Cl **00** *SC* **00.iv** *P* **iv** *L* **24** # **210**

Howard Johnson Signal Consulting, Inc.

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

Symbol for Boolean XOR is listed as (^). This conflicts with the symbol given in 802.3x/802.3y documents, which is a plus sign (+) surrounded by a circle.

SuggestedRemedy

Check document for occurances. If none found, delete this symbol from the special symbol table. Otherwise, change symbols as appropriate.

Proposed Response *Response Status* **C**

REJECT.

P. 37.21, figure 37-6 uses the carat. We like it this way. Leave the table as it is.

Cl **00** *SC* **7.3.2** *P* **7.1** *L* **1** # **245**

Geoff Thompson Bay Networks, Inc.

Comment Type **TR** *Comment Status* **R**

Restore the clock specification for 10 Mb/s that was inadvertently deleted by P802.3x (Cls 07)

It is recognized that this is a service to humanity and not within the nominal scope of the extension to the exisitng standard to specify Gigabit operation. It is a very important piece of the standard as a whole. I wish to insure that no future edition of the merged standard is printed without the correction of this error.

I will not let this item be a critical path item in the approval of this standard. If a case can be made that this is a critical path itme I will withdraw this comment.

SuggestedRemedy

Change 7.3.2 paragraph 1 to read:

The signaling rate specified here is 10 million bits per second ± 0.01%. Other signaling rates are specified elsewhere in this standard.

Proposed Response *Response Status* **U**

REJECT.

This change would be outside the scope of 802.3z.

Cl **00** *SC* **Global** *P* **Global** *L* **Global** # **246**

David Law 3Com

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

I understand that the definitions from this clause are added to the standards dictionary without reference as to where they came from. Shouldn't we add this context.

SuggestedRemedy

Suggest that '(See IEEE 802.3 clause XX)' to definitions that do not have this already as appropriate.

Proposed Response *Response Status* **C**

REJECT. Attributions are automatically added to the IEEE dictionary by the IEEE staff (for example, our definitions will have the phrase "802.3z 1998" appended to the definition).

Cl **00** *SC* **Global** *P* **Global** *L* **Global** # **238**

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 (inlcuding minor editorial corrections) plus added text and changes to exisitng clauses from 802.3u : 1995, 802.3r : 1996, and 802.3x&y : 1997

SuggestedRemedy

As new material becomes available (i.e. published version of 802.3x&y and hopefully a baseline merged version of the entire standard) cross check against new versions of the 802.3z draft.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **Global** *P* **Global** *L* **Global** # **233**

Pat Thaler Hewlett-Packard

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

When a 1000BASE-X <fiber> PMD with auto-negotiation off is connected to a 100BASE-FX PMD, the 100BASE-FX link monitor may detect a good link. This is because the 1000BASE-X idle signal filtered by the limited bandwidth of some 100BASE-FX receivers looks like the 100BASE-X similar to a 100BASE-X idle signal - a 62.5 MHz square wave. This has been observed even for a 1000BASE-SX PMD because the 100BASE-FX receiver had a broad enough response to detect the 850 nm light.

It is possible that some auto-configuration codes could also be detected as a good link.

We have not seen carrier detect result from a misconnection.

SuggestedRemedy

Add to clause 24 (perhaps to 24.1.3.1 where the PMA_SIGNAL.indicate (signal_status primitive is defined), a statement that for 100BASE-FX PMD's signal_status=ON does not assure that the link is connected to another 100BASE-FX PMD. Connections to other fiber optic devices including 1000BASE-X may result in signal_status=ON.

Proposed Response *Response Status* **C**

REJECT.

Ask the commentor to please forward this issue to the maintenance ballot.

Cl **00** *SC* **Global** *P* **Global** *L* **Global** # **107**

Pat Thaler Hewlett-Packard

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

There are several references to the specified BER, but nowhere is BER actually specifed. (01.5 lines 8,11, 01.6 line 12). There are also references to the BER objective, but the only place an actual value for this objective is stated is a note on page 38.2 line 36 mentions a 10^-12 BER objective.

I don't think we should have a BER specification as such a specification applies to the whole link. We specify PMD's and media to obtain a link that meets the objectives.

SuggestedRemedy

Replace specified BER with objective BER.
Add a BER objective of 10^-12 to the list of 1000BASE-X objectives in 36.1.2

Proposed Response *Response Status* **C**

ACCEPT.
Add objective to the bottomof the list:
Bit error ratio of 10^-12

K. -- Search for places where we use the phrase "specified BER" or "specified bit error rate" or "specified bit error ratio" and replace with the phrase "objective bit error ratio",

Cl **01** *SC* *P* *L* # **56**

henry hsiaw Sun Microsystems

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

SuggestedRemedy

Approve with no comments.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.1.2.2 (d)** *P* **01.2** *L* **43-47** # **19**

Rich Seifert Networks and Commu

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

If the GMII is not intended to be an exposed interface (as stated in this subclause), then it cannot really be considered a "compatibility interface". It is not possible to measure compatibility or interoperability on unexposed interfaces.

SuggestedRemedy

I suggest one of the following:

(1) Eliminate this paragraph.

(2) Keep the paragraph, but eliminate the statement that "conformance ... is highly recommended". In addition, if the intent is to present an unexposed, optional interface as a "compatibility interface", then a fifth paragraph should be added identifying the TBI as a compatibility interface. (It is as valid as an interface point as the GMII.)

Proposed Response *Response Status* **C**

ACCEPT.
Change the first line of this subclause to read "five" instead of "four".

Reword (d) as follows, and add a new section (e):

d) Gigabit Media Independent Interface (GMII). The GMII is designd to connect a gigabit-capable MAC or repeater unit to a gigabit PHY. 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. The GMII is intended for use as a chip-to-chip interface. No mechanical connector is specified for use with the GMII. The GMII is optional.

e) Ten-bit Interface (TBI). The TBI is provided by the 1000BASE-X PMA sublayer as a physical instantiation of the PMA service interface. The TBI is highly recommended for 1000BASE-X systems, since it provides a convenient partition between the high frequency circuitry associated with the PMA sublayer and the logic functions associated with the PCS and MAC sublayers.
The TBI is intended for use as a chip-to-chip interface. No mechanical connector is specified for use with the TBI. The TBI is optional.

Cl **01** *SC* **1.4** *P* **01.4** *L* **33** # **103**

Pat Thaler Hewlett-Packard

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

"Present" should be "presence".

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **01.5** *L* **7 to 12** # **106**

Pat Thaler Hewlett-Packard

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

These two definitions are identical except for "largest" and "smallest" yet one of the terms is maximum differential input and the other is minimum differential sensitivity.

SuggestedRemedy

Make them both "input" (or both "sensitivity").

Proposed Response *Response Status* **C**

REJECT. The maximum input specification is used to define the receiver overload threshold. The receiver will not be overloaded by Inputs at or below this level.
The minimum sensitivity specification is used to define how sensitive the receiver must be. The receiver is sufficiently sensitive to respond to signals of this level or greater.
These terms address different issues, and they are used appropriately.

Cl **01** *SC* **1.4** *P* **1.4** *L* **32** # **45**

Robert Grow XLNT

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

Typo in definition of extension bit.

SuggestedRemedy

Change "present" to "presence".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **1.5** *L* **29** # **251**

David Law 3Com

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

Suggest the text '(See IEEE 802.3 clause 36)' should be added to the end of the ordered_set definition.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **1.5** *L* **34** # **247**

David Law 3Com

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

The text 'See IEEE 802.3x clause 31B' should read 'See IEEE 802.3 clause 31B', reference to 'x' should be removed.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.
Change to read:
'See IEEE 802.3 annex 31B'

Cl **01** *SC* **1.4** *P* **1.5** *L* **39** # **248**

David Law 3Com

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

The text '... for 100BASE-T4. one for ...' should read '... for 100BASE-T4, one for ...', that is the period should be a comma.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **1.5** *L* **42** # **46**

Robert Grow XLNT

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

Include GMII in definition.

SuggestedRemedy

Change to read "between the MDI and MII or GMII".

Proposed Response *Response Status* **C**

ACCEPT.
Change to read: "between the MDI and MII, or between the MDI and GMII,. . ."

Cl **01** *SC* **1.4** *P* **1.5** *L* **42** # **249**

David Law 3Com

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

Suggest the text '... the MDI and MII ...' should read '... the MDI and MII/GMII ...' to include the 1000Mb/s PHYs in the definition

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Changed per comment 46.

Cl **01** *SC* **1.4** *P* **1.5** *L* **5** # **250**

David Law 3Com

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

The management interface is not 'An MII or GMII which provides ...', it is an interface provided by the MII and GMII.

SuggestedRemedy

Suggest the text should read 'An interface provided by both the MII and GMII which provides ...'

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.4** *P* **1.6** *L* **27-28** # **47**

Robert Grow XLNT

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

The definition of running disparity preserves the misconception that the RD includes an unbounded sum of the RD instead of a bounded disparity value which in turn limits the multiplications effects received errors. As written it is only true of the transmitter s running disparity.

SuggestedRemedy

Change to read "A parameter representative of the difference, either positive (+) or negative (-), between the number of ones and zeros in a sequence of 8B/10B code-groups. In an error-free valid sequence, it is the cumulative difference over all previously issued or received code-groups.".

Proposed Response *Response Status* **C**

ACCEPT.

A binary parameter having a value of + or -, representing the imbalance between the number of ones and zeros in a sequence of 8B/10B code-groups (see 36.2.4.3).

Cl **01** *SC* **1.5** *P* **01.7** *L* **19** # **20**

Rich Seifert Networks and Commu

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

Effective Modal Bandwidth is no longer used as a term, hence it needs no abbreviation.

SuggestedRemedy

Eliminate the abbreviation for EMB.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1.5** *P* **01.7** *L* **26** # **111**

Tom Mathey Baynetworks

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

The abbreviation TBI for Ten Bit Interface is used in the document and needs to be added to the list.

SuggestedRemedy

Add: TBI Ten Bit Interface

Proposed Response *Response Status* **C**

ACCEPT.

Accept as proposed.
ALSO -- Please re-order the abbreviations list to alphabetical order.

Cl **02** *SC* **Figure 2-1a** *P* **02.1** *L* **15** # **112**

Tom Mathey Baynetworks

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

In Figure 2-1a, for the box labeled PLS on the left hand side, the vertical line needs to be adjusted to line up with the rest of the vertical line above.

SuggestedRemedy

Correct vertical line.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **02** *SC* **Figure 2-1b** *P* **02.1** *L* **55** # **113**

Tom Mathey Baynetworks

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

In Figure 2-1b (as printed in 802.3x, Revision 3.1 of Dec. 16, 1996), the vertical line (with arrow pointing into the box Medium Access Control) for variable "wasTransmitting" needs to be deleted along with the text "wasTransmitting". This variable does not go to the physical layer. This change is a service to mankind.

Note: GOT has changed 802.3x for direction of variable "transmitting", but was not able to delete "wasTransmitting".

SuggestedRemedy

Delete vertical line and associated text.

Proposed Response *Response Status* **C**

REJECT. Unless someone can convince me otherwise, this change appears to lie outside the scope of our PAR and cannot be made at this time.

Cl **03** *SC* **3.2.8** *P* **03.2** *L* **9** # **114**

Tom Mathey
Baynetworks

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

The text "degree less than 31" needs to be "degree less than or equal to 31". This change was found by 802.3x, Full-Duplex and is documented in D3.1, Dec. 16, 1996.

SuggestedRemedy

Change symbol from "less than" to "less than or equal to".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **04** *SC* *P* **all** *L* # **40001**

howard frazier cisco systems

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

Check for correct punctuation and syntax.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.1.2.1.1** *P* **04.2** *L* **10** # **115**

Tom Mathey Baynetworks

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

As the standard is still half-duplex mode centric, I would like to see a crisp statement here that says "extension bits in full-duplex are not allowed". I would like the statement to be in the text and not buried in a Figure note or in a flow chart.

SuggestedRemedy

Add sentence something like: Full-duplex mode does not allow the use of extension bits.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following sentence to the end of the fourth paragraph of 4.1.2.1.1 on page 4.2.

In full-duplex mode, the MAC sublayer does not perform either carrier extension or frame bursting.

Cl **04** *SC* **4.1.2.1.1** *P* **04.2** *L* **23** # **117**

Tom Mathey Baynetworks

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

Lines 23 and 24 describe half-duplex mode. These lines should be moved and placed with other half-duplex text.

SuggestedRemedy

Move lines 23 and 24 from present position and place at end of line 6. No paragraph break is necessary.

Proposed Response *Response Status* **C**

ACCEPT.

Move the text on lines 23 and 24 to line 7, but keep them in a separate paragraph since they describe bursting, which is distinct from carrier extension.

Cl **04** *SC* **4.2.2.3** *P* **04.3** *L* **55** # **116**

Tom Mathey Baynetworks

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

When the two process BurstTimer and SetExtending were added, the base standard did not have paragraph "4.2.2.3 Organization of the procedural model" changed to reflect the added process.

SuggestedRemedy

change text of 4.2.2.3 as follows:

The procedural model used here is based on seven cooperating concurrent processes. Five are actually defined in the MAC sublayer. The remaining two processes are provided by the clients of the MAC sublayer (which may include the LLC sublayer) and utilize the interface operations provided by the MAC sublayer. The seven processes are thus:

a) Frame Transmitter Process
b) Frame Receiver Process
c) Bit Transmitter Process
d) Bit Receiver Process
e) Deference Process
f) BurstTimer Process
g) SetExtending Process.

Proposed Response *Response Status* **C**

ACCEPT.

change text of 4.2.2.3 as follows:

The procedural model used here is based on seven cooperating concurrent processes. The Frame Transmitter process and the Frame Receiver process are provided by the clients of the MAC sublayer (which may include the LLC sublayer) and make use of the interface operations provided by the MAC sublayer. The other five processes are defined to reside in the MAC sublayer.The seven processes are:

a) Frame Transmitter Process
b) Frame Receiver Process
c) Bit Transmitter Process
d) Bit Receiver Process
e) Deference Process
f) BurstTimer Process
g) SetExtending Process.

Cl **04** *SC* **4.2.4.2.1** *P* **04.10** *L* **34** # **118**

Tom Mathey Baynetworks

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

The English wording of the following sentence is awkard:
There are two possible length errors that can occur, that indicate ill-framed data:

SuggestedRemedy

Remove comma, replace that with which. Suggested text is:
There are two possible length errors that can occur which indicate ill-framed data:

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.5** *P* **04.11** *L* **22** # **21**

Rich Seifert Networks and Commu

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

No space between sentences. Term is improperly hyphenated.

SuggestedRemedy

Insert a space between "... steady state." and "Upon request ...".
Eliminate the hyphen breaking up the term "TransmitLinkMgmt".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.5** *P* **4.11** *L* **22** # **119**

Tom Mathey Baynetworks

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

Missing spaces between sentences for: "its steady state.Upon"

SuggestedRemedy

Add 2 spaces: "its steady state. Upon"

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Style convention is to use only a single space between a period and the beginning of a subsequent sentence, so insert a single space.

Cl **04** *SC* **4.2.7.1** *P* **04.13** *L* **8** # **120**

Tom Mathey Baynetworks

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

Extra tab or spaces in line.

SuggestedRemedy

For line, "end; {defines header for MAC frame}"
remove tab or spaces such that start of line is vertically aligned with word "case" on line 2.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.7.2** *P* **4.14** *L* **11** # **252**

David Law 3Com

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

Don't give me too much grief for this one but I note that the definition for the constant interFrameSize has four periods and a semi-colon when it should be three periods, a space and then the semi-colon

SuggestedRemedy

'=....;{' should read '=... ;{'

Proposed Response *Response Status* **C**

ACCEPT.

However, the appropriate amount of grief is hereby directed at the commenter, who is encouraged to GET A LIFE.

Cl **04** *SC* **4.2.7.4** *P* **04.15** *L* **37** # **121**

Tom Mathey Baynetworks

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

The variable "wasTransmitting" is not part of the interface to the Physical Layer.Therefore move the text in paragraph 4.2.7.4 on page 04.15, line 37 of:
wasTransmitting: Boolean; {Indicates transmission in progress or just completed}
to Subclause 4.2.7.2, in the var section.

Correction of this long standing error is not a service to mankind. Note that the var wasTransmitting is not included in paragraph 4.3.3 Services required from the physical layer.

SuggestedRemedy

Move text:
from the var section of 4.2.7.4 Summary of interlayer interfaces
to the var section of 4.2.7.2 Transmit state variables.

Proposed Response *Response Status* **C**

REJECT.

This is properly dealt with in the maintenance process. Refer to 802.3aa.

Note that since the variable wasTransmitting is used only in process Deference, it can be defined within process Deference as a local variable.

Cl **04** *SC* **4.2.8** *P* **04.18** *L* **45** # **122**

Tom Mathey Baynetworks

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

the line "else if (extend and lateCollisionCount > 0)" needs to have a "then" added.

SuggestedRemedy

change text
from "else if (extend and lateCollisionCount > 0)"
to "else if (extend and lateCollisionCount > 0) then"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **04.18** *L* **48** # **123**

Tom Mathey Baynetworks

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

If one believes the statement in the base standard (1966) on page 60 of "Note that in Pascal, assignment to a function causes the function to return immediately.", then the assignment statement on line 42 of: TransmitLinkMgmt := transmitOK; or on line 46 of: TransmitLinkMgmt := lateCollisionErrorStatus;
will cause an immediate return of function (TransmitLinkMgmt), and the later call to LayerMgmtTransmitCounters will never be executed.

SuggestedRemedy

move call for LayerMgmtTransmitCounters from line 48 to line 39 as follows:

end; {loop}

LayerMgmtTransmitCounters;
{update transmit and transmit error counters in 5.2.4.2}

if transmitSucceeding then

To the best of my knowledge, the call to LayerMgmtTransmitCounters does not modify any of the variables used by the Pascal in lines 39 to end of function. This is not a service to mankind.

Proposed Response *Response Status* **C**

ACCEPT.

Comment promoted from type "E" to type "T" by clause editor so that it will appear in the technical comment report rather than the editorial report.

Must also swap statements on lines 42 and 43, so that assignment to TransmitLinkMgmt is performed after the clearing of burstStart.

Cl **04** *SC* **4.2.8** *P* **04.20** *L* **7** # **124**

Tom Mathey Baynetworks

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

in the line "if attempts = 1 then maxBackOff := 2" the word "if" needs to be in italics.

SuggestedRemedy

change from plain text to italics.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.2.8** *P* **04.22** *L* **37** # **105**

Pat Thaler Hewlett-Packard

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

I know I brought this up before and got convinced that it was okay, but I'm looking at it again and it still looks broken. When we get a late collision detect during extend with transmitting false, we call LayerMgmtTramsmitCounters so that the late collision will get added to the late collision count. However, LayerMgmtTransmitCounters will update other counters based on what was left in variables by the last packet even though those counters have already been updated by that packet.

Specifically, transmitSucceeding will be true when this code executes (transmitting is false, so Watch for Collision is not running which is the only thing which will set it false between StartTransmit setting it and the next invocation of TransmitLinkManagement). Therefore, framesTransmittedOK will get incremented, octetsTransmittedOK will be increased by the size of the last frame, and other objects will be incremented if the conditions left by the last frame cause it.

Also, there is also a race condition problem. This code can be executing at the same time as the beginning lines of TransmitLinkMgmt (04-18 lines 2-8) which set lateCollisionCount to 0. In that case, either the late collision will not get counted because or it will get counted twice (once when Bit Transmitter calls LayerMgmtTransmitCounters and once when TransmitLinkMgmt calls LayerMgmtTransmitCounters for the next frame).

SuggestedRemedy

Replace the code from lines 33 to 38 (from "begin" to "end") with "IncLargeCounter(lateCollision)"

Alternatively, could create a process called IncLateCollision in clause 5 which has executes that line and replace lines 33 to 38 with "IncLateCollision" to keep the layer management counter function out of clause 4.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Accept commenter's first suggestion, I.e. replace the code from "begin" to "end" with IncLargeCounter(lateCollision). This is the cleanest way to make the change.

Also pick up reference to 802.1-1990 from second paragraph of subclause 5.1.2 and insert in 4.2.2.4, and make it general enough so that it also applies to clause 5 Pascal.

Cl **06** *SC* **6.1** *P* **6.1** *L* **16** # **240**

Geoff Thompson Bay Networks, Inc.

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

The provided figure is correct. The one that is in the currently published edition is not correct, however the figure was fixed form incorrect to correct during editing for publication of 802.3x&y and is correct in the pulished edition of that standard.

SuggestedRemedy

Change:
"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.)"
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 IEEE Std 802.3x&y 1997 is technically correct for that standard.)"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22** *P* **22.1** *L* **18** # **253**

David Law 3Com

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

The stars beside the MII and GMII on this figure seem redundant and should be removed if they are.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT. Delete all asterisks including MII, GMII, AUI and PMD (7 total).

Cl **22** *SC* **22.1 (a)** *P* **22.1** *L* **44-45** # **22**

Rich Seifert Networks and Commu

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

There is only one speed for operation of management functions across the MII.

SuggestedRemedy

Clarify the intent of this statement, that MII data transfers can occur at 10 Mb/s or 100 Mb/s, yet the management interface supports 10, 100, and 1000 Mb/s PHYs. I suspect that the best way to do this is to separate the data and management functions into separate subparagraphs.

Proposed Response *Response Status* **C**

ACCEPT.
In reviewing the comment a related error is noted on lines 40-41. The MII management interface is not defined to support 1 Mb/s operation, therefore, the all speeds of operation must be corrected there as well as in lines 44-45.

Change line 40 to read:
"between Station Management (STA) and PHY entities supporting data transfer at 10 Mb/s or above."

Change line44-45 to read:
"a) It is capable of supporting 10 Mb/s and 100 Mb/s rates for data transfer, and management functions for PHYs supporting data transfer at 10 Mb/s or above."

Cl **22** *SC* **22.1.5** *P* **22.1** *L* **53** # **23**

Rich Seifert Networks and Commu

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

SuggestedRemedy

Insert the word "supported" between "... capabilities for any" and "speed of operation ...".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **22** *SC* **22.2.4** *P* **22.2** *L* **10** # **24**

Rich Seifert Networks and Commu

Comment Type **TR** *Comment Status* **D** *Commenter not satisfied*

"Frames" are defined as data exchanges occurring at the Data Link layer. Clause 1.4 (Definitions) only define "data frames"; there is no such thing as a "management frame" defined there. The term "frame format" is used in this paragraph, but is not the "Frame Format" defined in Clause 3, and is confusing.

SuggestedRemedy

Eliminate the use of the term "management frame". Use "Management exchange" (or a similar term) instead. Use "Management exchange encapsulation" (or similar term) instead of "Management frame".

Proposed Response *Response Status* **W**

PROPOSED REJECT. The text criticized by the comment is as written in 802.3u -- an approved IEEE standard. 802.3z does not introduce a new usage of the term frame. The suggested remedy is also insufficient to accomplish the intent of the commenter. Other portions of 802.3u not modified by 802.3z also reference management frames (e.g., 22.2.4.4). An attempt in 802.3z to rewrite 802.3u to remove "management frames" is both inappropriate and ill-advised.

Cl **22** *SC* **22.2.4** *P* **22.2** *L* **18** # **125**

Tom Mathey Baynetworks

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

I believe that PICS entry MF69 which referes to paragraph 22.2.4.4 should actually refer to the shall of paragraph 22.2.4, line 18 for extended basic register set. Otherwise, paragraph 22.2.4.4 has one shall and two PICS entries.

SuggestedRemedy

Change PICS entry MF69 from 22.2.4.4 to 22.2.4.

Proposed Response *Response Status* **C**

ACCEPT. Change the reference on 22.9 line 38 to 22.2.4. This is a reversal of D3.2 Sponsor ballot comment #149 from David Law. The clause editor can only surmize that standing in awe of Mr. Law's PICS reputation he recommended accepting his comment with insufficient thought.

Cl **22** *SC* **22.2.4** *P* **22.2** *L* **20** # **40**

Brad Booth — Jato Technologies, Inc

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

Text makes no inference to 10 Mb/s.

SuggestedRemedy

Change sentence to read:
The status and control functions defined here are considered basic and fundamental to 10 Mb/s, 100 Mb/s and 1000 Mb/s PHYs.

Proposed Response *Response Status* **C**

REJECT. The original 802.3u text (D4.0, p. 22.2 line 17) excluded 10 Mb/s PHYs, because 10 Mb/s PHYs were defined before clause 22 was written, and therefore, the contents of clause 22 should not be made to retroactively apply as "basic and fundamental".

Cl **22** *SC* **22.2.4** *P* **22.2** *L* **22** # **41**

Brad Booth — Jato Technologies, Inc

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

Registers 0 and 1 do not select the format for registers 4 through 8. Registers 1 and 15 do it, as they are the only registers that indicate the capabilities of the PHY device.

SuggestedRemedy

Change sentence to read:
The format of these registers is selected by the bit settings of registers 1 and 15.

Proposed Response *Response Status* **C**

ACCEPT. This should have been corrected when a definition for bit 0.5 was removed. The text fails to include the T-2 registers.

Change lines 21-23 to read (includes base document text update per 802.3x&y):

"The format of registers 4 through 10 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 1 and 15."

Cl **22** *SC* **22.2.4.1.9** *P* **22.5** *L* **18** # **126**

Tom Mathey — Baynetworks

Comment Type **T** *Comment Status* **A** *Technical change*

For the MII nibble based design, a 4 bit time response (and equal to 1 clock cycle) may be reasonable. For the GMII octal based design, an 8 bit time response (and equal to 1 clock cycle) may also be reasonable.

SuggestedRemedy

re-word sentence to split MII = 4 bit times from GMII = 8 bit times as follows:

While bit 0.7 is set to one and the PHY is connected to an MII, then the PHY shall de-assert the COL signal within 4 BT in response to the de-assertion of TX_EN.

While bit 0.7 is set to one and the PHY is connected to a GMII, then the PHY shall de-assert the COL signal within 8 BT in response to the de-assertion of TX_EN.

Change PICS entry MF34 in 802.3u on page 76: MII = 4 bit times, GMII = 8 bit times.

Proposed Response *Response Status* **C**

ACCEPT.
While bit 0.7 is set to one, the PHY shall de-assert the COL signal within 4 BT when connected to an MII, or 16 BT when connected to a GMII, in response to the de-assertion of TX_EN.

Add modified PICS MF34 so Value/Comment reads:

After TX_EN is deasserted within:
MII = 4 BT
GMII = 16 BT

Cl **30** *SC* **30.2.2.2.2** *P* **30.7** *L* **53** # **254**

David Law 3Com

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

The text states that 'The Carrier Event function for Port N de-asserts when ...', this is not correct, it is the CarrierEvent signal that is de-asserted, not the Carrier Event function.

SuggestedRemedy

The text should read 'The Carrier Event function for Port N de-asserts the CarrierEvent signal when ...'

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.2.2.2** *P* **30.8** *L* **31** # **127**

Tom Mathey Baynetworks

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

at the end of this line, the word framing is followed by a funny piece of a symbol which looks like the fragment from an underline.

SuggestedRemedy

delete.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.2.2.2** *P* **30.8** *L* **33** # **255**

David Law 3Com

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

There appears to be a missing comma.

SuggestedRemedy

Suggest the test should read '... Start of Packet delimiter (see 35.2.3.6)preamble, ...' should read '... Start of Packet delimiter (see 35.2.3.6), preamble, ...'.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.5** *P* **30.11** *L* **11** # **217**

Amrit Kalla VLSI Tech. Inc.

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

According to line 11, ... are specified in Tables 30-1a, 30-1b, 30-1c, 30-1d and 30-1e. Tables 30-1a and 30-1b do not exist in the document!

SuggestedRemedy

Either tables 30-1a and 30-1b should be added, or if these tables were not meant to be in the document, then:
Change table 30-1c to 30-1a
Change table 30-1d to 30-1b
Change table 30-1e to 30-1c
Delete reference to Tables 30-1d and 30-1e fron line 11 on oage 30.11.

Proposed Response *Response Status* **C**

ACCEPT.

The missing tables will be added back in.

Cl **30** *SC* **30.2.5** *P* **30.12** *L* **1** # **256**

David Law 3Com

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

The first two pages of this table are missing from my copy of the draft yet the page numbers are consistent.

SuggestedRemedy

Restore tables 30-1a and 30-1b.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.2.5** *P* **30.12** *L* **55** # **128**

Tom Mathey Baynetworks

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

from page 30.12 to page 30.51, both the page numbers and the vertical strip of line numbers are on the wrong side of the page.

SuggestedRemedy

Please correct at next printing, and whip the chief editor with a wet banana.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.3.1.1.23** *P* **30.20** *L* **45** # **220**

Amrit Kalla VLSI Tech. Inc.

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

If the sentence spanning lines 44 and 45 was correct, then aInRangeLengthErrors counter would be erroneously incremented every time a frame with length/type field of value less than the minimum unpadded MAC client data size is received.

SuggestedRemedy

The sentence should read, " The counter also contains frames whose length field value is less than the minimum allowed unpadded MAC Client data size and the number of MAC Client data octects received is greater than the minimum unpadded MAC Client DataSize ".

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The sentence will read, " The counter also increments for frames whose length field value is less than the minimum allowed unpadded MAC Client data size and the number of MAC Client data octects received is greater than the minimum unpadded MAC Client DataSize "

Cl **30** *SC* **30.3.2.1.5** *P* **30.25** *L* **45** # **130**

Tom Mathey Baynetworks

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

This sentence would seem to preclude "carrier extend error" during half-duplex operation as an error. Suggest further split of half-duplex and full-duplex operation.

SuggestedRemedy

Replace existing text with something like:

For half-duplex operation at 1000 Mb/s, it is a count of the number of times the receiving media is non-idle (a carrier event) for a period of time equal to or greater than 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" or "Carrier Extend Error"on the GMII (see Table 35-2).

For full-duplex operation at 1000 Mb/s, it is a count of the number of times the receiving media is non-idle (a carrier event) for a period of time equal to or greater than minFrameSize, 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).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Accept the change to the text to split half-duplex and full-duplex operation into two paragraphs.

Reject the addition of 'Carrier Extend Error' as a reason to increment this counter. 'Carrier Extend Error' is a normal result of collisions in a half-duplex 1000Mb/s network (see 41.2.1.4.2, Jam Generation). This counter should only increment when there was an actual symbol error on the network, not when Jam was sent by the repeater.

Cl **30** *SC* **30.3.3.1** *P* **30.26** *L* **48** # **257**

David Law 3Com

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

>From this line onwards for the next two pages the formatting of the attributes is incorrect. All text apart from the heading appears to be one tab too far right.

SuggestedRemedy

Correct formatting

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.10** *P* **30.36** *L* **22** # **132**

Tom Mathey Baynetworks

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

It is very difficult to determine what values and criteria apply to the various speeds.

SuggestedRemedy

Change text to uniquely seperate out each speed and its criteria. Suggested text follows.

10 Mb/s operation:
Increment counter by one for each CarrierEvent that meets one of the following two conditions (only one test need be made):
a) The ActivityDuration is greater than ShortEventMaxTime and less than ValidPacketMinTime, and the CollisionEvent signal is deasserted.

b) The OctetCount is less than 64, the ActivityDuration is greater than ShortEventMaxTime, and the CollisionEvent signal is deasserted.

For 10 Mb/s repeaters:
ValidPacketMinTime is greater than or equal to 552 BT and less than 565 BT.
An event whose length is greater than 74 BT but less than 82 BT shall increment either the aShortEvents attribute or the aRunts attribute, but not both.
a CarrierEvent greater than or equal to 552 BT but less than 565 BT may or may not be counted as a runt.
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.

100 Mb/s operation:
Increment counter by one for each CarrierEvent that meets one of the following two conditions (only one test need be made):
a) The ActivityDuration is greater than ShortEventMaxTime and less than ValidPacketMinTime, and the COLLISION COUNT INCREMENT state of the partition state diagram (Figure 27-8) has not been entered.

b) The OctetCount is less than 64, the ActivityDuration is greater than ShortEventMaxTime, and the COLLISION COUNT INCREMENT state of the partition state diagram (Figure 27-8) has not been entered.

For 100 Mb/s repeaters:
ValidPacketMinTime is greater than or equal to 552 BT and less than 565 BT.
An event whose length is greater than 74 BT but less than 82 BT shall increment either the aShortEvents attribute or the aRunts attribute, but not both.
A CarrierEvent greater than or equal to 552 BT but less than 565 BT may or may not be counted as a runt.

1000 Mb/s operation:
Increment counter by one for each CarrierEvent that meets one of the following two conditions (only one test need be made):
a) The ActivityDuration is greater than ShortEventMaxTime and less than ValidPacketMinTime and the COLLISION COUNT INCREMENT state of the partition state diagram (Figure 41-4) has not been entered.

b) The OctetCount is less than 64, the ActivityDuration is greater than ShortEventMaxTime, and the the COLLISION COUNT INCREMENT state of the partition state diagram (Figure 41-4) has not been entered.

For 1000 Mb/s repeaters:
ValidPacketMinTime is 4136BT.
An event whose length is greater than 74 BT but less than 82 BT shall increment either the aShortEvents attribute or the aRunts attribute, but not both.
A CarrierEvent greater than or equal to 552 BT but less than 565 BT may or may not be counted as a runt.

Note:
1. for 1000 Mb/s operation, Figure 41-4, not 27-8, needs to be called out.
2. for 1000 Mb/s operation, 74 and 82 bit times are not an integer number of (octal) clock cycles.
3. for 100 Mb/s operation, 565 bit times is not an integer number of (nibble) clock cycles.
4. There is no intent to change the technical intent or content of this subclause. If any change occurs, it simply points out the difficulty of interperting the subclause.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

While the sentiments of the comment are accepted the new text suggest is rejected and new text is proposed below.
It should be noted that the function of the counter is the same for all speeds, it is only the values of the variables that changes between speeds and some of the notes that only apply at some speeds. It is should also noted that the commenter has used the now redundant definition of collision events as being signalled by the state of the Partition state machine instead of the function provided by subclause 30.2.2.2.2, repeater function. It is assumed that this was a mistake on the part of the commenter, not a request for a change back to the old method.
New text:-
Increment counter by one for each CarrierEvent that meets one of the following two conditions. Only one test need be made. a) The ActivityDuration is greater than ShortEventMaxTime and less than ValidPacketMinTime and the CollisionEvent signal is deasserted. b) The OctetCount is less than 64, the ActivityDuration is greater than ShortEventMaxTime, and the CollisionEvent signal is deasserted.
For 10 and 100 Mb/s repeaters, ValidPacketMinTime is greater than or equal to 552 BT and less than 565 BT. A CarrierEvent greater than or equal to 552 BT but less than 565 BT may or may not be counted as a runt.
For 10 Mb/s repeater an event whose length is greater than 74 BT but less than 82 BT shall increment either the aShortEvents attribute or the aRunts attribute, but not both. 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.
For 1000 Mb/s repeaters ValidPacketMinTime is 4136 BT.

Cl **30** *SC* **30.4.3.1.14** *P* **30.37** *L* **45** # **133**

Tom Mathey Baynetworks

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

Sentence "Generalized nonresettable counter" is missing a period at the end.

SuggestedRemedy

Add period (.).

Proposed Response *Response Status* **C**

REJECT.

As part of the syntax that is used to define these attributes the last sentence of the appropriate syntax paragraph does not have a period. In most other cases the sentence 'generalzed nonresettable counter' is not the last sentence so it will end with a period, howerver in this case it is the last sentence so it does not require a period.

Cl **30** *SC* **30.4.3.1.14** *P* **30.37** *L* **51** # **261**

David Law 3Com

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

Suggest text ' ... valid for 10 and 100 Mb/s operations only:' should read ' ... valid for 10 and 100 Mb/s operation only:', that is operation, not operations.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.14** *P* **30.38** *L* **3** # **262**

David Law 3Com

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

Suggest text ' ... valid for 10 and 100 Mb/s operations only:' should read ' ... valid for 10 and 100 Mb/s operation only:', that is operation, not operations.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.20** *P* **30.39** *L* **36 & 37** # **265**

David Law 3Com

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

The definition 'COLLISION COUNT INCREMENT state of the partition state diagram (Figure 41-4) has not been entered' is the same as the 'CollisionEvent signal has not been asserted', since it is defined in 30.2.2.2.2

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.20** *P* **30.39** *L* **38** # **264**

David Law 3Com

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

The Behaviour definition is missing a semicolon at its end.

SuggestedRemedy

Add missing semicolon

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.9** *P* **30.36** *L* **10** # **258**

David Law 3Com

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

The name of the attribute is incorrect, 'shortEvents' should read 'aShortEvents'.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

REJECT.

This text has not changed from that published in 802.3u

Cl **30** *SC* **30.4.3.1.9** *P* **30.36** *L* **14** # **259**

David Law 3Com

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

The start of the note seems to be missing, 'mplementors' should read 'implementors'.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.9** *P* **30.36** *L* **20** # **260**

David Law 3Com

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

Clause 41 repeaters always have a limit of a one repeater per collision domain topology. Suggest text '... repeaters normally support one ...' should read '... repeaters support one ...'

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.1.9** *P* **30.36** *L* **8** # **131**

Tom Mathey Baynetworks

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

Two sentences are run together. Line 8 has a subject and a verb and is therefore a sentence.

SuggestedRemedy

add comma: change to "ShortEventMaxTime is 84 bits (21 nibbles), and for the 1000 Mb/s case ShortEventMaxTime is 72 bits (9 octets).".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.2.1** *P* **30.39** *L* **50 & 52** # **263**

David Law 3Com

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

The two occurrences of should need to be replaced with shall.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.4.3.2.1** *P* **30.39** *L* **53** # **134**

Tom Mathey Baynetworks

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

A figure title does not match the title in clause 41, and list is not in order. Change receive jabber to receive timer and place this title first.

SuggestedRemedy

Replace line 53 with: exert a BEGIN on the receive timer, partition, and carrier integrity state diagrams .....

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.5.1.1.10** *P* **30.44** *L* **35** # **136**

Tom Mathey Baynetworks

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

If 1000BASE increments at a rate that is 10 times faster than 100BASE, then the 1000BASE rate should be 100 ms divided by 10, which is 10 ms. Stated value is 10 us.

SuggestedRemedy

change value from 10 us (micro) to 10 ms (milli).

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Will add the following text:-
'This counter has a maximum increment rate of 1 600 000 counts per second under maximum network load, and 100 000 counts per second under zero network load, for 1000 Mb/s implementations'

Cl **30** *SC* **30.5.1.1.4** *P* **30.42** *L* **44** # **135**

Tom Mathey Baynetworks

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

I believe that the references to re-numbered paragraphs are not correct.

SuggestedRemedy

remote fault: 22.2.4.2.9 should be to 22.2.4.2.11
link status 22.2.4.2.11 should be to 22.2.4.2.13

Proposed Response *Response Status* **C**

ACCEPT. ACCEPT.

Cl **30** *SC* **30.6.1.1.5** *P* **30.47** *L* **6** # **266**

David Law 3Com

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

'... as specified in clause 36' should read '... as specified in clause 31 and 36' as this is a full duplex PHY.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.
Will also modify the text for Full-duplex 1000BASE-T operation as following:

Full-duplex 1000BASE-T UTP PHY as specified in clause 31 and to be defined in clause 40.

Cl **30** *SC* **30.6.1.1.6** *P* **30.47** *L* **25** # **269**

David Law 3Com

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

Suggest that 'For clause 28 this ...' should read 'For clause 28 Auto-Negotiation ...'. Please do this change globally.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT..

Cl **30** *SC* **30.6.1.1.6** *P* **30.47** *L* **26** # **270**

David Law 3Com

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

Suggest that 'For clause 37 this ...' should read 'For clause 37 Auto-Negotiation ..'. Please do this change globally.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.6** *P* **30.47** *L* **26** # **267**

David Law 3Com

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

The text '... will map to bits ...' should read '... maps to bits ...'.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.6** *P* **30.47** *L* **30** # **268**

David Law 3Com

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

I believe the default is to capitalise the word SET in the case of an operation, therefore this should read '... successful SET operation ...'. Please do this globally.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.8** *P* **30.48** *L* **9** # **271**

David Law 3Com

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

Suggest '... a set of this attribute will have ...' should read '... a SET operation will have ...' Please also do this same change to 30.6.1.1.9 and 30.6.1.1.10

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **30.6.1.1.8** *P* **30.48** *L* **9** # **272**

David Law 3Com

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

Suggest '... and a get will return ...' should read '... a GET operation will return ...'. Please also do this same change to 30.6.1.1.9 and 30.6.1.1.10

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30** *SC* **Table 30-1e** *P* **30.14** *L* **42** # **129**

Tom Mathey Baynetworks

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

The line "aAutoNegAdvertisedTechnologyA-" has an extra dash at the end.

SuggestedRemedy

remove extra symbol at end of line.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The name of the attribute has in fact been truncated. Rather than deleting the dash the full name of the attribute will be restored.

Cl **30A** *SC* **30.A.7.1** *P* **30A.27** *L* **34** # **276**

David Law 3Com

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

The text 'The 1000 Mb/s Burst capability ...' should read 'The 1000 Mb/s Burst monitor capability ...' to match 30-1.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30A** *SC* **30A.2.1** *P* **30A.14** *L* **34** # **273**

David Law 3Com

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

The text 'The 100 and 1000 Mb/s Monitor capability' should read 'The 100/1000 Mb/s Monitor capability' to match table 30-1. Please also do this change to 30A.7.1

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30A** *SC* **30A.7.1** *P* **30A.27** *L* **30** # **274**

David Law 3Com

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

'GET,' should read 'GET;' as this is the only attribute in the list and therefore there should be a semicolon to terminate the list

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **30A** *SC* **30A.7.1** *P* **30A.27** *L* **32** # **275**

David Law 3Com

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

The registration arc is a duplicate of the one above. Please correct.

SuggestedRemedy

Please provide a unique registration arc.

Proposed Response *Response Status* **C**

ACCEPT.

Will also check all other ARC registrations.

Cl **30B** *SC* **30B.2** *P* **30B.4** *L* **28** # **277**

David Law 3Com

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

The word error should not be capitalised as it is in the second column.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B.3.7** *P* **31B.1** *L* **15** # **39**

howard frazier cisco systems

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

lack of a space in 100 Mb/s.
this should be written consistently in all clauses

SuggestedRemedy

"100Mb/s" should be "100 Mb/s"
The same change should be made on page 31B.1 line 21

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B.3.7** *P* **31B.1** *L* **15-16, 21-** # **25**

Rich Seifert Networks and Commu

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

SuggestedRemedy

Insert a space between "100" and "Mb/s" (2 places).
Delete the comma after "MII" on line 15-16.
Change "operation" to "operating" on line 21-22.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **31B** *SC* **31B.3.7** *P* **31B.1** *L* **21** # **38**

howard frazier cisco systems

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

bad tense

SuggestedRemedy

"operation" should be "operating"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **34** *SC* **34.1** *P* **34.1** *L* **40** # **137**

Tom Mathey Baynetworks

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

In Figure 34-1, the line which leaves block at far lower left labeled PHYSICAL and goes in a straignt line to block labeled PMA is incorrect.

SuggestedRemedy

Add a dog-leg to the line such that it enters box labeled MEDIUM at the upper left.

Proposed Response *Response Status* **C**

ACCEPT.
Other instances of this figure need the same correction.
See figures 36-1, 37-1, and 41-1.

These figures are OK and need no correction:
See figures 2-1, 4-1, 6-1, 22-1, and 35-1.

NOTE: clauses 23, 24, and 27 use a different convention. The MDI is not included in the physcial layer in those clauses.

Request that the IEEE editor change other drawings to match our convention (line goes below the MDI, I.e., the MDI is part of the physical layer).

Cl **34** *SC* **34.1** *P* **34.2** *L* **3** # **138**

Tom Mathey Baynetworks

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

Extra text "and" in the line.

SuggestedRemedy

change text
from "1000BASE-SX, and 1000BASE-CX, and 1000BASE-T."
to "1000BASE-SX, 1000BASE-CX, and 1000BASE-T.".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **34** *SC* **34.1.2** *P* **34.2** *L* **39** # **243**

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"
"Category 5 UTP"

Proposed Response *Response Status* **C**

ACCEPT. Incorporate the labels into the blocks already present on the left side of the table. Convert interior lines to "thin" style (per the approved IEEE "informal" table style). The left column should now read:
"1000BASE-SX Short Wave Length Optical"
"1000BASE-LX Long Wave Length Optical"
"1000BASE-CX Shielded Jumper Cable"
"1000BASE-T Category 5 UTP"

Cl **34** *SC* **34.4** *P* **34.4** *L* **20** # **234**

Pat Thaler Hewlett-Packard

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

Depending on the resolution of the DMD issues, the N in Backbone 50 micron for 1000BASE-SX may need to change to I. Also, the I for 62.5 micron for 1000BASE-LX may be able to change to N.

SuggestedRemedy

Proposed Response *Response Status* **C**

ACCEPT.

The table will be modified to reflect the outcome of our Feb. 2-3 interim. Comment 244, which speaks to the same issue, will be recirculated in future rounds of balloting as needed pending a final outcome of clause 38.

Cl **34** *SC* **34.4** *P* **34.4** *L* **22** # **244**

Geoff Thompson Bay Networks, Inc.

Comment Type **TR** *Comment Status* **A** *Global - depends on clause 38*

Review and revise table entries with respect to final outcome of jitter reallocation and link budgets

SuggestedRemedy

Proposed Response *Response Status* **U**

ACCEPT.

The table will be modified to reflect the outcome of our Feb. 2-3 interim.

The commentor chooses to disapprove of this response, in order to force recirculation of this comment in future rounds of balloting as needed pending a final outcome of clause 38.

Cl **35** *SC* **35.1.1** *P* **35.2** *L* **17** # **139**
Tom Mathey Baynetworks

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

The English for this sentence reads better by adding word "the".

SuggestedRemedy

Change text:
from: provided to MAC.
to: provided to the MAC.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.1.3** *P* **35.2** *L* **33** # **65**
William L. Quackenbush cisco Systems, Inc.

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

Change "can support" to "supports"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.1.3** *P* **35.2** *L* **36-38** # **26**
Rich Seifert Networks and Commu

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

SuggestedRemedy

Change "... support additional rates.." to "...support additional rates using other interfaces." (2 places)

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Change the referenced paragraph to read:

PHYs that provide a GMII shall support 1000 Mb/s operation, and may support additional rates using other interfaces (e.g., MII). PHYs must report the rates at which they are capable of operating via the management interface, as described in 22.2.4. Reconciliation sublayers that provide a GMII shall support 1000 Mb/s and may support additional rates using other interfaces.

Cl **35** *SC* **35.1.4** *P* **35.2** *L* **46-47** # **27**
Rich Seifert Networks and Commu

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

Clause 35 specifies only the GMII, not MII.

SuggestedRemedy

Change to read, "... 10 Mb/s DTEs, the GMII (like the Clause 22 MII) maximizes media independence...".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2** *P* **35.3** *L* **6 to 7** # **235**
Pat Thaler Hewlett-Packard

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

GMII does not support 10 & 100 Mb/s operation.

SuggestedRemedy

Delete first sentence.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the complete paragraph.

Cl **35** *SC* **35.2.1** *P* **35.3** *L* **20-39** # **28**
Rich Seifert Networks and Commu

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

This clause (and the figure 35-2) should be GMII-only.

SuggestedRemedy

Combine the signals TXD <7:4> and TXD <3:0> into a single signal TXD <7:0>.
Combine the signals RXD <7:4> and RXD <3:0> into a single signal RXD <7:0>.
Delete the asterisks currently present on TXD <7:4> and RXD <7:4>, and the associated asterisk note.
Delete the asterisk on GTX_CLK.
Delete the signal TX_CLK, and the double-asterisk note.

Proposed Response *Response Status* **C**

ACCEPT. Action on this comment must be consistent with that taken on comment #29 and #236.

Cl **35** *SC* **35.2.1** *P* **35.3** *L* **38** # **236**

Pat Thaler Hewlett-Packard

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

Note is no longer accurate as we removed the concept of a GMII operating in GMII mode or MII mode.

SuggestedRemedy

Change note to "Not used by GMII"
Or delete note and MII signals.
I prefer the former because it gives a clearer idea of what we expect implementations that support both GMII and MII over the interface to do.

Proposed Response *Response Status* **C**

ACCEPT. Delete MII signals. See comment #28 and #29 which are in conflict with the commenter's preferred solution. Comment #224 adds clarification to 35.3 for an implementation that supports both an MII and GMII.

Cl **35** *SC* **35.2.1.1.3** *P* **35.4** *L* **13** # **140**

Tom Mathey Baynetworks

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

Sentence needs word "and" removed and two commas added.

SuggestedRemedy

Change text:
from: The TXD<7:0> and TX_EN and TX_ER
to: The TXD<7:0>, TX_EN, and TX_ER

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.1.5** *P* **35.5** *L* **37** # **141**

Tom Mathey Baynetworks

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

Definition is singular, not plural.

SuggestedRemedy

Change text from "PLS_DATA.indicates" to "PLS_DATA.indicate"; ie., drop the "s".

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.1** *P* **35.6** *L* **32-34** # **29**

Rich Seifert Networks and Commu

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

This clause should be GMII-only.

SuggestedRemedy

Delete this subclause.

Proposed Response *Response Status* **C**

ACCEPT. Action on this comment must be consistent with that taken on comment #28 and #236.

Leave section number in. Renumbering will occur prior to final publication.

Cl **35** *SC* **35.2.2.2** *P* **35.6** *L* **38** # **66**

William L. Quackenbush cisco Systems, Inc.

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

delete comma after "continuous clock".

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.4** *P* **35.7** *L* **27** # **67**

William L. Quackenbush cisco Systems, Inc.

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

change "errors" to "forced errors".

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

REJECT. A propagated error may not be considered a forced error. The description of a no error case does not need to itemize the reason(s) why an error might be signalled over the interface. That is the purpose of Figure 35-4 illustrating the propagation of an error. (The only reason described in the standard for forcing the PHY to generate invalid code groups, though the function is not constrained to only that use by the standard). The recommended change is unnecessary, and the recommended adjective potentially confusing because it is not consistent with the decription of the signalled error case later in the clause.

Cl **35** *SC* **35.2.2.6** *P* **35.9** *L* **44-46** # **76**

William L. Quackenbush cisco Systems, Inc.

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

This paragraph is still muddled. I believe that what this paragraph is attemping to say is the all PHYs that used the GMII shall implement TX_ER and that any Reconciliation Sublayer or repeater that implements the GMII shall implement TX_ER. However, in some cases, the source of TX_ER need only drive TX_ER to the deasserted state.

SuggestedRemedy

Fix the paragraph to clearly state whatever it is trying to state.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Delete the paragraph.

Cl **35** *SC* **35.2.2.7** *P* **35.10** *L* **26** # **10**

Brad Booth Jato Technologies, Inc

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

RX_DV in Figure 35-8 is incorrect in its representation of when it can transition from a low to high state. RX_DV can be low for the whole preamble, or it may transition high during any of the preamble bytes as defined in 35.2.2.7. The current waveform diagram shows the RX_DV transitioning from low to high at the start of preamble or during the first two bytes of preamble.

SuggestedRemedy

Change Figure 35-8 to indicate that the RX_DV can transition at the start of preamble or during any byte of preamble. Add SFD to the RXD<7:0> and use that to indicate the RX_DV must be asserted during the SFD.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The commenter is right. RX_DV has a much broader range of conformant assertion. Make the recommended RX_DV change in Figures 35-8, and 35-11.

In doing the above change it is noted that the depiction of preamble in these and other illustrations could be misinterpreted. With preamble defined as 7 bytes, placement of one letter of "PREAMBLE" in each clock uses 8 clock periods. Change the depiction of preamble to a word spaning 7 clock periods in all figures.

Also change FCS to span 4 clock periods in all figures.

See similar change is made to 36.4.

Cl **35** *SC* **35.2.2.8** *P* **35.10** *L* **42** # **9**

Brad Booth Jato Technologies, Inc

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

"transfer" should be "transfers"

SuggestedRemedy

change "transfer" to "transfers"

Proposed Response *Response Status* **C**

REJECT. This is a style issue, whether RXD<7:0> is singular or plural. It should be treated as plural therefore, no change is required.

Cl **35** *SC* **35.2.2.8** *P* **35.11** *L* **1** # **68**

William L. Quackenbush cisco Systems, Inc.

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

The "must" in "must not be looped back" looks like it should be a "shall".

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. Change "must" to "shall"

Add new PICS item:
SF22a, RXD loopback, 35.2.2.8, No loopback unless loopback mode selected, M, Yes[]

Cl **35** *SC* **35.2.2.8** *P* **35.11** *L* **39** # **52**

Brad Booth Jato Technologies

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

COL signal shown in figure 35-10 for burst reception. COL is not shown in any other receive signal diagrams. COL is only important for transmit.

SuggestedRemedy

Remove COL signal in figure 35-10.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.2.9** *P* **35-12** *L* **7** # **108**

Pat Thaler — Hewlett-Packard

Comment Type **TR** *Comment Status* **A** *Commenter prefers Accept*

In the table, an encoding of RX_DV=0, RX_ER=1 and RXD = 00 is defined as normal interframe gap. However, that condition is never sent by PCS. Further, the text of clause 35 never mentions that condition including 35.2.1.5 which defines the effect of RX_ER on the reconciliation layer and 35.2.3.1 which defines interframe as the deassertion of RX_DV and RX_ER.

SuggestedRemedy

Delete this line in the table and make the starting RXD value 00 on the next line.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. This code point is used by the MII. It was defined for the 100BASE-T4 PHY. The code point is preserved to enhance similarity with the MII, and to leave the same option taken by 100BASE-T4 available for 1000BASE-T. To better define the code point add text to 35.15 line 24-26 as modified by comment #75 to read:

"The inter-frame <inter-frame> period on a GMII transmit or receive path is an interval during which no data activity occurs on the path. Between bursts or single frame transmissions, the absence of data activity on the receive path is indicated by the deassertion of both RX_DV and RX_ER or the deassertion of the RX_DV signal with an RXD<7:0> value of 00 hexidecimal. On the transmit path the absence of data activity is indicated by the deassertion of both TX_EN and TX_ER."

See comment #75.

Cl **35** *SC* **35.2.2.9** *P* **35.13** *L* **13** # **53**

Brad Booth — Jato Technologies

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

CRS is not shown for False Carrier indication in figure 35-12, yet it is likely that CRS will be asserted slightly delayed from RX_ER. This should probably be indicated in the figure.

SuggestedRemedy

Add CRS to figure 35-12 to shown CRS being asserted in relationship to RX_ER.

Proposed Response *Response Status* **C**

REJECT. CRS was not included in the diagram because CRS is not intended to be used by receivers, only transmitters. From the standpoint of recognizing false carrier indications, CRS provides no useful information, and would have no defined timing relationship with RX_DV. It might rise before, or after, the false carrier indication is presented on the MII/GMII. It might, or it might not, overlap with the false carrier indication. Therefore, there is no information about false carriers which can be gleaned from this signal, and no need to include it in the diagram.

Cl **35** *SC* **35.2.3.1** *P* **35.15** *L* **22** # **11**

Brad Booth — Jato Technologies, Inc

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

Inconsistency in headers 35.2.3.1, 35.2.3.2, 35.2.3.3, 35.2.3.4 and 35.2.3.5. 35.2.3.3 includes the "<data>" in the header for the text. 35.2.3.4 does the same thing with "<efd>". 35.2.3.1, 35.2.3.2 and 35.2.3.5 include the "<>" text in the first sentence describing variable.

SuggestedRemedy

Change header 35.2.3.1 to read: "35.2.3.1 Inter-frame <inter-frame>". Remove text "<inter-frame>" from line 24 on page 35.15 in sub-clause 35.2.3.1.

Change header 35.2.3.2 to read: "35.2.3.2 Preamble <preamble> and start of frame delimiter <sfd>". Remove text "<preamble>" from line 42 and "<sfd>" from line 48 on page 35.15 in sub-clause 35.2.3.2.

Change header 35.2.3.5 to read: "35.2.3.5 Carrier extension <extend>". Remove text "<extend>" from line 35 on page 35.17 in sub-clause 35.2.3.5.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. In previous rounds of comments, multiple commenters did not correlate the <xxx> with the GMII data stream of Figure 35-15. Consistency is desired, but in this case redundancy is also recommended.

Place the <xxx> in each heading as suggested, but also retain in text. This requires addition of <data> in 35.17 line 25 and <efd> in 35.17 line 30.

Cl **35** *SC* **35.2.3.1** *P* **35.15** *L* **24-26** # **75**

William L. Quackenbush cisco Systems, Inc.

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

The "inter-frame" period applies separately to the transmit and receive paths of the GMII, not the the GMII as a whole. One path of the GMII can be in an inter-frame period when the other path is not.

SuggestedRemedy

"The inter-frame <inter-frame> period on a GMII transmit or receive path is an interval during which no data activity occurs on the path. The absence of data activity on the receive path is indicated by the deassertion of both RX_DV and RX_ER. The absence of data activity on the transmit path is indicated by the deassertion of both TX_EN and TX_ER."

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Replace first paragraph of 35.2.3.1 with:

"The inter-frame <inter-frame> period on a GMII transmit or receive path is an interval during which no data activity occurs on the path. Between bursts or single frame transmissions, the absence of data activity on the receive path is indicated by the deassertion of both RX_DV and RX_ER or the deassertion of the RX_DV signal with an RXD<7:0> value of 00 hexidecimal. On the transmit path the absence of data activity is indicated by the deassertion of both TX_EN and TX_ER."

See comment #108.

Cl **35** *SC* **35.2.3.2.1** *P* **35.16** *L* **2** # **30**

Rich Seifert Networks and Commu

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

SuggestedRemedy

After "... transmitted serially" add, "from left to right.".

Proposed Response *Response Status* **C**

ACCEPT. See comment #77.

Cl **35** *SC* **35.2.3.2.1.** *P* **35.16** *L* **1-3** # **77**

William L. Quackenbush cisco Systems, Inc.

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

The exposition could be clearer.

SuggestedRemedy

change the paragraph to

"The preample and SFD are shown above with their bits ordered for serial transmission from left to right. As shown, the left most bit of each octet is the LSB of the octet and the right most bit of each octet is the MSB of the octet."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.2.4** *P* **35.18** *L* **12,17** # **69**

William L. Quackenbush cisco Systems, Inc.

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

"MAC transmit start to TX_EN sampled" makes no sense. There is no indication of what the sampled value of TX_EN needs to be to end the time interval being measured.

SuggestedRemedy

change to "MAC transmit start to TX_EN = 1 sampled" if that is the value of TX_EN that marks the end of the time interval being measured. This follows the model "COL assert to TXD = Jam sampled" in line 23.

Proposed Response *Response Status* **C**

ACCEPT. Add TX_EN=1 to both lines 12 and 17.

This also affect Table 36-9a and b line 18, 27,39 (TX_EN = 1) line 29 (TX_EN=0)

Cl **35** *SC* **35.3** *P* **35.18** *L* **38** # **224**

Robert Grow XLNT

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

While helping to review the proposed resolution to comment #28 Brad Booth pointed out that the references to the PMA interface in subclause 35.3 should be to the TBI. The text also needs to be clarified to better discriminate between GMII and MII.

SuggestedRemedy

Replace the PMA column headings of 35.19 line 7 with TBI.

Edit the text of 35.3 to read as follows:

The GMII is specified such that implementors may use common pins for implementation of the GMII, the MII specified in clause 22 and the TBI specified in clause 36. A recommended mapping of the signals for the GMII, MII and TBI signals is shown in Table 35-6. Implementers using this recommended mapping are to comply with the GMII electrical characteristics in 35.4, MII electrical characteristics in 22.3 and the TBI electrical characteristics in 36.3 as appropriate for the implemented interfaces.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the PMA column headings of 35.19 line 7 with TBI. Change text to read:

The GMII is specified such that implementors may share pins for implementation of the GMII, the MII specified in clause 22 and the TBI specified in clause 36. A recommended mapping of the signals for the GMII, MII and TBI signals is shown in Table 35-6. Implementors using this recommended mapping are to comply with the GMII electrical characteristics in 35.4, MII electrical characteristics in 22.3 and the TBI electrical characteristics in 36.3 as appropriate for the implemented interfaces.

In an implementation supporting both the MII and GMII, some signal pins are not used in all interfaces. For example, the TXD and RXD data bundles are four bits wide for the MII and eight bits wide for the GMII. Also, the GTX_CLK is only used when operating as a GMII while TX_CLK is used when operating as an MII.

Similarly, an implementation supporting both the GMII and TBI interfaces will map TBI data signals onto the GMII control signal pins of TX_ER, TX_EN, RX_ER and RX_DV. The COL and CRS signals of the GMII have no corollary in the TBI.

It is recommended that unused signal pins be driven to a valid logic state.

Cl **35** *SC* **35.4** *P* **35.19** *L* **29** # **70**

William L. Quackenbush cisco Systems, Inc.

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

unclear reference

SuggestedRemedy

change "it" to "the GMII"

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.4.2** *P* **35.19** *L* **46 through** # **78**

William L. Quackenbush cisco Systems, Inc.

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

The combination of clauses 35.4.2 and 35.4.3 is poorly orgainzed and unnecessarily confusing.

SuggestedRemedy

Rewrite clauses 35.4.2 and 35.4.3 as a single clause with subclause structure. Proposed rewrite submitted to Bob Grow.

Proposed Response *Response Status* **W**

ACCEPT.

Note to readers and editor. Because of size, the change could not be included here see separate markup of proposed edit from the Beleview meeting. The markup includes addition of ground symbols to test topology figures.

See related comments: #31, #71, #142, #72, #73, #12, #74, #13, #143

Cl **35** *SC* **35.4.2** *P* **35.19** *L* **51-52** # **31**

Rich Seifert Networks and Commu

Comment Type **TR** *Comment Status* **D**

There is a conformance requirement in this sentence that is unmeasurable. No tolerance is specified for the delay matching of the transmission lines. There is no associated PICS for this conformance requirement.

SuggestedRemedy

Either:

(1) Change "shall" to "should", if the matching is not precisely critical.
(2) Include a tolerance, measurement method, and PICS entry if the matching *is* critical, or
(3) Delete the last sentence of this paragraph.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT. See comment #78.

Editor note: If #78 is not accepted: The first option of SuggestedRemedy is accepted and corresponding PICS item deleted..

Cl **35** *SC* **35.4.3** *P* **35.21** *L* **10** # **71**

William L. Quackenbush cisco Systems, Inc.

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

change "in" to "for"

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. See comment #78 (included in proposed text).

Cl **35** *SC* **35.4.3** *P* **35.21** *L* **15** # **142**

Tom Mathey Baynetworks

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

Change uppercase letter V in Voltage to lower case.

SuggestedRemedy

Change from " Voltage " to " voltage ".

Proposed Response *Response Status* **C**

ACCEPT.

Editors note: See that change is implemented in #78 if accepted.

Cl **35** *SC* **35.4.3** *P* **35.21** *L* **3 through** # **79**

William L. Quackenbush cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D**

The combination of clauses 35.4.2 and 35.4.3 is poorly orgainzed and unnecessarily confusing.

SuggestedRemedy

Rewrite clauses 35.4.2 and 35.4.3 as a single clause with subclause structure. Proposed rewrite submitted to Bob Grow.

Proposed Response *Response Status* **Z**

WITHDRAWN BY EDITOR. Duplicate of comment #78.

Cl **35** *SC* **35.4.3** *P* **35.22** *L* **12-13** # **72**

William L. Quackenbush cisco Systems, Inc.

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

remove "Output Measurement Point" and the associated arrow from Figure 35-20. It is no longer referenced by the text and its presence in the figure is confusing.

SuggestedRemedy

see comment

Proposed Response *Response Status* **C**

ACCEPT. See comment #78 (included in proposed text).

Cl **35** *SC* **35.4.3** *P* **35.22** *L* **32** # **73**

William L. Quackenbush cisco Systems, Inc.

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

the "Clock Slew Rate (falling)" specification of -0.6 V/ns is a maximum, not a minimum.

SuggestedRemedy

Move the -0.6 V/ns specification from the minimum to the maximum column.

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Based on a small sample of contributors, no agreement would be reached on accepting or rejecting this comment. But there was general agreement that the specification would be clarified by changing the two slew rate specifications to use the absolute value of the rate rather than a signed v/ns.

See comment #78.

Cl **35** *SC* **35.4.3** *P* **35.22** *L* **38** # **12**

Brad Booth — Jato Technologies, Inc

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

Repetition of words in sentence.

SuggestedRemedy

First sentence should read:
"Clock Skew rate is the instantaneous value of the slope of the clock potential with respect to time (dV/dt), not an average value over the entire rise or fall time interval."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.4.3** *P* **35.22** *L* **45-46** # **74**

William L. Quackenbush — cisco Systems, Inc.

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

Sentence is imprecise.

SuggestedRemedy

change the first sentence in the paragraph to "Designers of components containing GMII receivers should note that there is no upper bound specified on the magnitude of the slew rate of signals that may be applied to the input of a GMII receiver."

Proposed Response *Response Status* **C**

ACCEPT.

Cl **35** *SC* **35.4.3** *P* **35.23** *L* **21** # **13**

Brad Booth — Jato Technologies, Inc

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

Parameter notes are incorrect for tSETUP and tHOLD, DRIVER and RCVR, because both notes do not apply for DRIVER and RCVR. Note "a" only applies to RCVR, and note "b" only applies to DRIVER. This applies to both Table 35-9 and Table 35-10.

SuggestedRemedy

tSETUP(DRIVER) and tHOLD(DRIVER) descriptions should only reference note "b".
tSETUP(RCVR) and tHOLD(RCVR) descriptions should only reference note "a".

Change in Table 35-9 and 35-10.

Proposed Response *Response Status* **C**

REJECT. The commenter is in error, but the text could more clearly explain the test procedures and the test circuit. See comments #72, #78.

Note "a" specifies the measurement point for both the DRIVER and the RECEIVER specifications. It is therefore applicable to and should be referenced by both specifications.

Cl **35** *SC* **35.5.3.6** *P* **35.28** *L* **18** # **143**

Tom Mathey — Baynetworks

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

For PICS items EC2 and EC3, the wrong subclause is called out.

SuggestedRemedy

Change from 35.4.1 to 35.4.2.

Proposed Response *Response Status* **C**

ACCEPT. Comment is overtaken if comment #78 is accepted (new EC PICS is required by rewrite). EC2 is deleted if comment #31 is accepted and #78 is not.

Cl **36** *SC* **36.1.4** *P* **36.1** *L* **54** # **144**

Tom Mathey Baynetworks

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

The reference to note is on page 36.1; the note is on next page, 36.2

SuggestedRemedy

At next printing, insure that reference to note and the actual note are on the same page.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.1.4.3** *P* **36.2** *L* **38** # **145**

Tom Mathey Baynetworks

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

Line needs a comma added

SuggestedRemedy

Change line:
from: The MDI, logically subsumed within each PMD subclause is the actual medium
to: The MDI, logically subsumed within each PMD subclause, is the actual medium

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.1** *P* **36.5** *L* **5-6** # **1**

Howie Johnson Plaintree Systems Inc.

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

Comment originally submitted by Scott Mason. The comment was withdrawn by the commentor from the D3.3 balloting. The chief editor has promised Scott that he will submit this comment on Scott's behalf during the sponsor ballot:

Clause 36 is inconsistent in its description of the PCS client. At times the client is called: MAC, reconciliation sub-layer, GMII, repeater, PCS client, or combinations of these such as: MAC via reconciliation sublayer and GMII.

SuggestedRemedy

Correct the following inconsistencies:

1) Page 36.5, lines 5-6, change from:

"The PCS Service Interface allows the 1000BASE-X PCS to transfer information to and from the MAC (via the Reconciliation sublayer) or other PCS client, such as a repeater."

to

"The PCS Service Interface allows the 1000BASE-X PCS to transfer information to and from a PCS client. PCS clients include the MAC (via the Reconciliation sublayer) and repeater."

The PCS Service Interface allows the 1000BASEX PCS to transfer information to and from the MAC (via the Reconciliation sublayer) or other PCS client, such as a repeater.

2) Page 36.17, line 8, change from:

"An EPD of /T/R/R/ results in one /R/ being delivered to the PCS client (see 36.2.4.14.1)."

to

"An EPD of /T/R/R/ results in one /R/ being delivered to the MAC (see 36.2.4.14.1)."

Proposed Response *Response Status* **C**

ACCEPT. Accepted.
Page, subclause and line references are changed to correspond to D4.
Corrected the following inconsistency:

1) Page 36.4, lines 46-47, change from:

"The PCS Service Interface allows the 1000BASE-X PCS to transfer information to and from the MAC (via the Reconciliation sublayer) or

other PCS client, such as a repeater."

to

"The PCS Service Interface allows the 1000BASE-X PCS to transfer information to and from a PCS client. PCS clients include the MAC (via the Reconciliation sublayer) and repeater."

Cl **36** *SC* **36.2.4.11** *P* **36.15** *L* **10** # **148**

Tom Mathey Baynetworks

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

The words "code_groups" need to have the underscore changed to a dash.

SuggestedRemedy

Change from code_groups to code-groups.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.4.15** *P* **36.16** *L* **35** # **149**

Tom Mathey Baynetworks

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

The word "EPD2" is still being used in this specification and is defined as "specified in 36.2.4.14.1;". However, there is no definition of EPD2 in 36.2.4.14.1. Remove all usage of "EPD2" from the specification.

SuggestedRemedy

Change sentence to somewhat match preceeding sentence b).
from: c) EPD2: Used by the PCS as the End_of_Packet delimiter, Part 2, as specified in 36.2.4.14.1;

to: c) Packet delimiter: The code-group sequence of /T/R/I/ is used by the PCS as the End_of_Packet delimiter when the /R/ is transmitted in an odd-numbered code-group position (see 36.2.4.14.1);

Proposed Response *Response Status* **C**

ACCEPT. Accepted: EPD2 is used as a label here. The text of item c) is changed as follows to remove the text reference to End_of_Packet delimiter, Part 2:

c) EPD2: The first /R/ following the /T/ in the End_of_Packet delimiters /T/R/I/ or /T/R/R/I/."

Cl **36** *SC* **36.2.4.15** *P* **36.16** *L* **36** # **150**

Tom Mathey Baynetworks

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

The word "EPD3" is still being used in this specification with a reference to "36.2.4.14.1". However, there is no definition of EPD3 in 36.2.4.14.1. Remove all usage of "EPD3" from the specification.

SuggestedRemedy

Change sentence to somewhat match preceeding sentence b).
from: d) EPD3: Used by the PCS as the End_of_Packet delimiter, Part 3, if necessary, to pad the only or last .....

to: d) Packet delimiter: The code-group sequence of /T/R/R/ is used by the PCS as the End_of_Packet delimiter when the first /R/ is transmitted in an even-numbered code-group position. The second /R/ is used to pad the only or last packet of a burst of packets so that the subsequent /I/ is aligned on an even-numbered code-group boundary. When used for this purpose, Carrier_Extend is emitted from, and interpreted by, the PCS. An EPD of /T/R/R/ results in one /R/ being delivered to the PCS client (see 36.2.4.14.1).

Proposed Response *Response Status* **C**

ACCEPT. Accepted: EPD3 is used as a label here. The text of item d) is changed as follows to remove the text reference to End_of_Packet delimiter, Part 3:

d) EPD3: The second /R/ following the /T/ in the End_of_Packet delimiter /T/R/R/I/. This /R/ is used, if necessary, to pad the only or last packet of a burst of packets..."

Cl **36** *SC* **36.2.4.2** *P* **36.7** *L* **1** # **57**

Dave Fifield 3Com Corp.

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

The text in this paragraph (lines 1-3) and in subclause 36.3.3.1 on page 36.36, lines 10-18, refers to "even-numbered" and "odd-numbered" code-groups. In 36.2.4.2, an even-numbered code-group is defined as the first code-group after a reset or power-on.

This is a weak description, since "reset or power-on" are not defined.

SuggestedRemedy

I would like to see a reference to Figure 36-9 - Synchronization state diagram added to subclause 36.2.4.2. In Figure 36-9, the variable rx_even is defined. This will clarify the definition of the term "even-numbered code-group".

Suitable wording that can simply be added as another sentence following the paragraph lines 1-3 could be as follows:

"The even-numbered code-group is defined by the rx_even variable used in the Synchronization state diagram, Figure 36-9. This variable is used throughout the Synchronization state machine to determine which code-group is even-numbered and which is odd-numbered."

Proposed Response *Response Status* **C**

REJECT. Subclause 36.2.4.2 discusses transmitted code-groups, not received code-groups. Transmitted code-groups are not based on the receive signal rx_even.

The signals reset (mr_main_reset) and power_on are now defined due to comment #153.

Cl **36** *SC* **36.2.5.1.2** *P* **36.19** *L* **16** # **152**

Tom Mathey Baynetworks

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

Remove all usage of End_of_Packet delimiter "part 1" from the specification.

SuggestedRemedy

Change
from: The code-group used for the End_of_Packet delimiter part 1.

to: The code-group used for the End_of_Packet delimiter (EPD); /T/R/R/ or /T/R/I/.

Proposed Response *Response Status* **C**

REJECT. Rejected. Existing text clearly and concisely identifies the code-group within the context of the three code-group End_of_Packet delimiter. The suggested remedy does not.

Cl **36** *SC* **36.2.5.1.2** *P* **36.19** *L* **9** # **151**

Tom Mathey Baynetworks

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

Remove all usage of End_of_Packet delimiter "part 2" and "part 3" from the specification.

SuggestedRemedy

Change
from: The code-group used as either: End_of_Packet delimiter part 2; End_of_Packet delimiter part 3; Carrier_Extend; and /I/ alignment.

to: The code-group used as either: an End_of_Packet delimiter of /T/R/I/; an End_of_Packet delimiter of /T/R/R/; Carrier_Extend; and /I/ alignment.

Proposed Response *Response Status* **C**

REJECT. Rejected. Existing text clearly and concisely identifies the code-group within the context of the three code-group End_of_Packet delimiter. The suggested remedy does not.

Cl **36** *SC* **36.2.5.1.3** *P* **36.19** *L* **23** # **153**

Tom Mathey Baynetworks

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

For the variable "BEGIN", there is no pointer or reference to a clause or paragraph where this variable is defined, set, or reset.

SuggestedRemedy

Please provide a pointer or reference.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Deleted the variable BEGIN in 36.2.5.1.3. Replaced all instances of its usage with the term "power_on=TRUE + mr_main_reset=TRUE". Defined the variables power_on=TRUE + mr_main_reset=TRUE in 36.2.5.1.3 as follows:

mr_main_reset
Controls the resetting of the PCS state diagrams via Control register bit 0.15.
Values: FALSE; Do not reset the PCS state diagrams.
TRUE; Reset the PCS state diagrams.

power_on
Condition that is true until such time as the power supply for the device that contains the PCS has reached the operating region. The condition is also true when the device has low power mode set via Control register bit 0.11.
Values: FALSE; The device is completely powered (default).
TRUE; The device has not been completely powered.
Note: Power_on evaluates to its default value in each state where it is not explicitly set.

Cl **36** *SC* **36.2.5.1.3** *P* **36.20, 36.21** *L* **21** # **17**

Thomas Dineen LSI Logic, 1551 McCar

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

The format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables seems to be unclear or unspecified. After discussions it became clear that the intended format is specified in 37.2.1.1 and 37.2.4.3.1.

Please specify by reference the format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables.

Two references are required:
a) Section 36.2.5.1.3, Page 36.20, line 21 rx_Config_Reg<D15:D0>.
b) Section 36.2.5.1.3, Page 36.21, line 21 tx_Config_Reg<D15:D0>.

SuggestedRemedy

Add the following sentence to the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0>
variable definitions as shown in Section 36.2.5.1.3.

At page 36.20, line 21, rx_Config_Reg<D15:D0> add:
"The bit format of the rx_Config_Reg<D15:D0> variable is context dependent, relative
to the state of the auto-negotiation function, and is presented in sections 37.2.1.1 and
37.2.4.3.1."

At page 36.21, line 21, tx_Config_Reg<D15:D0> add:
"The bit format of the tx_Config_Reg<D15:D0> variable is context dependent, relative
to the state of the auto-negotiation function, and is presented in sections 37.2.1.1 and
37.2.4.3.1."

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Changed the definitions of variables rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> as follows:

rx_Config_Reg<D15:D0>
A 16-bit array that contains the data bits received from a /C/ ordered_set as defined in 36.2.4.10. Conveyed by the PCS Receive process to the PCS Auto-Negotiation process. The format of the data bits is context dependent, relative to the state of the Auto-Negotiation function, and is presented in sections 37.2.1.1 and 37.2.4.3.1. For each element within the array:
Values: ZERO; Data bit is a logical zero.
ONE; Data bit is a logical one.

tx_Config_Reg<D15:D0>
A 16-bit array that contains the data bits to be transmitted in a /C/ ordered_set as defined in 36.2.4.10. Conveyed by the PCS Auto-Negotiation process to the PCS Transmit process. The format of the data bits is context dependent, relative to the state of the Auto-Negotiation function, and is presented in sections 37.2.1.1 and 37.2.4.3.1. For each element within the array:
Values: ZERO; Data bit is a logical zero.
ONE; Data bit is a logical one.

Cl **36** *SC* **36.2.5.1.3** *P* **36.21** *L* **48** # **154**

Tom Mathey Baynetworks

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

Sentence has extra "or" and a missing comma.

SuggestedRemedy

Change
from: /S/, or /V/ or the code-group /D/.
to: /S/, /V/, or the code-group /D/.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.5.1.4** *P* **36.22** *L* **27** # **231**

Bruce LaVigne Hewlett-Packard

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

The DECODE process updates running disparity based on a calculation, not based on table lookup -- particularly since the received codegroup may not even be in the table in the case of an error.

SuggestedRemedy

Change the last sentence of the description of the DECODE function
from "DECODE also updates the current running disparity per Table 36-1."
to "DECODE also updates the current running disparity per the running disparity rules outlined in 36.2.4.4"

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.5.2.1** *P* **36.24** *L* **24** # **155**

Tom Mathey Baynetworks

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

In the sentence "the /R/ ordered_set may be sourced, " the "may" implies that the /R/ is optional. I believe that the /R/ is required.

SuggestedRemedy

Change
from: If TX_EN and TX_ER are both de-asserted, the /R/ ordered_set may be sourced, after which the sourcing of /I/ is resumed.

to: If TX_EN and TX_ER are both de-asserted, then either the /T/R/ or the /T/R/R/ code-groups are sourced, after which the sourcing of /I/ is resumed.

Proposed Response *Response Status* **C**

REJECT. Rejected. This sentence, when taken in context, is referring to when the PCS is sending /R/ or /V/ ordered_sets during carrier extension or carrier extension with errors then TX_ER is deasserted. An additional /R/ may be generated to align the /I/ ordered_set. What Tom states is true when TX_EN first deasserts and TX_ER was never asserted but that is not the context for this sentence. That context was handled in lines 18-20. Note that state diagrams always have precedence per clause 1.

Cl **36** *SC* **36.2.5.2.2** *P* **36.27** *L* **27** # **104**

Pat Thaler Hewlett-Packard

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

The state RX_CB can be entered from the state EARLY_END (on the next page). When that happens, receiving, RX_DV and RX_ER remain asserted until RX_K or WAIT_FOR_K state is entered which can be up to 4 octets later. Is that okay?

SuggestedRemedy

Add receiving = FALSE, RX_DV = FALSE and RX_ER = FALSE to RX_CB state.

Proposed Response *Response Status* **C**

ACCEPT. Accepted as a duplicate of CommentID #54.

Cl **36** *SC* **36.2.5.2.2** *P* **36.27** *L* **28** # **54**

Benjamin Brown Cabletron Systems, In

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

Missing assignments to receiving, RX_DV and RX_ER in state RX_CB when transitioning from state EARLY_END

SuggestedRemedy

Add the following 3 assignments to state RX_CB:

receiving <= FALSE
RX_DV <= FALSE
RX_ER <= FALSE

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.5.2.3** *P* **36.29** *L* **6** # **232**

Bruce LaVigne Hewlett-Packard

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

There is an extra word "set" in the last sentence of 36.2.5.2.3.

SuggestedRemedy

Remove the first occurrance of the word "set" in the sentence, so that it now reads: "The detection of a non-SPD carrier event (false carrier) causes the PCS to substitute the value (00001110) for the code-group received, set RXD<7:0> to this value, and assert RX_ER."

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.2.5.2.4** *P* **36.29** *L* **25** # **50**

Howie Johnson — Signal Consulting

Comment Type **TR** *Comment Status* **R**

Regarding the conditions which cause the PCS auto-Negotiation process to begin, no tolerance has been provided for the condition "signal_detect=FAIL for 1 us or more".
An implementation which began Auto-Negotiation after 1.001 uS, as opposed to 1.000 uS, would technically not comply with the wording in this section.
I don't believe that was the intent.

SuggestedRemedy

Reword the first part of the first sentence on line 26 to read:

"The condition sync_status-FAIL existing for a duration of greater than or equal to link_timer, or signal_detect=FAIL existing for a duration of greater than or equal to X, where X is an implementation-dependent constant in the range of 1 us to 20 ms, causes the PCS Auto-Negotation process to begin the transmission of /C/."

Proposed Response *Response Status* **C**

REJECT. Rejected. Please refer to the suggested remedies for those comments.

This comment is overtaken by a successful resolution to comment #34:

Change:
an_sync_status
Qualified version of sync_status for use by Auto-Negotiation to detect a sync_status timeout condition.
Values: OK; The variable sync_status defined in 36.2.5.1.3 is OK.
FAIL; The variable sync_status defined in 36.2.5.1.3 is FAIL for a duration greater than or equal to the link timer.

Change 36.2.5.2.4 on page 36.29, line 25:
The condition sync_status=FAIL existing for ten ms or more causes the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin transmission of /C/.

Cl **36** *SC* **36.2.5.2.6** *P* **36.31** *L* **1** # **6**

Howie Johnson — Lucent Technologies

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

Comment originally submitted by April Bergstrom. The comment was rejected during the D3.3 recirculation ballot, and the commenter approved of that disposition. The chief editor has promised to preserve this issue for further consideration during the sponsor ballot:

The variable "mr_loopback" is not defined for figure 36-9.

SuggestedRemedy

Add the following definition to 36.2.5.1.3 :

mr_loopback
A boolean that indicates the enabling and disabling of data being loopbacked through the PHY. Loopback of data through the PHY is enabled when Control register bit 0.14 is set to one.

Values: FALSE; Loopback through the PHY is disabled.
TRUE; Loopback through the PHY is enabled.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy and the following additional change:

Added a row defining mr_loopback in table 37-8, entitled "PCS state diagram variable to management register mapping", on page 37-14. The contents of the row are: | mr_loopback | 0.14 Loopback (see 36.2.5.1.3) |

Cl **36** *SC* **36.3.1.2** *P* **36.32** *L* **15** # **230**

Bruce LaVigne — Hewlett-Packard

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

The reference to PMA_UNITDATA.request should be PMA_UNITDATA.indicate. This was actually resolved in comment #3 on draft 3.3, but must not have made it into D4.0 for some reason.

SuggestedRemedy

Change "PMA_UNITDATA.request" to "PMA_UNITDATA.indicate" in subclause 36.3.1.2

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.2.4** *P* **36.33** *L* **34** # **157**

Tom Mathey Baynetworks

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

The words "code_groups" need to have the underscore changed to a dash.

SuggestedRemedy

Change from code_groups to code-groups.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.3** *P* **36.33** *L* **47** # **158**

Tom Mathey Baynetworks

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

I believe that reference to ending paragraph is incorrect.

SuggestedRemedy

change
from: shall behave as described in subclauses 36.3.3 through 36.3.6.
to: shall behave as described in subclauses 36.3.3 through 36.3.8.

Proposed Response *Response Status* **C**

REJECT. Rejected. Subclauses 36.7 and 36.8 are not specific to the TBI.

Cl **36** *SC* **36.3.3.1** *P* **36.35** *L* **28** # **159**

Tom Mathey Baynetworks

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

Of all of the Ten Bit Interface signals, only -LCK_REF is listed with a polarity (minus). Suggest removing polarity symbol minus (-) since it adds no usefull information (or add the symbol plus (+) to all of the other signals).

SuggestedRemedy

Change from -LCK_REF to LCK_REF. This occurs on: page 36.34, line 18; page 36.35, line 28; page 36.35, line 39; page 36.36, line 36; and page 36.37, line 3.

Proposed Response *Response Status* **C**

REJECT. Rejected. "-" is used to indicate active low signal. The labeling follows conventions used in the source of this text, the Fibre Channel 10-bit Interface and virtually all vendor level implementation information. Diverging from these specs is not viewed as being useful.

Cl **36** *SC* **36.3.3.1** *P* **36.36** *L* **8** # **160**

Tom Mathey Baynetworks

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

The words "code_groups" need to have the underscore changed to a dash.

SuggestedRemedy

Change from code_groups to code-groups.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.3.2** *P* **36.36** *L* **41** # **161**

Tom Mathey Baynetworks

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

Table 36-5 lists the permitted combinations as well as the undefined, which is all of the possible.

SuggestedRemedy

Change sentence
from: Table 36-5 lists the permitted combinations of control signals on this TBI.

to: Table 36-5 lists all possible combinations of control signals on this TBI, including the valid combinations as well as the undefined combinations.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Changed sentence from: Table 36-5 lists the permitted combinations of control signals on this TBI.

to: Table 36-5 lists all possible combinations of control signals on this TBI, including the valid combinations as well as the undefined combinations.

Change Table 36-5 title to TBI combinations of control signals

Cl **36** *SC* **36.3.4.2** *P* **36.38** *L* **15** # **35**

Brad Booth Jato Technologies, Inc

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

Missing a "/" or an "and" to seperate "Input output"

SuggestedRemedy

Change to:
"Figure 36-11 - Input/output valid level for AC measurements"

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.4.3** *P* **36.37** *L* **50** # **162**

Tom Mathey Baynetworks

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

Capitalization of word "Data" differs between text (lower case) and Figure 36-12 (upper case).

SuggestedRemedy

Change
from: PMA_RX_CLK<1> and Data is
to: PMA_RX_CLK<1>, and DATA is

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.6.2** *P* **36.40** *L* **43** # **36**

Brad Booth Jato Technologies, Inc

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

REFCLK documented in footnote, but REFCLK does not exist.

SuggestedRemedy

Change "REFCLK" to "PMA_TX_CLK".

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **36.3.7** *P* **36.41** *L* **4** # **163**

Tom Mathey Baynetworks

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

The text on line 4 of:
"NOTE-Loopback mode may be implemented either in the parallel or the serial circuitry of a device."
(which to me implies the serial interface). conflicts with the text of 36.1.4.2 on page 36.2, line 28 wich states
e) Data loopback at the PMD Service Interface.

conflicts with the text on page 36.34, line 39 which states
"or internally loop it back to the Receive function input,",

and conflicts with Figure 36-10 on page 36.34 which shows loopback switches on the serial signals.

SuggestedRemedy

Please make all of the pieces consistent.

Proposed Response *Response Status* **C**

REJECT. Rejected. The only loopback requirement imposed is for the loopback function. It is desirable to loopback through serial logic in order to loopback as much of the device logic as possible. However, this is not a requirement as indicated in the note. The references on 36.2, line 28, and 36.34, line 39, are sufficiently vague to not require modification.

Cl **36** *SC* **36.3.7.2** *P* **36.41** *L* **14** # **164**

Tom Mathey Baynetworks

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

I would like to see a more crisp definition of transmitter activity during loopback, either here in paragraph 36.3.7.2 or in the referenced 22.2.4.1.2. The statement in 22.2.4.1.2.of "not result in the transmission of data on the network" could mean either no packet/frame, and/or no idles.

SuggestedRemedy

Specifically state that for a GMMI interface and PHY set to loopback, the transmitter sends /I2/ (I think).

Proposed Response *Response Status* **C**

REJECT. Rejected. The transmission of /I2/ is allowed but not required in this case. The (continued) transmission of data is specifically disallowed. What is allowed is implementation dependent. The existing text is correct and sufficient.

Cl **36** *SC* **36.4** *P* **36.41** *L* **32-40** # **32**

Rich Seifert Networks and Commu

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

First, the draft repeatedly states that the GMII is not intended as an exposed interface. However, this paragraph says that if there is an exposed PCS interface, then it SHALL comply with the GMII requirements. This appears to be self-contradictory.

Second, the last statement of this paragraph appears to be a tautology: "...if an exposed interface is provided to the PMA, and that interface is the TBI ... it shall comply with the [TBI] requirements...". By definition, if it *didn't* comply with the requirements, then it wouldn't be a TBI!! The statement neither requires that exposed PMA interfaces comply with the TBI requirements, not does it require that the TBI be used as the exposed PMA interface. It basically says that if you want to make your interface TBI-compliant, then it must comply with the requirements for a TBI-compliant interface, which is a content-free statement.

SuggestedRemedy

Either eliminate this subclause in its entirety, and any associated PICS entries, or delete all but the first sentence of this paragraph.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Reword the paragraph to read:

There is no requirement for a compliant device to implement or expose any of the interfaces specified for the PCS or PMA. Implementations of a GMII shall comply with the requirements as specified in clause 35. Implementations of a TBI shall comply with the requirements as specified in clause 36.3.3.

Cl **36** *SC* **36.5.1** *P* **36.42** *L* **4** # **165**

Tom Mathey Baynetworks

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

I would expect that when the numbers of Table 35-5 for MAC to/from GMII on page 35.18 are added to numbers of Table 36-9a for GMII to/from MDI on page 36.42, then the result should be equal to the numbers of Table 36-10 for MAC to/from MDI on page 36.43. They do not.

For the 4 cases listed in Table 36-10, one entry does not add up:
440 bit times, MDI input to MDI output = Jam, (worst case collision response)

Expected arithmetic is:

192 bit times, Table Table 36-9a: MDI input to COL assert
48 bit times, Table Table 35-5: COL assert to JAM
136 bit times, Table Table 36-9a: TX_EN Sampled to MDI Output (this seems like best number to use)
---
450 bit times

The 440 bit times is not equal to the 450 bit times.

SuggestedRemedy

Explain difference of 10 bit times (which is not equal to 1 clock cycle) or change the numbers.

Proposed Response *Response Status* **C**

REJECT. Rejected. COL assert to JAM is 112 bits, not 48. This number in addition to the MDI input to COL assert number of 192 is a total of 304. Add to this the TX_EN Sampled to MDI Output number of 136 and you get 440, which is the number in question.

Cl **36** *SC* **36.7.4.2** *P* **36.46** *L* **7** # **166**

Tom Mathey Baynetworks

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

In the PICS entry for CG1, it would be nice to add a comment.

SuggestedRemedy

Add to Value/Comment-- Transmitter initial running disparity assumes negative value.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **Figure 36-1** *P* **36.3** *L* **16** # **146**

Tom Mathey Baynetworks

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

In Figure 36-1, the line which leaves block at far lower left labeled PHYSICAL and goes in a straignt line to block labeled LX-PMD is incorrect.

SuggestedRemedy

Add a dog-leg to the line such that it enters box labeled MEDIUM at the upper left.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36** *SC* **Figure 36-2** *P* **36.4** *L* **12** # **147**

Tom Mathey Baynetworks

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

In Figure 36-2, the very usefull information on naming of lines into and out of the block labeled TRANSMIT has been deleted.

SuggestedRemedy

Add back in the line titles for block transmit:
top to bottom as: transmitting, receiving, and xmit.

Proposed Response *Response Status* **C**

ACCEPT. All line titles were deleted in draft 3.2 as line titles such as transmitting, receiving, and xmit since they were incomplete. The incompleteness was that all signals were not listed. Comments were presented to add more signals. Adding these or all signal would have overly cluttered and compromised the original intention of this figure "Functional Block Diagram" (of the PCS).

As pointed out in the Bellevue meeting, the line between the sync block and the receive block needs to be a double line to indicate parallel data.

Cl **36** *SC* **Figure 36-7b** *P* **36.28** *L* **40** # **156**

Tom Mathey Baynetworks

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

The figure reads better if the text is above the line instead of some above and some below the line.

SuggestedRemedy

For exit conditions from each block, place text above the line. This occurs at 3 places (lines 35, 40, and 41).

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36A** *SC* **36A.4** *P* **36A.2** *L* **24** # **37**

Brad Booth — Jato Technologies, Inc

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

Missing underscores in signal names.

SuggestedRemedy

Change to:
IPG (TX_EN and TX_ER low)

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36A** *SC* **Global** *P* **Global** *L* **Global** # **33**

Edward S. Chang — Unisys Corporation

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

The title, Random jitter test patterns, does not represent the contents of Clause 36A. The title means, the test patterns for random jitter (RJ) as oppose to deterministic jitter (DJ).

In fact, clause 36A includes variety of test patterns:
36A.1 High frequency test pattern -RJ (also transition asymmetry)
36A.2 Low frequency test pattern - RJ (also PLL tracking error)
36A.3 Mixed frequency test pattern - RJ and DJ
36A.4 Continuous random jitter test pattern - RJ and DJ

Obviously, the contents of Clause 36A is to provide variety of test patterns to characterize the jitter (RJ, DJ, BER) for the devices under test at different jitter conditions.

Therefore, the title should be changed to "Jitter test patterns", which will include all jitter: RJ and DJ.

Furthermore, it is recommended to explain the purposes of each tests.

SuggestedRemedy

1. At page 36A.1, line 6, change the title to "Jitter test patterns".
2. At page 36A, line 19, add "The intent of this test patter is to test (RJ) random jitter at BER of 10^-12, and the asymmetry of transition time".
3. At page 36A.1, line 28, add "The intent of this test pattern is to test low frequency RJ and PLL tracking error".
4. At age 36A, line 41, add "The intent of this test pattern is to test the combined jiter of RJ and DJ (deterministic jitter)".

Proposed Response *Response Status* **C**

ACCEPT. Accepted. The following changes are made:
1. At page 36A.1, line 6, changed the title to "Jitter test patterns".
2. At page 36A.1, line 16, added "The intent of this test patter is to test random jitter (RJ) at BER of 10^-12, and the asymmetry of transition time."
3. At page 36A.1, line 26, added "The intent of this test pattern is to test low frequency RJ and PLL tracking error."
4. At age 36A.1, line 35, added "The intent of this test pattern is to test the combination of RJ and deterministic jitter (DJ)."

Cl **36B** *SC* *P* **36B.1** *L* **13** # **167**

Tom Mathey Baynetworks

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

The words "code_groups" need to have the underscore changed to a dash.

SuggestedRemedy

Change from code_groups to code-groups on:
page 36B.1, line 13,
page 36B.1, line 30,
page 36B.2, line 16.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **36B** *SC* **36B-3** *P* **36B.2** *L* **5-7** # **36001**

Rich Taborek G2 Networks

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

Transmitted code-group and transmitted bitstream values are incorrect for the first code-group.

SuggestedRemedy

asdf

Proposed Response *Response Status* **C**

ACCEPT.

Cl **37** *SC* **37.1.1** *P* **37.1** *L* **28** # **168**

Tom Mathey Baynetworks

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

The FLP Bursts as defined in clause 28 take place on 100 ohm cable.

SuggestedRemedy

Change text
from: the same function on two pairs of 150-ohm balanced copper cabling.
to: the same function on two pairs of 100-ohm balanced copper cabling.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. The text "on two pairs of 150-ohm balanced copper cabling." is stricken due to 1000BASE-T.

Cl **37** *SC* **37.14** *P* **8** *L* **0** # **172**

Tom Mathey Baynetworks

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

Use of plural (diagrams) where singular (diagram) is needed (Figure 37-6 is one figure).

SuggestedRemedy

Change text
from: The state diagrams of Figure 37-6 generate and accept variables
.....
to: The state diagram of Figure 37-6 generates and accepts variables .?

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **37** *SC* **37.2.1.1** *P* **37.3** *L* **52** # **18**

Thomas Dineen LSI Logic, 1551 McCar

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

The format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables as shown in clause 36 seems to be unclear or unspecified. After discussions it
became clear that the intended format is specified in 37.2.1.1 and 37.2.4.3.1.

Please specify by reference the format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables.

Two references are required.
In sections 37.2.1.1 and 37.2.4.3.1 please add references to section 36.2.5.1.3
concerning both the definitions of rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0>
variables.

SuggestedRemedy

Add the following sentence to both 37.2.1.1 and 37.2.4.3.1.

At page 37.3, section 37.2.1.1, line 55, add:
"The bit format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables
is context dependent, relative to the state of the auto-negotiation function, and is
presented in here and in section 37.2.4.3.1."

At page 37.9, section 37.2.4.3.1, line 24, add:
"The bit format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables
is context dependent, relative to the state of the auto-negotiation function, and is
presented here and in section 37.2.1.1."

Proposed Response *Response Status* **C**

ACCEPT. Accepted. The following changes are made:

At page 37.3, section 37.2.1.1, line 55, added:
"The bit format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables is context dependent, relative to the state of the Auto-Negotiation function, and is presented in here and in 37.2.4.3.1."

At page 37.9, section 37.2.4.3.1, line 24, added:
"The bit format of the rx_Config_Reg<D15:D0> and tx_Config_Reg<D15:D0> variables is context dependent, relative to the state of the Auto-Negotiation function, and is presented here and in 37.2.1.1."

Cl **37** *SC* **37.2.1.5.3** *P* **37.6** *L* **4** # **14**

Howard Frazier Cisco Systems, Inc

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

The text in this subclause precludes the implementation of the most useful remote fault signalling algorithm. The text states:

While sync_status = FAIL, remote fault information is not signaled.

If the input fiber to a station is broken, sync_status = FAIL. Under this condition, it would be useful for a station to signal remote fault = Link Failure, so that the remote end of the link can see that the link is broken. This allows the station which receives the remote fault indication to differentiate between a link partner which has detected a broken link, and a link partner which is stuck in a reset state (which would be indicated by the receipt of /C/ zero config words).

Furthermore, the current behavior, which reports remote fault based on loss of sync, exhibits the old "hair trigger" behavior which we have come to know and hate.

Lastly, the current behavior will report "old news". The information about a failed link will only be signalled once the link is healthy again. This is too late to be of any help, since the desireable behavior is to report sick links, rather than healthy ones that were previously sick.

SuggestedRemedy

Change text in 37.2.1.5.3 to read:

A Remote Fault encoding of 0b10 indicates that the local device has detected a Link_Failure as indicated by the condition an_sync_status = FAIL. This Remote Fault encoding is continously transmitted in the AN_ENABLE state as long as the condition an_sync_status = FAIL persists.

As a consequence of this change, the RF bits should be masked out of the comparison rx_Config_Reg<D15:0>=0 for the purposes of restarting autonegotiation.

Proposed Response *Response Status* **C**

ACCEPT. Add a sentence to clause 37.2.1.5.3 which reads:

"Another indication of a link failure condition is provided by the reception of /C/ ordered_sets having rx_Config_Reg<D15:D0> = 0 for a duration exceeding link_timer."

Cl **37** *SC* **37.2.4.3** *P* **37.9** *L* **11** # **171**

Tom Mathey Baynetworks

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

For the shall in the text "it shall send a Message Page with a Null Message Code.", I can not find a matching PICS entry. Note that PICS entry of NP1 covers the shall on line 5.

SuggestedRemedy

Add PICS entry:
Item-- NP12
Feature-- Transmission of Message Pages with a Null Message Code
Subclause-- 37.2.4.3
Value/Comment-- Both local device and link partner have Next Page ability, but local device has no next page information to send.
Status-- NP:M
Support-- Yes [ ], N/A [ ]
(But I do not understand how a Status of Mandatory can have a Support of N/A [ ], please verify).

Note: The NP1 Feature text should be revised to be different from NP12. Suggested text is: change NP1 from: "Transmission of Message" to "Initial Transmission of Message".

Proposed Response *Response Status* **C**

ACCEPT. Accepted as a duplicate of CommentID #7.

Cl **37** *SC* **37.2.4.3** *P* **37.9** *L* **8-9** # **8**

Howie Johnson Cabletron Systems, In

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

Comment originally submitted by Benjamin Brown. The comment was rejected during the D3.3 recirculation ballot, and the commenter approved of that disposition. The chief editor has promised to preserve this issue for further consideration during the sponsor ballot:

The change to 37.2.4.3, page 9, lines 8 & 9 in d3.3 now say: "The advertised ability NP bit shall be set from the Next Page Able bit." This is wrong because the hardware can be Next Page Able and management can choose to not set the NP bit. I also can't find where this change was accepted in response to any particular comment.

This is a result of extraneous wording from an initial proposed response to several d3.2 comments associated with the Next Page Able bit. The extraneous text is most of the underlined text on D3.3 page 37.9, lines 8:9. The relevant comment is d3.2 comment #29. That comment, remedy and accepted response is as follows:

comment #29 text:
Next page operation is also controlled by the Next Page Able bit in register 6.

suggested remedy #29 text:
Update documentation to reflect control of Next Page Able bit.

response #29 text:
Accepted. The following change is made:

pg 37.10, line 1 changed to: "If the Next Page function is supported by both link ends and a next page exchange has been invoked by both link ends, then the next page exchange ends when both ends..."

SuggestedRemedy

The extraneous text, which should be removed is the first two sentences of the paragraph starting on page 37.9, lines 8. This paragraph should start with "Next page operation...". Note that this was how the same paragraph appeared in d3.2.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Deleted the first 2 lines of the paragraph in 37.2.4.3, lines 44 & 45 on page 37-8 beginning "Local device next page ability..." No PICS entry is affected by the removal of this "shall" because these lines were added inadvertently into D3.3.

Cl **37** *SC* **37.2.4.3.11** *P* **37.11** *L* **40-43** # **7**

Howie Johnson Cabletron Systems, In

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

Comment originally submitted by Benjamin Brown. The comment was rejected during the D3.3 recirculation ballot, and the commenter approved of that disposition. The chief editor has promised to preserve this issue for further consideration during the sponsor ballot:

Duplicate fix information was inserted into d3.3 as a result of resolution of d3.2 commentID #70. This duplicate fix information is extraneous and not contained in the accepted response to d3.2 comment #70. That comment, remedy and accepted response is as follows:

comment #70 text:
Add helpful text taken and modified from Clause 28.2.3.4.11 to explain that a device must send a null next page if it is willing to receive next page information but has no information to transmit.

suggested remedy #70 text:
Add the following after the sentence ending "its link partner's next page information.":

"If both devices advertise Next Page ability in their base pages, then both devices shall send at least one Next Page. If a device advertises Next Page ability and has no information to send but is willing to receive, it sends a null page."

response #70 text:
Accepted. Added the following text after the sentence ending "...its link partner's next page information.":

"If both the local device and its link partner advertise Next Page ability in their base pages, then both devices shall send at least one Next Page. If the local device advertises Next Page ability and has no next page information to send but is willing to receive next pages, and its link partner also advertises Next Page ability, it shall send Message Pages with a Null Message Code."

Added two PICS items, NP3 and NP4 to 37.5.4.2.6, Next page functions:

Item Feature Subclause Status Support Value/Comment

NP3 Initial Next 37.2.4.3 NP:M Yes [ ] Upon advertisement of NP
Page Exchange N/A [ ] ability by both devices

NP4 Next Page 37.2.4.3 NP:M Yes [ ] Indicated by advertising NP
Receipt Ability N/A [ ] ability via the NP bit

Renumbered other NPx PICS entries

SuggestedRemedy

Delete item f) in 37.2.4.3.11, on page 37.11, lines 40-43.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Deleted item f) in 37.2.4.3.11, on page 37.11, lines 17-20.

Cl **37** *SC* **37.2.5.1.9** *P* **37.14** *L* **11** # **173**

Tom Mathey Baynetworks

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

This sentence implies that there are 3 parts or columns to Table 37-8:
management registers,
management function interface signals,
variables from the state diagram.

SuggestedRemedy

Either revise the paragraph to list just 2 entries, or revise table to have 3 columns. I am not quite sure how to perform either.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Changed the last two sentences of 37.2.5.1.9 to:

Table 37-8 describes how PCS state diagram variables in both clauses 36 and 37 map to management register bits.

Cl **37** *SC* **37.2.5.1.9** *P* **37.14** *L* **12** # **174**

Tom Mathey Baynetworks

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

Reference to Figure 36-9 seems incorrect.

SuggestedRemedy

Change reference from Figure 36-9 to Figure 37-6.

Proposed Response *Response Status* **C**

REJECT. Rejected. However, the rejection reason is in context with other Sponsor Ballot comment. Specifically, the reference is required to address #6.

Cl **37** *SC* **37.2.5.1.9** *P* **37.14** *L* **29** # **5**

Howie Johnson Lucent Technologies

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

Comment originally submitted by April Bergstrom. The comment was rejected during the D3.3 recirculation ballot, and the commenter approved of that disposition. The chief editor has promised to preserve this issue for further consideration during the sponsor ballot:

The sentence "Also included in this table is the mapping of variables from the state diagram of Figure 36-9 to management function interface signals." is not needed since bit 1.2 Link Status now is mapped to xmit==DATA and not sync_status.

SuggestedRemedy

Remove the sentence "Also included in this table ..." from subclause 37.2.5.1.9 .

Proposed Response *Response Status* **C**

REJECT. Rejected per response to Comment ID #6 which adds a variable used in clause 36, mr_loopback, to table 37-8. Please refer to the response to that comment.

Cl **37** *SC* **37.3** *P* **37.15** *L* **8** # **175**

Tom Mathey Baynetworks

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

the shall in the sentence "the state diagrams shall take precedence." has no PICS entry.

SuggestedRemedy

Add PICS entry:
Item-- AN4
Feature-- Auto-Negotiation state diagram precedence
Subclause-- 37.3
Value/Comment-- the state diagrams shall take precedence
Status-- M
Support-- Yes [ ]

Note-- The feature entry for AN3 may need to be changed to something like: "Auto-Negotiation state diagram requirements" so that text for AN1 is different from AN4.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. State diagram precedence is specified in clause 1. The word "shall" is stricken.

Cl **37** *SC* **37.3.1.1** *P* **37.15** *L* **48** # **34**

Brad Booth — Jato Technologies, Inc

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

The variable signal_detect was added to the variable an_sync_status in Montreal. The original comment was not a request to add this variable, but rather a question about the effects of this variable changing states and whether that should impact the an_sync_status variable. I believe that the current draft goes beyond the commentors original intent.

SuggestedRemedy

Change:
an_sync_status
Qualified version of sync_status for use by Auto-Negotiation to detect a sync_status timeout condition.
Values: OK; The variable sync_status defined in 36.2.5.1.3 is OK.
FAIL; The variable sync_status defined in 36.2.5.1.3 is FAIL for a duration greater than or equal to the link timer.

Change 36.2.5.2.4 on page 36.29, line 25:
The condition sync_status=FAIL existing for ten ms or more causes the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin transmission of /C/.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **37** *SC* **37.3.1.1** *P* **37.15** *L* **52** # **51**

Howie Johnson — Signal Consulting

Comment Type **TR** *Comment Status* **R**

(see related comment concerning P36.29/L25/section 36.2.5.2.4)

Regarding the conditions which cause the PCS auto-Negotiation process to begin, no tolerance has been provided for the condition "signal_detect=FAIL for a duration of greater than 1 uS".
An implementation which began Auto-Negotiation after 1.001 uS, as opposed to 1.000 uS, would technically not comply with the wording in this section.
I don't believe that was the intent.

SuggestedRemedy

Reword the values paragraph starting on line 52 to read:

"Values:
FAIL: The variable sync_status defined in 36.2.5.1.3 is FAIL for a duration of greater than or equal to link_timer or the variable signal_detect defined in 36.2.5.1.3 is FAIL for a duration of greater than or equal to X, where X is an implementation-dependent constant in the range of 1 us to 20 ms.

OK: otherwise."

Proposed Response *Response Status* **C**

REJECT. Rejected as a duplicate of CommentIDs #50 per suggested remedy to those comments. Please refer to the suggested remedies for those comments.

This comment is overtaken by a successful resolution to comment #34:

Change:
an_sync_status
Qualified version of sync_status for use by Auto-Negotiation to detect a sync_status timeout condition.
Values: OK; The variable sync_status defined in 36.2.5.1.3 is OK.
FAIL; The variable sync_status defined in 36.2.5.1.3 is FAIL for a duration greater than or equal to the link timer.

Change 36.2.5.2.4 on page 36.29, line 25:
The condition sync_status=FAIL existing for ten ms or more causes the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin transmission of /C/.

Cl **37** *SC* **37.3.1.1** *P* **37.16** *L* **23-29** # **2**

Howie Johnson Seeq Technology

Comment Type **TR** *Comment Status* **R** *resubmit*

Comment originally submitted by Steve Dreyer. The comment was withdrawn by the commentor from the D3.3 balloting. The chief editor has promised Steve that he will submit this comment on Steve's behalf during the sponsor ballot:

In Montreal, the PCS group decided to qualify an_sync_status=FAIL with a signal_detect timer of a min/max duration 1us-20mS so that the link_timer could be used if desired. The current text could be interpreted to not allow that.

In addition, the text for qualification by sync_status also has some ambiguity.

SuggestedRemedy

Modify an_sync_status value definition as follows:
Values: OK; The variable sync_status defined in 36.2.5.1.3 is OK
and the variable signal_detect defined in
36.2.5.1.3
is OK.
FAIL; The variable sync_status defined in 36.2.5.1.3 is
FAIL
for a duration of the link_timer or
the variable signal_detect defined in 36.2.5.1.3
is FAIL
for a duration of 1uS-20mS.

Similarly, modify the first sentence of 36.2.5.2.4, P. 36.30, L. 14-15 to:
The condition sync_status=FAIL existing for a duration of 10mS-20mS or signal_detect=FAIL existing for a duration of 1uS-20mS causes the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin the transmission of /C/.

Proposed Response *Response Status* **C**

REJECT. Rejected as a duplicate of CommentIDs #50 and #51 per suggested remedy to those comments. Please refer to the suggested remedies for those comments.

This comment is overtaken by a successful resolution to comment #34:

Change:
an_sync_status
Qualified version of sync_status for use by Auto-Negotiation to detect a sync_status timeout condition.
Values: OK; The variable sync_status defined in 36.2.5.1.3 is OK.
FAIL; The variable sync_status defined in 36.2.5.1.3 is FAIL for a duration greater than or equal to the link timer.

Change 36.2.5.2.4 on page 36.29, line 25:

The condition sync_status=FAIL existing for ten ms or more causes the PCS Auto-Negotiation process to begin and the PCS Transmit process to begin transmission of /C/.

Cl **37** *SC* **37.3.1.1** *P* **37.16** *L* **4** # **176**

Tom Mathey Baynetworks

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

For the variable "BEGIN", there is no pointer or reference to a clause or paragraph where this variable is defined.

SuggestedRemedy

Please provide a pointer or reference.

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Deleted the variable BEGIN in 37.3.1.1 and its usage in the Auto-Negotiation state diagram in figure 37-6.

Cl **37** *SC* **37.3.1.3** *P* **37.20** *L* **4** # **215**

Amrit Kalla VLSI Tech. Inc.

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

RUDI is not defined in 36.2.5.1.5.

SuggestedRemedy

Defined in 36.2.5.1.6

Proposed Response *Response Status* **C**

ACCEPT. Accepted as a duplicate of CommentID #177.

Cl **37** *SC* **37.3.1.3** *P* **37.20** *L* **4** # **177**

Tom Mathey Baynetworks

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

Reference to paragraph 36.2.5.1.5. for definition of RX_UNITDATA.indicate(parameter) is incorrect.

SuggestedRemedy

Change reference from 36.2.5.1.5 to 36.2.5.1.6.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **37** *SC* **37.3.1.5** *P* **37.21** *L* **5** # **60**

Benjamin Brown — Cabletron Systems, In

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

According to 37.2.5.1.5, page 37.13, line 40, "The Page Received bit shall be reset to logic zero on a reead of the AN expansion register (register 6)." Given this, the assignment of mr_page_rx <= FALSE in the NEXT_PAGE_WAIT state is unnecessary.

SuggestedRemedy

Remove the assignment mr_page_rx <= FALSE from state NEXT_PAGE_WAIT.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **37** *SC* **37.5.4.2.6** *P* **37.25** *L* **19** # **178**

Tom Mathey — Baynetworks

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

The PICS entry for NP6 and NP9 both call out paragraph 37.2.4.3.2. However, this paragraph has only one shall.

SuggestedRemedy

Either delete one of the PICS entries or change the paragraph callout. (I can not find an alternate paragraph call-out to suggest).

Proposed Response *Response Status* **C**

ACCEPT. Accepted. Deleted PICS entry NP9. The Value/Comment entry for NP9 is moved to NP6. 37.5.4.2.6 Next page function entries are re-ordered.

Cl **37** *SC* **Figure 37-1** *P* **37.2** *L* **27** # **169**

Tom Mathey — Baynetworks

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

In Figure 37-1, the line which leaves block at far lower left labeled PHYSICAL and goes in a straignt line to block labeled LX-MDI is incorrect.

SuggestedRemedy

Add a dog-leg to the line such that it enters box labeled MEDIUM at the upper left.

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **37** *SC* **Table 37-1** *P* **37.4** *L* **21** # **170**

Tom Mathey — Baynetworks

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

With the text as printed, I could infer that RF1 is bit 4.13.

SuggestedRemedy

Change text
from: Remote Fault (RF1, RF2) 4.13:12 Remote Fault
to: Remote Fault (RF2, RF1) 4.13:12 Remote Fault

Proposed Response *Response Status* **C**

ACCEPT. Accepted per suggested remedy.

Cl **38** *SC* **38.** *P* **38.1** *L* **8** # **241**

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

It is not clear from the discussion at the MBI meeting in Florida, Jan 19-20 that these objectives are being reliably met on an interoperable basis with adequate margins for jitter and allowance for the uncharacterized behaviour of fiber that is being utilized.

SuggestedRemedy

Unclear

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

In this D4 comment resolution phase, based on documented performance of achieving conditioned launch with the offset launch SMF hybrid patch cord, the link length supported by 1000BASE-LX on 62MMF is proposed to be increased from 440 m to 550 m. This is based on achieving the specified 500 MHz*km modal bandwidth of 62MMF without the need for adding additional fiber specifications. 50MMF already is specified for 550 m.

Through the MBI committee, the optical PMD subgroup has undertaken the development and confirmation of inter-operability tests for MMF links at the defined test points in Figure 38-1. When completed, optical PMD transmitters and receivers meeting these test criteria will support link performance specifications for >99% of MMF cable which meets its bandwidth specifications.

The receiver tests will characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.

Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

Cl **38** *SC* **38.1.1.3.1** *P* **38.2** *L* **35** # **80**

Joe Gwinn
Raytheon

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

Our definition of signal detect allows implementation of totally broken forms of optical signal detect. Specifically, a DC-coupled signal detect function cannot tell when modal distortion has wiped all modulation off the optical signal, rendering communications impossible in spite of adequate *average* received optical power. Likewise, use of the phaselock-acquired signal from the clock recovery unit will fail, because any any worthwhile PLL type receiver can acquire bit and frame lock in spite of a negative signal to noise ratio, but reliable communications cannot be achieved under such conditions. Only the so-called AC-coupled signal detect approach, where modulation power (not average optical power) is measured, is robust.

One can measure the modulation envelope instead; it isn't necessary to actually measure power. Nor is great accuracy required.

Fortunately, implementation of an AC signal detect function is simple to implement, so all that's needed is to ensure that all designers are well aware of the issue.

SuggestedRemedy

Expand the note to say that AC signal detect is strongly preferred, for the above reasons. Some text from an internal design note follows. Plagarize at will.

In the AC approach, the signal is declared to be present if the average received modulation (vice optical) power exceeds some threshold, and is declared absent if the average modulation power falls below some lower threshold, the difference (hysteresis) being to prevent chattering. This is implemented as a coupling capacitor feeding a one-diode or two-diode peak (envelope) detector with RC filter feeding a schmitt trigger, the RC time constant being in the milliseconds. The diodes, which must be able to follow gigahertz signals, must be a small schottky type, and the capacitors must be RF grade (low inductance). A small amplifier or comparitor may be useful. Everything else is ordinary. If the receiver has AGC (automatic gain control), the modulation envelope detector will need to take this into account.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

On page 38.4, section 38.2.4, line 42, add note (d.)

"d. The SIGNAL_DETECT Values in Table 38-1 are generated by processing the 8B/10B character signal through an AC coupled receiver."

Add superscript "d" to FAIL, Unspecified and OK

Cl **38** *SC* **38.10** *P* **38.14** *L* **27** # **225**

Paul Kolesar Lucent Technologies

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

The term Connector is confusing, as it is sometimes interpreted to mean only the plug portion of the connecting hardware rather than the intended total connection. This leads to unnecessary questions as to whether the loss of a mated pair of plugs that forms the connection should actually be counted as two connectors.

SuggestedRemedy

Change the term Connetor to Connection in Figure 38-4 and throughout subclauses 38.11.2.1 and 38.11.2.2. This will clarify the intent of the standard.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

To clarify the intent of the standard,

Change the term "Connector" to "Connection" in Figure 38-4 and throughout subclauses 38.11.2.1 and 38.11.2.2.

Cl **38** *SC* **38.10** *P* **38.14** *L* **44** # **96**

Joe Gwinn Raytheon

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

Note "a" lacks a terminating period.

SuggestedRemedy

Add the missing period.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Add the missing period.

Cl **38** *SC* **38.11** *P* **38.14** *L* **41** # **226**

Paul Kolesar Lucent Technologies

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

The nominal industry specification for SMF is 1310 nm not 1300 nm.

SuggestedRemedy

Change 1300 to 1310 for the wavelength of SMF in Table 38-11. This will aviod confusion in the industry and conflict with many existing optical fiber specifications. This change does not impact the specifications of the -LX PMD-MDI.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT
Change 1300 to 1310 for the wavelength of SMF in Table 38-11. This will aviod confusion in the industry and conflict with many existing optical fiber specifications. This change does not impact the specifications of the -LX PMD-MDI.

Cl **38** *SC* **38.11** *P* **38.14** *L* **51** # **239**

Geoff Thompson Bay Networks, Inc.

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

Effective modal bandwidth and Differential Mode Delay are undefined terms that are of no use in purchasing fiber on the open market nor do they have any utility in terms of any established industry standard test method in characterizing the installed base of multi-mode fiber.

However, it seems that these are critical factors in establishing the suitability of particular fibers for use with Gigabit Ethernet

SuggestedRemedy

Provide a convincing case for the position that no new parameters are need to characterize multi-mode fiber for laser launched systems or establish specifications and test methods for multi-mode fiber that characterize their performance in laser launched systems of the type being specified by P802.3z

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

To provide a convincing case that no new MMF parameters are needed to characterize MMF link performance, the optical PMD subgroup has undertaken the development and confirmation of conformace and inter-operability tests for MMF links at the defined test points in Figure 38-1. The objective is that proposed MMF links lengths are achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.

The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.

Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

The projected schedule for developing conformance tests to address this TR comment is:
1. At the February Interim meeting, review potential impact of this comment resolution on 802.3z objectives and PAR.
2. At the March Plenary, present complete conformance test proposals, including theoretical analysis and experimental data.
3. At the May Interim, the goal is to present a complete PMD draft including conformance tests."

Cl **38** *SC* **38.11** *P* **38.15** *L* **25** # **15**

Howard Frazier Cisco Systems, Inc

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

It is unrealistic to specify a minimum overfilled launch modal bandwidth of 500/500 MHz*km for 50 um fiber, because this fiber is practically non-existent in the installed based of premises cable. It may be available as jumper cordage, but is it seldom if ever sold as either inside or outside plant cable. A much more common minimum overfilled launch modal bandwidth specification for 50 um fiber is 400/400 MHz*km, which appears to make up more than half the installed base of 50 um premises cable, with most cables being of equal bandwidth at 850 nm, and somewhat higher bandwidth at 1300 nm.

SuggestedRemedy

Revise Table 38-12 to reflect a minimum overfilled launch modal bandwidth of 400/400 MHz*km for 50 um fiber, and recalculate link parameters for this figure. This will almost certainly drop the maximum link span for 1000BASE-SX on 50 um fiber below 550 meters, and may even drop it below 500 meters.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

In Table 38-2 on page 38.5, line 11, change "550 m" to "525 m".

In Table 38-5 on page 38.7, in 50 um MMF column in lines 7-14, change 550 to 525, change 3.56 to 3.47, change 2.86 to 3.49, change 0.58 to 0.04.

In Table 38-11 on page 38.14, line 43, change 3.43 to 3.34

In Table 38-12 on page 38.15, and 50 um MMF column, change 500 to 400 in two places.

Cl **38** *SC* **38.11** *P* **38.15** *L* **30** # **49**

Don Knasel Corning Inc.

Comment Type **TR** *Comment Status* **D**

It is unrealistic to specify a minimum overfilled launch modal bandwidth of 160/500 MHz*km for 62.5 um fiber, because a significant percentage of fiber in the installed based of premises cable is below that value. While 160/500 represents a common fiber bandwidth, particularly in North America, the minimum bandwidth cell is 160/200.

SuggestedRemedy

Revise Table 38-12 to reflect a minimum overfilled launch modal bandwidth of 160/200 MHz*km for 62.5 um fiber, and recalculate link parameters for this figure. This will almost certainly drop the maximum link span for 1000BASE-LX on 62.5 um fiber below 440 meters.

Proposed Response *Response Status* **Z**

THE COMMENTOER HAS VERBALLY TOLD THE EDITOR THAT HE INTENDS TO WITHDRAW THIS COMMENT.

Cl **38** *SC* **38.11.2** *P* **38.16** *L* **15** # **184**

Tom Mathey Baynetworks

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

Each sentence for notes "a" thru "d" is missing a period at its end.

SuggestedRemedy

Add period at end of each sentence.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Add period at end of each sentence a) through d).

Cl **38** *SC* **38.11.2.1** *P* **38.16** *L* **24** # **228**

Paul Kolesar Lucent Technologies

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

The allocation of 1.5 dB is for connection and splice loss, not just connection loss.

SuggestedRemedy

Change the first sentence to read:
... 1.5 dB total connection and splice loss.

This clarifies that splices are included in the loss budget allocation.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change the first sentence to read:

... 1.5 dB total connection "and splice" loss.

Cl **38** *SC* **38.11.2.1** *P* **38.16** *L* **24** # **185**

Tom Mathey Baynetworks

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

The sentence "This allocation supports a minimum of three connectors" uses minimum where I would expect the budget to support a maximum of 3 connectors.

SuggestedRemedy

Change word minimum to maximum.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Replace "This allocation supports a minimum of "
with
"For example, this allocation supports "

Cl **38** *SC* **38.11.2.2** *P* **38.16** *L* **32** # **229**

Paul Kolesar Lucent Technologies

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

The allocation of 2.0 dB is for connection and splice loss, not just connection loss.

SuggestedRemedy

Change the first sentence to read:
... 2.0 dB total connection and splice loss.

This clarifies that splices are included in the loss budget allocation.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change the second sentence to read:

... connection "and splice" loss.

Cl **38** *SC* **38.11.2.2** *P* **38.16** *L* **32** # **186**

Tom Mathey Baynetworks

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

The sentence "This allocation supports a minimum of four connectors" uses minimum where I would expect the budget to support a maximum of 4 connectors.

SuggestedRemedy

Change word minimum to maximum.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "This allocation supports a minimum of "
with
"For example, this allocation supports "

Cl **38** *SC* **38.12** *P* **38.15** *L* **13** # **227**

Paul Kolesar — Lucent Technologies

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

The nominal industry specification for SMF is 1310 nm not 1300 nm.

SuggestedRemedy

Change 1300 to 1310 for the wavelength of SMF in Table 38-12. This will aviod confusion in the industry and conflict with many existing optical fiber specifications. This change does not impact the specifications of the -LX PMD-MDI.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change 1300 to 1310 for the wavelength of SMF in Table 38-12. This will aviod confusion in the industry and conflict with many existing optical fiber specifications. This change does not impact the specifications of the -LX PMD-MDI.

Cl **38** *SC* **38.12.4.2** *P* **38.21** *L* **17** # **187**

Tom Mathey — Baynetworks

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

The PICS entry for PMS5, paragraph 38.5, has no corresponding "shall" in paragraph 38.5.

SuggestedRemedy

At start of paragraph 38.5, add the following text: The jitter specifications listed in Table 38-10 shall apply to both a SX receiver and a LX receiver.

Note-- This "shall" can then be applied against both PICS entry PMS5 and PML4.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

Note: The editor of clause 38 has promoted this comment from "E" to "T" status because of its PICs-related content.

The receiver jitter contribution in Table 38-10 is defined by "TP3 to TP4" line. This information is Informative and does not require a PICs statement.

Remove PICs statements PMS5 in table 38.12.4.2.
Remove PICs statements PML4 in table 38.12.4.3.

Cl **38** *SC* **38.2.1** *P* **38.3** *L* **8** # **63**

Del Hanson — Hewlett-Packard Co.

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

The statement, "The optical transmit signal is defined a the end of a patch cord (TP2), between 2 and 5 meters in length,..." may be confusing now that mode conditioning patch cords are included, as noted in page 38.8, line 28 for 1000BASE-LX.

SuggestedRemedy

Add a sentence in page 38.3, line 10, which states,

"If a mode conditioning patch cord is used, the optical transmit signal is defined at the output end of this mode conditioning patch cord at (TP2)."

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Add a sentence in page 38.3, line 10, which states,

"If a mode conditioning patch cord is used, the optical transmit signal is defined at the output end of this mode conditioning patch cord at TP2."

Cl **38** *SC* **38.2.4** *P* **38.4** *L* **1** # **179**

Tom Mathey — Baynetworks

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

For this set of paragraphs, there are 5 "shall"s and 3 PICS entries. Two PICS entries are missing.

SuggestedRemedy

Add.

Proposed Response *Response Status* **C**

PROPOSED REJECT.

Note: The editor of clause 38 has promoted this comment from "E" to "T" status because of its PICs-related content.

Cl **38** *SC* **38.2.4** *P* **38.4** *L* **11** # **81**

Joe Gwinn Raytheon

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

Our definition of signal detect allows implementation of totally broken forms of optical signal detect. Specifically, a DC-coupled signal detect function cannot tell when modal distortion has wiped all modulation off the optical signal, rendering communications impossible in spite of adequate *average* received optical power. Likewise, use of the phaselock-acquired signal from the clock recovery unit will fail, because any any worthwhile PLL type receiver can acquire bit and frame lock in spite of a negative signal to noise ratio, but reliable communications cannot be achieved under such conditions. Only the so-called AC-coupled signal detect approach, where modulation power (not average optical power) is measured, is robust.

One can measure the modulation envelope instead; it isn't necessary to actually measure power. Nor is great accuracy required.

Fortunately, implementation of an AC signal detect function is simple to implement, so all that's needed is to ensure that all designers are well aware of the issue.

SuggestedRemedy

Insert a note saying that AC signal detect is strongly preferred, for the above reasons. Some text from an internal design note follows. Plagarize at will.

In the AC approach, the signal is declared to be present if the average received modulation (vice optical) power exceeds some threshold, and is declared absent if the average modulation power falls below some lower threshold, the difference (hysteresis) being to prevent chattering. This is implemented as a coupling capacitor feeding a one-diode or two-diode peak (envelope) detector with RC filter feeding a schmitt trigger, the RC time constant being in the milliseconds. The diodes, which must be able to follow gigahertz signals, must be a small schottky type, and the capacitors must be RF grade (low inductance). A small amplifier or comparitor may be useful. Everything else is ordinary. If the receiver has AGC (automatic gain control), the modulation envelope detector will need to take this into account.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

On page 38.4, section 38.2.4, line 42, add note (d.)

"d. The SIGNAL_DETECT Values in Table 38-1 are generated by processing the 8B/10B character signal through an AC coupled receiver."

Add superscript "d" to FAIL, Unspecified and OK.

Cl **38** *SC* **38.2.4** *P* **38.4** *L* **39-40** # **109**

Pat Thaler Hewlett-Packard

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

This statement seems to be untrue. That one end is receiving 8B/10B characters does not imply that the other end is also receiving 8B/10B characters.

SuggestedRemedy

Delete note b.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

In note b, change " receiving" to " sending encoded 8B/10B characters."

Add period and delete the remainer of the exising sentence.

Cl **38** *SC* **38.3** *P* **38.5** *L* **16** # **64**

Del Hanson Hewlett-Packard Co.

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

The statement, "NOTE-Operating range is based on experimental data available at the time of publication while using the worst case band-width measurements done in accordance with Annex 38B." under tables 38-2, and table 38-6 on page 38.7 at line 34, had a useful purpose during the earlier stages of reviewing the draft documents but is no longer relevant.

implied

SuggestedRemedy

Remove statement, "NOTE-Operating range is based on experimental data available at the time of publication while using the worst case band-width measurements done in accordance with Annex 38B." under tables 38-2 on page 38.5, line 16 and under table 38-6 on page 38.7, line 34.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **38** *SC* **38.3, 38.5** *P* **Multiple** *L* **Multiple** # **62**

Ray Lin Ascend Communicatio

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

The remedy proposed by the Modal Bandwidth Task Group (MBI) to mitigate what is characterized as the differential mode delay (DMD) addressed in each of the P802.3z Draft 3.2 comments listed below has not eliminated the additional jitter contribution to ensure 1000BASE-SX link lengths as specified in P802.3z Draft 4 , Table 38-2.

P802.3z Draft 3.2 DMD comments:

1. Geoff Thompson, Bay Networks, Comment #187
2. Howie Johnson , Signal Consulting, Comment #186
3. Ray Lin, Digital Equipment Corp., Comment #88
4. Paul Kolesar, Lucent Technologies, Comment #86

Based on jitter measurements presented to the Modal Bandwidth Task Group (MBI) by Digital Equipment Corporation and Hewlett-Packard it is clear that the addition of the Coupled Power Ratio (CPR) specification has not proven sufficient to mitigate what is characterized as the differential mode delay (DMD) problem for 1000BASE-SX links.
The presentations show jitter in access of the 96 ps (TP2 to TP3) using transmitters that have been selected to exhibit a CPR over the range of 9<CPR<29 dB as specified in P802.3z Draft 4, when measured with a common receiver.

SuggestedRemedy

Intent--

I will borrow Geoff Thompsons words extracted from his TR to preamble the intent of the proposed remedy which is to address 1000BASE-SX interoperabilty. I quote Geoff here.

"The success of 802.3 as a standard is based on the ability for customers to purchase or utilize existing system components that meet the specifications in the standard and plug them together and have them work in a predictable reliable and useful manner. This includes being able to replace any one component with an equivalent compliant component from another manufacturer and resume predictable reliable and useful operation. The discussions surrounding the operation of multi-mode fiber links with laser based transceivers have not assured me that we will meet this level of quality and reliability with the current set of specifications.

Goeffs Suggested Rem.

Provide sufficient data and revisions to specifications to provide reliable system elements for multi-mode transceivers and fiber. Revise specifications so that fiber, transceiver and any added launch conditioning devices or methods assure reliable operation under specification worst case operating conditions. Such conditions will be reviewed by 802.3 for their adequacy against the 5 Criteria and the project objectives."

End of quote.

Ray Lin Remedy--

1. Change jitter contribution allocated to TP3 (but recognized as derivative of the fiber, receiver and transmitter) in subclause 38.5, Table 38-10 to values that shall not exceed (ffs) of DJ and (ffs) RJ when measured per the Jitter Characterization Test Method proposed to Fiber Channel.

2. Modify transceivers specifications in subclause 38.3 to guarantee specified jitter at reference test points by including specifications for transmitter Mode Power Distribution (ffs), receiver jitter tolerance (ffs), and mode conditioning patch cords (ffs).

ffs = for further study.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

To provide a convincing case that no new MMF parameters are needed to characterize MMF link performance, the optical PMD subgroup has undertaken the development and confirmation of conformace and inter-operability tests for MMF links at the defined test points in Figure 38-1. The objective is that proposed MMF links lengths are achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.
The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.
Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

The projected schedule for developing conformance tests to address this TR comment is:
1. At the February Interim meeting, review potential impact of this comment resolution on 802.3z objectives and PAR.
2. At the March Plenary, present complete conformance test proposals, including theoretical analysis and experimental data.
3. At the May Interim, the goal is to present a complete PMD draft including conformance tests."

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **25-55** # **102**

Mark Nowell Hewlett-Packard

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

The intention of having a transmitter coupled power ratio (CPR) specification was to mitigate the additional jitter induced by certain laser/fiber combinations. Results presented to the
Modal Bandwidth Investigation task group (MBI), by both Hewlett-Packard and Digital Equipment
Corporation, have shown that for 1000BASE-SX a CPR specification is not sufficient to ensure
the jitter budget in Table 38-10 is met.

SuggestedRemedy

Modify table 38-3 "1000BASE-SX transmit characteristics" to include another specification which ensures sufficient launch conditioning to mitigate any DMD-induced excess jitter breaking the jitter budget. This may also require adjusting the values in the jitter budget (Table 38-10).

The form of the additional transmitter specification is not clear as there has been no proposal
made to the committee. Candidates for this specification are the mode power distribution (MPD)
but no results have been presented.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

Although is has been shown that CPR is insufficient to mitigate the impact of DMD-related jitter for 1000BASE-SX, it is premature to introduce a new criteria at this time. The objective of a transmitter conditioned launch test is that proposed MMF links lengths are achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.

The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.

Where possible, the conformance test criteria and related link
performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **29** # **42**

Brad Booth Jato Technologies, Inc

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

Missing "r" in Laser for Transmitter type under 62.5 um MMF.

SuggestedRemedy

Change "Lase" to "Laser"

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change "Lase" to "Laser"

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **29** # **82**

Joe Gwinn Raytheon

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

The word "Laser" has lost its "r" in the 62.5 micron column.

SuggestedRemedy

Provide the missing letter.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Provide the missing letter.

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **29** # **211**

Paul Kolesar Lucent Technologies

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

typo: Shortwave Lase

SuggestedRemedy

should be Shortwave Laser

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

should be Shortwave Laser

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **45** # **212**

Paul Kolesar Lucent Technologies

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

CPR is not a sufficient parameter for measuring the launch condition of SX transmitters.

SuggestedRemedy

CPR should be replaced or supplemented with additional relevant parameters such as near or far field intensity measurements made at TP2.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

Although is has been shown that CPR is insufficient to mitigate the impact of DMD-related jitter for 1000BASE-SX, it is premature to introduce a new criteria at this time. The objective of a transmitter conditioned launch test is that proposed MMF links lengths are achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.

The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.

Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

Cl **38** *SC* **38.3.1** *P* **38.5** *L* **53** # **83**

Joe Gwinn Raytheon

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

Notes "c" and "d" lack terminating periods.

SuggestedRemedy

Provide the missing periods.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Provide the missing periods.

Cl **38** *SC* **38.3.1** *P* **38.6** *L* **1** # **84**

Joe Gwinn Raytheon

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

Missing word "that" between "so" and "individual".

SuggestedRemedy

Change to read "... so that individual ...".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

statement to read"... volume so that individual... "

Cl **38** *SC* **38.3.1** *P* **38.6** *L* **1-15** # **16**

Thomas Dineen LSI Logic, 1551 McCar

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

From user's prospective the subclause fails to provide a sufficient description of the "Mode conditioned hybrid patch cord". Detailed information on the identification, use, and installation should be required by the standard.

1) Each end of the patch cord should be labeled as per the intended connection.
a) "To Equipment".
b) "To Building".

2) The patch cord should have an indelible label attached identifying it as an "802.3z Gigabit Ethernet Hybrid Patch Cord". Information on the intended application should be provided. A warning should be included that this hybrid patch cord is NOT usable for normal single mode or multimode patch cord applications.

This labeling should serve to produce a easy to use and install hybrid patch cord product.

SuggestedRemedy

At the top of page 38.6, subclause 38.3.1 add the following descriptive text at line 15:

"Mode conditioned hybrid patch cord assemblies shall be manufactured to include the following characteristics and product labeling:

1) Each end of the hybrid patch cord assembly shall be labeled to indicate the required connection:
a) "To Equipment" label attached to the PMD MDI connector.
b) "To Building" label attached to the multimode cable plant connector.

2) The hybrid patch cord shall include an attached indelible label specifying the following:
a) "802.3z Gigabit Ethernet Hybrid Patch Cord."
b) "This product is intended to provide conditioned laser launch for 1000BASE-SX laser transceivers operating over multimode fiber plants."
c) "This product is not usable for normal patch cord applications."

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

and add subclause 38.11.2.4.

38.11.2.4 Mode conditioning patch cord for MMF operation of 1000BASE-LX

This subclause specifies an example embodiment of a mode conditioner for 1000BASE-LX operation with MMF cable plant. The MMF cable plant should meet all of the specifications of 38.10. For 1000BASE-LX the mode conditioner consists of a singlemode fiber permanently coupled off-center to a graded index cable plant fiber. This example embodiment of a patch cord is not intended to exclude other physical implementations of offset launch mode conditioners. However, any implementation of offset launch mode conditioner used for 1000BASE-LX shall meet the specifications of Table 38-13. The offset launch must be contained within the patch cord assembly.

Table 38-13 Offset launch mode conditioner specifications

Description	62.5 um MMF	50 um MMF	Unit
Maximum insertion loss	0.5	0.5	dB
Coupled power ratio (CPR)	28 < CPR < 40	12 < CPR < 20	dB
Optical center offset between SMF and MMF	17 < Offset < 23	10 < Offset < 16	um
Angular offset (max)	1	1	degree

Note: All patch cord connecting ferrules containing the singlemode-to-multimode offset launch shall have singlemode tolerances (IEC 61754-4 grade 1 ferrule).

Mode conditioners based on different physical mechanisms may be discovered in the future. These new mode conditioners are not excluded from use with 1000BASE-LX. However, the specifications of Table 38-13 are specific to the singlemode fiber offset launch mode conditioner and may not ensure that mode conditioners based on other physical mechanisms will have adequate performance for 1000BASE-LX.

The singlemode fiber used to manufacture the offset launch mode conditioner shall meet the requirements of 38.10. The multimode fiber used in the construction of the offset launch mode conditioner shall be of the same type as the cable plant over which 1000BASE-LX is to be operated. If the cable plant is 62.5 um MMF then the MMF used in the construction of the mode conditioner should be of type 62.5 um MMF. If the cable plant is of type 50 um MMF, then the MMF used in the construction of the mode conditioner should be of type 50 um MMF.

Figure 38-5 shows the preferred embodiment of the offset patch cord. This patch cord consists of duplex fibers represented by a singlemode-to-multimode offset launch fiber connected to the transmitter MDI and a second conventional cable plant graded index fiber connected to the receiver MDI. The preferred configuration is a plug-to-plug patch cord since it maximises the power budget margin of the 1000BASE-LX link. The single mode end of the patch cord shall be labelled "To equipment". The patch cord connected to the cable plant shall be labelled "To cable plant". The "strain relief boot" of the singlemode fiber connector plug shall be colored blue. The "strain relief boot" of all multimode fiber connector plugs shall be colored beige. The patch cord assembly is labelled "Offset Launch Mode Conditioning Patch Cord Assembly". Labelling identifies which size multimode fiber is used in the construction of the patchcord. The polarity of the SC duplex optical plug ensures that the singlemode fiber end is automatically aligned to the transmitter MDI.

Cl **38** *SC* **38.3.1** *P* **38.6** *L* **10-15** # **110**

Pat Thaler Hewlett-Packard

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

This paragraph is misleading. I don't think we intend to be suggesting that the single mode fiber patch cord be used for mode conditioning SX and we haven't seen clear evidence that the step index is useful.

SuggestedRemedy

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

On page 38.6, line 11-14, remove the phrase,"a special step-index MMF for use at either wavelength or ".

Add at the end of sentence, the phrase, "with 1000BASE-LX, as described in subclause 38.11.2.4."

Cl **38** *SC* **38.3.1** *P* **38.6** *L* **3** # **85**

Joe Gwinn Raytheon

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

Unclear; missing clarifying words.

SuggestedRemedy

Change to read "... the resulting pulse-splitting-induced nulls ...".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change to read "... the resulting pulse-splitting-induced nulls ...".

Cl **38** *SC* **38.3.1** *P* **38.6** *L* **42-47** # **3**

Howie Johnson LSI Logic, 1551 McCar

Comment Type **T** *Comment Status* **D** *resubmit*

Comment originally submitted by Thomas Dineen. The comment was withdrawn by the commentor from the D3.3 balloting. The chief editor has promised Thomas that he will submit this comment on Thomas' behalf during the sponsor ballot:

From user's prospective the subclause fails to provide a sufficient description of the "Mode conditioned hybrid patch cord". Detailed information on the identification, use, and installation should be required by the standard.

1) Each end of the patch cord should be labeled as per the intended connection.
a) PMD MDI end.
b) Cable Plant end.

2) The patch cord should have an indelible label attached identifying it as an "802.3z Gigabit Ethernet Hybrid Patch Cord". Information on the intended application should be provided. A warning should be included that this hybrid patch cord is NOT usable for normal single mode or multimode patch cord applications.

3) The patch cord outer covering should be of a bright and unique color differentiating it from other commercial patch cord products.

This labeling should serve to produce a easy to use and install hybrid patch cord product.

SuggestedRemedy

At the bottom of page 38.6, subclause 38.3.1 add the following descriptive text:

"Mode conditioned hybrid patch cord assemblies shall be manufactured to include the following characteristics and product labeling:

1) Each end of the hybrid patch cord shall be labeled to indicate the required connection:
a) "PMD MDI" label attached to the PMD MDI connector.
b) "Multimode Cable Plant" label attached to the multimode cable plant connector.

2) The hybrid patch cord shall include an attached indelible label specifying the following:
a) "802.3z Gigabit Ethernet Hybrid Patch Cord."
b) "This product is intended to provide conditioned laser launch for 1000BASE-SX laser transceivers operating over multimode fiber plants."
c) "This product is not usable for normal patch cord applications."

3) The patch cord outer covering shall be colored "Corvette Yellow"."

Proposed Response *Response Status* **Z**

Withdrawn.

Cl **38** *SC* **38.3.2** *P* **38.6** *L* **20** # **219**

Paul Kolesar Lucent Technologies

Comment Type **TR** *Comment Status* **R**

Receiver bandwidth specification insufficient for interoperability.

SuggestedRemedy

Add a minimum receiver bandwidth must be specified. Suggest using 1000 MHz as the 3-dB electical bandwidth minimum.

Proposed Response *Response Status* **U**

PROPOSED REJECT.

Cl **38** *SC* **38.3.2=44 117 9222928** *P* **38.6** *L* **20** # **100**

David Cunningham Hewlett-Packard

Comment Type **TR** *Comment Status* **R**

In sections 38.3.2 and 38.4.2 there is a statement "To limit jitter, the receiver upper 3 dB bandwidth should be less than 1500 MHz." The lower 3 dB electrical bandwidth is not defined. To limit jitter the lower 3 dB low pass cut-off frequency of the receiver should be defined. The optical link model used by IEEE 802.3z assumed that the lower 3 dB electrical, low pass, cut-off frequency of the receiver was 1000 MHz.

Not specifying both the receiver lowest and highest 3 dB electrical, low pass, cut-off frequencies will cause ISI, jitter and lead to inter-operation problems.

This issue is made worse because there is no test to measure the bandwidth of a digital integrated receiver.

SuggestedRemedy

As a minimum change the statement in section 38.3.2 and 38.4.2 to read, "To limit intersymbol interference and jitter, the receiver lower 3 dB electrical, low pass, cut-off frequency should be greater than 1000 MHz and less than 1500 MHz".

Proposed Response *Response Status* **U**

PROPOSED REJECT.

Cl **38** *SC* **38.3.2=44 117 9222928** *P* **38.6** *L* **20** # **99**

David Cunningham Hewlett-Packard

Comment Type **TR** *Comment Status* **R**

In sections 38.3.2 and 38.4.2 there is a statement "To limit jitter, the receiver upper 3 dB bandwidth should be less than 1500 MHz." The lower 3 dB electrical bandwidth is not defined. To limit jitter the lower 3 dB low pass cut-off frequency of the receiver should be defined. The optical link model used by IEEE 802.3z assumed that the lower 3 dB electrical, low pass, cut-off frequency of the receiver was 1000 MHz.

Not specifying both the receiver lowest and highest 3 dB electrical, low pass, cut-off frequencies will cause ISI, jitter and lead to inter-operation problems.

This issue is made worse because there is no test to measure the bandwidth of a digital integrated receiver.

SuggestedRemedy

As a minimum change the statement in section 38.3.2 and 38.4.2 to read, "To limit intersymbol interference and jitter, the receiver lower 3 dB electrical, low pass, cut-off frequency should be greater than 1000 MHz and less than 1500 MHz".

Proposed Response *Response Status* **C**

PROPOSED REJECT.

Cl **38** *SC* **38.3.3** *P* **38.6** *L* **40** # **213**

Paul Kolesar Lucent Technologies

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

Table 38-5 is out of sequence.

SuggestedRemedy

Table 38-5 should be moved up so as to be in clause 38.3.3 which references it, rather than in clause 38.4.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

The IEEE 802.3z Editor will position tables at the appropriate position in the document prior to publication.

Cl **38** *SC* **38.4** *P* **38.7** *L* **28** # **101**

David Cunningham Hewlett-Packard

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

Table 38-6 has an operating range of 2 to 440m for 62.5um MMF based on using a modal bandwidth of 250MHz.km for direct launch without mode conditioning. Draft D4 defines a requirement for conditioned launch (CL) as specified by a coupled power ratio (CPR) range.

For 1000BASE-LX, which supports both SMF and MMF, an external mode conditioning patch cord based on offset single-mode launch has been shown, experimentally and theoretically, to achieve greater than 500 MHz.km for a wide range of MMF parameters. With 500 MHz.km modal bandwidth the 1000BASE-LX, 62MMF, link length is increased to greater than 800m. The minimum modal bandwidth to achieve 550 m is 325 MHz.km.

CPR values for the external mode conditioner have also been determined.

SuggestedRemedy

In table 38-6, increase the minimum range from (2 to 440m) to (2 to 550 m). In table 38-9, change the following 62.5 um MMF parameters: operating distance from 440m to 550 m, channel insertion loss from 2.18 dB to 2.35 dB, link penalties from 5.32 dB to 2.83 dB. Based on a minimum modal bandwidth of 500 MHz.km change the unallocated margin in link power budget from 0.0 to 2.32 dB.

In addition, in table 38-7 change CPR values for 62.5 um MMF from 15<CPR<30 to 28<CPR<40. In table 38-7 change CPR values for 50 um MMF from 10<CPR<25 to 12<CPR<20.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

In table 38-6, increase the minimum range from (2 to 440m) to (2 to 550 m).

In table 38-7 change CPR values for 62.5 um MMF from 15<CPR<30 to 28<CPR<40 and change CPR values for 50 um MMF from 10<CPR<25 to 12<CPR<20.

In table 38-9, change the following 62.5 um MMF parameters: operating distance from 440m to 550 m, channel insertion loss from 2.18 dB to 2.35 dB, link penalties from 5.32 dB to 4.02 dB. Based on a minimum modal bandwidth of 325 MHz.km change the unallocated margin in link power budget from 0.0 to 1.43 dB.

In table 38-11, line 43, change 2.16 to 2.32.

Cl **38** *SC* **38.4** *P* **38.7** *L* **28** # **214**

Paul Kolesar Lucent Technologies

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

The distance range for 62.5 um fiber for -LX is too short.

SuggestedRemedy

Offset-launch mode conditioning has been well simulated and lab tested to show that the present 440 meter limitation is too conservative. The 440 meter value is based on a 250 MHz-km de-rated bandwidth. The offset launch conditioner provides bandwidth sufficient to easily meet the 550 meter distance objective of the standard. The table should read: 2 to 550.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

In table 38-6, increase the minimum range from (2 to 440m) to (2 to 550 m).

In table 38-7 change CPR values for 62.5 um MMF from 15<CPR<30 to 28<CPR<40 and change CPR values for 50 um MMF from 10<CPR<25 to 12<CPR<20.

In table 38-9, change the following 62.5 um MMF parameters: operating distance from 440m to 550 m, channel insertion loss from 2.18 dB to 2.35 dB, link penalties from 5.32 dB to 4.02 dB. Based on a minimum modal bandwidth of 325 MHz.km change the unallocated margin in link power budget from 0.0 to 1.43 dB.
.

In table 38-11, line 43, change 2.16 to 2.32.

Cl **38** *SC* **38.4.1** *P* **38.8** *L* **20** # **59**

Bob Musk Hewlett Packard

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

1000BASE-LX Output Power. Table 38-7 has "Average launch power (min)"of -11.5dBm for MMF and -13.5dBm for SMF without consideration of mode conditioning. Table 38-8 has "Average receiver power (min)" of -19dBm. This results in table 38-9 having a "Link power budget" of 7.5dB for MMF and 5.5dB for SMF.
Use of an SMF offset launch mode conditioning patchcord for 1000BASE-LX implies that the Average launch power (min) of -11.5dBm for MMF will not be met.

SuggestedRemedy

Allowing 0.5dB for the transmission loss within a hybrid SMF offset launch into a MMF patchcord. To maintain the current MMF link power budge, increase the 10um SMF average launch power (min) to -11dBm in table 38-7. Change table 38-9 to have a link power budget of 8.0dB for SMF. In table 38-9, increase the 10um unallocated margin in link power budget from 0.76dB to 3.26dB.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

In table 38-7, in the 10um SMF column, change -13.5 to -11.0

In table 38-9, in the 10um SMF column, change 5.5 to 8.0 and change 0.76 to 3.26.

Cl **38** *SC* **38.4.1** *P* **38.8** *L* **27** # **216**

Paul Kolesar Lucent Technologies

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

CPR shows good correlation to the offset launch conditioning technique. It is not necessarily relevant to other possible launch conditioning devices or approaches. Therefore, the CPR parameter should be applied only to the specifications of the offset launch approach, not to -LX transmitters in general.

SuggestedRemedy

Delete the CPR requirement from Table 38-7. Create a separate table related to mode conditioning devices or techniques. The offset launch device is one class of conditioner that can now be specified therein. Specify the CPR parameter for the offset launch device only, at this time.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

The GbE specification specifies a single 1000BASE-LX transceiver to support three media types. The SMF offset launch patch cord, described in subclause 38.11.2.4, is the only defined method to achieveGbE MMFlink specifications.
CPR should be retained in Table 38-7 since it allows users to confirm that the SMF offset launch patch cord described in subclause 38.11.2.4 has been assempled properly. It is premature to add new criteria to characterize launch conditions pending the completion of the MBI Workplan summarized below.

Under Table 38-7, modify note a, to read,
"Due to the dual singlemode/multimode media support of the LX transmitter, fulfillment of this specification requires a SMF offset launch mode-contitioning patch cord described in subclause 38.11.2.4. This patch cord is not used for singlemode operation.

In subclause 38.4, page 38.6, line 45, change "is capable of supporting" to "supports".

In subclause 38.4.1, page 38.8, line 4, add sentence,
"To ensure that the specifications in Table 38-7 are met with MMF links, the 1000BASE-LX transmitter output shall be coupled through a singlemode fiber offset launch patch cord, as defined in subclause 38.11.2.4.

MBI Workplan

To provide a convincing case that no new MMF parameters are needed to characterize MMF link performance, the optical PMD subgroup has undertaken the development and confirmation of conformace and inter-operability tests for MMF links at the defined test points in Figure 38-1. The objective is that proposed MMF links lengths are achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.
The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to

simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.
Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

Cl **38** *SC* **38.4.1** *P* **38.8** *L* **30** # **183**

Tom Mathey Baynetworks

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

The sentence for note "b" is missing the period at end of sentence.

SuggestedRemedy

Add period at end of sentence.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **38** *SC* **38.4.1** *P* **38.8** *L* **30** # **86**

Joe Gwinn Raytheon

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

Note "b" lacks a terminating period.

SuggestedRemedy

Add missing period.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Capitalize "R" in radial and add missing period at the end of the sentence.

Cl **38** *SC* **38.4.1** *P* **38.8** *L* **37** # **87**

Joe Gwinn Raytheon

Comment Type **TR** *Comment Status* **R**

For interoperability and reliability, receiver bandwidth should be specified. Lab work showed that about half of receivers lacked sufficient filtering to control jitter. To ensure a level playing field between competing receiver manufacturers, bandwidth requirements must be spelled out, or people will be tempted to leave the filters out.

SuggestedRemedy

Change the "should" to a "shall". Provide a specific allowed range of receiver bandwidths, and a measurement procedure (directly, or by reference).

Proposed Response *Response Status* **U**

PROPOSED REJECT

Cl **38** *SC* **38.4.2** *P* **38.8** *L* **38** # **218**

Paul Kolesar Lucent Technologies

Comment Type **TR** *Comment Status* **R**

Receiver bandwidth specification insufficient for interoperability.

SuggestedRemedy

Add a minimum receiver bandwidth must be specified. Suggest using 1000 MHz as the 3-dB electical bandwidth minimum.

Proposed Response *Response Status* **U**

PROPOSED REJECT

Cl **38** *SC* **38.4.2** *P* **8** *L* **28 to 29** # **237**

Pat Thaler Hewlett-Packard

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

This note on the table is the only mention of the conditioning patch cord in LX. Some explanation of the cord should appear in the text. Also, the note as worded does not make sense. "... shall require ..." Use "requires". Also, nowhere does it make clear that a 1000BASE-LX transceiver is required to support operation over each of the three media. However, my understanding is that that was the intent. That is, it was intended that a multi-mode only 1000BASE-LX transceiver would be non-compliant. If so, the text of 38.4 should make that clear. If that is not the intent, then this note is incorrect.

SuggestedRemedy

Change "shall require" to "requires"
Add text to 38.4 that describes the patch cord.
Add text to 38.4 clarifying the media requirements for the 1000BASE-LX PMD. One possible place is the second sentence of 38.4 (page 38.6 lines 44 to 45). Replace "is capable of supporting" with "shall support" to make it clear that this is a requirement and not just a possibility.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

Under Table 38-7, modify note a, to read,
"Due to the dual singlemode/multimode media support of the LX transmitter, fulfillment of this specification requires a SMF offset launch mode-contitioning patch cord described in subclause 38.11.2.4. This patch cord is not used for singlemode operation.

In subclause 38.4, page 38.6, line 45, change "is capable of supporting" to "supports".

In subclause 38.4.1, page 38.8, line 4, add sentence,
"To ensure that the specifications in Table 38-7 are met with MMF links, the 1000BASE-LX transmitter output shall be coupled through a singlemode fiber offset launch patch cord, as defined in subclause 38.11.2.4.

Copy the last three paragraphs in section 38.3.1 to section 38.4.1.

Delete the last paragraph in 38.3.1 on line 11

Cl **38** *SC* **38.5** *P* **38.9** *L* **39** # **221**

Paul Kolesar Lucent Technologies

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

Jitter allocation from TP2 to TP3 is insufficient.

SuggestedRemedy

The jitter allocation from TP2 to TP3 is presently 96 ps, all of which is devoted only to randon jitter (RJ). This is unrealistic. The budget must be reallocated to provide workable jitter allocation to the fiber media. Historically, the jitter allocated to the fiber has been in the form of deterministic jitter (DJ), or more specifically data dependent jitter (DDJ) attributed to the limited bandwidth of the media. FDDI, for example, allocated 10% of the available budget to DDJ of the media. Based on that model, the DJ component from TP2 to TP3 should be at least 57 ps. The present 96 ps RJ equates to only 24 ps DJ.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

It is premature to modify the jitter budget in Table 38-10. To provide a convincing case for how to modify jitter budget, it is necessary to characterize MMF link performance as discribed in the MBI work plan summarized below.
The objective is that proposed MMF links lengths and jitter budgets be achieved with >99% of the installed MMF cable plants provided the MMFs meet their modal bandwidth specifications and optical PMD transmitters and receivers meet their conformance tests.

MBI Workplan
The receiver conformance tests are targeted to characterize, (1) worst case eye opening at TP4 and (2) a jitter tolerance window opening template at TP4 with two identical pseudo-random optical input pulse sequences having a prescribed delay range between them to simulate differential mode delay (DMD) jitter. The transmitter conformance test will define the acceptable launch characteristics, in conjunction with the receiver performance, to adequately mitigate the impact of DMD-related jitter at TP4.
Where possible, the conformance test criteria and related link performance will be confirmed both analytically and experimentally. This work anticipates changes to the jitter budget shown in Table 38-10, including TP1 and TP4.

The projected schedule for developing conformance tests to address this TR comment is:
1. At the February Interim meeting, review potential impact of this comment resolution on 802.3z objectives and PAR.
2. At the March Plenary, present complete conformance test proposals, including theoretical analysis and experimental data.
3. At the May Interim, the goal is to present a complete PMD draft including conformance tests."

Cl **38** *SC* **38.6** *P* **38.10** *L* **3** # **222**

Paul Kolesar Lucent Technologies

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

The measurement patch cable is not sufficiently defined to include mode conditioning types.

SuggestedRemedy

Replace line 3 with the following:

All optical measurements must be made through a patch cord between 2 and 5 meters in length. The appropriate type of cord is dependent on the optical fiber type, optical PMD MDI type and associated mode conditioning requirements given in Table 38-??.

Table 38-?? -- Patch cord types for optical measurements

Cabling Media	1000BASE-SX	1000BASE-LX
62.5 um MMF	62.5 um MMF or (if required) step-index mode conditioner	offset-launch mode conditioner or step-index mode conditioner
50 um MMF	50 um MMF or (if required) step-index mode conditioner	offset-launch mode conditioner or step-index mode conditioner
10 um SMF	not applicable	10 um SMF

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

The suggested remedy references step-index mode conditioners which have not yet been demonstrated to be sufficiently helpful to mitigate DMD-related jitter. The only mode-conditioning patch cord which has been demonstrated analytically and experimentally for 1000BASE-LX is the SMF offset launch into MMF as described in a new section 38.11.2.4. Thus, add the following generic text.

Add a sentence in page 38.10, line 3, which states, "If mode conditioning patch cords are used, the optical transmit signal is defined at the output end (TP2) of the mode conditioning patch cord."

Cl **38** *SC* **38.6.1** *P* **38.10** *L* **9** # **88**

Joe Gwinn Raytheon

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

Sentence could be less telegraphic and clearer.

SuggestedRemedy

Change to read "... conditions over the entire nominal operating temperature range."

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **38** *SC* **38.6.5** *P* **38.11** *L* **29** # **89**

Joe Gwinn Raytheon

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

This filter function is overspecified, as it lacks any notion of the allowed tolerance, and could preclude use of commercially available solutions. In fact, as stated, the requirement is impossible to meet, as all manufactured articles are approximations to desired ideals.

SuggestedRemedy

Add "or equivalent" wording, and specify a tolerance on allowable deviations from the specified filter function.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

Commercial implementations of the fourth order BT test receiver for this GbE specification follow CCITT G.957 Annex 1 specifications. This ensures that the BT filter response is sufficiently smooth and linear phase to stay within templates boundaries. This template allows +/- frequency tolerance of ~8.97% at the -3 dB response level. It adds unnecessary complexity to this standard to attempt to define whether another filter type is sufficiently close to the referenced fourth order BT filter.

On page 38.11, line37, add the following note:

NOTE- CCITT G.957 Annex 1 defines the filter response vs. frequency tolerence range for this fourth order Bessel Thompson filter.

Cl **38** *SC* **38.6.5** *P* **38.11** *L* **39** # **90**

Joe Gwinn Raytheon

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

My recollection was that the Bessel-Thompson filter had a reactive input, not output, although it may well be that both input and output are reactive, and may benefit from an attenuator.

I also recall that there was a commercial filter that would do the same job, without the reactive ports, but that it wasn't *exactly* Bessel-Thompson. We may not wish to preclude use of this filter.

SuggestedRemedy

Verify technical issue; change wording if needed.

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

Commercial implementations of the fourth order BT test receiver for this GbE specification follow CCITT G.957 Annex 1 specifications. This ensures that the BT filter response is sufficinently smooth and linear phase to stay within templates boundaries. This template allows +/- frequency tolerance of ~8.97% at the -3 dB response level. It adds unnecessary complexity to this standard to attempt to define whether another filter type is sufficiently close to the referenced fourth order BT filter.

On page 38.11, line39, change "output" to "input and output".

Cl **38** *SC* **38.6.6** *P* **38.11** *L* **44** # **91**

Joe Gwinn Raytheon

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

The word "compromise" is ambiguous.

SuggestedRemedy

Replace "compromise" with "reduce".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Replace "compromise" with "reduce".

Cl **38** *SC* **38.6.6** *P* **38.11** *L* **47** # **92**

Joe Gwinn Raytheon

Comment Type **TR** *Comment Status* **R**

Aren't we requiring that filter responses be removed using this equation? If so, we should come right out and say so, and not confuse people as to what's expected.

SuggestedRemedy

Replace "should" with "shall".

Proposed Response *Response Status* **U**

PROPOSED REJECT.

If specified transmitter rise/fall times can be achieved while using a filter to meet the transmit eye mask, there is no need remove the response-time characteric of the filter.

Cl **38** *SC* **38.6.8** *P* **38.12** *L* **10** # **93**

Joe Gwinn Raytheon

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

Wrong word. The "R" in BERT is "Rate", not "Ratio".

SuggestedRemedy

Replace "Ratio" with "Rate".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Replace "Ratio" with "Rate".

Cl **38** *SC* **38.6.8** *P* **38.12** *L* **19** # **94**

Joe Gwinn Raytheon

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

Clarifying word and comma needed.

SuggestedRemedy

Change to read "... penalty, but does not affect ...".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change to read "... penalty, but does not affect ...".

Cl **38** *SC* **38.7.2** *P* **38.13** *L* **10** # **95**

Joe Gwinn Raytheon

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

Clarifying word "of" needed.

SuggestedRemedy

Change to read "... fiber or out of an open ...".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Change to read "... fiber or out of an open ...".

Cl **38** *SC* **38.9** *P* **38.14** *L* **28** # **48**

Robert Grow XLNT

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

Name segments of the cable plant in figure 38-4.

SuggestedRemedy

At a minimum add "Jumper Cable" where appropriate.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

On page 38.14, section 38.10, line 26, add title "jumper cable" for the two cable sections between the" MDI" and "Connector" blocks and add the title "building cable" on the cable section between the two "Connector" blocks

Cl **38** *SC* **38.9** *P* **38.14** *L* **9** # **223**

Paul Kolesar Lucent Technologies

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

PHY labeling visible to the user is presently not required. This will lead to interoperablity problems in the field that can be avoided by requiring visible labeling.

SuggestedRemedy

Change line 9 to:
Each PHY (and supporting documentation) shall be labeled in a manner visible to the user with at least the following information according to PMD-MDI type:

for PMD MDI type 1000BASE-SX:
1) 1000BASE-SX multimode only
2) applicable safety warnings
3) type of external mode conditioning required (if applicable)

for PMD MDI type 1000BASE-LX:
1) 1000BASE-LX
2) applicable safety warnings
3) type of external mode conditioning required (if applicable)

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

Space is usually limited, thus, it is sufficient to retain this labeling information as recommendations. For clarity,there may be some preference to not mix the listing of the SX and LX cases.

Change lines 9-16 to read:
It is recommended that each PHY (and supporting documentation) be labeled in a manner visible to the user with at least the following parameters, according to PMD-MDI type:

PMD MDI type 1000BASE-SX:
1) 1000BASE-SX, multimode only
2) applicable safety warnings
3) type of external mode conditioning required (if applicable)

PMD MDI type 1000BASE-LX:
1) 1000BASE-LX
2) applicable safety warnings
3) type of external mode conditioning required (if applicable)

Cl **38** *SC* **Table 38-3** *P* **38.5** *L* **29** # **180**

Tom Mathey Baynetworks

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

The word "laser" is mis-spelled as "lase"

SuggestedRemedy

Correct spelling.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **38** *SC* **Table 38-3** *P* **38.5** *L* **53** # **181**

Tom Mathey Baynetworks

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

The sentence for note "c" and "d" are both missing periods at end of sentence.

SuggestedRemedy

Add periods at end of sentence.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Cl **38** *SC* **Table 38-7** *P* **38.8** *L* **28** # **182**

Tom Mathey Baynetworks

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

For the "shall" in note "a" of table 38-7, I can not find a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PML5
Feature-- Mode-conditioning hybrid patch cord
Subclause-- 38.4.1
Value/Comment-- Required for LX multimode operation
Status-- LX:M
Support-- Yes [ ], N/A [ ]

Proposed Response *Response Status* **C**

PROPOSED ACCEPT IN PRINCIPLE.

Note: The editor of clause 38 has promoted this comment from "E" to "T" status because of its PICs-related content.

In response to comment #237, in subclause 38.4.1, page 38.8, line 4, the following sentence has been added: "To ensure that the specifications in Table 38-7 are met with MMF links, the 1000BASE-LX transmitter output shall be coupled through a singlemode fiber offset launch patch cord, as defined in subclause 38.11.2.4.

Add the corresponding PICS entry as follows:
Item-- PML5
Feature-- Mode-conditioning hybrid patch cord
Subclause-- 38.4.1
Value/Comment-- Required for LX multimode operation
Status-- LX:M
Support-- Yes [ ], N/A [ ]

Cl **38A** *SC* *P* **38.25** *L* # **43**

Brad Booth — Jato Technologies, Inc

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

Page number incorrect.

SuggestedRemedy

Change 38.25 to 38.30 to be 38A.1 to 38A.6.

Proposed Response *Response Status* **C**

PROPOSED Reject

Page numbering is handled on a by-clause basis and cannot be addressed on a by-subclause basis.

Cl **38A** *SC* **38.10** *P* **38.25** *L* **32** # **97**

Joe Gwinn — Raytheon

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

Wrong word used. To "insure" is to get an insurance policy.

SuggestedRemedy

Replace "insure" with "ensure".

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

Replace "insure" with "ensure".

Cl **38A** *SC* **38A** *P* **38.25** *L* **16** # **55**

Howie Johnson — Signal Consulting

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

It's not clear to me that our standard benefits from the inclusion of this annex.

SuggestedRemedy

Let's either:
(1) please include in the annex a brief note at the beginning of each section explaining how the information in that section is used in clause 28, or
(2) delete the annex

Proposed Response *Response Status* **U**

PROPOSED ACCEPT IN PRINCIPLE.

At least until the completion of the MBI Work Plan defining conformance tests, it is desirable to retain these Test Methods in this document.

In clause 38A, page 38.25, lines 9-15, remove the box and contents.

Add a new sentence to Annex A, on page 38.25, line 16, stating: "For convenience only, Test Method selections from FC-PH are referenced in subclause 38.6. Certain changes have been made to convert to the equivalent Gigabit Ethernet references and parameters. "

Cl **38A** *SC* **FC-PH A.5.2** *P* **38.28** *L* **23** # **188**

Tom Mathey — Baynetworks

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

The Figure title of "Figure FC-PH A.2-RIN test setup" does not match title in the text of "Figure 38A-2".

SuggestedRemedy

Pick either title and have them match.

Proposed Response *Response Status* **C**

PROPOSED Reject

Cl **38A** *SC* **FC-PH A.5.3** *P* **38.29** *L* **13** # **189**

Tom Mathey — Baynetworks

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

The Table title of "Table FC-PH A-1-Filter 3 dB point" does not match title in the text of "Table 38A-1.".

SuggestedRemedy

Pick either title and have them match.

Proposed Response *Response Status* **C**

PROPOSED Reject

Cl **38A** *SC* **Table A-1** *P* **38.29** *L* **22** # **98**

Joe Gwinn — Raytheon

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

Used a period as a decimal point, unlike the rest of the table.

SuggestedRemedy

Use either period or comma as the decimal point, but be consistent.

Proposed Response *Response Status* **C**

PROPOSED ACCEPT.

In Table FC-PH A-1, change "265,625" to" 265.625", change "1,062 Gbaud" to "1,062.50 Mbaud".

Cl **38B** *SC* *P* **38.31** *L* # **44**

Brad Booth
Jato Technologies, Inc

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

Page numbering incorrect.

SuggestedRemedy

Change 38.31 and 38.32 to be 38B.1 and 38B.2.

Proposed Response *Response Status* **C**

PROPOSED Reject

Page numbering is handled on a by-clause basis and cannot be addressed on a by-subclause basis.

Cl **39** *SC* **39.2.3** *P* **39.1** *L* **45** # **190**

Tom Mathey Baynetworks

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

The paragraph 39.2.3 has 5 "shall"s, but only 3 PICS entries. The text "SIGNAL_DETECT shall be set to OK when the PMD circuitry receives a valid electrical signal." seems to be missing a PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- FN12
Feature-- SIGNAL_DETECT set to OK
Subclause-- 39.2.3
Value/Comment-- when the PMD circuitry receives a valid electrical signal
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

REJECT.

The "Value Comment" field for PIC FN10 includes both conditons for "FAIL" and "no false negatives". These consist of a combined "shall" and a "shall not".

Cl **39** *SC* **39.2.3** *P* **39.2** *L* **1** # **191**

Tom Mathey Baynetworks

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

The paragraph 39.2.3 has 5 "shall"s, but only 3 PICS entries. The text "an incoming signal at or above the minimum receive threshold (400 mV p-p) shall not indicate FAIL." seems to be missing a PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- FN13
Feature-- Incoming signal at or above the minimum receive threshold (400 mV p-p)
Subclause-- 39.2.3
Value/Comment-- SIGNAL_DETECT does not indicate FAIL
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

REJECT.

The present "Value Comment" field for PIC FN11 includes both conditions of "OK" and "no false positives". These consist of a combined "shall" and a "shall not".

Cl **39** *SC* **39.2.3** *P* **39.2** *L* **15** # **4**

Howie Johnson Hewlett-Packard

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

Comment originally submitted by Haluk Aytac. The comment was withdrawn by the commentor from the D3.3 balloting. The chief editor has promised Haluk that he will submit this comment on Haluk's behalf during the sponsor ballot:

Assigning fixed values to 1000BASE-CX signal detect function may be limiting the usefulness of SERDES devices for twinax copper cables. The only requirement is that signal detect, cross talk, minimum sensitivity be consistent. Of these three, cross talk can be taken to be the maximum of numbers gathered from the cable manufacturers and board designers. A SERDES from a vendor must always indicate a loss of signal below an amplitude value which is above maximum cross talk and above a guaranteed sensitivity level (given in the data sheet from this same SERDES vendor) by a certain guardband.

SuggestedRemedy

Remove the 200mV value from the spec. This is the value below which signal detect must always show loss of signal. Call this value SD_FAIL. Allow SERDES vendors determine this value in their data sheets. It must be larger than cross talk on receive side due to the transmit signal. Remove the 400mV value from the spec. Allow SERDES vendors to determine this value. Call it SD_PASS. This value must be smaller than 400mV which is the minimum sensitivity that is in this clause. It also must be larger than SD_FAIL.

Proposed Response *Response Status* **C**

PROPOSED PARTIAL ACCEPT.

The 200mV signal detect FAIL number is numerically incorrect for some implementaions of p-p launch amplitude, signal rise time, and cable conditions. It also prevents the implementation of designs that are otherwise compliant with 1000BASE-CX, but are engineered with greater receiver sensitivity than the minimum (and lower coupled noise), from providing any benefit to the user (with the possible exception of better noise margin). In addition, this fixed value for FAIL is an artificial requirement for interoperability, since it only comes into play when one end of the link is not operational.

The primary concern for the FAIL trip point is NEXT and system noise when a short open-cable is present in a port. The reflections from the open port, if aligned with a similar edge (rising or falling) can cause the NEXT to increase beyond that of a terminated cable. The two requirements for signal detect are in reality to ALWAYS be set when a valid signal is present (>=400mV p-p) and to not indicate OK on self-generated receiver-coupled noise.

Correcting this requires replaceing the requirements for FAIL with specific conditions instead of signal levels.

The proposed text change for this is to replace clause 39.2.3 with the following:

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.indicate is intended to be an 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 amplitude is below the worst case receiver coupled noise (NEXT, power supply, reflections, etc.) plus the receiver sensitivity. 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 NEXT, reflections, power supply noise, etc. Under all valid operating conditions, an incoming signal at or above the minimum receive threshold (400 mV p-p) shall not indicate FAIL. Though unspecified, this implies that there must be adequate margin between the SIGNAL_DETECT trip point and the receiver minimum differential sensitivity plus receiver coupled noise.

Response time requirements are not specified.

It is expected that SIGNAL_DETECT may chatter at some input level. It is expected that the PMD service interface will be designed to handle this.

Receive Conditions	Signal Detect Value
Vinput, Reveiver < (receiver sensitivity + worst case local system noise) (a)	Fail
Other conditions Examples 1) Receiving a non-8B/10B encoded data stream 2) Other end of the link undergoing power-on-reset (POR) transients 3) (Receiver sensitivity + local system noise) < Vinput, Receiver < Minimum differential sensitivity 4) One of the differential lines is open	Unspecified
Receiving encoded 8B/10B characters (b) AND Minimum differential sensitivity </= Vinput, (c) Receiver </= Maximum differential input	OK

(a) This implies that the link is open, or the transmitter on the other end of the link is OFF (see Table 39-2 for definition of OFF transmitter). Worst case system noise includes all receiver coupled noise sources (NEXT, power supply noise, and any reflected signals). Receive sensitivity is the actual sensitivity of the specific port (as opposed to the minimum differential sensitivity).

(b) This implies the transmitter on the other end of the link must be receiving encoded 8B/10B characters 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 specifications.

Cl **39** *SC* **39.3.1** *P* **39.5** *L* **22** # **242**

Geoff Thompson Bay Networks, Inc.

Comment Type **TR** *Comment Status* **D**

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.

SuggestedRemedy

Proposed Response *Response Status* **W**

PROPOSED PARTIAL ACCEPT.

Since no international standards have been located on how to make these measurements, the following text is proposed as an addition to clarify the usage of these tests.

39.6.8 Differential TDR measurement procedure
The differential time-domain reflectometry (TDR) test setup measures the reflected waveform returned from a load when driven with a step input. It is obtained by driving the load under test with a step waveform using a driver with a specified source impedance and risetime. The reflected waveform is the difference between (a) the observed waveform at the device under test when driven with the specified test signal, and (b) the waveform that results when driving a standard test load with the same specified test signal. From this measured result we can infer the impedance of the device under test. The time-domain reflectometry measurement is the time-domain equivalent of S11 parameter testing used in carrier-based systems.

For the measurement of 1000BASE-CX jumper cables, the following test conditions apply:
(a) The driving waveform is sourced from a balanced, differential 150-ohm source with an 85-ps risetime (see 39.6.8.1)
(b) The test setup is calibrated (see 39.6.8.2)

39.6.8.1 Driving waveform
If the natural differential output impedance of the driving waveform is not 75 ohms, it may be adjusted to within 75 +/- 5 ohms by an attenuating resistive pad. When the driving point resistance is 100 ohms (as would be the case with a differential signal source having two independant, antipodal, 50-ohm sources), a good pad design shown below, where R1=173.2 ohms and R2=43.3 ohms. All resistors are surface-mount packages soldered directly to the test fixture with no intervening leads or traces, and the whole structure is mounted on a solid ground plane (used in three places):

```
driving signal + --(50 ohms)---------+---R2-----(75 ohms)-----
      return ----------------gnd  |                          +
                                  |                          |
                                  R1   gnd for twinax shield    150
ohms differential load
                                  |                          |
                                  |                          -
driving signal - --(50 ohms)---------+---R2-----(75 ohms)-----
      return ----------------gnd
```

If the natural risetime of the driver is less than 85 ps, the resulting measured time-waveforms must be filtered to reduce the apparant risetime to 85 +/- 10 ps.

39.6.8.2 Calibration of the test setup
Three measurements are made, with a short, and open, and a known test load. The value of the test resistance should be constant to within 1% over the frequency range DC to 6 GHz, and of known value. The value of the test resistance should be within the range 75 +/- 5 ohms.
The differential voltages measured across the device-under-test terminals in these three cases are called Vshort, Vopen, and Vtest, respectively.
From these three measurements we will compute three intermediate quantities:

A = (Vopen - Vshort) /2
B = (Vopen + Vshort) /2
Z0 = Ztest * (Vopen - Vtest)/(Vtest - Vshort)

The value of Z0 is the actual driving point impedance of the tester. It must be within 75 +/- 5 ohms.

For any device under test, the conversion from measured voltage Vmesaured to impedance is as follows:
Measured impedance = Z0*(1 + V')/(1 - V'),
where V' = (Vmeasured -B)/A

Cl **39** *SC* **39.5.1** *P* **39.9** *L* **12** # **61**

Howard Frazier cisco systems

Comment Type **TR** *Comment Status* **R**

submitted on behalf of Jay Neer of Molex, at his request.

There has been no technical reason presented which would make the Style-2 connector the recommended one for this interface - we therefore recommend that the wording not be changed from the previous level which simply stated both may be used.

A second non-technical comment on the same subject is that Style-1 connector has multiple sources with ample supply - the Style-2 does not - therefore it would not be wise to point to the Style-2.

SuggestedRemedy

Revert to wording which was contained in draft d3.1, i.e.:

Jumper cable assemblies shall utilize style-1 or style-2 balanced connectors, with the plug attached to the cable.....

Alternatively, delete the sentence beginning on line 11 with the words "To limit possible cross-plugging..."

Proposed Response *Response Status* **C**

REJECT.

This comment is rejected for four reasons.

1. The Style-1 connectors that are compatable with 802.3z are also not "Standard" connectors. The present standard that documents these connectors is only for use up to 3MHz signalling rate. These standard connectors also do not meet standard mezzanine card spacing reuirements, and are electrically often poorer than the Style-2 connectors.

2. Removal of the referenced statement does not address the intermixing connector concern listed in the statement.

3. The Style-2 connectors are now manufactured by two large connector manufacturers; i.e., the connectors are multiple sourced.

4. The specific comment referenced here was added to resolve a previous TR comment. This issue was explicitly voted on at the 1997 Montreal 802.3z plenary as motion 1, with a result of 55-YES, 6-NO, 19-ABSTAIN. As a technical motion it both required and received >75% response on this vote.

5. The existing text states a recommendation only, not a requirement.

Cl **39** *SC* **39.6.4** *P* **39.11** *L* **52** # **58**

Howie Johnson Signal Consulting

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

No measurement procedures are called out for the differential TDR measruements.

SuggestedRemedy

Include a description of the TDR measurement test setup and procedures.

Proposed Response *Response Status* **C**

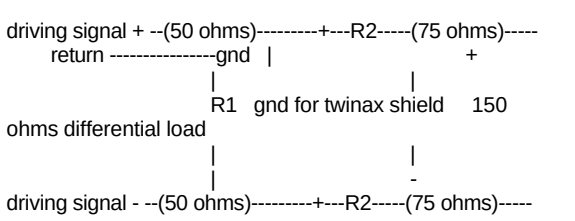
PROPOSED PARTIAL ACCEPT.

Since no international standards have been located on how to make these measurements, the following text is proposed as an addition to clarify the usage of these tests.

39.6.8 Differential TDR measurement procedure
The differential time-domain reflectometry (TDR) test setup measures the reflected waveform returned from a load when driven with a step input. It is obtained by driving the load under test with a step waveform using a driver with a specified source impedance and risetime. The reflected waveform is the difference between (a) the observed waveform at the device under test when driven with the specified test signal, and (b) the waveform that results when driving a standard test load with the same specified test signal. From this measured result we can infer the impedance of the device under test. The time-domain reflectometry measurement is the time-domain equivalent of S11 parameter testing used in carrier-based systems.

For the measurement of 1000BASE-CX jumper cables, the following test conditions apply:
(a) The driving waveform is sourced from a balanced, differential 150-ohm source with an 85-ps risetime (see 39.6.8.1)
(b) The test setup is calibrated (see 39.6.8.2)

39.6.8.1 Driving waveform
If the natural differential output impedance of the driving waveform is not 75 ohms, it may be adjusted to within 75 +/- 5 ohms by an attenuating resistive pad. When the driving point resistance is 100 ohms (as would be the case with a differential signal source having two independant, antipodal, 50-ohm sources), a good pad design shown below, where R1=173.2 ohms and R2=43.3 ohms. All resistors are surface-mount packages soldered directly to the test fixture with no intervening leads or traces, and the whole structure is mounted on a solid ground plane (used in three places):



return ----------gnd

If the natural risetime of the driver is less than 85 ps, the resulting measured time-waveforms must be filtered to reduce the apparant risetime to 85 +/- 10 ps.

39.6.8.2 Calibration of the test setup
Three measurements are made, with a short, and open, and a known test load. The value of the test resistance should be constant to within 1% over the frequency range DC to 6 GHz, and of known value. The value of the test resistance should be within the range 75 +/- 5 ohms.
The differential voltages measured across the device-under-test terminals in these three cases are called Vshort, Vopen, and Vtest, respectively.
From these three measurements we will compute three intermediate quantities:
A = (Vopen - Vshort) /2
B = (Vopen + Vshort) /2
Z0 = Ztest * (Vopen - Vtest)/(Vtest - Vshort)

The value of Z0 is the actual driving point impedance of the tester. It must be within 75 +/- 5 ohms.

For any device under test, the conversion from measured voltage Vmesaured to impedance is as follows:
Measured impedance = Z0*(1 + V')/(1 - V'),
where V' = (Vmeasured -B)/A

Cl **39** *SC* **Table 39-1** *P* **39.2** *L* **20** # **192**

Tom Mathey Baynetworks

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

The sentence for notes "1)" thru "4)" are each missing a period at the end of each sentence.

SuggestedRemedy

Add period at end of each sentence.

Proposed Response *Response Status* **C**

REJECT.

These are elments of a table, not parts of a sentence, and therefor do not require punctuation.

Cl **41** *SC* **41.1.1.1** *P* **41.1** *L* **53** # **194**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry. The text "Allowable topologies shall contain only one operative signal path between any two points" seems to be missing a PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- xxx
Feature-- Allowable topologies
Subclause-- 41.1.1.1
Value/Comment-- Only one operative signal path between any two points
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The sentence imposes a constraint on topology, not on the repeater.
The word "shall" will be deleted, and there will be no change required to the PICS.

The reworded sentence will read: "Allowable topologies contain only one operative signal path between any two points"

Cl **41** *SC* **41.2.1** *P* **41.3** *L* **33** # **195**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry. The text "Transmit" seems to be missing the PICS entry.

SuggestedRemedy

Add PICS entry for Transmit as follows:
Item-- RF8
Feature-- Transmit
Subclause-- 41.2.1
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **41.2.1** *P* **41.3** *L* **33** # **196**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry. The text "Receive" seems to be missing the PICS entry.

SuggestedRemedy

Add PICS entry for Receive as follows:
Item-- RF9
Feature-- Receive
Subclause-- 41.2.1
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **41.2.1.3.1** *P* **41.4** *L* **43** # **197**

Tom Mathey Baynetworks

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

The paragraph has a PICS entry of RE2 without a corresponding "shall" in the paragraph.

SuggestedRemedy

Change text to add "shall" as follows:
from: the repeater set repeats all received signals
to: the repeater set shall repeat all received signals

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **41.2.1.3.2** *P* **41.4** *L* **49** # **198**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry. The text "The duration of the output preamble shall not vary more than 8 bit times" seems to be missing the PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- RE9
Feature-- Output preamble duration
Subclause-- 41.2.1.3.2
Value/Comment-- Output preamble duration does not vary more than 8 bit times from the received preamble duration
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **41.2.1.4.4** *P* **41.5** *L* **43** # **199**

Tom Mathey Baynetworks

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

The paragraph has a requirement for EOJ less than or equal to SOP. However, there is no value given in the specification for SOP delay. There is only a SOP + SOJ not to exceed 976 bit times.

SuggestedRemedy

Add a value for SOP delay to paragraph 41.2.1.3.3. Change text
from: parameter is referred to as the SOP delay, and is measured at ....
to: parameter is referred to as the SOP delay, has a maximum value of XXX bit times, and is measured at ....

Add a PICS entry as follows: (this commenter is not able to suggest a specific value for SOP delay)
Item-- RE10
Feature-- Start-of-Packet (SOP) delay
Subclause-- 41.2.1.3.3
Value/Comment-- less than XXX bit times
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

REJECT.
Specifying a value for SOP would over-constrain implementations. Implementors are free to design to any value of SOP, SOJ, and EOJ so long as they meet the constraints that the combination of SOP and SOJ are less than 976 BT, and that EOJ is not larger than SOP.

Cl **41** *SC* **41.2.1.5.1** *P* **41.5** *L* **47** # **200**

Tom Mathey Baynetworks

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

The subclause has 11 "shall"s but only 10 PICS entries.

SuggestedRemedy

Add a PICS entry, but I am not able to match the shalls to the PICS and determine which one is missing.

Proposed Response *Response Status* **C**

REJECT.
While there is not a one-to-one mapping of PICS entries to instances of the word "shall" in the text, both the PICS and the text specify the same mandatory functions.

Cl **41** *SC* **41.2.1.6** *P* **41.6** *L* **46** # **201**

Tom Mathey Baynetworks

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

The paragraph has 8 "shall"s but 9 PICS entries.

SuggestedRemedy

Add a "shall" or delete a PICS entry, but I am not able to match the shalls to the PICS and determine which one is missing.

Proposed Response *Response Status* **C**

REJECT.
While there is not a one-to-one mapping of PICS entries to instances of the word "shall" in the text, both the PICS and the text specify the same mandatory functions.

Cl **41** *SC* **41.2.2** *P* **41.8** *L* **4** # **202**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry. The text "It is the functional behavior of any repeater set implementation that shall match the standard," seems to be missing the PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- SD5
Feature-- Repeater set functional behavior
Subclause-- 41.2.2
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the text, and the diagrams have corresponding PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "It is the functional behavior of any repeater set implementation that is expected to match the standard, not the internal structure."

Cl **41** *SC* **41.2.2.1.6** *P* **41.10** *L* **41** # **203**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PD1
Feature-- Port designation of ALL
Subclause-- 41.2.2.1.6
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the test, and the diagrams have PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "The test passes when all ports meet the test conditions."

Cl **41** *SC* **41.2.2.1.6** *P* **41.10** *L* **45** # **204**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PD2
Feature-- Port designation of ALLXJIPN
Subclause-- 41.2.2.1.6
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the test, and the diagrams have PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "The test passes when all ports, excluding those indicated by J, I, P, or N, meet the test conditions."

Cl **41** *SC* **41.2.2.1.6** *P* **41.10** *L* **49** # **205**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PD3
Feature-- Port designation of ANY
Subclause-- 41.2.2.1.6
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the test, and the diagrams have PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "The test passes when one or more ports meet the test conditions."

Cl **41** *SC* **41.2.2.1.6** *P* **41.10** *L* **52** # **206**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PD4
Feature-- Port designation of ANYXJIPN
Subclause-- 41.2.2.1.6
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the test, and the diagrams have PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "The test passes when one or more ports, excluding those indicated by J, I, P, or N, meet the test conditions."

Cl **41** *SC* **41.2.2.1.6** *P* **41.11** *L* **4** # **207**

Tom Mathey Baynetworks

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

The paragraph has a "shall" without a corresponding PICS entry.

SuggestedRemedy

Add PICS entry as follows:
Item-- PD5
Feature-- Port designation of ONLY1
Subclause-- 41.2.2.1.6
Value/Comment--
Status-- M
Support-- Yes [ ]

Proposed Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The state diagrams take precedence over the test, and the diagrams have PICS entries. The word "shall" will be removed from the text.

The reworded sentence will read: "The test passes when one and only one port meets the test conditions."

Cl **41** *SC* **41.6.2.2** *P* **41.19** *L* **44** # **278**

David Law 3Com

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

Clause 21 defines PICS stuff therefore 'See clause 31 ...' should read 'See clause 21 ...'

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **41.6.3** *P* **41.20** *L* **3** # **279**

David Law 3Com

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

This editors note should have been removed as its action was completed.

SuggestedRemedy

Remove note.

Proposed Response *Response Status* **C**

ACCEPT.

Add value/comment field to RE5 and RE6.

Cl **41** *SC* **Figure 41-1** *P* **41.1** *L* **2731** # **193**

Tom Mathey Baynetworks

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

In Figure 41-1, the line which leaves block at far lower left labeled PHYSICAL and goes in a straignt line to block labeled PMD is incorrect.

SuggestedRemedy

Add a dog-leg to the line such that it enters box labeled MEDIUM at the upper left.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **41** *SC* **Figure 41-5** *P* **41.15** *L* **50** # **208**

Tom Mathey
Baynetworks

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

Please make the use of FCELimit similiar to that of CELimit in Figure 41-4. This can be done by changing from "equals" to "equals or greater than". This takes care of all possible values of FCELimit.

SuggestedRemedy

Change symbol from "equals" to "equals or greater than".

Then change text on page 41.6 line 8:
from: when the False Carrier Event Count equals the value FCELimit
to: when the False Carrier Event Count equals or exceeds the value FCELimit

Proposed Response *Response Status* **C**

REJECT.
This was discussed in response to a similar comment on the working group ballot (comment #1102 to draft 3.1). Because the execution of the state diagrams is timeless, i.e. a transition occurs instantly when the condition becomes true, there is no functional difference between a transition on a counter equal to the limit versus a transition when a counter is greater than or equal to the limit. Therefore no change is necessary.

Cl **42** *SC* **42.1.1** *P* **42.2** *L* **43** # **209**

Tom Mathey Baynetworks

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

The sentence for notes "a)" thru "f)" are each missing a period at the end of each sentence.

SuggestedRemedy

Add period at end of each sentence.

Proposed Response *Response Status* **C**

ACCEPT.

Cl **42** *SC* **42.2.1.1** *P* **42.3** *L* **12** # **283**

David Law 3Com

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

While for Table 42-2 we note that the Fibre DTE-DTE link has no margin the same figure in this table has no similar note. We also do not note that this table is in meters. (See my comment on Table 42-2)

SuggestedRemedy

Please add note that distances are in meters. Also add the note that there is no margin if my comment about Table 42-2 is not accepted.

Proposed Response *Response Status* **C**

ACCEPT.
It is not necessary to note that distances are in meters since this is already indicated in the column heading. The "no margin" note will not be necessary since comment #282 is accepted. The value for the max fiber segment will change to 316 meters with corresponding change to the round trip delay.

Cl **42** *SC* **42.3** *P* **42.4** *L* **33** # **282**

David Law 3Com

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

Is note a for Table 42-1 entirely correct when it say that there is no margin. When I performed the calculation I found that all distances, other than fibre DTE-DTE link, have a minimum of 32 bit times margin (as recommended by Model 2).

SuggestedRemedy

I note that in subclause 42.1.1 (line 34, page 42.2) we say that these calculations are conservative therefore I suggest that we add margin to the one value that has not and remove the note.

Proposed Response *Response Status* **C**

ACCEPT.
The fiber link distance will be reduced from 320 to 316 meters and the "no margin" note will be deleted.

Cl **42** *SC* **42.3.1.1** *P* **42.5** *L* **1** # **281**

David Law 3Com

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

'Figures' should read 'Figure', there is only one figure referenced here.

SuggestedRemedy

See comment

Proposed Response *Response Status* **C**

ACCEPT.

Cl **42** *SC* **42.3.1.2** *P* **42.5** *L* **22** # **280**

David Law 3Com

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

There is no need to sum the repeater delays as the can only ever be one repeater.

SuggestedRemedy

Please remove the summation symbol for repeater delay. Also perform this change for line 51 on the same page.

Proposed Response *Response Status* **C**

ACCEPT.