Global: Plots of insertion loss, return loss, crosstalk limits are inconsistent. Some plots do not indicate where the pass regions are, but others do and use various terminologies to indicate where the acceptable region is - "Acceptable Region", "Recommended Region", "Pass Region", "Compliant Region"

Suggested Remedy:
Be consistent on all graphs regarding whether a pass region will be indicated. If the pass region is to be indicated, then use consistent terminology to indicate that region.

Response:
ACCEPT IN PRINCIPLE.

Check for style regarding the use of notes embedded in the tables, for example Tables 80-3 through 80-5.

Suggested Remedy:
Update the column notes in Tables (if applicable) as per IEEE style requirements.

Response:
ACCEPT IN PRINCIPLE.

As per IEEE Style manual section 15.4:
"A note to a table is informative. A footnote to a table is normative. This distinction should be kept in mind when determining whether information should go in a table note or a table footnote."

In Table 81-5 for the NOTE, delete the first sentence and for the following sentence: "All other values in lanes 1 to 3 not shown in this table are reserved. The link fault signaling state diagram allows future standardization of reserved Sequence ordered sets for functions other than link fault indications." put into the text above the table, and reword to fit in.

In Tables 81-3 and 81-4 delete the NOTE.

Clauses 81-88: Table on first page of PICS: Change NOTES 1, 2, 3 to NOTE 1, NOTE 2, NOTE 3 as applicable
### Draft 3.0 Comments

**IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments**

<table>
<thead>
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**Comment Type:** ER  **Comment Status:** A

**Ganga, Ilango Intel Corporation**

**Comment:** Check for style regarding the use of notes NOTE1 and NOTE2 embedded in the layer diagram figures, for example Figures 80-1 through 80-5 and 82-1, 83-1 etc.,

**Suggested Remedy:**

Update the notes embedded in the figures (if applicable) as per IEEE style requirements.

**Response**

*ACCEPT IN PRINCIPLE.*

As per the IEEE Style manual section 16.3:

"A note to a figure is informative. A footnote to a figure is normative. This distinction should be kept in mind when determining whether information should go in a figure note or a footnote."

Notes in Figures 80-1 through 80-5 and 81-1, 82-1, 83-1 and 88-2 are informative and hence the NOTE(s) in figures need not be changed.

In Fig 82-10 and Fig 82-11 change "Note -" to "NOTE-" (em dash)

In Fig 83-5, change footnote numbering from 1,2,3 to a,b,c

In Fig 83-6, change colon to em dash after the word NOTE

Under Figures 85-2 and 85-16 change "NOTE-*" to "Note -" to be consistent in P802.3ba.

<table>
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**Comment Type:** ER  **Comment Status:** A

**Ganga, Ilango Intel Corporation**

**Comment:** Check and update the subclause numbering style for new subclauses inserted by 802.3ba, as appropriate, if applicable to this amendment. Especially the new subclauses inserted by 802.3ba: Clauses 45, 73, 74 etc.,

**Suggested Remedy:**

Update the numbering style for inserted subclauses if applicable to 802.3ba

**Response**

*ACCEPT IN PRINCIPLE.*

See response to comments #389, #754, #767 and #624

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</table>

**Comment Type:** ER  **Comment Status:** A

**Ganga, Ilango Intel Corporation**

**Comment:** The draft is inconsistent on whether to use "AC coupling or AC coupled" or "AC-coupling or AC-coupled".

**Suggested Remedy:**

The response to comment 470 against D 2.0 agreed to use "AC coupling or AC coupled"

**Response**

*ACCEPT IN PRINCIPLE.*

The same inconsistency exists in the base standard as well.

Change all instances to "AC coupling" or "AC coupled" to be consistent in P802.3ba.

<table>
<thead>
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</table>

**Comment Type:** ER  **Comment Status:** A

**Anslow, Peter Nortel Networks**

**Comment:** The draft is inconsistent on whether to use "AC coupling or AC coupled" or "AC-coupling or AC-coupled".

**Suggested Remedy:**

The response to comment 470 against D 2.0 agreed to use "AC coupling or AC coupled"

**Response**

*ACCEPT IN PRINCIPLE.*

The same inconsistency exists in the base standard as well.

Change all instances to "AC coupling" or "AC coupled" to be consistent in P802.3ba.
This is only a note regarding my two earlier comments: They "must be satisfied"--but they are logged as "not required to be satisfied" in the myBallot tool and I can't figure out how to change them to "must be satisfied"

Suggested Remedy

ACCEPT IN PRINCIPLE.
There is no action to be taken.

The other two comments #346, #347 from the commenter have been classified as TR comments (must be satisfied).

Suggested Remedy

The draft has many blank pages. Please remove them

Suggested Remedy

Per comment

Proposed Response

REJECT.

This comment was WITHDRAWN by the commenter.

The document is configured to start new chapters (Clauses) with odd numbered pages. Hence blank pages are inserted at the end of a Clause or Annex to start the new page to the right (odd numbered page), so a printed document will have chapters starting at the right.
Comment Type TR Comment Status R

P802.3ba has chosen to use a nomenclature that doesn't follow previous uses. While the draft standard has chosen to use C and K to indicate media types - similar to previous uses in 802.3 - they have chosen to use S, L and E to indicate reach instead of wavelengths as was done in 802.3z and 802.3ae. This creates confusion with the nomenclature and may present limitations for future enhancements to the 40G and 100G family.

Suggested Remedy
Change all references for S to mean short wavelength (850nm).
Change all references for L to mean long wavelength (1310nm).
Change all references for E to be Z and to mean optimized long wavelength (1310nm).

Response Response Status W
REJECT.

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

The Task Force has discussed the nomenclature extensively during the WG ballot phase including the evolution of PHY naming conventions (see law_01_0709). The task force did discuss the consistency issue; during the discussions it was pointed out the nomenclature evolved as needed from 10M to 10G and that the base document already uses same letter(s) to identify different characteristics.

The nomenclature employed by P802.3ba is clearly documented in Table 80-2 and the port type definition (for e.g. "100GBASE-CR10") includes the characteristics/attributes of the port type. Individual letters are not used to distinguish different characteristics/attributes.

Comment Type E Comment Status A

There is a newer version of this standard available.

Suggested Remedy
IEC 61280-1-4:2009

Response Response Status C
ACCEPT IN PRINCIPLE.

Note- this will leave a reference to IEC 61280-1-4:2003 in the base standard as referred to by clause 68.
<table>
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</tbody>
</table>

Hajduczenia, Marek  
ZTE Corp.

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

All ITU-T references are dated per their publication. G.694.1 should be dated 2002 (see http://www.itu.int/rec/T-REC-G.694.1/en). G.694.2 should be dated 2003 (see http://www.itu.int/rec/T-REC-G.694.2/en).

**Suggested Remedy:**  
Add the date to G.694.1 and G.694.2 references per comment

**Response**  
**Response Status:** C

REJECT.

As per IEEE style manual, undated references are allowed (unless specificity is required). When specific dates are not included in the reference, the reader is expected to refer to the latest version.

Claus 87 and 88 do not take the wavelength or frequency values from G.694.1 or G.694.2, but simply refer to these Recommendations as the source of the values. Consequently, there is no risk that changes to the Recommendations will cause changes to the PMD specifications.

<table>
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</table>

Anslow, Peter  
Nortel Networks

**Comment Type:** G  
**Comment Status:** D

Add a Normative Reference to TIA Standard specifying OM3 performance

**Suggested Remedy:**  

**Response**  
**Response Status:** C

REJECT.

See response to comment #7

<table>
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</table>

Maguire, Valerie  
The Siemon Company

**Comment Type:** D  
**Comment Status:** R

Add a Normative Reference to TIA Standard specifying OM3 performance

**Suggested Remedy:**  

**Response**  
**Response Status:** C

REJECT.

See response to comment #7

<table>
<thead>
<tr>
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<td>387</td>
</tr>
</tbody>
</table>

Anslow, Peter  
Nortel Networks

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

In the example draft standard (Annex B) of the 2009 IEEE style manual, the abbreviations in clause 3.2 are shown with the first letters not capitalised except where it is a proper name. Also, in the base standard subclause 1.5 most of the abbreviations are shown with the expansions non-capitalised. Using the abbreviations in the base standard as a guide (e.g. XAUI, XGMII) it appears that DIC, LSB and MSB should be shown non-capitalised. OTN and OPUS are abbreviations defined by the ITU-T and the capitalization ITU use has been adopted.

**Suggested Remedy:**  
Change to "deficit idle count", "least significant bit" and "most significant bit"

**Response**  
**Response Status:** C

ACCEPT.

See response to comment #544

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<td>27</td>
<td>32</td>
<td>387</td>
</tr>
</tbody>
</table>

Ganga, Ilango  
Intel Corporation

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

[Editor's note: Comment 52 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]  
LSB and MSB don't denote proper names. This was nearly right in an earlier draft.

**Suggested Remedy:**  
Change "Least Significant Bit" to "least significant bit", change "Most Significant Bit" to "most significant bit."

**Response**  
**Response Status:** C

ACCEPT IN PRINCIPLE.

See response to comment # 396

<table>
<thead>
<tr>
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<td>01</td>
<td>1.5</td>
<td>27</td>
<td>32</td>
<td>387</td>
</tr>
</tbody>
</table>

Ganga, Ilango  
Intel Corporation

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

[Editor's note: Comment 52 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]  
LSB and MSB don't denote proper names. This was nearly right in an earlier draft.

**Suggested Remedy:**  
Change "Least Significant Bit" to "least significant bit", change "Most Significant Bit" to "most significant bit."

**Response**  
**Response Status:** C

ACCEPT IN PRINCIPLE.

See response to comment # 396

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>01</td>
<td>1.5</td>
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<td>387</td>
</tr>
</tbody>
</table>
P802.3ba PMDs are all comprised of multiple physical lanes and multiple PCS lanes. Future interfaces, e.g. under investigation by the 40Gb/s Ethernet Single-mode Fibre PMD Study Group, may not be multiple physical lanes but will still be multiple PCS lanes.

**Suggested Remedy**

Change "40 Gb/s multi-lane 64B/66B" to "40 Gb/s multi-PCS lane 64B/66B" and "100 Gb/s multi-lane 64B/66B" to "100 Gb/s multi-PCS lane 64B/66B". Same change in sub-clause 30.3.2.1.3 lines 18-19.

**Response**

Accept.

---

Since P802.3av is now an approved amendment, the draft should refer to that rather than P802.3av Draft 3.4.

**Suggested Remedy**

Change to "as modified by IEEE Std 802.3av-2009" (Is this the correct format?) Make this change here and throughout clause 45 (12 instances).

**Response**

Accept.

---

"PCS lanes" - this concept has not been defined in Clause 30 or before for that matter. Provide reference to where such concept is defined / used for the first time for readers who do not read standards from the back.

**Suggested Remedy**

Per comment

**Response**

Reject.

PCS lane (PCS L) is defined in Clause 1.4, this is generally considered to be closer to the front of the document.
### Draft 3.0 Comments

#### Comment: The "10G PCS Control 2" register has been re-named to the "PCS Control 2" register

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

The "10G PCS Control 2" register has been re-named to the "PCS Control 2" register.

**Suggested Remedy:**  
Change "10G PCS Control 2" to "PCS Control 2". Also the reference is duplicated at the end of the sentence, so do not add "and the PCS control 2 register specified in 45.2.3.6".

**Response:**  
ACCEPT.

---

#### Comment: 1000BASE-T is suitable for operation over all twisted-pair media types of the correct category.

**Comment Type:** G  
**Comment Status:** A

1000BASE-T is suitable for operation over all twisted-pair media types of the correct category.

**Suggested Remedy:**  
Change "UTP" to "twisted-pair"

**Response:**  
ACCEPT IN PRINCIPLE.

The "UTP" is not consistent with other PHY types. Delete "UTP" in 2 instances.

Note that this is a change to the base document and is not related to 40/100G.

---

#### Comment: 1000BASE-TFD is suitable for operation over all twisted-pair media types of the correct category.

**Comment Type:** G  
**Comment Status:** A

1000BASE-TFD is suitable for operation over all twisted-pair media types of the correct category.

**Suggested Remedy:**  
Change "UTP" to "twisted-pair"

**Response:**  
ACCEPT IN PRINCIPLE.

The "UTP" is not consistent with other PHY types. Delete "UTP" in 2 instances.

Note that this is a change to the base document and is not related to 40/100G.

---

#### Comment: This comment is related to changes needed to 31B.4.3 Major Capabilities/Options table in base document due to insertion of new speeds after 100Mb/s. The last row of table currently states "MIIc at operating speeds above 100Mb/s, however actually MIIc is for 1000Mb/s and MIId has been added for 10Gb/s other than 10GBASE-T and MIIe for 10Gb/s for 10GBASE-T. The last two options have been added/corrected by 802.3-2008-Cor1 in 31B.4.6 however these options have not been added to 31B.4.3. Add the missing options to table in 31B.4.3. The fix is needed to be consistent with the new options MIIf and MIIG added for 40Gb/s and 100Gb/s by 802.3ba

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

This comment is related to changes needed to 31B.4.3 Major Capabilities/Options table in base document due to insertion of new speeds after 100Mb/s. The last row of table currently states "MIIc at operating speeds above 100Mb/s, however actually MIIc is for 1000Mb/s and MIId has been added for 10Gb/s other than 10GBASE-T and MIIe for 10Gb/s for 10GBASE-T. The last two options have been added/corrected by 802.3-2008-Cor1 in 31B.4.6 however these options have not been added to 31B.4.3. Add the missing options to table in 31B.4.3. The fix is needed to be consistent with the new options MIIf and MIIG added for 40Gb/s and 100Gb/s by 802.3ba

**Suggested Remedy:**  
Change 31B.4.3 last row of table as follows:

- MIIc At operating speeds (strike-through: above 100 Mb/s) of 1000 Mb/s
- MIId {Feature} At operating speeds of 10 Gb/s with PHY types other than 10GBASE-T {Subclause} 31B.3.7 {Status} Optional
- MIIe {Feature} At operating speeds of 10 Gb/s with PHY types of 10GBASE-T {Subclause} 31B.3.7 {Status} Optional

**Response:**  
ACCEPT.

---

#### Comment: Table 45-59a. No line at the bottom of the table.

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

Table 45-59a. No line at the bottom of the table.

**Suggested Remedy:**  
Add line to bottom of table as per other tables split over pages

**Response:**  
ACCEPT.

---

#### Comment: Table 45-114a. The table title incorrectly says it is for lanes 0 and 1, but it is only actually for lane 0.

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

Table 45-114a. The table title incorrectly says it is for lanes 0 and 1, but it is only actually for lane 0.

**Suggested Remedy:**  
Replace with Table 45-114a-BIP error counter, lane 0 register bit definitions.

**Response:**  
ACCEPT.
<table>
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<td>No line at the bottom of the table.</td>
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<td>Suggested Remedy</td>
<td>Add line to bottom of table as per other tables split over pages</td>
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<tr>
<td>What is a 'Separated PMA'? I am sure that 802.3ba participants are intimately aware of that but a casual reader not participating in 802.3ba proceedings is at a loss in here. Similar comment to table 45-2, where reference to 'package' is made. What is a package and where it is defined?</td>
<td></td>
<td></td>
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<tr>
<td>Suggested Remedy</td>
<td>Provide a reference to where these concepts are defined</td>
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<tr>
<td>Response</td>
<td>Response Status</td>
<td>C</td>
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<tr>
<td>ACCEPT IN PRINCIPLE.</td>
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<td></td>
</tr>
<tr>
<td>&quot;package&quot; is defined in 45.2.</td>
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<td>Add appropriate table note to Separated PMA (1)</td>
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<tr>
<td>&quot;Separated PMAs are defined in 45.2.1&quot;</td>
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<td>3Com</td>
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<td>Comment Status</td>
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<td></td>
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<tr>
<td>Register 1.12 is called the '10G-EPON PMA/PMD ability register', see IEEE Std 802.3av-2009 subclause 45.2.1.11 (page 20). During my check of the changes made by this draft to the previous approved standards it became apparent that this register name was not correctly reflected in this table in the changes in IEEE Std 802.3av-2009 (see IEEE Std 802.3av-2009 page 17). If the IEEE 802.3ba project is uncomfortable about making this change I'm happy to submit it as a maintenance request.</td>
<td></td>
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</tr>
<tr>
<td>Suggested Remedy</td>
<td>Change the text 'P2MP ability register' to read '10G-EPON PMA/PMD ability register'.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>Response Status</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>The change will be shown as a change to 802.3-2008 as modified by 802.3av-2009.</td>
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<table>
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<td>Nortel Networks</td>
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<td>Comment Type</td>
<td>E</td>
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</tr>
<tr>
<td>Registers 1.150 and 1.151 have been re-named to &quot;BASE-R ...&quot; but the previous name of &quot;10GBASE-KR ...&quot; still appears in Tables 72-2 and 72-3</td>
<td></td>
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<tr>
<td>Suggested Remedy</td>
<td>Change &quot;10GBASE-KR PMD&quot; to &quot;BASE-R PMD&quot; in Table 72-2 (2 places) and Table 72-3 (4 places)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td>Response Status</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>REJECT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This change applies to Clause 72. It is not worth opening the clause for this editorial change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>However, a comment against 802.3az could fix this.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comment Type TR  Comment Status A
All of the "per-lane" counters are packed in much more tightly than they need to be given the 32,000 registers available. This may lead to painful and unnecessary renumbering in future projects that use more lanes. This comment will be referenced by specific other comments dealing with the particular registers, so it includes the text string HB_01.

SuggestedRemedy
Change the addresses of per-PCS-lane registers so that they start on 100 boundaries and reserve 200 register addresses for future expansion. Change the addresses of per-physical-lane registers so that they start on 100 boundaries and reserve 100 register addresses for future expansion.

Response  Response Status C
ACCEPT.

Comment Type T  Comment Status A
HB_02 Change register BASE-R FEC corrected blocks counter, lanes 0 through 19 as proposed in HB_01

SuggestedRemedy
Change register addresses to 1.300 to 1.339, add a row for Reserved 1.340 to 1.699

Response  Response Status C
ACCEPT.

Comment Type T  Comment Status A
HB_03 Change register BASE-R FEC uncorrected blocks counter, lanes 0 through 19 as proposed in HB_01

SuggestedRemedy
Change register addresses to 1.700 to 1.739, add a row for Reserved 1.740 to 1.1099

Response  Response Status C
ACCEPT.
Comment Type: T  Comment Status: A
This says "1.267 through 275" but it should be "1.267 through 1.275"

Suggested Remedy:
Change "1.267 through 275" to "1.267 through 1.275"
Make equivalent change elsewhere in Table 45-3 (3 more instances)
In Table 45-83 change "3.83 through 89" to "3.83 through 3.89"
In title of 45.2.3.38 change "Registers 3.91 through 109" to "Registers 3.91 through 3.109"

Response: Response Status: C
ACCEPT IN PRINCIPLE.
Change the format of the range as suggested, note that the numbers change according to comment #701.

Comment Type: T  Comment Status: A
HB_06 Change register BASE-R LP status report, lane 0 (copy) address as proposed in HB_01
Suggested Remedy:
Change register address to 1.1200
Response: Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
HB_07 Change register BASE-R LP status report, lane 1 through 9 address as proposed in HB_01
Suggested Remedy:
Change register addresses to 1.1201 to 1.1209, add a row for Reserved 1.1210 to 1.1299
Response: Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
HB_08 Change register BASE-R LD coefficient update, lane 0 (copy) address as proposed in HB_01
Suggested Remedy:
Change register address to 1.1300
Response: Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
HB_09 Change register BASE-R LD coefficient update, lane 1 through 9 address as proposed in HB_01
Suggested Remedy:
Change register addresses to 1.1301 to 1.1309, add a row for Reserved 1.1310 to 1.1399
Response: Response Status: C
ACCEPT.
HB_11 Change register BASE-R LD status report, lane 1 through 9 address as proposed in HB_01

SuggestedRemedy
Change register addresses to 1.1401 to 1.1409, add a row for Reserved 1.1410 to 1.1499

Response
Response Status A
ACCEPT.

HB_12 Change register Test pattern ability address as proposed in HB_01

SuggestedRemedy
Delete reserved row 1.306

Response
Response Status A
ACCEPT.

HB_13 Change register Square wave testing control address as proposed in HB_01

SuggestedRemedy
Change register address to 1.1500

Response
Response Status A
ACCEPT IN PRINCIPLE.

HB_14 Change register PRBS pattern testing control address as proposed in HB_01

SuggestedRemedy
Change register address to 1.1501

Response
Response Status A
ACCEPT IN PRINCIPLE.

The names of registers 1.308 & 1.309 are reversed

SuggestedRemedy
Change names in table so that 1.308 is Square wave testing control and 1.309 is PRBS pattern testing control

Response
Response Status A
ACCEPT.

HB_15 Change register PRBS pattern testing control address as proposed in HB_01

SuggestedRemedy
Change register address to 1.1502

Response
Response Status A
ACCEPT IN PRINCIPLE.

Change register address to 1.1501
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response Status</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.2.1</td>
<td>T</td>
<td>A</td>
<td>HB_15 Change register PRBS Tx error counters, lane 0 through lane 9 address as proposed in HB_01</td>
<td>Change register addresses to 1.1600 to 1.1609, add a row for Reserved 1.1610 to 1.1699</td>
<td>C</td>
<td>ACCEPT.</td>
</tr>
<tr>
<td>45</td>
<td>45.2.1</td>
<td>T</td>
<td>A</td>
<td>HB_16 Change register PRBS Rx error counters, lane 0 through lane 9 address as proposed in HB_01</td>
<td>Change register addresses to 1.1700 to 1.1709</td>
<td>C</td>
<td>ACCEPT.</td>
</tr>
<tr>
<td>45</td>
<td>45.2.1</td>
<td>T</td>
<td>A</td>
<td>Reserved registers need to change according to HB_01</td>
<td>Change address range to 1.1710 to 1.32767</td>
<td>C</td>
<td>ACCEPT.</td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- Change register addresses to 1.1600 to 1.1609, add a row for Reserved 1.1610 to 1.1699
- Change register addresses to 1.1700 to 1.1709
- Change address range to 1.1710 to 1.32767

**Comment Type**

- ER: Editorial required
- TR: Technical required
- G: General required

**Response Status**

- O: Open
- W: Written
- C: Closed
- U: Unsatisfied
- Z: Withdrawn

**Sort Order**

- Clause, Subclause, page, line

---

**Comment Type**

- TR: Technical required
- ER: Editorial required
- G: General required

**Comment Status**

- A: Accepted
- R: Rejected

**Response Status**

- W: Written

---

**Type:** TR/technical required, ER/editorial required, GR/general required

**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
It has been agreed with staff that where a subclause is inserted prior to the existing first subclause it is labelled [existing subclause - one level].[a through z]. Where a subclause is inserted after an existing subclause - assuming it is not the last - the new subclause it is labelled [subclause number][a through z]. For example to insert two subclauses before 43.2.1 the subclauses would be numbered 43.2.a and 43.2.b. Two subclauses between 43.2.1 and 43.2.2 would be numbered 43.2.1a and 43.2.1b. Two subclauses added after the last subclause 43.2.2 would be numbered 43.2.3 and 43.2.4.

At the moment I note that IEEE P802.3ba isn’t self consistent with itself in respect to inserts before first existing subclause - and I see IEEE P802.3az using a different approach. Here are three examples of inserts before the existing first paragraph where each time a different numbering approach has been used.

1. IEEE P802.3ba/D3.0 using .1a then .1b
   45.2.1.4 PMA/PMD speed ability (Register 1.4)
   45.2.1.4.1a 100G capable (1.4.9)
   45.2.1.4.1b 40G capable (1.4.8)
   45.2.1.4.1 10/1G capable (1.4.7)

2. IEEE P802.3ba/D3.0 using .1a then .2a
   45.2.1.9 PMD receive signal detect register (Register 1.10)
   45.2.1.9.1a PMD receive signal detect 9 (1.10.10)
   45.2.1.9.2a PMD receive signal detect 4, 5, 6, 7, 8 (1.10.5, 1.10.6, 1.10.7, 1.10.8, 1.10.9)

3. IEEE P802.3az/D2.2 using .a and .b
   79.3 IEEE 802.3 Organizationally Specific TLVs
   79.3.a IEEE TLV

Please use the approach agreed with staff in respect to inserts before existing first paragraph.

Change '45.2.1.4.1a 100G capable (1.4.9)' to read '45.2.1.4.a 100G capable (1.4.9)'.
Change '45.2.1.4.1b 40G capable (1.4.8)' to read '45.2.1.4.b 40G capable (1.4.8)'.
Change '45.2.1.8.1a PMD transmit disable 9 (1.9.10)' to read '45.2.1.8.a PMD transmit disable 9 (1.9.10)'.
Change '45.2.1.8.2a PMD transmit disable 4, 5, 6, 7, 8 (1.9.5, 1.9.6, 1.9.7, 1.9.8, 1.9.9)' to read '45.2.1.8.b PMD transmit disable 4, 5, 6, 7, 8 (1.9.5, 1.9.6, 1.9.7, 1.9.8, 1.9.9)'.
Change '45.2.1.9.1a PMD receive signal detect 9 (1.10.10)' to read '45.2.1.9.a PMD receive signal detect 9 (1.10.10)'.
Change '45.2.1.9.2a PMD receive signal detect 4, 5, 6, 7, 8 (1.10.5, 1.10.6, 1.10.7, 1.10.8, 1.10.9) to read '45.2.1.9.b PMD receive signal detect 4, 5, 6, 7, 8 (1.10.5, 1.10.6, 1.10.7, 1.10.8, 1.10.9)'.
Change '45.2.3.15.1a Scrambled idle test-pattern enable (3.42.7)' to read '45.2.3.15.a Scrambled idle test-pattern enable (3.42.7)'.

Please list the suggested remedy:

ADD CORRESPONDING PIC STATEMENT

Change MM23 to reference bits 5:0 instead of 3:0. Note that this is an error in 802.3av-2009.

Change: "10G PMA/PMD type is selected using bits 3:0"
To: "PMA/PMD type is selected using bits 5:0"
Although the text in clause 45 for the transmit and receive fault bits has been updated, the text for the global PMA/PMD fault bit (1.1.7) has not been updated to cover 40/100Gbps operation. 45.2.1.2.1 currently says:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Suggested Remedy**

Add change instructions to make 45.2.1.2.1 say:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10/40/100 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Response**

ACCEPT.

---

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

"the 40GBASE-KR4 PMDs is given" should be "the 40GBASE-KR4 PMD is given"

**Suggested Remedy**

Change "PMDs" to "PMD" here and also for "40GBASE-LR4 PMDs"

Make the same two changes in 45.2.1.7.5

**Response**

ACCEPT.

---

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

Although the text in clause 45 for the transmit and receive fault bits has been updated, the text for the global PMA/PMD fault bit (1.1.7) has not been updated to cover 40/100Gbps operation. 45.2.1.2.1 currently says:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Suggested Remedy**

Add change instructions to make 45.2.1.2.1 say:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10/40/100 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Response**

ACCEPT.

---

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

Although the text in clause 45 for the transmit and receive fault bits has been updated, the text for the global PMA/PMD fault bit (1.1.7) has not been updated to cover 40/100Gbps operation. 45.2.1.2.1 currently says:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Suggested Remedy**

Add change instructions to make 45.2.1.2.1 say:

Fault is a global PMA/PMD variable. When read as a one, bit 1.1.7 indicates that either (or both) the PMA or the PMD has detected a fault condition on either the transmit or receive paths. When read as a zero, bit 1.1.7 indicates that neither the PMA nor the PMD has detected a fault condition. For 10/40/100 Gb/s operation, bit 1.1.7 is set to a one when either of the fault bits (1.8.11, 1.8.10) located in register 1.8 are set to a one. For 10PASS-TS or 2BASE-TL operations, when read as a one, a fault has been detected and more detailed information is conveyed in 45.2.1.16, 45.2.1.39, 45.2.1.40, and 45.2.1.55.

**Response**

ACCEPT.
The Note says "... and may disrupt the network". What network and disrupt in what way? IMHO "Disabling the transmitter on one or more lanes stops the entire link from carrying data" is sufficient to this end i.e. informing a reader that if a stupid thing is done (i.e. one of the transmitting lanes is disabled), then the link goes down.

**Suggested Remedy**

Strike "and may disrupt the network" from the Note.

**Response**

ACCEPT.

**Comment**

(1) Add ",," before "respectively"(2) Add "bit" before "1.9.10" Similar comment against section 45.2.1.9.2a, page 47, line 28

**Suggested Remedy**

Per comment

**Response**

ACCEPT.

**Comment**

Change register address according to HB_06. Note that the register address is currently wrong.

**Suggested Remedy**

Change register address to 1.1200

**Response**

ACCEPT.

Note that HB_06 is comment 707
Comment Type: TR  Comment Status: A
Change register address according to HB_08. Note that the register address is currently wrong.

Suggested Remedy:
Change register address to 1.1300

Response:
Response Status: C
ACCEPT.

Other locations in Clause 45 that refer to copies of registers do not have "shall" (and therefore do not have a PICS entry). Make this location consistent - delete the word "shall"

Comment Type: TR  Comment Status: A
Shall statement does not include corresponding pic statement.

Suggested Remedy:
add corresponding pic statement

Response:
Response Status: C
ACCEPT IN PRINCIPLE.

Other locations in Clause 45 that refer to copies of registers do not have "shall" (and therefore do not have a PICS entry). Make this location consistent - delete the word "shall"

Comment Type: TR  Comment Status: A
Believe there is a typo causing conflict between register address in Table 45-3 (Register address 1.296) and statement in 45.2.1.82 (A copy of this register may be implemented at address 1.269 to assist PHY access for devices using postread-increment-address access for a multi-lane PCS. If implemented, all accesses to the copy shall have identical behavior as the original register.)

Suggested Remedy:
Believe that table is correct. Change register address in 45.2.1.82 to 1.296.

Response:
Response Status: C
ACCEPT.
The editing instruction for subclause 45.2.1.82a reads "Insert 45.2.1.82a and 45.2.1.82b for status register 2 & 3:" which doesn't make it totally clear where to place the new subclauses. According to the IEEE Standards Style Guide a letter subclause such as this is placed after the numbered so 45.2.1.82a would appear after 45.2.1.82. However looking at the register numbers it appears that these new subclauses should appear before 45.2.1.82.  

45.2.1.81 10GBASE-KR LD status report register (Register 1.155)  
45.2.1.82a BASE-R PMD status 2 register (Register 1.156)  
45.2.1.82b BASE-R PMD status 3 register (Register 1.157)  
45.2.1.82 1000BASE-KX control register (Register 1.160)  
45.2.1.83 1000BASE-KX status register (Register 1.161)  
45.2.1.82 BASE-R PMD status 3 register (Register 1.156)  
45.2.1.82b 7 Start-up protocol status 8, 9 (1.157.2, 1.157.6)  
45.2.1.82b.8 Training failure 8, 9 (1.157.3, 1.157.7)  

SuggestedRemedy  
Suggest the editorial instructions be changed to read "Insert subclause 45.2.1.81a and 45.2.1.81b after subclause 45.2.1.81:”.  
Suggest that the subclauses be labelled as follows:  
45.2.1.81a BASE-R PMD status 2 register (Register 1.156)  
45.2.1.81a.1 Receiver status 4, 5, 6, 7 (1.156.0, 1.156.4, 1.156.8, 1.156.12)  
45.2.1.81a.2 Frame lock 4, 5, 6, 7 (1.156.1, 1.156.5, 1.156.9, 1.156.13)  
45.2.1.81a.3 Start-up protocol status 4, 5, 6, 7 (1.156.2, 1.156.6, 1.156.10, 1.156.14)  
45.2.1.81a.4 Training failure 4, 5, 6, 7 (1.156.3, 1.156.7, 1.156.11, 1.156.15)  
45.2.1.81b BASE-R PMD status 3 register (Register 1.157)  
45.2.1.81b.1 Receiver status 8, 9 (1.157.0, 1.157.4)  
45.2.1.81b.2 Frame lock 8, 9 (1.157.1, 1.157.5)  
45.2.1.81b.3 Start-up protocol status 8, 9 (1.157.2, 1.157.6)  
45.2.1.81b.4 Training failure 8, 9 (1.157.3, 1.157.7)  

SuggestedRemedy  
Change the title of 45.2.1.85.2 to include "FEC" in normal font.  

Response  
ACCEPT.
"multi-lane PCS" is OK, but "multi-lane PHY" is problematic since future PHYs may not always be multiple physical lanes.

**Suggested Remedy**

Either change "multi-lane PHY" to "multi-lane PCS", or change to "multi-PCS lane PHY".

Same issue with 41.2.1.88, page 59, line 16.

**Response:**

ACCEPT IN PRINCIPLE.

As this is a PMA/PMD MMD, it needs to be specified that PCS lanes are intended.

change to "multi-PCS lane PHY"

locations:

p.58, l.38
p.59, l.16; l.27; l.40; l.53
p.60, l.17; l.16; l.25

---

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

Change register addresses according to HB_02

**Suggested Remedy**

Change register addresses to 1.300 to 1.339

**Response:**

ACCEPT.

See also comment #260

---

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

Change register addresses according to HB_03

**Suggested Remedy**

Change register addresses to 1.700 to 1.739

**Response:**

ACCEPT.

---

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

The change instruction "Insert 45.2.1.91-94 for multi-lane coefficient exchange:" is not in accordance with the style manual. See 14.2 e) "Dashes should never be used because they can be misconstrued for subtraction signs."

**Suggested Remedy**

Change to "Insert 45.2.1.91 through 45.2.1.94 for multi-lane coefficient exchange:"

**Response:**

ACCEPT.
Cl 45 SC 45.2.1.91 P 59 L 51 # 726
Barrass, Hugh Cisco Systems, Inc.

Comment Type T Comment Status A
Change register addresses according to HB_05

SuggestedRemedy
Change register addresses to 1.1101 to 1.1109

Response Response Status C
ACCEPT.

Cl 45 SC 45.2.1.92 P 60 L 5 # 728
Barrass, Hugh Cisco Systems, Inc.

Comment Type T Comment Status A
Change register addresses according to HB_07

SuggestedRemedy
Change register addresses to 1.1201 to 1.1209

Response Response Status C
ACCEPT.

Cl 45 SC 45.2.1.93 P 60 L 14 # 730
Barrass, Hugh Cisco Systems, Inc.

Comment Type T Comment Status A
Change register addresses according to HB_09

SuggestedRemedy
Change register addresses to 1.1301 to 1.1309

Response Response Status C
ACCEPT.

Cl 45 SC 45.2.1.94 P 60 L 23 # 732
Barrass, Hugh Cisco Systems, Inc.

Comment Type T Comment Status A
Change register addresses according to HB_11

SuggestedRemedy
Change register addresses to 1.1401 to 1.1409

Response Response Status C
ACCEPT.

Cl 45 SC 45.2.1.95 P 61 L 10 # 405
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
Make the title of Table 45-65a consistent with the others in clause 45 by adding "bit definitions"

SuggestedRemedy
Change the title of Table 45-65a to "Test pattern ability register bit definitions"

Response Response Status C
ACCEPT.

Cl 45 SC 45.2.1.95 P 61 L 25 # 52
Szczepanek, Andre HSZ Consulting Ltd

Comment Type T Comment Status A
The definition of the "PRBS9 ability" bit requires that PRBS9 generation capability be provided in both transmit and receive directions even though the PRBS9 pattern is strictly an optical test pattern. (See line 48)
In order for an optical gearbox PMA to support PRBS9 generation to the optics it would be required to also provide PRBS9 on the CAUI

SuggestedRemedy
Change the name of 1.307.5 to "Tx PRBS9 ability" and change the description field to
1 = Transmit direction PRBS9 pattern generation supported
0 = Transmit direction PRBS9 pattern generation not supported
Change the paragraph starting on line 47 to
When read as a one, register 1.307, bit 6 indicates that the device supports PRBS31 generation or checking, and register 1.307. In this case, it shall support that test for all of the generator and checker types that are indicated by the assertion of bits 3:0.
When read as a one, register 1.307, bit 5 indicates that the device supports PRBS9 generation in the transmit direction.

Response Response Status C
ACCEPT IN PRINCIPLE.

Clause 83 allows PRBS9 generation in both the transmit and receive directions.
Change definition of bits 1.307.0 through 1.307.7 in Table 45-65a Test pattern ability register so that ability is indicated for each supported permutation separately.
Make corresponding changes in Clause 83.

Cl 45 SC 45.2.1.95 Page 19 of 199
1/28/2010 9:51:01 AM
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>Change register address according to HB_12</td>
</tr>
</tbody>
</table>

SuggestedRemedy

Change register address to 1.1500 (multiple instances)

Response

ACCEPT.

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>This says &quot;Lanes for which a square wave pattern is not enabled pass through data as normal.&quot; But in testing, we want to be able to have scrambled idles or PRBS31 on the other lanes. Similar comment submitted against 83.5.10</td>
</tr>
</tbody>
</table>

SuggestedRemedy

Change "Lanes for which a square wave pattern is not enabled pass through data as normal." to "Lanes for which a square wave pattern is not enabled act as determined by other registers."

Response

ACCEPT.

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>The name of this register and its bits is ambiguous as to the direction of the &quot;square wave testing&quot; that is being controlled. This sub-clause could be interpreted as indicating a requirement to support square wave testing in both the receive and transmit directions.</td>
</tr>
</tbody>
</table>

SuggestedRemedy

Indicate explicitly that square wave testing is a transmit direction pattern ability only. Change name of register to "Tx Square wave testing control" here, the accompanying paragraph, and in Table 45-3. In the Description column of Table 45-65b change all instances of "square wave" to "transmit direction square wave"

Response

ACCEPT IN PRINCIPLE.

The register name does not need to fully define function of the register - that job is performed in Clause 83.

Change the text of 45.2.1.96 to add clarity - from:

From "The square wave testing control and status register is used for PHY types that implement square wave testing in the PMA."

To "The square wave testing control and status register is used for PHY types that implement transmit square wave testing in the PMA."

<table>
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<td>Change register address according to HB_13</td>
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SuggestedRemedy

Change register address to 1.1501 (multiple instances, note also reference in 45.2.1.95)

Response

ACCEPT IN PRINCIPLE.

Change register address to 1.1510 (multiple instances, note also reference in 45.2.1.95)
Comment Type: E  Comment Status: A  
The title of Table 45–65b is "Square wave testing control and status" but the register name elsewhere is "square wave testing control"  

SuggestedRemedy:  
Change the title of Table 45–65b to "Square wave testing control register bit definitions".  
Also on line 8 change "The square wave testing control and status register is used" to "The square wave testing control register is used".

Response: Response Status: C  
ACCEPT.

Comment Type: E  Comment Status: A  
The title of Table 45–65c is "PRBS pattern testing control and status" but the register name elsewhere is "PRBS pattern testing control"  

SuggestedRemedy:  
Change the title of Table 45–65c to "PRBS pattern testing control register bit definitions".  

Response: Response Status: C  
ACCEPT.

Comment Type: T  Comment Status: A  
Change register addresses according to HB_14  

SuggestedRemedy:  
Change register address to 1.1502 (multiple instances, note also reference in 45.2.1.95)  

Response: Response Status: C  
ACCEPT IN PRINCIPLE.

Change register address to 1.1501 (multiple instances, note also reference in 45.2.1.95)  

Comment Type: T  Comment Status: A  
Reserved registers need to change according to HB_01  

SuggestedRemedy:  
Change address range to 3.83 to 3.199  

Response: Response Status: C  
ACCEPT.
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<td>HB_17 Change register BIP error counters, lanes 0 through 19 address as proposed in HB_01</td>
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<td>A</td>
<td>HB_18 It would be useful to include a set of PCS mapping registers for debug purposes. In order to make this simple to define and extend in the future, there should be a register for each PCS lane that contains the PMA service interface lane number after the lane is aligned.</td>
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<td>65</td>
<td>45.2.3.11</td>
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<td>A</td>
<td>Reserved registers need to change according to HB_01</td>
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<td>Trowbridge, Stephen ALCATEL-LUCENT</td>
<td>267</td>
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**Suggested Remedy**

1. Change register addresses to 3.200 to 3.219
2. A row with registers: PCS lane mapping registers, lanes 0 through 19; addresses 3.400 to 3.419. Also add a reserved row between 3.220 and 3.219; the last reserved row needs to change to 3.420 to 3.32767. This amends the resolution of HB_17.
3. Change address range to 3.220 to 3.32768
4. As per suggested remedy but call the registers "Lane mapping register x" where x is the lane number
5. In table 74-1 and subclause 74.8.4.1 and 74.8.4.2 explicitly state that counters are for lanes of the service interface. (see comment 266)
6. In 45.2.3.11.5 explicitly state that counters and registers are for lanes of the service interface.
7. Scrub clause 74 for "PCS lane" and change to either "lane" or "lane of the service interface" as appropriate.
8. No change is required in 45.2.3.11.5 as it uses "receive lane" and references the appropriate section in Clause 82.
9. Change 45.2.1.89 and 45.2.1.90 and 45.2.1.97 to explicitly state that counters and registers are for lanes of the service interface.
10. In 45.2.3.37 and 45.2.3.38 explicitly state that BIP counters are PCS lanes.
11. A mapping register is added by comments #749 & #750.
Draft 3.0 Comments

IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

Sponsor ballot

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<td>E</td>
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<td>Add space between BER and the opening brace</td>
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<td>71</td>
<td>24</td>
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<td>E</td>
<td>The text &quot;or may function as defined for BASE-R PRBS9, PRBS31, pseudo random and square wave test patterns&quot; is missing a full stop after BASE-R</td>
<td>Add a full stop after &quot;BASE-R&quot; on line 24</td>
<td>ACCEPT.</td>
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<td>71</td>
<td>27</td>
<td>17</td>
<td>T</td>
<td>T</td>
<td>(1) It says &quot;or may function as defined&quot; - as defined where? Provide reference or add &quot;above&quot; it that is the case. (2) &quot; and 82.2.10&quot; should be underlined (AFAIK) since this is added text</td>
<td>Delete &quot;either&quot; and &quot;or may function as defined&quot;</td>
<td>ACCEPT IN PRINCIPLE.</td>
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Comment 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
I believe that the IEEE Standards style guide states that a subclause that is inserted between existing subclauses should be labelled as [lower numbered subclause][a-z] for example to insert two subclauses between 43.2.1 and 43.2.2 the new subclauses would be numbered 43.2.1a and 43.2.1b and not 43.2.2a and 43.2.2b.

New subclauses 45.2.3.16a and 45.2.3.16b are proceeded with the editing instructions 'Insert after 45.2.3.16 for high order counters' which meets the IEEE Standards style guide. New subclauses 45.2.3.17a however are preceded with the editing instructions 'Insert before 45.2.3.17 for PCS alignment status:' which seems contrary to the IEEE Standards style guide. This results in:

45.2.3.16 BASE-R PCS test-pattern error counter register (Register 3.43)
45.2.3.16a BER high order counter (Register 3.44)
45.2.3.16b Errored blocks high order counter (Register 3.45)
45.2.3.17a Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)
45.2.3.17b Multi-lane BASE-R PCS alignment status 2 register (Register 3.51)
45.2.3.17c Multi-lane BASE-R PCS alignment status 3 register (Register 3.52)
45.2.3.17d Multi-lane BASE-R PCS alignment status 4 register (Register 3.53)
45.2.3.17 10P/2B capability register (3.60)
45.2.3.18 10P/2B PCS control register (Register 3.61)

I believe to meet the IEEE Standards style guide this should actually be:

45.2.3.16c Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)
45.2.3.16d Multi-lane BASE-R PCS alignment status 2 register (Register 3.51)
45.2.3.16e Multi-lane BASE-R PCS alignment status 3 register (Register 3.52)
45.2.3.16f Multi-lane BASE-R PCS alignment status 4 register (Register 3.53)
45.2.3.18 10P/2B capability register (3.60)
45.2.3.18 10P/2B PCS control register (Register 3.61)

Suggested Remedy

Change '45.2.3.17a Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)' to read '45.2.3.16c Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)'.

Change subclauses '45.2.3.17a.1' through '45.2.3.17a.9' to read '45.2.3.16c.1' through '45.2.3.16c.9'.

Change '45.2.3.17b Multi-lane BASE-R PCS alignment status 2 register (Register 3.51)' to read '45.2.3.16d Multi-lane BASE-R PCS alignment status 2 register (Register 3.51)'.

Change subclauses '45.2.3.17b.1' through '45.2.3.17b.12' to read '45.2.3.16d.1' through '45.2.3.16d.12'.

Change '45.2.3.17c Multi-lane BASE-R PCS alignment status 3 register (Register 3.52)' to read '45.2.3.16e Multi-lane BASE-R PCS alignment status 3 register (Register 3.52)'.

Change subclauses '45.2.3.17c.1' through '45.2.3.17c.8' to read '45.2.3.16e.1' through '45.2.3.16e.8'.

Change '45.2.3.17d Multi-lane BASE-R PCS alignment status 4 register (Register 3.53)' to read '45.2.3.16f Multi-lane BASE-R PCS alignment status 4 register (Register 3.53)'.

I believe that the IEEE Standards style guide states that a subclause that is inserted between existing subclauses should be labelled as [lower numbered subclause][a-z] for example to insert two subclauses between 43.2.1 and 43.2.2 the new subclauses would be numbered 43.2.1a and 43.2.1b and not 43.2.2a and 43.2.2b.

New subclauses 45.2.3.16a and 45.2.3.16b are proceeded with the editing instructions 'Insert after 45.2.3.16 for high order counters' which meets the IEEE Standards style guide. New subclauses 45.2.3.17a however are preceded with the editing instructions 'Insert before 45.2.3.17 for PCS alignment status:' which seems contrary to the IEEE Standards style guide. This results in:

45.2.3.16 BASE-R PCS test-pattern error counter register (Register 3.43)
45.2.3.16a BER high order counter (Register 3.44)
45.2.3.16b Errored blocks high order counter (Register 3.45)
45.2.3.17a Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)
45.2.3.17b Multi-lane BASE-R PCS alignment status 2 register (Register 3.51)
45.2.3.17c Multi-lane BASE-R PCS alignment status 3 register (Register 3.52)
45.2.3.17d Multi-lane BASE-R PCS alignment status 4 register (Register 3.53)
45.2.3.17 10P/2B capability register (3.60)
45.2.3.18 10P/2B PCS control register (Register 3.61)

Suggested Remedy

Change '45.2.3.17a Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)' to read '45.2.3.17a Multi-lane BASE-R PCS alignment status 1 register (Register 3.50)'.

This is the upper 16 bits of a 22 bit counter so it should be "Bits 21:6 of BER counter" (see response to comment 217 against D 2.2).

Suggested Remedy

Change "Bits 19:6 of BER counter" to "Bits 21:6 of BER counter".

Reconcile with Clause 82 and assuming it is 22 bits change: Bits 19:6 of BER counter to Bits 21:6 of BER counter.

See comment #415 - counter is 22 bits. Also if it is 22 bits then the description on line 53 on page 72 should be "Bits 21:6 of BER counter".

Reconcile with Clause 82 and assuming it is 22 bits change: Bits 19:6 of BER counter to Bits 21:6 of BER counter.

See comment #415 - counter is 22 bits. Also if it is 22 bits then the description on line 53 on page 72 should be "Bits 21:6 of BER counter".

Reconcile with Clause 82 and assuming it is 22 bits change: Bits 19:6 of BER counter to Bits 21:6 of BER counter.

See comment #415 - counter is 22 bits. Also if it is 22 bits then the description on line 53 on page 72 should be "Bits 21:6 of BER counter".

Reconcile with Clause 82 and assuming it is 22 bits change: Bits 19:6 of BER counter to Bits 21:6 of BER counter.

See comment #415 - counter is 22 bits. Also if it is 22 bits then the description on line 53 on page 72 should be "Bits 21:6 of BER counter".
The highest subclause added by IEEE Std 802.3av-2009 is 45.2.3.35 so 45.2.3.36 will be absent.

Suggested Remedy
Change the editing instruction to "Insert after 45.2.3.35 (inserted by ..." and re-number subclauses accordingly.

ACCEPT.

Comment Type T
Comment Status A
Change register address according to HB_17
Suggested Remedy
Change register address to 3.200 (multiple instances)
Response
ACCEPT.

The table title 'BIP error counter, lanes 0 and 1 register bit definitions' appears to be in error as the table only shows the lane 0 register bit definition.

Suggested Remedy
Suggest the table title should read 'BIP error counter, lanes 0 register bit definitions'.
Response
ACCEPT.

The title of Table 45-114a is "BIP error counter, lanes 0 and 1 register bit definitions" but only lane 0 is covered.

Suggested Remedy
Change the title of Table 45-114a from "BIP error counter, lanes 0 and 1 register bit definitions" to "BIP error counter, lane 0 register bit definitions"
Response
ACCEPT.

(1) Title for section 45.2.3.38 should read "... Registers 3.91 through 3.109" and not "... (Registers 3.91 through 109)": Avoid any problems with clarity if possible. (2) In line 25, extend text to read "lane 2 is shown in register 3.92; through register 3.109 for lane 19."

Suggested Remedy
Per comment
Response
ACCEPT IN PRINCIPLE.
Change to "(Registers 3.91 through 3.109)"
Change to "Lane 1 is shown in register 3.91; lane 2 is shown in register 3.92; through register 3.109 for lane 19."

Note that register numbers change according to comments #720 & #739.
Comment Type: T  Comment Status: A
Change register addresses according to HB_17

Suggested Remedy
Change register addresses to 3.201 to 1.219 (multiple instances)

Response: Response Status C
ACCEPT.

Comment Type: T  Comment Status: A
In accordance with comment HB_18, subclauses are required to define the PCS lane mapping registers.

Suggested Remedy
Add subclause 45.2.3.39 - PCS lane mapping register, lane 0 (Register 3.400) - The assignment of bits in the PCS lane mapping register, lane 0 is shown in Table 114b. When the multi-lane PCS described in Clause 82 detects and locks the alignment marker for PCS lane 0, the corresponding PMA service interface lane number is recorded in this register. The contents of the PCS lane mapping register, lane 0 is valid when the Lane 0 aligned bit (3.52.0) is set to one and is invalid otherwise. - the table has one entry: bits 3.400.5:0; name PCS mapping, lane 0; description PMS service interface lane number that maps to PCS lane 0. Other bits reserved.

Response: Response Status C
ACCEPT IN PRINCIPLE.

Add subclause 45.2.3.39 - Lane mapping register 0 (Register 3.400) - The assignment of bits in the Lane mapping register 0 is shown in Table 114b. When the multi-lane PCS described in Clause 82 detects and locks the alignment marker for service interface lane 0, the detected PCS lane number is recorded in this register. The contents of the Lane mapping register 0 is valid when the Lane 0 aligned bit (3.52.0) is set to one and is invalid otherwise.

Create table 114b that has one entry with: bits 3.400.5:0; name Lane 0 mapping; description PCS lane received in service interface lane 0. Other bits reserved.
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<td>Also change LLB to RLB in this and 4 other instances.</td>
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<td>In item *FEC-R, &quot;Implementation of 10GBASE-R FEC&quot; should be &quot;Implementation of BASE-R FEC&quot;</td>
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<td>Change &quot;Implementation of 10GBASE-R FEC&quot; to &quot;Implementation of BASE-R FEC&quot;</td>
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<td>The PICS has entries for MMD 8 through 10. What about MMD 11?</td>
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**TYPE:** TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general  
**COMMENT STATUS:** D/dispatched  /accepted R/rejected  
**RESPONSE STATUS:** O/open  W/written  C/closed  U/unsatisfied  Z/withdrawn

**SORT ORDER:** Clause, Subclause, page, line  

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| 45 | 45 | 87 | 16 | 423 | **Comment Type:** T  **Comment Status:** A  
In MM23 the PMA/PMD type is selected using bits 5:0 not 4:0  
**Suggested Remedy:** Change "PMA/PMD type is selected using bits 4:0" to "PMA/PMD type is selected using bits 5:0".  
**Response:** ACCEPT. |
| 45 | 45 | 87 | 22 | 424 | **Comment Type:** E  **Comment Status:** A  
In MM32 "ignores writes to bits 1 -- 10" should be "ignores writes to bits 10:1" to use the same format as other rows and also to conform to the style manual. See 14.2 e) "Dashes should never be used because they can be misconstrued for subtraction signs."  
**Suggested Remedy:** Change "to bits 1 -- 10" to "to bits 10:1".  
**Response:** ACCEPT.  
Note that base text is "1 - 4" |
| 45 | 45 | 87 | 3 | 422 | **Comment Type:** T  **Comment Status:** A  
The subclause for MM19a through MM19d should be 45.2.1.1.4a and it is bit 1 not 0.  
**Suggested Remedy:** Change the subclause to 45.2.1.1.4a. Also change MM19a from "when bit 0 is set to a one" to "when bit 1 is set to a one" and change MM19d from "PMA transmit data is returned on receive path when in remote loopback" to "PMA receive data is returned on transmit path when in remote loopback".  
**Response:** ACCEPT. |
| 45 | 45 | 87 | 44 | 428 | **Comment Type:** T  **Comment Status:** A  
RM50a is shown as XCR:O but implementing the BER high order counter is mandatory for 40/100G (45.2.3.16a).  
**Suggested Remedy:** Change "XCR:M" to "CR:M". Also change MM50a from "when bit 0 is set to a one" to "when bit 1 is set to a one" and change MM50d from "PMA transmit data is returned on receive path when in remote loopback" to "PMA receive data is returned on transmit path when in remote loopback".  
**Response:** ACCEPT IN PRINCIPLE.  
Because the BER and errored blocks high order counters are optional, this will become RM50a:M and RM50f:M respectively. |
Cl 45 SC 45.5.3.7 P 90 L 46 # 429
Anslow, Peter Nortel Networks

Comment Type T
Comment Status A
RM50b says "Register bit 3.44.15 set to 1" but bit 3.44.15 is part of the counter according
to Table 45-96a

SuggestedRemedy
Remove RM50b

Response Response Status C
ACCEPT.

Cl 45 SC 45.5.3.7 P 90 L 9 # 425
Anslow, Peter Nortel Networks

Comment Type T
Comment Status A
In the base document RM35 is "Writes to 10GBASE-R PCS status 1 register have no
effect" but this register has been re-named to "BASE-R and 10GBASE-T PCS status 1"
register

SuggestedRemedy
Include a row for RM35 with the correct register name.

Response Response Status C
ACCEPT.

Cl 45 SC 45.5.3.7 P 91 L 26 # 262
Trowbridge, Stephen ALCATEL-LUCENT

Comment Type E
Comment Status A
Multi-lane refers to PCS lanes and not physical lanes

SuggestedRemedy
Change "Non Multi-lane BASE-R device" to "Non multi-PCS lane BASE-R device". Same
issue lines 34, 42 same page

Response Response Status C
ACCEPT.

Cl 45 SC 45.5.3.7 P 91 L 47 # 431
Anslow, Peter Nortel Networks

Comment Type E
Comment Status A
RM50f through RM50j concern the Errored blocks high order counter, so the subclause
should be 45.2.3.16b rather than 45.2.3.16a

SuggestedRemedy
Change the subclause for RM50f through RM50j to 45.2.3.16b

Response Response Status C
ACCEPT.

Cl 45 SC Table 45-3 P 39 L 16 # 108
Marris, Arthur Cadence Design Syste

Comment Type T
Comment Status A
The 802.3ba PCS has been designed to support speeds higher than 100G. Higher speeds
are likely to require more virtual and physical lanes but the register map does not allow any
room for expansion.

SuggestedRemedy
Please renumber the registers leaving a reserved space after each set of registers for
virtual and physical lanes to allow room for future expansion.

Response Response Status C
ACCEPT IN PRINCIPLE.

This is remedied by comment #701
Cl 45 SC Table 45-3 P 39 L 35 # 93
Szczepanek, Andre HSZ Consulting Ltd

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

The Register names of registers 1.308 and 1.309 in this table are swapped.
The clause references are correct.

**SuggestedRemedy**: change name of 1.308 to "Square wave testing control"
change name of 1.309 to "PRBS pattern testing control"

**Response** **Response Status**: C

ACCEPT IN PRINCIPLE.

See comment #738

---

Cl 69 SC 69.1.2 P 95 L 24 # 22
Hajduczenia, Marek ZTE Corp.

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

Bullet item iii - should read "a single-lane 10 Gb/s PHY"

**SuggestedRemedy**: Per comment

**Response** **Response Status**: C

ACCEPT IN PRINCIPLE.

'a' needs to be underlined as it is modifying base text.

---

Cl 69 SC 69.2.5 P 97 L 49 # 23
Hajduczenia, Marek ZTE Corp.

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

The word "existing" was removed, though I suggest to reinstate it. It makes sense in this context to emphasize the fact that minimum effort is needed to modify the existing network management solutions into the new system.

**SuggestedRemedy**: Per comment

**Response** **Response Status**: C

ACCEPT.

---

Cl 73 SC 73 P 99 L 1 # 432
Anslow, Peter Nortel Networks

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

The clause title is different from the base standard, but this is not shown.

**SuggestedRemedy**: Put an editing instruction before the clause title, show "Ethernet" in strikethrough and show "and copper cable assembly" in underline font.

**Response** **Response Status**: C

ACCEPT.

---

Cl 73 SC 73.11 P 106 L 2 # 437
Anslow, Peter Nortel Networks

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

The title of this clause has changed but this is not shown.

**SuggestedRemedy**: Put an editing instruction before the subclause title, show "Ethernet" in strikethrough and show "and copper cable assembly" in underline font. Also, the clause title appears in two other places on this page in the base standard, so these should be shown also.

**Response** **Response Status**: C

ACCEPT.

---

Cl 73 SC 73.3 P 99 L 53 # 433
Anslow, Peter Nortel Networks

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

"10GBASE-KR" was on the list of PHYs in the base document so this should not be shown with underline font.

**SuggestedRemedy**: Show "10GBASE-KR" in normal font

**Response** **Response Status**: C

ACCEPT.
Cl 73 SC 73.5.1 P 100 L 32 # 434
Anslow, Peter Nortel Networks

Comment Type T Comment Status A
The reference to 71.6.7 is not a link so it should be shown as dark blue. Also, 84.7.6 is Global PMD transmit disable whereas the others are lane by lane disable.

SuggestedRemedy
Show "71.6.7" as dark blue and change the reference from 84.7.6 to 84.7.7

Response Response Status C
ACCEPT.

Cl 74 SC 74.11 P 107 L 15 # 24
Hajduczenia, Marek ZTE Corp.

Comment Type T Comment Status R
The text says "provides additional margin to account for" but it is not clear what "margin" is meant. P802.3ba could do service to humanity and clarify what margin is meant.

SuggestedRemedy
Per comment

Response Response Status C
REJECT.

This is original text which P802.3ba has no need to change. Also the commenter has not provided a detailed remedy.

Cl 73 SC 73.6.4 P 101 L 23 # 436
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The editing instruction "Insert extra paragraph and change last sentence as follows:" would be better split in to two editing instructions - one for each sentence

SuggestedRemedy
Change editing instruction to "Insert extra paragraph as second to last paragraph" and insert new editing instruction "Change last paragraph as follows:"

Response Response Status C
ACCEPT.

Cl 74 SC 74.11 P 124 L 7 # 435
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The change instruction says Table 73-4 but the table heading is 73-2

SuggestedRemedy
Change the title of the table to be 73-4

Response Response Status C
ACCEPT.

Cl 73 SC 73.6.4 P 101 L 7 # 435
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The change instruction says Table 73-4 but the table heading is 73-2

SuggestedRemedy
Change the title of the table to be 73-4

Response Response Status C
ACCEPT.

Cl 74 SC 74.11.1 P 124 L 20 # 444
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
The references in the subclause and value/comment columns should either be links or in dark blue.

SuggestedRemedy
Change the references for 74.8.2, 74.8.3, 74.8.3.1 in to links and make 74.8.4, 51, 74.7.4.1 dark blue

Response Response Status C
ACCEPT.
### IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

#### Sponsor ballot

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#### Comment Type: ER | Comment Status: A

**PICS FE3 for Reverse gear box function needs to be updated to include option for 40Gb/s and 100Gb/s. The current option is for physical instantiation with XSBI option**

**Suggested Remedy**

Insert new PICS FE3a for 40Gb/s and 100Gb/s options

**Response**

**Response Status: C**

ACCEPT.

In 74.7.4.1.2

Change:

"The reverse gearbox function operates in the same manner as the lane block sync function defined in 82.2.11."

To:

"The reverse gearbox function, if implemented, shall operate in the same manner as the lane block sync function defined in 82.2.11."

and add PICS FE3a

FE3a, Reverse Gear Box function, 74.7.4.1.2, Reverse Gear Box function meets the requirements of 82.2.11, if implemented:

### CI 74 SC 74.2

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Hajduczenia, Marek

**Comment Type: T | Comment Status: R**

The target BER in point f) is really the post-FEC BER. Why not call it out this way i.e. change point f) to read "To support a post-FEC BER objective of 10-12 or better."

**Suggested Remedy**

Per comment

**Response**

**Response Status: C**

ACCEPT.

This text is from the base standard and it would be inappropriate for P802.3ba to modify it.

The P802.3ba copper PMDs will be able to achieve 10-12 BER without FEC.
It is not clear what changes to section 74.5 are made in P802.3ba and how the original text is affected. Why there is no differential version available? Why do you need to replace the whole existing section instead of adding only 74.5.2, which is new and specific to 40G and 100G? The current description impedes readability a lot.

**Suggested Remedy**
Per comment

**Response**
**Response Status** W
REJECT.

It needs to be done this way because the service interface for 10G is different from the service interface for 40 and 100G.

The 10G service interface definition is unchanged from 802.3-2008 with the exception of the introduction and the paragraph numbers. The structure was changed to improve the flow and readability. The substance remains the same.

The text says "The service primitives are defined slightly differently for ..." - how much is SLIGHTLY? Less than much and more than little? Avoid such meaningless adjectives. The definitions are different. Full stop.

**Suggested Remedy**
Per comment.

**Response**
**Response Status** C
ACCEPT IN PRINCIPLE.

delete the word 'slightly'

The service interface is described in detail in 80.3 and this is mentioned in 74.5.2. The way the service interface is described in 74.5.2 is consistent with other service interface descriptions in the 802.3ba draft.

**Suggested Remedy**
Follow the existing standard descriptions and not invent a new style.

**Response**
**Response Status** W
REJECT.

For better clarity Change "one per lane" to one per PCS lane" to be consistent with description in other places

**Suggested Remedy**
Change "one per lane" to one per PCS lane"
Based on Figure 74-2a and 74-2b, I fail to see how the signal FEC:IS_SIGNAL.indication can be sent to PMA. It is sent to PCS only (arrow points up, not down). PMA can send PMA:IS_SIGNAL.indication towards the FEC sublayer. Clarify whether Figures are OK or the textual description in section 74.5.2 is OK. Based on the description, it makes little sense to have such signal sent to PMA, since PMA is under FEC and not over it.

**Suggested Remedy**

Per comment

**Response**

**Response Status** W

ACCEPT IN PRINCIPLE.

The FEC service interface can connect to either the PCS or PMA. This is described in Clause 83 and illustrated in Figures 83-1 and 83-2.

Add the following to the end of the first paragraph in 74.4:

"In 40GBASE-R and 100GBASE-R the FEC service interface can either connect to the PCS as illustrated in Figure 74-1 or the PMA as illustrated Figure 83-2 where the FEC and PCS are in separate devices connected by XLAUI/CAUI."

Change sentence to read as follows: "The maximum delay contributed by the 40GBASE-R FEC (sum of transmit and receive delays at one end of the link) shall be no more than 24576 BT (or 48 pause quanta or 614.4 ns)." Change sentence to read as follows: "The maximum delay contributed by the 100GBASE-R FEC (sum of transmit and receive delays at one end of the link) shall be no more than 122880 BT (or 240 pause quanta or 1228.8 ns)." Also add the following sentence to end of this subclause: A description of overall system delay constraints and the definitions for bit-times and pause_quanta can be found in 80.4 and its references. Make similar change to 10Gb/s as well to be consistent with the 40 and 100G text. Also the first paragraph of 74.6 could be deleted.

**Response**

**Response Status** C

ACCEPT IN PRINCIPLE.

As per suggested remedy but not deleting the first paragraph of 74.6 because this is from the base standard.

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

The editing instruction is "Delete the last redundant paragraph of 74.7.3:". Does this mean that there are other redundant paragraphs that should not be deleted?

**Suggested Remedy**

Change editing instruction to "Delete the last paragraph of 74.7.3 as it is redundant:"

**Response**

**Response Status** C

ACCEPT.

This is base text and should not be modified by 802.3ba without good reason.

The description of the sync bits is important in this context because it is these that are compressed to accommodate the FEC overhead.

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

The editing instruction is "Delete the last redundant paragraph of 74.7.3:". Does this mean that there are other redundant paragraphs that should not be deleted?

**Suggested Remedy**

Change editing instruction to "Delete the last paragraph of 74.7.3 as it is redundant:"

**Response**

**Response Status** C

ACCEPT.

This is base text and should not be modified by 802.3ba without good reason.

The description of the sync bits is important in this context because it is these that are compressed to accommodate the FEC overhead.
The Reverse gear box function is applicable to both PCS to FEC interface and the PMA to FEC interface when FEC is implemented in a PHY chip, so update the description accordingly.

**Suggested Remedy**

Change sentence to read as follows: "...and the 1-bit wide lane of the 40GBASE-R or 100GBASE-R PCS to FEC interface (or PMA to FEC interface)."

Also change the next sentence as follows: "It receives the 1-bit stream from the FEC service interface (or PMA service interface) and..." In addition insert the following to the end of sentence in line 18: (or PMA:IS_UNITDATA_i.request primitive). Alternative to the above suggested remedy suitable description could be added to the last paragraph of 74.7.4.1.2 as follows: Insert a sentence to last paragraph: The Reverse gear box function is also applicable to PMA service interface when FEC sublayer is implemented with physical instantiation of PMA service interface for connecting to PCS sublayer (see Annex 83A).

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

Implement the first of the two suggested remedies.

---

**Comment Type:** T

**Comment Status:** A

Change text "The FEC sublayers for 40GBASE-R and 100GBASE-R mark all thirty-two 64B/66B blocks' sync bits to 11 to indicate error to the PCS," to read "The FEC sublayers for 40GBASE-R and 100GBASE-R set sync bits in all thirty-two 64B/66B blocks to 11 to indicate error to the PCS."

**Suggested Remedy**

Such a description is clearer IMHO.

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

Change to:

"The FEC sublayers for 40GBASE-R and 100GBASE-R set both sync bits to the value 11 in all thirty-two 64B/66B blocks to indicate error to the PCS."

This wording is consistent with the text in the previous paragraph.

---

**Comment Type:** T

**Comment Status:** A

Change 10BASE-KR PHY to 10GBASE-R PHY to be consistent with definition in base text

**Suggested Remedy**

Change "10BASE-KR PHY" to "10BASE-R PHY"

**Response**

**Response Status:** C

ACCEPT.

see also comment 34

---

**Comment Type:** T

**Comment Status:** A

Comment text added in lines 6 and 7 to read as follows: "... for the 10BASE-KR PHY. For the 40GBASE-R and 100GBASE-R PHYs, sync bits in all thirty-two 64B/66B decoded 64B/66B blocks take a value of (SH.0,SH.1) = 11."

**Suggested Remedy**

Per comment. Text is unclear otherwise.

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

Implement suggested remedy and also change 10BASE-KR to 10BASE-R (see comment 894)

---

**Comment Type:** T

**Comment Status:** A

Change register addresses according to HB_02

**Suggested Remedy**

Change register addresses to 1.300 to 1.339. Also in 74.8.4.1, p.122

**Response**

**Response Status:** C

ACCEPT IN PRINCIPLE.

The register addresses will be changed to match any relevant register address changes made in Clause 45.

Note HB_02 is comment 702
Comment Type E  Comment Status A

The "i" in FEC_corrected_blocks_counter_i is a variable, so it should be in italic font. Also applies to FEC_uncorrected_blocks_counter_i. Also in 74.8.4.1 and 74.8.4.2

SuggestedRemedy

Change the "i" to italic in both variables. Also applies to 74.8.4.1 and 74.8.4.2

Response  Response Status C

ACCEPT.

also see comment 895

Comment Type T  Comment Status A

Change i to italics for variables FEC_corrected_blocks_counter_i and FEC_uncorrected_blocks_counter_i. Make this change to all instances of this variable including 74.8.4.1 & 74.8.4.2 and if applicable to corresponding sections in Clause 45. Also state that i=0 through 3 for 40Gb/s and i=0 to 19 for 100Gb/s to description in 74.8.4.1 and 74.8.4.3

SuggestedRemedy

As per comment

Response  Response Status C

ACCEPT.

also see comment 442

Comment Type T  Comment Status A

(1.172, 1.173) and 45.2.1.89 (1.176 to 1.215). or *(1.172, 1.173) or 45.2.1.89 (1.176 to 1.215).* I do not believe they are available simultaneously but rather on the exclusive or basis. Same in line 9, page 123, section 74.8.4.2

SuggestedRemedy

Per comment

Response  Response Status C

ACCEPT IN PRINCIPLE.

Type

These variables are accessed through a management interface that may be mapped to the registers defined in 45.2.1.87 (1.172, 1.173) and 45.2.1.89 (1.176 to 1.215).* I do not believe they are available simultaneously but rather on the exclusive or basis. Same in line 9, page 123, section 74.8.4.2

To:

These variables are accessed through a management interface that may be mapped to the registers defined in 45.2.1.87 (1.172, 1.173) for single lane PHYs and 45.2.1.89 (1.176 to 1.215) for multi-lane PHYs.*

and similarly for 74.8.4.2

Also see comment 442
The PMDs defined in P802.3ba do not fulfill the PAR or the Five Criteria of 802.3. Specifically, as stated in section 5.4 of the PAR, the Purpose of Proposed Standard: "The project is to provide for the interconnection of equipment satisfying the distance requirements of the intended applications." Further, as stated in section 5.5, the Need for the Project: "The project is necessary to provide a solution for applications that have been demonstrated to need bandwidth beyond the existing capabilities. These include data center..." Data center backbone reach requirements have been repeatedly shown to extend to at least 200 meters per independent contributions kolesar_01_0906, swanson_01_1106, and flatman_01_0108. However, the maximum reach of the PMDs aimed at the data center, specifically -SR4/-CR10 and -SR4/-SR10, is presently stated as 125 meters, 75 meters shy of the need. While the commenter acknowledges the need for optimized solutions, the present optimization for lowest cost, which sacrifices sufficient coverage, is far from optimal. This is due to the huge increase in relative cost for the defined single-mode fiber based PMDs compared to the cost of extended reach -SR4/-SR10 PMDs that can address this reach, as shown in contributions jewell_01_0508 and kolesar_01_0908. Furthermore, without a cost effective solution that covers the vast majority of the reach requirements of the application space, this project does not satisfy the Broad Market Potential requirement for balanced cost, as the single-mode fiber based PMDs erect a market barrier when positioned as data center solutions rather than as the metro solutions for which they are optimal. Therefore PMDs that cost effectively support 200 meters must be defined to fulfill the PAR and satisfy the Broad Market Potential balanced cost criteria.

Suggested Remedy
Adopt the proposal of contribution kolesar_05_0509 for an informative annex that defines a test for selecting 200-meter-capable PMDs from the production runs of -SR4/-SR10 PMDs, as detailed in contribution kolesar_04_0509 with appropriate editorial adjustments induced by clause 86 evolution since draft 2.0, the draft upon which these contributions were submitted.

Response
REJECT.

The adopted objectives for the project include "at least 100m over OM3 MMF" for operation at 40Gb/s and 100Gb/s. The MMF objectives have remained unchanged since their approval, approval of the project’s 5 Criteria responses, and the PAR. Based on materials detailed below, it has been the consensus of the Task Force that the selected solutions (40GBASE-SR4 and 100GBASE-SR10) meet the stated PAR (http://www.ieee802.org/3/ba/par/p0802.3ba_0308.pdf) and 5 Criteria responses (http://www.ieee802.org/3/ba/par/P802.3ba_5C_0908.pdf).

Presentations relevant to this topic reviewed by the Task Force and the “40G/100G Extended Reach (>100m) over Parallel Multimode Fiber Ad Hoc” were:


Note that the response to comment 349 against D 3.0 has changed the reach of 40GBASE-SR4 and 100GBASE-SR10 over OM4 fiber to 150m.

A straw poll of the task force was taken:
Do you support the creation of an informative annex similar to that proposed in kolesar_04_0509.pdf?
Result: Yes 12
No 21
Abstain 17

#85

Comment Type E
Comment Status R
"Physical Layer entities such as those specified in Table 80-2"
Should refer to Table 80-1 instead of 80-2.

Suggested Remedy
Change to 80-1

Response
ACCEPT.

#1

Comment Type E
Comment Status C
It seems as one of points 5) and 6) is incorrect (if same fiber, SMF, then either 40 km or 10 km, not both).
Also, renumber this points from 1 (new list, not continuation from bullet g)

Suggested Remedy
REJECT.

This is the reach objective for 100GBASE-LR4 and 100GBASE-ER4 PMDs. (See P802.3ba objectives).
Do you really use CSMA/CD MAC or full duplex MAC? Compare 44. Introduction to 10 Gb/s baseband network, which mentions 802.3 MAC and not CSMA/CD MAC.

Suggested Remedy

Clarify whether CSMA/CD MAC is used in 40G/100G Ethernet and if not, remove such references altogether.

Response

REJECT.

The same MAC defined in Clause 4 is used by 40G and 100Gb/s physical layer devices. The MAC is used in Full duplex mode of operation when coupled with 40G/100G PHYs. Implementers can also refer to Annex 4A which is simplified version based on Clause 4 for full duplex operation.

The MAC is referred to as "IEEE 802.3 (CSMA/CD) MAC" throughout the base standard even when the MAC is used in full duplex operation (for example see 44.1.3).

Section 1.4 defines what a PCS lane is. What is a WDM lane?

Suggested Remedy

Please provide definition, reference to where it might be defined or remove / replace with some other term which is already defined.

Response

REJECT.

Abbreviation for WDM (wavelength division multiplexing) is included in amendment 802.3av-2009 and the term "WWDM lane" is used in the base standard without further definition.
In Table 80-2, note a) says that "Annex 83B is optional for PMD types listed in Table 80-2 except for KR and CR PMD types." yet KR and CR types are also marked as Optional for Annex 83A/B support. Why is that so?

**Suggested Remedy**

Per comment

**Response**

ACCEPT IN PRINCIPLE.

Have separate columns for Annex 83A and Annex 83B. Each column will list the options applicable to the corresponding annexes. 83A is optional for all PMDs of the appropriate rate 83B is optional for SR4/10 and LR4/ER4 PMDs.

Also delete table footnote "a"

Several comments:
1. Title should read "Reconciliation Sublayer (RS) and Media Independent Interface (MII)"
2. Line 40 should read "The Media Independent Interface (MII, see Clause 81) is not intended to be physically instantiated, rather it can logically connect layers within a device." - MII is not mandatory for implementation, yet it is intended for physical implementation if such a choice is made and such an interface is needed. I think this sentence should be removed altogether.
3. Line 41/42 should read "The MII is not intended to be physically instantiated, rather it can logically connect layers within a device." - MII is not mandatory for implementation, yet it is intended for physical implementation if such a choice is made and such an interface is needed. I think this sentence should be removed altogether.
4. Line 45 should read "The Reconciliation Sublayer (RS) provides a mapping ..."
5. Line 48 should read "While XLGMII and CGMII are optional interfaces, they are used extensively.

**Suggested Remedy**

Per comment

**Response**

ACCEPT IN PRINCIPLE.

The abbreviation MII is already used to mean Media Independent Interface for 100 Mb/s physical layers. Hence it was decided not to use that abbreviation in P802.3ba to generically refer to XLGMII and CGMII. The abbreviations XLGMII and CGMII are used to specifically refer to Media Independent Interface for 40Gb/s and 100Gb/s.

Change line 45 to read as "The Reconciliation Sublayer (RS)"

Change line 48 to read as: "While XLGMII and CGMII are optional interfaces, they are used extensively.

Check and update hyperlinks to references if they are not live.
Comment Type T  Comment Status A

What is a 'stripe' of data?

Suggested Remedy
Please clarify or use some more descriptive identification of what is a data stripe ...

Response  Response Status C

ACCEPT IN PRINCIPLE.

Change:
"stripe the data to multiple lanes"
to:
"distributes the data to multiple lanes"
to be consistent with sections in Clause 82 (see related comment: #79)

Comment Type E  Comment Status A

It would help to clarify that it is PCS lanes that are described here (vs. generic service interface of PMD lanes)

Suggested Remedy
Change "stripe the data to multiple lanes" to "stripe the data to multiple PCS lanes"

Response  Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #41
In this sentence: "The 40GBASE-R and 100GBASE-R PMAs perform the mapping of transmit and receive data streams between the PCS and PMA via the PMA service interface, and the mapping and multiplexing of transmit and receive bit streams between the PMA and PMD via the PMD service interface."

It is not consistent in terminology: first it says data streams then it says bit streams, make it consistent.

Suggested Remedy
as above

On line 22: Change "bit streams" to "data streams" to be consistent with the previous sentence.

Comment Type E  Comment Status A

In the following description, layer N represents an upper layer while layer N-1 represents a lower layer, connected via a service interface with a set of specific service primitives.

Suggested Remedy
Per comment

The terms "lower sublayer N-1" and "higher sublayer N" is used the description to explain the relative location of sublayers N and N-1. Also the use of N and N-1 is consistent with notations defined in 1.2.2
Comment Type E  Comment Status A
In figure 80-2, there is a definition for XLAUI, but no mention of XLAUI in the diagram, it might make sense to label the interface between the 2 pmas as an optional XLAUI. Either that or remove the definition of XLAUI. Same comment in figure 80-3 for CAUI.

Suggested Remedy
as above

Response  Response Status C
ACCEPT IN PRINCIPLE.

Figures 80-2 & 80-3 illustrate the service interface relative to the sublayers. XLAUI and CAUI are physical instantiation of PMA service interface(s) which is defined in Clause 83.

Delete XLAUI from Fig 80-2 and CAUI from Fig 80-3.

Comment Type T  Comment Status R
In Figure 80-2, there is a strict number of lanes in PCS and below (4). Why in Figure 80-3 the number of PCS lanes is defined as "n"? I think knowing the existing 100G types, it is possible to enumerate the value of "n" in the note in line 47.

Suggested Remedy
Please replace "n= NUMBER OF PARALLEL STREAMS OF DATA UNITS" with "n= NUMBER OF PARALLEL STREAMS OF DATA UNITS i.e. X for Y PHY, Z for A PHY" etc.

Response  Response Status C
REJECT.

This subclause provides definition of generic service interfaces at different sublayers. "n" (as opposed to a fixed number) is used at the 100G PMD service interface to accommodate future developments in number of parallel streams of data units at this interface.
Comment Type: TR  Comment Status: A
The delay constraint, expressed in bit times, for the 40G MAC, RS and MAC Control, is incorrect and does not correspond to the values in pause_quanta and absolute time in ns. It is also different from the value used elsewhere in the draft.

Suggested Remedy
Replace "10240" with "16384".

Response
Response Status: W
ACCEPT.
See response to comment #446

Comment Type: T
Comment Status: A
The maximum bit time entry for 40G mac should be 16384, not 10240.

Suggested Remedy
as above

Response
Response Status: C
ACCEPT.
See response to comment #446

This comment is against Figure 80-4 and Figure 80-5. Captions read: Figure 80-4--40GBASE-R and 100GBASE-R skew points 1Figure 80-5--40GBASE-R and 100GBASE-R skew points 2It would be nice to provide a more precise description of the scenarios i.e. Figure 80-4--40GBASE-R and 100GBASE-R skew points for implementation without XLAUI/CAUI interfaceFigure 80-5--40GBASE-R and 100GBASE-R skew points for implementation with XLAUI/CAUI interface

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Change title to Figure 80-4 to "40GBASE-R and 100GBASE-R for single XLAUI or CAUI"
Change title to Figure 80-5 to "40GBASE-R and 100GBASE-R for multiple XLAUI or CAUI"
Comment Type: T  Comment Status: A
Lines 50 - 52 need a rewrite as follows: "In the transmit direction, the skew points are defined in the following locations (see Figure 80-4 and Figure 80-5): (1) SP1 on the XLAUI/CAUI interface, at the input of the PMA; (2) SP2 on the PMD service interface at the input of the PMD; (3) SP3 at the output of the PMD at the MDI." List should be bulleted for clarity.

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.

Change Lines 50 - 52 to a bulleted list as follows:
"In the transmit direction, the skew points are defined in the following locations (see Figure 80-4 and Figure 80-5):
SP1 on the XLAUI/CAUI interface, at the input of the PMA closest to the PMA;
SP2 on the PMD service interface at the input of the PMD;
SP3 at the output of the PMD at the MDI."

Comment Type: E  Comment Status: A
Editorial: not (See 82.2.12) but (see 82.2.12) Also in the same line: not "The Skew" but "The skew"

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.

Change "(See 82.2.12)" to "(see 82.2.12)"

Comment Type: T  Comment Status: A
Lines 1 - 3 need a rewrite as follows: "In the receive direction, the skew points are defined in the following locations (see Figure 80-4 and Figure 80-5): (1) SP4 at the MDI at the input of the PMD; (2) SP5 on the PMD service interface at the output of the PMD; (3) SP6 on the XLAUI/CAUI interface at the output of the PMA." List should be bulleted for clarity.

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.

Change Lines 1 - 3 to a bulleted list as follows:
"In the receive direction, the skew points are defined in the following locations (see Figure 80-4 and Figure 80-5):
SP4 at the MDI at the input of the PMD;
SP5 on the PMD service interface at the output of the PMD;
SP6 on the XLAUI/CAUI interface at the output of the PMA closest to the PCS."

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

Page 44 of 199
# Comment #51

**Comment Type**: E  
**Comment Status**: R  
**Suggested Remedy**: Change two occurrences of "shown" to "given"  
**Response**: Per comment

**Response Status**: C  

The current description provides sufficient clarity. Tables 80-4 and 80-5 provide the summary of Skew & Skew Variation constraints and the requirements are specified in respective clauses referenced in those tables.

---

# Comment #53

**Comment Type**: T  
**Comment Status**: R  
**Suggested Remedy**: Insert Footnote for column "Maximum Skew for 40GBASE-R PCS lane (UI)" and "Maximum Skew for 100GBASE-R PCS lane (UI)" with the following text "These values are only approximations of the Maximum Skew value (expressed in ns), based on conversion between the units of ns and UI.". Remove characters ".

**Response**: Per comment

**Response Status**: C  

REJECT.

The approximately equal to character has been used to unambiguously indicate that the values are not exactly equal to. The existing table footnotes provide sufficient clarity.

---

# Comment #54

**Comment Type**: T  
**Comment Status**: R  
**Suggested Remedy**: Remove it altogether.

**Response**: Per comment

**Response Status**: C  

REJECT.

This section provides information on the conventions adopted by P802.3ba for state diagrams.

---

# Comment #55

**Comment Type**: T  
**Comment Status**: R  
**Suggested Remedy**: Change "81. Reconciliation Sublayer (RS) and Media Independent Interface for 40Gb/s and 100Gb/s operation" to "81. Reconciliation Sublayer (RS) and Media Independent Interface (MII) for 40Gb/s and 100Gb/s operation".

**Response**: MII should be finally used as a acronym

**Response Status**: C  

REJECT.

There already exists a MII elsewhere in the standard so calling this clause an MII would be confusing. Instead we define two distinct versions, XLGMII and CGMII. Similar to comment #56.

---
Cl  81  SC  81  P  141  L  1  # 62
Hajduczenia, Marek  ZTE Corp.

Comment Type  TR  Comment Status  R

Nowhere in this clause is the number of transfers per second mentioned. In clause 46, there is "46.1.3 Rate of operation", which at least defines what data rate the MII operates at. Here, in Clause 81, such section does not exist. Why?

Suggested Remedy
Please add a corresponding section defining data rate of MII operation in clause 81.

Response  Response Status  W
REJECT.
Clause 81 follows the model of clause 46, there does exist a section 81.1.3 Rate of operation which is similar in content to 46.1.3, and then the number of transfers is defined in 82.1.4., which is similar to 49.1.5.

The purpose of 46.1.3 seems to be to contrast the rates of operation of 10GBASE-R and 10GBASE-W. P802.3ba has no such distinction.

Cl  81  SC  81.1  P  141  L  50  # 57
Hajduczenia, Marek  ZTE Corp.

Comment Type  T  Comment Status  R

The Physical Coding Sublayer (PCS) is specified to the XLGMII/CGMII, - what does it mean? Do you mean to say that PCS is adapted to XLGMII/CGMII, or there is some other meaning?? Please clarify

Suggested Remedy
Per comment

Response  Response Status  C
REJECT.
It means simply that the PCS is specified to the XLGMII/CGMII interface, but stating interface would be redundant.

Cl  81  SC  81.1  P  141  L  7  # 59
Hajduczenia, Marek  ZTE Corp.

Comment Type  T  Comment Status  R

Several comments against paragraph 1 in 81.1(1) "face between CSMA/CD media access controllers" - do we still use CSMA/CD MAC in P2P links? I always thought that full duplex MAC was used(2) insert (MII) after "and the Media Independent Interface" in line 7(3) in line 9, "and Media Independent Interface to" change to "and MII to"(4) in line 10, "of the Media Independent Interface in this clause," change to "of the MII in this clause;"

Suggested Remedy
per comment

Response  Response Status  C
REJECT.
(1)This wording is consistent with other clauses, even 10G which is also full duplex. See comment #36 also.
(2)through (4)
The abbreviation MII is already used to mean "Media Independent Interface" for 100 Mb/s physical layers. Hence it was decided not to use that abbreviation in P802.2.2ba to generically refer to XLGMII and CGMII. The abbreviations XLGMII and CGMII are used to specifically refer to Media Independent Interface for 40Gb/s and 100Gb/s.

Cl  81  SC  81.1  P  141  L  49  # 264
Turner, Edward J  Gnodal Limited

Comment Type  E  Comment Status  A

The line at the bottom of the table is thinner than usual.

Suggested Remedy
Thicken the line at bottom of table

Response  Response Status  C
ACCEPT.

Cl  81  SC  81.1  P  141  L  49  # 264
Trowbridge, Stephen  ALCATEL-LUCENT

Comment Type  E  Comment Status  A

The words "multi-lane" generally refer to multiple PCS lanes, generic service interface lanes, or PMD lanes. Using this term in the context of the RS makes it sound as though the RS extends further down the stack than it does.

Suggested Remedy
Change "The RS adapts the bit serial protocols of the MAC to the multi-lane serial encodings of the PHYs" to "The RS adapts the bit serial protocols of the MAC to the parallel format of the PCS service interface."

Response  Response Status  C
ACCEPT.

Cl  81  SC  81.1  P  141  L  49  # 264
Trowbridge, Stephen  ALCATEL-LUCENT

Comment Type  E  Comment Status  A

The words "multi-lane" generally refer to multiple PCS lanes, generic service interface lanes, or PMD lanes. Using this term in the context of the RS makes it sound as though the RS extends further down the stack than it does.

Suggested Remedy
Change "The RS adapts the bit serial protocols of the MAC to the multi-lane serial encodings of the PHYs" to "The RS adapts the bit serial protocols of the MAC to the parallel format of the PCS service interface."

Response  Response Status  C
ACCEPT.
Hajduczenia, Marek  
ZTE Corp.

Comment Type: T  Comment Status: A

(1) Change "It provides independent 64-bit-wide transmit and receive data paths." to "It provides independent 64-bit wide transmit and receive data paths."
(2) "It provides for full duplex operation only." to "It supports full duplex operation only."

Suggested Remedy: Per comment

Response: Response Status: C

ACCEPT IN PRINCIPLE. Make Change #1, and then #2 is: "It supports full duplex operation only."

Hajduczenia, Marek  
ZTE Corp.

Comment Type: T  Comment Status: R

(1) "as they all define an interface allowing independent development of MAC and PHY logic." should read "as they all specify a generic interface allowing for independent development of MAC and PHY." (2) "The RS maps the signal set provided at the XLGMII/CGMII to the PLS service primitives at the MAC." should read "The RS maps the signal set of the XLGMII/CGMII to the PLS service primitives of the MAC." (3) "Each direction of data transfer is independent and serviced by data, control, and clock signals." should read "Each direction of data transfer is independent and carries data, control, and clock signals." (4) "link faults to the DTE on the remote end of the connecting link" should read "link faults to the DTE on the remote end of the link"

Suggested Remedy: Per comment

Response: Response Status: C

REJECT. Sentences are correct as is.

Hajduczenia, Marek  
ZTE Corp.

Comment Type: T  Comment Status: A

The XLGMII has been specified to support 40Gb/s and the CGMII is specified to support 100Gb/s. Change to "The XLGMII is specified to support 40Gb/s operation and the CGMII is specified to support 100Gb/s operation."

Suggested Remedy: Per comment

Response: Response Status: C

ACCEPT.

Anslow, Peter  
Nortel Networks

Comment Type: T  Comment Status: A

The Maximum (ns) values in Table 80-3 should match the values in Table 81-1

Suggested Remedy: Since the exact values are fairly simple, change "tilde 410" to "409.6" and change "tilde 248" to "245.76"

Response: Response Status: C

ACCEPT.
Comment Type: T  Comment Status: A
What do the tildes mean in the Maximum (ns) column in Table 81-1? One use for a tilda is to mean approximately. If that is the case, how does one "meet the values specified in Table 81-1", specifically in the column using approximate values? Especially when the paragraph states the maximum cumulative delay shall meet the values specified in the table.

Suggested Remedy
If the current use of tildes means approximately, then remove the tilda and use a maximum value, i.e. if the value is +/- 10 ns then add 10 ns and it will be a maximum.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See Comment #447.

Comment Type: T  Comment Status: A
The use of an approximate value in a table that is covered by a shall statement seems to be inappropriate. It is also inconsistent with most of the other clauses that chose to use the exact absolute time values for the delay constraints expressed in ns. Since this value is well defined, is there any reason why the precise value should not be used?

Suggested Remedy
Replace "~410" with "409.6" and "~246" with "245.76".

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Duplicate of #447, see resolution of #447.

Comment Type: T  Comment Status: A
The allocation of functions at the XLMII/CGMII balances the need for media independence with the need for a simple interface. The XLMII and CGMII maximize media independence by cleanly separating the Data Link and Physical Layers of the OSI seven-layer reference model. Change to "The allocation of functions at the XLMII/CGMII balances the need for media independence with interface simplicity. The XLMII and CGMII maximize media independence by separating the Data Link and Physical Layers of the OSI seven-layer reference model."

Suggested Remedy
Per comment

Response  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: R
A schematic view of the RS inputs and outputs change to "a schematic view of the RS input and output signals"

Suggested Remedy
Per comment

Response  Response Status: C
REJECT.
Some are signals and some are primitives so this does not improve the statement.
The 64 TXD and eight TXC signals shall be connected to the 64 RXD and eight RXC signals. Line 31: "as shall the sixty-four RXD and RXC, respectively" should be corrected to "as shall the sixty-four RXD and RXC, respectively".

Suggested Remedy:
Per comment

Change eight to 8 in 81.1.6. where applicable to keep a consistent number format in a given sentence.

Therefore, PLS service primitives supporting CSMA/CD operation are not mapped through the RS to the XLGMI/CGMI.II. It is the reason why we should not even mention support for CSMA/CD MAC, since these functions are not hooked to anything so the MAC operates on reduced function set anyway.

Suggested Remedy:
No changes to the draft, just an observation regarding type of supported MAC.

The data stream is a sequence of bytes, since it is a definition, we define a data stream.

Suggested Remedy:
Per comment

Accept.
Comment Type: T  Comment Status: A
Change lines 49 - 51 to read "bit value of <sfd> at the XLGMII/CGMII is the same as the Start Frame Delimiter (SFD) specified in 4.2.6 and equal to: 10101011"

SuggestedRemedy
Per comment

Response  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: R
Change line 10 to read: "The XLGMII/CGMII <preamble> and <sfd> carry the following values:"

SuggestedRemedy
Per comment

Response  Response Status: C
REJECT. If it isn't the values shown then they are not a preamble or sfd. Correct as is.

Comment Type: T  Comment Status: A
Change "DATA_NOT_VALID. (See 81.1.7.5.2 and 30.3.2.1.5)" to read "DATA_NOT_VALID - see 81.1.7.5.2 and 30.3.2.1.5."

SuggestedRemedy
Per comment

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Place the full stop after the brackets.

Comment Type: T  Comment Status: A
Since Figure 46-9 is referenced and it is a single figure only, I suggest you reproduce it here to make the section self-standing. Otherwise, a reader needs to use also base standard, which will be in a completely different part altogether.

SuggestedRemedy
Per comment

Response  Response Status: C
ACCEPT,
Duplicate of #278
Comment Type | ER | Comment Status | A
---|---|---|---
It seems that the entire Link Fault Signaling section has been copied from clause 46 (with the relevant modifications), except for the state diagram itself. Saving trees is a good thing. However, state diagrams are too important to be scattered around and be referenced to in different portions of the standard, 35 clauses apart. It would greatly help "making it easy for the reader to select relevant specification" (from our 5-criteria) if all the relevant state diagrams were in one place.

Suggested Remedy
Copy the Link Fault Signaling state diagram from Figure 46-9 to the end of this subclause, also change all references from Figure 46-9 to this new figure, Figure 48-9.

Response | Response Status | W
---|---|---
Duplicate of #75.

Comment Type | E | Comment Status | A
---|---|---|---
The title of subclause 81.4 should contain the clause 81 title.

Suggested Remedy
Change "and Media Independent Interface (XLMII/CMII)" to "and Media Independent Interface for 40 Gb/s and 100 Gb/s operation".

Response | Response Status | C
---|---|---
ACCEPT.

Comment Type | T | Comment Status | A
---|---|---|---
Subclause 81.1.4 says "sum of transmit and receive delays at one end of the link" so "round-trip delay" is not appropriate.

Suggested Remedy
Change "round-trip delay" to "delay".

Response | Response Status | C
---|---|---
ACCEPT.
The use of terms "control character" "control octet" is not consistent - they are used interchangeably. Please use just one term consistently in the clause. Decide whether when referring to a single data portion, the word "character" or "octet" is supposed to be used.

Suggested Remedy
Per comment.

Response  Response Status C
ACCEPT IN PRINCIPLE.
There is only a single use of "control octet", so change:
"All other characters are control octets and are transferred with the corresponding TXC or RXC bit set to one" to:
"All other characters are control characters and are transferred with the corresponding TXC or RXC bit set to one" Page 170 L49.

64B/66B code does not have a high transition density. It relies on the scrambler to provide only marginally better than random data.

Suggested Remedy
Delete has a high transition density and

Response  Response Status C
ACCEPT.
Earlier in the same paragraph it is stated that the encoding provides sufficient transitions so the transition density statement is not needed.

40GBASE-R and 100GBASE-R encoder, since only descrambler is shown, but encoder is not shown at all, (1) There is a text field saying "Input to decoder function" but there is no indication of where the encoder function is

Suggested Remedy
Per comment

Response  Response Status C
ACCEPT IN PRINCIPLE.
#1 Purpose the figure is to describe bit ordering, this would unnecessarily complicate the figure. Implement the first #2, the other suggestions would unnecessarily complicate the diagram.

For #3, 2nd #1 and 2nd #2, see response to #1 above.

Figure 82-3 is a long way from here and is out of order.

Suggested Remedy
Put it in order and move it closer

Response  Response Status C
ACCEPT.

Table 82-1. All lines are the same thickness.

Suggested Remedy
Use thicker lines for the table border and around the title cells, as per tables in the other clauses.

Response  Response Status C
ACCEPT.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Use thicker lines for the table border and around the title cells, as per tables in the other clauses.</td>
<td>ACCEPT.</td>
<td>A</td>
</tr>
<tr>
<td>E</td>
<td>Use thicker lines for the table border and around the title cells, as per tables in the other clauses.</td>
<td>ACCEPT.</td>
<td>A</td>
</tr>
<tr>
<td>E</td>
<td>Use thicker lines for the table border and around the title cells, as per tables in the other clauses.</td>
<td>ACCEPT.</td>
<td>A</td>
</tr>
<tr>
<td>E</td>
<td>Use thicker lines for the table border and around the title cells, as per tables in the other clauses.</td>
<td>ACCEPT.</td>
<td>A</td>
</tr>
</tbody>
</table>
Comment Type: E  
Comment Status: A  
PICS table does not have space above Date of statement

Suggested Remedy:  
Other PICS Protocol summary tables seem to have a space above Data of statement. In this revision, some have a space and some don’t. You may want to make all PICS summary tables consistent, though the base edition seems to have the same inconsistency in the formatting.

Response:  
Response Status: C  
ACCEPT.  
Add a space to make it consistent with other clauses.

Comment Type: E  
Comment Status: A  
Table line thickness of PICS tables is not same as in other clauses.

Suggested Remedy:  
Use thicker lines for the table border and around the title cells, as per tables in the other clauses. Apply to all tables in this subsection.

Response:  
Response Status: C  
ACCEPT.

Comment Type: E  
Comment Status: A  
Table line thickness of PICS tables is not same as in other clauses.

Suggested Remedy:  
Use thicker lines for the table border and around the title cells, as per tables in the other clauses. Apply to both tables in the subsection.

Response:  
Response Status: C  
ACCEPT.

Comment Type: TR  
Comment Status: R  
A good packet may get corrupted if followed by a runt packet across these 2 blocks if aligned as such. Note a runt packet (including S and T) that is 9 octets or greater is not a problem. Also having a minimum of 15 C’s between packets is not a problem either. The first 8 octets comprise RTYPE = T, the next 8 octets comprise RTYPE_NEXT = E. This causes Figure 82-15 to transition from RX_D to RX_E instead of RX_T. In effect, a good packet would be corrupted.

Suggested Remedy:  
A possible solution is to define a block format to Figure 82-5, “R” to cover the runt packet. This would prevent this block from being labeled as an invalid or error block.

Figure 82-15 could be updated in the transition from RX_D to RX_T to include “R”, R_TYPE_NEXT = (S + C + R) see ghiasi_02_0110

Response:  
Response Status: W  
REJECT.  
The state machine is optimized to prevent corrupted packets from entering the MAC, this is at the cost of a few corner cases which might drop what is possibly a good packet immediately after an error.
<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.1</th>
<th>P 165 L 15</th>
<th># 78</th>
</tr>
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<tbody>
<tr>
<td>Comment Type: T</td>
<td>Comment Status: A</td>
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</tbody>
</table>
| (1) "Both 40GBASE-R and 100GBASE-R are based on a 64B/66B code. " change to read "Both 40GBASE-R and 100GBASE-R use a 64B/66B code. "(2) "The 64B/66B code supports data" change to read "The 64B/66B code supports transmission of data"
| Suggested Remedy: | Per comment |
| Response: | ACCEPT IN PRINCIPLE. |
| #1 is correct as is. |
| #2 implement suggested change. |

<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.1</th>
<th>P 165 L 16</th>
<th># 79</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment Type: TR</td>
<td>Comment Status: A</td>
<td></td>
</tr>
<tr>
<td>What is 'data striping'? This concept is new and has not been defined anywhere. Examplain, or define</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Remedy:</td>
<td>Per comment</td>
<td></td>
</tr>
<tr>
<td>Response:</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>Change &quot;striping&quot; to &quot;distribution&quot; to be consistent with later sections (two instances in 82.1.1).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.1</th>
<th>P 165 L 18</th>
<th># 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment Type: T</td>
<td>Comment Status: R</td>
<td></td>
</tr>
<tr>
<td>allows the receive PCS to align data from multiple lanes. change to read &quot;allows the receiving PCS to align data across multiple lanes.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Remedy:</td>
<td>Per comment</td>
<td></td>
</tr>
<tr>
<td>Response:</td>
<td>REJECT.</td>
<td></td>
</tr>
<tr>
<td>Correct as is.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.2</th>
<th>P 165 L 26</th>
<th># 81</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment Type: T</td>
<td>Comment Status: A</td>
<td></td>
</tr>
<tr>
<td>In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes. this sentence reads plain old strange. Can you clarify it, separating into two independent sentences, which will be much clearer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Remedy:</td>
<td>Per comment</td>
<td></td>
</tr>
<tr>
<td>Response:</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>From:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to 64B/66B encoding, there is a methodology to add alignment markers and distribute data to multiple lanes.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.3</th>
<th>P 166 L 3</th>
<th># 82</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comment Type: T</td>
<td>Comment Status: A</td>
<td></td>
</tr>
<tr>
<td>Figure 82-1 depicts the relationship between the 40GBASE-R PCS and 100GBASE-R PCS and their associated sublayers. - this is not what the caption in Figure 82-1 says. Align them please.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Remedy:</td>
<td>Per comment</td>
<td></td>
</tr>
<tr>
<td>Response:</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>Change:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Figure 82-1 depicts the relationship between the 40GBASE-R PCS and 100GBASE-R PCS and their associated sublayers.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Figure 82-1 shows the relationship of the 40GBASE-R PCS and 100GBASE-R PCS sublayers (shown shaded) with other sublayers to the ISO Open System Interconnection (OSI) reference model.&quot;</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl 82 SC 82.1.3</th>
<th>P 166 L 3</th>
<th># 82</th>
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<tbody>
<tr>
<td>Comment Type: T</td>
<td>Comment Status: A</td>
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<tr>
<td>In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes. this sentence reads plain old strange. Can you clarify it, separating into two independent sentences, which will be much clearer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Remedy:</td>
<td>Per comment</td>
<td></td>
</tr>
<tr>
<td>Response:</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>From:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In addition to 64B/66B encoding, there is a methodology to add alignment markers and distribute data to multiple lanes.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
Comment Type: TR  Comment Status: R
It is not clear how you change from 10.3125 Gtransfers/s for per PCS lane to 40G transmission capacity. Likewise, it is not clear how you change from 5.15625 Gtransfers/s per PCS lane to 100G transmission capacity. Some text needs to be added, which clarifies how many PCS lanes are aggregated to provide the overall transmission capacity.

Suggested Remedy
Per comment

Response
Response Status: W
REJECT.
This is per PCS lane as it states, the number of PCS lanes are detailed elsewhere for each speed, so it is a simple multiplication to get the aggregate rate.

Comment Type: E  Comment Status: A
This says "The PMA or FEC service interface is defined in 83.2" but it is defined in 83.3

Suggested Remedy
Change "defined in 83.2" to "defined in 83.3"

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
The notation "TXCn" and "RXCn" is different from that used elsewhere which uses TXC<n> and RXC<n>

Suggested Remedy
Change "TXCn" to TXC<n> and "RXCn" to RXC<n>

Response
Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
In Figure 82--2, "inst:IS_UNITDATA_i.request: is repeated twice, so is "inst:IS_UNITDATA_i.indication ". Remove the second occurrence of these interface descriptions - they are not needed

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
This says "is from the BASE-R PCS test-pattern control register (register 3.42.3)". But 3.4.2 is a bit, not a register.

Suggested Remedy
Change "(register 3.42.3)" to "(bit 3.42.3)". Make the equivalent change on Page 181 line 44

Response
Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
Provide a reference to the described functionality.

Suggested Remedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.
From: When the transmit channel is operating in test-pattern mode, the encoded bit stream is distributed to the PCS Lanes as in normal operation.
To: When the transmit channel is operating in test-pattern mode, the encoded bit stream is distributed to the PCS Lanes as in normal operation (see 82.2.6).
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
<th>SuggestedRemedy</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>C</td>
<td>(1) line 3: &quot;The PCS shall generate and detect a scrambled idle test pattern.&quot; or &quot;The PCS shall have the ability to generate and detect a scrambled idle test pattern.&quot; (2) line 6: &quot;When scrambled idle pattern is selected,&quot; &gt; &quot;When a scrambled idle pattern is enabled,&quot; (3) line 9: &quot;and deskew the PCS lanes.&quot; &gt; &quot;and deskew individual PCS lanes.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Per comment</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>#1,2 - implement #3 - correct as is, you can't deskew individual lane in isolation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
<th>SuggestedRemedy</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>A</td>
<td>C</td>
<td>No corresponding PIC statement for this text - It shall form 4 or 20 bit streams from the primitives by concatenating the bits from the indications of each primitive in order from each inst:IS_UNITDATA_0.indication to inst:IS_UNITDATA_3.indication or inst:IS_UNITDATA_0.indication to inst:IS_UNITDATA_19.indication.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>add corresponding pic statement</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>Make the changes as proposed in gustlin_04_0110.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
<th>SuggestedRemedy</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>A</td>
<td>C</td>
<td>Change: It shall form 4 or 20 bit streams from the primitives by concatenating To: The PCS forms 4 or 20 bit streams from the primitives by concatenating</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

**Comment 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
Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A

(1) "PCS lane deskew" > "PCS lane deskew process"(2) in line 29: "Once the receiver has PCS lane lock on each PCS lane (4 or 20 lanes), then the process of deskewing the" > "Once the receiver achieves PCS lane lock on all PCS lanes (4 or 20 lanes, for 40GBASE-R and 100GBASE-R, respectively), the process of deskewing"(3) in line 31: " After alignment marker lock" > " After the alignment marker lock"(4) in line 32: "is achieved, then any lane to lane skew can be removed as shown in the PCS deskew state diagram in Figure 82--12." > "is achieved, then any the intra-lane skew between any two PCS lanes can be removed as shown in Figure 82--12."

Suggested Remedy

Per comment

Response

Accept in principle.

#1 Correct as is, would be inconsistent if this change was made.

#2 Change to: "Once the receiver achieves PCS lane lock on all PCS lanes (4 lanes for 40GBASE-R or 20 lanes for 100GBASE-R), the process of deskewing"

#3 Correct as is.

#4 Change to:

"is achieved, then any the intra-lane skew between any two PCS lanes can be removed as shown in Figure 82--12."

Anslow, Peter Nortel Networks

Comment Type: T  Comment Status: A

There are 20 BIP error counter registers 3.90 through 3.109

Suggested Remedy

Change "(registers 3.90 through 3.99)" to "(registers 3.90 through 3.109)"

Response

Accept in principle.

See comment #748, register changes to 3.200-3.219.

Barrass, Hugh Cisco Systems, Inc.

Comment Type: TR  Comment Status: A

Change register addresses according to HB_17. Note that the register address range is currently wrong.

Suggested Remedy

Change register addresses (currently 3.90-3.99) to 3.200-219. Also in Table 82-7, p.187

Response

Accept.

See also #720 (AKA HB_17) and related is #459.

Anslow, Peter Nortel Networks

Comment Type: E  Comment Status: A

BIP3 should have a subscripted "3"

Suggested Remedy

Change the 3 in BIP3 to be a subscript.

Response

Accept.

Duplicate of #460

Anslow, Peter Nortel Networks

Comment Type: E  Comment Status: A

BIP3 should have a subscripted "3"

Suggested Remedy

Change the 3 in BIP3 to be a subscript.

Response

Accept.

Duplicate of #459

Duplicate of #105.
<table>
<thead>
<tr>
<th>Cl 82</th>
<th>SC 82.2.14</th>
<th>P 181</th>
<th>L 7</th>
<th># 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gustlin, Mark</td>
<td>Cisco Systems, Inc.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: E
**Comment Status**: A
**Change**: due to bit error for example
to:
due to a bit error for example

**Suggested Remedy**: as above

**Response**: ACCEPT.

<table>
<thead>
<tr>
<th>Cl 82</th>
<th>SC 82.2.17</th>
<th>P 181</th>
<th>L 33</th>
<th># 285</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dawe, Piers J G</td>
<td>Independant</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Following up on D2.2 comment 69, "There are two error counting mechanisms that can be used on 64B/66B signals: errored blocks and BIP errors... We should be unambiguous which is meant by BER for the purposes of compliance. As the errored block counter is not very good in service at marginal and good BERs, we expect in-service monitoring to use BIP (that's why it was introduced). It is HIGHLY desirable that the same definition of BER apply in compliance testing with the scrambled idle signal as in service."

Also it seems that the 82.2.17 test-pattern checker will typically count 2 for an isolated error while the 82.2.14 BIP checker will count 1. For isolated errors, the BIP checker will correspond to frame loss statistics.

Note that any change to the PCS operation would be a simplification, and option 1 below makes no change.

**Suggested Remedy**

Option 1: no change to silicon: Add text to 82.2.17 line 33 "However, the BIP error count according to 82.2.14 is the preferred measure for BER." At 82.2.14 line 14, add "The BIP error count determines the BER for compliance purposes."

Option 2: To bring the definition of BER in scrambled idle test pattern mode in line with the expected de-facto definition of errors in service, it would be desirable to change:

"When operating in scrambled idle test pattern, the test-pattern error counter counts blocks with a mismatch. Any mismatch indicates an error and shall increment the test-pattern error counter."
to

"When operating in scrambled idle test pattern, the test-pattern error counter counts BIP errors according to 82.2.14."

There may be consequential changes to wording in Clause 45.

**Response**: ACCEPT IN PRINCIPLE.

Comment #461 has more clearly defined how to determine a BER from the scrambled idle error counters, with these changes the BER derived from scrambled idles or BIP are basically equivalent for error rates of interest. So no need to favor one over the other.
Cl 82 SC 82.2.17 P 181 L 38 # 461
Anslow, Peter Nortel Networks

Comment Type T
Comment Status A

This says "the scrambled idle test-pattern checker observes the output from the descrambler", but the sync bits bypass the descrambler. So, are the sync bits checked for errors or not? To make this checker and the BIP checker cover the same bits we should explicitly include the sync bits. Also the relationship between this count and BER is not obvious. See associated presentation anslow_04_0110.

Suggested Remedy
Change "the scrambled idle test-pattern checker observes the output from the descrambler. When the output of the descrambler is the all idle pattern, a match is detected." to "the scrambled idle test-pattern checker observes the sync header and the output from the descrambler. When the sync header and the output of the descrambler is the all idle pattern, a match is detected." add at the end of this paragraph, "Because of the error multiplication characteristics of the descrambler, the incoming bit error ratio can be estimated by dividing the 66-bit block error ratio by a factor of 1 081 344."

Response
ACCEPT.

See anslow_04_0110.

Cl 82 SC 82.2.18.2 P 182 L 6 # 203
Hajduczenia, Marek ZTE Corp.

Comment Type TR
Comment Status A

This comment is against the whole sub clause 82.2.18.2(1) Each variable seems to have a different style of definition, which impairs reading and complicates analysis - please make them consistent.(2) To simplify analysis of state diagrams, it would be nice to include variable type information and its size as well. (3) What is "Boolean indication" ? Do you mean "Boolean flag" ?(4) definition of am_status is less than readable - please consider using an equation if needed(5) in am_valid - who is this "we" ??(6) general comment: when number of bits is used as an adjective, it should be hyphenated e.g. 66-bit variable. Please scrub the draft for such occurrences(7) "66b" should be replaced with "66-bit"

Suggested Remedy
Per comment

Response
Response Status W
ACCEPT IN PRINCIPLE.

1- Make all Boolean variables consistent, not "Boolean indication", "Boolean", only "Boolean variable".
2 - Necessary information is included.
3 - See #1
4 - Change to:
"A Boolean variable that is true when all PCS lanes are in am_lock and false when at least one PCS lane is not in am_lock."
5 - this sentence is being deleted by comment #359
6- Make this change throughout clause 82
7 - Make this change throughout clause 82, similar to comment #203.

Cl 82 SC 82.2.18.2.1 P 182 L 18 # 462
Anslow, Peter Nortel Networks

Comment Type E
Comment Status A

the other instances of "Local Fault ordered set" in this subclause have an underscore between "ordered" and "set"

Suggested Remedy
Change "Local Fault ordered set" to "Local Fault ordered_set"

Response
Response Status C
ACCEPT.
In "am_lock<x>" and also "where x=0:3 for 40GBASE-R and x=0:19 for 100GBASE-R" x is a variable and so should be in italic font. Also applies to other instances of <x>. Also, in "am_lock<x>" the font of "<x>" is Arial 8 pt (Should be Times New Roman 10 pt).

**Suggested Remedy:**

show "x" in italic font. 8 instances on this page, 4 instances in Table 82-7, 8 instances in Figure 82-10, 7 instances in Figure 82-11, use correct base font for "<x>" in "am_lock<x>"

**Response**

ACCEPT.

---

Colloquial language "Note that we do not know which marker to expect on which PCS lane."

**Suggested Remedy:**

Delete the sentence. The information is already conveyed by the text of 82.2.1, page 169 line 10.

**Response**

ACCEPT.

---

The two-bit sync header bypasses the scrambler - it is not clear what these sync bits are, Sync header however is quite well defined.

**Suggested Remedy:**

per comment

**Response**

ACCEPT IN PRINCIPLE.

Change to:

"The two-bit sync header bypasses the scrambler."

---

To future-proof the PCS, repeat the error propagation analysis for worst CRn, 25G lanes and 40G lanes, not just example (not worst) KR error propagation statistics. Remember that unlike KR, CRn is for multi-vendor use, not just for closed systems, and "adequate" MTTFPA must be VERY good indeed. A packet falsely accepted is a much more serious issue than a dropped packet.

**Suggested Remedy:**

Find the MTTFPA at the hi_ber limit using conservative estimates for error propagation, for CRn, 25G lanes, and 40G lanes. If necessary, change the hi_ber limit by changing the ber_cnt limit.

**Response**

REJECT.

Appropriate MTTFPA analysis has been done for the PHYs and interfaces that are part of this project.

See the following presentations reviewed by the study group and task force:


---

The two-bit sync header bypasses the scrambler - it is not clear what these sync bits are, Sync header however is quite well defined.

**Suggested Remedy:**

per comment

**Response**

ACCEPT IN PRINCIPLE.

Change to:

"The two-bit sync header bypasses the scrambler."
Comment Type: T  Comment Status: A
A valid control character is one containing a control code specified in Table 82–1. Change to "Valid control characters are specified in Table 82–1."

Suggested Remedy:
Table 82-1 defines clearly what they are composed of. No need to redefine. Per comment.

Response:  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
66b should be "66-bit". Scrub the draft accordingly. Similarly, "64b" should be "64-bit".

Suggested Remedy:
Per comment

Response:  Response Status: C
ACCEPT.

Note: Corrected the page to 185 line 20.

Comment Type: T  Comment Status: A
(1) "This is always reset to zero if a" > "This counter is always reset when a" (2) "9-bit counter. When the receiver is in normal mode, errored_block_count counts once for each time" > "When the receiver is in normal mode, this 8-bit counter counts once for each time" (3) "16-bit counter. When the receiver is in test-pattern mode, the test_pattern_error_count counts" > "When the receiver is in test-pattern mode, this 16-bit counter counts"

Suggested Remedy:
Per comment

Response:  Response Status: C
ACCEPT.

Note: Corrected the page to 185 line 22.
Comment Type T  Comment Status R
the current 64 or 1024 block window - how is this value set? Perhaps a reference would help.
Suggested Remedy
Per comment.
Response Response Status C
REJECT.
The numbers were chosen from:
http://grouper.ieee.org/groups/802/3/ba/public/nov08/gustlin_03_1108.pdf
Once the numbers are chosen, the reasons for choosing the numbers do not appear in the standard.
Note: Corrected the page to 185 line 34.

Comment Type T  Comment Status A
It is not 'sync field' but 'sync header', which has been in use in previous clauses in 802.3. Scrub the draft, since this new term is used in several other locations.
Suggested Remedy
Per comment.
Response Response Status C
ACCEPT.
Note: Corrected the page to 185 line 54.

Comment Type T  Comment Status R
PCS lane the markers must match each other and an entry from Table 82--2 for 100GBASE-R or Table 82--3 for 40GBASE-R change to read "PCS lane, the markers must match one of the possible values specified in Table 82--2 for 100GBASE-R or Table 82--3 for 40GBASE-R and match each other after the marker lock is acquired."
Suggested Remedy
Per comment
Response Response Status C
ACCEPT IN PRINCIPLE.
On a given PCS lane, the markers must match each other and an entry from Table 82-2 for 100GBASE-R or Table 82-3 for 40GBASE-R.

Comment Type T  Comment Status A
Note that the BIP3 and BIP7 fields are excluded from the markers when making a match to each other or the tables change to "Note that the BIP3 and BIP7 fields are excluded from the markers when matching markers to each other or to possible values specified in Table 82--2 for 100GBASE-R or Table 82--3 for 40GBASE-R."
Suggested Remedy
Per comment
Response Response Status C
REJECT. Text is correct as is.
Note: Corrected the page to 186 line 11.
Comment Type: T  Comment Status: A
In accordance with comment HB_18, it would be useful to include a set of PCS mapping registers for debug purposes.

Suggested Remedy:
Add the following paragraph: When the PCS alignment marker lock process achieves lock for a lane, it shall record the PMA service interface lane number that corresponds to the locked PCS lane in the appropriate PCS lane mapping register (3.400-3.419) see 45.2.3.39. - also update Table 82-7 and PICS.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
The is part of the resolution of comment #266.

When the PCS alignment marker lock process achieves lock for a lane, it shall record the number of the PCS lane received on a particular lane of the PMA service interface in the appropriate lane mapping register (3.400-3.419) see 45.2.3.39. - also update Table 82-7 and PICS.

Comment Type: T  Comment Status: A
1.25ms is used and in some other locations, the same value is referred to as "1250us" - use one base unit consistently.

Suggested Remedy:
Change "received data stream for a given PCS lane" to "received bit stream for a given PCS lane".

Response  Response Status: C
ACCEPT.

Comment Type: ER  Comment Status: A
The am_invld_cnt variable assignment is state AM_RESET_CNT seems to be garbled.

Suggested Remedy:
Replace "am" and "nvld_cnt <= 0" with "am_invld_cnt <= 0".

Response  Response Status: W
ACCEPT.
Cl 82  SC 82.2.2  P 169  L 35  # 178
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  A
Comment: "provided by the rules in" to "defined in"
SuggestedRemedy
Per comment
Response  Response Status  C
ACCEPT.

Cl 82  SC 82.2.3  P 169  L 39  # 179
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  R
Comment: improve the transmission characteristics of information to be transferred across the link - what transmission characteristics are improved? What does it mean that "transmission characteristics of information" are improved?
SuggestedRemedy
Please clarify what this text mean.
Response  Response Status  C
REJECT.
The subsequent sentences explain and elaborate on this text.

Cl 82  SC 82.2.3  P 169  L 48  # 180
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  A
Comment: The relationship of block bit positions to XLGMII/CGMII, PMA, and other PCS constructs change to "The relationship of block bit positions relative to XLGMII/CGMII, PMA, and other PCS functions"
SuggestedRemedy
Per comment
Response  Response Status  C
ACCEPT.

Cl 82  SC 82.2.3  P 169  L 52  # 181
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  R
Note 6 on page 169 should be rewritten. It is clear how many lanes are used in specific PMDs, so it is also possible to define clearly what the run lengths are for individual PMD.
SuggestedRemedy
Per comment
Response  Response Status  C
REJECT.
The footnote gives one example, which is sufficient information to extrapolate the run length for any current or future pmd or interface.
Corrected the page to 169.

Cl 82  SC 82.2.3  P 170  L 1  # 182
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  A
Comment: 8 data octets. See 82.2.3.3 for information on how blocks containing control characters are mapped. Note that the sync header is generated by the encoder and bypasses the scrambler change to "8 data octets. 82.2.3.3 contains information on how blocks containing control characters are mapped into 66-bit blocks."
Please clarify
SuggestedRemedy
Per comment
Response  Response Status  C
ACCEPT IN PRINCIPLE.
Change:
"See 82.2.3.3 for information on how blocks containing control characters are mapped." to:
"See 82.2.3.3 for information on how blocks containing control characters are mapped into 66-bit blocks."

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
In Figure 82-3 the bits of inst:IS_UNITDATA_1.request are shown as TxB<66> to TxB<131> and similarly for inst:IS_UNITDATA_3.request, inst:IS_UNITDATA_19.request. This bit numbering would be appropriate for a serial interface where one block is sent after another, but is inappropriate where the lanes are sent in parallel at the same time. Likewise for Figure 82-4.

Suggested Remedy
- Renumber all blocks to be from TxB<0> to TxB<65> in both figures.

Response
- ACCEPT IN PRINCIPLE.
  - Renumber only figure 82-4, 82-3 is ok as is and correlates with section 82.2.9.

In Figure 82-5, what does the "Input data" mean? Is this the "xGMII data" as received from the particular MII type interface??

Suggested Remedy
- Please consider changing the name "Input Data" to "Data from CGMII/XLGMII"

Response
- REJECT.
  - Then meaning of the input data is sufficiently defined in subclause 82.2.3.3.
Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A
into a 7-bit C code. - what is a C code and where it is defined?

Suggested Remedy
Please provide a reference to where such codes are defined.

Response  Response Status: C
ACCEPT IN PRINCIPLE.

Change:
"The 40GBASE-R and 100GBASE-R PCS encode each of the other control characters into a 7-bit C code"
To:
"The 40GBASE-R and 100GBASE-R PCS encode each of the other control characters into a 7-bit control code"

Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A
maintain the Hamming distance: 0x00, 0x2D, 0x33 and 0x66. change to "maintain the required Hamming distance: 0x00, 0x2D, 0x33 and 0x66."

Suggested Remedy
per comment

Response  Response Status: C
ACCEPT IN PRINCIPLE.

There is no required hamming distance, though the bigger the better. clarify as follows:

Change:
"There are four unused values that maintain the Hamming distance: 0x00, 0x2D, 0x33 and 0x66."
To:
"There are four unused values that maintain this Hamming distance: 0x00, 0x2D, 0x33 and 0x66."

Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A
b) The block type field contains an invalid value (one not appearing in Figure 82--5). c) Any control character contains a value not in Table 82--1. change to read "b) The block type field contains an invalid value (one not included in Figure 82--5). c) Any control character contains a value not included in Table 82--1."

Suggested Remedy
Per comment

Response  Response Status: C
ACCEPT.

Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A
(1) Table 82--1 contains definition of control codes. Is this the same as C codes which are used in the same clause? If so, please make it consistent. (2) in subsequent sections, either idle, idle or idle character is used. Is this the same? If so, why multiply names for one and the same thing? Be consistent at least across the new clauses added in this project.

Suggested Remedy
Per comment.

Response  Response Status: C
ACCEPT IN PRINCIPLE.

#1 is addressed by comment #189, for #2 scrub clause 82 and use "idle control character".
This comment is applicable to Clause 82.2.3.7/8/9/10. (1) Why there are changes to these clauses as compared with Clause 49 apart from the necessary changes (data rates, xGMII interface names)? (2) In 82.2.3.10, line 26, page 175"For both the encoder and decoder, the"should read "In both the 64B/66B encoder and decoder, the"(3) In 82.2.3.9, line 20, page 175"and shall delete only one of the two."should read "and one of the two ordered sets shall be deleted."(4) In 82.2.3.9, line 21, page 175"Signal ordered_sets are not deleted for clock"should read "Signal ordered_sets shall not be deleted for clock"

Suggested Remedy
per comment

Response
Response Status C
ACCEPT IN PRINCIPLE.
#1 - changes are made due to the 8B alignment compared to 4B alignment in clause 49.
#2 - Make this change.
#3 - Change to:
"and only one of the two ordered sets may be deleted."
#4 - Text is ok as is.

One XLGMII/CGMII data transfer is encoded into each block. change to read "One XLGMII/CGMII data transfer is encoded into one 66-bit block."

Suggested Remedy
per comment

Response
Response Status C
ACCEPT.

(1) In Figure 82-6, it is not clear how much is "n" in terms of the number of lanes. Is it 4 and 20 for 40GBASE-R and 100GBASE-R respectively? Add a comment to the figure with clarification on this point. (2) also change caption of figure 82-6 to read "PCS block distribution function"

Suggested Remedy
Per comment

Response
Response Status C
REJECT.
The paragraph of 82.2.6 clearly states how many is n.
This references just Annex 83A for XLAUI/CAUI

Suggested Remedy
- Change "(see Annex 83A)" to "(see Annex 83A and Annex 83B)"

Response

ACCEPT.

---

Change "They interrupt any transfer that is already occurring" to read "Such blocks interrupt any data transfer that is already in progress"

Suggested Remedy
- Per comment

Response

ACCEPT IN PRINCIPLE.

Change the sentence to:
- "These markers interrupt any data transfer that is already in progress. This allows alignment markers to be inserted into all PCS lanes at the same time."

---

Periodically deleting IPG from the XLGMI/CGMI data stream. - this is the only location where IPG deletion function is mentioned at all. Some more details would be more than welcome

Suggested Remedy
- Per comment

Response

REJECT. Not sure what details would help out here. There are other areas of the draft where idle insertion and deletion is discussed.
Comment Type: T  Comment Status: A

1. Figure 82-7 breaks the text block into two, please fix it - place the figure anchor in a correct location and fix settings for orphans on this page.
2. Change caption in Figure 82-7 to read "Alignment market insertion function"

Suggested Remedy:
Per comment

Response
Response Status: C

ACCEPT IN PRINCIPLE.

Hajduczenia, Marek
ZTE Corp.

Comment:
1. - fix the text break.
2. - I don't believe that the 'function' is required.

Suggested Remedy:
Per comment

Response
Response Status: C

ACCEPT IN PRINCIPLE.

Hajduczenia, Marek
ZTE Corp.

Comment:
Data before descrambling is performed. change to read "data lanes before descrambling is performed."

Suggested Remedy:
Per comment

Response
Response Status: C

ACCEPT IN PRINCIPLE.

Hajduczenia, Marek
ZTE Corp.

Comment:
Markers are not scrambled in order to allow the receiver to find the alignment markers and re-align all of the data before descrambling is performed.

Suggested Remedy:
Per comment.

Response
Response Status: C

ACCEPT.

Hajduczenia, Marek
ZTE Corp.

Comment:
In table 82-2, note (a) is added only to column 2 and should be also added to column 4, after the word "Encoding".

Suggested Remedy:
Per comment.

Response
Response Status: C

ACCEPT.
Comment Type: T  Comment Status: A

(1) "A BIP field is added to each PCS Lane alignment marker. This allows accurate and fast determination of the bit error ratio of a given PCS Lane. This information is only used to update error counters, no state machines use this information." should read as: "A BIP field is added to each PCS Lane alignment marker on positions 3 and 7. This allows accurate and fast determination of the bit error ratio on a given PCS Lane. This information is only used to update error counters. No state machines use this information." (2) Considering that BIP fields are quite spaced apart, this method of calculating BER seems to be quite limited in terms of efficiency.

Suggested Remedy
Per comment

Response  Response Status: C

ACCEPT IN PRINCIPLE.

For #1 change to:
A PCS lane BIP field is carried in each PCS Lane alignment marker. This allows an accurate and fast measure of the bit error ratio of a given PCS Lane. This information is used to update error counters, no state machines use this information.

#2 - No suggested improvement in the comment. No change made.

Comment Type: T  Comment Status: A

Table 82-4 probably represents "BIP3 bit assignment". Also, it is not clear what these "assigned 66b word bits" are? There is no clear description how BIP3 and BIP7 is calculated - suggest to provide a clear example for this end.

Suggested Remedy
Per comment

Response  Response Status: C

ACCEPT IN PRINCIPLE.

Change the title of 82-4 to:
BIP3 bit assignments

The paragraph that refers to this figure gives the details of the BIP calculations, no change in the description is needed.
The names of the MDIO registers and variables in Tables 82-6 and 82-7 do not match those in clause 45.

Suggested Remedy

In Table 82-6:
Change "Control register 1" to "PCS control 1 register" (2 places)
In Table 82-7:
Change the name of register 3.32 to "BASE-R and 10GBASE-T PCS status 1 register" (2 places)
Change "10/40/100GBASE-R and 10GBASE-T receive link status" to "BASE-R and 10GBASE-T receive link status"
Change "10/40/100GBASE-R and 10GBASE-T PCS high BER" to "BASE-R and 10GBASE-T PCS high BER"
Change "Multi-lane BASE-R PCS alignment status register 1 and 2" to "Multi-lane BASE-R PCS alignment status 1 and 2 registers"
Change "Multi-lane BASE-R PCS alignment status register 3 and 4" to "Multi-lane BASE-R PCS alignment status 3 and 4 registers"
Change "Multi-lane BASE-R PCS alignment status register 1" to "Multi-lane BASE-R PCS alignment status 1 register"
Change "10/40/100GBASE-R and 10GBASE-T PCS status 2 register" to "BASE-R and 10GBASE-T PCS status 2 register" (2 places)
Change "3.90 through 3.99" to "3.90 through 3.109"

Response

ACCEPT IN PRINCIPLE.

Insert extra rows or modify the existing rows to reflect the missing registers and names.

Suggested Remedy

If a Clause 45 MDIO is implemented, then the PCS shall be placed in Loopback mode when the Loopback bit from the PCS control 1 register (bit 3.0.14) is set to one.

Response

ACCEPT.
Comment Type: T  Comment Status: A
Support for the Auto-Negotiation process defined in Clause 73 is mandatory. - why not make it into a “shall” statement altogether if it is mandatory?

Suggested Remedy
Per comment.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Change:
"The following requirements apply to a PCS used with a 40GBASE-KR4 PMD, 40GBASE-CR4 PMD or 100GBASE-CR10 PMD. Support for the Auto-Negotiation process defined in Clause 73 is mandatory."
to:
"The following requirements apply to a PCS used with a 40GBASE-KR4 PMD, 40GBASE-CR4 PMD or 100GBASE-CR10 PMD where support for the Auto-Negotiation process defined in Clause 73 is mandatory."
The appropriate shall statement immediately follows this sentence.
Note: Corrected the page to 188 line 21.

Comment Type: TR  Comment Status: R
In Figure 82-10, variable test_sh seem to be never set to true, even though it is used consistently in the state diagram

Suggested Remedy
Either mark condition under which this variable is set to true or mark that on the state diagram somewhere.

Response  Response Status: W
REJECT.
When it is true is defined in the variable definition. This behavior is consistent with other variables and state machines within the standard.

Note: Corrected the page to 189 line 1.

Comment Type: E  Comment Status: A
The line thicknesses of the Tables in the PICS section of clause 82 are not according to the usual style. (Thick round the outer edge and between the heading row and the body)

Suggested Remedy
Change line thicknesses per the usual style.

Response  Response Status: C
ACCEPT.
1. Item XGE, what is the "XLGMII/CGMII compatibility interface"? (2) In 82.7.3 (item XGE), 82.7.6.1 (items SM7, SM9, SM10, SM11), 82.7.6.3 (item TIM1) should be separated into separate entries for 40G and 100G interfaces, for an implementer to be able to mark support accordingly. Otherwise, it is not clear which version is supported.

Suggested Remedy
Per comment

ACCEPT IN PRINCIPLE.

#1 - Change: compatibility interface to: logical interface

#2 - Break out the items by speed. Also correct conditional mandatory status for entries.

Corrected page and line.

2. Items C3 and C4 should refer to 82.2.3.3, not 82.2.3

Suggested Remedy
modify subclause # to 82.2.3.3

ACCEPT.

3. In AM_RESET_CNT state am_invld_cnt is not written correctly

Suggested Remedy
am_invld_cnt <= 0

ACCEPT. Dupe of #279.

4. Title for Clause 83 should read "83. Physical Medium Attachment (PMA) sublayer, type 40GBASE-R and 100GBASE-R"

Suggested Remedy
Per comment

ACCEPT.

Note that the actual change is to page 201 line 1 rather than page 1 line 201.
Comment Type: E  Comment Status: A
Table 83-4. No line at the bottom of the table.
Suggested Remedy
- Add line at bottom of table as per other tables split over pages
Response  Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
Table line thickness of PICS table is not the same as in other clauses.
Suggested Remedy
- Use thick lines for the table border and around the title cells and thin lines for the inside of
  the table, as per tables in the other clauses. Apply to PICS tables in 83.7.4, 83.7.5, 83.7.6
Response  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: R
(40Gb/s and 100Gb/s) - remove - this is unnecessary since the transmission rate can be
deducted from the PMD family names.
Suggested Remedy
- Per comment
Response  Response Status: C
REJECT.

Table 80-2 contains both 40Gb/s and 100Gb/s PHYs. The 40GBASE-R PMA supports only
those operating at a transmission rate of 40Gb/s and the 100GBASE-R PMA supports only
those operating at a transmission rate of 100Gb/s. This is consistent with other clauses.

Physical Layers using the PMA defined here.change to read"Physical Layers using the
PMA defined in this Clause".
Suggested Remedy
- Per comment
Response  Response Status: C
ACCEPT IN PRINCIPLE.

Note that the actual change is to page 201 line 14 rather than page 14 line 201.
PMD service interfaces for other PMDs are defined abstractly. change to read "PMD service interfaces for other PMDs are defined in an abstract manner".

Suggested Remedy
Per comment.

Response Response Status C
ACCEPT IN PRINCIPLE.

Note that the actual comment applies to page 201 line 22 rather than page 22 line 201.

Since there is not actually a clause that specifically defines an abstract PMD service interface associated with any particular PMD, replace:

"The PMD service interfaces for other PMDs are defined abstractly" with
"The PMD service interfaces for other PMDs are defined in an abstract manner according to 80.3.1"
The text in the section, as well as in this Clause and a few next Clauses contains references to some numbers, p and q. In other places, numbers 'z', 'm' and 'n' are used. This is confusing, unless one set of illustrative numbers is used. Try to use a single set of illustrative numbers, e.g. 'm' and 'n'. See Figure 83-3 as an example. Also, when using such numbers, please put the in italics, to make sure that they actually can be distinguished from the background text. Otherwise it is very hard to read.

Suggested Remedy
Per comment.

Response
Response Status C

The use of m, n, p and q was arrived at over several iterations early in the project.

m and n are used consistently in the generic description of bit level multiplexing in a single direction of transmission, where m is the number of input lanes and n is the number of output lanes.

p and q are used consistently when describing the aggregate PMA with both directions of transmission, where p is the number of lanes to/from the direction of the PCS and q is the number of lanes to/from the direction of the PMD.

z is used consistently to indicate the number of PCS lanes (4 or 20) rather than PMA input or output lanes.

What kind of function is "tolerate Skew Variation"? This is a requirement for PMA.

Suggested Remedy
Per comment.

Response
Response Status C

As with other PMA capabilities in the list, there is a terse description in the indicated place (page 201 line 46) with a more detailed description in later clauses. In 83.5.3 you find "Any PMA which combines PCSLs from different input lanes onto the same output lane must tolerate Skew Variation between the input lanes without changing the PCSL positions on the output."

What is a "PMA context"? Usually this clause is called in the lines "Positioning of PMA within the IEEE 802.3 architecture" or something alike. What context do you mean? Make this title mean actually something - otherwise there is no need for it.

Suggested Remedy
Per comment.

Response
Response Status C

It isn't clear from the comment that there is a problem or that any new acronym is needed. The term used in the text is PCSL which is defined in 1.5. Other types of logical or physical lanes are input or output lanes of a sublayer or interface lanes and are clear from the context. Generally each of these lanes is comprised of bit-multiplexed PCSLs, which is why a unique term was chosen to represent this.

Sponsor ballot
This says "If the interface between the PMA client and the PMA is physically instantiated (XLAUI/CAUI), the PMA shall meet the electrical and timing specifications in Annex 83A or Annex 83B as appropriate." Which implies that if it is physically instantiated as something other than XLAUI/CAUI, it would still have to comply with Annex 83A or 83B.

SuggestedRemedy
Change "is physically instantiated (XLAUI/CAUI), the PMA shall" to "is physically instantiated as XLAUI/CAUI, the PMA shall". Also on line 47 change "physically instantiated as XLAUI/CAUI or nPPI, the PMA shall" to "physically instantiated as XLAUI/CAUI or nPPI, the PMA shall".

Response
ACCEPT.

Comment Type T  Comment Status A
This says "accessible through the PRBS pattern testing control and status (", but register 1.307 is called the Test pattern ability register.

SuggestedRemedy
Change "accessible through the PRBS pattern testing control and status (" to "accessible through the Test pattern ability register (".

Response
ACCEPT.

Comment Type T  Comment Status A
The variables "PRBS_TX_gen_enable", "PRBS_RX_gen_enable", "PRBS_TX_check_enable", "PRBS_RX_check_enable" used on pages 213 and 214 (12 instances total) do not match the variable names in Table 83-2 which are "TX_PRBS_gen_enable" etc.

SuggestedRemedy
Since the variables used elsewhere in the clause are "PRBS_TX," etc. change the 4 variables in Table 83-2 to match those used in the text. Also, on Page 213 lines 28, 37 and 46 the last underscore is missing from the variable names.

Response
ACCEPT.
### Comment 1

**Comment Type:** T  
**Comment Status:** R  
**Comment:** Asking for something to be random is not a good idea. Random means by chance, and it's very difficult to implement a true random number generator and very difficult or impossible to test for. However, randomness is not the point, and at least here there is no "shall" so no conformance test.

**Suggested Remedy:** Change  
"To avoid correlated crosstalk, it is highly recommended that the PRBS31 patterns generated on each lane be generated from independent, random seeds or at a minimum offset of 20 000 UI between the PRBS31 sequence on any lane and any other lane." to  
"To avoid correlated crosstalk, it is highly recommended that the chance that the offset between the PRBS31 sequence on any lane and any other lane is less than 20 000 UI is zero, or no greater than would be the case if the PRBS31 patterns generated on each lane were generated from independent, random seeds."

**Response:** REJECT.

The current text is clear and simple, and no developer would interpret "random seeds" as compelling an implementation which selects seeds based on a process of chance. The proposed remedy would make the text more difficult to parse and understand.

### Comment 2

**Comment Type:** T  
**Comment Status:** A  
**Comment:** Change register addresses according to HB_14

**Suggested Remedy:** Change register addresses (currently 1.309) to 1.1502 - 12 instances. Also in Table 83-2, p.215

**Response:** ACCEPT IN PRINCIPLE.

Change register addresses (currently 1.309) to 1.1501 - 12 instances. Also in Table 83-2, p.215

note HB_14 is comment 716

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**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
Comment Type: T  Comment Status: A
Change register addresses according to HB_15

Suggested Remedy
Change register addresses (currently 1.310-319) to 1.1600-1609. Also in Table 83-4, p.216

Response:  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
Register 1.307 is the "Test pattern ability" register. Also, the "Square wave test ability" bit is 1.307.12

Suggested Remedy
Change "is accessible through the square wave testing pattern ability register 1.307.15" to "is accessible through the Test pattern ability register, bit 1.307.12" or to "is accessible through the Square wave test ability bit 1.307.12"

Response:  Response Status: C
ACCEPT IN PRINCIPLE.

Change
"is accessible through the square wave testing pattern ability register 1.307.15"
to:
"is accessible through the Square wave test ability bit 1.307.12"

Per comment 743, register 1.307 changes to 1.1500.

Comment Type: T  Comment Status: A
This says "are accessible through square wave testing control register" but the register name is "square wave testing control and status" register in the body of 45.2.1.96 and title of Table 45-65b

Suggested Remedy
Change to "are accessible through the square wave testing control and status register"

Response:  Response Status: C
ACCEPT.

Note - reconcile with any register name/number change from Hugh
<table>
<thead>
<tr>
<th>Type</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Suggested Remedy</th>
<th>Response Status</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>E</td>
<td>A</td>
<td>&quot;The RX test pattern error counters Ln0_PRBS_RX_test_err_counter through Ln9_PRBS_RX_test_error_counter in count, per lane, errors in detecting ...&quot; has a spurious &quot;in&quot; after &quot;Ln9_PRBS_RX_test_error_counter&quot;</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>T</td>
<td>A</td>
<td>Change register addresses according to HB_16</td>
<td>Accept.</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>E</td>
<td>A</td>
<td>Space missing in &quot;output lanes. If bit&quot;</td>
<td>Accept.</td>
<td></td>
</tr>
</tbody>
</table>

Note that HB_16 is comment #718.

Current register addresses to be changed are 1.320-329 (not 219).
There is a numbering mismatch.
The value of 4.3 in the second lane of the 4 Lane PMA Output does not correspond with
the related 10 Lane PMA Input value.

SuggestedRemedy
Change the value from 4.3 to 4.5.

Response

ACCEPT IN PRINCIPLE.

See suggested remedy and response to comment #476

There is a numbering mismatch.
The value of 4.1 in the second lane of the 4 Lane PMA Output does not correspond with
the related 10 Lane PMA Input value.

SuggestedRemedy
Change the value from 4.1 to 4.3.

Response

ACCEPT IN PRINCIPLE.

See suggested remedy and response to comment #476

There is a numbering mismatch.
The value of 4.2 in the second lane of the 4 Lane PMA Output does not correspond with
the related 10 Lane PMA Input value.

SuggestedRemedy
Change the value from 4.2 to 4.4.

Response

ACCEPT IN PRINCIPLE.

See suggested remedy and response to comment #476
This statement - "If there is a physically instantiated XLAUI/CAUI as well, then this requirement is contingent on no more than 29 ns of Skew, and no more than 200 ps of Skew variation between lanes at SP1 (i.e., the PMA between SP1 and SP2 if both are at physically instantiated interfaces shall add no more than 14ns of Skew or 200 ps of Skew Variation in the transmit direction)." has no corresponding PIC.

Suggested Remedy
Add appropriate PIC

Response
ACCEPT IN PRINCIPLE.

Reword consistent with clause 86, i.e., have a statement of fact (not a requirement) that the signal given to the sublayer has skew and skew variation within limits, avoiding the need for additional PICs.

In 83.5.3.3, change:
"If there is a physically instantiated XLAUI/CAUI as well, then this requirement is contingent on no more than 29 ns of Skew, and no more than 200 ps of Skew Variation between lanes at SP1 (i.e., the PMA between SP1 and SP2 if both are at physically instantiated interfaces shall add no more than 14ns of Skew or 200 ps of Skew Variation in the transmit direction)."

to
"If there is a physically instantiated XLAUI/CAUI as well, then the skew measured at SP1 is limited to no more than 29 ns of Skew and no more than 200 ps of Skew Variation"

In 83.5.3.5, change:
"If there is a physically instantiated PMD service interface as well, this requirement is contingent on receiving no more than 145 ns of Skew, and no more than 3.6 ns of Skew Variation in the receive direction at the PMD service interface (SP5). If there is no physically instantiated PMD service interface, this requirement is contingent on receiving no more than 134 ns of Skew, and no more than 3.4 ns of Skew Variation at the MDI (SP4)."

to
"If there is a physically instantiated PMD service interface as well, the skew measured at SP5 is limited to no more than 145 ns of Skew and no more than 3.6 ns of Skew Variation. If there is no physically instantiated PMD service interface, the skew measured at SP4 is limited to no more than 134 ns of Skew, and no more than 3.4 ns of Skew Variation."

Comment 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

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
Comment Type: T  Comment Status: A
This says "Annex 86A specifies the Parallel Physical Interface (XLPPI and CPPI), the physical instantiation of the PMD service interface for 40GBASE-SR4 and 100GBASE-SR10 PMDs" but XLPPI and CPPI are optional.

Suggested Remedy:
Change "(XLPPI and CPPI), the physical instantiation of" to "(XLPPI and CPPI), an optional physical instantiation of"

Response: Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
"(where the interface to is physically instantiated)" doesn't make sense

Suggested Remedy:
Change to "(where the interface is physically instantiated)"

Response: Response Status: C
ACCEPT IN PRINCIPLE.

Overtaken by events - awkward text removed by comment #290
Comment Type: T
Comment Status: A
The column for "PMA/PMD register name" in Table 83-2 does not contain the register names.
Suggested Remedy: Replace with "PMA/PMD control 1" for register 1.0, "PRBS pattern testing control" for 1.309 and "Square wave testing control" for 1.308.
Response: ACCEPT.

Comment Type: E
Comment Status: A
Table 83-2. In the column for "MDIO status variable" TX etc. and RX etc. don't match the names in clause 45 and these are primarily control variables.
Suggested Remedy: Change TX to Tx (2 places), change RX to Rx (2 places) and change the column heading to "MDIO variable" (or MDIO control variable)
Response: ACCEPT IN PRINCIPLE.

Comment Type: E
Comment Status: A
Tables 83-2 and 83-3 are explained here but Table 83-4 is not
Suggested Remedy: Add "Mapping of MDIO counter to PMA counters is shown in Table 83-4."
Response: ACCEPT.
The title of subclause 83.7 should contain the clause 83 title.

**Suggested Remedy**

Change "sublayer, 40GBASE-R and 100GBASE-R" to "sublayer, type 40GBASE-R, 100GBASE-R". Also, at line 6 change "PMA Interface sublayer, 40GBASE-R and 100GBASE-R," to "Physical Medium Attachment (PMA) sublayer, type 40GBASER, 100GBASE-R"

**Response**

ACCEPT IN PRINCIPLE.

Comment #164 changes the title of clause 83 from "40GBASE-R, 100GBASE-R" to "40GBASE-R and 100GBASE-R", so the title on line 2 now matches.

On line 6 change "PMA Interface sublayer, 40GBASE-R and 100GBASE-R," to "Physical Medium Attachment (PMA) sublayer, type 40GBASER and 100GBASE-R"

---

The skew requirements are in 83.5.3 not 83.5.2

**Suggested Remedy**

Change the subclause reference to 83.5.3.x.

**Response**

ACCEPT IN PRINCIPLE.

Remove the PICS line SKEW, as this would just be the aggregate of PICS S1 through S9 in 83.7.4.

The entries USP1SP6, DSP1SP6, SP2SP5 are all included in the PICS table for the purpose of recording adjacent physically instantiated interfaces are present rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a "shall" statement in the text for these items. However, the subclause reference for these items is incorrect. Change the subclause reference for USP1SP6, DSP1SP6, SP2SP5 to 83.5.3.

---

The references in the subclause column should be links, but they aren't for *PMA40, *PMA100, LANES_UPSTREAM, LANES_DOWNSTREAM and *DSP1SP6.

**Suggested Remedy**

Make them links

**Response**

ACCEPT.
### Comment 1

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

For subclauses 83.1.1 and 83.1.4 - Items PMA40, PMA100, LANES_UPSTREAM, LANES_DOWNSTREAM do not have corresponding SHALL statements in referenced subclauses.

**Suggested Remedy:**  
add corresponding pic statement

**Response Status:** C  
**Response:** REJECT.

The entries PMA40, PMA100, LANES_UPSTREAM, LANES_DOWNSTREAM are all included in the PICS table for the purpose of recording which options have been implemented rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a "shall" statement in the text for these items.

### Comment 2

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

Both *PMA40 and *PMA100 are shown as optional, but one of the two must be present for this PICS to apply. Use the format of "O.1" as explained in 21.6.2: "O.<n> optional field/function, but at least one of the group of options labeled by the same numeral <n> is required".

**Suggested Remedy:**  
Show them both as O:1

**Response Status:** C  
**Response:** ACCEPT.

### Comment 3

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

Six places in the Value/Comment column use "<=" rather than the less than or equal to symbol

**Suggested Remedy:**  
Replace "<=" with the less than or equal to symbol (Ctrl-q #)

**Response Status:** C  
**Response:** ACCEPT.
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>TR</th>
<th>Comment Type</th>
<th>TR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC statements for JTP1 and JTP2 have no corresponding SHALL statements</td>
<td>Suggested Remedy</td>
<td>add appropriate SHALL statements to 83.5.10</td>
<td></td>
</tr>
<tr>
<td>The entries JTP1 and JTP2 are all included in the PICS table for the purpose of recording which options have been implemented rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a &quot;shall&quot; statement in the text for these items.</td>
<td>Response</td>
<td>REJECT.</td>
<td></td>
</tr>
<tr>
<td>We should not call part of the receiver a &quot;transmitter&quot; or part of the transmitter a &quot;receiver&quot;, if we can avoid it. According to 83.3, a PMA has TX and RX directions, each of which has an input and an output. nAUI is intended to connect PMAs, e.g., one in the host and one in a module. Therefore nAUI must connect a (host) TX (transmitter) output to a (module) transmitter input, and a (module) RX (receiver) output to a (host) receiver input. 83B used to use, and 86A uses, the terms host output, module input, module output, host input, according to resolution of D2.0 comment 470: &quot;ACCEPT IN PRINCIPLE. Need to avoid using &quot;receive&quot; or &quot;receiver&quot; on the transmit path (down the stack, PMA to MDI) or &quot;transmit&quot; or &quot;transmitter&quot; on the receive path (up the stack, MDI to PMA). Change names using the terms host, module, input and output. For example, in the caption of Table 86-6 change &quot;PPI electrical transmit signal output specifications at TP1a&quot; to &quot;nPPI host electrical output specifications at TP1a&quot;). This is compatible with 83 and the rest of 802.3ba except 83A and now 83B. But Figure 83A-2 shows two &quot;Transmitter&quot;s and two &quot;Receiver&quot;s, one for each direction. This isn't compatible terminology. Note this problem does not arise in clauses 84 or 85. Also compare Clause 47 (XAU) which uses &quot;driver&quot; and &quot;receiver&quot; for the ports of the ICs.</td>
<td>Suggested Remedy</td>
<td>Change &quot;Transmitter&quot; to &quot;driver&quot;, &quot;Transmit Compliance Point&quot; to &quot;driver compliance point&quot;, &quot;transmit eye mask&quot; and &quot;Transmitter Eye Mask&quot; to &quot;driver eye mask&quot; or just &quot;eye mask&quot;, &quot;transmit signal&quot; to &quot;signal&quot; or &quot;output signal&quot;, &quot;transmit jitter&quot; to &quot;driver jitter&quot; throughout 83A. In Table 83A-2, delete &quot;Receiver&quot; before &quot;eye mask&quot;, five times including table note. Consider changing &quot;XL/CAUI component receiver&quot; to &quot;XL/CAUI component receiver&quot; where appropriate. Change &quot;Figure 83A-2--Definition of transmit and receive test points&quot; to &quot;Figure 83A-2--Definition of test points&quot;.</td>
<td></td>
</tr>
<tr>
<td>Statement is not clear and intent is covered in d) &quot;shared technology with other 40 Gb/s or 100 Gb/s interfaces&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I didn't notice any "functional requirements" in Annex 83B: coding, skew and such are in 83. 83B is electrical.

Suggested Remedy
Delete "functional and".

Response Response Status C
ACCEPT.

See suggested remedy. Annex 83A/B are predominantly electrical specs

This says "The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board including one connector, see 83A.4.1." But 83A.4.1 simply defines the characteristic impedance to be 100 ohms.

Suggested Remedy
Change the reference to "83A.4"

Response Response Status C
ACCEPT.

See suggested Remedy

Figure 83A-2 has the caption "Definition of transmit and receive test points", yet the figure presents compliance points. Is the "test point" and "compliance point" one and the same? If so, why use two different terms?

Suggested Remedy
Per comment, clarify whether "test point" and "compliance point" is one and the same or not.

Response Response Status C
ACCEPT IN PRINCIPLE.

Rename figure to "Figure 83A-2 - Definition of transmit and receive compliance points"

Font too small in Figures (6.5 or 7 pt, should not be smaller than 8 pt). This may be because the charts in 83A have been shrunk.

Suggested Remedy
Don't shrink the figures. Check all clauses for font too small.

Response Response Status W
ACCEPT IN PRINCIPLE.

Resize/change font for figures 83A-3, 83A-4, 83A-14
<table>
<thead>
<tr>
<th>Type</th>
<th>Comment</th>
<th>Response Status</th>
<th>Response</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Suggested Remedy</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>The title of Figure 83A-3 &quot;Insertion loss between Transmit Compliance Point and Transmitter&quot; would be better with the order reversed. (direction of signal flow)</td>
<td>ACCEPT.</td>
<td></td>
<td>E</td>
<td></td>
<td>Change to &quot;Insertion loss between Transmitter and Transmit Compliance Point&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>The text &quot;between the Receiver and the Receive Compliance Point&quot; would be better with the order reversed. (direction of signal flow)</td>
<td>ACCEPT.</td>
<td></td>
<td>E</td>
<td></td>
<td>Change to &quot;between the Receive Compliance Point and the Receiver&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>This is the only instance of the spelling &quot;signalling&quot; in the draft (79 instances of &quot;signaling&quot;)</td>
<td>ACCEPT.</td>
<td></td>
<td>E</td>
<td></td>
<td>Change to &quot;signaling&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comment Type: ER

Comment Status: A

Suggested Remedy:
Too many gratuitous capitals. This is an ER comment because we are unlikely to catch them all in one cycle.

Response:
Scrub the draft, all clauses and annexes.

Suggested Remedy:
“Maximum Total Jitter” to “Maximum total jitter”
“Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Table 83A-1:
- “Maximum Differential Output Voltage, peak-to-peak” to “Maximum differential output voltage, peak-to-peak”
- “Minimum De-emphasis” to “Minimum de-emphasis”
- “Maximum Termination Mismatch at 1MHz” to “Maximum termination mismatch at 1MHz”
- “Maximum Output AC Common Mode Voltage, RMS” to “Maximum output AC common mode voltage, RMS”
- “Minimum Output Rise and Fall time (20% to 80%)” to “Minimum output rise and fall time (20% to 80%)”
- “Maximum Total Jitter” to “Maximum total jitter”
- “Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Table 83A-2:
- “Maximum Input AC Common Mode Voltage, RMS” to “Maximum input AC common mode voltage, RMS”
- “Minimum Input Rise and Fall Time (20% to 80%)” to “Minimum input rise and fall time (20% to 80%)”
- “Minimum deterministic input jitter tolerance”

Table 83A-3:
- “Minimum Module differential input return loss” to “Minimum module differential input return loss”

Table 83B-3:
- “Minimum De-emphasis” to “Minimum de-emphasis”
- “Maximum De-emphasis” to “Maximum de-emphasis”
- “Maximum Termination Mismatch at 1 MHz” to “Maximum termination mismatch at 1 MHz”
- “Maximum Total Jitter” to “Maximum total jitter”
- “Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Table 83B-5:
- “Minimum De-emphasis” to “Minimum de-emphasis”
- “Maximum De-emphasis” to “Maximum de-emphasis”
- “Maximum Termination Mismatch at 1 MHz” to “Maximum termination mismatch at 1 MHz”
- “Maximum Total Jitter” to “Maximum total jitter”
- “Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Comment Type: E

Comment Status: A

Suggested Remedy:
In table 83A-1, note a, “Rise/Fall time measurement methodology defined in 83A.3.3.2”, is redundant with the entry, “83A.3.3.2”, in the Subclause Reference column and can be deleted.

Response:
See suggested remedy

Table 83A-1:
- “Maximum Input AC Common Mode Voltage, RMS” to “Maximum input AC common mode voltage, RMS”
- “Minimum Input Rise and Fall Time (20% to 80%)” to “Minimum input rise and fall time (20% to 80%)”
- “Minimum deterministic input jitter tolerance”

Table 83A-2:
- “Maximum Input AC Common Mode Voltage, RMS” to “Maximum input AC common mode voltage, RMS”
- “Minimum Input Rise and Fall Time (20% to 80%)” to “Minimum input rise and fall time (20% to 80%)”
- “Minimum deterministic input jitter tolerance”

Table 83B-2:
- “Minimum Module differential input return loss” to “Minimum module differential input return loss”

Table 83B-3:
- “Minimum De-emphasis” to “Minimum de-emphasis”
- “Maximum De-emphasis” to “Maximum de-emphasis”
- “Maximum Termination Mismatch at 1 MHz” to “Maximum termination mismatch at 1 MHz”
- “Maximum Total Jitter” to “Maximum total jitter”
- “Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Table 83B-5:
- “Minimum De-emphasis” to “Minimum de-emphasis”
- “Maximum De-emphasis” to “Maximum de-emphasis”
- “Maximum Termination Mismatch at 1 MHz” to “Maximum termination mismatch at 1 MHz”
- “Maximum Total Jitter” to “Maximum total jitter”
- “Maximum Deterministic Jitter” to “Maximum deterministic jitter”

Note: This is in section 83A.3.1 page 378, line 47

Comma should not be necessary
"1MHz" should be "1 MHz"

Suggested Remedy:
- Change "1MHz" to "1 MHz"

Response Status: ACCEPT.

See suggested remedy

Comment 6 against D 2.3 was agreed to be re-submitted by the Editor against D 3.0. The directed proposed response was "accept" which would delete note a. A similar situation exists with note d which is not needed now that subclause 83A.3.3.5 is referenced. Also for other tables.

Suggested Remedy:
- Delete note d from Table 83A-1, notes a and c from Table 83A-2, note c from Table 83B-3 (including "d"s from other lines), note b from Table 83B-5 (including "c"s from other lines)

Response Status: ACCEPT IN PRINCIPLE.

It would appear notes are redundant due to reference to sections. Therefore delete notes

This applies to:
- Table 83A-1 notes a, b, c, d
- Table 83A-2 notes a, b, c
- Table 83B-3 notes a, b, c
- Table 83B-5 notes a, b

Also see comment 317
De-emphasis means a relative attenuation of the higher frequencies, as in "Dolby noise reduction is a form of dynamic preemphasis employed during recording, plus a form of dynamic de-emphasis used playback". Or according to the ANSI standard "ATIS Telecom Glossary 2007", de-emphasis is "In FM transmission, the process of restoring (after detection) the amplitude-vs.-frequency characteristics of the signal." So de-emphasis is the opposite of what's happening here, which is "preemphasis".

A system process designed to increase, within a band of frequencies, the magnitude of some (usually higher) frequencies with respect to the magnitude of other (usually lower) frequencies, in order to improve the overall signal-to-noise ratio by minimizing the adverse effects of such phenomena as attenuation differences, or saturation of recording media, in subsequent parts of the system. Note: Preemphasis has applications, for example, in audio recording and FM transmission.".

An implementation might achieve emphasis by a subtractive method, and the implementer might call his method what he wants. However, that's implementation. Viewed from the outside, pre-emphasis is a relative boosting of the higher frequencies and de-emphasis is its opposite.

Suggested Remedy

We don't need to argue about de- versus pre-: just change "de-emphasis" to "emphasis" throughout.

Response

REJECT.

De-emphasis is an industry standard term where implementations are de-emphasizing low frequency content.

Straw poll:

Use De-emphasis: 6

Use Emphasis: 3

No consensus for change.

Suggested Remedy

At line 10, replace "Amplitude measurements are taken using an average of at least 16 waveforms and taken at the center of the respective UI using a square wave test pattern as defined in 83.5.10." with either:

"Differential peak-to-peak amplitude is defined by an average over the central 20% of the first UI of each half of the square wave test pattern defined in 83.5.10. VMA is defined in 86A.5.3.5." if the UI matters, or:

"VMA is defined in 86A.5.3.5." if the UI doesn't matter for differential peak-to-peak amplitude, as in Figure 83A-5.

Replace "Vtx-demph" with "VMA" throughout (6 occurrences in all).

If we want to give guidance on averaging, add "NOTE--It is recommended that at least 16 waveforms be averaged for an emphasis measurement."

Response

ACCEPT IN PRINCIPLE.

At line 10, replace "Amplitude measurements are taken using an average of at least 16 waveforms and taken at the center of the respective UI using a square wave test pattern as defined in 83.5.10." with:

"VMA is defined in 86A.5.3.5."

Replace Vtx-demph with VMA in table 83A-1, equation 83A-3, equation 83A-4, figure 85A-5, table 83B-3, equation 83B-7 (no need to have a different lable for Vtx-demph).
This is actually in 83A. "x is max rise/fall time in ps" is not explicit. (I don't know what it means!!)

Suggested Remedy
With one potential meaning change to "x is the rise or fall time in ps whichever is larger"

Response
ACCEPT IN PRINCIPLE.
change to "x is the rise or fall time (whichever is larger) in ps"

See comment 854

[Editor's note: This comment is against 83A.3.3.1, hence corrected clause/subclause number fields to 83A]

---

Should not put whole sentences in figures, especially if normative - even if Figure 47-3 did. Should use regular text.

Suggested Remedy
Move the sentence in square brackets from Figure 83A-5 to line 15.

Response
ACCEPT.

See suggested remedy. See comment 370

---

The text "Single-ended output voltage range shall be between the range specified in Table 83A–1 with respect to ground." is not very clear.

Suggested Remedy
Change to "The single-ended output voltage shall be within the range specified in Table 83A–1 with respect to ground."

Response
ACCEPT.

See suggested remedy

---

For frequencies from 10 MHz to 11.1 GHz, common mode output return loss ... to "Common mode output return loss ..."

Suggested Remedy
Change from, "For frequencies from 10 MHz to 11.1 GHz, common mode output return loss ..." to "Common mode output return loss ..."

Response
ACCEPT.

See suggested remedy

---

"include" should be "includes"

Suggested Remedy
Change "include" to "includes". Make the same change on Page 384 line 40 and Page 385 line 30

Response
ACCEPT.

See suggested remedy

---
Cl 83A SC 83A.3.3.5 P 382 L 48 # 562
Anslow, Peter Nortel Networks

Comment Type E Comment Status A
There is only one template for this.

SuggestedRemedy
Change "templates" to "template"

Response Response Status C
ACCEPT.

Cl 83A SC 83A.3.4 P 383 L 35 # 583
Anslow, Peter Nortel Networks

Comment Type T Comment Status A
A receiver does not have an "Input AC Common Mode Voltage" or an "Input Rise and Fall Time". These are characteristics of an applied signal.

SuggestedRemedy
Change to "Input AC Common Mode Voltage tolerance" and "Input Rise and Fall Time tolerance".

Response Response Status C
ACCEPT IN PRINCIPLE.

Cl 83A SC 83A.3.4 P 383 L 36 # 849
Dudek, Michael QLogic Corporation

Comment Type T Comment Status A
This is actually 83A Ac common mode voltage and input rise and fall times are not characteristics of the receiver they are properties of the signal that the receiver must tolerate.

SuggestedRemedy
Add "tolerance" to the parameters AC common mode voltage and input rise and fall time"

Response Response Status C
ACCEPT IN PRINCIPLE.

Cl 83A SC 83A.3.4.2 P 384 L 11 # 520
Dawe, Piers J G Independant

Comment Type T Comment Status A
Draft says "the far-end receiver eye mask" yet no other mention of far-end eye.

SuggestedRemedy
Change to "the eye mask".

Response Response Status C
ACCEPT.

Cl 83A SC 83A.3.4.3 P 384 L 37 # 372
Ganga, Ilango Intel Corporation

Comment Type E Comment Status A
[Editor's note: Comment 9 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]
The phrase, "For frequencies from 10 MHz to 11.1 GHz, ", is redundant with the content of eq. 83a-7 and should be deleted.

SuggestedRemedy
Change from, "For frequencies from 10 MHz to 11.1 GHz, differential input return loss ..." to "Differential input return loss ..."

Response Response Status C
ACCEPT.

Cl 83A SC 83A.3.4.4 P 385 L 24 # 799
Ghiasi, Ali Broadcom

Comment Type T Comment Status A
Log scale hide the critical high freq attributes

SuggestedRemedy
Change to linear scale

Response Response Status C
ACCEPT IN PRINCIPLE.

Change plots 83A-6, 83A-7, 83A-10, 83A-11, 83A-14, 83B-8, 83B-9 to linear scale
Circular references, pointless equation and graph.

Suggested Remedy

Change "For frequencies from 10 MHz to 11.1 GHz, differential to common mode input return loss shall meet the requirements defined in Table 83A-2. Differential to common mode input return loss is given in Equation (83A-8) and is illustrated in Figure 83A-11." to "For frequencies from 10 MHz to 11.1 GHz, the differential to common mode input return loss shall comply with the limit shown in Table 83A-2." In Table 83A-2, change "Differential input return loss" to "Differential to common mode input return loss (min)" and change "see Equation (83A-8)" to "15". Delete Equation 83A-8. Either delete "Differential to common mode input return loss is given in Equation (83A-8) and is illustrated in Figure 83A-11." and the figure, or change to "The limit for differential to common mode input return loss is illustrated in Figure 83A-10." and show the -SCD11 line on figure 83A-10.

For consistency with other return loss specifications, it is best to represent the differential to common mode input return loss as an equation with a graph, and reference that equation in Table 83A-2 (even if it is a fixed value).

Suggested Remedy

Delete the last line of the paragraph, "f is the frequency in GHz." is redundant with the first line of the paragraph and can be deleted.

Suggested Remedy

Delete "For frequencies from 10 MHz to 11.1 GHz," from the first line of the paragraph

Add frequency bound to the equation:

0.01 = f = 11.1
The low frequency jitter tolerance is the same for a receive side input as for a transmit side input, so there is no margin for the small amount of extra LF jitter added by CDRs in the link (e.g. in a module). We also have to check that the nAUI LF jitter specs are compatible with the PMDs, both 10G-lane and 25G-lane. Here is one proposed remedy; there may be alternatives.

**Suggested Remedy**
Change the corner frequency for a nAUI interface on the transmit side (towards the line) from 4 MHz to 2 MHz. Also in 83B.

**Response**
W
REJECT.

PMD jitter requirements are verified at the PMD level. Jitter tolerance for PMDs are also defined in PMD sections. nAUI interface defines associated tolerance requirements.

---

This is actually 83A . Poor English

**Suggested Remedy**
Change "an Xlaui" to "a Xlaui"

**Response**
C
ACCEPT.

See suggested remedy

[Editor's note: This comment is against 83A.4, hence corrected clause/subclause number fields to 83A]
IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments
Draft 3.0 Comments

Cl 83A SC 83A.5.1 P 389 L 12 # 374
Ganga, Ilango Intel Corporation

Comment Type T Comment Status A
[Editor's note: Comment 12 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]
The text states, "The data pattern for jitter measurements shall be test pattern PRBS31." Should not either pattern 3, pattern 5 (see table 86-11) or valid traffic be acceptable? See also 83a.5.2 line 32 and 83b.2.3 page 404 line 7.

Suggested Remedy
Change from, "The data pattern for jitter measurements shall be test pattern PRBS31." to "Pattern 3, Pattern 5, see Table 86-11, or valid XLAUI/CAUI signal shall be used for jitter measurements." Repeat/apply in 83a.5.2 line 32 and 83b.2.3 page 404 line 7.

Response Response Status C
ACCEPT IN PRINCIPLE.
Resolve comment to ensure consistancy between 83A and 83B 83A.5.1
Change from, "The data pattern for jitter measurements shall be test pattern PRBS31." to "The data pattern for jitter measurements shall be the PRBS31 test pattern in 83.5.10 or scrambled idle in 82.2.10."
Change from, "A PRBS31 pattern shall be used for evaluating XLAUI/CAUI jitter tolerance." to "The PRBS31 test pattern in 83.5.10 or scrambled idle in 82.2.10 shall be used for evaluating XLAUI/CAUI jitter tolerance."
Add PICS for Jitter Tolerance Pattern

Change 83B.2.3 to the following:
The recommended pattern for evaluating XLAUI/CAUI jitter tolerance is scrambled idle in 82.2.10 or PRBS31 test pattern in 83.5.10.

Cl 83A SC 83A.5.1 P 389 L 13 # 325
Dawe, Piers J G Independant

Comment Type T Comment Status A
"The data pattern": if it's a test pattern it's not data. (Ethernet frames are data, idle is not.)

Suggested Remedy
Delete "data".

Response Response Status C
ACCEPT IN PRINCIPLE.
change "The data pattern" to "The test pattern"

Cl 83A SC 83A.5.1 P 389 L 15 # 785
Misek, Brian Avago Technologies

Comment Type TR Comment Status A
Not clear that "off" state can have de-emphasis.

Suggested Remedy
"is defined any setting that gives optimal performance"

Response Response Status C
ACCEPT IN PRINCIPLE.
"is defined any setting that gives optimal performance"

Cl 83A SC 83A.5.1 P 389 L 16 # 373
Ganga, Ilango Intel Corporation

Comment Type E Comment Status A
[Editor's note: Comment 13 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]
The text, "All XLAUI/CAUI channels shall be active during transmit jitter testing to ensure any channel-channel crosstalk is included in the jitter evaluation." uses the term 'channel' where the term 'lane' is more appropriate. For example, in 802.3ba context, the four lanes of XLAUI form one channel. See also 83a.5.2 line 31 and 83b.2.3 page 404 line 6.

Suggested Remedy
Change from, "All XLAUI/CAUI channels shall be active during transmit jitter testing to ensure any channel-channel crosstalk is included in the jitter evaluation." to "All XLAUI/CAUI lanes shall be active during transmit jitter testing to ensure any lane-lane crosstalk is included in the jitter evaluation." Repeat/apply in 83a.5.2 line 31 and 83b.2.3 page 404 line 6.

Response Response Status C
ACCEPT.

see comment 881
Comment Type: ER
Comment Status: A
The last sentence of the paragraph, "All XLAUI/CAUI channels shall be active during transmit jitter testing to ensure any channel-channel crosstalk is included in the jitter evaluation." uses the word 'channel' where the word 'lane' would seem a better choice.

Suggested Remedy
Change "All XLAUI/CAUI channels shall be active during transmit jitter testing to ensure any channel-channel crosstalk is included in the jitter evaluation." to "All XLAUI/CAUI lanes shall be active during transmit jitter testing to ensure any lane-lane crosstalk is included in the jitter evaluation."

Response: Response Status: W
ACCEPT.
See suggested remedy

Comment Type: T
Comment Status: A
As we are going to allow scrambled idles as well as PRBS31,

Suggested Remedy
Remove "PRBS31" from Figure 83A-15 and Figure 83B-10. Update PICS 83A.7.6 EM1.

Response: Response Status: C
ACCEPT.
Remove "PRBS31" from Figure 83A-15, 83B-10
Update PICS 83A.7.6 EM1 value to read PRBS31 or scrambled idle

Comment Type: ER
Comment Status: A
If by "peak-to-peak deterministic jitter" you mean dual-Dirac Deterministic Jitter, it definitely isn't peak-to-peak, it's related to intercept points that have nothing to do with peaks. And if not, what do you mean?

Suggested Remedy
Either change "peak-to-peak deterministic jitter" to "dual-Dirac Deterministic Jitter" (with capitals) twice here, three times in 83B.5.5, or, better, use a more meaningful jitter metric.

Response: Response Status: W
ACCEPT IN PRINCIPLE.
Add statement after the first sentence: "Applied jitter is measured using the methodology described in Annex 48B.3."

Peak-to-peak deterministic jitter is used in ap (CL72), 47, 85.

Comment Type: T
Comment Status: A
Comment: The XLAUI/CAUI jitter tolerance setup does not employ de-emphasis and includes significant PCB loss. This allows the receiver to take advantage of its equalization capabilities. An actual compliant channel can have very little loss. An actual compliant transmitter can have up to 7dB of de-emphasis. This will result in over equalization of the channel and there will be no residual equalizable jitter at the receiver input. Therefore the jitter tolerance setup as specified is not stressful enough and a receiver that passes the test will fail in an actual application.

This has been verified by simulating applications that use a short channel.

Suggested Remedy
Change: "The low pass filter stress is added until the 0.25 UI peak-to-peak deterministic jitter is achieved."
To: "The low pass filter stress is added until 0.37 UI peak-to-peak deterministic jitter is achieved."

Response: Response Status: C
ACCEPT IN PRINCIPLE.
Change: "The low pass filter stress is added until the 0.25 UI peak-to-peak deterministic jitter is achieved."
To: "The low pass filter stress is added until 0.34 UI peak-to-peak deterministic jitter is achieved."
Comment Type: ER  Comment Status: A

There should not be any inferences that test setups and block diagrams are compulsory.

Suggested Remedy:

Change "Figure 83A--15 depicts the XLAUI/CAUI Jitter Tolerance test setup." to "Figure 83A--15 depicts a XLAUI/CAUI Jitter Tolerance test setup."

Response

Accept in principle. Change (line 21 pg 389): The XLAUI/CAUI jitter tolerance test setup shall meet the minimum receiver eye mask defined in Table 83A-2.

Comment Status: A

Response Status: W

Petrilla, John Avago Technologies

Comment Type: E  Comment Status: A

[Editor's note: Comment 3 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]

Please spell out +.

Suggested Remedy:

Change, "... jitter of the filter stress + limiter and random jitter ..." to "... jitter of the filter stress plus limiter and random jitter ..."

Response

Accept.

Comment Status: A

Response Status: C

Ganga, Ilango Intel Corporation

Comment Type: T  Comment Status: A

There is nothing like "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Suggested Remedy:

There is nothing like "IEEE Std 802.3-2007" - this must be changed to "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Response

Accept in principle.

Comment Status: A

Response Status: C

Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A

IEEE 802.3 Std. 802.3ba-20xx Annex83A should read "IEEE 802.3 Std. 802.3ba, Annex83A" - scrub the draft to make this designation consistent across various clauses

Suggested Remedy:

There is nothing like "IEEE Std 802.3-2007" - this must be changed to "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Response

Accept in principle.

Comment Status: A

Response Status: C

Ghiasi, Ali Broadcom

Comment Type: T  Comment Status: A

There is nothing like "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Suggested Remedy:

There is nothing like "IEEE Std 802.3-2007" - this must be changed to "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Response

Accept in principle.

Comment Status: A

Response Status: C

Hajduczenia, Marek ZTE Corp.

Comment Type: T  Comment Status: A

IEEE 802.3 Std. 802.3ba-20xx Annex83A should read "IEEE 802.3 Std. 802.3ba, Annex83A" - scrub the draft to make this designation consistent across various clauses

Suggested Remedy:

There is nothing like "IEEE Std 802.3-2007" - this must be changed to "IEEE Std 802.3-2008" - scrub the draft to make this designation consistent across various clauses

Response

Accept in principle.

Comment Status: A

Response Status: C

Hajduczenia, Marek ZTE Corp.
Draft 3.0 Comments

IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

Sponsor ballot

Cl 83A SC 83A.7.3 P 392 L 4 # 842

Turner, Edward J Gnodal Limited

Comment Type E Comment Status A

Table line thickness and style of PICS table is not same as in other clauses.

SuggestedRemedy

Use thicker lines for the table border and around the title cells and thin lines between cells, as per tables in the other clauses. Also apply to other PICS tables in 83A.7

Response Response Status C

ACCEPT.

[Editor's note: This comment is against 83A.7.3, hence corrected clause/subclause number fields to 83A]

Cl 83A SC 83A.7.3 P 392 L 5 # 854

Anslow, Peter Nortel Networks

Comment Type T Comment Status A

(1) Item RATE has inconsistent Feature and Value/Comment description. What has the fact that "Leverages 64B/66B coding" got to do with the data rate? (2) Why there is "N/A" in Support column for items RATE and IO if they are mandatory? How can they be inapplicable?

SuggestedRemedy

Per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "Leverages 64B/66B coding" with

"10.3125Gb/s (nominal)"

Remove N/A from support

Remove "N/A" from IO under support

Cl 83A SC 83A.7.4 P 392 L 36 # 695

Anslow, Peter Nortel Networks

Comment Type T Comment Status R

Item TC6 "Maximum Termination Mismatch" references subclause 83A.3.3.3 which is "Differential output return loss"

SuggestedRemedy

Change to "83A.3.3"

Response Response Status C

REJECT.

83.3.3.3 contains shall statement for mismatch.
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<th>SC 83A.7.4</th>
<th>P 392</th>
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<td>No supporting SHALL statements for any PICS in 83A.7.3</td>
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<td>Change &quot;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&quot; to &quot;For 40 Gb/s applications, the data stream shall be presented in four lanes as described in Clause 83. For 100 Gb/s applications, the data stream shall be presented in ten lanes as described in Clause 83&quot;</td>
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<td>&quot;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.&quot; to &quot;Data is 64B/66B coded. The nominal signalling rate for each lane in both 40 Gb/s and 100 Gb/s applications shall be 10.3125 Gb/s.&quot;</td>
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<td><strong>IO:</strong></td>
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<td>Items TC8, TC9, RC3, RC4 contain &quot;S-parameters&quot; rather than return loss.</td>
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<td>83B</td>
<td>83B.1</td>
<td>396</td>
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We should not call part of the receiver a "transmitter" or part of the transmitter a "receiver", if we can avoid it. Reason per another comment. This proposed remedy, for 83B, follows 86A for connector-related items and 47 for IC-related items. In addition, the specs in 83B don't relate to the XLAUI/CAUI component but to the host or module input or output.

Suggested Remedy

In Figure 83B-3, change "Transmitter" to "Driver", twice, and once each in Figure 83B-5 and 83B-7. In 83B.2.1, change "Transmit de-emphasis" to "Module output emphasis" and "transmitter jitter" to "module output jitter".

In Table 83B-3, delete "Transmitter" before "eye mask", five times including table note, and four more times in the PICS 83B.4.3. In Table 83B-5, delete "Receiver" before "eye mask", five times including table note, and four more times in the PICS 83B.4.4. Change "83B.2.3 Receiver Tolerance" to "83B.2.3 Host input signal tolerance".

In Figure 83B-10, change "XLAUI / CAUI receiver" to "XLAUI / CAUI host input". If it isn't deleted by another comment, change 83B.4.4 PICS HC12 from "Receiver AC coupling" to "Host input AC coupling".

Response

ACCEPT IN PRINCIPLE.

Label Figures 83B-5 and 83B-7 with input and output points associated with specification parameters in Tables.

Align naming of "Transmit de-emphasis" and "transmitter jitter" in 83B.2.1 with these names.

Align naming of eye mask parameters in Table 83B-3 with these names.

Align naming of eye mask parameters in Table 83B-5 with these names.

Change the title of "83B.2.3 Receiver Tolerance" in line with these names.

Change the labelling of the rightmost box in figure 83B-10 in line with these names.

If it isn't deleted by another comment, change the naming of 83B.4.4 PICS HC12 in line with these names.

This is actually 83B. The connector loss is unnecessarily restrictive and tighter than CR4/10 and nppi. The loss budget for 83A is 12.38 dB and there isn't a good reason why the 83B loss budget should be this much smaller. This budget alone would allow a connector loss of 2.38 dB however that would be a horrible connector and probably worse than we should consider using.

Suggested Remedy

Change the max connector loss to 1.74 dB (same as assumed worst case in 85A.4). If this is accepted also change the connector loss from "up to 0.5dB" to "up to 1.74dB" in Figure 83B-5. I am not suggesting a change to figure 83B-7 because the connector there is on the MCB and a better quality connector should be used for this piece of test equipment.

Response

ACCEPT IN PRINCIPLE.

Modify the following sentence in 83A.4:

"This section describes recommended characteristics which are used to describe an XLAUI/CAUI channel."

to:

"This section describes recommended characteristics which are used to characterize an XLAUI/CAUI channel as shown in Figure 83A-2."

Additional detail required on 83A loss budget.

Commenter is encouraged to suggest additional information on loss budgeting in 83B in the next cycle.

[Editor's note: This comment is against 83B.1, hence corrected clause/subclause number fields to 83B]
If 85A.4 and 86A now support 0.87 dB connector loss, 83B should at least match it (83B should not need a better connector than 86A or 85 does). But no need to deal in 1/100ths of dB (0.2%).

**Suggested Remedy**

Change 0.5 to 0.9 here and in Figure 83B-3. Consider reducing the host insertion loss by 0.4 dB to keep the loss budget the same.

**Response**

accept in principle.

See comment 851

---

**Comment Type** T

**Comment Status** A

Figure 83B-3 should have a caption that reads "Chip-to-module connection loss budget". This term is also used throughout the clause, even though before it was used consistently as "chip-to-module". Use one designation consistently, please.

**Suggested Remedy**

Per comment

**Response**

accept in principle.

Use chip-module throughout.

---

**Comment Type** T

**Comment Status** A

"5.5GHz in the following sentence should be 5.15625 GHz. "Figure 83B-5 and Figure 83B-7 include the loss associated with the HCB and MCB at 5.5 GHz."

**Suggested Remedy**

"Change sentense to: "Figure 83B-5 and Figure 83B-7 include the loss associated with the HCB and MCB at 5.15625 GHz."

**Response**

accept.

See suggested remedy
"HCB test fixture PCB insertion loss": what's a "HCB test fixture"? Something to test the HCB? Other changes to improve clarity and consistency.

SuggestedRemedy

Change "The reference HCB test fixture PCB insertion loss" to "The reference differential insertion loss of the HCB, excluding the module connector". Next line, change "test fixture" to "HCB". Similarly for MCB.

Response

ACCEPT IN PRINCIPLE.

Change "The reference HCB test fixture PCB insertion loss" to "The reference differential insertion loss of the HCB PCB". Next line, change "test fixture" to "HCB".

Change "The reference MCB test fixture PCB insertion loss" to "The reference differential insertion loss of the MCB PCB". Next line, change "test fixture" to "MCB".

The effects of differences between the insertion loss of an actual test fixture and the reference insertion should be accounted for in the measurements.

SuggestedRemedy

Change to: "The effect of the difference between the insertion loss of an actual HCB and the reference insertion loss are to be accounted in the measurements."

Response

ACCEPT IN PRINCIPLE.

The compliance board losses should be specified down to 10 MHz as in 86A.

SuggestedRemedy

For equations 83B-3 and 83B-4, change the lower limit of the frequency range from 0.25 to 0.01 GHz. Consider similar changes for all specs in 83A and 83B.

Response

ACCEPT IN PRINCIPLE.

See comment 274

The reference HCB test fixture PCB insertion loss should be a smooth curve like equation 86A-4, with between 1.26 dB (like the 86A HCB) and 2.1 dB (max loss for 83B module PCB) at 5.15625 GHz. This is a TR in case there is delay in finding what HCB loss is achievable.

SuggestedRemedy

Use a scaled version of equation 86A-4. E.g. with 1.8 dB loss at 5.15625 GHz, this would be:

0.0143 + 0.4291 * sqrt(f) + 0.1573 * f

Response

ACCEPT IN PRINCIPLE.

See comment 274

The loss of 2.1dB is maintained to match 83B module loss budget.
### Comment 1
**Comment Type:** T  
**Comment Status:** A  
**Equation 83B-2** is for the reference HCB test fixture PCB insertion loss. This should be a smooth curve as per Equation 83B-3 for the MCB and have 2.1 dB loss at 5.15625 GHz.

**Suggested Remedy:**  
Use a scaled version of equation 86A-4 with chosen loss at 5.15625 GHz. This would be:  
\[0.017 + 0.5 \times \sqrt{f} + 0.1836 \times f\]  
for 2.1 dB at 5.15625 GHz.

**Response:**  
ACCEPT.

See suggested remedy. Change figure 83B-4

### Comment 2
**Comment Type:** ER  
**Comment Status:** A  
The sentence "HCB PCB up to 2.1dB" reflects the HCB loss value extracted from the equality equation 83B-3. Therefore, the HCB loss value should be identified as a target value.

**Suggested Remedy:**  
Change title to: "HCB PCB targeted to 2.1dB"

**Response:**  
ACCEPT IN PRINCIPLE.

See comment 852

### Comment 3
**Comment Type:** ER  
**Comment Status:** A  
The title "Figure 83B-5 Chip-module compliance points with HCB" does not indicate the reference frequency.

**Suggested Remedy:**  
Change title to: "Figure 83B-5 Chip-module compliance points with HCB at 5.15625 GHz"

**Response:**  
ACCEPT IN PRINCIPLE.

Change title to: "Figure 83B-5 Chip-module HCB insertion loss budget at 5.15625 GHz"

### Comment 4
**Comment Type:** ER  
**Comment Status:** A  
The sentence "The effects of differences between the insertion loss of an actual test fixture and the reference insertion should be accounted for in the measurements." is not normative.

**Suggested Remedy:**  
Change to: "The effect of the difference between the insertion loss of an actual MCB and the reference insertion loss are to be accounted in the measurements."

**Response:**  
ACCEPT.

See suggested remedySee comment 273.
The MCB loss for nAUI B is 0.92 dB while the MCB for PPI is 0.67 dB at Nyquist. An implementation e.g. QSFP socket may be capable of either nAUI B or nPPI (and possibly CRn). It would be an advantage if the same MCB could be used with all QSFP modules.

**Suggested Remedy**
If feasible, reduce the nAUI B MCB reference loss towards the nPPI reference loss.

**Response**
REJECT.

The document is technically complete.

Suggested proposal may be advantageous, however, a more complete technical proposal including all other impacted parameters (e.g., return loss, eye mask, jitter, etc..) is required for the task force to evaluate this proposal.

**Comment Type**: TR/technical required  
**Comment Status**: R

---

The sentence "MCB PCB up to 2.1dB" reflects the MCB loss value extracted from the equality equation 83B-4. Therefore, the MCB loss value should be identified as a target value.

**Suggested Remedy**
Change title to: "MCB PCB targeted to 2.1dB"

**Response**
ACCEPT IN PRINCIPLE.

See comment 853

---

In Figure 83B-7 the HCB is labelled "Up to 1dB", but there is no maximum HCB loss value.

**Suggested Remedy**
Change to "MCB PCB = 1 dB" where the "=" is an approximately equals as used in Table 80-4. Do the same thing for Figure 83B-5 for the appropriate reference loss.

**Response**
ACCEPT IN PRINCIPLE.

See comment 853
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<td>83B</td>
<td>83B.2.1</td>
<td>400</td>
<td>14</td>
<td>E/A</td>
<td>In Table 83B-2 &quot;Minimum Module differential input return loss&quot;, Module should have a lower case m. Change to module.</td>
</tr>
<tr>
<td>83B</td>
<td>83B.2.1</td>
<td>401</td>
<td>24</td>
<td>A/C</td>
<td>Log scale hide the critical high freq attributes. Change to linear scale.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>See suggested remedy.</td>
</tr>
<tr>
<td>83B</td>
<td>83B.2.1</td>
<td>402</td>
<td>1</td>
<td>E/A</td>
<td>Please try to pull note c into page 401.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A/C</td>
<td>See suggested remedy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A/C</td>
<td>Please try to pull note c into page 401.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>Remove comment c (points to Figure 83A-8-Transmitter Eye Mask) which is covered in subclause reference.</td>
</tr>
<tr>
<td>83B</td>
<td>83B.2.2</td>
<td>403</td>
<td>24</td>
<td>A/C</td>
<td>This is actually in 83B, &quot;x is max rise/fall time in ps&quot; is not explicit. (I don't know what it means!!) Change to linear scale.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C</td>
<td>See suggested remedy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A/C</td>
<td>Please try to pull note c into page 401.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A/C</td>
<td>If this table really is for host electrical output, it's pointing at the wrong mask diagram.</td>
</tr>
</tbody>
</table>

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
[Editor's note: Comment 16 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0.]

Random jitter is not usually specified as peak-to-peak but either as RMS or for a given BER.

**Suggested Remedy**
Change, "... and 0.15 UI peak-to-peak random jitter" to "and 0.15 UI random jitter for BER = 1E-12."

**Response**
ACCEPT IN PRINCIPLE.

Add the following sentence to 83A.5:
Jitter values are specified for BER of 10^-12. (last sentence)

---

There should not be any inferences that test setups and block diagrams are compulsory.

**Suggested Remedy**
Change from "Figure 83B--10 depicts the XLAUI / CAUI jitter tolerance test setup." to "Figure 83B--10 depicts a XLAUI / CAUI jitter tolerance test setup."

**Response**
ACCEPT.

---

This is actually in 83B The figure doesn't show the correct eye mask and doesn't give the co-ordinates to be used.

**Suggested Remedy**
Replace "defined in figure 83A-9" with "illustrated in figure 83A-8 with the values for X1, X2, Y1 and Y2 given in Table 83B-3"

**Response**
ACCEPT.

---

**Suggested Remedy**
Change from "shall be conducted with a stressed input signal which is comprised of at least 0.25 UI peak-to-peak deterministic jitter" to "shall be conducted with a stressed input signal which is comprised of at least 0.25 UI peak-to-peak deterministic jitter..." to "shall be conducted with a stressed input signal which is comprised of at least 0.25 UI peak-to-peak deterministic jitter..."

**Response**
ACCEPT.

See suggested remedy
Cl 83B SC 83B.4. P407 L 4 683
Dambrosia, John Force 10 Networks Inc

Comment Type TR
Comment Status A
Missing Major capabilities / options subclause

Suggested Remedy
add major capabilities / options PICS subclause

Response Response Status W
ACCEPT IN PRINCIPLE.

Add major capabilities / options PICS subclause with:
NOL (number of lanes)
RATE (data rate)
(above two same as 83A)

IO
Feature: Meets chip-to-module XLAUI / CAUI electrical characteristics
Subclause: 83B.2
Value/comment: Supports host / module compliance points

Add the following sentence to 83B.2.2":... the module connector as depicted in Figure 83B-5 and Figure 83B-7. Chip-to-module devices shall meet the electrical characteristics defined in this section."

Cl 83B SC 83B.4.3 P407 L 36 103
Latchman, Ryan

Comment Type E
Comment Status A
"De-emphasis shall be off during jitter testing" should have a PICS statement

Suggested Remedy
Add MC14 De-emphasis off during jitter testing

Response Response Status C
ACCEPT.

See suggested remedy

Feature: De-emphasis setting during module jitter evaluation section: 83B.2.1
value: off

Cl 83B SC 83B.4.3 P407 L 37 102
Latchman, Ryan

Comment Type E
Comment Status A
"AC coupling for both TX and RX paths shall be located in the module." needs a PICS statement

Suggested Remedy
Add MC15 AC coupling for both TX and RX

Response Response Status C
ACCEPT.

See suggested remedy

Feature: AC coupling for TX and RX
section: 83B.2.1
value: present in module

Cl 83B SC 83B.4.3 P407 L 4 243
Turner, Edward J Gnodal Limited

Comment Type E
Comment Status A
Table line thickness and style of PICS table is not same as in other clauses.

Suggested Remedy
Use thicker lines for the table border and around the title cells and thin lines between cells, as per tables in the other clauses. Also apply to other PICS tables in 83B.4

Response Response Status C
ACCEPT.

See suggested remedy

[Editor's note: This comment is against 83B.4.3, hence corrected clause/subclause number fields to 83B]
Comment Type: T  Comment Status: A
Item MC1 is for module single ended output voltage range. Where is this requirement in Annex 83B?

Suggested Remedy:
Either add the requirement or remove the PICS entry

Response:
Response Status: C
ACCEPT IN PRINCIPLE.

See comment 680

---

Comment Type: TR  Comment Status: A
The SHALL statement points to Tables 83B-2 and 83B-3, but then things are called out singularly in the PICS, and in some cases things that don't have a table entry have a corresponding SHALL statement (MC1); entries in table with no corresponding PICS - module output signal, minimum module differential output return loss, various De-emphasis entries in Table 83B-3; and different names - module input reflection should be minimum module differential input return loss).

Suggested Remedy:
modify PIC to reflect SHALL statement - A module which uses XLAUI / CAUI to interface with a host shall meet the characteristics outlined in Table 83B--2 and Table 83B--3

Response:
Response Status: W
ACCEPT IN PRINCIPLE.

Remove MC1 - MC13 and replace with the following:

MC1:
Feature: XLAUI / CAUI compliant module
Subclause: 83B.2.1
Value: Meets requirements defined in 83B-2 and 83B-3

---

Comment Type: E  Comment Status: A
Single ended output voltage range is no longer in 83B.2.1 since it is an AC coupled interface

Suggested Remedy:
Remove MC1

Response:
Response Status: C
ACCEPT.

See comment 680

---

Comment Type: E  Comment Status: A
Remove HC12 since this is covered in MC15

Suggested Remedy:
Remove HC12

Response:
Response Status: C
ACCEPT.

See suggested remedy
The SHALL statement points to Tables 83B-4 and 83B-5, but then things are called out singularly in the PICS, and there are conflicts - missing items, or names changed.

**Suggested Remedy**
- modify PIC to reflect SHALL statement - A host which uses XLAUI / CAUI to interface with a module shall meet the characteristics outlined in Table 83B-4 and 83B-5

**Response**
- Remove HC1 - HC12 and replace with the following:

  **HC1:**
  Feature: XLAUI / CAUI compliant host
  Subclause: 83B.2.2
  Value: Meets requirements defined in 83B-4 and 83B-5

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

- Item HC12 is "Receiver AC coupling" "Present". Where is this requirement in Annex 83B?

**Suggested Remedy**
- Either add the requirement or remove the PICS entry

**Response**
- Remove requirement

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

- PIC HC12 has no corresponding SHALL statement

**Suggested Remedy**
- add SHALL statement

**Response**
- Remove HC12. AC coupling is located in the module.
Figures in this section are sparsely distributed. Try fitting two figures per page.

Per comment

The pagination of this text can be improved. At a minimum, the heading 83C.2 should be moved onto the same page as 83.C.2.1, and the size of the legend boxes on Figure 83C-2 can be reduced.

The opportunity to reduce the sparseness is limited given the template and style guidelines. Floating figures are not an option here since there is no text, and each figure needs to remain under the heading that describes it. There are 54 lines of text space available per page. A heading uses 3 lines. The various figure sizes are:

- 83C-1 - 24 lines
- 83C-2 - 28 lines
- 83C-3 - 25 lines
- 83C-4 - 25 lines
- 83C-5 - 29 lines

So no two Figures plus their headings will fit on a single page. The legends for the Figures are already at the smallest point size permitted. There is redundancy in the legends from one Figure from the next, but I don't find a precedent in the base text for having a separate, common legend that applies to multiple figures.

---

Table 84-3. No line at the bottom of the table.

Add line to bottom of table as per other tables split over pages

When a Table is inserted using the 802.3ba template with "IEEE format", then when it breaks across multiple pages, the last row on a page does not have a line beneath it. This is to indicate that the table is continued on the next page.

To override this behaviour: In the Table Designer, on the Ruling tab, click on the "Draw Bottom Ruling on Last Sheet Only" tick box until it is cleared (two clicks) and then Apply.

In the published standards, such tables do have a line at the bottom of the first page, but the table title on the next page has "(continued)" at the end in italic font.

The editors will review this across all the Clauses in 802.3ba and adopt the appropriate table style.
In Table 84-1, the order of clauses is confusing as XLAUI is shown between XLGMII and PCS. Also applies to clause 85 Table 85-1

**Suggested Remedy**
Show the clauses in the order that they appear in the stack in Figure 84-1. Do the equivalent for Table 85-1

**Response**
ACCEPT IN PRINCIPLE.

This needs to be treated as a technical comment. Make the order in Table 84-1:

- RS
- XLGMII
- PCS
- FEC
- PMA
- XLAUI
- AN

Make the equivalent alteration to Table 85-1

Remove the row for Clause 86 from Table 86-2 and re-format as per Table 85-1

The table title needs to be changed because a PHY does not include the RS however the Physical Layer does. For a similar reason it would be an improvement to change the text "In order to form a complete PHY" in 84.1.

Change title of Table 84-1 from:

PHY (Physical Layer) clauses associated with the 40GBASE-KR4 PMD to:

Physical Layer clauses associated with the 40GBASE-KR4 PMD

Change title of Table 85-1 to:

Physical Layer clauses associated with the 40GBASE-CR4 and 100GBASE-CR10 PMDs

Change title of Table 86-2 to:

Physical Layer clauses associated with the 40GBASE-SR4 and 100GBASE-SR10 PMDs

Change title of Table 87-1 to:

Physical Layer clauses associated with the 40GBASE-LR4 PMD

Change title of Table 88-1 to:

Physical Layer clauses associated with the 100GBASE-LR4 and 100GBASE-ER4 PMDs

Also re-order and change 86-1 to more closely match that of the other P802.3ba PMD clauses so that Table 86-2 becomes 86-1.

Clause 86 to begin:

"This clause specifies the 40GBASE-SR4 PMD and the 100GBASE-SR10 PMD together with the multimode fiber medium. When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 86-1, to the medium through the MDI and optionally to the management functions that are accessible through the management interface defined in Clause 45, or equivalent."

Each PMD clause except clause 86 to begin:

"This clause specifies the xxx PMD [for 85-88: together with the yyy medium]. When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 8x-1, to the medium through the MDI and to the management functions that are optionally accessible through the management interface defined in Clause 45, or equivalent."

where xxx is the name of the relevant PMD/s and yyy refers to the medium where appropriate; making the first sentences:

This clause specifies the 40GBASE-KR4 PMD.

This clause specifies the 40GBASE-CR4 PMD and the 100GBASE-CR10 PMD (including MDI) and the baseband medium.

This clause specifies the 40GBASE-LR4 PMD together with the single-mode fiber medium.

This clause specifies the 100GBASE-LR4 PMD and the 100GBASE-ER4 PMD together with the single-mode fiber medium.

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

Clause 73 is no longer called "Auto-Negotiation for Backplane Ethernet"

**Suggested Remedy**
Since the full title may be too long, change "Auto-Negotiation for Backplane Ethernet" to "Auto-Negotiation" as per Table 85-1. Same issue on Page 232, line 12.

**Response**
ACCEPT.
The text states the following: "This clause specifies the 40GBASE-KR4 PMD. In order to form a complete PHY, the PMD shall be connected to the appropriate sublayers (see Table 84–1)" but the PIC in 84.11.3 includes the XLGMII interface which is an optional interface but not a sublayer. However, the XLAUI does not have a PIC.

**Suggested Remedy**

Add appropriate PIC for XLAUI

**Response Status**

Accept.

---

This says "IS_UNITDATA_i.indication" but it should be "PMD:IS_UNITDATA_i.indication" (2 places)

**Suggested Remedy**

Change "IS_UNITDATA_i.indication" to "PMD:IS_UNITDATA_i.indication" (2 places). Make the same change in clause 45, Page 237, line 9

**Response Status**

Accept in principle.

The commenter intended to say Clause 85 rather than 45 in the suggested remedy.

Make the change suggested and also in Clause 85, page 237, line 9.

---

There is no corresponding "SHALL" statement for FS2

**Suggested Remedy**

Add appropriate "shall" statement to 84.7.2

**Response Status**

Accept.

---

This says "Requirements of 84.7.6, 84.7.7 and Table 72-6". But Table 72-6 contains many requirements, only one of which must be met.

**Suggested Remedy**

Change "Requirements of 84.7.6, 84.7.7 and Table 72-6" to "Requirements of 84.7.6, 84.7.7"
Comment Type: T  Comment Status: R

There is no need to say "is used" all the time in Table 84.11.4.1, 84.11.4.3, 84.11.4.4.

Suggested Remedy
Per comment.

Response
REJECT.

Removing 'is used' does not improve readability of the text.

Comment Type: T  Comment Status: A

MF3 says "Sets PMD_transmit_fault as specified in 45.2.1.7.5." This should be PMD_receive_fault.

Suggested Remedy
Change "Sets PMD_transmit_fault" to "Sets PMD_receive_fault". Also 45.2.1.7.5 and 45.2.1.7.4 in MF2 should be links.

Response
ACCEPT.

This comment also affects Clause 85

Comment Type: E  Comment Status: A

Missing space in =FAIL.

Suggested Remedy
Insert space.

Response
ACCEPT.
The bit defined in 45.2.1.7.4 is called "Transmit fault". Also, 45.2.1.7.4 should be a link. Same issue in 85.7.10

Suggested Remedy
Change "mapped to the PMD_transmit_fault bit" to "mapped to the Transmit fault bit". Also, make 45.2.1.7.4 a link. Make the same changes in 85.7.10 Page 242, line 50

Response
ACCEPT.

This comment also affects Clause 85

The bit defined in 45.2.1.7.5 is called "Receive fault". Also, 45.2.1.7.5 should be a link. Same issue in 85.7.11

Suggested Remedy
Change "contribute to PMA/PMD receive fault bit" to "contribute to the Receive fault bit". Also, make 45.2.1.7.5 a link. Make the same changes in 85.7.11 Page 243, line 6

Response
ACCEPT.

This comment also affects Clause 85

The control function variables used in table 84-3 need to be defined in the corresponding subclause in Clause 84. The control function description in 84.7.12 refers to control function in Clause 72. However Clause 72 is applicable to single lane. So description to be added to 84.7.12 to state that the corresponding variables defined for single lane is enumerated to multiple lanes. For example rx_trained variable is enumerated to rx_trained_0 through rx_trained_3. Variable names with proper enumeration to be defined in Clause 80 so this can be mapped to registers in Clause 45.

Suggested Remedy
Provide description of variables in appropriate subclause(s) in Clause 84.

Response
ACCEPT IN PRINCIPLE.

Add the following paragraphs at the end of 84.7.12:

"The variables rx_trained_i, frame_lock_i, training_i and training_failure_i (where i goes from 0 to 3) report status for each lane and are equivalent to rx_trained, frame_lock, training and training_failure as defined in 72.6.10.3.1. If the MDIO interface is implemented, then this function shall map these variables to the appropriate bits in the BASE-R PMD status register (Register 1.151) as specified in 45.2.1.78."

also add appropriate PICS entry

SIGNAL_DETECT is set to OK only when training is successful.

Suggested Remedy
Insert "successful" between "Upon" and "completion".

Response
ACCEPT IN PRINCIPLE.

Upon successful completion of training on all lanes, SIGNAL_DETECT shall be set to OK.

Also update PIC in 84.11.4.1

see also comment 282 against Clause 85
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>A</td>
<td>W</td>
<td>There is no corresponding PIC for the second SHALL of the following sentence - If the MDIO interface is implemented, then Global_PMD_signal_detect (1.10.0) shall be continuously set to the value of SIGNAL_DETECT as described in 45.2.1.9.5; and PMD_signal_detect_0 (1.10.1), PMD_signal_detect_1 (1.10.2), PMD_signal_detect_2 (1.10.3) and PMD_signal_detect_3 (1.10.4) shall be set to one or zero depending on whether a particular lane's signal_detect, as defined by the training state diagram in Figure 72-5, returns true or false.</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>W</td>
<td>change n to italics in variable PMD_signal_detect_n. Also check other instances of this variable. Similarly change i to italics in variable PMD_transmit_disable_i. Why one variable uses n and the other variable uses i. Change both of these to be i to be consistent.</td>
</tr>
<tr>
<td>T</td>
<td>A</td>
<td>C</td>
<td>This says &quot;and does not exceed the maximum differential peak-to-peak output voltage specified in Table 72-6.&quot; Since Table 72-6 contains both &quot;Differential peak-to-peak output voltage (max.)&quot; and &quot;Differential peak-to-peak output voltage (max.) with TX disabled&quot; it is not as clear as it should be which limit applies. Same issue on line 23.</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>C</td>
<td>Variables should be in italic font</td>
</tr>
</tbody>
</table>

Response

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>SuggestedRemedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR</td>
<td>A</td>
<td>W</td>
<td>add appropriate PIC to 84.11.4.1</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>W</td>
<td>As per comment</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>C</td>
<td>ACCEPT.</td>
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Anslow, Peter

Nortel Networks

<table>
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<tr>
<th>Comment Type</th>
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<th>SuggestedRemedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>C</td>
<td>Change &quot;and does not exceed the maximum differential peak-to-peak output voltage specified in Table 72-6.&quot; to &quot;and does not exceed the maximum differential peak-to-peak output voltage with TX disabled specified in Table 72-6.&quot; Make the same change on line 23.</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>C</td>
<td>ACCEPT.</td>
</tr>
</tbody>
</table>

Anslow, Peter

Nortel Networks

<table>
<thead>
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<th>Comment Type</th>
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<th>SuggestedRemedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>A</td>
<td>C</td>
<td>In &quot;The PMD_transmit_disable_i function (where i represents&quot; show the two &quot;i&quot;s in italic font. Also on lines 21, 24 and 26</td>
</tr>
<tr>
<td>E</td>
<td>A</td>
<td>C</td>
<td>ACCEPT.</td>
</tr>
</tbody>
</table>
COMMENT TYPE: T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected  C/closed  U/unsatisfied  Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

**Anslow, Peter  Nortel Networks**

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

This says "Control of the loopback function is specified in 45.2.1.1.4." But 45.2.1.1.4 is "PMA local loopback" not PMD loopback. Same issue in 85.7.8

**Suggested Remedy:**
Either explain that the loopback function is in the co-located PMA or provide a separate control function. Also, 45.2.1.1.4 should be a link. Apply the same change in 85.7.8

**Response:**
Make 45.2.1.1.4 a link.

In 45.2.1.1.4 change:
"The local loopback function is mandatory for the 1000BASE-KX, 10GBASE-KR, and 10GBASE-X port type and optional for all other port types,"

to:
"The local loopback function is mandatory for the 1000BASE-KX, 10GBASE-KR, 10GBASE-X, 40GBASE-CR4, 40GBASE-CR4, 100GBASE-CR10 port types and optional for all other port types,"

In 84.7.8 change:
"Loopback mode shall be provided for the 40GBASE-CR4 PMD by the transmitters and receivers of a device as a test function to the device."
to:
"Local loopback shall be provided by the adjacent PMA (see 83.5.8) for the 40GBASE-CR4 PMD as a test function to the device."

In 85.7.8 change:
"Loopback mode shall be provided for the 40GBASE-CR4 and 100GBASE-CR10 PMDs by the transmitters and receivers of a device as a test function to the device."
to:
"Local loopback mode shall be provided by the adjacent PMA (see 83.5.8) for the 40GBASE-CR4 and 100GBASE-CR10 PMDs as a test function to the device."

In clause 83 make local loopback mandatory for the PMA next to the PMD for 40GBASE-KR4, 40GBASE-CR4 and 100GBASE-CR10 with editorial license.

Change the clause 83 PICS to make local loopback mandatory for the PMA next to the PMD for 40GBASE-KR4, 40GBASE-CR4 and 100GBASE-CR10.

**Response:**
ACCEPT IN PRINCIPLE.

**Hajduczenia, Marek  ZTE Corp.**

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

Note 2 says that "Placing a network port into loopback mode can be disruptive to a network." - in what way is a network disrupted in such a case? Do you mean that network operation is disrupted?

**Suggested Remedy:**
Change to read "Placing a network port into loopback mode can be disruptive to a network operation and carried traffic."

**Response:**
This phrasing is used in 802.3-2008. There is no need to use different wording in 802.3ba.

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

If the MDIO is implemented, PMD_fault is the logical OR of PMD_receive_fault, PMD_transmit_fault, and any other implementation specific fault.

change to read "If the MDIO is implemented, PMD_fault corresponds to the logical OR operation on PMD_receive_fault, PMD_transmit_fault, and any other implementation specific fault." Similar changes to 85.7.9 PMD_fault function, page 242, line 35

**Suggested Remedy:**
Per comment

**Response:**
REJECT.

This wording is used in 802.3-2008. There is no need to use different wording in 802.3ba.

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

The same test fixture as 10GBASE-KR shall be used on all lanes as described in 72.7.1.1 change to read "The test fixture defined for 10GBASE-KR in 72.7.1.1 shall be used on all lanes."

**Suggested Remedy:**
Per comment

**Response:**
ACCEPT.
This says "Receiver electrical characteristics at TP4 for 40GBASE-KR4 shall be the same as 10GBASE-KR, as detailed in 72.7.1.1 through 72.7.2.5.". But 72.7.1.1 is for the transmitter. Receiver characteristics start at 72.7.2.1

**Suggested Remedy**
Change "as detailed in 72.7.1.1 through 72.7.2.5." to "as detailed in 72.7.2.1 through 72.7.2.5."

**Response**
ACCEPT.

---

**Comment**
No space between the and 100GBASE-CR10

**Suggested Remedy**
Add a space between the and 100GBASE-CR10

**Response**
ACCEPT.

---

**Comment**
The apostrophe on assembly's is a sans-serif type, whereas the style elsewhere is to use a serif type with a tail.

**Suggested Remedy**
Use serif apostrophe. Also on page 246 at line 38, and page 339 at line 30.

**Response**
ACCEPT.
The "square wave test pattern" is not specified. The spec could be calling for alternating 1s and 0s, which will not work.

**Suggested Remedy**

Change 6) to:

"The reference lane of the transmitter under test sends a square wave test pattern, consisting of 5 consecutive ones followed by five consecutive zeros, while all other lanes send either scrambled idle or PRBS-31."

**Response**

ACCEPT IN PRINCIPLE.

Change 6) to:

"The reference lane of the transmitter under test sends a square wave test pattern as specified in 83.5.10 while all other lanes send either scrambled idle or PRBS31."

Some explanation of the intent of the following procedure may make the procedure easier for the reader to understand.

**Suggested Remedy**

Change:

"Instead the following process is defined for the verification of transmit equalizer performance at TP2."

to:

"Instead the effective channel characteristic between the equalizer function and TP2 is determined and then equalized to measure the transmit equalizer function directly. The process below accomplishes this."

**Response**

ACCEPT IN PRINCIPLE. Change:

"Instead the following process is defined for the verification of transmit equalizer performance at TP2."

to:

"The effective channel characteristic between the equalizer function and TP2 is determined and then equalized to measure the transmit equalizer function directly. The process below accomplishes this."

The peak value of the linear fit pulse is out of alignment with table 85-1.

**Suggested Remedy**

Change:

"The peak value of the linear fit pulse from step 3, p, shall be greater than 240 mV."

to:

"DC amplitude, the sum of linear fit pulse response, p(k), from step 3 divided by M from step 3, shall be greater than 0.34V and no greater than 0.6V. The peak of the linear fit pulse response from step 3 shall be greater than 0.83*DC amplitude."

**Response**

ACCEPT IN PRINCIPLE. Change:

"The peak value of the linear fit pulse from step 3, p, shall be greater than 240 mV."

to:

"The DC amplitude, the sum of linear fit pulse response, p(k), from step 3 divided by M from step 3, shall be greater than 0.34V and less than or equal to 0.6V. The peak of the linear fit pulse response from step 3 shall be greater than 0.83*DC amplitude."

Table 85-5. Thin line under title cells.

**Suggested Remedy**

Use a thicker line under the title cells, as per tables in other clauses.

**Response**

ACCEPT.
### Draft 3.0 Comments

#### Comment Type: TR  
**Comment Status:** A  

**Moore, Charles**  
Avago Technologies

**Comment**

Step 3 is referenced elsewhere and should be as clear as possible. I think that its clarity can be improved.

**Suggested Remedy**

Change:

"Compute the linear fit to the captured waveform per 85.8.3.3.5"  
to:

"Compute the linear fit to the captured waveform and the linear fit pulse response p(k) per 85.8.3.3.5."

Make the same change to step 9 (line 35).

Also in steps 10 and 11 (lines 37-39) change:

"linear fit pulse, p,"

to:

"linear fit pulse response, p(k),"

and in notes b and c to Table 85-4, change:

"linear fit pulse"

to:

"linear fit pulse response p(k)"

**Response**  
**Response Status:** W

ACCEPT.

---

#### Comment Type: E  
**Comment Status:** A  

**Moore, Charles**  
Avago Technologies

**Comment**

The quote marks are a sans-serif type, whereas the style elsewhere is to use a serif type with a tail.

**Suggested Remedy**

Use serif quote marks. Also at lines 22 and 25 on the same page.

**Response**  
**Response Status:** C

ACCEPT.
IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

### Comment #822

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

85.8.4.2 does not make it clear that both tests must pass.

**Suggested Remedy**

Change the paragraph in 85.8.4.2 to:

"The receiver shall pass both Test 1 (short channel) and Test 2 (long channel) using the interference tolerance parameters listed in Table 85-7."  

**Response**

Response Status: W

ACCEPT IN PRINCIPLE.  
See response comment #534

### Comment #836

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

Poor English.

**Suggested Remedy**

Replace "at pattern" with "at the pattern".

**Response**

Response Status: C

ACCEPT IN PRINCIPLE.  
See comment #697.

[Editor's note: This comment is against 85.8.4.3.2, hence updated the subclause number field accordingly]

### Comment #251

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

The referenced section 86.8.8.2 does not exist.

**Suggested Remedy**

Replace with 86.8.2.

**Response**

Response Status: C

ACCEPT.

### Comment #255

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

The referenced section 86.8.8.2 does not exist.

**Suggested Remedy**

Replace with 86.8.2.

**Response**

Response Status: C

ACCEPT.
### Draft 3.0 Comments

**IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments**

#### Sponsor ballot

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**Comment Type: T** | **Comment Status: A**
---

In Table 85-1, "not applicable" should be written as "N/A" since that is what is used in PICS throughout the 802.3 standards.

**Suggested Remedy:**
Per comment.

**Response:**

**Response Status:** C

**ACCEPT.**

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

In Table 85-1, "not applicable" should be written as "N/A" since that is what is used in PICS throughout the 802.3 standards.

**Suggested Remedy:**
Per comment.

**Response:**

**Response Status:** C

**ACCEPT.**

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.

---

**Comment Type: T** | **Comment Status: A**
---

There are two references to IEC XXXXX-X-XX

**Suggested Remedy:**
Replace with a valid reference.

**Response:**

**Response Status:** C

**ACCEPT IN PRINCIPLE.**

See response to comment #544.
### Comment 1

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

[Editor's note: Comment 64 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]

**Inconsistent notation:** Here we have MDNEXT subscript loss while previously in 85 we had Insertion_loss, IL, Return_loss. 85A uses IL a lot.

**Suggested Remedy:**

My preferred solution is to use simply "MDNEXT" to and flip the sign, and replace Insertion_loss and IL with SDD21 (and flip the sign), in line with CEI, SFP+ and CXP.

**Response:**

ACCEPT IN PRINCIPLE.

Replace subscripted loss for MDNEXT and MDFEXT with _loss e.g., MDNEXT_loss(f) and MDFEXT_loss(f).

---

### Comment 2

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

The caption for Table 85-9 states these are "example" maximum cable assembly insertion loss requirements. This does not appear to be an example, they are the actual requirements as stated in the preceding paragraph.

**Suggested Remedy:**

Delete the word "Example" from the caption.

**Response:**

ACCEPT IN PRINCIPLE.

Delete the word "Example" from the Table 85-9. Add example to caption Figure 85-8.
In equation 85-26, "NLi(f) is the power of the NEXT loss at frequency f of pair combination i, in dB,". What is the meaning of "the power of" here? Isn't NLi(f) simply the NEXT loss? If some manipulation of the loss is implied, then it should be explicit in the equation. Also applies to equation 85-27.

Suggested Remedy

In addition to the change needed on Page 259 line 44, on line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is specified using the individual NEXT losses". On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is specified using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT", on line 14 change "specified as the power sum of the individual FEXT" to "specified using the individual FEXT".

Response

ACCEPT IN PRINCIPLE.

On line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is determined using the individual NEXT losses".

On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is determined using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT".

on line 14 change "specified as the power sum of the individual FEXT" to "determined using the individual FEXT".

Comment Status A

Response Status C

ACCEPT.

In equation 85-26, "NLi(f) is the power of the NEXT loss at frequency f of pair combination i, in dB,". What is the meaning of "the power of" here? Isn't NLi(f) simply the NEXT loss? If some manipulation of the loss is implied, then it should be explicit in the equation. Also applies to equation 85-27.

Suggested Remedy

In addition to the change needed on Page 259 line 44, on line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is specified using the individual NEXT losses". On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is specified using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT", on line 14 change "specified as the power sum of the individual FEXT" to "determined using the individual FEXT".

Response

ACCEPT IN PRINCIPLE.

On line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is determined using the individual NEXT losses".

On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is determined using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT".

on line 14 change "specified as the power sum of the individual FEXT" to "determined using the individual FEXT".

Comment Status A

Response Status C

ACCEPT.

In equation 85-26, "NLi(f) is the power of the NEXT loss at frequency f of pair combination i, in dB,". What is the meaning of "the power of" here? Isn't NLi(f) simply the NEXT loss? If some manipulation of the loss is implied, then it should be explicit in the equation. Also applies to equation 85-27.

Suggested Remedy

In addition to the change needed on Page 259 line 44, on line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is specified using the individual NEXT losses". On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is specified using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT", on line 14 change "specified as the power sum of the individual FEXT" to "determined using the individual FEXT".

Response

ACCEPT IN PRINCIPLE.

On line 42 change "(MDNEXT) loss is specified as the power sum of the individual NEXT losses" to "(MDNEXT) loss is determined using the individual NEXT losses".

On Page 260 line 11, change "MDFEXT loss is specified as the power sum of the individual FEXT losses. MDFEXT loss is determined by summing the power of the three or nine ..." to "MDFEXT loss is determined using the individual FEXT losses. MDFEXT loss is determined from the three or nine ..."

on Page 419 line 9 change "is specified as the power sum of the individual NEXT" to "is specified using the individual NEXT".

on line 14 change "specified as the power sum of the individual FEXT" to "determined using the individual FEXT".

Comment Status A

Response Status C

ACCEPT.

Integrated crosstalk noise <sigma_x> is an estimate of the RMS crosstalk noise voltage that would be generated by all disturber transmitters with maximum slew rate. It is derived via the near-end and far-end crosstalk losses, assuming a second-order transmitter response and a fourth-order receiver response, as follows.

Suggested Remedy

Insert text: Integrated crosstalk noise <sigma_x> is an estimate of the RMS crosstalk noise voltage that would be generated by all disturber transmitters with maximum slew rate. It is derived via the near-end and far-end crosstalk losses, assuming a second-order transmitter response and a fourth-order receiver response, as follows.

Response

ACCEPT IN PRINCIPLE.

Add text before paragraph page 260, line 30: "In order to limit multiple disturber crosstalk noise at a receiver the cable assembly integrated crosstalk noise (ICN) is specified in relationship to the measured insertion loss. ICN is calculated from the MDFEXT and MDNEXT."

Add text after paragraph page 260, line 30: "The RMS crosstalk noise is characterized at the output of a specified receive filter utilizing a specified transmitter waveform and the measured multiple disturber crosstalk transfer functions. The transmitter and receiver filters are defined in Equation (85-28) and Equation (85-29) as weighting functions to the multiple disturber crosstalk in Equation (85-30) and Equation (85-31)."
Comment Type: T  Comment Status: A
The phrase “…and Fast Fourier transform (FFT)…” does not seem to fit.

Suggested Remedy
Change the sentence to read “Note that -3 dB transmit filter bandwidths fnt and fft are inversely proportional to the 20 to 80% rise and fall times Tnt and Tft respectively.”

Response  Response Status: C  
ACCEPT IN PRINCIPLE. Change: “Note that the 3 dB transmit filter bandwidths fnt and Fast Fourier transform (FFT) are inversely proportional to the 20% to 80% rise and fall times Tnt and Tft respectively.”

To: “Note that the 3 dB transmit filter bandwidths fnt and fft are inversely proportional to the 20% to 80% rise and fall times Tnt and Tft respectively.”

Comment Type: E  Comment Status: A
[Editor’s note: Comment 66 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]
What does “Fast Fourier transform (FFT) [is] inversely proportional to the 20% to 80% rise and fall time Tft” mean?
Is what follows “Note that” a NOTE, i.e. informative and not part of the standard? Although the style guide allows it, it’s ambiguous and should be avoided.
Other editorial issues.
I think the equation at line 48 and the units in Table 85-10 are not consistent (needs checking).

Suggested Remedy
Change
“Define the weight at each frequency fn using” to “The weights Wnt and Wft at each frequency fn are given by” (or add “here lines for Wnt and Wft). Change
where the equation parameters are given in Table 85-10.
Note that the 3 dB transmit filter bandwidths fnt and Fast Fourier transform (FFT) are inversely proportional to the 20% to 80% rise and fall times Tnt and Tft respectively. The constant of proportionality is 0.2365 (e.g. Tnt fnt = 0.2365). In addition, fr is the 3 dB reference receiver bandwidth which is set to 7.5 GHz.”
to
where
fnt is in GHz and is given by Equation 85-new1,
fft is in GHz and is given by Equation 85-new2,
fr, the reference receiver 3 dB bandwidth, is 7.5 GHz
and the other equation parameters are given in Table 85-10.
fnt= 236.5 / Tnt (85-new1)
fft= 236.5 / Tr (85-new2)
where Tnt and Tft are the 20% to 80% rise and fall times in picoseconds given in Table 85-10.

Response  Response Status: C  
ACCEPT IN PRINCIPLE.  
See response comment #890
I would be useful to declare that sinc( x ) is sin( πx )/(πx) since there is some ambiguity as to whether this is the normalized sinc function or not.

Suggested Remedy
Add a statement to this paragraph that defined sinc( x ).

Response
ACCEPT IN PRINCIPLE.
Page 260, line 35. Add sentence, "The sinc function is defined by sinc( x )=sin( πx )/(πx)."

The conversion factor 0.2365 assumes that fnt is expressed in Hz and Tnt is in seconds. At line 32, fnt is implied to be units of MHz and Table 85-10 states the units of Tnt are picoseconds which may lead to confusion.

Suggested Remedy
State that the conversion factor is for fnt in units of Hz and Tnt in units of seconds.

Response
ACCEPT IN PRINCIPLE.
Change:"The constant of proportionality is 0.2365 (e.g. Tnt fnt = 0.2365).
To:"The constant of proportionality is 0.2365 (e.g. Tnt fnt = 0.2365; with Tnt in Hz and fnt in seconds)."

It is strange to call the reference loss by a name including max

Suggested Remedy
Change the name ILcatfmax to ILcatfref here and on line 39

Response
ACCEPT IN PRINCIPLE.
See comment#540.
[Editor's note: This comment is against 85.10.8, hence updated the subclause number field accordingly]
Comment Type: T

Comment Status: A

Equation 85-34 defines a reference loss, not a maximum so the variable name shouldn't be "ILcatfmax"

Suggested Remedy
In Equation 85-34 change "ILcatfmax" to "ILcatf" (2 places). Also in Figure 85-12 use the same variable name instead of "IL_CATF"

Response

ACCEPT IN PRINCIPLE.

In Equation 85-34 change "ILcatfmax" to "ILcatfref" (2 places). Also in Figure 85-12 use the same variable name instead of "IL_CATF"

Comment Type: TR

Document organization, it would a better fit to move 85.10.9 in to test fixture section

Suggested Remedy
Move the section after 85.8.3.5

Response

REJECT.

See comment#769. In addition, 85.10.9 should follow after 85.10.8.

Comment Type: TR

This section could be helped by the use of "sigma nx" and "sigma fx" in the last 2 table entries. In addition the first 2 lines are new values not presented else where. Are these presented to make sure on of the channels is not really bad? If so state that in the introduction and give it a special "sigma" name. subscript of senx and sefx should work.

Suggested Remedy
See comment suggestion

ACCEPT IN PRINCIPLE.

Add sentence below paragraph page 265 line 27: "The mated test fixtures integrated crosstalk RMS noise voltages for the single-disturber near-end crosstalk loss and the single-disturber far-end crosstalk loss are determined using Equation (85-28) through Equation (85-32) by substituting the single disturber near-end for the multiple disturber near-end crosstalk loss and the single disturber far-end crosstalk loss for the multiple disturber far-end crosstalk loss."

Comment Type: TR

Since this is a specification on the mated test fixtures, Should there be 2 tables. One for QSFP and one for CXP. This would keep the QSFP mated boards as clean as possible.

Suggested Remedy
Add separate values for QSFP put same value as place holder.

Proposed Response

REJECT.

This comment was WITHDRAWN by the commenter.
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<td>MLD can reorder lanes but figure 85-12 shows specific SL# connected to each pin of the MDI connector. Connecting lane 1 to lane one of the the MDI could compromise the signal integrity based on QSFP and CXP connector pin out. Unlike CL85, CL86 allows connecting any host lane to module lane for ease of flexiblity and SI</td>
<td>REJECT. MLD is independent of MDI source lane (SL) naming conventions; MDI contact assignments consistent with SFF-8436.</td>
<td>U</td>
<td>Broadcom</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.11.1.2</td>
<td>268</td>
<td>17</td>
<td>643</td>
<td>ER</td>
<td>A</td>
<td>Fig 85-19 and 85-20 are labeled the same thing</td>
<td>correct figure titles</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>Force 10 Networks Inc</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.11.1.2</td>
<td>268</td>
<td>29</td>
<td>806</td>
<td>TR</td>
<td>A</td>
<td>Incorrect figure title. Fig 85-20 is the MDI receptacle, not the cable plug</td>
<td>replace Figure 85-20 title with &quot;Example Style-2 MDI board receptacle&quot;</td>
<td>ACCEPT.</td>
<td>C</td>
<td>Intel Corporation</td>
</tr>
<tr>
<td>85</td>
<td>85.11.1.2.1</td>
<td>269</td>
<td>32</td>
<td>773</td>
<td>TR</td>
<td>R</td>
<td>MLD can reorder lanes but figure 85-12 shows specific SL# connected to each pin of the MDI connector. Connecting lane 1 to lane one of the MDI could compromise the signal integrity based on QSFP and CXP connector pin out. Unlike CL85, CL86 allows connecting any host lane to module lane for ease of flexiblity and SI</td>
<td>REJECT. See response comment #772.</td>
<td>U</td>
<td>Broadcom</td>
<td></td>
</tr>
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</table>
Comment Type TR Comment Status R

MLD can reorder lanes but figure 85-12 shows specific SL# connected to the each pin of the MDI connector. Connecting lane 1 to lane one of the MDI could compromise the signal integrity based on QSFP and CXP connector pin out. Unlike CL85, CL86 allows connecting any host lane to module lane for ease of flexibility and SI.

SuggestedRemedy
Current statement "The Style-1 40GBASE-CR4 MDI connector contact assignment shall be as defined in Table 85-12." to "Example Style-1 40GBASE-CR4 MDI connector contact assignment is shown in Table 85-12. Other wiring assignment is acceptable as long as Tx lane and Rx lane pairs are not broken and the polarity is maintained."

Response Response Status U
REJECT.
See response to comment#772.

Comment Type T Comment Status A

The IEC numbers for the 100GBASE-CR10 connectors are missing.

SuggestedRemedy
Supply the correct reference or add an editor's note that informs the reader when the correct reference is expected to be added.

Response Response Status C
ACCEPT IN PRINCIPLE.
See response comment#544.

Comment Type E Comment Status A

If an IEC document for this connector is going to be published in time for 802.3ba to reference it, then it must be going through the IEC balloting process already.

SuggestedRemedy
Either change "IEC XXXXX-X-XX" to the draft IEC document number and add an editor's note to clause 1.5 giving the expected publishing date or replace this text with an alternative reference. (2 places).

Response Response Status C
ACCEPT IN PRINCIPLE.
Use reference to SFF-8642 Rev 2.4 for 100GBASE-CR10. Remove IEC XXXXX-X-XX.
Use reference to SFF-8436 Rev 3.4 for 40GBASE-CR4 Style 1.
Add the above references to 1.3 Normative references.
Editorial licence to modify the text as appropriate.
Remove related Editor's note in 1.3.

Comment Type TR Comment Status A

This comment serves as a reminder to insert proper IEC reference number instead of "IEC XXXXX-X-XX"

SuggestedRemedy
Per comment

Response Response Status W
ACCEPT IN PRINCIPLE.
See comment#544.
It would be more logical for the subclause on "100GBASE-CR10 MDI AC-Coupling" to be a sub-clause of 85.11.2

Suggested Remedy
Since 85.11.3 is 100GBASE-CR10 specific, make it subclause of 85.11.2.1

Response
ACCEPT.
Move 85.11.3 under 85.11.2 as subclause 85.11.2.1

Clause 85 PICS missing the copyright release

Suggested Remedy
Add footnote to 85.13 section title. See Clause 86 PICS (86.11.4) for an example of required footnote text and formatting

Response
ACCEPT IN PRINCIPLE.
Add footnote to 85.13 section title: "Copyright release for PICS proformas: Users of this standard may freely reproduce the PICS proforma in this subclause so that it can be used for its intended purpose and may further publish the completed PICS."

The 2 "PCS" PICS entries indicate that "Support of 40GBASE-R PCS" and "Support of 100GBASE-R PCS" are both mandatory for a given device.

Suggested Remedy
Replace both "PCS" entries and both "PMA" entries with a single entry like the "SF1" entry in 86.11.4.1. "Compatible with 40GBASE--R or 100GBASE--R PCS and PMA"

Response
ACCEPT IN PRINCIPLE.
See response comment #807.

Replace "Clause85" with "Clause 85"

Response
ACCEPT IN PRINCIPLE. See response comment #247
Comment Type T Comment Status A
Major capabilities / options table incorrectly implies that BOTH CR4 AND CR10 are required. Support of either PMD is optional; the relevant PCS & PMA’s are mandatory dependent upon PMD type.

**Suggested Remedy**
Add two rows to table (after XLAUI row) to indicate support for CR4 & CR10 PMDs.
First row: Item = "CR4"; Feature = "40GBASE-CR4 PMD"; Value/comment: "Can operate as 40GBASE-CR4 PMD"; status = "O.1".
Second row: Item = "CR10"; Feature = "100GBASE-CR10 PMD"; Value/comment: "Can operate as 100GBASE-CR10 PMD"; status = "O.1".
Change Status of the next four rows from "M" to "CR4:M" and "CR10:M" as appropriate. i.e., 40GBASE-R PCS & PMA are "CR4:M"; 100GBASE-R PCS & PMA are "CR10:M"

Response Response Status C
ACCEPT IN PRINCIPLE.
Add two rows to table (after XLAUI row) to indicate support for CR4 & CR10 PMDs.
First row: Item = "CR4"; Feature = "40GBASE-CR4 PMD"; Value/comment: "Can operate as 40GBASE-CR4 PMD"; status = "O.1".
Second row: Item = "CR10"; Feature = "100GBASE-CR10 PMD"; Value/comment: "Can operate as 100GBASE-CR10 PMD"; status = "O.1".
Change Status of the next four rows from "M" to "CR4:M" and "CR10:M" as appropriate. i.e., 40GBASE-R PCS & PMA are "CR4:M"; 100GBASE-R PCS & PMA are "CR10:M"

In addition, editor to fill-in appropriate column references where applicable.

**Comment Type** TR **Comment Status** A
Given the multiple skew and skew variation constraints, the values comment should direct the reader to 85.5.
**Suggested Remedy**
modify value/comment for DSC by adding "constraints specified in 85.5" at end of sentence

Response Response Status C
ACCEPT.

**Comment Type** TR **Comment Status** A
In PF7 "via PMD_SIGNAL.indication (SIGNAL_DETECT)" should be "via PMD:IS_SIGNAL.indication (SIGNAL_DETECT)"
**Suggested Remedy**
Change "via PMD_SIGNAL.indication" to "via PMD:IS_SIGNAL.indication"

Response Response Status C
ACCEPT.
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<td>85.7.6</td>
<td>is for Global PMD</td>
<td>change subclause to 85.7.7</td>
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<tr>
<td>E</td>
<td>A</td>
<td>PF13</td>
<td>&quot;Allows each lane transmitters to ...&quot;</td>
<td>Change &quot;transmitters&quot; to &quot;transmitter&quot;</td>
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<td>A</td>
<td>PF17</td>
<td>&quot;72.6.10&quot; should be dark blue</td>
<td>Make &quot;72.6.10&quot; dark blue</td>
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<td>A</td>
<td>DS2</td>
<td>&quot;Equation (85-1)&quot; and &quot;Equation (85-2)&quot;</td>
<td>Make &quot;Equation (85-1)&quot; and &quot;Equation (85-2)&quot; links.</td>
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<tr>
<td>TR</td>
<td>A</td>
<td>CA6</td>
<td>and Equation (85-16) fits into the requirement</td>
<td>Add SHALL statement for CA6, and it is not clear how EQ 85-16 fits into the requirement</td>
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</table>
| T            | A              | DS3     | "85.8.3.7" should be "85.8.3.6" | In DS3 change "85.8.3.7" to "85.8.3.6"

**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
### Draft 3.0 Comments

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<td>In CA10 the reference to &quot;85.10.9&quot; should be &quot;85.10.10&quot;</td>
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<td>Items CA12 through CA17 and MDC1 through MDC3 are shown as &quot;CBL-M&quot; or &quot;M&quot;. This means that any implementation must support all connector types (both 40G and 100G).</td>
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<td>Create &quot;CR4C1&quot;, &quot;CR4C2&quot; and &quot;CR10C&quot; PICS entries for CR4 Style-1, CR4 Style-2 and CR10 connectors and make them optional. (see PMA40 and PMA100 in 83.7.3 or Cl 88 PICS). Then make CA12 through CA17 and MDC1 through MDC3 &quot;CR4C1:M&quot; etc.</td>
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</table>

*Editorial licence to implement option: The status "CBL","CR401:M" is redundant since CA401 only applies to CBL, thus you could drop the CBL predicate and only use CA401/CA402/CA100 in the above Status changes.*

**PICs requires cable assembly to have all three connector types. Also pin assignment PICs for cables do not have Status or Support fields. This can be remedied by creating an Item for each cable assembly type to be used as conditions in 85.13.4.5**

<table>
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<td>Add three rows to options table (85.13.4) to indicate cable assembly type.</td>
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<td>First added row: Item = &quot;CA401&quot;; Feature = &quot;40GBASE-CR4 Style-1 cable assembly&quot;; Value/comment: &quot;Cable assembly supports 40GBASE-CR4 Style-1&quot;; Status = &quot;CBL:O.3&quot;</td>
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<td>Second added row: Item = &quot;CA402&quot;; Feature = &quot;40GBASE-CR4 Style-2 cable assembly&quot;; Value/comment: &quot;Cable assembly supports 40GBASE-CR4 Style-2&quot;; Status = &quot;CBL:O.3&quot;</td>
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<td>Third added row: Item = &quot;CA100&quot;; Feature = &quot;100GBASE-CR10 cable assembly&quot;; Value/comment: &quot;Cable assembly supports 100GBASE-CR10&quot;; Status = &quot;CBL:O.3&quot;</td>
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<td>Change cable assembly PICS table (85.13.4.5) to use appropriate predicate items in Status field.</td>
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<td>Change the Status field for Items CA12 and CA13 to &quot;CBL*CA401:M&quot;</td>
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<td>Change the Status field for Items CA14 and CA15 to &quot;CBL*CA402:M&quot;</td>
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<td>Change the Status field for Items CA16 and CA17 to &quot;CBL*CA100:M&quot;</td>
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<td>Change Support field for CA13, CA15, and CA17 to match CA12 Support field.</td>
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<td>Option: The status &quot;CBL*CA401:M&quot; is redundant since CA401 only applies to CBL, thus you could drop the CBL predicate and only use CA401/CA402/CA100 in the above Status changes.</td>
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In addition, editor to fill-in appropriate column references where applicable.

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**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

---

*Editorial licence to implement option: The status "CBL","CR401:M" is redundant since CA401 only applies to CBL, thus you could drop the CBL predicate and only use CA401/CA402/CA100 in the above Status changes.*

In addition, editor to fill-in appropriate column references where applicable.
Draft 3.0 Comments

IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

Sponsor ballot

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**Comment Type** ER **Comment Status** A

subclause reference should be to 85.11.1.1

**Suggested Remedy**

correct subclause reference

**Response** Response Status W

ACCEPT.

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**Comment Type** ER **Comment Status** A

subclause reference should be to 85.11.2.1

**Suggested Remedy**

correct subclause reference

**Response** Response Status W

ACCEPT IN PRINCIPLE. Change:"85.11.1" To:"85.11.1.2.1"

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

Item CA16 has a Value/Comment of "40GBASE-CR4 Style-2 plug (SFF-8642 plug)" but it is for a CR10 connector.

**Suggested Remedy**

Change to "100GBASE-CR10 plug (SFF-8642 plug)"

**Response** Response Status C

ACCEPT.

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

CA17 subclause reference should be to 85.11.3

**Suggested Remedy**

correct subclause reference

**Response** Response Status W

ACCEPT.

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</thead>
<tbody>
<tr>
<td>Dambrosia, John</td>
<td>Force 10 Networks Inc</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type** ER **Comment Status** A

no corresponding SHALL statements to subclauses referenced for CA18

**Suggested Remedy**

add shall statements or clarify subclause references

**Response** Response Status C

ACCEPT IN PRINCIPLE.

In CA18, delete 85.11.3, 85.11.1.1.

In CA18, add reference 85.8.4.6.

**Response** Response Status C

CHANGE TO "100GBASE-CR10 receptacle (SFF-8642 receptacle)"

ACCEPT.

**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
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.13.4.6</td>
<td>T</td>
<td>A</td>
<td>Two problems with MDI PICs. 1) implies that all three connector types are required, s/b dependent upon PMD/MDI type. 2) use of CBL predicate is incorrect as this is for MDI, not cable. This can be remedied by creating an Item for each MDI type to be used as conditions in 85.13.4.6.</td>
</tr>
<tr>
<td>02</td>
<td>85.13.4.4</td>
<td>E</td>
<td>A</td>
<td>Change &quot;defined in 80.3.2&quot; to &quot;defined in 80.3.2.&quot;</td>
</tr>
<tr>
<td>21</td>
<td>85.6</td>
<td>T</td>
<td>A</td>
<td>Change &quot;The cable assembly test fixture of Figure 85-12 or its functional equivalent, is required.&quot; to &quot;The cable assembly test fixture of Figure 85-12 or its equivalent, is used&quot;, or to &quot;The cable assembly test fixture of Figure 85-12 or its electrical equivalent, is used&quot;.</td>
</tr>
</tbody>
</table>

**Suggested Remedy**

- Add two rows to options table (85.13.4) to indicate if CR4 PMD is using Style 1 or 2 MDI. First added row: Item = "MDIST1"; Feature = "Style-1 MDI Connector"; Value/comment: "40GBASE-CR4 device uses Style-1 MDI"; status = "O.2". Second added row: Item = "MDIST2"; Feature = "Style-2 MDI Connector"; Value/comment: "40GBASE-CR4 device uses Style-2 MDI"; status = "O.2". Change MDI connector PICS table (85.13.4.6) Status columns to use dependencies. Replace Item MDC1 status with "CR4*MDIST1:M" Replace Item MDC2 status with "CR4*MDIST2:M" Replace Item MDC3 status with "CR10:M"  
- Add two rows to options table (85.13.4) to indicate if CR4 PMD is using Style 1 or 2 MDI. First added row: Item = "MDIST1"; Feature = "Style-1 MDI Connector"; Value/comment: "40GBASE-CR4 device uses Style-1 MDI"; status = "O.2". Second added row: Item = "MDIST2"; Feature = "Style-2 MDI Connector"; Value/comment: "40GBASE-CR4 device uses Style-2 MDI"; status = "O.2". Change MDI connector PICS table (85.13.4.6) Status columns to use dependencies. Replace Item MDC1 status with "CR4*MDIST1:M" Replace Item MDC2 status with "CR4*MDIST2:M" Replace Item MDC3 status with "CR10:M"  
- Change "defined in 80.3.2" to "defined in 80.3.2."  
- Change "The cable assembly test fixture of Figure 85-12 or its functional equivalent, is required." to "The cable assembly test fixture of Figure 85-12 or its equivalent, is used", or to "The cable assembly test fixture of Figure 85-12 or its electrical equivalent, is used". Similarly in 85.8.3.4, 85.8.3.5, 85.10.8.
Comment Type: TR
Comment Status: A
TP2 location as identified on Fig 85-2 is not correct

SuggestedRemedy
Please add TP2 test fixture dotted below the current diagram and its output designated as TP2.

Response
Response Status: W
ACCEPT IN PRINCIPLE.
See comment #785.

Comment Type: TR
Comment Status: A
TP3 location as identified on Fig 85-2 is not correct

SuggestedRemedy
TP3 is the output of the cable measured as measured with the cable test fixture. Add dotted line to show cable test fixture and designate TP3 signal on it.

Response
Response Status: W
ACCEPT IN PRINCIPLE.

Discussion below:
Figure is too busy to include suggested illustration. Subclause text sufficiently describes TP2 unless specified otherwise, all transmitter measurements and tests defined in Table 85-4 are made at TP2 utilizing the test fixture specified in 85.8.3.5.*

Comment Type: T
Comment Status: A
In caption of Figure 85-2, what is the ‘half link’? Do you mean that only one link direction is illustrated?

SuggestedRemedy
Per comment

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Page 240, line 5
Change:* A 40GBASE-CR4 or 100GBASE-CR10 link is illustrated in Figure 85-2.*

To:*
A 40GBASE-CR4 or 100GBASE-CR10 link in one direction is illustrated in Figure 85-2.*
The following paragraph "The 40GBASE-CR4 PMD Transmit function shall convert the four bit streams requested by the PMD service interface messages D:IS_UNITDATA_0.request to PMD:IS_UNITDATA_3.request into four separate electrical streams. A positive output voltage of SL<p> minus SL<n> (differential voltage) shall correspond to tx_bit = one. The 100GBASE-CR10 PMD Transmit function shall convert the ten bit streams requested by the PMD service interface messages PMD:IS_UNITDATA_0.request to PMD:IS_UNITDATA_9.request. A positive output voltage of SL<p> minus SL<n> (differential voltage) shall correspond to tx_bit = one." seems to justify the PF1 and PF3 PICs in 85.13.4.1, but not the PF2 PIC.

**Suggested Remedy**

Add appropriate Shall statement to 85.7.2 in relation to PF2.

Response

ACCEPT IN PRINCIPLE.

After sentence line 3 p 241: "The 40GBASE-CR4 PMD Transmit function shall convert..."

Add sentence at line 5 p 241: "The four electrical signal streams shall then be delivered to the MDI, all according to the transmit electrical specifications in 85.8.3."

After sentence line 6 p 241: "The 100GBASE-CR10 PMD Transmit function shall convert..."

Add sentence at line 8 p 241: "The ten electrical signal streams shall then be delivered to the MDI, all according to the transmit electrical specifications in 85.8.3."

---

SIGNAL_DETECT is set to OK only when training is successful.

**Suggested Remedy**

Insert "successful" between "Upon" and "completion".

Response

ACCEPT.
Comment Type: T  Comment Status: A
Strike "above" from the end of line 45 - it is irrelevant.

Suggested Remedy
Per comment

Response  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: R
There are several subclauses, which clearly describe Optional features, yet the captions do not reflect that (1) Change caption 85.7.6 to read "Global PMD transmit disable function (Optional)" (2) Change caption 85.7.7 to read "PMD lane-by-lane transmit disable function (Optional)" (3) Change caption 85.7.9 to read "PMD fault function (Optional)" (4) Change caption 85.7.10 to read "PMD transmit fault function (Optional)" (5) Change caption 85.7.11 to read "PMD receive fault function (Optional)" (6) Change caption 85.7.12 to read "PMD transmit function (Optional)" (7) Change caption 84.7.6 to read "Global PMD transmit disable function (Optional)"(8) Change caption 84.7.7 to read "PMD lane-by-lane transmit disable function (Optional)"(9) Change caption 84.7.8 to read "PMD fault function (Optional)"

Suggested Remedy
Per comment

Response  Response Status: C
ACCEPT.

The subclauses contain the requirements (e.g. optional or mandatory).

Response  Response Status: C
REJECT.

Comment Type: E  Comment Status: A
This says "is mapped to register bit 1.1.7 as listed in". 1.1.7 is bit 7 of register 1.1.

Suggested Remedy
Change "is mapped to register bit 1.1.7 as listed in" to "is mapped to bit 1.1.7 as listed in"

Response  Response Status: C
ACCEPT IN PRINCIPLE.

Ensure consistency as register bit is used elsewhere as bit in register (see 45.2.3.15)
For committee discussion.

Comment 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
Draft has a table row "Unit interval nominal 85.8.3.8 96.969697 ps". No other 10G/lane PMD has a similar row. However many digits you add, it will never be correct because 1000/10.3125 is a recurring decimal.

Suggested Remedy
Delete the row, here and in Table 85-6. Delete "The corresponding unit interval is nominally 96.969697 ps." in 85.8.3.8. If you think that not all your readers know what a unit interval is, as it’s the same for Tx and Rx, add a sentence at 85.8, "The 40GBASE-CR4 and 100GBASE-CR10 PMDs use NRZ signaling at nominally 10.3125 Gb/s on each lane, for which the unit interval is approximately 96.97 ps."

Response
REJECT.

Unit interval nominal provided in other clauses in base document e.g., 47, 54. Your suggested remedy provides information in text rather than table.

Comment Type E
The “Value” for the Transmitter DC amplitude is “> 0.34 min, 0.6 max”. Since the value 0.34 is “min”, the inclusion of “>” is confusing. Likewise, “>0.63 Transmitter DC amplitude” is a different style from the rest of the table for no good reason.

Suggested Remedy
Change “> 0.34 min, 0.6 max” to “0.34 min, 0.6 max”. Correct spelling of transmitter in Parameter column. Also, change “Linear fit pulse” to “Linear fit pulse (min)” and change “>0.63 Transmitter DC amplitude” to “0.63 Transmitter DC amplitude”.

Response
ACCEPT IN PRINCIPLE.

SuggestedRemedy
Remove the row "min amplitudes(linear fit)" (circa line 27) from Table 85-4. In 85.8.3.3 (page 247, line 13) remove the line "The peak value of the linear fit pulse from step 3, p, shall be greater than 240 mV."

Response
ACCEPT IN PRINCIPLE.
See response to comment #812 and #818.

SuggestedRemedy
Line needs to be removed. Lines 22-24 replaced this.

Response
ACCEPT IN PRINCIPLE.
See response to comment #812.

Suggested Remedy
Show “p” and “e” in italic font.

Response
ACCEPT.
This doesn't say whether the "normalized error(linear fit), "e"" of 0.037 is max or min

Suggested Remedy: Change "normalized error(linear fit), "e"" to "max normalized error(linear fit), "e""

Accept

For the "Far-end transmit output noise (max.)" limits it would be better to point to equations 85-2 and 85-3 than give values of 2 and 1 mV

Suggested Remedy: Change "2" to "See Equation (85--2)" and "1" to "See Equation (85--3)"

Accept

In Table 85-4 add to parameter Far-end Tx output noise next to 2 See Equation (85-2) and add next to 1 See Equation (85-3)

M is a variable, so should be in italic

Suggested Remedy: Change "M" to italic font

Accept

"83A.5.1" and "83.5.10" should be links

Suggested Remedy: Make "83A.5.1" and "83.5.10" links and black

Accept
Comment Type: T  Comment Status: A
Use naming as per dambrosia_01_0909.pdf

Suggested Remedy

Also, on Page 252, line 39 change "The differential return loss, in dB," to "The differential input return loss, in dB,"

Response: A

Cl 85 SC 85.8.3.1 P 245 L 3 # 621
Anslow, Peter  Nortel Networks

Comment Type: ER  Comment Status: A
Term ICN is too general, this is far-end integrated cross talk which is given the symbol sigma with subscript fx in the referenced section equation 85-31.

Suggested Remedy

Change ICN to symbol sigma with fx subscript.

Response: W

Cl 85 SC 85.8.3.2 P 245 L 27 # 756
Misek, Brian  Avago Technologies

Comment Type: E  Comment Status: A
"PRBS-31" should be "PRBS31"

Suggested Remedy

Change "PRBS-31" to "PRBS31"

Response: C

Cl 85 SC 85.8.3.2 P 245 L 35 # 522
Anslow, Peter  Nortel Networks

Comment Type: E  Comment Status: A
In "c(n)", n is a variable, so should be in italic font. Also, why do items a to c and a1 to c1 use "n" and d1 uses "K" as a variable? k would be a better choice since n is used for the number of lanes elsewhere.

Suggested Remedy

Change the font of "n" to italic (6 places) and also on Page 248, line 7. Unless there is a good reason to use "K" only in d1), change to "c(k)" throughout with "K" in italic (or alternatively I).

Response: C

Cl 85 SC 85.8.3.3 P 246 L 33 # 523
Anslow, Peter  Nortel Networks

Comment Type: TR  Comment Status: A
Lines 13-16 have been superceded by Table 85-4 lines 22-24 and page 245 lines 44 and 45

Suggested Remedy

Remove

Response: C

Cl 85 SC 85.8.3.3 P 247 L 13 # 758
Misek, Brian  Avago Technologies

Comment Type: TR  Comment Status: A
Lines 13-16 have been superceded by Table 85-4 lines 22-24 and page 245 lines 44 and 45

Suggested Remedy

Remove

Response: C

ACCEPT IN PRINCIPLE. See response to comment#818.
<table>
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<tr>
<th>Cl</th>
<th>SC</th>
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<th>Comment Status</th>
<th>Response</th>
<th>Suggested Remedy</th>
<th>Type</th>
<th>Sponsor</th>
<th>Page</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response Status</th>
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<tbody>
<tr>
<td>85</td>
<td>85.8.3.3</td>
<td>E</td>
<td>A</td>
<td></td>
<td>&quot;83.5.10&quot; should be a link. Also on line 34</td>
<td></td>
<td>Nortel</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>Make &quot;83.5.10&quot; a link and black. Also on line 34</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.8.3.3</td>
<td>E</td>
<td>C</td>
<td></td>
<td>In &quot;sampled pulse pi&quot; the &quot;i&quot; should be a subscript.</td>
<td></td>
<td>Nortel</td>
<td>39</td>
<td></td>
<td></td>
<td></td>
<td>In &quot;sampled pulse pi&quot; make the &quot;i&quot; a subscript.</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.8.3.3</td>
<td>T</td>
<td>A</td>
<td></td>
<td>Incorrect equation corresponding to the ratio 2.57 +/- 10% (in the numerator, subtract c(1) and not c(-1)).</td>
<td></td>
<td>Aveago</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>Change to &quot;...and the ratio (c(0)-c(1)+c(-1))/(c(0)+c(1)+c(-1)) is 2.57 +/- 10%.&quot;</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.8.3.3</td>
<td>T</td>
<td>A</td>
<td></td>
<td>The two ratios:</td>
<td></td>
<td>Avago</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>The existing wording is very difficult to follow.</td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>85.8.3.3</td>
<td>ER</td>
<td>A</td>
<td></td>
<td>The existing wording is very difficult to follow.</td>
<td></td>
<td>Avago</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td>The existing wording is very difficult to follow.</td>
<td></td>
</tr>
</tbody>
</table>

[Editor's note: This comment is against 85.8.3.3.2, hence updated the subclause number field accordingly]
Anslow, Peter  
Nortel Networks

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

In "c(1)" the "c" should be italic.

**Suggested Remedy:**
In "c(1)" make the "c" italic.

**Response:**
Response Status: C
ACCEPT.

---

Anslow, Peter  
Nortel Networks

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

In "y(k)" the "k" should be italic. Do the same on Page 249 lines 21 and 30

**Suggested Remedy:**
In "y(k)" make the "k" italic.

**Response:**
Response Status: C
ACCEPT.

---

Anslow, Peter  
Nortel Networks

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

In "M-by-N" the "-by-" should not be italic as it is not a variable.

**Suggested Remedy:**
In "M-by-N" make the "-by-" appear in normal font. Do the same on Page 249, lines 6, 15 and 47.

**Response:**
Response Status: C
ACCEPT.

---

Petrilla, John  
Avago Technologies

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

The low frequency end of the range for insertion loss in 85 is 0.05 GHz (Eqs 85-14, 85-16, 85-20, 85-23, 85-24, 85-34, 85-35, 85-36, 85-37) in 83A is 0.25 GHz (Eqs 83A-1, 83A-2, 83A-9), in 83B is 0.25 GHz (Eqs 83B-1, 83B-2, 83B-3, 83B-4), in 85A is 0.05 GHz (85A-1, 85A-2, 85A-3, 85A-4, 85A-5) and in 86A is 0.01 GHz (86A-4, 86A-5, 86A-6, 86A-7, 86A-15, 86A-16). Since scrambled data has low frequency content it seems prudent to set the insertion loss frequency requirements to the lowest practical level to guard against undesired loss of low frequency content.

**Suggested Remedy:**
Set the low frequency end of the range for insertion loss in 85 from 0.05 GHz to 0.01 GHz (Eqs 85-14, 85-16, 85-20, 85-23, 85-24, 85-34, 85-35, 85-36, 85-37) in 83A from 0.25 GHz to 0.01 GHz (Eqs 83A-1, 83A-2, 83A-9), in 83B from 0.25 GHz to 0.01 GHz (Eqs 83B-1, 83B-2, 83B-3, 83B-4), and in 85A from 0.05 GHz to 0.01 GHz (85A-1, 85A-2, 85A-3, 85A-4, 85A-5).

**Response:**
Response Status: C
ACCEPT IN PRINCIPLE.

Change min frequency to 10 MHz:
85-14-Host IL-TPO-TP2-TP3-TP5 - min 10 MHz
85-16-IL TF MAX - min 10 MHz
85-17-Rx RL - min 10 MHz
85-34-IL CATF - min 10 MHz
85-35-IL mated test fixture - min 10 MHz
85-36-IL mated test fixture - min 10 MHz
85-37-RL mated test fixture - min 10 MHz
85A-1-IL TxRx-PCB max - min 10 MHz
85A-2-IL TxRx-PCB min - min 10 MHz

In 83A
83A-1-IL(f) to transmitter compliance point - min 10 MHz
83A-2-IL to receiver compliance point - min 10 MHz
83A-9-IL naui channel - min 10 MHz

In 83B
83B-1- IL Host - min 10 MHz
83B-2- IL module - min 10 MHz
83B-3- IL HCB PCB - min 10 MHz
83B-4- IL MCB PCB - min 10 MHz

**Discussion straw poll joint copper/optical track:**
A: Change lower frequency of cable assemblies to 10 MHz
B: Leave lower frequency of cable assemblies at 50 MHz

---

**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

---

Page 146 of 199
1/28/2010  9:51:05 AM
The minimum loss channel is missing. This loss makes sure the RL can be met with realistic host IC's. It is present in 86A and as such should be present in 85 that share the same port.

**Suggested Remedy**

Add additional equation by copying equation 86A-16 and adding the upper limit line that is represented by this equation to Figure 85-4.

**Proposed Response**

This comment was WITHDRAWN by the commenter.

---

**Comment:**

CL 85A TP0 to TP2 definition require min loss why does CL85 does not require min channel loss?

**Suggested Remedy**

Please add definition of CL86A6 min channel loss to this section.

**Response**

Equation 86A-16 for IL min does not sufficiently characterize TP0-TP2 or TP3-TP5 insertion loss e.g., 0 dB @ 1 GHz, -2.08 dB @ 5.15625 GHz. TP0 to TP2 = 2.08 = [TxRx-PCB]+[Mated connector IL]+[TPTF/HCB IL] TP0 to TP2 = 2.08 = [TxRx-PCB]+[Mated connector IL]+1.26 [TxRx-PCB]+[Mated connector IL] = 0.82 dB. In addition, the parameters at TP2 and TP3 measured includes affects of TxRxPCB IL therefore a normative minimum TxRxPCB IL is not required.

---

**Comment:**

Currently TP2/TP3 test fixture hangs in air

**Suggested Remedy**

Please add host to the left of the TP2/TP3 test fixture. Replace the DC blocks and scope with rf port.

**Response**

ACCEPT IN PRINCIPLE. See response to comment #831.

---

**Comment:**

[Editor's note: Comment 29 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0] Fig 85-5 state transmitter test fixture on the left dotted line show TP2/Tp3 test fixture. TP3 is a reciver test point how could it be called transmitter test fixture!

**Suggested Remedy**

Please replace the figure showing MCB-HCB mated pair, you borrow fig 86-3 but with CL85 test point on it.

**Response**

ACCEPT IN PRINCIPLE. See response to comment #831.
I don't think it is feasible to get 15dB return loss up to 5GHz from the test fixture including the connector and I don't think referring back to clause 72 helps.

Suggested Remedy
Change "test fixture shall" to "test fixture excluding the connector shall. Replace the last sentence with "The test fixture when mated with the cable assembly test fixture described in 85.10.8 meet the impedance requirements described in 85.10.9.2."

Response
ACCEPT IN PRINCIPLE.

[Editor's note: This comment is against 85.8.3.6, hence updated the subclause number field accordingly]

Delete: "The differential load impedance applied to the transmitter output of the test fixture depicted in Figure 85-5 shall be 100 Ω."

Change: "The differential return loss, in dB, of the test fixture shall meet Equation (85-15)."

To: "The differential return loss, in dB, of the test fixture is specified in a mated state and shall meet the requirements of 85.10.9.2."

Delete: "The test fixture impedance is equivalent to the test fixture impedance specified in 72.7.1.2."

Change: "The test fixture of Figure 85-5, or its functional equivalent, is required for measuring the transmitter specifications in 85.8.3 at TP2 and TP3 with the exception of the return loss specified in 85.8.3.6."

To: "The test fixture of Figure 85-5, or its functional equivalent, is required for measuring the transmitter specifications in 85.8.3 at TP2 and the receiver return loss at TP3."

There is PIC DS4 with no corresponding SHALL statement.

Suggested Remedy
add PIC

ACCEPT IN PRINCIPLE.

The effects of differences between the insertion loss of an actual test fixture and the reference insertion loss should be accounted for in the measurements."

Similarly in 85.10.8 and 83B.2 (twice).

ACCEPT IN PRINCIPLE.

The effects of differences between the insertion loss of an actual test fixture and the reference insertion loss should be accounted for in the measurements."

Similarly in 85.10.8.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>85.8.3.7</th>
<th>P 251</th>
<th>L 51</th>
<th># 833</th>
</tr>
</thead>
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<tr>
<td><strong>Dudek, Michael</strong></td>
<td><strong>QLogic Corporation</strong></td>
<td></td>
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</tr>
</tbody>
</table>

**Comment Type** | **T** | **Comment Status** | **A** |
|----------------|-------|-------------------|------|

The insertion loss is now reference not maximum.

**SuggestedRemedy**

Change $IL_{tf\text{max}}$ to $IL_{tf\text{ref}}$ in equation 85-16. Also make the same change on line 4 page 252, and change maximum to reference in the description on this line.

**Response**

Response Status **C**

ACCEPT.

[Editor's note: This comment is against 85.8.3.7, hence updated the subclause number field accordingly]

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>85.8.4</th>
<th>P 252</th>
<th>L 32</th>
<th># 632</th>
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<td><strong>Anslow, Peter</strong></td>
<td><strong>Nortel Networks</strong></td>
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</tbody>
</table>

**Comment Type** | **T** | **Comment Status** | **A** |
|----------------|-------|-------------------|------|

85.8.3.7 starts "The reference test fixture printed circuit board insertion loss is given in Equation (85–16)", so this is a reference loss, not a maximum loss.

**SuggestedRemedy**

In equation 85-16, change the variable "$IL_{tf\text{max}}(f)$" to "$IL_{tf}(f)$" (2 places) and also change "is the maximum test fixture insertion loss at frequency $f$" to "is the reference test fixture insertion loss at frequency $f$"

Response

Response Status **C**

ACCEPT IN PRINCIPLE.

See comment#833.

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>85.8.4</th>
<th>P 252</th>
<th>L 32</th>
<th># 630</th>
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<td><strong>Nortel Networks</strong></td>
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</tbody>
</table>

**Comment Type** | **T** | **Comment Status** | **A** |
|----------------|-------|-------------------|------|

The Bit error ratio doesn't say min or max.

**SuggestedRemedy**

Change "Bit error ratio" to "Bit error ratio (maximum)"

Response

Response Status **C**

ACCEPT IN PRINCIPLE.

Add "or better" after 10-12

<table>
<thead>
<tr>
<th>Cl</th>
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<th>P 252</th>
<th>L 33</th>
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</table>

**Comment Type** | **T** | **Comment Status** | **A** |
|----------------|-------|-------------------|------|

This has a value of "10 dB max from 50 MHz to 10000 MHz" so a value of say 20 dB would be out of spec.

**SuggestedRemedy**

Change "10 dB max from 50 MHz to 10000 MHz" to "10 dB min from 50 MHz to 10 GHz". Also, use a non-breaking space (Ctrl Space) between 50 and MHz

Response

Response Status **C**

ACCEPT IN PRINCIPLE.

See response to comment#700.

<table>
<thead>
<tr>
<th>Cl</th>
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<th>85.8.4</th>
<th>P 252</th>
<th>L 22</th>
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</table>

**Comment Type** | **TR** | **Comment Status** | **A** |
|----------------|-------|-------------------|------|

The SCD11 line is all wrong. (SCD11 shouldn't be +10, and differential to common mode return loss should be min not max.

**SuggestedRemedy**

Change this row to "Differential to Common mode return loss" "10 dB min from".

Response

Response Status **C**

ACCEPT IN PRINCIPLE.

See response comment#700.

[Editor's note: This comment is against 85.8.4, hence updated the subclause number field accordingly]
<table>
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<tr>
<td>85</td>
<td>85.8.4.2</td>
<td>253</td>
<td>10</td>
<td><strong>E</strong> Test 1 and 2 are confusing. They are associated with long and short cable channel in other places and called out as high and low loss. <strong>SuggestedRemedy</strong> Change Test 1 to Low Loss and Test 2 to High Loss <strong>Response</strong> <strong>C</strong> <strong>REJECT.</strong> Test 1 and Test 2 parameters unique to 85.8.4.2.</td>
</tr>
<tr>
<td>85</td>
<td>85.8.4.2</td>
<td>253</td>
<td>12</td>
<td><strong>E</strong> Root-GHz <strong>SuggestedRemedy</strong> Please use proper square root sign. <strong>Response</strong> <strong>C</strong> <strong>ACCEPT IN PRINCIPLE.</strong> Follow style guide.</td>
</tr>
</tbody>
</table>

---

**Discussion:**
1. The test channel insertion loss is the maximum host insertion loss [TP0-TP2] plus the cable assembly loss [TP1-TP4] minus one mated test fixture [TP1-TP2]. Therefore, the cable assembly insertion loss is then the [test channel insertion loss]-[max. host insertion loss]+[mated test fixture insertion loss] or [test channel insertion loss] - 3.7 dB.

2. For the test 1 values of a1, a2, and a4, the cable assembly insertion loss is 9.7 - 3.7 = 6 dB. Referring to Equation (85-33), the maximum ICN allowed for such a cable assembly = 12.4-0.45*6 = 9.7 mV RMS. This is very close to the point of worst signal-to-noise ratio for the noise dominated case (i.e. the largest insertion loss allowed for the maximum ICN value).

3. Removing the MDNEXT contribution of 3.7 mV RMS, the MDFEXT contribution should be sqrt(9.7^2 - 3.7^2) = 8.97 mV RMS.

4. Acknowledging that the far-end crosstalk aggressors are similar to the victim (800 mV differential peak-to-peak output voltage) while ICN is calculated using the maximum peak-to-peak differential output voltage (1200 mV), the calibrated far-end crosstalk should be (800/1200)*8.97 = 5.96 mV RMS.

5. Including the allowance for transmitter output noise from 85.8.3.2, the final value for the calibrated far-end crosstalk should be sqrt(5.98^2 + 2^2) = 6.3 mV RMS.
Comment Type: ER  Comment Status: A
"-" is confusing and this is not MDNEXT but "sigma subscript nx"

Suggested Remedy
- Remove "-" and change MDNEXT to "sigma subscript nx"

Response  Response Status: W
ACCEPT.

Comment Type: TR  Comment Status: A
"The receiver interference tolerance tests shall be implemented": That's wrong; there should be no requirement to implement tests, only requirements to achieve performance. Need to change the sentence more, e.g. "To be compliant the receiver interference tolerance shall satisfy the requirements of 85.8.4.3 to 85.8.4.3.4 with the parameters given in Table 85-7." 85.8.4.3 should be 85.8.4.2.1. Also, please use proper square root sign in the Table.

Suggested Remedy
- Change "The receiver interference tolerance tests shall be implemented using the receiver interference tolerance parameters summarized in Table 85-7." to either:
  - "The receiver interference tolerance of each lane shall comply with the parameters of Table 85-7 if measured according to the methods of 85.8.4.3 to 85.8.4.3.4." to either:
  - "Receiver interference tolerance tests is defined by the methods of 85.8.4.3 to 85.8.4.3.4 and the parameters given in Table 85-7." and delete the PICS.

Response  Response Status: W
ACCEPT IN PRINCIPLE.

Comment Type: T  Comment Status: A
[Editor's note: Comment 32 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0] Fig 85-6 defines LUT and PGC but you have to read the next section before you know what they are

Suggested Remedy
- Please provide test setup definition in the same section

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See response to comment#696.
IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

Draft 3.0 Comments

**Comment from Ghiasi, Ali, Broadcom**
- **Cl 85 SC 85.8.4.3 P 253 L 38 # 778**
- **Comment Type TR**
- **Comment Status A**

Test channel is measured from cable assembly test fixture to cable assembly test fixture and not to the middle of MDI.

**Suggested Remedy**
Please add 2nd diagram showing test channel where it is used for calibration with cable right end terminated to cable assembly test fixture.

**Response from Ghiasi, Ali, Broadcom**
- **Response Status W**
- **Comment Status A**

ACCEPT IN PRINCIPLE.
In Figure 85-6 move label MDI over MDI. Extend hatched line to enclose Tx/Rx PCB, Rx Under Test and Tx. Label hatched rectangle "host under test".

**Comment from Ghiasi, Ali, Broadcom**
- **Cl 85 SC 85.8.4.3 P 253 L 38 # 777**
- **Comment Type TR**
- **Comment Status A**

Fig 85-6 defines LUT and PGC but you have to read the next section before you know what they are.

**Suggested Remedy**
Please provide test setup definition in the same section as well as definition of LUT and PGC in this section.

**Response from Ghiasi, Ali, Broadcom**
- **Response Status W**
- **Comment Status A**

ACCEPT IN PRINCIPLE. See comment #696.

**Comment from Ganga, Ilango, Intel Corporation**
- **Cl 85 SC 85.8.4.3 P 253 L 39 # 386**
- **Comment Type T**
- **Comment Status A**

Why is twinaxial cable required and why n=4, 10, ... ?

**Suggested Remedy**
Replace twinaxial cable with "CR4 or CR10 cable assembly".

**Response from Ganga, Ilango, Intel Corporation**
- **Response Status C**
- **Comment Status A**

ACCEPT IN PRINCIPLE.
Replace: "The MDNEXT is measured from points HTx to point LUT in Figure 85-7."

In figure 85-7 change "LUT" at Tx to LUT_Tx and LUT at Rx to LUT_Rx.
In Figure 85-6 change "LUT" at Tx to LUT_Tx.

With: "The MDNEXT is measured from points host transmitters (HTx) to adjacent point LUT_Rx in figure 85-7. HTx is the set of 4 or 10 transmit lanes of the device under test corresponding to the 4 or 10 near-end crosstalk disturbers."

Update Figure 85-7 to indicate HTx is the set of 4 or 10 near-end aggressors corresponding to the transmitters of the device under test.

**Response from Healey, Adam, LSI Corporation**
- **Response Status C**
- **Comment Status A**

ACCEPT IN PRINCIPLE.

Replace: "The MDNEXT is measured from points HTx to point LUT in Figure 85-7."

In figure 85-7 change "LUT" at Tx to LUT_Tx and LUT at Rx to LUT_Rx.
In Figure 85-6 change "LUT" at Tx to LUT_Tx.

With: "The MDNEXT is measured from points host transmitters (HTx) to adjacent point LUT_Rx in figure 85-7. HTx is the set of 4 or 10 transmit lanes of the device under test corresponding to the 4 or 10 near-end crosstalk disturbers."

Update Figure 85-7 to indicate HTx is the set of 4 or 10 transmit lanes of the device under test corresponding to the 4 or 10 near-end crosstalk disturbers.
Comment Type T Comment Status A
This paragraph states that "the cable assembly test fixture lanes not under test are terminated in 100 Ohms differentially." In fact, it seems the other lanes are connected to aggressor transmitters either associated with pattern generators (FEXT) or the device under test (NEXT). This intended to be a requirement on the terminating impedance presented by those transmitters. If so, the established return loss specifications should be used in their place.

Suggested Remedy
Remove this sentence. Supplement the requirements with the return loss requirement for the pattern generator (including far-end aggressors) as appropriate.

Response Response Status C
ACCEPT IN PRINCIPLE.
See comment resolution #781

Delete page 254, line 5: The cable assembly test fixture lanes not under test are terminated in 100 Ohms differentially.
Comment Type E  Comment Status A
Terminated in what impedance? Also "host transmitter" should be plural.

Suggested Remedy
Change last sentence to read ". . . , and host transmitters (HTx) and PGC terminated in 100 Ohms."

Response Response Status C
ACCEPT IN PRINCIPLE.

Response
Change: "with no signal applied at pattern generator connection (PGC), and host transmitter (HTx) and PGC terminated."
To: "with no signal applied at PGC, and HTx and PGC terminated in 100 ohms differentially."
Give editorial licence to clarify text to reflect condition applies to Figure 85-7.

Comment Type T  Comment Status A
It should be made clear that the pattern generator (and aggressor) requirements apply at the test reference, or Pattern Generator Connection (PGC), as shown in Figure 85-6.

Suggested Remedy
Add a statement at the beginning of 85.8.4.3.3 that states the requirements of this subclause are verified at the PGC.

Response Response Status C
ACCEPT IN PRINCIPLE.

Response
Under sentence page 253 line 28 add *
The requirements of this subclause are verified at the pattern generator connection (PGC) or test references in Figure 85-6 and Figure 85-7. The lanes under test (LUT) are illustrated in Figure 85-6 and Figure 85-7."

Comment Type TR  Comment Status A
The rise and fall time test patter not provided and definition

Suggested Remedy
Rise and fall times are measured with pattern of 8 ones and 8 zeros from 20-80%.

Response Response Status C
ACCEPT IN PRINCIPLE.
See response to comment#698.

Response
Page 255, line 11
Change: "with equalization turned off (preset condition)."
To: with maximum compliant amplitude and equalization turned off (preset condition).
Cl  85  SC  85.8.4.3.4  P  255  L  9  #  637
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
Shall statement does not include corresponding pic statement.
SuggestedRemedy
add PIC

Response  Response Status  W
ACCEPT IN PRINCIPLE.
Insert PIC between RS1 and RS2; reorder list. Feature=Receiver tolerance,Subclause=85.8.4.3, value/comment= BER of better than 10-12, status=M, Support=Yes{[.]}

Cl  85  SC  85.8.4.3.4  P  255  L  9  #  536
Anslow, Peter  Nortel Networks

Comment Type  E  Comment Status  A
The reference 86.8.8.2 does not exist.
SuggestedRemedy
Change "86.8.8.2" to "86.8.2" and make it a link.
Response  Response Status  C
ACCEPT.

Cl  85  SC  85.84.3  P  253  L  38  #  782
Ghiasi, Ali  Broadcom

Comment Type  TR  Comment Status  R
Fig 85-6 is missing load on the left side
SuggestedRemedy
Please add load to the left of the figure terminating all lanes
Response  Response Status  W
ACCEPT IN PRINCIPLE.
"The cable assembly test fixture receive lanes are terminated in 100 ohm differentially."

Cl  85  SC  85.8.4.3.2  P  254  L  13  #  780
Ghiasi, Ali  Broadcom

Comment Type  TR  Comment Status  A
The cable assembly should be CR4/CR10 and not n pairs of Twinaxial cable n=4,10, etc
SuggestedRemedy
Replace with CR4/CR10 cable assembly
Response  Response Status  W
ACCEPT IN PRINCIPLE.
See response to comment#779.
Comment Type TR  Comment Status A

4 SHALL statements in 85.8.4.3.2 and 85.8.4.3.3 with no corresponding PICS

SuggestedRemedy
add PICS

Response  Response Status W
ACCEPT IN PRINCIPLE.

Editor given licence to implement PICS for shall statements below.

(1)The minimum fitted insertion loss coefficients of the lane under test (LUT), derived using the fitting procedure in 85.10.2, shall meet the test values in Table 85-7.
(2)The RMS value of the integrated MDNEXT crosstalk noise, determined using Equation (85-30) through Equation (85-34), shall meet the test values in Table 85-7.
(3)The pattern generator transmits data to the device under test. Its output amplitude shall be no more than 800 mV peak to peak differential when measured on an alternating one zero pattern.
(4)The minimum fitted insertion loss coefficients of the lane under test (LUT), derived using the fitting procedure in 85.10.2, shall meet the test values in Table 85-7.

Comment Type T  Comment Status A

In Table 85A-1 the "Differential peak-to-peak output voltage (max.) with TX disabled" refers to 72.6.5 which is the "PMD transmit disable function". This doesn't seem very helpful. It would be better to use the same reference as Table 85-4

SuggestedRemedy
Change "72.6.5" to "85.8.3.3"  
Response  Response Status C
ACCEPT.

By intent, the transmitter characteristics at TP0 are identical to the 10GBASE-KR transmitter characteristics and as a result most of this table duplicates a similar table in Clause 72. It would be simpler to just reference Clause 72 and note the exceptions.

SuggestedRemedy
Change to read "Transmitter electrical characteristics at TP0 for 40GBASE-CR4 and 100GBASE-CR10 are the same as 10GBASE-KR transmitter characteristics at TP1, as defined in 72.7.1.1 through 72.7.1.11. In addition, the common-mode AC output voltage at TP0 should not exceed 30 mV RMS." Delete Table 85A-1.

Response  Response Status C
ACCEPT.

[Editor's note: This comment is against 85A.2, hence corrected clause/subclause number fields to 85A]
Comment Type: T  Comment Status: A
By intent, the receiver characteristics at TP5 are identical to the 10GBASE-KR receiver characteristics and as a result most of this table duplicates a similar table in Clause 72. It would be simpler to just reference Clause 72 and note the exceptions. Also note that the frequency range for SCD11 is inconsistent with the frequency range used to specify other S-parameters and should be updated.

Suggested Remedy
Change to read "Receiver electrical characteristics at TP5 for 40GBASE-CR4 and 100GBASE-CR10 are the same as 10GBASE-KR, as defined in 72.7.2.2 through 72.7.2.5. In addition Differential to common mode conversion SCD11 should not exceed -10 max from 50 MHz to 7.5 GHz." Delete Table 85A-2.

Response
ACCEPT IN PRINCIPLE.

In Table 85-6 and Table 85A-2 for SCD11 change parameter name: From "Differential to common mode conversion SCD11" To: Differential to common mode input return loss

In Table 85-6 change: "10 dB max from 50 MHz to 10000 MHz" To: "10 min from 10 MHz to 10 GHz"

In Table 85A-2 change: "-10 max from 0.01 to 11.1 GHz" To: "10 min from 10 MHz to 10 GHz"

Comment Type: E  Comment Status: A
"-10 max from 0.01 to 11.1 GHz" should be "-10 max from 0.01 GHz to 11.1 GHz" to comply with the style manual.

Suggested Remedy
Change "from 0.01 to 11.1 GHz" to "from 0.01 GHz to 11.1 GHz".

Response
ACCEPT IN PRINCIPLE.

See response to comment #700

Comment Type: E  Comment Status: A
Proposed wordsmithing

Suggested Remedy
Change "Based on 85.8.3.4 insertion loss TP0 to TP2 or TP3 to TP5 and..." to "With the insertion loss from TP0 to TP2 or TP3 to TP5 given in 85.8.3.4 and...

Response
ACCEPT.
Comment Type: T  Comment Status: A
Draft says "an assumed connector loss of 1.74 dB". I thought the allowed connector loss was 0.87 dB. If a single mated connection had that much loss, wouldn't there be a problem with its reflections? Also, text is not clear whether this is the loss of one mated connection, or, as in the rest of this paragraph, the sum of Tx side and Rx side losses.

Suggested Remedy
Either change "an assumed connector loss of 1.74 dB" to "an assumed loss of ? dB for two MDI connectors" or (preferred) "an assumed loss of ? dB per MDI connector".

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Change:"Based on 85.8.3.4 insertion loss TP0 to TP2 or TP3 to TP5 and an assumed connector loss of 1.74 dB"
To:"Based on 85.8.3.4 insertion loss TP0 to TP2 or TP3 to TP5 and an assumed mated connector loss of 1.74 dB"

Host PCB loss = 3.5dB
TF PCB= 1.26 dB
TP0 toTP2 = 6.5=[3.5]+ [Mated connector IL]+[1.26]
[Mated connector IL] =6.5-[3.5]-[1.26]
Mated connector IL=1.74 dB

Resolve with comment #335.

Comment Type: E  Comment Status: A
Missing closing bracket

Suggested Remedy

Response  Response Status: C
ACCEPT.

Comment Type: ER  Comment Status: A
This is actually 85A. It would be less confusing if the sentence at line 53 were added at the end of the paragraph at line 35.

Suggested Remedy
Move the sentence.

Response  Response Status: C
ACCEPT.

[Editor's note: This comment is against 85A.4, hence corrected clause/subclause number fields to 85A]
Move sentence to end of the paragraph at line 35: The maximum insertion loss for the transmitter or the receiver differential controlled impedance printed circuit board is one half of the maximum insertion loss.

Comment Type: E  Comment Status: A
In Equation 85A-1 "(0.30)" should not have a trailing zero.

Suggested Remedy
Change "(0.30)" to "(0.3)"

Response  Response Status: C
ACCEPT.
### Cl 85A SC 85A.4 P 416 L 44 # 600

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

In the where section of Equation 85A-1, "ILPCB(f) is the maximum insertion loss for the transmitter and receiver PCB" should not be the maximum. That is ILPCBmax(f)

**Suggested Remedy:**
Change to "ILPCB(f) is the insertion loss for the transmitter and receiver PCB" Make the equivalent change for "minimum" in the where section of Equation 85A-2

**Response:**
ACCEPT.

---

### Cl 85A SC 85A.4 P 416 L 44 # 655

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

This is actually 85A ILpcb is not the maximum

**Suggested Remedy:**
delete "maximum". Add a row that defines ILpcbmax

**Response:**
ACCEPT IN PRINCIPLE.

Change:="is the maximum insertion loss for the transmitter and receiver PCB"
To:"is the insertion loss for the transmitter and receiver PCB"
Add: ILPCBmax(f) is the maximum insertion loss for the transmitter and receiver PCB"

[Editor's note: This comment is against 85A.4, hence corrected clause/subclause number fields to 85A]

---

### Cl 85A SC 85A.4 P 416 L 64 # 601

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

In the where section of Equation 85A-1, "b1" should be in italic font.

**Suggested Remedy:**
Change "b1" to italic

**Response:**
ACCEPT.

---

### Cl 85A SC 85A.4 P 417 L 13 # 680

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

This is actually 85A ILpcb is not the minimum

**Suggested Remedy:**
Change ILpcb to ILpcbmin

**Response:**
ACCEPT.

[Editor's note: This comment is against 85A.4, hence corrected clause/subclause number fields to 85A]

---

### Cl 85A SC 85A.4 P 417 L 15 # 689

**Comment Type:** ER  **Comment Status:** A

This is actually 85A It would be less confusing if the sentence at line 15 were added at the end of the paragraph at line 5

**Suggested Remedy:**
Move the sentence.

**Response:**
ACCEPT.

Move sentence to end of the paragraph at line 5" The minimum insertion loss for the transmitter or the receiver differential controlled impedance printed circuit board is one half of the minimum insertion loss...

[Editor's note: This comment is against 85A.4, hence corrected clause/subclause number fields to 85A]
Comment Type: ER  Comment Status: A
The title "Figure 85A-1- Illustration channel insertion loss budget" does not indicate the reference frequency.

Suggested Remedy
Change title to: "Figure 85A-1- Illustration channel insertion loss budget at 5.15625 GHz"

Response  Response Status: W
ACCEPT IN PRINCIPLE.

Page 487- line 1: Change: The channel insertion loss budget is illustrated in Figure 85A-1. 
To: The channel insertion loss budget at 5.15625 GHz is illustrated in Figure 85A-1.

Change title to: "Figure 85A-1- Illustration channel insertion loss budget at 5.15625 GHz"

In Figure 85A-1-change: 1.28 dB to 1.26 dB

Comment Type: T  Comment Status: A
This is actually 85A IL ca is not the maximum

Suggested Remedy
delete "maximum". Also delete the row on line 48 as this quantity is already defined here.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
[Editor's note: This comment is against 85A.5, hence corrected clause/subclause number fields to 85A]

Page 417, line 32 for ILCh(f) delete maximum
Page 417, line 48 for ILCh(f) delete minimum.
Page 417, starting line 49 delete ILCamax(f), ILHost(f), ILMatedTF(f)

In Equation 85A-3 delete "ILCh(f)"
In Equation 85A-4 delete "ILCh(f)"
In Equation 85A-4 Replace: "ILCh_min(f)"
With:"ILCh_0.5m(f)"

In Table 85-8-Cable assembly differential characteristics summary add Minimum insertion loss at 5.15625 GHz 3 dB.
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<td>85A.5</td>
<td>417</td>
<td>40</td>
<td># 602</td>
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<td>Nortel Networks</td>
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<tr>
<td>E</td>
<td>A</td>
<td>Equation 85A-4 starts with a spurious &quot;(&quot;</td>
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<tr>
<td>T</td>
<td>A</td>
<td></td>
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<tr>
<td><strong>This is actually 85A. The wording is strange. &quot;Determined using equation&quot; sounds like a mathematical certitude.</strong></td>
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<tr>
<td><strong>Suggested Remedy</strong></td>
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<tr>
<td>Replace &quot;is determined using equation&quot;. With &quot;is recommended to meet equation&quot;.</td>
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<tr>
<td>Change: &quot;The return loss of each lane of the 40GBASE-CR4 or 100GBASE-CR10 channel is determined using Equation (85-25).&quot; To: &quot;The return loss of each lane of the 40GBASE-CR4 or 100GBASE-CR10 channel is recommended to meet the values determined using Equation (85-25).&quot;</td>
<td></td>
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**[Editor's note: This comment is against 85A.6, hence corrected clause/subclause number fields to 85A]**

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<td>Equation 85A-5 should have units of &quot;(dB)&quot;</td>
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<td>Table like 86-1 is missing from copper clauses 84 and 85.</td>
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<td>See response to comment 793</td>
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**[Editor's note: Page and line numbers reversed]**

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**[Editor's note: This comment is against 86.1, hence corrected clause/subclause number fields to 86]**

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<td>This is actually 85A. You can't have a shall statement in an informative clause.</td>
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<td><strong>Response</strong></td>
<td><strong>Response Status</strong></td>
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**[Editor's note: This comment is against 85A.7, hence corrected clause/subclause number fields to 85A]**

**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

**Page 161 of 199**
The operating range can be increased without change to the transceiver specifications by utilizing prevalent low-loss connection technology. For a connection loss allocation of 1.0 dB, the upper end of the ranges can increase to 120 m for OM3 and 150 m for OM4. Note that accepting this comment produces ripple effects in other parts of clause 86 that are addressed in subsequent comments.

Suggested Remedy
Change
"0.5 to 100 for OM3 or 125 for OM4" to
"0.5 to 120 for OM3 or 150 for OM4".

Response
Make changes as shown in anslow_07_0110

A straw poll of the sub-task force was taken:
If the draft is modified to have 150m reach over OM4, would you support:
A 3 reaches: 100m OM3, 125m OM4 1.5 dB connector loss, 150m OM4 1.0 dB connector loss
B 2 reaches: 100m OM3, 150m OM4 1.0 dB connector loss
Result
A 0
B 15

A second straw poll of the sub-task force was taken:
Do you support:
A changing the draft for 150m reach over OM4 with 1.0 dB max connector loss
B make no change to the draft (125m over OM4 with 1.5 dB max connector loss)
Result
A 11
B 2

A vote of the sub-task force was taken:
Do you support making the changes as shown in anslow_07_0110?
Yes 11
No 2

Add reference to TIA Standard specifying OM3 performance

Response
REJECT.
The ANSI/TIA-568-C.3 standard is a structured cabling standard and not a fiber specification. Also, Type A1a.2 is an IEC type that does not exist in the ANSI/TIA standard.
These two PMDs are very similar. - strike this one out. They are different after all, since there are different definitions of PMDs.

Per comment

ACCEPT.

Table 86-1 tells the reader the number of lanes and the signalling rate of a lane, so the draft is unambiguous. The PMD connects to the PMA, not the PCS. There is no need to confuse the PMD implementer with mention of PCS lanes; any lack of clarity should be fixed in the introductory clause and the PMA clause.

40GBASE--SR4 uses four identical lanes, while 100GBASE--SR10 uses ten of the same lanes. In this clause, where there are four or ten items are these PCS lanes or PMD lanes? This needs to be spelled out clearly.

Per comment

REJECT.

Per Figure 86-5, what are the numbers (4 or 10) which are used on the figure? Do they denote lanes, fibres, cable bundles etc.?  

Clarify what the "4 or 10" refers to on Figure 86-5

ACCEPT IN PRINCIPLE.

Move text beginning p297 line 24, "The fiber optic cabling (channel) contains 4 or 10 optical fibers ... any receiver lane." to p296 line 35.
The second edition of IEC 61280-4-1 has been published for several months. As indicated in the editor's note, the referenced test should be harmonized with this new edition. However, the directions in the editor's note do not capture the changes completely nor in the most concise way. This is remedied in the proposed change.

Suggested Remedy:
Change
"Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2 or IEC 61280-4-1/Method 3." to
"Insertion loss measurements of installed fiber cables are made in accordance with the methods for cabling configuration A of IEC 61280-4-1."

Response
ACCEPT IN PRINCIPLE.
Change
"Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2 or IEC 61280-4-1/Method 3." to
"Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1:2009."

Also remove the editor's note.
Also add "IEC 61280-4-1:2009" (not to be confused with IEC 61280-1-4:2009) to the list of additional references to be inserted in clause 1.3.

Note: this will leave a reference to IEC 61280-4-1:2003 in the amended standard as referred to by subclause 68.8
The fiber contained within the 40GBASE–SR4 or 100GBASE–SR10 fiber optic cabling change to read "The fiber used for the 40GBASE–SR4 or 100GBASE–SR10 fiber optic cabling"

Suggested Remedy
Per comment

Proposal Response

REJECT.

This comment was WITHDRAWN by the commenter.

[Editor's note: Page and line numbers reversed]

The commenter has withdrawn this comment. The proposed change is not an improvement as it implies that the requirements only have to be met at the time of installation. The current text was inserted by comment 519 against draft 1.0

Table 86-13 should be modified to show channel characteristics for both the 1.5 dB and 1.0 dB connection loss cases. Providing both cases carries the legacy 1.5 dB loss case while simultaneously defining the lower loss 1.0 dB case that offers enhanced distance capability in trade.

Suggested Remedy
Change Table 86-13 as proposed in the attached file "d3_0_comment_Table86-13.xls".

Response
ACCEPT IN PRINCIPLE.

See response to comment 349.

By using low loss connectors the distance for OM3 can be increased to 125m and OM4 to 150m. This requires no changes to anything else in the document and essentially comes free. These low loss connectors are available from many manufactures.

Suggested Remedy
Change 86.10.2.2.1 Connection insertion loss to read:
The operating link distances in the tables is based on an allocation of 1.5 dB total connection and splice loss. For example, this allocation supports two connections, each with an insertion loss of 0.75 dB. However, the loss of a single connection shall not exceed 0.75 dB.

Connections with lower loss characteristics may be used provided the requirements of Table 86-14 are met. By reducing the connection and splice loss from 1.5 dB to 1.0 dB the operating distance for OM3 can be extended to 120 meters and the operating distance for OM4 can be extended to 150 meters.

Response
ACCEPT IN PRINCIPLE.

See response to comment 349.

Change: "The maximum link distance is based on an allocation of 1.5 dB total connection and splice loss. For example, this allocation supports two connections, each with an insertion loss of 0.75 dB."

to "The maximum operating distances are based on allocations of 1.0 dB or 1.5 dB total connection and splice loss. For example, these allocations support two connections, each with an insertion loss of 0.5 dB or 0.75 dB respectively."

Response
ACCEPT IN PRINCIPLE.

See response to comment 349.
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<th>SC 86.10.2.2.1</th>
<th>P 298</th>
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<td>Add reference to TIA Standard specifying OM3 performance</td>
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<td>Change &quot;IEC 60793-2-10 type A1a.2&quot; to &quot;IEC 60793-2-10 type A1a.2 and ANSI/TIA-568.C.3&quot;</td>
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<td>&quot;arranged in two rows of at least 10 or 12 positions.&quot; is vague and there is no justification for a minimum of 12.</td>
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<td>Replace with &quot;.arranged in two rows of at least 10 positions.&quot;</td>
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<td>Change &quot;arranged in two rows of at least 10 or 12 positions.&quot; to &quot;arranged in two rows of 10 or 12 positions.&quot;</td>
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<th>L 15</th>
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<tr>
<td>Items *TP1 and *TP4 are for when compliance points TP1 or TP4 are exposed. This may be with an electrical interface other than that defined in Annex 86A, so it is not appropriate to list &quot;Annex 86A&quot; in the Value /Comments for these items.</td>
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<td>Remove &quot;Annex 86A&quot; from *TP1 and *TP4</td>
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<td>Remove &quot;Annex 86A&quot; from *TP1 and *TP4, under TP4, create two major options, *PIT nPPI Tx interface 86.1 Uses XLPI or CPPI host to module (see 86A) TP1:O Yes/No</td>
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<td>&quot;PIR nPPI Rx interface 86.1 Uses XLPI or CPPI module to host (see 86A) TP4:O Yes/No</td>
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<td>note related comment 474 against 83.5.1.</td>
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<td>PIC SF2 is in regards to integration with management functions, but there is no corresponding SHALL statement - &quot;A PMD is optionally connected to the management functions that may be accessible through the management interface defined in Clause 45.&quot;</td>
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<tr>
<td>add SHALL statement.</td>
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<tr>
<td>Response</td>
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</tr>
<tr>
<td>REJECT. SF2 is included in the PICS table for the purpose of recording which options have been implemented rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a &quot;shall&quot; statement in the text for this item. In the same way, there is no &quot;shall&quot; statement corresponding to SR, LR, ER, etc. in the clause 52 PICS.</td>
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</table>
Cl 86  SC 86.11.4.1  P 303  L 14  # 648
Dambrosia, John  Force 10 Networks Inc

Comment Type  E  Comment Status  A
values for D, SF3 - SF5 are blank

Suggested Remedy
List values for D, SF3 - SF5

Response  Response Status  C
ACCEPT IN PRINCIPLE. The Skew and Skew Variation at SP2 (TP1) are input conditions for the PMD, not something it can control. Delete SF3 and renumber other "SF" PICS. If it fits within 2 lines in the cell, insert "SR4, max 1024 BT (2 pause_quanta, 25.6 ns). SR10, max 2048 BT (4 pause_quanta, 20.48 ns)."
"At SP3, less than 54 ns, 600 ps. At SP4, less than 134 ns, 3.4 ns."
"If measurable, less than 145 ns, 3.6 ns."
Insert long dashes or "See text" in otherwise empty table cells. There is no need to use the Value/Comment cells; the reader must read the subclause anyway.

Cl 86  SC 86.11.4.2  P 304  L 6  # 649
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
No corresponding SHALL statements to subclauses referenced for SM1

Suggested Remedy
add SHALL statement

Response  Response Status  W
ACCEPT IN PRINCIPLE.
In 86.4 change "Mapping of MDIO control variables to PMD control variables is shown in Table 86-3. Mapping of MDIO status variables to PMD status variables is shown in Table 86-4." to "If MDIO is implemented, the mapping of MDIO control variables to PMD control variables shall be as shown in Table 86-3, and the mapping of MDIO status variables to PMD status variables shall be as shown in Table 86-4."
In 86.11.4.2 SM1 insert "See 86.4" in Value/Comment field.
In addition, change "86.11.4.3 Electrical and optical specifications for 40GBASE-SR4 or 100GBASE-SR10" to "86.11.4.3 Optical specifications for 40GBASE-SR4 or 100GBASE-SR10"

Cl 86  SC 86.11.4.4  P 305  L 11  # 652
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
No corresponding SHALL statement for SOM4

Suggested Remedy
add SHALL statement

Response  Response Status  W
ACCEPT IN PRINCIPLE.
In 86.8.4.3 change "OMA is as defined" to "OMA shall be as defined" See also comments 662 (87.12.4.4 XLOM5) and 668 (88.12.4.5 COM4).

Cl 86  SC 86.11.4.4  P 305  L 13  # 653
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
No corresponding SHALL statement for SOM5

Suggested Remedy
add SHALL statement

Response  Response Status  W
ACCEPT IN PRINCIPLE. In 86.8.4.4 TDP, change "is as defined" to "shall be as defined". Make equivalent changes in 87 and 88.
For SOM6 the value cited is for the test methodology, but not the limits that are given in Table 86-12.

Suggested Remedy:

Add reference to limits being in Table 86-12 in Value comment for SOM6.

Response

ACCEPT IN PRINCIPLE. Extinction ratio is used both for transmitter and receiver (each has its own PICs), so 86.8.4.5 should address the test methodology only. In 86.8.4.5, change "Extinction ratio shall be within the limits given in Table 86-6 if measured using the methods specified in IEC 61280-2-2 using the test pattern defined in Table 86-12." to "Extinction ratio is defined by the methods of IEC 61280-2-2, using the test pattern defined in Table 86-12."

For SOM8 the value cited is for the test methodology, but not the limits that are given in Table 86-8.

Suggested Remedy:

Add reference to limits being in Table 86-8 in Value comment for SOM8.

Response

ACCEPT IN PRINCIPLE. Change "Each lane, per 52.9.9 as modified" to "See 86.8.4.7".

For item SO6 the reference should be "86.10.3.2" rather than "86.10.3.1"

Suggested Remedy

No corresponding SHALL statement for SES3 PIC.

Response

ACCEPT. Change "86.10.3.1" to "86.10.3.2".
Cl 86 SC 86.11.4.6 P 306 L 18 # 659
Dambrosia, John Force 10 Networks Inc

Comment Type ER Comment Status A
Reference to subclause is incorrect, as it should be to 86.10.3.2.

Suggested Remedy
change subclause reference to 86.10.3.2.

Response Response Status W
ACCEPT.
Same as comment 564.

Cl 86 SC 86.11.4.6 P 306 L 18 # 659
Dambrosia, John Force 10 Networks Inc

Comment Type TR Comment Status A
No corresponding SHALL statement for SOC1 PIC

Suggested Remedy
add SHALL statement

Response Response Status W
ACCEPT IN PRINCIPLE.
In 86.10.1, change "The channel insertion loss is given in Table 86-13." to "The channel shall comply with the specifications in Table 86-13.".

Cl 86 SC 86.4 P 282 L 31 # 133
Hajduczenia, Marek ZTE Corp.

Comment Type T Comment Status R
Why is "Transmit disable 9" separated from "Transmit disable 8 to Transmit disable 0" in Table 86-3? Similar question about PMD signal detect in Table 86-4. If there is a good reason, please state it in the form of a Note under the tables.

Suggested Remedy
Per comment

Response Response Status C
REJECT. [Editor's note: Page and line numbers reversed]
"Transmit disable 9" is separated from "Transmit disable 8 to Transmit disable 0" to show that it is mapped to bit 1.9.10 not 1.9.1 (bit ordering).
For 40GBASE-SR4, the highest-numbered six of the ten lane-by-lane signal detects do not apply. Change to read "For 40GBASE-SR4, the highest six lane-by-lane signal detect signals from the pool of ten lane-by-lane signal detect signals are not used."

Suggested Remedy

Per comment

Response

REJECT.

[Editor's note: Page and line numbers reversed]

See response to comment 134.

---

The diagram appears to include a 4 input AND gate producing SIGNAL_DETECT, and could be interpreted to mean that Ln-1 is not included in the SIGNAL_DETECT function.

Suggested Remedy

Show a 4 input AND gate, or place an ellipsis between the 2nd and last inputs.

Response

ACCEPT IN PRINCIPLE.

Show a 4 input AND gate

---

The footnote appears to be left from an earlier time when the numbers were different. The difference between Min OMA and OMA - TDP min is now only 0.7dB

Suggested Remedy

Change the footnote to say "TDP < 0.7dB"

Response

ACCEPT IN PRINCIPLE.

In footnote b to Table 86-6, change "TDP < 1 dB" to "TDP < 0.7 dB"

[Editor's note: This comment is against 86.7.1, hence updated the subclause number field accordingly]
In table 86-6, the existing TDP value was based on different TP4 output criteria (J2 & J9), than the currently proposed TJ(BER=1E-12) = 0.70 UI. To reduce inconsistencies among the requirements, the ref receiver in the TDP test should have the same output criteria as that intended at TP4 for an operating link.

**Suggested Remedy**

In table 86-8 change the value for TDP from 3.7 to 3.6.

**Response**

ACCEPT IN PRINCIPLE.

In table 86-8 change the value for TDP from 3.7 to 3.6.

In Table 86-9 change:

- Power budget (for maximum TDP) from 8.3 to 8.2 dB
- Change the Allocation for penalties (for maximum TDP) for OM3 from 6.4 to 6.3dB.
- Comment 349 has changed the Allocation for penalties (for maximum TDP) for OM4 to 6.5dB. Change the Allocation for penalties (for maximum TDP) as modified by comment 349 from 6.5 to 6.4dB.

**Suggested Remedy**

In Table 86-6 change the Y2 coordinate from 0.33 to 0.35

**Response**

ACCEPT.

Some of the references to 40GBASE-SR4 / 100GBASE-SR4 contain 'and' between types and some 'or'. Why is 'or' used in case of definition of parameters which are common for both types? Even title in Table 86-8 suggests the use of 'and'.

**Suggested Remedy**

Per comment

**Response**

ACCEPT IN PRINCIPLE. [Editor's note: Page and line numbers reversed]

Clause contains two specifications, hence "and", but unlike e.g. Clause 88, the specs for each PMD in several tables are the same, hence "or". A PMD is expected to be one type or the other, hence "or".

Change "86.7 PMD to MDI specifications for 40GBASE-SR4 and 100GBASE-SR10", "Table 86-6-40GBASE-SR4 and 100GBASE-SR10 optical transmit characteristics", "Table 86-8-40GBASE-SR4 and 100GBASE-SR10 optical receiver characteristics", "86.7.4 40GBASE-SR4 and 100GBASE-SR10 illustrative link power budget", "Table 86-9-40GBASE-SR4 and 40GBASE-SR10 illustrative link power budget" and first sentences of 86.6 Lane assignments and 86.10.3 Medium Dependent Interface (MDI), to use "or" instead of "and".
In Table 86-8 the values of J2 and J9 have been found difficult to simultaneously meet as called for in 86.8.4.7. This appears due to the lengthy DDJ distribution tails that occurs with a PRBS31 or similarly long-run-length, richly-structured test patterns after passing through a VCSEL and inducing VECP. In these cases a significant portion of the peak-to-peak DDJ in the signal is not included in J2 but is included in J9. This was not fully appreciated when the existing J2 and J9 values were proposed for the SRS condition. The J2 and J9 values for the SRS test should be changed to reflect actual operating conditions as well as being more readily implemented. The existing J2 and J9 values are based on a dual-Dirac - Gaussian combination where peak-to-peak DJ equals dual-Dirac DJ of 0.274 UI, RJ(@1E-12) = 0.229 UI and TJ(@1E-12) = 0.498 UI. The proposed new values are based on an approximate binomial-Gaussian combination where peak-to-peak DJ ~ 0.330 UI, RJ(@1E-12) ~ 0.225 UI and TJ(@1E-12) ~ 0.502 UI.

Suggested Remedy
In Table 86-8, change the value of J2 from 0.35 to 0.3.

Response
ACCEPT.

[Editor's note: Comment 71 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]

"Receiver jitter tolerance signal level in OMA, each lane" (shown as "Max" in D2.3) is used in 86.8.4.8 "as in 86.8.6.11, with the following differences:

a) The parameters of the signal are specified in Table 86-8...

b) The parameters of the signal are specified in Table 86-8...

68.6.11 says "... the power in OMA at the receiver is adjusted, using the optical attenuator, to be equal to the stressed sensitivity in OMA, also given in Table 68-5, and a BER of better than 10-12 shall be achieved."

So, we are to adjust the power in OMA to any value we like as long as it doesn't exceed the -5.4 limit in Table 86-8. So the spec is arbitrary and uncertain: a tester can make anything fail by setting the OMA low enough.

Note this is unlike stressed sensitivity which is a property of the receiver under test not of the test rig. It's more like an eye mask, which is also fixed.

If we were not trying to move to Sponsor ballot this would be a TR.

Suggested Remedy
Change the row "Receiver jitter tolerance signal level in OMA, each lane Max -5.4 dBm" to "Receiver jitter tolerance, each lane, per conditions below" (deleting "Max -5.4 dBm"

Keep the footnote, but change "This is a test of the optical receiver's ability" to "Jitter tolerance defines the optical receiver's ability"

Another remedy would be to change "Receiver jitter tolerance signal level in OMA to "Receiver jitter tolerance in OMA" and modify 86.8.4.8 b to say that the test signal's OMA is set at the maximum for receiver jitter tolerance signal level in OMA given in Table 86-8.

Response
ACCEPT IN PRINCIPLE. Change "Receiver jitter tolerance signal level in OMA to "Receiver jitter tolerance in OMA" and change item b in 86.8.4.8 to be "The parameters of the signal are specified in Table 86-8 and the power in OMA at the receiver is set to the maximum for receiver jitter tolerance in OMA given in Table 86-8;"
Comment Type: TR  Comment Status: R

1. Table 86-9 p. 289 (see also Tables 86-6, 86-7, 86-8). The 802.3ba standard needs not only an illustrative power budget but an illustrative link model similar to 802.3ae models on http://ieee802.org/3/ae/public/index.html. The link needs to satisfy both power penalty and ISI requirements and these depend on more parameters than what is explicitly mentioned in Table 86-9. The illustrative link model gives a set of common baseline assumptions and ensures all link calculations have a common consensus root. The reference to the illustrative link model can be in an annex to clause 86 or in the same section at Table 86-9.

Suggested Remedy

add an illustrative consensus link model which meets both power and ISI-BER requirements.

Response

Response Status: W

REJECT.
The link model used in the 10GbE project was incomplete as it only included the optical impairments, and there have been no improved models made publicly available. 10GbE did not put its model (or include a reference to it) in the standard. With the introduction of newer specification methodologies essential for low cost implementation at 10GbE/lane, the Ethernet link model becomes only one input to a specification developed with engineering judgement and, one hopes, measurement as other inputs. SRn links are less power-limited and more jitter-limited than 802.3ae optical links. Note that the electrical PMDs don't have an accessible link model at all.

Comment Type: T  Comment Status: A

Table title contains error for 100G.

Suggested Remedy

Change "40GBASE-SR10" to "100GBASE-SR10".

Response

Response Status: C

ACCEPT.

Comment Type: ER  Comment Status: A

In Figure 86-3, there are numerous right angled arrows that clutter the diagram, are difficult to interpret, and seem to add little value.

Suggested Remedy

Delete the right angled arrows.

Response

Response Status: W

ACCEPT IN PRINCIPLE.

Add legend to diagram clarifying that the right angled arrows indicate the direction in which the test stimulus is applied.

Comment Type: T  Comment Status: A

Such a table (as 86-10) should be also included in the copper PHY clauses, which for now contain only textual description of what the test points are and where they are located.

Suggested Remedy

Per comment

Response

Response Status: C

ACCEPT IN PRINCIPLE.

Test points for back-plane are adequately defined in 84.7.1 which references the base text in 71.6.1. Under 85.7.1 Link block diagram create table of entries summarizing textual description of test points.
Eye diagrams, J9, and if it matters, J2 and AC common-mode voltage, are measured with all lanes running so any crosstalk is included. We forgot to mention this.

**Suggested Remedy**

Add text here, at 86.8.3.3, 86A.5.3.1 to make this clear. Note that 87 and 88 reference 86.8.3.2.

Proposed text here: "Whether optical or electrical, all co-propagating and counter-propagating lanes are active, using one of patterns 3, 5, or a valid 40GBASE-R or 100GBASE-R signal. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

At 86.8.3.3, "J2 Jitter and J9 Jitter are specified with all co-propagating and counter-propagating lanes active, using one of patterns 3, 5, or a valid 40GBASE-R or 100GBASE-R signal. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

**Response**

ACCEPT IN PRINCIPLE.

Insert at the end of the first paragraph in 86.8.3.2, "Whether electrical or optical eye diagrams, all co-propagating and counter-propagating lanes are active as crosstalk sources, using one of patterns 3, 5, or a valid 40GBASE-R or 100GBASE-R signal. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

Also add to 86.8.3.3: "J2 Jitter and J9 Jitter are specified with all co-propagating and counter-propagating lanes active as crosstalk sources, using one of patterns 3, 5, or a valid 40GBASE-R or 100GBASE-R signal. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

---

The existing eye diagram definition does not mention the other signal lanes and measurements may be made neglecting these sources of potential crosstalk. There's a similar lack of mention of activating potential crosstalk sources in 86A.5.3.6. Fortunately 86A.5.3.6 refers to 86.8.3.2 and an appropriate remedy for 86.8.3.2 will carry over to 86A.5.3.

**Suggested Remedy**

Insert at the end of the first paragraph in 86.8.3.2, "Whether electrical or optical eye diagrams, all co-propagating and counter-propagating signal lanes in the channel are active as crosstalk sources, using one of patterns 3, 5, or valid 40GBASE-R or 100GBASE-R signals. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

**Response**

ACCEPT IN PRINCIPLE.

See response to comment 301.

---

The existing jitter definitions for J2 and J9 do not mention the other signal lanes and measurements may be made neglecting these sources of potential crosstalk.

**Suggested Remedy**

For J2 and J9, insert into 86.8.3.3, "All co-propagating and counter-propagating signal lanes in the channel are active as crosstalk sources, using one of patterns 3, 5, or valid 40GBASE-R or 100GBASE-R signals. The input lanes of the item under test are receiving signals that are asynchronous to those being output."

**Response**

ACCEPT IN PRINCIPLE.

See response to comment 301.
Why does the word "normative" appear in the last sentence of this subclause, but not in the parallel sentence of 86.8.3.3.1

Suggested Remedy
Delete "normative".

Response
ACCEPT IN PRINCIPLE.
Delete "The normative".

OMA is as defined in 52.9.5 for measurement with a square wave (8 ones, 8 zeros) test pattern change to read "OMA is as defined in 52.9.5 for measurement with a square wave (see Table 86-12) test pattern"

Suggested Remedy
no need to repeat information included already in Table 86-12

Response
ACCEPT IN PRINCIPLE. [Editor's note: Page and line numbers reversed]
Want to be sure the reader realises that 8+8 is meant, rather than any other square wave. Add to the end of the paragraph "See 86.8.2 for test pattern information."

In item d), a reference receiver bandwidth of 6.1 GHz provides a better match (than 6.2 GHz) of the total link penalties between the test case and the worst case link at max reach.

Suggested Remedy
In item d), change the reference receiver bandwidth from 6.2 GHz to 6.1 GHz.

Response
ACCEPT.

Otherwise TDP(i) is zero, TDP(i) = 0." is redundant.

Suggested Remedy
Replace with "Otherwise TDP(i) = 0."

Response
ACCEPT.
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<td>The aggregate BER of the PMD receiver is the average of the BER of all receive lanes at the same receive OMA.</td>
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<td>Between d and e, insert new bullet &quot;The aggregate BER of the PMD receiver is the average of the BER of all receive lanes at the same receive OMA.&quot;</td>
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**Response**

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<td>Between d and e, insert new bullet &quot;The aggregate BER of the PMD receiver is the average of the BER of all receive lanes at the same receive OMA.&quot;</td>
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**Response Status**

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<td>Move item f) from 86.8.4.7 to 86.8.4.8.</td>
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**Response**

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**Response Status**

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<tbody>
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</table>
Comment Type TR Comment Status A
To make a future 40GBASE-LR4 module with an unretimed interface feasible, the J2 and J9 limits of the XLPPI interface are proposed to be slightly changed.
A related comment proposes to modify the optical power levels of 40GBASE-LR4.
See king_01_0110.pdf

Suggested Remedy
In Table 86A-1 change "J2 Jitter output" to "J2 Jitter output for 100GBASE-R" and add a new row above for "J2 Jitter output for 40GBASE-R" with a value of 0.17 UI Max.
In Table 86A-2 change "J2 Jitter tolerance" to "J2 Jitter tolerance for 100GBASE-R" and add a new row for "J2 Jitter tolerance for 40GBASE-R" at "TP1a" with a value of 0.17 Ul Max.
In Table 86A-3 change "J9 Jitter output" to "J9 Jitter output for 100GBASE-R" and add a new row above for "J9 Jitter output for 40GBASE-R" with a value of 0.64 UI Max.
In Table 86A-4 change "J9 Jitter tolerance" to "J9 Jitter tolerance for 100GBASE-R" and add a new row above for "J9 Jitter tolerance for 40GBASE-R" at "TP4" with a value of 0.64 UI Max.
See king_01_0110 for further details.

Note, there is a related comment to increase the optical power levels of 40GBASE-LR4

Response W
ACCEPT IN PRINCIPLE.
[Editor's note: Page number changed from 442]

In Tables 86A-1 and 86A-2 change the J2 Jitter value from 0.18 to 0.17 UI and change the J9 Jitter value from 0.26 to 0.29 UI.

In Tables 86A-3 and 86A-4 change the J2 Jitter value from 0.46 to 0.42 UI and change the J9 Jitter value from 0.62 to 0.65 UI.

Change the title of Annex 86A to include 40GBASE-LR4
Change the text of 86A.1 to include 40GBASE-LR4

A straw poll of the sub-task force was taken:
Do you support:
A in Tables 86A-1 and 86A-2 change the J2 Jitter value from 0.18 to 0.17 UI
B in Tables 86A-1 and 86A-2 leave the J2 Jitter value unchanged at 0.18 UI
Result:
A 14
B 4
The values of J2 and J9 are not well-aligned with the currently proposed TP4 output TJ(BER=1E-12) = 0.70 UI target. It also appears that lengthy DDJ distribution tails occur with a PRBS31 or similarly long-run-length, richly-structured test patterns after passing through a VCSEL and inducing VEC. In these cases a significant portion of the peak-to-peak DDJ in the signal is not included in J2 but is included in J9. This was not fully appreciated when the existing J2 and J9 values were proposed for TP4. Further, there's interest in adjusting nPPI requirements to accommodate 40GBASE-LR4 in small footprint form factors. The J2 and J9 values for TP4 should be changed to reflect expected jitter distributions and reasonably accommodate LR4. The existing J2 and J9 values are based on a dual-Dirac - Gaussian combination where peak-to-peak DJ equals dual-Dirac DJ of 0.328 UI, RJ(@1E-12) = 0.332 UI and TJ(@1E-12) = 0.661 UI. The proposed new values are based on an approximate binomial - Gaussian combination where peak-to-peak DJ ~ 0.362 UI, RJ(@1E-12) ~ 0.332 UI and TJ(@1E-12) ~ 0.694 UI. This also applies to J2 and J9 jitter tolerance requirements in Table 86A-4.

SuggestedRemedy

In Tables 86A-3 and 86A-4 change J2 from 0.46 to 0.42 and J9 from 0.62 to 0.65.

Response

ACCEPT IN PRINCIPLE. See response to comment 793.

"During July 2009 plenary petrilla_01_0709 stated 
At TP4, for the combination of J2 (max = 0.46 UI) X1 = 0.11 UI and J9 (max = 0.63 UI), max TJ is estimated at 0.716 UI. This is higher than the expected 0.68 UI and may place too heavy a burden on the downstream receiver. Relief is proposed by reducing max J9 from 0.63 UI to 0.62 UI to yield a max TJ estimate of 0.704 UI."
The premise for the change was not to exceed TJ of 0.7 UI but the current J2=0.46 and J9=0.62 results in TJ of 0.66 UI, this will increase cost of the optics and will make 100Gbase-SR10 implementation more difficult due to the X10 connector. Please set the specification to what was intended.

SuggestedRemedy

Keep J2 but increase J9 to 0.4. TJ 1E-12 depends on the jitter distribution but for the case of max DJ (32 ps) to hit J2 then TJ=0.7 UI.

Response

ACCEPT IN PRINCIPLE. See response to comment 793.
Comment Type T Comment Status A

[Editor's note: Comment 75 against D 2.3 was agreed to be resubmitted by the Editor against D 3.0]

BER is a criterion of tolerance, not a metric of it. It's already stated in 86A.5.3.8.6 and is the same for the whole project so should not be repeated here.

Note comment on related issue against 86.7.3 Table 86-8.

Also, per D2.0 comment 470:

'ACCEPT IN PRINCIPLE. Need to avoid using "receive" or "receiver" on the transmit path (down the stack, PMA to MDI) or "transmit" or "transmitter" on the receive path (up the stack, MDI to PMA).

Change names using the terms host, module, input and output.'

SuggestedRemedy

In Table 86A-4, change
"Receiver signal tolerance, each lane (BER) - 10-12"

"Host input signal tolerance, each lane, per conditions below"

In footnote b, change "host receiver (see 86A.5.3.8.)" to "host input (see 86A.5.3.8.)" (it happens that the host input is a receiver input but we resolved to use "input" and "output" in D2.0 comment 470).

Make the cross-reference into a proper link.

In Table 86A-6 and 86A.5.3.8 consider changing "receiver tolerance" to input tolerance" as appropriate.

Response

ACCEPT IN PRINCIPLE.

The name of this parameter has been changed by comment 305.

Change the name as modified by 305 from "Receiver signal tolerance (interface BER)" to "Host input signal tolerance, interface BER limit"

In Note b change "host receiver" to "host" and make the reference a link.
"During July 2009 plenary petrilla_01_0709 stated 
At TP4, for the combination of J2 (max = 0.46 UI) X1 = 0.11 UI and J9 (max = 0.63 UI),
max TJ is estimated at 0.716 UI. This is higher than the expected 0.68 UI and may place
too heavy a burden on the downstream receiver. Relief is proposed by reducing max J9
from 0.63 UI to 0.62 UI to yield a max TJ estimate of 0.704 UI."
The premise for the change was not to exceed TJ of 0.7 UI but the current J2=0.46 and
J9=0.62 results in TJ of 0.66 UI, this will increase cost of the optics and will make
100Gbase-SR10 implementation more difficult due to the X10 connector. Please set the
specification to what was intended.

**Suggested Remedy**
Keep J2 but increase J9 to 0.4. TJ 1E-12 depends on the jitter distribution but for the case
of max DJ (32 ps) to hit J2 then TJ=0.7 UI.

**Response**
ACCEPT IN PRINCIPLE.
See response to comment 793

---

Table 86A-4 declares a DDPWS tolerance for the host input. Unfortunately, DDPWS is only
defined for PRBS9 which appears to have little relevance to the actual signal seen at this
interface. Since this requirement appears to provide little utility and will likely add burden to
the implemenetor, it should be dropped.

**Suggested Remedy**
In Table 86A-4, delete the DDPWS row.

**Response**
REJECT. DDPWS is one of the most important specs in the table. It is a key indicator of a
receivable signal, and a set DDPWS enforces consistency among signal tolerance testers.
The use of PRBS9 puts the measurement at a near optimum statistical significance.

---

In Equation 86A-6, change - 0.109 + 0.654 f + 0.12f dB to -0.11 + 0.46 f + 0.16f dB
In Equation 86A-6, change - 0.109 + 0.654 sqrt(f) + 0.12f dB to -0.11 + 0.46 sqrt(f) + 0.16f dB
Make the equivalent change to equation 85-35.
In SFP+ and previously in 86A, HCB-MCB crosstalk was controlled up to 15 GHz. Now 86A refers to 85.10.9.3 which does not control above 10 GHz. HCB-MCB crosstalk needs to be controlled to a frequency higher than product crosstalk (affects J9, eye, Qsq) according to the roll-off of the aggressor signal. Qsq is observed in a 12 GHz bandwidth. Also, every other spec in 86A starts at 10 MHz not 50 MHz.

**SuggestedRemedy**

Define an appropriate upper end of the frequency range for HCB-MCB crosstalk (for Annex 86A purposes). Define the lower end at 10 MHz (for Annex 86A purposes).

**Response**

ACCEPT IN PRINCIPLE.

The limits on integrated crosstalk noise of the mated HCB and MCB are specified in 85.10.9.3 with the exception that the frequency range is 0.01 GHz to 12 GHz.

In Figure 86A-5 the label "Differential to common-mode mode conversion loss looking in to HCB or MCB" has "mode" twice which does not match the parameter name.

**SuggestedRemedy**

change to "Differential to common-mode conversion loss looking in to HCB or MCB".

**Response**

ACCEPT IN PRINCIPLE. Change to "Differential to common-mode conversion loss looking into HCB or MCB".

The definition for transition time measurements calls for observation through a 12 GHz low pass filter. To ease the burden on implementers, this requirement should be harmonized with that in 83A.5, "The signal waveform, eye, and jitter may be measured using a receiver with an equivalent minimum -3dB bandwidth of at least 18 GHz." This also applies to 86A.5.3.4, 86A.5.3.5 and 86A.5.3.6.

**SuggestedRemedy**

Change from, "the waveform is observed through a 12 GHz low pass filter response." to "the waveform is observed using a receiver with an equivalent minimum -3dB bandwidth of at least 18 GHz." Repeat in 86A.5.3.4, 86A.5.3.5 and 86A.5.3.6.

**Response**

REJECT. It is not appropriate to measure a waveform in a bandwidth very different from the bandwidth that will be used in service. It is wrong to measure a noise (86A.5.3.5) in the wrong bandwidth. For DDPWS and transition time, the implementer can easily measure in a too-wide bandwidth and correct in software; the opposite is not accurate.
Comment Type: E  
Comment Status: A  
Terminology

Check that "Host electrical receiver signal tolerance" has the same name throughout.

Response: Response Status: C  
ACCEPT IN PRINCIPLE.

In 86A.5.3.8 change "Host electrical receiver signal tolerance" to "Host input signal tolerance", twice.

Update PICS to match.
See also comment 382.

Comment Type: E  
Comment Status: A

"86A.5.3.8.1" and "86A.5.3.8.6" should be links

Response: Response Status: C  
ACCEPT.

"at the Rx host (PMA) compliance point" is unclear

Response: Response Status: C  
ACCEPT.

Comment Type: E  
Comment Status: A

"looking looking" is needless repetition

Response: Response Status: C  
ACCEPT.

Apparent blank line

Response: Response Status: C  
ACCEPT.
Table 86A-7. Thick vertical line between cells.

Use a thin vertical line between cells, as per tables in other clauses.

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<td>A</td>
<td>Use a thin vertical line between cells, as per tables in other clauses.</td>
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Response | Response Status | C
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<td>Turner, Edward J Gnodal Limited</td>
<td>ACCEPT. [Editor's note: Clause/subclause numbers changed]</td>
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</table>

Originally there was a 0.5 dB limit at low frequencies to make life easier for those doing the measurement. It then got scaled up when it should have remained at 0.5 dB and the frequency break point (presently 200 MHz) moved down.

Suggested Remedy

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<th>Comment Status</th>
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<tbody>
<tr>
<td>T</td>
<td>A</td>
<td>Change 0.682 to 0.5, and 0.2 to 0.11 (twice). If there is an equivalent limit in 85 or 85A (I didn't find it), change that similarly.</td>
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Response | Response Status | C
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<td>Dawe, Piers J G Independant</td>
<td>ACCEPT IN PRINCIPLE. Delete the row &quot;0 0.01 &lt;= f &lt;= 1&quot;. Change from -0.5 + 0.5f, 1 to 7 GHz, to -0.22 + 0.46f, 0.01 to 7 GHz.</td>
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</table>

This is actually 86A. In context where this is following immediately after the loss equation for the Host PCB, connector and HCB it would clarify the statement to add "or HCB after "without connector".

Suggested Remedy

<table>
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<th>Comment Type</th>
<th>Comment Status</th>
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<td>T</td>
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Response | Response Status | C
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<td>Dudek, Michael QLogic Corporation</td>
<td>ACCEPT IN PRINCIPLE. Change &quot;+(without connector)&quot; to &quot;+(without connector or HCB)&quot;. [Editor's note: This comment is against 86A.6, hence corrected clause/subclause number fields to 86A]</td>
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<td>Cl 86A</td>
<td>SC 86A.8.2.2</td>
<td>P 440</td>
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<td>IEEE Std 802.3ba-20xx should read &quot;IEEE Std 802.3-2008.&quot;</td>
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<th>P 441</th>
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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

---

**Comment**: The phrase "IEEE Std 802.3-2008." should be replaced with "IEEE Std 802.3ba-20xx." in the document.

**Suggested Remedy**: Review and update the reference to ensure accuracy.

---

**Comment**: It is suggested to add shall statements for MO, HO, and MD.

**Suggested Remedy**: Add shall statements for MO, HO, and MD.

---

**Comment**: It is recommended to remove the "shall" statements for SF2, SF3, and SF4.

**Suggested Remedy**: Remove the shall statements for SF2, SF3, and SF4.

---

**Comment**: It is suggested to add shall statements for SEM2, SEM3, and SEM4.

**Suggested Remedy**: Add shall statements for SEM2, SEM3, and SEM4.
Comment 87-13. Thick vertical line between cells.

Suggested Remedy

Use a thin vertical line between cells, as per tables in other clauses

Response

ACCEPT.

Comment 87. Single quote marks are used, whereas elsewhere double quote marks are used.

Suggested Remedy

Use double quote marks. Also at line 54 on the same page, and on page 325 at lines 15 and 16.

Response

ACCEPT.

Comment 87.1. Since clause 87 has a single PMD type, the title of Table 87-1 "PMD type and associated clauses" seems inappropriate.

Suggested Remedy

Change title to "Clauses associated with the 40GBASE-LR4 PMD"

Response

ACCEPT IN PRINCIPLE.

Comment 498 has changed the title of this table to:
"Physical Layer clauses associated with the 40GBASE-LR4 PMD"

Comment 87.12.3. No corresponding SHALL statements for XLTP1 and XLTP4

Suggested Remedy

Add shall statements

Response

REJECT.
XLTP1 and XLTP4 are included in the PICS to record which options have been implemented, rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a shall statement in the text for these items.

Comment 87.12.3. No corresponding SHALL statement to MD PIC

Suggested Remedy

Add SHALL statement

Response

REJECT.
MD is included in the PICS to record which options have been implemented, rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a shall statement in the text for this item.

Comment 87.12.3. No corresponding SHALL statements for LR4, INS

Suggested Remedy

Add shall statements

Response

REJECT.
The entries LR4 and INS are all included in the PICS table for the purpose of recording which options have been implemented rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a "shall" statement in the text for these items.
In the title, "types 40GBASE-LR4" should be "type 40GBASE-LR4"

Suggested Remedy

Change "types 40GBASE-LR4" to "type 40GBASE-LR4"

Response

ACCEPT.

No corresponding SHALL statements for XLF1 and XLF2

Suggested Remedy

add shall statements

Response

ACCEPT IN PRINCIPLE.

In 87.4 change "Mapping of MDIO control variables to PMD control variables is shown in Table 87-2. Mapping of MDIO status variables to PMD status variables is shown in Table 87-3."

to "If the MDIO interface is implemented, the mapping of MDIO control variables to PMD control variables shall be as shown in 87-2 and the mapping of MDIO status variables to PMD status variables shall be as shown in 87-3."

see also comment 674

No corresponding SHALL statement for XLOM5

Suggested Remedy

add shall statement

Response

ACCEPT IN PRINCIPLE.

In 87.8.5 change "OMA is defined in..." to "OMA shall be as defined in...".

see also comment 668
Cl 87  SC 87.12.4.4  P 334  L 19  # 663
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
No corresponding SHALL statement for XLOM7

SuggestedRemedy
add shall statement

Response  Response Status  W
ACCEPT IN PRINCIPLE.
In 87.8.8 change "The RIN measurement methodology is defined in ..." to "The RIN measurement methodology shall be as defined in...".
see also comment 669

Cl 87  SC 87.12.4.6  P 335  L 8  # 664
Dambrosia, John  Force 10 Networks Inc

Comment Type  TR  Comment Status  A
No corresponding SHALL statement for XLOC2

SuggestedRemedy
add shall statement

Response  Response Status  W
ACCEPT IN PRINCIPLE.
The normative requirements on the channel are contained in Table 87-14 with associated PICS entry XLOC1. Subclause 87.11.1 lists fibre types that meet these requirements. Remove PICS entry XLOC2.
see also 671

Cl 87  SC 87.2  P 308  L 42  # 503
Dawe, Piers J G  Independant

Comment Type  TR  Comment Status  A
The 40GBASE-LR4 service interface should be like the 10GBASE-LR service interface. For 40GBASE-LR4, draft says "When SIGNAL_DETECT=FAIL, the IS_UNITDATA_i.indication parameters are undefined, but consequent actions interpret IS_UNITDATA_i.indication as a logic zero." while 52.1.1.3.1 says simply "When SIGNAL_DETECT = FAIL, PMD_UNITDATA.indication(r_bit) is undefined.". Note that there is no specification for consequent actions; this is deliberate, as the "consequent actions" includes a CDR, which needs transitions. There is no requirement for squelch. (Editorial: should have been "a zero" not "a logic zero".)

SuggestedRemedy
Delete "but consequent actions interpret IS_UNITDATA_i.indication as a logic zero" here and in 88.2. There is another comment for the electrical PMDs.

Response  Response Status  C
ACCEPT.

Cl 87  SC 87.5.4  P 311  L 41  # 841
Dudek, Michael  QLogic Corporation

Comment Type  T  Comment Status  A
There is no reference to the signal detect requirements

SuggestedRemedy
Insert at the end of the first sentence. "that meet the requirements of table 87-4"

Response  Response Status  C
ACCEPT IN PRINCIPLE. [Editor's note: This comment is against 87.5.4, hence updated the subclause number field accordingly] Table 87-4 does not place requirements on the optical signals, but rather on the SIGNAL_DETECT function.
Change "SIGNAL_DETECT shall be a global indicator of the presence of optical signals on all four lanes." to "SIGNAL_DETECT shall be a global indicator of the presence of optical signals on all four lanes. The value of the SIGNAL_DETECT parameter shall be generated according to the conditions defined in Table 87-4."

See also comment 846
Comment Type: T  Comment Status: A
Change the text of the Note to read as follows: NOTE - There is no requirement to associate a particular electrical lane with a particular optical lane, as the PCS is capable of receiving lanes in any arrangement. Also, clarify what lanes are meant - are these PMD lanes or PCS lanes?

Suggested Remedy
Per comment

Response: C  Response Status: C
ACCEPT IN PRINCIPLE.

In Table 87-7 change:
Total average launch power (max) from 8.3 to 8.6 dBm
Average launch power, each lane (max) from 2.3 to 2.6 dBm
Average launch power, each lane (min) from -7 to -6.7 dBm
Optical Modulation Amplitude (OMA), each lane (max) from 3.5 to 3.8 dBm
Optical Modulation Amplitude (OMA), each lane (min) from -4 to -3.7 dBm
Launch power in OMA minus TDP, each lane (min) from -4.8 to -4.5 dBm
Transmitter and dispersion penalty (TDP), each lane (max) from 2.3 to 2.6 dB
RIN20OMA (max) from -128 to -130 dB/Hz

In Table 87-8 change:
Damage threshold (min) from 3.3 to 3.6 dBm
Average receive power, each lane (max) from 2.3 to 2.6 dBm
Average receive power, each lane (min) from -13.7 to -13.4 dBm
Receiver power, each lane (OMA) (max) from 3.5 to 3.8 dBm
Receiver sensitivity (OMA), each lane (max) from -9.9 to -9.6 dBm
Vertical eye closure penalty, each lane from 1.6 to 1.9 dB

In Table 87-9 change:
Power budget (for max TDP) from 9 to 9.3 dB
Allocation for penalties (for max TDP) from 2.3 to 2.6 dB
See king_01_0110.pdf for further details.
Note, there is a related comment to modify the J2 and J9 values for the XLPPI interfaces.

Response: W  Response Status: W
ACCEPT IN PRINCIPLE.

In Table 87-7 change:
Transmitter and dispersion penalty (TDP), each lane (max) from 2.3 to 2.6 dB

In Table 87-8 change:
Stressed receiver sensitivity (OMA), each lane (max) from -9.9 to -9.6 dBm
Vertical eye closure penalty, each lane from 1.6 to 1.9 dB

In Table 87-9 change:
Power budget (for max TDP) from 9 to 9.3 dB
Allocation for penalties (for max TDP) from 2.3 to 2.6 dB
Add a row to Table 87-1 to show clause 86A as optional.
Cl 87  SC 87.7.1  P 314  L 42  # 804
Dawe, Piers J G  Independant

Comment Type  T  Comment Status  A
TDP limit seems demanding, especially for QSFP module

SuggestedRemedy
Consider increasing TDP max from 2.3 to 2.5 dB, with appropriate changes to other parameters e.g. VECP.

Response  Response Status  C
ACCEPT IN PRINCIPLE.
see response to comment 792

Cl 87  SC 87.7.1  P 314  L 54  # 842
Dudek, Michael  QLogic Corporation

Comment Type  TR  Comment Status  R
The hit ratio for the eye mask is not defined.

SuggestedRemedy
Add a footnote to the transmitter eye mask definition. Footnote to say "The eye mask is defined at a 5 e-5 hit ratio".

Response  Response Status  W
REJECT.
[Editor's note: This comment is against 87.7.1, hence updated the subclause number field accordingly]
The eye mask definition and methodology is referenced from 87.1.1. It points to section 86.8.4.6.1 which defines the 5 e-5 hit ratio.

Cl 87  SC 87.7.2  P 315  L 315  # 126
Hajduczenia, Marek  ZTE Corp.

Comment Type  TR  Comment Status  A
Stressed Eye Jitter used in this clause appears to be the same as J2 used in clause 86. J2 is a more descriptive name.

SuggestedRemedy
Change Stressed eye jitter to J2 throughout this clause.

Response  Response Status  W
ACCEPT IN PRINCIPLE. [Editor's note: This comment is against 87.7.2, hence updated the subclause number field accordingly]

In Table 87-8, and in note e, change "Stressed eye jitter " to "Stressed eye J2 Jitter"

Make equivalent changes in 87.8.11.2, 87.8.11.3 and 88.8.10

In Table 88-8, and in note f, change "Stressed eye jitter " to "Stressed eye J2 Jitter"

In 86.8.4.7 change "J2 and J9 specifications" to "J2 Jitter and J9 Jitter specifications"
In Table 87-10 the subclause for pattern 5 should be 82.2.10

Suggested Remedy
Change "82.2.11" to "82.2.10"

Response  Response Status C
ACCEPT.

In Table 87-11 the items "Calibration of OMA for receiver tests" and "Vertical eye closure penalty calibration" do not have an entry in the "Related subclause" column. Also applies to Table 88-11

Suggested Remedy
Make them both "87.8.11" Also applies to Table 88-11.

Response  Response Status C
ACCEPT.

Any PMD should provide the same BER performance at the MAC-PLS service interface irrespective of the number of lanes. It doesn't matter how the errors are divided among the lanes. See other comment for 86.8.4.7 and 86A.5.3.8.1.

Suggested Remedy
In the second paragraph of 87.8.11 change "For each lane, the stressed receiver sensitivity is defined with the transmit section in operation on all four lanes and with the receive lanes not under test also in operation." to "The BER of each lane is defined with the transmit section in operation on all four lanes and with the receive lanes not under test also in operation."

At the end of the first paragraph of 87.8.11 insert "The aggregate BER of the PMD receiver is the average of the BER of all receive lanes at the same receive OMA. At the stressed receiver sensitivity (OMA) specified in Table 87-8, a compliant receiver’s aggregate BER does not exceed 10^-12."

Response  Response Status C
ACCEPT.

Some residual noise and jitter from all sources is unavoidable, but more than 0.25 UI peak-to-peak jitter at the 10-12 points is not acceptable.

Suggested Remedy
Change "Some residual noise and jitter from all sources is unavoidable, but should be less than 0.25 UI peak-to-peak jitter at the 10-12 points." to "Some residual noise and jitter from all sources is unavoidable, but more than 0.25 UI peak-to-peak jitter at the 10-12 points is not acceptable."

Response  Response Status C
ACCEPT.

Suggested Remedy
Change to "the signaling rate". Also 87.8.11.2 bullet 3.

Response  Response Status C
ACCEPT.

"data dependent effects should be minimal, and short data patterns can be used". If it's a test pattern it's not data.

Suggested Remedy
Change to "pattern dependent effects should be minimal, and short patterns can be used".

Response  Response Status C
ACCEPT.

TYPE: TR/technical required  ER/editorial required  GR/general required  T/technical  E/editorial  G/general
COMMENT STATUS: D/dispatched  A/accepted  R/rejected     RESPON SE STATUS: O/open   W/written   C/closed   U/unsatisfied  Z/withdrawn
SORT ORDER: Clause, Subclause, page, line
The fraction of VECP created by the filter has an important effect on SRS stress.

**Suggested Remedy**

Change "should be created" to "is created".

**Response**

REJECT.

Current text follows clause 52, see 52.9.9.2

---

Too many "should"s allow uncertainty.

**Suggested Remedy**

Change "should result" to "results".

**Response**

ACCEPT IN PRINCIPLE.

Change this sentence as modified by comment 794 from:

"The resulting stressed eye conformance signal should have at least 0.05 UI of pulse width shrinkage."

to

"The resulting stressed eye conformance signal is required to have at least 0.05 UI of pulse width shrinkage."

---

What wavelength the adjacent channels are set to is also important.

**Suggested Remedy**

Change to "set to the required OMA and wavelength as described".

**Response**

ACCEPT IN PRINCIPLE.

[Editor's note: This comment is against 87.8.11.2, hence updated the subclause number field accordingly]

Change "set to the required OMA as described" to "set to the required OMA and wavelength as described".

---

Stress receiver sensitivity test for frequency greater than loop BW defines $S_j$ in the range of 0.05 UI to 0.15 UI. Defining the stress receiver sensitivity with so much slop means the test will not be consistent and higher amount of $S_j$ will penalize the receiver for no good reason. Why do we need to carry this 10 years old legacy when test equipment where arcade and CL86A already take advantage of this?

**Suggested Remedy**

propose to set $S_j$ to 0.05 UI as illustrated by Figure 86A-10 and Table 86A-7

**Response**

ACCEPT IN PRINCIPLE.

Modify the procedure for stressed receiver sensitivity measurement in 87.8.11 as shown in king_02_0110 with editorial licence

See also comment 790

A straw poll of the sub-task force was taken:

A make changes as outlined in king_02_0110
B In Table 87-13: change "0.05 <= S <= 0.15" to "0.05 <= S <= 0.08"
C leave the draft as it is

Result

A 5
B 1
C 0
Draft 3.0 Comments  IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments  Sponsor ballot

Cl 87  SC 87.8.5  P 317  L 53  # 127
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  R
OMA is as defined in 52.9.5 for measurement with a square wave (8 ones, 8 zeros) test pattern. Change to read "OMA is as defined in 52.9.5 for measurement with a square wave (see Table 87-11) test pattern."
Suggested Remedy
no need to repeat information included already in Table 87-11
Response  Response Status  C
REJECT.
[Editor's note: Page number and line number reversed] OMA isn't exactly as defined in 52.9.5, there is an exception which is noted in the same sentence.

Cl 87  SC 87.8.6.4  P 319  L 28  # 568
Anslow, Peter  Nortel Networks
Comment Type  T  Comment Status  A
For the measurements of TDP and SRS in clauses 86, 87 and 88 clarification is needed that the BER of 1E-12 should be measured for the bits of the lane under test and not for the bits of all of the lanes together.
Suggested Remedy
In 87.8.6.4 and 88.8.5.4 change "(transmit and receive), and each lane is tested individually using an optical filter to separate the lane under test from the others." to "(transmit and receive), each lane is tested individually using an optical filter to separate the lane under test from the others, and the BER of 1 x 10^-12 is for the lane under test on its own." Add to the end of the first paragraph of 87.8.11 "The BER is required to be met for the lane under test on its own." Add an additional exception in 86.8.4.4 "f) The BER of 1 x 10^-12 is for the lane under test on its own". Insert an additional exception in 86.8.4.7 and 86.8.4.8 "The BER must remain below 1 x 10^-12 for the lane under test on its own".
Response  Response Status  C
ACCEPT IN PRINCIPLE.
See response to comment 342

Cl 87  SC 87.8.7  P 319  L 33  # 644
Dudek, Michael  QLogic Corporation
Comment Type  E  Comment Status  A
Two "tables" delete one
Suggested Remedy
ADD. [Editor's note: This comment is against 87.8.7, hence updated the subclause number field accordingly]
Response  Response Status  C
ACCEPT.
[Editor's note: Page number and line number reversed] OMA isn't exactly as defined in 52.9.5, there is an exception which is noted in the same sentence.

Cl 87  SC 87.8.7  P 319  L 28  # 568
Anslow, Peter  Nortel Networks
Comment Type  E  Comment Status  A
"Table" twice in "given in Table Table 87-7"
Suggested Remedy
Change to "given in Table 87-7"
Response  Response Status  C
ACCEPT.

Cl 88  SC 88.11.3  P 354  L 45  # 347
Nikolich, Paul  YAS Broadband Ventu
Comment Type  TR  Comment Status  R
Examples of an MDI include the following:a) Connectorized fiber pigtail, b) PMD receptacle Perhaps it is defined elsewhere in the 802.3 Standard, but I could not find a definition or a reference for a "connectorized fiber pigtail."
Suggested Remedy
ADD. [Editor's note: Subclause changed from "88.11.3 Medium Dependent Inter" to "88.11.3"]
Response  Response Status  W
REJECT.
[Editor's note: Subclause changed from "88.11.3 Medium Dependent Inter" to "88.11.3"]
The term "connectorized fiber pigtail" is readily understandable without further definition. It has been used in five clauses of the base standard (52, 53, 58, 59, 60) and also in clause 75 of IEEE Std 802.3av-2009 without further explanation.

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

Page 192 of 199  1/28/2010  9:51:07 AM
Cl 88  SC 88.12.3  P 356  L 6  # 672
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  R

No corresponding SHALL statements for LR4, ER4, INS, CTP1, CTP4

Suggested Remedy

add shall statements

Response  Response Status  C

REJECT.
The entries LR4, ER4, INS, CTP1, CTP4 are all included in the PICS table for the purpose of recording which options have been implemented rather than to confirm compliance with a particular requirement. Consequently it is not appropriate to have a "shall" statement in the text for these items.
In the same way, there is no "shall" statement corresponding to SR, LR, ER, etc. in the clause 52 PICS.

Cl 88  SC 88.12.4.1  P 357  L 10  # 673
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  A

No corresponding SHALL statements for CF1 and CF2.

Suggested Remedy

Add shall statements

Response  Response Status  W

ACCEPT IN PRINCIPLE.
CF2 (Integration with management functions) is included in the PICS table for the purpose of recording whether this option has been implemented rather than to confirm compliance with a requirement. Consequently it is not appropriate to have a "shall" statement in the text for this item.
Comment 498 has modified the second sentence of 88-1 to be "When forming a complete Physical Layer, a PMD shall be connected to the appropriate PMA as shown in Table 88-1, to the medium through the MDI and to the management functions that are optionally accessible through the management interface defined in Clause 45, or equivalent."

Cl 88  SC 88.12.4.5  P 359  L 12  # 674
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  A

No corresponding SHALL statements for CM1.

Suggested Remedy

Add shall statements

Response  Response Status  W

ACCEPT IN PRINCIPLE.
In 88.4 change "OMA is as defined in ..." to "OMA shall be as defined in ..."

Cl 88  SC 88.12.4.5  P 359  L 18  # 675
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  A

No corresponding SHALL statement for COM4

Suggested Remedy

add shall statement

Response  Response Status  W

ACCEPT IN PRINCIPLE.
In 88.8.7 change "The RIN measurement methodology is as defined in ..." to "The RIN measurement methodology shall be as defined in ..."
Cl 88  SC 88.12.4.5  P 359  L 22  # 572
Anslow, Peter  Nortel Networks
Comment Type  E  Comment Status  A
For COM9 the subclause should be 88.8.10 not 88.8.9
SuggestedRemedy
Change 88.8.9 to 88.8.10
Response  Response Status  C
ACCEPT.
See also comment 670.

Cl 88  SC 88.12.4.5  P 359  L 22  # 570
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  A
The subclause reference for COM9 appears to be incorrect as it should be to Stressed Receiver Sensitivity, i.e 88.8.10
SuggestedRemedy
correct subclause reference to 88.8.10
Response  Response Status  W
ACCEPT.
See also comment 572.

Cl 88  SC 88.12.4.7  P 360  L 8  # 671
Dambrosia, John  Force 10 Networks Inc
Comment Type  TR  Comment Status  A
No corresponding SHALL statement for COC2,
SuggestedRemedy
add shall statement
Response  Response Status  W
ACCEPT IN PRINCIPLE.
The normative requirements on the channel are contained in Table 88-14 with associated PICS entry COC1. Subclause 88.11.1 lists fibre types that meet these requirements. Remove PICS entry COC2.

Cl 88  SC 88.3.1  P 339  L 6  # 119
Hajduczenia, Marek  ZTE Corp.
Comment Type  T  Comment Status  A
in some of the clauses there are references to units of "BT" (bit times) and in some locations there are references to units of "bit times".(1) BT (bit times) used on 363/23, 29/41,(2) bit time used on 365/23, 365/26, 365/29, 365/33, 365/34, 365/39, 365/43, 134/43, 225/4, 225/6, 237/27, 237/28, 237/31, 237/32,
SuggestedRemedy
Use a consistent designation across clauses. The use of "BT" is suggested.
Response  Response Status  C
ACCEPT IN PRINCIPLE.
[Editor's Note: Page changed from 6 to 339 and Line changed from 339 to 6]In clause 4 (29/41) the format used matches that in NOTE 4 in the base standard. Likewise, in clause 4A (363/23) the format used matches that in NOTE 1 to NOTE 3 in the base standard. Also, in clause 74 "BT" is used to be consistent with clause 74 in the base standard.
The remainder of the draft uses "bit time".
However, there is an inconsistency in whether the term contains a hyphen.
In the base standard "bit time" has 335 occurrences and "bit-time" has 10 occurrences.
Change all occurrences of "bit-time" to "bit time".
Clause 81 - 2 instances
Clause 82 - 1 instance
Clause 84 - 1 instance
Clause 85 - 1 instance
Clause 86 - 3 instances
Clause 87 - 2 instances
Clause 88 - 2 instances
### IEEE P802.3ba D3.0 40Gb/s and 100Gb/s Ethernet comments

#### Sponsor ballot

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
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<tbody>
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<td>88.3.2</td>
<td>339</td>
<td>10</td>
<td>120</td>
</tr>
<tr>
<td>Hajduczenia, Marek</td>
<td>ZTE Corp.</td>
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</table>

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

The text in 88.3.2 is clear, but it is always better to have such skew requirements presented in the form a table.

**Suggested Remedy**

Add a table with the skew requirements into all clauses which contain PMD definitions and contain similar textual description to 88.3.2

**Response** **Response Status** C

REJECT.

[Editor's Note: Page changed from 10 to 339 and Line changed from 339 to 10]

The skew requirements are presented in a table in subclause 80.5 which is referenced in each of the clauses where skew requirements are called out. However, many of the individual requirements have conditions that must be fulfilled before the limit applies, e.g. "If the PMD service interface is physically instantiated so that the Skew at SP2 can be measured, then the Skew at SP2 is ..." This is best captured in the textual form as in the current draft.

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
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<tbody>
<tr>
<td>88</td>
<td>88.5.4</td>
<td>341</td>
<td>46</td>
<td>846</td>
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<tr>
<td>Dudek, Michael</td>
<td>QLogic Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

There is no reference to the signal detect requirements

**Suggested Remedy**

Insert at the end of the first sentence. "that meet the requirements of table 88-4"

**Response** **Response Status** C

ACCEPT IN PRINCIPLE.

[Editor's Note: Page changed from 43 to 342 and Line changed from 342 to 43]

Table 88-4 does not place requirements on the optical signals, but rather on the SIGNAL_DETECT function.

Change "SIGNAL_DETECT shall be a global indicator of the presence of optical signals on all four lanes." to "SIGNAL_DETECT shall be a global indicator of the presence of optical signals on all four lanes. The value of the SIGNAL_DETECT parameter shall be generated according to the conditions defined in Table 88-4."

See also comment 841
table 88.5 and table 88.7.
My knowledge is too small to be sure, but 10 gigabit/sec has L for 1310 nm, and E for 1550 nm. Now, in 100 Gb/s, E and L has same wavelengths, and only difference is maximum distance and such parameters as sensitivity of receiver (table 88.6). But, if same wavelength, why E? I thought that E means extra long wavelength (at least in 10 Gb/s).

Suggested Remedy

REJECT.
Since the 100GBASE-LR4 and 100GBASE-ER4 PMDs use identical wavelengths, they cannot be distinguished by means of a letter indicating wavelength.
In the 40GBASE and 100GBASE nomenclature as explained in 80.1.4 the L does not stand for long wavelength.

The nomenclature was adopted by the task force in May 2008 (See slide 8 of Ganga_02_0508 and Motion #2 in May 2008 minutes).
The nomenclature was further discussed in July 2009 with the following result:
Straw Poll #1:
The task force was asked to indicate a preference between the options:
• Leave the nomenclature unchanged;
• Change the nomenclature to one of 100GBASE-LRE4, 100GBASE-LME, 100GBASE-LR4-E

Results
All in the room: Unchanged - 25, Change - 25
802.3 voters: Unchanged - 26, Change - 26

See also comment 391.

Response

REJECT.

Change the text of the Note to read as follows: NOTE - There is no requirement to associate a particular electrical lane with a particular optical lane, as the PCS is capable of receiving lanes in any arrangement. Also, clarify what lanes are meant - are these PMD lanes or PCS lanes?

Suggested Remedy

Per comment

Response

ACCEPT IN PRINCIPLE.
[Editor's note: Page changed from 47 to 343 and Line changed from 343 to 47]
These lanes are clearly not PCS lanes as there are 20 PCS lanes for 100GBASE-R.

Change "NOTE-There is no requirement to modulate a particular electrical lane on to a particular optical lane on to a particular optical lane, as the PCS is capable of receiving with the lanes in any arrangement." to "NOTE-There is no requirement to associate a particular electrical lane with a particular optical lane, as the PCS is capable of receiving lanes in any arrangement."

Response

REJECT.
[Editor's note: Page changed from 2 to 344 and Line changed from 344 to 2]
Putting the example in brackets makes the sentence easier to read. This is also the format used in the base standard (see 52.5)
Comment Type: E  Comment Status: A
Title says "100GBASE-LR4 operating range" yet table covers 100GBASE-ER4 also.
Suggested Remedy
Change title
Response
ACCEPT IN PRINCIPLE.
Change the title of Table 88-6 from "100GBASE-LR4 operating range" to "100GBASE-LR4 and 100GBASE-ER4 operating ranges"

Comment Type: E  Comment Status: A
Table 88-13. Thick vertical line between cells.
Suggested Remedy
Use a thin vertical line between cells.
Response
ACCEPT.
[Editor's note: Subclause changed from 88 to 88.8.10]
See also comments 244 and 240

Comment Type: TR  Comment Status: D
Current 10 MHz jitter tolerance corner frequency leads to higher power and complexity for the receiver. The CRU BW was increased by scaling CRU BW up by factor of 10.7/10.3125 from 10 GbE but the VCO noise and other power supply noise do not scale up. We are burdening the receiver for no clear benefit for the transmitter. The 10 MHz burden will remain even in the case of future generation where the ASIC/Serdses run at 25 G with DFE implementation!
Suggested Remedy
Propose to consider corner frequency of 7 MHz instead of current 10 MHz and change 100 KHz to 70 KHz. Table 83-13 becomes:

<table>
<thead>
<tr>
<th>f</th>
<th>S = 0.05 (target value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;7 MHz</td>
<td>not defined</td>
</tr>
<tr>
<td>7 KHz ≤ f ≤ 7 MHz</td>
<td>7*10^4/f + S - 0.05</td>
</tr>
<tr>
<td>&gt;7 MHz</td>
<td>f &lt; 10 S = 0.05</td>
</tr>
</tbody>
</table>

Proposed Response
REJECT.

This comment was WITHDRAWN by the commenter.

The relative merits of 7 vs. 10 MHz corner frequencies depend on the implementation details of the clock extraction unit. Comments 127, 128 and 129 against D 2.2 proposed to change the corner frequency in Clause 88 from 10MHz to 7MHz and were discussed by the Task Force Optical track during the Chicago meeting in September 2009. The result of a vote was:
The Task Force voted on whether to:
A - Leave the CRU corner frequency at 10 MHz and correct the formula in Table 88-13
B - Change the CRU corner frequency to 7 MHz in a consistent manner in clause 88
A 9
B 1
Stress receiver sensitivity test for frequency greater than loop BW defines Sj in the range of 0.05 UI to 0.15 UI. Defining the stress receiver sensitivity with so much slope means the test will not be consistent and higher amount of Sj will penalize the receiver for no good reason. Why do we need to carry this 10 years old legacy when test equipment where arcade and CL86A already take advantage of this?

Suggested Remedy
- Propose to limit max Sj to 0.05 UI. Figure 86A-10 and Table 86-7 can be used as guide line. Table 88-13 then becomes:
  - f<100 KHz Not defined
  - 100 KHz<f<=10 MHz 5x10^5/f - 0.05
  - 10 MHz<f<10 LB 0.05

Response
- ACCEPT IN PRINCIPLE.

The procedure for stressed receiver sensitivity measurement in 87.8.11 has been modified by comment 794.

"per the methods of 52.9.9.3." should be "per the methods of 87.8.11.2." as in king_01_0709.pdf

Suggested Remedy
- Change "per the methods of 52.9.9.3." to "per the methods of 87.8.11.2."

Response
- ACCEPT IN PRINCIPLE.

This comment was WITHDRAWN by the commenter.
Comment Type: TR
Comment Status: A

Dudek, Michael
QLogic Corporation

Comment
DGD is an important channel characteristic for longer fibers and the test channel DGD is not specified thereby potentially leading to varying test results.

Suggested Remedy
Add an extra column to table 88-12. DGD(max). Value to be 8ps for both lengths.

Response
Response Status: W

ACCEPT IN PRINCIPLE.

[Editor's note: Subclause changed from 88 to 88.8.5.2]

Table 88-12 defines a channel for transmitter compliance testing. DGD is a parameter of the optical channel which is converted in to a penalty by the optical receiver. Consequently, it is inappropriate and very difficult to apply the maximum link DGD reproducibly to the channel for a transmitter compliance requirement. Long fibres are specified for maximum mean DGD (usually in ps per sqrt(km)) rather than maximum DGD which is theoretically unbounded.

From the curves on slides 5 and 8 of anslow_04_1108.pdf a maximum DGD of 3 ps gives a penalty below 0.1 dB. Using a peak to mean value of 3.75 (to give 2.6 sec/year above the "peak"), gives a requirement of 0.8 ps maximum mean DGD. This value can be achieved using a fibre of length 60 km and a mean DGD coefficient of 0.1 ps per sqrt(km) which is readily obtainable.

Add a new column to Table 88-12 for the "maximum mean DGD" with a value of 0.8 ps for both 100GBASE-LR4 and 100GBASE-ER4.

Also add a new paragraph at the end of 88.8.5.2: "The mean DGD of the channel is to be less than the value specified in Table 88-12."

Comment Status: A

Dudek, Michael
QLogic Corporation

Response
Response Status: W

ACCEPT IN PRINCIPLE.

[Editor's note: Subclause changed from 88 to 88.8.5.2]

Table 88-12 defines a channel for transmitter compliance testing. DGD is a parameter of the optical channel which is converted in to a penalty by the optical receiver. Consequently, it is inappropriate and very difficult to apply the maximum link DGD reproducibly to the channel for a transmitter compliance requirement. Long fibres are specified for maximum mean DGD (usually in ps per sqrt(km)) rather than maximum DGD which is theoretically unbounded.

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Add a new column to Table 88-12 for the "maximum mean DGD" with a value of 0.8 ps for both 100GBASE-LR4 and 100GBASE-ER4.

Also add a new paragraph at the end of 88.8.5.2: "The mean DGD of the channel is to be less than the value specified in Table 88-12."

Comment Type: TR
Comment Status: D

Ghiasi, Ali
Broadcom

Comment
Transmitter eye diagram is measured CRU BW of 10 MHz will result to more complex higher power receiver implementations. D2.1 and comment 128 will result to more complex higher power receiver implementations. Increased CRU BW has very little benefit on the VCO noise. The 10 MHz burden will remain even in the case of future generations where ASIC/SerDes operate at 25 G with DFE receiver!

Suggested Remedy
Propose CRU BW 7 MHz instead of current 10 MHz. Higher CRU BW has very little benefit on the VCO noise and power supply noise but significant penalty on the receiver, see ghiasi_01_0110

Proposed Response
Response Status: Z

REJECT.

This comment was WITHDRAWN by the commenter.

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