominal signaling speed." Millivolts are not peak-to-peak; the differential amplitude is.

*SuggestedRemedy*

Use Mb/s, MBd, nominal signaling speed. Use "Differential Amplitude (peak-to-peak)" in column 1 and mV in column 2.

Proposed Response Response Status C

ACCEPT.  
 In table 39-1  
 Change "Nominal Baud Rate" to "Nominal Signaling Rate, in Baud"  
 Change "Differential Amplitude" to "Differential Amplitude (peak-to-peak)"  
 Change "Max (peak)" to "Max (worst case peak-to-peak)"  
 Change "Min (opening)" to "Min."  
 Change "Mbit/s" to "Mb/s"  
 Strike the notation "(p-p)" in two places

In table 39-3  
 Change "Minimum Differential Sensitivity" to "Minimum Differential Sensitivity (peak-to-peak)"  
 Change "Mbit/s" to "Mb/s"  
 Strike the notation "(p-p)" in one place

Cl 39 SC 39.3.2 P 39.6 L 1 # 611  
 David Cunningham Hewlett-Packard

Comment Type TR Comment Status R

How was the receive eye diagram in figure 39-5 calculated? Has it been experimentally verified?

In draft D3.1 the frequency response of the attenuation of the jumper cable assembly is specified at one point only, 8.8 dB at 625 MHz. Since the attenuation response as a function of frequency is not specified for the jumper cable assembly it is impossible to calculate the receive eye diagram.

However, based on extensive experience designing both twisted pair and optical fibre digital communication links an attenuation value greater than 6 dB at a frequency equal to half the band rate usually indicates that equalization is required. I would therefore expect the eye to be closed.

To perform a simple simulation I assumed a square root dependence for the frequency response of the attenuation, in dB, for the jumper cable. I assumed that it passed through the (8.8 dB, 625 MHz) point. I concluded that the eye opening was less than 400 mV peak to peak for distances longer than approximately 17 m.

*SuggestedRemedy*

Verify 400 mV peak to peak receive eye opening for a non-equalized 25 m jumper cable.

If non-equalized, 25 m long, jumper cable assemblies cannot be supported reduce the reach of the short haul copper PMD for non-equalized jumper cables appropriately (since equalizers are currently optional).

Alternatively, make equalizers normative but leave the decision as whether to use in cable or on chip equalizers up to the implementer.

Proposed Response Response Status C

Reject  
 The 400mV p-p eye opening ia correct. In addition, the receive eye mask specifies the signal required at TP-3. The 0.1 to 25m jumper may include equalization to ensure conformance with the receive eye mask. If equalization is used to meet the eye mask it must be included as part of the jumper cable assembly to ensure interoperation. The text of 39.4.1 will be changed to reflect this.

The new wording for this subclause is:

A jumper cable assembly may include an equalizer network to meet the specifications and signal quality requirements (e.g., receiver eye mask at TP3) of this clause. The equalizer shall need no adjustment. All jumper cable assemblies containing such circuits shall be marked with information identifying the specific designed operational characteristics of the jumper



P802.3z Draft 3.1 Comments

cable assembly.

CI 39 SC 39.3.2 P39.6 L 32 # 803

Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: font symbol conversion in Units column.

SuggestedRemedy

Change from "W" to "ohms symbol". Also change line 34.  
Note same problem on page 39.8, lines 9 and 10

Proposed Response Response Status C

ACCEPT.  
Change from "W" to "ohms symbol". Also change line 34.  
And correct same problem on page 39.8, lines 9 and 10

CI 39 SC 39.3.2, 39.4 P39.6, 39 L 48, # 581

Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Replace "Though\_Connection" with "Through\_Connection" in specified places.

Proposed Response Response Status C

ACCEPT.  
Replace "Though\_Connection" with "Through\_Connection" in specified places.

CI 39 SC 39.3.3 P39.7 L 37 # 804

Tom Mathey Baynetworks

Comment Type E Comment Status A

Typo: reference to wrong table.

SuggestedRemedy

Change from "table 38.5" to "38-7". Note change from . to -.

Proposed Response Response Status C

ACCEPT.  
Change from "table 38.5" to "38-7".

CI 39 SC 39.3.3 P39.7 L 37 # 324

Richard Dugan Hewlett Packard

Comment Type E Comment Status A

Note in lines 36,37 incorrectly refers to "table 38.5"

SuggestedRemedy

Change to "table 38-7"

Proposed Response Response Status C

ACCEPT.  
Change note in lines 36,37 from "table 38.5", to "table 38-7"

CI 39 SC 39.3.3 P39.7 L 9 # 426

Steve Joiner HP

Comment Type E Comment Status A

The Random and Deterministic Jitter values confuse implementors because the random jitter values are based on assuming that the allowed random jitter is the total jitter minus the actual deterministic jitter values. The table does not represent jitter budgetary specifications. The jitter numbers suggested by the work of the T11 methodology for jitter specification technical report was based on making the total jitter and deterministic jitter normative. The random jitter was to be the remaining jitter budget at each test point.

SuggestedRemedy

Remove the phrase that the beginning with Deterministic in line 9.

Replace with the following:

The informative values for deterministic jitter in the table represent a budgetary value for the maximum deterministic jitter for each compliance point. At each point, the allowed random jitter is the difference between the total jitter and the actual deterministic jitter. Thus the random jitter in Table 39-4 represents the allowed random jitter when the deterministic jitter is at its maximum recommended value.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
Implement according to final decision on 424 and 425. Change language in line 9, Delete "and random", "and RJ" and "38.5.11" and change "38.5.10" to "38.6.9".

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Cl 39 SC 39.3.3 P 39.7 L Multiple, # 582  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

All references to clause 38 are incorrect.

SuggestedRemedy

- \* On line 6 replace "38.5.9" with "38.6.8".
- \* On line 10 replace "38.5.10" with "38.6.9".
- \* On line 10 replace "38.5.11" with "38.6.10".
- \* On line 37 replace "38.5" with "38.7".

Proposed Response Response Status C

ACCEPT.  
 On line 6 replace "38.5.9" with "38.6.8".  
 On line 10 replace "38.5.10" with "38.6.9".  
 On line 10 replace "38.5.11" with "38.6.10".  
 On line 37 replace "38.5" with "38.7".

Cl 39 SC 39.4 P 39.7 L 39 # 201  
 Robert Campbell Lucent Technologies

Comment Type T Comment Status A

Requirement needed to ensure shield of cable is connected to the connector (plug) shield. This comment (No. 32) was rejected for Draft 3.0 and is reintroduced again.

SuggestedRemedy

Recommend a sub-clause be added that says something like:  
 "The shield of the cable shall be connected to the shell of the connectors (plugs) at each end of the jumper cable."

This comment was rejected because "This requirement is already covered by the 11801 reference in 39.6."  
 Clause 39.6 (which is 39.7 in draft 3.1) says:  
 "All equipment subject to this clause shall conform to the requirements of 14.7 and applicable sections of ISO/IEC 11801:1995."  
 Since ISO/IEC 11801 was written for, and applies to building cable it is not clear to me which sections are applicable. Looking through this specification I could not find a section that specifically requires the shield of a cable to be connected to the shield of a connector. Table 25 provides a hint of a requirement for 150 ohm connectors. Clause 10, which is titled "Shielding Practices", does not appear to be applicable to this specific comment. Therefore, I believe the inclusion of this requirement is very necessary to ensure the performance of the shield is realized, particularly for EMC reasons.

Proposed Response Response Status C

ACCEPT.  
 Add text to the clause requiring that the shield be connected to the connector shell at both ends of the cable.

This note was added to Fig. 39-1: "Jumper cable assembly shielding is attached to the system chassis via the connector shroud "

Also, in 39.7, the last sentence was changed to read: "Systems connected with 1000BASE-CX links shall meet the bonding requirements (common ground connection) of ISO 11801 clause 9.2 for shielded cable assemblies. Cable shield(s) shall be earthed (chassis ground) through the bulkhead connector shells on both ends of the jumper cable assembly as shown in figure 39-1."

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CI 39 SC 39.4 P 39.7 L 40 # 121

Henricus Koeman,

Fluke

Comment Type T Comment Status A

Requirements for characteristic impedance, and through connection characteristic impedance, and NEXT are stated in the time domain (TDR type measurements). This is not commonly done for generic cabling, where requirements are stated in the frequency domain. While there is no objection to stating requirements in the time domain, there is a need to establish consistency of results. The consistence of these measurements should be stated and should be based on measurements by different parties, using different test equipment and using the very same object(s).

SuggestedRemedy

State variability

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution at Comment 1156

While the statement is correct that TDRs are not usually used for generic cabling, it must be pointed out that this is not generic cabling; i.e., these are jumper cable assemblies. Text will be added to clause 39.1 to explain that these jumpers are effectively black-box assemblies that are only "visible" through their I/O connectors. (see comment 204, the response to which is attached below:)

The jumper cable assembly shall provide an output signal shown in figure 39-5 on contacts R+/R-, at the far end of the connector, when a transmit signal compliant with figures 39-3 and 39-4 is connected to contacts T+/T- at the near-end MDI connector.

In addition, about TDR testing in general, (see comment 1156) Numerous examples of TDR test data have been presented and reviewed at ANSI T11 meetings, as well as at 802.3z meetings. In no case was any significant discrepancy found between different pieces of test equipment. However, improper test fixturing can have significant impact on the results. It is the responsibility of the implementer of such a fixture to ensure, through testing with known loads, that their fixture produces accurate results.

A note will be added to the clause at line 55, page 39.11, stating that:  
" Any test fixture used with these TDR tests must be calibrated with standard loads and verified to produce accurate results."

We will investigate the existance of international test methodologies for TDR. If found, we will include this in 39.6.4.

Additional response as of 9/30/97: The committee has determined that no interantional standard test methodolgies exist for TDR measurements of 150-ohm balanced cabling.

CI 39 SC 39.4 P 39.7-8 L 48-34 # 267

Colin Mick

The Mick Group

Comment Type E Comment Status A

Tie notes to apprprriate entries/columns in 39-5.

SuggestedRemedy

As above

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The notes on lines 24 through 28 on page 39.8 will be attached to table 39-5. Notes on lines 29 through 34 will not -- these are informative.

CI 39 SC 39.4 P 39.8 L 15 # 196

Robert Campbell

Lucent Technologies

Comment Type TR Comment Status A

Change unit of NEXT loss from '%' to 'dB'.

SuggestedRemedy

Change NEXT loss unit to 'dB' and the value to '> 24.4'.

Also, add 'loss' after 'NEXT'. The normal metric for specifying NEXT loss in both cabling standards is dB.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

The two metrics (dB AND %) both express a ratio and are easily translated. The majority of participants in the working group have expressed preference for %. To insure clarity, both values will be listed.

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Cl 39 SC 39.4 P 39.8 L 16 # 188  
 Robert Campbell Lucent Technologies

Comment Type TR Comment Status A

Specify End to End Delay in nano-seconds in addition to bit times.

SuggestedRemedy

This comment was rejected in Draft 3.0, therefore it is submitted again. There is a long list of precedences for providing delay in time (ns); 1BASE5, 10BASE-T, 100BASE-T4 and 100BASE-T2 to name only a few. The metric used to measure (specify) cable delay in these standards is time in nano-seconds. Also, in the two cabling standards (ISO/IEC 11801 and ANSI/TIA/EIA-568-A) cable delay is specified and measured in nano-seconds. Therefore, add an additional item to this specification for delay in time of '< 253 ns'.

Proposed Response Response Status C

ACCEPT.  
 State delay in both ns and bit times.

Cl 39 SC 39.4 P 39.8 L 16 # 202  
 Robert Campbell Lucent Technologies

Comment Type T Comment Status A

The 'end to end delay' appears to be excessive.

SuggestedRemedy

The delay of a 25 meter jumper cable assuming a velocity of 0.65C is  $25/(0.300E*0.65) = 128$  ns, which is equal to 128 bits. It appears the delay is specified in round trip delay rather than one way delay. Recommend the 'end to end' delay' be changed to a value in the order of 128 bits.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 1) Math should use 1.25 GBaud  
 2) Add footnote: "Used in clause 42. This delay is a budgetary requirement of the upper layers. It is easily met by the jumper cable delay characteristics in this clause."

Cl 39 SC 39.4 P 39.8 L 22 # 204  
 Robert Campbell Lucent Technologies

Comment Type TR Comment Status A

Frequency specification for attenuation and NEXT loss insufficient to guarantee an open eye. Currently these two parameters are specified at only 625 MHz. This implies that the energy above (and possibly below) this frequency is not required to be recovered to ensure an open receive eye, which is necessary for ensure the BER is met. The amount of energy in the first lobe of the NRZ transmitted signal vs the rise time of the transmitter signal is shown below.

| Transmitter Signal Rise time (ps) | Percent of Energy Above 625 MHz |
|-----------------------------------|---------------------------------|
| 0                                 | 14.3 %                          |
| 85                                | 13.4 %                          |
| 327                               | 8.0 %                           |

Although a channel with a cutoff frequency of one-half the signaling symbol rate may be possible mathematically when using an ideal channel, the channel used by CX is not ideal and hence needs to be modified.

SuggestedRemedy

It is recommended that frequency specification for attenuation and NEXT loss be increased from 625 MHz to 825 MHz. This will ensure there is sufficient signal energy to ensure an open receiver eye. The amount of energy of the first lobe of the NRZ transmitted signal above 825 MHz is less than 4.2 percent as shown in the following table.

| Transmitter Signal Rise time (ps) | Percent of Energy Above 825 MHz |
|-----------------------------------|---------------------------------|
| 0                                 | 4.18 %                          |
| 85                                | 3.80 %                          |
| 327                               | 1.86 %                          |

The current specification relies on the frequency region above 625 MHz to be well behaved (attenuation response is consistent with that below 625 MHz). To ensure that the region above 625 MHz is well behaved requires that a specification be provided that includes this region. Therefore, it is recommended to that both attenuation and NEXT loss be specified up to 825 MHz.

In addition, it is recommended that the attenuation and NEXT loss be specified in the frequency band below 825 MHz. Since I have been unable to locate a contribution that describes the jumper cable characteristics I am unable to provide a suggested remedy/specification.

P802.3z Draft 3.1 Comments

*Proposed Response*      *Response Status*    **C**

ACCEPT IN PRINCIPLE.

A misunderstanding was found in that these cables are jumper cable assemblies only and not separate cable, connector, etc. specifications. This will be clarified by adding text to 39.1 explaining that the jumpers are effectively black-box entities that need only meet the electrical and mechanical requirements of the clause to ensure interoperability, and may be implemented in any of a number of fashions.

The following text will be added to clause 39.1 to replace the second sentence of the second paragraph of this clause.

A 1000BASE-CX jumper cable assembly shall consist of a continuous shielded balanced cable terminated at each end with a polarized shielded plug described in 39.5.1

The jumper cable assembly shall provide an output signal shown in figure 39-5 on contacts R+/R-, at the far end of the connector, when a transmit signal compliant with figures 39-3 and 39-4 is connected to contacts T+/T- at the near-end MDI connector.

---

**Cl 39**      **SC 39.4**                      **P 39.8**              **L 30**                      # **203**  
 Robert Campbell                      Lucent Technologies

*Comment Type*    **TR**              *Comment Status*    **A**                      *recirculate this to Bob*

Remove note pertaining to IBM Type I shielded twisted pair.  
 This comment was rejected in draft 3.0 (comment 23)

*SuggestedRemedy*

- It is strongly recommended that the note pertaining to the IBM Type I cable be removed since;
1. It has not been demonstrated via contributions that the cable will support the 1250 MBaud rate.
  2. The cable is only specified up to 300 MHz (Attenuation and NEXT loss) in ISO/IEC 11801.
  3. The cable is designed as a building cable rather than a jumper cable.
  4. It is not expected the CX jumper cable will be field assembled.

*Proposed Response*      *Response Status*    **U**

ACCEPT IN PRINCIPLE.

To address this comment, the verbiage "...may not meet the differential skew, NEXT, Bandwidth, or other specifications required for this application." will be added to the note.

NEW INFORMATION added at San Jose Interim:  
 In addition the specific reference to "IBM" will be replaced by a reference the ISO 11801 reference for this cable type.

---

**Cl 39**      **SC 39.4**                      **P 39.8**              **L 32**                      # **199**  
 Robert Campbell                      Lucent Technologies

*Comment Type*    **E**                      *Comment Status*    **A**  
 Spelling correction

*SuggestedRemedy*

Change `Though' to `Through'.  
 Make same correction on page 39.6, line 48.

*Proposed Response*      *Response Status*    **C**

ACCEPT.  
 Change `Though' to `Through'.  
 Make same correction on page 39.6, line 48.

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CI 39 SC 39.4 P 39.8 L 4 # 51  
 David G. Cunningham Hewlett-Packard

Comment Type T Comment Status A

The jumper cable assembly attenuation specification is incomplete. The attenuation is only specified at a single frequency in table 39-5. Base band transmission of NRZ data requires a channel having a pass bandwidth from close to zero to frequencies in excess of the half-baud rate.

Based on the single attenuation point the simplest assumption is to assume that the channel is a perfect low pass filter up to the half-baud rate frequency. However, a channel of this type has zero tolerance to timing jitter, clock frequency drift and cut-off frequency shift. For this reason the worse case frequency response of the jumper cable must be defined from DC to frequencies above the half-baud rate.

Proof that frequency response in excess of the half-baud rate is required can be found in 'Digital Transmission', 2nd edition by P Bylanski and D G W Ingram, published by Peter Peregrinus Ltd., UK, on Behalf of the IEE, ISBN: 0 906048 (see Chapter 9, section 9.7).

SuggestedRemedy

Define the worse case attenuation envelope of the jumper cable assembly from DC to at least 875 MHz by adding a table of attenuation versus frequency values for the jumper. Such tables are commonly provided in ISO 11801 for twisted pair cabling.

Alternatively, in combination with attenuation value in table 39-5, define the worse case jumper cable assembly attenuation as a function of frequency with an equation. This approach has previously been used in TIA/EIA-568-A for twisted pair cabling.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution of comment 204:

ACCEPT IN PRINCIPLE.

A misunderstanding was found in that these cables are jumper cable assemblies only and not separate cable, connector, etc. specifications. This will be clarified by adding text to 39.1 explaining that the jumpers are effectively black-box entities that need only meet the electrical and mechanical requirements of the clause to ensure interoperability, and may be implemented in any of a number of fashions.

The following text will be added to clause 39.1 to replace the second sentence of the second paragraph of this clause.

A 1000BASE-CX jumper cable assembly shall consist of a continuous shielded balanced cable terminated at each end with a polarized shielded plug described in 39.5.1

The jumper cable assembly shall provide an output signal shown in

figure 39-5 on contacts R+/R-, at the far end of the connector, when a transmit signal compliant with figures 39-3 and 39-4 is connected to contacts T+/T- at the near-end MDI connector.

CI 39 SC 39.4 P 39.8 L 4,5,6 # 52  
 Les Poltrack Cisco Systems

Comment Type T Comment Status A

Table 39.5 lists both cable impedance and link impedance units as "W". I believe the author meant Ohms, not Watts as a measure of impedance.

SuggestedRemedy

Change the three "W"s in Table 39-5 to Omegas.

Proposed Response Response Status C

ACCEPT.

Change the three "W"s in Table 39-5 to Omegas.

CI 39 SC 39.4 P 39.8 L 5 # 198  
 Robert Campbell Lucent Technologies

Comment Type E Comment Status A

Table 39-5: Remove Cable Impedance (nominal)

SuggestedRemedy

Recommend Cable Impedance item be removed since it is also specified in the Link Impedance.

Proposed Response Response Status C

ACCEPT.

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Cl 39 SC 39.4.1 P 39.8 L 38 # 69  
 Grahame Measor GEC Plessey Semicon

Comment Type T Comment Status R

When equalization is present in the link, this line mandates that it shall be contained in the cable. This precludes auto equalization in the receiver. We should allow the use of equalization in either the cable or the receiver.

SuggestedRemedy

Line 38 should read:  
 "An optional equalizer network, when present in a link, may exist and operate as part of the jumper cable assembly. Equalization networks in the cable shall need no adjustment. An equalizer in the receiver shall automatically adjust its characteristics to accommodate cables containing an equalizer and also cables without equalizers, for cable length between 0.1 and 25m."

Proposed Response Response Status C

REJECT.  
 The commentator is correct, if equalization is required for a cable to meet its specifications, it is required in the cable assembly. There is no restriction within the draft standard concerning the use of equalization in the transceiver. The working group explicitly excluded the combination of non-equalized jumper assemblies that require equalization in the transceiver to meet specification. This was done to avoid interoperability problems.

Clause 39.4.1 will be re-written to correct for the mis-conception.

In addition, the receive eye mask specifies the signal required at TP-3. The 0.1 to 25m jumper may include equalization to ensure conformance with the receive eye mask. If equalization is used to meet the eye mask it must be included as part of the jumper cable assembly to ensure interoperation. The text of 39.4.1 will be changed to reflect this.

The new wording for this subclause is:

A jumper cable assembly may include an equalizer network to meet the specifications and signal quality requirements (e.g., receiver eye mask at TP3) of this clause. The equalizer shall need no adjustment. All jumper cable assemblies containing such circuits shall be marked with information identifying the specific designed operational characteristics of the jumper cable assembly.

Cl 39 SC 39.5 P 39.8 L 49 # 200  
 Robert Campbell Lucent Technologies

Comment Type TR Comment Status R

Need for two MDI connectors?

SuggestedRemedy

- Recommend only one MDI connector be specified. Justification for only one are:
1. Backwards compatibility is not required.
  2. Minimizes the number of jumper cords that are required to be inventoried. With the current specification 3 different cords at each length would be necessary.
  3. Specifying two connectors creates confusion at all levels for service providers.

Specifying the style-2 connector would differentiate the CX interface from other interfaces that use style-1. Since there are sufficient contributions in support of the style-2 connector, I recommend the style-2 connector be adopted as the official 1000BASE-CX MDI connector.

Proposed Response Response Status U

REJECT.  
 This issue was raised as a series of motion at the 802.3z level, at the London UK meeting. The The first motion was #2, which read: "That the sytle-1 DB-9 conector be removed from 802.3z". This technical motion failed by a vote of (Y-16, N-15, A-23). The second motion was #3, which read "Keep the Style-1 (DB-9) and Style-2 (HSSDC) connector in clause 39". This technical motion passed by a vote of (Y-42, N-8, A-9). In light of these vote results, it is clear that we have a significant technical consensus in favor of retaining both connectors.

Cl 39 SC 39.5 P 39.8 L 51 # 187  
 Robert Campbell Lucent Technologies

Comment Type E Comment Status A

Reword to clarify purpose of this section

SuggestedRemedy

Replace lines 51-52 with the following.  
 'This clause defines the Media Dependent Interface (MDI). The 1000BASE-CX PMD of 39.3 is coupled to the jumper cable by the MDI.'

Proposed Response Response Status C

ACCEPT.  
 Replace lines 51-52 with the following.  
 'This clause defines the Media Dependent Interface (MDI). The 1000BASE-CX PMD of 39.3 is coupled to the jumper cable by the MDI.'

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Cl 39 SC 39.5.1 P 39.9 L 1 # 186  
 Robert Campbell Lucent Technologies

Comment Type E Comment Status A  
 Title of section should reflect information in section.

SuggestedRemedy  
 Replace title with following.  
 `MDI Connectors`

Proposed Response Response Status C  
 ACCEPT.  
 Replace title with `MDI Connectors`

Cl 39 SC 39.5.1 P 39.9 L 2-3 # 193  
 Robert Campbell Lucent Technologies

Comment Type E Comment Status A  
 Wordsmith lines 2-3 to provide specificity.

SuggestedRemedy  
 Replace lines 2-3 with the following  
 `Connectors meeting the requirements of 39.5.1.1 (Style-1) and 39.5.1.2 (Style-2) shall be used as the mechanical interface between the PMD of 39.3 and the jumper cable of 39.4. The plug connector shall be used on the jumper cable and the jack on the PHY. Style-1 or style-2 connectors may be used as the MDI interface.`

Proposed Response Response Status C  
 ACCEPT.  
 Replace the paragraph with"  
 "Connectors meeting the requirements of 39.5.1.1 (Style-1) and 39.5.1.2 (Style-2) shall be used as the mechanical interface between the PMD of 39.3 and the jumper cable assembly of 39.4. The plug connector shall be used on the jumper cable assembly and the receptacle on the PHY. Style-1 or style-2 connectors may be used as the MDI interface."

Cl 39 SC 39.5.1.1 P 39.9 L 52 # 1227  
 Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A  
 This is not an standards based specification that I can give to my purchasing department and expect to get something that is interoperable and works.

SuggestedRemedy  
 Quote real standards based specifications

Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The footnote at the bottom of page 39.9 will be removed and the paragraph 39.5.1.1 will be replaced with:

The style-1 balanced connector for balanced jumper cable assemblies shall be the 9-pin shielded D-sub miniature connector, with the mechanical mating interface defined by IEC 807-3, having pinouts matching those shown in figure 39-6, and the signal quality and electrical requirements of this clause.

Cl 39 SC 39.6.2 P 39.11 L 30 # 396  
 Scott Carter IBM

Comment Type E Comment Status A  
 fix capitalization

SuggestedRemedy  
 uncapitalize Figure

Proposed Response Response Status C  
 ACCEPT.  
 Remove capitalization from the word "Figure" on page 39.11, line 30.

Cl 39 SC 39.6.3 P 39.11 L 42 # 583  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 The reference to 38.5.9 is incorrect.

SuggestedRemedy  
 Replace "38.5.9" with "38.6.8".

Proposed Response Response Status C  
 ACCEPT.  
 Replace "38.5.9" with "38.6.8".



P802.3z Draft 3.1 Comments

CI 39 SC 39.6.3 P 39.11 L 46 # 395  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 fix capitalization  
 SuggestedRemedy  
 uncapitalize Figure  
 Proposed Response Response Status C  
 ACCEPT.  
 Remove capitalization from the word "Figure" on page 39.11, line 46.

CI 39 SC 39.6.5 P 39.12 L 10 # 205  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status R  
 It is unclear what is being measured in this sub-clause.  
 SuggestedRemedy  
 Recommend an introduction be provided that defines  
 `differential skew` and the need for this measurement.  
 It is unclear whether this sub-clause measures the skew  
 between the two cable pairs or the skew between the two  
 conductors of a single pair in the jumper cable. If it  
 is the latter, then ground references need to be defined.  
 Since it is unclear to me what is being measured I am unable  
 to provide a suggested remedy.

Proposed Response Response Status C  
 REJECT.  
 Page 39.12, line 18, states that the test equipment provide a load equivalent  
 to figure 39-2. Since the transmit end is AC coupled, the only ground present  
 in the system is that defined by 39-2, which is at the output of the cable at the  
 point where the measurement is required to be made.

CI 39 SC 39.6.5 P 39.12 L 18 # 394  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 fix capitalization  
 SuggestedRemedy  
 uncapitalize Figure  
 Proposed Response Response Status C  
 ACCEPT.  
 Remove capitalization from the word "Figure" on page 39.12, line 18.

CI 39 SC 39.6.6 P 39.12 L 30 # 397  
 Scott Carter IBM  
 Comment Type E Comment Status A  
 fix capitalization  
 SuggestedRemedy  
 uncapitalize Figure  
 Proposed Response Response Status C  
 ACCEPT.  
 Remove capitalization from the word "Figure" on page 39.12, line 30.

CI 39 SC 39.6.6 P 39.12 L 30-31 # 584  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 Both references are incorrect.  
 SuggestedRemedy  
 Replace "Figure 39-12" with "Figure 39-2" and "39.5" with "Figure 39-5".  
 Proposed Response Response Status C  
 ACCEPT.  
 Replace figure 39-12 with figure 39-2.  
 Replace 39.5 with figure 39-5.

CI 39 SC 39.6.7 P 39.12 L 33 # 189  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status R  
 Add `Loss` to title  
 SuggestedRemedy  
 Add `Loss` after `NEXT`.  
 Proposed Response Response Status C  
 REJECT.  
 Loss is implied in definition of NEXT

CI 39 SC 39.6.7 P 39.12 L 35 # 192  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status A  
 Wordsmithing `or equivalent`.  
 SuggestedRemedy  
 Put `or equivalent` in parentheses.  
 Proposed Response Response Status C  
 ACCEPT.  
 Put `or equivalent` in parentheses.

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Cl 39 SC 39.6.7 P 39.12 L 35 # 190  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status R  
 Add the word 'Loss'.  
 SuggestedRemedy  
 Add 'Loss' after '(NEXT)'.  
 Proposed Response REJECT. see comment 189  
 Response Status C

Cl 39 SC 39.6.7 P 39.12 L 36 # 191  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status A  
 Substitute for 'pair'  
 SuggestedRemedy  
 Change 'of the pair' to 'of the jumper cable connector'.  
 Proposed Response ACCEPT. Change 'of the pair' to 'of the jumper cable connector'.  
 Response Status C

Cl 39 SC 39.6.7 P 39.12 L 39 # 197  
 Robert Campbell Lucent Technologies  
 Comment Type T Comment Status A  
 Termination of far-end jumper cable pairs.  
 SuggestedRemedy  
 It is highly recommended that both far end jumper cable pairs be terminated per Figure 39-2. This is very important when measuring short length jumper cables. Reflections from the unterminated end may influence the measurements on R+/R- pairs. Therefore, change line 39 as follows. Change 'are unterminated' to 'shall be terminated per Figure 39-2'.

Proposed Response ACCEPT. The second termination will be added to the requirements. Shalls should be added to 39.6.x  
 Response Status C  
 PICS added as follows:  
 Proposed response to comment #197  
 Add after the 39.6 Title:  
 "Electrical measurements shall be performed as described in the following sections 39.6.1, 39.6.2, 39.6.3, 39.6.4, 39.6.5, 39.6.6, 39.6.7"  
 Add these new PICS after OR-3 in section 39.8.4.4  
 ITEM, FEATURE, SUBCLAUSE, STATUS SUPPORT, VALUE/COMMENT  
 OR-A, Transmit rise/fall, 39.6.1, M, Yes[ ], Meet requirement of Table 39-1, time measurement, with load equivalent to fig. 39-2  
 OR-B, Transmit skew, 39.6.2, M, Yes[ ], Same as above^ measurement  
 OR-C, Transmit eye, 39.6.3, M, Yes[ ], Meet requirement of fig 39-3, measurement, with load equivalent to fig. 39-2  
 OR-D, Through-connection, 39.6.4, M, Yes[ ], Meet requirement of table 39-3, impedance measurement, and 39-5  
 OR-E, Jumper cable differential, 39.6.5, M, Yes[ ], Meet requirement of table 39-5, skew measurement, with a load equivalent to fig. 39-2  
 OR-F, Rx link signal, 39.6.6, M, Yes[ ], Meet requirement of fig. 39-5, measurement, with a load equivalent to fig. 39-2  
 OR-G, NEXT measurement, 39.6.7, M, Yes[ ], Meet requirement of table 39-5, with a load equivalent to fig. 39-2

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Cl 39 SC 39.6.7 P 39.12 L 40 # 195  
 Robert Campbell Lucent Technologies  
 Comment Type T Comment Status A  
 Add additional requirement.  
 SuggestedRemedy  
 Add the following requirement. `The NEXT loss measurement shall be conducted at each end of the jumper cable.'  
 Proposed Response Response Status C  
 ACCEPT.  
 Add the following requirement. `The NEXT loss measurement shall be conducted at each end of the jumper cable.'

Cl 39 SC 39.7 P 39.12 L 47 # 194  
 Robert Campbell Lucent Technologies  
 Comment Type E Comment Status A  
 Remove words `or the incorrect use of in-line splices or other adapters,'.  
 SuggestedRemedy  
 Since the jumper cable is a factory assembled unit of a continuous piece of cable, and since adapters are not required/used it strongly recommended the words `or the incorrect use of in-line splices or other adapters,' be removed.  
 Proposed Response Response Status C  
 ACCEPT.  
 Delete the text "or the incorrect use of in-line splices or other adapters," from line 47 of page 39.12.

Cl 39 SC 39.8.4 P 39.15 L 37 # 805  
 Tom Mathey Baynetworks  
 Comment Type E Comment Status A  
 Typo: Text from clause 38 in clause 39.  
 SuggestedRemedy  
 Change from "type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wave-length Laser" to "type 1000BASE-CX".  
 Proposed Response Response Status C  
 ACCEPT.  
 Change from "type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wave-length Laser" to "type 1000BASE-CX".

Cl 39 SC 39.8.4.1 to 39.8.4.4 P 39.16 to 39. L All # 1009  
 David Law 3Com  
 Comment Type E Comment Status A  
 Item references are usually alpha-numeric and do not include special characters.  
 SuggestedRemedy  
 Remove the '-' from the item names. For example 'FN-1' should read 'FN1'  
 Proposed Response Response Status C  
 ACCEPT.  
 Scrub all PICs for hyphens in the "Item" name. Do same to clause 38.

Cl 39 SC 39.8.4.3 P 39.18 L # 1202  
 David Law 3Com  
 Comment Type E Comment Status A  
 The support column for item LI-2 seems to be incorrect.  
 SuggestedRemedy  
 Suggest text should read 'Yes[] N/A[]'  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The measurements in LI-2 appears to be correct. PICs, in general, need to be scrubbed/verified.  
 Additional response as of 9/30/97: The editor has corrected the PICS to match all changes made to the document.

Cl 39 SC 39.8.4.3 P 39.18 L 11 # 1010  
 David Law 3Com  
 Comment Type E Comment Status A  
 This optional item is missing the 'N/A[]' in the support column.  
 SuggestedRemedy  
 Support column should read 'Yes[] N/A[]'  
 Proposed Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 The measurements in LI-2 appears to be correct. PICs, in general, need to be scrubbed/verified.  
 Additional response as of 9/30/97: The editor has corrected the PICS to match all changes made to the document.

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Cl 39 SC 39.8.4.4 P 39.19 L 6 # 1228  
Geoff Thompson Bay Networks, Inc.

Comment Type TR Comment Status A

The "Feature" PICS entry is broken for items OR-1 and OR-2. All TBDs were supposed to be gone

SuggestedRemedy

Replace TBD with appropriate text.

Proposed Response Response Status C

ACCEPT.

The footnote at the bottom of page 39.9 will be removed and the paragraph 39.5.1.1 will be replaced with:

The style-1 balanced connector for balanced jumper cable assemblies shall be the 9-pin shielded D-sub miniature connector, with the mechanical mating interface defined by IEC 60807-3, having pinouts matching those shown in figure 39-6, and the signal quality and electrical requirements of this clause.

The OR-1 feature description will be replaced with "Style-1 Connector"

The first paragraph of 39.5.1.2 will be replaced with

The style-2 balanced cable connector shall be the 8 pin shielded ANSI Fibre Channel style-2 connector with the mechanical interface defined by IEC 61076-3-103, having pinouts matching those shown in figure 39-7, and the signal quality and electrical requirements of this clause.

The OR-2 feature description will be replaced with "Style-2 Connector"

Cl 39 SC 39.8.4.4 P 39.19 L 6 # 1232  
Geoff Thompson Bay Networks, Inc.

Comment Type T Comment Status A

The "Feature" PICS entry for item OR-7 quotes a US only standard. This needs to have an international reference.

SuggestedRemedy

Provide international reference. If there is no international equivalent then an activity should be started so that one is available when international balloting takes place.

Proposed Response Response Status C

ACCEPT.

Will change to IS11801 (?) specific reference to be provided by E. Grivna by Santa Clara meeting.

Additional response as of 9/30/97:

In 39.7, the last sentence was changed to read: "Systems connected with 1000BASE-CX links shall meet the bonding requirements (common ground connection) of ISO 11801 clause 9.2 for shielded cable assemblies. Cable shield(s) shall be earthed (chassis ground) through the bulkhead connector shells on both ends of the jumper cable assembly as shown in figure 39-1."

Cl 39 SC 8.3 P 39.15 L 15 # 1155  
 Jim Mangin Bay Networks

Comment Type TR Comment Status A

Again we have the fact that the implementation of SIGNAL\_DETECT is optional. In this case, there is no simple way to implement it because there is no transceiver that provides it or free. Nonetheless, I still think an indication of whether the link is physically hooked up should be implemented.

SuggestedRemedy

Provide an indication of SIGNAL\_DETECT.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 The 802.3z task force accepted motion number 5 at the London meeting. This motion states

That the Signal\_Detect function in clauses 38 and 39 be changed from optional to mandatory, following the definitions developed by the PMD sub task group.

The motion was made by Ed Grivna, and seconded by Jim Tatum. The voting results for this motion were:

- YES - 50
- NO - 0
- ABSTAIN - 1

The motion mets the 75% requirement and passed.

The necessary text changes to implement this are listed here. A new parameter of "Maximum Differential Sensitivity" is added to table 39-3 with a value of 2000mV p-p.

The following paragraphs are effectively the full text replacements for their equivalent paragraphs in their listed subclauses.

38. Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-LX (Long Wavelength Laser) and 1000BASE-SX (Short Wavelength Laser)

38.1.1.3 PMD\_SIGNAL.indicate

This primitive is generated by the PMD to indicate the status of the signal being received from the MDI. Semantics of the service primitive

PMD\_SIGNAL.indicate(SIGNAL\_DETECT)

The SIGNAL\_DETECT parameter can take on one of two values: OK or FAIL, indicating whether the PMD is detecting a valid signal at the receiver (OK) or not (FAIL). When SIGNAL\_DETECT = FAIL, then rx\_bit is undefined,

but consequent actions based on PMD\_UNITDATA.indicate, where necessary, interpret rx\_bit as a logic ZERO.

Note: SIGNAL\_DETECT = OK does not guaranty that rx\_bit is known good. It is possible for a poor quality link to provide sufficient light for a SIGNAL\_DETECT = OK indication and still not meet the 10-12 BER objective.

38.2.4 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid optical signal. SIGNAL\_DETECT shall be set to FAIL when the received optical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 38-X SIGNAL\_DETECT value definition

| Receive Conditions                             | Signal       |
|------------------------------------------------|--------------|
|                                                | Detect Value |
| P_input, RX < -30 dBm (a)                      | FAIL         |
| Other conditions                               |              |
| Examples:                                      |              |
| 1) Receiving a non-8B/10B encoded data stream  | Unspecified  |
| 2) PMA on other end of link in loopback        |              |
| 3) Other end of link undergoing POR transients |              |
| 4) -30 dBm < P_input, RX < Receive power (min) |              |
| Receiving 8B/10B Code (b)                      |              |
| AND                                            |              |

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Receive power (min) is < or = to P\_input, RX and < or = to Receive power (max) (c) | OK

- a) This implies that the link is open, or the transmitter on the other end of the link is off (see table 38.2 for definition of off transmitter).
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 38.2 1000BASE-SX transmit characteristics

| Description                             | 50 mm and 62.5 mm MMF value | Unit     |
|-----------------------------------------|-----------------------------|----------|
| Transmitter type                        | Shortwave Laser             |          |
| Baud rate (range)                       | 1.25 +/- 100 ppm            | GBd      |
| Wavelength (l, range)                   | 770 to 860                  | nm       |
| Trise/Tfall (max; 20%-80%; l > 830 nm)  | 0.26                        | ns       |
| Trise/Tfall (max; 20%-80%; l >= 830 nm) | 0.21                        | ns       |
| Spectral width (max)                    | 0.85                        | ns, RMS  |
| Launch power (max)                      | See footnote (a)            | dBm, avg |
| Launch power (min)                      | -10                         | dBm, avg |
| Launch power of OFF transmitter(max)(b) | -30                         | dBm, avg |
| Extinction ratio (min)                  | 9                           | dB       |
| RIN (max)                               | -117                        | dB/Hz    |

- a) The 1000BASE-SX launch power shall be the lesser of the class 1 safety limit as defined by 38.7.2 or the maximum receive power defined by Table 38.3.
- b) Examples of an OFF transmitter are: no power supplied to the PMD, laser shutdown for safety conditions, activation of an "transmit disable" or other optional module laser shut down conditions.

Table 38.3 1000BASE-SX receive characteristics

| Description         | Value            | Unit     |
|---------------------|------------------|----------|
| Baud rate           | 1.25 +/- 100 ppm | GBd      |
| Wavelength (range)  | 770 to 860       | nm       |
| Receive power (max) | 0                | dBm, avg |
| Receive power (min) | -17              | dBm, avg |
| Return loss (min)   | 12               | dB       |

38.2.4.1 Physical Medium Dependent (PMD) sublayer and baseband medium, type 1000BASE-CX

39.2.3 PMD signal detect function

The PMD Signal Detect function shall report to the PMD service interface, using the message PMD\_SIGNAL.indicate(SIGNAL\_DETECT) which is signaled continuously. PMD\_SIGNAL is intended to be a rough indicator of signal presence. SIGNAL\_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal. SIGNAL\_DETECT shall be set to FAIL when the received electrical input power level is below -30 dBm. Examples of a FAIL condition are when the link is unplugged or the transmitter to which it is attached is turned off. Under all other conditions, the state of SIGNAL\_DETECT is unspecified.

Under all valid operating conditions there shall be no false positive OK indications. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the inherent noise level of the PMD due to cross talk, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the Receive power (min) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL\_DETECT trip point and the receiver sensitivity minimum.

Response time requirements are not specified.

It is expected that SIGNAL\_DETECT may chatter at some optical input level. It is expected that the PMD service interface will be designed to handle this.

Table 39-X SIGNAL\_DETECT value definition

| Receive Conditions | Signal |
|--------------------|--------|
|                    |        |

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|                                                                                                  | Detect Value |             |
|--------------------------------------------------------------------------------------------------|--------------|-------------|
| VINPUT, RX < 200 mV(p-p) (a)                                                                     |              | FAIL        |
| Other conditions                                                                                 |              |             |
| Examples:                                                                                        |              |             |
| 1) Receiving a non-8B/10B encoded data stream                                                    |              | Unspecified |
| 2) Other end of link undergoing POR transients                                                   |              |             |
| 2) 200 mV(p-p) < VINPUT, RX < Minimum Differential Sensitivity                                   |              |             |
| 4) One of the differential lines is open                                                         |              |             |
| Receiving 8B/10B Code (b)                                                                        |              |             |
| AND                                                                                              |              |             |
| Minimum Differential Sensitivity <= to V_input, RX and <= to Maximum Differential Sensitivity(c) |              | OK          |

- a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see table 38.2 for definition of OFF transmitter). 200 mV(p-p) assumes a combination of worst case NEXT (120 mV(p-p)) plus OFF transmitter noise due to ground and power supply noise (70 mV(p-p)) plus a 10 mV(p-p) margin.
- b) This implies that the transmitter on the other end of the link must be receiving 8B/10B code from the PMA/PCS and is functioning normally.
- c) This implies that the transmitter on the other end of the link is operating within specifications and the link is within specification.

Table 39-5 Transmitter characteristics at TP2

| Description                       | Value  | Unit    |
|-----------------------------------|--------|---------|
| Type                              | (P)ECL |         |
| Data Rate                         | 1000   | Mbits/s |
| Clock tolerance                   | +/-100 | ppm     |
| Nominal Baud Rate                 | 1250   | MBaud   |
| Differential Amplitude Max (peak) | 2000   | mv(p-p) |

|                                 |      |         |
|---------------------------------|------|---------|
| Min (opening)                   | 1100 | mv(p-p) |
| Max (OFF) (a)                   | 70   | mv(p-p) |
| Rise/Fall Time (20-80%) maximum | 327  | ps      |
| minimum                         | 85   | ps      |
| Differential (Skew)             | 25   | ps      |

a) Examples of an OFF transmitter are: no power supplied to the PMD and PMA transmit output being driven to a static state during loopback.

CI 39 SC Fig. 39-6 P L # 380003

Ed Grivna Cypress

Comment Type T Comment Status A

Figures 39-6 and 39-7 do not identify whether we are looking at a plug or a receptacle.

Suggested Remedy

Change the title of figure 39-6 to read:  
 "Style-1 balanced connector receptacle pin assignments"  
 Change the title of figure 39-7 to read:  
 "Style-2 balanced connector receptacle pin assignments"

In figure 39-6, the pin numbers 5 and 9, currently shown at the top of the figure, should be moved to the bottom, and the pin numbers 1 and 6, currently shown at the bottom of the figure, should be moved to the top.

Proposed Response Response Status C

ACCEPT.

Cl 39 SC General P L # 1274  
 Myles Kimmitt 3Com

Comment Type T Comment Status A

1000B-CX spec does not have crosstalk specifications and only has an optional squelch. These two factors make it impossible to guarantee that when a cable is pulled (worst case at the remote end) that the PMD will be able to detect this event. It is likely that the RX\_SYNC state machine will lock to the local crosstalk signal and continue to declare the receive channel good. The spec cannot prevent this from happening because 1) the crosstalk level seen at the receiver is not specified, and 2) The receiver can operate down to an unspecified input level (no squelch).

History

10B-T has crosstalk and squelch specs

Token ring uses phantom and crosstalk specs

100B-TX/CDDI has about half the standard devoted to crosstalk and squelch issues

1000B-CX has nothing and it is running 10 times faster than 100B-TX? There is something wrong here and the laws of physics still apply.

I can only think that in Fibre Channel the arbitrated loop closes open links and prevents receivers floating and most connections are within cabinets and cable disconnects are not common.

*SuggestedRemedy*

1. The standard should tackle these issues.

2. If the standard is going to have these omissions in the PMD spec it should have some informative text on how to make robust systems in the presence of crosstalk. Over time it will become apparent that different Silicon is required for good CX operation versus SX and LX and the resistance to these specs will diminish as they are driven outside the standard by vendors.

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.

Worst case NEXT is specified in Table 39.5.

In addition, the signal detect function has now been changed from optional to mandatory. The trip level is set such that it is above the worst case crosstalk level.



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CI 41 SC 41.1.1 P41.2 L1-30 # 585  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status R

The PHYs on Figure 41-1 should include an AUTONEG block, which is mandatory for 1000Mb/s operation.

SuggestedRemedy

- \* Add an "AUTONEG" block to each PHY on Figure 34-1.
- \* Add an additional note that reads as follows:  
 "AUTONEG is mandatory for 1000Mb/s systems, and is optional otherwise".

Proposed Response Response Status C

Reject.  
 For the purposes of these diagrams, which appear in most clauses of 802.3z, AutoNeg is considered part of PCS.

CI 41 SC 41.1.3 P41.3 L13 # 672  
 stephen haddock Extreme Networks

Comment Type T Comment Status A

This is first of three places indicating the repeater\_mode variable should be set in each PHY. This one says "should", the other two (41.2.1.3.1 and 41.2.2.1.2) say "shall". There is no PICS entry.

SuggestedRemedy

Use the word "shall" in one place for setting this variable, and add a PICS entry

Proposed Response Response Status C

Accept. The "shall" will be in section 41.2.1.3.1. The parenthetical sentence referring to the repeater\_mode variable will be taken out of parenthesis and made a separate sentence. Section 41.1.3 page 41.3 line 13 will be reworded to "The repeater\_mode variable in each PHY is set so that the CRS signal of the GMII is asserted only in response to receive activity." Section 41.2.2.1.2 page 41.8 line 23 will be modified to read: "... is set so that the CRS(X) signal ..."  
 Add PICS entry RE6, refer to editorial comment number 1205.

CI 41 SC 41.1.3 P41.3 L14 # 1206  
 David Law 3Com

Comment Type E Comment Status A

Add a reference to the repeater\_mode in clause 36.

SuggestedRemedy

Suggest text '... receive activity.' should read '... receive activity (see 36.2.5.1.3).'

Proposed Response Response Status C

Accept.

CI 41 SC 41.2.1.2.2 P41.4 L40 # 806  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Sentence with words "code-groups" should have dash symbol "-" replaced with underscore "\_". Also, perform a global search of this clause and replace all other usages.

SuggestedRemedy

Replace "code-groups" with "code\_groups".

Proposed Response Response Status C

ACCEPT IN PRINCIPLE.  
 The inconsistency in the use of "code-groups" vs "code\_groups" will be resolved by using "code\_groups" everywhere.

CI 41 SC 41.2.1.3.1 P41.4 L51 # 1205  
 David Law 3Com

Comment Type E Comment Status A

Suggest that the 'shall' statement should be removed from the brackets and made it to a stand alone sentence. The 'shall' then should also be added to the PICS.

SuggestedRemedy

Suggest additional PICS entry in 41.6.4.5, item 'RE6', Feature 'PHY repeater\_mode variable', subclause '41.2.1.3.1' support 'M', support 'Yes[]'

Proposed Response Response Status C

Accept.

CI 41 SC 41.2.1.3.3 P41.5 L16 # 807  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

Reference to wrong sub-clause

SuggestedRemedy

Change from "41.3.1.4.3." to "41.2.1.4.3."

Proposed Response Response Status C

Accepted. Duplicate of comment number 297.  
 See comment number 1229

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*Cl* 41    *SC* 41.2.1.3.3    *P*41.5    *L*16    # 297  
 Colin Mick                      The Mick Group  
*Comment Type*    **E**            *Comment Status*    **A**  
     Citation to 41.3.1.4.3 should be to 41.2.1.4.3  
*SuggestedRemedy*  
     fix  
*Proposed Response*            *Response Status*    **C**  
     Accepted.  
     See comment number 1229

*Cl* 41    *SC* 41.2.1.3.3    *P*41.5    *L*16    # 1229  
 Geoff Thompson                      Bay Networks, Inc.  
*Comment Type*    **TR**            *Comment Status*    **A**  
     (Duplicate of web comment already submitted)  
     Open reference. There is no 41.3.1.4.3  
*SuggestedRemedy*  
     Fix  
*Proposed Response*            *Response Status*    **C**  
     Accept. Duplicate of comment number 297.  
     Change reference to 41.2.1.4.3.

*Cl* 41    *SC* 41.2.1.3.3    *P*41.5    *L*16    # 586  
 Shimon Muller                      Sun Microsystems  
*Comment Type*    **E**            *Comment Status*    **A**  
     The reference to 41.3.1.4.3 is incorrect.  
*SuggestedRemedy*  
     Replace "41.3.1.4.3" with "41.2.1.4.3".  
*Proposed Response*            *Response Status*    **C**  
     Accepted. Duplicate of comment number 297.  
     See comment number 1229

*Cl* 41    *SC* 41.2.1.3.3    *P*41.5    *L*16    # 70  
 Geoff Thompson                      Bay Networks  
*Comment Type*    **TR**            *Comment Status*    **A**  
     There is no value specified for Start of Packet Prop delay. Instead there is an open  
     reference that points to a non-existent sub-clause  
*SuggestedRemedy*  
     Put the required value in this clause  
     Make sure that all reference pointers have meaningful and valid destinations  
*Proposed Response*            *Response Status*    **C**  
     Accepted in principal. The clause reference will be corrected to "41.2.1.4.3" . The required  
     value for SOP+SOJ is already in the referenced clause.

*Cl* 41    *SC* 41.2.1.5.1    *P*41.6    *L*19    # 1102  
 Tom Mathey                      Baynetworks  
*Comment Type*    **E**            *Comment Status*    **A**  
     Text does not agree with state diagram.  
     Item 1. The state diagram of figure 41-5, Carrier integrity, for exit from state FALSE  
     CARRIER has an exit  
     condition of (FCE(X) = FCELimit).  
  
     Item 2. The text in 41.2.2.1.5 for counter FCE(x) says "Isolation occurs on a terminal count  
     of FCELimit being  
     reached."  
  
     Item 3. The text in 41.2.1.5.1 says "when the False Carrier Event Count exceeds the value  
     FCELimit".  
  
     The item 1 and 2 text for equals (=) and text for terminal count (an =) seem to agree with  
     each other, but do not match item 3  
     text of exceeds. Yes, I realize that the 802.3z text was purloined directly from 802.3u,  
     clause 27.3.1.5.1, and  
     the matching figure 27-9.  
*SuggestedRemedy*  
     Change from "when the False Carrier Event Count exceeds the value FCELimit"  
     to "when the False Carrier Event Count equals or exceeds the value FCELimit"  
     by adding text "equals or".  
  
     Change figure 41-5 symbol for exit condition from "equals" to "greater than or equal to"  
  
     Change PICS entry, page 41.23, lines 9 and 19.  
*Proposed Response*            *Response Status*    **C**  
     Accept in principle.  
     All text will be made consistent with the condition False Carrier Event Count = FCELimit.  
     No change to figure 41-5.

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Cl 41 SC 41.2.1.6 P41.6 L51 # 1103

Tom Mathey Baynetworks

Comment Type E Comment Status A

Text does not agree with state diagram.

Item 1. The state diagram of figure 41-4, Partition, for exit from state COLLISION COUNT INCREMENT has an exit condition of (CE(X) ,, CELimit).

Item 2. The text in 41.2.2.1.5 for counter CE(x) says "Partitioning occurs on a terminal count of CCLimit being reached."

Item 3. The text in 41.2.1.6 says "If this count exceeds the value CELimit".

The item 1 and 2 text for equal to or greater than (,,) and text for terminal count (an =) seem to agree with each other, but do not match item 3 text of exceeds. Yes, I realize that the 802.3z text was purloined directly from 802.3u, clause 27.3.1.6, and the matching figure 27-8.

SuggestedRemedy

Change from "If this count exceeds the value CELimit" to "If this count equals or exceeds the value CELimit" by adding text "equals or ".

Change PICS entry, page 41.24, line 9.

Note: figure 41-5 for exit condition requires no change.

Proposed Response Response Status C

Accept in principle.  
All text will be made consistent with the condition Collision Event Count >= CELimit.  
No change to figure 41-4.

Cl 41 SC 41.2.1.6 P41.6 L52 # 673

stephen haddock Extreme Networks

Comment Type T Comment Status A

There is a PICS entry for detecting partition condition for a carrier event in excess of jabber\_timer duration, but no "shall" in the text.

SuggestedRemedy

Replace last sentence with "In addition, the partition condition shall be detected due to a carrier event of duration in excess of jabber\_timer in which a collision has occurred."

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.2.2 P41.7 L42 # 1204

David Law 3Com

Comment Type E Comment Status A

In the case of the state diagrams these specify the repeater unit not the repeater set. Same error on line 47 and 'unit' should also be added to 'repeater' on line 37.

SuggestedRemedy

Suggest text '... repeater set ...' should read '... repeater unit ...'

Proposed Response Response Status C

Accept.

Cl 41 SC 41.2.2.1.2 P41.8 L27 # 588

Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Style.

SuggestedRemedy

Replace "indicating" with "indicate".

Proposed Response Response Status C

Accepted in principal. Replace "encodings that indicating that the PHY" with "encodings indicating that the PHY".

Cl 41 SC 41.2.2.1.2 P41.8 L32-36 # 589

Shimon Muller Sun Microsystems

Comment Type T Comment Status A

The definition of TX(X) is incorrect.

SuggestedRemedy

Replace the first sentence to read as follows:  
"A combination of the GMII signal encodings that indicate that port X is in the process of transmitting a frame".

Proposed Response Response Status C

Accept in principle. Change first sentence to read:

"A combination of the GMII signal encodings indicating that port X is transmitting a frame".

P802.3z Draft 3.1 Comments

Cl 41 SC 41.2.2.1.2 P41.9 L 2, 6 # 590  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Both Auto-Negotiation functions are relevant for the 1000BASE-T repeater.

SuggestedRemedy

Replace "clause 37" with "clauses 37 and 28" on line 2.  
 Also, replace "operation" with "operational" on line 6.

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.2.2.1.4 P41.9 L 51 # 671  
 stephen haddock Extreme Networks

Comment Type T Comment Status A

Reference to "partition state" is ambiguous.

SuggestedRemedy

Replace "the Partition state is exited" with "partition(X) is set to false"

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.2.2.1.5 P41.10 L 8 # 591  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Replace "CCLimit" with "CELimit".

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.2.2.2 P41.11 L 32 # 592  
 Shimon Muller Sun Microsystems

Comment Type T Comment Status A

Is there any reason why the transition from the PREAMBLE to the REPEAT states is qualified by "RXERROR(ALLXJIP)=false" and not by "RXERROR(N)=false"? The way it is specified now, a "flaky" PHY on an "ALLXJIPN" port may force the repeater to get stuck in the PREAMBLE state and send preamble bits on the network for a very long time.

SuggestedRemedy

Replace "RXERROR(ALLXJIP)=false" with "RXERROR(N)=false".

Proposed Response Response Status C

Accepted. RXERROR from any port other than N should be accompanied with CRS which would cause a transition to JAM. Thus there is no need to monitor any port other than port N for RXERROR.

P802.3z Draft 3.1 Comments

Cl 41 SC 41.2.2.2 P41.14 L1-55 # 593  
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A

The way the Carrier Integrity Monitor state diagram is currently defined, there is a potential that a False Carrier event may be misinterpreted as a Valid Carrier and enable an isolated port earlier than it actually intends to. The transition from the "SSD PENDING WAIT" state to the "LINK UNSTABLE" state is qualified by the FalseCarrier indication on the GMII. Unfortunately, as defined in clause 35, the PHY is mandated to assert this indication "for at LEAST ONE cycle of the RX\_CLK" during the false carrier event (see 35.2.2.9). If this event persists for an extended period of time, the state machine will come back to "SSD PENDING WAIT", but will not go back to "LINK UNSTABLE", since CRS(X) is still true. Instead, the transition to "LINK WAIT" will be made after the valid\_carrier\_timer expires. This will enable the isolated port. A similar scenario may occur if the false carrier event was detected while the state diagram was in the "SSD PENDING" state, and the transition from "FALSE CARRIER" to "LINK UNSTABLE" was made due to false\_carrier\_timer\_done. Furthermore, in both cases described above, the ipg\_timer will be started while carrier activity is still present, which violates its definition.

SuggestedRemedy

Provide an intermediate state for entry into the "LINK UNSTABLE" state from both "SSD PENDING WAIT" and "FALSE CARRIER". In this new state the condition "CRS(X)=false" is tested for transitioning to "LINK UNSTABLE". Also, this state should generate "isolate(X)<=true" and "force\_jam(X)<=false".

Proposed Response Response Status C

Accepted in principal. A new state IPG WAIT will be added between LINK UNSTABLE and STABILIZATION WAIT. The ipg\_timer will be started in the new IPG WAIT state, and not in the LINK UNSTABLE state. The transition from IPG WAIT to STABILIZATION WAIT will be upon ipg\_timer\_done. The transition from LINK UNSTABLE to IPG WAIT will be "CRS(X) = false", and while in IPG WAIT a "CRS(X) = true" condition will cause a transition back to LINK UNSTABLE. This solution is believed to be better than the suggested remedy because it assures that CRS(X) will be deasserted prior to starting the ipg\_timer following the "begin = true" and "link status not equal OK" conditions, and does not require modifying sections in Clause 30 that reference entry to the LINK UNSTABLE state.

Cl 41 SC 41.4.2 P41.15 L34 # 594  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A

The specified reference is incorrect.

SuggestedRemedy

Replace "41.5.3" with "41.4.3".

Proposed Response Response Status C

Accepted

Cl 41 SC 41.6.4.1 P41.20 L18 # 1203  
 David Law 3Com

Comment Type E Comment Status A

Please complete the comment filed for item CC5

SuggestedRemedy

Suggest the text '... meets clause xx ...' should read '... meets clause 30 ...'

Proposed Response Response Status C

Accept. Duplicate of comment number 674.

Cl 41 SC 41.6.4.1 P41.20 L18 # 674  
 stephen haddock Extreme Networks

Comment Type E Comment Status A

missing clause reference

SuggestedRemedy

Replace "clause xx" with "clause 30"

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.6.4.10 P41.25 L6 # 676  
 stephen haddock Extreme Networks

Comment Type E Comment Status A

erroneous figure reference

SuggestedRemedy

Replace "figure 27-" with "figure 41-" in SD1-SD4.

Proposed Response Response Status C

Accepted.

Cl 41 SC 41.6.4.10 P41.25 L7 # 809  
 Tom Mathey Baynetworks

Comment Type E Comment Status A

PICS for clause 41 calls out figure for clause 27.

SuggestedRemedy

Change from "figure 27-2" to "figure 41-2". Also change lines 10, 12, and 14.

Proposed Response Response Status C

Accepted. Duplicate of comment number 676.

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Cl 41 SC 41.6.4.5 P41.22 L 10 # 808  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Value in PICS entry for SOP + SOJ less than or equal to 864 BT differs from text in Subclause 41.2.1.4.3 of 976 bit times. Same value is used on line 26.

SuggestedRemedy  
 Change to proper value and beats me if I know which is correct.

Proposed Response Response Status C  
 Accepted. Duplicate of comment number 298. (The text is correct; the PICS will be corrected.)

Cl 41 SC 41.6.4.5 P41.22 L 11, 26 # 298  
 Colin Mick The Mick Group

Comment Type E Comment Status A  
 Text shows SOP+SOJ value of 976BT

SuggestedRemedy  
 Correct text or PIC table

Proposed Response Response Status C  
 Accepted. The text is correct; the PIC table will be corrected.

Cl 41 SC 41.6.4.8 P41.24 L 28 # 679  
 stephen haddock Extreme Networks

Comment Type T Comment Status A  
 comments on PA9 are incomplete

SuggestedRemedy  
 Replace "Detecting activity" with "transmitting or detecting activity"

Proposed Response Response Status C  
 Accepted.

Cl 41 SC General PNA LNA # 587  
 Shimon Muller Sun Microsystems

Comment Type TR Comment Status A  
 Clause 41 contains several key design parameters for the repeater set that are stated as absolute numbers without any description how these numbers have been derived. Some of these numbers are not trivial to extrapolate and are certainly not obvious. It would be extremely helpful for the uneducated reader of this clause, if all the bit budget assumptions and the delay constraints relevant to the repeater set, were assembled in an informative annex to this clause.

SuggestedRemedy  
 Generate an informative annex 41A, and add references to it in the appropriate sections in clause 41.

Proposed Response Response Status C  
 The following informative text will be added to briefly describe the motivation for the values assigned to each timer.

Add to 41.2.1.5.1 Carrier integrity functional requirements :

The false\_carrier\_timer duration is longer than the maximum round trip latency from a repeater to a DTE, but less than a slot time. This allows a properly functioning DTE to respond to the Jam message by detecting collision and terminating the transmission prior to the expiration of the timer. The upper limit on the false\_carrier\_timer prevents the Jam message from exceeding the maximum fragment size.

The combination of the ipg\_timer, idle\_timer, and valid\_carrier\_timer filter transient activity that can occur on a link during power cycles or mechanical connection. The duration of the ipg\_timer is greater than two-thirds of the minimum IPG, and less than the minimum IPG less some shrinkage. The idle\_timer is specified as approximately 320 microseconds based upon empirical data on such transients. The valid\_carrier\_timer duration is less than the duration of a minimum valid carrier event, but long enough to filter most spurious carrier events (note that there can be no valid collision fragments on an isolated link in a single repeater topology). The range of the valid\_carrier\_timer is specified to be the same as the false\_carrier\_timer range for the convenience of implementations.

Add to 41.2.1.6 Partition functional requirements :

The no\_collision\_timer duration is longer than the maximum round trip latency from a repeater to a DTE (maximum time required for a repeater to detect a collision), and less than the minimum valid carrier event duration (slot time plus header size minus preamble shrinkage).

Add to 41.2.1.7 Receive jabber functional requirements :

The lower bound of the jabber\_timer duration is longer than the carrier event of a maximum length burst. The upper bound is large enough to permit a wide variety of implementations.

P802.3z Draft 3.1 Comments

CI 42 SC P L # 920  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A

*SuggestedRemedy*

p42.1 line 13-14, Delete the last sentence of this paragraph. The performance of a shared LAN is a function of much more than just the number of DTEs. It is also a function of offered load distribution across frame lengths, stations, and time, DTE performance, etc.

line 16, Delete "1000 Mb/s"  
 line 17, change "bandwidth" to "data rate" (2 places)

p42.2, line 20 Change "bandwidth" to "data rate"  
 Figure 42-2, Circle the two collision domains using repeaters, and indicate that they are collision domains

p42.3, line 19, Change "system" to "LAN"  
 line 20, change "be" to "comprise"  
 line 27, add "(maximum)" to the end of item (a)

p42.4, line 39, change to "Šnetwork configuration to be validŠ"  
 Also change "contend for the network at the same time" to "properly arbitrate for the network."

line 52, change "42-6" to "42-5"

Proposed Response Response Status C

Accept. The commentors proposed change to page 42.4 line 39 makes the next sentence awkward. The next sentence will be modified to read: "When two or more stations attempt to transmit within a slot time interval, each station must be notified . . ."

CI 42 SC 42.1 P 42.1 L 7-9 # 919  
 Rich Seifert Networks & Communic  
 Comment Type TR Comment Status A

It is not possible to build a heterogeneous 10/100/1000 Mb/s CSMA/CD network. There can be only one speed of operation on a given LAN.

*SuggestedRemedy*

Change the second sentence to "The 1000 Mb/s technology is designed to be deployed in both homogeneous 1000 Mb/s networks and 10/100/1000 Mb/s mixed networks using bridges and/or routers."

We should similarly make this change to Clause 29 (Maintenance Request).

Proposed Response Response Status C

Accept.

It is the commenter's responsibility to submit a maintenance request on clause 29.

CI 42 SC 42.1 and throughout CI P 42-1 L 7-9 and th # 983  
 Ian Crayford Bay Networks, Inc.  
 Comment Type T Comment Status A

The first sentence, and generally the whole clause, makes minimal if any reference to full duplex operation. However, Clause 34 (Introduction) specifically states (page 34.1, lines 37-39) that topologies for 1000 Mb/s operation are "similar" to those for 100BASE-T. But the Clause 42 fails to point out exactly where these full duplex topologies are identical, and where they are different. In addition, there is no analysis of the difference in overall operation for CSMA/CD operation and full duplex operation. In 1000 Mb/s, the min size MAC frame is allowed to be substantially different for the first time (unlike 100BASE-T). This difference should be documented and explained.

*SuggestedRemedy*

Update the topology section in one place for 1000 Mb/s operation (in Clause 42). Do not add additional information to the 100BASE-T topology clause for 100 Mb/s operation. Add an explanation of the differences between half and full duplex operation and performance.

Proposed Response Response Status C

Accepted.

Add subclause 42.4 which will read as follows:

Unlike half-duplex CSMA/CD networks, the physical size of full-duplex 1000 Mb/s networks is not limited by the round-trip collision propagation delay. Instead, the maximum link length between DTEs is limited only by the signal transmission characteristics of the specific link.

CI 42 SC 42.1.1 P 42.2 L 33-35 # 595  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A

The reference to 4.4.2.1 is incorrect.

*SuggestedRemedy*

Replace "4.4.2.1" with "4.4.2.4".

Proposed Response Response Status C

Accept.

P802.3z Draft 3.1 Comments

Cl 42 SC 42.1.1 P 42.2 L 33-35 # 921  
 Rich Seifert Networks & Communic

Comment Type E Comment Status A  
 4.4.2.1 contains the MAC parameters for 10 Mb/s operation. It is not relevant here. Also, it is only an IPG shrinkage problem for repeaters, not the IPG itself.

SuggestedRemedy  
 Reword and correct the reference.

Proposed Response Response Status C  
 Accept. The last sentence of the first paragraph in 42.1.1 will read: ". . . and requires the number of repeaters to be limited to one so as not to exceed the InterFrameGap shrinkage noted in section 4.4.2.4."

Cl 42 SC 42.3 P 42.3 L 46 # 299  
 Colin Mick The Mick Group

Comment Type E Comment Status R  
 Missing letters in text

SuggestedRemedy  
 fix

Proposed Response Response Status C  
 Reject. There do not appear to be any missing letters.

Cl 42 SC 42.3.1 P 42.4 L 41 # 597  
 Shimon Muller Sun Microsystems

Comment Type E Comment Status A  
 Reference "5.2.2.1.2" is incorrect.

SuggestedRemedy  
 Delete the reference to 5.2.2.1.2.

Proposed Response Response Status C  
 Accepted.

Cl 42 SC 42.3.1.1 P 42.4 L 50 # 923  
 Rich Seifert Networks & Communic

Comment Type TR Comment Status A  
 It is inappropriate to have a conformance requirement in this clause.

SuggestedRemedy  
 Change "shall be" to "is". Also on p42.5, line 17

Proposed Response Response Status C  
 Accept. Duplicate of comment numbers 677 and 678.

Cl 42 SC 42.3.1.1 P 42.4 L 52 # 300  
 Colin Mick The Mick Group

Comment Type E Comment Status A  
 Citation to figure 42-6 should be to 42-5

SuggestedRemedy  
 fix

Proposed Response Response Status C  
 Accepted. "Figures 42-6" will be changed to "Figure 42-5".

Cl 42 SC 42.3.1.1 P 42.4 L 52 # 675  
 stephen haddock Extreme Networks

Comment Type E Comment Status A  
 erroneous figure reference

SuggestedRemedy  
 Replace "figures 42-6" with "figure 42-5".

Proposed Response Response Status C  
 Accepted. Duplicate of comment number 300.

Cl 42 SC 42.3.1.1 P 42.4 L 52 # 810  
 Tom Mathey Baynetworks

Comment Type E Comment Status A  
 Typo: wrong figure is called out.

SuggestedRemedy  
 Change from "Figures 42-6" which does not exist to "Figure 42-4". Note change from plural to singular.

Proposed Response Response Status C  
 Accepted in principal. Should be changed to "Figure 42-5". Duplicate of comment number 300.

Cl 42 SC 42.3.1.1 P 42.4 L 52 # 678  
 stephen haddock Extreme Networks

Comment Type E Comment Status A  
 Don't use "shall" in informative clause.

SuggestedRemedy  
 Replace "shall be identified" with "is identified".

Proposed Response Response Status C  
 Accept.



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CI 42 SC 42.3.1.1 P 42.4 L 52 # 598  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 Spelling, reference.  
 SuggestedRemedy  
 Replace "Figures 42-6" with "Figure 42-5".  
 Proposed Response Response Status C  
 Accepted. Duplicate of comment number 300.

CI 42 SC 42.3.1.2 P 42.5 L 18 # 677  
 stephen haddock Extreme Networks  
 Comment Type E Comment Status A  
 Don't use "shall" in informative clause.  
 SuggestedRemedy  
 Replace "shall be checked" with "is checked".  
 Proposed Response Response Status C  
 Accept.

CI 42 SC 42.3.1.2 P 42.5 L 34 # 599  
 Shimon Muller Sun Microsystems  
 Comment Type E Comment Status A  
 Table 42-3 specifies the delays in bit times and not byte times.  
 SuggestedRemedy  
 Replace "byte times" with "bit times".  
 Proposed Response Response Status C  
 Accepted.

CI 42 SC 42.3.1.2 P 42.5 L 43 # 600  
 Shimon Muller Sun Microsystems  
 Comment Type T Comment Status A  
 The DTE delay values supplied by the manufacturer need to be summed up for both ends of the worst case path.  
 SuggestedRemedy  
 Add the following sentence to item d:  
 "If the manufacturer's supplied values are used, the DTE delays of both ends of the worst case path should be summed together".  
 Proposed Response Response Status C  
 Accepted.

CI 42 SC Multiple, see Suggeste P Multiple, se L Multiple, # 596  
 Shimon Muller Sun Microsystems  
 Comment Type TR Comment Status A  
 In several instances in this clause, the maximum fiber segment length for both 1000BASE-SX and 1000BASE-LX links is specified to be 320m. This contradicts the value specified for 1000BASE-SX 62.5 micron MMF in Table 38-1 (260m), and is therefore misleading.  
 SuggestedRemedy  
 \* Change the third entry in Table 42-1 to read as follows:  
 "Fiber Link Segment (1000BASE-LX; 1000BASE-SX, 50 micron) 2 320 3232"  
 \* Add a new entry in Table 42-1 to read as follows:  
 "Fiber Link Segment (1000BASE-SX, 62.5 micron) 2 260 2626"  
 \* On page 42.3, line 30, change item d) to read as follows:  
 "Fiber segments less than or equal to 260m for 1000BASE-SX 62.5 micron MMF, and 300m otherwise".  
 \* Add a note d to Table 42-2 (DTE-DTE fiber item) to read as follows:  
 "Assumes 50 micron and/or 1000BASE-LX fiber links".

Proposed Response Response Status C  
 Accepted in principal. Accept the suggested remedy with the following modifications:  
 On page 42.3 line 30 item d0 should specify "320m otherwise", not "300m otherwise".  
 In Table 42-2 add footnote "d" on the value "320" in the fiber column which reads:  
 d. Distance may be limited by the maximum transmissino distances of the link.

Add two rows to Table 42-1:  
 Fiber Link Segment (1000BASE-LX) 2 320 3232  
 Fiber Link Segment (1000BASE-SX, 50 micron) 2 320 3232  
 Fiber Link Segment (1000BASE-SX, 62.5 micron) 2 260 2626

Delete b, c, and d of 42.2 and replace b with:

Link distances less than or equal to the less of 320 m or the maximum transmission distance for the link.

CI 42 SC Table 42-2 P 42.4 L # 922  
 Rich Seifert Networks & Communic  
 Comment Type E Comment Status A  
 SuggestedRemedy  
 Change heading "Model" to "Configuration" to avoid confusion with the two system models.  
 In the last two columns, change to "Mixed Cat-5 & fiber" and "Mixed TW-style & fiber" for clarity.  
 Proposed Response Response Status C  
 Accept.