

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

Comment Type ER Comment Status X

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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type E Comment Status X

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 indicitive 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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type TR Comment Status X

- 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 specificaitons:  
 A- PCB loss of 2.3 dB from TP0 to TP1 and TP4 to TP5  
 B- Reduction of KR ILD by 3 dB and increaseing cable IL is not supported with cable return loss specificaitons and stacked connectors  
 C- Reference 10 m QSFP cable used for baaseline simualtion has 10 dB better return loss than cable SDDxx return loss  
 D- Reference 10 m QSFP cable with lowwest loss was used for the cable loss specifications  
 E- Worst case FEXT are either not included or oमित from CR4/CR10 specificatinos

#### 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 anc 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 O

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

Comment Type TR Comment Status X

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 subjectivly 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 commetns attedning different track without giving him oppourtunity to come by specifically Piers Dawes comments.

Proposed Response Response Status O

CI 00 SC 0 P1 L 1 # 255  
 Booth, Brad AMCC

Comment Type TR Comment Status X

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 O

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

Comment Type **TR** Comment Status **X**

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 **O**

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

Comment Type **TR** Comment Status **X**

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 **O**

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

Comment Type **TR** Comment Status **X**

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 **O**

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

Comment Type **ER** Comment Status **X**

40GBASE-SR10

SuggestedRemedy  
 40GBASE-SR4

Proposed Response Response Status **O**

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

Comment Type **E** Comment Status **X**

Actually they need to be inserted in alphanumeric order.

SuggestedRemedy  
 Change alphabetic to alphanumeric.

Proposed Response Response Status **O**

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

Comment Type **T** Comment Status **X**

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 **O**

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

Comment Type ER Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X

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 reomment:

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, l.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 O

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

Comment Type T Comment Status X

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 O

Cl 30 SC P31 L3 # 345  
Grow, Robert Intel

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

CI 45 SC P52 L35 # 350  
 Grow, Robert Intel

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O



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

Comment Type E Comment Status X

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 serendipitously 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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X  
zeroes

*SuggestedRemedy*

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

Proposed Response Response Status O

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

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

Cl 45 SC 45.2.1.95 P61 L5 # 353  
 Grow, Robert Intel  
 Comment Type ER Comment Status X  
 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 O

Cl 45 SC 45.2.3 P64 L21 # 106  
 Young, George AT&T  
 Comment Type T Comment Status X  
 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 O

Cl 45 SC 45.2.3.11.4 P68 L21 # 107  
 Young, George AT&T  
 Comment Type T Comment Status X  
 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 O

Cl 45 SC 45.2.3.12 P68 L35 # 108  
 Young, George AT&T  
 Comment Type T Comment Status X  
 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 O

Cl 45 SC 45.2.3.12.4 P69 L54 # 109  
 Young, George AT&T  
 Comment Type T Comment Status X  
 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 O

Cl 45 SC Table 45-11 P47 L17 # 358  
 Grow, Robert Intel  
 Comment Type TR Comment Status X  
 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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

**Cl 45**    **SC Table 45-82**    **P64**    **L36**    # **351**  
 Grow, Robert    Intel

**Comment Type**    **E**    **Comment Status**    **X**  
 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**    **O**

**Cl 45**    **SC Table 45-83**    **P64**    **L46**    # **359**  
 Grow, Robert    Intel

**Comment Type**    **TR**    **Comment Status**    **X**  
 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**    **O**

**Cl 52**    **SC 52.9.10**    **P91**    **L1**    # **335**  
 D'Ambrosia, John    Force10 Networks

**Comment Type**    **TR**    **Comment Status**    **X**  
 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**    **O**

**Cl 69**    **SC 69.1.3**    **P94**    **L1**    # **258**  
 Booth, Brad    AMCC

**Comment Type**    **TR**    **Comment Status**    **X**  
 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**    **O**

**Cl 69B**    **SC 69B.4.1**    **P361**    **L34**    # **27**  
 Dawe, Piers    Avago Technologies

**Comment Type**    **T**    **Comment Status**    **X**  
 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**    **O**

CI 73 SC 73.9.1 P101 L32 # 1 [REDACTED]  
Marris, Arthur Cadence

Comment Type TR Comment Status X

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 O

CI 74 SC 74.10.2.2 P121 L23 # 3 [REDACTED]  
Marris, Arthur Cadence

Comment Type E Comment Status X

spelling fec\_bock\_lock

*SuggestedRemedy*

change fec\_bock\_lock to fec\_block\_lock

Proposed Response Response Status O

CI 74 SC 74.2 P105 L30 # 28 [REDACTED]  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

Gbaud

*SuggestedRemedy*

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

Proposed Response Response Status O

CI 74 SC 74.2 P105 L30 # 360 [REDACTED]  
Ganga, Ilango Intel

Comment Type E Comment Status X

Fix typo:

Page 105, Line 30: delete double period

*SuggestedRemedy*

per comment

Proposed Response Response Status O

CI 74 SC 74.2 P105 L31 # 2 [REDACTED]  
Marris, Arthur Cadence

Comment Type E Comment Status X

extra period ..

*SuggestedRemedy*

delete one of them

Proposed Response Response Status O

CI 74 SC 74.7.3 P112 L30 # 5 [REDACTED]  
Marris, Arthur Cadence

Comment Type TR Comment Status X

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 O

CI 74 SC 74.7.4.5 P116 L4 # 4  
Marris, Arthur Cadence

Comment Type **TR** Comment Status **X**  
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

CI 80 SC 80.1.3 P124 L27 # 92  
Gustlin, Mark Cisco

Comment Type **E** Comment Status **X**  
CGMII = 100 Gb/s MEDIA INDEPENDENT INTERFACE PMA = 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

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

Comment Type **E** Comment Status **X**  
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

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

Comment Type **E** Comment Status **X**  
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

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

Comment Type **TR** Comment Status **X**  
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

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

Comment Type **T** Comment Status **X**  
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

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

Fix typo:  
line 33: between

SuggestedRemedy

per comment

Proposed Response Response Status O

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

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

grammar

SuggestedRemedy

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

Proposed Response Response Status O

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

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

grammar

*SuggestedRemedy*

Change "a XLGMII" to "an XLGMII"

also on page 150 line 34

Proposed Response Response Status O

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

Comment Type T Comment Status X

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 O



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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type E Comment Status X

Typos

SuggestedRemedy

Change "Mapping RXD to PLS\_DATA.indicates" to "Mapping RXD to PLS\_DATA.indications" and "Create PLS\_DATA.increments" to "Create PLS\_DATA.indications".

Proposed Response Response Status O

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

Comment Type E Comment Status X

The transition between clock sources is not specified

SuggestedRemedy

Remove the PICS statement for the transition between clock sources

Proposed Response Response Status O

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

Comment Type T Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type E Comment Status X

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

SuggestedRemedy

See comment.

Proposed Response Response Status O

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

Comment Type T Comment Status X

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 O

CI 82 SC 82.1.2 P163 L23 # 392  
 Law, David 3Com  
 Comment Type E Comment Status X  
 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 O

CI 82 SC 82.1.4 P165 L15 # 296  
 D'Ambrosia, John Force10 Networks  
 Comment Type TR Comment Status X  
 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 O

CI 82 SC 82.1.4 P165 L9 # 8  
 Marris, Arthur Cadence  
 Comment Type T Comment Status X  
 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 O

CI 82 SC 82.1.5 P179 L13 # 270  
 Trowbridge, Stephen Alcatel-Lucent  
 Comment Type TR Comment Status X  
 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 O

CI 82 SC 82.2.1 P165 L41 # 407  
 Law, David 3Com  
 Comment Type T Comment Status X  
 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 O

CI 82 SC 82.2.19.2.1 P181 L15 # 415  
 Estes, Dave UNH - IOL  
 Comment Type T Comment Status X  
 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 O

CI 82 SC 82.2.19.2.3 P182 L20 # 93  
 Gustlin, Mark Cisco  
 Comment Type T Comment Status X  
 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 O

CI 82 SC 82.2.19.2.3 P182 L48 # 412  
 Estes, Dave UNH - IOL  
 Comment Type E Comment Status X  
 Old function definition  
 SuggestedRemedy  
 Remove the definition of T\_BLOCK\_TYPE because it has been replaced with T\_TYPE.  
 Proposed Response Response Status O

CI 82 SC 82.2.19.2.3 P182 L48 # 18  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type TR Comment Status X  
 Function T\_BLOCK\_TYPE no longer exists.  
 SuggestedRemedy  
 Delete T\_BLOCK\_TYPE.  
 Proposed Response Response Status O

CI 82 SC 82.2.19.2.3 P183 L14 # 413  
 Estes, Dave UNH - IOL  
 Comment Type E Comment Status X  
 "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 O

CI 82 SC 82.2.19.2.4 P183 L37 # 19  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type E Comment Status X  
 Plural.  
 SuggestedRemedy  
 Replace "marker" with "markers".  
 Proposed Response Response Status O

CI 82 SC 82.2.19.3 P184 L36 # 303  
 D'Ambrosia, John Force10 Networks  
 Comment Type E Comment Status X  
 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 O

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

Comment Type E Comment Status X

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 O

CI 82 SC 82.2.2 P166 L31 # 94  
 Gustlin, Mark Cisco

Comment Type T Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type ER Comment Status X

"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 O

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

Comment Type E Comment Status X

Typo.

SuggestedRemedy

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

Proposed Response Response Status O

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

Comment Type TR Comment Status X

/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 // 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 O

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

Comment Type E Comment Status X

Function names have changed

*SuggestedRemedy*

Change R\_BLOCK\_TYPE to R\_TYPE and T\_BLOCK\_TYPE to T\_TYPE

Proposed Response Response Status O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

'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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

'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 O

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

Comment Type E Comment Status X

style

SuggestedRemedy

change '4' to 'four'

Proposed Response Response Status O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type TR Comment Status X

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

Cl 83 SC 83.1.1 P199 L12 # 379  
Ganga, Ilango Intel

Comment Type T Comment Status X

Avoid listing of PMDs in the PMA clause that will create a maintenance 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

Cl 83 SC 83.1.1 P199 L22 # 380  
Ganga, Ilango Intel

Comment Type T Comment Status X

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

*SuggestedRemedy*

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

Proposed Response Response Status

Cl 83 SC 83.1.2 P199 L32 # 362  
Ganga, Ilango Intel

Comment Type E Comment Status X

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

Cl 83 SC 83.1.3 P200 L25 # 363  
Ganga, Ilango Intel

Comment Type E Comment Status X

Description for CGMII overlaps that of PMA. Create more space between the two columns.

*SuggestedRemedy*

As per comment

Proposed Response Response Status

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

Comment Type TR Comment Status X

The text in section 83.1.4 reads:

"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."

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 PCSs 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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

**Cl 83**    **SC 83.2**    **P202**    **L33**    # **366**  
 Ganga, Ilango    Intel

**Comment Type**    **E**    **Comment Status**    **X**  
 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**    **O**

**Cl 83**    **SC 83.2**    **P202**    **L33**    # **20**  
 Muller, Shimon    Sun Microsystems, Inc

**Comment Type**    **E**    **Comment Status**    **X**  
 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**    **O**

**Cl 83**    **SC 83.3**    **P204**    **L43**    # **377**  
 Ganga, Ilango    Intel

**Comment Type**    **ER**    **Comment Status**    **X**  
 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**    **O**

**Cl 83**    **SC 83.4**    **P205**    **L2**    # **365**  
 Ganga, Ilango    Intel

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

**SuggestedRemedy**  
 As per comment

**Proposed Response**    **Response Status**    **O**

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

**Comment Type**    **TR**    **Comment Status**    **X**  
 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**    **O**

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

Comment Type TR Comment Status X

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 O

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

Comment Type TR Comment Status X

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 O

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

Comment Type T Comment Status X

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 O

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

Comment Type ER Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

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 O

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

Comment Type E Comment Status X

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 (XLPP1 and CPPI), the physical instantiation of the PMD service interface for 40GBASE-SR4 and 100GBASE-SR10.

Proposed Response Response Status O

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

Comment Type TR Comment Status X

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 O

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

Comment Type TR Comment Status X

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

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

Comment Type TR Comment Status X

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\_ebable\_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

Cl 83 SC 83.7.3 P216 L39 # 382  
Ganga, Ilango Intel

Comment Type TR Comment Status X  
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 O

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

Comment Type TR Comment Status X  
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 O

Proposed Response Response Status O

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

Comment Type **ER** Comment Status **X**

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 **O**

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

Comment Type **E** Comment Status **X**

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 **O**

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

Comment Type **ER** Comment Status **X**

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 **O**

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

Comment Type **E** Comment Status **X**

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 **O**

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

Comment Type **E** Comment Status **X**

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 **O**



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

Comment Type **ER** Comment Status **X**

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 **O**

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

Comment Type **ER** Comment Status **X**

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 **O**

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

Comment Type **ER** Comment Status **X**

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 **O**

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

Comment Type **E** Comment Status **X**

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 **O**

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

Comment Type **TR** Comment Status **X**

Maximum rise and fall time

*SuggestedRemedy*

Should be min rise and fall time

Proposed Response Response Status **O**

Cl 83A SC 83A.3.3.1 P370 L10 # 157  
 Petrilla, John Avago Technologies

Comment Type T Comment Status X

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 O

Cl 83A SC 83A.3.3.1 P370 L7 # 312  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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 O

Cl 83A SC 83A.3.3.1 P372 L12 # 174  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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

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 O

Cl 83A SC 83A.3.3.2 P372 L41 # 173  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 83A SC 83A.3.3.4 P371 L48 # 35  
 Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

CI 83A SC 83A.3.3.5 P372 L41 # 244  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

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 O

CI 83A SC 83A.3.4 P373 L37 # 322  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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 O

CI 83A SC 83A.3.4.1 P374 L2 # 158  
 Petrilla, John Avago Technologies

Comment Type ER Comment Status X

Reference is made to a 'reference input signal a 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 O

CI 83A SC 83A.3.4.6 P376 L45 # 36  
 Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

CI 83A SC 83A.4 P377 L28 # 323  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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

CI 83A SC 83A.5 P383 L # 176  
 Ghiasi, Ali Broadcom

Comment Type ER Comment Status X

What is LP

SuggestedRemedy  
 Replace with Low Pass

Proposed Response Response Status

CI 83A SC 83A.5.1 P382 L13 # 175  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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

CI 83B SC 83B.1 P385 L40 # 325  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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

CI 83B SC 83B.1 P385 L40 # 159  
 Petrilla, John Avago Technologies

Comment Type ER Comment Status X

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



CI **83B** SC **83B.2.1** P**389** L**48** # **180**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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 **O**

CI **83B** SC **83B.2.1** P**390** L**31** # **181**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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/ff = SQRT(Tr\*Tf) instead of max rise and fall time  
 see ghiasi\_03\_0709  
 Proposed Response Response Status **O**

CI **83B** SC **83B.2.1** P**390** L**31** # **182**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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 Vtex-demph  
 SuggestedRemedy  
 Please see ghiasi\_03\_0709  
 Proposed Response Response Status **O**

CI **83B** SC **83B.2.2** P**389** L**14** # **339**  
 Palkert, Tom Xilinx/Luxtera  
 Comment Type **TR** Comment Status **X**  
 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 **O**

CI **83B** SC **83B.2.2** P**389** L**18** # **338**  
 Palkert, Tom Xilinx/Luxtera  
 Comment Type **TR** Comment Status **X**  
 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 **O**

CI **83B** SC **83B.2.2** P**390** L**36** # **185**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 Not the best use of title "Host Compliance"  
 SuggestedRemedy  
 Host Specifications  
 Proposed Response Response Status **O**

Cl **83B** SC **83B.2.2** P**390** L**39** # **186**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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 **O**

Cl **83B** SC **83B.2.2** P**390** L**46** # **183**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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 **O**

Cl **83B** SC **83B.2.3** P**389** L**52** # **245**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 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 **O**

Cl **83B** SC **83B.2.3** P**390** L**3** # **246**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 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 **O**

Cl **83B** SC **83B.2.4** P**391** L**15** # **187**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 Host input tolerance signal at MCB output is confusing  
 SuggestedRemedy  
 Host input calibration signal instead  
 Proposed Response Response Status **O**

Cl **83C** SC **83C.1.1** P**395** L**30** # **257**  
 Booth, Brad AMCC  
 Comment Type **T** Comment Status **X**  
 In Figure 83C-1, the MMD numbering is wrong. The PMD and PMA are separated in the 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 **O**

**Cl 83C**    **SC 83C.1.1**                    **P395**            **L 32**            # **314**  
 D'Ambrosia, John                    Force10 Networks

**Comment Type**    **ER**            **Comment Status**    **X**

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**    **O**

**Cl 83C**    **SC 83C.1.2**                    **P396**            **L 1**            # **260**  
 Booth, Brad                            AMCC

**Comment Type**    **TR**            **Comment Status**    **X**

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**    **O**

**Cl 84**    **SC 84.11.4.4**                    **P232**            **L 23**            # **371**  
 Ganga, Ilango                            Intel

**Comment Type**    **E**            **Comment Status**    **X**

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**    **O**

**Cl 84**    **SC 84.2**                            **P223**            **L 4**            # **370**  
 Ganga, Ilango                            Intel

**Comment Type**    **E**            **Comment Status**    **X**

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**    **O**

**Cl 85**    **SC**                                    **P**            **L**            # **38**  
 Dawe, Piers                            Avago Technologies

**Comment Type**    **TR**            **Comment Status**    **X**

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**    **O**



Cl 85 SC P L # 37  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.1 P 233 L 8 # 188  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.10 P 251 L 9 # 337  
Palkert, Tom Xilinx/Luxtera

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.10 P 258 L 40 # 201  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.10.2 P 252 L 11 # 17  
Mellitz, Richard Intel

Comment Type TR Comment Status X

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  
 $((0.146 \cdot \sqrt{f} + 0.000896 \cdot f)) \text{dB}$   
 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 O

Cl 85 SC 85.10.2 P259 L14 # 189  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

Reference 10 m QSFP cable with lowwest loss was used for the cable loss specifications Eq 85-50

*SuggestedRemedy*

Worst case cable loss is 2.27 dB/m, ILca becmoes  
 $ILca=0.2120239*\text{SQRT}(f) + 0.001643*f$  which has loss of 23.7 dB at Nyquist

See ghiasi\_01\_0709

Proposed Response Response Status O

Cl 85 SC 85.10.2 P321 L11 # 41  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.10.3 P253 L1 # 139  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

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 ILCmax contains a significant term that is proportional to  $\text{sqrt}(f)$ .

*SuggestedRemedy*

Consider basing ILfitted on a polynomial fit. Refer to healey\_03\_0709.pdf.

Proposed Response Response Status O

Cl 85 SC 85.10.3 P253 L54 # 309  
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status X

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 O

Cl 85 SC 85.10.3 P259 L50 # 292  
DiMinico, Chris MC Communications

Comment Type TR Comment Status X

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 O

CI 85 SC 85.10.4 P254 L13 # 236  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

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
- $SC21 = SA21 * SB21 / (1 - SA22 * SB11)$  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:

- $db(SC21) = db(SA21) + db(SB21) + \text{correction}$ .

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.

$| \text{correction} | < 20 * \log_{10}(e) * SA22 * SB11$

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 O

CI 85 SC 85.10.4 P261 L36 # 202  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 85 SC 85.10.5 P262 L41 # 205  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

Needs to be log10

SuggestedRemedy

replace log with log10

Proposed Response Response Status O

CI 85 SC 85.10.5 P264 L21 # 203  
 Ghiasi, Ali Broadcom

Comment Type ER Comment Status X

Wrong reference

SuggestedRemedy

Replace figure 85-10 with 85-7

Proposed Response Response Status O

Cl 85 SC 85.10.6 P264 L18 # 170  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

When worst case FEXT included in the PSXT then cable insertion loss to crosstalk crosses over around 400 MHz.

*SuggestedRemedy*

Specifications 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

Cl 85 SC 85.10.7 P263 L10 # 206  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

Needs to be log10

*SuggestedRemedy*

replace log with log10

Proposed Response Response Status

Cl 85 SC 85.10.7 P264 L8 # 171  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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

Cl 85 SC 85.10.8 P255 L47 # 141  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

The insertion loss to crosstalk ratio limit (ICRC<sub>Amin</sub>) 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

Cl 85 SC 85.10.8 P263 L36 # 293  
DiMinico, Chris MC Communications

Comment Type TR Comment Status X

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

CI 85 SC 85.10.9 P257 L23 # 114  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

In Figure 85-8, test points TP1 and TP4 should 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 O

CI 85 SC 85.10.9 P257 L8 # 128  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 O

CI 85 SC 85.10.9 P264 L49 # 204  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 85 SC 85.10.9 P264 L52 # 295  
DiMinico, Chris MC Communications

Comment Type TR Comment Status X

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 O

CI 85 SC 85.11 P258 L50 # 104  
Kipp, Scott Brocade

Comment Type ER Comment Status X

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 O

CI 85 SC 85.11 P259 L11 # 105  
Kipp, Scott Brocade

Comment Type ER Comment Status X

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 O

Cl 85 SC 85.11 P259 L8 # 98  
Kipp, Scott Brocade

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.11 P262 L12 # 99  
Kipp, Scott Brocade

Comment Type ER Comment Status X

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 O

Cl 85 SC 85.11.1.1.2 P260 L27 # 39  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.11.1.1.2 P260 L27 # 42  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.13.3 P265 L1 # 372  
Ganga, Ilango Intel

Comment Type E Comment Status X

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 O

CI 85 SC 85.13.4.5 P269 L32 # 374  
 Ganga, Ilango Intel  
 Comment Type E Comment Status X  
 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 O

CI 85 SC 85.7.1 P238 L26 # 271  
 Frazier, Howard Broadcom Corporation  
 Comment Type ER Comment Status X  
 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 O

CI 85 SC 85.7.1 P238 L27 # 272  
 Frazier, Howard Broadcom Corporation  
 Comment Type ER Comment Status X  
 "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 O

CI 85 SC 85.7.1 P238 L34 # 273  
 Frazier, Howard Broadcom Corporation  
 Comment Type ER Comment Status X  
 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 O

CI 85 SC 85.7.12 P307 L4 # 286  
 Bandyopadhyay, Jaya Juniper Networks  
 Comment Type T Comment Status X  
 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 O

Cl 85 SC 85.7.7 P241 L3 # 276  
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.7.9 P241 L32 # 277  
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.8 P243 L24 # 226  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

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 O

Cl 85 SC 85.8 P243 L28 # 247  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

The MCB fixture and cables to the scope have an effect on this measurement. They need to be allowed 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

Change AN2 From: Max=1 to Max=2.45

Change AN2 From: Min=0 To: 1.5

Proposed Response Response Status O

Cl 85 SC 85.8 P243 L34 # 227  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

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 O



Cl 85 SC 85.8 P243 L46 # 228  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

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-connector-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 than 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 O

Cl 85 SC 85.8 P244 L32 # 229  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

Definition of XFR(i) and components are wrong

SuggestedRemedy

Change:  
 Input(i) to Output(i)  
 Add:  
 Input(i) DFT of the ideal 1 V PRBS9 waveform

Proposed Response Response Status O

Cl 85 SC 85.8 P244 L52 # 230  
 Misek, Brian Avago Technologies

Comment Type E Comment Status X

for 50 MHz <= f <= 6000 MHz should be removed.

SuggestedRemedy

Remove  
 for 50 MHz <= f <= 6000 MHz

Proposed Response Response Status O

Cl 85 SC 85.8.2 P242 L24 # 282  
 Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.8.3 P242 L28 # 304  
 D'Ambrosia, John Force10 Networks

Comment Type E Comment Status X

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 O

Cl 85 SC 85.8.3 P243 L1 # 306  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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

Cl 85 SC 85.8.3 P243 L11 # 305  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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

Cl 85 SC 85.8.3 P243 L23 # 287  
Bandyopadhyay, Jaya Juniper Networks

Comment Type T Comment Status X

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

Cl 85 SC 85.8.3 P243 L27 # 124  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

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

CI 85 SC 85.8.3 P243 L28 # 136  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P243 L32 # 125  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 O

CI 85 SC 85.8.3 P243 L34 # 137  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P243 L42 # 288  
Bandyopadhyay, Jaya Juniper Networks

Comment Type T Comment Status X

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 O

CI 85 SC 85.8.3 P243 L42 # 132  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

There 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 O

CI 85 SC 85.8.3 P243 L45 # 142  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P243 L47 # 135  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

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 than 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 O

CI 85 SC 85.8.3 P247 L14 # 190  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P247 L19 # 191  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P247 L25 # 193  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.3 P247 L33 # 195  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.8.3 P247 L36 # 196  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

Far end noise confusing to be part of TP2 table without some explanation

*SuggestedRemedy*

add to the note measured through the module compliacne 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 O

Cl 85 SC 85.8.3 P247 L43 # 194  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.8.3 P247 L45 # 192  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

Cl 85 SC 85.8.3.1 P244 L1 # 126  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 O

Cl 85 SC 85.8.3.1 P244 L6 # 127  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 O

Cl 85 SC 85.8.3.2 P244 L13 # 140  
Healey, Adam LSI Corporation

Comment Type TR Comment Status X

There is no bound on the difference between the linear fit inssertion 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 O

Cl 85 SC 85.8.3.2 P244 L13 # 14  
 Marris, Arthur Cadence  
 Comment Type E Comment Status X  
 spelling transmitt  
 SuggestedRemedy  
 change transmitt to transmit  
 Proposed Response Response Status O

Cl 85 SC 85.8.3.2 P244 L29 # 117  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

Cl 85 SC 85.8.3.2 P244 L37 # 118  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

Cl 85 SC 85.8.3.2 P244 L37 # 16  
 Mellitz, Richard Intel  
 Comment Type TR Comment Status X  
 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 O

Cl 85 SC 85.8.3.2 P244 L50 # 119  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

Cl 85 SC 85.8.3.2 P244 L51 # 113  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

CI 85 SC 85.8.3.2 P245 L20 # 120  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 Equation (85-7) is wrong. W(i) should not be raised to the nth power.  
 SuggestedRemedy  
 Change (85-7) to read:  

$$m_{xn} = \{ \text{SUM}(i = 0 \text{ to } i = 510) W(i) * \text{sqrt}(i * df)^n \} / \text{weight}$$
  
 Proposed Response Response Status O

CI 85 SC 85.8.3.2 P245 L24 # 121  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

CI 85 SC 85.8.3.2 P245 L25 # 122  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 Definition of "delta f" is wrong.  
 SuggestedRemedy  
 Define "delta f" to be "signaling rate/511"  
 Proposed Response Response Status O

CI 85 SC 85.8.3.2 P245 L35 # 116  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 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 O

CI 85 SC 85.8.3.2 P245 L36 # 123  
 Healey, Adam LSI Corporation  
 Comment Type T Comment Status X  
 The variable "delta f" is already defined.  
 SuggestedRemedy  
 Delete redundant definition.  
 Proposed Response Response Status O

CI 85 SC 85.8.3.2 P248 L40 # 197  
 Ghiasi, Ali Broadcom  
 Comment Type TR Comment Status X  
 Wrong reference  
 SuggestedRemedy  
 Should be table 85-4 not 85-6  
 Proposed Response Response Status O

CI 85 SC 85.8.3.3 P248 L14 # 290  
DiMinico, Chris MC Communications

Comment Type ER Comment Status X

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 O

CI 85 SC 85.8.3.3 P249 L15 # 291  
DiMinico, Chris MC Communications

Comment Type ER Comment Status X

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 O

CI 85 SC 85.8.3.4 P247 L30 # 231  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

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 diffenet 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 O

CI 85 SC 85.8.3.5 P247 L51 # 232  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

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 O

CI 85 SC 85.8.3.5 P247 L51 # 112  
Healey, Adam LSI Corporation

Comment Type E Comment Status X

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 O



CI 85 SC 85.8.3.5 P247 L51 # 115  
 Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 O

CI 85 SC 85.8.3.5 P248 L3 # 233  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

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  $20 \times \log_{10}(|SDD21|) = -.01 -.3 \times \sqrt{f} -.11 \times f$

SuggestedRemedy

Adopt the MCB that is lower loss.

Proposed Response Response Status O

CI 85 SC 85.8.3.5 P252 L15 # 294  
 DiMinico, Chris MC Communications

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.4 P248 L16 # 40  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 85 SC 85.8.4 P248 L17 # 307  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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 O

CI 85 SC 85.8.4 P248 L38 # 308  
 D'Ambrosia, John Force10 Networks

Comment Type T Comment Status X

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 O

Cl 85 SC 85.8.4.1 P248 L41 # 15  
 Marris, Arthur Cadence  
 Comment Type E Comment Status X  
 spelling  
 SuggestedRemedy  
 change interference to interference  
 Proposed Response Response Status O

Cl 85 SC 85.8.4.2 P249 L22 # 138  
 Healey, Adam LSI Corporation  
 Comment Type TR Comment Status X  
 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 O

Cl 85 SC 85.8.4.2 P249 L28 # 234  
 Misek, Brian Avago Technologies  
 Comment Type T Comment Status X  
 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  
 $ILtch(f) \geq ILchmax(f) - 0.5 * ILpcb(f)$

Proposed Response Response Status O

Cl 85 SC 85.8.4.2 P249 L32 # 111  
 Healey, Adam LSI Corporation  
 Comment Type E Comment Status X  
 "isertion" should be "insertion"  
 SuggestedRemedy  
 Correct two instances of this error in this paragraph.  
 Proposed Response Response Status O

Cl 85 SC 85.8.5 P253 L18 # 198  
 Ghiasi, Ali Broadcom  
 Comment Type TR Comment Status X  
 Differential peak to peak not compatible with CL86  
 SuggestedRemedy  
 Change max value from 1200 mV to 850 mV  
 Proposed Response Response Status O

Cl 85 SC 85.8.5 P253 L22 # 199  
 Ghiasi, Ali Broadcom  
 Comment Type TR Comment Status X  
 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 O

**Cl 85**    **SC 85.8.5.1**    **P253**    **L 32**    # **200**  
 Ghiasi, Ali    Broadcom

**Comment Type**    **TR**    **Comment Status**    **X**

Inteference test is not sufficently described wihtout 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**    **O**

**Cl 85**    **SC 85.9**    **P250**    **L 27**    # **373**  
 Ganga, Ilango    Intel

**Comment Type**    **E**    **Comment Status**    **X**

fix typo: insertion loss deviation (ILD)

Add missing cross-reference to Figure 85-2

**SuggestedRemedy**  
 As per comment

**Proposed Response**    **Response Status**    **O**

**Cl 85**    **SC 85A.3**    **P402**    **L 28**    # **289**  
 Bandyopadhyay, Jaya    Juniper Networks

**Comment Type**    **T**    **Comment Status**    **X**

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**    **O**

**Cl 85A**    **SC 85A.2**    **P401**    **L 16**    # **130**  
 Healey, Adam    LSI Corporation

**Comment Type**    **T**    **Comment Status**    **X**

Since the transmitter characteristics defined at TP0 are essentially identical to 10GBASE-KR (40GBASE-KR4) is seems unecessary 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**    **O**

**Cl 85A**    **SC 85A.2**    **P401**    **L 17**    # **315**  
 D'Ambrosia, John    Force10 Networks

**Comment Type**    **TR**    **Comment Status**    **X**

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**    **O**

**Cl 85A**    **SC 85A.2**    **P401**    **L 34**    # **210**  
 Ghiasi, Ali    Broadcom

**Comment Type**    **TR**    **Comment Status**    **X**

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**    **O**

Cl **85A** SC **85A.2** P**401** L**34** # **209**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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

Cl **85A** SC **85A.2** P**401** L**38** # **211**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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

Cl **85A** SC **85A.2** P**401** L**41** # **207**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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

Cl **85A** SC **85A.3** P**402** L**1** # **131**  
 Healey, Adam LSI Corporation  
 Comment Type **T** Comment Status **X**  
 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

Cl **85A** SC **85A.3** P**402** L**18** # **208**  
 Ghiasi, Ali Broadcom  
 Comment Type **TR** Comment Status **X**  
 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

CI 85A SC 85A.4 P402 L25 # 326  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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

CI 85A SC 85A.4 P402 L29 # 318  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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

CI 85A SC 85A.4 P402 L30 # 237  
 Misek, Brian Avago Technologies

Comment Type T Comment Status X

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

CI 85A SC 85A.4 P402 L31 # 129  
 Healey, Adam LSI Corporation

Comment Type T Comment Status X

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 (ILCAmax+ILPCBmax) implies that this is intended to mean the host may have loss beyond ILPCBmax/2 equal to the defined cable assembly test fixture loss.

*SuggestedRemedy*

Modify the text to clarify the intent.

Proposed Response Response Status

Cl **85A** SC **85A.4** P**402** L**35** # **238**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 Small PCB's can be accurately modeled by sqrt(f) and f terms.  
 SuggestedRemedy  
 Remove 85A-1 and 2 f^2 and f^3 terms.  
 Proposed Response Response Status **O**

Cl **85A** SC **85A.4** P**402** L**50** # **283**  
 Frazier, Howard Broadcom Corporation  
 Comment Type **TR** Comment Status **X**  
 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 **O**

Cl **85A** SC **85A.4** P**403** L**19** # **239**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 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 **O**

Cl **85A** SC **85A.5** P**403** L**33** # **240**  
 Misek, Brian Avago Technologies  
 Comment Type **E** Comment Status **X**  
 wrong equation sited in lin 33 and 48  
 SuggestedRemedy  
 change 51 to 40  
 Proposed Response Response Status **O**

Cl **85A** SC **85A.6** P**404** L**4** # **241**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 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 **O**

Cl **85A** SC **85A.7** P**403** L**2** # **243**  
 Misek, Brian Avago Technologies  
 Comment Type **T** Comment Status **X**  
 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 **O**

CI **85A** SC **85A.7** P**404** L # **242**  
 Misek, Brian Avago Technologies

Comment Type **T** Comment Status **X**

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<sub>XIJ</sub> being complex numbers)
2. For the channels we work with, generally the phases of SA<sub>22</sub> and SB<sub>11</sub> 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<sub>21</sub>) which will contribute to ILD, since the phase both

SA<sub>22</sub> and SB<sub>11</sub> 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 ILD<sub>ch</sub> is not equal to ILD<sub>ca</sub> and an ILD<sub>ch</sub> equation to flare out to 2.3dB at nyquist.

$ILD_{ch}(f) \geq ILD_{chmin}(f) = -0.8 - 0.3 \times 10E-9$  (85A.XX)

$ILD_{ch}(f) \leq ILD_{chmax}(f) = 0.8 + 0.3 \times 10E9$  (85S.XX)

Proposed Response Response Status **O**

CI **85A** SC **85A.7** P**405** L**3** # **212**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **X**

ICR channel min exceed ICR chfit, when worst case FEXT are included link budget are not supported at 10m

*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 **O**

CI 86 SC P L # 327  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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 O

CI 86 SC 86.1 P271 L20 # 145  
Petrilla, John Avago Technologies

Comment Type E Comment Status X

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 O

CI 86 SC 86.1 P271 L23 # 46  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 86 SC 86.1 P272 L5 # 146  
Petrilla, John Avago Technologies

Comment Type E Comment Status X

The phrase, "(bibliography, entries referenced here in the format [Bn])", is difficult to understand. Is there a typo?

#### SuggestedRemedy

Check that the phrase was written as intended and act accordingly.

Proposed Response Response Status O



CI 86 SC 86.10.3 P260 L31 # 213  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 86 SC 86.2 P273 L13 # 44  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86 SC 86.5 P275 L18 # 100  
 Kipp, Scott Brocade

Comment Type E Comment Status X

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 O

CI 86 SC 86.5.1 P274 L51 # 147  
 Petrilla, John Avago Technologies

Comment Type T Comment Status X

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 O

CI 86 SC 86.5.1 P275 L21 # 47  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86 SC 86.5.10 P277 L45 # 279  
 Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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 O

CI 86 SC 86.5.11 P277 L50 # 280  
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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

CI 86 SC 86.5.4 P276 L31 # 148  
Petrilla, John Avago Technologies

Comment Type E Comment Status X

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

CI 86 SC 86.5.7 P277 L13 # 43  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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

CI 86 SC 86.5.8 P277 L36 # 281  
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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

CI 86 SC 86.5.9 P277 L39 # 278  
Frazier, Howard Broadcom Corporation

Comment Type TR Comment Status X

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

CI 86 SC 86.7.2 P279 L9 # 149  
Petrilla, John Avago Technologies

Comment Type T Comment Status X

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 O

CI 86 SC 86.7.3 P286 L37 # 214  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 86 SC 86.8 P283 L51 # 101  
Kipp, Scott Brocade

Comment Type E Comment Status X

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 O

CI 86 SC 86.8 P286 L12 # 102  
Kipp, Scott Brocade

Comment Type E Comment Status X

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 O

CI 86 SC 86.8.3.2 P298 L47 # 215  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 86 SC 86.8.3.3.2 P285 L28 # 45  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86 SC 86.8.4.1 P249 L11 # 235  
Misek, Brian Avago Technologies

Comment Type T Comment Status X

Broad band noise values need to be justified. The noise far end for the Tx has the nFEXT in it and has been shaped by the longest cable. This means it should represent the FEXT noise and was less than the 3mV. The test calls out all active channels. What is the source of the noise being injected? How should it be injected? It would be easiest to inject it at the Tx end if one is using a cable to model the channel. The noise would then be shaped by the channel transfer function.

*SuggestedRemedy*

With the definition of HCB and 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 O

CI 86 SC 86.8.4.7 P287 L48 # 150  
Petrilla, John Avago Technologies

Comment Type E Comment Status X

"minimised" should be "minimized"

*SuggestedRemedy*

Change "minimised" to "minimized"

Proposed Response Response Status O

CI 86 SC 86.8.4.7 P287 L52 # 151  
Petrilla, John Avago Technologies

Comment Type TR Comment Status X

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 O

CI 86 SC 86.8.4.7 P288 L6 # 48  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl **86A** SC P L # **329**  
 D'Ambrosia, John Force10 Networks

Comment Type **TR** Comment Status **X**

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

Cl **86A** SC P L # **316**  
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **X**

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

Cl **86A** SC **86A.4** P **407** L **52** # **59**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**  
 the electrical nPPI.

*SuggestedRemedy*

the nPPI.

Proposed Response Response Status

CI 86A SC 86A.4 P408 L4 # 328  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

Subclause 86A.4.1 is titled "XLPPi and CPPI transmit side electrical specifications"  
 Subclause 86A.4.2 is titled "XLPPi 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

#### Suggested Remedy

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.

$RLD(f) > RLDmin = \{show equations\}$

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.

$RLC(f) > RLCmin = \{show equations\}$

where f is frequency in gigahertz

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

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  $RLCD > RLCDmin = 10dB$

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 O

CI 86A  
 SC 86A.4

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 6/29/2009 2:38:05 PM

Cl 86A SC 86A.4.1 P408 L10 # 217  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X  
XLPP1 and CPPI has no TP0 definition missing

*SuggestedRemedy*

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 O

Cl 86A SC 86A.4.1 P408 L10 # 221  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X  
XLPP1 and CPPI has no TP5 definition missing

*SuggestedRemedy*

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 O

Cl 86A SC 86A.4.1 P408 L20 # 56  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 86A SC 86A.4.1 P408 L24 # 57  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 86A SC 86A.4.1 P408 L30 # 216  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 severe 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 O

Cl 86A SC 86A.4.1 P410 L13 # 61  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

Font size of the minus sign before 10

*SuggestedRemedy*

Fix. Also p411 line 13. Centre-justify "-10" there.

Proposed Response Response Status O

CI **86A** SC **86A.4.1** P**410** L**20** # **55**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**  
 DDPWS min. seems wrong.

SuggestedRemedy  
 Change to DDPWS tolerance (still min.).

Proposed Response Response Status **O**

CI **86A** SC **86A.4.1.1** P**408** L**40** # **49**  
 Dawe, Piers Avago Technologies

Comment Type **T** Comment Status **X**  
 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 **O**

CI **86A** SC **86A.4.1.2** P**408** L**50** # **58**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**  
 SCC22 at TP1a and TP4 isn't an XLPPi 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 **O**

CI **86A** SC **86A.4.2** P**410** L**19** # **218**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **X**  
 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 **O**



Cl **86A** SC **86A.4.2** P**410** L**46** # **162**  
 Petrilla, John Avago Technologies

Comment Type **T** Comment Status **X**

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 **O**

Cl **86A** SC **86A.4.2** P**411** L**20** # **54**  
 Dawe, Piers Avago Technologies

Comment Type **T** Comment Status **X**

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 **O**

Cl **86A** SC **86A.4.2** P**411** L**22** # **220**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **X**

Condition for host stress should be target not max

SuggestedRemedy

Change max to target value

Proposed Response Response Status **O**

Cl **86A** SC **86A.4.2** P**411** L**22** # **53**  
 Dawe, Piers Avago Technologies

Comment Type **T** Comment Status **X**

Need to confirm transition time value and provide DDPWS value.

SuggestedRemedy

I'll try to bring numbers to the meeting.

Proposed Response Response Status **O**

Cl **86A** SC **86A.4.2.1** P**409** L**46** # **60**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**

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 **O**

Cl **86A** SC **86A.4.2.1** P**411** L**28** # **219**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **X**

DDPWS value is TBD

SuggestedRemedy

Replace TBD with 0.36 UI

Proposed Response Response Status **O**

Cl **86A** SC **86A.5.1.1.2** P**412** L**45** # **330**  
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **X**

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

Cl **86A** SC **86A.5.1.1.2** P**412** L**48** # **134**  
 Healey, Adam LSI Corporation

Comment Type **T** Comment Status **X**

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

Cl **86A** SC **86A.5.1.1.2** P**413** L**27** # **331**  
 D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **X**

the term "through response" in Fig 86A-2 and 86A-3 is inconsistent 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

Cl **86A** SC **86A.5.1.1.2** P**413** L**33** # **332**  
 D'Ambrosia, John Force10 Networks

Comment Type **TR** Comment Status **X**

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

CI 86A SC 86A.5.1.1.2 P413 L34 # 62  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86A SC 86A.5.1.1.2 P414 L46 # 63  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86A SC 86A.5.1.1.2 P415 L27 # 333  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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 O

CI 86A SC 86A.5.1.1.2 P415 L34 # 64  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 86A SC 86A.5.1.1.2 P416 L27 # 334  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status X

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 O

CI 86A SC 86A.5.3 P416 L46 # 51  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 86A SC 86A.5.3.2 P417 L46 # 222  
 Ghiasi, Ali Broadcom  
 Comment Type TR Comment Status X  
 The numerator of Zp-Zn could be negative  
 SuggestedRemedy  
 Add absolute value |Zp-Zn|  
 Proposed Response Response Status O

Cl 86A SC 86A.5.3.3 P418 L7 # 65  
 Dawe, Piers Avago Technologies  
 Comment Type E Comment Status X  
 In this clause  
 SuggestedRemedy  
 In this annex  
 Proposed Response Response Status O

Cl 86A SC 86A.5.3.3 P418 L8 # 66  
 Dawe, Piers Avago Technologies  
 Comment Type E Comment Status X  
 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 O

Cl 86A SC 86A.5.3.5 P419 L23 # 67  
 Dawe, Piers Avago Technologies  
 Comment Type E Comment Status X  
 It may  
 SuggestedRemedy  
 Qsq may  
 Proposed Response Response Status O

Cl 86A SC 86A.5.3.8 P420 L3 # 68  
 Dawe, Piers Avago Technologies  
 Comment Type T Comment Status X  
 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 O

Cl 86A SC 86A.5.3.8.2 P420 L16 # 50  
 Dawe, Piers Avago Technologies  
 Comment Type T Comment Status X  
 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 O

Cl 86A SC 86A.5.3.8.3 P420 L50 # 70  
 Dawe, Piers Avago Technologies  
 Comment Type E Comment Status X  
 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 O

CI 86A SC 86A.5.3.8.3 P421 L42 # 69  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 86A SC 86A.5.3.8.5 P422 L28 # 160  
Petrilla, John Avago Technologies

Comment Type E Comment Status X

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 O

CI 86A SC 86A.5.3.8.5 P422 L31 # 161  
Petrilla, John Avago Technologies

Comment Type ER Comment Status X

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 O

CI 86A SC 86A.6 P423 L44 # 317  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status X

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 O

CI 86A SC 86A.6 P423 L45 # 133  
Healey, Adam LSI Corporation

Comment Type T Comment Status X

Per Figure 86-3, "TP1 and TP4" should be "TP1a and TP4a".

*SuggestedRemedy*

Per comment.

Proposed Response Response Status O

Cl **86A** SC **86A.6** P**424** L**31** # **223**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **X**

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

Cl **86A** SC **86A.8.4** P**427** L**20** # **52**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**

"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

Cl **87** SC **87.11.1** P**317** L**10** # **76**  
 Dawe, Piers Avago Technologies

Comment Type **T** Comment Status **X**

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

Cl **87** SC **87.12.4.3** P**321** L**37** # **87**  
 Dawe, Piers Avago Technologies

Comment Type **E** Comment Status **X**

As these are mandatory,

*SuggestedRemedy*

Delete "N/A [ ]" twice.

Proposed Response Response Status

CI 87 SC 87.3.1 P303 L5 # 78  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 87 SC 87.3.1 P303 L8 # 21  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status X

Wrong reference.

SuggestedRemedy

Replace "See 80.3." with "See 80.4.".

Proposed Response Response Status O

CI 87 SC 87.4 P304 L4 # 79  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 87 SC 87.5.4 P305 L51 # 80  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 87 SC 87.7.2 P308 L7 # 81  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 87 SC 87.7.2 P309 L24 # 88  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

Cl 87 SC 87.7.2 P309 L30 # 71  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 87 SC 87.7.2 P309 L37 # 261  
Maki, Jeffery Juniper Networks, Inc.

Comment Type ER Comment Status X

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 O

Cl 87 SC 87.8.1 P310 L25 # 23  
Anslow, Peter Nortel Networks

Comment Type T Comment Status X

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 O

Cl 87 SC 87.8.10 P313 L48 # 84  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

"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 O

Cl 87 SC 87.8.11 P314 L1 # 264  
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status X

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 O



CI 87 SC 87.8.11 P314 L2 # 143  
King, Jonathan finisar

Comment Type T Comment Status X

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 O

CI 87 SC 87.8.11 P314 L29 # 85  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

"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 O

CI 87 SC 87.8.11 P314 L30 # 86  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

"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 O

CI 87 SC 87.8.3 P311 L32 # 74  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 87 SC 87.8.3 P311 L32 # 72  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 87 SC 87.8.4 P311 L37 # 73  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 87 SC 87.8.6.1 P312 L9 # 77  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

Cl 87 SC 87.8.6.2 P312 L27 # 75  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 87 SC 87.8.6.3 P313 L11 # 82  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 87 SC 87.8.8 P313 L32 # 83  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 87 SC 87.8.9 P313 L44 # 144  
King, Jonathan finisar

Comment Type T Comment Status X

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 O

CI 88 SC 88.7 P331 L43 # 90  
Dawe, Piers Avago Technologies

Comment Type E Comment Status X

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 O

CI 88 SC 88.7.2 P333 L37 # 91  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 88 SC 88.7.2 P333 L43 # 262  
Maki, Jeffery Juniper Networks, Inc.

Comment Type ER Comment Status X

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 O

CI 88 SC 88.8 P334 L33 # 22  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status X

Typo.

SuggestedRemedy

Delete the " at the end of the paragraph.

Proposed Response Response Status O

CI 88 SC 88.8.2 P336 L37 # 89  
Dawe, Piers Avago Technologies

Comment Type T Comment Status X

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 O

CI 88 SC 88.9.10 P341 L1 # 265  
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status X

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 O

CI 88 SC 88.9.10 P341 L21 # 225  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

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 O

CI 88 SC 88.9.10 P341 L3 # 251  
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type ER Comment Status X

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

CI 88 SC 88.9.10 P341 L4 # 254  
 Szczepanek, Andre HSZ Consulting Ltd

Comment Type TR Comment Status X

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

CI 88 SC 88.9.5.3 P340 L8 # 224  
 Ghiasi, Ali Broadcom

Comment Type TR Comment Status X

The CRU of 10 MHz add extra burden on the receiver and there is no reson to use such wide band CRU as the power supply noise and clock phase noise typiclaly are not more than 1 MHz.

#### SuggestedRemedy

propose to use CRU BW=6 MHz

Proposed Response Response Status

CI 88 SC 88.9.8 P340 L42 # 263  
Maki, Jeffery Juniper Networks, Inc.

Comment Type T Comment Status X

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 O

CI 99 SC P3 L20 # 342  
Grow, Robert Intel

Comment Type E Comment Status X

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 O

CI 99 SC P3 L40 # 343  
Grow, Robert Intel

Comment Type E Comment Status X

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 O

CI 99 SC 99 P1 L45 # 386  
Law, David 3Com

Comment Type E Comment Status X

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 O

CI 99 SC 99 P2 L3 # 387  
Law, David 3Com

Comment Type E Comment Status X

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 O

CI 99 SC 99 P2 L46 # 389  
 Law, David 3Com

Comment Type E Comment Status X

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 O

CI 99 SC 99 P2 L9 # 385  
 Law, David 3Com

Comment Type E Comment Status X

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 O

CI 99 SC 99 P4 L15 # 388  
 Law, David 3Com

Comment Type E Comment Status X

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 O