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

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

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

Suggested Remedy

Add sentence at end of 73.9.1:

This primitive is an out-of-band asynchronous signal.

Response

ACCEPT IN PRINCIPLE.

This was discussed in the BRC of the logic task force and it was decided that it would be inappropriate to add this text as it directly concerns implementation. Hence there is no change to the base standard.

There is no change to base text in 73.9.1. So delete the change instruction and 73.9.1 from 802.3ba draft.

Suggested Remedy

change fec_bock_lock to fec_block_lock

Response

ACCEPT.

There is no extra period ..

Suggested Remedy

delete one of them

Response

ACCEPT.

Also scrub clause 74 for other instances such as:

- page 105, line 30
- page 109, line 50 ‘rate’
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>82.1.4</th>
<th>P</th>
<th>165</th>
<th>L</th>
<th>9</th>
<th>#</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marris, Arthur</td>
<td>Cadence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong>: TR</td>
<td><strong>Comment Status</strong>: A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There is redundancy in the descriptions of the inter-sublayer interfaces and 82.1.4 reads awkwardly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Move 82.2.1 to be under 82.1.4 and renumber to 82.1.4.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renumber 82.1.5 to 82.1.4.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong>: Response Status C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCEPT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>81.1</th>
<th>P</th>
<th>139</th>
<th>L</th>
<th>46</th>
<th>#</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marris, Arthur</td>
<td>Cadence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong>: E</td>
<td><strong>Comment Status</strong>: A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>change &quot;The XLGMII and the CGMII is&quot; to &quot;The XLGMII/CGMII is&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong>: Response Status C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See the resolution to comment #408</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>81.1.2</th>
<th>P</th>
<th>147</th>
<th>L</th>
<th>9</th>
<th>#</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marris, Arthur</td>
<td>Cadence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong>: E</td>
<td><strong>Comment Status</strong>: A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change &quot;a XLGMII&quot; to &quot;an XLGMII&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>also on page 150 line 34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong>: Response Status C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCEPT.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>82.2.4.1</th>
<th>P</th>
<th>168</th>
<th>L</th>
<th>9</th>
<th>#</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marris, Arthur</td>
<td>Cadence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong>: TR</td>
<td><strong>Comment Status</strong>: A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I/O/ refers to an ordered set not a control character. The control character for an ordered set is either /Q/ or /Fsig/.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also need to explain Z notation here.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change: &quot;Control characters other than /I/, /S/ and /T/ are labeled C0 to C7. The control character for ordered_set is labeled as O0 since it is only valid on the first octet of the XLGMII/CGMII. The control character for start is labeled as S0 for the same reason. The control character for terminate is labeled as T0 to T7.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| To: "The control characters /I/ and /E/ are labeled C0 to C7. The control characters, /Q/ and /Fsig/, for ordered_sets are labeled as O0 since they are only valid on the first octet of the XLGMII/CGMII. The control character for start is labeled as S0 for the same reason. The control character for terminate is labeled as T0 to T7. The four trailing zero data octets in ordered_sets are labeled as Z4 to Z7."
| also delete the sentence "Control codes fixed to all zeros are identified as a Z code." in 82.2.4.4 on page 171 line 46. |
| **Response**: Response Status C |
| ACCEPT. |
Comment Type: T  Comment Status: A
"Each control block contains eight characters.' Is this really true?

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

or change to:
Each control block encodes eight characters.

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Change to:
Each control block encodes eight characters.

Comment Type: T  Comment Status: A
"Control codes fixed to all zeros are identified as a Z code' does not make sense.

Suggested Remedy
Delete this sentence.

Add explanation of Z in 82.2.4.1 Notation conventions

Response
Response Status: C
ACCEPT IN PRINCIPLE.
Sentence will be deleted. See comment #9 for the definition of Z.

Comment Type: E  Comment Status: A
"style"

Suggested Remedy
change '4' to 'four'

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
spelling transmit

Suggested Remedy
cchange transmit to transmit

Response
Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
spelling interference

Suggested Remedy
cchange interference to interference

Response
Response Status: C
ACCEPT.
See suggested remedy
Comment ID # 16

Cl 85 SC 85.8.3.2 P 244 L 37 # 16
Mellitz, Richard Intel

Comment Type TR Comment Status A

Apparent units for equation 85-2 need to GHz.

SuggestedRemedy
Put note suggesting f is in GHz or scale eq 85-27 to 85-30

Response Response Status W
ACCEPT IN PRINCIPLE.

add f is in GHz

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

Comment Type TR Comment Status A

The worst case ILTP2 can be up to 6.1 dB at 5.156 GHz. The test fixture can be up to 4.5 dB. (eq 84-33) That leaves in 1.6 dB left for board, package, and silicon. If the package uses up 1.5 dB (Pkg55mm_T33mm115ohm_highBGcoupling.s8p, na_02_1207) that leaves .1 dB for board routing and silicon. Any large package device (like a router) will require 6-8" to route to a connector. That's 3.5 dB to 4.5 dB. The 0.1 dB budget won't support that.

SuggestedRemedy
change eq, 85-40 to 
\[((0.146*sqrt(f)+0.000896)*f)\]dB
and
In table 85-4 change
ILTP2 AN0 max from 1.6 to 2.2
ILTP2 AN1 max from 2.5 to 3.5

Response Response Status U
ACCEPT IN PRINCIPLE.

See remedy comment#294

Cl 82 SC 82.2.19.2.4 P 183 L 37 # 19
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Plural.

SuggestedRemedy
Replace "marker" with "markers".

Response Response Status C
ACCEPT.

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

Comment Type E Comment Status A

Style.

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

Response Response Status C
ACCEPT.

Overtaken by comment 366

Cl 87 SC 87.3.1 P 303 L 8 # 21
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A
Wrong reference.

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

Response Response Status W
ACCEPT IN PRINCIPLE.

See comment 29

Cl 82 SC 82.2.19.2.3 P 182 L 48 # 18
Muller, Shimon Sun Microsystems, Inc

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

SuggestedRemedy
Delete T_BLOCK_TYPE.

Response Response Status C
ACCEPT.
Dupe of #412
<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Delete the &quot; at the end of the paragraph.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>T</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>There are multiple test patterns specified in Table 87-11. However, it is not clear whether the tests have to be performed with all of the patterns or whether any one pattern is sufficient. Also applies to subclause 88.9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SuggestedRemedy</td>
<td>Insert before last sentence &quot;Any of the test patterns given for a particular test in Table 87-11 may be used to perform that test.&quot; Make equivalent change in 88.9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>T</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Clauses 84 through 88 show clause 83A XLAUI/CAUI as optional in Tables 84-1, 85-1, 86-2, 87-1 and 88-1. However, clause 83B could be used also and in some cases is more appropriate than 83A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SuggestedRemedy</td>
<td>In Tables 84-1, 85-1, 86-2, 87-1 and 88-1 show clause 83B as optional</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Change &quot;In addition, the PCS shall transmit what it receives from&quot; to &quot;In addition, the PCS may transmit what it receives from&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Change &quot;In addition, the PCS shall transmit what it receives from&quot; to &quot;In addition, the PCS transmits what it receives from&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Change &quot;In addition, the PCS may transmit what it receives from the XLMII/CGMII to the PMA sublayer, and shall ignore all data presented to it by the PMA sublayer.&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Change: In addition, the PCS shall transmit what it receives from the XLMII/CGMII to the PMA sublayer, and shall ignore all data presented to it by the PMA sublayer. To: In addition, the PCS shall transmit what it receives from the XLMII/CGMII to the PMA sublayer, and shall ignore all data presented to it by the PMA sublayer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment Type</th>
<th>E</th>
<th>Comment Status</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuggestedRemedy</td>
<td>Show 83B as optional for 87-1 and 88-1. Show 83B as optional for 86-1 with note b In Table 80-1 add a note to CR and KR PMDs to say that 83B is not optional for them with editorial licence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response</td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>
Comment Type  T  Comment Status  A

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

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

Response  Response Status  C
ACCEPT IN PRINCIPLE.

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

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

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

85.10.8 describes the cable assembly rather than the channel.

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

Comment Type  E  Comment Status  A

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

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

Response  Response Status  C
ACCEPT IN PRINCIPLE.
Change to "contains"
Cl 82 SC P L # [31]  
Dawe, Piers Avago Technologies  

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

Suggested Remedy  
If the counter definitions in 49.2.14.2 Counters are needed, refer to them somehow from 82, or copy them.  
The same issue may apply to the test-pattern error counter.  
Response  
ACCEPT IN PRINCIPLE.  
Add in the following to the counter definitions on page 183:  
errrored_block_count: 8-bit counter. When the receiver is in normal mode, errored_block_count counts once for each time RX_E state is entered. This counter is reflected in MDIO register bits 3.33.7:0.  
Also add:  
test_pattern_error_count: 16-bit counter. When the receiver is in test-pattern mode, the test_pattern_error_count counts errors as described in 82.2.18. This counter is reflected in MDIO register bits 3.43.15:0.  

Comment Type T Comment Status R  
We now have two error counting mechanisms that can be used on 64B/66B-like signals: errored blocks and BIP errors. For isolated errors at error rates of interest, they will give near-identical results. If burst errors are involved, the errored block counter will typically count 1 per burst while the BIP error counters will typically count the number of errors in the burst.  
It would be useful to be clearer which is meant by BER. As MTTFPA is so important and burst errors are a threat to it, BIP counting seems preferable. Also, it is preferable to be able to count errors the same way with live traffic as with the normative scrambled idle test pattern.  

Suggested Remedy  
Say that BER for 64B/66B signals is defined by BIP error counting. Consider removing (for 40G/100G) or making optional the block error counter mechanism and the errored blocks counters.  
Do we want a counter of BIP errors summed across the lanes?  
Response  
REJECT.  
BIP is not a great way to measure burst errors, and the BIP saturates at a much lower BER (10^-6 approximately). This lower BER saturation is not consistent with the current high BER SM that kicks in at a 10^-4 BER.  
As far as the accumulated BIP error count, the consensus is to leave that to the SW if desired.
The PMA receive side PRBS31 checker would be much more useful if it could check a
signal that had been through a gearbox, e.g. when testing whole modules or whole gearbox
ICs. This is more of a concern for 100G than for 40G.
Also it is desirable to do the same test with the same pattern in module factory, and in host
factory, and in service. See dawe_01_0509.pdf and subsequent work.
Note that the change of words below makes no difference to the high speed silicon of e.g.
a 40G serial PMA or a 10-lane PMA pattern generator because a PRBS31 when 2-way 4-
way bit-demuxed is four PRBS31s (with offsets >31 UI). So far the analysis shows that interleaved PRBS31s have similar characteristics to single
PRBS31s.

SuggestedRemedy
Change
"on each of the lanes" to "on each of the PCS lanes" here and at line 19.
Change "one lane and any other lane" to "one PCS lane and any other PCS lane"
In the paragraphs beginning line 25 and line 34, change "lane" or "lanes" to "PCS lane" or
"PCS lanes".
Delete "Note that bit multiplexing of per-lane PRBS31 may produce a signal which is not
meaningful for downstream sublayers."
Provide 20 PRBS31 error counters in each direction, one per PCS lane.

Response  Response Status  W
REJECT.
This comment was not accepted based on dawe_01_0509. Subsequent investigation as
shown in anslow_05_0709 gives some concern over this approach.

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

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

Response  Response Status  C
REJECT.
There is no such specification in 49.2.12 for 10G, and it does not seem compelling to
diverge in the spec for 40/100G. Such limitations would seem to be implementation
dependent.
Comment Type: TR/technical required

Comment Status: R

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

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

Suggested Remedy:

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

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

Response Status: U

REJECT.

See comment 184

---

Comment Type: TR/technical required

Comment Status: R

Exchange of DME frames is an unnecessary burden on the host: it was designed for AN purposes but the other port types that this port could be connected to can't understand it. The choice of link types is 4 x 3.125 lanes (CX4), 4x10G lanes, and 4x10G lanes with FEC, and this can be managed with 'Parallel Detection' not DME frames.

In the future, and in closed systems such as a supercomputer, support for legacy CX4 will be unnecessary.

Note that 16G Fibre Channel do not use DME frames, although for electrical PMDs they use training. They may use training frames to signal FEC support, although that should not be necessary.

DME signalling is not necessary for these copper links, and should not appear on front-panel ports.

Suggested Remedy:

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 can use Parallel Detection. Use the same method as 16GFC's link speed negotiation for CX4/CR4 negotiation. This is in line with the backward compatibility with CX4 and baseline "Parallel detection function to detect legacy 100GBASE-CX4 PHYs".

Response Status: W

REJECT.

Suggested remedy inconsistent with baseline objective to utilize 802.3ap electricals and to include backward compatibility with CX4 see diminico_02_0708.pdf.

The commenter has not provided a sufficiently complete proposal for replacement of DME frames with a parallel detection mechanism.

---

Comment Type: TR/technical required

Comment Status: R

CRn like all other front-panel Ethernet PMDs needs exemplary MMTFPA. gustlin_04_0509 leveraged previous backplane analysis since we have no other data! Because CRn uses equalisation even more than KR we need to repeat the analysis with CRn data.

Suggested Remedy:

Find out what the error propagation statistics of CRn are, then work out the MMTFPA ***FOR CRn***. If it isn't adequate, fix the issue (there may be several ways to fix it, some really minor like tweaking hi_ber).

Response Status: W

REJECT.

gustlin_04_0509 leveraged previous backplane analysis that are applicable to CRn, as CRn utilizes KR electricals (transceivers) and channel limits. See comment#96 for reconciliation of channel loss limits with KR.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.11.1.2</td>
<td>260</td>
<td>27</td>
<td>39</td>
</tr>
</tbody>
</table>

Dawe, Piers, Avago Technologies

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

Specifying of cable at low frequencies still needs fixing; the informative note is nice but we need something normative.

If "it's just a wire" then meeting a low frequency spec will be easy. Remember this is not a measurement standard; no-one has to measure something if they can convince the customer that "it's just a wire" so there isn't a cost or test-time problem.

However, for Style-1 40GBASE-CR4 and 100GBASE-CR10 plug connectors the receive lanes are AC-coupled; the coupling capacitors are contained within the plug connectors. Large customers can avoid the bad cables by experience but this is Ethernet; any cable from Fry's should work.

**Suggested Remedy**

Add a normative specification to 85.10 Cable assembly characteristics to ensure that performance not much worse than the capacitor recommendation is achieved.

**Response**

**Response Status**: W

ACCEPT IN PRINCIPLE.

It should be noted that there may be various methods for AC-coupling in actual implementations. The low frequency 3 dB cutoff of the AC-coupling shall be less than 50 KHz.

Add PICS entry.

NOTE-It is recommended that the value of the coupling capacitors be 100 nF. This will limit the in rush currents and baseline wander.

This requirement is already embodied in the 85-10 specifications. For style 1 and CR10 MDI's the cable assembly specifications are to be met with the coupling capacitors contained within the plug connectors.

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.9.4</td>
<td>248</td>
<td>16</td>
<td>40</td>
</tr>
</tbody>
</table>

Dawe, Piers, Avago Technologies

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

Change to clearly normative text, and to match transmitter section.

**Suggested Remedy**

Change 85.8.4 Receiver characteristics at TP3 summary

The receiver characteristics at TP3 are summarized in Table 85-5.

to

85.8.3 Receiver characteristics

Receiver characteristics shall meet specifications at TP3, unless otherwise noted. The specifications at TP2 are summarized in Table 85-5. The receiver specifications at TP5 are provided informatively in Annex 85A, Table 85A-2.

**Response**

**Response Status**: C

ACCEPT IN PRINCIPLE.

Change: The receiver characteristics at TP3 are summarized in Table 85-5.

To: The receiver characteristics shall meet specifications summarized in Table 85-5 at TP3 unless otherwise noted.

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.10.2</td>
<td>321</td>
<td>11</td>
<td>41</td>
</tr>
</tbody>
</table>

Dawe, Piers, Avago Technologies

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

I believe the sum of new cable loss limit plus PCB loss limit exceeds the KR "high confidence" region of 68B. Fixing this may mean adjusting the 10 m objective.

**Suggested Remedy**

Reduce the cable loss so that cable loss plus PCB losses is within the KR high confidence region.

**Response**

**Response Status**: W

ACCEPT IN PRINCIPLE.

See remedy comment #96
Comment Type | TR | Comment Status | R
---|---|---|---

Specification range for cable insertion loss is not adequate especially at low frequencies. SFP+ Annex E cable S-parameter specs go down to 10 MHz. Even a PRBS9 goes down to 20 MHz. If "it's just a wire" then meeting a spec below 50 MHz will be easy. Remember this is not a measurement standard; no-one has to measure something if they can convince the customer that "it's just a wire" so there isn't a cost or test-time problem. Large customers can avoid the bad cables by experience but this is Ethernet; any cable from Fry's should work.

**SuggestedRemedy**
Extend the frequency range of Cable assembly insertion loss, Cable assembly return loss, Near-End Crosstalk, MDNEXT, FEXT and MDELFEXT down to 10 MHz at the low end.

**Response**
This comment was submitted against D2.0. The comment was accepted in principle with remedy to specify minimum of 50 MHz for 85.9 channel parameters and 85.10 cable assembly parameters as sufficient to characterize impairments.

Comment Type | T | Comment Status | A
---|---|---|---

Previously, draft says "In this clause... an example item is numbered i." i is the usual example integer (while x is the usual example number on a continuous scale).

**SuggestedRemedy**
Change x to i where appropriate. Affects 87, 88 also.

**Response**
ACCEPT IN PRINCIPLE.
In clauses 80, 82, 83, 84, 85, 86, 87, 88 change the variable in the service interface primitives from "x" to "i"

**Comment Type** | T | **Comment Status** | A
---|---|---|---

Unnecessary repetition: the sentence "As Pattern 3 is more demanding..." occurs four times already in 86, and possibly should appear for other parameters in 86 and in the equivalent places in 87, 88 and 86A. It would be better to:

**SuggestedRemedy**
Move the sentence to 86.8.2 p282 line 53 and equivalent places in 87.8.1, 88.9.1 and 86A.5.2. Delete the three equivalent sentences. Alternatively, move the sentence to become a table note to Table 86-11, referred to from PRBS31. Delete the three equivalent sentences. Add similarly in 87, 88 and 86A. Make tables 87-10 and 88-14 wider if text added to tables.

**Response**
ACCEPT IN PRINCIPLE.
Move the sentence to 86.8.2 p282 line 53 and equivalent place in 86A.5.2. Delete the three equivalent sentences.

For clauses 87 and 88 see response to comment 23.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Cl</th>
<th>SC</th>
<th>Page</th>
<th>Line</th>
<th>Type</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Suggested Remedy</th>
<th>Response Status</th>
<th>Comment Status</th>
<th>Response</th>
<th>Comment ID</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>#46</td>
<td>86</td>
<td>86.1</td>
<td>271</td>
<td>23</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>REJECT.</td>
<td>This comment was WITHDRAWN by the commenter. May affect other clauses.</td>
<td></td>
<td></td>
<td>D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>#47</td>
<td>86</td>
<td>86.5.1</td>
<td>275</td>
<td>21</td>
<td>T</td>
<td>T</td>
<td>A</td>
<td>CARETAKER.</td>
<td>Change it back (two places). Add new second sentence to 86.5.1 &quot;An optional physical partitioning and electrical connector is shown. At line 50, add &quot;: see Annex 86A&quot;.</td>
<td>ACCEPT IN PRINCIPLE. See response to 151.</td>
<td></td>
<td>C</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>#48</td>
<td>86</td>
<td>86A.4.1.1</td>
<td>408</td>
<td>40</td>
<td>T</td>
<td>T</td>
<td>A</td>
<td>At the last meeting we considered reducing the upper limit of required (or recommended) S-parameter compliance from 11.1 GHz to 10.4 GHz. I don't think we considered the compromise suggested below.</td>
<td>For nPPI host, module and channel, reduce the upper limit of required (or recommended) S-parameter compliance from 11.1 GHz to 10.4 GHz. But for the compliance boards, do not reduce the limit.</td>
<td>REJECT. Kept at 11.1 GHz for synergy reasons. See the response to comment 507 against Draft 2.0</td>
<td></td>
<td></td>
<td>C</td>
<td>R</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: Comment ID
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Page</th>
<th>Commenter</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>#50</td>
<td></td>
<td>Dawe, Piers</td>
<td>T</td>
<td>A</td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>#51</td>
<td></td>
<td>Dawe, Piers</td>
<td>T</td>
<td>A</td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td>#52</td>
<td></td>
<td>Dawe, Piers</td>
<td>E</td>
<td>A</td>
<td>ACCEPT. Be consistent with resolution of 316.</td>
</tr>
<tr>
<td>#53</td>
<td></td>
<td>Dawe, Piers</td>
<td>T</td>
<td>A</td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
</tbody>
</table>

**Comment 50**

**Comment Type:** T  
**Comment Status:** A  
Too many "shall"s; one per test procedure is enough.

**Suggested Remedy:**

Leave the first "shall", in 86A.5.3.8. In the rest of 86A.5.3, change "shall be" to "is" or "are", "shall have" to "has", "shall not exceed" to "does not exceed", "shall transmit" to "transmits". Change "The BER shall remain below 10-12." to "The BER of a compliant host receiver remains below 10-12."

**Response Status:** C

**Response:**

ACCEPT IN PRINCIPLE.

Leave the first "shall" in 86A.5.3.8. In the rest of 86A.5.3.8, change "shall be" to "is" or "are", "shall have" to "has", "shall not exceed" to "does not exceed", "shall transmit" to "transmits". Change "The BER shall remain below 10-12." to "The BER of a compliant host receiver remains below 10-12."

---

**Comment 51**

**Comment Type:** T  
**Comment Status:** A  
With the split of 86 into two parts, need to tell the reader about the dual-use parameter definitions in 86.8.3.

**Suggested Remedy:**

Insert sentence:  
As well as the parameter definitions below, some definitions with dual use (both optical and electrical) are given in 86.8.3.

**Response Status:** C

**Response:**

ACCEPT IN PRINCIPLE.

---

**Comment 52**

**Comment Type:** E  
**Comment Status:** A  
"PICS proforma tables for" should match annex title.

**Suggested Remedy:**

Change "Physical Medium Dependent (PMD) sublayer and medium, types 40GBASE-SR4 and 100GBASE-SR10" to "Parallel Physical Interface (XLPPI/CPPI) for 40GBASE-SR4 and 100GBASE-SR10".

**Response Status:** Z

**Response:**

ACCEPT. Be consistent with resolution of 316.

---

**Comment 53**

**Comment Type:** T  
**Comment Status:** A  
Is this eye mask a condition of the host electrical receiver signal tolerance test?

**Suggested Remedy:**

If so, re-order table rows to reflect this.

**Response Status:** C

**Response:**

ACCEPT IN PRINCIPLE.  
Move "Conditions of host electrical receiver signal tolerance test" above "Eye mask coordinates".
### IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

#### Working Group ballot

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>E</td>
<td>A</td>
<td>DDPWS min. seems wrong.</td>
<td>Change to DDPWS tolerance (still min.).</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>T</td>
<td>R</td>
<td>If Table 86A-3, nPPI module electrical output specifications at TP4, has a termination mismatch spec, why doesn't Table 86A-1, nPPI host electrical output specifications at TP1a?</td>
<td>Add row, Termination mismatch at 1 MHz, max 5%.</td>
<td>REJECT.</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>E</td>
<td>A</td>
<td>the electrical nPPI.</td>
<td>Add row, Output transition time, 20% to 80% min 28 ps. This is easier for the host than SFP+ 34 ps.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>E</td>
<td>A</td>
<td>SCC22 at TP1a and TP4 isn't an XLPPI and CPPI transmit side electrical specification, as it's not on the transmit side. We have referred to 86A.5.1 in each of the previous three sections.</td>
<td>Change to: 86A.4.1.2 Common mode output reflection response SCC22 at TP1a From 10 MHz to 11.1 GHz, the magnitude in decibels of the host common mode output reflection response SCC22 at TP1a shall not exceed the limit given in Equation 86A-2 and illustrated in Figure 86A-1. Create new: 86A.4.2.2 Common mode output reflection response SCC22 at TP4 From 10 MHz to 11.1 GHz, the magnitude in decibels of the module common mode output reflection response SCC22 at TP4 shall not exceed the limit given in Equation 86A-2 and illustrated in Figure 86A-1. Revise PICS to follow changes.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>E</td>
<td>A</td>
<td>the electrical nPPI.</td>
<td>Put the categories in the same order as elsewhere in the clause.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>E</td>
<td>A</td>
<td>Put the categories in the same order as elsewhere in the clause.</td>
<td>Change &quot;module output differential&quot; to &quot;module differential output&quot;.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
</tbody>
</table>

---

**Note:**
- **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:** Comment ID

---

**Page 14 of 111**

7/16/2009 2:12:06 PM
Cl 86A SC 86A.4.1 P 410 L 13 # 61
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
Font size of the minus sign before 10

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

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.1.1.2 P 413 L 34 # 62
Dawe, Piers Avago Technologies

Comment Type T Comment Status A
Do we have measurements on QSFP and CXP mated HCB-MCB reflection response?

SuggestedRemedy
If so, update equations 86A-8 and 86A-9. If appropriate, combine into a single limit.
Update Figure 86A-2 to match.

Response Response Status C
ACCEPT IN PRINCIPLE.
See response to comment 332

Cl 86A SC 86A.5.1.1.2 P 414 L 46 # 63
Dawe, Piers Avago Technologies

Comment Type T Comment Status A
Cleaning up terminology: the NEXT specs apply from receive side to transmit side (crosstalk that would go from module back to module) as much as vice versa.

SuggestedRemedy
Change "from any transmit lane to any receive lane or vice versa" to "from any input lane to any output lane on the same compliance board or vice versa".
On next page, change "between one transmit lane and another, or between one receive lane and another" to "between any lane and any other co-propagating lane", change "from all but one transmit lanes to any receive lane or vice versa," to "from all but one of a group of 4 or 10 lanes to any counter-propagating lane or vice versa".
The last "or vice versa" doesn't need to be kept but is this an easier way to do the measurement?

Response Response Status C
ACCEPT IN PRINCIPLE.
Change "from any transmit lane to any receive lane or vice versa" to "from any input lane to any output lane on the same compliance board or vice versa".
On next page, change "between one transmit lane and another, or between one receive lane and another" to "between any lane and any other co-propagating lane".
also change "from all but one transmit lanes to any receive lane or vice versa," to "from all of a group of 4 or 10 lanes to any counter-propagating lane"

Ensure that other definitions have the correct direction and number of lanes specified.

Cl 86A SC 86A.5.1.1.2 P 415 L 34 # 64
Dawe, Piers Avago Technologies

Comment Type T Comment Status R
Is FEXT defined as victim signal out / aggressor signal in (through response, as draft), or victim signal out / aggressor signal out?

SuggestedRemedy
?

Response Response Status C
REJECT.
No change to the draft is required!
IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

Draft 2.1 Comments

Cl 86A SC 86A.5.3.3 P418 L7 # 65
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
In this clause

SuggestedRemedy
In this annex

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.3.3 P418 L8 # 66
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
At present, we don’t have a transition time spec on an optical signal.

SuggestedRemedy
Delete “This applies to electrical signals as well as optical signals.”

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.3.3 P419 L23 # 67
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
It may

SuggestedRemedy
Qsq may

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.3.8 P420 L3 # 58
Dawe, Piers Avago Technologies

Comment Type T Comment Status A
802.3 is not a test specification.

SuggestedRemedy
Change “Host electrical receiver signal tolerance testing shall be in accordance with the requirements” to “Host electrical receiver signal tolerance shall be defined by the procedures and requirements”.

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.3.8.3 P421 L42 # 59
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
A voltage stress before the limiter function is to be applied.

SuggestedRemedy
A voltage stress is to be applied before the limiter function.

Response Response Status C
ACCEPT.

Cl 86A SC 86A.5.3.8.3 P420 L50 # 70
Dawe, Piers Avago Technologies

Comment Type E Comment Status A
Terminology: these things aren’t jitter. ISI is an effect not a form of jitter. Later we have “ISI jitter” then “high probability jitter” for apparently the same thing.

SuggestedRemedy
Clean up the terminology in 86A.5.3.8. Spell out “RSS” if necessary.

Response Response Status C
ACCEPT IN PRINCIPLE. Clean up the terminology in 86A.5.3.8. Spell out “RSS”.

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: Comment ID
For 40GBASE-LR4, the TDP limit for the transmitter and the allowance for penalties are the same, at 2.3 dB, but the VECP for the receiver stressed sensitivity test is much lower, 1.6 dB. This is a bigger difference than for other single-mode PMDs, and a significantly lower VECP than in Clause 52.

**Suggested Remedy**

Increase the VECP to e.g. 2 dB and increase the stressed receiver sensitivity (OMA) in step.

**Response**

REJECT. There was no consensus to change this value at this point, however further review is encouraged.

802.3ba link budgets (e.g. TDP vs Tx OMA trade offs) are based on the TDP value being a good measure of the penalty the module receiver would see with a given transmitter over a worst case link.

The module receiver has to provide enough link budget whether the Tx has max or min TDP. The SRS test specifies a TDP value (1.6dB) at which minimum Tx OMA is at the mid point of its allowed range, and the required receiver sensitivity (to meet link budget) is also at the mid point of its range. It would be burdensome to test SRS corresponding to every possible TDP value and there's no justification for measuring SRS at a single extreme of the required receiver sensitivity range.

Previous successful Ethernet spec's show this approach to be reasonable and effective.

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

**Comment:** Maintaining multiple dual references (IEC or ITU-T and TIA) is too onerous. IEC 61280-1-1 is not in the references nor referred to in 86.8.4.1. I believe that TIA/EIA-455-127-A is a better (more up-to-date) reference for spectral width.

**Suggested Remedy**

Either delete "TIA/EIA-455-95-A", here and in 88.9.3 (and PICS).

**Response**


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

**Comment:** Saying "An optical spectrum analyzer (OSA) or equivalent instrument is used" might be just fluff, or introducing terminology that isn't used, or duplicating the normative reference(s), or contradicting the normative reference(s). It's not necessary.

**Suggested Remedy**

Delete "An optical spectrum analyzer (OSA) or equivalent instrument is used", here and in 88.9.2.

**Response**

ACCEPT.
**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

Draft says "The channel provides a maximum optical return loss specified in Table 87-12." Table says "Optical return loss (max)". Hence tester is allowed to provide a lower optical return loss, which would tend to fail compliant transmitters, or the transmitter implementer has an unknown but over-onerous target to meet. Neither is acceptable. So this isn't a "max" at all, it's a test condition. Similarly, the amount of dispersion is unbounded.

**Suggested Remedy**

Replace "a maximum" with "the", delete "(max)". Hence tester is allowed to provide a lower optical return loss. Similarly, the amount of dispersion is unbounded.

**Type of Change**

In 87.8.6.2 and 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

Incorrect table column heading. Anyway, the column heading is not the place for a list of fibre types. When you have a single column of spec limits (as here) the heading should be "Value" (see clauses 68, 85, 86 for examples). When there are two options (as in Table 88-1 and Table 88-18), the heading distinguishes between them.

**Suggested Remedy**

Replace "a maximum" with "the", delete "(max)". Hence tester is allowed to provide a lower optical return loss. Similarly, the amount of dispersion is unbounded.

**Type of Change**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

The required amount of dispersion is clearly bounded.

**Type of Change**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.

Leave Table 87-1 unchanged.

**Comment Type** | **Comment Status** | **Response**
--- | --- | ---
T | A | ACCEPT IN PRINCIPLE.

**Comment**

In Tables 87-12 and 88-16 change "Optical return loss (max)" to "Optical return loss".

**Type of Change**

In 88.9.5.2.

**Response Status**

C

**Response**

ACCEPT IN PRINCIPLE.
In the following, "should" is too weak for a definition. "Instantaneous decision sampling" is utopian. The reference transmitter should meet the following basic requirements:
- Rise/fall times should be less than...
- RIN should be minimized to less than -136 dB/Hz.
- The reference receiver should have the bandwidth...
- The sensitivity of the reference receiver should be limited...
- The reference receiver should have minimal...

Change to:
- The reference transmitter... meets the following basic requirements:
  - Rise/fall times are less than...
  - RIN is less than -136 dB/Hz and should be minimized to .
  - The reference receiver has the bandwidth...
  - The sensitivity of the reference receiver is limited...
  - The receiver has minimal...
  - Decision sampling has minimal uncertainty and setup/hold properties.
  - The sensitivity S... It should be measured while...

Similarly in 88.9.5.

Response

ACCEPT IN PRINCIPLE.

In 87.8.6.1 and 88.9.5.1
- Change "The rise/fall times should be less than" To "Rise/fall times of less than"
- Change "RIN should be minimized to less than" To "RIN of less than"
- Change "The reference receiver should have the bandwidth" To "The reference receiver is required to have the bandwidth"
- Change "The sensitivity of the reference receiver should be limited by" To "The sensitivity of the reference receiver is limited by"
- Change "The receiver should have minimal" To "The receiver has minimal"

If you resize the columns the heading row will fit on one line.
For an optical receiver, the inherent noise level of the PMD is not due to crosstalk or power supply noise; it really is inherent.

Suggested Remedy
Change to match 86.5.4 and 88.5.4: change "due to" to "including the effects of".

Response
ACCEPT.

Table 87-7 says "Lane wavelengths (range)" while Table 87-8 says "Lane wavelengths".

Suggested Remedy
Make these and similar in 88 consistent. Another alternative is "Lane wavelengths (ranges)" - although it's obvious that these are ranges.

Response
ACCEPT IN PRINCIPLE. Use Lane wavelengths (range) consistently.

If the reference CRU corner frequency matters, it must be specified not just bounded on one side.

Suggested Remedy
Delete "less than or equal to". Also in 88.9.5.3.

Response
ACCEPT.
Comment Type: T  Comment Status: A
"may be sent" but sending something isn't discretionary. Editorials.

SuggestedRemedy
Change "Test patterns 3 or 5, or valid 40GBASE-R bit streams may be sent from the transmit section of the receiver under test." to
Pattern 3 or Pattern 5, or a valid 40GBASE-R signal is sent from the transmit section of the PMD under test.
Also 88.9.10.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
In 87.8.11 change "Test patterns 3 or 5, or valid 40GBASE-R bit streams may be sent from the transmit section of the receiver under test" to
To "Pattern 3 or Pattern 5 or a valid 40GBASE-R signal is sent from the transmit section of the PMD under test"
In 88.9.10 change "Test patterns 3 or 5, or a valid 100GBASE-R signal may be sent from the transmit section of the receiver under test" to
To "Pattern 3 or Pattern 5 or a valid 100GBASE-R signal is sent from the transmit section of the PMD under test"

Comment Type: E  Comment Status: A
"The data being transmitted": test patterns aren't data.

SuggestedRemedy
Change "The data being transmitted is asynchronous to the received data." to
The signal being transmitted is asynchronous to the received signal.
In 88.9.10, change "received data." to "received signal.".

Response  Response Status: C
ACCEPT.
For 100BASE-LR4, the TDP limit for the transmitter is 2.2 dB, and the polarisation mode dispersion penalty is estimated at 0.4 dB, but the VECP for the receiver stressed sensitivity test is much lower than the combination, at 1.8 dB. One also has to consider that there is an OMA-TDP spec also, but this seems low.

Suggested Remedy

Increase the VECP to 2.2, adjust the stressed receiver sensitivity (OMA) so that OMA-TDP-PMDpen-loss = SRS-VECP (= -9, so SRS doesn't change from -6.8, I believe).

Response

ACCEPT IN PRINCIPLE.

The 10ps DGD value (with 0.4 dB associated penalty) came from the P802.3ae Equalization Ad Hoc and equates to a link PMD coefficient of 0.8 ps/sqrt(km) (assuming S = 3.75 or 2.6 sec/year above the "Max"). The value of 0.8 ps/sqrt(km) comes from the 99.99th percentile of links made up from fibres with the worst case PMDq of 0.5 ps/sqrt(km). Consequently, the probability of seeing a DGD as high as 10 ps is very small indeed (2.6 s/year on 0.01% of maximum length links of near "worst" fibre). It is therefore more realistic to set the vertical eye closure penalty that the receiver is tested against at 1.8 dB which is representative of the penalties likely to be seen in practical links than it would be to use 2.2 dB which is the maximum the TDP is allowed to be.

Reducing the maximum DGD to 8 ps reduces the expected penalty from 0.4 dB to 0.2 dB. In Table 88-18 change the DGD_max from 10 ps to 8 ps.

Suggested Remedy

Combine the two sections. Combine Table 88-6 and 88-10, and so on.

Response

ACCEPT IN PRINCIPLE.

We should not qualify units: a UI or volt or whatever cannot be peak-to-peak, it's just a unit. The parameter measured in UI or volts or whatever might be defined in a peak-to-peak way, but is this one? I assume what is intended by "Stressed eye jitter" is the stressed eye jitter, J of 52.9.9.2, which is J2, from the 0.5th to the 99.5th percentile not from peak to peak. But 88.9.10 Stressed receiver sensitivity refers to 53.9.12, 53.9.15 and 53.9.14, none of which has a "Stressed eye jitter". 53 wasn't intended for 64B/66B use.

Suggested Remedy

1. Remove "pk-pk", here and in Table 88-12.
2. In 88.9.10 and 87.8.11, define stressed sensitivity by reference to 52.9.9 for the signal characteristics and calibration, not 53.9.12.

Response

ACCEPT IN PRINCIPLE.

For definition of stressed sensitivity see response to comment 143.

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

Suggested Remedy

Combined the two sections, 88.7 and 88.10, and so on.

Response

ACCEPT.

CGMII = 100 Gb/s MEDIA INDEPENDENT INTERFACE PMA = PHYSICAL MEDIUM ATTACHMENT runs together in figure 80-1.
Comment Type  T  Comment Status  A
Change: 
"The two high order sync bits bypass the scrambler."
To:
The two sync bits bypass the scrambler.
high order does not make sense.

Suggested Remedy
as above.

Response  Response Status  C
ACCEPT.

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

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

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

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

Suggested Remedy
as above.

Response  Response Status  C
ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Commenter</th>
<th>Response Status</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>0</td>
<td></td>
<td>0</td>
<td>96</td>
<td>TR</td>
<td>A</td>
<td>Gustlin, Mark</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>01</td>
<td>1.4</td>
<td>26</td>
<td>37</td>
<td>ER</td>
<td>A</td>
<td>Kipp, Scott</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>85</td>
<td>85.11</td>
<td>259</td>
<td>88</td>
<td>TR</td>
<td>A</td>
<td>Kipp, Scott</td>
<td>W</td>
<td></td>
</tr>
</tbody>
</table>

**Comment:** Clause 86 and 85 are not consistent in their PCB loss budgets. The CR4/CRI0 PCB loss allowances are not sufficient for future PCB board designs, and do not support at least 4" of standard PCB trace.

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

See gustlin_04_0709 for details of the changes.

**Response:**
- Accept in principle.
- Use gustlin_04_0709 as reach objective guidance and subsequent input for insertion loss allocation clause 85 comment resolution below.

Use Healey_03A_0709.pdf slide 14.
- 6.26 dB loss TP0-TP2 and TP3-TP5 change to 6.5 dB
- TP0-TP5 changes from 23.96 to 24.44 dB

Represents the loss budget from TP0 to TP5.

In addition, the methodology and assumptions of Healey_03A_0709.pdf slide 14 are accepted.
- For TP0-TP2 and TP3-TP5 change to 6.5 at Nyquist - use scaled 86A-20 only maximum.
- Specification frequency range: 50 MHz to 10000 MHZ.
- In addition, give editor license to implement changes to tx/rx pcb losses to reflect loss basis for scaled 86A-20 equation.

In summary, the link loss budget accomodates at least 7 m reach and an IL of 6.5 dB between TP0-TP2.

For changes to equation 86A-20 see response to comment 223.

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

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

**Response:**
- Accept in principle.
- In clause 1.4 change the text such as "with extended reach" to "with reach up to at least 40 km".

See also response to comment #255.

**Comment:**
- Figure 85-11. This isn't a picture of the QSFP because it only has 26 pins.

**Suggested Remedy:**
- I have the original picture if you want it since I was the editor of QSFP. We have one for QSFP+ also.

**Response:**
- Accept in principle. Update figure 85-11 with QSFP board receptacle figure.
Comment ID # 99
Kipp, Scott  Brocade

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

Figure 85-14 and 85-15 don't match Revision 1.77 of SFF-8642. The latest revision of SFF-8642 uses different terminology than this standard. Revision 1.77 uses D1-D21 instead of D64 to D84. Table use

**Suggested Remedy**

Please put the latest figures in the document.

**Response**

Response Status W

ACCEPT IN PRINCIPLE. Update figures 85-14 and 85-15 per latest revision of SFF-8462.

---

Comment ID # 100
Kipp, Scott  Brocade

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

Figure 86-2. Why do you specify a lane i? Remove this lane decrease the drawing size and so that you don't need two "...".

The and gate symbol also looks bad.

**Suggested Remedy**

Remove lane i. Remove the overlap of the lines where they take a right angle into the AND gate.

Make the AND gate and optical receiver look pretty by removing overlapping lines.

**Response**

Response Status C

REJECT.

The "I" is used in the text in this clause. Beauty is in the i of the beer holder.

---

Comment ID # 101
Kipp, Scott  Brocade

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

Why are there so many 1 sentence paragraphs in this subclause. One paragraph is cut in half by the table.

**Suggested Remedy**

Consolidate some of the paragraphs into longer sentences and make sure the paragraphs aren't divided over the table.

**Response**

Response Status C

ACCEPT IN PRINCIPLE. Move third paragraph to continue first. Look for a way to let a table float to the end of the page (Table 86-13). May be better to leave staff editor to tidy up when pagination is known.

---

Comment ID # 102
Kipp, Scott  Brocade

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

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

**Suggested Remedy**

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

**Response**

Response Status C

ACCEPT IN PRINCIPLE.

Change ONE to one and ZERO to zero throughout the draft, also give the editors licence to change 1 to one and 0 to zero where appropriate.
Cl 85  SC 85.11  P 259  L 11  # 105
Kipp, Scott  Brocade

Comment Type  ER  Comment Status  A
The caption of Figure 85-11 is non-descriptive and not consistent with Fig 85-13.
SuggestedRemedy
Change the caption to Example Style 1 MDI board receptacle
Response  Response Status  W
ACCEPT.

Cl 45  SC 45.2.3  P 64  L 21  # 106
Young, George  AT&T

Comment Type  T  Comment Status  A
Table 45-82 Register name entries for register addresses 3.32, 3.33, 3.42 and 3.43 continue to employ "10G/40G/100G.." nomenclature which was previously removed from the corresponding text in subclauses 45.2.3.11, 45.2.3.12, 45.2.3.15 and 45.2.3.16, respectively.
SuggestedRemedy
Remove four instances of "10G/40G/100G" in Table 45-82 register name entries.
Response  Response Status  C
ACCEPT.

Cl 45  SC 45.2.3.11.4  P 68  L 21  # 107
Young, George  AT&T

Comment Type  T  Comment Status  A
Definition of hi_ber variable needs added reference to Clause 82 PCS.
SuggestedRemedy
Change "This bit is a direct reflection of the state of the hi_ber variable in the 64B/66B state diagram and is defined in 49.2.13.2.2 for 10GBASE-R PCS."
Response  Response Status  C
ACCEPT.

Cl 45  SC 45.2.3.12  P 68  L 35  # 108
Young, George  AT&T

Comment Type  T  Comment Status  A
Definition of block_lock variable needs added reference to Clause 82 PCS.
SuggestedRemedy
Change "This bit is a direct reflection of the state of the block_lock variable in the 64B/66B state diagram defined in 49.2.13.2.2 for 10GBASE-R and in 82.2.19.2.2 for 40/100GBASE-R." to:
"This bit is a direct reflection of the state of the block_lock variable in the 64B/66B state diagram defined in 49.2.13.2.2 for 10GBASE-R and in 82.2.19.2.2 for 40/100GBASE-R."
Response  Response Status  C
ACCEPT.

Cl 45  SC 45.2.3.12.4  P 69  L 54  # 109
Young, George  AT&T

Comment Type  T  Comment Status  A
Definition of errored_block_count variable needs added reference to Clause 82 PCS.
SuggestedRemedy
Change "The errored blocks counter is an eight bit count defined by the errored_block_count counter specified in 49.2.14.2 for 10/40/100GBASE-R,..." to:
"The errored blocks counter is an eight bit count defined by the errored_block_count counter specified in 49.2.14.2 for 10GBASE-R, in 82.3.1 for 40/100GBASE-R,..."
New definition for "BASE-R" in subclause 1.4 conflicts with the use of the name "BASE-R" with a distinctly different meaning as separately defined in and contained throughout Clause 45 text.

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

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

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

The text in subclauses already defines that BASE-R PMD refers to PHY types using the PMDs described in Clause 72, 84 or 85. Add that definition if it is missing from any BASE-R PMD registers. This definition need not be included for BASE-R FEC or BASE-R PCS registers as this is covered by the normative definition of BASE-R in 1.4.

So delete footnote 'a' of Table 45-3.

The FEC was left as 10GBASE-R to indicate that the FEC sublayer can be used by other 10GBASE-R PHY types as well.

So delete the text such as "The BASE-R FEC uncorrected blocks counter, lane 0 is used for 10GBASE-KR and other PHY types using the PMDs described in Clause 72, 84 or 85 with the FEC function described in Clause 74." from FEC related registers.

"Insertion" should be "insertion" correct the two instances of this error in this paragraph.

The Amax equation and its associated parameters (b1, b2, b3, b4) are repeatedly defined throughout the document. Defining Amax in one place (with b1...b4) and then referring to Amax in subsequent equations (with cross-references) would be a cleaner approach.

Equation (85-3) has no dependency on frequency so the associated frequency range specified on line 51 makes no sense.

Delete text "for 50 MHz <= f <= 6000 MHz"
### Comment 114

**Comment Type:** T  
**Comment Status:** A  
Healey, Adam  
LSI Corporation  

**Comment:**

In Figure 85-8, test points TP1 and TP4 should be on the other side of the block labeled "cable assembly test fixture" and not between that block and schematic representation of the connector as shown. If this figure is intended to imply that the cable assembly test fixture should be de-embedded from the measurement, then there really isn’t a need to define the test fixture at all.

Also, the connector receptacle is part of the cable assembly test fixture.

**Suggested Remedy:**

Change the label on each box to "Cable assembly test fixture excluding connector" and move TP1 and TP4 to the outside edges of the boxes.

**Response:**

ACCEPT IN PRINCIPLE.

Add Note figure 85-2. See 85-8 for location of TP1 and TP4.

### Comment 115

**Comment Type:** T  
**Comment Status:** A  
Healey, Adam  
LSI Corporation  

**Comment:**

Test fixture insertion loss allowance is too large. Equation 85-33 corresponds to 4.5 dB loss at half of the signaling rate.

**Suggested Remedy:**

Refer to the compliance board parameters in 86A.5.1.1 since the hardware will likely be identical for the Style 1 connector. If the parameters for Style 2 test fixtures are required to be different, define them separately (however, it is not clear why this should be the case since a common test fixture is defined for both connector styles in the current draft).

**Response:**

ACCEPT IN PRINCIPLE.  
OBE see comment #136.

### Comment 116

**Comment Type:** T  
**Comment Status:** A  
Healey, Adam  
LSI Corporation  

**Comment:**

The definition of Input(i) is incorrect -- it is actually the definition of Output(i). The definition of Output(i) is missing.

**Suggested Remedy:**

Change "Input(i)" to "Output(i)." Add the following definition for "Input(i)":

"DFT of the 1 V peak-to-peak PRBS9 pattern"

**Response:**

ACCEPT IN PRINCIPLE.  
OBE see comment #136.
Comment Type: T  Comment Status: A
Equation (85-2) is mathematically incorrect.

Furthermore, the fitted insertion loss is not the basis of any specification parameters. The fitted transfer function (it is not just insertion loss, the phase response is also required) is used to generate an equalizing filter per Table 85-4, note a. Thus a more appropriate variable name is XFRfit(f).

Finally, it is not clear that the frequency range specified for the fit is appropriate since this transfer function is used to define an equalizer and is not otherwise constrained.

Suggested Remedy
Change (85-2) to read...
"XFRfit(f) = \exp(a0 + a1*sqrt(f) + a2*f + a4*f^2)"

Delete line 39 which defines the frequency range for ILTP2.

Response  Response Status: C
ACCEPT IN PRINCIPLE. OBE see comment#136

Comment Type: T  Comment Status: A
Equation (85-3) is wrong. The coefficients an are complex numbers and the scale factor is incorrect.

Suggested Remedy
Change Equation (85-3) to read:
"ANn = -20*real(\ an\)(10.3125 x 10^9)/2)/log(10) dB"

Response  Response Status: C
ACCEPT IN PRINCIPLE. OBE see comment#136

Comment Type: T  Comment Status: A
Definition of "delta f" is wrong.

Suggested Remedy
Define "delta f" to be "signaling rate/511"

Response  Response Status: C
ACCEPT IN PRINCIPLE
OBE see comment#136
Comment Type T Comment Status A
The variable "delta f" is already defined.

Suggested Remedy
Delete redundant definition.

Response Response Status C
ACCEPT IN PRINCIPLE. OBE see comment#136

Comment Type T Comment Status A
If this is a coefficient of insertion loss then the nominal range of AN0 should be -1.6 to 2.0 dB which corresponds to 1.2 and 0.8 V differential peak-to-peak output amplitudes respectively.

However, this leaves no allowance for the DC loss of the host channel when a -KR compliant device delivers 0.8 V at TP0. Note that the nPPI host channel recommendations (refer to 86A.6) allow 0.56 dB loss at 10 MHz between TP0 and TP1a (comparable to -CRn TP2).

Suggested Remedy
Change AN0 range to -1.6 to 2.5 dB.

Response Response Status C
ACCEPT IN PRINCIPLE. OBE see comment#136

Comment Type T Comment Status A
AN1+AN2 allocation of 3 dB (max.) isn't even adequate to cover the budgetary allocations for the host printed circuit board (PCB) trace (2.37 dB) and host compliance board (HCB) PCB trace (1.26 dB) never mind the device package and connector.

Suggested Remedy
Revise the AN1, AN2, and AN1+AN2 allowances to be consistent with the total loss of the components between the transmit function and TP2.

Response Response Status C
ACCEPT IN PRINCIPLE. OBE comment#136
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Healey, Adam</th>
<th>LSI Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>128</td>
<td>T</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>SC 85.10.9</td>
<td>P 257</td>
<td>L 8</td>
<td>#128</td>
</tr>
<tr>
<td>Test fixture insertion loss allowance is too large. Equation 85-61 corresponds to 2.4 dB loss at half of the signaling rate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to the compliance board parameters in 86A.5.1.1 since the hardware will likely be similar for the Style 1 connector. If the parameters for Style 2 test fixtures are required to be different, define them separately (however, it is not clear why this should be the case since a common test fixture is defined for both connector styles in the current draft).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCEPT IN PRINCIPLE. OBE see comment #96.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Healey, Adam</th>
<th>LSI Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>129</td>
<td>T</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85A</td>
<td>SC 85A.4</td>
<td>P 402</td>
<td>L 31</td>
<td>#129</td>
</tr>
<tr>
<td>It is not clear what is meant by the &quot;insertion loss between TP0-TP1 and TP4-TP5&quot; since TP1 and TP4 are defined at the input (output) of the cable assembly test fixture.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The construction of the channel insertion loss limit (ILCAmax+ILPCBmax) implies that this is intended to mean the host may have loss beyond ILPCBmax/2 equal to the defined cable assembly test fixture loss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modify the text to clarify the intent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCEPT IN PRINCIPLE. See comment #96 and use healey_3a_0709.pdf illustrations as guidance &gt;&gt; move TP1 and TP4; increase the allowance for cable assembly plus test fixtures accordingly. Editor given license to implement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Healey, Adam</th>
<th>LSI Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>T</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85A</td>
<td>SC 85A.2</td>
<td>P 401</td>
<td>L 16</td>
<td>#130</td>
</tr>
<tr>
<td>Since the transmitter characteristics defined at TP0 are essentially identical to 10GBASE-KR (40GBASE-KR4) is seems unnecessary to define them again here in an informative manner. A cross reference should suffice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State that the intent is to have the transmitter characteristics at TP0 match the 40GBASE-KR4 transmitter characteristics at TP1 and supply the appropriate cross reference. Delete all other text in this subclause. Note the title should be corrected to read &quot;TP-0&quot; (zero) and not &quot;TP-O&quot; (&quot;oh&quot;).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REJECT. No consensus to change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Healey, Adam</th>
<th>LSI Corporation</th>
</tr>
</thead>
<tbody>
<tr>
<td>131</td>
<td>T</td>
<td>R</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85A</td>
<td>SC 85A.3</td>
<td>P 402</td>
<td>L 1</td>
<td>#131</td>
</tr>
<tr>
<td>Since the receiver characteristics defined at TP5 are essentially identical to 10GBASE-KR (40GBASE-KR4) is seems unnecessary to define them again here in an informative manner. A cross reference should suffice.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Suggested Remedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State that the intent is to have the receiver characteristics at TP5 match the 40GBASE-KR4 receiver characteristics at TP4 and supply the appropriate cross reference. Delete all other text in this subclause.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REJECT. No consensus to change.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comment Type: T  Comment Status: A
The are multiple formatting and technical issues with the "Max. output jitter" row of Table 85-4.

1. Align characteristic values with the corresponding names.
2. The note that "Jitter measurements at TP2" is unnecessary. In the first paragraph of 85.8.3, it is stated that "the specifications at TP2 are summarized in Table 85-4."
3. "Jitter is specified at a BER of 10^-12" only applies to random and total jitter, and should be noted accordingly.
4. It is not stated anywhere how these parameters are to be measured.

Suggested Remedy
Per comment. For item 4, refer to healey_01_0709.pdf.

Response  Response Status: C
ACCEPT IN PRINCIPLE.

In Table 85-4:
1. Align characteristic values with the corresponding names.
2. Remove "Jitter measurements at TP2"
3. Add: Note b: The total Jitter and random jitter is specified at a BER of 10^-12

Comment Type: T  Comment Status: A
Per Figure 86-3, "TP1 and TP4" should be "TP1a and TP4a".

Suggested Remedy
Per comment.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See response to comment 317.
### Comment #135

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

Table 85-4, note a) states that the associated parameters are "measured with effect of ILTP2(f) loss Equation (85-2) mathematically removed from the signal at TP2 using a software FIR filter that is no more then 6 UI long."

A user of the standard is given no guidance regarding how such a filter may be derived or implemented.

**Suggested Remedy:** Refer to healey_01_0709.pdf.

**Response Status:** C

**Acceptance:** ACCEPT IN PRINCIPLE.

**Response:** Refer to healey_01_0709.pdf.

### Comment #136

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

While it may be true that...

1. A polynomial in sqrt( f ) is a reasonable model for the transfer function of printed circuit board (PCB) traces and...
2. One can also derive a formula that maps the coefficient of the f^2 term in the transfer function to the 20 to 80% rise time of the function's output

...this model may not apply equally well to all implementations of a driver compliant to 10GBASE-KR requirements. One possible outcome of the deficiency in the model is that some weighted least mean squares coefficients (e.g. AN1 and AN4) may turn out to be negative.

This is not permitted per the requirements stated in Table 85-4 ruling out otherwise valid implementations.

**Suggested Remedy:** Refer to healey_01_0709.pdf.

**Response Status:** C

**Acceptance:** ACCEPT IN PRINCIPLE.

**Response:** Refer to presentation healey_02_0709.pdf for implementation of text, replacing 85.8.3.1 Transmitter noise parameter measurements.

**Far-end transmit output noise (parameter)**
- low insertion loss channel - max 2 mV
- high insertion loss channel - max 1 mV

**Note:** these values replace TBD 1 and TBD 2 in healey_02_0709.pdf.

Replace PRBS9 with square wave test pattern and specify the histogram for RMS noise measurement is 1 UI wide.

### Comment #137

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

In Table 85-4, the requirements for near-end and far-end noise make no sense. One would expect the long channel transfer function to reduce the noise, not enhance it.

**Suggested Remedy:** Refer to healey_02_0709.pdf.

**Response Status:** C

**Acceptance:** ACCEPT IN PRINCIPLE.

**Response:** Refer to presentation healey_02_0709.pdf for implementation of text, replacing 85.8.3.1 Transmitter noise parameter measurements.

**Far-end transmit output noise (parameter)**
- low insertion loss channel - max 2 mV
- high insertion loss channel - max 1 mV

**Note:** these values replace TBD 1 and TBD 2 in healey_02_0709.pdf.

Replace PRBS9 with square wave test pattern and specify the histogram for RMS noise measurement is 1 UI wide.
The definition of the test channel for interference tolerance testing is flawed.

1. The heading of 85.8.4.1 implies that the receiver interference tolerance requirements apply at TP3. Thus, ILch is not an appropriate reference function since it "double counts" the loss from TP3 to the TP5 (i.e. this loss is built into the device under test).

2. It is not appropriate to define the test channel in terms of a linearly scaled version of some reference function, since not every compliant cable assembly exhibits a transfer function that is a linearly scaled version of that reference function. For example, as the ratio of the coefficient of sqrt(f) to the coefficient of f deviates from the ratio defined by the reference function, the linear fit parameters mTC and bTC start to lose meaning.

**Suggested Remedy**
Refer to healey_03_0709.pdf.

**Response**
ACCEPT IN PRINCIPLE.

**Interference tolerance test channel for text for replacement of subclause 85.8.4.2 test channel**

(1) replace fit equation by reference to cable assembly polynomial fit.
(2) Limits given by polynomial coefficients (low loss a1=2.15,a2=7.8,a4=.03)
(high loss a1=3.04,a2=0.94,a4=0.08). These are target minimum values.

---

The insertion loss of a cable assembly is not a linear function of frequency so why does it make sense to try to fit it to such a function?

Note that the equation ILCAmx contains a significant term that is proportional to sqrt(f).

**Suggested Remedy**
Consider basing ILfitted on a polynomial fit. Refer to healey_03_0709.pdf.

**Response**
ACCEPT IN PRINCIPLE.

Use polynomial fit for cable assembly IL fit; see healey_03a_0709.pdf slide 8 Proposal - Polynomial fit, 50 MHz to 7.5 GHz equation given per slide 8.

See comment#96 link budget values at nyquist and the draft2.1 IL equation as basis for determining coefficients by scaling coefficients to link budget value.

Add figure of maximum insertion loss.

Use healey_05_0709.pdf for specification text.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85</td>
<td>243</td>
<td>45</td>
<td>142</td>
</tr>
</tbody>
</table>

Healey, Adam
LSI Corporation

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

10GBASE-KR compliant devices may exhibit up to 3.5% duty cycle distortion at TP0. Since the insertion loss of the printed circuit board trace, connector, and test fixture will amplify duty cycle distortion, the allowance at TP2 needs to be increased accordingly.

**Suggested Remedy**
Refer to healey_01_0709.pdf.

Also note that there is no cross-reference to the duty cycle distortion measurement procedure in clause 72. Add a cross-reference or find some other means to define how the parameter should be measured.

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

ACCEPT IN PRINCIPLE.

Add cross-reference to the duty cycle distortion measurement procedure in clause 72.

---

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>87</td>
<td>87</td>
<td>314</td>
<td>2</td>
<td>143</td>
</tr>
</tbody>
</table>

King, Jonathan
finisar

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

The current Stressed Receiver Test (based on LX4 methodology) is not rigorous, unlikely to be implemented in practise, and complete specification of the test is scattered across many clauses and subclauses.

A modified SRS test is proposed which uses either of 2 options:
1) input signals are tuned to the wavelengths of worst insertion loss for the channel under test, and worst case crosstalk penalty for the other channels.
2) input signals are at nominal wavelengths and input channel levels are adjusted to account for channel insertion loss ripple for the channel under test and crosstalk variation for the other channels.

A presentation will be available to the task force which describes the details of the proposed new SRS test, also a Frame document with a draft section describing the proposed new SRS test will be available.

**Suggested Remedy**
Remove references and sub clauses to current SRS test.
Insert new SRS subclause section describing a modified SRS test which uses either of 2 options:
1) input signals are tuned to the wavelengths of worst insertion loss for the channel under test, and worst case crosstalk penalty for the other channels.
2) input signals are at nominal wavelengths and input channel levels are adjusted to account for channel insertion loss ripple for the channel under test and crosstalk variation for the other channels.

A presentation describing the details of the proposed new SRS test, and a Frame document with a draft section describing the proposed new SRS test will be available.

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

ACCEPT IN PRINCIPLE.
Apply the changes in king_01_0709 taking in to account the comments on this document received by the editor, with editorial licence.

Presentation contained in cole_01_0709, Detailed proposal contained in king_01_0709
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>86</td>
<td>86.1</td>
<td>271</td>
<td>20</td>
<td>145</td>
<td>C</td>
</tr>
<tr>
<td>86</td>
<td>86.5.1</td>
<td>274</td>
<td>51</td>
<td>147</td>
<td>C</td>
</tr>
</tbody>
</table>

King, Jonathan  
(finisar)

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

The reference filter described in ITU G.691, for transmitter eye mask measurement, has large tolerances allowed which can potentially lead to eye opening variations of 20% or more. This is inconsistent with the use of eye masks to guarantee link closure. The degree of variation can be limited by encouraging non-idealities of the eye mask measurement reference receiver to be compensated for.

**Suggested Remedy:**  
Insert text:  
Any variation of the reference receiver filter response from ideal 4th order Bessel Thompson response can be compensated for.

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

ACCEPT IN PRINCIPLE.

In 86.8.4.6, 87.8.9 and 88.9.8 add the text:

"Compensation may be made for variation of the reference receiver filter response from an ideal 4th order Bessel Thompson response."

---

Pettrilla, John  
(Avago Technologies)

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

In Table 86-1, for Required operating range, ... 100 or OM3 ... should be ... 100 for OM3 ...

**Suggested Remedy:**  
In Table 86-1, for Required operating range, change ... 100 or OM3 ... to ... 100 for OM3 ...

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

ACCEPT.

---

Pettrilla, John  
(Avago Technologies)

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

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

**Suggested Remedy:**  
Check that the phrase was written as intended and act accordingly.

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

ACCEPT IN PRINCIPLE.  
Change "(bibliography, entries referenced here in the format [Bn])" to "(bibliography, referenced as [B1], [B2], etc.)"

---

---
In Table 86-6, increasing the Max limit for 'Average launch power, each lane' can enable lower cost transmitter implementations without significant impact on receivers if the current max 'Optical Modulation Amplitude (OMA), each lane' and max 'Peak power, each lane' are unchanged. Raising the Max limit for 'Average launch power, each lane' to 2.4 dBm will not compromise the eye safety class 1M limit of ~5.3 dBm. See petrilla_02_0308 for eye safety discussion.

Suggested Remedy

In Table 86-6, change the Max limit for 'Average launch power, each lane' from 1 to 2.4. In Table 86-7 change the max for 'Total average power for 40GBASE-SR4', from 7 to 8.4 and change the max for 'Total average power for 100GBASE-SR10, from 11 to 12.4. In Table 86-8, change min 'Damage threshold' from 2 to 3.4 and max 'Average power at receiver input, each lane' from 1 to 2.4.

Response

ACCEPT IN PRINCIPLE.

Make the proposed changes and also change the maximum "Average power, each lane" in Table 86-7 to 2.4 dBm.

"minimised" should be "minimized"

Suggested Remedy

Add another item, e, to the list of exceptions, e) Where nPPI or nAUI is exposed, a receiver is considered compliant if it meets the requirements in Annex 86A for nPPI or Annex 83B for nAUI.

Response

ACCEPT IN PRINCIPLE.

Optional is currently stated in the first sentence for both 83A and 83B (no change required):

This annex defines the functional and electrical characteristics for the optional 40 Gb/s Attachment Unit Interface (XLAUI) and 100 Gb/s Attachment Unit Interface (CAUI). This annex also occurs in 83B, see Annex 86A for reference.
Comment Type: E  Comment Status: A

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

Suggested Remedy

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

Response: C

ACCEPT. Change pin to contact.

change 83A.2.1 to:
...between the Transmitter and the Transmit Compliance Point shall be

change 83A.3.1
...between the Receiver and the Receive Compliance Point shall be.

Comment Type: ER  Comment Status: A

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

Suggested Remedy

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

Response: W

ACCEPT IN PRINCIPLE.

Change Figure 83A-3 title to:

Insertion loss between Transmit Compliance Point and Transmitter

Change Figure 83A-4 title to:

Insertion loss between Receive Compliance Point and Receiver

Comment Type: E  Comment Status: R

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

Suggested Remedy

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

Response: C

REJECT.

Transmitter eye mask definition is consistent with other clauses (52, 86, 87, 88)
CI 83A SC 83A.3.3.1  P 370  L 10  # 157
Pettrilla, John  Avago Technologies
Comment Type  T  Comment Status  R

Clause 83A.5.1 defines an off state for de-emphasis as the optimal setting for jitter and eye mask testing. This definition may allow some small level of de-emphasis in the off state. Should equation 83A-3 that into consideration?

Suggested Remedy
Add a term to Eq 83A-3 to substract out-off-state de-emphasis.

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

CI 83A SC 83A.3.4.1  P 374  L 2  # 158
Pettrilla, John  Avago Technologies
Comment Type  ER  Comment Status  A

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

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

Response  ACCEPT.
See suggested remedy

CI 86A SC 86A.5.3.8.5  P 422  L 28  # 160
Pettrilla, John  Avago Technologies
Comment Type  E  Comment Status  A

The text calls for, 'the intrinsic jitter of the test source due to intrinsic noise and finite bandwidth effects is measured and calibrated'. If intrinsic, it seems unlikely that it can be calibrated.

Suggested Remedy
Change, 'is measured and calibrated' to 'is measured'

Response  ACCEPT.
Comment Type ER  Comment Status A
The text refers to a 'measured reference level' but it's not clear what this is. If this is meant to be the level measured in the preceding paragraph, please say so.

Suggested Remedy
Change 'measured reference level' to 'above measured intrinsic level'

Response

ACCEPT IN PRINCIPLE.

Change:

With an applied calibration test pattern and no additional jitter stress applied, the intrinsic jitter of the test source due to intrinsic noise and finite bandwidth effects is measured and calibrated. At this stage, J2 Jitter shall be less than 0.15 UI and J9 Jitter less than 0.25 UI. SJ is added until the J2 Jitter increases by 0.05 UI above the measured reference level.

To:

With an applied calibration test pattern and no additional jitter stress applied, the intrinsic J2 Jitter and J9 Jitter of the test source due to intrinsic noise and finite bandwidth effects are measured. At this stage, J2 Jitter shall be less than 0.15 UI and J9 Jitter less than 0.25 UI. SJ is added until the J2 Jitter increases by 0.05 UI above the measured intrinsic J2 Jitter level.

Comment Type T  Comment Status A
In Table 86A-3 (also 86A-4) the limits for J2 (0.46) and J9 (0.63) for some reasonable combinations of jitter will permit TJ (at BER + 1E-12) to exceed 0.70 UI which was not intended when these J2 and J9 limits were established. Unfortunately, a similar situation occurred at TP1 and, consequently without some relief at TP1 relief at TP4 is limited. However, it appears that J9 can be tightened from 0.63 UI to 0.62 UI. See petrilla_01_7079 for discussion.

Suggested Remedy
In Tables 86A-3 and 86A-4 change J9 from 0.63 to 0.62.

Response

ACCEPT IN PRINCIPLE.

In Table 86-8 change VECP from 2 to 1.9 and in Tables 86A-3 and 86A-4 change J9 from 0.63 to 0.62.
Clause 85 started without being well thought and with very aggressive cable reach 10m, which is not feasible based on KR. Here are major issue with CL85 specificaitons:
A- PCB loss of 2.3 dB from TP0 to TP1 and TP4 to TP5
B- Reduction of KR ILD by 3 dB and increasing cable IL is not supported with cable return loss specificaitons and stacked connectors
C- Reference 10 m QSFP cable used for baseline simulation has 10 dB better return loss than cable SDDxx return loss
D- Reference 10 m QSFP cable with lowest loss was used for the cable loss specificaitons
E- Worst case FEXT are either not included or omitted from CR4/CR10 specificaitons

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

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

See ghiasi_01_0709

Response
ACCEPT IN PRINCIPLE.
A: see comment #96 for PCB IL
B: see comment#96 and comment#236
C: Now use CL86 SDDii EQ 86A-1
D: 7 meter reach objective (IL and PSXT-(NEXT and FEXT) met with measured 7 meter cable assembly.

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

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

This comment was WITHDRAWN by the commenter.

Response
ACCEPT IN PRINCIPLE.
Subclause 85.11.1.1 "Style-1 hardware contact definitions" provides a mechanism to detect whether a CL85 or CL86 receiver is connected.

Add similar mechanism to CR10 MDI if possible
<table>
<thead>
<tr>
<th>Cl</th>
<th>00</th>
<th>SC</th>
<th>0</th>
<th>P1</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td>168</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

**Suggested Remedy**

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

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

See ghiasi_02_0790

**Response**

**Response Status:** C

REJECT.

The commenter has not provided a sufficiently complete proposal in this comment that would enable the implementation of suggested remedy. See responses to comments 36, 175, 184, 214, 224 and 225 for responses to specific proposed changes.

<table>
<thead>
<tr>
<th>Cl</th>
<th>00</th>
<th>SC</th>
<th>0</th>
<th>P1</th>
<th>L20</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

**Suggested Remedy**

Please remove it

**Proposed Response**

**Response Status:** Z

REJECT.

This comment was WITHDRAWN by the commenter.

Incorporation of text per D2.0 comment resolutions; see >>

http://www.ieee802.org/3/ba/public/may09/P8023ba-D20-Final_Responses_byClsa.pdf

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

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

<table>
<thead>
<tr>
<th>Cl</th>
<th>85</th>
<th>SC</th>
<th>85.10.6</th>
<th>P264</th>
<th>L18</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

**Suggested Remedy**

Specifications is does not close either reduce cable reach to 5 m, define KR+ EQ, allow combination of passive and active cables.

See ghiasi_01_0709

**Response**

**Response Status:** W

ACCEPT IN PRINCIPLE.

See comment#96 and comment#141
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Commenter</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>171</td>
<td>85.10.7</td>
<td>264</td>
<td>8</td>
<td>TR</td>
<td>A</td>
<td>Ghiasi, Ali Broadcom</td>
<td>Worst case FEXT are either not included or omitted from CR4/CR10 specifications</td>
</tr>
<tr>
<td>172</td>
<td>83A.3.3</td>
<td>371</td>
<td>23</td>
<td>TR</td>
<td>D</td>
<td>Ghiasi, Ali Broadcom</td>
<td>No pattern is defined for rise and fall time measurement</td>
</tr>
<tr>
<td>173</td>
<td>83A.3.3.2</td>
<td>372</td>
<td>41</td>
<td>TR</td>
<td>A</td>
<td>Ghiasi, Ali Broadcom</td>
<td>In cases where the rise and fall time are very different the equation 83A-6 overestimates the min Vtx-demph</td>
</tr>
</tbody>
</table>

**Suggested Remedy**
- Worst case FEXT for QSFP and CXP
- Rise/Fall time measurements are taken using a square wave test pattern as defined in 83.5.10.

**Proposed Response**
- Include worst case FEXT for QSFP and CXP
- Add equation to section 83A.3.3.1

**Comment Status**
- A: Accepted
- D: Dispatched
- Z: Withdrawn

**Response Status**
- W: Written
- Z: Closed

**Sort Order:** Comment ID
Comment ID # 175

Cl 83A SC 83A.5.1 P 382 L 13
Ghiasi, Ali Broadcom

Comment Type TR Comment Status D
High pass pole for jitter measurement to harmonize with PPI it may need to change from 4 MHz. Corner frequency for PPI and nAUI has to be the same.

SuggestedRemedy
It was suggested to add 2 MHz for PPI

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

802.3ae, 802.3ap, 802.3aq uses 4MHz.

Comment ID # 176

Cl 83A SC 83A.5 P 383 L
Ghiasi, Ali Broadcom

Comment Type ER Comment Status A
What is LP

SuggestedRemedy
Replace with Low Pass

Response Response Status C
ACCEPT.

See suggested remedy

Comment ID # 177

Cl 83B SC 83B.2.1 P 388 L 26
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A
Module compliance is not very descriptive

SuggestedRemedy
Suggested title, Module Specifications

Response Response Status C
ACCEPT.

See suggested remedy

Comment ID # 178

Cl 83B SC 83B.2.1 P 388 L 29
Ghiasi, Ali Broadcom

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

SuggestedRemedy
Remove HCB

Response Response Status C
ACCEPT IN PRINCIPLE.

Modify the following sentence from:

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

to

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

Comment ID # 179

Cl 83B SC 83B.2.1 P 389 L 40
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A
Title is not descriptive

SuggestedRemedy
Suggest to use "Module Specifications"

Response Response Status C
ACCEPT.

See comment 177

Since this specification focuses on module compliance and not module specifications, the title is appropriate
<table>
<thead>
<tr>
<th>Cl</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Suggested Remedy</th>
<th>GHIASI, ALI BROADCOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>83B</td>
<td>TR</td>
<td>A</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>To make it more clear why there is signal with HCB output for module specifications modify the name</td>
<td>Module input signal calibration</td>
</tr>
<tr>
<td></td>
<td>TR</td>
<td>D</td>
<td>REJECT.</td>
<td>In cases where the rise and fall time are very different the equation 83A-6 over estimates the min Vtx-demph</td>
<td>Propose to use geometric average of tr/tf = SQRT(Tr*Tf) instead of max rise and fall time</td>
</tr>
<tr>
<td></td>
<td>TR</td>
<td>R</td>
<td>REJECT.</td>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TR</td>
<td>R</td>
<td>REJECT.</td>
<td>Comment Suggested remedy does not contain sufficient information to implement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TR</td>
<td>R</td>
<td>REJECT.</td>
<td>No consensus reached at this time.</td>
<td></td>
</tr>
</tbody>
</table>
**Cl 83B SC 83B.2.2 P 390 L 36 # 185**
Ghiasi, Ali Broadcom

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

Not the best use of title "Host Compliance"

**Suggested Remedy:**
Host Specifications

**Response:**
ACCEPT. See suggested remedy

---

**Cl 83B SC 83B.2.2 P 390 L 39 # 186**
Ghiasi, Ali Broadcom

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

Host are measured with HCB not MCB

**Suggested Remedy:**
Remove MCB, or if you want to keep MCB then say MCB is used for signal calibration

**Response:**
ACCEPT IN PRINCIPLE.

---

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

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

CL 85 link budget does not close 10m reach with KR EQ

**Suggested Remedy:**
Reduce cable reach to 5 m.

**Response:**
ACCEPT IN PRINCIPLE. see ghiasi_01_0709

---

**Cl 85 SC 85.10.2 P 259 L 14 # 189**
Ghiasi, Ali Broadcom

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

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

**Suggested Remedy:**
Worst case cable loss is 2.27 dB/m, ILca becmoes

**Response:**
ACCEPT IN PRINCIPLE. See remedy comment#96. The loss basis for the cable used in comment#96 is 1.9 dB/m.

For:11 Against:3
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.8.3</td>
<td>247</td>
<td>14</td>
<td>190</td>
</tr>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td>TR</td>
<td><strong>Comment Status</strong></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>Differential output return loss at TP2 is referenced to CL 72 which was for KR chip return loss and is not relevant to TP2 which include chip + channel + connector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SuggestedRemedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clause 86 has already worked through the effect of chip, channel, and connector. Please use Eq 86A-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>ACCEPT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response Status</strong></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RL 86A-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.8.3</td>
<td>247</td>
<td>19</td>
<td>191</td>
</tr>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td>TR</td>
<td><strong>Comment Status</strong></td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Common mode voltage output for CL85 is 30 mV this huge or 2X CL86, what is the justifications for this. Is this because copper cable are better schied than optical fiber!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SuggestedRemedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As compromise propose 20 mV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td>REJECT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response Status</strong></td>
<td>Z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.8.3</td>
<td>247</td>
<td>45</td>
<td>192</td>
</tr>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td>TR</td>
<td><strong>Comment Status</strong></td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>It was not agreed in the meeting to incorporate “Measured with effect of ILTP2(f) loss equation 85-2 mathematically removed from the signal at TP2 using software FIR filter that is no more then 6 UI long”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SuggestedRemedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please remove it</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response Status</strong></td>
<td>C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OBE comment#136</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.8.3</td>
<td>247</td>
<td>43</td>
<td>194</td>
</tr>
<tr>
<td>Ghiasi, Ali</td>
<td>Broadcom</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comment Type</strong></td>
<td>TR</td>
<td><strong>Comment Status</strong></td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Total jitter of 0.25 UI is even tighter than CL86 this was KR chip output TJ not the TP2. Table 85A-1 TP0 TJ=0.28 UI, looks like you need add a jitter attenuator to meet TP2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SuggestedRemedy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Propose to set TJ=0.32 UI or better just make it the same as CL86</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Response</strong></td>
<td>REJECT.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Response Status</strong></td>
<td>Z</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This comment was WITHDRAWN by the commenter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Footnote: Total jitter of 0.25 UI excluding DDJ</td>
<td></td>
<td></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:** Comment ID
Comment Type: TR/technical required
Comment Status: A
Suggested Remedy: Through CL85 if channel in question is host PCB then replace channel with host PCB channel, if it is the cable then replace it with cable or cable channel.

Note: require more detail on the test method: Noise output is measured with host compliance board while opposing traffic active. The crosstalk traffic is either 64B/66B signal or PN31.

Response: ACCEPT IN PRINCIPLE.

Comment ID: 195
Ghiasi, Ali, Broadcom

Comment Type: TR/technical required
Comment Status: A
Suggested Remedy: add to the note measured through the module compliance board with opposing traffic having maximum amplitude and fastest rise/fall time. The opposing traffic can be 64B/66B signal or PN31.

Response: ACCEPT IN PRINCIPLE

Comment ID: 196
Ghiasi, Ali, Broadcom

Comment Type: TR/technical required
Comment Status: A
Suggested Remedy: enclosed peak to peak not compatible with CL86

Response: ACCEPT.

Comment ID: 197
Ghiasi, Ali, Broadcom

Comment Type: TR/technical required
Comment Status: D
Suggested Remedy: Should be table 85-4 not 85-6

Response: REJECT.

This comment was WITHDRAWN by the commenter.

Can't find wrong reference page 248 line 40.

Comment ID: 198
Ghiasi, Ali, Broadcom

Comment Type: TR/technical required
Comment Status: A
Suggested Remedy: Propose to use Eq 86A-3

Response: ACCEPT.

Suggested remedy.

Comment ID: 199
Ghiasi, Ali, Broadcom

Comment Type: TR/technical required
Comment Status: A
Suggested Remedy: Differential return loss for TP3 is referred to KR chip return loss which is not relevant.

Response: ACCEPT.

Suggested remedy.
Comment Type  TR  Comment Status  A
Interference test is not sufficiently described without pulse or impulse response of the cable

Suggested Remedy
- propose to use cable pulse or impulse response for the interference generator

Response  Response Status  C
ACCEPT IN PRINCIPLE.

See healey_03a_0709.pdf slide 11.
See remedy comment#139.

Comment Type  TR  Comment Status  A
Max cable loss 21.55 is not the worst case

Suggested Remedy
- Increase 21.55 to 23.7 dB which is 2.27 dB/m of loss

Response  Response Status  U
ACCEPT IN PRINCIPLE.
OBE see comment#96.

Comment Type  TR  Comment Status  A
Baseline analysis which showed technical feasibility was performed for cable with 10 dB better return loss.

Suggested Remedy
- Either tighten the cable specifications by 10 dB or cut the cable reach

Response  Response Status  C
ACCEPT IN PRINCIPLE.
See remedy comment#236.

Comment Type  TR  Comment Status  A
Needs to be log10

Suggested Remedy
- replace log with log10

Response  Response Status  C
ACCEPT.

Suggested remedy
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Commentor</th>
<th>Comment</th>
<th>Status</th>
<th>Proposed Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>206</td>
<td>TR</td>
<td>Ghiasi, Ali Broadcom</td>
<td>Needs to be log10</td>
<td>A</td>
<td>Replace log with log10</td>
</tr>
<tr>
<td>207</td>
<td>TR</td>
<td>Ghiasi, Ali Broadcom</td>
<td>AC common mode voltage can not be the same at TP0 and TP2</td>
<td>D</td>
<td>Propose to change the common mode voltage at the TP0 to 15 mV</td>
</tr>
<tr>
<td>208</td>
<td>TR</td>
<td>Ghiasi, Ali Broadcom</td>
<td>max input voltage 1200 mV exceed the CL86 max value, customers want CL85 and 86 to have common electrical!</td>
<td>R</td>
<td>Make max input 850 mV more compatible with future CMOS process</td>
</tr>
<tr>
<td>209</td>
<td>TR</td>
<td>Ghiasi, Ali Broadcom</td>
<td>Differential Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!</td>
<td>D</td>
<td>Propose to use Eq 83A-8</td>
</tr>
<tr>
<td>210</td>
<td>TR</td>
<td>Ghiasi, Ali Broadcom</td>
<td>Differential Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!</td>
<td>D</td>
<td>Propose to use Eq 83A-8</td>
</tr>
</tbody>
</table>

Duplicate of comment #209
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Proposed Response</th>
<th>Response Status</th>
<th>Commenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>211</td>
<td></td>
<td>TR</td>
<td>D</td>
<td>Common mode Return loss defined by 72-4 and 72-5 at TP0 which is identical to TP2 values!</td>
<td>REJECT.</td>
<td>Ghiasi, Broadcom</td>
</tr>
<tr>
<td>212</td>
<td></td>
<td>TR</td>
<td>A</td>
<td>ICR channel min exceed ICR chfit, when worst case FEXT are included link budget are not supported at 10 m</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td>Ghiasi, Broadcom</td>
</tr>
<tr>
<td>213</td>
<td></td>
<td>TR</td>
<td>R</td>
<td>Condition of jitter tolerance test gives credit to the transmitter by allowing low frequency jitter &lt;4 MHz to be tracked but the receiver is not test with the same tracked SJ. This is called double dipping!</td>
<td>REJECT.</td>
<td>Ghiasi, Broadcom</td>
</tr>
</tbody>
</table>

Comment #96 and comment #141. ICR replaced by ICN.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>215</td>
<td>TR</td>
<td>R</td>
<td></td>
<td>217</td>
<td>TR</td>
<td>D</td>
<td>Z</td>
</tr>
<tr>
<td>216</td>
<td>TR</td>
<td>R</td>
<td></td>
<td>218</td>
<td>TR</td>
<td>R</td>
<td></td>
</tr>
</tbody>
</table>

**Comment ID # 215**

**Comment:**

The CRU of 4 MHz allow tracking all low frequency which can be as result of power supply noise or clock source during normal operation but the receiver is not test with the same SJ. This is called double dipping!

**Suggested Remedy:**

As compromise I suggest 2 MHz for the corner frequency for the CRU and the jitter tolerance.

See ghiasi_02_0709

**Response:**

REJECT.

See response to comment 214

Note also comments 168, 36, 184, 183, 214, 224, 225.

**Comment ID # 216**

**Comment:**

If the transmitter has very low RJ=0 then DDJ will approach J2 or 0.18 UI due to over emphasis. Over emphasis can result in severe eye degradation depending on the laser driver gain, etc.

**Suggested Remedy:**

To protect against these over-emphasis scenarios DDJ must be added with propose value of 0.12 UI.

**Response:**

REJECT.

The combination of other specifications, including the eye mask may protect against this.

There was no consensus to add this parameter. Further study of this issue is invited.

**Comment ID # 218**

**Comment:**

XLPP and CPPI has no TP0 definition missing

**Suggested Remedy:**

propose to add table similar to SFF-8431 table 26 to the clause

**Comment Status:** D

**Response Status:** Z

REJECT.

This comment was WITHDRAWN by the commenter.

See response to comment 221.
IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

Comment ID # 219
Ghiasi, Ali Broadcom

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

**Comment**: DDPWS value is TBD

**Suggested Remedy**: Replace TBD with 0.36 UI

**Response**: ACCEPT IN PRINCIPLE.

**Response Status**: C

Note comment 53.

---

Comment ID # 220
Ghiasi, Ali Broadcom

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

**Comment**: Condition for host stress should be target not max

**Suggested Remedy**: Change max to target value

**Response**: ACCEPT IN PRINCIPLE.

**Response Status**: W

The column sub-header is "Specification values". See response to comment 54 which makes this clearer.

---

Comment ID # 221
Ghiasi, Ali Broadcom

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

**Comment**: XLPPI and CPPI has no TP5 definition missing

**Suggested Remedy**: propose to add table similar to SFF-8431 table 27 to the clause

Max input differential voltage swing, 850 mV  
Input AC common mode, 15 mV max  
SDD11, 0.01-2.8GHz -12 dB and -8.55 13.33log10(f/5.5), with f in GHz  
SCD11, from 0.01 to 11.1 GHz -15 dB

**Response**: REJECT.  
This comment was WITHDRAWN by the commenter.

There has up until now been no request for such, and comment does not explain why a change might be desirable. Any table would be a recommendation only, and could go in 86A.6 Recommended electrical channel, renamed.

---

Comment ID # 222
Ghiasi, Ali Broadcom

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

**Comment**: The numerator of Zp-Zn could be negative

**Suggested Remedy**: Add absolute value |Zp-Zn|

**Response**: ACCEPT IN PRINCIPLE.

Change "Termination mismatch is defined as the percent difference between the two low frequency impedances to common of a differential electrical port." to "Termination mismatch is the percent difference between the two low frequency impedances to common of a differential electrical port."

In equation 86A-16 change " Zp-Zn" to " |Zp-Zn|" and add "%"

Also In equation 86A-17 change " Ip-In" to " |Ip-In|" and add "%"
Comment Type TR Comment Status A

Based on input from several OEMs 3.5 dB of PCB trace is not sufficient for most applications as the reach on FR4-6 is only about 4", but QSFP and CXP have very difficult routing on the front contacts.

Suggested Remedy

propose to increase the host PCB loss from 3.5 dB to 5 dB, the back to back loss will increase compare to SFP by 0.5 dB due to 0.2 dB MCB loss increase and 0.3 dB HCB loss increase.

SDD21 = -0.7 dB from 0.01 to 0.2 GHz
- 0.116 - 0.91*sqrt(f) - 0.864*f from 0.2 to 7 GHz
36.52 - 6.44*f from 7 to 8 GHz
- 15 from 8 to 11 GHz

Response

ACCEPT IN PRINCIPLE.

Modify equation 86A-20 by scaling the existing equation to produce a value at the nyquist frequency of -6.5 dB

See also response to comment 96

Comment Type TR Comment Status R

The CRU of 10 MHz add extra burden on the receiver and there is no reson to use such wide band as the power supply noise and clock phase noise typically are < 1 MHz.

Suggested Remedy

propose to use reduce the SJ corner frequency from 10 MHz to 6 MHz

Response

REJECT.

There was some interest in changing the CRU and SJ corner frequency to a lower value than 10 MHz, but it was felt that more study is required on this topic.

See also comment 224

Comment Type T Comment Status D

Aplitude peak to peak should be clearly defined

Suggested Remedy

Add to Value column:
min=800mV
Add note:
KR Preset State 72.6.10.2.3.1 and alternating 1010 output. Note (a)

Proposed Response

REJECT.

This comment was WITHDRAWN by the commenter.
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>#</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Misek, Brian Avago Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.8</td>
<td>243</td>
<td>227</td>
<td>T</td>
<td>A</td>
<td>The Noise numbers are wrong. The original presentation in Moore01_0509.pdf had a formula basing the noise as a function of the input signal. For a 1V signal the rms noise was 6mV for the short cable and is now labeled &quot;near-end&quot; and 0.6mV for the long cable or &quot;far end&quot;</td>
</tr>
<tr>
<td>85</td>
<td>85.8</td>
<td>243</td>
<td>228</td>
<td>T</td>
<td>A</td>
<td>Total jitter is wrong. If the filter to remove DJ is used then the Jitter measured at the output of that filter will be limited to a value slightly greater than the KR TP0 specified to allow for additional non-equalizable ISI caused by the PCB-connector-TP2 test board (HCBI). That additional ISI was budgeted to be 50mUI in the original Moore-01-0509. Somehow we got to 250mUI which is less than the KR 280mUI at the pins of the package.</td>
</tr>
<tr>
<td>85</td>
<td>85.8</td>
<td>244</td>
<td>229</td>
<td>T</td>
<td>A</td>
<td>Definition of XFR(i) and components are wrong</td>
</tr>
<tr>
<td>85</td>
<td>85.8</td>
<td>244</td>
<td>230</td>
<td>E</td>
<td>A</td>
<td>for 50 MHz &lt;= f &lt;= 6000 MHz should be removed.</td>
</tr>
</tbody>
</table>

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

**Response**
- ACCEPT IN PRINCIPLE.
- OBE comment#141

- Change the 0.25 to 0.33 and add "note A" to note column.

**Response**
- ACCEPT IN PRINCIPLE.
- Replace Total jitter in Table 85-4 - with Total jitter excluding data dependent jitter

**SuggestedRemedy**
- Remove for 50 MHz <= f <= 6000 MHz

**Response**
- ACCEPT.
- Suggested remedy
Response #231
Cl 85 SC 85.8.3.4 P 247 L 30 # 231
Misek, Brian Avago Technologies

Comment Type T Comment Status A
This whole section does not make sense to me. The Test fixture will be attached to the host through the connector to yeild a TP2 test point. As such the test fixture must be evaluated in a different manner than is represented here. The Test fixture could be called the Module Compliance Board (MCB) and should be normatively specified as was the case for SFI. That is it shall have a normative IL limit (min and Max). This then causes us to need Some way of testing the "goodness" of the HCB. A Cable Compliance board could be used to test the Host compliance board.

Suggested Remedy
Recommend adoption in principle of methodology of Section 86A.5.1 as pertaining to test board loss and definition with the requested further study of:
1) that the acceptable region of the mated HCB-CCB not have the drop in the SDD21 around 5.7GHz. This step would allow hazardous ripple in the SDD21 that could invalidate jitter measurements.
2) The section on FEXT and NEXT.

Response Response Status C
ACCEPT IN PRINCIPLE.

See response comments #96, #165.

In the mated CA-TF and TP2-TF loss is per 86A-6 and 86-A7. Add equations to 85.8.3.3.

Response Response Status C
ACCEPT IN PRINCIPLE.

See response comments #138.

Response Response Status C
ACCEPT IN PRINCIPLE.
Cl  85  SC  85.8.4.1  P 249  L 11  # 235
Misek, Brian  Avago Technologies

Comment Type  T  Comment Status  R

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

Suggested Remedy

With the definition of HCB ans CCB boards it becomes possible to explicitly call out this test procedure.

If a cable is used, then guidance to how the test setup can be constructed would be needed.

Response  REJECT.

Commentor has not provided sufficient information to implement suggested remedy.

---

Cl  85  SC  85.10.4  P 254  L 13  # 236
Misek, Brian  Avago Technologies

Comment Type  T  Comment Status  A

Cabling RL high. When this is presented to a RL of -15dB for the ASIC host it will cause ripple in the channel that has not been captured in any of the budgets. In order to keep with the higher insertion loss then KR the RL for the cable will need to be reduced.

For 2 networks "a" and "B" that are joined to make Network"C"

1. If one connect two 2-port networks described in terms of S-parameters
   • SC21 = SA21*SB21/(1-SA22*SB11) where (SXU being complex numbers)
   • For the channels we work with, generally the phases of SA22 and SB11 are not specified or even specifiable. Therefore we can approximate:
     • db(SC21) = db(SA21)+db(SB21) + correction.
     • The correction amounts to an uncertainty in db(SC21) which will contribute to ILD, since the phase both SA22 and SB11 will vary quite a bit with frequency.

2. The correction is therefore:

   \[ \text{correction} < 20\times10^\left(\frac{\text{ILD}}{2}\right) \]

3. Assuming return loss of the channel TP0-TP2 is 12dB at Nyquist and Cable assembly return loss at Nyquist is 5.7dB

   \[ | \text{correction} | < 1.133 \]

   4. Making similar assumptions for TP3-TP5, gives a second correction.

   \[ | \text{correction} | < 1.133 \]

5. RSSing the 2 corrections with the specified ILD=1.73dB for the Cable assembly at Nyquist gives:

   \[ \text{ILD TP0-TP5} = +/-2.3 \text{ dB} \]

Suggested Remedy

RL to -9dB at nyquist to limit the additional channel ripple correction to .5dB and channel ILD impact to less the 0.2dB

Response  ACCEPT IN PRINCIPLE.

Use RL for cable assembly: SFF-8431-4.1 Table 37 equations; note 5 and 6
Cl 85A SC 85A.4 P 402 L 30 # 237
Misek, Brian Avago Technologies

Comment Type T Comment Status A
Split the loss in half explicitly for TP0-TP1 and TP4-TP5 PCB loss.

Suggested Remedy
Change line 30 and to an or.
change the scaling in 85A-1 to half the loss curve.
Change line 50 0.2 meters (8 inches) to 01 meters (4 inches).
Strike line: “The maximum insertion loss for the transmitter or the receiver differential controlled impedance printed circuit board is one half of...”

Same type changes to the min los on page 403.

Response Response Status C
ACCEPT IN PRINCIPLE.
OBE see comment #96

Cl 85A SC 85A.4 P 402 L 35 # 238
Misek, Brian Avago Technologies

Comment Type T Comment Status D
Small PCB's can be accurately modeled by sqrt(f) and f terms.

Suggested Remedy
Remove 85A-1 and 2 1^n2 and 1^n3 terms.

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

See response comment #233.

Cl 85A SC 85A.5 P 403 L 19 # 239
Misek, Brian Avago Technologies

Comment Type T Comment Status A
Now that there are test fixtures available for testing channels. A channel IL from TP0 to TP2 can be recommended that can be measured using probing on the ASIC bumps out to the TP2 SMA's to assist board manufactures.

Suggested Remedy
Add section similar in scope to 86A.6 with appropriate reductions in the loss to match the PCB loss of the 85A interconnect.

Response Response Status C
ACCEPT IN PRINCIPLE.
See comment #96

Cl 85A SC 85A.5 P 403 L 33 # 240
Misek, Brian Avago Technologies

Comment Type E Comment Status A
wrong equation sited in lin 33 and 48

Suggested Remedy
change 51 to 40

Response Response Status C
ACCEPT.

Cl 85A SC 85A.6 P 404 L 4 # 241
Misek, Brian Avago Technologies

Comment Type T Comment Status A
Return loss equation is sited wrong. Also this assumes that the channel between TP0 and the cable connector is no different then the CCB.

Suggested Remedy
should be 85-49 and 85-50

Response Response Status C
ACCEPT.
Comment Type T Comment Status A

If the RL of the cable assembly is not improved as per a previous comment then the ILD of the channel must be increased.

Reflections between the hosts and the connectors on the PC boards will create additional ripple over what is measure for the cable. The cable assembly is measured with better return loss connections then the host will provide and as such the informative overall channel ILD needs to be speced at a higher value than the cable.

The calculation can be performed as shown
1. If one connect two 2-port networks described in terms of S-parameters
   • SC21 = SA21*SB21/(1-SA22*SB11) where (SXIJ being complex numbers)
2. For the channels we work with, generally the phases of SA22 and SB11 are not specified or even specifiable. Therefore we can approximate:
   • |db(SC21) = |db(SA21)+|db(SB21) + correction.
   The correction amounts to an uncertainty in db(SC21) which will contribute to ILD, since the phase both SA22 and SB11 will vary quite a bit with frequency.
   • | correction| < 20*log10(e)*SA22*SB11

Worst case the uncertainty will add directly to ILD.

Some will argue that it should RSS with ILD which might be slightly optimistic
3. Assuming return loss of the channel TP0-TP2 is 12dB at Nyquist and Cable assembly return loss at Nyquist is 5.7dB
   • | correction| < 1.133
4. Making similar assumptions for TP3-TP5, gives a second correction.
   • | correction| < 1.133
5. RSSing the 2 corrections with the specified ILD=1.73dB for the Cable assembly at Nyquist gives:
   • ILD TP0-TP5 = 2.3 dB

SuggestedRemedy

Change ILDCh is not equal to ILDca and an ILDch equation to flare out to 2.3dB at nyquist.

ILDch(f) >= ILDchmin(f) = 0.8 - 0.3 X 10e-9 (85A.XX)
ILDch(f) <= ILDchmax(f) = 0.8 + 0.3 X 10e9 (85S.XX)

Response

C

ACCEPT IN PRINCIPLE.

See response comment#236
Cl 83A SC 83A.3.3.5 P 372 L 41 # [44]
Misek, Brian Avago Technologies

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

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

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

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

There are two references to 83A.5.1. Therefore delete the following sentence from 83A.3.3.5: The template measurement requirements are specified in 83A.5.1

Cl 83B SC 83B.2.3 P 389 L 52 # [45]
Misek, Brian Avago Technologies

Comment Type T Comment Status D
For this interface how is the host Rx tested? I think it has the connector in the Host Rx stress path. As such the locked in deterministic effects of the connector do not need to be put into the stress, they get generated in the channel, unlike the 83A condition. The value of DJ injected into the limiter should be reduced.

Suggested Remedy
Change .22UI to .12 for the

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

Since the receiver tolerance test is calibrated with the HCB, the effects of the connector is included in the 0.22UI.

Cl 83B SC 83B.2.3 P 390 L 3 # [46]
Misek, Brian Avago Technologies

Comment Type T Comment Status D
For this interface how is the host Rx tested? I think it has the connector in the Host Rx stress path, and uses a HCB to inject the signal to stress the Rx. As such the Tx stress generator need to have the ability to use Dephasing to equalize the channel. Does this mean we need a board that will represent 6.9dB of the channel so we can calibrate the Rx stress to the Rx eye mask of 83A-9 as suggested in the test? This need some discussion

Suggested Remedy
Rewrite to allow for the eyemask to be measured at appropriate point.

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

83B has been written around the connector compliance point. There should be no need to have a board which represents 7.9dB of channel loss.
Misek, Brian
Avago Technologies

Comment Type: T
Comment Status: A
The MCB fixture and cables to the scope have an effect on this measurement. They need to be allowed for:
- 1.25dB PCB on HCB
- 0.5dB for connector
- 0.8dB for instrument grade cables.
- 1.5dB for Package losses
- 0.7 to 2.4dB host PCB loss

Total is 3.05dB in addition to the channel PCB for the A1+A2

Suggested Remedy
- Change AN1 From: Max=2.5 To: 4.05
- Change AN1 From: Min=1.25 To: 1.75
- Change AN2 From: Max=1 to Max=2.45
- Change AN2 From: Min=0 To: 1.5

Response Status: C
ACCEPT IN PRINCIPLE.
OBE comment #136

Szczepanek, Andre
HSZ Consulting Ltd

Comment Type: ER
Comment Status: A
During comment resolution on Draft 2.0 it was agreed that PRBS9 checking would be removed to resolve my comment on the lack of a defined implementation for the PRBS9 checker.

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

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

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

Response Status: W
ACCEPT.
In 88.9.10, the mix of references to Clauses 52 & 53 make the status of sinusoidal amplitude interference unclear.
- The measurement method references 53.9.12, 53.9.14 & 53.9.15
  - note a) of Table 88-17 references 52.9.9.3

Clause 52 had both sinusoidal amplitude interference AND sinusoidal jitter.

Can we assume NO sinusoidal amplitude interference because there is no reference to sinusoidal amplitude interference in 53.9.12/14/15? Although 52.9.9 does refer to sinusoidal amplitude interference, that section is not mentioned in 88.9.10. Although Table 88-17 does refer to 52.9.9.3, but it does so in the context of sinusoidal jitter, and not sinusoidal amplitude interference.

Suggested Remedy
In the 88.9.10 exception list, explicitly state either
1) sinusoidal amplitude interference (per 52.9.9) is required;
or
2) sinusoidal amplitude interference (per 52.9.9) is not required

Inphi (with whom I am affiliated) will make a presentation at the July plenary in support of this comment.

Proposed Response
REJECT.

This comment was WITHDRAWN by the commenter.

See response to comment 143
IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

Cl 88 SC 88.9.10 P 341 L 4 # 254
Szczepanek, Andre HSZ Consulting Ltd

Comment Type TR Comment Status D
In 88.9.10, the references to 53.9.12-14 specify too much DCD DJ because LX4 defines DCD DJ in ps, not fractions of a UI.

- The serial rate at LX4 is 3.125Gb/s and minimum DCD DJ specified is 14 ps
- 14/320 = 0.04375 UI
- Using the same fractional UI at 25.78125Gb/s (UI=38.7878ps), the minimum DCD DJ should be 1.6969, rounded to 1.7 ps.

Suggested Remedy
Add another exception (e) to 88.9.10, with DCD DJ of 1.7ps.

Inphi (with whom I am affiliated) will make a presentation at the July plenary in support of this comment.

Proposed Response Response Status Z
REJECT.

This comment was WITHDRAWN by the commenter.

See response to comment 143

Cl 00 SC 0 P 1 L 1 # 255
Booth, Brad AMCC

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

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

See booth_01_0709.pdf for more information on nomenclature.

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

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

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

Response Response Status U
ACCEPT IN PRINCIPLE.

There was no agreement to change the nomenclature (see straw poll below).
Replace the two paragraphs starting "The letter C in the port type ..." in 80.1.4 with a description including a table similar to Table 52-1 and including reach.

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

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

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

Also see comment #97.

Straw Poll: The Task force was asked to indicate a preference between the options:
## Draft 2.1 Comments

IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

Working Group ballot

<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Comment ID</th>
<th>Booth, Brad</th>
<th>AMCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>45.1.3</td>
<td>39</td>
<td>22</td>
<td>#256</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Leave the nomenclature unchanged
change the nomenclature to one of 100GBASE-LRE4, 100GBASE-LR4E, 100GBASE-LR4-E

- All in the room
- Unchanged - 25
- Change - 25

- 802.3 voters
- Unchanged - 26
- Change - 26

### Comment

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>CI</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>Booth, Brad</th>
<th>AMCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>257</td>
<td>83C</td>
<td>83C.1.1</td>
<td>39</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type**: TR/technical required  
**Comment Status**: A

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

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

**Suggested Remedy**

- Remove interleaving.

**Response**

- **Response Status**: C

- **Response**: ACCEPT.

- **Note**: Make corresponding changes in clause 74.

### In Figure 83C-1, the MMD numbering is wrong. The PMD and PMA are separated in the diagram; therefore, they require unique MMD numbering.

- **Suggested Remedy**

- Change MMD 1 to be MMD 8.

**Response**

- **Response Status**: C

- **Response**: ACCEPT IN PRINCIPLE.

- **Note**: While the comment was against Annex 83C, the solution impacts clauses 45, 83, and Annex 83C.

- **In 83.1.4, replace:**

  "By default, the PMA sublayer that is closest to the PMD is addressed as Management Data Input/Output (MDIO) Manageable Device (MMD) 1 (see clause 45). More addressable instances of PMA sublayers, each one separated from lower addressable instances by chip-to-chip interfaces, may be implemented and addressed as MMD 8, 9 and 10, where MMD 8 is the second closest to the PMD and MMD 10 is the farthest from the PMD (see Table 45-1 for MMD device addresses)."

  with

  "Management Data Input/Output (MDIO) Manageable Device (MMD) addresses 1, 8, 9, 10, and 11 are available for addressing multiple instances of PMA sublayers (See Table 45-1 for MMD device addresses). If the PMA sublayer that is closest to the PMD is packaged with the PMD, it shares MMD 1 with the PMD. If the PMD service interface is physically instantiated as nPPI (see Annex 86C), the PMA sublayer that is closest to the PMD will be addressed as MMD 8. More addressable instances of PMA sublayers, each one separated from lower addressable instances by chip-to-chip interfaces, may be implemented and addressed allocating MMD addresses to PMAs in increasing numerical order going from the PMD toward the PCS."

- **In Table 45-1, add 11 - Separated PMA (4) and change 11 through 28 - Reserved to 12 through 28 (reserved)**

- **In 45.2.1, replace:**

  "For devices operating at 40 Gb/s or higher speeds, the PMA may be instantiated as multiple sublayers (see Clause 83, Figure 83-2 and Annex 83C). By default, these sublayers are all implemented as one instance addressed by MMD 1. Alternatively they may be implemented in multiple addressable instances with separate MMD addresses. By default, the PMA sublayer that is closest to the PMD is addressed as MMD 1. More addressable instances of PMA sublayers, each one separated from lower addressable instances, may be implemented and addressed as MMD 8, 9 and..."
10, where MMD 8 is the closest to the PMD and MMD 10 is the furthest from the PMD. The addresses and functions of all registers in MMD 8, 9 and 10 are defined identically to MMD 1, except registers m.5 and m.6 as defined in Table 45-2."

with

"For devices operating at 40 Gb/s or higher speeds, the PMA may be instantiated as multiple sublayers (see 83.1.4 for how MMD addresses are allocated to multiple PMA sublayers). A PMA sublayer that packaged with the PMD is addressed as MMD 1. More addressable instances of PMA sublayers, each one separated from lower addressable instances, may be implemented and addressed as MMD 8, 9, 10, and 11 where MMD 8 is the closest to the PMD and MMD 11 is the furthest from the PMD. The addresses and functions of all registers in MMD 8, 9, 10 and 11 are defined identically to MMD 1, except registers m.5 and m.6 as defined in Table 45-2."

In Figure 83-2, which shows the lowest PMA separated from the PMD, indicate MMD 1 for the PMD and MMD 8, 9, 10, 11 for the PMAs.

In Figure 83C-1, the PMD service interface will be removed per comment #314 so the PMA can remain as MMD1.

In Figure 83C-3, indicate MMD1 for the PMD and MMD8 for the PMA.

In the Figures in Annex 83C where the lowest PMA is packaged with the PMD (83C-1 83C-2, 83C-4, 83C-5) move the label for MMD1 and add a curly brace so that it is apparent that this address applies to both the lowest PMA and the PMD.

Editorial license to find and fix other applicable text or figures.
Cl 45 SC 45.2.1 P 39 L 10 # 259
Booth, Brad AMCC

Comment Type TR Comment Status A

Table can be made simpler to read.

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

Suggested Remedy

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

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

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

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

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

Response Response Status W

ACCEPT IN PRINCIPLE.

Itemizing the comment into 5 paragraphs:

1. The "BASE-R" descriptor is required to distinguish from 10P/2B FEC.

2. Change register 1.172-1.175 back to being just 10GBASE-R registers (no changes to register & subclause names). Delete the (added) first sentence and last sentences of the first paragraph of 45.2.1.86 & 45.2.1.87. Change the additional paragraph for both subclauses:

"For a multi-lane PHY, this register may be a copy of register 1.176 (1.216) BASE-R FEC corrected (uncorrected) blocks counter, lane 0. If implemented, all accesses to the copy shall have identical behavior as the original register."

3. The changes described in 2. eliminate any such implication.

4. & 5. Accept the proposed changes.

Cl 83C SC 83C.1.2 P 396 L 1 # 260
Booth, Brad AMCC

Comment Type TR Comment Status R

In Annex 83C, there is no diagram to show the need of MMD 10.

Suggested Remedy

Create a duplicate of 83C.1.2. Put a PMA on top of the PMD and a PMA on the bottom of the FEC with an interface between the two PMAs. The PMD/PMA pair would be MMD 1, the others would be numbered accordingly from 8-10.

Response Response Status W

REJECT.

The requested figure is already in the main body of the standard (Figure 83-2). It was agreed that this most expanded example would appear in the main body, with additional examples in Annex 83C. 83C.1 refers to this main body figure without repeating the figure. "The example of FEC implemented in a separate device from either the PCS or the PMD is illustrated in Figure 83-2."

Cl 87 SC 87.7.2 P 309 L 37 # 261
Maki, Jeffery Juniper Networks, Inc.

Comment Type ER Comment Status A

Table 87-8. Footnote refers to the wrong subclause.

Offending footnote: dMeasured with conformance test signal at TP3 (see 87.8.10) for BER = 10-12.

Suggested Remedy

Replace 87.8.10 with 87.8.11.

Response Response Status C

ACCEPT.
IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

Working Group ballot

Maki, Jeffery
Juniper Networks, Inc.

Comment Type: TR/technical required
Comment Status: A

#265

This numerical value 18.75 does not appear to be appropriate for this standard, and does not align with any of the likely numerical values.

0.75 * (10*10.3125)/4 = 0.75 * 25.78125 = 19.34
0.75 * (10*11.0957)/4 = 20.80

Since there is no relation to 10G, there is no need to use 0.75 * (10*10)/4 = 0.75 * 25 = 18.75

SuggestedRemedy
For internal consistency of this standard, we should use 0.75 * (10*11.0957)/4 = 20.80. At a minimum, we should use 0.75 * (10*10.3125)/4 = 0.75 * 25.78125 = 19.34.

Response
ACCEPT IN PRINCIPLE.

Change "The filter nominal reference frequency fr is 18.75 GHz" to "The filter nominal reference frequency fr is 19.34 GHz"
Comment Type: E  Comment Status: A

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

Suggested Remedy:
Italicize the lower case "n"s (multiple occurrences)

Response:
ACCEPT IN PRINCIPLE.

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

Check other instances (in Clause 83 and other clauses) of n and change to non italics.

Comment ID # 266
Trowbridge, Stephen Alcatel-Lucent

---

Comment Type: T  Comment Status: A

The MDIO is optional

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

Response:
ACCEPT IN PRINCIPLE.

Change to:
The optional MDIO/MDC management interface (Clause 45) provides...

Comment ID # 268
Trowbridge, Stephen Alcatel-Lucent

---

Comment Type: TR/technical required

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

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

Response:
ACCEPT.

Comment ID # 269
Trowbridge, Stephen Alcatel-Lucent

---

Comment Type: TR/technical required

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

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

Response:
ACCEPT.

Comment ID # 269
Trowbridge, Stephen Alcatel-Lucent

---

Comment Type: TR/technical required

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

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

Response:
ACCEPT.

Comment ID # 269
Trowbridge, Stephen Alcatel-Lucent
Comment Type TR  Comment Status A

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

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

Response Response Status C
ACCEPT.

Comment Type ER  Comment Status A

"points" is ambiguous in the sentence "For purposes of system conformance, the PMD sublayer is standardized at the points described in this subclause."

SuggestedRemedy
change "points" to "test points", as in: "For purposes of system conformance, the PMD sublayer is standardized at the test points described in this subclause."

Response Response Status W
ACCEPT.
change "points" to "test points"

Comment Type ER  Comment Status A

The sentence: "The 40GBase-CR4 and 100GBase-CR10 channel is defined between the transmitter (TP0) and receiver blocks (TP5)..." implies that this draft is describing a channel that can be 40GBase-CR4 and 100GBase-CR10 simultaneously. This is not the case. You can either have a link that complies with 40GBase-CR4, or a link that complies with 100GBase-CR10, but not a link that complies with both simultaneously.

SuggestedRemedy
Change the sentence to read:

A block diagram for a 40GBase-CR4 or 100GBase-CR10 link is illustrated in Figure 85-2.

Response Response Status W
ACCEPT IN PRINCIPLE.

Change: A 40GBase-CR4 and 100GBase-CR10 link is illustrated in Figure 85-2.

To:A 40GBase-CR4 or 100GBase-CR10 link is illustrated in Figure 85-2.

Change: Figure 85-2-40GBase-CR4 and 100GBase-CR10 link (half link is illustrated)
To: Figure 85-2-40GBase-CR4 or 100GBase-CR10 link (half link is illustrated)
The delay constraint on MAC Control/MAC/RS for 40G is still needlessly tight. The increase from 10 pause quanta to 20 pause quanta falls short of what is needed. A delay constraint of 32 pause quanta will allow a broader range of implementations, without causing any harm.

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

Suggested Remedy

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

Response

ACCEPT.

Also see comment #275.

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

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

Suggested Remedy

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

Response

ACCEPT.

See response to comment #274.

There is no Clause 45 register bit referenced for PMD_fault in this subclause.

Suggested Remedy

Delete the words "If the MDIO is implemented" at the beginning of the first sentence. Add the sentence: "If the MDIO interface is implemented, PMD_fault shall be mapped to the PMD_fault bit as specified in 45.2.1.2.

Response

ACCEPT IN PRINCIPLE.

See response comment #427.
Comment Type: TR  Comment Status: A
There is no Clause 45 register bit referenced for PMD_fault in this subclause.

Suggested Remedy
Delete the words "the MDIO is implemented, and" at the beginning of the first sentence.
Add the sentence: "If the MDIO interface is implemented, PMD_fault shall be mapped to the PMD_fault bit as specified in 45.2.1.2"

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See response to comment 279

Comment Type: TR  Comment Status: A
There is no Clause 45 register bit referenced for PMD_transmit_fault in this subclause.

Suggested Remedy
Delete the words "the MDIO is implemented, and" at the beginning of the first sentence.
Add the sentence: "If the MDIO interface is implemented, PMD_transmit_fault shall be mapped to the PMD_transmit_fault bit as specified in 45.2.1.7.4"

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See response to comment 279

Comment Type: TR  Comment Status: A
There is no Clause 45 register bit referenced for PMD_receive_fault in this subclause.

Suggested Remedy
Delete the words "the MDIO is implemented, and" at the beginning of the first sentence.
Add the sentence: "If the MDIO interface is implemented, PMD_receive_fault shall be mapped to the PMD_receive_fault bit as specified in 45.2.1.7.4"

Response  Response Status: C
ACCEPT IN PRINCIPLE.
See response to comment 279

Comment Type: TR  Comment Status: A
Disabling any of the lanes of the PMD using the lane-by-lane disable function effectively disables the whole interface, since we haven't defined a mechanism by which an interface can operate without the full complement of lanes. Thus, the draft should include a warning, in the form of a note, that disabling one or more lanes will disable the interface, and can be disruptive to a network.

Suggested Remedy
Add a note at the end of 86.5.8 that reads:

NOTE -Disabling the electrical transmitter on one or more lanes effectively disables the entire interface and can be disruptive to a network.

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Add to subclause 45.2.1.8:

NOTE -Disabling the transmitter on one or more lanes stops the entire link from carrying data and may disrupt the network.
The link spans for 40GBASE-CR4 and 100GBASE-CR10 are not going to reach 10 m. I don't think the link budget will close at 6 m after making a reasonable allowance for realistic PCB trace loss, and properly accounting for FEXT and cable insertion loss.

Suggested Remedy
Reduce the maximum link span to 5 m. This will require a change to the objectives for 40G and 100G copper, and the new objectives must be re-evaluated against the 5 Criteria, particularly Broad Market Potential Technical Feasibility, and Economic Feasibility.

Response
ACCEPT IN PRINCIPLE.
See response to comment #96 and comment #141
See gustlin_04_0709.pdf as input to 5 criteria.

The stated 8" of PCB trace cannot be achieved with the current loss budget, and things will get worse once the budget is corrected. It's more like 6" (<3" per end), and this simply isn't enough for multi-port PHYs.

Board designers will need a loss budget of approximately 5 dB from TP0-TP1, and 5 dB from TP4-TP5 to account for PCB loss, connector loss, and other impairments.

Suggested Remedy
Increase the maximum loss to 5 dB from TP0-TP1, and TP4-TP5. This will result in a decrease in the link span, probably to 5 m once the link budget has been corrected to account for FEXT and cable insertion loss. This will require a change to the objectives for 40G and 100G copper, and the new objectives must be re-evaluated against the 5 Criteria, particularly Broad Market Potential, Technical Feasibility, and Economic Feasibility.

Response
ACCEPT IN PRINCIPLE.
See response to comment #96.
The text in section 83.1.4 reads:

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

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

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

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

Suggested Remedy

Change 83.1.4 to read:

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

Response

ACCEPT.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Page</th>
<th>Line</th>
<th>Commenter</th>
<th>Response Status</th>
<th>REject Comment Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>288</td>
<td>T</td>
<td>R</td>
<td>50</td>
<td>42</td>
<td>Bandyopadhyay, Jaya</td>
<td>C</td>
<td>Commentor has not provided sufficient information to make suggested changes.</td>
</tr>
<tr>
<td>289</td>
<td>A</td>
<td>A</td>
<td>50</td>
<td>28</td>
<td>Bandyopadhyay, Jaya</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>290</td>
<td>ER</td>
<td>A</td>
<td>50</td>
<td>14</td>
<td>DiMinico, Chris</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>291</td>
<td>TR</td>
<td>A</td>
<td>50</td>
<td>50</td>
<td>DiMinico, Chris</td>
<td>C</td>
<td></td>
</tr>
</tbody>
</table>

**Comment 288**

**Comment Type:** T  
**Comment Status:** R  
Table 85-4 TP2 jitter numbers should match Annex 86A table 86-A-1. They are the same test point from a system point of view. They should also follow the same methodology. Table 86A-1 has J2=0.18UI, J9=0.26UI. Table 85-4 has RJ=0.15UI, TJ=0.25UI.  
**Suggested Remedy:** Have a common set of measurement parameters at these test points.  
**Response:** REJECT.  
Commentor has not provided sufficient information to make suggested changes.

**Comment 289**

**Comment Type:** A  
**Comment Status:** A  
85A.4 pcb channel loss allowed to support 10m copper cable will make practical system implementation extremely difficult.  
**Suggested Remedy:** Reduce the allowable cable length objective from 10m to "X"m. "X" would need future measurement and analysis work.  
**Response:** ACCEPT IN PRINCIPLE.  
See comment#96.

**Comment 290**

**Comment Type:** ER  
**Comment Status:** A  
The coefficients a0, a2, a2, and a4. are determined using Equation (85-2) through Equation (85-2) is incorrect.  
**Suggested Remedy:** The coefficients a0, a2, a2, and a4. are determined using Equation (85-4) through Equation (85-30).  
**Response:** ACCEPT IN PRINCIPLE.  
OBE see comment#136

**Comment 291**

**Comment Type:** TR  
**Comment Status:** A  
The least mean squares line fit procedure defined by Equation (85-52) through Equation (85-56) needs be adjusted to better fit the cable assembly insertion loss between the frequency range of 50 MHz to 100 MHz as the error in the fit is an independent source of ILD. This applies to 85A.7 Channel insertion loss deviation (ILD) as well.  
**Suggested Remedy:** Specify fit procedures to better fit the cable assembly insertion loss (ILD) and the channel insertion loss deviation (ILD) specified in 85A.7 over the frequency range of 50 MHz to 100 MHz.  
**Response:** ACCEPT IN PRINCIPLE. see remedy comment#139

**Table of Comments**

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Page</th>
<th>Line</th>
<th>Commenter</th>
<th>Response Status</th>
<th>Response Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>288</td>
<td>T</td>
<td>R</td>
<td>50</td>
<td>42</td>
<td>Bandyopadhyay, Jaya</td>
<td>C</td>
<td>Commentor has not provided sufficient information to make suggested changes.</td>
</tr>
<tr>
<td>289</td>
<td>A</td>
<td>A</td>
<td>50</td>
<td>28</td>
<td>Bandyopadhyay, Jaya</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>290</td>
<td>ER</td>
<td>A</td>
<td>50</td>
<td>14</td>
<td>DiMinico, Chris</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>291</td>
<td>TR</td>
<td>A</td>
<td>50</td>
<td>50</td>
<td>DiMinico, Chris</td>
<td>C</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:** Comment ID  
**Comment ID:** 292  
7/16/2009  2:12:07 PM
Reported in balasubramanian_01_0509.pdf, the equation for generating the fit line for any data to test to the limit line as specified in section 85-10.8 can cause some cable assemblies, which actually pass the ICR requirements in raw data to fail the requirements with the fit line. This applies to 85A.7 Channel insertion loss to crosstalk ratio (ICR).

**Suggested Remedy**
Modify specification requirements to reduce false negatives due to fit procedure. This applies to 85A.7 Channel insertion loss to crosstalk ratio (ICR).

Presentation material will be provided in support of suggested remedy.

**Response**
ACCEPT IN PRINCIPLE.

See comment#141.
ICR changed to ICN

---

The maximum test fixture insertion loss Equation (85-33) coefficient (0.193) is incorrect.

**Suggested Remedy**
Replace the coefficient (0.193) with (0.054); see page 252 - line 15 - Equation (85-33).

**Response**
ACCEPT IN PRINCIPLE.

---

The maximum test fixture insertion loss Equation (85-71) coefficient (0.103) is incorrect. Replace the coefficient (0.103) with (0.029).

**Suggested Remedy**
Replace the coefficient (0.103) with (0.029); see Page 264 - line 52- Equation (85-71).

**Response**
ACCEPT IN PRINCIPLE.

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

**Suggested Remedy**
Change noted text above to

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

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

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

**Suggested Remedy**

1. Replace XLAUI / CAUI with nAUI when talking about the optional physical instantiation in general terminology.
2. Use CAUI-10 for 10 lane wide CAUI.
3. Use XLAUI-4 for 4 lane wide XLAUI.
4. Modify definitions in 1.4 accordingly.

**Response**

---

This comment was WITHDRAWN by the commenter.

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

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

Moreover since there is already XAUI for 10G, so the term nAUI may be (mis)interpreted as encompassing this interface as well.
| Comment ID | SC | Page | Line | Comment Type | Comment Status | Comment | Suggested Remedy | Response | Response Status |
|------------|----|------|------|--------------|---------------|---------|------------------|----------|-----------------
| 300        | 81 | 146  | 16   | E            | A            | unnecessary wording | change to | | ACCEPT. |
| 301        | 82 | 165  | 54   | E            | A            | should be definitive as to who many streams for each rate | change wording to | | ACCEPT. |
| 302        | 82 | 184  | 36   | E            | A            | Note in Figures 82-10, 82-11. | modify note | | ACCEPT. |
| 303        | 82 | 242  | 28   | E            | A            | rewrite sentences to better link the transmitter characteristics in Table 85-4 to the "Shall" statement- | | | ACCEPT IN PRINCIPLE. Change sentence to read: Transmitter characteristics shall meet specifications summarized in Table 85-4 at TP2 unless otherwise noted. |

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: Comment ID
Comment Type TR  Comment Status D
Table 85-4 is entitled Transmitter characteristics at TP2 summary. Text in 85.8.3 indicates that there may be exceptions to being at TP2. Differential peak-to-peak output voltage with TX disabled has a subclause reference that shows it is at 72.6.5. There is no note in Table 85-4 to indicate the exception. There is no test fixture for measuring it at TP1 in Clause 85. Is the fixture in Clause 72 to be used?

The same observation is made for common-mode voltage limits, differential output return loss (min), and common-mode output return loss (min).

Suggested Remedy
Clarify where the differential peak-to-peak output voltage (max) with Tx disabled is to be measured and what fixture is to be used.

Proposed Response  Response Status Z
This comment was WITHDRAWN by the commenter.

Comment Type ER  Comment Status A
Table 85-4 title indicates that the transmitter characteristics are at TP2, but over half the table appears related to specifications at "transmit function".

Suggested Remedy
Split into two tables. One for specificaitons at "transmit function" and one for TP2.

correct intro text of 85.8.3 as follows
Transmitter characteristics shall meet specifications, summarized in Table 85-x at "Transmit Function" and Table 85-4 at TP2.

Correct PICS accordingly.

Response  Response Status C
ACCEPT IN PRINCIPLE.
OBE See comment#136

Comment Type E  Comment Status A
caption for Fig 85-5 got separated onto next page away from the figure

Suggested Remedy
keep caption and figure together on same page.

Response  Response Status C
ACCEPT.
Cl  83A  SC  83A.1  P  365  L 18  #  310
D’Ambrosia, John  Force10 Networks

Comment Type  ER  Comment Status  A
Comment Type  ER  Comment Status  A

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

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

Response  Response Status  C
ACCEPT.

Modify figure 83A-1

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

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

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

Response  Response Status  C
ACCEPT.

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

Comment Type  ER  Comment Status  A
reference is to wrong figure. Fig 83a-3 is for insertion loss.

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

Response  Response Status  C
ACCEPT.

The PMD service interface can be used to illustrate how MMD addresses are allocated based on whether the lowest PMA is packaged with the PMD. Remove the PMD service interface as proposed from Fig 83C-1 and show MMD1 for both PMD and PMA (per comment #257). Leave the PMD service interface as explicit in Fig 83C-3 so that the PMD is shown with MMD1 and the lowest PMA with MMD 8.

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

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

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

Response  Response Status  C
ACCEPT IN PRINCIPLE.

Identify inconsistencies and change as suggested.

Cl  83C  SC  83C.1.1  P  395  L 32  #  314
D’Ambrosia, John  Force10 Networks

Comment Type  ER  Comment Status  A
In Fig 83C-1 the PMD Service Interface is called out. This is inconsistent with other figures in the text. This is also done for Fig 83C-3.

SuggestedRemedy
Delete call out to PMD service interface for 40G and 100G stacks in Fig 83c-1. Place the PMD blocks right under and against the PMA blocks.

Repeat for Fig 83C-3

Response  Response Status  W
ACCEPT IN PRINCIPLE.

The PMD service interface can be used to illustrate how MMD addresses are allocated based on whether the lowest PMA is packaged with the PMD. Remove the PMD service interface as proposed from Fig 83C-1 and show MMD1 for both PMD and PMA (per comment #257). Leave the PMD service interface as explicit in Fig 83C-3 so that the PMD is shown with MMD1 and the lowest PMA with MMD 8.
Comment Type TR Comment Status D
The transmitter characteristics at "Transmit function" are defined normatively in Clause 83 and then defined informatively in 83A.2. This will cause confusion.

Suggested Remedy
Delete subclause 83A.2

Proposed Response Response Status Z
REJECT.
This comment was WITHDRAWN by the commenter.

Comment Type TR Comment Status D
the description below does not appear right since the named end points are not on the HCB

Suggested Remedy
change text to
A recommended maximum attenuation template for the mated host card and HCB (between TP0 and TP1A or TP4A and TP5), including connector loss, is illustrated in Figure 86A-11,

Proposed Response Response Status C
ACCEPT IN PRINCIPLE.

Comment Type ER Comment Status A
Per Comment 537: Rename PPI to nPPI with specific interfaces being XLPPI and CPPI.

This is interpreted as only using XLPPI / CPPI when discussing the specific interfaces. This has been partially implemented in Annex 86A.

1. P407, Line 7 "Parallel Physical Interface (XLPPI and CPPI) for 40GBASE-SR4 and 100GBASE-SR10"
2. P407, Line 49 "86A.4 Electrical specifications for XLPPI and CPPI"
3. P408, Line 4 "86A.4.1 XLPPI and CPPI transmit side electrical specifications"
4. P 409, Line 36 "86A.4.2 XLPPI and CPPI receive side electrical specifications"

Suggested Remedy
1. Change title to "Parallel Physical Interface (nPPI) for 40GBASE-SR4 (XLPPI) and 100GBASE-SR10 (CPPI)"
2. Change to "86A.4 Electrical specifications for nPPI"
3. Change to "86A.4.1 nPPI transmit side electrical specifications"
4. change to "86A.4.2 nPPI receive side electrical specifications"

Response Response Status C
ACCEPT IN PRINCIPLE.
Change clause title from: "Parallel Physical Interface (XLPPI and CPPI) for 40GBASE-SR4 and 100GBASE-SR10" to: "Parallel Physical Interface (nPPI) for 40GBASE-SR4 (XLPPI) and 100GBASE-SR10 (CPPI)"
In title of 86A.4 change "for XLPPI and CPPI" to "for nPPI"
In title of 86A.4.1 change "XLPII and CPPI" to "nPPI"
In title of 86A.4.2 change "XLPPI and CPPI" to "nPPI"

Comment Type ER Comment Status A
Eq's 85A-1 and 85A-2 specify the maximum and minimum insertion loss for the Tx and Rx PCB trace loss. The problem is that it does not split the loss budget between the two boards, which could result in an interoperaibility issue, if one end of the link decides to use more of the total budget.

Suggested Remedy
specify min and max trace loss per each board (multiply current equations by 1/2)

Response Response Status C
ACCEPT IN PRINCIPLE.
See response comment #96
All parameters listed in Table 83A-1 are normative and have a corresponding "SHALL" statement in the text following the table except "Maximum Termination Mismatch at 1MHz".

SuggestedRemedy
Add following sentence to end of paragraph at 83A.3.3.3
The maximum termination mismatch at 1 MHz shall be less than the requirement defined in Table 83A-1.

Response
Make sure PICS is included

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

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

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

Add PIC

Change Table 83A-1:
change table entry "Differential Output S-parameter" to "Differential output return loss"
change table entry "Common Mode Output S-parameter" to "Common mode output return loss"

Response
ACCEPT IN PRINCIPLE.

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

Response
ACCEPT.

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

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

Response
ACCEPT.

change Table 83A-2 "differential input s-parameters" to "Differential input return loss"
Comment Type: TR  Comment Status: A

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

Suggested Remedy: Reverse the signs for both equations.

Response: ACCEPT.

Response Status: W


Comment Type: ER  Comment Status: A

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

Suggested Remedy: Use one consistent form for an equation parameter <= limit (name) = equation.

Response: ACCEPT IN PRINCIPLE.

Response Status: C

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

Also change text to remove reference to CPIL:

From: The differential insertion loss, CPIL, expressed in decibels, between the Transmitter and the transmit compliance point shall be less than CPILmax, as defined by Equation (83A-1), which is illustrated in Figure 83A-3.

To: The differential insertion loss, expressed in decibels, between the Transmitter and the Transmit Compliance point shall be less than the insertion loss defined in equation 83A-1.

From: The differential insertion loss, CPIL, expressed in decibels, between the receive pin and the receive compliance point shall be less than CPILmax, as defined by Equation (83A-2), which is illustrated in Figure 83A-4.

To: The differential insertion loss, expressed in decibels, between the Receiver and the Receive Compliance point shall be less than the insertion loss defined in equation 83A-2.

Commenter is encouraged to provide additional input on naming convention which should...
Cl 83B SC 83B.1 P 385 L 40 # 325
D'Ambrosia, John Force10 Networks

Comment Type TR
Comment Status A

Fig 83B-1 calls out connector loss of 0.5 dB. This should be consistent with 86A.

Page 424 Line 36: The recommended maximum loss of the host channel (PCB only) at 5.15625 GHz is 3.5 dB.
Observation: 5.3dB - 3.5dB = 1.8dB for HCB + connector
Equation 83A-7 specifies 1.26dB for HCB trace only
Observation: 1.8dB - 1.26dB = 0.54dB for connector only

but

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

Suggested Remedy
Resolve what the loss of the connector should be.

Response ACCETP IN PRINCIPLE.

There is no reason for the connector loss to be different between host board and compliance board

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

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

from:

The loss budget of Equation 83A-9 is linearly scaled to 7.9 dB loss at 5.5 GHz for the Host XLAUI / CAUI component, and 2.1 dB loss at 5.5 GHz for the module as per Table 83B-1 and Equation (83B-1) for the host and Equation (83B-2) for the module.
Naming of return loss parameters is inconsistent with naming nomenclature used in IEEE 802 and most other industry specifications, including Infiniband, Fibre Channel, XFP, OIF CEI, where the term "return loss," not "reflection" is used. The only exception being SFP+. Given current thoughts on being able to implement -SR and -GR ports through same MDI, care should be taken on similar terminology. While "S21" was used in Clause 47, further searches found no usage of SDDmn parameters in IEEE 802.3 Section 4 or Section 5.

1. Table 86A-1, Line 22, "Differential output reflection response, SDD22"
2. Table 86A-1, Line 23, "Common mode output reflection response, SCC22"
3. Table 86A-2 "Differential input reflection response SDD11"
4. Table 86A-2 "Reflected differential to common mode conversion, SCD11"
5. Table 86A-3 "Differential Output Reflection Response SDD22"
6. Table 86A-3 "Common mode output reflection response, SCC2"
7. Table 86A-4 "Differential input reflection response, SDD11"
8. Table 86A-4 "Reflected differential to common mode conversion, SCD11"

Suggested Remedy
1. Table 86A-1, Line 22, "Differential output reflection response, SDD22"
2. Table 86A-1, Line 23, "Common mode output reflection response, SCC22"
3. Table 86A-2 "Differential input reflection response SDD11"
4. Table 86A-2 "Reflected differential to common mode conversion, SCD11"
5. Table 86A-3 "Differential Output Reflection Response SDD22"
6. Table 86A-3 "Common mode output reflection response, SCC2"
7. Table 86A-4 "Differential input reflection response, SDD11"
8. Table 86A-4 "Reflected differential to common mode conversion, SCD11"

Make following changes:
1. change "Differential output reflection response, SDD22" to "Differential Output Return Loss"
2. change "Common mode output reflection response, SCC22" to "Common-mode Output Return Loss"
3. Change "Differential input reflection response SDD11" to "Differential Input Return Loss"
4. Change "Reflected differential to common mode conversion, SCD11" to "Differential to Common-mode Input Return Loss"
5. Change "Differential Output Reflection Response SDD22" to "Differential Output Return Loss"
6. Change "Common mode output reflection response, SCC2" to "Common-mode Output Return Loss"
7. Change "Differential input reflection response, SDD11" to "Differential Input Return Loss"
8. Change "Reflected differential to common mode conversion, SCD11" to "Differential to Common-mode Input Return Loss"

Add definition to 1.4:
Return Loss: the ratio (expressed in dB) of reflected power at one port to the incident power at the same port. May refer to optical power or to electrical power in a specified frequency range. Note that the dB measurement of return loss is the absolute magnitude of the respective s-parameter dB magnitude measurement.

Response Status: U
REJECT. There was insufficient consensus within the sub-task force to make the changes as proposed.

After some debate an initial proposal was captured below:

In Tables 86A-1 and 86A-3, change "Differential output reflection response, SDD22" to "Differential output return loss"
In Tables 86A-1 and 86A-3, change "Common mode output reflection response, SCC22" to "Common mode output return loss"
In Table 86A-2 and Table 86A-4, change "Differential input return loss" to "Differential input return loss"
In Table 86A-2 and Table 86A-4, change "Reflected differential to common mode conversion, SCD11" to "Differential to common mode input return loss"

Make equivalent changes to definitions of these parameters in Clause 86A.

1.4 of the base standard contains:

1.4.308 return loss: In 10BROAD36, the ratio in decibels of the power reflected from a port to the power incident to the port. An indicator of impedance matching in a broadband system. (See IEEE 802.3, Clause 11.)

Add:
1.4.xxx return loss: In 40G/100GBASE-R, the ratio of the power incident to a port to the power reflected from the same port. May refer to optical power or to electrical power in a specified frequency range.
Cl 86A SC 86A.4 P 408 L 4 # 328
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

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

Reviewing figures 86-2 or 86-3, it is not clear where the "transmit side" or "receive side" is. Furthermore, the text is confusing as I believe there is a tx and rx associated with each side. So using the terminology "transmit" or "receive" side should be avoided.

86A.4.1.2 is a specification measured at TP4, which is not on the Tx side

Suggested Remedy

Instead of terminology "transmit side" use "nPPI Ingress"
Instead of terminology "receive side" use "nPPI Egress"

Illustrate this terminology in either Fig 86-2 or 86-3

Building on this then, you would have a "nPPI Ingress Tx" and "nPPI Ingress Rx" and "nPPI Egress Tx" and "nPPI Egress Rx"

Reorganize / reword according to below

86A.4.1 nPPI Ingress Electrical Specifications

Table 86A-1 change title to "nPPI Ingress Tx Output Electrical Specifications"
Move Table 86A-2 so it comes right after Table 86A-1 and rename it "nPPI Ingress Rx Input Electrical Specifications"

86A.4.1.1 nPPI Ingress Tx Differential Output Return Loss and Ingress Rx Differential Input Return Loss

Change text to:

The magnitude of RLD in dB for nPPI Ingress Tx Differential Output Return Loss measured at TP1a and nPPI Ingress Rx Differential Input Return Loss measured at TP1 shall be greater than RLDmin as defined in Equation 86A-1 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

RLD(f) > RLDmin = (show equations)

where f is frequency in gigahertz

86A.4.1.2 nPPI Ingress Tx Common-mode Output Return Loss

The magnitude of RLC in dB for nPPI Ingress Tx Common-mode Output Return Loss measured at TP1a shall be greater than RLCmin as defined in Equation 86A-2 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

RLC(f) > RLCmin = (show equations)

where f is frequency in gigahertz

86A.4.2 nPPI Egress Electrical Specifications

Rename Table 83A-3 to "nPPI Egress Tx Electrical Output Specifications"
Rename Table 83A-4 to "nPPI Egress Rx Electrical Input Specifications"

86A.4.2.1 nPPI Egress Tx Differential Output Return Loss and Egress Rx Differential Input Return Loss

Change text to:

The magnitude of RLD in dB for nPPI Egress Tx Differential Output Return Loss measured at TP4 and nPPI Egress Rx Differential Input Return Loss measured at TP4a shall be greater than RLDmin as defined in Equation 86A-1 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

86A.4.2.2 nPPI Egress Tx Common-mode Output Return Loss

The magnitude of RLC in dB for nPPI Egress Tx Common-mode Output Return Loss measured at TP4 shall be greater than RLCmin as defined in Equation 86A-2 for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

86A.4.2.3 nPPI Egress Rx Differential to Common-mode Input Return Loss

The magnitude of RLCD in dB for nPPI Ingress Rx Differential to Common-mode Input Return Loss measured at TP4a shall be greater than RLCDmin as defined in Equation 86A-x for frequencies from 10 MHz to 11.1 GHz. The equation is illustrated in Figure 86A-1.

Move Fig 86A-1 to after Table 86A04
Change Caption to Return Loss Specifications
In Figure
Change "SCC22" to "RLCDMIN"
Change "SDD11 or SDD22" to "RLDMIN"
Change "SCD11" to "RLCDMIN"

Response Status C

ACCEPT IN PRINCIPLE.
The terms "Ingress" and "Egress" do not have an obvious mapping to the two PPI links in question. One reader's ingress is another readers egress.
The response to comment 470 against Draft 2.0 was to change names using the terms "host, module, input and output".
Change title of 86A.4.1 to "nPPI host to module electrical specifications"
Change title of 86A.4.2 to "nPPI module to host electrical specifications"

Give editorial licence to apply similar changes elsewhere in the clause
For format of equations see response to comment 336
For XLPPI and CPPI vs nPPI see response to comment 316
For Return loss vs S-parameter names see response to comment 327

Comment Type TR Comment Status R
All graphs of dB in Annex86a are negative in magnitude. This is inconsistent with the equations, which show absolute magnitudes, as well as the rest of 802.3, which does not show negative numbers.

Suggested Remedy
Definition for return loss created in other comment
Add other definition for insertion loss in 1.4

Insertion Loss: the ratio (expressed in dB) of transmitted power at a port to the incident power at another port. May refer to optical power or to electrical power in a specified frequency range. Note that the dB measurement of insertion loss is the absolute magnitude of the respective s-parameter dB magnitude measurement.

Equations should result in positive number. Use one consistent form for an equation

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

Redo equations as described above, and then replot all graphs so magnitudes are positive.

Suggested Remedy

Response REJECT.
There was a lack of consensus on this comment due to the lack of consensus on comment 327
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Type</th>
<th>Status</th>
<th>Commenter</th>
<th>Comment Title</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>331</td>
<td>ER</td>
<td>R</td>
<td>D'Ambrosia, John</td>
<td>the term &quot;through response&quot; in Fig 86A-2 and 86A-3 is inconsistent with terminology used in p802.3ba as well as 802.3. The term is also used in the text.</td>
<td>REJECT.</td>
</tr>
<tr>
<td>332</td>
<td>TR</td>
<td>A</td>
<td>D'Ambrosia, John</td>
<td>The limit lines that Eqs 86A-8 and -9 establish, as shown in Fig 86A-4, are so close that it seems preferable to just have one limit.</td>
<td>ACCEPT.</td>
</tr>
<tr>
<td>334</td>
<td>ER</td>
<td>A</td>
<td>D'Ambrosia, John</td>
<td>By combining these different parameters in a single figure, the figure is not consistent with other clauses in 802.3, as different types of parameters has not been done before. It may also confuse the reader to think that the limit depicted for &quot;SCD21 or SCD12 looking into HCB or MCB&quot; is referring to a mode conversion crosstalk measurement.</td>
<td>ACCEPT.</td>
</tr>
<tr>
<td>335</td>
<td>TR</td>
<td>R</td>
<td>D'Ambrosia, John</td>
<td>This is outside the scope of the IEEE P802.3ba PAR</td>
<td>REJECT.</td>
</tr>
</tbody>
</table>

**Comment Status: D/dispatched A/accepted R/rejected**

**Response Status: O/open W/written C/closed U/unsatisfied Z/withdrawn**

**Sort Order: Comment ID**

**Page 87 of 111**

7/16/2009 2:12:07 PM
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Type</th>
<th>Status</th>
<th>Comment</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>336</td>
<td>Cl</td>
<td>ER</td>
<td>A</td>
<td>D'Ambrosia, John</td>
<td>Force10 Networks</td>
<td>Limit lines made up of 2 or more equations are numbered differently throughout the text.</td>
</tr>
<tr>
<td>337</td>
<td>Cl</td>
<td>TR</td>
<td>A</td>
<td>Palkert, Tom</td>
<td>Xilinx/Luxtera</td>
<td>The maximum cable loss should be adjusted to allow for a common host PCB design for CR and SR variants.</td>
</tr>
<tr>
<td>338</td>
<td>Cl</td>
<td>TR</td>
<td>A</td>
<td>Palkert, Tom</td>
<td>Xilinx/Luxtera</td>
<td>SDD11 for nAUI host input should match the PPI specification.</td>
</tr>
<tr>
<td>339</td>
<td>Cl</td>
<td>TR</td>
<td>A</td>
<td>Palkert, Tom</td>
<td>Xilinx/Luxtera</td>
<td>SDD22 for nAUI host output should match the PPI specification.</td>
</tr>
</tbody>
</table>
Cl 83B SC 83B.2.1 P 388 L 8 # 340
Palkert, Tom Xilinx/Luxtera

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

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

Response Response Status C
ACCEPT IN PRINCIPLE.

nAUI modules should have more flexibility with respect to SDD11

See comment 341

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

Comment Type TR Comment Status A
SDD22 for nAUI module output should match the PPI specification.

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

Response Response Status C
ACCEPT IN PRINCIPLE.

nAUI modules should have more flexibility with respect to SDD11

for nAUI, use PPI mask from 0.01GHz to 2.19GHz, use nAUI from 2.19GHz to 11.1GHz

PPI: \(= -12 + 2 \times V(f)\)

nAUI: \(-5.56 + 8.7 \times \log_{10}(f / 5.5)\).
Comment Type: E  Comment Status: R
Excessive capitalization (IEEE style uses lower case, only with justified exceptions for defined terms that otherwise would be confused, e.g., Idle being something distinct on the MII from the generic usage of idle). (Just following what was done in 802.3ae doesn’t make it right.)

SuggestedRemedy
Though out of scope recommend:

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

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

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

REJECT.

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

Comment ID: 345
Cl 30 SC 30 P 31 L 3 # 345
Grow, Robert Intel
Comment Type: E  Comment Status: A
While the right thing was done to recognize that other amendments will likely beat this one to publication, best practice is to include detailed insertion point to aid publication editor merge, and not enough detail is provided on many insert instructions.

SuggestedRemedy
30.3.2.1.2 -- Since list seems to be in alphnumeric order, instruct "Insert new PHY types in alphnumeric order..."
30.3.2.1.3 -- Same change, "Insert new PHY types in alphnumeric order..."
30.5.1.1.2 -- "Insert new PHY types into "APPROPRIATE SYNTAX" before 802.9a (802.3av/D3.4); change "BEHAVIOR" of 30.5.1.1.2:"

Response Response Status: C
ACCEPT.

Comment ID: 346
Cl 00 SC 0 P L # 346
Grow, Robert Intel
Comment Type: E  Comment Status: A
Editing instruction do not typically describe why the insert, change or replace is done, but most of the instructions in this draft include a brief but unnecessary explanation. The edits themselves should generally be self indicatve of why the change is being done and anyone that reads the amendment title should be able to understand that most of the edits are to add 40 Gb/s and 100 Gb/s specifications. In a few other cases, more editing instruction than what is provided would be appropriate. In number of cases, Tables probably are floating well away from the change instruction related to the table.

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

Response Response Status: C
ACCEPT IN PRINCIPLE.

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

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

Comment ID: 347
Cl 45 SC Table 45-8 P 44 L 34 # 347
Grow, Robert Intel
Comment Type: E  Comment Status: A
Where is the editing instruction for Table 45-8?

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

Response Response Status: C
ACCEPT IN PRINCIPLE.

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

Change the change instruction to make this explicit:

"Change 45.2.1.7 and change the indicated row of Table 45-8 for naming:"
Comment #348

Cl  01 SC 1.3  P 25  L 3  # 348

Grow, Robert Intel

Comment Type E  Comment Status A

Actually they need to be inserted in alphanumeric order.

SuggestedRemedy

Change alphabetic to alphanumeric.

Response  Response Status C

ACCEPT.

Comment #349

Cl  45 SC 45.2.1.4  P 42  L 47  # 349

Grow, Robert Intel

Comment Type E  Comment Status A

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

SuggestedRemedy

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

Search for similar occurrences and correct as needed.

Response  Response Status C

ACCEPT IN PRINCIPLE.

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

Update change instruction to read: "Insert 45.2.1.4.1a and 45.2.1.4.1b before 45.2.1.4.1 as follows:"
Comment Type: E  Comment Status: A
Correct for likely prior publication of P802.3av.

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

Response
ACCEPT IN PRINCIPLE.

"Change Table 45-82 (as modified by 802.3av) for 40 Gb/s and 100 Gb/s PCS registers:
Delete row 3.74 through 3.89
Replace with change row:
3.83 through 3.32 767 Reserved
becomes
3.83 through 3.89 Reserved

Response
ACCEPT IN PRINCIPLE.

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

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

Response
ACCEPT IN PRINCIPLE.

Editorial license to find numbering that does not conflict with the finalized 802.3av amendment.

Comment Type: ER  Comment Status: A
Strange order, inserted clause specify Register 1.307, then 1.309, then 1.308.

Suggested Remedy
Correct order moving 309 after 308.

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

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

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

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

Response
ACCEPT IN PRINCIPLE.

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

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

Response
ACCEPT IN PRINCIPLE.

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

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

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

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

SuggestedRemedy

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

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

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

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

Response

ACCEPT IN PRINCIPLE.

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

Make Table 45-7 an active link.

Line 5, make strikethrough text "1.7.15:5".

Line 8, make strikethrough text "1.7.4.0".

Column for bit 4 is not underlined.

Replace line 18:

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

1 1 1 x x = reserved
1 1 0 1 1 = reserved
1 1 0 1 0 = 10GBASE-PR-U3
1 1 0 0 1 = 10GBASE-PR-D3
1 1 0 0 0 = 10/1GBASE-PRX-U3
1 0 1 1 1 = 10/1GBASE-PRX-U2
1 0 1 1 0 = 10/1GBASE-PRX-U1
1 0 1 0 1 = 10GBASE-PR-D3
1 0 1 0 0 = 10GBASE-PR-D2
1 0 1 1 1 = 10GBASE-PR-D1
1 0 1 0 1 = 10GBASE-PRX-D3
1 0 0 0 1 = 10GBASE-PRX-D2
1 0 0 0 0 = 10/1GBASE-PRX-D1

SuggestedRemedy

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

Response

ACCEPT.

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

Make Table 45-83 an active link.

Line 52:

0 0 1 0 = 10/1 Gb/s

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

x x 1 1 = Reserved

For 802.3av/D3.4 as base text.

SuggestedRemedy

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

Response

ACCEPT IN PRINCIPLE.

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

Line 52:

0 0 1 0 = 10/1 Gb/s

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

x x 1 1 = Reserved
Fix typo:
Page 105, Line 30: delete double period

SuggestedRemedy per comment

Response Response Status C ACCEPT.

---

Fix typo:
line 33: between

SuggestedRemedy per comment

Response Response Status C ACCEPT.

---

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

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

Response Response Status C ACCEPT IN PRINCIPLE.

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

with

"The purpose of the PMA is to adapt the PCS Lanes (PCSLs) to an appropriate number of abstract or physical lanes and to optionally provide test signals and loopback."
Cl 83 SC 83.2 P 202 L 33 # 366
Ganga, Ilango Intel

Comment Type E Comment Status A
Sentence fragment. Rephrase as suggested

SuggestedRemedy
See 83.5.2 and Figure 83-4 for details.
Also add missing cross-reference to 83.5.2
Also rephrase line 35 as follows:
Figure 83-5 provides the functional block diagram of a PMA.

Response Response Status C
ACCEPT.

Cl 83 SC 83.5.2 P 206 L 6 # 367
Ganga, Ilango Intel

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

SuggestedRemedy
As per comment

Response Response Status C
ACCEPT.

Cl 83 SC 83.5.4 P 209 L 22 # 368
Ganga, Ilango Intel

Comment Type E Comment Status A
Typo in Table 83-1 last column title : Maximum(ns)
Also in the corresponding PICS on page 217 line 19: add space between 4096 BT and 9216 BT

SuggestedRemedy
As per comment

Response Response Status C
ACCEPT.

Cl 83 SC 83.5.6 P 210 L 3 # 369
Ganga, Ilango Intel

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

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

Response Response Status C
ACCEPT.

Cl 84 SC 84.2 P 223 L 4 # 370
Ganga, Ilango Intel

Comment Type E Comment Status A
SIGNAL_DETECT is defined in 84.7.4. So no need to describe the condition for SIGNAL detect generation in 84.2. Just provide a reference to 84.7.4 and only describe the validity of UNIDATA_x.indication in 84.2.

SuggestedRemedy
As per comment

Response Response Status C
REJECT.
The current text is OK and consistent with Clause 85 and other Clauses. It does not seem worth the effort and risk of changing it.

Cl 84 SC 84.11.4.4 P 232 L 23 # 371
Ganga, Ilango Intel

Comment Type E Comment Status A
Font size in column 4 is inconsistent with other fonts in table.

SuggestedRemedy
Change font size to be consistent across the PICS tables

Response Response Status C
ACCEPT.
<table>
<thead>
<tr>
<th>CI</th>
<th>SC</th>
<th>Comment</th>
<th>Line</th>
<th>Comment Status</th>
<th>Comment Type</th>
<th>Response</th>
<th>Response Status</th>
<th>Suggested Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>85</td>
<td>85.13.3</td>
<td>Ganga, Ilango Intel</td>
<td>P 265 L 1</td>
<td>A</td>
<td>E</td>
<td>Move title of subclause 85.13.4 Major capabilities/options to 85.13.3 and move the current title 85.13.3 to start after Major capabilities/options. Add a subclause with title 86.13.4.7 Environmental specifications and move the table on page 265 for environmental requirements to this subclause.</td>
<td>As per comment</td>
<td>ACCEPT</td>
</tr>
<tr>
<td>85</td>
<td>85.9</td>
<td>Ganga, Ilango Intel</td>
<td>P 250 L 27</td>
<td>A</td>
<td>E</td>
<td>fix typo: insertion loss deviation (ILD) Add missing cross-reference to Figure 85-2</td>
<td>As per comment</td>
<td>ACCEPT IN PRINCIPLE</td>
</tr>
<tr>
<td>83</td>
<td>83.1.4</td>
<td>Ganga, Ilango Intel</td>
<td>P 201 L 44</td>
<td>A</td>
<td>ER</td>
<td>The generic interface is now called inter-sublayer service interface defined in 80.3, so rephrase as suggested</td>
<td>Rephrase item (a) as follows: a) The inter-sublayer service interface defined in 80.3, is used for the PMA, FEC and PMD service interfaces supporting a flexible architecture with optional FEC and multiple PMA sublayers Rephrase item (c) as follows c) The abstract inter-sublayer service interface can be physically instantiated as a XLAUI or CAUI, using associated PMAs to map to the appropriate number of lanes.</td>
<td>ACCEPT</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: Comment ID
Add a sentence to indicate SIGNAL_OK parameter can take a value of OK or FAIL. Also specify the condition when this parameter takes a value of OK and under what condition this parameter takes a value of FAIL. (alternatively define this condition in 83.5.7 Link Status subclause and refer to it in 83.3).

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

Suggested Remedy
As per comment

ACCEPT IN PRINCIPLE.

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

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

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

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

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

ACCEPT IN PRINCIPLE.

Replace "The 40GBASE-R PMA(s) can support any of the following PMDs: 40GBASE-SR4, 40GBASE-LR4, 40GBASE-CR4, or 40GBASE-KR4. The 100GBASE-R PMA(s) can support any of the following PMDs: 100GBASE-SR10, 100GBASE-LR4, 100GBASE-ER4, or 100GBASE-CR10." with
"The 40GBASE-R PMA(s) can support any of the 40 Gb/s PMDs listed in Table 80-1. The 100GBASE-R PMA(s) can support any of the 100 Gb/s PMDs listed in Table 80-1."
Comment Type  T Comment Status  A

Comment Type  TR Comment Status  A

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

Suggested Remedy

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

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

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

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

Suggested Remedy

Change PICS as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Value/Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM1</td>
<td>40GBASE-R PCS lane lock</td>
<td>Implements 4 PCS lane lock process as depicted in Figure 82-10</td>
</tr>
<tr>
<td>SM2</td>
<td>100GBASE-R PCS lane lock</td>
<td>Implements 20 PCS lane lock process as depicted in Figure 82-10</td>
</tr>
<tr>
<td>SM3</td>
<td>40GBASE-R PCS alignment marker lock</td>
<td>Implements 4 alignment marker lock process as depicted in Figure 82-11</td>
</tr>
<tr>
<td>SM4</td>
<td>100GBASE-R PCS alignment marker lock</td>
<td>Implements 20 alignment marker lock as depicted in Figure 82-11</td>
</tr>
<tr>
<td>SM5</td>
<td>40GBASE-R and 100GBASE-R PCS deskew</td>
<td>Meets the requirements of Figure 82-12</td>
</tr>
</tbody>
</table>

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

| SM6  | 40GBASE-R BER monitor | Meets the requirement of Fig 82-12 with xus_timer_done equals 1.25ms |
| SM7  | 100GBASE-R BER monitor | Meets the requirement of Fig 82-12 with xus_timer_done equals 500us |

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

Change/renumber Transmit and Receive PICS as follows

| SM8  | 40GBASE-R and 100GBASE-R Transmit process |
| SM9  | 40GBASE-R and 100GBASE-R Receive process |

Delete PCS_R_Status from 82.7.6.1 (SM6) as this is not defined or used in Clause 82.
There should be separate PICS to capture the local and remote loopback requirements in 83.5.8 and 83.5.9. Also the PICS in 83.7.6 that captures the optional requirements should be updated accordingly.

**Suggested Remedy**

Change 83.7.3 LB as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Subclause</th>
<th>Value/Comment</th>
<th>Status</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>LBL</td>
<td>PMA local loopback</td>
<td>83.5.8</td>
<td>Supports local loopback</td>
<td>O</td>
<td>Yes/No/NA</td>
</tr>
<tr>
<td>LBR</td>
<td>PMA Remote loopback</td>
<td>83.8.9</td>
<td>Supports remote loopback</td>
<td>O</td>
<td>Yes/No/NA</td>
</tr>
</tbody>
</table>

Change 83.7.6 LB1 and LB2 as follows:

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

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

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

**Suggested Remedy**

Change 83.5.7 line 8 as follows:

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

Insert the following PICS to 83.7.3

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Subclause</th>
<th>Value/Comment</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNKS</td>
<td>PMA link status</td>
<td>83.5.7</td>
<td>Meets the requirements of 83.5.7</td>
<td>M</td>
</tr>
</tbody>
</table>

**Response** ACCEPT.
The error counters are now combined in status variable mapping. Instead move these counters to a separate table 83-4 as follows:

Table 83-4 MDIO/PMA counters mapping

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

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

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

Response Response Status C
ACCEPT IN PRINCIPLE.

Editorial license to craft appropriate text to define PMA registers

---

Comment Type E
Comment Status A

The keywords do not include Ethernet anywhere, only the abbreviation GbE.

SuggestedRemedy
So that a keyword search for Ethernet finds IEEE P802.3ba please change ‘40GbE’ to read ‘40 Gb/s Ethernet’ and ‘100GbE’ to read ‘100 Gb/s Ethernet’.

Response Response Status C
ACCEPT IN PRINCIPLE.

Change "40GbE" to "40 Gb/s Ethernet"
Change "100GbE" to "100 Gb/s Ethernet"
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>99</td>
<td>99</td>
<td>4</td>
<td>15</td>
<td>388</td>
<td>388</td>
</tr>
<tr>
<td>Law, David</td>
<td>3Com</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type E**

**Comment Status A**

The approval of IEEE P802.3at is contingent on the approval of IEEE P802.3bc so IEEE P802.3bc should appear in the list before IEEE P802.3at. It is also likely that IEEE P802.3-1998/Cor1 (IEEE 802.3bb) will also be published before IEEE P802.3ba.

**Suggested Remedy**

Add the following two projects to the list:

1. IEEE Std 802.3bc(TM)-200X
   - This amendment includes changes to IEEE Std 802.3-2008 and adds Clause 79. This amendment transfers the IEEE 802.3 Organizationally Specific TLVs that were originally specified in IEEE Std 802.1AB Station and Media Access Control Connectivity Discovery to IEEE Std 802.3.

2. IEEE Std 802.3-2008/Cor 1(TM)-200X
   - This corrigendum corrects the PAUSE reaction delay value specified for some PHY types.

**Response**

**Response Status C**

ACCEPT.

---

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>99</td>
<td>99</td>
<td>2</td>
<td>46</td>
<td>389</td>
<td>389</td>
</tr>
<tr>
<td>Law, David</td>
<td>3Com</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type E**

**Comment Status A**

I believe that the following text should appear at the bottom of page 2 of the frontmatter.

The Institute of Electrical and Electronics Engineers, Inc.
3 Park Avenue, New York, NY 10016-5997, USA

Copyright © 2009 by the Institute of Electrical and Electronics Engineers, Inc.
All rights reserved. Published xx Month 200x. Printed in the United States of America.

IEEE is a registered trademark in the U.S. Patent & Trademark Office, owned by the Institute of Electrical and Electronics Engineers, Incorporated.

Print: ISBN 0-7381-xxxx-x SHxxxxx
PDF: ISBN 0-7381-xxxx-x SSxxxxx

**Suggested Remedy**

See comment.

**Response**

**Response Status C**

ACCEPT IN PRINCIPLE.

Check the latest front matter template and update if appropriate.

---

<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>30.2.1.5</td>
<td>31</td>
<td>45</td>
<td>390</td>
<td>390</td>
</tr>
<tr>
<td>Law, David</td>
<td>3Com</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comment Type E**

**Comment Status A**

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

**Suggested Remedy**

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

**Response**

**Response Status C**

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

Response
See comment.

Accept.

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

Response
See comment.

Accept.

This footnote should be just a note.

Response
See comment.

Accept.

Typo.

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

Accept in principle.

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

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

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

Suggest clarifying is a dated or undated reference is intended.

Accept in principle.

For G.694.1 and G.694.2 remove the dates from clause 1.4

Where a date appears in the reference in 1.4, a dated reference was intended even where the date was not included in the citation. This applies to IEC 60793-2-50, IEC 61280-1-1, IEC 61280-1-4, G.959.1 and TIA-455-127-A.
<table>
<thead>
<tr>
<th>Cl</th>
<th>SC</th>
<th>P</th>
<th>L</th>
<th>#</th>
<th>Comment ID #</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Response Status</th>
<th>Comment Status</th>
<th>Working Group ballot</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>4.4.2</td>
<td>29</td>
<td>41</td>
<td>996</td>
<td>396</td>
<td>T</td>
<td>A</td>
<td>The note states that '.. the received interPacketGap .. can have a minimum value of 8 BT (bit times) .. due to interPacketGap shrinkage.. It is not due to interPacketGap shrinkage, that is what it is, it is due to clock tolerance and lane alignment requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy</td>
<td>Suggest the text '.. due to interPacketGap shrinkage.' be change to read '.. due to clock tolerance and lane alignment requirements.'</td>
<td>ACCEPT IN PRINCIPLE. In addition to 4.4.2, make the suggested change to Annex 4A (4A.4.2).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>30.5.1.1.15</td>
<td>34</td>
<td>28</td>
<td>997</td>
<td>397</td>
<td>T</td>
<td>A</td>
<td>IEEE Std 802.3-2008 subclause 30.1.4 'Management model' states that '.. items are defined .. in terms of the template requirements of ISO/IEC 10165-4: 1991.' In ISO/IEC 10165-4, under the Attribute template in subclause 8.7.3.2 'WITH ATTRIBUTE SYNTAX type-reference,' it is stated that 'This construct, present only if the DERIVED FROM construct is absent, identifies the ASN.1 data type that describes how instances of this attribute are carried in protocol.'</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SuggestedRemedy</td>
<td>We should therefore be using ASN.1 notation in APPROPRIATE SYNTAX, and I believe that the correct ASN.1 notation for an array is 'SEQUENCE.' For an existing example see subclause 30.3.1.1.30 'aCollisionFrames'. Further we need to define a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Suggest lines 31 through 37 be replaced with:

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

Response Status C

ACCEPT IN PRINCIPLE.

Accept the proposed response and also make similar change for 30.5.1.1.16.
I'm sure I remember as similar discussion during 10Gb/s - but why when we say that the both TXC<7:0> (page 147, line 8) and TXD<63:0> are 'shall transition synchronously with respect to the rising edge of TX_CLK,' why in Figure 81-5 are they shown to transition synchronously with respect to the falling edge of TX_CLK. Is this showing the clock to output delay - but should it be shown as exactly half a clock cycle.

Suggested Remedy
- Change if thought necessary.

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

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

Suggested Remedy
- Suggest that '.. or Error control characters,' be changed to read '.. or Receive error characters.'.

Response
- Accept in principle.
- Change the entry in table 81-4: from:
  - "Receive error"
  to:
  - "Error"
This makes it consistent with line 49, and makes it consistent with Table 81-3 also.

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

Suggested Remedy
- Suggest that '.. or Error control characters,' be changed to read '.. or Transmit error propagation characters.'.

Response
- Accept in principle.
- Change table 81-3 From:
  - "Transmit error propagation"
To:
  - "Error"
This makes it consistent with line 53.
Comment ID # 403
Law, David 3Com

Comment Type T
Comment Status A

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

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

Suggested Remedy
Add a definition of column before its use.

Response
Response Status C
ACCEPT IN PRINCIPLE.

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

In table 81-5
Change:
NOTE-Values in Lane 1-7 columns are in hexadecimal, most significant bit to least significant bit (i.e., <7:0>).
To:
NOTE-Values are in hexadecimal, most significant bit to least significant bit (i.e., <7:0>).

Add the following after the first paragraph of 81.3.4:
Clause 46 uses the term column when describing data transfer on the XGMII. The eight lanes of data and control transferred per clock cycle on XLGMII/CGMII are equivalent to a column in the following description of link fault signaling.

Comment ID # 404
Law, David 3Com

Comment Type T
Comment Status A

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

Suggested Remedy
See comment.

Response
Response Status C
ACCEPT.

Comment ID # 405
Law, David 3Com

Comment Type T
Comment Status A

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

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

Response
Response Status C
ACCEPT.
Comment Type: T  Comment Status: A
Line 17 states that 'Data striping is introduced to support multiple lanes in the Physical Layer.' yet line 28 states that '.. distribute data to multiple lanes in order to support PMAs and PMDs with multiple lanes.'.
Isn't it actually the need to support multiple lanes on the medium - be it multiple fibres, copper links or wavelengths - that drives this.

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

Response  Response Status: C
ACCEPT IN PRINCIPLE.
Change the following text.
From:
"In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes in order to support PMAs and PMDs with multiple lanes."
To:
"In addition to 64B/66B encoding is a methodology to add alignment markers and distribute data to multiple lanes."

Comment Type: T  Comment Status: A
I don't think the PCVS clien can be anything other than the RS.

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

Response  Response Status: C
ACCEPT.

Comment Type: E  Comment Status: A
Typo
Change "Mapping RXD to PLS_DATA.indicates" to "Mapping RXD to PLS_DATA.indications" and "Create PLS_DATA.increment" to "Create PLS_DATA.indications".

Response  Response Status: C
ACCEPT.

Comment Type: T  Comment Status: A
The transition between clock sources is not specified

Suggested Remedy
Remove the PICS statement for the transition between clock sources

Response  Response Status: C
ACCEPT.  
This was originally classified as E, changed it to T.
<table>
<thead>
<tr>
<th>Comment ID</th>
<th>Comment Type</th>
<th>Comment Status</th>
<th>Comment</th>
<th>Suggested Remedy</th>
<th>Response</th>
<th>Response Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>411</td>
<td>E</td>
<td>A</td>
<td>Function names have changed</td>
<td>Change <code>R_BLOCK_TYPE</code> to <code>R_TYPE</code> and <code>T_BLOCK_TYPE</code> to <code>T_TYPE</code></td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>412</td>
<td>E</td>
<td>A</td>
<td>Old function definition</td>
<td>Remove the definition of <code>T_BLOCK_TYPE</code> because it has been replaced with <code>T_TYPE</code>.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>413</td>
<td>E</td>
<td>A</td>
<td>“T_TYPE = tx_raw&lt;71:0&gt;” should be “T_TYPE(tx_raw&lt;71:0&gt;)”</td>
<td>“T_TYPE = tx_raw&lt;71:0&gt;” should be “T_TYPE(tx_raw&lt;71:0&gt;)”</td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
<tr>
<td>414</td>
<td>T</td>
<td>A</td>
<td>Unused values of block type are defined twice.</td>
<td>Change &quot;All unused values of block type field are reserved&quot; to &quot;All unused values of block type field are invalid&quot; to match the new wording in 82.2.4.5.</td>
<td>ACCEPT.</td>
<td></td>
</tr>
<tr>
<td>415</td>
<td>T</td>
<td>A</td>
<td><code>r_block_type</code> can only contain the value returned from <code>R_TYPE</code></td>
<td>Create a variable called <code>r_block_type_next</code> that contains the value of <code>R_TYPE_NEXT</code></td>
<td>ACCEPT IN PRINCIPLE.</td>
<td></td>
</tr>
</tbody>
</table>

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

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

Change `R_TYPE_NEXT` function to refer to the new variable.
Cl 82  SC 82.7  P 194  L 1  # 416
Estes, Dave  UNH - IOL

Comment Type  T  Comment Status  A
PICS are needed for several shalls

SuggestedRemedy
- PICS are needed for the following shalls:
  82.2.4.3 page 171 line 1 (2 shall statements)
  82.2.4.4 page 172 line 1 (2 shall statements)
  82.2.4.6 page 172 line 19 (Idles shall not be added during data)
  82.2.19.2.3 AM_SLIP, DECODE, ENCODE, and SLIP contain shall statements
  82.2.19.3 No PICS statement for Figure 82-12 PCS deskew state diagram

Response  Response Status  C
ACCEPT.

Cl 82  SC 82.2.4.2  P 168  L 27  # 417
Estes, Dave  UNH - IOL

Comment Type  T  Comment Status  A
There is a PICS but no shall

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

Response  Response Status  C
ACCEPT.

Cl 82  SC 82.2.8  P 174  L 27  # 418
Estes, Dave  UNH - IOL

Comment Type  T  Comment Status  A
There isn't a shall or PICS associated with alignment markers

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

Response  Response Status  C
ACCEPT IN PRINCIPLE.
Change:
- "The alignment markers are inserted after every 16383 66-bit blocks on each PCS lane" to:"The alignment markers shall be inserted after every 16383 66-bit blocks on each PCS lane"
- Add appropriate PICS.
- Change from: "The content of the alignment markers is shown in Table 82-2 for 100GBASE-R and in Table 82-3 for 40GBASE-R." to: "The content of the alignment markers shall be as shown in Table 82-2 for 100GBASE-R and in Table 82-3 for 40GBASE-R."
- And add appropriate PICS

Cl 85A  SC 85A.7  P 405  L 52  # 419
Balasubramanian, Vittal  FCI USA, Inc.

Comment Type  E  Comment Status  A
Remove "<XREF>"

SuggestedRemedy
- Change per comment

Response  Response Status  C
ACCEPT.
[Editor's note: Late comment submitted after the ballot close; pending consideration by the Task Force]
Line reads “The ILD shall be within the region defined by Equation (85-47) and Equation (85-48) for all frequencies from 50 MHz to 6000 MHz”. This should be from 1000 MHz to 6000 MHz. Loss characteristics are different for cables below 1 GHz and above 1 GHz. Can’t use a linear IL Fitted line to calculate ILD if the ILD needs to be met below 1 GHz. Also, Figure 85-5 does not reflect the frequency range.

**Suggested Remedy**
- Change lower frequency of ILD requirement back to 1000 MHz as in draft 2.0

**Response**
- ACCEPT IN PRINCIPLE.
- [Editor’s note: Late comment submitted after the ballot close; pending consideration by the Task Force]

**Comment**
- Page 281, line 24, 86.7.4, Table 86-9: Change “fiber” in note c to “cabled optical fiber”
- Page 290, line 25, 86.10.2.1, Table 86-14: Change “fiber cable attenuation” to “cabled optical fiber attenuation”

**Suggested Remedy**
- As per comment

**Response**
- ACCEPT IN PRINCIPLE.
- [Editor’s note: Late comment for consideration by the Task Force]

**Comment**
- ICRcalf shall be greater than or equal to ICRcamin as defined by the following equation where f is expressed in GHz.
- This statement cannot be true. f needs to be in Hz or eqn 85A-12 needs to change to (f/5)

**Suggested Remedy**
- Change equation per comment

**Response**
- ACCEPT IN PRINCIPLE.
- OBE ICR to ICN change see comment #141 [Editor’s note: Late comment submitted after the ballot close; pending consideration by the Task Force]
### IEEE P802.3ba D2.1 40Gb/s and 100Gb/s Ethernet comments

#### Draft 2.1 Comments

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Page</th>
<th>Line</th>
<th>Comment Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>425</td>
<td>87.8</td>
<td>310</td>
<td>16</td>
<td>Page 310, line 16, 87.8, Table 87-9: Change &quot;fiber&quot; in note a to &quot;cabled optical fiber&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Page 317, line 14, 87.11.1, Table 87-15: Change &quot;fiber cable attenuation&quot; to &quot;cabled optical fiber attenuation&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As per comment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Editor's note: Late comment for consideration by the Task Force]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Table 87-9: Change &quot;fiber&quot; in note a to &quot;cabled optical fiber&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Table 87-15: Change &quot;Fiber cable attenuation&quot; to &quot;Cabled optical fiber attenuation&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Page</th>
<th>Line</th>
<th>Comment Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>426</td>
<td>88.7.3</td>
<td>334</td>
<td>21</td>
<td>Page 334, line 21, 88.7.3, Table 88-9: Change &quot;fiber&quot; in note a to &quot;cabled optical fiber&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Page 344, line 14, 88.12.1, Table 88-19: Change &quot;fiber cable attenuation&quot; to &quot;cabled optical fiber attenuation&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As per comment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Editor's note: Late comment for consideration by the Task Force]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Table 88-9: Change &quot;fiber&quot; in note a to &quot;cabled optical fiber&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Table 88-19: Change &quot;Fiber cable attenuation&quot; to &quot;Cabled optical fiber attenuation&quot;</td>
</tr>
</tbody>
</table>

#### Working Group ballot

<table>
<thead>
<tr>
<th>Comment ID</th>
<th>SC</th>
<th>Page</th>
<th>Line</th>
<th>Comment Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>427</td>
<td>45.2.1.7</td>
<td>310</td>
<td>16</td>
<td>Subclauses 45.2.1.7.4 and 45.2.1.7.5, which describe PMA/PMD Transmit Fault and PMA/PMD Receive Fault, need to be updated by P802.3ba to include the set of PMDs defined in P802.3ba, with appropriate forward references</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Suggested Remedy</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>As per comment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Response</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ACCEPT IN PRINCIPLE.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Editor's note: Late comment for consideration by the Task Force]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prior to the final sentence of first paragraph 45.2.1.7.4, insert:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;The description of the transmit fault function for the 40GBASE-KR4 PMDs is given in 84.7.10. The description of the transmit fault function for the 40GBASE-CR4 and 100GBASE-CR10 PMDs is given in 85.7.10. The description of the transmit fault function for the 40GBASE-SR4 and 100GBASE-CR10 PMDs is given in 86.5.10. The description of the transmit fault function for the 40GBASE-LR4 PMDs is given in 87.5.10. The description of the transmit fault function for the 100GBASE-LR4 and 100GBASE-ER4 PMDs is given in 88.5.10.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Prior to the final sentence of 45.2.1.7.5, insert:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;The description of the receive fault function for the 40GBASE-KR4 PMDs is given in 84.7.11. The description of the receive fault function for the 40GBASE-CR4 and 100GBASE-CR10 PMDs is given in 85.7.11. The description of the receive fault function for the 40GBASE-SR4 and 100GBASE-CR10 PMDs is given in 86.5.11. The description of the receive fault function for the 40GBASE-LR4 PMDs is given in 87.5.11. The description of the receive fault function for the 100GBASE-LR4 and 100GBASE-ER4 PMDs is given in 88.5.11.&quot;</td>
</tr>
</tbody>
</table>