

CI 00 SC P L # 297
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

The term 'nAUI' should be used rather than XLAUI / CAUI when talking about the optional physical instantiation in general terminology rather than "XLAUI / CAUI"

Also, given industry work on developing higher speed electrical interfaces, a number should be added at the end of the name to indicate the lane width.

SuggestedRemedy

replace XLAUI / CAUI with nAUI when talking about the optional physical instantiation in general terminology.

Use CAUI-10 for 10 lane wide CAUI.
Use XLAUI-4 for 4 lane wide XLAUI.

Modify definitions in 1.4 accordingly.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The term XLAUI or CAUI clearly distinguishes between the physical instantiations of 40G instantiation and 100G instantiation of the PMA service interface. Moreover this also shows that these two interfaces are not interoperable even though they share the same electrical characteristics on each of the lanes.

Using the term nAUI does not allow this distinction, because the term might imply three different possibilities: XLAUI, CAUI or both. A device implementation needs to still clearly specify if that device supports either XLAUI, or CAUI, or both.

Moreover since there is already XAUI for 10G, so the term nAUI may be (mis)interpreted as encompassing this interface as well.

Discuss in BRC about future possibility of nomenclature of narrower lane width physical instantiations of PMA service interface.

We can leave current terminology as it is and have the future version(s) add additional distinctions (could be a prefix/suffix). This will have less impact to current document.

Examples of future narrow interface possibilities: 4 lane x 25 GBd version for 100G, and a 2 lane x 20 GBd or 1 lane by 40GBd for 40G. In each of these cases the physical, electrical, and channel characteristics may be different with one another and different from existing XLAUI or CAUI. So proper distinctions should be made to clearly identify the interface since they may not be compatible with one another. We can leave current terminology as it is and have the future version(s) add additional distinction (could be a prefix/suffix)

Discuss in BRC.

CI 00 SC 0 P L # 346
Grow, Robert Intel

Comment Type E Comment Status D

Editing instruction do not typically describe why the insert, change or replace is done, but most of the instructions in this draft include a brief but unnecessary explanation. The edits themselves should generally be self-indicative of why the change is being done and anyone that reads the amendment title should be able to understand that most of the edits are to add 40 Gb/s and 100 Gb/s specifications. In a few other cases, more editing instruction than what is provided would be appropriate. In number of cases, Tables probably are floating well away from the change instruction related to the table.

SuggestedRemedy

Modify editing instructions to only describe what the editor is to do on a merge. In many cases (e.g., Clause 45 edits), complete tables are not reproduced and that would be appropriate to indicate (e.g., "Change indicated rows of Table 45-x as follows:"). Correct table float (or anchor) problems.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Scrub the editing instructions for existing Clauses/Annexes and add additional description or change instructions as appropriate (applies to Clauses 1, 4, 30, 45, 52, 69, 73, 74, and Annexes A, 4A, 31B, 69A, 69B).

For example change instruction for 73.9.1 (page 101) does not indicate the text that has changed from the base document. If the entire 73.9.1 needs to be removed and replaced with the new text then this should be a Replace instruction.

CI 00 SC 0 P L # 103
Kipp, Scott Brocade

Comment Type ER Comment Status D

The document does not use consistent terminology for setting bits to ONE, one, 1 and ZERO, zero, 0.

SuggestedRemedy

While it is not very confusing, it would be nice for the standard to use standard terminology. Change to ONE and ZERO everywhere and define these terms in the introduction.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

In most cases the base document uses logic ZERO and logic ONE, though there are few instances of logic 0 and logic 1.

To be consistent change to logic ZERO and logic ONE in P802.3ba document.

Cl 00 SC 0 P L # 313
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

Annexes 83B and 85A have equations but have not illustrated these equations via figures. This is inconsistent with other clauses where equations have been illustrated. Also in Annex 83B actual equations have been entered into table entries (see Table 83B-2 and 83B-4), rather than being added as equations into the text body, where the equation # is referenced in the table)

SuggestedRemedy

Equations that define limits should be plotted in order to be consistent with the rest of the draft. Equations should not be entered as actual table entries. Instead, equations should be entered in text, and then the actual equation # referenced in the table entry.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Identify inconsistencies and change as suggested.

Cl 00 SC 0 P L # 336
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

Limit lines made up of 2 or more equations are numbered differently throughout the text.

1. each equation is numbered with its own equation #
2. a group of equations making up a limit is given one equation #.

This was commented before, and an editor pointed out that use of #2 above follows Clause 47. However, subsequent reviews of projects that came after 802.3ae showed that

SuggestedRemedy

Adopt one style

1. Number each equation

or

2. Put a bracket next to equations related to a single limit line.

#1 is preferred.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Number each equation.

Discuss in BRC

Cl 00 SC 0 P L # 24
 Anslow, Peter Nortel Networks

Comment Type T Comment Status D

Clauses 84 through 88 show clause 83A XLAUI/CAUI as optional in Tables 84-1, 85-1, 86-2, 87-1 and 88-1. However, clause 83B could be used also and in some cases is more appropriate than 83A

SuggestedRemedy

In Tables 84-1, 85-1, 86-2, 87-1 and 88-1 show clause 83B as optional

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Show 83B as optional for Tables 86-1, 87-1 and 88-1. Discuss if applicable for backplane and copper clauses.

CI 00 SC 0 P L # 96
Gustlin, Mark Cisco

Comment Type TR Comment Status D

Clause 86 and 85 are not consistent in their PCB loss budgets.
The CR4/CR10 PCB loss allowances are not sufficient for future PCB board designs, and do not support at least 4" of standard PCB trace.

SuggestedRemedy

Change the reach objective for CR4/10 to 7m (from 10m) to allow for more loss be assigned to the PCB
Change clause 85A.4 from 4.74dB total loss for tx / rx host boards to 5dB per side for the PCB + connector + impairments budget
Change clause 86A.6 to 5dB per side for the PCB + connector + impairments. Note that this is a informative change since the PCB budget is informative, and this channel is jitter limited.
Change Eq 86A-20 to reflect 3.5dB (Host trace) + 0.87dB (connector) + 1.26dB (HCB trace) + 0.63dB (impairments) = 6.26dB at 5.15625 GHZ

See gustlin_04_0709 for details of the changes.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Loss basis for components required for loss budget considerations.

Given: P802.3ba CR4/CR10 maximum IL at 5.15625 GHz

Cable assembly (21.55dB), Tx and Rx PCB (4.74 dB),

Channel (26.29 dB)

Suggested component IL values at 5.15625 GHz:

Cable: 24 AWG 4-pair (1.9 dB/m)

Mated connector: host receptacle and plug (paddle card/ wire termination) (1.2 dB per end)

Component-up IL budget calculation:

10 meter cable assembly = $(10 \times 1.9\text{dB/m}) + (2 \times 1.2\text{dB}) = 21.4\text{ dB}$

channel = $(21.4\text{ dB} + 4.74\text{ dB}) = 26.14 < 26.29\text{ dB}$

Example: applying component values to 7 meter cable assembly topology:

7 meter cable assembly = $(7 \times 1.9\text{dB/m}) + (2 \times 1.2\text{dB}) = 15.7\text{ dB}$

Assuming 10 dB Tx/Rx PCB trace loss.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Channel = $15.7 + 10 = 25.7\text{ dB} < 26.29$

CI 00 SC 0 P L # 352
Grow, Robert Intel

Comment Type ER Comment Status D

We have a general problem with numbering. Not all projects are following the same convention, for example, P802.3av is inserting clauses and instructing renumbering, but this project attempts to follow the Style Guide (laudable but difficult for us). As is shown by this draft, the Style Manual convention doesn't support adding a new subclause when it is the first at that level (add 45.2.1.4.1a before 45.2.1.4.1), and it doesn't support alphabetic subclause ordering when doing this more than once (something we frequently do. For example in Clause 45, a second amendment would typically place a new bit definition for example as 45.2.1.4.1b before 45.2.1.4.1a which is before 45.2.1.4.1, but place a new register definition 45.2.1.12b after 45.2.1.12a.

SuggestedRemedy

Work with WG Chair to better coordinate projects and use consistent style for indicating changes. Though it can get painful (and was why I build a spreadsheet for clause 45 to manage amendments), I think we need to not follow the Style Guide for subclause insertions (which is add letters without renumbering) but rather insert and renumber, but I'll leave that decision to the WG Chair and if he chooses to the WGAC.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Discuss with WG chair and follow a consistent numbering style across amendment projects.

CI 00 SC 0 P1 L # 163
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

The process to resolve comment in CL 85 is broken, with meeting running past scheduled time past mid-night, decision are made with just 5-6 people in the room, comments are subjectively rejected by the editor, with meeting running late the editor gives himself permission to change the comment database since the meeting was already past midnight.

SuggestedRemedy

We need to adhere to scheduled time, editors should not enter resolution to comments outside the meeting time, do not reject a person comments attending different track without giving him opportunity to come by specifically Piers Dawes comments.

Proposed Response Response Status Z

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

CI 00
SC 0

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Cl 00 SC 0 P1 L # 168
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

There is no harmony and plus there is disconnect between the transmitter jitter and receiver jitter. The transmitter low frequency jitter gets tracked by the 4 MHz CRU defined in CL85 and 86 but the receiver jitter tolerance does not include the tracked jitter, this is called double dipping!

SuggestedRemedy

We have to test transmitter with a CRU with BW X and then receiver jitter tolerance SJ mask must include same SJ with BW X. High corner frequency could be a problem with some of the digital CDR/EQ and I am assuming this is the reason jitter tolerance is missing, as compromise we can use 1 or 2 MHz for the transmitter CRU BW to measure jitter.

If the CRU BW in CL 83A/B need to also be in Sync if the BW.

See ghiasi_02_0790

Proposed Response Response Status W

PROPOSED REJECT.

The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion, see ghiasi_02_0709.pdf.

Cl 00 SC 0 P1 L # 165
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Clause 85 started without being well thought and with very aggressive cable reach 10m, which is not feasible based on KR. Here are major issue with CL85 specifications:
 A- PCB loss of 2.3 dB from TP0 to TP1 and TP4 to TP5
 B- Reduction of KR ILD by 3 dB and increasing cable IL is not supported with cable return loss specifications and stacked connectors
 C- Reference 10 m QSFP cable used for baseline simulation has 10 dB better return loss than cable SDDxx return loss
 D- Reference 10 m QSFP cable with lowest loss was used for the cable loss specifications
 E- Worst case FEXT are either not included or omitted from CR4/CR10 specifications

SuggestedRemedy

Here are suggested resolution:

- A- Increase PCB loss to 5 dB from 2.3 dB
- B- Do not change KR ILD and make max cable IL the same as KR
- C- Propose to use CL86 SDDii EQ 86A-1 and SCC22 EQ 86-A2 or stay with current RL and cut the cable reach more
- D- Worst case cable pair has 23.7 dB loss or about 2.27 dB/m
- D- Include worst case FEXT for QSFP and CXP

With above changes the cable reach is assuming KR loss $23.3 = 2.27 * X + 1$ dB (2 connectors) 10 dB (2x PCB trace), which result with reach of 5.4 m.

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Use PCB loss per resolution to comment #96

Consider other changes B and C on the basis of A.

Cl 00 SC 0 P1 L # 167
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Clause 85 and 86 have the same physical instantiation but max transmitter amplitude CL85 1200 mV Table 86-4 exceed the max transmitter amplitude 700 mV for CL86 table 86A-1. There is absolutely no reason to have two electrical level in same physical instantiation with 70% more amplitude in era of energy efficient Ethernet.

SuggestedRemedy

Reduce CL85 transmitter output from 1200 mV to 700 mV make a seamless interface without possibly damaging optical modules with over voltage. Reducing voltage to 700 mV is more compatible with 40nm and 32 nm CMOS.

Proposed Response Response Status W

PROPOSED REJECT.

The max transmitter amplitude specified in Clause 85 is consistent with baseline objective to utilize 10GBASE-KR (Clause 72) to specify 40GBASE-CR4 and 100GBASE-CR10.

Cl 00 SC 0 P1 L # 166
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Clause 85 has fundamental budget problem where its reach has to be reduced to about 5 m then not meeting the 10 m objective.

SuggestedRemedy

As alternative to KR the group can use the 10GSFP+Cu as the baseline currently supporting 8.5 m and supporting in excess of >100m with active cables without the need to change the objective. 10GSFP+Cu electrically fully compatible with CL86 unlike Clause 85.

see ghiasi_04_0709

Proposed Response Response Status W

PROPOSED REJECT.

The commenter has not provided a sufficiently complete proposal that would enable the implementation of the suggested remedies for changes to D2.1.

Cl 00 SC 0 P1 L1 # 255
Booth, Brad AMCC

Comment Type TR Comment Status D

IEEE P802.3ba has selected nomenclature that conflicts with previous uses of the same nomenclature letter. There has been an effort in the past decade to establish a consistent use of letters for port type nomenclature. Unfortunately, this was not noticed until the task force was in working group ballot.

IEEE P802.3ba should strive to keep its nomenclature consistent with IEEE Std. 802.3-2008. Maintaining a consistency will easily permit additional PMD types to be added to the 40GbE and 100GbE family.

See booth_01_0709.pdf for more information on nomenclature.

SuggestedRemedy

In all uses of SR, change from short reach to be short wavelength.

In all uses of LR, change from long reach to be long wavelength.

In all uses of ER, change ER to be HR, and change from extended reach to be high-power long wavelength.

Proposed Response Response Status W

PROPOSED REJECT.

The nomenclature was adopted by the Task Force in May 2008 (see motion #2). The adopted nomenclature was presented to the WG by the TF Chair during Jul'08 opening plenary.

The nomenclature was discussed in the task force which also included 802.3 WG members. The requirement for 802.3ba was to distinguish reach for different PMDs, and previous distinctions based on wavelength was not considered sufficient. Hence the current nomenclature was adopted. The nomenclature is also documented clearly in Clause 80.

The task force did discuss the consistency issue; during the discussions it was pointed out that the base document already uses same letter(s) to identify different characteristics. (e.g., B, L, S). Also in the base document numeric suffix identifies either number of lanes/wavelengths or distance. After considerable discussion there was consensus in the Task Force to adopt S, L and E to represent reach.

Also see comment #97.

Discuss in BRC. Hear supporting presentations.

Cl 00 SC 0 P1 L20 # 164
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

KR does not close the 10 m link! Clause 85 has fundamental issues which I have raised them with my commetns against D2.0 and D1.2 but the fundamental issue not addressed. CL85 is about 1 year behind other clasue by my estimate.

SuggestedRemedy

I propose to spin CL85/86 into a new project

Proposed Response Response Status W

PROPOSED REJECT.

The suggested remedy is not in the ballot scope which is to comment against the entire P802.3ba/D2.1 draft.

Cl 00 SC 0 P1 L20 # 169
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

It was not agreed in the meeting to incorporate "Measured with effect of ILTP2(f) loss equation 85-2 mathematically removed from the signal at TP2 using software FIR filter that is no more then 6 UI long"

SuggestedRemedy

Please remove it

Proposed Response Response Status W

PROPOSED REJECT.

Incorporation of text per D2.0 comment resolutions; see >>
http://www.ieee802.org/3/ba/public/may09/P8023ba-D20-Final_Responses_byCIsa.pdf

comment resolution number 697 and reference Moore01_0509.pdf
(http://www.ieee802.org/3/ba/public/may09/moore_01_0509.pdf) to incorporate table and notes.

note > b) Measured with effect of ILiTP2 loss mathematically removed from the signal at TP2 using a software FIR filter that is no more then 6UI long.

Cl 00 SC 45 P38 L37 # 355
Grow, Robert Intel

Comment Type TR Comment Status D

As specified, edits from P802.3av could be lost. The content of the table on the row for bit 1.12 is being modified by P802.3av, and the content isn't "Reserved for 802.3av". You should use base text from 802.3av in this case.

SuggestedRemedy

Change 1.12 row to the contents of P802.3av (nothing underscore), and correct the Change instruction to "Change indicated rows of Table 45-3 (P802.3av/D3.4):". Delete table row at line 40 as it is an 802.3-2008 row as it is being changed by P802.3av and doesn't need to be changed again.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Also see related comment #356 regarding changing editing instruction with respect to amended text in 802.3av.

Change 1.12 row to the contents of P802.3av (nothing underscore).

Correct the Change instruction to "Change indicated rows of Table 45-3 (as modified by 802.3av):". Delete table row at line 40 as it is an 802.3-2008 row as it is being changed by P802.3av and doesn't need to be changed again.

Cl 01 SC 1.1.3.2 P24 L22 # 248
Szczepanek, Andre HSZ Consulting Ltd

Comment Type ER Comment Status D

40GBASE-SR10

SuggestedRemedy

40GBASE-SR4

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 01 SC 1.3 P25 L3 # 348
Grow, Robert Intel

Comment Type E Comment Status D

Actually they need to be inserted in alphanumeric order.

SuggestedRemedy

Change alphabetic to alphanumeric.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 01 SC 1.3 P25 L5 # 395
 Law, David 3Com

Comment Type T Comment Status D

For dated references, only the edition cited applies, although we do state that users are encouraged to investigate the possibility of applying the most recent edition. For undated references, the latest edition of the referenced document (including any amendments or corrigenda) applies.

In the Normative references subclause IEC 60793-1-42 is dated referencing the 2007 edition yet in the body of the draft, in subclause 87.8.6.2 Channel requirements the reference to IEC 60793-1-42 undated.

The same is true for IEC 60793-2-50, IEC 61280-1-1, IEC 61280-1-4, G.694.1, G.694.2, G.694.2, G.959.1 and TIA-455-127-A.

SuggestedRemedy

Clarify is a dated or undated reference is intended.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Discuss in BRC and if appropriate update with dated or undated references.

CI 01 SC 1.4 P26 L2 # 97
 Kipp, Scott Brocade

Comment Type ER Comment Status D

There are some inconsistencies between nomenclature between this section and the rest of 802.3. In clause 1.4.41 of 802.3-2008, it says "S" is for short wavelength optics while it says short reach in definition in 1.4 and no mention of S in 80.1.4.

The document should be consistent throughout regarding nomenclature if possible and should show some examples of the nomenclature.

SuggestedRemedy

Use consistent nomenclature/definitions in the document. Add a graphic in 80.1.4 to show how the the media notation works. I will make a presentation on this and submit it to the group. Even if we can't use common terminology for the whole document, we should do it in ba.

Proposed Response Response Status W

PROPOSED REJECT.

See response to comment #255

The nomenclature is defined in 80.1.4

Discuss in BRC

CI 01 SC 1.4 P27 L4 # 110
 Young, George AT&T

Comment Type TR Comment Status D

New definition for "BASE-R" in subclause 1.4 conflicts with the use of the name "BASE-R" with a distinctly different meaning as separately defined in and contained throughout Clause 45 text.

The subclause 1.4.x definition of BASE-R is clear in meaning physical devices utilizing Clause 49 or 82 64B/66B PCS coding. The other definition of BASE-R used throughout Clause 45 is taken from footnote 'a' of Table 45-3 to mean only "PHYs that use the PMD described in Clause 72, 84 or 85 including PHYS designated as BASE-KR and BASE-CR".

If "BASE-R" alone continues to be used indiscriminately, it will cause unnecessary confusion. Example: 40GBASE-LR4 PMD is "BASE-R" according to Subclause 1.4 definition on account of 64B/66B PCS employed. But 40GBASE-LR4 PMD is not "BASE-R" according to Clause 45.

SuggestedRemedy

Consistently use only "BASE-R PCS" throughout for the meaning now defined in 1.4.x in referring to the family of physical layer devices using the 64B/66B encoding defined in PCS Clauses 49 or 82. Consistently use only "BASE-R PMD" and/or "BASE-R FEC" throughout in referring to employing Clauses 72, 84 or 85 PHYs.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change footnote 'a' of Table 45-3 as follows:

"The name "BASE-R" is used in these register titles to denote PHYs that use the PMD described in Clause 72, 84 or 85 including PHYS designated as BASE-KR and BASE-CR"

Cl 01 SC 1.5 P27 L22 # 344
Grow, Robert Intel

Comment Type E Comment Status D

Excessive capitalization (IEEE style uses lower case, only with justified exceptions for defined terms that otherwise would be confused, e.g., Idle being something distinct on the MII tofrom the generic usage of idle). (Just following what was done in 802.3ae doesn't make it right.)

SuggestedRemedy

Though out of scope reomend:

AUI is attachment unit interface and MII is media independent interface, unfortunately all subsequent xAUIs and xMIIs use title case, consider correcting this generation, you are defining enough interfaces to change the preponderance

DIC is my fault, the one expansion in the base document should not have been capitalized. Also correct p.149, I.48.

HCB, LSB, MCB, MSB, OTN, OPU3 have no need to use capitalization, search document for expansion and make consistently lower case.

Proposed Response Response Status W

PROPOSED REJECT.

The BRC discussed the capitalization issue in 1.5 w.r.t. IEEE style guide during response to comment #668 in D2.0. The consensus decision was to leave it capitalized for LSB, MSB and other definitions.

Cl 04 SC 4.4.2 P29 L41 # 396
Law, David 3Com

Comment Type T Comment Status D

The note states that '.. the received interPacketGap .. can have a minimum value of 8 BT (bit times) .. due to interPacketGap shrinkage.'. It is not due to interPacketGap shrinkage, that is what it is, it is due to clock tolerance and lane alignment requirements.

SuggestedRemedy

Suggest the text '.. due to interPacketGap shrinkage.' be change to read '.. due to clock tolerance and lane alignment requirements.'

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

In addition to 4.4.2, make the suggested change to Annex 4A (4A.4.2).

Cl 30 SC P31 L3 # 345
Grow, Robert Intel

Comment Type E Comment Status D

While the right thing was done to recognize that other amendments will likely beat this one to publication, best practice is to include detailed insertion point to aid publication editor merge, and not enough detail is provided on many insert instructions.

SuggestedRemedy

30.3.2.1.2 -- Since list seems to be in alphanumeric order, instruct "Insert new PHY types in alphanumeric order..."

30.3.2.1.3 -- Same change, "Insert new PHY types in alphanumeric order..."

30.5.1.1.2 -- "Insert new PHY types into "APPROPRIATE SYNTAX" before 802.9a (P802.3av/D3.4); change "BEHAVIOR" of 30.5.1.1.2:"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 30 SC 30.3.2.1.5 P31 L45 # 390
Law, David 3Com

Comment Type E Comment Status D

The 'or' then 'and' construct could be misunderstood.

SuggestedRemedy

Suggest that '.. on the XGMII (see Table 46-4) or XLGMII and CGMII (see Table 81-3).' be chnaged to read '.. on the XGMII (see Table 46-4), the XLGMII or the CGMII (see Table 81-3).'

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 30 SC 30.5.1.1.15 P34 L28 # 397
 Law, David 3Com

Comment Type T Comment Status D

IEEE Std 802.3-2008 subclause 30.1.4 'Management model' states that '.. items are defined .. in terms of the template requirements of ISO/IEC 10165-4: 1991.' In ISO/IEC 10165-4, under the Attribute template in subclause 8.7.3.2 'WITH ATTRIBUTE SYNTAX type-reference', it is stated that 'This construct, present only if the DERIVED FROM construct is absent, identifies the ASN.1 data type that describes how instances of this attribute are carried in protocol'.

We should therefore be using ASN.1 notation in APPROPRIATE SYNTAX, and I believe that the correct ASN.1 notation for an array is 'SEQUENCE'. For an existing example see subclause 30.3.1.1.30 'aCollisionFrames'.

Further we need to define a

SuggestedRemedy

Suggest that the text 'Array of generalized nonresetable ..' be changed to read 'A SEQUENCE of generalized nonresetable ..'.

Make the same change for subclause 30.5.1.1.16, page 34, line 49.

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 30 SC 30.5.1.1.15 P34 L30 # 398
 Law, David 3Com

Comment Type T Comment Status D

The counter increment rate needs to be added for 40Gb/s and 100 Gb/s operation.

SuggestedRemedy

Add the counter increment rate for 40Gb/s and 100 Gb/s operation.

Make the same change for subclause 30.5.1.1.16, page 34, line 51.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

Change "and 5 000 000 counts per second for 10 Gb/s implementations"

to "5 000 000 counts per second for 10 Gb/s and 40Gb/s implementations, and 2 500 000 counts per second for 100Gb/s implementations"

CI 30 SC 30.5.1.1.15 P34 L33 # 399
 Law, David 3Com

Comment Type T Comment Status D

The indices of the array should be defined as well as what happens with PHYs that do not use PCS lanes such as 10GBASE-R.

SuggestedRemedy

Suggest lines 31 through 37 be replaced with:

For 1000BASE-PX PHYs or 10/40/100GBASE-R PHYs, an array of corrected FEC blocks counters. The counters will not increment for other PHY types. The indices of this array (0 to N - 1) denote the PCS lane number where N is the number of PCS lanes in use. The Number of PCS lanes in use is set to one for PHYs that do not use PCS lanes. Each element of this array contains a count of corrected FEC blocks for that PCS lane.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

Accept the proposed response and also make similar change for 30.5.1.1.16.

CI 45 SC P52 L35 # 350
 Grow, Robert Intel

Comment Type E Comment Status D

This introduces a strange convention of nested editing instructions. Change 45.2.1.78 through 81 ... followed by only partial text of that being modified (e.g., Change the title of Table 45-55 as follows:). No tables are reproduced and some unchanged subclauses nested a level deeper are not reproduced. It took me a while to think I knew what was going on, not sure I've got it correctly though, am worried about it causing unintended loss of text, and I'm doubtful the publication editor will like it.

SuggestedRemedy

You need more editing instructions, probably one for 78 through 81 and one per table. If not acceptable to P802.3ba editor/BRC, check if this will pass with the publication editor (if you haven't already). Correct if instructed by publication editor.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

The "nesting" is an unintended artifact from a comment on D2.0 and was not a specific requirement from the BRC. Change the editing instructions as follows:

For each subclause 45.2.1.78 through 81 - add explicit change instruction (e.g. Change 45.2.1.78 for register naming and for multi-lane:) and keep the change instructions for each table title (as per comment #675 in D2.0).

CI 45 SC 45.1.3 P39 L22 # 256
 Booth, Brad AMCC

Comment Type T *Comment Status* D

LP coefficient update, LP status, LD coefficient update and LD status should be grouped and not interleaved. Current interleaving increases MDIO interactions when reading the registers.

SuggestedRemedy
 Remove interleaving.

Proposed Response *Response Status* W
 PROPOSED ACCEPT.

CI 45 SC 45.2.1 P39 L10 # 259
 Booth, Brad AMCC

Comment Type TR *Comment Status* D

Table can be made simpler to read.

Also, the changes to the table may imply that a 10GBASE-R device is required to have the lane 0 copies.

SuggestedRemedy
 Change BASE-R FEC ability and BASE-R FEC control to just be FEC ability and Fec control, respectively.

Change register 1.172-1.175 back to being just 10GBASE-R registers. Add a note to the descriptions that in 40G and 100G, implementers may reflect a copy of the information contained in lane 0.

Eliminate references that may imply existing 10G devices would be required to create a "copy" in another register location.

Change BASE-R FEC corrected to be 40G/100G FEC corrected from lane 0-19 in register space 1.176-215.

Change BASE-R FEC uncorrected (lanes 1-19) to be 40G/100G FEC uncorrected from lane 0-19 in register space 1.216-255.

Proposed Response *Response Status* W
 PROPOSED ACCEPT IN PRINCIPLE.

Itemizing the comment into 5 paragraphs:

1.
The "BASE-R" descriptor is required to distinguish from 10P/2B FEC.
2.
Change register 1.172-1.175 back to being just 10GBASE-R registers (no changes to register & subclause names). Delete the (added) first sentence and last sentences of the first paragraph of 45.2.1.86 & 45.2.1.87. Change the additional paragraph for both subclauses:

 "For a multi-lane PHY, this register may be a copy of register 1.176 (1.216) BASE-R FEC corrected (uncorrected) blocks counter, lane 0. If implemented, all accesses to the copy shall have identical behavior as the original register."
3.
The changes described in 2. eliminate any such implication.
4. & 5. Accept the proposed changes.

CI 45 SC 45.2.1.4 P42 L47 # 349
Grow, Robert Intel

Comment Type E Comment Status D

These inserts are not in logical order. (We typically define our bits starting with Bit 0 but describe the bits starting from the highest numbered defined bit (with the possible exception of P802.3ap). Consequently newly defined bits require a new 45.x.x.x.1 and renumbering of other bit subclauses. While 45.1.4.8 is serendipidously the correct next subclause number (since P802.3av/D3.4 renumbers the current 45.2.1.4.6 to be 45.2.1.4.7), that puts the bit definitions of bits 8 and 9 after bit 0 and if followed as a precedent would place the bits in what would appear to most readers as random order.

SuggestedRemedy

Insert at beginning of 45.2.1.4 and renumber as required. (And, no reference to the most recent amendment is required in this case.)

Search for similar occurrences and correct as needed.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change clause numbers from "45.2.1.4.8 and 45.2.1.4.9" to "45.2.1.4.1a and 45.2.1.4.1b"

Update change instruction to read: "Insert 45.2.1.4.1a and 45.2.1.4.1b before 45.2.1.4.1 as follows:"

CI 45 SC 45.2.1.4.8 P43 L5 # 356
Grow, Robert Intel

Comment Type TR Comment Status D

As shown, edits from 802.3av could be lost. Change base text to 802.3av.

SuggestedRemedy

Correct instruction on p.42, l.44 to read: Change Table 45-6 as follows (P802.3av/D3.4):
Correct first line of your Table 45-6 so that it is strikethrough text of "1.4.15:8".
Delete row for bit 1.4.7 because it is defined in P802.3av/D3.4.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

"Change Table 45-6 (as modified by 802.3av) for 40 Gb/s and 100 Gb/s speed ability:"

Correct first line of your Table 45-6 so that it is strikethrough text of "1.4.15:8".
Delete row for bit 1.4.7 because it is defined in P802.3av/D3.4.

CI 45 SC 45.2.1.86 P57 L38 # 26
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

zeroes

SuggestedRemedy

zeros (9 times, including the only two in the base document).

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 45 SC 45.2.1.86 P58 L4 # 375
Ganga, Ilango Intel

Comment Type E Comment Status D

Fix typo:

Page 58, line 4: this register
Page 60, line 40: controlled
Page 60, line 43: controlled
Page 61, line 9: fix double period
Page 62, line 5: fix double period
Page 85, line 15: abilities
Page 85, line 18: abilities

SuggestedRemedy

Per comment

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Page 58, line 4: thes register -> this register
Page 60, line 40: controled -> controlled
Page 60, line 43: controled -> controlled
Page 61, line 9: fix double period
Page 62, line 5: fix double period
Page 85, line 15: abilites -> abilities
Page 85, line 18: abilites -> abilities

CI 45 SC 45.2.1.89 P58 L52 # 354
Grow, Robert Intel

Comment Type T Comment Status D

With all the gearboxes doesn't this need to be more specific than multi-LAN PHYs (though there is probably only one place in the architecture where the lanes get 20 wide) and only for 40 and 100 Gb/s operation, not for 10 Gb/s operation? It is less certain for the narrower interfaces.

SuggestedRemedy

Include text describing where lane 0 is specified "For multi-lane BASE-R PHYs, the even-numbered registers in this set are defined similarly to register 1.174 (see 45.2.1.87) which is used for lane 0, but for lanes 1 through 19 respectively. The odd-numbered registers in this set are defined similarly to work with register 1.175 (see 45.2.1.87) expanding the capability for lanes 1 through 19 respectively. Registers corresponding to lanes that are not used for the implemented PHY shall return all zeros."

Appropriately modify if determined to be appropriate to better specify where within the PHY it becomes this wide.

Make corresponding clarifications for other register descriptions expanding capability for multi-lane PHYs.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.

Change the first 2 sentences of 45.2.1.88 to

For multi-lane BASE-R PHYs, the even-numbered registers in this set are defined similarly to register 1.172 (which is used for lane 0, see 45.2.1.86) but for lanes 1 through 19 respectively of multi-lane PHYs. The odd-numbered registers in this set are defined similarly to register 1.173 (see 45.2.1.86) but for lanes 1 through 19 respectively of multi-lane PHYs.

Make corresponding clarifications for 45.2.1.89, 45.2.1.90, 45.2.1.91, 45.2.1.92, 45.2.1.93.

CI 45 SC 45.2.1.95 P61 L5 # 353
Grow, Robert Intel

Comment Type ER Comment Status D

Strange order, inserted clause specify Register 1.307, then 1.309, then 1.308.

SuggestedRemedy

Correct order moving 309 after 308.

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 45 SC 45.2.3 P64 L21 # 106
Young, George AT&T

Comment Type T Comment Status D

Table 45-82 Register name entries for register addresses 3.32, 3.33, 3.42 and 3.43 continue to employ "10G/40G/100G.." nomenclature which was previously removed from the corresponding text in subclauses 45.2.3.11, 45.2.3.12, 45.2.3.15 and 45.2.3.16, respectively.

SuggestedRemedy

Remove four instances of "10G/40G/100G" in Table 45-82 register name entries.

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 45 SC 45.2.3.11.4 P68 L21 # 107
Young, George AT&T

Comment Type T Comment Status D

Definition of hi_ber variable needs added reference to Clause 82 PCS.

SuggestedRemedy

Change "This bit is a direct reflection of the state of the hi_ber variable in the 64B/66B state diagram and is defined in 49.2.13.2.2." to:

"This bit is a direct reflection of the state of the hi_ber variable in the 64B/66B state diagram defined in 49.2.13.2.2 for 10GBASE-R and in 82.2.19.2.2 for 40/100GBASE-R."

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 45 SC 45.2.3.12 P68 L35 # 108
Young, George AT&T

Comment Type T Comment Status D

Definition of block_lock variable needs added reference to Clause 82 PCS.

SuggestedRemedy

Change "This bit is a direct reflection of the state of the block_lock variable in the 64B/66B state diagram and is defined in 49.2.13.2.2 for 10GBASE-R PCS" to:

"This bit is a direct reflection of the state of the block_lock variable in the 64B/66B state diagram defined in 49.2.13.2.2 for 10GBASE-R and in 82.2.19.2.2 for 40/100GBASE-R."

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 45 SC 45.2.3.12.4 P69 L54 # 109
 Young, George AT&T

Comment Type T Comment Status D

Definition of errored_block count variable needs added reference to Clause 82 PCS.

SuggestedRemedy

Change "The errored blocks counter is an eight bit count defined by the errored_block_count counter specified in 49.2.14.2 for 10/40/100GBASE-R ..." to:

"The errored blocks counter is an eight bit count defined by the errored_block_count counter specified in 49.2.14.2 for 10GBASE-R, in 82.3.1 for 40/100GBASE-R ..."

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 45 SC Table 45-11 P47 L17 # 358
 Grow, Robert Intel

Comment Type TR Comment Status D

P802.3av/D3.4 and P802.3ba/D2.1 both define Bit 1.11.9.

SuggestedRemedy

Correct by modifying editing instruction to reference P802.3av/D3.4, correct first row of indicted changes to edit the reserved row in 802.3av, change second row of to be bit 1.11.10.

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 45 SC Table 45-64a. P60 L23 # 249
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type ER Comment Status D

During comment resolution on Draft2.0 it was agreed that PRBS9 checking would be removed to resolve my comment on the lack of a defined implementation for the PRBS9 checker.

The text in Table 45-64a for 1.307.5 and in 45.2.1.94 for 1.307.5 do not reflect the removal of PRBS9 checking.

SuggestedRemedy

In the table description column for 1.307.5 change to :
 1 = PRBS9 pattern generation supported
 0 = PRBS9 pattern generation not supported

Change text on line 46 to
 "and register 1.307, bit 5 indicates that the device supports PRBS9 generation. In both cases, if" (ie remove "or generation"

Proposed Response Response Status W
 PROPOSED ACCEPT.

Cl 45 **SC Table 45-7** **P44** **L18** # **357**
 Grow, Robert Intel

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

The way it is specified, changes from P802.3av could be lost. Changes need to be marked against P802.3av/D3.4. It is unlikely at this point that additional PHY types will be added by P802.3av consequently, the 40 Gb/s code points could also be moved to start at 011011. The unused bits are simply "Reserved", not reserved for a specific project. (The problem being that if the specified project doesn't use them, are they still Reserved or can they now be used for private usage?)

SuggestedRemedy

Modify the editing instruction on p.43, l.21 to read: "Change indicated rows of Table 45-7 as follows (P802.3av/D3.4):", and get the change instruction closer to the Table (anchor or float problem).

Line 5 as a modification to P802.3av/D3.4 have strikethrough bit number "1.7.15:5".

Line 18 is wrong, and needs to be replaced with the Table 45-7 code points defined in P802.3av/D3.4 (no longer underscored).

Recommend moving 40 Gb/s code points to start with 011011, and starting 100Gb/s code points at 1000000 (leaving 011111 Reserved and available for the rumored 40 Gb/s serial PMA/PMD type). (If 40 Gb/s code points are not moved, the rows indicating "Reserved" would also be copied from P802.3av/D3.4). Change 100 Gb/s code points to start at 100000.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.

"Change Table 45-7 (as modified by 802.3av) for 40 Gb/s and 100 Gb/s PMA/PMD type selections:"

Make Table 45-7 an active link.

Line 5, make strikethrough text "1.7.15:5".
 Line 8, make strikethrough text "1.7.4:0".

Column for bit 4 is not underlined.

Replace line 18:

(0 1 x x x x = Reserved for 802.3av)

1 1 1 x x = reserved
 1 1 0 1 1 = reserved
 1 1 0 1 0 = 10GBASE-PR-U3
 1 1 0 0 1 = 10GBASE-PR-U1
 1 1 0 0 0 = 10/1GBASE-PRX-U3

1 0 1 1 1 = 10/1GBASE-PRX-U2
 1 0 1 1 0 = 10/1GBASE-PRX-U1
 1 0 1 0 1 = 10GBASE-PR-D3
 1 0 1 0 0 = 10GBASE-PR-D2
 1 0 0 1 1 = 10GBASE-PR-D1
 1 0 0 1 0 = 10/1GBASE-PRX-D3
 1 0 0 0 1 = 10/1GBASE-PRX-D2
 1 0 0 0 0 = 10/1GBASE-PRX-D1

Cl 45 **SC Table 45-8** **P44** **L34** # **347**
 Grow, Robert Intel

Comment Type **E** **Comment Status** **D**

Where is the editing instruction for Table 45-8"

SuggestedRemedy

Add editing instruction "Change indicated row of Table 45-8 as follows:". Then you don't need the row with the elipse.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.

There is a change instruction for 45.2.1.7 (that includes Table 45-8).

Change the change instruction to make this explicit:

"Change 45.2.1.7 and change the indicated row of Table 45-8 for naming:"

Cl 45 **SC Table 45-82** **P64** **L 36** # **351**
 Grow, Robert Intel

Comment Type E **Comment Status D**

Correct for likely prior publication of P802.3av.

SuggestedRemedy

Delete row 3.74 through 3.89. Last row should become an edit of the last row of P802.3av/D3.4.

Proposed Response **Response Status W**

PROPOSED ACCEPT IN PRINCIPLE.

"Change Table 45-82 (as modified by 802.3av) for 40 Gb/s and 100 Gb/s PCS registers:"

Delete row 3.74 through 3.89

Replace with change row:

3.83 through 3.32 767 Reserved

becomes

3.83 through 3.89 Reserved

Cl 45 **SC Table 45-83** **P64** **L 46** # **359**
 Grow, Robert Intel

Comment Type TR **Comment Status D**

Use P802.3av/D3.4 as base text.

SuggestedRemedy

Modify change instruction by adding "(P802.3av/D3.4)". Change marking to be consistent with that base text. (Especially, include P802.3av/D3.4 specification for the 0010 line.)

Proposed Response **Response Status W**

PROPOSED ACCEPT IN PRINCIPLE.

"Change Table 45-83 (as modified by 802.3av) for 40 Gb/s and 100 Gb/s speed selection:"

Line 52:

0 0 1 0 = 10/1 Gb/s

Note also, line 50, the text is changed from:

x x 1 1 = Reserved

Cl 52 **SC 52.9.10** **P91** **L 1** # **335**
 D'Ambrosia, John Force10 Networks

Comment Type TR **Comment Status D**

This is outside the scope of the IEEE P802.3ba PAR

SuggestedRemedy

Discuss with Task Force as service to humanity effort.

Proposed Response **Response Status W**

PROPOSED REJECT. The effect of the change as in D2.1 has to be written somewhere. It should apply to 10GBASE-S, it is helpful to avoid a temporary difference between SR and SRn, and it will be years before the next maintenance project would complete.

For discussion in P802.3ba.

If after discussion in P802.3ba and Maintenance task force, there may be no change to D2.1, hence proposed reject.

Cl 69 **SC 69.1.3** **P94** **L 1** # **258**
 Booth, Brad AMCC

Comment Type TR **Comment Status D**

In response to comment #560 on D2.0, the editor has seen fit to take it upon themselves to institute a change to a previously approved draft.

Comments #560, 575 and 577 were attending to call out that this is inconsistent with most of 802.3. Only EFM used the port type nomenclature with the PCS. The port name at the bottom of the stack indicates the type of 64B/66B or 8B/10B PCS that should be used.

SuggestedRemedy

Return the previously approved text back to its original form.

Change all architecture diagrams to be consistent with the majority of IEEE Std. 802.3-2008 where the coding scheme is only shown with PCS, not the port type.

Proposed Response **Response Status W**

PROPOSED REJECT. Comment 560 against D2.0 was resolved in a full meeting of the task force on the 4th May when anslow_05_0509 was discussed. Comment 560 was given due consideration and the final response represents a consensus view of the meeting rather than the view of any particular editor.

Within 802.3ba Figures 69-1, 84-1, 85-1, 86-1, 87-1 and 88-1 are all consistent in how they represent the stack.

In the existing standard Figures 51-1, 53-1 (LX4) and 54-1 (CX4) use the port type nomenclature with the PCS so there is precedent for doing this. It is the notation that was used in the original Figure 69-1 that was anomalous.

CI **69B** SC **69B.4.1** P**361** L**34** # **27**
 Dawe, Piers Avago Technologies

Comment Type **T** Comment Status **D**

fb is the upper limit for requiring ILD compliance. So between 5.15625 and 6 GHz there can be as much crosstalk as you like. I don't think practical equalisers can stand this; fb should be little higher than the Nyquist frequency.

SuggestedRemedy

For 40GBASE-KR4, change 5.15625 GHz to 6 GHz (as in 85.10.8 for CRn).

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

ILD is already specified out to 6 GHz so there is no need to change Clause 69 for this.

It is f2 that is the upper limit for ILD (not fb). f2 is 6 GHz which is slightly above nyquist.

Crosstalk is bounded by ICR, and -KRn and -CRn are both consistent in that they bound crosstalk up to Nyquist. See fb in Table 69B-1 and stated frequency range for Equation 85A-6.

85.10.8 describes the cable assembly rather than the channel.

Add paragraph number 85A.8 to line 23 on page 404

CI **73** SC **73.9.1** P**101** L**32** # **1**
 Marris, Arthur Cadence

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

This is a pile on to unsatisfied comment 416 against draft 2.1.

AN_LINK.indication is an asynchronous signal that goes from the PCS to the AN function. There has been confusion expressed in the task force about how it should be routed. It does not make sense to route it through the PMA and PMD as this would unnecessarily complicate implementation and the specification as well as potentially adding cost.

It does not do any harm to add text to the spec to say AN_LINK.indication may be implemented as an out-of-band signal when the PCS and AN function are on separate chips.

SuggestedRemedy

Add sentence at end of 73.9.1:
 This primitive is an out-of-band asynchronous signal.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI **74** SC **74.10.2.2** P**121** L**23** # **3**
 Marris, Arthur Cadence

Comment Type **E** Comment Status **D**

spelling fec_bock_lock

SuggestedRemedy

change fec_bock_lock to fec_block_lock

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI **74** SC **74.2** P**105** L**30** # **28**
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **D**

Gbaud

SuggestedRemedy

GBd (twice). Underline "for 10G and 40G; and 5.15625 GBd for 100G.." Remove the second full stop.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI **74** SC **74.2** P**105** L**30** # **360**
 Ganga, Ilango Intel

Comment Type **E** Comment Status **D**

Fix typo:

Page 105, Line 30: delete double period

SuggestedRemedy

per comment

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl 74 **SC 74.2** **P105** **L31** # **2**
Marris, Arthur Cadence

Comment Type **E** **Comment Status** **D**
extra period ..

SuggestedRemedy
delete one of them

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 74 **SC 74.7.3** **P112** **L30** # **5**
Marris, Arthur Cadence

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

The last paragraph of 74.7.3 mentions 16 bit data coming from the PCS so is not generic for BASE-R. This last paragraph is not relevant in a subclause headed 'Composition of the FEC block' and repeats information given in previous subclauses so it makes sense to delete it.

SuggestedRemedy
delete the last paragraph by adding the appropriate editing instruction and inserting the following struck through text:
"The 16-bit data transmitted from the PCS function is encoded by the FEC encoder and sent to the PMA sublayer; similarly, the 16-bit data received from the PMA sublayer is decoded by the FEC decoder. The resulting 64B/66B blocks are sent to the PCS sublayer."

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 74 **SC 74.7.4.5** **P116** **L4** # **4**
Marris, Arthur Cadence

Comment Type **TR** **Comment Status** **D**
Need to underline added text

SuggestedRemedy
underline
or PMA:IS_SIGNAL.indication(SIGNAL_OK)
and
or the PMA:IS_UNITDATA_x.indication

also scrub clause 74 for other instances such as:
page 105, line 30
page 109, line 50 'rate'

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 80 **SC 80.1.3** **P124** **L27** # **92**
Gustlin, Mark Cisco

Comment Type **E** **Comment Status** **D**
CGMII = 100 Gb/s MEDIA INDEPENDENT INTERFACEPMA = PHYSICAL MEDIUM ATTACHMENT runs together in figure 80-1.

SuggestedRemedy
Put a space between the word Interface and PMA. Also applies to 81-1, 82-1 and 83-1.

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 80 **SC 80.1.4** **P125** **L34** # **267**
Trowbridge, Stephen Alcatel-Lucent

Comment Type **E** **Comment Status** **D**
This may have been discussed before, but as there are no single-lane PMDs, it may be better to describe the terminology in the abstract.

SuggestedRemedy
Replace "No numeric suffix in the port type implies a single lane PMD." with "No numeric suffix in the port type would imply a single lane PMD."

Proposed Response **Response Status** **W**
PROPOSED REJECT.

This is a repeat of comment #291 in draft 2.0.

This issue and exact phrase was discussed in the BRC during resolution of comment #220 and #291. The consensus was to change to the statement as documented (see response to comment #220/D2.0)

CI 80 SC 80.2.1 P126 L41 # 298
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

Choice of wording is inconsistent -

The Media Independent Interface is not intended to be electrically instantiated, rather it can logically connect layers within a device.

Interfaces are physically instantiated, not electrically instantiated

SuggestedRemedy

Change sentence to:

The Media Independent Interface is not intended to be physically instantiated, rather it can logically connect layers within a device.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 80 SC 80.2.3 P127 L8 # 269
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status D

FEC might appear either between the PCS and PMA, or between two PMA sublayers - see figures 83-2 and 83C-2

SuggestedRemedy

Replace "The FEC sublayer can be placed in between the PCS and PMA sublayers ..." with "The FEC sublayer can be placed in between the PCS and PMA sublayers or between two PMA sublayers ..."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 80 SC 80.2.7 P127 L44 # 268
Trowbridge, Stephen Alcatel-Lucent

Comment Type T Comment Status D

The MDIO is optional

SuggestedRemedy

Replace "The MDIO/MDC management interface (Clause 45) provides ..." with "The MDIO/MDC management interface (Clause 45) optionally provides ..."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change to:

The optional MDIO/MDC management interface (Clause 45) provides.."

CI 80 SC 80.3 P133 L5 # 274
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

The delay constraint on MAC Control/MAC/RS for 40G is still needlessly tight. The increase from 10 pause quanta to 20 pause quanta falls short of what is needed. A delay constraint of 32 pause quanta will allow a broader range of implementations, without causing any harm.

The primary value of the delay constraint is to bound the reaction time to a received PAUSE frame. Bounding the delay helps limit the size of receive buffers. An unbounded delay would result in an unbounded buffer size. However, the biggest component of the delay is the round trip propagation delay of the link. The round trip propagation delay of a 10 km optical link at 40G dwarfs the 40G component delay constraints in table 80-1.

SuggestedRemedy

increase the MAC Control/MAC/RS delay constraint for 40G to 32 pause quanta.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Also see comment #275.

Discuss in BRC. Hear supporting presentation by Howard.

Cl 80 SC 80.3.1 P128 L17 # 266
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status D

Should the "n"s as well as the "x"s be italicized? I think other clauses do this.

SuggestedRemedy

Italicize the lower case "n"s (multiple occurrences)

Proposed Response Response Status W

PROPOSED REJECT.

Variables should be in italics.

In this case "x" is a variable that takes a the value from 0 to n-1, where n is the number of streams of data units which is constant for that instance.

Cl 80 SC 80.3.2 P128 L33 # 361
Ganga, Ilango Intel

Comment Type E Comment Status D

Fix typo:
line 33: between

SuggestedRemedy

per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 81 SC 81.1 P139 L10 # 299
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

Wording is inconsistent with placing 100G before 40G

Note that there are two instantiations of the Media Independent Interface in this clause, the 100 Gb/s Media Independent Interface (CGMII) and the 40 Gb/s Media Independent Interface (XLGMII).

SuggestedRemedy

change sentence to read -

Note that there are two instantiations of the Media Independent Interface in this clause, the 40 Gb/s Media Independent Interface (XLGMII), and the 100 Gb/s Media Independent Interface (CGMII).

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 81 SC 81.1 P139 L46 # 6
Marris, Arthur Cadence

Comment Type E Comment Status D

grammar

SuggestedRemedy

change "The XLGMII and the CGMII is" to "The XLGMII/CGMII is"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See the resolution to comment #408

Cl 81 SC 81.1 P139 L46 # 408
Estes, Dave UNH - IOL

Comment Type E Comment Status D

Typo

SuggestedRemedy

Change "The XLGMII and the CGMII is an optional logical interface" to "The XLGMII and the CGMII are optional logical interfaces"

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 81 SC 81.1.4 P140 L38 # 29
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Four lines already given in 80.4. This long justification should not be repeated for each sublayer because a sublayer by itself cannot control MAC-to-MAC delay.
See another comment addressing 87.3.1 and 88.3.1.

SuggestedRemedy

Delete first two sentences of 81.1.4, 82.5, 83.5.4, 84.4, 85.4.

Delete first sentence of 87.3.1 and 88.3.1.

At end of 81.1.4, 84.4, add "See 80.4 for additional details." or "See 80.4." or "A description of overall system delay constraints can be found in 80.4."

In 85.4, line 27, change the reference to 85.4 to point to 80.4.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change the delay statements in each clause according to gustlin_05_0709.

CI 81 SC 81.1.4 P140 L52 # 275
 Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

The delay constraint on MAC Control/MAC/RS for 40G is still needlessly tight. The increase from 10 pause quanta to 20 pause quanta falls short of what is needed. A delay constraint of 32 pause quanta will allow a broader range of implementations, without causing any harm.

The primary value of the delay constraint is to bound the reaction time to a received PAUSE frame. Bounding the delay helps limit the size of receive buffers. An unbounded delay would result in an unbounded buffer size. However, the biggest component of the delay is the round trip propagation delay of the link. The round trip propagation delay of a 10 km optical link at 40G dwarfs the 40G component delay constraints in table 81-1.

SuggestedRemedy

increase the MAC Control/MAC/RS delay constraint for 40G to 32 pause quanta.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Howard will give a short presentation to justify this change.

CI 81 SC 81.2.3 P146 L16 # 300
 D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

unnecessary wording

The data <data> in a well-formed frame shall consist of a set of data octets.

SuggestedRemedy

change to

The data <data> in a frame shall consist of a set of data octets.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 81 SC 81.3.1.2 P147 L9 # 7
 Marris, Arthur Cadence

Comment Type E Comment Status D

grammar

SuggestedRemedy

Change "a XLGMII" to "an XLGMII"

also on page 150 line 34

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 81 SC 81.3.1.3 P147 L53 # 401
 Law, David 3Com

Comment Type T Comment Status D

In table 81-3 above TXC = 1 and TXD = 0xFE is described as 'Transmit error propagation' yet on this line it is called 'Error control characters'.

SuggestedRemedy

Suggest that '.. or Error control characters.' be changed to read '.. or Transmit error propagation characters.'

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change table 81-3

From

"Transmit error propagation"

To

"Error"

This makes it consistent with line 53.

Cl 81 SC 81.3.1.3 P148 L4 # 400
Law, David 3Com

Comment Type T Comment Status D

I'm sure I remember as similar discussion during 10Gb/s - but why when we say that the both TXC<7:0> (page 147, line 8) and TXD<63:0> are 'shall transition synchronously with respect to the rising edge of TX_CLK.' why in Figure 81-5 are they shown to transition synchronously with respect to the falling edge of TX_CLK. Is this showing the clock to output delay - but should it be shown as exactly half a clock cycle.

SuggestedRemedy

Change if thought necessary.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Shift transitions in figures 81-5, 81-6, 81-7 and 81-8, closer to the rising edge.

Cl 81 SC 81.3.2.3 P152 L49 # 402
Law, David 3Com

Comment Type T Comment Status D

In table 81-4 above RXC = 1 and TXD = 0xFE is described as 'Receive error' yet on this line it is called 'Error control character'.

SuggestedRemedy

Suggest that '.. or Error control characters.' be changed to read '.. or Receive error characters.'

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change the entry in table 81-4:

from:

"Receive error"

to:

"Error"

This makes it consistent with line 49, and makes it consistent with Table 81-3 also.

Cl 81 SC 81.3.3.3 P154 L10 # 403
Law, David 3Com

Comment Type T Comment Status D

The text '.. preserve the column alignment of the transmitting RS ..' is the first use of the term column in the draft. I don't see column defined in the definitions of the base IEEE Std 802.3-2008 or being added by this draft.

To add to the confusion is its use in Table 81-5 where it is stated that 'Values in Lane 1-7 columns are in hexadecimal ..'. What is defined as a column is actually illustrated in a row in the table.

SuggestedRemedy

Add a definition of column before its use.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:

The PCS is required to either preserve the column alignment of the transmitting RS, or align the Start control character to lane 0. The RS shall not indicate DATA_VALID to the MAC for a Start control character received on any other lane. Error free operation will not change the SFD alignment in lane 7. A MAC/RS implementation is not required to process a packet that has an SFD in a position other than lane 7 of the column containing the Start control character.

To:

The PCS is required to either preserve the column alignment of the transmitting RS, or align the Start control character to lane 0. The RS shall not indicate DATA_VALID to the MAC for a Start control character received on any other lane. Error free operation will not change the SFD alignment in lane 7. A MAC/RS implementation is not required to process a packet that has an SFD in a position other than lane 7 XLGMII/CGMII transfer containing the Start control character.

In table 81-5

Change:

NOTE-Values in Lane 1-7 columns are in hexadecimal, most significant bit to least significant bit (i.e., <7:0>).

To:

NOTE-Values are in hexadecimal, most significant bit to least significant bit (i.e., <7:0>).

Add the following after the first paragraph of 81.3.4:

Clause 46 uses the term column when describing data transfer on the XGMII. The eight lanes of data and control transferred per clock cycle on XLGMII/CGMII are equivalent to a column in the following description of link fault signaling.

Cl 81 SC 81.3.4 P154 L21 # 404
Law, David 3Com

Comment Type T Comment Status D

To totally avoid any little endian vs big endian confusion suggest that 'upper four bytes' be changed to read 'lane 4 to 7'.

SuggestedRemedy

See comment.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 81 SC 81.4.3.2 P158 L49 # 409
Estes, Dave UNH - IOL

Comment Type E Comment Status D

Typos

SuggestedRemedy

Change "Mapping RXD to PLS_DATA.incipates" to "Mapping RXD to PLS_DATA.indications" and "Create PLS_DATA.increments" to "Create PLS_DATA.indications".

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 81 SC 81.4.3.4 P160 L29 # 410
Estes, Dave UNH - IOL

Comment Type T Comment Status D

The transition between clock sources is not specified

SuggestedRemedy

Remove the PICS statement for the transition between clock sources

Proposed Response Response Status W

PROPOSED ACCEPT.

This was originally classified as E, changed it to T.

Cl 82 SC P L # 31
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

45.2.3.12.4 Errored blocks (3.33.7:0) says that the errored blocks counter is according to 49.2.14.2, but that's information not specification. Neither 82 nor the rest of 49.2 refer to 49.2.14.

SuggestedRemedy

If the counter definitions in 49.2.14.2 Counters are needed, refer to them somehow from 82, or copy them.

The same issue may apply to the test-pattern error counter.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Add in the following to the counter definitions on page 183:

errored_block_count:

8-bit counter. When the receiver is in normal mode, errored_block_count counts once for each time RX_E state is entered. This counter is reflected in MDIO register bits 3.33.7:0.

Also add:

test_pattern_error_count:

16-bit counter. When the receiver is in test-pattern mode, the test_pattern_error_count counts errors as described in 82.2.18. This counter is reflected in MDIO register bits 3.43.15:0.

Cl 82 SC P L # 32
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

We now have two error counting mechanisms that can be used on 64B/66B-like signals: errored blocks and BIP errors. For isolated errors at error rates of interest, they will give near-identical results. If burst errors are involved, the errored block counter will typically count 1 per burst while the BIP error counters will typically count the number of errors in the burst.

It would be useful to be clearer which is meant by BER. As MTTFFPA is so important and burst errors are a threat to it, BIP counting seems preferable. Also, it is preferable to be able to count errors the same way with live traffic as with the normative scrambled idle test pattern.

SuggestedRemedy

Say that BER for 64B/66B signals is defined by BIP error counting. Consider removing (for 40G/100G) or making optional the block error counter mechanism and the errored blocks counters.

Do we want a counter of BIP errors summed across the lanes?

Proposed Response Response Status W

PROPOSED REJECT.

The BIP error counting could be used for driving the high BER SM, but currently block errors are. A complete proposal needs to be made to change to BIP vs. sync errors. A new state machine would need to be designed.

Cl 82 SC 82.1.1 P163 L10 # 405
Law, David 3Com

Comment Type T Comment Status D

I believe that the PCS is sublayer of the Physical layer - see Figure 82-1.

SuggestedRemedy

Suggest that 'The 40GBASE-R PCS can connect to one of the following Physical Layers ..' be changed to read 'The 40GBASE-R is a sublayer of the following Physical Layers ..'.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 82 SC 82.1.1 P163 L14 # 391
Law, David 3Com

Comment Type E Comment Status D

Suggest that '.. defined here.' be changed to read '.. defined in this Clause.'

SuggestedRemedy

See comment.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 82 SC 82.1.2 P163 L17 # 406
Law, David 3Com

Comment Type T Comment Status D

Line 17 states that 'Data striping is introduced to support multiple lanes in the Physical Layer.' yet line 28 states that '.. distribute data to multiple lanes in order to support PMAs and PMDs with multiple lanes.'

Isn't it actually the need to support multiple lanes on the medium - be it multiple fibres, copper links or wavelengths - that drives this.

SuggestedRemedy

Reword the line 17 and 28 to be consistent - and suggest that it should refer to the need for multiple lanes on the medium.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:

"Data striping is introduced to support multiple lanes in the Physical Layer"

to:

"Data striping is introduced to support multiple lanes on the medium"

From:

"In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes in order to support PMAs and PMDs with multiple lanes."

To:

"In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes."

Cl 82 **SC 82.1.2** **P163** **L23** # **392**
 Law, David 3Com

Comment Type **E** **Comment Status** **D**

Suggest that '.. Ethernet MAC and reconciliation layers, ..' should read '.. Ethernet MAC and reconciliation sublayers, ..' as both are sublayers (see Figure 82-1).

SuggestedRemedy
 See comment.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT.

Cl 82 **SC 82.1.4** **P165** **L15** # **296**
 D'Ambrosia, John Force10 Networks

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

The following statement is implementation dependent

"The lower interface of the PCS connects to the PMA sublayer to support a PMD. If the optional FEC sublayer is implemented (see Clause 74), then the lower interface connects to the FEC sublayer."

In the case that an optional FEC sublayer existed, but was connected to the PCS sublayer through a nAUI, then the lower interface of the PCS would still connect to the PMA sublayer.

SuggestedRemedy
 Change noted text above to

"The lower interface of the PCS connects to the PMA sublayer to support a PMD. If the optional FEC sublayer is implemented (see Clause 74) and an optional physical instantiation, i.e. nAUI, is not implemented, then the lower interface connects to the FEC sublayer."

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Change to:

"The lower interface of the PCS connects to the PMA sublayer to support a PMD. If the optional FEC sublayer is implemented (see Clause 74) and an optional physical instantiation, i.e. XLAUI or CAUI, is not implemented directly below the PCS sublayer, then the lower interface connects to the FEC sublayer."

Cl 82 **SC 82.1.4** **P165** **L9** # **8**
 Marris, Arthur Cadence

Comment Type **T** **Comment Status** **D**

There is redundancy in the descriptions of the inter-sublayer interfaces and 82.1.4 reads awkwardly

SuggestedRemedy
 Delete the first paragraph of 82.1.4

Move 82.2.1 to be under 82.1.4 and renumber to 82.1.4.1

Renumber 82.1.5 to 82.1.4.2

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT.

Cl 82 **SC 82.1.5** **P179** **L13** # **270**
 Trowbridge, Stephen Alcatel-Lucent

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

BIP errors should be counted like SDH RS-B1 rather than MS-B1 so that the error count will not be skewed in the case where 40GBASE-R is transported over OTN with transcoding and bit errors in the sync header or control block types cause replacement of an entire 66B block with an error control block. A supporting presentation will be provided. This falls under the OTN support objective.

SuggestedRemedy
 Replace "... the appropriate BIP error counter register is incremented for each BIP bit in error (registers 3.90 through 3.99)" with
 "... the appropriate BIP error counter register is incremented for each 8-bit BIP value in error (registers 3.90 through 3.99)"

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.
 We need to discuss this change during the task force to get consensus.

Cl 82 **SC 82.2.1** **P165** **L41** # **407**
 Law, David 3Com

Comment Type **T** **Comment Status** **D**

I don't think the PCVS clien can be anything other than the RS.

SuggestedRemedy
 Change the text 'A PCS client is generally the Reconciliation Sublayer.' to red 'The PCS client is the Reconciliation Sublayer.'.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT.

Cl 82 SC 82.2.19.2.1 P181 L15 # 415
Estes, Dave UNH - IOL

Comment Type T Comment Status D
r_block_type can only contain the value returned from R_TYPE

SuggestedRemedy

Create a variable called r_block_type_next that contains the value of R_TYPE_NEXT

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:

r_block_type

This variable contains the rx_coded<65:0> vector classification results, returned by the R_TYPE or R_TYPE_NEXT functions. It can assume one of the following five values {C,S,T,D,E}, as defined by the R_TYPE function.

To:

r_block_type

This variable contains the rx_coded<65:0> vector classification results, returned by the R_TYPE function. It can assume one of the following five values {C,S,T,D,E}, as defined by the R_TYPE function.

Add:

r_block_type_next

This variable contains the rx_coded<65:0> vector classification results, returned by the R_TYPE_NEXT function. It can assume one of the following five values {C,S,T,D,E}, as defined by the R_TYPE_NEXT function.

Change R_TYPE_NEXT function to refer to the new variable.

Cl 82 SC 82.2.19.2.3 P182 L20 # 93
Gustlin, Mark Cisco

Comment Type T Comment Status D

Change:

"The two high order sync bits bypass the scrambler."

To:

The two sync bits bypass the scrambler.

high order does not make sense.

SuggestedRemedy

as above.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 82 SC 82.2.19.2.3 P182 L48 # 412
Estes, Dave UNH - IOL

Comment Type E Comment Status D
Old function definition

SuggestedRemedy

Remove the definition of T_BLOCK_TYPE because it has been replaced with T_TYPE.

Proposed Response Response Status W

PROPOSED ACCEPT.

Should be a T type comment, duplicate of #18.

Cl 82 SC 82.2.19.2.3 P182 L48 # 18
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status D
Function T_BLOCK_TYPE no longer exists.

SuggestedRemedy

Delete T_BLOCK_TYPE.

Proposed Response Response Status W

PROPOSED ACCEPT.

Dupe of #412

Cl 82 SC 82.2.19.2.3 P183 L14 # 413
Estes, Dave UNH - IOL

Comment Type E Comment Status D
"T_TYPE = tx_raw<71:0>" should be "T_TYPE(tx_raw<71:0>)"

SuggestedRemedy

"T_TYPE = tx_raw<71:0>" should be "T_TYPE(tx_raw<71:0>)"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change to:

T_TYPE(tx_raw<71:0>)

Cl 82 **SC 82.2.19.2.4** **P183** **L37** # **19**
Muller, Shimon Sun Microsystems, Inc

Comment Type **E** **Comment Status** **D**
Plural.

SuggestedRemedy
Replace "marker" with "markers".

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 82 **SC 82.2.19.3** **P184** **L36** # **303**
D'Ambrosia, John Force10 Networks

Comment Type **E** **Comment Status** **D**
Transmit state diagram text / reference is prior to the Receive state diagram text, yet the Transmit State Diagram Fig 82-15 is after the Receive State Diagram Fig 82-14.

SuggestedRemedy
Reorder figures so that Transmit State Diagram is before Receive State Diagram

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 82 **SC 82.2.2** **P165** **L54** # **301**
D'Ambrosia, John Force10 Networks

Comment Type **E** **Comment Status** **D**
Should be definitive as to who many streams for each rate

When communicating with the PMA, the PCS uses multiple serial streams, either 4 or 20 encoded bit streams depending on the PCS6.

Furthermore, this is a general issue throughout clause 82, where references are made to 4 "x" or 20 "x", but not in relation to the speed being run.

SuggestedRemedy
change wording to

When communicating with the PMA, the PCS uses multiple serial streams, 4 encoded bit streams for 40GBASE-R or 20 encoded bit streams for 100GBASE-R.

Clarify which rate a given thing relates to throughout clause 82

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 82 **SC 82.2.2** **P166** **L31** # **94**
Gustlin, Mark Cisco

Comment Type **T** **Comment Status** **D**
Since the PCS can connect directly to a PMA or FEC sublayer, change all "PMA:IS_" to "inst:IS_" with inst in italics (this matches what we have in clause 83). Also add a note to the last paragraph on page 166 that the inst can be replaced with PMA or FEC.

Where is says "PMA service interface" Change to "service interface".

Change figure 82-2's bottom block to read "PMA or FEC sublayer" (just says PMA sublayer now.

Change the title of 82.2.10 from "PMA Interface" to "PMA or FEC Interface"

SuggestedRemedy
as above.

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

Cl 82 **SC 82.2.2** **P166** **L54** # **393**
Law, David 3Com

Comment Type **E** **Comment Status** **D**
This footnote should be just a note.

SuggestedRemedy
Change the text '6These streams originate from a common clock in each direction, but may vary in phase and skew dynamically.' to read 'Note- These streams originate from a common clock in each direction, but may vary in phase and skew dynamically.' placed under paragraph two of subclause 82.2.2.

Proposed Response **Response Status** **W**
PROPOSED ACCEPT.

CI 82 SC 82.2.2 P167 L4 # 250
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type ER Comment Status D

"When the receive channel is in normal mode ..."
 This implies that deskew is not required when the receiver is in test pattern mode, which is not the case.
 The only PCS testpattern is scrambled idles which requires all the synchronization steps listed in this paragraph.

SuggestedRemedy

"When the receive channel is in normal or testpattern mode ..."

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 82 SC 82.2.4.1 P168 L19 # 394
 Law, David 3Com

Comment Type E Comment Status D
 Typo.

SuggestedRemedy

Change '0x1e' to read '0x1E'.

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 Change all hex instances to capitals:
 The one on page 168, line 19, figure 82-5, table 82-1, table 82-2, table 82-3 etc.

CI 82 SC 82.2.4.1 P168 L9 # 9
 Marris, Arthur Cadence

Comment Type TR Comment Status D

/O/ refers to an ordered set not a control character. The control character for an ordered set is either /Q/ or /Fsig/.

Also need to explain Z notation here.

SuggestedRemedy

Change:

"Control characters other than /O/, /S/ and /T/ are labeled C0 to C7. The control character for ordered_set is labeled as O0 since it is only valid on the first octet of the XLGMII/CGMII. The control character for start is labeled as S0 for the same reason. The control character for terminate is labeled as T0 to T7."

To:

"The control characters /I/ and /E/ are labeled C0 to C7. The control characters, /Q/ and /Fsig/, for ordered_sets are labeled as O0 since they are only valid on the first octet of the XLGMII/CGMII. The control character for start is labeled as S0 for the same reason. The control character for terminate is labeled as T0 to T7. The four trailing zero data octets in ordered_sets are labeled as Z4 to Z7."

also delete the sentence "Control codes fixed to all zeros are identified as a Z code." in 82.2.4.4 on page 171 line 46.

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 82 SC 82.2.4.10 P173 L27 # 411
 Estes, Dave UNH - IOL

Comment Type E Comment Status D
 Function names have changed

SuggestedRemedy

Change R_BLOCK_TYPE to R_TYPE and T_BLOCK_TYPE to T_TYPE

Proposed Response Response Status W
 PROPOSED ACCEPT.

CI 82 SC 82.2.4.2 P168 L27 # 417
Estes, Dave UNH - IOL

Comment Type T Comment Status D

There is a PICS but no shall

SuggestedRemedy

Change "Block bit transmission order is illustrated" to "Block bit transmission order shall be as illustrated"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.2.4.3 P168 L42 # 10
Marris, Arthur Cadence

Comment Type T Comment Status D

'Each control block contains eight characters.' Is this really true?

SuggestedRemedy

Preferably delete the sentence:
'Each control block contains eight characters.'

or change to
Each control block encodes eight characters.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change to:
Each control block encodes eight characters.

CI 82 SC 82.2.4.3 P171 L1 # 414
Estes, Dave UNH - IOL

Comment Type T Comment Status D

Unusual values of block type are defined twice.

SuggestedRemedy

Change "All unused values of block type field are reserved" to "All unused values of block type field are invalid" to match the new wording in 82.2.4.5.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.2.4.4 P171 L46 # 11
Marris, Arthur Cadence

Comment Type T Comment Status D

'Control codes fixed to all zeros are identified as a Z code' does not make sense.

SuggestedRemedy

Delete this sentence.

Add explanation of Z in 82.2.4.1 Notation conventions

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.2.4.9 P173 L12 # 12
Marris, Arthur Cadence

Comment Type E Comment Status D

style

SuggestedRemedy

change '4' to 'four'

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.2.4.9 P173 L15 # 13
Marris, Arthur Cadence

Comment Type T Comment Status D

It is confusing to refer to /O/ as a character when it is in fact a set of characters. Also you cannot find /O/ in Table 82-1 which is confusing.

SuggestedRemedy

Change:

"The ordered_set control characters (/O/) indicate the start of an ordered_set. Block type field plus the O code encodes the specific /O/ character for the ordered_set."

To:

"The ordered_set control characters (/Q/ and /Fsig/) indicate the start of an ordered_set. The block type field plus the O code encode the specific control character for the ordered_set."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.2.8 P174 L27 # 418
Estes, Dave UNH - IOL

Comment Type T Comment Status D

There isn't a shall or PICS associated with alignment markers

SuggestedRemedy

Add a shall statement and a PICS statement for the insertion of alignment markers.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:

"The alignment markers are inserted after every 16383 66-bit blocks on each PCS lane"

To:

"The alignment markers shall be inserted after every 16383 66-bit blocks on each PCS lane"

And add appropriate PICS.

Change from:

"The content of the alignment markers is shown in Table 82-2 for 100GBASE-R and in Table 82-3 for 40GBASE-R."

To:

"The content of the alignment markers shall be as shown in Table 82-2 for 100GBASE-R and in Table 82-3 for 40GBASE-R."

And add appropriate PICS

CI 82 SC 82.2.9 P177 L6 # 30
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

Style guide says to avoid "will" (although I think we use it in a particular formula of words in Clause 30), and this use in an example may be fine.

SuggestedRemedy

Check style guide. Can change "will contain" to "contains".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change to "contains"

CI 82 SC 82.4 P186 L42 # 25
Anslow, Peter Nortel Networks

Comment Type TR Comment Status D

This text was changed in Draft 2.1 from "In addition, the PCS shall transmit" to "In addition, the PCS may transmit".

This means that the behaviour of the PCS in loopback is poorly defined as we cannot be sure what data is passed to the layers below. If the implementer were to choose all zeros or all ones, then it is not clear how an optical PMD would behave. It might emit CW light or possibly shut down.

This may cause issues to the link as the far end receiver may just see noise and would almost certainly cause alarms. If the intent was to remove the shall, then the Suggested remedy below achieves this.

SuggestedRemedy

Change "In addition, the PCS may transmit what it receives from" to "In addition, the PCS transmits what it receives from"

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 82 SC 82.5 P188 L41 # 302
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

Note in Figures 82-10, 82-11,

Note - block_lock<x> refers to the received PCS lane x, where x = 0:3 or 0:19

SuggestedRemedy

Modify note

Note - block_lock<x> refers to the received PCS lane x, where x = 0:3 (for 40GBASE-R) or 0:19 (for 100GBASE-R).

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 82 SC 82.7 P194 L1 # 416
Estes, Dave UNH - IOL

Comment Type T Comment Status D

PICS are needed for several shalls

SuggestedRemedy

PICS are needed for the following shalls:

82.2.4.3 page 171 line 1 (2 shall statements)

82.2.4.4 page 172 line 1 (2 shall statements)

82.2.4.6 page 172 line 19 (Idles shall not be added during data)

82.2.19.2.3 AM_SLIP, DECODE, ENCODE, and SLIP contain shall statments

82.2.19.3 No PICS statement for Figure 82-12 PCS deskew state diagram

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Review all of these shalls and agree that PICS are required in the TF.

Cl 82 SC 82.7.4.1 P195 L34 # 95
Gustlin, Mark Cisco

Comment Type T Comment Status D

PICS C4 no longer makes sense, this was left over from 10G.

SuggestedRemedy

Delete PICS C4. Clause 81 states that the minimum IPG for the RS can be as low as one byte (just a /T/) so all of the Idle can be deleted.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 82 SC 82.7.6.1 P197 L6 # 381
Ganga, Ilango Intel

Comment Type TR Comment Status D

The PICS for state machines should include separate line items for 40GBASE-R and 100GBASE-R to match the requirements of 82.2.19.3. Where there is difference in requirements for 40GBASE-R and 100GBASE-R then these should be captured as separate line items in 82.2.19.3 and in PICS.

Also the PCS deskew process requirements depicted in figure 82-12 is a requirement for 40GBASE-R and 100GBASE-R. So change line 25 to shall statment(s) to capture this requirement and add a corresponding PICS.

The BER process requirements are different for 40GBASE-R and 100GBASE-R. Change line 31 to "shall" statements to capture this requirement (500us window and 1.25ms window).

PCS_R_Status (page 197, line 18) appears to be a carry over from Clause 49. This signal is not used in Clause 82. So delete this PICS SM6.

SuggestedRemedy

Change PICS as follows:

Item: Feature Value/Comment

SM1: 40GBASE-R PCS lane lock. Implements 4 PCS lane lock process as depicted in Figure 82-10

SM2: 100GBASE-R PCS lane lock. Implements 20 PCS lane lock process as depicted in Figure 82-10

SM3: 40GBASE-R PCS alignment marker lock Implements 4 alignment marker lock process as depicted in Figure 82-11

SM4: 100GBASE-R PCS alignment marker lock Implements 20 alignment marker lock as depicted in Figure 82-11

SM5: 40GBASE-R and 100GBASE-R PCS deskew. Meets the requirements of Figure 82-12

Also change 82.2.19.3 line 25 to include "shall" to capture the deskew requirement.

SM6: 40GBASE-R BER monitor. Meets the requirement of Fig 82-12 with xus_timer_done equals 1.25ms

SM7: 40GBASE-R BER monitor. Meets the requirement of Fig 82-12 with xus_timer_done equals 500us.

Also change 82.2.19.3 line 31 to include shall statements to capture the difference in xus_timer requirement for 40GBASE-R and 100GBASE-R

Change/renumber Transmit and Receive PICS as follows

SM8 40GBASE-R and 100GBASE-R Transmit process

SM9 40GBASE-R and 100GBASE-R Receive process

Delete PCS_R_Status from 82.7.6.1 (SM6) as this is not defined or used in Clause 82.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl 83 **SC 83.1.1** **P199** **L 12** # 379
Ganga, Ilango Intel

Comment Type **T** *Comment Status* **D**

Avoid listing of PMDs in the PMA clause that will create a maitenance issue in future. So rephrase sentence as suggested.

SuggestedRemedy

The 40GBASE-R PMA(s) can support any of the 40 Gb/s PMD as specified in Table 80-1. The 100GBASE-R PMA(s) can support any of the 100 Gb/s PMDs as specified in Table 80-1.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Replace
"The 40GBASE-R PMA(s) can support any of the following PMDs: 40GBASE-SR4, 40GBASELR4, 40GBASE-CR4, or 40GBASE-KR4. The 100GBASE-R PMA(s) can support any of the following PMDs: 100GBASE-SR10, 100GBASE-LR4, 100GBASE-ER4, or 100GBASE-CR10."

"The 40GBASE-R PMA(s) can support any of the 40 Gb/s PMDs listed in Table 80-1. The 100GBASE-R PMA(s) can support any of the 100 Gb/s PMDs listed in Table 80-1.

Cl 83 **SC 83.1.1** **P199** **L 22** # 380
Ganga, Ilango Intel

Comment Type **T** *Comment Status* **D**

Change physical description of PMD service interface to include XLPPI/CPPI as suggested

SuggestedRemedy

The physical instantiation of the PMD service interfaces for 40GBASE-SR4 and 100GBASE-SR10 PMDs, known as XLPPI/CPPI, are defined in Annex 86A. The PMD service interfaces for other PMDs are defined abstractly.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl 83 **SC 83.1.2** **P199** **L 32** # 362
Ganga, Ilango Intel

Comment Type **E** *Comment Status* **D**
Rephrase sentence for better readability

SuggestedRemedy

The purpose of the PMA is to adapt the PCS Lanes (PCSL) to an appropriate number of abstract or physical lanes and to optionally provide test signals and loopback.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Replace "The electrical PMD service interfaces for 40GBASE-SR4 and 100GBASE-SR10 PMDs are defined in Annex 86A." with "The purpose of the PMA is to adapt the PCS Lanes (PCSLs) to an appropriate number of abstract or physical lanes and to optionally provide test signals and loopback."

Cl 83 **SC 83.1.3** **P200** **L 25** # 363
Ganga, Ilango Intel

Comment Type **E** *Comment Status* **D**
Description for CGMII overlaps that of PMA. Create more space between the two columns.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

CI 83 SC 83.1.4 P200 L44 # 285
Ofelt, David Juniper Networks

Comment Type TR Comment Status D

The text in section 83.1.4 reads:

"Each PMA remaps the PCSLs from m PMA input lanes to n PMA output lanes in the Tx direction, and from n PMA input lanes to m PMA output lanes in the Rx direction."

Later in the clause, the PMA bit muxes are described as having "m input lanes" and "n output lanes" and the mux is used in both the TX and RX directions.

Then, even later in the clause, figure 83.5 uses "p" to refer to the number of lanes on the side of the PMA closest to the MAC and "q" to refer to the number of lanes closest to the PMD.

The use of "m" and "n" in 83.1.4 seems inconsistent since it implies that "m" and "n" exist on specific sides of the PMA, where in our current scheme, they are always the inputs and outputs of a direction agnostic bit mux.

SuggestedRemedy

Change 83.1.4 to read:

Each PMA remaps the PCSLs from p PMA input lanes to q PMA output lanes in the TX direction and from q PMA input lanes to p PMA output lanes in the RX direction.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.1.4 P200 L46 # 364
Ganga, Ilango Intel

Comment Type E Comment Status D

Line 46: double period, delete one.

Line 50: capitalization: change clause 45 to Clause 45

Line 53: add missing cross-reference link to Figure 83-2

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.1.4 P201 L44 # 376
Ganga, Ilango Intel

Comment Type ER Comment Status D

The generic interface is now called inter-sublayer service interface defined in 80.3, so rephrase as suggested

SuggestedRemedy

Rephrase item (a) as follows:

a) The inter-sublayer service interface defined in 80.3, is used for the PMA, FEC and PMD service interfaces supporting a flexible architecture with optional FEC and multiple PMA sublayers

Rephrase item (c) as follows

c)The abstract inter-sublayer service interface can be physically instantiated as a XLAUI or CAUI, using associated PMAs to map to the appropriate number of lanes.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.1.4 P201 L53 # 284
Ofelt, David Juniper Networks

Comment Type TR Comment Status D

The lane speeds for XLAUI and CAUI are referred to as 10 Gb/s, but this is inconsistent with the description in 83A.1.1 where the nAUI lanes are described as being 10.3125Gb/s.

SuggestedRemedy

Assuming that the Annex describes the speeds correctly, change the text from:

2) XLAUI is a 10 Gb/s by 4 lane physical instantiation of the respective 40 Gb/s connection
3) CAUI is a 10 Gb/s by 10 lane physical instantiation of the respective 100 Gb/s connection

To:

2) XLAUI is a 10.3125 Gb/s by 4 lane physical instantiation of the respective 40 Gb/s connection
3) CAUI is a 10.3125 Gb/s by 10 lane physical instantiation of the respective 100 Gb/s connection

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl **83** *SC* **83.2** *P***202** *L***33** # **20**
Muller, Shimon Sun Microsystems, Inc

Comment Type **E** *Comment Status* **D**
Style.

SuggestedRemedy

"See 83.5.2 for more details Figure 83-4."
with
"For more details see 83.5.2 and Figure 83-4."

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.
Overtaken by comment 366

Cl **83** *SC* **83.2** *P***202** *L***33** # **366**
Ganga, Ilango Intel

Comment Type **E** *Comment Status* **D**
Sentence fragment. Rephrase as suggested

SuggestedRemedy

See 83.5.2 and Figure 83-4 for details.

Also add missing cross-reference to 83.5.2

Also rephrase line 35 as follows:
Figure 83-5 provides the functional block diagram of a PMA.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **83** *SC* **83.3** *P***204** *L***43** # **377**
Ganga, Ilango Intel

Comment Type **ER** *Comment Status* **D**

Add a sentence to indicate SIGNAL_OK parameter can take a value of OK or FAIL. Also specify the condition when this parameter takes a value of OK and under what condition this parameter takes a value of FAIL. (alternatively define this condition in 83.5.7 Link Status subclause and refer to it in 83.3).

Indicate the validity of the PMA:IS_UNIDATA_x.indication when the PMA:IS_SIGNAL.indication primitive indicates FAIL in 83.3.

SuggestedRemedy
As per comment

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Replace
"When these conditions are met,
PMA:IS_SIGNAL.indication (SIGNAL_OK) is sent to the PMA client." with
"When these conditions are met,
the SIGNAL_OK parameter sent to the PMA client via the PMA:IS_SIGNAL.indication primitive will have the value OK. Otherwise, the SIGNAL_OK parameter will have the value FAIL."

Cl **83** *SC* **83.4** *P***205** *L***2** # **365**
Ganga, Ilango Intel

Comment Type **E** *Comment Status* **D**
Typo: change "promitives" to "primitives"

SuggestedRemedy
As per comment

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

CI 83 SC 83.5.10 P210 L51 # 252
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type TR Comment Status D

PMA test patterns (optional)

PRBS31 generation and checking in the 100GBASE-LR4/ER4 PMA is a requirement to allow implementation of the 100GBASE-LR4/ER4 optical tests using standard (BERT) test equipment.

SuggestedRemedy

Reword as PRBS31 generation and checking is mandatory for 100GBASE-LR4/ER4 PMAs

Proposed Response Response Status W

PROPOSED REJECT.

It has been confirmed through several meeting cycles that test patterns are optional, adding further clarification of this in sub-clause headers, PICS, etc.

CI 83 SC 83.5.10 P211 L13 # 33
 Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

The PMA receive side PRBS31 checker would be much more useful if it could check a signal that had been through a gearbox, e.g. when testing whole modules or whole gearbox ICs. This is more of a concern for 100G than for 40G.

Also it is desirable to do the same test with the same pattern in module factory, and in host factory, and in service. See daw_01_0509.pdf and subsequent work.

Note that the change of words below makes no difference to the high speed silicon of e.g. a 40G serial PMA or a 10-lane PMA pattern generator because a PRBS31 when 2-way 4-way bit-demuxed is four PRBS31s (with offsets >31 UI).

So far the analysis shows that interleaved PRBS31s have similar characteristics to single PRBS31s.

SuggestedRemedy

Change

"on each of the lanes" to "on each of the PCS lanes" here and at line 19.

Change "one lane and any other lane" to "one PCS lane and any other PCS lane"

In the paragraphs beginning line 25 and line 34, change "lane" or "lanes" to "PCS lane" or "PCS lanes".

Delete "Note that bit multiplexing of per-lane PRBS31 may produce a signal which is not meaningful for downstream sublayers."

Provide 20 PRBS31 error counters in each direction, one per PCS lane.

Proposed Response Response Status W

PROPOSED REJECT.

This comment was not accepted based on daw_01_0509. This may be reconsidered if the task force is persuaded by subsequent work.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
 COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
 SORT ORDER: Clause, Subclause, page, line

CI 83 SC 83.5.10 P211 L27 # 253
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type TR Comment Status D

There is no limit to the potential increment rate of the PRBS31 checker referenced in 49.2.12.

The checker implementation is difficult to match at high increment rates or in the presence of burst errors (the source synchronous descrambler implementation error multiplication factor depends on burst pattern).

For most practical purposes stringent matching of the 49.2.12 implementation is not necessary. It would be sufficient to match the result of a 49.2.12 implementation only for isolated single bit errors and at errors rates better than 1 in a thousand.

SuggestedRemedy

Replace:
 (see 49.2.12)

With:

The PRBS31 checker shall match the results of the checker implementation in 49.1.12 for isolated single bit errors and at errors rates better than 1 in a thousand.

Proposed Response Response Status W

PROPOSED REJECT.

While it is arguable that the existing PRBS31 checker is not ideal, it has stood the test of time for 10G interfaces and it is not compelling to diverge from this for 40/100GBASE-R

CI 83 SC 83.5.10 P211 L31 # 34
 Dawe, Piers Avago Technologies

Comment Type T Comment Status D

The maximum error count rate for PRBS31 error counting appears not to be specified. It would be too power-hungry to try to count every error.

SuggestedRemedy

Define a BER above which the reported count rate may saturate, in the range 10^{-6} to 10^{-3} , for both check Tx PRBS31 and check Rx PRBS31.

Proposed Response Response Status W

PROPOSED REJECT.

There is no such specification in 49.2.12 for 10G, and it does not seem compelling to diverge in the spec for 40/100G. Such limitations would seem to be implementation dependent.

CI 83 SC 83.5.2 P206 L22 # 378
Ganga, Ilango Intel

Comment Type ER Comment Status D

The following requirement is specified in 83.5.2 without a "shall" statement.

The only requirement is that from the time the link is brought up, each PCSL from an input lane is mapped to a particular output lane, and the input lane to output lane mapping of PCSLs is maintained.

SuggestedRemedy

Add a "shall" to indicate this requirement and add a corresponding PICS.

"each PCSL from an input lane shall be mapped....shall be maintained"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Replace "The only requirement is that from the time the link is brought up, each PCSL from an input lane is mapped to a particular output lane, and the input lane to output lane mapping of PCSLs is maintained." with "From the time the link is brought up, the mapping of each PCSL from an input lane to a particular output lane shall be maintained." Add new "LANE_MAPPING" PICS to 83.7.3 table with reference to 83.5.2, mandatory.

CI 83 SC 83.5.2 P206 L6 # 367
Ganga, Ilango Intel

Comment Type E Comment Status D

To be consistent change "nominal rate R" to "nominal signaling rate R" in two instances (line 6 and line 8).

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.5.4 P209 L22 # 368
Ganga, Ilango Intel

Comment Type E Comment Status D

Typo in Table 83-1 last column title : Maximum(ns)

Also in the corresponding PICS on page 217 line 19: add space between 4096 BT and 9216 BT

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.5.6 P210 L3 # 369
Ganga, Ilango Intel

Comment Type E Comment Status D

The PMD service interface described is specific to 40GBASE-SR4 and 100GBASE-SR10, so rephrase as suggested

SuggestedRemedy

86.2 specifies the PMD service interface for 40GBASE-SR4 and 100GBASE-SR10 PMDs. Annex 86A specifies the Parallel Physical Interface (XLPI and CPPI), the physical instantiation of the PMD service interface for 40GBASE-SR4 and 100GBASE-SR10.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.5.7 P210 L8 # 383
Ganga, Ilango Intel

Comment Type TR Comment Status D

Include a "shall" statement to capture the PMA link status requirements in 83.5.7. Also add a corresponding PICS to 83.7.3 to capture this requirement

SuggestedRemedy

Change 83.5.7 line 8 as follows:

The PMA shall provide link status information to the PMA client using the PMA:IS_SIGNAL.indication primitive

Insert the following PICS to 83.7.3

Item	Feature	Subclause	Value/Comment	Status	Support
LNKS	PMA link status	83.5.7	Meets the requirements of 83.5.7	M	Y/N

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 83 SC 83.5.7 P210 L8 # 320
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

Link Status does not have a corresponding SHALL statement or PIC.

SuggestedRemedy

modify sentence

The PMA provides link status information to the PMA client using the PMA:IS_SIGNAL.indication primitive.

to

The PMA shall provide link status information to the PMA client, as described in this subclause (83.5.7), using the PMA:IS_SIGNAL.indication primitive.

Add PIC

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Dup 383.

CI 83 SC 83.6. P212 L17 # 384
 Ganga, Ilango Intel

Comment Type TR Comment Status D

The PMA control variables should be defined in Clause 83. If MDIO is implemented then these PMA control variables shall map to the MDIO control variables as shown in Tables 83-2 and 83-3. Since MDIO is optional the control and status variables should still be defined in PMA clause that will be used to control and monitor the status of the PMA sublayer. Also the error counters should be defined in Clause 83 that will map to the MDIO registers. See Clause 74 in the base document as reference for defining counters/variables.

Modify the corresponding subclauses to define these variables.

Add PICS as appropriate. See 74.11.4 as an example for implementing management PCIS.

SuggestedRemedy

Define control/status variables and add to last column of Table 83-2 as follows. Also define these variables in appropriate subclauses where these functions are described:

Remote_loopback_enable; Add to Table 83-2 and describe this variable in last paragraph of 83.5.9

Local_loopback_enable; Add to Table 83-2 and describe this variable in last paragraph of 83.5.8

PRBS31_enable; Add to Table 83-2

PRBS9_enable; Add to Table 83-2

Tx_PRBS_gen_enable; Add to Table 83-2

Tx_PRBS_checker_enable; Add to Table 83-2

Square_wav_enable_0 to Square_wav_enable_9; Add to Table 83-2

Change description in 83.5.10 to include the above control variables instead of directly writing to the register bits. Since implementing MDIO is optional, the operation should be described without dependency to these MDIO register bits.

Add the following variables to Table 83-3. Define the variables in corresponding subclauses where the function is described.

Remote_loopback_ability;
 Local_loopback_ability;
 PRBS_pattern_ability;
 PRBS31_pattern_ability;
 PRBS9_pattern_ability;
 PRBS_Tx_gen_ability;
 PRBS_Tx_checker_ability;
 PRBS_Rx_gen_ability;
 PRBS_Rx_checker_ability;
 Square_wav_ability

The error counters are now combined in status variable mapping. Instead move these counters to a separate table 83-4 as follows:
Table 83-4 MDIO/PMA counters mapping

Define the following error counters in 83.5.10 and add to Table 83-4
Ln0_PRBS_Tx_pattern_test_err_counter to Ln9_PRBS_Tx_pattern_test_err_counter;
Ln0_PRBS_Rx_pattern_test_err_counter to Ln9_PRBS_Rx_pattern_test_err_counter;

These variables and counters need to be implemented in PMA sublayer even if MDIO is not implemented, so add corresponding management PICS to Clause 83

Add subclause 83.7.7 Management
Add PICS corresponding to the above management variables/counters

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Editorial license to craft appropriate text to define PMA registers

Cl **83** *SC* **83.7.3** *P* **216** *L* **39** # **382**
Ganga, Ilango Intel

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

There should be separate PICS to capture the local and remote loopback requirements in 83.5.8 and 83.5.9.

Also the PICS in 83.7.6 that captures the optional requirements should be updated accordingly.

SuggestedRemedy

Change 83.7.3 LB as follows:

Item	Feature	Subclause	Value/Comment	Status	Support
*LBL	PMA local loopback	83.5.8	Supports local loopback	O	Yes/No/NA
*LBR	PMA Remote loopback	83.8.9	Supports remote loopback	O	Yes/No/NA

Change 83.7.6 LB1 and LB2 as follows:

LB1	PMA local loopback implemented	83.5.8	Meets the requirements of 83.5.8
LBL:M	Yes/No		
LB2	PMA remote loopback implemented	83.5.9	Meets the requirements of 83.5.9
LBR:M	Yes/No		

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **83A** *SC* *P* *L* # **324**
D'Ambrosia, John Force10 Networks

Comment Type **ER** *Comment Status* **D**

Equations in 83A are handled in an inconsistent manner. In some cases the equations specify the limit lines (see Equation 83A-1 for example), while in other cases the equations state what the parameter needs to meet (see 83A-6).

This is also done in Annex 83B.

SuggestedRemedy

Use one consistent form for an equation

parameter <=> limit (name) = equation

Draft should refrain from using specific 4 port s-parameter names. n-Port s-parameters are becoming more common. Presentation given in May did not focus on port numbers, just the different types of modes, i.e. differential, common-mode, differential to common-mode, and common-mode to differential.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Change Equation 83A-1, 83A-2 to use <= sign to describe limit.

Commenter is encouraged to provide additional input on naming convention which should be followed throughout the draft

Cl **83A** *SC* *P* *L* # **319**
D'Ambrosia, John Force10 Networks

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

All parameters listed in Table 83A-1 are normative and have a corresponding "SHALL" statement in the text following the table except "Maximum Termination Mismatch at 1MHz"

SuggestedRemedy

Add following sentence to end of paragraph at 83A.3.3.3

The maximum termination mismatch at 1 MHz shall be less than the requirement defined in Table 83A-1.

Proposed Response *Response Status* **W**
PROPOSED ACCEPT.

Cl **83A** SC **83A.1** P**365** L**12** # **152**
 Petrilla, John Avago Technologies

Comment Type **E** Comment Status **D**

It would be helpful to begin the overview with a statement that using nAUI is optional. This also occurs in 83B, See Annex 86A for reference.

SuggestedRemedy

Add as the first sentence to the overview, "The XLAUI/CAUI interfaces are optional instantiations of the interface between PMA sublayer of Clause 83." Repeat with appropriate adjustment for 83B.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Optional is currently stated in the first sentence for both 83A and 83B:

This annex defines the functional and electrical characteristics for the optional 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s Attachment Unit Interface (CAUI).

This annex defines the functional and electrical characteristics for the optional chip-to-module 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s Attachment Unit Interface (CAUI).

Cl **83A** SC **83A.1** P**365** L**18** # **310**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**

no reason to separate the PMA and PMD sublayers and call out the PMD Service Interface.

SuggestedRemedy

For 1 - redraw figures with the PMA and PMD sublayers against each other as done in other diagrams.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Modify figure 83A-1

Cl **83A** SC **83A.1.2** P**366** L**29** # **311**
 D'Ambrosia, John Force10 Networks

Comment Type **E** Comment Status **D**

the text for this subclause is written in a tone similar to XAUI which was part of the XGXS sublayer. nAUI is not an extension to the MII, and therefore the relation back to the MII could be misleading.

SuggestedRemedy

Rewrite paragraph as follows -

The XLAUI interface supports the 40 Gb/s data rate and the CAUI interface supports the 100 Gb/s data rate. For 40 Gb/s applications, the data stream is presented in four lanes as described in Clause 83. For 100 Gb/s applications, it is presented in ten lanes as described in Clause 83. The data is 64B/66B coded, resulting in a nominal rate of 10.3125 Gb/s for each lane in both 40 Gb/s and 100 Gb/s applications.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl **83A** SC **83A.2.1** P**367** L**22** # **153**
 Petrilla, John Avago Technologies

Comment Type **E** Comment Status **D**

The text refers to a transmit pin but the drawing, Fig 83A-2, uses the term Transmitter. It's also unlikely that pins are used in actual packages. This also occurs with the Rx text in 83A.2.2.

SuggestedRemedy

Make the terms consistent between Figure 83A-2 and the text in 83A.2.1 and 83A.2.2. Change pin to contact.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

change 83A.2.1 to:

...between the Transmitter and the Transmit Compliance Point shall be

change 83A.3.1

...between the Receiver and the Receive Compliance Point shall be less than CPILmax

CI **83A** SC **83A.2.1** P**367** L**49** # **154**
 Petrilla, John Avago Technologies

Comment Type **ER** Comment Status **D**

Figure 83A-3 is titled, "Insertion loss between Transmit Compliance Point and Transmit Compliance Pin|". The | at the end is likely inadvertent. Is compliance defined for the pins (preferably contacts)? If not they should not be called compliance pins. This also occurs in 83A.2.2 for the Rx

SuggestedRemedy

For Figure 83A-3 change "Insertion loss between Transmit Compliance Point and Transmit Compliance Pin|" to "Insertion loss between Transmit Compliance Point and Transmitter Contact" and for Figure 83A-4 change "Insertion loss between Receive Compliance Point and Receive Compliance Pin" to "Insertion loss between Receive Compliance Point and Receiver Contact" In the text change 'transmit pin' to 'transmitter contact' and 'receive pin' to 'receiver contact'.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change Figure 83A-3 title to:

Insertion loss between Transmit Compliance Point and Transmitter

Change Figure 83A-4 title to:

Insertion loss between Receive Compliance Point and Receiver

CI **83A** SC **83A.3.3** P**369** L**16** # **155**
 Petrilla, John Avago Technologies

Comment Type **ER** Comment Status **D**

In table 83A-1, the parameter name 'Single-ended output voltage range' should be 'Single-ended output voltage'.

SuggestedRemedy

In table 83A-1, change the parameter name from 'Single-ended output voltage range' to 'Single-ended output voltage'.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Change table 83A-1:

Single-ended output voltage range
to
Single-ended output voltage

CI **83A** SC **83A.3.3** P**369** L**30** # **321**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**

The following table entries in Table 83A-1 do not match their respective subclause headings
 Differential Output S-parameter > 83A.3.3.3 Differential output return loss
 Common Mode Output S-parameter > 83A.3.3.4 Common mode output return loss

SuggestedRemedy

change table entry "Differential Output S-parameter" to "Differential output return loss"

change table entry "Common Mode Output S-parameter" to "Common mode output return loss"

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change Table 83A-1:

change table entry "Differential Output S-parameter" to "Differential output return loss"

change table entry "Common Mode Output S-parameter" to "Common mode output return loss"

CI **83A** SC **83A.3.3** P**369** L**36** # **156**
 Petrilla, John Avago Technologies

Comment Type **E** Comment Status **D**

In Table 83A-1, the parameters named, 'Transmitter eye mask definition' seem better named 'Transmitter eye mask coordinate'. This also occurs in Table 83A-2

SuggestedRemedy

In Table 83A-1, change the parameters names from, 'Transmitter eye mask definition' to 'Transmitter eye mask coordinate'. Repeat in table 83A-2.

Proposed Response Response Status **W**

PROPOSED REJECT.

Transmitter eye mask definition is consistent with other clauses (52, 86, 87, 88)

Cl **83A** SC **83A.3.3** P**371** L**23** # **172**
 Ghiasi, Ali Broadcom

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

Maximum rise and fall time

SuggestedRemedy

Should be min rise and fall time

Proposed Response Response Status **W**

PROPOSED REJECT.

Minimum rise / fall time and maximum rise / fall time appears to be referenced correctly. See below for reference.

Minimum Output Rise and Fall time (20% to 80%) 24 ps

83A.3.3.2 Rise/fall time

Differential rise/fall times shall be greater than the minimum output rise and fall time defined in Table 83A-

1, as measured from the 20% to the 80% levels. Shorter transitions may result in excessive high-frequency

components and increase EMI and crosstalk. The upper limit is defined by the transmit eye mask shown in

Figure 83A-8. Rise/fall time is measured with de-emphasis off.

Cl **83A** SC **83A.3.3.1** P**370** L**10** # **157**
 Petrilla, John Avago Technologies

Comment Type **T** Comment Status **D**

Clause 83A.5.1 defines an off state for de-emphasis as the optimal setting for jitter and eye mask testing. This definition may allow some small level of de-emphasis in the off state.

Should equation 83A-3 that that into consideration?

SuggestedRemedy

Add a term to Eq 83A-3 to subtract out off-state de-emphasis.

Proposed Response Response Status **W**

PROPOSED REJECT.

The optimal setting for jitter should result in an immaterial amount of de-emphasis (otherwise this will add jitter). Therefore subtraction is not necessary

Cl **83A** SC **83A.3.3.1** P**370** L**7** # **312**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**

reference is to wrong figure. fig 83a-3 is for insertion loss.

SuggestedRemedy

change reference from Fig 83a-3 to Fig 83A-5

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl **83A** SC **83A.3.3.1** P**372** L**12** # **174**
 Ghiasi, Ali Broadcom

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

In cases where the rise and fall time are very different the equation 83A-6 over estimates the min Vtx-demph

SuggestedRemedy

Propose to use geometric average of tr/TF = SQRT(Tr*Tf) instead of max rise and fall time

When tr and fall time were different the far end eye opening for compliant transmitter was more than 110 mV, see ghiasi_03_0709

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add equation to section 83A.3.3.1

$x = (Tr \cdot Tf)^{0.5}$

where Tr is Rise time in ps, Tf is Fall time in ps

Make similar change to equation 83B-5

Cl **83A** SC **83A.3.3.2** P**372** L**41** # **173**
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **D**
 No pattern is defined for rise and fall time measurement

SuggestedRemedy

Propose to use pattern of 8 1's and 8 0's for rise and fall time measurements

Proposed Response Response Status **W**

Add the following sentence to 83A.3.3.2

Rise/Fall time measurements are taken using an average of at least 16 waveforms and taken at the center of the respective UI using a square wave test pattern as defined in 83.5.10.

Cl **83A** SC **83A.3.3.4** P**371** L**48** # **35**
 Dawe, Piers Avago Technologies

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

Draft says $\text{abs}(\text{SCC22}) \leq 9$ dB. SCC22 is a common mode output reflection response, so it must be less than 1 W/W, or 0 dB (S-parameters define power gain, not loss). If the common mode output reflection response at a particular frequency were $0.1 + 0.076j$, the absolute response (without phase) would be $\sqrt{0.1^2 + 0.076^2} = 0.1259$ W/W, or -9 dB. Not plus.

By comparison, the things called loss in Clause 85 actually are loss, hence positive.

The mathematics police pick on things like this.

Here's what SFF-8414 says (their capitals):

CAUTION: S-PARAMETERS ARE A MEASURE OF GAIN (OUTPUT REFERRED TO INPUT) BY DEFINITION. HOWEVER COMMON USAGE HAS INCORRECTLY IMPLEMENTED THE WORD 'LOSS' INSTEAD OF GAIN. PARAMETERS WHOSE AMPLITUDE IS EXPRESSED AS A NEGATIVE DB VALUE REPRESENT A GAIN LESS THAN ONE OR A POSITIVE 'LOSS'. PLEASE EXERCISE CAUTION IN THIS AREA AND UNDERSTAND THAT DATA MAY BE PRESENTED OR LABELED INCORRECTLY (i.e., GAINS BEING LABELED AS LOSSES).

SuggestedRemedy

Correct the signs of the S-parameters.

Proposed Response Response Status **W**

PROPOSED REJECT.

Using positive loss is consistent with other sections in 802.3

Cl **83A** SC **83A.3.3.5** P**372** L**41** # **244**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

Since a small (up to 1 dB channel) exist before you get to Tx compliance point, why do you measure with no emphasis? This seems fair to allow equalization of this small channel for Host Tx measurements. Also in test methods in section 5.1 page 379 line 15.

SuggestedRemedy

Remove line:

Jitter and eye mask measurement requirement are described in 83A.5.1, and are conducted with de-emphasis off.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

The intent is to ensure that the jitter mask requirements are not measured with significant amounts of de-emphasis since this will cause excessive DJ. Therefore it is specified with De-emphasis off with the description in 83A.5.1 (off is the optimal setting for transmit jitter testing).

There are two references to 83A.5.1. Therefore delete the following sentence from 83A.3.3.5:

The template measurement requirements are specified in 83A.5.1

CI **83A** SC **83A.3.4** P**373** L**37** # **322**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**

table entries in Table 83A-2 need to be corrected and match respective subclauses.

differential input s-parameters > 83A.3.4.3 Differential input return loss
 differential common mode input conversion s-parameters > 83A.3.4.4 Reflected differential
 to common mode conversion

SuggestedRemedy

change Table 83A-2 "differential input s-parameters" to "Differential input return loss"

Change Table 83A-2 "differential common mode input conversion s-parameters" and
 83A.3.4.4 "Reflected differential to common mode conversion" to "Differential- to-common
 mode input return loss"

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

See comment 321

change Table 83A-2 "differential input s-parameters" to "Differential input return loss"

Change Table 83A-2 "differential common mode input conversion s-parameters" and
 83A.3.4.4 "Reflected differential to common mode conversion" to "Differential- to-common
 mode input return loss" and "Differential- to-common mode input return loss" respectively

CI **83A** SC **83A.3.4.1** P**374** L**2** # **158**
 Petrilla, John Avago Technologies

Comment Type **ER** Comment Status **D**

Reference is made to a 'reference input signal' as defined in 83A.3.4.2' but there's no
 mention in 83A.3.4.2 of a reference input signal.

SuggestedRemedy

In 83A.3.4.1 change from 'reference input signal' to 'compliant input signal' and in
 83A.3.4.2, change from 'An input signal' to 'A compliant input signal'.

Proposed Response Response Status **W**

PROPOSED ACCEPT.

CI **83A** SC **83A.3.4.6** P**376** L**45** # **36**
 Dawe, Piers Avago Technologies

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

It's not clear that these jitter specs allow the two concatenated CDRs and an optical link,
 XFP style, that will be wanted when connecting e.g. a 40GBASE-LR4 module. This is a
 jitter accumulation issue. It would apply to a CR4 link using a big module and clocks
 derived from the signal also.

We could use module jitter transfer specs from XFP 3.9.2 (8 MHz max jitter transfer
 bandwidth, 1 dB jitter peaking <50 kHz). But as 802.3 specifies signals at compliance
 points more than transfer metrics like jitter transfer, another way would be to measure the
 transmit side signals (from host to module) with a 1 MHz clock recovery unit and the
 receive side signals (from module to host) with 4 GHz as in the draft. The 10G optical
 signals are defined with 4 GHz.

SuggestedRemedy

Modify the jitter specifications to be sure they do allow two concatenated CDRs and an
 optical link, XFP style.

Create two masks in figure 83A-12, with 1 MHz corner frequency for a transmit side signal,
 and the current 4 MHz for a receive side signal.

Proposed Response Response Status **W**

PROPOSED REJECT.

nAUI is an electrical interface. It does not need to define the jitter transfer BW for
 respective components (outside scope).

The optical interface specification needs to ensure that coming out of equipment is good
 enough. Likewise in the receive path.

CI **83A** SC **83A.4** P**377** L**28** # **323**
 D'Ambrosia, John Force10 Networks

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

Sign of equation for insertion loss is going in the wrong direction. The insertion loss should
 be less than the limit not greater

sign of equation for return loss is going in the wrong direction. The return loss should be
 greater than the limit not less than.

SuggestedRemedy

Reverse the signs for both equations

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Modify equation 83A-9

Cl **83A** SC **83A.5** P**383** L # **176**
 Ghiasi, Ali Broadcom
 Comment Type **ER** Comment Status **D**
 What is LP
 SuggestedRemedy
 Replace with Low Pass
 Proposed Response Response Status **W**
 PROPOSED ACCEPT.

Cl **83A** SC **83A.5.1** P**382** L**13** # **175**
 Ghiasi, Ali Broadcom
 Comment Type **TR** Comment Status **D**
 High pass pole for jitter measurement to harmonize with PPI it may need to change from 4 MHz. Corner frequency for PPI and nAUI has to be the same.
 SuggestedRemedy
 It was suggested to add 2 MHz for PPI
 Proposed Response Response Status **W**
 PROPOSED REJECT.
 802.3ae, 802.3ap, 802.3aq uses 4MHz.

Cl **83B** SC **83B.1** P**385** L**40** # **325**
 D'Ambrosia, John Force10 Networks
 Comment Type **TR** Comment Status **D**
 Fig 83B-1 calls out connector loss of 0.5dB. This should be consistent with 86A.
 Page 424 Line 36: The recommended maximum loss of the host channel (PCB only) at 5.15625 GHz is 3.5 dB.
 Observation: 5.3dB - 3.5dB = 1.8dB for HCB + connector
 Equation 83A-7 specifies 1.26dB for HCB trace only
 Observation: 1.8dB - 1.26 dB = 0.54dB for connector only

but

However, specifications for HCB, MCB, and mated HCB/ MCB :
 HCB: 1.26dB
 MCB: 0.67dB
 Mated HCB / MCB: 2.8dB
 Connector loss = 2.8 - 1.26 - 0.63 = 0.87dB

SuggestedRemedy

Resolve what the loss of the connector should be.

Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Resolution on difference required. Agreed value needed

Change table 83B-1 such that loss is specified at 5.15625 and change the following text to:

The loss budget of Equation 83A-9 is linearly scaled to 7.9 dB loss at 5.15625 GHz for the Host XLAUI / CAUI component, and 2.1 dB loss at 5.15625 GHz for the module as per Table 83B-1 and Equation (83B-1) for the host and Equation (83B-2) for the module.

from:

The loss budget of Equation 83A-9 is linearly scaled to 7.9 dB loss at 5.5 GHz for the Host XLAUI / CAUI component, and 2.1 dB loss at 5.5 GHz for the module as per Table 83B-1 and Equation (83B-1) for the host and Equation (83B-2) for the module.

CI **83B** SC **83B.1** P**385** L**40** # **159**
 Petrilla, John Avago Technologies

Comment Type **ER** Comment Status **D**

Figure 83B-1 is similar to Figure 83A-2 but the names on what may be identical items are different, e.g. XLAUI/CAUI Component vs XLAUI/CAUI IC, Driver vs Transmitter, Input vs Receiver. If these block diagram elements are actually the same, please use the same terminology, otherwise it can be confusing. See also Fig 83B-3.

SuggestedRemedy

If the XLAUI/CAUI Component & XLAUI/CAUI IC are the same use the same name.
 Likewise for Driver & Transmitter use Transmitter and for Input & Receiver use Receiver.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change figure 83B-1:

Change XLAUI/CAUI IC to XLAUI/CAUI Component
 Change Driver to Transmitter
 Change Input to Receiver

CI **83B** SC **83B.2.1** P**388** L**16** # **341**
 Palkert, Tom Xilinx/Luxtera

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

SDD22 for nAUI module output should match the PPI specification.

SuggestedRemedy

Modify the SDD11 in Table 83B-2 to match the PPI specifications in equation 86A-3 and section 86A.4.2.1

Proposed Response Response Status **W**

PROPOSED REJECT.

nAUI modules should have more flexibility with respect to SDD

CI **83B** SC **83B.2.1** P**388** L**25** # **184**
 Ghiasi, Ali Broadcom

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

No definition on the nAUI CDR requirements

SuggestedRemedy

Please add section similar to XFP+ MSA Rev 4.5 section 3.9.2.
 To reduce the host burden we may want to consider the max BW here 4 MHz instead of 8 MHz.

Proposed Response Response Status **W**

PROPOSED REJECT.

See comment 36

CI **83B** SC **83B.2.1** P**388** L**26** # **177**
 Ghiasi, Ali Broadcom

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

Module compliance is not very descriptive

SuggestedRemedy

Suggested title, Module Specifications

Proposed Response Response Status **W**

PROPOSED REJECT.

Since this specification focuses on module compliance and not module specifications, the title is appropriate

CI **83B** SC **83B.2.1** P**388** L**29** # **178**
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **D**
 Module are measured only with MCB not HCB

SuggestedRemedy
 Remove HCB

Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Modify the following sentence from:

A module which uses XLAUI / CAUI to interface with a host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 when measured using the MCB and HCB

to

A module which uses XLAUI / CAUI to interface with a host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 when measured using the MCB and HCB (where the HCB is used to calibrate inputs to the module).

CI **83B** SC **83B.2.1** P**388** L**8** # **340**
 Palkert, Tom Xilinx/Luxtera

Comment Type **TR** Comment Status **D**
 SDD11 for nAUI module input should match the PPI specification.

SuggestedRemedy
 Modify the SDD11 in Table 83B-2 to match the PPI specifications in equation 86A-1 and section 86A.4.1.1

Proposed Response Response Status **W**
 PROPOSED REJECT.

nAUI modules should have more flexibility with respect to SDD

See comment 341

CI **83B** SC **83B.2.1** P**389** L**40** # **179**
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **D**
 Title is not descriptive

SuggestedRemedy
 Suggest to use "Module Specifications"

Proposed Response Response Status **W**
 PROPOSED REJECT.

See comment 177

Since this specification focuses on module compliance and not module specifications, the title is appropriate

CI **83B** SC **83B.2.1** P**389** L**48** # **180**
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **D**
 To make it more clear why there is signal with HCB output for module specifications modify the name

SuggestedRemedy
 Module input signal calibration

Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Change table 83B-2 from:

Module input tolerance signal

to

Module input tolerance calibration signal

CI 83B **SC 83B.2.1** **P390** **L 31** # **182**
 Ghiasi, Ali Broadcom

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

Vtx-demph was derived based on assumption of maximum module PCB loss, the impact of module PCB with near zero loss need to be studied and possibly adjust Vtx-demph

SuggestedRemedy
 Please see ghiasi_03_0709

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Far end jitter compliance is expected with a short channel and appropriate Vtx-demph setting.

CI 83B **SC 83B.2.1** **P390** **L 31** # **181**
 Ghiasi, Ali Broadcom

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

In cases where the rise and fall time are very different the equation 83A-6 over estimates the min Vtx-demph

SuggestedRemedy
 Propose to use geometric average of $tr/TF = \text{SQRT}(Tr \cdot Tf)$ instead of max rise and fall time

see ghiasi_03_0709

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE.

See comment 174

CI 83B **SC 83B.2.2** **P389** **L 14** # **339**
 Palkert, Tom Xilinx/Luxtera

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

SDD22 for nAUI host output should match the PPI specification.

SuggestedRemedy
 Modify the SDD22 in Table 83B-4 to match the PPI specifications in equation 86A-1 and section 86A.4.2.1

Proposed Response **Response Status** **W**
 PROPOSED REJECT.

See comment 341

nAUI modules should have more flexibility with respect to SDD

CI 83B **SC 83B.2.2** **P389** **L 18** # **338**
 Palkert, Tom Xilinx/Luxtera

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

SDD11 for nAUI host input should match the PPI specification.

SuggestedRemedy
 Modify the SDD11 in Table 83B-4 to match the PPI specifications in equation 86A-3 and section 86A.4.2.1

Proposed Response **Response Status** **W**
 PROPOSED REJECT.

See comment 341

nAUI modules should have more flexibility with respect to SDD

CI 83B **SC 83B.2.2** **P390** **L 36** # **185**
 Ghiasi, Ali Broadcom

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

Not the best use of title "Host Compliance"

SuggestedRemedy
 Host Specifications

Proposed Response **Response Status** **W**
 PROPOSED REJECT.

Since we are specifying host compliance, title is appropriate

Cl **83B** SC **83B.2.2** P **390** L **39** # **186**
 Ghiasi, Ali Broadcom

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

Host are measured with HCB not MCB

SuggestedRemedy

Remove MCB, or if you want to keep MCB then say MCB is used for signal calibration

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the following sentence from:

A host which uses XLAUI / CAUI to interface with a module shall meet the characteristics outlined in Table 83B-4 and 83B-5 when measured using the MCB and HCB

to:

A host which uses XLAUI / CAUI to interface with a module shall meet the characteristics outlined in Table 83B-4 and 83B-5 when measured using the MCB and HCB (where the MCB is used to calibrate inputs to the host).

Cl **83B** SC **83B.2.2** P **390** L **46** # **183**
 Ghiasi, Ali Broadcom

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

Receiver tolerance must include the effect of cascaded CDR's

SuggestedRemedy

This is similar to XFP+ MSA Rev4.5 Fig 14, an option here would be to use 2 MHz BW to reduce the jitter tolerance on the host

see ghiasi_03_0709

Proposed Response Response Status **W**

PROPOSED REJECT.

See comment 36.

Cl **83B** SC **83B.2.3** P **389** L **52** # **245**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

For this interface how is the host Rx tested? I think it has the connector in the Host Rx stress path. As such the locked in deterministic effects of the connector do not need to be put into the stress, they get generated in the channel, unlike the 83A condition. The value of DJ injected into the limiter should be reduced.

SuggestedRemedy

Change .22UI to .12 for the

Proposed Response Response Status **W**

PROPOSED REJECT.

Since the receiver tolerance test is calibrated with the HCB, the effects of the connector is included in the 0.22UI.

Cl **83B** SC **83B.2.3** P **390** L **3** # **246**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

For this interface how is the host Rx tested? I think it has the connector in the Host Rx stress path. and uses a HCB to inject the signal to stress the Rx. As such the Tx stress generator need to have the ability to use Demphasis to equalize the channel. Does this mean we need a board that will represent 6.9dB of the channel so we can calibrate the Rx stress to the Rx eye mask of 83A-9 as suggested in the test? This need some discussion

SuggestedRemedy

Rewrite to allow for the eyemask to be measured at appropriate point.

Proposed Response Response Status **W**

PROPOSED REJECT.

83B has been written around the connector compliance point. There should be no need to have a board which represents 7.9dB of channel loss.

CI **83B** SC **83B.2.4** P**391** L**15** # **187**
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **D**
 Host input tolerance signal at MCB output is confusing

SuggestedRemedy
 Host input calibration signal instead

Proposed Response Response Status **W**
 PROPOSED ACCEPT IN PRINCIPLE.

Change table 83B-4 from:
 Host input tolerance signal

to
 Host input tolerance calibration signal

CI **83C** SC **83C.1.1** P**395** L**30** # **257**
 Booth, Brad AMCC

Comment Type **T** Comment Status **D**
 In Figure 83C-1, the MMD numbering is wrong. The PMD and PMA are separated in the diagram; therefore, they require unique MMD numbering.

Same issue with Figure 83C-3.

SuggestedRemedy
 Change MMD 1 to be MMD 8.

Proposed Response Response Status **W**
 PROPOSED REJECT.

According to 83.1.4, "the PMA sublayer that is closest to the PMD is addressed as Management Data Input/Output (MDIO) Manageable Device (MMD) 1". This is true even if the PMA sublayer closest to the PMD is implemented in a separate device. Also overtaken by comment 314.

CI **83C** SC **83C.1.1** P**395** L**32** # **314**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**
 In Fig 83C-1 the PMD Service Interface is called out. This is inconsistent with other figures in the text. This is also done for Fig 83C-3.

SuggestedRemedy
 Delete call out to PMD service interface for 40G and 100G stacks in Fig 83c-1. Place the PMD blocks right under and against the PMA blocks.

Repeat for Fig 83C-3

Proposed Response Response Status **W**
 PROPOSED ACCEPT.

CI **83C** SC **83C.1.2** P**396** L**1** # **260**
 Booth, Brad AMCC

Comment Type **TR** Comment Status **D**
 In Annex 83C, there is no diagram to show the need of MMD 10.

SuggestedRemedy
 Create a duplicate of 83C.1.2. Put a PMA on top of the PMD and a PMA on the bottom of the FEC with an interface between the two PMAs. The PMD/PMA pair would be MMD 1, the others would be numbered accordingly from 8-10.

Proposed Response Response Status **W**
 PROPOSED REJECT.

The requested figure is already in the main body of the standard (Figure 83-2). It was agreed that this most expanded example would appear in the main body, with additional examples in Annex 83C. 83C.1 refers to this main body figure without repeating the figure "The example of FEC implemented in a separate device from either the PCS or the PMD is illustrated in Figure 83-2."

CI **84** SC **84.11.4.4** P**232** L**23** # **371**
 Ganga, Ilango Intel

Comment Type **E** Comment Status **D**
 Font size in column 4 is inconsistent with other fonts in table.

SuggestedRemedy
 Change font size to be consistent across the PICS tables

Proposed Response Response Status **W**
 PROPOSED ACCEPT.

Cl 84 SC 84.2 P223 L4 # 370
Ganga, Ilango Intel

Comment Type E Comment Status D

SIGNAL_DETECT is defined in 84.7.4. So no need to describe the condition for SIGNAL detect generation in 84.2. Just provide a reference to 84.7.4 and only describe the validity of UNIDATA_x.indication in 84.2.

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED REJECT.

The current text is OK and consistent with Clause 85 and other Clauses. It does not seem worth the effort and risk of changing it.

Cl 85 SC P L # 37
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

Exchange of DME frames is an unnecessary burden on the host: it was designed for AN purposes but the other port types that this port could be connected to can't understand it. The choice of link types is 4 x 3.125 lanes (CX4), 4x10G lanes, and 4x10G lanes with FEC, and this can be managed with 'Parallel Detection' not DME frames.

In the future, and in closed systems such as a supercomputer, support for legacy CX4 will be unnecessary.

Note that 16G Fibre Channel do not use DME frames, although for electrical PMDs they use training. They may use training frames to signal FEC support, although that should not be necessary.

DME signalling is not necessary for these copper links, and should not appear on front-panel ports.

SuggestedRemedy

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 can use Parallel Detection. Use the same method as 16GFC's link speed negotiation for CX4/CR4 negotiation. This is in line with the backward compatibility with CX4 and baseline "Parallel detection function to detect legacy 10GBASE-CX4 PHYs".

Proposed Response Response Status W

PROPOSED REJECT

Suggested remedy inconsistent with baseline objective to utilize 802.3ap electricals and to include backward compatibility with CX4 see diminico_02_0708.pdf.

The commenter has not provided a sufficiently complete proposal for replacement of DME frames with a parallel detection mechanism.

Cl 85 SC P L # 38
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

CRn like all other front-panel Ethernet PMDs needs exemplary MMTFPA. gustlin_04_0509 "Leverages previous backplane analysis since we have no other data!" Because CRn uses equalisation even more than KR we need to repeat the analysis with CRn data.

SuggestedRemedy

SuggestedRemedy

Find out what the error propagation statistics of CRn are, then work out the MTTFPA ***FOR CRn***. If it isn't adequate, fix the issue (there may be several ways to fix it, some really minor like tweaking hi_ber).

Proposed Response Response Status W

PROPOSED REJECT.

gustlin_04_0509 leveraged previous backplane analysis that are applicable to CRn, as CRn utilizes KR electricals (tranceivers) and channel limits.

Cl 85 SC 85.1 P233 L8 # 188
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

CL 85 link budget does not close 10m reach with KR EQ

SuggestedRemedy

Reduce cable reach to 5 m.

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED REJECT

The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies; for committee discussion see ghiasi_01_0709.

Cl 85 SC 85.10 P251 L9 # 337
Palkert, Tom Xilinx/Luxtera

Comment Type TR Comment Status D

The maximum cable loss should be adjusted to allow for a common host PCB design for CR and SR variants.

SuggestedRemedy

Reduce the cable loss number to approximately 16.3dB to allow the equivalent SR PPI PCB loss.

Proposed Response Response Status W

PROPOSED REJECT

Maximum cable assembly loss consistent with baseline objectives of at least 10 m reach constrained by 802.3ap channel insertion loss and Tx/Rx PCB loss.

Cl 85 SC 85.10 P258 L40 # 201
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Max cable loss 21.55 is not the worst case

SuggestedRemedy

Increase 21.55 to 23.7 dB which is 2.27 dB/m of loss

Proposed Response Response Status W

PROPOSED REJECT.

Maximum cable assembly loss limits based on maximum loss of measured cable assemblies (+5% additional loss). See diminico_02_1108.pdf comment resolution #458 accepted as worse case measured cable assembly. Note 5% loss added to measured cable assembly IL. Measurements consistent with baseline objectives of at least 10 m reach constrained by 802.3ap channel insertion loss and Tx/Rx PCB loss. The Protocol implementation conformance for CR4 and CR10 includes cable assembly specifications that shall be met for implementation of compliant channels.

Cl 85 SC 85.10.2 P252 L11 # 17
Mellitz, Richard Intel

Comment Type TR Comment Status D

The worst case ILTP2 can be up to 6.1 dB at 5.156 GHz. The test fixture can be upto 4.5 dB. (eq 84-33) That leaves in 1.6 dB left for board, package, and silicon. If the package uses up 1.5 dB (Pkg55mm_T33mm115ohm_highBGAcoupling.s8p, na_02_1207) that leaves .1 dB for board routing and silicon. Any large package device (like a router) will require 6-8" to route to a connector. That's 3.5 dB to 4.5dB. The 0.1 dB budget won't support that.

SuggestedRemedy

change eq. 85-40 to
 $((0.146 * \sqrt{f} + 0.000896 * f)) \text{dB}$
 and
 In table 85-4 change
 ILTP2 AN0 max from 1.6 to 2.2
 ILTP2 AN1 max from 2.5 to 3.5

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

See remedy comment#294

Cl 85 SC 85.10.2 P259 L14 # 189
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Reference 10 m QSFP cable with lowest loss was used for the cable loss specifications Eq 85-50

SuggestedRemedy

Worst case cable loss is 2.27 dB/m, ILca becomes
 $ILca = 0.2120239 * \sqrt{f} + 0.001643 * f$ which has loss of 23.7 dB at Nyquist

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED REJECT. See remedy comment#201

CI 85 SC 85.10.2 P321 L11 # 41
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

I believe the sum of new cable loss limit plus PCB loss limit exceeds the KR "high confidence" region of 68B.

Fixing this may mean adjusting the 10 m objective.

SuggestedRemedy

Reduce the cable loss so that cable loss plus PCB losses is within the KR high confidence region.

Proposed Response Response Status W

PROPOSED REJECT. See remedy comment#201

CI 85 SC 85.10.3 P253 L1 # 139
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

The insertion loss of a cable assembly is not a linear function of frequency so why does it make sense to try to fit it to such a function?

Note that the equation ILC_{max} contains a significant term that is proportional to \sqrt{f} .

SuggestedRemedy

Consider basing IL fitted on a polynomial fit. Refer to healey_03_0709.pdf.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Use polynomial fit for cable assembly IL fit ; for committee discussion see healey_03_0709.pdf.

CI 85 SC 85.10.3 P253 L24 # 420
Balasubramanian, Vittal FCI USA, Inc.

Comment Type ER Comment Status D

Line reads "The ILD shall be within the region defined by Equation (85-47) and Equation (85-48) for all frequencies from 50 MHz to 6000 MHz". This should be from 1000 MHz to 6000 MHz. Loss characteristics are different for cables below 1 GHz and above 1 GHz. Can't use a linear IL Fitted line to calculate ILD if the ILD needs to be met below 1 GHz. Also, Figure 85-5 does not reflect the frequency range.

SuggestedRemedy

Change lower frequency of ILD requirement back to 1000 MHz as in draft 2.0

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]

See remedy to comment #139

CI 85 SC 85.10.3 P253 L28 # 213
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Reduction of KR ILD by 3 dB Eq 85-57/58 and increasing cable IL is not supported with cable return loss specifications and stacked connectors

SuggestedRemedy

Do not change KR ILD and make max cable IL the same as KR

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: References changed from 86.10.3 p260 line 31]

See response to comment #256

CI 85 SC 85.10.3 P253 L54 # 309
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

caption for Fig 85-5 got separated onto next page away from the figure

SuggestedRemedy

keep caption and figure together on same page.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 85 SC 85.10.3 P259 L 50 # 292
DiMinico, Chris MC Communications

Comment Type TR Comment Status D

The least mean squares line fit procedure defined by Equation (85-52) through Equation (85-56) needs be adjusted to better fit the cable assembly insertion loss between the frequency range of 50 MHz to 100 MHz as the error in the fit is an independent source of ILD. This applies to 85A.7 Channel insertion loss deviation (ILD) as well.

SuggestedRemedy

Specify fit procedures to better fit the cable assembly insertion loss (ILD) and the channel insertion loss deviation (ILD) specified in 85A.7 over the frequency range of 50 MHz to 100 MHz.

Presentation material will be provided in support of suggested remedy.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. see remedy comment#139

CI 85 SC 85.10.4 P254 L 13 # 236
Misek, Brian Avago Technologies

Comment Type T Comment Status D

Cabling RL high. When this is presented to a RL of -15dB for the ASIC host it will cause Ripple in the channel that has not been captured in any of the budgets. In order to keep with the higher insetion loss then KR the RL for the cable will need to be reduced.

For 2 networks "a" and "B" that are joined to make Network"C"

1. If one connect two 2-port networks described in terms of S-parameters
• $SC_{21} = SA_{21} * SB_{21} / (1 - SA_{22} * SB_{11})$ where (SXIJ being complex numbers)
2. For the channels we work with, generally the phases of SA22 and SB11 are not specified or even

specifiable. Therefore we can approximate:

- $db(SC_{21}) = db(SA_{21}) + db(SB_{21}) + \text{correction}$.

The correction amounts to an uncertainty in $db(SC_{21})$ which will contribute to ILD, since the phase both

SA22 and SB11 will vary quite a bit with frequency.

$|\text{correction}| < 20 * \log_{10}(e) * SA_{22} * SB_{11}$

Worst case the uncertainty will add directly to ILD.

Some will argue that it should RSS with ILD which might be slightly optimistic

3. Assuming return loss of the channel TP0-TP2 is 12dB at Nyquist and Cable assembly return loss at Nyquist is 5.7dB

- $|\text{correction}| < 1.133$

4. Making similar assumptions for TP3-TP5, gives a second correction.

- $|\text{correction}| < 1.133$

5. RSSing the 2 corrections with the specified ILD=1.73dB for the Cable assembly at Nyquist gives:

- ILD TP0-TP5 = +/-2.3 dB

SuggestedRemedy

RL to -9dB at nyquist to limit the additional channel ripple correction to .5dB and channel ILD impact to less the 0.2dB

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

For committee discussion

Cl 85 **SC 85.10.4** **P254** **L4** # **421**
 Balasubramanian, Vittal FCI USA, Inc.

Comment Type ER **Comment Status D**
 Figure 85-6 should start from 50 MHz and not 100 MHz

SuggestedRemedy
 Change figure per comment

Proposed Response **Response Status W**
 PROPOSED ACCEPT.
 [Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]

Cl 85 **SC 85.10.4** **P256** **L20** # **422**
 Balasubramanian, Vittal FCI USA, Inc.

Comment Type TR **Comment Status D**
 ICRcafit shall be greater than or equal to ICRcam in as defined by the following equation where f is expressed in GHz.
 This statement cannot be true. f needs to be in Hz or eqn 85-60 needs to change to (f/5)

SuggestedRemedy
 Change equation per comment

Proposed Response **Response Status W**
 PROPOSED ACCEPT IN PRINCIPLE.
 [Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]

Change "where f is expressed in GHz."
 to: "where f is expressed in Hz."

Cl 85 **SC 85.10.4** **P261** **L36** # **202**
 Ghiasi, Ali Broadcom

Comment Type TR **Comment Status D**
 Baseline analysis which showed technical feasibility was performed for cable with 10 dB better return loss.

SuggestedRemedy
 Either tighten the cable specifications by 10 dB or cut the cable reach

See ghiasi_01_0709

Proposed Response **Response Status W**
 PROPOSED REJECT.
 Technical feasibility was not intended to address all possible impairments. Reach bounded by compliant cable assemblies meeting the CRn specification based on KR channel limits.

Cl 85 **SC 85.10.5** **P262** **L41** # **205**
 Ghiasi, Ali Broadcom

Comment Type TR **Comment Status D**
 Needs to be log10

SuggestedRemedy
 replace log with log10

Proposed Response **Response Status W**
 PROPOSED ACCEPT.

Cl 85 **SC 85.10.5** **P264** **L21** # **203**
 Ghiasi, Ali Broadcom

Comment Type ER **Comment Status D**
 Wrong reference

SuggestedRemedy
 Replace figure 85-10 with 85-7

Proposed Response **Response Status W**
 PROPOSED REJECT.
 Can't locate wrong reference.

Cl 85 SC 85.10.6 P264 L18 # 170
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

When worst case FEXT included in the PSXT then cable insertion loss to crosstalk crosses over around 400 MHz.

SuggestedRemedy

Specification does not close either reduce cable reach to 5 m, define KR+ EQ, allow combination of passive and active cables.

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED REJECT.

Power sum crosstalk (including FEXT) constrained by insertion loss to crosstalk ratio. Specified ICR based on 0.5 m and 10 m cable assembly measurements consistent with baseline objectives of at least 10 m reach constrained by 802.3ap channel insertion loss and Tx/Rx PCB loss; see diminico_02_1108. The Protocol implementation conformance for CR4 and CR10 includes cable assembly specifications that shall be met for implementation of compliant channel.

Cl 85 SC 85.10.7 P263 L10 # 206
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Needs to be log10

SuggestedRemedy

replace log with log10

Proposed Response Response Status W

PROPOSED ACCEPT.
See suggested remedy.

Cl 85 SC 85.10.7 P264 L8 # 171
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Worst case FEXT are either not included or omitted from CR4/CR10 specifications

SuggestedRemedy

Include worst case FEXT for QSFP and CXP

See ghiasi_01_0709

Proposed Response Response Status W

PROPOSED REJECT.

See remedy comment#170.

Please note: In 10m analysis models measured FEXT disturber used for 3 disturber's in power sum crosstalk calculation imposing worse case FEXT.

In 0.5 m analysis model worse case measured FEXT used; see diminico_02_1108.pdf.

Cl 85 SC 85.10.8 P255 L47 # 141
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

The insertion loss to crosstalk ratio limit (ICRC_{Amin}) predicts that compliant cable assemblies will produce larger crosstalk voltages than observed on actual cable assemblies.

It has also been pointed out that the log-linear fit to the measured insertion loss to crosstalk ratio (ICR) sometimes produces limit violations even though the raw data appears to be in the compliance range.

A metric based on a weighted integral of the power sum crosstalk will be less sensitive to the shape of the transfer function and offer a tighter coupling to the receiver interference tolerance test conditions.

SuggestedRemedy

Consider specifications based on integrated crosstalk noise. Refer to healey_02_0709.pdf.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_02_0709.pdf

Cl 85 **SC 85.10.8** **P263** **L36** # **293**
DiMinico, Chris MC Communications

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

Reported in balasubramanian_01_0509.pdf, the equation for generating the fit line for any data to test to the limit line as specified in section 85-10.8 can cause some cable assemblies, which actually pass the ICR requirements in raw data to fail the requirements with the fit line. This applies to 85A.7 Channel insertion loss to crosstalk ratio (ICR).

SuggestedRemedy

Modify specification requirements to reduce false negatives due to fit procedure. This applies to 85A.7 Channel insertion loss to crosstalk ratio (ICR).

Presentation material will be provided in support of suggested remedy.

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE. see response comment#141

Cl 85 **SC 85.10.9** **P257** **L23** # **114**
Healey, Adam LSI Corporation

Comment Type **T** **Comment Status** **D**

In Figure 85-8, test points TP1 and TP4 should be on the other side of the block labeled "cable assembly test fixture" and not between that block and schematic representation of the connector as shown. If this figure is intended to imply that the cable assembly test fixture should be de-embedded from the measurement, then there really isn't a need to define the test fixture at all.

Also, the connector receptacle is part of the cable assembly test fixture.

SuggestedRemedy

Change the label on each box to "Cable assembly test fixture excluding connector" and move TP1 and TP4 to the outside edges of the boxes.

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.

The channel insertion loss is determined by Equation (85-A-3). To reconcile this the test fixture IL is removed from the measurement (IL is the only parameter that is de-embedded).

Step 1. Change the label on each box to "Cable assembly test fixture excluding connector" and move TP1 and TP4 to the outside edges of the boxes.

Step 2. Add text to subclause 85.10.9 "Cable assembly test fixture" indicating that the insertion loss of test fixture is calibrated from the measurement for comparison to the measurement limits determined using Equation (85-40).

Cl 85 **SC 85.10.9** **P257** **L8** # **128**
Healey, Adam LSI Corporation

Comment Type **T** **Comment Status** **D**

Test fixture insertion loss allowance is too large. Equation 85-61 corresponds to 2.4 dB loss at half of the signaling rate.

SuggestedRemedy

Refer to the compliance board parameters in 86A.5.1.1 since the hardware will likely be similar for the Style 1 connector. If the parameters for Style 2 test fixtures are required to be different, define them separately (however, it is not clear why this should be the case since a common test fixture is defined for both connector styles in the current draft).

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.
See suggested remedy comment#295

Cl 85 **SC 85.10.9** **P264** **L49** # **204**
Ghiasi, Ali Broadcom

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

Cable assembly test fixture insufficiently defined, need return loss, XTALK, etc are missing

SuggestedRemedy

Please use definition of compliance board in CL86A.5.5.1

Proposed Response **Response Status** **W**

PROPOSED REJECT.
Return loss specified. Test fixture crosstalk in CL86A.5.5.1 not sufficiently specified; for committee discussion.

Cl 85 **SC 85.10.9** **P264** **L52** # **295**
DiMinico, Chris MC Communications

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

The maximum test fixture insertion loss Equation (85-71) coefficient (0.103) is incorrect. replace the coefficient (0.103) with (0.029).

SuggestedRemedy

Replace the coefficient (0.103) with (0.029); see Page 264 - line 52- Equation (85-71).

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE. The maximum test fixture insertion loss Equation (85-61) coefficient (0.103) is incorrect.
Suggested remedy >replace the coefficient (0.103) with (0.029).

Cl 85 SC 85.11 P258 L 50 # 104
Kipp, Scott Brocade

Comment Type ER Comment Status D

Figure 85-10. The caption of Figure 85-10 is non-descriptive and not consistent with Fig 85-12.

SuggestedRemedy

Change the caption to Example Style 1 cable assembly plug

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 85 SC 85.11 P259 L 11 # 105
Kipp, Scott Brocade

Comment Type ER Comment Status D

The caption of Figure 85-11 is non-descriptive and not consistent with Fig 85-13.

SuggestedRemedy

Change the caption to Example Style 1 MDI board receptacle

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 85 SC 85.11 P259 L 8 # 98
Kipp, Scott Brocade

Comment Type TR Comment Status D

Figure 85-11. This isn't a picture of the QSFP because it only has 26 pins.

SuggestedRemedy

I have the original picture if you want it since I was the editor of QSFP. We have one for QSFP+ also.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Update figure 85-11 with QSFP board receptacle figure.

Cl 85 SC 85.11 P262 L 12 # 99
Kipp, Scott Brocade

Comment Type ER Comment Status D

Figure 85-14 and 85-15 don't match Revision 1.77 of SFF-8642. The latest revision of SFF-8642 uses different terminology than this standard. Revision 1.77 uses D1-D21 instead of D64 to D84. Table use

SuggestedRemedy

Please put the latest figures in the document.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Update figures 85-14 and 85-15 per latest revision of SFF-8642.

Cl 85 SC 85.11.1.1.2 P260 L 27 # 39
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

Specification of cable at low frequencies still needs fixing; the informative note is nice but we need something normative.

If "it's just a wire" then meeting a low frequency spec will be easy. Remember this is not a measurement standard; no-one has to measure something if they can convince the customer that "it's just a wire" so there isn't a cost or test-time problem.

However, For Style-1 40GBASE-CR4 and 100GBASE-CR10 plug connectors the receive lanes are AC-coupled; the coupling capacitors are contained within the plug connectors. Large customers can avoid the bad cables by experience but this is Ethernet; any cable from Fry's should work.

SuggestedRemedy

Add a normative specification to 85.10 Cable assembly characteristics to ensure that performance not much worse than the capacitor recommendation is achieved.

Proposed Response Response Status W

PROPOSED REJECT.

This requirement is already embodied in the 85-10 specifications. For style 1 and CR10 MDI's the cable assembly specifications are to be met with the coupling capacitors contained within the plug connectors,

CI 85 SC 85.11.1.1.2 P260 L27 # 42
Dawe, Piers Avago Technologies

Comment Type TR Comment Status D

Specification range for cable insertion loss is not adequate especially at low frequencies. SFP+ Annex E cable S-parameter specs go down to 10 MHz. Even a PRBS9 goes down to 20 MHz.

If "it's just a wire" then meeting a spec below 50 MHz will be easy. Remember this is not a measurement standard; no-one has to measure something if they can convince the customer that "it's just a wire" so there isn't a cost or test-time problem.

Large customers can avoid the bad cables by experience but this is Ethernet; any cable from Fry's should work.

SuggestedRemedy

Extend the frequency range of Cable assembly insertion loss, Cable assembly return loss, Near-End Crosstalk, MDNEXT, FEXT and MDELNEXT down to 10 MHz at the low end.

Proposed Response Response Status W

PROPOSED REJECT.

This comment was submitted against D2.0. The comment was accepted in principle with remedy to specify minimum of 50 MHz for 85.9 channel parameters and 85.10 cable assembly parameters as sufficient to characterize impairments.

CI 85 SC 85.13.3 P265 L1 # 372
Ganga, Ilango Intel

Comment Type E Comment Status D

Subclause title 85.13.3 and table for environmental requirements appears out of place.

Move title of subclause 85.13.4 Major capabilities/options to 85.13.3 and move the current title 85.13.3 to start after Major capabilities/options.

Add a subclause with title 86.13.4.7 Environmental specifications and move the table on page 265 for environmental requirements to this subclause.

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 85 SC 85.13.4.5 P269 L32 # 374
Ganga, Ilango Intel

Comment Type E Comment Status D

Inconsistent font size in column 4 of table. Change font size to be consistent for the PICS tables

SuggestedRemedy

As per comment

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 85 SC 85.7.1 P238 L26 # 271
Frazier, Howard Broadcom Corporation

Comment Type ER Comment Status D

The sentence "A 40GBASE-CR4 and 100GBASE-CR10 link is illustrated in Figure 85-2." implies that this draft is describing a single link that can be 40GBASE-CR4 and 100GBASE-CR10 simultaneously. This is not the case. You can either have a link that complies with 40GBASE-CR4, or a link that complies with 100GBASE-CR10, but not a link that complies with both simultaneously.

SuggestedRemedy

Change the sentence to read:

A block diagram for a 40GBASE-CR4 or 100GBASE-CR10 link is illustrated in Figure 85-2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: A 40GBASE-CR4 and 100GBASE-CR10 link is illustrated in Figure 85-2."

To: A 40GBASE-CR4 or 100GBASE-CR10 link is illustrated in Figure 85-2.

Change: Figure 85-2-40GBASE-CR4 and 100GBASE-CR10 link (half link is illustrated)
To: Figure 85-2-40GBASE-CR4 or 100GBASE-CR10 link (half link is illustrated)

CI 85 SC 85.7.1 P238 L27 # 272
Frazier, Howard Broadcom Corporation

Comment Type ER Comment Status D

"points" is ambiguous in the sentence "For purposes of system conformance, the PMD sublayer is standardized at the points described in this subclause."

SuggestedRemedy

change "points" to "test points", as in: "For purposes of system conformance, the PMD sublayer is standardized at the test points described in this subclause."

Proposed Response Response Status W

PROPOSED ACCEPT.
change "points" to "test points"

CI 85 SC 85.7.1 P238 L34 # 273
Frazier, Howard Broadcom Corporation

Comment Type ER Comment Status D

The sentence: "The 40GBASE-CR4 and 100GBASE-CR10 channel is defined between the transmitter (TP0) and receiver blocks (TP5)..." implies that this draft is describing a channel that can be 40GBASE-CR4 and 100GBASE-CR10 simultaneously. This is not the case.

SuggestedRemedy

Change the sentence to read: "The 40GBASE-CR4 and 100GBASE-CR10 channels are defined between the transmitter (TP0) and receiver blocks (TP5)..."

Proposed Response Response Status W

PROPOSED ACCEPT.
See suggested remedy.

CI 85 SC 85.7.12 P307 L4 # 286
Bandyopadhyay, Jaya Juniper Networks

Comment Type T Comment Status D

Clause 85 adds 72.6.10 as mandatory. This is not in sync with clause 86 and also not in sync with SFP+ direct attach. If one wants to use common components between 40/100G-CR and SR and SFP+ direct attach, since SR PMD does not require this remote Tx training from Rx, it becomes very difficult for implementer. For example, if one uses a retiming device with transmit pre-emphasis between big chip with integrated PHY and SR module, but wants to plug in Cu cables on the same slot, how would the training work for CR case? Assumption here is retiming device's Tx is able to handle the Cu cable impairments.

SuggestedRemedy

In order to provide maximum flexibility in system implementation, make 72.6.10 optional for CR case. This means if the KR phy talks directly to the media (copper or fiber), training can be utilized.

Proposed Response Response Status W

PROPOSED REJECT.
Clause 85 specification consistent with baseline objectives to utilize 10GBASE-KR (Clause 72) to specify 40GBASE-CR4 and 100GBASE-CR10; specifications embodied in the protocol implementation conformance statement (PICS) 85.13.1; other implementations are possible but not specified.

CI 85 SC 85.7.7 P241 L3 # 276
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

Disabling any of the lanes of the PMD using the lane-by-lane disable function effectively disables the whole interface, since we haven't defined a mechanism by which an interface can operate without the full complement of lanes. Thus, the draft should include a warning, in the form of a note, that disabling one or more lanes will disable the interface, and can be disruptive to a network.

SuggestedRemedy

Add a note at the end of 85.7.7 that reads:

NOTE -Disabling the electrical transmitter on one or more lanes effectively disables the entire interface and can be disruptive to a network.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Add note:
NOTE - A mechanism by which an interface can operate without the full complement of lanes is not specified to ensure the CR4/CR10 signalling rate at effective BER.

CI 85 SC 85.7.9 P241 L32 # 277
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

There is no Clause 45 register bit referenced for PMD_fault in this subclause.

SuggestedRemedy

Delete the words "If the MDIO is implemented" at the beginning of the first sentence. Add the sentence: "If the MDIO interface is implemented, PMD_fault shall be mapped to the PMD_fault bit as specified in 45.2.1.2."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
For commttee discussion; need to reconcile with 84.7.9 and 86.5.9.

CI 85 SC 85.8 P243 L24 # 226
Misek, Brian Avago Technologies

Comment Type T Comment Status D

Aplitude peak to peak should be clearly defined

SuggestedRemedy

Add to Value column:
min=800mV
Add note:
KR Preset State 72.6.10.2.3.1 and alternating 1010 output. Note (a)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Add - Amplitude peak-to-peak min=800 mV to Table 85-4 value column.

CI 85 SC 85.8 P243 L28 # 247
Misek, Brian Avago Technologies

Comment Type T Comment Status D

The MCB ficture and cables to the scope have an effect on this measurment. THey need to be allowanced for.
1.25dB PCB on HCB
.5dB for connector
.8dB for instrument grade cables.
1.5dB for Package losses
0.7 to 2.4dB host PCB loss

Total is 3.05dB in addition to the channel PCB for the A1+A2

SuggestedRemedy

Change AN1 From: Max=2.5 To: 4.05
Change AN1 From: Min=1.25 To: 1.75
Chnage AN2 From: Max=1 to Max=2.45
Change AN2 From: Min=0 To: 1.5

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
For committee discussion

CI 85 SC 85.8 P243 L34 # 227
Misek, Brian Avago Technologies

Comment Type T Comment Status D

The Noise numbers are wrong. The original presentation in Moore01_0509.pdf had a formula basing the noise as a function of the input signal.
For a 1V signal the rms noise was 6mV for the short cable and is now labeled "near-end" and 0.6mV for the long cable or "far end"

SuggestedRemedy

Change the values to:
Noise near-end = $6mV * 10E(-AN0/20)$
Noise far-end = $0.6 * 10E(-AN0/20)$

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
For committee discussion

CI 85 SC 85.8 P243 L46 # 228
 Misek, Brian Avago Technologies

Comment Type T Comment Status D

Total jitter is wrong. If the filter to remove DJ is used then the Jitter measured at the output of that filter will be limited to a value slightly greater than KR TP0 specified to allow for additional non-equalizable ISI caused by the PCB-conector-TP2 test board (HCB). That additional ISI was budgeted to be 50mUI in the original Moore-01-0509. Somehow we got to 250mUI which is less the KR 280mUI at the pins of the package.

T

SuggestedRemedy

Change the 0.25 to 0.33 and add "note A" to note column.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 For committee discussion

CI 85 SC 85.8 P244 L32 # 229
 Misek, Brian Avago Technologies

Comment Type T Comment Status D

Definition of XFR(i) and components are wrong

SuggestedRemedy

Change:
 Input(i) to Oupptput(i)
 Add:
 Input(i) DFT of the ideal 1 V PRBS9 waveform

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change:change input(i) to output(i) line 33 page 244.
 add definition: input(i)
 The DFT of a 1.0 Vp-p PRBS pattern.

CI 85 SC 85.8 P244 L52 # 230
 Misek, Brian Avago Technologies

Comment Type E Comment Status D

for 50 MHz <= f <= 6000 MHz should be removed.

SuggestedRemedy

Remove
 for 50 MHz <= f <= 6000 MHz

Proposed Response Response Status W

PROPOSED ACCEPT.
 Suggested remedy

CI 85 SC 85.8.2 P242 L24 # 282
 Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

The link spans for 40GBASE-CR4 and 100GBASE-CR10 are not going to reach 10 m. I don't think the link budget will close at 6 m after making a reasonable allowance for realistic PCB trace loss, and properly accounting for FEXT and cable insertion loss.

SuggestedRemedy

Reduce the maximum link span to 5 m. This will require a change to the objectives for 40G and 100G copper, and the new objectives must be re-evaluated against the 5 Criteria, particularly Broad Market Potential Technical Feasibility, and Economic Feasibility.

Proposed Response Response Status W

PROPOSED REJECT.
 See response to comment#170

Cl 85 SC 85.8.3 P242 L28 # 304
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status D

rewrite sentences to better link the transmitter characteristics in Table 85-4 to the "Shall" statement-

Transmitter characteristics shall meet specifications at TP2, unless otherwise noted. The specifications at TP2 are summarized in Table 85-4.

SuggestedRemedy

Transmitter characteristics shall meet specifications summarized in Table 85-4 at TP2 unless otherwise noted.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Change sentence to read: Transmitter characteristics shall meet specifications summarized in Table 85-4 at TP2 unless otherwise noted.

Cl 85 SC 85.8.3 P243 L1 # 306
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

Table 85-4 title indicates that the transmitter characteristics are at TP2, but over half the table appears related to specifications at "transmit function".

SuggestedRemedy

Split into two tables. One for specifications at "transmit function" and one for TP2.

correct intro text of 85.8.3 as follows

Transmitter characteristics shall meet specifications, summarized in Table 85-x at "Transmit Function" and Table 85-4 at TP2.

Correct PICS accordingly.

Proposed Response Response Status W

PROPOSED REJECT.

See remedy D2.0 comment 697. Transmitter characteristics are specified at TP2.

Cl 85 SC 85.8.3 P243 L11 # 305
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

Table 85-4 is entitled Transmitter characteristics at TP2 summary. Text in 85.8.3 indicates that there may be exceptions to being at TP2. Differential peak-to-peak output voltage with TX disabled has a subclause reference that shows it is at 72.6.5. There is no note in Table 85-4 to indicate the exception. There is no test fixture for measuring it at TP1 in Clause 85. Is the fixturing in Clause 72 to be used?

The same observation is made for common-mode voltage limits, differential output return loss (min), and common-mode output return loss (min).

SuggestedRemedy

Clarify where the differential peak-to-peak output voltage (max) with Tx disabled is to be measured and what fixturing is to be used.

Proposed Response Response Status W

PROPOSED REJECT.

See response to comment #306

Cl 85 SC 85.8.3 P243 L23 # 287
Bandyopadhyay, Jaya Juniper Networks

Comment Type T Comment Status D

Table 85-4 shows peak-to-peak amplitude at TP2 is max 1200mV (after removing the ILTP2(f) from the signal at TP2). That means it's basically 1200mV peak-to-peak amplitude at TP0.

ILTP2 = ILpcb min + conn min + HCB min

ILTP2 = 1.2dB+0.5dB+1.26dB

So, with max 1200mV at TP0, TP2 amplitude will violate max 750mV amplitude allowed for eye mask at TP1a point for SR. TP1a (for SR) and TP2 (for CR) are the same point from a system point of view.

SuggestedRemedy

Adjust max amplitude voltage specification for CR to match with SR at test point TP1a and TP2.

Proposed Response Response Status W

PROPOSED REJECT. Specified loss budget consistent with baseline objectives of at least 10 m reach constrained by 802.3ap channel insertion loss and Tx/Rx PCB loss; see diminico_02_1108.

CI 85 SC 85.8.3 P243 L27 # 124
Healey, Adam LSI Corporation

Comment Type T Comment Status D

If this is a coefficient of insertion loss then the nominal range of AN0 should be -1.6 to 2.0 dB which corresponds to 1.2 and 0.8 V differential peak-to-peak output amplitudes respectively.

However, this leaves no allowance for the DC loss of the host channel when a -KR compliant device delivers 0.8 V at TP0. Note that the nPPI host channel recommendations (refer to 86A.6) allow 0.56 dB loss at 10 MHz between TP0 and TP1a (comparable to -CRn TP2).

SuggestedRemedy

Change AN0 range to -1.6 to 2.5 dB.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE. For committee discussion

CI 85 SC 85.8.3 P243 L28 # 136
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

While it may be true that...

1. A polynomial in \sqrt{f} is a reasonable model for the transfer function of printed circuit board (PCB) traces and...
2. One can also derive a formula that maps the coefficient of the f^2 term in the transfer function to the 20 to 80% rise time of the function's output

...this model may not apply equally well to all implementations of a driver compliant to 10GBASE-KR requirements. One possible outcome of the deficiency in the model is that some weighted least mean squares coefficients (e.g. AN1 and AN4) may turn out to be negative.

This is not permitted per the requirements stated in Table 85-4 ruling out otherwise valid implementations.

SuggestedRemedy

Refer to healey_01_0709.pdf.

Proposed Response Response Status W
PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_01_0709.pdf.

CI 85 SC 85.8.3 P243 L32 # 125
Healey, Adam LSI Corporation

Comment Type T Comment Status D

AN1+AN2 allocation of 3 dB (max.) isn't even adequate to cover the budgetary allocations for the host printed circuit board (PCB) trace (2.37 dB) and host compliance board (HCB) PCB trace (1.26 dB) never mind the device package and connector.

SuggestedRemedy

Revise the AN1, AN2, and AN1+AN2 allowances to be consistent with the total loss of the components between the transmit function and TP2.

Proposed Response Response Status W
PROPOSED ACCEPT IN PRINCIPLE.
See comment response#247

CI 85 SC 85.8.3 P243 L34 # 137
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

In Table 85-4, the requirements for near-end and far-end noise make no sense. One would expect the long channel transfer function to reduce the noise, not enhance it.

SuggestedRemedy

Refer to healey_02_0709.pdf.

Proposed Response Response Status W
PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_02_0709.pdf.

CI 85 SC 85.8.3 P243 L42 # 132
Healey, Adam LSI Corporation

Comment Type T Comment Status D

The are multiple formatting and technical issues with the "Max. output jitter" row of Table 85-4.

1. Align characteristic values with the corresponding names.
2. The note that "Jitter measurements at TP2" is unnecessary. In the first paragraph of 85.8.3, it is stated that "the specifications at TP2 are summarized in Table 85-4."
3. "Jitter is specified at a BER of 10^{-12} " only applies to random and total jitter, and should be noted accordingly.
4. It is not stated anywhere how these parameters are to be measured.

SuggestedRemedy

Per comment. For item 4, refer to healey_01_0709.pdf.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

In Table 85-4:

1. Align characteristic values with the corresponding names.
2. Remove "Jitter measurements at TP2" 3. Note: >The total Jitter and random jitter is specified at a BER of 10-12

CI 85 SC 85.8.3 P243 L42 # 288
Bandyopadhyay, Jaya Juniper Networks

Comment Type T Comment Status D

Table 85-4 TP2 jitter numbers should match Annex 86A table 86-A-1. They are the same test point from a system point of view. They should also follow the same methodology. Table 86A-1 has J2=0.18UI, J9=0.26UI. Table 85-4 has RJ=0.15UI, TJ=0.25UI.

SuggestedRemedy

Have a common set of measurement parameters at these test points.

Proposed Response Response Status W

PROPOSED REJECT.

TP2 jitter numbers consistent with baseline objectives to utilize 10GBASE-KR electrical specifications (Clause 72) for 40GBASE-CR4 and 100GBASE-CR10 baseline electrical specifications with applicable revisions to account for differences in channel parameters e.g., copper cable assembly versus backplane and the 4-lane and 10-lane operation versus serial operation.

CI 85 SC 85.8.3 P243 L45 # 142
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

10GBASE-KR compliant devices may exhibit up to 3.5% duty cycle distortion at TP0. Since the insertion loss of the printed circuit board trace, connector, and test fixture will amplify duty cycle distortion, the allowance at TP2 needs to be increased accordingly.

SuggestedRemedy

Refer to healey_01_0709.pdf.

Also note that there is no cross-reference to the duty cycle distortion measurement procedure in clause 72. Add a cross-reference or find some other means to define how the parameter should be measured.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Add cross-reference to the duty cycle distortion measurement procedure in clause 72.

CI 85 SC 85.8.3 P243 L47 # 135
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

Table 85-4, note a) states that the associated parameters are "measured with effect of ILTP2(f) loss Equation (85-2) mathematically removed from the signal at TP2 using a software FIR filter that is no more then 6 UI long."

A user of the standard is given no guidance regarding how such a filter may be derived or implemented.

SuggestedRemedy

Refer to healey_01_0709.pdf.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_01_0709.pdf.

Cl 85 SC 85.8.3 P247 L14 # 190
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Differential output return loss at TP2 is referenced to CL 72 which was for KR chip return loss and is not relevant to TP2 which include chip + channel + connector

SuggestedRemedy

Clause 86 has already worked through the effect of chip, channel, and connector. Please use Eq 86A-1

Proposed Response Response Status W

PROPOSED REJECT. Differential output return loss of KR is still applicable. PCB loss should improve differential output return loss at TP2.
For committee discussion.

Cl 85 SC 85.8.3 P247 L19 # 191
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Common mode voltage output for CL85 is 30 mV this huge or 2X CL86, what is the justifications for this. Is this because copper cable are better shielded than optical fiber!

SuggestedRemedy

As compromise propose 20 mV

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

Cl 85 SC 85.8.3 P247 L25 # 193
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

ILTP2 ANx include the loss of host PCB channel, connector, package, and ESD diode. ILTP2 does not provide useful normative set of parameters, if the device delivers the VMA and jitter ILTP2 does not add anything.

SuggestedRemedy

propose to move ILTP2 to informative section for SI work. Replace ILTP2 with VMA value per draft D1.2 267 mV, QSQ=55, Vertical eye opening of 340 mV

Proposed Response Response Status W

PROPOSED REJECT. Consensus to implement ILTP2 in D2.1 see resolution to comment#697.

Cl 85 SC 85.8.3 P247 L33 # 195
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

How is somebody suppose to figure out what needs to be done based on the note on near-end!

SuggestedRemedy

Through CL85 if channel in question is host PCB then replace channel with host PCB channel, if it is the cable then replace it with cable or cable channel.

Note require more detail on the test method: Noise output is measured with host compliance board while opposing traffic active. The crosstalk traffic is either 64B/66B signal or PN31.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

Cl 85 SC 85.8.3 P247 L36 # 196
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Far end noise confusing to be part of TP2 table without some explanation

SuggestedRemedy

add to the note measured through the module compliance board with opposing traffic having maximum amplitude and fastest rise/fall time. The opposing traffic can be 64B/66B signal or PN31

Proposed Response Response Status W

PROPOSED REJECT

For committee discussion.

Cl 85 SC 85.8.3 P247 L43 # 194
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Total jitter of 0.25 UI is even tighter than CL86 this was KR chip output TJ not the TP2. Table 85A-1 TP0 TJ=0.28 UI, looks like you need add a jitter attenuator to meet TP2

SuggestedRemedy

Propose to set TJ=0.32 UI or better just make it the same as CL86

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Footnote: Total jitter of 0.25 UI excluding DDJ

CI 85 SC 85.8.3 P247 L45 # 192
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

It was not agreed in the meeting to incorporate "Measured with effect of ILTP2(f) loss equation 85-2 mathematically removed from the signal at TP2 using software FIR filter that is no more than 6 UI long"

SuggestedRemedy

Please remove it

Proposed Response Response Status W

PROPOSED REJECT.

Incorporation of text per D2.0 comment resolutions; see >>
http://www.ieee802.org/3/ba/public/may09/P8023ba-D20-Final_Responses_byClisa.pdf
comment resolution number 697 and reference Moore01_0509.pdf
(http://www.ieee802.org/3/ba/public/may09/moore01_0509.pdf) to incorporate table and notes.

note > b) Measured with effect of ILTP2 loss mathematically removed from the signal at TP2 using a software FIR filter that is no more than 6UI long.

CI 85 SC 85.8.3.1 P244 L1 # 126
Healey, Adam LSI Corporation

Comment Type T Comment Status D

What does it mean to send a test pattern "through TP2" and terminate all other transmitters "beyond TP2"? The first paragraph of 85.8.3 states "transmitter characteristics shall meet specifications at TP2."

SuggestedRemedy

Change text to read:

"The noise parameters specified in Table 85-4 are shall be measured with the transmitter of the disturbed lane sending PRBS9 and the transmitters of all other lanes sending PRBS31. All lanes shall be terminated at TP2 with an impedance meeting the requirements of 85.8.3.4."

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The noise parameters specified in Table 85-4 shall be measured with the transmitter of the disturbed lane sending PRBS9 and the transmitters of all other lanes sending PRBS31. All lanes shall be terminated at TP2 with an impedance meeting the requirements of 85.8.3.4."

CI 85 SC 85.8.3.1 P244 L6 # 127
Healey, Adam LSI Corporation

Comment Type T Comment Status D

How does one establish the "optimum sampling point for data recovery" for "each measured bit"?

If the phase at which the noise is measured has a significant impact on the observed value, the specification should be more rigorous in defining how to select this phase. If the phase is not significant, this requirements is not necessary.

SuggestedRemedy

Refer to healey_02_0709.pdf.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion seehealey_02_0709.pdf.

CI 85 SC 85.8.3.2 P244 L13 # 140
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

There is no bound on the difference between the linear fit insertion loss (ILTP2) and the original function (XFR) which somewhat diminishes the meaning of the fit.

SuggestedRemedy

Refer to healey_01_0709.pdf.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_01_0709.pdf.

CI 85 SC 85.8.3.2 P244 L13 # 14
Marris, Arthur Cadence

Comment Type E Comment Status D

spelling transmitt

SuggestedRemedy

change transmitt to transmit

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 85 SC 85.8.3.2 P244 L29 # 117
Healey, Adam LSI Corporation

Comment Type T Comment Status D

The definition of Input(i) is incorrect -- it is actually the definition of Output(i). The definition of Output(i) is missing.

SuggestedRemedy

Change "Input(i)" to "Output(i)." Add the following definition for "Input(i)":
"DFT of the 1 V peak-to-peak PRBS9 pattern"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See remedy comment#229

Cl 85 SC 85.8.3.2 P244 L37 # 16
Mellitz, Richard Intel

Comment Type TR Comment Status D

Apparent units for equation 85-2 need to GHz.

SuggestedRemedy

Put note suggesting f is in GHz or scale eq 85-27 to 85-30

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. See response comment#230

Cl 85 SC 85.8.3.2 P244 L37 # 118
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Equation (85-2) is mathematically incorrect.

Furthermore, the fitted insertion loss is not the basis of any specification parameters. The fitted transfer function (it is not just insertion loss, the phase response is also required) is used to generate an equalizing filter per Table 85-4, note a. Thus a more appropriate variable name is XFRfit(f).

Finally, it is not clear that the frequency range specified for the fit is appropriate since this transfer function is used to define an equalizer and is not otherwise constrained.

SuggestedRemedy

Change (85-2) to read...

"XFRfit(f) = exp(a0 + a1*sqrt(f) + a2*f + a4*f^2)"

Delete line 39 which defines the frequency range for ILTP2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Change (85-2) to read...

XFRfit(f) = exp(a0 + a1*sqrt(f) + a2*f + a4*f^2)

Cl 85 SC 85.8.3.2 P244 L50 # 119
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Equation (85-3) is wrong. The coefficients an are complex numbers and the scale factor is incorrect.

SuggestedRemedy

Change Equation (85-3) to read:

"ANn = -20*real(an)*((10.3125 x 10^9)/2)^(n/2)/loge(10) dB"

Proposed Response Response Status W

PROPOSED ACCEPT.

Change Equation (85-3) to read:

"ANn = -20*real(an)*((10.3125 x 10^9)/2)^(n/2)/loge(10) dB"

Cl 85 SC 85.8.3.2 P244 L51 # 113
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Equation (85-3) has no dependency on frequency so the associated frequency range specified on line 51 makes no sense.

SuggestedRemedy

Delete text "for 50 MHz <= f <= 6000 MHz"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. See response to comment#230

Cl 85 SC 85.8.3.2 P245 L20 # 120
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Equation (85-7) is wrong. W(i) should not be raised to the nth power.

SuggestedRemedy

Change (85-7) to read:

"mxn = {SUM(i = 0 to i = 510) W(i)*sqrt(i*df)^n }/weight"

Proposed Response Response Status W

PROPOSED ACCEPT.
Change (85-7) to read:

"mxn = {SUM(i = 0 to i = 510) W(i)*sqrt(i*df)^n }/weight"

Cl 85 SC 85.8.3.2 P245 L24 # 121
Healey, Adam LSI Corporation

Comment Type T Comment Status D

The variable mx7 is never used, so there is no need to include n = 7.

SuggestedRemedy

Define n to be "1, 2, 3, 4, 5, 6, 8".

Proposed Response Response Status W

PROPOSED ACCEPT.
Define n to be "1, 2, 3, 4, 5, 6, 8".

Cl 85 SC 85.8.3.2 P245 L25 # 122
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Definition of "delta f" is wrong.

SuggestedRemedy

Define "delta f" to be "signaling rate/511"

Proposed Response Response Status W

PROPOSED ACCEPT. Define "delta f" to be "signaling rate/511"

Cl 85 SC 85.8.3.2 P245 L35 # 116
Healey, Adam LSI Corporation

Comment Type T Comment Status D

The variable my3 is never used, so there is no need to include n = 3 on line 35.

SuggestedRemedy

Change to read "where n 0, 1, 2, 4"

Proposed Response Response Status W

PROPOSED ACCEPT.
Change to read "where n 0, 1, 2, 4"

Cl 85 SC 85.8.3.2 P245 L36 # 123
Healey, Adam LSI Corporation

Comment Type T Comment Status D

The variable "delta f" is already defined.

SuggestedRemedy

Delete redundant definition.

Proposed Response Response Status W

PROPOSED ACCEPT. Delete redundant definition.

Cl 85 SC 85.8.3.2 P248 L40 # 197
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Wrong reference

SuggestedRemedy

Should be table 85-4 not 85-6

Proposed Response Response Status W

PROPOSED REJECT.
Can't find wrong reference page 248 line 40.

CI 85 SC 85.8.3.3 P248 L14 # 290
DiMinico, Chris MC Communications

Comment Type ER Comment Status D

Reconcile any ambiguity between frequency range described in text with equations 85-1 to 85-30.

SuggestedRemedy

Reconcile any ambiguity between frequency range described in text with equations 85-1 to 85-30.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Reconcile any ambiguity between frequency range described in text with equations 85-1 to 85-30.

CI 85 SC 85.8.3.3 P249 L15 # 291
DiMinico, Chris MC Communications

Comment Type ER Comment Status D

The coefficients
a0, a2, a2,and a4. are determined using Equation (85-2) through Equation (85-2) is incorrect.

SuggestedRemedy

The coefficients
a0, a2, a2,and a4. are determined using Equation (85-4) through Equation (85-30).

Proposed Response Response Status W

PROPOSED ACCEPT.

Change: The Equation (85-2) through Equation (85-2)

To: Equation (85-4) through Equation (85-30).

CI 85 SC 85.8.3.4 P247 L30 # 231
Misek, Brian Avago Technologies

Comment Type T Comment Status D

This whole section does not makes sense to me. The Testfixture will be attached to the host through the connector to yeild a TP2 test point. As such the test fixture must be evaluated in a differnet manner then is represented here.

The Test fixture could be called the Module Compliance Board (MCB) and should be normatively specified as was the case for SFI. That is it shall have a normative IL limit(min and Max). This then causes us to need Some way of testing the "goodness" of the HCB. A Cable Compliance board could be used to test the Host compliance board

SuggestedRemedy

Recommend adoption in principle of methodology of Section 86A.5.1 as pertaining to test board loss and definition with the requested further study of:

1)that the acceptable reagon of the mated HCB-CCB not have the drop in the SDD21 around 5.7GHz. This step would allow hazardous ripple in the SDD21 that could invalidate jitter measurements.

2)The section on FEXT and NEXT.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

CI 85 SC 85.8.3.5 P247 L51 # 232
Misek, Brian Avago Technologies

Comment Type T Comment Status D

Limit specification of PCB loss terms to square root and linear with F. Hlger order terms are not needed for this short of a board.

SuggestedRemedy

rewrite equation 85-33 and drop the b3 and b4 terms.

Proposed Response Response Status W

PROPOSED REJECT. PCB loss basis consistent for all clause 85 PCB losses (e.g., test fixtures, Tx/Rx PCB).

Cl 85 SC 85.8.3.5 P247 L51 # 112
Healey, Adam LSI Corporation

Comment Type E Comment Status D

The Amax equation and its associated parameters (b1, b2, b3, b4) are repeatedly defined throughout the document. Defining Amax in one place (with b1...b4) and then referring to Amax in subsequent equations (with cross-reference) would be a cleaner approach.

SuggestedRemedy

Per comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Define Amax in one place (with b1...b4) and then refer to Amax in subsequent equations (with cross-references).

Cl 85 SC 85.8.3.5 P247 L51 # 115
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Test fixture insertion loss allowance is too large. Equation 85-33 corresponds to 4.5 dB loss at half of the signaling rate.

SuggestedRemedy

Refer to the compliance board parameters in 86A.5.1.1 since the hardware will likely be identical for the Style 1 connector. If the parameters for Style 2 test fixtures are required to be different, define them separately (however, it is not clear why this should be the case since a common test fixture is defined for both connector styles in the current draft).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See response comment#294

Cl 85 SC 85.8.3.5 P248 L3 # 233
Misek, Brian Avago Technologies

Comment Type T Comment Status D

A common set of HCB's should be a goal of this project between clause 85 and 86A. The HCB is a means to a measurement.
85 is $.053 \times [20 \times \log_{10}(e) \times (2E-5(\sqrt{f})+1.1E-10)]$
86A is $20 \times \text{Log}_{10}(|\text{SDD21}|) = -.01 -.3 \times \sqrt{f} -.11 \times f$

SuggestedRemedy

Adopt the MCB that is lower loss.

Proposed Response Response Status W

PROPOSED REJECT. PCB loss functions consistent for all PCB losses in clause 85 (e.g., test fixtures, Tx/Rx PCB).

Cl 85 SC 85.8.3.5 P252 L15 # 294
DiMinico, Chris MC Communications

Comment Type TR Comment Status D

Sub clause 85.8.3.5 Test-fixture insertion loss

The maximum test fixture insertion loss Equation (85-33) coefficient (0.193) is incorrect

SuggestedRemedy

Replace the coefficient (0.193) with (0.054); see page 252 - line 15 - Equation (85-33).

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Replace the coefficient (0.193) with (0.054); see page 252 - line 15 - Equation (85-33).

Cl 85 SC 85.8.4 P248 L16 # 40
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Change to clearly normative text, and to match transmitter section.

SuggestedRemedy

Change
85.8.4 Receiver characteristics at TP3 summary
The receiver characteristics at TP3 are summarized in Table 85-5.
to
85.8.3 Receiver characteristics
Receiver characteristics shall meet specifications at TP3, unless otherwise noted. The specifications at TP2 are summarized in Table 85-5. The transmitter specifications at TP5 are provided informatively in Annex 85A, Table 85A-2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change: The receiver characteristics at TP3 are summarized in Table 85-5.

To: The receiver characteristics shall meet specifications summarized in Table 85-5 at TP3 unless otherwise noted.

Cl 85 SC 85.8.4 P248 L17 # 307
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

No "Shall" statement related to the Rx characteristics at TP3 are included or appropriate PICS for Differential peak-to-peak input amplitude tolerance, differential input return loss, or differential to common mode conversion SCD11.

SuggestedRemedy

Modify sentence in 85.8.4 to:

Receiver characteristics shall meet specifications, summarized in Table 85-5, at TP3.

add PICS

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
(1)See response to comment#40 for text
(2)Add PICS

Cl 85 SC 85.8.4 P248 L38 # 308
D'Ambrosia, John Force10 Networks

Comment Type T Comment Status D

CR Rx based on 10GBASE-KR. Missing note in Table 85-5.

SuggestedRemedy

add following note (ref Table 72-9)-
a The receiver shall tolerate amplitudes up to 1600 mV without permanent damage.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See suggested remedy.

Cl 85 SC 85.8.4.1 P248 L41 # 15
Marris, Arthur Cadence

Comment Type E Comment Status D

spelling

SuggestedRemedy

change interference to interference

Proposed Response Response Status W

PROPOSED ACCEPT.

See suggested remedy

Cl 85 SC 85.8.4.1 P249 L11 # 235
Misek, Brian Avago Technologies

Comment Type T Comment Status D

Broad band noise values need to be justified. The noise far end for the Tx has the nFEXT in it and has been shapped by the longest cable. This means it should represent the FEXT noise and was less then the 3mV. The test calls out all active channels. What is the source of the noise be injected? How should it be injected? It would be easyist to inject it at the Tx end if on is using a cable to model the channel. The noise would then be shapped by the channel transfer function.

SuggestedRemedy

With the definition of HCB ans CCB boards it becomes possible to explicitly call out this test procedure.

If a cable is used, then guidance to how the test setup can be constructed would be needed.

Proposed Response Response Status W

PROPOSED REJECT.
[Editor's note: References changed from 86.8.4.1]

The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

Cl 85 SC 85.8.4.2 P249 L22 # 138
Healey, Adam LSI Corporation

Comment Type TR Comment Status D

The definition of the test channel for interference tolerance testing is flawed.

1. The heading of 85.8.4.1 implies that the receiver interference tolerance requirements apply at TP3. Thus, ILch is not an appropriate reference function since it "double counts" the loss from TP3 to the TP5 (i.e. this loss is built into the device under test).

2. It is not appropriate to define the test channel in terms of a linearly scaled version of some reference function, since not every compliant cable assembly exhibits a transfer function that is a linearly scaled version of that reference function. For example, as the ratio of the coefficient of sqrt(f) to the coefficient of f deviates from the ratio defined by the reference function, the linear fit parameters mTC and bTC start to lose meaning.

SuggestedRemedy

Refer to healey_03_0709.pdf.

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion see healey_03_0709.pdf.

Cl 85 SC 85.8.4.2 P249 L28 # 234
 Misek, Brian Avago Technologies

Comment Type T Comment Status D
 ILch(f) is not 85.9 It is 85A-4 with 1/2 of the ILpcb removed. This should be ILtch for IL test channel

SuggestedRemedy
 ILtch(f)>=ILchmax(f)-0.5*ILpc(f)

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 For committee

Cl 85 SC 85.8.4.2 P249 L32 # 111
 Healey, Adam LSI Corporation

Comment Type E Comment Status D
 "isertion" should be "insertion"

SuggestedRemedy
 Correct two instances of this error in this paragraph.

Proposed Response Response Status W
 PROPOSED ACCEPT.
 "isertion" should be "insertion" correct the two instances of this error in this paragraph.

Cl 85 SC 85.8.5 P253 L18 # 198
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D
 Differential peak to peak not compatible with CL86

SuggestedRemedy
 Change max value from 1200 mV to 850 mV

Proposed Response Response Status W
 PROPOSED REJECT. Peak-to-peak values consistent with baseline objectives to utilize 10GBASE-KR electrical specifications (Clause 72) for 40GBASE-CR4 and 100GBASE-CR10 baseline electrical specifications.

Cl 85 SC 85.8.5 P253 L22 # 199
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D
 Differential return loss for TP3 is refered to KR chip return loss which is no relevant.

SuggestedRemedy
 Propose to use Eq 86A-3

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.
 For committee discussion.

Cl 85 SC 85.8.5.1 P253 L32 # 200
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D
 Inteferance test is not sufficently described wihout pulse or impulse responce of the cable

SuggestedRemedy
 propose to use cable pulse or impulse response for the inteference generator

see ghiasi_01_0709

Proposed Response Response Status W
 PROPOSED REJECT.

The implemten of the test channel with specified insertion loss and return loss (i.e., implemented as a cable + attachment) will yield a sufficiently characterized channel response.

Cl 85 SC 85.9 P250 L27 # 373
 Ganga, Ilango Intel

Comment Type E Comment Status D
 fix typo: insertion loss deviation (ILD)

Add missing cross-reference to Figure 85-2

SuggestedRemedy
 As per comment

Proposed Response Response Status W
 PROPOSED ACCEPT IN PRINCIPLE.

CI 85 **SC 85A.3** **P402** **L28** # **289**
 Bandyopadhyay, Jaya Juniper Networks

Comment Type **T** **Comment Status** **D**

85A.4 pcb channel loss allowed to support 10m copper cable will make practical system implementation extremely difficult.

SuggestedRemedy
 Reduce the allowable cable length objective from 10m to "x"m. "X" would need future measurement and analysis work.

Proposed Response **Response Status** **W**

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

CI 85A **SC 85A.2** **P401** **L16** # **130**
 Healey, Adam LSI Corporation

Comment Type **T** **Comment Status** **D**

Since the transmitter characteristics defined at TP0 are essentially identical to 10GBASE-KR (40GBASE-KR4) is seems unnecessary to define them again here in an informative manner. A cross reference should suffice.

SuggestedRemedy
 State that the intent is to have the transmitter characteristics at TP0 match the 40GBASE-KR4 transmitter characteristics at TP1 and supply the appropriate cross reference. Delete all other text in this subclause. Note the title should be corrected to read "TP-0" (zero) and not "TP-O" ("oh").

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.
 See suggested remedy.

CI 85A **SC 85A.2** **P401** **L17** # **315**
 D'Ambrosia, John Force10 Networks

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

The transmitter characteristics at "Transmit function" are defined normatively in Clause 83 and then defined informatively in 83A.2. This will cause confusion.

SuggestedRemedy
 Delete subclause 83A.2

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.
 See response to comment #130

CI 85A **SC 85A.2** **P401** **L34** # **209**
 Ghiasi, Ali Broadcom

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

Differential Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!

SuggestedRemedy
 Propose to use Eq 83A-8

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.

For committee discussion

CI 85A **SC 85A.2** **P401** **L34** # **210**
 Ghiasi, Ali Broadcom

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

Differential Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!

SuggestedRemedy
 Propose to use Eq 83A-8

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.

Duplicate of comment #209

CI 85A **SC 85A.2** **P401** **L38** # **211**
 Ghiasi, Ali Broadcom

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

Common mode Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!

SuggestedRemedy
 Propose to use Eq 83A-10

Proposed Response **Response Status** **W**

PROPOSED ACCEPT IN PRINCIPLE.
 For committee discussion

CI 85A SC 85A.2 P401 L41 # 207
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

AC common mode voltage can not be the same at TP0 and TP2

SuggestedRemedy

Propose to change the common mode volatage at the TP0 to 15 mV

Proposed Response Response Status W

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

CI 85A SC 85A.3 P402 L1 # 131
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Since the receiver characteristics defined at TP5 are essentially identical to 10GBASE-KR (40GBASE-KR4) is seems unnecessary to define them again here in an informative manner. A cross reference should suffice.

SuggestedRemedy

State that the intent is to have the receiver characteristics at TP5 match the 40GBASE-KR4 receiver characteristics at TP4 and supply the appropriate cross reference. Delete all other text in this subclause.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See suggested remedy.

CI 85A SC 85A.3 P402 L18 # 208
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

max input voltage 1200 mV exceed the CL86 max value, cusomters want CL85 and 86 to have common electrical!

SuggestedRemedy

Make max input 850 mV more compatible with future CMOS process

Proposed Response Response Status W

PROPOSED REJECT.
max input 850 mV is inconsistent with max output of 1200 mV

CI 85A SC 85A.4 P402 L25 # 326
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

The stated insertion loss for Tx / Rx PCB trace in Eqs 85A-1 and 85A-2 is specified up to 6GHz. The stated channel insertion loss in Eqs 85A-3 and 85A-4 is only specified up to 5.1625GHz. There are no constraints on the insertion loss above the stated frequencies. The same is true for the cable assembly in Eq. 85-40.

-CR PMD is based on -KR. Therefore, prior knowledge achieved with -KR channels is relevant. During 802.3ap it was correlated that insertion loss above f2 could be indicative of poorer performance, therefore a bound on insertion loss above f2 was created.

SuggestedRemedy

Extend Eq's 85a-3 and 85a-4 to 6 GHz
add equation to upper bound in 85A.1, 85A.2 and 85A.5
base on equation 69B-8. In that equation, change Amax(f) to ILcamax(f), and change f2 to 6GHz.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Reconcile the frequency range limit to 6 GHz in 85A.

CI 85A SC 85A.4 P402 L29 # 318
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

Eq's 85A-1 and 85A-2 specify the maximum and minimum insertion loss for the Tx and Rx PCB trace loss. The problem is that it does not split the loss budget between the two boards, which could result in an interoperability issue, if one end of the link decides to use more of the total budget.

SuggestedRemedy

specify min and max trace loss per each board (multiply current equations by 1/2)

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
For committee discussion

CI 85A SC 85A.4 P402 L30 # 237
 Misek, Brian Avago Technologies

Comment Type T Comment Status D

Split the loss in half explicitly for TP0-TP1 and TP4-TP5 PCB loss.

SuggestedRemedy

Change line 30 and to an or.

change the scaling in 85A-1 to half the loss curve.

Change line 50 0.2 meters(8 inches) to 01 meters (4 inches).

Strike line: "The maximum insertion loss for the transmitter or the receiver differential controlled impedance printed circuit board is one half of...."

Same type changes to the min los on page 403.

Proposed Response Response Status W

PROPOSED REJECT.
 See page 402, line 50-54
 The maximum insertion loss for the transmitter or the receiver differential controlled impedance printed circuit board is one half of the maximum inserton loss $l_{pcb}(f)$.

CI 85A SC 85A.4 P402 L31 # 129
 Healey, Adam LSI Corporation

Comment Type T Comment Status D

It is not clear what is meant by the "insertion loss between TP0-TP1 and TP4-TP5" since TP1 and TP4 are defined at the input (output) of the cable assembly test fixture.

The construction of the channel insertion loss limit ($IL_{Cmax} + IL_{PCBmax}$) implies that this is intended to mean the host may have loss beyond $IL_{PCBmax}/2$ equal to the defined cable assembly test fixture loss.

SuggestedRemedy

Modify the text to clarify the intent.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

The channel insertion loss is determined by Equation (85-A-3). To reconcile this the test fixture IL is removed from the measurement (IL is the only parameter that is de-embedded).

Update text to indicate that the test fixture IL is removed from the IL measurement (IL is the only parameter that is de-embedded).

CI 85A SC 85A.4 P402 L35 # 238
 Misek, Brian Avago Technologies

Comment Type T Comment Status D

Small PCB's can be accuratly modeled by \sqrt{f} and f terms.

SuggestedRemedy

Remove 85A-1 and $2f^2$ and f^3 terms.

Proposed Response Response Status W

PROPOSED REJECT. See response comment#233.

Cl **85A** SC **85A.4** P**402** L**50** # **283**
 Frazier, Howard Broadcom Corporation

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

The stated 8" of PCB trace cannot be achieved with the current loss budget, and things will get worse once the budget is corrected. It's more like 6" (<=3" per end), and this simply isn't enough for multi-port PHYs. Board designers will need a loss budget of approximately 5 dB from TP0-TP1, and 5 dB from TP4-TP5 to account for PCB loss, connector loss, and other impairments.

SuggestedRemedy

Increase the maximum loss to 5 dB from TP0-TP1, and TP4-TP5. This will result in a decrease in the link span, probably to 5 m once the link budget has been corrected to account for FEXT and cable insertion loss. This will require a change to the objectives for 40G and 100G copper, and the new objectives must be re-evaluated against the 5 Criteria, particularly Broad Market Potential, Technical Feasibility, and Economic Feasibility.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

Use response to comment #96 to consider PCB trace loss

Cl **85A** SC **85A.4** P**403** L**19** # **239**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

Now that there are test fixtures available for testing channels. A channel IL from TP0 to TP2 can be recommended that can be measured using probing on the ASIC bumps out to the TP2 SMA's to assist board manufactures.

SuggestedRemedy

Add section similar in scope to 86A.6 with appropriate reductions in the loss to match the PCB loss of the 85A interconnect.

Proposed Response Response Status **W**

PROPOSED REJECT.

The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

Cl **85A** SC **85A.5** P**403** L**33** # **240**
 Misek, Brian Avago Technologies

Comment Type **E** Comment Status **D**

wrong equation sited in lin 33 and 48

SuggestedRemedy

change 51 to 40

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl **85A** SC **85A.6** P**404** L**4** # **241**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

Return loss equation is sited wrong. Also this assumes that the channel between TP0 and the cable connector is no different then the CCB.

SuggestedRemedy

should be 85-49 and 85-50

Proposed Response Response Status **W**

PROPOSED ACCEPT.

Cl **85A** SC **85A.7** P**403** L**2** # **243**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

NOTE--2.5 dB of the 3 dB signal-to-noise ratio penalty related to insertion loss deviation embodied in 802.3ap ICRmin is applied as 2.5 dB ICRchmin margin to account for reduction in ILD penalty for CR4 and CR10."

After taking into consideration the effects of reflections at TP1 and TP4, this is unlikely to be valid.

Previous comments show a 1dB penalty exists for ILD.

SuggestedRemedy

Change note to:

2.5 dB of the 3 dB to 1.5dB of the 3dB

Change ICRchfit(f)>= ICRchmin(f)= 23.3-18.7log10(f/5E9)-2.5 to

ICRchfit(f)>= ICRchmin(f)= 23.3-18.7log10(f/5E9)-1.5 which then requires a reduction in max channel Insertion loss by 1dB to account for this additional impairment.

This can be accomplished by changing the cable loss and or the pcb loss as this what makes up the channel loss.

Proposed Response Response Status **W**

PROPOSED REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedy; for committee discussion.

CI **85A** SC **85A.7** P**404** L # **242**
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **D**

If the RL of the cable assembly is not improved as per a previous comment then the ILD of the channel must be increased.

Reflections between the hosts and the connectors on the PC boards will create additional ripple over what is measure for the cable. The cable assymble is measured with better return loss connections then the host will provide and as such the informative overall channel ILD needs to be speced at a higher value than the cable.

The calculation can be performed as shown

1. If one connect two 2-port networks described in terms of S-parameters
 - $SC_{21} = SA_{21} * SB_{21} / (1 - SA_{22} * SB_{11})$ where (S_{XIJ} being complex numbers)
2. For the channels we work with, generally the phases of SA₂₂ and SB₁₁ are not specified or even

specifiable. Therefore we can approximate:

- $db(SC_{21}) = db(SA_{21}) + db(SB_{21}) + \text{correction}$.

The correction amounts to an uncertainty in db(SC₂₁) which will contribute to ILD, since the phase both

SA₂₂ and SB₁₁ will vary quite a bit with frequency.

$| \text{correction} | < 20 * \log_{10}(e) * SA_{22} * SB_{11}$

Worst case the uncertainty will add directly to ILD.

Some will argue that it should RSS with ILD which might be slightly optimistic

3. Assuming return loss of the channel TP0-TP2 is 12dB at Nyquist and Cable assembly return loss

at Nyquist is 5.7dB

- $| \text{correction} | < 1.133$

4. Making similar assumptions for TP3-TP5, gives a second correction.

- $| \text{correction} | < 1.133$

5. RSSing the 2 corrections with the specified ILD=1.73dB for the Cable assembly at Nyquist gives:

- ILD TP0-TP5 = 2.3 dB

SuggestedRemedy

Change ILDch is not equal to ILDca and an ILDch equation to flare out to 2.3dB at nyquist.

$ILDch(f) \geq ILDchmin(f) = -0.8 - 0.3 \times 10E-9$ (85A.XX)

$ILDch(f) \leq ILDchmax(f) = 0.8 + 0.3 \times 10E9$ (85S.XX)

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

See response comment#236

CI **85A** SC **85A.7** P**404** L**52** # **423**
 Balasubramanian, Vittal FCI USA, Inc.

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

ICRcafit shall be greater than or equal to ICRcam in as defined by the following equation where f is expressed in GHz.

This statement cannot be true. f needs to be in Hz or eqn 85A-12 needs to change to (f/5)

SuggestedRemedy

Change equation per comment

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE.

[Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]

Change "where f is expressed in GHz."

to: "where f is expressed in Hz."

CI **85A** SC **85A.7** P**405** L**3** # **212**
 Ghiasi, Ali Broadcom

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

ICR channel min exceed ICR chfit, when worst case FEXT are included link budget are not supported at 10 m

SuggestedRemedy

ICR channel min crossover ICRfit-400 MHz due to worst case aggressor FEXT which is not included in the daminico_01_0708 presentation.

see ghiasi_01_0709

Proposed Response Response Status **W**

PROPOSED REJECT.

See remedy comment#170.

Please note: In 10m analysis models measured FEXT disturber used for 3 disturber's in power sum crosstalk calculation imposing worse case FEXT.

In 0.5 m analysis model worse case measured FEXT used; see diminico_02_1108.pdf.

Cl 85A **SC 85A.7** **P405** **L52** # **419**
 Balasubramanian, Vittal FCI USA, Inc.

Comment Type E **Comment Status D**
 Remove "<XREF>"

SuggestedRemedy
 Change per comment

Proposed Response **Response Status W**
 PROPOSED ACCEPT.
 [Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]

Cl 86 **SC** **P** **L** # **327**
 D'Ambrosia, John Force10 Networks

Comment Type ER **Comment Status D**

Naming of return loss parameters is inconsistent with naming nomenclature used in IEEE 802 and most other industry specifications, including Infiniband, Fibre Channel, XFP, OIF CEI, where the term "return loss," not "reflection" is used. The only exception being SFP+. Given current thoughts on being able to implement -SR and -CR ports through same MDI, care should be taken on similar terminology. While "S21" was used in Clause 47, further searches found no usage of SDDmn parameters in IEEE 802.3 Section 4 or Section 5.

1. Table 86A-1, Line 22, "Differential output reflection response, SDD22"
2. Table 86A-1, Line 23, "Common mode output reflection response, SCC22"
3. Table 86A-2 "Differential input reflection response SDD11"
4. Table 86A-2 "Reflected differential to common mode conversion, SCD11"
5. Table 86A-3 "Differential Output Reflection Response SDD22"
6. Table 86A-3 "Common mode output reflection response, SCC2"
7. Table 86A-4 "Differential input reflection response, SDD11"
8. Table 86A-4 "Reflected differential to common mode conversion, SCD11"

SuggestedRemedy

1. Table 86A-1, Line 22, "Differential output reflection response, SDD22"
2. Table 86A-1, Line 23, "Common mode output reflection response, SCC22"
3. Table 86A-2 "Differential input reflection response SDD11"
4. Table 86A-2 "Reflected differential to common mode conversion, SCD11"
5. Table 86A-3 "Differential Output Reflection Response SDD22"
6. Table 86A-3 "Common mode output reflection response, SCC2"
7. Table 86A-4 "Differential input reflection response, SDD11"
8. Table 86A-4 "Reflected differential to common mode conversion, SCD11"

Make following changes:

1. change "Differential output reflection response, SDD22" to "Differential Output Return Loss"
2. change "Common mode output reflection response, SCC22" to "Common-mode Output Return Loss"
3. Change "Differential input reflection response SDD11" to "Differential Input Return Loss"
4. Change "Reflected differential to common mode conversion, SCD11" to "Differential to Common-mode Input Return Loss"
5. Change "Differential Output Reflection Response SDD22" to "Differential Output Return Loss"
6. Change "Common mode output reflection response, SCC2" to "Common-mode Output Return Loss"
7. Change "Differential input reflection response, SDD11" to "Differential Input Return Loss"
8. Change "Reflected differential to common mode conversion, SCD11" to "Differential to Common-mode Input Return Loss"

Add definition to 1.4:

Return Loss: the ratio (expressed in dB) of reflected power at one port to the incident power

at the same port. May refer to optical power or to electrical power in a specified frequency range. Note that the dB measurement of return loss is the absolute magnitude of the respective s-parameter dB magnitude measurement.

Proposed Response *Response Status* **W**

PROPOSED REJECT. There are three parts to the comment:

- A. "return loss" vs "reflection"
- B. Whether to mention the parameter symbol in the table entry.
- C. Adding a definition for return loss.

For A: we are using S-parameters. XFP, SFP+ (module and connector), InfiniBand CXP and FC-PI-4 all use S-parameters (negative numbers). So do instruments, and the measurement data at <http://ieee802.org/3/ba/public/channel.html>. Those who deal in small optical modules and/or compliance boards are used to this. Any change would be disruptive.

S-parameters define responses (gains) not losses. See <http://contact.tm.agilent.com/data/static/downloads/eng/Notes/interactive/an-95-1/an-95-1.pdf> page 12

Some documents just call the parameters e.g. "Differential Output S-parameter" (from SFF-8083), some finesse the issue and by careful wordsmithing avoid calling an S-parameter a loss (e.g. SFF-8083, FC-PI-4).

The words used e.g. "reflection" and "response" are clear, correct, and consistent with S-parameters. "Coefficient" seems to be used more for a single-frequency response but can be considered.

52.6.1 has its signs and terminology straight:

"Optical Return Loss Tolerance (max) 12 dB

Transmitter Reflectance (max) -12 dB"

87 and 88 are similar.

For B: we give other symbols where we have them, e.g. DDPWS, J2. It helps the reader.

As to adding a definition for return loss; 86A doesn't use the term. There is one already: 1.4.308 return loss: In 10BROAD36, the ratio in decibels of the power reflected from a port to the power incident to the port. An indicator of impedance matching in a broadband system. (See IEEE 802.3, Clause 11.)

This contradicts e.g. 11.3.1.2.1 where the return loss is positive. Clause 11 is no longer maintained. A parameter exists whether in dB or not.

If it helps 85 and 83A, could change 1.4.308 return loss to:

The ratio of the incident power at a port to the reflected power from that port; the inverse of reflection response. May refer to optical power or to electrical power in a specified frequency range. An indicator of impedance matching in a broadband system. (See IEEE 802.3.)

But would prefer to avoid writing pieces of a textbook if not necessary.

<i>Cl</i> 86	<i>SC</i> 86.1	<i>P</i> 271	<i>L</i> 20	# 145
Petrilla, John		Avago Technologies		

Comment Type **E** *Comment Status* **D**

In Table 86-1, for Required operating range, ... 100 or OM3 ... should be ... 100 for OM3 ...

SuggestedRemedy

In Table 86-1, for Required operating range, change ... 100 or OM3 ... to ... 100 for OM3 ...

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

<i>Cl</i> 86	<i>SC</i> 86.1	<i>P</i> 271	<i>L</i> 23	# 146
Dawe, Piers		Avago Technologies		

Comment Type **E** *Comment Status* **D**

In IEC document names, should we use hyphens (short) or minus signs/ en-dashes (medium length)?

SuggestedRemedy

?

Also look out for inconsistent hyphens and minus signs/ en-dashes in equations and 86A.5.3.1 p416 line 49, 86A.5.3.4 p418 line 42.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Find out and implement. May affect other clauses.

<i>Cl</i> 86	<i>SC</i> 86.1	<i>P</i> 272	<i>L</i> 5	# 146
Petrilla, John		Avago Technologies		

Comment Type **E** *Comment Status* **D**

The phrase, "(bibliography, entries referenced here in the format [B_n])", is difficult to understand. Is there a typo?

SuggestedRemedy

Check that the phrase was written as intended and act accordingly.

Proposed Response *Response Status* **W**

PROPOSED REJECT. References to the entries in Annex A take the form [B1], [B2] and so on.

CI 86 SC 86.2 P273 L13 # 44
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Previously, draft says "In this clause... an example item is numbered i." i is the usual example integer (while x is the usual example number on a continuous scale).

SuggestedRemedy

Change x to i where appropriate. Affects 87, 88 also.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. In clauses 80-88 and appendices if applicable, where x represents an integer, replace with italic i

e.g. in
IS_UNITDATA_x.request
where x = 0 to n-1 FEC_uncorrected_blocks_counter_x
Not in Figure 74-4, 74-6.

Clause editors to consider:

Which way for am_lock<x> and similar?

For "inst:IS_UNITDATA_y.request (y not necessarily equal to x)", use j in place of y? k in place of z?

Alternatively, make no change.

CI 86 SC 86.5 P275 L18 # 100
Kipp, Scott Brocade

Comment Type E Comment Status D

Figure 86-2. Why do you specify a lane i? Remove this lane decrease the drawing size and so that you don't need two "...".

The and gate symbol also looks bad.

SuggestedRemedy

Remove lane i. Remove the overlap of the lines where they take a right angle into the AND gate.

Make the AND gate and optical receiver look pretty by removing overlapping lines.

Proposed Response Response Status W

PROPOSED REJECT. Could remove lane 1 instead of lane I, don't see strong reason to do so as there are at least 4 lanes.

Do lines overlap at high magnification or on a printout?

CI 86 SC 86.5.1 P274 L51 # 147
Petrilla, John Avago Technologies

Comment Type T Comment Status D

The text covers the case where TP1 & TP4 are not exposed but doesn't cover the case where TP2 & TP3 are not exposed.

SuggestedRemedy

Add the sentence, "If TP2 and TP3 are not exposed, a conforming implementation must behave as though the interfaces were compliant."

Proposed Response Response Status W

PROPOSED REJECT. In common with previous PMDs, exposed TP2 & TP3 are expected.

CI 86 SC 86.5.1 P275 L21 # 47
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

We were persuaded to change "PMD service interface" in the block diagram to "nPPI". This is not correct; compare Figure 87-2, 88-2 or 85-2. But it may help to point out that the partitioning and electrical connector are optional and refer to 86A.

SuggestedRemedy

Change it back (two places). Add new second sentence to 86.5.1 "An optional physical partitioning and electrical connector is shown. At line 50, add ": see Annex 86A".

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86 SC 86.5.10 P277 L45 # 279
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

There is no Clause 45 register bit referenced for PMD_transmit_fault in this subclause.

SuggestedRemedy

Delete the words "the MDIO is implemented, and" at the beginning of the first sentence. Add the sentence: "If the MDIO interface is implemented, PMD_transmit_fault shall be mapped to the PMD_transmit_fault bit as specified in 45.2.1.7.4"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. The PMD_transmit_fault variable is found in Table 86-4, which relates it to register/bit number 1.8.11 of the Status 2 register. It would be helpful if the register/bit number were clickable, but it is described in 45.2.1.7.4. So the information is there, in the format of 52, 87-88. Insert "The PMD_transmit_fault function is optional." at the beginning of paragraph. Compare 52, 68, 85 and 86. In 45.2.1.7.4 and 45.2.1.7.5, add text for new PMDs.

CI 86 SC 86.5.11 P277 L50 # 280
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

There is no Clause 45 register bit referenced for PMD_receive_fault in this subclause.

(note to the editor in chief- the pmd_fault functions should be defined consistently in the copper and optics clauses. In D2.1, they are inconsistent.)

SuggestedRemedy

Delete the words "the MDIO is implemented, and" at the beginning of the first sentence. Add the sentence: "If the MDIO interface is implemented, PMD_receive_fault shall be mapped to the PMD_receive_fault bit as specified in 45.2.1.7.4"

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Not persuaded that 86.5 PMD functional specifications is the place to impose "shall"s on mapping to MDIO registers. That's what 86.4 PMD MDIO function mapping and 45 are for. Consider changing 84 and 85 to be like 86-88.

CI 86 SC 86.5.4 P276 L31 # 148
Petrilla, John Avago Technologies

Comment Type E Comment Status D

In Table 86-5, the term, "Input_optical_power" is not defined, nor used elsewhere (except in this and similar tables in 87 & 88), nor needs definition as standard english is sufficient - except standard english does not need nor uses the underscores

SuggestedRemedy

In Table 86-5, change the term, "Input_optical_power" to "Input optical power" twice. Repeat in tables 87-4 and 88-4.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. The term "Input optical power" isn't used otherwise, either. Change "Input_optical_power <= -30 dBm average power" to "Average optical power at TP3 <= -30 dBm". Change "Input_optical_power >= stressed receiver sensitivity (max) in OMA" to "Optical power at TP3 >= stressed receiver sensitivity (max) in OMA". Make similar changes in Table 87-4 and Table 88-4.

CI 86 SC 86.5.7 P277 L13 # 43
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Why are 86.5.9 and others marked "(optional)" in the title while this, which says it's optional in the text, is not?

SuggestedRemedy

Add "(optional)" here, at 87.5.7 and 88.5.7.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Also consider if "(optional)" should be added to 86.5.8.

CI 86 SC 86.5.8 P277 L36 # 281
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

Disabling any of the lanes of the PMD using the lane-by-lane disable function effectively disables the whole interface, since we haven't defined a mechanism by which an interface can operate without the full complement of lanes. Thus, the draft should include a warning, in the form of a note, that disabling one or more lanes will disable the interface, and can be disruptive to a network.

SuggestedRemedy

Add a note at the end of 86.5.8 that reads:

NOTE -Disabling the electrical transmitter on one or more lanes effectively disables the entire interface and can be disruptive to a network.

Proposed Response Response Status W

PROPOSED REJECT. As we haven't defined a mechanism by which an interface can operate without the full complement of lanes, this seems self-evident.

Any text could be something like:

NOTE -Disabling the transmitter on one or more lanes stops the entire link from carrying data.

Apply same remedy to 84.7.7, 85.7.7, 87.5.8 and 88.5.8. Alternatively, place the NOTE in 80.

CI 86 SC 86.5.9 P277 L39 # 278
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status D

There is no Clause 45 register bit referenced for PMD_fault in this subclause.

SuggestedRemedy

Delete the words "the MDIO is implemented, and" at the beginning of the first sentence. Add the sentence: "If the MDIO interface is implemented, PMD_fault shall be mapped to the PMD_fault bit as specified in 45.2.1.2

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Follow response to 280.

CI 86 SC 86.7.2 P279 L9 # 149
Petrilla, John Avago Technologies

Comment Type T Comment Status D

In Table 86-6, increasing the Max limit for 'Average launch power, each lane' can enable lower cost transmitter implementations without significant impact on receivers if the current max 'Optical Modulation Amplitude (OMA), each lane' and max 'Peak power, each lane' are unchanged. Raising the Max limit for 'Average launch power, each lane' to 2.4 dBm will not compromise the eye safety class 1M limit of ~5.3 dBm. See petrilla_02_0308 for eye safety discussion.

SuggestedRemedy

In Table 86-6, change the Max limit for 'Average launch power, each lane' from 1 to 2.4. In Table 86-7 change the max for 'Total average power for 40GBASE-SR4', from 7 to 8.4 and change the max for 'Total average power for 100GBASE-SR10, from 11 to 12.4. In Table 86-8, change min 'Damage threshold' from 2 to 3.4 and max 'Average power at receiver input, each lane' from 1 to 2.4.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86 SC 86.7.3 P280 L37 # 214
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Condition of jitter tolerance test gives credit to the transmitter by allowing low frequency jitter <4 MHz to be tracked but the receiver is not test with the same tracked SJ. This is called double dipping!

SuggestedRemedy

Jitter tolerance is part of receiver sensitivity test and the same SJ taken credit for must be tolerated.

As compromise I suggest 2 MHz for the corner frequency for the CRU and the jitter tolerance.

See ghiasi_02_0709

Proposed Response Response Status W

PROPOSED REJECT. [Page changed from 286] Either receiver corner frequency should remain at 4 MHz or it could be increased (but does not need to be). Needs coordination with nAUI (and CRn).

Note also comments 168, 36, 175, 184, 183, 215, 224, 225.

CI 86 SC 86.8 P283 L51 # 101
Kipp, Scott Brocade

Comment Type E Comment Status D

Why are there so many 1 sentence paragraphs in this subclause. One paragraph is cut in half by the table.

SuggestedRemedy

Consolidate some of the paragraphs into longer sentences and make sure the paragraphs aren't divided over the table.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Move third paragraph to continue first. Look for a way to let a table float to the end of the page (Table 86-13). May be better to leave staff editor to tidy up when pagination is known.

CI 86 SC 86.8 P286 L12 # 102
Kipp, Scott Brocade

Comment Type E Comment Status D

the effect of the effect of the decision circuit

is an odd way of saying the effect of the decision circuit

SuggestedRemedy

Change to the effect of the decision circuit

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86 SC 86.8.3.2 P298 L47 # 215
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

The CRU of 4 MHz allow tracking all low frequency which can be as result of power supply noise or clock source during normal operation but the receiver is not test with the same SJ. This is called double dipping!

SuggestedRemedy

As compromise I suggest 2 MHz for the corner frequency for the CRU and the jitter tolerance.

See ghiasi_02_0709

Proposed Response Response Status W

PROPOSED REJECT. As there are no CDRs between TP1, Tp2, TP3 and TP4, the same 4 MHz appropriate to the optical signal can be used at all four points. The receiver stressed signal is calibrated with the same 4 MHz. Editor does not see double dipping going on.

Note also comments 168, 36, 175, 184, 183, 214, 224, 225.

CI 86 SC 86.8.3.3.2 P285 L28 # 45
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Unnecessary repetition: the sentence "As Pattern 3 is more demanding..." occurs four times already in 86, and possibly should appear for other parameters in 86 and in the equivalent places in 87, 88 and 86A, it would be better to:

SuggestedRemedy

Move the sentence to 86.8.2 p282 line 53 and equivalent places in 87.8.1, 88.9.1 and 86A.5.2. Delete the three equivalent sentences.

Alternatively, move the sentence to become a table note to Table 86-11, referred to from PRBS31. Delete the three equivalent sentences. Add similarly in 87, 88 and 86A. Make tables 87-10 and 88-14 wider if text added to tables.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Move the sentence to 86.8.2 p282 line 53 and equivalent place in 86A.5.2. Delete the three equivalent sentences. For clauses 87 and 88 see response to comment 23.

Cl 86 **SC 86.8.4.7** **P287** **L48** # **150**
Petrilla, John Avago Technologies

Comment Type E **Comment Status D**
"minimised" should be "minimized"

SuggestedRemedy
Change "minimised" to "minimized"

Proposed Response **Response Status W**
PROPOSED ACCEPT.

Cl 86 **SC 86.8.4.7** **P287** **L52** # **151**
Petrilla, John Avago Technologies

Comment Type TR **Comment Status D**
No Rx output criteria is established for the SRS test. While bit errors may be reported in system operation, there are occasions where a nPPI or nAUI interface may be exposed at the output of the Rx and it would be valuable to determine compliance at these interfaces.

SuggestedRemedy
Add another item, e, to the list of exceptions,
e) Where nPPI or nAUI is exposed, a receiver is considered compliant if it meets the requirements in Annex 86A for nPPI or Annex 83B for nAUI.

Proposed Response **Response Status W**
PROPOSED ACCEPT IN PRINCIPLE. Add another item to the list of exceptions,
e) Where nPPI or nAUI is exposed, a PMD receiver is considered compliant if it meets the nPPI module electrical output specifications at TP4 given in Table 86A-3 for nPPI, or the requirements in Annex 83B for nAUI.

Cl 86 **SC 86.8.4.7** **P288** **L6** # **48**
Dawe, Piers Avago Technologies

Comment Type T **Comment Status D**
With un-retimed modules, the meaning of compliant to stressed sensitivity is not always what it was when Clause 52 was written.

SuggestedRemedy
Add extra sentence:
For a complete receive port, compliance means a BER of or better than 10⁻¹² under the conditions specified. For a PMD module, compliance means that the nPPI module electrical output specifications at TP4 given in Table 86A-3 are met.

Proposed Response **Response Status W**
PROPOSED ACCEPT IN PRINCIPLE. See response to 151.

Cl 86A **SC** **P** **L** # **329**
D'Ambrosia, John Force10 Networks

Comment Type TR **Comment Status D**
All graphs of dB in Annex86a are negative in magnitude. This is inconsistent with the equations, which show absolute magnitudes, as well as the rest of 802.3, which does not show negative numbers.

SuggestedRemedy
Definition for return loss created in other comment

Add other definition for insertion loss in 1.4

Insertion Loss : the ratio (expressed in dB) of transmitted power at a port to the incident power at another port. May refer to optical power or to electrical power in a specified frequency range. Note that the dB measurement of insertion loss is the absolute magnitude of the respective s-parameter dB magnitude measurement.

Equations should result in positive number. Use one consistent form for an equation

parameter <=> limit (name) = equation

Draft should refrain from using specific 4 port s-parameter names. n-Port s-parameters are becoming more common. Presentation given in May did not focus on port numbers, just the different types of modes, i.e. differential, common-mode, differential to common-mode, and common-mode to differential.

Redo equations as described above, and then replot all graphs so magnitudes are positive.

Sparameter port names should not be used for names of limit lines.

Proposed Response **Response Status W**
PROPOSED REJECT. Some other clauses define losses (positive, if no amplifiers being measured). This one, following XFP, FC-PI-4, InfiniBand, SFP+ and others, defines S-parameters, which are gains (see response to comment 327). As the other industry specifications which developed the compliance board methodology (FC-PI-4, SFP+, SFF-8083) use S-parameters, it would be very disruptive to try to invert everything in 86A. This does not stop 85 continuing to use cable losses. Reflections and return losses are correctly signed in the optical clauses (e.g. 52).

As to adding a definition of insertion loss: would prefer to avoid writing pieces of a textbook if not necessary. If we have to, the ratio exists whether expressed in dB or not. Equating -3 dB (1/2) to +3 dB (2/1) is ambiguous and bad practice; anything expressed in dB must be properly signed.

Using the form
parameter <=> limit (name) = equation
Needs two names each time, and is not necessary for the uses we make of these equations in 86A.

If "refrain from using specific 4 port s-parameter names" is referring to the form e.g. SDD22, all the similar documents (SFP+, FC-PI-4, InfiniBand,) that the editor has used recently do so. As long as we don't incorrectly label port numbers on figures, it seems widely acceptable.

As to "Sparameter port names should not be used for names of limit lines." limits are not named in 86A, inequalities are used to avoid dual naming.

<i>Cl</i> 86A	<i>SC</i>	<i>P</i>	<i>L</i>	#	316
D'Ambrosia, John		Force10 Networks			

Comment Type **ER** *Comment Status* **D**

Per Comment 537: Rename PPI to nPPI with specific interfaces being XLPPPI and CPPI.

This is interpreted as only using XLPPPI / CPPI when discussing the specific interfaces. This has been partially implemented in Annex 86A.

1. P407, Line 7 "Parallel Physical Interface (XLPPPI and CPPI) for 40GBASE-SR4 and 100GBASE-SR10"
2. P407, Line 49 "86A.4 Electrical specifications for XLPPPI and CPPI"
3. P408, Line 4 "86A.4.1 XLPPPI and CPPI transmit side electrical specifications"
4. P 409, Line 36 "86A.4.2 XLPPPI and CPPI receive side electrical specifications"

SuggestedRemedy

1. Change title to "Parallel Physical Interface (nPPI) for 40GBASE-SR4 (XLPPPI) and 100GBASE-SR10 (CPPI)"
2. Change to "86A.4 Electrical specifications for nPPI"
3. Change to "86A.4.1 nPPI transmit side electrical specifications"
4. change to "86A.4.2 nPPI receive side electrical specifications"

Proposed Response *Response Status* **W**

PROPOSED REJECT. May be appropriate for whole committee discussion. Note comment 297 on nAUI vs. XLAUI / CAUI.

<i>Cl</i> 86A	<i>SC</i> 86A.4	<i>P</i> 407	<i>L</i> 52	#	59
Dawe, Piers		Avago Technologies			

Comment Type **E** *Comment Status* **D**

the electrical nPPI.

SuggestedRemedy

the nPPI.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

<i>Cl</i> 86A	<i>SC</i> 86A.4	<i>P</i> 408	<i>L</i> 4	#	328
D'Ambrosia, John		Force10 Networks			

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

Subclause 86A.4.1 is titled "XLPPPI and CPPI transmit side electrical specifications"
Subclause 86A.4.2 is titled "XLPPPI and CPPI receive side electrical specifications"

Reviewing figures 86-2 or 86-3, it is not clear where the "transmit side" or "receive side" is. Furthermore, the text is confusing as i believe there is a tx and rx associated with each side. So using the terminology "transmit" or "receive" side should be avoided.

86A.4.1.2 is a specification measured at TP4, which is not on the Tx side

SuggestedRemedy

Instead of terminology "transmit side" use "nPPI Ingress"
Instead of terminology "receive side" use "nPPI Egress"

Illustrate this terminology in either Fig 86-2 or 86-3

Building on this then, you would have a "nPPI Ingress Tx" and "nPPI Ingress Rx" and "nPPI Egress Tx" and "nPPI Egress Rx"

reorganize / reword according to below
86A.4.1 nPPI Ingress Electrical Specifications

Table 86A-1 change title to " nPPI Ingress Tx Output Electrical Specifications"
Move Table 86A-2 so it comes right after Table 86A-1 and rename it - "nPPI Ingress Rx Input Electrical Specifications"

86A.4.1.1 nPPI Ingress Tx Differential Output Return Loss and Ingress Rx Differential Input Return Loss

Change text to:

The magnitude of RLD in dB for nPPI Ingress Tx Differential Output Return Loss measured at TP1a and nPPI Ingress Rx Differential Input Return Loss measured at TP1 shall be greater than RLDmin as defined in Equation 86A-1 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

$RLD(f) > RLD_{min} = \{show equations\}$

where f is frequency in gigahertz

86A.4.1.2 nPPI Ingress Tx Common-mode Output Return Loss

The magnitude of RLC in dB for nPPI Ingress Tx Common-mode Output Return Loss measured at TP1a shall be greater than RLCmin as defined in Equation 86A-2 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

$RLC(f) > RLC_{min} = \{show equations\}$

where f is frequency in gigahertz

86A.4.1.3 nPPI Ingress Rx Differential to Common-mode Input Return Loss

The magnitude of RLCD in dB for nPPI Ingress Rx Differential to Common-mode Input Return Loss measured at TP1 shall be greater than RLCDmin as defined in Equation 86A-x for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

add equation $RLCD > RLCD_{min} = 10dB$

86A.4.2 nPPI Egress Electrical Specifications

Rename Table 83A-3 to "nPPI Egress Tx Electrical Output Specifications"

Rename Table 83A-4 to "nPPI Egress Rx Electrical Input Specifications"

86A.4.2.1 nPPI Egress Tx Differential Output Return Loss and Egress Rx Differential Input Return Loss

Change text to:

The magnitude of RLD in dB for nPPI Egress Tx Differential Output Return Loss measured at TP4 and nPPI Egress Rx Differential Input Return Loss measured at TP4a shall be greater than RLDmin as defined in Equation 86A-1 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

86A.4.2.2 nPPI Egress Tx Common-mode Output Return Loss

The magnitude of RLC in dB for nPPI Egress Tx Common-mode Output Return Loss measured at TP4 shall be greater than RLCmin as defined in Equation 86A-2 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

86A.4.2.3 nPPI Egress Rx Differential to Common-mode Input Return Loss

The magnitude of RLCD in dB for nPPI Ingress Rx Differential to Common-mode Input Return Loss measured at TP4a shall be greater than RLCDmin as defined in Equation 86A-x for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

Move Fig 86A-1 to after Table 86A04

Change Caption to Return Loss Specifications

In Figure

Change "SCC22" to "RLCMIN"

Change "SDD11 or SDD22" to "RLDMIN"

Change SCD11" to "RLCDMIN"

Proposed Response *Response Status* **W**

PROPOSED REJECT. It is clear. Like any other sublayer or interface, there is a transmit side and a receive side (e.g. 82.2.5 Transmit process, 82.2.17 Receive process, "Each PMA remaps the PCSs from m PMA input lanes to n PMA output lanes in the Tx direction, and from n PMA input lanes to m PMA output lanes in the Rx direction." As noted in D2.0 comment 470, the transmit path is down the stack, PMA to MDI, and the receive path is up the stack, MDI to PMA. Neither P802.3ba/D2.1 nor 802.3 Section 4 uses "ingress" or "egress".

<i>Cl</i> 86A	<i>SC</i> 86A.4.1	<i>P</i> 408	<i>L</i> 10	# 217
Ghiasi, Ali		Broadcom		

Comment Type **TR** *Comment Status* **D**
 XLPPi and CPPI has no TP0 definition missing

Suggested Remedy

propose to add table similar to SFF-8431 table 26 to the clause
 Differential Output Voltage, see note 1
 Termination mismatch at 1 MHz, 5%
 Single ended output voltage range, -0.3 to 4 V
 Output rise and fall time, 24 ps min
 Output AC common mode, 12 mV max
 SDD22, 0.01-2.8GHz -12 dB and -8.55 13.33log10(f/5.5), with f in GHz
 SCC22, 0.01-2.8GHz -9 dB and -6.1 + log10(f/5.5) from 2.8 to 11 GHz

Proposed Response *Response Status* **W**
 PROPOSED REJECT. See response to comment 221.

<i>Cl</i> 86A	<i>SC</i> 86A.4.1	<i>P</i> 408	<i>L</i> 10	# 221
Ghiasi, Ali		Broadcom		

Comment Type **TR** *Comment Status* **D**
 XLPPi and CPPI has no TP5 definition missing

Suggested Remedy

propose to add table similar to SFF-8431 table 27 to the clause
 Max input differential voltage swing, 850 mV
 Input AC common mode, 15 mV max
 SDD11, 0.01-2.8GHz -12 dB and -8.55 13.33log10(f/5.5), with f in GHz
 SCD11, from 0.01 to 11.1 GHz -15 dB

Proposed Response *Response Status* **W**
 PROPOSED REJECT. There has up until now been no request for such, and comment does not explain why a change might be desirable. Any table would be a recommendation only, and could go in 86A.6 Recommended electrical channel, renamed.

Cl 86A SC 86A.4.1 P408 L20 # 56
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

If Table 86A-3, nPPI module electrical output specifications at TP4, has a termination mismatch spec, why doesn't Table 86A-1, nPPI host electrical output specifications at TP1a?

SuggestedRemedy

Add row, Termination mismatch at 1 MHz, max 5%

Proposed Response Response Status W

PROPOSED ACCEPT. Check with experts first.

Cl 86A SC 86A.4.1 P408 L24 # 57
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

If Table 86A-3, nPPI module electrical output specifications at TP4, has an output transition time spec, why doesn't Table 86A-1, nPPI host electrical output specifications at TP1a? Up to a point, if the host emits edges that are too fast, it suffers its own crosstalk (because the connector is on the host), but a compliant module may reflect and convert more of the high frequency signal than test equipment, giving worse performance in the field than expected from testing.

SuggestedRemedy

Add row, Output transition time, 20% to 80% min 28 ps. This is easier for the host than SFP+ 34 ps.

Proposed Response Response Status W

PROPOSED ACCEPT. Check with experts first.

Cl 86A SC 86A.4.1 P408 L30 # 216
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

If the transmitter has very low RJ~0 then DDJ will approach J2 or 0.18 UI due to over emphasis. Over emphasis can result in sever eye degradation depending on the laser driver gain, etc.

SuggestedRemedy

To protect against these over-emphasis scenarios DDJ must be added with propose value of 0.12 UI.

Proposed Response Response Status W

PROPOSED REJECT. The combination of other specifications, including the eye mask protects against this.

Cl 86A SC 86A.4.1 P410 L13 # 61
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

Font size of the minus sign before 10

SuggestedRemedy

Fix. Also p411 line 13. Centre-justify "-10" there.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.4.1 P410 L19 # 218
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

If the transmitter has very low RJ~0 then DDJ will approach J2 or 0.18 UI due to over emphasis. Over emphasis can result in sever eye degradation depending on the laser driver gain, etc.

SuggestedRemedy

To protect against these over-emphasis scenarios DDJ must be added with propose value of 0.12 UI.

Proposed Response Response Status W

PROPOSED REJECT. [Reclassified from 86A.4.2] See response to comment 216.

Cl 86A SC 86A.4.1 P410 L20 # 55
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

DDPWS min. seems wrong.

SuggestedRemedy

Change to DDPWS tolerance (still min.).

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.4.1.1 P408 L40 # 49
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

At the last meeting we considered reducing the upper limit of required (or recommended) S-parameter compliance from 11.1 GHz to 10.4 GHz. I don't think we considered the compromise suggested below.

SuggestedRemedy

For nPPI host, module and channel, reduce the upper limit of required (or recommended) S-parameter compliance from 11.1 GHz to 10.4 GHz. But for the compliance boards, do not reduce the limit.

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 86A SC 86A.4.1.2 P408 L50 # 58
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

SCC22 at TP1a and TP4 isn't an XLPP and CPPI transmit side electrical specification, as it's not on the transmit side. We have referred to 86A.5.1 in each of the previous three sections.

SuggestedRemedy

Change to:
86A.4.1.2 Common mode output reflection response SCC22 at TP1a
From 10 MHz to 11.1 GHz, the magnitude in decibels of the host common mode output reflection response SCC22 at TP1a shall not exceed the limit given in Equation 86A-2 and illustrated in Figure 86A-1.
Create new:
86A.4.2.2 Common mode output reflection response SCC22 at TP4
From 10 MHz to 11.1 GHz, the magnitude in decibels of the module common mode output reflection response SCC22 at TP4 shall not exceed the limit given in Equation 86A-2 and illustrated in Figure 86A-1.
Revise PICS to follow changes.

Proposed Response Response Status W
PROPOSED ACCEPT.

CI 86A SC 86A.4.2 P410 L46 # 162
Petrilla, John Avago Technologies

Comment Type T Comment Status D

In Table 86A-3 (also 86A-4) the limits for J2 (0.46) and J9 (0.63) for some reasonable combinations of jitter will permit TJ (at BER + 1E-12) to exceed 0.70 UI which was not intended when these J2 and J9 limits were established. Unfortunately, a similar situation occurred at TP1 and, consequently without some relief at TP1 relief at TP4 is limited. However, it appears that J9 can be tightened from 0.63 UI to 0.62 UI. See petrilla_01_0709 for discussion.

SuggestedRemedy

In Tables 86A-3 and 86A-4 change J9 from 0.63 to 0.62.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Further review of the receiver (sub-clause 86.7.3, page 280, Table 86-8) by the commenter reveals the conditions for the stressed receiver sensitivity test generate an unneeded and undesirable over-stress condition. The choice of values for J2 (0.35 UI) and J9 (0.47) permit TJ (BER=1E-12) to reach 0.496 UI, higher than the expected 0.485 UI. Also, the vertical eye closure penalty (VECP) value (2 dB) is larger than that calculated (1.9 dB) for updated SR and PPI conditions. These are partly due to misunderstanding of the probabilities associated with J2 and J9 when these conditions were first proposed in January 2009 and partly due to slight shifts in attributes since January.

Although the current values of J2 and J9 permit a higher than expected level of TJ at TP3, this appears reasonably aligned with the current TDP requirement. Relief for the over-stress at TP3 should come from the VECP condition.

In Table 86-8 change VECP from 2 to 1.9 and in Tables 86A-3 and 86A-4 change J9 from 0.63 to 0.62.

CI 86A SC 86A.4.2 P411 L20 # 54
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Is this eye mask is a condition of the host electrical receiver signal tolerance test?

SuggestedRemedy

If so, re-order table rows to reflect this.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Move "Conditions of host electrical receiver signal tolerance test" above "Eye mask coordinates".

Cl 86A **SC 86A.4.2** **P411** **L22** # **220**
 Ghiasi, Ali Broadcom

Comment Type **TR** **Comment Status** **D**
 Condition for host stress should be target not max

SuggestedRemedy
 Change max to target value

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE. The column sub-header is "Specification values".
 See response to comment 54 which will make this clearer.

Cl 86A **SC 86A.4.2** **P411** **L22** # **53**
 Dawe, Piers Avago Technologies

Comment Type **T** **Comment Status** **D**
 Need to confirm transition time value and provide DDPWS value.

SuggestedRemedy
 I'll try to bring numbers to the meeting.

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE. Note comment 219.

Cl 86A **SC 86A.4.2.1** **P409** **L46** # **60**
 Dawe, Piers Avago Technologies

Comment Type **E** **Comment Status** **D**
 Put the categories in the same order as elsewhere in the clause.

SuggestedRemedy
 Change "module output differential" to "module differential output".

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT.

Cl 86A **SC 86A.4.2.1** **P411** **L28** # **219**
 Ghiasi, Ali Broadcom

Comment Type **TR** **Comment Status** **D**
 DDPWS value is TBD

SuggestedRemedy
 Replace TBD with 0.36 UI

Proposed Response **Response Status** **W**
 PROPOSED ACCEPT IN PRINCIPLE. For discussion. Note comment 53.

Cl 86A **SC 86A.5.1.1.2** **P412** **L45** # **330**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** **Comment Status** **D**
 It is unclear which equation (86A-6 and 86A-7) goes with HCB and MCB
 This is also true for 86A-8 and 86A-9.

SuggestedRemedy
 Add clarifying text with equations 86A-6 and 86A-7, so it is clear which equation goes to
 HCB and MCB respectively.

Also, do for 86A-8 and 86A-9.

Proposed Response **Response Status** **W**
 PROPOSED REJECT. Both equations 86A-6 and 86A-7 apply to the mated HCB and
 MCB (they are max and min limits. Fig 86A-3 is on p414). 86A-8 specifies SDDhh and
 86A-9 specifies SDDmm. At line 41,
 "where SDDhh is SDD11 or SDD22 looking into the HCB,
 SDDmm is SDD11 or SDD22 looking into the MCB"
 See comment 332 for possible consolidation of 86A-8 and 86A-9.

CI **86A** SC **86A.5.1.1.2** P**412** L**48** # **134**
 Healey, Adam LSI Corporation

Comment Type **T** Comment Status **D**

How much loss does the connector introduce?

1. Subtracting Equations (86A-4) and (86A-5) from (86A-6) for the combined MCB and HCB implies a connector loss (plus other impairments) of 0.87 dB at 5.15625 GHz.
2. Subtracting Equation (86A-4) and 3.5 dB from Equation (86A-20) for the TP0 to TP1a (or TP4a to TP5) channel implies a connector (plus other impairments) loss of 0.54 dB at 5.15625 GHz.

Upon first glance, one would assume you could do better with the controlled environment of the HCB and MCB but equations seem to reflect the opposite.

SuggestedRemedy

Update the equations to exhibit improved consistency or explain why they don't need to be consistent.

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE. Equations 86A-4 and 86A-5 give the nominal responses for "If boards are used which do not match the specifications given, the measurement results for nPPI shall be corrected for the differences between the actual HCB or MCB's properties and the reference through responses (SDD21) given below" at line 19. 86A-6 gives a spec on actual response of a pair for "Boards that do not meet the specifications for mated HCB-MCB shall not be used."

The difference is for the connector and also tolerances on the MCB and HCB. The SFP+ connector spec is 0.58 dB at 5.15625 GHz.

Change "below" to "in 86A.5.1.1.1", change "outside the limits" to "outside the limits given in 86A.5.1.1.2", change "HCB-MCB shall" to "HCB-MCB in 86A.5.1.1.2 shall".

CI **86A** SC **86A.5.1.1.2** P**413** L**27** # **331**
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **D**

the term "through response" in Fig 86A-2 and 86A-3 is inconcistent with terminology used in p802.3ba as well as 802.3. The term is also used in the text.

This comment was submitted previously and the editor dismissed it saying it was the correct s-parameter, and quote Infiniband use of s-parameters. "Search of IBTA document shows use of term "insertion loss", but not "through response"

SuggestedRemedy

use "insertion loss"

change title for figure to

Fig 86A-2 "Insertion loss for PCB Traces"

Fig 86A-3 "Insertion loss limite of mated HCB-MCB"

replace term in text with "insertion loss"

Proposed Response Response Status **W**

PROPOSED REJECT. S-parameters define responses (gains) not losses. The optics track resolved the ER comments in May, not just the editor.

CI **86A** SC **86A.5.1.1.2** P**413** L**33** # **332**
 D'Ambrosia, John Force10 Networks

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

The limit lines that Eqs 86A-8 and -9 establish, as shown in Fig 86A-4, are so close that it seems preferable to just have one limit.

SuggestedRemedy

Use the lower limit (SDDhh(86A-8)) for SDDHH and SDDMM

Proposed Response Response Status **W**

PROPOSED ACCEPT IN PRINCIPLE. Agreed, but do not expect QSFP and CXP connectors to be better than SFP+. Without measurement information, would have to choose the upper limit (86A-9). See response to comment 62.

CI 86A SC 86A.5.1.1.2 P413 L34 # 62
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Do we have measurements on QSFP and CXP mated HCB-MCB reflection response?

SuggestedRemedy

If so, update equations 86A-8 and 86A-9. If appropriate, combine into a single limit.
Update Figure 86A-2 to match.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Requesting measurements on QSFP and CXP mated HCB-MCB reflection response.
If not available, remove Equation 86A-8 and use 86A-9 for both looking into the HCB and looking into the MCB. Update text and Figure 86A-4.

CI 86A SC 86A.5.1.1.2 P414 L46 # 63
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Cleaning up terminology: the NEXT specs apply from receive side to transmit side (crosstalk that would go from module back to module) as much as vice versa.

SuggestedRemedy

Change "from any transmit lane to any receive lane or vice versa" to "from any input lane to any output lane on the same compliance board or vice versa".
On next page, change "between one transmit lane and another, or between one receive lane and another" to "between any lane and any other co-propagating lane", change "from all but one transmit lanes to any receive lane or vice versa," to "from all but one of a group of 4 or 10 lanes to any counter-propagating lane or vice versa".
The last "or vice versa" doesn't need to be kept but is this an easier way to do the measurement?

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.5.1.1.2 P415 L27 # 333
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

Title of Fig 86A-4 uses inconsistent name, as noted in other comments.

SuggestedRemedy

Change title of Fig 86A-4 to "Return Loss Limits for mated HCB-MCB"

Proposed Response Response Status W

PROPOSED REJECT. S-parameters define responses (gains) not losses.

CI 86A SC 86A.5.1.1.2 P415 L34 # 64
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Is FEXT defined as victim signal out / aggressor signal in (through response, as draft), or victim signal out / aggressor signal out?

SuggestedRemedy

?

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
?

CI 86A SC 86A.5.1.1.2 P416 L27 # 334
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status D

By combining these different parameters in a single figure, the figure is not consistent with other clauses in 802.3, as different types of parameters has not been done before. It may also confuse the reader to think that the limit depicted for "SCD21 or SCD12 looking into HCB or MCB" is referring to a mode conversion crosstalk measurement.

SuggestedRemedy

separate the limit line for Eq 86A-11 onto a separate graph figure.

Proposed Response Response Status W

PROPOSED REJECT. Each line is distinct and clearly labelled. This section has enough graphs as it is. Editor is not aware of any prohibition against a graph with e.g. length, width and height, all using the same axes.

CI 86A SC 86A.5.3 P416 L46 # 51
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

With the split of 86 into two parts, need to tell the reader about the dual-use parameter definitions in 86.8.3.

SuggestedRemedy

Insert sentence:
As well as the parameter definitions below, some definitions with dual use (both optical and electrical) are given in 86.8.3.

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.5.3.2 P417 L46 # 222
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

The numerator of Zp-Zn could be negative

SuggestedRemedy

Add absolute value |Zp-Zn|

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Although it's a pity to be different to SFP+, and an alternative would be to put the "absolute" in the tables. Change "Termination mismatch is defined as the percent difference between the two low frequency impedances to common of a differential electrical port. Termination mismatch is defined as:" to "Termination mismatch is defined as the absolute proportional difference between the two low frequency impedances to common of a differential electrical port. Termination mismatch is defined as a percentage as:". Add the bars as suggested.

Cl 86A SC 86A.5.3.3 P418 L7 # 65
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

In this clause

SuggestedRemedy

In this annex

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.5.3.3 P418 L8 # 66
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

At present, we don't have a transition time spec on an optical signal.

SuggestedRemedy

Delete "This applies to electrical signals as well as optical signals."

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.5.3.5 P419 L23 # 67
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

It may

SuggestedRemedy

Qsq may

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.5.3.8 P420 L3 # 68
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

802.3 is not a test specification.

SuggestedRemedy

Change "Host electrical receiver signal tolerance testing shall be in accordance with the requirements" to "Host electrical receiver signal tolerance shall be defined by the procedures and requirements".

Proposed Response Response Status W

PROPOSED ACCEPT.

Cl 86A SC 86A.5.3.8.2 P420 L16 # 50
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Too many "shall"s; one per test procedure is enough.

SuggestedRemedy

Leave the first "shall", in 86A.5.3.8. In the rest of 86A.5.3, change "shall be" to "is" or "are", "shall have" to "has", "shall not exceed" to "does not exceed", "shall transmit" to "transmits". Change "The BER shall remain below 10-12." to "The BER of a compliant host receiver remains below 10-12."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.5.3.8.3 P420 L50 # 70
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

Terminology: these things aren't jitter. ISI is an effect not a form of jitter. Later we have "ISI jitter" then "high probability jitter" for apparently the same thing.

SuggestedRemedy

Clean up the terminology in 86A.5.3.8. Spell out "RSS" if necessary.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Clean up the terminology in 86A.5.3.8. Spell out "RSS".

CI 86A SC 86A.5.3.8.3 P421 L42 # 69
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

A voltage stress before the limiter function is to be applied.

SuggestedRemedy

A voltage stress is to be applied before the limiter function.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.5.3.8.5 P422 L28 # 160
Petrilla, John Avago Technologies

Comment Type E Comment Status D

The text calls for, 'the intrinsic jitter of the test source due to intrinsic noise and finite bandwidth effects is measured and calibrated'. If intrinsic, it seems unlikely that it can be calibrated.

SuggestedRemedy

Change, 'is measured and calibrated' to 'is measured'

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.5.3.8.5 P422 L31 # 161
Petrilla, John Avago Technologies

Comment Type ER Comment Status D

The text refers to a 'measured reference level' but it's not clear what this is. If this is meant to be the level measured in the preceding paragraph, please say so.

SuggestedRemedy

Change 'measured reference level' to 'above measured intrinsic level'

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 86A SC 86A.6 P423 L44 # 317
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status D

the description below does not appear right since the named end points are not on the HCB

A recommended maximum attenuation template for the Parallel Physical Interface's channel (PCB) and the HCB, between the PMA IC (TP0 or TP5) and TP1 or TP4, is illustrated in Figure 86A-11,

SuggestedRemedy

change text to

A recommended maximum attenuation template for the mated host card and HCB (between TP0 and TP1A or TP4A and TP5), including connector loss, is illustrated in Figure 86A-11,

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Change to:

The recommended limits for the differential through response (SDD21) in decibels of the host PCB and connector mated to the HCB, between the PMA IC (TP0 or TP5) and TP1a or TP4a, are given in Equation 86A-20 and Equation 86A-21, and illustrated in Figure 86A-11. One of the limits is intended to control the effect of reflections.

CI 86A SC 86A.6 P423 L45 # 133
Healey, Adam LSI Corporation

Comment Type T Comment Status D

Per Figure 86-3, "TP1 and TP4" should be "TP1a and TP4a".

SuggestedRemedy

Per comment.

Proposed Response Response Status W

PROPOSED ACCEPT. See response to comment 317.

CI 86A SC 86A.6 P424 L31 # 223
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Based on input from several OEMs 3.5 dB of PCB trace is not sufficient for most applications as the reach on FR4-6 is only about 4", but QSFP and CXP have very difficult routing on the front contacts

SuggestedRemedy

propose to increase the host PCB loss from 3.5 dB to 5 dB, the back to back loss will increase compare to SFP by 0.5 dB due to 0.2 dB MCB loss increase and 0.3 dB HCB loss increase,

SDD21 = -0.7 dB from 0.01 to 0.2 GHz
- 0.116 - 0.91*sqrt(f) - 0.864*f from 0.2 to 7 GHz
36.52 - 6.44*f from 7 to 8 GHz
- 15 from 8 to 11 GHz

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE. Check the proposed new limit first.

CI 86A SC 86A.8.4 P427 L20 # 52
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

"PICS proforma tables for" should match annex title.

SuggestedRemedy

Change "Physical Medium Dependent (PMD) sublayer and medium, types 40GBASE-SR4 and 100GBASE-SR10" to "Parallel Physical Interface (XLPPI/CPPI) for 40GBASE-SR4 and 100GBASE-SR10".

Proposed Response Response Status W

PROPOSED ACCEPT. Be consistent with resolution of 316.

CI 87 SC 87.11.1 P317 L10 # 76
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Incorrect table column heading. Anyway, the column heading is not the place for a list of fibre types. When you have a single column of spec limits (as here) the heading should be "Value" (see clauses 68, 85, 86 for examples). When there are two options (as in Table 88-1 and Table 88-18), the heading distinguishes between them.

SuggestedRemedy

For Table 87-1, change "40GBASE-LR4" to "Status". Could change title to "Clauses and sublayers for 40GBASE-LR4" if wished.

For Table 87-7, 8, 9 and 14, change "40GBASE-LR4" to "Value". Could add "for 40GBASE-LR4" to title of Table 87-14.

For Table 87-15, change "Type B1.1, B1.3 SMF" to "Value". Could add "for 40GBASE-LR4" to title.

For Table 88-7, 8, 9, 11, 12, and 13, see another comment (combine the tables) or change "100GBASE-LR4" or "100GBASE-ER4" to "Value".

For Table 88-19, change "Type B1.1, B1.3 SMF" to "Value".

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

Table 87-7, 8, 9 and 14, change "40GBASE-LR4" to "Value"

Change Title of Table 87-14 to "Fiber optic cabling (channel) characteristics for 40GBASE-LR4"

In Table 87-15, change "Type B1.1, B1.3 SMF" to "Value"

Change Title of Table 87-15 to "Optical fiber and cable characteristics for 40GBASE-LR4"

For Table 88-7, 8, 9, 11, 12, and 13, see response to comment 90

In Table 88-19, change "Type B1.1, B1.3 SMF" to "Value"

CI 87 SC 87.12.4.3 P321 L37 # 87
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

As these are mandatory,

SuggestedRemedy

Delete "N/A []" twice.

Proposed Response Response Status W

PROPOSED REJECT. Follows other clauses (eg 52), allows devices that only contain an Ethernet compatible Tx or Rx (but not both).

CI 87 SC 87.3.1 P303 L5 # 78
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

The text "An upper bound to the delay through the PMA and PMD is required for predictable operation of the MAC Control PAUSE operation." is a leftover from 10G where the PMA and PMD delays are specified in combination. In 40G and 100G, they are specified separately. The text could give the impression that controlling the delay through the PMA and PMD determines predictable operation of the MAC Control PAUSE operation, which is not true; above a very few 100 m, delay is dominated by the medium, and the FEC, PCS and RS are also involved. 87 and 88 should not be talking about what the PMA delay should be or why; PMA delay is addressed in 83.5.4.
Note another comment for a similar issue in other clauses.

SuggestedRemedy

Delete the sentence, here and in 88.3.1.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE
See response to comment 29

CI 87 SC 87.3.1 P303 L8 # 21
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status D

Wrong reference.

SuggestedRemedy

Replace "See 80.3." with "See 80.4.".

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.4 P304 L4 # 79
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

If you resize the columns the heading row will fit on one line.

SuggestedRemedy

Select table, resize columns to contents, then resize to 432 points total. Also Table 88-2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

CI 87 SC 87.5.4 P305 L51 # 80
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

For an optical receiver, the inherent noise level of the PMD is not due to crosstalk or power supply noise; it really is inherent.

SuggestedRemedy

Change to match 86.5.4 and 88.5.4: change "due to" to "including the effects of".

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.7.2 P308 L7 # 81
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

Table 87-7 says "Lane wavelengths (range)" while Table 87-8 says "Lane wavelengths".

SuggestedRemedy

Make these and similar in 88 consistent. Another alternative is "Lane wavelengths (ranges)" - although it's obvious that these are ranges.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Use Lane wavelengths (range) consistently

CI 87 SC 87.7.2 P309 L24 # 88
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

Table 87-8 Receive electrical 3 dB upper cutoff frequency
Table 87-11 Receive upper cutoff frequency
87.8.12 Receiver 3 dB electrical upper cutoff frequency
The receiver cutoff frequency
87.12.4.4 Receiver 3dB electrical upper cutoff frequency

SuggestedRemedy

Make all "Receiver 3dB electrical upper cutoff frequency". Also in 88.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.7.2 P309 L30 # 71
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

For 40GBASE-LR4, the TDP limit for the transmitter and the allowance for penalties are the same, at 2.3 dB, but the VECP for the receiver stressed sensitivity test is much lower, 1.6 dB. This is a bigger difference than for other single-mode PMDs, and a significantly lower VECP than in Clause 52.

SuggestedRemedy

Increase the VECP to e.g. 2 dB and increase the stressed receiver sensitivity (OMA) in step.

Proposed Response Response Status W

PROPOSED REJECT.

802.3ba link budgets (e.g. TDP vs Tx OMA trade offs) are based on the TDP value being a good measure of the penalty the module receiver would see with a given transmitter over a worst case link.

The module receiver has to provide enough link budget whether the Tx has max or min TDP. The SRS test specifies a TDP value (1.6dB) at which minimum Tx OMA is at the mid point of its allowed range, and the required receiver sensitivity (to meet link budget) is also at the midpoint of its range. It would be burdensome to test SRS corresponding to every possible TDP value and there's no justification for measuring SRS at a single extreme of the required receiver sensitivity range.

Previous successful Ethernet spec's show this approach to be reasonable and effective.

CI 87 SC 87.7.2 P309 L37 # 261
Maki, Jeffery Juniper Networks, Inc.

Comment Type ER Comment Status D

Table 87-8. Footnote refers to the wrong subclause.

Offending footnote:

dMeasured with conformance test signal at TP3 (see 87.8.10) for BER = 10-12.

SuggestedRemedy

Replace 87.8.10 with 87.8.11.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.1 P310 L25 # 23
Anslow, Peter Nortel Networks

Comment Type T Comment Status D

There are multiple test patterns specified in Table 87-11. However, it is not clear whether the tests have to be performed with all of the patterns or whether any one pattern is sufficient.

Also applies to subclause 88.9.1

SuggestedRemedy

Insert before last sentence "Any of the test patterns given for a particular test in Table 87-11 may be used to perform that test."

Make equivalent change in 88.9.1

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.10 P313 L48 # 84
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

"is informative and testing is not required." This is giving the reader the wrong impression; because 802.3 is not a testing specification, testing isn't required even if something is normative (although compliance is) - there are multiple ways to show or assure compliance.

SuggestedRemedy

Change "testing" to "compliance". Also 88.9.9.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.11 P314 L1 # 264
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status D

An SRS test is needed that system companies can use to qualify an optic. The test that component vendors do might be more complicated, but there should be a clear relation so that if a system company finds a part fails, the component vendor will too. Furthermore, the system company should not have to disassemble the part. The standard does not provide test plans, but the standard should lead to compatible test plans between system companies, their vendors, and even a system company's customers. The standard should not be written such that disparate interpretations are fostered leading to different quantitative results with no clear relation.

SuggestedRemedy

See technical presentation to be submitted by a group of supporters reducing the number of tunable transmitters among other changes.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
see response to comment 143

CI 87 SC 87.8.11 P314 L2 # 143
King, Jonathan finisar

Comment Type T Comment Status D

The current Stressed Receiver Test (based on LX4 methodology) is not rigorous, unlikely to be implemented in practise, and complete specification of the test is scattered across many clauses and subclauses.

A modified SRS test is proposed which uses either of 2 options:

1) input signals are tuned to the wavelengths of worst insertion loss for the channel under test, and worst case crosstalk penalty for the other channels.

or

2) input signals are at nominal wavelengths and input channel levels are adjusted to account for channel insertion loss ripple for the channel under test and crosstalk variation for the other channels.

A presentation will be available to the task force which describes the details of the proposed new SRS test, also a Frame document with a draft section describing the proposed new SRS test will be available.

also applies to 88

SuggestedRemedy

Remove references and sub clauses to current SRS test.

Insert new SRS subclause section describing a modified SRS test which uses either of 2 options:

1) input signals are tuned to the wavelengths of worst insertion loss for the channel under test, and worst case crosstalk penalty for the other channels.

or

2) input signals are at nominal wavelengths and input channel levels are adjusted to account for channel insertion loss ripple for the channel under test and crosstalk variation for the other channels.

A presentation describing the details of the proposed new SRS test, and a Frame document with a draft section describing the proposed new SRS test will be available.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Presentation contained in cole_01_0709, Detailed proposal contained in king_01_0709

CI 87 SC 87.8.11 P314 L29 # 85
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

"may be sent" but sending something isn't discretionary. Editorials.

SuggestedRemedy

Change "Test patterns 3 or 5, or valid 40GBASE-R bit streams may be sent from the transmit section of the receiver under test." to
Pattern 3 or Pattern 5, or a valid 40GBASE-R4 or 100GBASE-R10 signal is sent from the transmit section of the PMD under test.

Also 88.9.10.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE

In 87.8.11 change "Test patterns 3 or 5, or valid 40GBASE-R bit streams may be sent from the transmit section of the receiver under test"
To "Pattern 3 or Pattern 5 or a valid 40GBASE-R signal is sent from the transmit section of the PMD under test"

In 88.9.10 change "Test patterns 3 or 5, or a valid 100GBASE-R signal may be sent from the transmit section of the receiver under test"
To "Pattern 3 or Pattern 5 or a valid 100GBASE-R signal is sent from the transmit section of the PMD under test"

CI 87 SC 87.8.11 P314 L30 # 86
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

"The data being transmitted": test patterns aren't data.

SuggestedRemedy

Change "The data being transmitted is asynchronous to the received data." to
The signal being transmitted is asynchronous to the received signal.
In 88.9.10, change "received data." to "received signal."

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.3 P311 L32 # 74
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Saying "An optical spectrum analyzer (OSA) or equivalent instrument is used" might be just fluff, or introducing terminology that isn't used, or duplicating the normative reference(s), or contradicting the normative reference(s). It's not necessary.

SuggestedRemedy

Delete "An optical spectrum analyzer (OSA) or equivalent instrument is used and", here and in 88.9.2.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.3 P311 L32 # 72
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Maintaining multiple dual references (IEC or ITU-T and TIA) is too onerous. IEC 61280-1-3 is not in the references nor referred to in 86.8.4.1. I believe that TIA/EIA-455-127-A is a better (more up-to-date) reference for spectral width.

SuggestedRemedy

Either delete "IEC 61280-1-3", here and in 88.9.2 (and PICS) or add it to 1.3 Normative references.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Add reference to IEC 61280-1-3 in clause 1.3:
IEC 61280-1-3:1998, Fibre optic communication subsystem basic test procedures-Part 1-3: Test procedures for general communication subsystems- Central wavelength and spectral width measurement.

CI 87 SC 87.8.4 P311 L37 # 73
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

When an international reference is sufficient, that's all we give; maintaining multiple dual references (IEC or ITU-T and TIA) would be too onerous. TIA/EIA-455-95-A and IEC 61280-1-1 are believed to be equivalent. 86.8.4.2 refers to the latter only.

SuggestedRemedy

Delete "TIA/EIA-455-95-A", here and in 88.9.3 (and PICS).

Proposed Response Response Status W

PROPOSED REJECT.

Dual references were the accepted remedy to a comment on draft 2.0

CI 87 SC 87.8.6.1 P312 L9 # 77
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

In the following, "should" is too weak for a definition. "Instantaneous decision sampling" is utopian.

The reference transmitter... should meet the following basic requirements:

The rise/fall times should be less than...

RIN should be minimized to less than -136 dB/Hz.

The reference receiver should have the bandwidth...

The sensitivity of the reference receiver should be limited...

The receiver should have minimal...

Decision sampling should be instantaneous with minimal uncertainty and setup/hold properties.

The sensitivity S... It should be measured while...

SuggestedRemedy

Change to

The reference transmitter... meets the following basic requirements:

The rise/fall times are less than...

RIN is less than -136 dB/Hz and should be minimized to .

The reference receiver has the bandwidth...

The sensitivity of the reference receiver is limited...

The receiver has minimal...

Decision sampling has minimal uncertainty and setup/hold properties.

The sensitivity S... It is measured while...

Similarly in 88.9.5.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE

In 87.8.6.1 and 88.9.5.1

Change "It should meet the following basic requirements"

To "The basic requirements are:"

Change "The rise/fall times should be less than"

To "Rise/fall times of less than"

Change "RIN should be minimized to less than"

To "RIN of less than"

In 87.8.6.3 and 88.9.5.3

Change "The reference receiver should have the bandwidth"

To "The reference receiver is required to have the bandwidth"

Change "The sensitivity of the reference receiver should be limited by"

To "The sensitivity of the reference receiver is limited by"

Change "The receiver should have minimal"

To "The receiver has minimal"

Change "Decision sampling should be instantaneous with minimal uncertainty and setup/hold properties"

To "Decision sampling has minimal uncertainty and setup/hold times"

Change "It should be measured while sampling at the eye center"

To "It is measured while sampling at the eye center"

CI 87 SC 87.8.6.2 P312 L27 # 75
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

Draft says "The channel provides a maximum optical return loss specified in Table 87-12."

Table says "Optical return loss (max)". Hence tester is allowed to provide a lower optical return loss, which would tend to fail compliant transmitters, or the transmitter implementer has an unknown but over-onerous target to meet. Neither is acceptable. So this isn't a "max" at all, it's a test condition. Similarly, the amount of dispersion is unbounded.

SuggestedRemedy

Replace "a maximum" with "the", delete "(max)", delete "at least" twice. Same in 88.9.5.2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE

The required amount of dispersion is clearly bounded.

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss"

In 87.8.6.2 and 88.9.5.2

Change "The channel provides a maximum optical return loss" to "The channel provides an optical return loss"

CI 87 SC 87.8.6.3 P313 L11 # 82
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

If the reference CRU corner frequency matters, it must be specified not just bounded on one side.

SuggestedRemedy

Delete "less than or equal to". Also in 88.9.5.3.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 87 SC 87.8.8 P313 L32 # 83
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

As there are now three exceptions,

SuggestedRemedy

Lay out as a lettered list:

The RIN measurement methodology is defined in 52.9.6 with these exceptions:

- a) The optical return loss...
- b) Each lane may...
- c) The upper -3 dB...

Also 88.9.7.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

In 87.8.8 and 88.9.7 change

"The RIN measurement methodology is defined in 52.9.6 with the exception that the optical return loss is 20 dB and that each lane may be tested individually with the sum of the optical power from all of the lanes not under test being below -30 dBm, or if other lanes are operating, a suitable optical filter may be used to separate the lane under test. Also, the upper -3 dB limit of the measurement apparatus is to be approximately equal to the signaling rate (i.e.,"

To

"The RIN measurement methodology is as defined in 52.9.6 with the following exceptions:

- a) The optical return loss is 20 dB.
- b) Each lane may be tested individually with the sum of the optical power from all of the lanes not under test being below -30 dBm, or if other lanes are operating, a suitable optical filter may be used to separate the lane under test.
- c) The upper -3 dB limit of the measurement apparatus is to be approximately equal to the signaling rate (i.e.,"

CI 87 SC 87.8.9 P313 L44 # 144
King, Jonathan finisar

Comment Type T Comment Status D

The reference filter described in ITU G.691, for transmitter eye mask measurement, has large tolerances allowed which can potentially lead to eye opening variations of 20% or more. This is inconsistent with the use of eye masks to guarantee link closure. The degree of variation can be limited by encouraging non-idealities of the eye mask measurement reference receiver to be compensated for.

SuggestedRemedy

Insert text:

Any variation of the reference receiver filter response from ideal 4th order Bessel Thompson response can be compensated for.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

In 87.8.9 and 88.9.8 add the text:

"Any variation of the reference receiver filter response from ideal 4th order Bessel Thompson response can be compensated for.

CI 88 SC 88.7 P331 L43 # 90
Dawe, Piers Avago Technologies

Comment Type E Comment Status D

88.7 PMD to MDI optical specifications for 100GBASE-LR4 and 88.8 PMD to MDI optical specifications for 100GBASE-ER4 have the same structure, tables with all the same rows bar two, and almost identical text. Many of the spec numbers differ, of course. Also, unlike Clause 52, these PMDs are interoperable. It would be much easier for the reader to take in, and observe the similarities and differences, if the sections were combined, as 10GEPON 75.4 for example has done.

SuggestedRemedy

Combine the two sections. Combine Table 88-6 and 88-10, and so on.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Combine the two sections with editorial licence.

CI 88 SC 88.7.2 P333 L37 # 91
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

We should not qualify units: a UI or volt or whatever cannot be peak-to-peak, it's just a unit. The parameter measured in UI or volts or whatever might be defined in a peak-to-peak way, but is this one? I assume what is intended by "Stressed eye jitter" is the stressed eye jitter, J of 52.9.9.2, which is J2, from the 0.5th to the 99.5th percentile not from peak to peak. But 88.9.10 Stressed receiver sensitivity refers to 53.9.12, 53.9.15 and 53.9.14, none of which has a "Stressed eye jitter". 53 wasn't intended for 64B/66B use.

SuggestedRemedy

1. Remove "pk-pk", here and in Table 88-12.
2. In 88.9.10 and 87.8.11, define stressed sensitivity by reference to 52.9.9 for the signal characteristics and calibration, not 53.9.12.2.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Remove "pk-pk" in Table 88-8 (and 88-12 if tables not combined due to comment 90).

For definition of stressed sensitivity see response to comment 143.

CI 88 SC 88.7.2 P333 L43 # 262
Maki, Jeffery Juniper Networks, Inc.

Comment Type ER Comment Status D

Footnote refers to the wrong subclause.

Offending footnote:

.dMeasured with conformance test signal at TP3 (see 88.9.9) for BER = 10-12.

SuggestedRemedy

Replace 88.9.9 with 88.9.10.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
Replace "conformance test signal at TP3 (see 88.9.9)" with "conformance test signal at TP3 (see 88.9.10)" in notes to Table 88-8 (and 88-12 if tables not combined due to comment 90)

CI 88 SC 88.8 P334 L33 # 22
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status D

Typo.

SuggestedRemedy

Delete the " at the end of the paragraph.

Proposed Response Response Status W

PROPOSED ACCEPT.

CI 88 SC 88.8.2 P336 L37 # 89
Dawe, Piers Avago Technologies

Comment Type T Comment Status D

For 100GBASE-LR4, the TDP limit for the transmitter is 2.2 dB, and the polarisation mode dispersion penalty is estimated at 0.4 dB, but the VECP for the receiver stressed sensitivity test is much lower than the combination, at 1.8 dB. One also has to consider that there is an OMA-TDP spec also, but this seems low.

SuggestedRemedy

Increase the VECP to 2.2, adjust the stressed receiver sensitivity (OMA) so that OMA-TDP-PMDpen-loss = SRS-VECP (= -9, so SRS doesn't change from -6.8, I believe).

Proposed Response Response Status W

PROPOSED REJECT.

The 10ps DGD value (with 0.4 dB associated penalty) came from the P802.3ae Equalization Ad Hoc and equates to a link PMD coefficient of 0.8 ps/sqrt(km) (assuming S = 3.75 or 2.6 sec/year above the "Max"). The value of 0.8 ps/sqrt(km) comes from the 99.99th percentile of links made up from fibres with the worst case PMDq of 0.5 ps/sqrt(km). Consequently, the probability of seeing a DGD as high as 10 ps in the same link as a transmitter with a TDP at the maximum allowed is very small indeed.

It is therefore more realistic to set the vertical eye closure penalty that the receiver is tested against at 1.8 dB which is representative of the penalties likely to be seen in practical links than it would be to use 2.2 dB which is the maximum the TDP is allowed to be.

CI 88 SC 88.9.10 P341 L1 # 265
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status D

An SRS test is needed that system companies can use to qualify an optic. The test that component vendors do might be more complicated, but there should be a clear relation so that if a system company finds a part fails, the component vendor will too. Furthermore, the system company should not have to disassemble the part. The standard does not provide test plans, but the standard should lead to compatible test plans between system companies, their vendors, and even a system company's customers. The standard should not be written such that disparate interpretations are fostered leading to different quantitative results with no clear relation.

SuggestedRemedy

See technical presentation to be submitted by a group of supporters reducing the number of tunable transmitters among other changes.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See Response to comment 143

CI 88 SC 88.9.10 P341 L21 # 225
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

Corner frequency of 10 MHz for SJ add extra burden on the receiver and there is no reason to use such wide band as the power supply noise and clock phase noise typically are < 1 MHz.

SuggestedRemedy

propose to use reduce the SJ corner frequency from 10 MHz to 6 MHz

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
This comment needs to be considered by the task force together with comment 224

CI 88 SC 88.9.10 P341 L3 # 251
Szczepanek, Andre HSZ Consulting Ltd

Comment Type ER Comment Status D

In 88.9.10, the mix of references to Clauses 52 & 53 make the status of sinusoidal amplitude interference unclear.

- The measurement method references 53.9.12, 53.9.14 & 53.9.15
- note a) of Table 88-17 references 52.9.9.3

Clause 52 had both sinusoidal amplitude interference AND sinusoidal jitter

Can we assume NO sinusoidal amplitude interference because there is no reference to sinusoidal amplitude interference in 53.9.12/14/15?

Although 52.9.9 does refer to sinusoidal amplitude interference, that section is not mentioned in 88.9.10.

Although Table 88-17 does refer to 52.9.9.3, but it does so in the context of sinusoidal jitter, and not sinusoidal amplitude interference.

SuggestedRemedy

In the 88.9.10 exception list, explicitly state either

- 1) sinusoidal amplitude interference (per 52.9.9) is required;
- or
- 2) sinusoidal amplitude interference (per 52.9.9) is not required

Inphi (with whom I am affiliated) will make a presentation at the July plenary in support of this comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
See response to comment 143

CI 88 SC 88.9.10 P341 L4 # 254
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type TR Comment Status D

In 88.9.10, the references to 53.9.12-14 specify too much DCD DJ because LX4 defines DCD DJ in ps, not fractions of a UI.

The serial rate at LX4 is 3.125Gb/s and minimum DCD DJ specified is 14 ps
 · $14/320 = 0.04375$ UI
 · Using the same fractional UI at 25.78125Gb/s (UI=38.7878ps), the minimum DCD DJ should be 1.6969, rounded to 1.7 ps.

SuggestedRemedy

Add another exception (e) to 88.9.10, with DCD DJ of 1.7ps.

Inphi (with whom I am affiliated) will make a presentation at the July plenary in support of this comment.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 See response to comment 143

CI 88 SC 88.9.5.3 P340 L8 # 224
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status D

The CRU of 10 MHz add extra burden on the receiver and there is no reason to use such wide band CRU as the power supply noise and clock phase noise typically are not more than 1 MHz.

SuggestedRemedy

propose to use CRU BW=6 MHz

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 This comment needs to be considered by the task force together with comment 225

CI 88 SC 88.9.8 P340 L42 # 263
 Maki, Jeffery Juniper Networks, Inc.

Comment Type T Comment Status D

This numerical value 18.75 does not appear to be appropriate for this standard, and does not align with any of the likely numerical values.

$0.75 * (10 * 10.3125) / 4 = 0.75 * 25.78125 = 19.34$
 $0.75 * (10 * 11.0957) / 4 = 20.80$

Since there is no relation to 10G, there is no need to use $0.75 * (10 * 10) / 4 = 0.75 * 25 = 18.75$

SuggestedRemedy

For internal consistency of this standard, we should use $0.75 * (10 * 11.0957) / 4 = 20.80$. At a minimum, we should use $0.75 * (10 * 10.3125) / 4 = 0.75 * 25.78125 = 19.34$.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.
 Change "The filter nominal reference frequency fr is 18.75 GHz" to "The filter nominal reference frequency fr is 19.34 GHz"

CI 99 SC P3 L20 # 342
 Grow, Robert Intel

Comment Type E Comment Status D

Editors stopped allowing listing of projects in amendments, the listing is only included in a revision.

SuggestedRemedy

Check for consistency of front matter with latest 802.3 front matter template, where it should refer to the listing in the base revision document.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

This text follows the current version of front matter template.

Check for any latest revision to front matter template and update 802.3ba front matter if appropriate.

Cl **99** *SC* *P3* *L40* # **343**
Grow, Robert Intel

Comment Type **E** *Comment Status* **D**

Inconsistent usage on publication year for IEEE Std 802.3ba-200X. Earlier was 20XX and planned date for submission of project would require XX.

SuggestedRemedy

Change to -20XX for convenience of future search. Search document for "-200X" (case insensitive) and replace with "-20XX".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The suggested change may not be applicable to other amendments.
Search for 802.3ba-200X and replace with 802.3ba-20XX.

Cl **99** *SC* **99** *P1* *L45* # **386**
Law, David 3Com

Comment Type **E** *Comment Status* **D**

According to the 2009 style guide the email address the ipr email address should be included in the frontmatter notice.

SuggestedRemedy

Change '.. IEEE Standards Activities Department.' to read 'IEEE Standards Activities Department (stds.ipr@ieee.org)'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Make the suggested change to 802.3ba front matter and forward this comment for changing the front matter template.

Cl **99** *SC* **99** *P2* *L3* # **387**
Law, David 3Com

Comment Type **E** *Comment Status* **D**

Change '.. 802.3 ..' to read '.. IEEE 802.3 ..'.

SuggestedRemedy

See comment.

Change this on:
Page 2, line 2.
Page 2, line 4.
Page 4, line 30.
Page 4, line 32.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **99** *SC* **99** *P2* *L46* # **389**
Law, David 3Com

Comment Type **E** *Comment Status* **D**

I believe that the following text should appear at the bottom of page 2 of the frontmatter.

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SuggestedRemedy

See comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Check the latest front matter template and update if appropriate.

CI 99 SC 99 P2 L9 # 385
Law, David 3Com

Comment Type E Comment Status D

The keywords do not include Ethernet anywhere, only the abbreviation GbE.

SuggestedRemedy

So that a keyword search for Ethernet finds IEEE P802.3ba please change '40GbE' to read '40Gb/s Ethernet' and '100GbE' to read '100Gb/s Ethernet'.

Proposed Response Response Status W

PROPOSED ACCEPT IN PRINCIPLE.

Change "40GbE" to "40 Gb/s Ethernet"
Change "100GbE" to "100 Gb/s Ethernet"

CI 99 SC 99 P4 L15 # 388
Law, David 3Com

Comment Type E Comment Status D

The approval of IEEE P802.3at is contingent on the approval of IEEE P802.3bc so IEEE P802.3bc should appear in the list before IEEE P802.3at. It is also likely that IEEE P802.3-1998/Cor1 (IEEE 802.3bb) will also be published before IEEE P802.3ba.

SuggestedRemedy

Add the following two projects to the list:

IEEE Std 802.3bc(TM)-200X

This amendment includes changes to IEEE Std 802.3-2008 and adds Clause 79. This amendment transfers the IEEE 802.3 Organizationally Specific TLVs that were originally specified in IEEE Std 802.1AB Station and Media Access Control Connectivity Discovery to IEEE Std 802.3.

IEEE Std 802.3-2008/Cor 1(TM)-200X

This corrigendum corrects the PAUSE reaction delay value specified for some PHY types.

Proposed Response Response Status W

PROPOSED ACCEPT.