

Cl 00 SC P L # 448  
D'Ambrosia, John Force10 Networks

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

All equations throughout D2.0 need to be re-evaluated for consistency.

*SuggestedRemedy*

Update all equations to be self-consistent with other equations.

Response Response Status **U**

REJECT.

[Editor's note: Changed clause number from 99 to 00]

See Response to comment 447

Cl 00 SC P L # 447  
D'Ambrosia, John Force10 Networks

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

Various figures throughout the entire document related to channel parameters (insertion loss (min & max), ICR, ILD, Return loss (including DD,CC, DC, and CD) and return loss's (which have been labeled "reflection coefficients in Clause 85 in D2.0)) and associated with the Tx and Rx output return loss parameters all need to be re-evaluated for consistency

*SuggestedRemedy*

Update all figures to be self consistent with other figures.

In all graphs (insertion loss, return loss, and crosstalk) the magnitude of all the y-axis should be positive magnitude. See dambrosia\_02\_0509 on naming nomenclature of charts.

Response Response Status **U**

REJECT.

[Editor's note: Changed clause number from 99 to 00]

There was consensus in the task force that a consistent format be adopted across all of the clauses but this is dependent on decisions on the parameter naming and equation format.

Cl 00 SC 0 P L # 451  
D'Ambrosia, John Force10 Networks

Comment Type **ER** Comment Status **R**

Naming Parameters of mixed mode 4 port S-parameters is inconsistent within IEEE P802.3ba. A standard naming nomenclature is needed.

List of places needing updated

Clause 85:

Table 85-6 (Line 23): Differential to common mode conversion SCD11

Fig 85-5 caption

Page 249, Line 3 - "fitted cable assembly insertion loss"

Figure 86-8-Mode conversion of mated HCB-MCB

Text in subclause 86.9 Recommended electrical channel (informative)

Figure 86-12-Recommend response of PPI channel with HCB

In Table83A-1, Differential Output S-parameters and Common Mode Output S-parameters

In Table 83A02, Differential Input S-parameters and Differential Common Mode Input

Conversion S-parameters

83A.3.4.4 Reflected differential to common mode conversion and text in sub-clause

Figure 83A-9-Reflected differential to common mode conversion

Text in sub-clause 83A.4 Interconnect characteristics

Figure 83A-11-Channel insertion loss

Figure 83A-12-Channel Return Loss

TC6 and TC7 in 83A.7.4 XLAUI/CAUI Transmitter Requirements

RC2 and RC3 in 83A.7.5 XLAUI/CAUI Receiver Requirements

In Table 83B-2, Module input reflection SDD11 and Module output reflection (SDD22)

In Table 83B-4, Host output reflection SDD22 and Host input reflection SDD11

HC3 and HC4 in 83B.4.4 Host requirements

85.10.4 Cable assembly return loss & test in subclause

Fig 85-7 caption

85.9.1: Transmitter and receiver differential printed circuit board trace loss & text in sub-clause

85.9.2 Channel insertion loss & text in subclause

85.9.3 Channel return loss & text in subclause

Table 85-7 (Line 40) Maximum Insertion Loss

85.10.2 Cable assembly insertion loss and text in subclause

86.6.1.1 SDD11 at TP1 and SDD22 at TP1a and text in subclause  
 86.6.1.2 Common mode output reflection coefficient SCC22 at TP1a and TP4  
 In Table 86-6, Differential output reflection coefficient, SDD22 and Common mode output reflection coefficient, SCC22  
 In Table 86-7 Differential input reflection coefficient, SDD11 and Reflected differential to common mode conversion, SCD11  
 In Table 86-11 Differential output reflection coefficient, SDD22 and Common mode output reflection coefficient, SCC22  
 In Table 86-12,  
 Figure 86-3-Differential and common-mode reflection specifications  
 86.6.5.1 SDD22 at TP4 and SDD11 at TP4a & text in subclause  
 Figure 86-5-Through response of HCB and MCB excluding connector  
 Text in Sub-clause 86.7.1.1 Compliance board parameters  
 Figure 86-6-Through response of mated HCB-MCB

**SuggestedRemedy**

Rename all parameters using standard naming nomenclature  
 see presentation (dambrosia\_02\_0509)

**Response**                      **Response Status** **U**  
 REJECT.

There was consensus in the task force that a consistent naming convention be adopted across all of the clauses.

**Cl 00**    **SC 0**                      **P**                      **L**                      # 263  
 Diab, Wael                                      Broadcom

**Comment Type**    **TR**                      **Comment Status**    **A**  
 Please consider effect on PAUSE for the 40G and 100G PMDs

**SuggestedRemedy**

If changes are required, please make modifications to Annex 31B

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

See response to comment #643

**Cl 00**    **SC 0**                      **P**                      **L**                      # 487  
 D'Ambrosia, John                                      Force10 Networks

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

Clauses 74 and 83 - 88 provide definitions for service interfaces, but it has been agreed that the use of the optional physical instantiation for XLAUI / CAUI accompanied by adjacent PMA sublayers means that all of these service interfaces are the same

**SuggestedRemedy**

give one single definition of a service interface that can be referenced accordingly by the other clauses

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

See comment #648

**Cl 00**    **SC 0**                      **P**                      **L**                      # 480  
 D'Ambrosia, John                                      Force10 Networks

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

All physical layer specifications and electrical interfaces use a multi-lane approach. It is not clear from the text throughout 802.3ba whether the tx / rx signal characteristics are tested with all lanes operational.

**SuggestedRemedy**

specify that all signals similar in nature to the DUT shall be operational, i.e. all transmitters shall be transmitting when testing a transmitter, all receivers shall be receiving when testing a receiver.

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

This comment was WITHDRAWN by the commenter.

Need to identify specific changes to Clauses and subclauses that need to be changed.

CI 00 SC 0 P12 L5 # 771  
Marris, Arthur Cadence

Comment Type E Comment Status A  
Table of contents

*SuggestedRemedy*

Change 10GBASE-R to BASE-R on lines 5 and 25

Response Response Status C  
ACCEPT IN PRINCIPLE.

These ToC items are generated based on contents from Clause 74. The tool does not allow strike through to be carried over to ToC. Need to manually edit ToC for these entries.

CI 00 SC 0 P126 L18 # 577  
Booth, Brad AMCC

Comment Type TR Comment Status R

In the architectural figures for 802.3ba, there is a reference in the stack to 40GBASE-R PCS and 100GBASE-R PCS. This is incorrectly described relative to the description in Clause 82 which defines it as a 64B/66B PCS. Being verify specific is not required. For example, the 802.3 specification references 8B/10B PCS, 64B/66B PCS or just PCS in many instances through the standard. Calling out the specific port type is note required.

*SuggestedRemedy*

Change all diagrams to show 40GBASE-PCS and 100GBASE-R PCS as 64B/66B PCS.

Response Response Status U  
REJECT.

There is a single lane 64B/66B PCS for 10GBASE-R. Hence to differentiate that the 40G and 100G R PCS is not the same as a 10G R PCS this specific reference was added. Also, the 40GBASE-R PCS is different from the 100GBASE-R PCS in terms of the number of lanes etc.

CI 00 SC 0 P130 L22 # 275  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

The text and values relating to delay in the various clauses in the draft are not consistent with each other. Some clauses use the term "round-trip" and others say "sum of transmit and receive" (some use both).

The delay constraint is specified so that a device implementor can meet the maximum delay constraint allowable for sublayers implemented in that device. And the network system designer can use this information to plan the amount of buffer needed (from the time pause frame is issued to the time it takes for the remote system to respond to the pause frame by actually stopping the transmission). See diagram below:

```

MAC/RS PCS PMA PMD MEDIUM PMD PMA PCS RS/MAC
PAUSE-> TX1 TX1 TX1 TX1 M-> RX2 RX2 RX2 RX2 -> Recd
STOP <- RX1 RX1 RX1 RX1 M<- TX2 TX2 TX2 TX2 <- STOP

```

Hence the delay constraint specifies the sum of the transmit and receive delays of that particular device or sublayer at one end of the link. The requirement is therefore that for each layer TX1 + RX1 or TX2 + RX2 (+ M as appropriate) must remain within the limit. This comment (which has been discussed by the editorial team) proposes modifications to each of the clauses to follow this model and make them consistent with each other.

The text to describe what is included in the delay of all clauses is modified and the delays in clause 84 and 85 are changed.

Also, the text in 83.5.4 says "The maximum cumulative MAC Control, MAC and RS round-trip (sum of transmit and receive) delay". But this is the PMA clause. Also, this text should make it clear how many PMAs this delay covers.

*SuggestedRemedy*

In clause 80.3 change "Table 80-2 contains the values of maximum sublayer round-trip (sum of transmit and receive) delay in bit time as" to "Table 80-2 contains the values of maximum sublayer delay (sum of transmit and receive delays at one end of the link) in bit times as". Change the title of Table 80-2 to "Sublayer delay constraints" and change the values to be consistent with the values below.

In Clause 81.1.4 change the sentence starting in line 41 to "The maximum cumulative MAC Control, MAC and RS delay (sum of transmit and receive delays at one end of the link) shall meet the values specified in Table 81-1." Change the title of Table 81-1 to "Delay constraints"

In Clause 82.5 change the last two sentences to "The maximum delay contributed by the 40GBASE-R PCS (sum of transmit and receive delays at one end of the link) shall be no more than 11264 BT (or 22 pause\_quanta). The maximum delay contributed by the 100GBASE-R PCS (sum of transmit and receive delays at one end of the link) shall be no more than 35328 BT (or 69 pause\_quanta)."

In Clause 83.5.4 change the clause title to "Delay constraints". Change the sentence starting on line 34 to "The maximum cumulative delay contributed by up to four PMA stages in a PHY (sum of transmit and receive delays at one end of the link) shall meet the values specified in Table 83-1." Change the title of Table 83-1 to "Delay constraints"

In Clause 84.4 change the last two sentences to "The sum of the transmit and the receive delays at one end of the link contributed by the 40GBASE-KR4 PMD and the medium in one direction shall be no more than 2048 bit times (or 4 pause\_quantas). It is assumed that the one way delay through the medium is 320 bit times."

In Clause 85.4 change the last two sentences to "The sum of the transmit and the receive delays at one end of the link contributed by the 40GBASE-CR4 PMD and the medium in one direction shall be no more than 6144 bit times (or 12 pause\_quantas). It is assumed that the one way delay through the medium is 2072 bit times.  
The sum of the transmit and the receive delays at one end of the link contributed by the 100GBASE-CR10 PMD and the medium in one direction shall be no more than 14848 bit times (or 29 pause\_quantas). It is assumed that the one way delay through the medium is 5180 bit times."

In Clause 86.2.1 change the first two sentences to "The sum of the transmit and receive delays at one end of the link contributed by the 40GBASE-SR4 PMD including 2 m of fiber in one direction shall be no more than 1024 bit-times (or 2 pause\_quantas). The sum of the transmit and receive delays at one end of the link contributed by the 100GBASE-SR10 PMD including 2 m of fiber in one direction shall be no more than 2048 bit-times (or 4 pause\_quantas)."

In Clause 87.3.1 change the sentence starting on line 6 to "The sum of the transmit and receive delays at one end of the link contributed by the 40GBASE-LR4 PMD including 2 m of fiber in one direction shall be no of no more than 1024 bit-times (or 2 pause\_quantas)."

In Clause 88.3.1 change the sentence starting on line 6 to "The sum of the transmit and receive delays at one end of the link contributed by the 100GBASE-LR4 or 100GBASE-ER4 PMD including 2 m of fiber in one direction shall be no of no more than 2048 bit-times (or 4 pause\_quantas)."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

In clause 80.3 change the last but one sentence to "Table 80-2 contains the values of maximum sublayer delay (sum of transmit and receive delays at one end of the link) in bit times as specified in 1.4 and pause\_quantas as specified in 31B.2. If a PHY contains an Auto-Negotiation sublayer, the delay of the Auto-Negotiation sublayer is included within the delay of the PMD and medium."

Change the title of Table 80-2 to "Sublayer delay constraints" and change the values to be consistent with the values below.

Add a column to Table 80-2 for Maximum (ns).

In Table 80-2 change "Includes delay associated with" to "Includes delay of one direction through" in three places. Add footnotes to Table 80-2 "Note that for 40GBASE-R, 1 pause\_quantum is equal to 12.8 ns and for 100GBASE-R, 1 pause\_quantum is equal to 5.12 ns. (see 31B.2 for the definition of pause\_quantas.)" and "Should there be a

discrepancy between this table and the delay requirements of the relevant sublayer clause, the sublayer clause prevails"

In Clause 81.1.4 change the sentence starting in line 41 to "The maximum cumulative MAC Control, MAC and RS delay (sum of transmit and receive delays at one end of the link) shall meet the values specified in Table 81-1." Change the title of Table 81-1 to "Delay constraints". In Table 81-1 change 40 Gb/s MAC, RS, and MAC Control delay to 20 pause\_quantas, or 10240 BT and the 100 Gb/s MAC, RS, and MAC Control delay to 48 pause\_quantas, or 24576 BT. Add a column to Table 83-1 for Maximum (ns).

In Clause 82.5 change the last two sentences to "The maximum delay contributed by the 40GBASE-R PCS (sum of transmit and receive delays at one end of the link) shall be no more than 11264 BT (22 pause\_quantas or 281.6 ns). The maximum delay contributed by the 100GBASE-R PCS (sum of transmit and receive delays at one end of the link) shall be no more than 35328 BT (69 pause\_quantas or 353.28 ns)." At end of paragraph, add "See 80.3."

In Clause 83.5.4 change the clause title to "Delay constraints". Change the sentence starting on line 34 to "The maximum cumulative delay contributed by up to four PMA stages in a PHY (sum of transmit and receive delays at one end of the link) shall meet the values specified in Table 83-1." At end of paragraph, add "See 80.3." Change the title of Table 83-1 to "Delay constraints". Add a column to Table 83-1 for Maximum (ns).

In Clause 84.4 change the last three sentences to "A description of overall system delay constraints and the definitions for bit-times and pause\_quantas can be found in 69.3 and Table 80-2. The sum of the transmit and the receive delays at one end of the link contributed by the 40GBASE-KR4 PMD, AN and the medium in one direction shall be no more than 2048 bit times (4 pause\_quantas or 51.2 ns). It is assumed that the one way delay through the medium is no more than 320 bit times (8 ns)."

In Clause 85.4 change the last three sentences to "A description of overall system delay constraints and the definitions for bit-times and pause\_quantas can be found in 80.3 and Table 80-2. The sum of the transmit and the receive delays at one end of the link contributed by the 40GBASE-CR4 PMD, AN and the medium in one direction shall be no more than 6144 bit times (12 pause\_quantas or 153.6 ns). It is assumed that the one way delay through the medium is no more than 2072 bit times (51.8 ns).  
The sum of the transmit and the receive delays at one end of the link contributed by the 100GBASE-CR10 PMD, AN and the medium in one direction shall be no more than 14848 bit times (29 pause\_quantas or 148.48 ns). It is assumed that the one way delay through the medium is no more than 5180 bit times (51.8 ns)."

In Clause 86.2.1 change the first two sentences to "The sum of the transmit and receive delays at one end of the link contributed by the 40GBASE-SR4 PMD including 2 m of fiber in one direction shall be no more than 1024 bit-times (2 pause\_quantas or 25.6 ns). The sum of the transmit and receive delays at one end of the link contributed by the 100GBASE-SR10 PMD including 2 m of fiber in one direction shall be no more than 2048 bit-times (4 pause\_quantas or 20.48 ns). See 80.3." In 86.2 title, change "skew" to "Skew"

In Clause 87.3.1 change the sentence starting on line 6 to "The sum of the transmit and



CI 01 SC 1.1.3.2 P22 L13 # 677  
Marek, Hajduczenia ZTE Corporation

Comment Type T Comment Status R

PMA's ? So a single link has more than 1 PMA? Compare with the definition of the XAUI in 1.3.3.2 g) in 802.3-2008.

*SuggestedRemedy*

either fix according to 1.3.3.2 g) in 802.3-2008 or explain what is exactly meant.

Response Response Status C

REJECT.

Also applies to comment #678

See PMA architecture in Clause 83, multiple PMA instances are possible in a single link. Multiple PMAs provide flexibility and scalability to adapt PCS (lanes) to different physical lane configurations. So an implementation may use one or more PMAs to adapt the number and rate of the PCS lanes to the number and rate of the PMD lanes.

The 40Gb/s and 100Gb/s architecture was discussed extensively and adopted by the Task Force (Motion #3, May 2008)

CI 01 SC 1.1.3.2 P22 L24 # 536  
Booth, Brad AMCC

Comment Type ER Comment Status A

CAUI should be described as a physical instantiation of the service interface.

*SuggestedRemedy*

Change first sentence of description to read:

The CAUI is provided by the 100GBASE-R PMA sublayer as a physical instantiation of the PMA service interface.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change first sentence as follows:

The CAUI is a physical instantiation of the PMA service interface to extend the connection between 100 Gb/s capable PMAs.

CI 01 SC 1.1.3.2 P22 L25 # 678  
Marek, Hajduczenia ZTE Corporation

Comment Type T Comment Status R

PMA's ? So a single link has more than 1 PMA? Compare with the definition of the XAUI in 1.3.3.2 g) in 802.3-2008.

*SuggestedRemedy*

either fix according to 1.3.3.2 g) in 802.3-2008 or explain what is exactly meant.

Response Response Status C

REJECT.

See response to comment # 677

CI 01 SC 1.1.3.2 P22 L30 # 537  
Booth, Brad AMCC

Comment Type TR Comment Status A

PPI is incorrect characterized. A physical instantiation cannot exhibit two different properties. The 40G version does not interoperate with the 100G version.

*SuggestedRemedy*

Create XLPPPI and CPPI for 40G and 100G, respectively.

Add definitions of interfaces to 1.4.

Response Response Status C

ACCEPT IN PRINCIPLE.

Rename PPI to nPPI with specific interfaces being XLPPPI and CPPI

modify definitions of interfaces in 1.4  
modify subclause 1.1.3.2

Grant editorial licence to modify the draft to include this change throughout

**Cl 01**    **SC 1.1.3.2**                      **P22**                      **L33**                      # **707**  
Muller, Shimon                              Sun Microsystems, Inc

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

This interface is specific for PMDs and not generic for PHYs as all the others.

**SuggestedRemedy**

Replace "PHYs" with "PMDs".

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

ACCEPT IN PRINCIPLE.

This response also applies to comment #537

Yes, the PPI is specific to 40GBASE-SR4 and 100GBASE-SR-10 PMDs. Hence replace (m) as follows:

Parallel Physical Interface (PPI). The PPI is provided as a physical instantiation of the PMD service interface for 40GBASE-SR4 and 100GBASE-SR10 PMDs. For 40GBASE-SR4 the PPI has four lanes and for 100GBASE-SR10 it has ten lanes. The PPI for 40GBASE-SR4 does not interoperate with the PPI for 100GBASE-SR10. While conformance with implementation of this interface is not necessary to ensure communication, it allows flexibility in connecting the 40GBASE-SR4 and 100GBASE-SR10 PMDs. The PPI is intended for use as a chip-to-module interface. No mechanical connector is specified for use with the PPI. The PPI is optional.

**Cl 01**    **SC 1.1.3.2**                      **P22**                      **L9**                      # **535**  
Booth, Brad                                      AMCC

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

Use of the term "maximum flexibility" for XLGMII and CGMII is overkill as these interfaces are not like their predecessors.

**SuggestedRemedy**

Remove "maximum".

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

ACCEPT.

**Cl 01**    **SC 1.2.3**                              **P22**                      **L42**                      # **538**  
Booth, Brad                                      AMCC

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

Incorrect use in the example. K is not a PCS encoding. T was used for medium, but has also be used to describe the whole PHY.

**SuggestedRemedy**

Delete the example.

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

ACCEPT IN PRINCIPLE.

This is an example of nomenclature that that is used as "additional distinction may identify characteristics of transmission or medium and, in some cases, the type of PCS encoding used".

Change the examples in parenthesis as follows:

(examples of additional distinctions are "T" for twisted pair, "B" for bidirectional optics, and "X" for a block PCS coding used for that speed of operation).

**Cl 01**    **SC 1.4**                                      **P23**                      **L26**                      # **665**  
Marek, Hajduczenia                              ZTE Corporation

**Comment Type**    **ER**                              **Comment Status**    **R**

All references in these section should be made to P802.3ba instead of IEEE 802.3, where they do not exist and will not exist until the following consolidation.

**SuggestedRemedy**

fix accordingly

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

REJECT.

IEEE 802.3ba when published will be amendment to IEEE Std 802.3-2008, hence the reference is correct. See base document IEEE Std 802.3-2008 for similar references to other PHYs.

"IEEE 802.3" need to be explicitly referenced because the entries may be copied into an IEEE dictionary of terms.

CI 01 SC 1.4 P23 L30 # 539  
Booth, Brad AMCC

Comment Type TR Comment Status A  
XLAUI is incorrect compared to previous description.

*SuggestedRemedy*

Change to read:  
The interface designed to extend the reach between two 40 Gigabit PMA sublayers.

Response Response Status C  
ACCEPT IN PRINCIPLE.

Change as follows (to match 1.1.3.2), and keep the references in paranthesis:

A physical instantiation of the PMA service interface to extend the connection between 40 Gb/s capable PMAs, used for chip-to-chip or chip-to-module interconnections.

CI 01 SC 1.4 P23 L31 # 290  
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status R  
References within the same standard shouldn't need to be fully qualified - except in this section, references are simply to "Clause 83" or "Annex 83A"

*SuggestedRemedy*

Delete "IEEE 802.3" in front of clause or Annex reference (16 occurrences in clause 1.4)

Response Response Status C  
REJECT.

The base document has similar references. See base document IEEE Std 802.3-2008.

Reference to "IEEE 802.3" can be deleted but it will make it inconsistent with the text in the base document.

CI 01 SC 1.4 P23 L37 # 540  
Booth, Brad AMCC

Comment Type TR Comment Status A  
Description is very convoluted and confusing.

*SuggestedRemedy*

Change to read:  
An IEEE 802.3 physical coding sublayer for 40 Gb/s operation.

Response Response Status C  
ACCEPT IN PRINCIPLE.

Change to read as follows:

1.4.x 40GBASE-R: An IEEE 802.3 family of physical layer devices using the physical coding sublayer defined in Clause 82 for 40 Gb/s operation. (See IEEE 802.3, Clause 82.)

CI 01 SC 1.4 P23 L46 # 541  
Booth, Brad AMCC

Comment Type TR Comment Status R  
L stands for long wavelength.

*SuggestedRemedy*

Change to read:  
40GBASE-LR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four WDM lanes on single-mode fiber using long wavelengths.

100GBASE-LR4: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single-mode fiber using long wavelengths.

Response Response Status U  
REJECT.

Since the 100GBASE-LR4 and 100GBASE-ER4 PMDs use identical wavelengths, they cannot be distinguished by means of a letter indicating wavelength. In the 40GBASE and 100GBASE nomenclature the L does not stand for long wavelength, it stands for long reach.

This nomenclature was adopted by the task force in May 2008 (See slide 8 of Ganga\_02\_0508 and Motion #2 in May 2008 minutes).



CI 01 SC 1.4 P23 L47 # 708  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status R

"Long" and "short" are relative terms and should not be included in a definition without specifying what it actually is.

*SuggestedRemedy*

Delete ", with long reach".  
Same comment applies to:  
- Page 23, line 50.  
- Page 24, line 14.  
- Page 24, line 17.

Response Response Status C

REJECT.  
The definitions need to retain the text "with long reach" or "with extended reach" because this is the only thing that distinguishes the definition of 100GBASE-LR4 from that of 100GBASE-ER4. Since the S, L and E in the nomenclature stand for Short, Long and Extended reach it is helpful to include this text in the definition. There is precedent for this as the base standard definitions for 10GBASE-S, L and E include the relative terms "short wavelength", "long wavelength" and "extra long wavelength"

CI 01 SC 1.4 P23 L47 # 308  
Young, George AT&T

Comment Type TR Comment Status R

Definitions of 40GBASE-LR4, page 23, line 47, of 100GBASE-ER4, page 24, line 11 and of 100GBASE-LR4, page 24, line 14 all should reference "CWDM lanes on single mode fiber" rather than "WDM", just as the incumbent definition of 10GBASE-LX4 differentiates WWDM lanes over multimode fiber.

*SuggestedRemedy*

Change "WDM" to "CWDM" for the three definitions of 40GBASE-LR4, 100GBASE-ER4 and 100GBASE-LR4.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

ITU-T classifies WWDM as channel spacing > 50nm, CWDM as channel spacing < 50 nm but > 1000 GHz (about 8 nm at 1550 nm and 5.7 nm at 1310 nm) and DWDM as channel spacing < 1000 GHz. This makes:

40GBASE-LR4 CWDM  
100GBASE-LR4 DWDM  
100GBASE-ER4 DWDM

When the definitions in clause 1.4 were discussed in the Task Force, it was felt undesirable to designate 100GBASE-LR4 and 100GBASE-ER4 as DWDM because the channel spacing of 800 GHz is close to the boundary between CWDM and DWDM. It is also undesirable to use different classifications of WDM from ITU-T. The agreement was to use the generic term WDM for all of the definitions since this still conveys the essential information that this PMD operates over multiple wavelengths rather than multiple fibers.

Cl 01 SC 1.4 P23 L49 # 542  
Booth, Brad AMCC

Comment Type TR Comment Status R

S stands for short wavelength.

*SuggestedRemedy*

Change to read:

40GBASE-SR4: IEEE 802.3 Physical Layer specification for 40 Gb/s using 40GBASE-R encoding over four lanes of multimode fiber using short wavelengths.

100GBASE-SR10: IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over ten lanes of multimode fiber using short wavelengths.

Response Response Status U

REJECT.

In the 40GBASE and 100GBASE nomenclature the S does not stand for short wavelength, it stands for short reach.

This nomenclature was adopted by the task force in May 2008 (See slide 8 of Ganga\_02\_0508 and Motion #2 in May 2008 minutes).

Cl 01 SC 1.4 P23 L50 # 309  
Young, George AT&T

Comment Type TR Comment Status R

Definition of 40GBASE-SR4, page 23, line 50 and of 100GBASE-SR10, page 24, line 17 both should reference "OM3" multimode fiber, as is explicitly stated in the 802.3ba objectives.

*SuggestedRemedy*

Replace "multimode fiber" with "OM3 multimode fiber" in both definitions.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

These are the definitions of the PMDs not the specifications. It would be inappropriate to (and the draft does not) list the type of singlemode fibre that the LR4 and ER4 PMDs operate over. Likewise it is inappropriate to specify the multimode fibre type for SR4/10. The 802.3ba objective does not preclude operation over other fibre types than OM3 and there are proposals to include operation over other fibre types in clause 86.

Cl 01 SC 1.4 P23 L52 # 543  
Booth, Brad AMCC

Comment Type TR Comment Status A

CAUI is incorrect compared to previous description.

*SuggestedRemedy*

Change to read:

The interface designed to extend the reach between two 100 Gigabit PMA sublayers.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change as follows (to match 1.1.3.2) and keep the references in paranthesis:

A physical instantiation of the PMA service interface to extend the connection between 100 Gb/s capable PMAs, used for chip-to-chip or chip-to-module interconnections.

Cl 01 SC 1.4 P24 L10 # 545  
Booth, Brad AMCC

Comment Type TR Comment Status R

E stands for extra long wavelength.

*SuggestedRemedy*

Change to read:

IEEE 802.3 Physical Layer specification for 100 Gb/s using 100GBASE-R encoding over four WDM lanes on single-mode fiber using extra long wavelengths.

Response Response Status U

REJECT.

Since the 100GBASE-LR4 and 100GBASE-ER4 PMDs use identical wavelengths, they cannot be distinguished by means of a letter indicating wavelength.

In the 40GBASE and 100GBASE nomenclature the E does not stand for extra long wavelength, it stands for extended reach.

This nomenclature was adopted by the task force in May 2008 (See slide 8 of Ganga\_02\_0508 and Motion #2 in May 2008 minutes).

CI 01 SC 1.4 P24 L11 # 666  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

All references to SMF could be provided with an acronym. It is a standard acronym and defined in 802.3 base document already. Why not use it ? Global search and replace.

SuggestedRemedy  
per comment

Response Response Status C  
ACCEPT IN PRINCIPLE.

We will use abreviations where space is a constraint hence no need to change to abreviations throughout the document.

In addition change "single mode fiber" to "single-mode fiber" throughout the document to be consistent with the base document. (Affects 1.4, 30.5.1.1.2, 80.1.2, 80.1.4)

CI 01 SC 1.4 P24 L25 # 546  
Booth, Brad AMCC

Comment Type E Comment Status A  
Missing service.

SuggestedRemedy  
Change to read:  
PMA service interface

Response Response Status C  
ACCEPT.

CI 01 SC 1.4 P24 L4 # 544  
Booth, Brad AMCC

Comment Type ER Comment Status A  
Description could be simpler.

SuggestedRemedy  
Change to read:  
An IEEE 802.3 physical coding sublayer for 100 Gb/s operation.

Response Response Status C  
ACCEPT IN PRINCIPLE.

Change to read as follows:

1.4.x 100GBASE-R: An IEEE 802.3 family of physical layer devices using the physical coding sublayer defined in Clause 82 for 100 Gb/s operation. (See IEEE 802.3, Clause 82)

CI 01 SC 1.5 P24 L37 # 230  
Lynskey, Eric Teknovus

Comment Type E Comment Status A  
BIP is already contianed in 1.5.

SuggestedRemedy  
Remove abbreviation.

Response Response Status C  
ACCEPT.

Also see comment #667

CI 01 SC 1.5 P24 L37 # 667  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A  
BIP is already defined in 802.3-2008

SuggestedRemedy  
Remove it

Response Response Status C  
ACCEPT.

CI 01 SC 1.5 P24 L37 # 547  
Booth, Brad AMCC

Comment Type E Comment Status A  
BIP is already in 802.3-2008.

SuggestedRemedy  
Delete.

Response Response Status C  
ACCEPT.

Also see comment #667

CI 01 SC 1.5 P24 L41 # 668  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

Also in line 42. Why is 'Least' capitalized and the rest not ? Makes no sense. Either capitalize all of them or do not capitalzie any of them

*SuggestedRemedy*

Fix accordingly and consistently.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change as follows:

LSB Least Significant Bit  
MSB Most Significant Bit

CI 04 SC 4.4.2 P25 L34 # 641  
Ganga, Ilango Intel

Comment Type T Comment Status R

In table footnote-a change clause references from "e.g 13, 35, and 42" to "e.g. Clause 13, Clause 35 and Clause 42" as suggested.

*SuggestedRemedy*

Changes note Table footnote a as follows:

"References to interFrameGap or interFrameSpacing in other clauses (e.g., Clause 13, Clause 35, and Clause 42) shall be interpreted as interPacketGap."

Response Response Status C

REJECT.

It is just an example.

CI 04 SC 4.4.2 P25 L35 # 679  
Marek, Hajduczenia ZTE Corporation

Comment Type T Comment Status R

Table provides the value of 96 bits and yet the NOTE b) says it can be as small as 8 bits. So which value is binding in this case ?

*SuggestedRemedy*

Clarify which of the requirements is binding in this case. Otherwise, it is confusing for a reader to get two different specs.

Response Response Status C

REJECT.

The minimum value of interPacketGap at the transmitting station is 96 BT (see 4.2.3.2.2), however IPG shrinkage can be observed at the receiver. The note specifies the minimum value for IPG as measured at the receiver due to IPG shrinkage.

See response to comment #548

CI 04 SC 4.4.2 P25 L35 # 548  
Booth, Brad AMCC

Comment Type TR Comment Status A

Footnote b mentions variable network delays. This specification is only for point-to-point links, so variable network delays does not seem to be the correct description.

*SuggestedRemedy*

Change to read:

The received interPacketGap at the media independent interface may have a minimum value of 8 bits due to receiver implementation and clock tolerances.

Response Response Status C

ACCEPT IN PRINCIPLE.

The response also applies to related comment #679

Delete footnote b:

Add a Note 7 at the end of the table:

For 40 Gb/s and 100 Gb/s operation, the received interPacketGap (the spacing between two packets, from the last bit of the FCS field of the first packet to the first bit of the Preamble of the second packet) can have a minimum value of 8 BT (bit times), as measured at the XLGMII or CGMII receive signals at the DTE due to interPacketGap shrinkage.

This change is also applicable to Annex 4A Note 4. Hence replace 4A.4.2 Note 4 as above.

CI 04 SC 4.4.2 P25 L35 # 229  
Lynskey, Eric Teknovus

Comment Type E Comment Status A

All of the other speeds have added notes following this table to talk about the spacing between two packets. Is there a reason why 40G and 100G want to add a footnote to the table instead of adding a new note following the other notes?

*SuggestedRemedy*

Remove footnote b. Add a new note following the table, NOTE 7, that has the same contents as footnote b.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment 548

CI 04 SC 4.4.2 P25 L35 # 1  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

In Table 4-2, note b has been added so it should be shown with an underline font.

*SuggestedRemedy*

Show the whole of note b with underline font.

Response Response Status C

ACCEPT.

See response to comment #548

CI 30 SC 30 P27 L1 # 669  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

General comment on Clause 30 material:

Incorrect editorial statement. s/b adding new entries instead of replacing the whole entry. Other projects e.g. P802.3av are also making changes in here so it is inappropriate to suggest replacement of the whole subsection. Material should be added when possible and not replaced.

Additionally, it is wasteful to provide the whole existing test of the registry when all You are doing is adding to it and not changing anything inside

*SuggestedRemedy*

Per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

30.3.2.1.2, 30.3.2.1.3 - insert the new PHY type (do not use "change")

30.5.1.1.2, 30.6.1.1.5 - insert PHY type into enumeration, change BEHAVIOR

CI 30 SC 30.3.2.1.2 P27 L13 # 651  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status R

What is this nice blue colour about ? External links ?

*SuggestedRemedy*

explain it sowmehere please (editorial note at the beginning etc:)

Response Response Status C

REJECT.

Page 21, line 45 of the current draft (front matter) defines how the dark blue colo(u)r is used. Note that this is the only instance of the word "blue" in the draft.

CI 30 SC 30.3.2.1.2 P27 L25 # 622  
Ganga, Ilango Intel

Comment Type E Comment Status A

Change "multilane" to "multi-lane" to be consistent with the use of multi-lane in rest of the draft.

*SuggestedRemedy*

Change "multilane" to "multi-lane" throught Clause 30 (total of six instances)

Response Response Status C

ACCEPT.

Cl 30 SC 30.3.2.1.5 P28 L # 647  
Ganga, Ilango Intel

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

30.3.2.1.5 aSymbolErrorDuringCarrier: Reference to Clause 81 for 40 Gb/s and 100 Gb/s is missing from this attribute.

Specify appropriate references for 40G and 100G (See 81.2.5) in 30.3.2.1.5.

*SuggestedRemedy*

Change the 10G text in 30.3.2.1.5 as follows (include the change instructions in 802.3ba):

For operation at 10 Gb/s, 40 Gb/s, and 100 Gb/s, it is a count of the number of times the receiving media is non-idle (the time between the Start of Packet Delimiter and the End of Packet Delimiter as defined by 46.2.5 and 81.2.5) for a period of time equal to or greater than minFrameSize, and during which there was at least one occurrence of an event that causes the PHY to indicate "Receive Error" on the XGMII (see Table 46-4) or XLGMII and CGMII (See Table.81-3).

Response Response Status **C**

ACCEPT.

Cl 30 SC 30.5.1.1.14 P32 L40 # 628  
Ganga, Ilango Intel

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

10/40/100GBASE-R FEC control register (see 45.2.1.85) is now called BASE-R FEC control register

*SuggestedRemedy*

Change "10/40/100GBASE-R FEC control register (see 45.2.1.85)" to "BASE-R FEC control register" as per 45.2.1.85.

Also add cross-reference link to "(see 45.2.1.85)"

Response Response Status **C**

ACCEPT.

Cl 30 SC 30.5.1.1.15 P32 L47 # 629  
Ganga, Ilango Intel

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

The new changes from base document has not been underlined in this subclause.

Example: In "Array of generalized" "array of g" should have been underlined with strikethrough for "G" in Generalized.

*SuggestedRemedy*

Check and underline new changes in this subclause 30.5.1.1.15 as follows:

Array of generalized nonresetable counters.

An array of counters enumerated as counters 0 to N-1, where N is the number of PCS lanes in use. Each counter applies to the corresponding lane and behaves in the following manner.

Also change the last sentence of this subclause as follows to indicate that it maps to counters not just a counter.

"this attribute will map to the FEC corrected blocks counter(s)"

Response Response Status **C**

ACCEPT.

Cl 30 SC 30.5.1.1.16 P33 L14 # 630  
Ganga, Ilango Intel

Comment Type ER Comment Status A

The new changes from base document has not been underlined in 3.5.1.1.16.

Example: "Array of generalized nonresetable counters" in this phrase "array of g" should have been underlined with strikethrough for "G" in Generalized

*SuggestedRemedy*

Check and underline new changes in this subclause 30.5.1.1.16 as follows:

"Array of generalized nonresetable counters. Each counter has a maximum increment rate of"

"An array of counters enumerated as counters 0 to N-1, where N is the number of PCS lanes in use. Each counter applies to the corresponding lane and behaves in the following manner."

Also change the last sentence of this subclause as follows to indicate that it maps to counters not just a counter.

"this attribute will map to the FEC uncorrectable blocks counter(s)"

Response Response Status C  
ACCEPT.

Cl 30 SC 30.5.1.1.2 P30 L18 # 550  
Booth, Brad AMCC

Comment Type TR Comment Status R

E is for extra long wavelength.

*SuggestedRemedy*

Change "with extended reach" to "extra long wavelength" for 100GBASE-ER4.

Response Response Status U  
REJECT.

See #545

Cl 30 SC 30.5.1.1.2 P30 L2 # 289  
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status A

Reference to PCS/PMA should indicate Clause 83 in addition to Clause 82

*SuggestedRemedy*

Replace "Multilane R PCS/PMA as specified in Clause 82" with "Multilane R PCS/PMA as specified in Clauses 82 and 83". Same change for 100GBASE-R on line 11.

Response Response Status C  
ACCEPT IN PRINCIPLE.

Remedied by the resolution of comment #627

Cl 30 SC 30.5.1.1.2 P30 L2 # 623  
Ganga, Ilango Intel

Comment Type E Comment Status R

Add cross-reference links to Clause number references in the list for all clauses from 82 through 88 listed in this page.

Though the base document, IEEE Std 802.3-2008, is not consistent with respect to providing cross-reference links in 30.5.1.1.2, the newer clauses have added the cross-reference links (See 802.3-2008, for e.g EFM, 802.3ap phy types)

*SuggestedRemedy*

Add cross-reference links to Clause number references from Clause 82 through Clause 88 listed in this page and elsewhere in Clause 30.

Response Response Status C  
REJECT.

A very small minority of PHYs (backplane and some EFM) have active links. The latest PHYs do not have links. It is of questionable use to link to a clause heading, when the bookmarks get there as easily. This would be better handled by a decision during the next revision.

CI 30 SC 30.5.1.1.2 P30 L2 # 627  
Ganga, Ilango Intel

Comment Type ER Comment Status A

Reference to Clause 83 missing in the list for 40GBASE-R and 100GBASE-R PCS/PMA:

*Suggested Remedy*

Change list for 40GBASE-R and 100GBASE-R as follows:

40GBASE-R Multilane R PCS/PMA as specified in Clause 82 and Clause 83 over undefined PMD

100GBASE-R Multilane R PCS/PMA as specified in Clause 82 and Clause 83 over undefined PMD

Response Response Status C

ACCEPT IN PRINCIPLE.

Option 3 below was chosen as the response.

Related to comment #289

option #1

40GBASE-R Multilane PCS/PMA as specified in Clause 82 and Clause 83 over undefined PMD

100GBASE-R Multilane PCS/PMA as specified in Clause 82 and Clause 83 over undefined PMD

option #2

40GBASE-R Multilane BASE-R PCS as specified in Clause 82

100GBASE-R Multilane BASE-R PCS as specified in Clause 82

option #3

40GBASE-R Multilane PCS as specified in Clause 82 over undefined PMA/PMD

100GBASE-R Multilane PCS as specified in Clause 82 over undefined PMA/PMD

CI 30 SC 30.5.1.1.2 P30 L7 # 624  
Ganga, Ilango Intel

Comment Type E Comment Status A

Missing "lane" in the description for 40GBASE-SR4 and 40GBASE-SR10 in the list:

Rephrase as suggested to be consistent with description for other port types in this list on page 30.

*Suggested Remedy*

Rephrase as suggested

40GBASE-R PCS/PMA over 4 lane OM3 multimode fiber PMD as specified in Clause 86

100GBASE-R PCS/PMA over 10 lane OM3 multimode fiber PMD as specified in Clause 86

Response Response Status C

ACCEPT IN PRINCIPLE.

Change to:

40GBASE-R PCS/PMA over 4 lane multimode fiber PMD as specified in Clause 86

100GBASE-R PCS/PMA over 10 lane multimode fiber PMD as specified in Clause 86

CI 30 SC 30.5.1.1.2 P30 L9 # 549  
Booth, Brad AMCC

Comment Type TR Comment Status R

L refers to long wavelength.

*Suggested Remedy*

Change:  
with long reach  
To read:  
using long wavelength  
For 40GBASE-LR4 and 100GBASE-LR4.

Response Response Status U

REJECT.

See #541



Cl 30 SC 30.5.1.1.2 P30 L9 # 310  
 Young, George AT&T

Comment Type TR Comment Status R

Descriptions of MAUTypes for 40GBASE-LR4, page 30, line 9, for 100GBASE-LR4, page 30, line 16 and for 100GBASE-ER4, page 30, line 18 all should reference "CWDM lane single mode fiber" rather than "WDM".

SuggestedRemedy

Change "WDM" to "CWDM" for the three descriptions of 40GBASE-LR4, 100GBASE-ER4 and 100GBASE-LR4

Response Response Status W

REJECT.

This comment was WITHDRAWN by the commenter.

See comment #308

Cl 30 SC 30.5.1.1.4 P30 L41 # 671  
 Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

It is wasteful to provide the whole existing text of the registry when all You are doing is making minor changes. Provide the sentence which is to be changed and show changes using editorial instructions. The rest just wastes trees.

SuggestedRemedy

Per comment

Response Response Status C

ACCEPT IN PRINCIPLE.

Related to comment #669

Change only BEHAVIOR section of 30.5.1.1.4

Cl 30 SC 30.5.1.1.4 P31 L28 # 645  
 Ganga, Ilango Intel

Comment Type TR Comment Status A

In subclause 30.5.1.1.4 aMediaAvailable, mapping of Remote fault for Clause 73 Auto-Negotiation is missing. This change is also missing in the base document. However, since Clause 73 AN is applicable to 40G and 100G PHYs, make this change in 802.3ba.

SuggestedRemedy

Change line 28 as follows (underline "or Clause 73"):

Any MAU that implements management of Clause 28 or Clause 73 Auto-Negotiation will map remote fault indication to MediaAvailable "remote fault."

Response Response Status C

ACCEPT.

Cl 30 SC 30.5.1.1.4 P31 L51 # 646  
 Ganga, Ilango Intel

Comment Type TR Comment Status A

For 40G and 100G enumerations mapping to link fault variable is not specified in 30.5.1.1.4 aMediaAvailable. Though Clause 81 references to Fig 46-9, the state variables are defined in Clause 81 for 40G and 100G. Clause 81 defines link\_fault variable in 81.3.4.

Provide appropriate text that specifies the mapping for 40G and 100G

SuggestedRemedy

Add the following text to 30.5.1.1.4

For 40 Gb/s and 100 Gb/s the enumerations map to value of the link\_fault variable (See 81.3.4) within the Link Fault Signaling state diagram (See 81.3.4.1 and Figure 46-9) as follows: the value OK maps to the enumeration "available", the value Local Fault maps to the enumeration "not available" and the value Remote Fault maps to the enumeration "remote fault".

Response Response Status C

ACCEPT.

**Cl 30**    **SC 30.5.1.1.4**    **P31**    **L52**    # **311**  
 Young, George    AT&T

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

Operation of Link Fault Signaling state diagram is common to 10, 40 and 100 Gb/s implementations and the 'excessive BER' enumeration of this aMediaAvailable attribute pertains to 40 and 100 Gb operation, so the introduction to this part of the behaviour definition needs to refer to all three speeds together.

*SuggestedRemedy*

Change "For 10 Gb/s" to read "For 10/40/100 Gb/s"

**Response**    **Response Status**    **W**

ACCEPT IN PRINCIPLE.

Implement the remedy of comment #646

**Cl 30**    **SC 30.6.1.1.5**    **P34**    **L18**    # **631**  
 Ganga, Ilango    Intel

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

Underline new changes from base document for FEC ability and FEC Requested.

And also add cross-references to clause number references. Base document has cross-references for Clause numbers in this subclause.

*SuggestedRemedy*

In 30.6.1.1.5 underline new changes as suggested:

Underline the following phrase highlighted in double quotes:  
 FEC Capable FEC ability as specified in "Clause 73 (see 73.6.5) and" Clause 74

Underline the following line:  
 "FEC Requested FEC requested as specified in Clause 73 (see 73.6.5) and Clause 74"

Also add cross reference to Clause numbers in for new changes.

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

ACCEPT.

**Cl 31B**    **SC 31B.3.7**    **P**    **L**    # **643**  
 Ganga, Ilango    Intel

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

Previously one pause reaction time value was specified in 31B.3.7 for operating speeds of 10Gb/s and above.

However 802.3bb has updated the pause reaction time value for stations using 10Gb/s phy types. Hence Annex 31B needs to be updated (amended) to include pause reaction timing delay value for operating speeds of 40Gb/s and 100Gb/s speeds in amendment 802.3ba.

*SuggestedRemedy*

Include Annex 31B to 802.3ba with the following changes:

Change 30B.3.7 to include the pause reaction delay numbers for 40 Gb/s and 100 Gb/s speeds (and also add corresponding PICS):

At operating speeds of 40 Gb/s, a station shall not begin to transmit a (new) frame more than ninety-six pause\_quantum bit times after the reception of a valid PAUSE frame that contains a non-zero value of pause\_time, as measured at the MDI.

At operating speeds of 100 Gb/s, a station shall not begin to transmit a (new) frame more than three-hundred-and-sixty-seven pause\_quantum bit times after the reception of a valid PAUSE frame that contains a non-zero value of pause\_time, as measured at the MDI.

Insert the following changes to the PICS:

31B.4.3 Major capabilities/options  
 Insert the following two rows to the end of table in 31B.4.3

[Item] \*MIf [Feature] At operating speeds of 40Gb/s [Subclause] 31B.3.7 [Value/Comment] N/A [Status] O [Support] Yes  No

[Item] \*MIlg [Feature] At operating speeds of 100Gb/s [Subclause] 31B.3.7 [Value/Comment] N/A [Status] O [Support] Yes  No

31B.4.6 PAUSE command MAC timing considerations:  
 Insert the following two rows to the end of table in 31B.4.6

[Item] TIM7 [Feature] Measurement point for station at 40Gb/s [Subclause] 31B.3.7 [Value/Comment] Delay at MDI <= (96 x pause\_quantum) bits [Status] MIf:M [Support] N/A  M:Yes

[Item] TIM8 [Feature] Measurement point for station at 100Gb/s [Subclause] 31B.3.7 [Value/Comment] Delay at MDI <= (367 x pause\_quantum) bits [Status] MIlg:M [Support] N/A  M:Yes

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

ACCEPT IN PRINCIPLE.

Modify 31B.3.7 to include the pause reaction delay numbers for 40 Gb/s and 100 Gb/s speeds (and also add corresponding PICS) using values consistent with Response to comment #275

Remedy also applies to comment #263

Since P802.3bb is also changing Annex 31B, changes to be consistent with P802.3bb draft

**Cl 45**      **SC 2.3.11.1**                      **P68**                      **L10**                      # **238**  
 Szczepanek, Andre                      Harwood & Szczepanek

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

40/100GBASE-R PCS's do not support PRBS9 or PRBS31 pattern testing in the PCS. Shouldn't the two pattern testing ability entries be explicitly prefixed by "10GBASE-R" ? And maybe a note at the bottom of the table to indicate these bits should be zero in 40/100GBASE-R.

This issue also applies to 45.2.3.15 10/40/100GBASE-R test pattern control register, where there are PCS PRBS9/31 pattern mode enables bits.

**SuggestedRemedy**

Prefix 3.32.3, 3.32.2, 3.42.6, 3.42.5, & 3.42.4 with "10GBASE-R"

eg "10GBASE-R PRBS9 pattern testing ability"

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

ACCEPT.

**Cl 45**      **SC 45**                                      **P42**                      **L1**                      # **654**  
 Marek, Hajduczenia                      ZTE Corporation

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

extra large spaces before / after editorial instructions. What for ?

**SuggestedRemedy**

remove them please

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

ACCEPT IN PRINCIPLE.

Remove spaces before editorial instructions on lines 15 & 40.

**Cl 45**      **SC 45.2**                                      **P35**                      **L24**                      # **551**  
 Booth, Brad                                      AMCC

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

Separated PMA 1, 2 and 3 provides 4 PMA MMDs for a single device. The goal should be to try to model what 802.3ae did with XAUI and provide access only to the PMAs at the top and bottom in a single PHY device.

**SuggestedRemedy**

Change "Separated PMA 1" to be DTE PMA as the PMA closest to the DTE within that PHY device. Separated PMA 2 and 3 are deleted. Update Clause 45 to reflect changes.

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

ACCEPT IN PRINCIPLE.

Bring the text in 45.2.1 in line with the architecture shown in fig 83-2.

**Cl 45**      **SC 45.2**                                      **P36**                      **L1**                      # **670**  
 Marek, Hajduczenia                      ZTE Corporation

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

Tree-wasting reproduction of whole tables. Please learn to use editorial instructions and DO NOT reproduce the whole tables when You are only inserting material (Table 45-2 and Table 45-1). Material that takes 6'7 lines of text here occupies two pages for no reason.

**SuggestedRemedy**

Per comment

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

ACCEPT IN PRINCIPLE.

Table 45-1 & 45-2, insert new lines; change the "reserved" line (do not reproduce the remainder)

Note that many WG participants have asked that project reproduce enough of the base document to understand the context of the changes. (e.g. 802.3ar, draft 1.1). Reproducing the source is also less prone to errors when the staff editors merge multiple amendments into the next revision. For example, if the editor had chosen to reproduce the whole of Table 45-3, it would have avoided the error highlighted by comments such as #2 etc.

CI 45 SC 45.2.1 P37 L43 # 552  
Booth, Brad AMCC

Comment Type TR Comment Status A

Registers and descriptions in table do not seem to follow typical 802.3 conventions and strays from the original intention of Clause 45. There also seems to be register overlap with what is in 802.3-2008 for 1.30-1.39. BASE-R is a poor description and will create too much confusion in the next revision of 802.3.

*SuggestedRemedy*

Control and status registers should be separate registers.

Resolve overlap on 1.30-1.39.

Instead of changing all the 10GBASE-KR information, add new registers for Backplane and Short-reach Copper. That will also permit grouping of all the lane data instead of staggering corrected/uncorrected and coefficient/status for each lane.

Response Response Status C

ACCEPT IN PRINCIPLE.

First part:

Combine status (ability) from (current register) 1.18, 1.19 into Test pattern ability register (1.307)

Change PRBS testing control and status into PRBS testing control (1.308); Change Square wave testing control and status into Square wave testing control (1.309)

Note that this changes references in Clause 83.

Second part:

Comment #226 resolved this

Third part:

Make duplicate version of coefficient update and status report registers for lane 0, in the same block as lanes 1-9

De-interleave the corrected and uncorrected FEC errors. Make a copy of corrected errors, lane 0

CI 45 SC 45.2.1 P37 L44 # 226  
Barrass, Hugh Cisco

Comment Type TR Comment Status A

The square wave & PRBS registers occupy register space that is already used in the base standard.

*SuggestedRemedy*

Move registers (currently) 1.18 through 1.39 to 1.308 through 1.329

Also the reserved space 1.16 through 1.29 can stay reserved (no change to the base standard)

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1 P37 L47 # 2  
Anslow, Peter Nortel Networks

Comment Type TR Comment Status A

Registers 1.30 through 1.33 and 1.36 through 1.39 are already used in the base standard for 10P/2B.

*SuggestedRemedy*

Allocate different registers for PRBS Rx error counters, lane 0 through lane 9

Response Response Status C

ACCEPT.

Comment #226 resolves this.

CI 45 SC 45.2.1 P37 L50 # 314  
Young, George AT&T

Comment Type TR Comment Status R

Beginning in Table 45-3 and all throughout Clause 45, the newly created nomenclature "BASE-R" has been employed to "denote PHYs that use the PMD described in Clause 72, 84 or 85 including PHYS designated as BASE-KR and BASE-CR" as noted in Table note a at the bottom of the Table on page 40. The term "BASE-R" is not a good choice for this selective reference only to BASE-KR and BASE-CR PMDs, since it fosters confusion with the other generic use of 'xxGBASE-R' to denote the choice any PHY with 64B/66B PCS operation.

SuggestedRemedy

Replace all instances of "BASE-R" nomenclature now in Clause 45 with the term "BASE-KR/CR". Change Note a at the bottom of Table 45-3 on page 40 to read 'The term "BASE-KR/CR" is used to denote PHYs that use the PMD described in Clause 72, 84 or 85 including all PHYs designated as BASE-KR and BASE-CR.' Then remove throughout Clause 45 the many times it is restated: 'The BASE-R xxxxx register is used for ... and other PHY types using the PMD described in Clause 72, 84 or 85.'

Response Response Status W

REJECT.  
There was no consensus within the Task Force to make this change.

CI 45 SC 45.2.1 P37 L8 # 312  
Young, George AT&T

Comment Type E Comment Status A

Declarative sentence "Where MMD 8 ..." begins with a preposition.

SuggestedRemedy

Change "... MMD 8, 9 and 10. Where MMD 8 ..." to "... MMD 8, 9 and 10, where MMD 8 ...".

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1 P40 L23 # 225  
Barrass, Hugh Cisco

Comment Type T Comment Status A

802.3av is no longer using these registers

SuggestedRemedy

Delete the line showing the reserved registers.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.1 P40 L33 # 681  
Marek, Hajduczenia ZTE Corporation

Comment Type TR Comment Status A

"Change Table 45-4 for 40 Gb/s and 100 Gb/s speed selection:" - editorial instruction is provided but the table is missing.

SuggestedRemedy

Add the table please.

Response Response Status C

ACCEPT IN PRINCIPLE.

Table 45-4 is on page 41, however, this is not immediately obvious to the casual observer.

Add a dynamic link to Table 45-4.

CI 45 SC 45.2.1.1.3 P40 L41 # 672  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

missing space between the number and the unit in "1000Mb/s". Several other occurrences were found in the text. Always use non-breaking space in this location.

SuggestedRemedy

Global fix is needed

Response Response Status C

ACCEPT.

The editor will search for such occurrences and fix as many as possible. Note that this error occurs in the base standard and will appear as a change to 802.3-2008.

CI 45 SC 45.2.1.1.3 P41 L46 # 652  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

It is not common to start a newsentence after semicolon in "When bits 5 through 2 are set to 0010 the use of a 40G PMA/PMD is selected; When set to 0011 the use of a"

SuggestedRemedy

S/B "When bits 5 through 2 are set to 0010 the use of a 40G PMA/PMD is selected. When set to 0011 the use of a"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "When" to "when"

Cl 45 SC 45.2.1.1.4a P42 L9 # 653  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

Speed designation is broken between the lines. Avoid it  
"For 40/  
100 Gb/s operation," reads bad.

*SuggestedRemedy*

Fix such occurrence by using non-breakable spaces and defining the characters which allow the line breaks. check Format > Document > Text Options in Frame.  
This needs to be done globally as well.

Response Response Status C

ACCEPT.

Note that this comment needs to be against Clause 99 for it to have a global effect. The document properties of this clause are inherited from the project afresh in each draft, therefore a change by the clause editor alone will not "stick." It should also be noted that the base document does not have this property set and leaves the issue to be resolved by staff editors on a case-by-case basis (so that PMA/PMD may be broken, for example).

Cl 45 SC 45.2.1.10 P48 L8 # 554  
Booth, Brad AMCC

Comment Type TR Comment Status A

In Table 45-11, uses incorrect reference to extended abilities register.

*SuggestedRemedy*

Reference should be to register 1.13, not 1.12. Also recommend using bit 9 instead of bit 15 to permit future use of this register.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.10 P48 L9 # 315  
Young, George AT&T

Comment Type TR Comment Status A

Description in Table 45-11 bit 1.11.15 =1 incorrectly refers to "40G/100G extended abilities listed in register 1.12". Register 1.13 is employed as the 40G/100G PMA/PMD extended ability register.

*SuggestedRemedy*

Change description to read: "1 = PMA/PMD has 40G/100G extended abilities listed in register 1.13".

Response Response Status W

ACCEPT.

See also response to comment #554

Cl 45 SC 45.2.1.12 P48 L9 # 710  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Typo.

*SuggestedRemedy*

Replace "1.12" with "1.13".

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.1.12a P49 L12 # 656  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

column NAME canbe stretched a little bit to avoid line breaking

*SuggestedRemedy*

Fix it

Response Response Status C

ACCEPT.

**Cl 45**    **SC 45.2.1.12a.1**    **P49**    **L45**    # **657**  
 Marek, Hajduczenia    ZTE Corporation

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

"then it is controlled using the PMA remote loopback bit 1.0.1." - live link to the registre would be very welcome

**SuggestedRemedy**  
 Per comment

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

Change "1.0.1" to "1.0.1 (see 45.2.1.1.4a)"

The reference will be an active link.

**Cl 45**    **SC 45.2.1.12a.6**    **P50**    **L21**    # **4**  
 Anslow, Peter    Nortel Networks

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

In clauses 45.2.1.12a.6 through 45.2.1.12a.9 the text "100GBASE" should be "40GBASE" (8 occurrences). Note - the clause titles are correct.

**SuggestedRemedy**  
 In clauses 45.2.1.12a.6 through 45.2.1.12a.9 change "100GBASE-" to "40GBASE-" (8 occurrences)

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

**Cl 45**    **SC 45.2.1.12a.6**    **P50**    **L21**    # **555**  
 Booth, Brad    AMCC

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

Cut and paste error in 45.2.1.12a.6, .7, .8 and .9.

**SuggestedRemedy**  
 Replace all instances of 100G with 40G.

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

**Cl 45**    **SC 45.2.1.12a.6**    **P50**    **L21**    # **711**  
 Muller, Shimon    Sun Microsystems, Inc

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

Typo.

**SuggestedRemedy**  
 Replace "100GBASE-..." with "40GBASE-..." in two places.  
 Same comment applies to:  
 - Page 50, lines 27-29.  
 - Page 50, lines 33-35.  
 - Page 50, lines 39-41.

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

**Cl 45**    **SC 45.2.1.12b**    **P48**    **L48**    # **316**  
 Young, George    AT&T

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

States: "Register 1.19, bit 14 indicates that the device supports PRBS31 generation or checking." unlike the more usual "When read as a one, bit 1.13.0 indicates that..." Similarly at line 53.

**SuggestedRemedy**  
 Change to read: "When read as a one, register 1.19, bit 14 indicates that the device supports PRBS31 generation or checking, and register 1.19, bit 13 indicates that the device supports PRBS9 generation or checking.

Also change Line 53 to read: "When read as a one, register 1.19, bit 11 indicates that the device supports PRBS generation in the transmit direction. and register 1.19, bit 10 indicates that ...".

**Response**    **Response Status W**  
 ACCEPT.

(page 51)

CI 45 SC 45.2.1.12b P51 L17 # 712  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Reserved bits should be RO.

*SuggestedRemedy*

Replace "R/W" with "RO".  
Same comment applies to:  
- Page 51, line 33.  
- Page 53, line 18.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.12b P51 L48 # 5  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

The text "indicates that the device supports PRBS31 generation or checking" is misleading. This would be better worded as "indicates whether the device supports PRBS31 generation or checking". This change needs to be made in six places in this subclause.

*SuggestedRemedy*

change "indicates that the device supports" to "indicates whether the device supports" in six places.

Response Response Status C

ACCEPT IN PRINCIPLE.

See #316, 50

CI 45 SC 45.2.1.12b P51 L48 # 50  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Draft says "Register 1.19, bit 14 indicates that the device supports PRBS31 generation or checking." unlike the more usual "When read as a one, bit 1.13.0 indicates that..."

*SuggestedRemedy*

When read as a one, register 1.19, bit 14 indicates that the device supports PRBS31 generation or checking, and register 1.19, bit 13 indicates that the device supports PRBS9 generation or checking.  
Similarly at line 53.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.12c P52 L31 # 6  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

The error counter "bits shall be held at all ones in the case of overflow". In other cases where this applies (e.g. Table 45-63) the term "NR = Non Roll-over" is used.

*SuggestedRemedy*

Designate bits 1.20.11:0 as NR and add "NR = Non Roll-over" to note a

Response Response Status C

ACCEPT.

Change "RO" to "RO, NR"

Add footnote as in 45.2.1.86

CI 45 SC 45.2.1.12c P52 L37 # 51  
Dawe, Piers Avago Technologies

Comment Type E Comment Status A

twelve bit count

*SuggestedRemedy*

12-bit counter  
Also in 45.2.1.12d.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.12d P52 L44 # 49  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

Should support ability to error-check PRBS31 after gearbox: see comment against 83.5.10.

*SuggestedRemedy*

Support counting of PRBS31 after gearbox as in 83.5.10. This may involve no change here.

Response Response Status C

REJECT.

There is no change to this register.



CI 45 SC 45.2.1.4.8 P43 L5 # 100  
 Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-6, if 1.4.15:10 (reserved) bits are "RO", its description should be changed.

SuggestedRemedy

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.6.1 P43 L28 # 709  
 Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Replace the text in parenthesis with "(1.7.5:0)".

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.6.1 P44 L9 # 553  
 Booth, Brad AMCC

Comment Type ER Comment Status A

Don't define what the register bits are reserved for.

SuggestedRemedy

Remove references to 40G and 100G for the reserved register space.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.7.15 P44 L35 # 673  
 Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

Why reproduce the whole Table 45-8 when changes are minimum and can be referenced via editorial instructions ?

SuggestedRemedy

use the editorial instructions and do not reproduce the whole tables for no reason.

Response Response Status C

ACCEPT.

Use ellipses to signify unchanged and out of context rows in Table 45-8

CI 45 SC 45.2.1.76 P54 L13 # 102  
 Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-53, if 1.150.15:2 (reserved) bits are "RO", its description should be changed.

SuggestedRemedy

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.76 P54 L17 # 224  
 Barras, Hugh Cisco

Comment Type E Comment Status A

It appears to be a typo:

Name "restart training"  
 Description "reset ... protocol"

SuggestedRemedy

Change "reset" to "restart"

NOTE - this is a change to the base standard.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.76 P54 L22 # 658  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status R

70% of a page is blank - why ?

*SuggestedRemedy*

Always scrub the draft prior to release for such unexpected blank pages.

Response Response Status C

REJECT.

Floating text and table break rules are left to default values as required by the style guide. Putting overrides may improve a specific draft but may cause problems in subsequent drafts and in the final publication.

CI 45 SC 45.2.1.76 P54 L3 # 713  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Plural.

*SuggestedRemedy*

Replace "PMD described in Clause 72, 84 or 85" with "PMDs described in Clauses 72, 84 or 85".

Same comment applies to:

- Page 55, lines 3-4.
- Page 56, line 40.
- Page 56, line 52.
- Page 57, line 7.
- Page 57, line 17.
- Page 58, lines 3-4.
- Page 59, lines 19-20.
- Page 60, lines 17-18.
- Page 60, lines 53-54.
- Page 61, lines 35-36.
- Page 62, lines 6-7.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.78 P56 L37 # 7  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

The name of register 1.152 is "BASE-R LP coefficient update, lane 0" so it should be referred to as the "BASE-R LP coefficient update, lane 0 register" and not the "BASE-R LP coefficient update register, lane 0"

In other words, this is not one register with ten lanes, it is ten registers each of which has a lane number in its name.

Maybe this would be better without the comma in the names?

*SuggestedRemedy*

Change "BASE-R LP coefficient update register, lane 0" to "BASE-R LP coefficient update, lane 0 register" in five places.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.78 P56 L45 # 8  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

Table 45-55 (referred to here) needs its title changing

*SuggestedRemedy*

Change title of Table 45-55 from "10GBASE-KR LP coefficient update register bit definitions" to "BASE-R LP coefficient update, lane 0 register bit definitions"

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.79 P56 L49 # 9  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

The name of register 1.153 is "BASE-R LP status report, lane 0" so it should be referred to as the "BASE-R LP status report, lane 0 register" and not the "BASE-R LP status report register, lane 0"

*SuggestedRemedy*

Change "BASE-R LP status report register, lane 0" to "BASE-R LP status report, lane 0 register" in four places.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.79 P57 L1 # 10  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 Table 45-56 (referred to here) needs its title changing

*SuggestedRemedy*

Change title of Table 45-56 from "10GBASE-KR LP status report register bit definitions" to "BASE-R LP status report, lane 0 register bit definitions"

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.80 P57 L12 # 12  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 Table 45-57 (referred to here) needs its title changing

*SuggestedRemedy*

Change title of Table 45-57 from "10GBASE-KR LD coefficient update register bit definitions" to "BASE-R LD coefficient update, lane 0 register bit definitions"

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.80 P57 L4 # 11  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A  
 The name of register 1.154 is "BASE-R LD coefficient update, lane 0" so it should be referred to as the "BASE-R LD coefficient update, lane 0 register" and not the "BASE-R LD coefficient update register, lane 0"

*SuggestedRemedy*

Change "BASE-R LD coefficient update register, lane 0" to "BASE-R LD coefficient update, lane 0 register" in four places.

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.81 P57 L14 # 13  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A  
 The name of register 1.155 is "BASE-R LD status report, lane 0" so it should be referred to as the "BASE-R LD status report, lane 0 register" and not the "BASE-R LD status report register, lane 0"

*SuggestedRemedy*

Change "BASE-R LD status report register, lane 0" to "BASE-R LD status report, lane 0 register" in four places.

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.81 P57 L21 # 14  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 Table 45-58 (referred to here) needs its title changing

*SuggestedRemedy*

Change title of Table 45-58 from "10GBASE-KR LD status report register bit definitions" to "BASE-R LD status report, lane 0 register bit definitions"

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.81a P58 L1 # 15  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A  
 The name of register 1.156 is "BASE-R PMD status 2" so it should be referred to as the "BASE-R PMD status 2 register" and not the "BASE-R PMD status register 2"

*SuggestedRemedy*

Change "BASE-R PMD status register 2" to "BASE-R PMD status 2 register" in four places (including the title of Table 45-58a).

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.81a P58 L4 # 714  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

A lane is defined as a bi-directional channel. Therefore, "in a given direction" in this context is redundant.

SuggestedRemedy

Delete "in a given direction".

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.81b P59 L17 # 16  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

The name of register 1.157 is "BASE-R PMD status 3" so it should be referred to as the "BASE-R PMD status 3 register" and not the "BASE-R PMD status register 3"

SuggestedRemedy

Change "BASE-R PMD status register 3" to "BASE-R PMD status 3 register" in four places (including the title of Table 45-58b).

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.81b P59 L29 # 103  
Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-58b, if 1.157.15:8 (reserved) bits are "RO", its description should be changed.

SuggestedRemedy

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.84 P60 L27 # 104  
Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-61, if 1.170.15:2 (reserved) bits are "RO", its description should be changed.

SuggestedRemedy

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.85 P61 L9 # 105  
Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-62, if 1.171.15:2 (reserved) bits are "RO", its description should be changed.

SuggestedRemedy

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.86 P61 L37 # 17  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

In this case registers 1.172 and 1.173 comprise the "10GBASE-R FEC corrected blocks counter, lane 0" so it would be better to say:

"The assignment of bits in the BASE-R FEC corrected blocks counter, lane 0 is shown ..." rather than:  
"The assignment of bits in the BASE-R FEC corrected blocks counter register, lane 0 is shown ..."

SuggestedRemedy

Change "FEC corrected blocks counter register, lane 0" to "FEC corrected blocks counter, lane 0"

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.87 P62 L17 # 19  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 The title of Table 45-64 should include ", lane 0"

*SuggestedRemedy*

Change the title of Table 45-64 from "BASE-R FEC uncorrected blocks counter register bit definitions" to "BASE-R FEC uncorrected blocks counter, lane 0 register bit definitions"

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.87 P62 L8 # 18  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A  
 In this case registers 1.174 and 1.175 comprise the "10GBASE-R FEC uncorrected blocks counter, lane 0" so it would be better to say:  
  
 "The assignment of bits in the BASE-R FEC uncorrected blocks counter, lane 0 is shown ..." rather than:  
 "The assignment of bits in the BASE-R FEC uncorrected blocks counter register, lane 0 is shown ..."

*SuggestedRemedy*

Change "FEC uncorrected blocks counter register, lane 0" to "FEC uncorrected blocks counter, lane 0"

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.87c P63 L3 # 20  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 These are the wrong register numbers

*SuggestedRemedy*

Change register numbers to:  
 1.270, 1.274, 1.278, 1.282, 1.286, 1.290, 1.294, 1.298, 1.302

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.87d P63 L11 # 21  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 These are the wrong register numbers

*SuggestedRemedy*

Change register numbers to:  
 1.271, 1.275, 1.279, 1.283, 1.287, 1.291, 1.295, 1.299, 1.303

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.87e P63 L19 # 22  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 These are the wrong register numbers

*SuggestedRemedy*

Change register numbers to:  
 1.272, 1.276, 1.280, 1.284, 1.288, 1.292, 1.296, 1.300, 1.304

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.87f P63 L27 # 23  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A  
 These are the wrong register numbers

*SuggestedRemedy*

Change register numbers to:  
 1.273, 1.277, 1.281, 1.285, 1.289, 1.293, 1.297, 1.301, 1.305

Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1.9 P47 L18 # 101  
 Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-10, if 1.10.15:11(reserved) bits are "RO", its description should be changed.

*SuggestedRemedy*

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

CI 45 SC 45.2.1.9.2a P48 L20 # 655  
 Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status R

70% of a page is blank - why ?

*SuggestedRemedy*

Always scrub the draft prior to release for such unexpected blank pages.

Response Response Status C

REJECT.

Floating text and table break rules are left to default values as required by the style guide. Putting overrides may improve a specific draft but may cause problems in subsequent drafts and in the final publication.

CI 45 SC 45.2.1.9.2a P48 L9 # 3  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A

The 40G/100G PMA/PMD extended ability register is 1.13 not 1.12 as stated here

*SuggestedRemedy*

Change "listed in register 1.12" to "listed in register 1.13"

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3 P64 L26 # 24  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A

This register name should stay as "10GBASE-R PCS test pattern seed A" as it has not been used for 40/100G

*SuggestedRemedy*

Change "10G/40G/100GBASE-R PCS test pattern seed A" back to "10GBASE-R PCS test pattern seed A"

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3 P64 L35 # 556  
 Booth, Brad AMCC

Comment Type E Comment Status A

Multiple entries are not required.

*SuggestedRemedy*

Change to read:  
 3.50 through 3.53 Multi-lane PCS alignment status

Update register descriptions.

Response Response Status C

ACCEPT IN PRINCIPLE.

3.50 through 3.53 : Multi-lane PCS alignment status 1 through 4

CI 45 SC 45.2.3 P64 L42 # 682  
 Marek, Hajduczenia ZTE Corporation

Comment Type TR Comment Status A

registers 3.74 - 3.81 (inclusive) are in use by P802.3av. Check the latest version of the draft for details (D3.2).

*SuggestedRemedy*

Mark registers 3.74 - 3.81 as reserved for P802.3av. Shift the BIP error counters, lanes 0 through 19 register by twopositions up i.e. to 3.82 through 3.91 range. Change the reserved range from 3.90 through 3.32 767 to 3.92 through 3.32 767

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolution of comment #227 moves the registers.

CI 45 SC 45.2.3 P64 L43 # 227  
Barrass, Hugh Cisco

Comment Type TR Comment Status A

802.3av is using registers 3.74 - 3.81

*SuggestedRemedy*

Change the rows:

3.74 - 3.89 : reserved for 802.3av  
3.90 through 3.99 : BIP error counters lanes 0 through 19  
3.100 - 3.32 767 : reserved

Response Response Status C

ACCEPT.

Note also change to Clause 82.

CI 45 SC 45.2.3 P64 L44 # 274  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

Register addresses 3.80 and 3.81 have been used by 802.3av

*SuggestedRemedy*

Change BIP error counters, lanes 0 through 19 to use register addresses 3.82 through 3.91

Response Response Status C

ACCEPT IN PRINCIPLE.

Resolution to comment #227 moves these registers.

CI 45 SC 45.2.3 P64 L44 # 557  
Booth, Brad AMCC

Comment Type E Comment Status R

BIP error counters should be sufficient description.

*SuggestedRemedy*

Delete "lanes 0 through 19".

Response Response Status C

REJECT.

No harm in keeping "lanes 0 through 19" as it adds a little clarity.

CI 45 SC 45.2.3 P64 L44 # 232  
Lynskey, Eric Teknovus

Comment Type TR Comment Status A

The 10G-EPON draft is already using registers 3.80 and 3.81.

*SuggestedRemedy*

Shift register 3.80 to 3.82. Perform a similar shift for all subsequent registers.

Response Response Status W

ACCEPT IN PRINCIPLE.  
See #227

CI 45 SC 45.2.3 P65 L2734 # 106  
Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-85, if 3.4.15:9 (reserved) bits and 3.4.6:2 (reserved) bits are "RO", their descriptions should be changed.

*SuggestedRemedy*

Change "writes ignored" into "Ignore on read" in each description.

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

Cl 45 SC 45.2.3.11.1 P67 L46 # 317  
Young, George AT&T

Comment Type TR Comment Status R

Refers to bit being described as "a reflection of the PCS\_status variable defined in 49.2.14.1 for 10GBASE-R" in this subclause extended to variables pertaining to '10/40/100GBASE-R'. Clause 49 on 10GBASE-R PCS operation contains no revisions to reflect corresponding 40 and/or 100 Gb/s operations. Corresponding re-employed PCS variables need to be restated in reference to Clause 82 rather than Clause 49 subclauses. Also page 68, lines 34 and 47 - page 70, lines 3, 12 and 25 - page 71, line 20.

*SuggestedRemedy*

PCS variables re-employed from Clause 49 should be restated for 40GBASE-R and/or 100GBASE-R operation and referenced to Clause 82.

Response Response Status W

REJECT.

This comment was WITHDRAWN by the commenter.

This bit is already re-employed for 10GBASE-T. The text explicitly says "variable is defined in 49.2.14.1 for 10GBASE-R, in 55.3.6.1 for 10GBASE-T and in 82.3.1 for 40/100GBASE-R."

This is clear and unambiguous and does not require any editing of clause 49.

Cl 45 SC 45.2.3.11.1 P68 L5 # 107  
Obara, Satoshi Fujitsu

Comment Type E Comment Status R

In the Table 45-90, if 3.32.15:13 (reserved) bits are "RO", its description should be changed.

*SuggestedRemedy*

Change "writes ignored" into "Ignore on read".

Response Response Status C

REJECT.

This is the format used in the base document, the text is unchanged.

Cl 45 SC 45.2.3.11.4 P68 L29 # 659  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

Please do not let the "BER of < 10-4." be broken between the lines. It is hard to read

*SuggestedRemedy*

Per comment.

Response Response Status C

ACCEPT.

2 instances.

Cl 45 SC 45.2.3.12 P69 L1 # 644  
Ganga, Ilango Intel

Comment Type TR Comment Status A

Register naming convention for multi-speed control/status registers are not consistent across PMA/PMD registers and PCS registers. The PMA/PMD registers and FEC registers have been named as e.g. BASE-R PMD status register, BASE-R FEC corrected blocks counter etc., Whereas the PCS registers have been named as 10/40/100GBASE-R registers, e.g. see 45.2.3.12, 45.2.3.15 and 45.2.3.16.

Rename the PCS registers to be consistent with other register naming e.g BASE-R registers..

*SuggestedRemedy*

Rename PCS registers in subclauses 45.2.3.11, 45.2.3.12, 45.2.3.15 and 45.2.3.16 as BASE-R registers instead of 10/40/100GBASE-R registers. Make the change to register names and corresponding text in those subclauses.

Also make appropriate changes to text in Clause 30 (text referring to those PCS registers).

Response Response Status C

ACCEPT.



CI 45 SC 45.2.3.12.3 P70 L3 # 660  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

Do not let the PMD names be divided between the lines. This impairs readability  
10/40/100GBASE  
R  
alsi in line 22  
10/40/  
100GBASE-R

*SuggestedRemedy*

A global fix is needed, probably by defining the characters on which line break is possible  
(remove / and - from the list)

Response Response Status C

ACCEPT IN PRINCIPLE.

Global fix may not be feasible. Look for specific fix for these instances (otherwise leave it  
as an issue for staff editors prior to publication).

CI 45 SC 45.2.3.12.3 P70 L3 # 30  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

This clause refers to 49.2.14.2 for the definition of the ber\_count variable for  
10/40/100GBASE-R. However clause 82 does not refer to clause 49 for this function (and  
this counter is not currently defined in clause 82).

Note, there is a comment against clause 82.2.19.2.4 to add this counter definition (with 20  
bits) there.

*SuggestedRemedy*

Assuming that this counter is added to clause 82.2.19.2.4, add a reference to clause  
82.2.19.2.4 for /40/100GBASE-R

Response Response Status C

ACCEPT.

Comment #40 is accepted, so the counter is defined in 82.2.19.2.4

CI 45 SC 45.2.3.12.3 P70 L6 # 715  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Wrong reference.

*SuggestedRemedy*

Replace "45.2.3.16b" with "45.2.3.16a".

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.12.3 P70 L6 # 25  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

This refers to 45.2.3.16b for the "BER high order counter, 3.44" but the reference should be  
to 45.2.3.16a

*SuggestedRemedy*

change reference from 45.2.3.16b to 45.2.3.16a

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.12.4 P70 L14 # 26  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

There is a missing reference to the "Errored blocks high order counter, 3.45" which should  
be to 45.2.3.16b

*SuggestedRemedy*

change from "()" to "(45.2.3.16b)"

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.12.4 P70 L14 # 674  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

Missing reference ?? in "If the Errored blocks high order counter, 3.45 () is not implemented then these bits shall be held at all ones in the case of overflow."

*SuggestedRemedy*

provide the reference for 3.45 () ...

Response Response Status C

ACCEPT IN PRINCIPLE.

See #26

CI 45 SC 45.2.3.12.4 P70 L14 # 716  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Reference missing.

*SuggestedRemedy*

Insert "45.2.3.16b" in parenthesis.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.15 P70 L19 # 27  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

In 40/100G the only test pattern generated by the PCS is "scrambled idle".  
One of the reserved bits needs to be allocated to this function.  
Text needs to be added to say that this bit is ignored by 10G.  
Text needs to be added to say that the other bits are ignored by 40/100G

*SuggestedRemedy*

Allocate one of the reserved bits to control the generation of the "scrambled idle" test pattern by the 40/100G PCS.  
Before the last sentence of the clause, add text to say that this bit is ignored by 10G. Also, add text to say that the other bits are ignored by 40/100G.

Response Response Status C

ACCEPT IN PRINCIPLE.

3.42.7 scrambled idle test pattern enable

Insert a new subclause to define scrambled idle enable (similar to existing subclauses).

Insert before the last sentence of 45.2.3.15:

"PRBS9, PRBS31, pseudo random and square wave test patterns are defined for 10GBASE-R only. Scrambled idle test patterns are defined for 40/100GBASE-R only. The PHY may either ignore writes and read zeroes for register bits related to undefined functions or may function as defined."

Note also reference in Clause 82.

**Cl 45**    **SC 45.2.3.15**    **P70**    **L28**    # **675**  
 Marek, Hajduczenia    ZTE Corporation

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

What is the purpose of reproduction of the whole table if only title is changed ? Use the editorial instructions, that is what they are for.  
 The same comment on many more tables which are reproduced without any need e.g. Table 45-95.

**SuggestedRemedy**

remove the body of table Table 45-94 and provide editorial instructions: Modify the title of Table 45-94 as follows:

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

ACCEPT IN PRINCIPLE.

Comment #27 changes the body of the table.

Remove table rows that are not required for context in this draft. In cases where only the title changes, do not reproduce the table.

**Cl 45**    **SC 45.2.3.16**    **P71**    **L1**    # **29**  
 Anslow, Peter    Nortel Networks

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

This clause defines a counter which can be used for scrambled idle pattern checking. However, clause 82.2.15 requires per lane error counters to be defined for BIP-8 error counts.  
 Note, there is a comment against clause 82.2.15 to add a reference to these counters when defined.

**SuggestedRemedy**

Define per lane error counters for BIP-8 (new clauses needed).

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

REJECT.

This comment was WITHDRAWN by the commenter.

**Cl 45**    **SC 45.2.3.16**    **P71**    **L21**    # **28**  
 Anslow, Peter    Nortel Networks

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

This clause refers to 49.2.12, but not 82.2.11 where the 40/100G PCS needs to use the counter for scrambled idle pattern checking.  
 Note, there is a comment against clause 82.2.11 to add text there that defines the use of this counter.

**SuggestedRemedy**

Add a reference to clause 82.2.11 which (should) use this counter.

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

ACCEPT.

**Cl 45**    **SC 45.2.3.17a**    **P72**    **L32**    # **31**  
 Anslow, Peter    Nortel Networks

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

The name of register 3.50 is the "Multi-lane BASE-R PCS alignment status 1" register.

**SuggestedRemedy**

Change "Multi-lane BASE-R PCS alignment status register 1" to "Multi-lane BASE-R PCS alignment status 1 register" in three places (including clause title and Table 45-96a title).

Also change "Multi-lane BASE-R PCS alignment status register" to "Multi-lane BASE-R PCS alignment status 1 register" in three places.

Also change "the BASE-R PCS alignment status register" to "the Multi-lane BASE-R PCS alignment status 1 register" in one place

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

ACCEPT.

CI 45 SC 45.2.3.17a.2 P72 L50 # 676  
Marek, Hajduczenia ZTE Corporation

Comment Type ER Comment Status A

be consistent on how You call subclauses in brackets. In some locations, it is simple (clause\_number). In some locations, it is (see clause\_number). I suggest a consistent use of option 2.

*SuggestedRemedy*

Per comment. Global fix is required for all clauses.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change instances in clause 45 that are within the scope of this amendment - instances within the base standard will not be changed solely for this reason.

CI 45 SC 45.2.3.18a P74 L25 # 32  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

The name of register 3.51 is the "Multi-lane BASE-R PCS alignment status 2" register.

*SuggestedRemedy*

Change "Multi-lane BASE-R PCS alignment status register 2" to "Multi-lane BASE-R PCS alignment status 2 register" in three places (including clause title and Table 45-97a title).

Also change "Multi-lane BASE-R PCS alignment status register" to "Multi-lane BASE-R PCS alignment status 2 register" in four places.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.19a P76 L43 # 33  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

The name of register 3.52 is the "Multi-lane BASE-R PCS alignment status 3" register.

*SuggestedRemedy*

Change "Multi-lane BASE-R PCS alignment status register 3" to "Multi-lane BASE-R PCS alignment status 3 register" in seven places (including clause title and Table 45-98a title).

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.20a P78 L25 # 34  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

The name of register 3.53 is the "Multi-lane BASE-R PCS alignment status 4" register.

*SuggestedRemedy*

Change "Multi-lane BASE-R PCS alignment status register 4" to "Multi-lane BASE-R PCS alignment status 4 register" in seven places (including clause title and Table 45-99a title).

Response Response Status C

ACCEPT.

CI 45 SC 45.2.3.21a P80 L48 # 318  
Young, George AT&T

Comment Type TR Comment Status A

The reference to register 3.54 is incorrect. Register 3.54 is defined as reserved in Table 45-82.

*SuggestedRemedy*

Change to read: "The two 8 bit counters shall be reset to all zeroes when register 3.80 is read by the management function or upon PCS reset".

Response Response Status W

ACCEPT.

CI 45 SC 45.2.3.21a P80 L48 # 717  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Wrong reference.

*SuggestedRemedy*

Replace "register 3.54" with "register 3.80".

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.3.21b P81 L1 # 680  
Marek, Hajduczenia ZTE Corporation

Comment Type T Comment Status A

I think we deserve at least some basic description for the entries in the Description column. Otherwise, what is that column for.  
Also on the same page, line 13 - what is this large space for?

*SuggestedRemedy*

either provide description for individual entries in the Description column or remove it altogether.  
remove the large space between sections.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add descriptions:

Errors detected by BIP in lane 0  
Errors detected by BIP in lane 1

Cl 45 SC 45.2.3.4 P65 L29 # 558  
Booth, Brad AMCC

Comment Type TR Comment Status A

Bits 6:2 being reserved for future speeds makes no sense.

*SuggestedRemedy*

Move 40G to use bit 2 and 100G to use bit 3.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.7 P81 L30 # 661  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

no need to reproduce Table 45-133

*SuggestedRemedy*

use editorial instructions to identify the row which is changed.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.7 P82 L16 # 718  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The register name as written looks weird.

*SuggestedRemedy*

Replace "Backplane, BASE-R copper Ethernet" with "Backplane Ethernet, BASE-R copper".

Same comment applies to:  
- Page 83, lines 1, 3 and 6.  
- Page 84, lines 1, 6, 7 and 8.

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.7 P82 L16 # 559  
Booth, Brad AMCC

Comment Type ER Comment Status R

The merge of existing backplane status with 40G and 100G is not necessary and could create further issues.

*SuggestedRemedy*

Rename 7.48 to be 1G/10G BP Ethernet status.

Create a new register 7.49 call 40G/100G AN status. Bit 7.49.0 would be AN status. 7.49.4 would be FEC negotiated. Existing 7.48.8-5 would move to become 7.49.8-5.

Response Response Status C

REJECT.

Negotiation between 10G & 40G backplane systems is reasonable expectation for the new PHYs.

**Cl 45**    **SC 45.2.7**                      **P82**            **L24**            # **662**  
 Marek, Hajduczenia                      ZTE Corporation

**Comment Type**    **E**            **Comment Status**    **R**  
 50% of the page is blank. Why ?

**SuggestedRemedy**  
 remove the extra blank space

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

Floating text and table break rules are left to default values as required by the style guide. Putting overrides may improve a specific draft but may cause problems in subsequent drafts and in the final publication.

**Cl 45**    **SC 45.2.7.12**                      **P83**            **L6**            # **663**  
 Marek, Hajduczenia                      ZTE Corporation

**Comment Type**    **E**            **Comment Status**    **A**  
 Title of Table 45-142 is broken really bad. Make a forced break before e.g. (Register 7.48) bit definitions

**SuggestedRemedy**  
 per comment

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

**Cl 45**    **SC 45.5.3.2**                      **P85**            **L33**            # **35**  
 Anslow, Peter                              Nortel Networks

**Comment Type**    **E**            **Comment Status**    **A**  
 There should be a non-breaking space (ctrl space) between a number and its unit

**SuggestedRemedy**  
 Change "40Gb/s PMA/PMD" to "40 Gb/s PMA/PMD"  
 Change "100Gb/s PMA/PMD" to "100 Gb/s PMA/PMD"  
 Change "10Mb/s PMA/PMD" to "10 Mb/s PMA/PMD"  
 Change "100Mb/s PMA/PMD" to "100 Mb/s PMA/PMD"  
 Change "1000Mb/s PMA/PMD" to "1000 Mb/s PMA/PMD"

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

**Cl 45**    **SC 45.5.3.7**                      **P90**            **L19**            # **36**  
 Anslow, Peter                              Nortel Networks

**Comment Type**    **T**            **Comment Status**    **A**  
 Text says "return zero for PCS that does not support 10/40/100GBASE-R and 10GBASE-T". This should be "or" not "and"

**SuggestedRemedy**  
 Change "does not support 10/40/100GBASE-R and 10GBASE-T" to "does not support 10/40/100GBASE-R or 10GBASE-T"

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

**Cl 45**    **SC 45.5.3.7**                      **P91**            **L13**            # **37**  
 Anslow, Peter                              Nortel Networks

**Comment Type**    **T**            **Comment Status**    **A**  
 The text is not consistent with register names.

**SuggestedRemedy**  
 Change "alignment status register 1" to "alignment status 1 register"  
 Change "alignment status register 2" to "alignment status 2 register"  
 Change "alignment status register 3" to "alignment status 3 register"  
 Change "alignment status register 4" to "alignment status 4 register"

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

**Cl 4A**    **SC 4A**                                      **P364**            **L1**            # **583**  
 Booth, Brad                                      AMCC

**Comment Type**    **E**            **Comment Status**    **R**  
 Extra pages at the end of the Annexes.

**SuggestedRemedy**  
 Delete extra pages.

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

The document page setting is configured for a new Clause to start on the right side (odd numbered page). This follows a printed book format.

Cl 69 SC 69.1.3 P94 L14 # 560  
Booth, Brad AMCC

Comment Type TR Comment Status A

Figure 69-1 shows the 40G PCS as 40GBASE-R PCS. This is an incorrect reference that doesn't follow with the PCS descriptions for the other PHYs. An 8B/10B PCS is used for 1000BASE-KX, and it is also used for 10GBASE-KX4 even though they are different.

*SuggestedRemedy*

Change 40GBASE-R PCS to be 64B/66B PCS.

Response Response Status U

ACCEPT IN PRINCIPLE.

The 8B/10B encoding used in 1000BASE-KX is not the same as that used in 10GBASE-KX4 so the current diagram is misleading.

In Figure 69-1 change

"8B/10B PCS" in the 1000BASE-KX stack to "1000BASE-X PCS"

"8B/10B PCS" in the 10GBASE-KX4 stack to "10GBASE-X PCS"

"64B/66B PCS" in the 10GBASE-KR stack to "10GBASE-R PCS"

Cl 69 SC 69.2.3 P95 L14 # 625  
Ganga, Ilango Intel

Comment Type E Comment Status A

Cross-reference links missing for clause number references. Add cross-reference links.

*SuggestedRemedy*

Add cross-reference links to Clause 82, 83 and 84 in this subclause.

Also check and update cross-references in Clause 69

Response Response Status C

ACCEPT.

Cl 69 SC 69.2.3 P95 L20 # 633  
Ganga, Ilango Intel

Comment Type ER Comment Status A

Add a column for XLAUI (Optional) to Table 69-1

*SuggestedRemedy*

Add a column to Table 69-1:

83A XLAUI optional

Response Response Status C

ACCEPT.

also see comment 477

Cl 69 SC 69.2.3 P95 L21 # 319  
Young, George AT&T

Comment Type TR Comment Status R

In Table 69-1, the newly created nomenclature "BASE-R FEC" is employed to just denote PHYs that employ only xxGBASE-KRx or xxGBASE-CRx PMDs and in this Clause 69 pertain only to the xxGBASE-KRx PMDs. The term "BASE-R" is not a good choice for this selective reference to BASE-KR and BASE-CR PMDs, since it fosters confusion with the other generic use of 'xxGBASE-R' to denote the choice any PHY with 64B/66B PCS operation. As shown in Table 80-1, Clause 74 "BASE-R FEC" does not pertain to 40GBASE-SR4, 40GBASE-LR4, 100GBASE-SR10, 100GBASE-LR4 or 100GBASE-ER4 PMDs, which are otherwise referred to as 40GBASE-R or 100GBASE-R PHYs. See similar comments against Clauses 45, 74 and 80.

*SuggestedRemedy*

Replace "BASE-R FEC" with "BASE-KR/CR FEC".

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Clause 69 is an introduction to Ethernet on backplanes so the reader will not be getting confused with 40GBASE-SR4, 40GBASE-LR4, 100GBASE-SR10, 100GBASE-LR4 or 100GBASE-ER4 PMD.

see also comments 320 and 321.

CI 69 SC 69.2.3 P95 L40 # 477  
D'Ambrosia, John Force10 Networks

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

It is easy to envision implementations where a XLAUI for chip-to-chip interconnection (discrete FEC) would be desirable. Furthermore, XLAUI is actually shown as optional in Clause 84.

*SuggestedRemedy*

Add to Table 69-1 a column for Annex 83A - XLAUI, and make optional for 40GBASE-KR4.

Response Response Status **W**

ACCEPT.

also see comment 633

CI 69 SC 69.3 P96 L3 # 632  
Ganga, Ilango Intel

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

"Add" is not a valid editing instruction as per 2009 IEEE standards style manual. Change "Add" to "Insert" in Clause 69 and elsewhere in the draft

*SuggestedRemedy*

Replace editing instructions from "Add" to "Insert"

Use the following editing instructions only throughout the draft 802.3ba. Check 802.3ba and make changes as necessary when there is a deviation from the 2009 style manual.

Editing instructions: Change, Insert, Delete and Replace

Response Response Status **U**

ACCEPT.

CI 69 SC 69.3 P96 L5 # 634  
Ganga, Ilango Intel

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

Add reference to PMA delay constraints as well.

See 83.5.4

Also remove phrase "informative delay spec" and instead just provide a reference to 80.3

*SuggestedRemedy*

Add reference to 83.5.4

For 40GBASE-KR4 normative delay specifications may be found in 81.1.4, 82.5, 83.5.4 and 84.4 and also referenced in 80.3.

Response Response Status **C**

ACCEPT.

CI 73 SC 73 P97 L1 # 561  
Booth, Brad AMCC

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

Clause title does not lead one to interpret that this clause would contain information relative to 40GBASE-CR4 or 100GBASE-CR10. Change the title to support the function of the clause.

*SuggestedRemedy*

Change to read:

Auto-Negotiation function for backplane Ethernet, 40GBASE-C and 100GBASE-C

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change to read:

Auto-Negotiation function for backplane and copper cable assembly



**Cl 73**    **SC 73.10.1**    **P102**    **L11**    # **295**  
 Trowbridge, Stephen    Alcatel-Lucent

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

802.3ba PMAs are rate specific but not PMD specific - for example, there is no such thing as a 40GBASE-KR4 PMA, only a 40GBASE-R PMA. But from the stack, it appears that the relevant PMD is actually the signal source.

**SuggestedRemedy**

Replace "40GKR4; represents that the 40GBASE-KR4 PMA is the signal source.  
 40GCR4; represents that the 40GBASE-CR4 PMA is the signal source.  
 100GCR10;represents that the 100GBASE-CR10 PMA is the signal source." with  
 "40GKR4; represents that the 40GBASE-KR4 PMD is the signal source.  
 40GCR4; represents that the 40GBASE-CR4 PMD is the signal source.  
 100GCR10;represents that the 100GBASE-CR10 PMD is the signal source."

**Replace:**

"PD; represents all of the following that are present: 1000BASE-KX PMA, 10GBASE-KX4 PMA or 10GBASE-CX4 PMA, and 10GBASE-KR PMA, 40GBASE-KR4 PMA, 40GBASE-CR4 PMA, and 100GBASE-CR10 PMA." with  
 "PD; represents all of the following that are present: 1000BASE-KX PMA, 10GBASE-KX4 PMA or 10GBASE-CX4 PMA, and 10GBASE-KR PMA, 40GBASE-KR4 PMD, 40GBASE-CR4 PMD, and 100GBASE-CR10 PMD." on lines 20-23

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

ACCEPT.

**Cl 73**    **SC 73.10.1**    **P102**    **L8**    # **565**  
 Booth, Brad    AMCC

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

Addition of 10GBASE-CX4 is outside the scope of the project.

**SuggestedRemedy**

Delete text related to 10GBASE-CX4.

**Response**    **Response Status**    **U**

REJECT.

Clause 73 autonegotiation has been extended to include 40GBASE-CR4 and other 802.3ba PHYs.

10GKX4 in the base 802.3-2008 standard is used to indicate the parallel detection of 10GBASE-KX4 by the Clause 48 PCS.

The Clause 48 PCS is also used by 10GBASE-CX4.

There is the possibility of an end point using 40GBASE-CR4 connecting to a legacy 10GBASE-CX4 end-point. (40GBASE-CR4 and 10GBASE-CX4 share a common connector.) If this were to happen the 10GKX4 indication would be set by the Clause 48 PCS if present.

For this reason the description of 10GKX4 has been modified to include either KX4 or CX4 parallel detection.

Vote in BRC  
 yes to comment response 8  
 no to comment response 2

see also comment 563

**Cl 73**    **SC 73.10.7**    **P102**    **L41**    # **526**  
 Frazier, Howard    Broadcom

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

"three indications" should be "six indications",

and also on line 43.

**SuggestedRemedy**

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

ACCEPT IN PRINCIPLE.

delete the word three in both places

**Cl 73**    **SC 73.2**    **P97**    **L25**    # **775**  
 Marris, Arthur    Cadence

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

AN\_LINK.indication goes from the PCS to the AN layer. It is NOT bidirectional.

**SuggestedRemedy**

In figure 73-1 delete arrow going into PCS layer for AN\_LINK.indication

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

ACCEPT IN PRINCIPLE.  
 See response to comment 52

**Cl 73**    **SC 73.2**    **P97**    **L25**    # **530**  
 Frazier, Howard    Broadcom

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

In Figure 73-1, the GMII, XGMII, XLGMII or CGMII are all depicted by the same combination of three rectangles, located between the reconciliation sub-layer and the PCS. My recollection is that this depiction was chosen to represent a physical interface, that could include a cable with connectors. Certainly this was true for the 802.3u MII. It is misleading to use this depiction for the XLGMII or CGMII, as they are not intended to be exposed outside of an integrated circuit.

**SuggestedRemedy**

My first choice would be to butt the PCS sublayer directly up to the reconciliation sub-layer in this diagram.

If this is not acceptable, then represent the interface with a single rectangle, similar to the way it is depicted in Figure 69-1, Figure 74-1, Figure 80-1, etc.

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

ACCEPT IN PRINCIPLE.

For consistency go with second option of a single rectangle, similar to the way it is depicted in Figure 69-1, Figure 74-1, Figure 80-1, etc.

**Cl 73**    **SC 73.2**    **P97**    **L27**    # **636**  
 Ganga, Ilango    Intel

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

In Fig 73-1 show the direction of AN\_LINK.indication primitive to be from PCS to AN (currently it is shown as bidirectional in the diagram)

**SuggestedRemedy**

In Fig 73-1 show the direction of AN\_LINK.indication primitive to be from PCS to AN (unidirectional instead of bidirectional)

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

ACCEPT IN PRINCIPLE.

See response to comment 52

**Cl 73**    **SC 73.2**    **P97**    **L27**    # **52**  
 Dawe, Piers    Avago Technologies

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

In Figure 73-1, the primitive AN\_LINK.indication is shown passing round the PMD and PMA by magic, which doesn't seem acceptable. Primitives can't sneak round sublayers; they go through them (see 76.4.1.1 for an example). This one must go through the PMA and PMD. The bidirectional arrow marking is wrong anyway; the primitive goes downwards only, from PCS to AN.

**SuggestedRemedy**

Remove the arrow and the \*\*\* note from the figure.

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

ACCEPT IN PRINCIPLE.

Remove the arrow and the \*\*\* note from the figure because this diagram is about the location of Auto-Negotiation function within the ISO/IEC OSI reference model and not information flow.

**Cl 73**    **SC 73.5.1**    **P98**    **L11**    # **637**  
 Ganga, Ilango    Intel

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

Add or change PICS for the new shall statements added to 73.5.1

Also change reference to existing PICS for 73.5.1.1 to point to 73.5.1

**SuggestedRemedy**

Insert or change PICS for new shall statements in 73.5.1 related to multilane PHYs.

Change reference to DME electricals in existing PICS DT2 and DT3 (See 73.11.4.2) from 73.5.1.1 to 73.5.1 and delete 10GBASE-KX4 in value/comment column for DT2.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

Change reference to DME electricals in existing PICS DT2 and DT3 (See 73.11.4.2) from 73.5.1.1 to 73.5.1 and delete 10GBASE-KX4 in value/comment column for DT2.

**Cl 73**    **SC 73.6.4**    **P99**    **L24**    # **562**  
 Booth, Brad    AMCC

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

The statement is too narrow and should be broader in scope. Use of cannot does not imply a requirement.

**SuggestedRemedy**

Change to read:  
 Note that BASE-C and BASE-K technology abilities shall not be advertised simultaneously as their physical interfaces are different.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

change text to:

40GBASE-CR4 and 40GBASE-KR4 shall not be advertised simultaneously as their physical interfaces are different.

and add corresponding PICS

**Cl 73**    **SC 73.6.5**    **P99**    **L43**    # **527**  
 Frazier, Howard    Broadcom

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

It would be better to present the resolution of the FEC capability bits in a table. The use of double negatives in the requirements statements in this subclause is going to lead to confusion.

**SuggestedRemedy**

Recast the required resolution of the FEC capability bits in a table.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

Change:

". If either device does not have FEC ability, FEC shall not be enabled. If neither device requests FEC, FEC shall not be enabled even if both devices have FEC ability."

to

"; otherwise FEC shall not be enabled."

and modify PICS appropriately

**Cl 73**    **SC 73.7.4.1**    **P100**    **L40**    # **563**  
 Booth, Brad    AMCC

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

Where did 10GBASE-CX4 come from? There is also the use of will and should in this text. While the statement may be correct, this sounds like an application note has been inserted into the draft standard and is out of scope.

**SuggestedRemedy**

Strike all text here related to 10GBASE-CX4.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

see response to comment 565

change:

"System developers should distinguish between parallel detection of 10GBASE-KX4 and 10GBASE-CX4 based on the MDI and media type present."

to:

"The means to distinguish between 10GBASE-KX4 and 10GBASE-CX4 is implementation dependent."

CI 73 SC 73.7.6 P101 L10 # 783  
Palkert, Tom Xilinx

Comment Type T Comment Status R

Not clear how a port autonegotiates between 40GE and 4x10GE. This capability should be included.

SuggestedRemedy

Response Response Status C

REJECT.

[Editor's Note: Late comment submitted by the commenter after the close of the ballot]

The commenter seems to be requesting AN support of four lanes of 10GE in the same connector as used by 40GBE.

Support for this is not an objective of 802.3ba therefore this comment requests a feature that is out of scope.

CI 73 SC 73.7.6 P101 L4 # 642  
Ganga, Ilango Intel

Comment Type T Comment Status R

Currently CR4 is shown as higher priority than KR4 in Table 73-5. Add a note to the priority resolution function (73.7.6) that CR4 and KR4 will not coexist in the same medium. (similar to the note in 73.6.4).

SuggestedRemedy

As per comment

Response Response Status C

REJECT.

CI 73 SC 73.7.6 P101 L5 # 525  
Frazier, Howard Broadcom

Comment Type ER Comment Status A

The editing instructions "Change Table 73-2 as follow:" don't agree with the table title, which indicates that the table is 73-3.

SuggestedRemedy

Fix.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change to Table 73-5 in both places

CI 73 SC 73.9.1.2 P101 L41 # 564  
Booth, Brad AMCC

Comment Type ER Comment Status A

Inserted text is an implementation note and is outside the scope of the project.

SuggestedRemedy

Delete inserted text.

Response Response Status C

ACCEPT.

see also comment 416

CI 73 SC 9.1 P101 L28 # 416  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status R

In the 40/100GbE applications it is feasible that the PCS and the PHY are not located in the same chip and there may be PCB signal for speed detection.

SuggestedRemedy

Add text: Auto-Negotiation primitive may pass between the PCS and XLAUI/CAUI retimer as out of band PCB signal traces .

Response Response Status U

REJECT.

As with many other primitives, the physical instantiation of this primitive is not defined

CI 74 SC 74 P105 L1 # 566  
Booth, Brad AMCC

Comment Type ER Comment Status A

BASE-R PHY is a wide open description. BASE-R really equals 64B/66B PCS.

SuggestedRemedy

Change to read: Forward Error Correction (FEC) sublayer for 64B/66B PCS

Change BASE-R PHY throughout clause to be 64B/66B PCS.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add BASE-R PHY to the definitions in 1.4:

BASE-R PHY uses a 64B/66B encoding (see Clause 49 and Clause 82)

CI 74 SC 74 P105 L1 # 320  
Young, George AT&T

Comment Type TR Comment Status R

Beginning with the Title and throughout Clause 74, the newly created nomenclature "BASE-R" has been employed to just denote PHYs that employ only xxGBASE-KRx or xxGBASE-CRx PMDs. The term "BASE-R" is not a good choice for this selective reference only to BASE-KR and BASE-CR PMDs, since it fosters confusion with the other generic use of 'xxGBASE-R' to denote the choice any PHY with 64B/66B PCS operation. As shown in Table 80-1, Clause 74 "BASE-R FEC" does not pertain to 40GBASE-SR4, 40GBASE-LR4, 100GBASE-SR10, 100GBASE-LR4 or 100GBASE-ER4 PMDs, which are otherwise referred to as 40GBASE-R or 100GBASE-R PHYs.

*SuggestedRemedy*

Replace all instances of "BASE-R" nomenclature now in Clause 74 with the term "BASE-KR/CR" where referring to PHY or PMD rather than PCS layer. In Clause 74, replace all instances of "10GBASE-R" with "10GBASE-KR" where referring to PHY or PMD rather than PCS layer. In Clause 74, replace all instances of "40GBASE-R" with "40GBASE-KR/CR" where referring to PHY or PMD rather than PCS layer. In Clause 74, replace all instances of "100GBASE-R" with "100GBASE-CR" where referring to PHY or PMD rather than PCS layer.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

It is already clear enough in the standard which PHY types are able to use FEC.

see also comment 566

CI 74 SC 74.1 P105 L11 # 719  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

"multi-PCS-lane BASE-R PHY" looks strange.

*SuggestedRemedy*

Replace the first part of this sentence with:  
"For a PHY with a multi-lane BASE-R PCS, the FEC sublayer...".  
Same comment applies to:  
- Page 108, lines 3, 5 and 44.

Response Response Status C

ACCEPT.

CI 74 SC 74.11.1 P124 L11 # 573  
Booth, Brad AMCC

Comment Type ER Comment Status A

Value/Comment does not need to contain a full description. Keep the information to the point.

*SuggestedRemedy*

Sum of transmit and receive. No more than 6144 BT for 10GBASE-R, 48 pause quanta for 40GBASE-R, and 240 pause quanta for 100GBASE-R.

Response Response Status C

ACCEPT.

CI 74 SC 74.2 P105 L29 # 720  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

The rate specified in d) should be per lane.  
Also, this is not an "effective data rate" but rather a baud rate.

*SuggestedRemedy*

Replace d) with the following:  
"To provide a 10.3125 Gb/s baud rate on each BASE-R PCS lane at the service interface presented by the PMA sublayer."

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace d) with the following:  
"To provide 10.3125 Gbaud on each BASE-R PCS lane at the service interface for 10G and 40G; and 5.15625 Gbaud for 100G."

CI 74 SC 74.3 P106 L31 # 567  
Booth, Brad AMCC

Comment Type ER Comment Status R

Suddenly calling this a BASE-R FEC.

*SuggestedRemedy*

Change to be FEC.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 74 SC 74.4.1 P107 L5 # 568  
Booth, Brad AMCC

Comment Type TR Comment Status A

The functional diagram only works for 10GBASE-R PHYs and not single-lane PHYs. Including the diagram also implies that there may be changes to the diagram.

*SuggestedRemedy*

Change title to be: Functional Block Diagram for 10GBASE-R PHYs

Delete the edit made to the paragraph and delete the diagram.

Response Response Status C

ACCEPT.

also see comment 313

CI 74 SC 74.4.1 P107 L7 # 313  
Young, George AT&T

Comment Type TR Comment Status A

The addition of "or other single lane BASE-R PHYs" to this newly differentiated single lane PHY subclause is confusing because this implies, incorrectly, that there are other single lane PHYs other than 10GBASE-KR. There are no other single lane PHYs being put forward or proposed for 40 Gb/s or 100 Gb/s operation at this time.

*SuggestedRemedy*

Keep the new differentiation in the title of this subclause to show single lane PHYs, but revert to the incumbent wording by removing "or other single lane BASE-R PHYs".

Response Response Status W

ACCEPT IN PRINCIPLE.

see response to comment 568

CI 74 SC 74.4.2 P108 L3 # 569  
Booth, Brad AMCC

Comment Type ER Comment Status A

This is confusing throughout the diagram and could be greatly simplified.

*SuggestedRemedy*

Create two new functional diagram blocks. One to show 40GBASE-R and another to show 100GBASE-R.

Response Response Status C

ACCEPT IN PRINCIPLE.

create separate diagrams for 40G and 100G, and make consistent with resolution of comment 648 if necessary.

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

CI 74 SC 74.5.1.2 P110 L7 # 571  
Booth, Brad AMCC

Comment Type TR Comment Status R

FEC\_UNITDATA.request and FEC\_UNITDATA.indicate can be 66 bits wide. Recommend creating a tx\_code-group and rx\_code-group that is 66 bits wide.

*SuggestedRemedy*

Change tx\_bit to be tx\_code-group<0:65>.

Change rx\_bit to be rx\_code-group<0:65>.

Apply change throughout.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

It must be 16 bits to match the 10GBASE-R PMA.

CI 74 SC 74.5.2 P111 L17 # 721  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Style.

*SuggestedRemedy*

Put the second part of the sentence in parenthesis, starting with "so".

Response Response Status C

ACCEPT.

CI 74 SC 74.5.2.1.2 P111 L40 # 296  
Trowbridge, Stephen Alcatel-Lucent

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

The FEC operates on a PCS lane which is 10.3125GBd for 40GBASE-R, but 5.15625GBd for 100GBASE-R

*SuggestedRemedy*

Replace "The PCS sends parallel tx\_bit streams to the FEC at a nominal signaling speed of 10.3125 GBd." with "The 40GBASE-R PCS sends parallel tx\_bit streams to the FEC at a nominal signaling speed of 10.3125 GBd. The 100GBASE-R PCS sends parallel tx\_bit streams to the FEC at a nominal signaling speed of 5.15625GBd."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The commenter is correct and the proposed response is good. Grant editorial licence to harmonize with response to comment 648 if necessary.

CI 74 SC 74.5.2.2.2 P112 L11 # 297  
Trowbridge, Stephen Alcatel-Lucent

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

The FEC operates on a PCS lane which is 10.3125GBd for 40GBASE-R, but 5.15625GBd for 100GBASE-R

*SuggestedRemedy*

Replace "The FEC sends one rx\_bit to the PCS for each rx\_bit from the PMA sublayer. The nominal rate of generation of the FEC\_UNITDATA.indication primitive is 10.3125 GBd." with "The FEC sends one rx\_bit to the PCS for each rx\_bit from the PMA sublayer. The nominal rate of generation of the FEC\_UNITDATA.indication primitive is 10.3125 GBd for 40GBASE-R and 5.15625GBd for 100GBASE-R."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The commenter is correct and the proposed response is good. Grant editorial licence to harmonize with response to comment 648 if necessary.

CI 74 SC 74.7.4.1.1 P114 L37 # 294  
Trowbridge, Stephen Alcatel-Lucent

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

Extra hyphen after reference to Figure 82-10-

*SuggestedRemedy*

Remove the extra hyphen

Response Response Status **C**

ACCEPT.

CI 74 SC 74.7.4.1.2 P114 L27 # 570  
Booth, Brad AMCC

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

Why is there a reverse gearbox for 40G or 100G? Each "lane" has generated a 66-bit wide chunk of data out of the PCS. It doesn't make sense to make this a serial stream and then back down to a 66-bit wide stream.

*SuggestedRemedy*

Change description such that the 40G and 100G PCS map their output directly into the transcoder.

Response Response Status **C**

REJECT.

It needs to be done this way because the 40G and 100G PCS lane service primitives are defined to be bit serial.

CI 74 SC 74.7.4.1.2 P114 L27 # 298  
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

The reverse gearbox function for 40/100GBASE-R doesn't make sense in the way in which it is described. The existence of a physically instantiated XLAUI/CAUI above the FEC isn't visible to the FEC since there is a PMA below the XLAUI/CAUI that delivers to the FEC the same abstract interface as if the interface were adjacent to the PCS. In the 100G case in particular, there is a 10:20 PMA above the FEC which converts the 10 bit-serial lanes from the CAUI to 20 lanes which are delivered to the FEC over an abstract interface.

*SuggestedRemedy*

All that seems required as the contents of 74.7.4.1.2 is "If the FEC is not directly adjacent to the PCS, lane lock is obtained for each PCS lane using the PCS lane lock state diagram shown in Figure 82-10." The PMA does the rest.

Response Response Status C

ACCEPT IN PRINCIPLE.

The gearbox is needed because the service primitive for 40/100GBASE-R is defined to be serial for each lane.

Change last paragraph to read:  
"The internal data-path width from the PCS or PMA is an implementation choice. Depending on the path width, the reverse gearbox function may not be necessary."

CI 74 SC 74.7.4.1.2 P114 L37 # 664  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A

Some garbage in "PCS lane lock state diagram shown in Figure 82-10-."

*SuggestedRemedy*

Clean it up please

Response Response Status C

ACCEPT.

see comment 294

CI 74 SC 74.8 P120 L23 # 572  
Booth, Brad AMCC

Comment Type TR Comment Status A

MDIO register mapping prevents easy read-increment of counters.

*SuggestedRemedy*

Leave registers 1.172-175 alone for 10GBASE-R FEC.

Add new registers for 40G/100G FEC that have corrected block 0-19 in sequential order and uncorrected also in sequential order.

Response Response Status C

ACCEPT IN PRINCIPLE.

also make appropriate corresponding changes in Clause 45.

also see response to comment 552

CI 74 SC 74.9 P123 L48 # 299  
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

The scrambled idle test pattern generated by the 40/100GBASE-R PCS can work without bypassing FEC encode and decode.

*SuggestedRemedy*

Replace "The Clause 82 PCS can also operate in test pattern mode (see 82.2.11)." with "The Clause 82 PCS can also operate in test pattern mode (see 82.2.11), however the scrambled idle test pattern does not require bypassing FEC encode and decode."

Response Response Status C

ACCEPT.



CI 80 SC 4 P134 L36 # 793  
Ofelt, David Juniper Networks

Comment Type ER Comment Status A

Table 80-3 does not reference all relevant sections in Notes for SP2.

*SuggestedRemedy*

The note for SP2 should contain all the references from SP3 in addition to 83.5.3.3

"See 83.5.3.3 or 84.5 or 95.5 or 86.2.2 or 87.3.2 or 88.3.2"

Response Response Status C

ACCEPT IN PRINCIPLE.

Make the following changes to note for SP2 in Table 80-4.

"See 83.5.3.3 or 84.5 or 95.5 or 86.2.2 or 87.3.2 or 88.3.2"

CI 80 SC 4 P134 L9 # 792  
Ofelt, David Juniper Networks

Comment Type ER Comment Status A

Table 80-3 does not reference all relevant sections in Notes for SP2.

*SuggestedRemedy*

The note for SP2 should contain all the references from SP3 in addition to 83.5.3.3

"See 83.5.3.3 or 84.5 or 95.5 or 86.2.2 or 87.3.2 or 88.3.2"

Response Response Status C

ACCEPT.

CI 80 SC 80.1 P126 L34 # 531  
Frazier, Howard Broadcom

Comment Type TR Comment Status A

The footnote figure caption "1 - conditional based on PHY type" can be accurately applied to AN, but not to FEC. FEC is optional regardless of the PHY type.

Interestingly, figure 83A-1 has it right.

*SuggestedRemedy*

Renumber the existing footnote figure caption "2 - conditional based on PHY type", and Add a footnote figure caption "1 - optional", and footnote the FEC sub-layers with this. Ditto for figure 81-1, 82-1, 83-1.

Response Response Status C

ACCEPT IN PRINCIPLE.

Use wording "NOTE1--OPTIONAL OR OMITTED DEPENDING ON PHY TYPE", moving existing NOTE1 to NOTE2 to keep notes in sensible order for figure

CI 80 SC 80.1.1 P125 L13 # 723  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Style.

*SuggestedRemedy*

Delete "mode of" in this sentence.

Response Response Status C

ACCEPT.

CI 80 SC 80.1.1 P125 L7 # 574  
Booth, Brad AMCC

Comment Type E Comment Status A

The use of "The" doesn't read properly.

*SuggestedRemedy*

Remove the first "The".

Response Response Status C

ACCEPT.

CI 80 SC 80.1.1 P125 L8 # 722  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

This paragraph contains a list of 8 Physical Layer entities, with potentially more to come in the future. It would be better to use a reference rather than continue to maintain a long laundry list.

*SuggestedRemedy*

Change the second part of the sentence to read as follows:  
"...such as those specified in Table 80-1."

Response Response Status C  
ACCEPT.

CI 80 SC 80.1.3 P126 L17 # 575  
Booth, Brad AMCC

Comment Type ER Comment Status R

In Figure 80-1, the PCS are described as a 40GBASE-R PCS and a 100GBASE-R PCS. This does not follow the convention previously established.

*SuggestedRemedy*

Change 40GBASE-R PCS and 10GBASE-R PCS to be 64B/66B PCS.

Response Response Status U  
REJECT.

See response to comment #577

CI 80 SC 80.1.3 P126 L48 # 323  
Young, George AT&T

Comment Type TR Comment Status R

Subclause c) states lane counts but does not contain any reference to specific lane data-path widths for XLAUI PMA Service Interface implementations, which is the purpose of listing of exceptions in this subclause. Also pertains to subclause d) for CAUI implementations.

*SuggestedRemedy*

In subclause c), change " ... uses a 4 lane data path ..." to " uses 4 bit-wide lane data paths ...".

In subclause d), change " ... uses a 10 lane data path ..." to " uses 10 bit-wide lane data paths ...".

Response Response Status W  
REJECT.

The existing description sufficiently describes the data path width. The suggested remedy does not provide better clarity.

CI 80 SC 80.1.3 P127 L3 # 219  
Gustlin, Mark Cisco

Comment Type T Comment Status A

This statement is a sub bullet describing mandatory data path widths, but it does not describe the widths directly of the PMDs:

"The MDI as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4 and 100GBASE-CR10, in Clause 86 for 40GBASE-SR4 and 100GBASE-SR10, Clause 87 for 40GBASE-LR4 and in Clause 88 for 100GBASE-LR4 and 100GBASE-ER4."

*SuggestedRemedy*

Change

"The MDI as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4 and 100GBASE-CR10, in Clause 86 for 40GBASE-SR4 and 100GBASE-SR10, Clause 87 for 40GBASE-LR4 and in Clause 88 for 100GBASE-LR4 and 100GBASE-ER4."

To:

"The MDI as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4, in Clause 86 for 40GBASE-SR4, Clause 87 for 40GBASE-LR4, in Clause 88 for 100GBASE-LR4 and 100GBASE-ER4 all uses a 4 lane data path. The MDI as specified in Clause 86 for 100GBASE-SR10 and in Clause 85 for 100GBASE-CR10 all uses a 10 lane data path."

Response Response Status C  
ACCEPT IN PRINCIPLE.

See response to comment #322

**Cl 80**    **SC 80.1.3**    **P127**    **L3**    # **322**  
 Young, George    AT&T

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

Subclause f) does not contain any reference to specific data-path widths for MDI implementations, which is the purpose of listing of exceptions in this subclause.

**SuggestedRemedy**

State specific data-path width constraints for MDI implementations for the clauses cited.

**Response**    **Response Status**    **W**

ACCEPT IN PRINCIPLE.

Response also applies to comment #219

State the data-path widths for MDI implementations.

Change as follows:

f) The MDIs as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4, in Clause 86 for 40GBASE-SR4, in Clause 87 for 40GBASE-LR4, and in Clause 88 for 100GBASE-LR4 and 100GBASE-ER4 all use a 4 lane data path.

g) The MDIs as specified in Clause 85 for 100GBASE-CR10, and in Clause 86 for 100GBASE-SR10 use a 10 lane data path.

**Cl 80**    **SC 80.1.4**    **P127**    **L15**    # **724**  
 Muller, Shimon    Sun Microsystems, Inc

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

Style.

**SuggestedRemedy**

Change the sentence to read as follows:

"The letter R in the port type (e.g. 40GBASE-R or 100GBASE-R) represents a family of physical layer devices using a physical coding sublayer for 40Gb/s or 100Gb/s operation over multiple lanes based on 64B/66B block encoding (see Clause 82)."

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

ACCEPT IN PRINCIPLE.

Change the sentence to read as follows:

"The letter R in the port type (e.g. 40GBASE-R or 100GBASE-R) represents a family of physical layer devices using a physical coding sublayer for 40Gb/s or 100Gb/s operation over multiple PCS lanes based on 64B/66B block encoding (see Clause 82)."

**Cl 80**    **SC 80.1.4**    **P127**    **L19**    # **367**  
 Kipp, Scott    Brocade

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

Doesn't the C stand for Copper, S for Shortwave, L for Longwave and E for Extended? Why don't we create a table to show that?

Does the K stand for backPlane?

Does the R stand for reach?

**SuggestedRemedy**

Add a table with the letter and it's meaning. Another way to do this is to create a diagram and show an example name and how to break it down. See FC-PI-4 for an example.

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

REJECT.

Subclause 80.1.4 defines the nomenclature in text format. What each letter means is explained clearly in this subclause. So a tabular format is not needed.

**Cl 80**    **SC 80.1.4**    **P127**    **L23**    # **324**  
 Young, George    AT&T

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

Nomenclature definition for port type letter S should explicitly recognize support for OM3 multimode fiber operation as specified in the subclause 80.1.2 objectives.

**SuggestedRemedy**

Change "... physical medium of multimode optical fiber ..." to "... physical medium of OM3 multimode optical fiber ...".

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

REJECT.

This comment was WITHDRAWN by the commenter.

This subclause is explaining the nomenclature of the PMDs not providing the specifications. It would be inappropriate to (and the draft does not) list the type of singlemode fibre that the LR4 and ER4 PMDs operate over. Likewise it is inappropriate to specify the multimode fibre type for SR4/10. The 802.3ba objective does not preclude operation over other fibre types than OM3 and there are proposals to include operation over other fibre types in clause 86.

Cl 80 SC 80.1.4 P127 L 30 # 220  
Gustlin, Mark Cisco

Comment Type T Comment Status A

This statement:

"A single lane PMD does not have any numeric suffix in the port type."

Seems strange here since we do not have any single lane PMDs defined.

*SuggestedRemedy*

Change it to

"A single lane PMD would not have any numeric suffix in the port type (though no single lane PMDs are currently defined)."

Or just delete the statement.

Response Response Status C

ACCEPT IN PRINCIPLE.

Response also applies to comment #291

Subclause 80.1.4 defines the nomenclature for 40Gb/s and 100Gb/s physical layers that may include current and any future single lane PMDs.

Change statement as follows:

"No numeric suffix in the port type implies a single lane PMD."

Cl 80 SC 80.1.4 P127 L 30 # 291  
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status A

There is no single lane PMD for 40GBASE-R or 100GBASE-R, so the nomenclature description can indicate how one might be described, but should not say how one is described.

*SuggestedRemedy*

Replace "A single lane PMD does not have any numeric suffix in the port type." with "A single lane PMD would not have any numeric suffix in the port type."

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #220

Cl 80 SC 80.1.5 P128 L 5 # 321  
Young, George AT&T

Comment Type TR Comment Status R

In Table 80-1, the newly created nomenclature "BASE-R FEC" is employed to just denote PHYs that employ only xxGBASE-KRx or xxGBASE-CRx PMDs. The term "BASE-R" is not a good choice for this selective reference to BASE-KR and BASE-CR PMDs, since it fosters confusion with the other generic use of 'xxGBASE-R' to denote the choice any PHY with 64B/66B PCS operation. As shown in this table, Clause 74 "BASE-R FEC" does not pertain to 40GBASE-SR4, 40GBASE-LR4, 100GBASE-SR10, 100GBASE-LR4 or 100GBASE-ER4 PMDs, which are otherwise referred to as 40GBASE-R or 100GBASE-R PHYs. See similar comments against Clauses 45, 69 and 74.

*SuggestedRemedy*

Replace "BASE-R FEC" with "BASE-KR/CR FEC".

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Clause 74 FEC can be used with single lane or multilane BASE-R PHYs. Table 80-1 clearly identifies BASE-R FEC is applicable to KR and CR PMDs.

Cl 80 SC 80.2.5 P129 L 30 # 725  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

See remedy.

*SuggestedRemedy*

Change the second part of the sentence to read as follows:  
"...specified in clauses 84 through 88."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change to read as follows.

"...specified in Clause 84 through Clause 88."

CI 80 SC 80.2.9 P130 L1 # 648  
Ganga, Ilango Intel

Comment Type TR Comment Status A

Inter-sublayer interfaces: In draft 2.0 different inter-sublayer interfaces, all having same or similar definition, are used between sublayers. For example PMA service interface (e.g PMA\_UNIDATA.indicationx etc..) FEC service interface (e.g. FEC\_UNIDATA.indicationx etc..), all use same or similar definition but with different names for defining the primitives.

Since all these service interfaces use same definition, a common inter sublayer interface can be defined and the same interface can be instantiated between sublayers. The naming convention can then include a particular instace of the inter-sublayer service interface.

For example inter-sublayer interface primitives can be generically defined as

IS\_UNIDATA.indicationx  
IS\_UNIDATA.requestx  
IS\_SIGNAL.indication

For example an instance of the inter-sublayer interface can be name as follows:

PMA:IS\_UNIDATA.indicationx  
PMA:IS\_UNIDATA.requestx  
PMA:IS\_SIGNAL.indication

and

FEC:IS\_UNIDATA.indicationx  
FEC:IS\_UNIDATA.requestx  
FEC:IS\_SIGNAL.indication

and

PMD:IS\_UNIDATA.indicationx  
PMD:IS\_UNIDATA.requestx  
PMD:IS\_SIGNAL.indication

*SuggestedRemedy*

Define a generic intersublayer interface in Clause 80 and provide reference in other Clauses that instantiate the inter-sublayer interface.

Supporting document(s) will be presented with detailed text and diagrams. See ganga\_03\_0509.

Response Response Status C

ACCEPT IN PRINCIPLE.

Apply changes to the draft as described in ganga\_04\_0509 with licence granted to editors to modify as appropriate

Response also applies to comment #487

CI 80 SC 80.3 P130 L24 # 726  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

*SuggestedRemedy*

Delete the text in the parenthesis.

Response Response Status C

ACCEPT IN PRINCIPLE.

A reference to Pause needs to be maintained but currently it is unknown as to whether it points to the correct place. Therefore it is better to leave the draft as it is . Also, changes to Annex 31B for 40Gb/s and 100Gb/s operation have been included in P802.3ba per comment #643. Hence it will be relevant to have these references.

Add an Editors note to the draft that says that this reference may change.

CI 80 SC 80.3 P130 L29 # 53  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

Table of delay limits is incomplete; no point bounding all but one items in a link. At present there is no control over delay through the AN. It MIGHT be low, but nothing enforces it.

*SuggestedRemedy*

Add extra sentence "If a PHY contains an Auto-Negotiation sublayer, the delay of the Auto-Negotiation sublayer is included within the delay of the PMD and medium."

Response Response Status C

ACCEPT.

See response to comment #275

CI 80 SC 80.3 P131 L1 # 635  
Ganga, Ilango Intel

Comment Type ER Comment Status A

As per 2009 style manual (See 10.1) normative text and informative text cannot be interspersed. Since this table provides reference to normative delay numbers remove the word informative from Table title.

Add a footnote to table below to state that where there is a difference in delay numbers between this table and the clauses the number defined in the clauses takes precedence over the number defined in the Table 80-2.

*SuggestedRemedy*

Deleted "informative" from table title and add a footnote b to Table 80-2 regarding precedence.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #275

CI 80 SC 80.3 P131 L20 # 55  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

"Includes delay associated with cable medium." is ambiguous. Not clear if it means one way through the cable or both ways. See comment against 85.4 for reasoning.

*SuggestedRemedy*

Change to "Includes delay of one direction through cable medium."

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #275

CI 80 SC 80.3 P131 L20 # 54  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

The 40GBASE-CR4 delay limit is 64 ns. If 10 m cables for 40GBASE-CR4 made sense (which appears too difficult for a reasonable cost- and power-effective implementation), the cable would take 50 ns each way.

The 100GBASE-CR10 delay limit is 25.6 ns.

An over-the-top equaliser for a very difficult channel (e.g. digital MMSE) will need extra delay time.

If we had seen the numbers in normal time units we could have picked up on this before.

*SuggestedRemedy*

1. Increase the CRn delay limits.
2. Add a column with the delays in ns.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #275

CI 80 SC 80.3 P131 L5 # 528  
Frazier, Howard Broadcom

Comment Type TR Comment Status A

In table 80-2, the delay constraint for the 40G MAC, RS and MAC Control is needlessly tight. At 10G, the delay constraint was 16 pause quanta, or 8192 BT. For 40G, draft D2 allows only 10 pause quanta, or 5120 BT. It is hard to see how a 40G implementation is going to be able to react in a shorter number of pause quanta than a 10G implementation, given that data path widths and state machine clock frequencies are not likely to scale exactly linearly, and certainly won't scale super-linearly.

It would make better sense to allow a longer reaction time at 40G, relative to 10G.

*SuggestedRemedy*

Increase the delay constraint on the 40G MAC, RS and MAC Control to 32 pause quanta, or 16384 BT, to allow for a broader range of implementations.

Response Response Status U

ACCEPT IN PRINCIPLE.

Change the 40 Gb/s MAC, RS, and MAC Control delay to 20 pause\_quanta and the 100 Gb/s MAC, RS, and MAC Control delay to 48 pause\_quanta.

See response to comment #275

CI 80 SC 80.3 P131 L5 # 576  
Booth, Brad AMCC

Comment Type ER Comment Status A

Table 80-2 is difficult to read and could be simplified.

*SuggestedRemedy*

Group the 40G delay constraints at the top and the 100G delay constraints at the bottom.

Response Response Status C

ACCEPT.

Also see comment #275 that suggests other changes to the Table 80-2

CI 80 SC 80.4 P132 L51 # 727  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Page:132, 133

Line:51-53, 1-3

The description of the skew point locations is quite confusing.

*SuggestedRemedy*

Change the two paragraphs to read as follows:

"In the transmit direction, the skew points are located as follows. SP1 is located on the XLAUI/CAUI interface at the input of the PMA closest to the PMD.

SP2 is located on the PMD Service Interface at the input of the PMD itself.

SP3 is located at the output of the PMD at the MDI.

In the receive direction, the skew points are located as follows. SP4 is located at the MDI at the input of the PMD. SP5 is located on the PMD Service Interface at the output of the PMD. SP6 is located on the XLAUI/CAUI interface at the output of the PMA closest to the PCS."

Response Response Status C

ACCEPT.

CI 80 SC 80.4 P134 L1 # 429  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Tables 80-3 and 80-4 are listed as Informative.

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

Tables 80-3 and 80-4 are actually summary tables that are just listed as "informative."

*SuggestedRemedy*

Change title of 80-3 to

"Table 80-3-Summary of skew constraints"

Change title of 80-4 to

"Table 80-4-Skew Variation constraints"

Add the following footnote to each table-

"In cases of conflict between values cited in this table and values noted in cited clauses per skew point, the values in the cited clauses shall override the values cited in this summary table."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the title of Table 80-3 to:

"Table 80-3-Summary of Skew constraints"

Add the following footnote to Table 80-3:

"Should there be a discrepancy between this table and the Skew requirements of the relevant sublayer clause, the sublayer clause prevails."

Change the title of Table 80-4 to

"Table 80-4-Summary of Skew Variation constraints"

Add the following footnote to Table 80-4:

"Should there be a discrepancy between this table and the Skew Variation requirements of the relevant sublayer clause, the sublayer clause prevails."

**Cl 80**    **SC 80.4**                      **P134**        **L33**                      # **728**  
Muller, Shimon                              Sun Microsystems, Inc

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

Page:134  
Line:33-45  
There are three values missing in the fourth column.

**SuggestedRemedy**  
Fill in the missing values.

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

ACCEPT IN PRINCIPLE.

Replace blank cells with N/A.

**Cl 80**    **SC Table 80-2**                      **P131**        **L4**                      # **108**  
Bergmann, Ernest                              Circadian/JDSU

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

There is a footnote, a, describing bit time, there needs to be a footnote for pause\_quanta as well.

**SuggestedRemedy**  
Add a footnote, "b" after "(pause\_quanta)" and place at bottom of Table:

"b<sup>super</sup>Note that for 40GBASE-R, 1 pause quanta is 12.8 ns and for 100GBASE-R, 1 pause\_quanta is equal to 5.12 ns. (see 31B.2 for the definition of pause\_quanta.)

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

ACCEPT IN PRINCIPLE.

31B.2 provides the definition of pause\_quanta:

"The pause\_time is measured in units of pause\_quanta, equal to 512 bit times of the particular implementation"

See response to comment #275

**Cl 81**    **SC 81.1**                              **P137**        **L49**                      # **729**  
Muller, Shimon                              Sun Microsystems, Inc

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

The term "parallel serial encodings" sounds like a contradiction in terms.

**SuggestedRemedy**  
Replace "parallel serial encodings" with "multi-lane serialized encodings."

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

ACCEPT IN PRINCIPLE.  
Replace  
"parallel serial encodings"  
with  
"multi-lane serial encodings."

**Cl 81**    **SC 81.1.4**                              **P138**        **L38**                      # **730**  
Muller, Shimon                              Sun Microsystems, Inc

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

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

**SuggestedRemedy**  
Delete the text in the parenthesis.

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

ACCEPT IN PRINCIPLE.  
Delete the text in the parenthesis and also add a reference to 80.3



CI 81 SC 81.1.4 P138 L52 # 529  
 Frazier, Howard Broadcom

Comment Type TR Comment Status A

In table 81-1, the delay constraint for the 40G MAC, RS and MAC Control is needlessly tight. At 10G, the delay constraint was 16 pause quanta, or 8192 BT. For 40G, draft D2 allows only 10 pause quanta, or 5120 BT. It is hard to see how a 40G implementation is going to be able to react in a shorter number of pause quanta than a 10G implementation, given that data path widths and state machine clock frequencies are not likely to scale exactly linearly, and certainly won't scale super-linearly.

It would make better sense to allow a longer reaction time at 40G, relative to 10G.

*SuggestedRemedy*

Increase the delay constraint on the 40G MAC, RS and MAC Control to 32 pause quanta, or 16384 BT, to allow for a broader range of implementations.

Response Response Status U

ACCEPT IN PRINCIPLE.

Change the 40 Gb/s MAC, RS, and MAC Control delay to 20 pause\_quanta and the 100 Gb/s MAC, RS, and MAC Control delay to 48 pause\_quanta.

See Response to comment 275.

CI 81 SC 81.3.2.1 P148 L14 # 300  
 Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status R

The Rx clock recovered from the received signal must be used unless there is failure of the received signal.

*SuggestedRemedy*

Replace "The frequency of RX\_CLK may be derived from the received data or it may be that of a nominal clock (e.g., TX\_CLK). When the received data rate at the PHY is within tolerance, the RX\_CLK frequency shall be one sixty-fourth of the MAC receive data rate.

There is no need to transition between the recovered clock reference and a nominal clock reference on a frame-by-frame basis. If loss of received signal from the medium causes a PHY to lose the recovered RX\_CLK reference, the PHY shall source the RX\_CLK from a nominal clock reference." with

"The frequency of RX\_CLK is normally derived from the received data, and shall be one sixty-fourth of the MAC receive data rate. If loss of received signal from the medium or the received data is not with within tolerance, the PHY shall source the RX\_CLK from a nominal clock reference.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

This is not true, differences in the clocks can be made up for by deleting or inserting idles at the MII.

CI 81 SC 81.3.2.3 P150 L54 # 731  
 Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Typo.

*SuggestedRemedy*

Replace "an that" with "that an".

Response Response Status C

ACCEPT.

CI 81 SC 81.3.4 P152 L47 # 301  
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

According to Figure 82-5 and the first paragraph of 81.3.4 (... padding the upper 4 bytes with 0's), the upper 4 bytes of an ordered set cannot contain any value but zero.

*SuggestedRemedy*

In the 4th row of Table 81-5 (below the heading) for lanes 4 through 7, replace ">=0x00" with simply "0x00"

Response Response Status C

ACCEPT.

CI 81 SC Figure 81-1 P137 L25 # 109  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

[2 places] The FEC is optional.

*SuggestedRemedy*

Replace footnote 1 with a second footnote. [2 places]; make it "footnote 2"

add at bottom of Figure add:  
"NOTE2--OPTIONAL, CONDITIONAL ON PHY TYPE"

Response Response Status C

ACCEPT IN PRINCIPLE.

Use wording "NOTE1--OPTIONAL OR OMITTED DEPENDING ON PHY TYPE", moving existing NOTE1 to NOTE2 to keep notes in sensible order for figure

CI 82 SC 2.4.8 P171 L32 # 111  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

"Since packets may be any length, .." is an exaggeration!

*SuggestedRemedy*

Replace with:  
"Since the number of bytes in a packet varies, .."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change:  
"Since packets may be any length"  
To:  
"Since packets vary in length"

CI 82 SC 2.5 P172 L16 # 794  
Ofelt, David Juniper Networks

Comment Type TR Comment Status A

The bit assignments for the data and sync header in tx\_coded<65:0> do not match what the ENCODE function (82.2.19.2.3) indicates.

*SuggestedRemedy*

Assuming that ENCODE is correct then tx\_coded<63:0> is the data part and is sent to the scrambler and the two high-order sync bits bypass the scrambler (tx\_coded<65:64>).

Change the text to:

"tx\_coded<65:64> contains the sync header and the remainder of the bits contain the block payload"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change:  
"ENCODE(tx\_raw<71:0>)"  
Encodes the 72-bit vector returning tx\_coded<65:0> of which tx\_coded<63:0> is sent to the scrambler."  
To:  
"ENCODE(tx\_raw<71:0>)"  
Encodes the 72-bit vector returning tx\_coded<65:0> of which tx\_coded<65:2> is sent to the scrambler."

CI 82 SC 2.6 P172 L23 # 795  
Ofelt, David Juniper Networks

Comment Type TR Comment Status A

For clarity, I think a comment should be added to this section that indicates that the sync headers are not scrambled- only tx\_coded<63:0>

SuggestedRemedy

Change the text to read:

"The payload, tx\_coded<63:0>, is scrambled with a self-synchronizing scrambler. The scrambler ... the scrambler. The sync bits, tx\_coded<65:64> are not scrambled.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change:

"The payload of the block is scrambled with a self-synchronizing scrambler. The scrambler is identical to the scrambler used in Clause 49, see 49.2.6 for the definition of the scrambler."

To:

"The payload, tx\_coded<65:2>, is scrambled with a self-synchronizing scrambler. The scrambler is identical to the scrambler used in Clause 49, see 49.2.6 for the definition of the scrambler. The sync bits, tx\_coded<1:0> are not scrambled.

CI 82 SC 2.7 P172 L29 # 796  
Ofelt, David Juniper Networks

Comment Type TR Comment Status A

The text indicates that the data is distributed in a round-robin fashion and the figure shows this is from the lowest to the highest links, but I think this should be made explicit in the text.

SuggestedRemedy

Change the text to read:

Once the data is encoded and scrambled, it is distributed to multiple lanes, 66-bit blocks at a time in a round-robin distribution from the lowest to the highest numbered PCS lanes.

Response Response Status C

ACCEPT.

CI 82 SC 2.8 P173 L4 # 797  
Ofelt, David Juniper Networks

Comment Type TR Comment Status A

I do not believe it is stated in the text that the alignment markers use the control word sync header. It is shown in figure 82-9, just not in the text.

SuggestedRemedy

Add text to state that the alignment characters have a control-type sync header.

One suggestion for the second sentence of 82.2.8:

"The alignment marker has the form of a specially defined 66-bit block with a control-type sync header".

Response Response Status C

ACCEPT IN PRINCIPLE.

"The alignment marker has the form of a specially defined 66-bit block with a control block sync header".

CI 82 SC 2.8 P174 L17 # 236  
Szczepanek, Andre Harwood & Szczepane

Comment Type E Comment Status A

"As an example, the lane marker for 100GBASE-R lane number 0 is sent as (left most bit sent first):  
10100000110001011010000100 BIP3 011111001110100101111011 BIP7"

For the sake of readability put a space character between sync bit field and the m0/m1/m2 field. This makes it easy to check the example against the table without being confused by the extra 2 leading digits. This really threw me when I tried to check the example.

SuggestedRemedy

Change to :

"As an example, the lane marker for 100GBASE-R lane number 0 is sent as (left most bit sent first):  
10 100000110001011010000100 BIP3 011111100111010010111011 BIP7"

Response Response Status C

ACCEPT.

Cl 82 SC 82..2.19.2.2 P178 L29 # 339  
Estes, Dave UNH - IOL

Comment Type E Comment Status A

The definition for alignment\_valid is confusing.

*SuggestedRemedy*

Change the sentence to "It is valid when each lane is in am\_lock, with each lane locked to a unique alignment marker from Table 82-2, and when all lanes are deskewed."

Response Response Status C

ACCEPT.

Cl 82 SC 82.1.4 P163 L16 # 325  
Young, George AT&T

Comment Type TR Comment Status A

The definition of PCS Lane abbreviated 'PCSL' was added in Clause 1.4 as "In 40GBASE-R and 100GBASE-R, the PCS distributes encoded data to multiple logical lanes, these logical lanes are called PCS lanes". The term is not employed in Clause 82 until subclause 82.2.7 and following that sporadically interchanged with just "lane". Ensure throughout Clause 82 that usage of PCSL term is consistent.

*SuggestedRemedy*

Change "... 10.3125 Gtransfers/s per lane," to "... 10.3125 Gtransfers/s per PCS Lane," Similarly on line 18 change "... 5.15625 Gtransfers/s per lane," to "... 5.15625 Gtransfers/s per PCS lane,".

Response Response Status W

ACCEPT IN PRINCIPLE.

Make suggested change and editorial license to search for other instances and make the appropriate changes.

Cl 82 SC 82.1.6 P163 L32 # 41  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

This says: "Figure 82-2 provides a functional block diagram of the 40GBASE-R PHY and 100GBASE-R PHY" but the block diagram is only really of the functions of the PCS

*SuggestedRemedy*

Change "Figure 82-2 provides a functional block diagram of the 40GBASE-R PHY and 100GBASE-R PHY" to "Figure 82-2 provides a functional block diagram of the 40GBASE-R PCS and 100GBASE-R PCS"

Response Response Status C

ACCEPT.

Cl 82 SC 82.1.6 P163 L32 # 732  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The functional block diagram on Figure 82-2 is specific to the PCS and not the PHY in general.

*SuggestedRemedy*

Replace "PHY" with "PCS" in two places.

Response Response Status C

ACCEPT.  
Dupe of #41

Cl 82 SC 82.1.6 P164 L31 # 578  
Booth, Brad AMCC

Comment Type TR Comment Status A

In Figure 82-2, there is no inference of FEC\_UNITDATA.request or .indicate. These service primitives should be equivalent.

*SuggestedRemedy*

Provide some form of indication that these service primitives are equivalent.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See the resolution for #487 and #648. 648 and 487 have larger scopes but should resolve this concern.

CI 82 SC 82.2.11 P176 L13 # 38  
 Anslow, Peter Nortel Networks

Comment Type T Comment Status A

This clause does not say how the test pattern is controlled or where the error counters are (as is done in clause 83.5.10)

Note, there is a comment against clause 45.2.3.15 stating that a control bit for scrambled idle should be defined there.

*SuggestedRemedy*

Add text to the clause to define (if MDIO is implemented) how the test pattern is controlled and that the error counters are in register 3.43 defined in 45.2.3.16.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add in the following paragraph as the 3rd paragraph in this sub-clause:

"If a Clause 45 MDIO is implemented, then control of the test pattern generation is from the BASE-R PCS test-pattern control register (register 3.42.3)."

Also add in the following paragraph in this sub-clause 82.2.18:

"If a Clause 45 MDIO is implemented, then control of the test pattern reception is from the BASE-R PCS test-pattern control register (register 3.42.2). In addition errors are counted in the BASE-R PCS test-pattern error counter register (3.43.15:0)"

CI 82 SC 82.2.12 P176 L29 # 304  
 Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

Data is passed upward from the PMA via the PMA\_UNITDATA.indication primitive rather than the PMA\_UNITDATA.request primitive.

*SuggestedRemedy*

Replace "4 or 20 PMA\_UNITDATA.request primitives" with "4 or 20 PMA\_UNITDATA.indication primitives"

Response Response Status C

ACCEPT.

Dupe of #739

CI 82 SC 82.2.12 P176 L29 # 739  
 Muller, Shimon Sun Microsystems, Inc

Comment Type T Comment Status A

The receive channel uses "indication" primitives rather than "requests". Also, the next sentence is confusing.

*SuggestedRemedy*

- Replace "PMA\_UNITDATA.request" with "PMA\_UNITDATA.indication".
- Replace "...concatenating requests with the bits of..." with "...concatenating the bits from the indications of...".

Response Response Status C

ACCEPT.

CI 82 SC 82.2.14 P177 L3 # 380  
 Kipp, Scott Brocade

Comment Type T Comment Status R

It says: PCS transmit lanes can be received on different lanes than they were originally transmitted on due to skew and multiplexing, and so the receive PCS shall handle receiving any transmit lane on any receive lane.

How can skew cause a lane change?

Why do we need this flexibility?

How difficult is it to add the flexibility of receiving any lane in any position?

*SuggestedRemedy*

Remove the skew reason.

Remove the whole sentence and require a lane to be received on the proper lane. This will create logic and test cases that are unnecessary. How many test cases does a tester need to have to prove this?

Response Response Status C

REJECT.

It is the combination of skew and muxing that can cause lanes to move, today this is only an issue for 100GE with the gearbox. This is part of the agreed upon behavior.

**Cl 82**    **SC 82.2.15**    **P177**    **L15**    # **39**  
 Anslow, Peter    Nortel Networks

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

This says "The appropriate MDIO register is incremented for each BIP bit in error".  
 Which are the appropriate registers?

Note, there is a comment against clause 45.2.3.16 to create these registers somewhere in clause 45

**SuggestedRemedy**

When per lane PCS error count registers are defined, add their register numbers and defining clause here.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

The appropriate MDIO register is incremented for each BIP bit in error.

To:

If a Clause 45 MDIO is implemented, then the appropriate BIP error counter register is incremented for each BIP bit in error (registers 3.90 through 3.99)."

In addition add the appropriate entry to table 82-7 "MDIO mapping"

**Cl 82**    **SC 82.2.15**    **P177**    **L7**    # **524**  
 Healey, Adam    LSI Corporation

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

It should be made clear that, once am\_lock is TRUE, the block corresponding to am\_timer\_done equal to TRUE should be deleted whether it is a valid alignment marker or not. One could interpret the text to mean that if it does not match the alignment marker (due to bit error for example), it should not be deleted which would lead to corruption of the demultiplexed data. Repeated alignment marker errors will result in am\_lock being set to false, but until that happens it should be sufficient to delete the block in the alignment marker position, whatever that block may be.

**SuggestedRemedy**

Clarify text accordingly.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

Change:

"After all lanes are aligned and deskewed, the lanes are multiplexed together in the proper order to reconstruct the original stream of blocks and the alignment markers are deleted from the data stream. The difference in rate from the deleted alignment markers is compensated for by inserting idles by a function in the Receive process."

To:

"After all lanes are aligned and deskewed, the lanes are multiplexed together in the proper order to reconstruct the original stream of blocks and the alignment markers are deleted from the data stream. The difference in rate from the deleted alignment markers is compensated for by inserting idles by a function in the Receive process. Note that an alignment marker is always deleted when a given PCS Lane is in am\_lock=true even if it does not match the expected alignment marker value (due to bit error for example). Repeated alignment marker errors will result in am\_lock being set to false for a given PCS Lane, but until that happens it is sufficient to delete the block in the alignment marker position."

**Cl 82**    **SC 82.2.18**    **P177**    **L42**    # **56**  
 Dawe, Piers    Avago Technologies

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

Now that we have BIP8, counting errors can be done conveniently using it, possibly with lower power, and less extra high-speed circuitry.

**SuggestedRemedy**

Say that using the BIP8 feature to count errored chunks as normal is an adequate implementation for the test-pattern checker.

**Response**    **Response Status C**

REJECT.

I don't think that they are equivalent. The idle pattern checker will count each block that is in error, the BIP would miss many blocks that are in error.

Cl 82 SC 82.2.19.2.2 P178 L22 # 338  
 Estes, Dave UNH - IOL  
 Comment Type E Comment Status A  
 first\_am is not in alphabetical order.  
 SuggestedRemedy  
 Reorder the list to put first\_am in the correct order.  
 Response Response Status C  
 ACCEPT.

Cl 82 SC 82.2.19.2.2 P178 L41 # 740  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type E Comment Status A  
 Make the definition of this variable consistent with the definition of am\_lock.  
 SuggestedRemedy  
 Replace "For all n in am\_lock<n>" with "For all x in am\_lock<x>".  
 Response Response Status C  
 ACCEPT.

Cl 82 SC 82.2.19.2.2 P178 L43 # 741  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type T Comment Status A  
 The am\_timer is not really a timer. Timers measure absolute time rather than counting events. Therefore, this variable should be defined as a counter.  
 SuggestedRemedy  
 Change the definition of this variable as follows:  
 "am\_counter  
 This counter counts 16383 66b blocks that separate two consecutive alignment markers."  
 Same comment applies to:  
 - Page 178, lines 45-46.  
 - Page 185, lines 15, 27, 30, 39.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Agree, one other change is to move the definition of the counter down to page 181 with the other counter definitions.

Cl 82 SC 82.2.19.2.2 P179 L12 # 742  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type E Comment Status A  
 Typo.  
 SuggestedRemedy  
 Replace "dekew" with "deskew".  
 Response Response Status C  
 ACCEPT.

Cl 82 SC 82.2.19.2.2 P179 L26 # 340  
 Estes, Dave UNH - IOL  
 Comment Type E Comment Status A  
 "one XLGMII/CGMII transfers" should be "one XLGMII/CGMII transfer"  
 SuggestedRemedy  
 Change transfers to transfer  
 Response Response Status C  
 ACCEPT.

Cl 82 SC 82.2.19.2.3 P180 L14 # 743  
 Muller, Shimon Sun Microsystems, Inc  
 Comment Type TR Comment Status A  
 R\_BLOCK\_TYPE is not a function. It is rather the result returned by R\_TYPE and R\_TYPE\_NEXT functions. A function cannot return another function as a result.  
 SuggestedRemedy  
 - The current definition of R\_BLOCK\_TYPE should become the definition of actions taken by the R\_TYPE and R\_TYPE\_NEXT functions.  
 - Define R\_BLOCK\_TYPE as a bit-vector variable with a reference to the function definition.  
 Response Response Status C  
 ACCEPT.  
 Implement the solution as outlined in gustlin\_06\_0509.

CI 82 SC 82.2.19.2.3 P180 L21 # 744  
Muller, Shimon Sun Microsystems, Inc

Comment Type **TR** Comment Status **A**  
Block type field of 0x55 is not defined anywhere.

SuggestedRemedy  
Delete item c).

Response Response Status **C**  
ACCEPT.

CI 82 SC 82.2.19.2.3 P180 L21 # 305  
Trowbridge, Stephen Alcatel-Lucent

Comment Type **TR** Comment Status **A**  
Block type 0x55 is not allowed per Figure 82-5.

SuggestedRemedy  
Delete "c) A block type field of 0x55."

Response Response Status **C**  
ACCEPT.  
Dupe of 744.

CI 82 SC 82.2.19.2.3 P180 L40 # 745  
Muller, Shimon Sun Microsystems, Inc

Comment Type **TR** Comment Status **A**  
T\_BLOCK\_TYPE is not a function. It is rather the result returned by the T\_TYPE function. A function cannot return another function as a result.

SuggestedRemedy  
- The current definition of T\_BLOCK\_TYPE should become the definition of actions taken by the T\_TYPE function.  
- Define T\_BLOCK\_TYPE as a bit-vector variable with a reference to the function definition.

Response Response Status **C**  
ACCEPT.  
Implement the solution as detailed in gustlin\_06\_0509.

CI 82 SC 82.2.19.2.4 P181 L20 # 218  
Gustlin, Mark Cisco

Comment Type **TR** Comment Status **A**  
Change:  
"Count of the number of invalid sync headers checked within the current 64 or 1024 block window."  
To:  
"Count of the number of invalid sync headers within the current 64 or 1024 block window."

SuggestedRemedy  
As above.

Response Response Status **C**  
ACCEPT.

CI 82 SC 82.2.19.2.4 P181 L9 # 40  
Anslow, Peter Nortel Networks

Comment Type **T** Comment Status **A**  
Clause 45.2.3.12.3 defines a BER counter for 10/40/100GBASE-R which uses the ber\_count variable in 49.2.14.2. This clause does not point to 49.2.14.2 to define this function and this is a 20 bit counter rather than six, so this counter should be defined here.

Note, there is a comment against clause 49.2.14.2 to add a reference there to this clause for the definition of the ber\_count variable for 40/100GBASE-R

SuggestedRemedy  
Add a counter:  
ber\_count:  
20-bit counter that counts each time BER\_BAD\_SH state is entered. This counter is reflected in MDIO register bits 3.33.13:8 and 3.44.13:0.

Response Response Status **C**  
ACCEPT.



CI 82 SC 82.2.19.3 P182 L6 # 746  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

State diagrams are too important to be scattered around and be referenced to in different portions of the standard. It would greatly help "making it easy for the reader to select the relevant specification" (from our 5-criteria) if all the relevant state diagrams were in one place.

*SuggestedRemedy*

Copy the Transmit state diagram from Figure 49-14 to this clause.

Response Response Status C

ACCEPT.  
We originally deleted it to remove redundancy.

CI 82 SC 82.2.19.3 P184 L # 341  
Estes, Dave UNH - IOL

Comment Type E Comment Status A

Figure 82-10

The text to the upper right of TEST\_SH2 is difficult to read

*SuggestedRemedy*

Move the text above the transition arrow

Response Response Status C

ACCEPT.

CI 82 SC 82.2.19.3 P184 L39 # 580  
Booth, Brad AMCC

Comment Type ER Comment Status A

Violation of state machine conventions. Merging of exit branches of a state machine is only valid if the conditions for all those branches are the same.

*SuggestedRemedy*

Add branches for each unique condition.

This applies to all state machines in 802.3ba.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Re-draw the SMS to to comply with the convention. Applies to 82-10 and 82-13.

Add the following to clause 80.5:

Multiple states of a function that have a transition to a common state utilizing different qualifiers (for example, multiple exit conditions to an IDLE or WAIT state) may be indicated by a shared arrow. An exit transition arrow must connect to the shared arrow, and the qualifier must be met prior to termination of the transition arrow on the shared arrow. The shared arrow has no qualifier

CI 82 SC 82.2.19.3 P187 L15 # 750  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

I believe this state diagram is flawed with regard to the BER\_TEST\_SH state. The state misses an exit condition for the case when: sh\_valid \* !xus\_timer\_done. This is a normal case when the synch header was valid before the timer popped, and the state machine should WAIT FOR THE NEXT HEADER (ber\_test\_sh=true) before the next evaluation for the synch header is performed.

The problem here is that when this condition is encountered, no transition is made out of this state, and the synch header will be continuously evaluated, resulting in premature evaluation and a wrong transition taken to BER\_BAD\_SH.

*SuggestedRemedy*

- Add a new BER\_TEST\_SH\_WAIT state to the diagram.
- The new state has no actions.
- Add a transition from BER\_TEST\_SH to BER\_TEST\_SH\_WAIT where the qualifying condition is sh\_valid \* !xus\_timer\_done.
- Add a transition from BER\_TEST\_SH\_WAIT to BER\_TEST\_SH where the qualifying condition is ber\_test\_sh.

Response Response Status C

ACCEPT.  
Implement the SM changes that are in gustlin\_06\_0509.

CI 82 SC 82.2.2 P163 L52 # 326  
 Young, George AT&T

Comment Type TR Comment Status A

The width of the individual PCS lane data paths is not specified.

*SuggestedRemedy*

Change "... the PCS uses a 4-lane or 20-lane wide data path ..." to "...the PCS uses a 4-lane or 20-lane bit-wide data path ...".

Response Response Status W

ACCEPT IN PRINCIPLE.

Change:

"When communicating with the PMA, the PCS uses a 4-lane or 20-lane wide data path that conveys 4 or 20 streams of encoded bits."

To:

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

CI 82 SC 82.2.2 P163 L53 # 221  
 Gustlin, Mark Cisco

Comment Type E Comment Status A

Footnote 5 should appear on the same page as the sentence it refers back to.

*SuggestedRemedy*

Fix it

Response Response Status C

ACCEPT.

CI 82 SC 82.2.2 P164 L54 # 733  
 Muller, Shimon Sun Microsystems, Inc

Comment Type T Comment Status A

The note implies that the entire PMA interface operates using a common clock, which may not necessarily be the case.

*SuggestedRemedy*

Replace the note to read as follows:

"These streams may be derived from a common clock in each direction, but can vary in phase and skew dynamically."

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace the note with:

"These streams originate from a common clock in each direction, but may vary in phase and skew dynamically."

CI 82 SC 82.2.2 P165 L7 # 734  
 Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

Need to be more precise and clarify that block synchronization is performed on each lane independently.

*SuggestedRemedy*

Replace the latter part of the sentence from "...synchronization headers on all lanes" with "...synchronization headers on each one of the lanes".

Response Response Status C

ACCEPT.

CI 82 SC 82.2.3 P165 L33 # 302  
 Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

The FEC sublayer uses the block format and sync headers if necessary to align when FEC is not adjacent to the PCS (e.g., below a XLAUI/CAUI).

*SuggestedRemedy*

Delete the sentence "Blocks are unobservable and have no meaning outside the PCS.", as blocks are observable and have meaning to FEC.

Response Response Status C

ACCEPT.

CI 82 SC 82.2.4.3 P167 L33 # 735  
 Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Typo.

*SuggestedRemedy*

Insert "is" between "that" and "always".

Response Response Status C

ACCEPT.

CI 82 SC 82.2.4.3 P170 L # 342  
Estes, Dave UNH - IOL

Comment Type T Comment Status A  
Figure 82-5

The character type Z is undefined but used in the Control Block Format ODDDZZZZ.

*SuggestedRemedy*

Define the Z character type in subclause 82.2.4.1.

Response Response Status C  
ACCEPT.

CI 82 SC 82.2.4.3 P170 L # 343  
Estes, Dave UNH - IOL

Comment Type T Comment Status A  
Figure 82-5

There are 8 empty single bit fields for block type 0x87, there should only be 7.

*SuggestedRemedy*

Remove one of the empty single bit fields.

Response Response Status C  
ACCEPT.

CI 82 SC 82.2.4.4 P169 L10 # 579  
Booth, Brad AMCC

Comment Type E Comment Status A  
Improper hyphenation.

*SuggestedRemedy*

Prevent hyphenation of XLGMII and 100GBASE-R. Check hyphenation throughout draft.

Response Response Status C  
ACCEPT.

Need to understand how to prevent FM from doing this going forward?

CI 82 SC 82.2.4.4 P169 L12 # 327  
Young, George AT&T

Comment Type T Comment Status A  
Baseline agreement on OTN compatibility agreed to "considered as an error" as stronger wording.

*SuggestedRemedy*

Change "... treated as an error ..." to "... considered as an error ...".

Response Response Status C  
ACCEPT IN PRINCIPLE.

Change:

"shall not be transmitted and shall be treated as an error if received"

To:

"shall not be transmitted and shall be considered an error if received"

CI 82 SC 82.2.4.4 P169 L8 # 336  
Estes, Dave UNH - IOL

Comment Type E Comment Status A  
The ) should not be there

*SuggestedRemedy*

Remove the )

Response Response Status C  
ACCEPT.

Cl 82 SC 82.2.4.4 P170 L2 # 582  
Booth, Brad AMCC

Comment Type TR Comment Status A

Any change to the coding specified in Figure 82-5 must be coordinated with ITU-T Study Group 15.

WHAT????!!!

Seriously, you cannot write that into a draft standard as text. Editor's note maybe, but once the standard is done, how is someone supposed to interpret this?

SuggestedRemedy

Move to an editor's note that is removed upon publication of the standard.

Response Response Status C

ACCEPT IN PRINCIPLE.

The IEEE P802.3ba 40 Gb/s and 100 Gb/s Ethernet Task Force has adopted an objective to "Provide appropriate support for OTN". In May, 2008 a baseline proposal was adopted to satisfy this objective (see slides 58-69 of BaselineSummary\_0708).

Though the current 'must' wording could be interpreted the same as a shall, and seeing that there is no PIC related to this statement, the following re-wording is proposed:

From:

"The mapping of 40GBASE-R PCS into OPU3 specified in ITU-T Recommendation G.709 depends on the set of control block types shown in Figure 82-5. Any change to the coding specified in Figure 82-5 must be coordinated with ITU-T Study Group 15."

To:

Put this statement in a warning box (similar to the one in clause 4.4.2).

"Warning: The mapping of 40GBASE-R PCS into OPU3 specified in ITU-T Recommendation G.709 depends on the set of control block types shown in Figure 82-5. Any deviation from the coding specified in Figure 82-5 will break the mapping and may prevent 40GBASE-R PCS from being mapped into OPU3."

Cl 82 SC 82.2.4.5 P170 L39 # 303  
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

Block types not shown in Figure 82-5 are not "reserved", they are "invalid"

SuggestedRemedy

Replace "b) The block type field contains a reserved value." with "b) The block type field contains an invalid value (one not appearing in Figure 82-5)."

Response Response Status C

ACCEPT.

Cl 82 SC 82.2.4.8 P171 L32 # 736  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Typo.

SuggestedRemedy

Insert "of" between "be" and "any".

Response Response Status C

ACCEPT.

Cl 82 SC 82.2.4.8 P171 L34 # 337  
Estes, Dave UNH - IOL

Comment Type E Comment Status A

The statement "A valid end of packet occurs when a block containing a /T/ is followed by a control block that does not contain a /T/" is inaccurate. A /T/ followed by an /E/ or invalid block is not valid.

SuggestedRemedy

Change the sentence to:

"A valid end of packet occurs when a block containing a /T/ is followed by a valid control block that does not contain a /T/ or an /E/"

Response Response Status C

ACCEPT.

CI 82 SC 82.2.5 P172 L53 # 737  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

This is the only place in this standard that I could find that defines the rules for Idle deletion for marker insertion. This key functionality cannot be buried in a note that is not considered to be part of the standard itself or binding.

*SuggestedRemedy*

Change the text in the note to read as follows, and move it either to the end of the first paragraph in 82.2.5, or create a new paragraph right after it:  
"There are sufficient idles to delete in order to make room for alignment markers, in addition to handling clock compensation. The precise idle deletion algorithm is implementation-specific, however an implementation shall ensure that at least eight //s or /Q/s are removed for every 16383 transfers over the XLGMII/CGMII. See 82.2.8 for more details."

Response Response Status C

ACCEPT IN PRINCIPLE.

Add the following to the first paragraph of 82.2.5.

"There are sufficient idles to delete in order to make room for alignment markers, in addition to handling clock compensation. Idles or sequence ordered sets are removed, if necessary, to accommodate the insertion of the 66b alignment markers. See 82.2.4.6 for more details."

CI 82 SC 82.2.8 P174 L14 # 368  
Kipp, Scott Brocade

Comment Type E Comment Status A

100GBASER-R is incorrect

*SuggestedRemedy*

Change to 100GBASE-R

Response Response Status C

ACCEPT.

CI 82 SC 82.2.8 P174 L17 # 738  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

Clarity.

*SuggestedRemedy*

Add spaces between octet boundaries in the bit stream.

Same comment applies to:

- Page 175, line 47.

Response Response Status C

ACCEPT.

CI 82 SC 82.2.9 P174 L53 # 773  
Marris, Arthur Cadence

Comment Type E Comment Status A

Style

*SuggestedRemedy*

Delete the word "simply"

Response Response Status C

ACCEPT.

CI 82 SC 82.2.9 P175 L16 # 237  
Szczepanek, Andre Harwood & Szczepanek

Comment Type E Comment Status A

"Each bit in the BIP field is an even parity calculation over all of the previous selected bits of a given PCS Lane"

"Selected" by whom or what ?. The adjective selective is redundant and confusing - delete it.

*SuggestedRemedy*

"Each bit in the BIP field is an even parity calculation over all of the previous bits of a given PCS Lane"

Response Response Status C

ACCEPT.

CI 82 SC 82.3.1 P183 L7 # 748  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A  
Typo.

## SuggestedRemedy

Replace "10GBASE-R" with "10GBASE-T" in the first column.

Response Response Status C  
ACCEPT.

CI 82 SC 82.4 P182 L51 # 747  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

Is the "shall" statement here really necessary? What would be the harm if the PCS did not send to the PMA the MII data when it is in the loopback mode?

## SuggestedRemedy

Replace "...the PCS shall transmit..." with "...the PCS may transmit...".

Response Response Status C  
ACCEPT.

CI 82 SC 82.4.4 P170 L15 # 328  
Young, George AT&T

Comment Type TR Comment Status A

Z4, Z5, Z6, and Z7 are left unspecified, except identified in Figure 82-5.

## SuggestedRemedy

Specify control block codes Z4, Z5, Z6 and Z7 in the text.

Response Response Status W  
ACCEPT.  
Dupe of #342

CI 82 SC 82.5 P183 L34 # 749  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

## SuggestedRemedy

Delete the text in the parenthesis.

Response Response Status C  
ACCEPT.  
Delete the text in the parenthesis since this subclause now references 80.3 (see response to comment 275)

CI 82 SC 82.7.5.1 P192 L28 # 292  
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status A

Bottom boundary of table doesn't use consistent line width.

## SuggestedRemedy

Line at bottom of table in "Value/Comment" column should match line width of the rest of the table border

Response Response Status C  
ACCEPT.

CI 82 SC Figure 82-1 P162 L18 # 110  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

[2 places] The FEC is optional.

## SuggestedRemedy

Replace footnote 1 with a second footnote. [2 places]; make it "footnote 2"

add at bottom of Figure add:  
"NOTE2--OPTIONAL, CONDITIONAL ON PHY TYPE"

Response Response Status C  
ACCEPT IN PRINCIPLE.

Use wording "NOTE1--OPTIONAL OR OMITTED DEPENDING ON PHY TYPE", moving existing NOTE1 to NOTE2 to keep notes in sensible order for figure

CI 83 SC P379 L30 # 43  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A

In figure 83A-7 the X axis label "X2" does not line up with the dotted line

SuggestedRemedy

Move "x2" toline up with the dotted line.

Response Response Status C

ACCEPT.

CI 83 SC 4.2.1 P202 L30 # 113  
 Bergmann, Ernest Circadian/JDSU

Comment Type E Comment Status A

Spelling of "servie"

SuggestedRemedy

Replace with "service".

Response Response Status C

ACCEPT.

CI 83 SC 5.10 P207 L48 # 240  
 Szczepanek, Andre Harwood & Szczepane

Comment Type TR Comment Status A

83.5.10 is constantly referred to as the definition point for the PMA PRBS patterns checkers and generators. However this clause only includes references to PRBS patterns generators - not checkers.

PRBS31 generation is defined via a reference to clause 49.2 .8 (Test-pattern generators). But PRBS31 checking is not defined by a reference to the corresponding 10GBASE-R checker clause. This omission is important because the pattern error counter value will depend on the checker implementation - and the 10GBASE-R error counting method is not the obvious implementation.

There is a bigger problem with PRBS9 checker definition. PRBS9 is defined in Clause 68.6.1, but only by it's generator polynomial. A checking method for PRBS9 is not defined. Given that the pattern error counter value will depend on the checker implementation, the implementation needs to be specified.

SuggestedRemedy

There needs to be a reference to Clause 49.3.12 (10GBASE-R Test-pattern checker) for PRBS31 pattern checking method.

The checking method for PRBS9 needs definition. A reference is not possible as it has not been defined before. It may be possible to make a new sub-clause by copying Clause 49.3.12 and modifying it for PRBS9.

Response Response Status C

ACCEPT IN PRINCIPLE.

If decision is to use existing checker, replace

"When check Tx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.2 (see 45.2.1.12b), the PMA expects to find the PRBS31 pattern on each of the lanes received from the PMA client via the PMA\_UNITDATA.requestx primitive"

with

"When check Tx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.2 (see 45.2.1.12b), the PMA expects to find the PRBS31 pattern on each of the lanes received from the PMA client via the PMA\_UNITDATA.requestx primitive (see 49.2.12)"

Remove PRBS9 checking capability in Tx, Rx. On p.208 lines 17-30,

Replace:

"When send Rx PRBS9 test pattern mode (see 68.6.1) is enabled by bits 1.19.6 and 1.19.1 (see 45.2.1.12b),

the PMA generates a PRBS9 pattern on each lane toward the PMA client via the PMA\_UNITDATA.indicationx

primitive. The PMA will also generate PMA\_SIGNAL.indication(SIGNAL\_OK) toward the PMA client

independent of the link status at the PMA server interface. When send Rx PRBS9 test pattern mode is

disabled, the PMA returns to normal operation performing bit multiplexing as described in 83.5.2.  
 When check Tx PRBS9 test pattern mode is enabled by bits 1.19.6 and 1.19.2 (see 45.2.1.12b), the PMA expects to find the PRBS9 pattern on each of the lanes received from the PMA client via the PMA\_UNITDATA.requesttx primitive. The Tx test pattern error counters in registers 1.20 through 1.29 (see 45.2.1.12c) count, per lane, errors in detecting the PRBS9 pattern on the lanes from the PMA client. When check Tx PRBS9 test pattern is disabled, the PMA expects normal traffic and test pattern error counting does not continue. While in check Tx PRBS9 test pattern mode, bit multiplexing continues as described in 83.5.2.  
 Note that bit multiplexing of per-lane PRBS9 may produce a signal which is not meaningful for downstream sublayers."  
 With  
 "Note that PRBS9 is intended to be checked by external test gear, and no PRBS9 checking is provided within the PMA."

Cl 83 SC 83 P195 L1 # 585  
 Booth, Brad AMCC

Comment Type TR Comment Status A  
 There are a number of issues related to this clause. First, the use of MMD in a Figure 83-2 is incorrectly used. Each device would have a separate PHY address; therefore, multiple MMDs as proposed are not required. Also, the term PMAserver (which for some unknown reason is in italics) is used. If the PMA should talk to XLAUI or CAUI, in essence it is talking to a PMD service interface. The same applies if it communicates directly with a PMD. There is lack of mapping from this PMAserver (server is a really, really bad term to use) service interface to the PMD service interface.

SuggestedRemedy  
 This clause should be an equation. The PMA service interface is x wide. The PMD service interface is y wide. Clause 83 defines how to map x to y and vice versa. Use the annexes to define the 20:10, 10:4, 4:4, etc. combining that is required.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

There seem to be two complaints in the comment:  
 (1) MMD numbering. This is a mechanism that was worked out two meeting cycles ago that still seems among the best of the alternatives. While it is true that sometimes PMAs will be in different devices and have different PHY addresses, there are cases where more than one PMA will be in the same device (e.g., a standalone FEC chip with a 10:20 PMA above and a 20:10 PMA below to interface to the CAUIs above and below). So there is no way to avoid having a mechanism like this. It is arguable that the needed functionality might be provided using fewer than 4 MMD addresses (but more than one), but a specific proposal would be required justifying what the right number of MMD addresses is and how they should be allocated.  
 aligning with resolution of corresponding clause 45 comment (551), this portion is rejected.

(2) The use of the term PMAserver. An earlier draft had dealt with the problem that there are multiple possible sublayers that might be below the PMA by defining a PMA\_UNITDATA.output primitive (rather than naming the primitive according to the layer below). Comments indicated that the task force was more comfortable with traditional primitive naming (i.e., that data passed from the PMA to the sublayer below is via a UNITDATA.request primitive belonging to the sublayer below). The fact that we don't know what sublayer is below the PMA, we use a variable called PMAserver. This is italicized to call attention to the fact that it is a variable, as there is no actual sublayer called PMAserver. As explained in the introductory paragraph of 83.4, PMAserver might be a PMD, FEC, or another PMA (below a physically instantiated XLAUI or CAUI). If the commenter feels that a different name should be used, please make a proposal.

Align with resolution of comment 648. Still use PMAserver as a variable, but it will be clearer that this is an instance of the generic service interface, e.g., server:IS\_UNITDATA\_x.request (tx\_bit)). Editorial license.

Cl 83 SC 5.10 P208 L13 # 114  
 Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
 spelling: "PMAserver\_UNITDATA.reqeustx"

SuggestedRemedy  
 Replace with:  
 spelling: "PMAserver\_UNITDATA.requestx" [after the "q" comes "u"]

Response Response Status C  
 ACCEPT.

Cl 83 SC 7.5 P216 L10 # 115  
 Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A  
 "Send square Tx" refers to a square wave test pattern

SuggestedRemedy  
 Replace with:  
 "Send square wave Tx"

Response Response Status C  
 ACCEPT.



**Cl 83**    **SC 83.1.1**    **P195**    **L22**    # **222**  
 Gustlin, Mark    Cisco

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

Should use the full pmd name in this sentence?  
 The electrical PMD service interfaces for 40GBASE-SR  
 and 100GBASE-SR PMDs are defined in 86.1.1.

**SuggestedRemedy**

Change to:  
 The electrical PMD service interfaces for 40GBASE-SR4  
 and 100GBASE-SR10 PMDs are defined in 86.1.1.

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

ACCEPT.

**Cl 83**    **SC 83.1.4**    **P195**    **L51**    # **752**  
 Muller, Shimon    Sun Microsystems, Inc

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

Page:196  
 Line:51-54  
 In the context of this paragraph, it is not obvious what the reasoning is for  
 this MMD numbering.

**SuggestedRemedy**

Add a sentence to this paragraph that explains what happened to MMD2-MMD7.

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

ACCEPT IN PRINCIPLE.  
 The PMA clause doesn't need to say which MMD device addresses are used for WIS,  
 PCS, etc., but a reference can be inserted to the table of MMD device addresses in clause  
 45 so that someone can see why 8 was the next available address.

Replace "... where MMD 8 is the second closest to the PMD and MMD 10 is the farthest  
 from the PMD."  
 with

"... 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)."

**Cl 83**    **SC 83.1.4**    **P196**    **L44**    # **751**  
 Muller, Shimon    Sun Microsystems, Inc

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

In the context of this paragraph it is not clear what an "input" and "output"  
 PMA lanes are.

**SuggestedRemedy**

Change the last sentence of this paragraph to read as follows:  
 "Each PMA re-maps the PCSs from m lanes on one (upper) PMA interface to n  
 lanes on the other (lower) PMA interface, and vice versa."

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

ACCEPT IN PRINCIPLE.

Replace: "Each PMA recombines the PCSs from m PMA input lanes to  
 n PMA output lanes." with  
 "Each PMA remaps the PCSs from m PMA input lanes to  
 n PMA output lanes in the Tx direction, and from n PMA input lanes to m PMA output lanes  
 in the Rx direction."

**Cl 83**    **SC 83.1.4**    **P197**    **L3**    # **381**  
 Kipp, Scott    Brocade

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

Figure 83-2 The 4:4 PMA next to MMD 1 seems unnecessary. What is it trying to show?

**SuggestedRemedy**

Remove the redundant PMA layer or show that it is a retimer or whatever.

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

REJECT.

There is always a PMA above and below a XLAUI or CAUI (Annex 83C.2 item (b) "XLAUI  
 and CAUI are physical instantiations of the connection between two adjacent PMA  
 sublayers"). This is just a particular example showing FEC in a separate chip with XLAUI  
 above & below.

[Editor's note: Commenter has incorrectly marked figure number in subclause field. Moved  
 figure number to comment field]

CI 83 SC 83.1.4 P197 L9 # 369  
Kipp, Scott Brocade

Comment Type E Comment Status R

figure 83-2 There are redundant MMD numbers on the left and right side, so it could be confusing.

*SuggestedRemedy*

Change the MMD numbers next to CAUI to unique numbers in the figure like MMD 4, 5 and 6.

Response Response Status C

REJECT.

The MMD numbers on the left are for the 40GBASE-R stack and the MMD numbers on the right are for the 100GBASE-R stack.

[Editor's note: Commenter has incorrectly marked figure number in subclause field. Moved figure number to comment field]

CI 83 SC 83.2 P198 L17 # 753  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

Page:198  
Line:17-50

This figure is too simplistic and does not adequately illustrate the concept of bit muxing. The left and right parts seem to be completely unrelated, and there is no explanation or illustration of what happens in between. The definition of z below the figure seems to be messed up and there is no explanation of x or y.

*SuggestedRemedy*

- Replace the paragraph on lines 18-19 with the following:  
"The function of the PMA bit mux is to map the PCSs from m PMA input lanes to n PMA output lanes in each direction. This is accomplished by demultiplexing the m input lanes to the common denominator number of PCSs (z), followed by multiplexing them back to the n output lanes. See 83.5.2 for more details."
- Delete Figure 83-4.
- Create a similar figure is subclause 83.5.2 that provides a real-life example of a bit sequence transmission for a 10->4 and a 4->10 bit-mux, including bit ordering on each one of the relevant lanes.

Response Response Status C

ACCEPT IN PRINCIPLE.

The general purpose figure should be kept with some adjustments:

- Get rid of spurious "z"
- Show z/m input demuxes (as well as input lanes)
- Show z/n output muxes (as well as output lanes)
- Remove numbering (0 to z-1 and x to y) from PCSs, show bracket indicating that there are z of them in no particular order

On lines 18-19, replace:

"The operation of a PMA bit mux is to recombine as necessary the PCSs from m PMA input lanes to n PMA output lanes as illustrated in Figure 83-4." with

"Conceptually, the PMA bit mux operates in one direction of transmission by demultiplexing PCSs from m PMA input lanes and remultiplexing them into n PMA output lanes. The mapping of PCSs from input to output lanes is not specified. See 83.5.2 for more details"

Add to the end of the paragraph on lines 16-20, page 204 (in clause 83.5.2):

"Figure 83-x illustrates one possible bit ordering for a 10:4 PMA bit mux. Other bit orderings are also valid".

Add a new figure 83-x to illustrate bit-ordering in a 10:4 bit mux. Bits from the 20 PCSs will be labeled "a" through "t", which will be combined in pairs on the 10 input lanes and in repeating groups of 5 bits on each of the 5 output lanes (figure to be provided in time for the meeting). Editorial license to create new figure: starting from trowbridge\_01\_0509:

- Show demux and remux 1:2 x 5:1
- Show bit ordering, e.g., b0, b1, b2

- Show skew between lanes, e.g., b0, b1, b2 and c3, c4, c5
- Not necessary to show every bit every lane

**Cl 83**      **SC 83.2**                      **P199**      **L2**                      # **754**  
Muller, Shimon                      Sun Microsystems, Inc

**Comment Type**    **E**                      **Comment Status**    **A**  
Clarity.

**SuggestedRemedy**

"The number of input and output lanes in each direction."

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

**Cl 83**      **SC 83.3**                      **P200**      **L2**                      # **58**  
Dawe, Piers                      Avago Technologies

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

If the port uses Auto-negotiation, there is another primitive AN\_LINK.indication, which is passed without modification from PCS to AN (see Figure 73-1). It's not the same as PMA\_SIGNAL.indication(SIGNAL\_OK). In Figure 73-1, this primitive is shown passing round the PMD and PMA by magic, which doesn't seem acceptable. Primitives can't sneak round sublayers; they go through them (see 76.4.1.1 for an example). It must go through the PMA and PMD.

**SuggestedRemedy**

Add AN\_LINK.indication, required if AN present.

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

The signal goes from the PCS direct to the AN block. It should not go through the PMA and PMD. See comment 52 resolution, and comment 112 resolution from D1.2.

**Cl 83**      **SC 83.4.2.1**                      **P202**      **L30**                      # **370**  
Kipp, Scott                      Brocade

**Comment Type**    **E**                      **Comment Status**    **A**  
Servie is incorrect

**SuggestedRemedy**

Change to Server

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

Duplicate #113

**Cl 83**      **SC 83.5.10**                      **P207**      **L20**                      # **432**  
D'Ambrosia, John                      Force10 Networks

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

In 83.5.10, there is only 1 SHALL statement - There shall be at least 31 bits delay between the PRBS31 patterns generated on one lane and any other lane." Yet in the PICS there are the following JTP, JTP1, JTP2, J1 through J9.

**SuggestedRemedy**

Add corresponding SHALL statements to support PIC statements.

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

ACCEPT IN PRINCIPLE.

(J1) Replace "When send Tx PRBS31 test pattern is enabled by bits 1.19.7 and 1.19.3 (see 45.2.1.12b), the PMA generates a PRBS31 pattern ..." with "If supported, when send Tx PRBS31 test pattern is enabled by bits 1.19.7 and 1.19.3 (see 45.2.1.12b), the PMA shall generate a PRBS31 pattern ..."

(J2) Replace "When send Rx PRBS31 test pattern is enabled by bits 1.19.7 and 1.19.1 (see 45.2.1.12b), the PMA generates a PRBS31 pattern ..." with "If supported, when send Rx PRBS31 test pattern is enabled by bits 1.19.7 and 1.19.1 (see 45.2.1.12b), the PMA shall generate a PRBS31 pattern ..."

(J3) Replace "When check Tx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.2 (see 45.2.1.12b), the PMA expects to find the PRBS31 pattern ..." with "If supported, when check Tx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.2 (see 45.2.1.12b), the PMA shall check for the PRBS31 pattern (see 49.2.12) ..." (note that the added reference addresses comment #240)

(J4) Replace "When check Rx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.0 (see 45.2.1.12b), the PMA expects to find the PRBS31 pattern ..." with "If implemented, when check Rx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.0 (see 45.2.1.12b), the PMA shall check for the PRBS31 pattern ..."

(J5) Replace "When send Tx PRBS9 test pattern mode (see 68.6.1) is enabled by bits 1.19.6 and 1.19.3, the PMA generates a PRBS9 pattern ..." with "If implemented, when send Tx PRBS9 test pattern mode (see 68.6.1) is enabled by bits 1.19.6 and 1.19.3, the PMA shall generate a PRBS9 pattern ..."

(J6) Replace "When send Rx PRBS9 test pattern mode (see 68.6.1) is enabled by bits 1.19.6 and 1.19.1 (see 45.2.1.12b), the PMA generates a PRBS9 pattern ..." with "If implemented, when send Rx PRBS9 test pattern mode (see 68.6.1) is enabled by bits 1.19.6 and 1.19.1 (see 45.2.1.12b), the PMA shall generate a PRBS9 pattern ..."

Delete following and associated PICS per comment #240:

(J7) Delete "When check Tx PRBS9 test pattern mode is enabled by bits 1.19.6 and 1.19.2 (see 45.2.1.12b), the PMA expects to find the PRBS9 pattern ..."

(J8) Delete "When check Rx PRBS9 test pattern mode is enabled by registers 1.19.6 and

1.19.0 (see 45.2.1.12b), the PMA expects to find the PRBS9 pattern ..."

Note: PICS J9 becomes J7 after deleting PRBS9 checker

(J9) Replace "When transmit square wave test pattern mode is enabled by registers 1.118.0 through 1.118.9 for lanes 0 through 9 (limited to the number of lanes of the PMAserver service interface, see 45.2.1.12e), the PMA generates a square wave test pattern ..." with

"If implemented, when transmit square wave test pattern mode is enabled by registers 1.118.0 through 1.118.9 for lanes 0 through 9 (limited to the number of lanes of the PMAserver service interface, see 45.2.1.12e), the PMA shall generate a square wave test pattern ..."

Note that PICS JTP1 and JPT2 are not requirements per se, but check boxes indicating the presence of physical instantiations above and below the PMA which affect which test patterns might be applicable. Note also that comment #240 may, if accepted, add a specification similar to 49.2.12 for a PRBS9 test pattern checker and an appropriate reference would be made from the sentence for (J7) where it is first used.

CI 83 SC 83.5.10 P207 L51 # 42  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

the reference to 45.2.1.12c has an extra "c" at the end in magenta font

*SuggestedRemedy*

Remove extra "c" from "45.2.1.12cc"

Response Response Status C

ACCEPT.

CI 83 SC 83.5.10 P208 L32 # 293  
Trowbridge, Stephen Alcatel-Lucent

Comment Type E Comment Status A

Remove magenta colored font on closing ")" of reference to 45.2.1.12b.

*SuggestedRemedy*

Remove magenta colored font on closing ")" of reference to 45.2.1.12b.

Response Response Status C

ACCEPT.

CI 83 SC 83.5.10 P208 L4 # 57  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

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. The remedy below makes checking at the PCS lane level optional, for the sake of existing IC designs.

If wished, can have an extra ability bit in Clause 45 to tell management that the better way of checking is implemented.

*SuggestedRemedy*

Change the paragraph to:

When check Rx PRBS31 test pattern mode is enabled by bits 1.19.7 and 1.19.0 (see 45.2.1.12b), the PMA expects to find one or (optionally) two interleaved PRBS31 pattern(s) on each of the lanes received from the PMA server via the PMAserver\_UNITDATA.indicationx primitive. Where there are 10 PMA lanes and no errors, there are always two bit-interleaved PRBS31 patterns, one per PCS lane. In many situations, each PMA lane can also be seen as carrying a single PRBS31. The Rx test pattern error counters in registers 1.30 through 1.39 (see 45.2.1.12d) count, per PMA lane, errors in detecting the PRBS31 patterns on the lanes from the PMA server. If the 20 bit-interleaved PRBS31 patterns are checked, the errors are summed for each PMA lane. While in check... [last two sentences unchanged]

Response Response Status U

REJECT.

The properties of bit-muxed PRBS31 need to be analyzed before accepting this proposal.

CI 83 SC 83.5.3.1 P204 L37 # 223  
Gustlin, Mark Cisco

Comment Type E Comment Status A

Change:

"shall produce no more than 29 ns Skew between PCSLs"

to:

"shall produce no more than 29 ns of Skew between PCSLs"

*SuggestedRemedy*

Response Response Status C

ACCEPT.

Cl 83 SC 83.5.4 P205 L31 # 755  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

SuggestedRemedy

Delete the text in the parenthesis.

Response Response Status C

ACCEPT.

Delete the text in the parenthesis since this subclause now references 80.3 (see response to comment 275)

Cl 83 SC 83.5.6 P206 L23 # 479  
D'Ambrosia, John Force10 Networks

Comment Type E Comment Status A

Annex 83A or Annex 83B, as appropriate, specifies the XLAUI/CAUI interface

doesn't provide any clarification regarding what the individual annex's cover in relation to the XLAUI / CAUI interface

SuggestedRemedy

change "Annex 83A or Annex 83B, as appropriate, specifies the XLAUI/CAUI interface"

to

Annex 83A specifies the XLAUI / CAUI interface for chip-to-chip applications  
Annex 83B specifies the XLAUI / CAUI interface for chip-to-module applications

Response Response Status C

ACCEPT.

Cl 83 SC 83.5.8 P206 L37 # 430  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

In 83.5.8, it states, "PMA local loopback mode is optional. If it is implemented, it shall conform to the requirements of this subclause (83.5.8)." However I don't note any requirements in the subsequent sections (no additional SHALL statements). However, there are Items LB and LB1 in the PICS for 83.5.8, but no corresponding SHALL statements.

SuggestedRemedy

Add corresponding SHALL statements to support PIC statements.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "If it is implemented, it shall conform to the requirements of this subclause (83.5.8)." with

"If it is implemented, it shall be as described in this subclause (83.5.8)."

Cl 83 SC 83.5.9 P207 L1 # 431  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

In 83.5.9, it states "PMA remote loopback mode is optional. If implemented, it shall conform to the requirements of this subclause (83.5.9). However I don't note any requirements in the subsequent sections (no additional SHALL statements). However, there are Items LB and LB2 in the PICS for 83.5.9, but no corresponding SHALL statements.

SuggestedRemedy

Add corresponding SHALL statements to support PIC statements.

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace:

"If implemented, it shall conform to the requirements of this subclause (83.5.9)."

with:

"If implemented, it shall be as described in this subclause (83.5.9)."

CI 83 SC 83.6 P209 L25 # 756  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A  
Typo.

**SuggestedRemedy**

Replace "emable" with "enable".

Response Response Status C  
ACCEPT.

CI 83 SC Figure 83-1 P196 L14 # 112  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A  
[2 places] The FEC is optional.

**SuggestedRemedy**

Replace footnote 1 with a second footnote. [2 places]; make it "footnote 2"

add at bottonm of Figure add:  
"NOTE2--OPTIONAL, CONDITIONAL ON PHY TYPE"

Response Response Status C  
ACCEPT IN PRINCIPLE.

Use wording "NOTE1--OPTIONAL OR OMITTED DEPENDING ON PHY TYPE", moving existing NOTE1 to NOTE2 to keep notes in sensible order for figure

CI 83A SC P L # 598  
Petrilla, John Avago Technologies

Comment Type ER Comment Status A  
Equations in 83A, 83A-3, 83A-4, 83A-5, 83A-7 & 83A-8, use f as a variable without adequately identifying the appropriate units for f.

**SuggestedRemedy**

Assuming GHz is the appropriate unit for all instances of f in equations , 83A-3, 83A-4, 83A-5, 83A-7 & 83A-8, add to the end of the equation the phrase, where f is the frequency in GHz.

Response Response Status C  
ACCEPT.

Add "Where f is the frequency in gigahertz"

CI 83A SC 2.1 P372 L47 # 406  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A  
Current SDD21 equation results in loss of 0.7 dB at Nyquist which may not allow PCB break out board.

**SuggestedRemedy**

Increase the loss for the transmitter function PCB loss from 0.7 dB to 1 dB at Nyquist  $SDD_{xy}=0.00086 - 0.2286*\sqrt{f} - .08386*f$ , where f is in GHz from 0.25 to 11.1 GHz

Response Response Status C  
ACCEPT IN PRINCIPLE.

See Comment 481 on implementation with updated equation:

$SDD_{xy}=0.00086 - 0.2286*\sqrt{f} - 0.08386*f$ , where f is in GHz from 0.25 to 11.1 GHz

CI 83A SC 2.2 P373 L3 # 418  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A  
Current SDD21 equation results in loss of 0.7 dB at Nyquist which may not allow PCB break out board.

**SuggestedRemedy**

Increase the loss for the receiver function PCB loss from 0.7 dB to 1 dB at Nyquist  $SDD_{xy}=0.00086 - 0.2286*\sqrt{f} - 0.08386*f$ , where f is in GHz from 0.25 to 11.1 GHz

Response Response Status C  
ACCEPT IN PRINCIPLE.

See Comment 482 on implementation with updated equation:

$SDD_{xy}=0.00086 - 0.2286*\sqrt{f} - 0.08386*f$ , where f is in GHz from 0.25 to 11.1 GHz

Cl **83A** SC **3.3** P**374** L**10** # **415**  
 Ghiasi, Ali Broadcom

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

The host should be allowed to exceed maximum differential output and Y2 levels on known longer channel for improve BER if it never violate receiver Y2.

*SuggestedRemedy*  
 Add informative note to Output voltage level Maximum output level can be as high as 900 mV on channel with at least 1/2 the loss of XLAUI/CAUI channel.  
 Add the same informative note for Y2 with value of 450 mV.

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

Hosts already should have this flexibility since in this case, they are guaranteeing the Rx eye mask per nAUI.

Cl **83A** SC **3.3** P**374** L**11** # **405**  
 Ghiasi, Ali Broadcom

*Comment Type* **TR** *Comment Status* **A** *de-emphasis*

With current min de-emphasis and without limit on min Vtx-demph the value of Vtx-demph can go to zero at infinit de-emphasis!

*SuggestedRemedy*  
 Propose to limit the range of transmit de-emphasis to max of 6.8 dB

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

Update equation  
 $V_{txdemph} = (234.64 - 2.13 * x + 0.18 * x^2) * 1.32 * (10^{y/20})$

Update min deemphasis in table 83A-1 to 4.4 dB

Add Maximum De-emphasis row in table 83A-1 with value of 7.0 dB

See ghiasi\_03\_0509

Cl **83A** SC **3.3.1** P**374** L**42** # **118**  
 Bergmann, Ernest Circadiant/JDSU

*Comment Type* **ER** *Comment Status* **R**

"De-Emphasis shall be the.."

*SuggestedRemedy*  
 Replace with:  
 "Pre-Emphasis shall be the.."

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

De-emphasis should be used throughout

Cl **83A** SC **3.3.1** P**374** L**47** # **119**  
 Bergmann, Ernest Circadiant/JDSU

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

"definition of pre-emphasis."

*SuggestedRemedy*  
 Replace with:  
 "definition of pre-emphasis:" [use colon]

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

Change to:  
 "definition of de-emphasis:"

**CI 83A**    **SC 3.3.1**                      **P374**        **L49**        # **120**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **T**                      **Comment Status**    **A**  
 The Equation needs modification:

**SuggestedRemedy**  
 Replace Equation 83A-1 with:  
 Pre-emphasis(dB) = 20log10(Differential Peak-Peak Amplitude/VMA)

[the "10" in "log10" is subscripted]  
 [there is no minus sign]

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

Remove minus sign. Equation becomes:  
 De-emphasis (dB) = 20log10(Differential Peak-Peak Amplitude / Vtx-demph)

**CI 83A**    **SC 3.3.1**                      **P374**        **L51**        # **121**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **T**                      **Comment Status**    **R**  
 Equation 83A-2 appears to need 83A-1 ("y"), which relates back to 83A-2. It is unclear what is going on and what is needed.

**SuggestedRemedy**  
 Based upon the minimum 24 ps rise/fall time or otherwise can one replace 83A-2 by, say:

Minimum VMA = 450 mV

or

provide a plot of minimum VMA vs. rise/fall time?

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

The intention of these equations is provide flexibility for suppliers trade-off amount of de-emphasis / rise-fall time / and amplitude in a given nAUI solution. See ghiasi\_01\_0109.pdf, ghiasi\_03\_0509.pdf

**CI 83A**    **SC 3.3.2**                      **P375**        **L28**        # **123**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **ER**                      **Comment Status**    **A**  
 "with de-emphasis off."

**SuggestedRemedy**  
 Replace with:  
 "with pre-emphasis circuits disabled."

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

See response to 118  
 and, see response in 696

**CI 83A**    **SC 3.3.5**                      **P377**        **L38**        # **124**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **ER**                      **Comment Status**    **A**  
 "with de-emphasis off."

**SuggestedRemedy**  
 Replace with:  
 "with pre-emphasis circuits disabled."

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

See response to 118  
 and See resolution 696



CI **83A** SC **3.4.1** P**379** L**6** # **125**  
 Bergmann, Ernest Circadiant/JDSU

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

The note is uncalled for and would at least need more qualification. Error floors are not to be ignored.

*SuggestedRemedy*

remove note  
or

replace wording:

"would have sufficient margin"  
with  
"might have sufficient margin (based upon purely Gaussian statistics)"

Response Response Status **C**

REJECT.

There was strong interest in the group to provide guidance on how to achieve 1E-15 operation. 'would have sufficient margin for operation at approximately BER 10-15' provides that guidance

CI **83A** SC **3.4.4** P**380** L**90** # **126**  
 Bergmann, Ernest Circadiant/JDSU

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

Reference impedance for differential mode is supplied; why not provide the reference impedance for common mode?

*SuggestedRemedy*

Append the sentence:

"The reference impedance for common mode measurements is 25 ohms."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

"The reference impedance for common mode return loss measurements is 25 ohms."

CI **83A** SC **5.2** P**383** L**49** # **127**  
 Bergmann, Ernest Circadiant/JDSU

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

"83A.5.2 Jitter tolerance" yet this subclause includes interference ("vertical jitter").

*SuggestedRemedy*

Replace with:

"83A.5.2 Stressed-eye and jitter tolerance"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

"83A.5.2 Receiver tolerance"

CI **83A** SC **5.2** P**383** L**53** # **407**  
 Ghiasi, Ali Broadcom

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

The stress generator has 0.32 UI of non-cancelable ISI which seem excessive for the an FR4 channel

*SuggestedRemedy*

Propose to reduce stress generator DJ from 0.32 UI to 0.27 UI which result in 0.15 UI of FR4 generated ISI and 0.15 UI of non-cancelable DJ

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change text to the following:

The low pass filter stress is added until the 0.25 U<sub>pp</sub> Deterministic Jitter is achieved.

CI **83A** SC **5.2** P**383** L**53** # **128**  
 Bergmann, Ernest Circadiant/JDSU

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

"defined in 83A.3.4.8" points to non-existent subclause.

*SuggestedRemedy*

Replace with:

"defined in 83A.3.4.7"

Response Response Status **C**

ACCEPT.

Suggested remedy

**Cl 83A**    **SC 5.2**                      **P384**            **L12**            # **413**  
 Ghiasi, Ali                              Broadcom  
  
*Comment Type*    **TR**            *Comment Status*    **R**  
     Limiter function gain must be defined  
  
*SuggestedRemedy*  
     Propsoe min gain of 20 dB  
  
*Response*                      *Response Status*    **U**  
     REJECT.  
     Add the following to 83A.5.2:  
  
     ."followed by a limiting function with minimum gain of 20dB..

**Cl 83A**    **SC 7.4**                      **P386**            **L26**            # **130**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
*Comment Type*    **T**              *Comment Status*    **A**  
     "-0.4 to 4" should indicate units  
  
*SuggestedRemedy*  
     Replace with:  
     "-0.4 V to 4 V"  
  
*Response*                      *Response Status*    **C**  
     ACCEPT.

**Cl 83A**    **SC 7.4**                      **P386**            **L29**            # **131**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
*Comment Type*    **ER**            *Comment Status*    **A**  
     "De-emphasis"  
  
*SuggestedRemedy*  
     Replace with:  
     "Pre-emphasis"  
  
*Response*                      *Response Status*    **C**  
     ACCEPT IN PRINCIPLE.  
  
     De-emphasis used throughout  
  
     See comment 118

**Cl 83A**    **SC 7.6**                      **P387**            **L18**            # **132**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
*Comment Type*    **ER**            *Comment Status*    **A**  
     "De-emphasis"  
  
*SuggestedRemedy*  
     Replace with:  
     "Pre-emphasis"  
  
*Response*                      *Response Status*    **C**  
     ACCEPT IN PRINCIPLE.  
  
     De-emphasis should be used throughout  
  
     see comment 118

**Cl 83A**    **SC 83A.1**    **P371**    **L 50**    # **774**  
 Marris, Arthur    Cadence

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

It is still a little unclear that 83A defines both the chip-to-chip interface and a superset of the chip-to-module interface.

**SuggestedRemedy**

Change:

"The purpose of the XLAUI or CAUI is to provide a flexible chip-to-chip interconnect as well as the connection between optical module and the host for discrete 40 Gb/s or 100 Gb/s components respectively. An example application of CAUI includes providing a physical connection between a ten-lane 100 Gb/s PMA and 10:4 PMA mapping element. An example application of XLAUI is to provide lane extension for interfacing MAC and PHY components in a 40 Gb/s Ethernet system distributed across a circuit board."

To:

"The purpose of the optional XLAUI or CAUI is to provide a flexible chip-to-chip and chip-to-module interconnect for discrete 40 Gb/s or 100 Gb/s components. Further functional and electrical requirements for chip-to-module interconnection are defined in Annex 83B.

The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board including one connector.

An example application of CAUI includes providing a physical connection between a ten-lane 100 Gb/s PMA and 10:4 PMA mapping element. An example application of XLAUI is to provide lane extension for interfacing MAC and PHY components in a 40 Gb/s Ethernet system distributed across a circuit board."

Also delete 83A.1.2 Application as it is redundant.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

Change:

"The purpose of the XLAUI or CAUI is to provide a flexible chip-to-chip interconnect as well as the connection between optical module and the host for discrete 40 Gb/s or 100 Gb/s components respectively. An example application of CAUI includes providing a physical connection between a ten-lane 100 Gb/s PMA and 10:4 PMA mapping element. An example application of XLAUI is to provide lane extension for interfacing MAC and PHY components in a 40 Gb/s Ethernet system distributed across a circuit board."

To:

"The purpose of the optional XLAUI or CAUI is to provide a flexible chip-to-chip and chip-to-module interconnect for 40 Gb/s or 100 Gb/s components. Annex 83A provides compliance requirements for XLAUI / CAUI transmitters and receivers while Annex 83B specifies the functional and electrical requirements for the chip-to-module interconnection.

The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board including one connector.

An example application of CAUI includes providing a physical connection between a ten-lane 100 Gb/s PMA and 10:4 PMA mapping element. An example application of XLAUI is to provide lane extension for interfacing MAC and PHY components in a 40 Gb/s Ethernet system distributed across a circuit board."

Also delete 83A.1.2 Application as it is redundant.

**Cl 83A**    **SC 83A.1.2**    **P372**    **L 29**    # **280**  
 Latchman, Ryan    Gennum Corp

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

The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board, see 83A.4.1

should be

The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board, see 83A.4.

**SuggestedRemedy**

Modify text to:

The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board, see 83A.4.

**Response**    **Response Status C**

ACCEPT IN PRINCIPLE.

See resolution in 774 and add

25 cm over printed circuit board, see 83A.4.

CI 83A SC 83A.2.1 P372 L46 # 481  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Any interconnect which has a loss less than  $SDD21(dB) = -0.0006 - 0.16\sqrt{f} - 0.0587(f)$  where f is from 0.25 GHz to 11.1 GHz, between the XLAUI/CAUI transmit pin and Transmit Compliance Point may be used as long as transmitter parameters of Table 83A-1 are met.

Given that the compliance point will form the basis of normative measurements, it should also be normative. Text is also confusing.

SuggestedRemedy

1. Rewrite sentence

The differential insertion loss, CPIL, expressed in decibels, between the transmit pin and the transmit compliance point shall be less than CPILmax, as defined by Equation 83C-x:

$$CPIL(f) \leq CPILmax(f) = 0.0006 + (0.16 \cdot f)^{1/2} + (0.0587 \cdot f) \quad (83A-x)$$

where F is in Ghz  
for 10 MHz  $\leq$  f < 11.1 GHz

The differential insertion loss limit is illustrated in Fig 83A-x.

Add figure showing illustration of differential insertion loss limit and appropriate pics statement.

Response Response Status W

ACCEPT IN PRINCIPLE.

The differential insertion loss, CPIL, expressed in decibels, between the transmit pin and the transmit compliance point shall be less than CPILmax, as defined by Equation 83A-x, which is illustrated in Fig 83A-x.

$SDD21 = 0.00086 - 0.2286\sqrt{f} - 0.08386 \cdot f$ , where f is in GHz from 0.25 to 11.1 GHz

Add figure showing illustration of differential insertion loss limit and add appropriate pics statement.

CI 83A SC 83A.2.1 P372 L47 # 597  
Petrilla, John Avago Technologies

Comment Type ER Comment Status A

An equation, ' $SDD21(dB) = -0.0006 - 0.16\sqrt{f} - 0.0587(f)$ ' is buried in text and doesn't have an equation #. The same equation exists in 83A.2.2, page 373, line3. Finally the units for f is not identified.

SuggestedRemedy

In 83A.2.1 separate the equation,  $SDD21(dB) = -0.0006 - 0.16\sqrt{f} - 0.0587(f)$  from the text and give it an equation #, i.e. (83A-1). Rewrite the equation as  $20\log_{10}(|SDD21|) = -0.0006 - 0.16 \cdot \sqrt{f} - 0.0587(f)$ , where f is the frequency in GHz.

In 83A.2.2, delete the equation from the text and, instead, refer to the above equation, i.e. "Any interconnect which has a loss less than defined by equation 83A-1 between ..."

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment 481 / 482 for update wrt equation & text

CI 83A SC 83A.2.1 P372 L47 # 606  
Petrilla, John Avago Technologies

Comment Type T Comment Status R

Similar to the requirement in 83A.3.3.3, "Differential S-parameters include contributions from on-chip circuitry, chip packaging, and any off-chip components related to the driver.", off-chip components related to the driver should be included in the interconnect between the transmit contact and Transmit Compliance Point.

A similar instance occurs in 83A.2.2 for the Rx

SuggestedRemedy

Change in the first sentence of 83A.2.1, "Any interconnect which has a loss less ..." to "Any interconnect including any off-chip components related to the driver which has a loss less ..."

Change in the first sentence of 83A.2.2, "Any interconnect which has a loss less ..." to "Any interconnect including any off-chip components related to the receiver which has a loss less ..."

Response Response Status C

REJECT.

Not sure if this adds clarity to the compliance point definition. For the receiver, AC coupling is included in the receiver as per 83A.3.4.6

See comment 481 / 482 for updated wording

CI **83A** SC **83A.2.2** P**373** L**3** # **482**  
 D'Ambrosia, John Force10 Networks

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

Any interconnect which has a loss less than  $SDD_{21}(dB) = ?]0.0006?]0.16?ã(f)?]0.0587(f)$  where f is from 0.25 GHz to 11.1 GHz, between the XLAUI/CAUI receive pin and Receive Compliance Point may be used as long as receiver parameters of Table 83A-2 are met.

Given that the compliance point will form the basis of normative measurements, it should also be normative. Text is also confusing.

*SuggestedRemedy*

1. Rewrite sentence

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 83C-x, which is illustrated in Fig 83A-x.

Refer to previously Added figure (for tx compliance point) showing illustration of differential insertion loss limit and add appropriate pics statement.

Response Response Status **W**

ACCEPT IN PRINCIPLE.

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-x, which is illustrated in Fig 83A-x.

$SDD_{21} = 0.00086 - 0.2286 * \sqrt{f} - 0.08386 * f$ , where f is the frequency in GHz from 0.25 to 11.1 GHz

Add figure showing illustration of differential insertion loss limit and add appropriate pics statement.

CI **83A** SC **83A.3.1** P**373** L**34** # **484**  
 D'Ambrosia, John Force10 Networks

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

text is unnecessary

Low-swing differential signaling provides noise immunity and improved electromagnetic interference (EMI) immunity.

*SuggestedRemedy*

delete text

Response Response Status **C**

ACCEPT.

CI **83A** SC **83A.3.3** P**373** L**48** # **483**  
 D'Ambrosia, John Force10 Networks

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

Tx fixture for testing the transmitter characteristics (excluding return loss)

*SuggestedRemedy*

copy from  
 72.7.1.1 Test Fixture  
 72.7.1.2 Test Fixture impedance  
 Fig 72-7  
 add appropriate PICS

Response Response Status **C**

REJECT.

Tx test fixture should go under 83A.5.1 (electrical parameter measurement methods - transmit jitter)

Can we add the following in the section:

Transmit jitter test fixture is defined in 72.7.1.1.

Transmit jitter test fixture impedance is defined in 72.7.1.2.

CI **83A** SC **83A.3.3** P**373** L**49** # **284**  
 Latchman, Ryan Gennum Corp

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

Transmitter characteristics should be normative. The XLAUI/CAUI transmitter characteristics are summarized in Table 83A-1 is not a normative statement

*SuggestedRemedy*

change text to:  
 The XLAUI/CAUI transmitter characteristics are specified in Table 83A-1.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The XLAUI/CAUI transmitter characteristics are specified in Table 83A-1.

Make sure shall's are attached to each normative characteristics

Add corresponding PICS

CI **83A** SC **83A.3.3** P**37350** L # **599**  
 Petrilla, John Avago Technologies

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

In subclauses 83A.3.3, 83A.3.3.1, 83A.3.3.2, 83A.3.3.3, 83A.3.3.4 & 83A.3.3.5, requirement values that are in Table 83A-1 are repeated. This is not good practice and can lead to conflicting requirements. A similar situation exists for Rx characteristics

*SuggestedRemedy*

Change the text to refer to Table 83A-1 instead of repeating the requirement value. For example,  
 - in 83A.3.3, change "The XLAUI/CAUI signaling speed shall be 10.3125 GBd ±100 ppm." to "The XLAUI/CAUI signaling speed is defined in Table 83A-1"  
 - in 83A.3.3.1, change "Driver differential output amplitude shall be less than 760 mVp-p" to "Driver differential output amplitude is defined in Table 83A-1"  
 - in 83A.3.3.2, change "Differential rise/fall times shall be greater than 24 ps" to "Differential rise/fall times are defined in Table 83A-1".  
 - in 83A.3.3.3, change "For frequencies from 10 MHz to 11.1 GHz, differential output S-parameters shall meet the requirements of Equation (83A-3)." to "Differential output S-parameters are defined in Table 83A-1." and repeat in 83A.3.3.4.  
 - in 83A.3.3.5, change "The jitter requirements at the transmitter are a maximum Total Jitter of 0.32 UI peak-to-peak and a maximum Deterministic Jitter of 0.17 UI peak-to-peak." to "The jitter requirements at the transmitter are defined in Table 83A-1".

Apply also to subsections 83A.3.4.3, 83A.3.4.4 & 83A.3.4.5.

Response Response Status **C**  
 ACCEPT.

CI **83A** SC **83A.3.3** P**374** L1 # **592**  
 Petrilla, John Avago Technologies

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

It would reduce any uncertainties if Table 83A-1 was called "XLAUI/CAUI transmit signal characteristics at transmit compliance point".

The same holds for Table 83A-2

*SuggestedRemedy*

Change the title of Table 83A-1 from, "Transmitter characteristics" to "XLAUI/CAUI transmit signal characteristics at transmit compliance point".

Change the title of Table 83A-2 from, "Receiver characteristics" to "XLAUI/CAUI receive signal characteristics at receive compliance point".

Response Response Status **C**  
 REJECT.

CI **83A** SC **83A.3.3** P**374** L11 # **286**  
 Latchman, Ryan Gennum Corp

Comment Type **T** Comment Status **R** *de-emphasis*

Minimum de-emphasis for the nAUI channel is on the high side once you take into account Tx compliance point.

*SuggestedRemedy*

Change Minimum de-emphasis to 3.2dB

Response Response Status **C**  
 REJECT.

This comment was WITHDRAWN by the commenter.

Comment intended for 83B

CI **83A** SC **83A.3.3** P**374** L11 # **278**  
 Latchman, Ryan Gennum Corp

Comment Type **T** Comment Status **A** *de-emphasis*

A max de-emphasis should be specified to provide an upper bound (limits over equalization of the channel)

*SuggestedRemedy*

Add row to table 83A-1:

Maximum De-emphasis 10dB

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

See resolution in comment 405

CI **83A** SC **83A.3.3** P**374** L**11** # **600**  
 Petrilla, John Avago Technologies

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

While there appears to be two de-emphasis states, one with a min of 4.8 dB and the other with de-emphasis off, Table 83A-1 only reflects the first of these. Note in a similar instance in 83B, Table 83B-3, both states are addressed in the table.

*SuggestedRemedy*

Change the de-emphasis entries in Table 83A-1 to be similar to the entries in Table 83B-3, i.e from "Minimum De-emphasis" to "De-emphasis states" and "4.8" to "off and 4.8 (min)"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See comment 696 resolution

CI **83A** SC **83A.3.3** P**374** L**33** # **355**  
 Dudek, Mike Independent

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

It is ambiguous as to what de-emphasis is required/allowed. Currently the draft only specifies a minimum value. It also specifies that the jitter is measured with the de-emphasis turned off. (but it doesn't state whether the transmit eye is measured with the de-emphasis on or not. The value for X1 and the Max Tj imply it is measured with de-emphasis turned off. Also the equations (as corrected for sign of de-emphasis in a separate comment) allow very large values of de-emphasis that will have a closed eye on a short link.

*SuggestedRemedy*

First clarify that the transmitter eye mask definition is with the equalizer turned off. either  
 1 Add at the beginning of footnote d to table 83A-1 and 83B-3. "Measured with the transmitter de-emphasis turned off." or  
 2 Add as the second sentence in 83A.3.3.5 "The transmitter eye measurements are conducted with de-emphasis off.

Then decide whether this spec is for a fixed or variable transmit de-emphasis. If for a fixed de-emphasis add a row to table 83A-1 Maximum De-emphasis, 83A.3.3.1, 6dB. (6dB is suggested as a reasonable window for setting the de-emphasis with a minimum of 4.8dB).

If for a variable de-emphasis. Add a sentence on page 373 line 50. "The specification assumes that the amount of de-emphasis a transmitter provides is variable and is set for a particular application by means outside the scope of this standard."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Modify "Jitter measurement requirements are described in 83A.5.1, and are conducted with de-emphasis off."

to

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

Modify Figure 83A-6 title from "Driver Template" to "Transmitter Eye Mask"

Also see resolution in 696

CI 83A SC 83A.3.3.1 P374 L43 # 785  
Li, Mike Altera

Comment Type T Comment Status A

The de-emphasis ratio is measured with an averaged waveform, but it does not specify a minimum number of waveform needed for conducting averaging, leaving large range of measurement uncertainties:

*SuggestedRemedy*

Specify a minimum # of waveforms needed to do the average, suggesting N=20

Response Response Status C

ACCEPT IN PRINCIPLE.

Change text to:

"Amplitude measurements are taken using an average of at least 16 waveforms and taken at the center of the respective UI."

[Editor's Note: Late comment submitted by the commenter after the close of the ballot]

CI 83A SC 83A.3.3.1 P374 L44 # 363  
Ewen, John IBM

Comment Type T Comment Status A

The test pattern is not specified.

*SuggestedRemedy*

Change to:

Amplitude measurements are taken using an averaged waveform and taken in the center of the respective UI of a square wave test pattern as defined in 83.5.10

Response Response Status C

ACCEPT IN PRINCIPLE.

. using a square wave test pattern as defined in 83.5.10.

CI 83A SC 83A.3.3.1 P374 L49 # 354  
Dudek, Mike Independent

Comment Type TR Comment Status A

There is an error in the signs of de-emphasis. Table 83A-1 requires a minimum de-emphasis of 4.8dB ie De-emphasis is a positive quantity in this table. However Equation 83A-1 line 49 produces a negative number. Also equation 83A-2 cannot be met with a positive value for y.

*SuggestedRemedy*

Remove the negative sign in equation 83A-1 and change the final exponent in equation 83A-2 to be (-y/20)

Response Response Status C

ACCEPT.

See comment 120

CI 83A SC 83A.3.3.1 P374 L49 # 285  
Latchman, Ryan Gennum Corp

Comment Type T Comment Status A

the following equation does not need a (-) in front of the 20:

De-emphasis (dB) = -20log10(Differential Peak-Peak Amplitude / Vtx-demph)

*SuggestedRemedy*

change to:

De-emphasis (dB) = 20log10(Differential Peak-Peak Amplitude / Vtx-demph)

Response Response Status C

ACCEPT.

See comment 120



CI **83A** SC **83A.3.3.2** P**375** L**28** # **63**  
 Dawe, Piers Avago Technologies

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

"rise/fall time is measured with de-emphasis off." That's not a valid way to do a conformance test; you have to test what the DUT does in a relevant state of operation.

Editorial: missing capital.

*SuggestedRemedy*

Either specify rise time with emphasis as used (would reduce the 24 ps a little), or use e.g. a slew rate or spectral spec.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Transmit rise/fall time is specified in "de-emphasis off state" to measure the rise-fall time in a practical wave form. See comment 696.

CI **83A** SC **83A.3.3.2** P**375** L**28** # **786**  
 Li, Mike Altera

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

The sentence of "The upper limit is defined by the transmit eye mask" did not spell out which eye-mask it refers to.

*SuggestedRemedy*

Add "shown in Figure 83A-6" after "The upper limit is defined by the transmit eye mask".

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change to "The upper limit is defined by the transmit eye mask shown in Figure 83A-6"

[Editor's Note: Late comment submitted by the commenter after the close of the ballot]

CI **83A** SC **83A.3.3.3** P**375** L**37** # **639**  
 Ganga, Ilango Intel

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

The equations in Annex 83A are not consistent with the format for equations used in the rest of the document. (E.g Equations 83A-4, 83A-5, 83A-7, 83A-8 etc.,).

In general equations used in the draft are not consistent across the clauses.

This comment also applies to Clauses 84 through Clause 88 and corresponding annexes.

*SuggestedRemedy*

Reformat the equations to be consistent across all clauses and annexes.

Response Response Status **U**

ACCEPT.

CI **83a** SC **83a.3.3.3** P**375** L**38** # **485**  
 D'Ambrosia, John Force10 Networks

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

differential output return loss should be positive

*SuggestedRemedy*

modify equation: delete "-" sign at front of equation

Response Response Status **W**

ACCEPT IN PRINCIPLE.

Multiply equations by -1

Cl 83A SC 83A.3.3.3 P375 L38 # 596  
 Petrilla, John Avago Technologies

Comment Type ER Comment Status R

In Eq. 83A-3, use/placement of the term dB does not seem to follow standard math practice and, therefore, can be ambiguous. For example, is it an operator?, does it just apply to the last term, "+ 13.33 log10(f/5.5)? See also equations 83A-4, 83A-5, 83A-7 & 83A-8.

*SuggestedRemedy*

Follow the format in Eq. 86-1; write Eq. 83A-3 as  
 $20 \times \log_{10}(|SDD21|) \leq -6.5 + 13.33 \log_{10}(f/5.5)$

An acceptable but less preferred alternative would be to write Eq 83A-3 as  
 $(|SDD21|) \leq [-6.5 + 13.33 \log_{10}(f/5.5)] \text{ dB}$ .

Also apply the format to equations, 83A-4, 83A-5, 83A-7 & 83A-8.

Response Response Status C

REJECT.

This style is used in numerous places including 85

Cl 83A SC 83A.3.3.4 P376 L40 # 486  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Common mode return loss should be "+"

*SuggestedRemedy*

modify equations associated with 83a-4 so that common mode return loss is "+"

Response Response Status C

ACCEPT IN PRINCIPLE.

Multiply equations by -1

Cl 83A SC 83A.3.3.5 P377 L32 # 488  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

this appears to cover multiple normative requirements, but there is no accompanying shall statements for maximum total jitter, max deterministic jitter, or any of the eye mask definitions.

what is the tx data pattern for these measurements?

*SuggestedRemedy*

Change text from:

"The eye templates are given in Figure 83A-6 and Table 83A-1. The template measurement requirements are specified in 83A.5.1. The jitter requirements at the transmitter are a maximum Total Jitter of 0.32 UI peak-to-peak and a maximum Deterministic Jitter of 0.17 UI peak-to-peak. The maximum Random Jitter is equal to the maximum Total Jitter minus the actual Deterministic Jitter. Jitter measurement requirements are described in 83A.5.1, and are conducted with de-emphasis off."

add appropriate pics statements

"The eye templates are given in Figure 83A-6 and Table 83A-1. The template measurement requirements are specified in 83A.5.1. The jitter requirements at the transmitter are a maximum Total Jitter of 0.32 UI peak-to-peak and a maximum Deterministic Jitter of 0.17 UI peak-to-peak. The maximum Random Jitter is equal to the maximum Total Jitter minus the actual Deterministic Jitter. Jitter measurement requirements are described in 83A.5.1, and are conducted with de-emphasis off using a xxxx test pattern."

to

"The measured Tx signal at the transmit compliance point shall meet the eye templates specified in Figure 83A-6 and Table 83A-1. The template measurement requirements are specified in 83A.5.1. The measured jitter at the transmit compliance point shall be less than the maximum Total Jitter of 0.32 UI peak-to-peak and a maximum Deterministic Jitter of 0.17 UI peak-to-peak. Jitter measurement requirements are described in 83A.5.1, and are conducted with de-emphasis off."

Response Response Status C

ACCEPT IN PRINCIPLE.

"The measured Tx signal at the transmit compliance point shall meet the eye templates specified in Figure 83A-6 and Table 83A-1. The template measurement requirements are specified in 83A.5.1. The measured jitter at the transmit compliance point shall be less than the maximum Total Jitter as defined in Table 83A-1 and a maximum Deterministic Jitter as defined in 83A-1. Jitter measurement requirements are described in 83A.5.1, and are conducted with de-emphasis off."

Check multiple instances of Shall and make sure PICS are assigned.

CI 83A SC 83A.3.3.5 P377 L 3238 # 787  
 Li, Mike Altera

Comment Type T Comment Status A

The intended usage of Figure 83A-6 for Tx to comply is under the condition that the pre-emphasize/de-emphasize is turned off. The current text in this paragraph did not spell out this important intent.

*SuggestedRemedy*

\*Add a sentence of "are for Tx to comply when its equalization pre-emphasize/de-emphasize is turned off" after the first sentence of "The eye templates are given in Figure 83A-6 and Table 83A-1".

\*Remove the last sentence "and are conducted with de-emphasis off" to avoid redundancy.

Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution to comment 696.

[Editor's Note: Late comment submitted by the commenter after the close of the ballot]

CI 83A SC 83A.3.3.5 P377 L 37 # 696  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

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 383 line 45.

*SuggestedRemedy*

Equalization may be used to equalize the channel to the Tx compliance point when making the eye mask and jitter measurements.

Response Response Status C

ACCEPT IN PRINCIPLE.

83A.5.1

Change:

Equalization shall be off during jitter testing

to:

De-emphasis shall be off during jitter testing.

Transmit de-emphasis off state is the optimal setting for transmitter jitter and eye mask evaluation.

CI 83A SC 83A.3.3.5 P377 L 37 # 64  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status A

"Jitter measurement requirements are... conducted with de-emphasis off." That's not a valid way to do a conformance test; you have to test what the DUT does in a relevant state of operation.

*SuggestedRemedy*

If the eye is always open, specify with emphasis as used. If not, use WDP, UJ and Qsq specs.

Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution in 63.

CI 83A SC 83A.3.4 P378 L 25 # 279  
 Latchman, Ryan Gennum Corp

Comment Type T Comment Status A

Receiver characteristics should be normative.

Receiver characteristics are summarized in Table 83A-2 and detailed in the following subclauses

*SuggestedRemedy*

change text to:

The XLAUI/CAUI receiver characteristics are specified in Table 83A-2.

Response Response Status C

ACCEPT IN PRINCIPLE.

change text to:

The XLAUI/CAUI receiver characteristics are specified in Table 83A-2.

Make sure shall's are attached to each normative characteristics

Add corresponding PICS

CI 83A SC 83A.3.4 P378 L50 # 281  
Latchman, Ryan Gennum Corp

Comment Type E Comment Status A

note:

bTotal Jitter Measurement Methodology defined in 83A.5

should be

bJitter Tolerance Measurement Methodology defined in 83A.5.2

SuggestedRemedy

change to:

bJitter Tolerance Measurement Methodology defined in 83A.5.2

Response Response Status C

ACCEPT.

CI 83A SC 83A.3.4 P402 L48 # 695  
Misek, Brian Avago Technologies

Comment Type T Comment Status R

With a max Tx of 380mV Y1 why is this 425?

SuggestedRemedy

Change 425 to 380

Response Response Status C

REJECT.

The higher receive side is intended to allow for reflections

CI 83A SC 83A.3.4.2 P379 L10 # 489  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

this would appear to be normative text, but there are no accompanying shall statements or PIC statements.

SuggestedRemedy

modify text in subclause to include corresponding shall statements. Add corresponding pic statements.

Response Response Status C

ACCEPT IN PRINCIPLE.

In 83A.5.2 Jitter tolerance (line 6 of 384),

The jitter tolerance test setup shall meet the minimum receiver eye mask defined in Table 83A-2.

(fix link)

CI 83a SC 83A.3.4.3 P379 L42 # 490  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

return loss specified by equations associated with 83A-5 should be positive

also for 83A.3.4.4

SuggestedRemedy

modify equations so return loss is "+"

Response Response Status C

ACCEPT IN PRINCIPLE.

Multiply equations by -1

CI 83A SC 83A.3.4.5 P381 L35 # 282  
Latchman, Ryan Gennum Corp

Comment Type E Comment Status A

Receiver measurement requirements are specified in 83A.5.2

change: The template measurement requirements are specified in 83A.5

to  
The template measurement requirements are specified in 83A.5.2

SuggestedRemedy

change text to:

The template measurement requirements are specified in 83A.5.2

Response Response Status C

ACCEPT.

See resolution in comment 491

CI 83A SC 83a.3.4.6 P381 L32 # 491  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

isn't 83A.3.4.5 Receiver eye mask definition the same as 83A.3.4.2 Input signal definition?

SuggestedRemedy

delete subclause 83A.3.4.5

Response Response Status C

ACCEPT IN PRINCIPLE.

Add the following tatement in 83A.3.4.2:

Stressed receiver measurement requirements are specified in 83A.5.2

Delete 83A.3.4.5

CI 83A SC 83A.3.4.7 P379 L49 # 59  
Dawe, Piers Avago Technologies

Comment Type TR 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, and has almost nothing to do with the optical specifications (it would apply to a CR4 link using a big module and clocks derived from the signal also).

SuggestedRemedy

Modify the jitter specifications to be sure they do allow two concatenated CDRs and an optical link, XFP style. This may mean that the specs on the transmit side and receive side differ - I think there has to be a single-tone sinusoidal jitter mask for the transmit side nAUI link, like Fig. 83A-10 but with reduced SJ and corner frequency as appropriate for a transmitter. Fig. 83A-10 can remain for the receive side nAUI link.

If we don't know the answers in the meeting, put in an editors note and develop the solution in time for the July meeting.

Response Response Status U

REJECT.

The scope of the jitter specification is not to address the 2 concatenated CDRs and an optical link XFP style. Additional information required to support the need for specification changes.

Optical link requirements are defined in other sections.

CI 83A SC 83A.4 P382 L28 # 287  
Latchman, Ryan Gennum Corp

Comment Type T Comment Status A

System designers should be allowed to trade off interconnect characteristics such as crosstalk, reflections etc. to achieve the specified receive eye mask (which is normative). consider removing:

Note: 2.5 dB receive eye margin is allocated to account for crosstalk and reflection penalties

SuggestedRemedy

Remove:

Note: 2.5 dB receive eye margin is allocated to account for crosstalk and reflection penalties

Response Response Status C

ACCEPT.

Cl **83A** SC **83A.4** P**382** L**28** # **593**  
 Petrilla, John Avago Technologies

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

The note reads, "2.5 dB receive eye margin is allocated to account for crosstalk and reflection penalties." Was this intended to say 'eye-margin' or 'signal loss margin'. If 'eye margin' how is this defined?

*SuggestedRemedy*

If signal loss margin was intended, change eye margin to signal loss margin.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See comment 287

Cl **83a** SC **83a.4** P**382** L**30** # **492**  
 D'Ambrosia, John Force10 Networks

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

the text indicates that this clause is informative.

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

insertion loss and return loss is "+"

*SuggestedRemedy*

move 83A.4 into an informative annex

modify equations so insertion loss and return loss are "+"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change:  
 "This section describes informative characteristics which...

To:  
 "This section describes recommended characteristics.."

change:  
 "The informative values."

to  
 "The values for insertion loss..."

Cl **83A** SC **83A.5** P**383** L**3237** # **789**  
 Li, Mike Altera

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

The Tx RJ inferred is at 1.1 ps RMS. There is no requirement on the jitter floor for the measurement receiver. This measurement error will be significant if jitter floor of the measurement receiver is at 1 ps or above.

*SuggestedRemedy*

Add a requirement of "The measurement receiver needs to have a jitter floor that is 366 fs rms (3-sigma below the DUT RJ) or lower." after the sentence "The eye is measured using a receiver with a -3dB bandwidth of 12 GHz."

Response Response Status **C**

REJECT.

We would like to avoid further specification of measurement equipment.

Cl **83A** SC **83A.5** P**383** L**3237** # **788**  
 Li, Mike Altera

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

To maintain the minimum error introduced by the measurement equipment such as an sampling scope in measuring waveform, eye-diagram, and jitter, a minimum BW is needed. The rule of thumb is that the BW should be at the 5th harmonic minimum. In the case of 10 Gbps for XALUI/CAUI, it is 25 GHz. The current BW requirement is set at 12 GHz, and it will introduce unacceptable amount of errors.

*SuggestedRemedy*

Change the last sentence of "the eye is measured using a receiver with a -3dB bandwidth of 12 GHz", to "the signal waveform, eye, and jitter is measured using a receiver with a minimum -3dB bandwidth of 25 GHz, with a roll-off slope no faster than 20 dB/decade at above 25 GHz"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change the last sentence of "the eye is measured using a receiver with a -3dB bandwidth of 12 GHz",

to "the signal waveform, eye, and jitter may be measured using a receiver with an equivalent minimum -3dB bandwidth at least 18 GHz"

[Editor's Note: Late comment submitted by the commenter after the close of the ballot]

CI **83A** SC **83A.5.1** P**383** L**42** # **62**  
 Dawe, Piers Avago Technologies

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

Total Jitter and Deterministic Jitter are not useful metrics with 64B/66B line code. 802.3ae gave up on them. SFP+ gave up on them. Dual-Dirac DJ is an extrapolation from a point you haven't measured directly to something you probably don't care about, and one can improve the reported DJ by adding more RJ and degrading the signal!

Is there any reason why this situation is different?

We don't have any normative definition of jitter here because Annex 48B is informative.

*SuggestedRemedy*

Response Response Status **C**

REJECT.

No suggested remedy given.

This is the same method used in KR:

72.7.1.9 Transmit jitter test requirements

Transmit jitter is defined with respect to a test procedure resulting in a BER bathtub curve such as that described in Annex 48B.3.

CI **83A** SC **83A.5.1** P**383** L**46** # **283**  
 Latchman, Ryan Gennum Corp

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

83A uses the term de-emphasis to describe transmit equalization. Change the following wording:

Equalization shall be off during jitter testing

to

De-emphasis shall be off during jitter testing

*SuggestedRemedy*

Change the following wording:

Equalization shall be off during jitter testing

to

De-emphasis shall be off during jitter testing

Response Response Status **C**

ACCEPT.

See comment 696

CI **83A** SC **83A.5.2** P**383** L**52** # **601**  
 Petrilla, John Avago Technologies

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

In 83A.5.2 there's a reference to 83A.3.4.8. There is no 83A.3.4.8 in draft 2.0. By the way links to references do not appear active in 83A.

*SuggestedRemedy*

Correct in 83A.5.2 the reference to 83A.3.4.8. 83A.3.4.7 may be the intended subclause.

Activate reference links.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Update to 83A.3.4.7

Cl 83A SC 83A.5.2 P383 L52 # 611  
 Petrilla, John Avago Technologies

Comment Type TR Comment Status R

The phrase "at least" in the instruction in the first sentence, "... comprised of at least 0.42 Ulpp deterministic jitter, and 0.2 Ulpp random jitter" can lead to problematic results. This allows significant overstress, e.g. DJ of 1.0 Ulpp would meet the requirement.

*SuggestedRemedy*

Change, the first sentence from , "... comprised of at least 0.42 Ulpp deterministic jitter, and 0.2 Ulpp random jitter" to "... comprised of 0.42 Ulpp deterministic jitter, and 0.2 Ulpp random jitter"

Response Response Status U

REJECT.

This is a minimum value specified

Cl 83A SC 83A.5.2 P383 L53 # 359  
 Ewen, John IBM

Comment Type E Comment Status A

Incorrect section cross reference.

*SuggestedRemedy*

Change 83A.3.4.8 to 83A.3.4.7

Response Response Status C

ACCEPT.

See comment 601

Cl 83A SC 83A.5.2 P383 L54 # 705  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

The limiting amplifier should be used to make "nonequalizable" only thta portion of the jitter that is nonequalizable in the real system. With the well controlled return loss of this channel, it seems reasonable to limit this only slightly above the Tx DJ.

*SuggestedRemedy*

Change:

The low pass filter stress is added until the 0.32 Ulpp Deterministic Jitter is achieved. FR4 trace stress is then added until 0.42 Ulpp Deterministic Jitter is achieved.

To

With the SJ source off, the low pass filter stress is added until 0.2 Ulpp Deterministic Jitter is achieved. FR4 trace stress is then added until 0.37 Ulpp Deterministic Jitter is achieved. Then the SJ jitter is added to bring the total to 0,42UI when SJ frequency is above 4MHz.

Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution in comment 407

Cl 83A SC 83A.6.3 P384 L39 # 60  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status R

The text about "sound installation practice codes and regulations" is copied from another clause where there is cabling installation to be done. Here, everything in a chip-to-chip nAUI link has been soldered together in a factory: there is no field installation. (If there were a connector, the relevant annex would likely be 83B, and there is still no need for an Installation and maintenance guidelines section.)

*SuggestedRemedy*

Delete 83A.6.3.

Response Response Status C

REJECT.

Consistent with other IEEE clauses



CI 83A SC 83B.2.1, Table 83B-3 P391 L 10 # 790  
Li, Mike Altera

Comment Type T Comment Status A

This fourth row of the Table 83B-3 has the similar information as that of Table 83A-1 of page 374, L11, and there is no reason to make them different.

*SuggestedRemedy*

Make them the same format, except the value, namely remove the states in first column, and remove "off and" in the third column of Table 83B-3.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change de-emphasis states in Table 83B-3 to:

Minimum De-emphasis row

Maximum De-emphasis row

(remove off state from table, put it in sentence below)

Also Change:

Modules may support additional de-emphasis states, but the specification of additional states is outside the scope of this standard. De-emphasis shall be off during jitter testing. Transmit de-emphasis off state is the optimal setting for transmitter jitter and eye mask evaluation.

CI 83A SC Figure 83A-13 P384 L 12 # 129  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Figure is vague and misleading

*SuggestedRemedy*

[see file "83AB\_stress.pdf"]

Indicate sinusoidal jitter added to PBBS31 pattern generator.

Separate into 2 blocks the low pass filter, the limiter.

Use a circle with a "+" inside for the "random jitter injection" to save space.

Change title to: "Figure 83A-13 Stressed-eye and jitter tolerance test setup"

Response Response Status C

ACCEPT.

CI 83A SC Figure 83A-3 P375 L 14 # 122  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status R

The figure is not detailed enough to provide "definitions" (see page 374, lines 46-47). In particular, how wide may the pulse be for the post transition peaking? The "Vtx-demph" could be identified with voltage modulation amplitude, analogous to an optical modulation amplitude (OMA, which is used extensively in this document).

*SuggestedRemedy*

Replace:

"Vtx-demph" --> "VMA"

Provide more detail on requirements on maximum width of peaking and if peaking before the transition is at all possible. (from the drawing it does not appear that there could be "pre-peaking".

Response Response Status C

REJECT.

Vtx-demph is defined in 83A-2. Actual implementation of de-emphasis is product specific.

CI 83A SC Table 83A-1 P374 L 11 # 116  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

"Minimum De-emphasis"

*SuggestedRemedy*

Replace with:

Minimum Pre-emphasis"

Response Response Status C

ACCEPT IN PRINCIPLE.

Intent is to use de-emphasis throughout

see 118

**Cl 83A** SC **Table 83A-1** P**374** L**13** # **117**  
 Bergmann, Ernest Circadiant/JDSU

**Comment Type T** **Comment Status R**  
 "Minimum Vtx-denph"

**SuggestedRemedy**  
 Replace with  
 "Minimum VMA"

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

Intention is to use Vtx-demph throughout  
 see comment 122

**Cl 83B** SC **1** P**389** L**28** # **420**  
 Ghiasi, Ali Broadcom

**Comment Type TR** **Comment Status A**  
 nAUI host and module are measured with the nAUI MCB and HCB which provides measurable points. Figure 83B need to be updated to reflect this as well as Table 83B.

**SuggestedRemedy**  
 Add nAUI HCB and MCB reference point to CL83B and updated the Table 83B for the board loss and see ghiasi\_03\_0509.

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

Update by replacing figure 83B-2 with 2 copies of 83B-1 with the following modifications:

- 1) Picture#1 with HCB instead of module showing the host compliance point with associated loss board
- 2) Picture #2 with MCB instead of host showing the module compliance point with associated loss board

Add MCB and HCB loss equations:

MCB:  
 $SDD21(dB) = 0.04 - 0.33 * \sqrt{f} - 0.32 * f$  from 0.25 to 7 GHz  
 $SDD21(dB) = 3.72 f$  from 7 to 11.1 Ghz

MCB  
 see comment 418

**Cl 83B** SC **1** P**43** L**44** # **419**  
 Ghiasi, Ali Broadcom

**Comment Type TR** **Comment Status A**  
 The S21PCB loss budget for the host and PCB and connector only specified at single frequency, propose to add SDD21 mask limit similar to CL83A

**SuggestedRemedy**  
 Host PCB limit  $SDD21 = -0.111 - 1.046 * \sqrt{f} - 1.05 * f$  from 0.25 to 7 GHz  
 and  $11.95 - 3.15 * f$  from 7 to 11.1 GHz  
 f is in GHz

Since the host always will be measured with nAUI HCB with 2.1 dB loss we could include the adapter loss here. Similarly the module will be measured with the MCB loss propose loss of 1 dB which can be included in the measurement. for detail proposal to this option see ghiasi\_03\_0509.

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

Modify the following:  
 The loss budget of Equation 83A-7 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.

To  
 The loss budget of Equation 83A-7 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 equations 83B\*\* and 83B\*\*\*.

83B\*\*:  
 Host PCB limit  $SDD21 = -0.111 - 1.046 * \sqrt{f} - 1.05 * f$  from 0.25 to 7 GHz  
 and  $11.95 - 3.15 * f$  from 7 to 11.1 GHz  
 f is in GHz

83B\*\*\*:  
 Module PCB limit  $SDD21 = -0.03 - 0.278 * \sqrt{f} - 0.28 * f$  from 0.25 to 7 GHz  
 and  $11.95 - 3.15 * f$  from 7 to 11.1 GHz  
 f is in GHz

CI **83B** SC **2.1** P**389** L**10** # **410**  
 Ghiasi, Ali Broadcom

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

The de-emphasis amount and Vtx-demph equation need to be adjusted for the module 2.1 dB PCB loss and the connector

*SuggestedRemedy*

Min de-emphasis should be 3.5 dB and max 5.5 dB and also see ghiasi\_03\_0509

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Update Vtxdemph for 83B:

$$Vtxdemph=(-110-2.13*x +0.32*x^2)*(10^y/20)$$

Update table 83B-3 minimum de-emphasis value to 3.5dB

Update table 83B-3 maximum de-emphasis value to 6.0dB

CI **83B** SC **2.1** P**390** L**29** # **133**  
 Bergmann, Ernest Circadiant/JDSU

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

"de-emphasis states,"

*SuggestedRemedy*

Replace with:  
 "pre-emphasis states,"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

De-emphasis should be used throughout  
 see comment 118

CI **83B** SC **2.1** P**390** L**35** # **408**  
 Ghiasi, Ali Broadcom

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

Module input and output return loss must be adjusted due to the effect of compliance board

*SuggestedRemedy*

ghiasi\_03\_0509 adjust the chip return loss based on the connector and compliance board response

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Update Module input / output reflection SDD11/SDD22 in table 83B-2 from:

-12+2xV(f), 0.01 GHz < f < 4.11 GHz

-6.3 + 13xlog10(f/5.5),

4.11 GHz < f < 11.1 GHz

To:

-12, 0.01 GHz < f < 1.0 GHz

-5.56 + 8.7xlog10(f/5.5),

1.0 GHz < f < 11.1 GHz

Update Host input / output reflection SDD11/SDD22 in table 83B-4 from:

-12+2xV(f), 0.01 GHz < f < 4.11 GHz

-6.3 + 13xlog10(f/5.5),

4.11 GHz < f < 11.1 GHz

to:

-12, 0.01 GHz < f < 1.0 GHz

-5.56 + 8.7xlog10(f/5.5),

1.0 GHz < f < 11.1 GHz

see ghiasi\_03\_0509

Cl **83B** SC **2.1** P**391** L**13** # **411**  
 Ghiasi, Ali Broadcom

Comment Type **TR** Comment Status **A** *de-emphasis*

The min de-emphasis is defiend to be 3.9 dB but without the maximum de-emphasis Vtx\_demph can go to zero!

SuggestedRemedy  
 Propose to define de-emphasis range instead of 3.9 dB de-emphasis see ghiasi\_03\_0509

Response Response Status **C**

ACCEPT.

See comment 410 for resolution

Cl **83B** SC **2.2** P**391** L**45** # **409**  
 Ghiasi, Ali Broadcom

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

Host input and output return loss must be adjusted due to the effect of compliance board

SuggestedRemedy  
 ghiasi\_02\_0309 adjust the chip return loss based on the connector and compiance board response

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See comment resoultion in 408

Cl **83B** SC **2.3** P**390** L**37** # **414**  
 Ghiasi, Ali Broadcom

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

Limiter function gain must be defined

SuggestedRemedy  
 Propsoe min gain of 20 dB

Response Response Status **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **83B** SC **2.3** P**392** L**22** # **142**  
 Bergmann, Ernest Circadiant/JDSU

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

"83B.2.3 Host jitter tolerance requirement" has requirements upon interference.

SuggestedRemedy  
 Change to:  
 "83B.2.3 Host stressed-eye and jitter tolerance requirement"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

"83B.2.3 Receiver tolerance"

Cl **83B** SC **2.3** P**392** L**26** # **143**  
 Bergmann, Ernest Circadiant/JDSU

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

"defined in 83A.3.4.8," references a non-existant subclause.

SuggestedRemedy  
 Replace with:  
 "defined in 83A.3.4.7,"

Response Response Status **C**

ACCEPT.

Suggested remedy

CI **83B** SC **2.3** P**392** L**39** # **412**  
 Ghiasi, Ali Broadcom

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

The stress Gen DJ of 0.25 UI is excessive amount of stress for nAUI channels where significant of DJ is due to ISI

*SuggestedRemedy*

Propose to use DJ of 0.2 UI which allow more ISI generated DJ

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Update 83B.2.3 Host jitter tolerance requirement from

Deterministic jitter is added to a clean test pattern by adding sinusoidal jitter as defined in 83A.3.4.8, along with low pass filter stress, followed by a limiting function

to:

Deterministic jitter is added to a clean test pattern as sinusoidal jitter defined in 83A.3.4.8. The limited low pass filter stress is added until the 0.22 U<sub>lpp</sub> Deterministic Jitter is achieved. FR4 trace stress is then added until 0.25 U<sub>lpp</sub> Deterministic Jitter is achieved.

Update figure 83B-3 accordingly

CI **83B** SC **4.3** P**395** L**5** # **145**  
 Bergmann, Ernest Circadian/JDSU

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

"-0.4 to 4" should have units

*SuggestedRemedy*

Replace with:  
 "-0.4 V to 4 V"

Response Response Status **C**

ACCEPT.

CI **83B** SC **83B.1** P**389** L**41** # **44**  
 Anslow, Peter Nortel Networks

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

Table 83B-1 defines an "S21 Loss budget (at 5.5 GHz)".  
 What does a "loss budget" mean?  
 Is this the maximum loss? Minimum loss? Typical loss?

*SuggestedRemedy*

Change "S21 Loss budget (at 5.5 GHz)" to "S21 Loss max. (at 5.5 GHz)"

Response Response Status **C**

ACCEPT.

*Suggested remedy*

CI **83B** SC **83B.2** P**389** L**50** # **67**  
 Dawe, Piers Avago Technologies

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

I heard that the compliance board losses for nAUI must be much larger than for PPI because the module is much bigger, but I'm not convinced they would be MUCH larger.

*SuggestedRemedy*

Find out what they are or use PPI numbers.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See resolution in comment 420

CI **83B** SC **83B.2** P**390** L**2** # **268**  
 Anslow, Peter Nortel Networks

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

Text says "and a host compliance boards (HCB) is used". This should be "and a host compliance board (HCB) is used". i.e change "boards" to "board"

*SuggestedRemedy*

Change "and a host compliance boards (HCB) is used". to "and a host compliance board (HCB) is used"

Response Response Status **C**

ACCEPT.

Change "and a host compliance boards (HCB) is used". to "and a host compliance board (HCB) is used"

CI **83B** SC **83B.2.1** P**390** L**25** # **612**  
 Petrilla, John Avago Technologies

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

The first sentence in 83B.2.1 call for, "host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 if measured using the MCB and HCB." but provides no requirement if not measured using the MCB and HCB.

*SuggestedRemedy*

Change the first sentence in 83B.2.1 from, "... host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 if measured using the MCB and HCB." to "... host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 if measured using the MCB and HCB. If an MCB and HCB are not used, a conforming implementation must behave as though an MCB and HCB were used."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change to

"... host shall meet the characteristics outlined in Table 83B-2 and Table 83B-3 when measured with the MCB and HCB."

CI **83B** SC **83B.2.1** P**390** L**26** # **613**  
 Petrilla, John Avago Technologies

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

While 83B.2.1 calls for use of compliance boards, no definition of the boards is provided. Fortunately, an appropriate definition exists in 86.7.1.

*SuggestedRemedy*

Add at the end of the first paragraph of 83B.2.1, "Characteristics of MCB and HCB are defined in 86.7.1.1."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See comment 420

CI **83B** SC **83B.2.1** P**390** L**29** # **356**  
 Dudek, Mike Independent

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

See related comment on subclause 83A. It is ambiguous as to what de-emphasis is required/allowed. Currently the draft specifies one minimum value besides zero. The equations (as corrected for sign of de-emphasis in a separate comment) allow very large values of de-emphasis that will have a closed eye on a short link.

*SuggestedRemedy*

Change the de-emphasis states row of Table 83B-3 to "off and 4.4+/-0.5dB"

Response Response Status **C**

ACCEPT IN PRINCIPLE.

See comment 410

CI **83B** SC **83B.2.1** P**390** L**30** # **607**  
 Petrilla, John Avago Technologies

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

AC coupling capacitors are set as requirements although other means may be possible.

*SuggestedRemedy*

Change "AC coupling capacitors for both TX and RX paths" to "AC coupling means for both TX and RX paths".

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change "AC coupling capacitors for both TX and RX paths" to  
 "AC coupling for both TX and RX paths"..

CI **83B** SC **83B.2.1** P**390** L**39** # **602**  
 Petrilla, John Avago Technologies

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

In tables 83B-2 and 83B-4, equations use f as a variable without adequately identifying the appropriate units for f.

*SuggestedRemedy*

Assuming GHz is the appropriate unit for all instances of f in these equations, add to the end of the equation the phrase, where f is the frequency in GHz.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Add "where f is frequency in GHz" to equations

**CI 83B**    **SC 83B.2.1**                      **P390**            **L40**            # **348**  
 Dudek, Mike                                      Independent

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

Wrong reference. The Module input tolerance signal should be the completely described input signal. 83A.5.2 is just jitter

**SuggestedRemedy**  
 Change the reference from 83A.5.2 to 83A.3.4

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

ACCEPT IN PRINCIPLE.  
 83A.5.2 deals with more than just jitter

See comment 127

**CI 83B**    **SC 83B.2.1**                      **P391**            **L6**            # **349**  
 Dudek, Mike                                      Independent

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

AC coupling is normatively required in the module electrical output in 83B.2.1 page 390 line 30. The module cannot therefore create a single ended output voltage as required in table 83B-3.

**SuggestedRemedy**  
 Either delete this row in the table or change the parameter to "Single-ended output voltage tolerance range.

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

ACCEPT.

Delete this row.

**CI 83B**    **SC 83B.2.2**                      **P391**            **L41**            # **449**  
 D'Ambrosia, John                                      Force10 Networks

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

Clause 83B has no crosstalk requirements on host compliance. Furthermore, Clause 83A has minimal guidance regarding channel crosstalk constraints

Note: 2.5 dB receive eye margin is allocated to account for crosstalk and reflection penalties.

**SuggestedRemedy**  
 Apply the following crosstalk limits to Host Compliance.  
 Propose to limit total NEXT to power sum of 2 aggressors per Eq 86-12. Add appropriate equation.

Propose to limit total FEXT to power sum of 2 aggressors per Eq 86-13. Add appropriate equation.

Add these crosstalk limits to XLAUI / CAUI in Annex 83A

**Response**                                      **Response Status**    **U**

REJECT.

Crosstalk is included in nAUI transmit jitter and receiver tolerance measurements by having all channels active.

**CI 83B**    **SC 83B.2.2**                      **P392**            **L5**            # **350**  
 Dudek, Mike                                      Independent

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

Table 83B-5 is the electrical output specs. The first two lines incorrectly specifying inputs

**SuggestedRemedy**  
 Change "input" to "output" (two places)

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

ACCEPT. See suggested remedy

CI **83B** SC **83B.2.3** P**392** L**25** # **351**  
 Dudek, Mike Independent

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

We have learnt by bitter experience that it is unwise to specify key stressed conditions as "at least this amount of degradataion". The test condition should be specified with just a target value.

*SuggestedRemedy*

Delete "at least" on line 25.

Response Response Status **C**

REJECT.

A single value doesn't cover the value as a minimum

CI **83B** SC **83B.2.3** P**392** L**26** # **269**  
 Anslow, Peter Nortel Networks

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

This says "using a interference generator" which should be "using an interference generator". i.e. change "a" to "an"

*SuggestedRemedy*

Change "using a interference generator" to "using an interference generator"

Response Response Status **C**

ACCEPT.

CI **83B** SC **83B.2.3** P**392** L**26** # **360**  
 Ewen, John IBM

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

Incorrect section cross reference.

*SuggestedRemedy*

Change 83A.3.4.8 to 83A.3.4.7

Response Response Status **C**

ACCEPT.

CI **83B** SC **83B.2.3** P**392** L**32** # **66**  
 Dawe, Piers Avago Technologies

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

Jitter tolerance testing should be done with Pattern 5 (scrambled idle), with PRBS31 as an alternative.

*SuggestedRemedy*

Change "A PRBS31 pattern shall be used for evaluating XLAUI/CAUI jitter tolerance." to "The recommended pattern for evaluating XLAUI/CAUI jitter tolerance is Pattern 5 (scrambled idle, see 82.2.11). The alternative is Pattern 3 (PRBS31)."

Consider adding

"As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-R or 100GBASE-R bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the required limit using Pattern 3."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The recommended pattern for evaluating XLAUI/CAUI jitter tolerance is scrambled idle, (see 82.2.11) or PRBS31 (83.5.10).

CI **83B** SC **83B.3.3** P**393** L**15** # **65**  
 Dawe, Piers Avago Technologies

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

The text about "sound installation practice codes and regulations" is copied from another clause where there is cabling installation to be done. Here, we are talking about plugging a module in which isn't regulated by law as far as I know, and doesn't have the same wiring-safety implications.

*SuggestedRemedy*

Delete 83B.3.3.

Response Response Status **C**

REJECT.

Consistent with other clauses





CI **83B** SC **Table 83B-3** P**391** L**10** # **137**  
 Bergmann, Ernest Circadiant/JDSU

Comment Type **T** Comment Status **A**  
 This line should be clarified

SuggestedRemedy  
 Replace parameter name to: "Minimum set of Pre-emphasis states"  
 Replace value to: "0 and 3.9"

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

See resolution in comment 410

CI **83B** SC **Table 83B-3** P**391** L**12** # **138**  
 Bergmann, Ernest Circadiant/JDSU

Comment Type **ER** Comment Status **R**  
 Rename: "Minimum Vtx-demph"

SuggestedRemedy  
 Change to:  
 "Minimum VMA"

Response Response Status **C**  
 REJECT.

Intent is to use Minimum Vtx-demph throughout

CI **83B** SC **Table 83B-4** P**391** L**103** # **139**  
 Bergmann, Ernest Circadiant/JDSU

Comment Type **T** Comment Status **A**  
 "Value", needs to indicate that the frequency, f, is in GHz.

SuggestedRemedy  
 Replace with:  
 "Value<sup>a</sup>" and add the footnote:  
 "<sup>a</sup> The frequency, f, is in GHz."

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

See comment resolution in 602

CI **83B** SC **Table 83B-4** P**391** L**48** # **141**  
 Bergmann, Ernest Circadiant/JDSU

Comment Type **T** Comment Status **A**  
 "Host input reflection SDD11" not adequate.

SuggestedRemedy  
 Replace with:  
 "Maximum host input reflection |SDD11|" [max, abs bars]

Response Response Status **C**  
 ACCEPT.

change to  
 "Maximum host input reflection |SDD11|"

CI **83B** SC **Table83B-4** P**391** L**45** # **140**  
 Bergmann, Ernest Circadiant/JDSU

Comment Type **T** Comment Status **A**  
 "Host output reflection SDD22" not clear

SuggestedRemedy  
 Replace with:  
 "Maximum host output reflection |SDD22|" [max, abs bars]

Response Response Status **C**  
 ACCEPT.

change to  
 "Maximum host output reflection |SDD22|"

CI **83C** SC **2** P**397** L**34** # **798**  
 Ofelt, David Juniper Networks

Comment Type **ER** Comment Status **A**  
 figure is misspelled.

SuggestedRemedy  
 Change "See Fgure 83-5" to "See Figure 83-5".

Response Response Status **C**  
 ACCEPT.

CI **83C** SC **83C** P397 L1 # 584  
Booth, Brad AMCC

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

This reads like a whitepaper. While informative in nature, 83C.2 uses the word guidelines which implies a normative requirement.

*SuggestedRemedy*

Change 83C.2 to read: PMA partitioning recommendations

Delete all the examples.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Move the content of 83.C.2 into subclause 83.1.4. The Annex is then only informative examples. Remove the introductory paragraph in 83.C.1, now unnecessary as it is covered by the introductory paragraph of 83.C.3.

CI **83c** SC **83c.2** P397 L21 # 473  
D'Ambrosia, John Force10 Networks

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

1) An instance of this interface can only connect service interfaces with the same number of lanes.

Given that there are PMD solutions based on 4 lanes of 10G for 40G and 4 lanes of 25G for 100G, this statement should be modified such that it is realized that you cant hook up these two.

*SuggestedRemedy*

modify text to

1) An instance of this interface can only connect service interfaces with the same number of lanes, where the lanes operate at the same baud rate.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Replace "1) An instance of this interface can only connect service interfaces with the same number of lanes." with

"1) An instance of this interface can only connect service interfaces with the same number of lanes, where the lanes operate at the same rate."

CI **83C** SC **83C.2** P397 L22 # 764  
Muller, Shimon Sun Microsystems, Inc

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

A PMA does not convert the lane widths, but rather maps the number of lanes on each side of the PMA. Also, seems to be redundant with bullet b)4) on line 29.

*SuggestedRemedy*

Delete the sentence.

Response Response Status **C**

ACCEPT.

CI **83C** SC **83C.2** P397 L29 # 765  
Muller, Shimon Sun Microsystems, Inc

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

This bullet is confusing: "n" and "m" are not defined anywhere, and it is not clear what "adjusting" means.

*SuggestedRemedy*

Replace with:

"The number of lanes above a PMA sublayer ('m') is matched to the number of lanes below a PMA sublayer ('n') by mapping 'm' lanes to 'n' lanes in the PMA".

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Delete item (b)(4). Capture the concept by replacing:

"c) The physical instantiation XLAUI or CAUI, and associated PMAs, can replace any instance of the

generic multi-lane abstract service interface"

with

"c) The generic multi-lane abstract service interface can be physically instantiated as a XLAUI or CAUI, using associated PMAs to map to the appropriate number of lanes"

CI **83C** SC **83C.3** P**397** L**44** # **474**  
 D'Ambrosia, John Force10 Networks

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

The different partition examples either have FEC or don't

*SuggestedRemedy*

add two sub-clauses under 83C.3

83C.3.1 would cover partitioning examples for -CR and -KR where FEC has been employed.  
 Move 83C.3.3 to 83C.3.1.1 and 83C.3.4 to 83C.3.1.2

83C.3.2 would cover partitions where FEC is not employed or permitted.

Move 83C.3.1 to 83C.3.2.1. move 83c.3.2 to 83c.3.2.2. move 83c.3.5 to 83C.3.2.3

Response Response Status **C**

ACCEPT IN PRINCIPLE.

The resolution to #584 will eliminate a heading level since 83C.2 moves to 83.1.4. So 83C.1 can contain examples with FEC (the reference to the example in Figure 83-2, 83C, 83C.3.3, 83C.3.4) and 83C.2 can contain the examples without FEC (83C.3.1, 83C.3.2, 83C.3.5)

CI **83C** SC **83C.3** P**397** L**44** # **766**

Muller, Shimon Sun Microsystems, Inc

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

The figures that follow in the subsequent subclauses contain MMD numbering that is not obvious.

*SuggestedRemedy*

Either add a paragraph that explains the MMD numbering rationale, or add a reference to elsewhere in the document where this has been already explained.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Add a sentence "Partitioning guidelines and MMD numbering conventions are described in 83.1.4" (partitioning guidelines will move from 83C.2 to 83.1.4 per comment 584)

CI **83C** SC **83C.3.5** P**402** L**1** # **333**  
 Young, George AT&T

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

The context for the application of the PMA partitioning example shown in Figure 83C-5 is entirely unclear.

*SuggestedRemedy*

Provide a better title than "Example 40GBASE-R and 100GBASE-R PMA Layering" and/or description to accompany Figure 83C-5.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Change title of Figure 83C-5 to match title of subclause 83C.3.5 "Example - Separate SERDES for optical module interface"

CI **83C** SC **83C3.3** P**400** L**21** # **475**

D'Ambrosia, John Force10 Networks

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

The layer diagram in Fig 83C-3 shows an example diagram for implementations with FEC, but FEC is only optional for -CR and -KR. This is not shown in the layer diagram, which merely shows "-R"

This is also done in 83C.3.4 and Fig 83C-4.

*SuggestedRemedy*

Change 40GBASE-R to "40GBASE-CR4 or 40GBASE-KR4"  
 Change 100GBASE-R to "100GBASE-CR10"

Repeat correction for Fig 83C-4.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Replace 100GBASE-R with 100GBASE-CR10 in Figures 83C-3 and 83C-4.

Replace 40GBASE-R with 40GBASE-CR4 in Figure 83C-3 and 40GBASE-R with 40GBASE-KR4 in Figure 83C-4 (these are just examples, so we can give one example of each)

Cl 84 SC 4 P220 L36 # 156  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

"definitions for bit-times ans pause\_quanta can be found in 69.3 and 80.3." is not helpful.

SuggestedRemedy

Replace with:  
"definitions for bit-times ans pause\_quanta can be found in 69.3 and Table 80-2."

[There is also a separate comment on changing Table 80-2 to include detail on pause\_quanta.]

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 275

Cl 84 SC 4 P220 L39 # 157  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"delay through the medium is 640 bit times." does not support a range of delays

SuggestedRemedy

Replace with:  
"delay through the medium is no more than 640 bit times."

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 275

Cl 84 SC 7.6 P223 L29 # 146  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

The introductory sentence talks of transmitters (plural). So the phrase: "turn off the transmitter..." is not clear.

SuggestedRemedy

replace with:  
"turn off each transmitter..."

Response Response Status C

ACCEPT IN PRINCIPLE.

replace with:

"turn off all of the transmitters"

to match Clause 85

Cl 84 SC 7.6 P223 L32 # 147  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

The introductory sentence talks of transmitters (plural). So the phrase: "turn off the electrical transmitter." is not clear.

SuggestedRemedy

replace with:  
"turn off all transmitters."

Response Response Status C

ACCEPT IN PRINCIPLE.

replace with:

"turn off the electrical transmitter in all lanes."

to match Clause 85

Cl 84 SC 7.7 P223 L41 # 148  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Only one transmitter for each lane, so:  
"the electrical transmitters in each lane to be selectively disabled"  
does not seem to be the intent

*SuggestedRemedy*

replace with:  
"the transmitter in each lane to be selectively disabled"

Response Response Status C

ACCEPT IN PRINCIPLE.

replace with:  
"the electrical transmitter in each lane to be selectively disabled"

also implement the same change in Clause 85

Cl 84 SC 7.7 P223 L48 # 149  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status R

"electrical transmitter"

*SuggestedRemedy*

remove "electrical" to produce:  
"transmitter"

Response Response Status C

REJECT.

there is no justification for removing the word electrical and this wording is consistent with  
the rest of the 802.3ba document

also see comment 161

Cl 84 SC 7.8 P224 L11 # 154  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Loop back involves all the transmitters and all the receivers. Thus we should change: "The  
signal path that is exercised in the loopback"

*SuggestedRemedy*

Replace with:  
"The signal paths that are exercised in the loopback"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change to:

NOTE 1-The signal paths that are exercised in the loopback mode are implementation  
specific, but it is recommended that these signal paths encompass as much of the circuitry  
as is practical.

also implement the same change in Clause 85

Cl 84 SC 7.8 P224 L12 # 155  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Loop back involves all the transmitters and all the receivers. Thus we should change: "this  
signal path encompass"

*SuggestedRemedy*

Replace with:  
"these signal paths encompass"

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 154

CI 84 SC 7.8 P224 L3 # 150  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Loop back involves all the transmitters and all the receivers. Thus we should change: "the transmitter and receiver of a device"

*SuggestedRemedy*

replace with:  
"the transmitters and the receivers of a device"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change to:

Loopback mode shall be provided for the 40GBASE-KR4 PMD by the transmitters and receivers of a device as a test function to the device. When loopback mode is selected, transmission requests passed to each transmitter are sent directly to the corresponding receiver, overriding any signal detected by each receiver on its attached link. Note that loopback mode does not affect the state of the transmitter which continues to send data (unless disabled).

also implement the same change in Clause 85

CI 84 SC 7.8 P224 L4 # 151  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Loop back involves all the transmitters and all the receivers. Thus we should change: "passed to the transmitter"

*SuggestedRemedy*

replace with:  
"passed to each transmitter"

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 150

CI 84 SC 7.8 P224 L5 # 152  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Loop back involves all the transmitters and all the receivers. Thus we should change: "to the receiver, overriding any signal detected by the receiver"

*SuggestedRemedy*

replace with:  
"to the corresponding receiver, overriding any signal detected by each receiver"

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 150

CI 84 SC 7.8 P224 L6 # 158  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

"Note that this bit does" refers to a bit not mentioned in this subsection.

*SuggestedRemedy*

Replace with:  
"Note that loopback does"

Response Response Status C

ACCEPT IN PRINCIPLE.

duplicate comment to comment 153

see response to comment 150

CI 84 SC 7.8 P224 L6 # 153  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"this bit" has no prior mention in this section.

*SuggestedRemedy*

Replace with:  
"loopback mode"

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to comment 150

see also comment 162

CI 84 SC 84.1 P217 L7 # 70  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

Instead of "In order to form a complete PHY", text should say "When forming a complete PHY" (see 802.3-2008 72.1). Strictly, as the RS is not part of the PHY, that should be "complete Physical Layer".

*SuggestedRemedy*

Change "In order to form a complete PHY" to "When forming a complete Physical Layer".

Response Response Status C

REJECT.

This wording is consistent with 85.1, 87.1 and 88.1.

Also see response to comment 77

CI 84 SC 84.11.3 P228 L20 # 626  
Ganga, Ilango Intel

Comment Type E Comment Status A

Change font size for "skew variation" to be consistent with text in the table. (It currently uses larger fonts)

*SuggestedRemedy*

As per comment.

Response Response Status C

ACCEPT.

CI 84 SC 84.3 P220 L25 # 69  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

1. This PMD clause can't impose requirements on the PCS. That's what we have a PCS clause for!. The requirement for the PCS to support the AN service interface primitive AN\_LINK.indication is already covered in 82.6.

2. As the primitive AN\_LINK.indication cannot sneak round the PMD by magic, it must go through the PMD (see 76.4.1.1 for an example of a primitive going through a sublayer).

*SuggestedRemedy*

Delete 84.3 and add AN\_LINK.indication as a subclause below 84.2.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

see response to comment 52

CI 84 SC 84.3 P220 L27 # 478  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status R

The PCS associated with this PMD is required to support the AN service interface primitive AN\_LINK.indication defined in 73.9. (See 82.6.)

This should be a SHALL statement

*SuggestedRemedy*

Add appropriate PICS for SHALL statement.

Add "PCS requirements for AN service interface"

see 72.10.4.1. for reference.

Response Response Status C

REJECT.

It is not appropriate to add PICS and SHALL for a PCS in a PMD clause.



Cl 84 SC 84.4 P220 L32 # 757  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

SuggestedRemedy

Delete the text in the parenthesis.

Response Response Status C

ACCEPT.

Delete the text in the parenthesis since this subclause references 80.3

Cl 84 SC 84.4 P220 L38 # 68  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

Other port types have delay specifications for all sublayers. There is no point bounding all but one items in a link. If those are necessary, then the delay through the AN sublayer must be controlled also. At present there is no control over delay through the AN. It MIGHT be low, but nothing enforces it

SuggestedRemedy

Change "40GBASE-KR4 PMD and medium" to "40GBASE-KR4 PMD, AN and medium".

Response Response Status C

ACCEPT IN PRINCIPLE.

also see comment 275

Cl 84 SC 84.5 P220 L42 # 379  
Kipp, Scott Brocade

Comment Type ER Comment Status A

Why are skew numbers repeated here when they have been defined in other places like Table 80-3. Parameters should be defined in one place and not multiple to prevent errors.

SuggestedRemedy

Consolidate all of the skew numbers into one section. Don't repeat topics in multiple areas.

This applies to Clause 84.5, 85.5, 86.2.2, 88.3.2 and 87.3.2.

Response Response Status C

ACCEPT IN PRINCIPLE.

also see comment 388

Cl 84 SC 84.7.1 P221 L43 # 772  
Marris, Arthur Cadence

Comment Type E Comment Status A

Missing space

SuggestedRemedy

insert space after 'as'

Response Response Status C

ACCEPT.

CI 85 SC P231 L1 # 703  
Misek, Brian Avago Technologies

Comment Type T Comment Status A

Normative specification point should be easily accessible to the system integrator.  
Informative specification to separate parts supplied from different sources.

*SuggestedRemedy*

- 1) Informative spec on S-parameters from TP0 to TP5 (ILChmax)
- The change of this from the present normative to informative is to allow it to be used to derive normative specifications.
- 2) Normative S parameter specs from TP1 to TP4, ILCamax (Section 85.10)
- This stays much the same as defined in clause 85.10. It is something the integrator/vendor can test to.
- 3) Normative specs on Tx at TP2
- The combination of the TP0 specifications and the Host PCB to be accounted together. Enables the provider of the Tx port a means to ensure compatibility.
- 4) Normative interference tolerance test on Rx at TP3.
- Enables the provider of the Rx port a means to ensure compatibility.
- 5) Informative spec on Tx at TP0 or nearby, (very close to 72.7.1)
- This allows for Host ASIC vendors to have a point they can test against
- 6) Informative spec on channel from TP0 to TP2, 1/2 ILPCB (Section 85.9.1)
- This allows Box manufactures to have a definition to work to.
- 7) Informative spec on channel form TP3 to TP5 ,1/2 ILPCB (Section 85.9.1)
- This allows Box manufactures to have a definition to work to.
- 8) Informative spec on Rx at TP5 (very close to 72.7.2)
- This allows for Host ASIC vendors to have a point they can test against.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See resolution comment#512

CI 85 SC 10.10 P254 L14 # 174  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

The note does not adequately talk about the DLn<p>, etc.

*SuggestedRemedy*

Replace the note with the note used below figure 85-2 on page 238, which explains that the SL.. is the transmitter side and the DL.. is the receiver side.

Response Response Status C

ACCEPT IN PRINCIPLE.  
NOTE-SLn<p> and SLn<n> are the positive and negative sides of the transmit differential signal pair and DLn<p> and DLn<n> are the positive and negative sides of the receive differential signal pair for lane n (n = 0, 1, 2, 3 or n=0, 1, 2, 3, 4, 5, 6, 7, 8, 9 ). Signal\_Shield\_n is the signal shield of the differential signal pair for Lane n.

Implement with comment#386

CI 85 SC 10.2 P248 L12 # 402  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Cable assembly insertion loss and other parameters are measured with test board having maximum loss which does not excite the worse case crosstalk.

*SuggestedRemedy*

All cable parameters must be remeasured with cable test board with 0.7 dB loss at nyquist.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See suggested remedy in comment#417

CI 85 SC 10.3 P249 L5 # 172  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"at N uniformly-spaced" does not adequately limit N

*SuggestedRemedy*

Specify that N must be at least 30

Response Response Status C

ACCEPT IN PRINCIPLE.  
See response comment#170

Cl 85 SC 10.8 P252 L42 # 173  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A  
"at N uniformly-spaced" does not adequately limit N

SuggestedRemedy  
Specify that N must be at least 30

Response Response Status C  
ACCEPT IN PRINCIPLE.  
See response comment#170

Cl 85 SC 13.4.2 P262 L19 # 177  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
In this table, the column marked "Value/Comment" has entries with different font sizes.

SuggestedRemedy  
Reduce the font sizes for the entries associated with PF1, PF4, PF5 to match the font size in Pf2,PF3,PF6, and PF7.

Response Response Status C  
ACCEPT IN PRINCIPLE.  
Implement consistent font size for 85.13.4.2

Cl 85 SC 13.4.2 P263 L13 # 178  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
Applies to lines 13 and 19:  
"loopback not affected" [2 places]

SuggestedRemedy  
Replace with:  
"Loopback not affected" [2 places]  
[No indent and capitalize]

Response Response Status C  
ACCEPT.  
Accept suggested remedy

Cl 85 SC 13.4.2 P263 L15 # 179  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
Under "Value/Comment", the font sizes for PF13 and PF17 are too large.

SuggestedRemedy  
Reduce the font size of these 2 entries to match those for PF8, etc.

Response Response Status C  
ACCEPT IN PRINCIPLE.  
Implement consistent font size for 85.13.4.2

Cl 85 SC 13.4.3 P263 L32 # 180  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
entries for "Value/Comment" need capitalization. [4 places]

SuggestedRemedy  
Capitalization needed for MF1, MF2, MF4, and MF5.

Response Response Status C  
ACCEPT.  
Accept suggested remedy

Cl 85 SC 13.4.3 P263 L42 # 181  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A  
2 entries in "Value/Comment" have overly large fonts

SuggestedRemedy  
Reduce the font sizes for MF4 and MF5 to match earlier entries.

Response Response Status C  
ACCEPT IN PRINCIPLE. Implement consistent font size for 85.13.4.3

**Cl 85**    **SC 4**                      **P235**    **L13**                      # **159**  
Bergmann, Ernest                      Circadian/JDSU

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

"pause\_quanta can be found in 80.3."

**SuggestedRemedy**

Replace with:

"pause\_quanta can be found in Table 80-2."

[There is also a separate comment on changing Table 80-2 to include detail on pause\_quanta.]

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

ACCEPT IN PRINCIPLE.

See response to comment #275

**Cl 85**    **SC 4**                      **P235**    **L16**                      # **160**  
Bergmann, Ernest                      Circadian/JDSU

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

"medium is 1135 bit times." does not support a range of delays

**SuggestedRemedy**

Replace with:

"medium is not more than 1135 bit times."

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

ACCEPT IN PRINCIPLE.

See response to comment #275

**Cl 85**    **SC 7.1**                      **P237**    **L50**                      # **393**  
Ghiasi, Ali                                      Broadcom

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

There is no definition for TP0 and TP5 loss from the TX/RX function Line 6 state "TP0 and TP5 are reference points that may be testable in an implemented system."

**SuggestedRemedy**

An implemented system would require some PCB loss, please use definition per 83A  $SDD_{21}(dB) \leq -0006 - 0.16 \cdot \sqrt{f} - 0.0587(f)$  where f is from 0.25 to 11.1 GHz, which gives 0.7 dB loss are Nyquist.

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

REJECT.

This comment was WITHDRAWN by the commenter.

**Cl 85**    **SC 7.1**                      **P238**    **L8**                      # **417**  
Ghiasi, Ali                                      Broadcom

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

Cable test board definition to measure TP1 is missing

**SuggestedRemedy**

For definition of host test board See ghiasi\_01\_0509

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

ACCEPT IN PRINCIPLE. Add sub clause

85.10.x Cable assembly test fixture

The test fixture of Figure 85-x, or its functional equivalent, is required for measuring the cable assembly specifications in 85.10 at TP1 and TP4 TP1 and TP4 are illustrated in Figure 85-2. The test fixture return loss is equivalent to the test fixture return loss specified in 85.8.3.2. The test fixture insertion loss is determined using eq 85-x Max loss:  $L_{cax}(f) = (0.103) \times [20 \times \log_{10}(e) \times (b1 f + b2f + b3f^2 + b4f^3)]$ . The coefficients b1 through b4 are given in (85-3).

where f is expressed in Hz  
for all frequencies from 50 MHz to 6000 MHz.

Note: The value of x is to yield insertion loss to be less than or equal to 0.7 dB loss at 5 GHz.

**Cl 85**    **SC 7.1**                      **P238**    **L8**                      # **401**  
Ghiasi, Ali                                      Broadcom

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

Host test board definition to measure TP2 is missing

**SuggestedRemedy**

For definition of host test board See ghiasi\_01\_0509

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

ACCEPT IN PRINCIPLE.

85.8.3.1 specifies test fixture at TP2.

See comment#395 response for additional test fixture specifications

**Cl 85**    **SC 7.6**                      **P239**    **L48**                      # **161**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **E**                      **Comment Status**    **R**  
 "turn off the electrical transmitter in all lanes."

**SuggestedRemedy**  
 Replace with:  
 "turn off the transmitters in all lanes."

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

Provides explicit distinction between optical and electrical.

see also comment 149

**Cl 85**    **SC 7.8**                      **P240**    **L19**                      # **162**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **ER**                      **Comment Status**    **A**  
 "Note this bit does" refers to a bit not mentioned in this subsection.

**SuggestedRemedy**  
 Replace with:  
 "Note that loopback does"

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

see response to comment 150

**Cl 85**    **SC 7.8**                      **P240**    **L24**                      # **163**  
 Bergmann, Ernest                      Circadiant/JDSU

**Comment Type**    **E**                      **Comment Status**    **A**  
 The style of NOTES here should match the style in 84.7.8

**SuggestedRemedy**  
 remove the title: "NOTES"  
 below replace: "Note 1" --> "NOTE 1"  
 below replace: "Note 2" --> "NOTE 2"

**Response**                      **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.  
 Check style guide; apply consistently

**Cl 85**    **SC 8.3**                      **P242**    **L33**                      # **394**  
 Ghiasi, Ali                                      Broadcom

**Comment Type**    **TR**                      **Comment Status**    **A**  
 There is no definition where TP2 and TP3 is located or the property of the test board, TP2 and TP3 specifications are meaningless without host test board loss and return loss

**SuggestedRemedy**  
 Please see ghiasi\_01\_0509, CL86 in 7.1 also defines Compliance Board Parameters for accurate TP2 and TP3 measurement.

**Response**                      **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.  
 85.8.3.1 specifies test fixture at TP2. Add applicability to TP3.  
 See comment#395 suggested remedy for additional test fixture specifications

**Cl 85**    **SC 8.3**                      **P242**    **L35**                      # **396**  
 Ghiasi, Ali                                      Broadcom

**Comment Type**    **TR**                      **Comment Status**    **A**  
 Table 85-5 does not define DJ and RJ and TP2, please add DJ and RJ to TP2

**SuggestedRemedy**  
 Add line for DJ with value of 0.19 UI, add line for RJ with value of 0.19 UI

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

**Cl 85**    **SC 8.3**                      **P242**    **L37**                      # **400**  
 Ghiasi, Ali                                      Broadcom

**Comment Type**    **TR**                      **Comment Status**    **A**  
 Jitter and Qsq are not sufficient to guarantee operation of TP2 over 10 m of cable.

**SuggestedRemedy**  
 Propose to use TWDP method see ghiasi\_02\_0509 and one line for TWDP penalty to table 85-5

**Response**                      **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.  
 See comment#697 for resolution

Cl 85 SC 8.3.2 P243 L33 # 395  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Test fixture impedance is define but more critical parameter the insertion loss SDD21 is not defined

*SuggestedRemedy*

Transmit test fixture SDD21 loss must be as low as possible but allow breakout of CR4 and CR10 signals, see ghiasi\_01\_0509 and use the following loss curve  $SDD21 = -0.01 - 0.3 * \sqrt{f} - 0.11 * f$   
f from 0.1 to 11.1 GHz and give loss of about 1.3 dB at Nyquist.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add 85.8.3.x. Test fixture insertion loss for measuring TP2. Use equation below

The max test fixture trace insertion loss is determined using eq 85-x  $IL_{txf}(f) = IL_{txf}(f) = (0.193) \times [20 \times \log_{10}(e) \times (b1 f + b2f^2 + b3f^2 + b4f^3)]$ . The coefficients b1 through b4 are given in (85-3).

where f is expressed in Hz

for all frequencies from 50 MHz to 6000 MHz.

Cl 85 SC 8.4 P244 L3 # 398  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

TP2 and TP3 are the most important compliaince point for Ethernet interface as it provide system level interoperability. CL 85.8.3 defines TP2 but CL 85.8.4 does not define TP3. Since CR4/CR10 system are build by many OEMs, currently it is not possible full interoperability and/or compliance.

Without TP3 definition the draft is not technically complete.

*SuggestedRemedy*

Define TP3 stressor starting with KR intereference tolerance tester 69A.1 for full proposal see ghiasi\_02\_0509. This propsoal repalces Frequncy dependent attenuator of Fig 69A-1 with 10 m cable or 10 m cable impulse response otherwise the set up is identical to Fig 69A-1.

Add TP3 Receiver Table Similar to table 72-10

Target BER 10-12

min KR receive waveform "V2" at TP3 150 mV (see note b on page 242)

Amplitude of Broadband noise source 3.7 mV

Applied transition time (20-80%) 47 ps

Applied Sinusoidal jitter (min peak peak) 0.115 UI

Applied random jitter (min peak to peak) 0.130 UI

Applied Duty Cycle Distortion (min peak to peak) 0.035

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment#697 for TP2 and comment#700 for TP3

Cl 85 SC 8.4.3 P244 L42 # 397  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

AC common mode voltage is missing form the TP2 specifications

*SuggestedRemedy*

Propose to use 32.5 mV RMS

Response Response Status C

ACCEPT IN PRINCIPLE.

Add: Common-mode AC output votage (max.) 30 mV rms to Table 85-5-Transmitter characteristics'at TP2 summary

CI 85 SC 83A.5.2 P384 L7 # 61  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

Jitter tolerance testing should be done with Pattern 5 (scrambled idle), with PRBS31 as an alternative.

*SuggestedRemedy*

Change "A PRBS31 pattern shall be used for evaluating XLAUI/CAUI jitter tolerance." to "The recommended pattern for evaluating XLAUI/CAUI jitter tolerance is Pattern 5 (scrambled idle, see 82.2.11). The alternative is Pattern 3 (PRBS31)."

Consider adding

"As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-R or 100GBASE-R bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the required limit using Pattern 3."

Response Response Status C

ACCEPT IN PRINCIPLE. (mislabelled clause, should be clause 83A)

The recommended pattern for evaluating XLAUI/CAUI jitter tolerance is scrambled idle, (see 82.2.11) or PRBS31 (83.5.10).

CI 85 SC 83B.2.1 P391 L1 # 594  
Petrilla, John Avago Technologies

Comment Type E Comment Status A

It would reduce any uncertainties if Table 83B-3 was called "XLAUI/CAUI module transmit signal characteristics at module transmit compliance point".

The same holds for Table 83B-5.

*SuggestedRemedy*

Change the title of Table 83A-3 from, "Module electrical output" to "XLAUI/CAUI module transmit signal characteristics at module transmit compliance point".

Change the title of Table 83B-5 from, "Receiver characteristics" to "XLAUI/CAUI module receive signal characteristics at module receive compliance point".

Response Response Status C

ACCEPT.

CI 85 SC 85.1 P231 L33 # 76  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

Because CRn relies on equalisation even more than KR, and because it is not only aimed at closed systems where the owner of all parts can decide what MTTFFPA he can tolerate, we must assure an acceptable MTTFFPA in all circumstances. To do that we need to know more about the error propagation statistics of CRn.

*SuggestedRemedy*

Find out what the error propagation statistics of CRn are, then work out the MTTFFPA. If it isn't adequate, fix the issue (there may be several ways to fix it).

Response Response Status U

REJECT.

One of the objectives for CR4 and CR10 is to use the KR electricals and the KR channel parameters as an upperbound. Please see gustlin\_04\_0509 CR4/CR10 MTTFFPA relative to the age of the universe (slide 7).

CI 85 SC 85.1 P231 L7 # 77  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

Instead of "In order to form a complete PHY", text should say "When forming a complete PHY" (see 802.3-2008 72.1). Strictly, as the RS is not part of the PHY, that should be "complete Physical Layer".

*SuggestedRemedy*

Change "In order to form a complete PHY" to "When forming a complete Physical Layer".

Response Response Status C

REJECT.

"In order to form a complete PHY" makes sense in its context here and see 84.1, 87.1 and 88.1.

CI 85 SC 85.10 P247 L 30 # 75  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

I don't believe that these specifications provide adequate protection for the receiver, because there is no control over the cable's phase response (this is much worse in CRn than KR because the channel is much longer).

*SuggestedRemedy*

Add a phase response or impulse response spec.

Response Response Status U

REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies. It's anticipated that the outcome of the interference tolerance test parameterization will yield a sufficiently characterized channel response.

CI 85 SC 85.10 P247 L 50 # 362  
Ewen, John IBM

Comment Type T Comment Status A

Table 85-7 Error in last table row.

*SuggestedRemedy*

Replace "Maximum insertion loss to crosstalk ratio" with "Minimum insertion loss to crosstalk ratio" to be consistent with equation 85-33.

Response Response Status C

ACCEPT.

CI 85 SC 85.10.1 P248 L 49 # 433  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Figure 85-5 is labeled "informative"

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

In 85.10.2 the normative statement is made in regards to meeting Eq. 85-13, and then the text states, "The maximum cable assembly insertion loss is illustrated in Figure 85-5." Therefore, Fig 85-5 is the illustration of the equation.

*SuggestedRemedy*

Change caption of Fig 85-5 to

"Figure 85-5-Maximum cable assembly insertion loss"

Response Response Status C

ACCEPT IN PRINCIPLE.  
Delete informative in figure label

CI 85 SC 85.10.10 P254 L 3 # 386  
Kipp, Scott Brocade

Comment Type T Comment Status A

Figure 85-9 What does DL stand for? This is never defined. The note says what SL is, but is it the transmitter or receiver?

The arrows go both directions and if they only went in one direction, that would be better.

*SuggestedRemedy*

Explain where the SL, DL terms come from. Is it an acronym hopefully?

Turn the double headed arrows into single heads.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Provide definition for SL(source lane) and DL(destination lane) in note. Correct arrow direction in Figure 85-9 to reflect direction i.e., source and destination.

Implement with comment#174



CI 85 SC 85.10.2 P248 L11 # 684  
 Misek, Brian Avago Technologies

Comment Type E Comment Status A

85.10.2:

equation 85-13:

uses incorrect frequency units

SuggestedRemedy

Change to

$ILca(f) = ILcamax(f) = ((1.92749E-4 \times \sqrt{f}) + (1.494E-9 \times f))$

Response Response Status C

ACCEPT IN PRINCIPLE.

Change: for all frequencies from 100 MHz to 6000 MHz

To: Where f is expressed in MHz for all frequencies from 100 MHz to 6000 MHz

Implement clarification of f units for all equations where necessary.

CI 85 SC 85.10.2 P248 L11 # 704  
 Misek, Brian Avago Technologies

Comment Type T Comment Status R

The equation for ILca needs a fE2 term to account for skew between the true and complement legs. In addition this skew can be easily measured for cables and should have a entry in table 85-7 on page 247.

SuggestedRemedy

Add to table 85-7:

Intrapair Skew 85.10.11 10 ps (a place holder)

Add section 85.10.11 Cable Intrapair Skew

The maximum skew between the true and complement signals shall be 10ps. This skew is measured by connecting a cable assembly to a low skew signal generator, that is transmitting at square pattern of at least 8 1's 8 zeros, and observing the true and complement signals at the output on an scope that has been connected with cables. The difference in the zero crossings CH1 - CH2 of the signals is noted as tskew1. The cables from the CCB to the scope are swapped and the difference in the zero crossings CH1 - CH2 is made to obtain tskew2.  $Tskew = (tskew1 + tskew2) / 2$

modify equation 85-13

$ILca(f) = ILcamax(f) = ((1.92749E-4 \times \sqrt{f}) + (1.494E-9 \times f + TBD \times fE2))$

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 85 SC 85.10.2 P248 L11 # 358  
 Ewen, John IBM

Comment Type E Comment Status A

Equation 85-13. No units specified for frequency.

SuggestedRemedy

Add "with f in MHz"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change per comment 684

Cl 85 SC 85.10.2 P248 L13 # 767  
DiMinico, Christopher MC Communications

Comment Type T Comment Status A

For alignment with 10GBASE-KR insertion loss fmin  
change: for all frequencies from 100 MHz to 6000 MHz.  
To: for all frequencies from 50 MHz to 6000 MHz.

*SuggestedRemedy*

change: for all frequencies from 100 MHz to 6000 MHz.  
To: for all frequencies from 50 MHz to 6000 MHz.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See comment#453 for remedy

Cl 85 SC 85.10.2 P248 L13 # 691  
Misek, Brian Avago Technologies

Comment Type T Comment Status A

Cables have alot of low freqency content that adversely effect the tail energy in the time domain. The frequencies of interest for these cables should be extended down to 10MHz

*SuggestedRemedy*

change:  
for all frequencies from 100 MHz to 6000 MHz  
to:  
for all frequencies from 10 MHz to 6000 MHz

Response Response Status C

ACCEPT IN PRINCIPLE.  
See comment#453 for remedy

Cl 85 SC 85.10.2 P248 L13 # 72  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

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. This is not about 1G operation; a cable that is allowed any amount of loss below 100 MHz WILL be expected to fail at 10G/lane, 64B/66B.

10GBASE-KR specs (72 and 69B) go down to 50 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.

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.

*SuggestedRemedy*

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

Response Response Status U

ACCEPT IN PRINCIPLE.  
see comment#453 for remedy to min frequency  
NOTE-It is recommended that the value of the coupling capacitors be 100 nF. This will limit the  
in rush currents and baseline wander.

Cl 85 SC 85.10.2 P248 L29 # 683  
Misek, Brian Avago Technologies

Comment Type E Comment Status R

85.10.2:

Figure 85-5

Can we make this have a linear frequency scale?

Also Figure 85-6

*SuggestedRemedy*

Change to Linear frequency plots to be consistent with other parts of the specification.

Response Response Status C

REJECT.

All figures are consistent; log frequency.

CI 85 SC 85.10.2 P249 L4 # 692  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

Cables have alot of low frequency content that adversely effect the tail energy in the time domain. The frequencies of interest for these cables should be extended down to 10MHz

*SuggestedRemedy*

in lines 4, 6,and 26 change:  
 range 100 MHz to 6000 MHz  
 to:  
 range 10 MHz to 6000 MHz

Response Response Status C

ACCEPT IN PRINCIPLE. See comment#453 for response

CI 85 SC 85.10.3 P250 L24 # 434  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Figure 85-6 is labeled as "informative"

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

In 85.10.3 the normative statement is made in regards to being within the region specified by Eq. 85-20 and 85-21, and then the text states,"The insertion loss deviation limits are illustrated in Figure 85-6." Therefore, Fig 85-6 is the illustration of the limits stated by Eq 85-20 and 85-21.

*SuggestedRemedy*

Change caption of Fig 85-6 to

Figure 85-6-Maximum cable assembly insertion loss deviation

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label

CI 85 SC 85.10.4 P250 L32 # 770  
 DiMinico, Christopher MC Communications

Comment Type TR Comment Status A

For alignment with 10GBASE-KR return loss fmin  
 Change: for 100 MHz  $\leq f < 1250$  MHz.  
 To: for 50 MHz  $\leq f < 1250$  MHz

*SuggestedRemedy*

Change: for 100 MHz  $\leq f < 1250$  MHz.  
 To: for 50 MHz  $\leq f < 1250$  MHz

Response Response Status C

ACCEPT IN PRINCIPLE.  
 See comment#453 for remedy

CI 85 SC 85.10.4 P251 L23 # 435  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Fig 85-7 is labeled as "informative"

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

In 85.10.4 the normative statement is made in regards to meeeting the values determined by Eq 85-22 and 85-23, and then the text states,"The minimum cable assembly return loss is illustrated in Figure 85-7." Therefore, Fig 85-7 is the illustration of the limits stated by Eq 85-22 and 85-23.

*SuggestedRemedy*

change caption of Figure to  
 "Figure 85-7-Minimum cable assembly return loss"

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label

CI 85 SC 85.10.5 P251 L29 # 385  
Kipp, Scott Brocade

Comment Type T Comment Status R

Why do we have these mathematical equations? Does anyone know the value of NL? Are they useful to anyone?

*SuggestedRemedy*

Let's delete these from the document and leave them in a textbook. They are not worthwhile here. This would apply to 85.10.6, 85.10.7, and 85.10.8.

Response Response Status C

REJECT. The equations are used to derive multi-disturber crosstalk from the individual pair-to-pair measurements.  $NL_i(f)$  is the power of the NEXT loss at frequency  $f$  of pair combination  $i$ , in dB.

CI 85 SC 85.10.5 P251 L31 # 372  
Kipp, Scott Brocade

Comment Type E Comment Status A

Since four or ten transmit and four or ten receive lanes

is poorly worded.

*SuggestedRemedy*

Change to:  
Since four or ten lanes

This matches clause 85.10.6 and is easier to read.

Response Response Status C

ACCEPT IN PRINCIPLE.  
To match clause 85.10.6.  
Since four lanes or ten lane.

CI 85 SC 85.10.5 P251 L31 # 373  
Kipp, Scott Brocade

Comment Type E Comment Status R

the NEXT that is coupled into a receive lane will be from the four or ten transmit lanes

Is crosstalk from the lane itself? I would think that that crosstalk is from the other lanes, so it should be 3 or 9 transmit lanes.

*SuggestedRemedy*

Change to:

the NEXT that is coupled into a receive lane will be from the three or nine transmit lanes

This will change the value of  $i$  to 2 or 9 in equation 85-24 as well.

Response Response Status C

REJECT.  
The crosstalk is from the other transmit lanes into a near end receiver so it's 4 or 10.

CI 85 SC 85.10.6 P252 L5 # 383  
Kipp, Scott Brocade

Comment Type T Comment Status A

If the crosstalk is from 3 or 9 pairs, the  $i$  variable should be 2 or 8 since it starts at 0.

*SuggestedRemedy*

change  $i$  to 2 or 8. Either this equation is wrong or 85-24 is wrong.

Response Response Status C

ACCEPT IN PRINCIPLE. In equation 85-25  $i=0$  to 2 or 0 to 8  
on line 14 change  $i=0$  to 2 or 0 to 8

CI 85 SC 85.10.7 P252 L31 # 384  
Kipp, Scott Brocade

Comment Type T Comment Status A

The values of  $i$  should be 0 to 2 and 0 to 8.

*SuggestedRemedy*

Change the values.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Remove definition of  $i$  line 30.  $i$  not applicable to (85-26).

CI 85 SC 85.10.8 P252 L37 # 706  
Balasubramanian, Vittal FCI USA, Inc.

Comment Type TR Comment Status R

The equation for generating the fit line for any data to test to the limit line as specified in section 85-10.8 is faulty (See attached supporting document.) The fit line, as it stands now, can cause some cable assemblies, which actually pass the ICR requirements in raw data to fail the requirements with the fit line.

*SuggestedRemedy*

Need to come up with a new equation for the fit line which takes into account the low frequency data also when coming up with the fit line to test against the limit line. One option was presented at the January Plenary meeting in balasubramanian\_01\_0109.pdf as a comment against section 69B. A similar method could be adopted here.

Response Response Status C

REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies.

CI 85 SC 85.10.8 P253 L13 # 690  
Misek, Brian Avago Technologies

Comment Type T Comment Status R

Equation 85-33 for cable ICRcamin(f) is very close to 85.12 for total channel ICRchmin. Does it allow enough margin for the PC boards?

*SuggestedRemedy*

re-evaluate this equation in light of the ripple caused by the host to connector interactions.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 85 SC 85.10.8 P253 L13 # 523  
Healey, Adam LSI Corporation

Comment Type T Comment Status R

ICR should not be sole means of constraining crosstalk in the system. The requirement implies that the power-sum crosstalk can get arbitrarily large as the loss decreases.

*SuggestedRemedy*

Define power sum NEXT and power sum FEXT limits based on 0.5 m cable assembly data to represent the upper bound on crosstalk for lower loss channels. ICR would be expected to remain the governing parameter for higher loss channels.

Response Response Status C

REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies.

CI 85 SC 85.11 P254 L36 # 589  
Petrilla, John Avago Technologies

Comment Type E Comment Status A

In various places for style-1 connectors, the word pin(s) is used where the word contact is appropriate. There are no pins in this style of edge connector.

*SuggestedRemedy*

in 85.11 for style-1 connectors, replace pin(s) with contact(s) and pinout with contact assignment. For examples:

- page 254 line 36, change pinout to contact assignment
- page 255 line 14, change pin to contact
- page 255 line 21, change pin to contact, twice
- page 255 line 44, change pin to contact
- page 256 line 3, change pin to contact
- page 256 line 7, change pin to contact
- page 256 line 9, change pin to contact, twice
- page 256 line 11, change pin to contact, twice
- page 256 line 15, change pin to contact, twice
- page 257 line 39, change pinout to contact assignment
- page 259 line 9, change pin to contact, four times
- page 259 line 36, change pin to contact

Response Response Status C

ACCEPT IN PRINCIPLE. Change pin to contact for style-1 connectors and 85.11.2 100GBASE-CR10 MDI connector

CI 85 SC 85.11 P258 L5 # 234  
Oganessyan, Gourgen Quellan

Comment Type E Comment Status A

Figures 85-14 and 85-15: Pin numbering does not seem to correspond to the convention in SFF-8642 and Table 85-11(B22 instead of B1, etc)

*SuggestedRemedy*

Renumber pins in the figures to correspond to the numbers in SFF-8642 and Table 85-11.

Response Response Status C

ACCEPT IN PRINCIPLE. Align pin numbering with SFF-8642

Cl 85 SC 85.11 P259 L37 # 387  
Kipp, Scott Brocade

Comment Type T Comment Status R

Why do we repeat pin assignments from the referenced document but not do it completely. It would be better to just reference the document.

*SuggestedRemedy*

Delete these pinouts unless they are different than the referenced specification in some way. This would apply to pinouts in multiple places in Clause 85.

Response Response Status C

REJECT. Referenced documents are mechanical interfaces. MDI specifications to include signal pin or contact assignments.

Cl 85 SC 85.11 P259 L5 # 235  
Oganessyan, Gourgen Quellan

Comment Type TR Comment Status A

Table 85-11. The proposed pinout is not optimal for optical, passive copper and active copper variants as it does not enable common pluggable interface.

*SuggestedRemedy*

Change pinout per Petrilla&Fromm

Response Response Status W

ACCEPT IN PRINCIPLE.  
See suggested remedy comment#609.

Cl 85 SC 85.11.1.1 P L # 437  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Fig 85-11 is labeled "informative"

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The MDI connector shall be the quad small form factor pluggable (QSFP) receptacle with the mechanical mating interface defined by IEC XXXXX-X-XX and illustrated in Figure 85-11.

Therefore, it is just an illustration.

Also, the illustration shows more than just the interface and goes into the implementation (see the bottom of the figure)

*SuggestedRemedy*

Change the caption of Fig 85-11 to "Figure 85-11-Example MDI board receptacle"

modify the figure to only show the interface, and not the implementation (see bottom of figure).

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label  
page 255 line 8 and 9. white out lower contact area to only show mating interface.

Cl 85 SC 85.11.1.1 P254 L51 # 365  
Kipp, Scott Brocade

Comment Type T Comment Status R

Figure 85-10 The caption is not descriptive.

*SuggestedRemedy*

Change to QSFP cable Assembly Plug  
Do the same for Figure 85-11.

Response Response Status C

REJECT. Figure captions provide appropriate description for functions e.g., plug and receptacle.

Cl 85 SC 85.11.1.1 P254 L51 # 436  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Fig 85-10 is labeled "informative"

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The connector for each end of the cable assembly shall be the quad small form factor pluggable (QSFP) with the mechanical mating interface defined by IEC XXXXX-X-XX and illustrated in Figure 85-10.

Therefore, it is just an illustration

*SuggestedRemedy*

Change caption of figure 85-10 to "Figure 85-10-Example cable assembly plug"

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label

Cl 85 SC 85.11.1.2 P256 L28 # 759  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

I don't believe a reference to an 802.3 project that no longer exists would be appropriate for a new standard. (Besides, IEEE803.3ak never really existed :-). Traditionally we reference other relevant parts of our standard, not projects.

*SuggestedRemedy*

Replace "IEEE803.3ak (CX4)" with "10GBASE-CX4".

Response Response Status W

ACCEPT IN PRINCIPLE.  
Accept suggested remedy

Cl 85 SC 85.11.1.2 P256 L38 # 438  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Figures 85-12 and 85-13 are both labeled informative

First, per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

These figures are noted as being illustrated in the text

*SuggestedRemedy*

Change the caption of 85-12 to "Figure 85-12-Example Style-2 cable assembly plug"

change the caption of 85-13 to "Figure 85-13-Example Style-2 MDI board receptacle"

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label

Cl 85 SC 85.11.2 P258 L1 # 609  
Petrilla, John Avago Technologies

Comment Type TR Comment Status A

The contact labels in Figures 85-14 & 85-15 (e.g. B22, C43, ...) do not align with the labels in Table 85-11 (e.g. B1, C1, ...). Further, the physical location of the contacts chosen for differential signals in Table 85-11 are not optimum for assembly of cable paddle cards nor for alignment with the optical lanes chosen at the optical MDI. Failure of physical alignment of MDI lanes positions between clauses 85 and 86 will cause needless complexity and expense.

*SuggestedRemedy*

Coordinate the contact labels between Figures 85-14 & 85-15 and Table 85-11 and choose lanes in the center of the SFF-8642 for more optimum assembly and alignment with lane choices in clause 86. See petrilla\_01\_0509 for details.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Use lane assignments and pin mapping from slide 11 petrilla\_01\_0509.pdf for Table 85-11.

CI 85 SC 85.11.2 P258 L15 # 439  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Figures 85-14 and 85-15 are both labeled informative

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

But these figures are noted as "illustrated" in the text

*SuggestedRemedy*

Change caption of Fig 85-14 to "Figure 85-14-Example cable assembly plug"

Change caption of Fig 85-15 to "Figure 85-15-Example MDI board receptacle"

Response Response Status C

ACCEPT IN PRINCIPLE. Delete informative in figure label

CI 85 SC 85.11.2 P258 L16 # 366  
Kipp, Scott Brocade

Comment Type T Comment Status R

Figure 85-14 The caption is not descriptive.

*SuggestedRemedy*

Change to SFF-8642 cable assembly plug  
Do the same for Figure 85-15

Response Response Status C

REJECT. Figure captions provide appropriate description for functions e.g., plug and receptacle.

CI 85 SC 85.13.4.1 P262 L7 # 374  
Kipp, Scott Brocade

Comment Type E Comment Status A

primitive is incorrect

*SuggestedRemedy*

change to primitive

Response Response Status C

ACCEPT.  
Accept suggested remedy

CI 85 SC 85.13.4.3 P263 L35 # 271  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

There are two Items "MF1"

*SuggestedRemedy*

Change the second "MF1" to "MF2"

Response Response Status C

ACCEPT. Accept suggested remedy

CI 85 SC 85.3 P235 L1 # 74  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

1. This PMD clause can't impose requirements on the PCS. That's what we have a PCS clause for!. The requirement for the PCS to support the AN service interface primitive AN\_LINK.indication is already covered in 82.6.

2. Front-side ports should not use AN - or at least, should not have to support DME frames at an alien signalling rate that will cause problems with CDRs, squelch circuits and maybe more.

3. As the primitive AN\_LINK.indication cannot sneak round the PMD by magic, if it exists it must go through the PMD (see 76.4.1.1 for an example of a primitive going through a sublayer).

*SuggestedRemedy*

Delete 84.3.  
Simplify the AN complexity to use parallel detection, and Training frames if necessary.  
If AN\_LINK.indication remains, add it as a subclause below 84.2.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Remove shall, align text with 84.3 Change:The PCS associated with this PMD shall support the AN service interface primitive AN\_LINK.indication defined in 73.9. (See 49.2.16 and 82.6)  
To:The PCS associated with this PMD is required to support the AN service interface primitive AN\_LINK.indication defined in 73.9. (See 82.6.)  
Remove associated PICS.



Cl 85 SC 85.3 P235 L3 # 288  
 Carlson, Steven HSD

Comment Type TR Comment Status A

A PMD clause should not specify the behavior of a PCS clause. Clause 49 is not associated with this PMD in any case.

*SuggestedRemedy*

Delete subclauses 84.3 and 85.3, or restructure.

Response Response Status W

ACCEPT IN PRINCIPLE.  
 See comment#74 for remedy

Cl 85 SC 85.3 P235 L3 # 776  
 Marris, Arthur Cadence

Comment Type TR Comment Status A

It is inappropriate for a PMD clause to specify the behaviour of a PCS clause. Also Clause 49 is not associated with this PMD.

Remove shall, reference to Clause 49 and corresponding PICS entry.

*SuggestedRemedy*

Change "shall support the" to "is required to"  
 Delete "49.2.16 and"  
 Delete PICS item PR1 on page 261

Alternatively delete subclauses 85.3 and 84.3 altogether.

Response Response Status W

ACCEPT IN PRINCIPLE. See comment#74 for remedy

Cl 85 SC 85.3 P235 L4 # 640  
 Ganga, Ilango Intel

Comment Type ER Comment Status A

Reference to clause 49 is not required. The AN service interface primitive requirement is specified in Clause 82. Delete this reference.

*SuggestedRemedy*

Delete the reference to 49.2.16 as this requirement is specified in Clause 82.

Response Response Status C

ACCEPT IN PRINCIPLE. See See comment#74 for remedy

Cl 85 SC 85.4 P235 L15 # 777  
 Marris, Arthur Cadence

Comment Type TR Comment Status A

Delay constraints are wrong and need to be specified separately for 40G and 100G.

*SuggestedRemedy*

Change the second paragraph to:

The sum of the transmit and the receive delays contributed by the 40GBASE-CR4 PMD and medium shall be no more than 8192 bit times (or 16 pause quanta). It is assumed that the round-trip delay through the medium is 4400 bit times.

The sum of the transmit and the receive delays contributed by the 100GBASE-CR10 PMD and medium shall be no more than 20480 bit times (or 40 pause quanta). It is assumed that the round-trip delay through the medium is 11000 bit times.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment#275

Cl 85 SC 85.4 P235 L16 # 81  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status A

The point of delay accounting is to determine the round trip time from above the MAC back to above the same MAC. It makes sense to associate one pass through the medium with each port (or half of the transmit side cable and half of the receive side - same thing). In that case, quoting the round-trip delay through the medium is misleading. The delay in BT cannot be the same for CR4 and CR10.

*SuggestedRemedy*

Quote the one-way delays through the medium. For the avoidance of doubt, give the delays in ns as well as BT.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment #275

CI 85 SC 85.4 P235 L16 # 73  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

The other port types have delay specifications for all sublayers. There is no point bounding all but one items in a link. If those are necessary, and if we can't wean ourselves off AN where it shouldn't be, then the delay through the AN sublayer must be controlled also. At present there is no control over delay through the AN. It MIGHT be low, but nothing enforces it

*SuggestedRemedy*

For preference, don't use AN on front-panel ports. Failing that, Change "40GBASE-CR4 and 100GBASE-CR10 PMDs and medium" to "40GBASE-CR4 or 100GBASE-CR10 PMD, AN and medium".

Anyway, the delay in BT should be different for the two MAC rates.

Response Response Status C

ACCEPT IN PRINCIPLE. See response to comment #275 for remedy

CI 85 SC 85.4 P235 L7 # 382  
Kipp, Scott Brocade

Comment Type T Comment Status A

Why are delay constraints discussed so many times?

*SuggestedRemedy*

Delete this section and other sections that repeat information contained in 80.3.

Response Response Status C

ACCEPT IN PRINCIPLE. The delay requirements for each sublayer belong in the clause for that sublayer. This allows a PICS entry in the relevant clause (see 85.13.4 for this clause). A footnote has been added to Table 80-2 to clarify that the requirements of the sublayer clause take precedence over Table 80-2. See Response to comment#275

CI 85 SC 85.4 P235 L9 # 758  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

*SuggestedRemedy*

Delete the text in the parenthesis.

Response Response Status C

ACCEPT.  
Delete the text in the parenthesis since this subclause references 80.3 (see response to comment 275)

CI 85 SC 85.7.1 P238 L11 # 685  
Misek, Brian Avago Technologies

Comment Type T Comment Status R

"Transmitter and receiver differential controlled impedance printed circuit board insertion losses defined between TP0-TP1 and TP4-TP5 respectively are specified in 85.9.1."

But TP1 and TP4 are not very accessible. Measure from TP0 to TP2 and from TP3 to TP5 and make allowance for double counting of connectors.

*SuggestedRemedy*

Use a Host Compliance Board (HCB) as defined in 85.XXX.

The TP0-TP2 channel should be measured by probing the landing pads, with the HOST IC removed, and connecting the other 2 ports of the measurement equipment to the SMA's on the HCB.

Return loss should be greater than equation 85.xxx  
Insertion loss, IL<sub>pcbtx</sub>, should be less than equation 85.yyy and should be greater than equation 85.zzz.

The TP5-TP3 channel should be measured by probing the landing pads, with the HOST IC removed, and connecting the other 2 ports of the measurement equipment to the SMA's on the HCB.

Return loss should be greater than equation 85.xxx  
Insertion loss, IL<sub>pcbtx</sub>, should be less than equation 85.yyy and should be greater than equation 85.zzz.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

*Cl* 85      *SC* 85.7.1      *P238*      *L* 6      # 512  
 Healey, Adam      LSI Corporation

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

Since 85.7.1 correctly states that "TP0 and TP5 are reference points that may not be testable in an implemented system," does it make sense to make them normative?

In addition, it is stated that "transmitter and receiver differential controlled impedance printed circuit board insertion losses defined between TP0-TP1 and TP4-TP5 respectively are specified in 85.9.1." Since TP0 and TP5 may not be testable, does it makes to specify transfer functions relative to these points normatively?

*SuggestedRemedy*

TP1, TP2, TP3, and TP4 are directly accessible and may be subject to normative specifications. TP0 and TP5 would appear to be informative requirements. In addition, the transfer functions between TP0 and TP1, and between TP4 and TP5 are also informative in nature.

Per the 2009 IEEE Standards Style Manual:

"Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

Hence any informative content should be the subject of an informative annex.

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

ACCEPT IN PRINCIPLE.

Leave in normative sections: Cable assembly -[TP1 and TP4], Transmitter [TP2], Receiver [TP3]

Move to Informative Annex>>Channel-[TP0 to TP5], Tx and Rx PCB boards [TP0 to TP1] and [TP4 to TP5]

*Cl* 85      *SC* 85.7.1      *P238*      *L* 7      # 698  
 Misek, Brian      Avago Technologies

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

"All cable assembly measurements are to be made between TP1 and TP4 as illustrated in Figure 85.2. Two mated connector pairs have been included in the cable assembly specifications defined in 85.10."

But effect of these cable compliance boards (attached PCB traces and SMA connectors) is not defined or specified. We need a spec.

*SuggestedRemedy*

The mated connector pairs, int his section, consist of the cable under test and a Cable Compliance Board (CCB).

The CCB shall mate with the cable and connect to SMA connectors.

The CCB should meet specifications defined in 85.X.X

Retun loss should be greater then equation 85.xxx

Insertion loss ILccb should be less then equation 85.yyy and should be greater then 85.zzz.

A mated pair, consisting of a cable compliance board and a host compliance board, shall have all port's return loss greater then equation 85.xxx. Insertion loss, ILccb\_hcb, shall be less then equation 85.www and shall be greater then 85.vvv.

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

ACCEPT IN PRINCIPLE.

See suggested remedy comment#417

CI 85 SC 85.7.4 P239 L16 # 71  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

Exchange of DME frames is an unnecessary burden on the host. It is not necessary for these copper links, and should not appear on front-panel ports. The choice of link types is 4 x 3.125 lanes, 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.

*SuggestedRemedy*

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 can use Parallel Detection.

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 may optionally recognise CX4, but not necessarily.

Response Response Status U

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.

CI 85 SC 85.7.5 P239 L37 # 778  
Marris, Arthur Cadence

Comment Type TR Comment Status A

Duplicate shall. The shall on line 37 duplicates the shalls on lines 26 and 30.

*SuggestedRemedy*

Change "shall be continuously updated according to the requirements of 85.7.4."

to "is continuously updated as described in 85.7.4 above."

Response Response Status W

ACCEPT.

Accept suggested remedy

CI 85 SC 85.8 P242 L37 # 233  
Oganessyan, Gourgen Quellan

Comment Type E Comment Status A

Table 85-5, First column, second entry: reference to "KR waveform" appears misplaced.

*SuggestedRemedy*

Delete "KR"

Response Response Status C

ACCEPT.

Accept suggested remedy

CI 85 SC 85.8.3 P241 L28 # 265  
Mellitz, Richard Intel Corporation

Comment Type TR Comment Status R

Table 85-5 seems remarkably similar in nature to table 86-7. The intent seems to be about the same. That is, measuring electrical characteristics after a connector. The tables appear quite different. For example Table 86-7 refers to an eye mask, jitter tolerance, and DDPWS and table 85-5 refers to max total jitter, min KR transmit waveform, and vertical eye opening. In my opinion there should be consistency with this document.

*SuggestedRemedy*

Make the two tables more similar in form and terminology

Response Response Status W

REJECT. Although the tables could be made more similar in form and terminology, the commenter has not provided a sufficiently complete proposal to reconcile differences in the test parameters which are the basis for much the terminology differences.

See also response to comment 264

CI 85 SC 85.8.3 P241 L28 # 699  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

"The specifications at TP0 are summarized in Table 85.4 and detailed in 72.7.1.1 through 72.7.1.11 with the exception of the transmitter characteristics specified in 85.8.3.3."

The consensus of the ad-hoc group is that the specs at TP0 be informative, while 72.7.1 is normative. If it is allowable, we should note that the specs at TP0 are the same as 72.7.1 except that they are only informative. If not we may have to rewrite 72.7.1 in 85 (or an annex) as an informative spec.

SuggestedRemedy

rewrite 1st line from:

Transmitter characteristics shall meet specifications at TP0 and TP2

To:

Transmitter characteristics should meet specifications at TP0 and shall meet specifications at TP2

Response Response Status C

ACCEPT IN PRINCIPLE.

See response comment#512

CI 85 SC 85.8.3 P241 L35 # 80  
 Dawe, Piers Avago Technologies

Comment Type TR Comment Status R

Need normative reflection specs at TP2 and TP3.

SuggestedRemedy

Would the PPI limits be suitable?

Response Response Status U

REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies; analysis required to determine suitability of PPI.

CI 85 SC 85.8.3 P242 L15 # 272  
 Anslow, Peter Nortel Networks

Comment Type E Comment Status A

In Table 85-4, for the Differential output return loss (min.) the value is given as "[See Equation (72-4) and Equation (72-5)]" What is the meaning of the square brackets? This is inconsistent with other tables in the draft referring to equations.

Also applies to the Common-mode output return loss (min.) in this table and Differential input return loss (minimum) in Table 85-6

SuggestedRemedy

Change "[See Equation (72-4) and Equation (72-5)]" to "See Equation (72-4) and Equation (72-5)"

Make the same change for the Common-mode output return loss (min.) in this table.

Also remove the "[" from the value of Differential input return loss (minimum) in Table 85-6

Response Response Status C

ACCEPT. Accept suggested remedy

CI 85 SC 85.8.3 P242 L19 # 588  
 Petrilla, John Avago Technologies

Comment Type E Comment Status A

The word, votage, in table 85-4 should be voltage.

SuggestedRemedy

Change the word, votage, in table 85-4 to voltage.

Response Response Status C

ACCEPT.

Accept suggested remedy

CI 85 SC 85.8.3 P242 L31 # 513  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

As pointed out 85.7.1, TP0 may not be testable in a system. However, the TP2 requirements in Table 85-5 alone are not sufficient to ensure interoperability.

*SuggestedRemedy*

1. Define the signaling speed at TP2.
2. Define the maximum differential peak-to-peak output voltage at TP2
2. Define the maximum differential peak-to-peak output voltage with TX Disabled at TP2
3. Define the minimum differential output return loss at TP2
4. Define the minimum common-mode output return loss at TP2
5. Define the common-mode DC output voltage range at TP2
6. Define the maximum common-mode RMS AC output voltage at TP2
7. Define transmitter output waveform requirements at TP2, similar to what is defined for 10GBASE-KR in 72.7.1.10 and 72.7.1.11. It must be verified that the transmitter has appropriate equalizer coefficient step size and range to meet the link performance objectives.

Response Response Status C

ACCEPT IN PRINCIPLE.

In addition to parameters in comment#697 add parameters and values to TP2

2. Define the maximum differential peak-to-peak output voltage with TX Disabled at TP2 = 30 mV
4. Define the minimum common-mode output return loss at TP2 = subclause 72.7.1.6
6. Define the maximum common-mode RMS AC output voltage at TP2 = 30 mV

CI 85 SC 85.8.3 P242 L37 # 515  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

In Table 85-5, the minimum KR transmit waveform "v2" of 267 mV constrains the de-emphasis to be significantly lower than what would otherwise be available from a 10GBASE-KR compliant transmitter. For a transmitter that satisfies the minimum differential peak-to-peak output amplitude constraint of 800 mV, this corresponds to only 3.5 dB of de-emphasis. Even nAUI requires more de-emphasis.

The stated intent of -CRn is to re-use 10GBASE-KR compliant transceivers. It has not been established that all 10GBASE-KR compliant implementations can support the channel in 85.9 with this reduced level of de-emphasis.

*SuggestedRemedy*

Revert to 10GBASE-KR requirements for v2 (40 mV).

Response Response Status C

ACCEPT IN PRINCIPLE. OBE see comment#697

CI 85 SC 85.8.3 P242 L38 # 516  
Healey, Adam LSI Corporation

Comment Type T Comment Status A

In Table 85-5, note c (pertaining to Qsq) does not indicate what v2 value is required for the test or at least assumed by the specification. Not all noise sources may scale with v2.

*SuggestedRemedy*

State the maximum RMS value of the noise in absolute units.

Response Response Status C

ACCEPT IN PRINCIPLE. OBE see comment#697

CI 85 SC 85.8.3 P242 L4 # 587  
Petrilla, John Avago Technologies

Comment Type E Comment Status A

The word, characteristics', in the Table 85-4 title and Table 85-5 title should be characteristics.

*SuggestedRemedy*

Change the word, characteristics', in the Tables 85-4 and 85-5 titles to characteristics.

Response Response Status C

ACCEPT.  
See suggested remedy comment#164 and comment#165.

CI 85 SC 85.8.3 P242 L4 # 510  
Healey, Adam LSI Corporation

Comment Type E Comment Status A

In the title of Table 85-3, "characteristics" need not be possessive.

*SuggestedRemedy*

Delete trailing apostrophe. See also Table 85-5.

Response Response Status C

ACCEPT IN PRINCIPLE.

See suggested remedy comment#164 and comment#165.

CI 85 SC 85.8.3 P242 L4 # 784  
Palkert, Tom Xilinx

Comment Type T Comment Status A

Normative specifications at TP0 are difficult to test and specifications at both TP0 and TP2 requires additional testing.

*SuggestedRemedy*

Make TP0 informative for CR4/10. Add additional specifications to TP2 in order to guarantee interoperability

Response Response Status C

ACCEPT IN PRINCIPLE.

See resolution in comment#512

CI 85 SC 85.8.3 P242 L40 # 514  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

In Table 85-5, a measurement procedure for "vertical eye opening" is not defined. It is not clear what this parameter controls since during the normal operation of the link, de-emphasis will be adjusted to optimize performance of the entire link and not the vertical eye opening at TP2 (for example, the signal may be over-equalized at this observation point). Finally, note d) indicates that this is an informative parameter. Per the 2009 IEEE Standards Style Manual:

"Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

*SuggestedRemedy*

Strike this row from the table and the associated note.

Response Response Status C

ACCEPT IN PRINCIPLE. OBE see comment#697

CI 85 SC 85.8.3 P242 L40 # 361  
Ewen, John IBM

Comment Type T Comment Status A

Table 85-5. There is no definition of vertical eye opening, nor is the pattern specified for the measurement. The referenced footnote does not seem to apply.

*SuggestedRemedy*

Modify footnote (d) to describe the pattern and test conditions.

Response Response Status C

ACCEPT IN PRINCIPLE.

OBE see comment#697

CI 85 SC 85.8.3 P242 L49 # 791  
Li, Mike Altera

Comment Type T Comment Status R

Use of jitter here is inappropriate

*SuggestedRemedy*

Change jitter to total jitter (TJ) to be correct.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 85 SC 85.8.3 P242 L9 # 511  
Healey, Adam LSI Corporation

Comment Type T Comment Status R

In Table 85-4, the definition of nominal unit interval is completely redundant since it may be directly derived from the signaling speed.

*SuggestedRemedy*

Strike row and associated text in 85.8.3.3.

Response Response Status C

REJECT.

Explicit UI is useful to distinguish UI with signaling rather than data rate. Other 802.3 clauses include explicit UI.

CI 85 SC 85.8.3.1 P243 L5 # 687  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

85.8.3.1:

We will need a new test fixtures, properly specified, for TP2.  
 Need at least 2, one for TP0, one for TP2 40GBASECR4 and 100GBASECR10.

*SuggestedRemedy*

Change:  
 The test fixture is equivalent to the test fixture specified in 72.7.1.1.  
 To:  
 The test fixture for TP0 is equivalent to the test fixture specified in 72.7.1.1.

add:  
 The test fixture for TP2 is called an host complianc board (HCB) and serves to trasion the signals from inside the connectors to instument grade ports. Retun loss should be greater then equation 85.xxx  
 Insertion loss should be less then equation 85.yyy and should be greater then equation 85.zzz.  
 When mated with a CCB(Cable comliance board) The Retun loss shall be greater then equation 85.aaa, Insertion loss shall be less then equation 85.bbb and shall be greater then equation 85.ccc.

Response Response Status C  
 ACCEPT IN PRINCIPLE. See comment#395 for remedy

CI 85 SC 85.8.3.1 P243 L7 # 781  
 Palkert, Tom Xilinx

Comment Type T Comment Status A

The TX test fixture is insufficiently defined to guarantee interoperability

*SuggestedRemedy*

The TX test fixture should be changed to reference a module compliance board similar to the one used for PPI testing or additional design parameters should be added.

Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 see response to comment#395

CI 85 SC 85.8.3.2 P243 L42 # 595  
 Petrilla, John Avago Technologies

Comment Type ER Comment Status R

In Eq. 85-2, use/placement of the term dB does not seem to follow standard math practice and, therefore, can be ambiguous. For example, is it an operator?, does it just apply to the last term, "-26.57 x log10(f/5000)? See also equations 85-3, 85-4, 85-6, 85-9, 85-12, 85-13, 85-20, 85-21, 85-23 & 85-27.

*SuggestedRemedy*

Follow the format in Eq. 86-1; write Eq. 85-2 as  
 $\text{Return Loss}(f) = -20 \times \log_{10}(|\text{SDD}_{21}|) \geq 15 - 26.57 \times \log_{10}(f/5000)$   
 An acceptable but less preferred alternative would be to write Eq 85-2 as  
 $\text{Return Loss}(f) \geq [15 - 26.57 \times \log_{10}(f/5000)] \text{ dB}$ .

Also apply the format to equations, 85-3, 85-9, 85-12, 85-13, 85-20, 85-21 & 85-23. With equations 85-4, 85-6 & 85-27, it is sufficient to just delete the dB term as the equality holds for linear as well as Log units.

Response Response Status C  
 REJECT. Placement of equation units are consistent with other 802.3 clauses.

CI 85 SC 85.8.4 P244 L12 # 476  
 D'Ambrosia, John Force10 Networks

Comment Type T Comment Status R

Submitted on behalf of Chang Yifeng

Table 85-6 is missing differential to common mode conversion SCD12 or SCD21

*SuggestedRemedy*

Add row to Table 85-6 for SCD12 or SCD21 with value of equation (86-11) that has been given in section 86.7.1.1

See presentation yifeng\_01\_0509.pdf.

Response Response Status C

REJECT.  
 Table 85-6 is for the receiver characteristics. From your presentation information it's not clear how the analysis and conclusions applies to the receiver characteristics. Please provide clarification on applicability to receiver characteristics.



Cl 85 SC 85.8.4 P244 L12 # 517  
Healey, Adam LSI Corporation

Comment Type T Comment Status R

In Table 85-6, the definition of nominal unit interval is completely redundant since it may be directly derived from the signaling speed.

*SuggestedRemedy*

Strike the row and associated text in 85.8.4.2.

Response Response Status C

REJECT. Explicit UI is useful to distinguish UI with signaling rather than data rate. Other 802.3 clauses include explicit UI.

Cl 85 SC 85.8.4 P244 L15 # 518  
Healey, Adam LSI Corporation

Comment Type T Comment Status A

It seems that AC-coupling is only a receiver requirement for 40GBASE-CR4 using the Style-2 connector. For -CRn using Style-1 connectors, the requirement is actually on the cable assembly.

*SuggestedRemedy*

The requirement for AC-coupling for Style-1 connector should be moved to the cable assembly requirements in 85.10.

The requirement for receiver AC coupling for 40GBASE-CR4 using Style-2 connectors should remain 85.8.4.1.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Editor to implement.

Cl 85 SC 85.8.4 P244 L17 # 519  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

As pointed out 85.7.1, TP5 may not be testable in a system. However, the TP3 requirements in Table 85-6 alone are not sufficient to ensure interoperability.

*SuggestedRemedy*

1. Define the differential peak-to-peak input amplitude tolerance at TP3.
2. Define the differential input return loss at TP3.
3. Define the differential to common mode return loss at TP3.

Response Response Status C

ACCEPT IN PRINCIPLE.

1. Define the differential peak-to-peak input amplitude tolerance at TP3 = 1200 mV
2. Define the differential input return loss at TP3 = 72.7.2.5
3. Define the differential to common mode return loss at TP3 = 10 dB 50 MHz to 10000 MHz

Cl 85 SC 85.8.4 P244 L3 # 686  
Misek, Brian Avago Technologies

Comment Type T Comment Status A

85.8.4:

Receiver specs at TP5 should be the same as 72.7.2, except that it is informative rather than normative. Either reference 72.7.2 with a note that it becomes informative, or rewrite 72.7.2 in 85 or in an annex if appropriate.

*SuggestedRemedy*

Add line:

The receiver at TP5 should meet all specifications in 72.7.2. In addition the receiver shall meet the BER of 1E-12 while stressed at TP3 with the receiver tolerance test of section 85.8.4.1.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response in comment#512

CI 85 SC 85.8.4 P244 L8 # 780  
Palkert, Tom Xilinx

Comment Type T Comment Status A

The receiver characteristics are insufficient to guarantee interoperability.

*SuggestedRemedy*

Make TP5 informative for CR4/10. Add additional specifications to TP3 in order to guarantee interoperability

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment#512

CI 85 SC 85.8.4.1 P244 L28 # 700  
Misek, Brian Avago Technologies

Comment Type T Comment Status A

85.8.4:

For TP3, we need to specify a normative interference tolerance measurement, similar to 72.7.2.1 and 69A but with:

Interference tolerance test channel based on:

Maximum effective (extracted) loss at TP2, plus maximum or minimum (two tests) cable, less effect of two mated connector pairs,

Interference level based on power sum of integral of maximum cable crosstalk, plus crosstalk at TP2, referred to TP3 plus X.XdB for ripple allowance. In addition, all transmitters near receiver active with PRBS31, and signals like full amplitude Tx transmitting through Interference tolerance test channel, sending PRBS31, incident on all other Rx inputs at TP3. Test Tx has no minimum risetime spec since extracted loss at TP2 includes effect of risetime.

*SuggestedRemedy*

Change section heading to: "Receiver interference tolerance"

Change text to:

"The receiver interference tolerance shall consist of two separate tests as described in Annex 69A with the parameters specified in Table 85-XX for CR4 and Table 85.YY for CR10. The data pattern for the interference tolerance test shall be the test patterns 2 or 3 as defined in 52.9.1.1. The receiver shall satisfy the requirements for interference tolerance specified in Annex 69A for both tests."

Table 85.XX -Receiver characteristics for 10GBASE-CR4

Parameter	Test1 values	Test2 values	Unit
Target BER	10E-12	10E-12	
Mcc (min.) note a	1	0.1	
Amplitude of broadband noise (min.)	TBD	TBD	mV RMV
Applied Sinusoidal jitter (min.)	0.115	0.115	Ulpk-pk
Applied random jitter (min.) Note b	0.130	0.130	Ulpk-pk
Applied Duty Cycle Distortion (min.)	0.035	0.035	Ulpk-pk

"a" Mcc is defined in Section 85.XX

"b" Applied random jitter is specified at a BER of 10-12.

Table 85.YY -Receiver characteristics for 10GBASE-CR10

Parameter	Test1 values	Test2 values	Unit
Target BER	10E-12	10E-12	
Mcc (min.) note a	1	0.1	
Amplitude of broadband noise (min.)	TBD	TBD	mV RMV
Applied Sinusoidal jitter (min.)	0.115	0.115	Ulpk-pk
Applied random jitter (min.) Note b	0.130	0.130	Ulpk-pk

Applied Duty Cycle Distortion (min.) 0.035 0.035 Ulpk-pk  
 "a" Mcc is defined in Section 85.XX  
 "b" Applied random jitter is specified at a BER of 10-12.

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

ACCEPT IN PRINCIPLE.

Editor to have editorial licence to implement text in suggested remedy and associated text in moore\_02\_0509.pdf. Tables will be transferred intact with the following exceptions.

Base channel b parameters are described in revised 85.8.4.1 as Tx or Rx PCB loss and the cable assembly loss.

Broadband Noise m Vrms test 1 =3 mV and test 2= 7 mV  
 jitter is specified at TP0  
 Applied SJ frequency >15 MHz

**Cl 85** **SC 85.8.4.1** **P244** **L29** # 364  
 Ewen, John IBM

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

The receiver compliance test described does not seem to guarantee interoperability.

*SuggestedRemedy*

Replace this subclause with a reference to 72.7.2.1 and Annex 69A using 84.8.2.1 as an example.

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.  
 OBE see comment#398

**Cl 85** **SC 85.8.4.1** **P244** **L30** # 520  
 Healey, Adam LSI Corporation

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

It is stated that the "receiver shall operate with a BER 10<sup>-12</sup> or better when receiving a compliant transmit signal, as defined in 85.8.3, through a compliant cable assembly as defined in 85.10 exhibiting the maximum insertion loss of 85.10.2."

In fact, it should operate over any compliant cable assembly as defined in 85.10. This includes cable assemblies that exhibit the maximum insertion loss AND minimum insertion loss to crosstalk ratio simultaneously, or the minimum insertion loss, or any cable assembly whose parameters fit within regions of compliance defined in 85.10.

*SuggestedRemedy*

State the requirement to be that:

"Differential signals received at the MDI that were transmitted from a remote transmitter within the specifications of 85.8.3 and have passed through a link specified in 85.10 are received with a BER less than 10<sup>-12</sup>."

*Response* *Response Status* **W**

ACCEPT IN PRINCIPLE.

State the requirement to be that:

" The receiver shall operate with a BER 10-12 or better when receiving a compliant transmit signal, as defined in 85.8.3, through a compliant cable assembly as defined in 85.10."

CI 85 SC 85.8.4.1 P244 L30 # 79  
Dawe, Piers Avago Technologies

Comment Type TR Comment Status A

As Ali and others have observed, there is no meaningful receiver spec for assessing a piece of equipment against. There needs to be a solid spec and compliance test at TP4 (possibly TP3 if you can work out how). What we have here:

"The receiver shall operate with a BER 10<sup>-12</sup> or better when receiving a compliant transmit signal, as defined in 85.8.3, through a compliant cable assembly as defined in 85.10 exhibiting the maximum insertion loss of 85.10.2."

Is weak and vague. It needs to be a defined worst-case signal, through a defined worst-case test channel with defined loss AND CROSSTALK and REFLECTION characteristics. Optical links have had stressed sensitivity specs for 10 years now, SFP+ has something. No reason why this PMD should have lower standards.

SuggestedRemedy

Add formal stressed sensitivity or tolerance test, with defined signal, defined test channel with defined loss, crosstalk and reflection characteristics. You may need two test cases: low loss and high loss.

Response Response Status U

ACCEPT IN PRINCIPLE.

See comment#700 for resolution

CI 85 SC 85.8.5 P242 L31 # 697  
Misek, Brian Avago Technologies

Comment Type T Comment Status A

Table 85-5. A new table 85-5 is provided along with notes.

Will be similar to table provided in: pdf titled: "Specifications at TP2-1.pdf" pages 6,7 and 8 that has been reviewed in the ad-hoc

SuggestedRemedy

Remove existing table 85-5 and notes and replace with:

Table 85-5 and notes in presentation for Quebec meetin, Moore01\_0509.pdf

Response Response Status C

ACCEPT IN PRINCIPLE.

Remove

Table 85-5 replace with Moore01\_0509.pdf (slide 6, 7, and 8)

Jitter direct measurement at TP2 (remove replace prop-noise in table with noise near-end 1 mV RMS noise far-end 2.4 mV RMS

TJ=0.25 UI

RJ=0.15 UI

DCD = 0.035 UI

Table TP0 informative

CI 85 SC 85.9 P245 L1 # 522  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

As pointed out 85.7.1, TP0 and TP5 may not be testable in a system hence the channel between them should be informative.

SuggestedRemedy

Make relevant sections of 85.9 the subject of an informative annex to clause 85.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response comment#512

Cl 85 SC 85.9 P245 L38 # 453  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

all of the channel requirements stated in Clause 85 start with a minimum frequency of 100 MHz, but the solution for -CR is based on 10GBASE-KR. All the analysis for 10GBASE-KR was based on channel data starting at 50 MHz, and that is what is specified in Annex 69B

*SuggestedRemedy*

Change minimum frequency for all parameters from 100 MHz to 50 MHz.

Response Response Status C

ACCEPT IN PRINCIPLE.

802.3ap IL(f) and ILD(f) is specified from fmin=50 MHz  
ICR(f)- Insertion loss to crosstalk ratio specified from fa=100 MHz.  
Specify fmin=50 MHz for 85.9 channel parameters and 85.10 cable assembly parameters

Cl 85 SC 85.9 P245 L5 # 371  
Kipp, Scott Brocade

Comment Type E Comment Status R

The link to Figure 85-2 doesn't work

*SuggestedRemedy*

Add a hyperlink.

Response Response Status C

REJECT.  
My copy worked; will confirm.

Cl 85 SC 85.9 P247 L4 # 638  
Ganga, Ilango Intel

Comment Type ER Comment Status R

Scale for Graphs in Clause 85 are not consistent with the graphs in other clauses. E.g Fig 85-4 to Fig 85-8

*SuggestedRemedy*

Re-plot the graphs Fig 85-4 to Fig 85-8 to be consistent with the format and scale used in other clauses across the draft.

Response Response Status U

REJECT.  
Editor implemented baseline objective for consistency with 10GBASE-CX4 cable assembly specifications i.e., other IEEE 802.3 specifications for twinaxial cable. See Figure 54-7- Maximum cable assembly insertion loss (informative)

Cl 85 SC 85.9.1 P245 L10 # 688  
Misek, Brian Avago Technologies

Comment Type T Comment Status R

85.9.1

"The maximum insertion loss allocation for the transmitter and receiver differential controlled impedance printed circuit boards for each differential lane shall"

Make this informative. Separate specs for Rx and Tx as they will are likely to be from separate suppliers.

*SuggestedRemedy*

The maximum insertion loss allocation for both the transmitter and receiver differential controlled impedance printed circuit boards for each differential lane should meet the values determined using Equation (85-3) where f is expressed in Hz and the coefficients b1 through b4 are given below.

(need to change coefficients to be 1/2 that loss since each board can have this loss)

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Cl 85 SC 85.9.1 P245 L13 # 608  
Petrilla, John Avago Technologies

Comment Type TR Comment Status A

Eq. 85-3 appears, between the [ ], to be either missing a ( or has an extra ). Further the term (e) is not defined and could be interpreted as the basis for the natural log or 10.

*SuggestedRemedy*

Correct the equation and if the term (e) remains, please define it.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Remove extra ")" and add definition for "e"

CI 85 SC 85.9.1 P245 L13 # 78  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

The PCB losses in CRn and PPI are different yet both are claimed to be based on the Nicholl distance criteria. Which is right? Or is there a good reason for the difference?

*SuggestedRemedy*

Review. Does the CRn PCB loss allow enough for practical board layout?

Response Response Status C

REJECT.

The CR4/CR10 channel loss budget is consistent with the baseline objectives; see diminico\_02\_0708.pdf. nicholl\_01\_0708.pdf used as guidance on minimum PCB length.

CI 85 SC 85.9.1 P245 L13 # 521  
Healey, Adam LSI Corporation

Comment Type TR Comment Status R

The maximum recommended electrical channel insertion loss is approximately half the loss allowed in 86.9 (less the host compliance board loss, excluding the connector per 86.7.1.1). This is considerably more loss than what may be attributed to the mated connector.

Since a common receptacle (Style-1) may accept either an optical transceiver or a copper cable assembly, the loss allocations should be identical. Otherwise, a compliant copper cable assembly whose specifications are based on the host electrical channel loss described in here may not interoperate with systems that exhibit a higher loss within the recommendations of 86.9.

*SuggestedRemedy*

Ensure 86.9 and 85.9.1 are consistent. Note that using the higher loss recommendations of 86.9 may mean that the cable assembly defined in 85.10 cannot be supported by 10GBASE-KR compliant devices, which is a stated aim of -CRn.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

See response to comment 502

CI 85 SC 85.9.1 P245 L15 # 768  
DiMinico, Christopher MC Communications

Comment Type TR Comment Status A

For alignment with 10GBASE-KR insertion loss fmin change: for all frequencies from 100 MHz to 6000 MHz.  
To: for all frequencies from 50 MHz to 6000 MHz.

*SuggestedRemedy*

change: for all frequencies from 100 MHz to 6000 MHz.  
To: for all frequencies from 50 MHz to 6000 MHz.

Response Response Status C

ACCEPT IN PRINCIPLE. See comment#453 for remedy

CI 85 SC 85.9.1 P245 L25 # 45  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

This says "0.20 meters", which should be "0.2 meters" in accordance with the response to comment 501 against draft 1.2

*SuggestedRemedy*

Change "0.20 meters" to "0.2 meters"

Response Response Status C

ACCEPT.  
Accept suggested remedy

CI 85 SC 85.9.1 P245 L7 # 782  
Palkert, Tom Xilinx

Comment Type T Comment Status A

This section should be informative

*SuggestedRemedy*

move to an annex

Response Response Status C

ACCEPT IN PRINCIPLE.

See response comment#512

CI 85 SC 85.9.2 P245 L35 # 689  
 Misek, Brian Avago Technologies

Comment Type T Comment Status R

85.9.2:

Is channel insertion loss calculated or measured? I think that it should be measured if possible. It should be informative.

If eq(85-4) is used to compute the limit on the measurement, and we specify ILpcb at TP2 and TP3, allowance for two mated pairs should be made.

SuggestedRemedy

Add:

Since TP0 to TP5 is difficult to measure the measured channel insertion loss should be calculated as:

$IL_{CHmax} \leq IL_{CHmeas} = IL_{pcbtx} + IL_{ca} + IL_{pcbtx} - 2 \times IL_{ccb\_hcb}$

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

CI 85 SC 85.9.2 P245 L35 # 452  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

85.9.2 does not have a "SHALL" statement, but is called out in the PICS.

SuggestedRemedy

Add the appropriate SHALL statement

Response Response Status W

ACCEPT IN PRINCIPLE.

OBE see response to comment#512

CI 85 SC 85.9.2 P245 L35 # 357  
 Ewen, John IBM

Comment Type E Comment Status A

Equation 85-4 is incorrect?

SuggestedRemedy

Replace

$IL_{Chmax}(f) \leq IL_{Chmax}(f) = IL_{Camax}(f) + IL_{PCBmax}(f)$

with

$IL_{Ch}(f) \leq IL_{Chmax}(f) = IL_{Camax}(f) + IL_{PCBmax}(f)$

Response Response Status C

ACCEPT.

Accept suggested remedy

Replace

$IL_{Chmax}(f) \leq IL_{Chmax}(f) = IL_{Camax}(f) + IL_{PCBmax}(f)$

with

$IL_{Ch}(f) \leq IL_{Chmax}(f) = IL_{Camax}(f) + IL_{PCBmax}(f)$

CI 85 SC 85.9.2 P245 L38 # 769  
 DiMinico, Christopher MC Communications

Comment Type TR Comment Status A

For alignment with 10GBASE-KR insertion loss fmin

Change: for 100 MHz  $\leq f \leq 5156.25$  MHz.

To: for 50 MHz  $\leq f \leq 5156.25$  MHz

SuggestedRemedy

Change: for 100 MHz  $\leq f \leq 5156.25$  MHz.

To: for 50 MHz  $\leq f \leq 5156.25$  MHz

Response Response Status C

ACCEPT IN PRINCIPLE. See comment#453 for remedy

Cl 85 SC 85.9.2 P245 L42 # 603  
 Petrilla, John Avago Technologies

Comment Type T Comment Status R

Clause 85.9.2 states, "The sum of the transmit PCB loss and the receive PCB loss depicted in Figure 85-2." Unfortunately, Figure 85-2 is an illustration of the link block diagram and not of the PCB losses. It would be helpful to have an illustration of the PCB losses similar to that of cable assemble losses in Figure 85-5.

*SuggestedRemedy*

Provide an illustration, similar to that of Figure 85-5 for the cable assembly, for the PCB insertion losses based on Eq. 85-3.

Response Response Status C

REJECT.

A number of PCB losses for test fixtures and the imposition of min and max constraints for tx and rx pcb losses would increase PCB related figures disproportionately to their value.

Cl 85 SC 85.9.3 P245 L46 # 454  
 D'Ambrosia, John Force10 Networks

Comment Type T Comment Status R

The sub-clause is about channel return loss, but it is not clear that this relates to the Differential input and output return loss (SDD11 & SDD22).

*SuggestedRemedy*

subclause, EQ's 85-22 and 85-23, and Fig 85-7 should reflect that the return loss specification is at both ends of the channel (SDD11 and SDD22).

Response Response Status C

REJECT.

No consensus to change.

Cl 85 SC 85.9.4 P246 L8 # 701  
 Misek, Brian Avago Technologies

Comment Type T Comment Status R

85.9.4

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

The calculation can be performed as shown in ad-hock presentation "Return Loss TP0-TP5.pdf page 2

*SuggestedRemedy*

The channel insertion loss deviation shall be within the region defined by Equation (85-XX) and Equation (85-YY) for all frequencies from 1000 MHz to 6000 MHz.

$ILD(f) \geq ILD_{min}(f) = -1.0 - 0.3 \times 10e-9$  (85.XX)

$ILD(f) \leq ILD_{max}(f) = 1.0 + 0.3 \times 10e-9$  (85.XX)

Response Response Status C

REJECT. The commenter has not provided a sufficiently complete proposal that would enable the implementation of suggested remedies. Suggested models are insufficient to determine channel ILD and therefore suggested changes. In addition, suggested ILD not representative of measurements.



CI 85 SC 85.9.5 P246 L43 # 702  
Misek, Brian Avago Technologies

Comment Type T Comment Status R  
85.9.5

"NOTE--2.5 dB of the 3 dB signal-to-noise ratio penalty related to insertion loss deviation embodied in 802.3ap ICRmin is applied as 2.5 dB ICRchmin margin to account for reduction in ILD penalty for CR4 and CR10."

After taking into consideration the effects of reflections at TP1 and TP4, this is unlikely to be valid.  
The calculation can be performed as shown in ad-hock presentation "Return Loss TP0-TP5.pdf page 2

*SuggestedRemedy*

change equation 85-12 to:  
 $ICRchfit(f) \geq ICRchmin(f) = 23.3 - 18.7 \log_{10}(f/5E9)$

Response Response Status C  
REJECT.

This comment was WITHDRAWN by the commenter.

CI 85 SC 9.1 P245 L13 # 403  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

Eq 85-3 defines maximum transmitter and receiver PCB loss to limit the reflection and crosstalk a min PCB loss should be defined as well.

*SuggestedRemedy*

Propose to use the following loss for min PCB loss  
 $SDD_{xy} = -0.0006 - 0.16 \sqrt{f} - 0.0587 * f$  from 0.1 to 11.1 where f is in GHz

Response Response Status C  
ACCEPT IN PRINCIPLE.

Following eq (85-3) add min PCB trace loss to 85.9.1  $IL_{pcb}(f) \geq IL_{pcbmin}(f) = (0.103) \times [20 \times \log_{10}(e) \times (b1 f + b2f + b3f^2 + b4f^3)]$ . Using coefficients given in (85-3). where f is expressed in Hz for all frequencies from 50 MHz to 6000 MHz.

CI 85 SC 9.3 P245 L48 # 399  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status R  
Channel return loss is missing common mode parameter SCC11/22

*SuggestedRemedy*

Add common mode return loss per following equation  
 $SCC_{ii} = -7 + 1.6 * f$ , where f is from 0.01 to 10 GHz  
 $SCC_{ii} = -3$  from 2.5 to 10 GHz  
These values are based on the 10GSFP+Cu.

Response Response Status C

REJECT. Determination of the common mode should be based on performance metrics explicitly linking the limits to performance; consider frequency based common-to-differential mode conversion and/or differential-to-common mode conversion.

CI 85 SC 9.5 P246 L21 # 170  
Bergmann, Ernest Circulant/JDSU

Comment Type T Comment Status A  
"N uniformly spaced" places no requirements upon N

*SuggestedRemedy*

Specify that N must be at least 25

Response Response Status C

ACCEPT IN PRINCIPLE. Specify minimum N to achieve maximum frequency step size of 10 MHz

CI 85 SC Figure 85-14 P258 L7 # 175  
Bergmann, Ernest Circulant/JDSU

Comment Type T Comment Status R  
This Figure has pin labels like B22, B42, C43, C63, D64, and D84, which are inconsistent with the labeling in Table 85-11

*SuggestedRemedy*

Relabel:  
B22, B42, C43, C63, D64, and D84 -->  
B1, B21, C1, C21, D1, and D21

Response Response Status C

REJECT. Align pin numbering with SFF-8642

Cl 85 SC Figure 85-15 P258 L22 # 176  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status R

This Figure has pin labels like B22, B42,C43,C63,D64, and D84, which are inconsistent with the labeling in Table 85-11

*SuggestedRemedy*

Relabel:  
B22, B42,C43,C63,D64, and D84 -->  
B1, B21,C1, C21,D1, and D21

Response Response Status C

REJECT. Align pin numbering with SFF-8642

Cl 85 SC Table 84-4 P242 L4 # 164  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A

"characteristics' at TP0"

*SuggestedRemedy*

Replace with:  
"characteristics at TP0"

[remove apostrophe]

Response Response Status C

ACCEPT.  
Accept suggested remedy

Cl 85 SC Table 85-5 P242 L31 # 165  
Bergmann, Ernest Circadiant/JDSU

Comment Type E Comment Status A

"characteristics' at TP2"

*SuggestedRemedy*

Replace with:  
"characteristics at TP2"

[remove apostrophe]

Response Response Status C

ACCEPT. Accept suggested remedy

Cl 85 SC Table 85-5 P242 L36 # 166  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

v<sub>2</sub> is not adequately explained and appears to be analogous to VMA/2

*SuggestedRemedy*

Replace this row with the entries:  
"Minimum KR transmit waveform VMA" and "534"

Response Response Status C

ACCEPT IN PRINCIPLE.  
OBE see comment#697

Cl 85 SC Table 85-5 P242 L38 # 167  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"QSQ" appears completely analogous to "Qsq" in Clause 68

*SuggestedRemedy*

Change the name to "Qsq" [subscript the "sq"] and change footnote c:

"c<sup>super</sup> the measurement of Qsq is analogous to that of Clause 68 except here the measurement is electrical whereas Clause 68 is optical. Thus the references to OMA in Clause 68 are to be understood as VMA here. The lane under test shall transmit a square wave pattern with runs of eight consecutive ones, while the other lanes shall transmit PRBS31."

Response Response Status C

ACCEPT IN PRINCIPLE.  
OBE see comment#697

Cl 85 SC Table 85-5 P242 L41 # 168  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status R

"de-emphasis"

*SuggestedRemedy*

Replace with:  
"pre-emphasis"

Response Response Status C

REJECT.  
de-emphasis appropriate

**Cl 85**    **SC Table 85-6**    **P244**    **L 6**    # **169**  
 Bergmann, Ernest    Circadian/JDSU

**Comment Type**    **E**    **Comment Status**    **A**  
 "Receiver characteristics' summary"

**SuggestedRemedy**  
 Replace with:  
 "Receiver characteristics summary" [remove apostrophe]

**Response**    **Response Status**    **C**  
 ACCEPT.  
 Accept suggested remedy

**Cl 85**    **SC Table 85-7**    **P247**    **L 36**    # **171**  
 Bergmann, Ernest    Circadian/JDSU

**Comment Type**    **E**    **Comment Status**    **A**  
 "Cable assembly differential characteristics' summary"

**SuggestedRemedy**  
 Replace with  
 "Cable assembly differential characteristics summary" [remove apostrophe]

**Response**    **Response Status**    **C**  
 ACCEPT. Accept suggested remedy

**Cl 86**    **SC**    **P**    **L**    # **450**  
 D'Ambrosia, John    Force10 Networks

**Comment Type**    **TR**    **Comment Status**    **A**  
 the entire clause has been done in a manner inconsistent from every other pmd clause in IEEE P802.3ba.

**SuggestedRemedy**  
 redo ordering of subclauses, tables, and figures in clause to be consistent with other clauses.

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

Implement the changes proposed on slide 6 of dawe\_03\_0509 as modified by the response to comment 450 with editorial license

**Cl 86**    **SC 86.1**    **P267**    **L**    # **217**  
 Pimpinella, Rick    Panduit Corp.

**Comment Type**    **T**    **Comment Status**    **A**    **OM2\_4**  
 Based on growing customer demand for high performance multimode fiber, OM4 should be included as a fiber type option in Table 86-1.

**SuggestedRemedy**  
 Make changes as outlined in pimpinella\_01\_0509.

**Response**    **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.  
 Add support for OM4 fiber to 125 m as proposed in pimpinella\_01\_0509 with editorial licence

**Cl 86**    **SC 86.1**    **P267**    **L 22**    # **509**  
 Healey, Adam    LSI Corporation

**Comment Type**    **E**    **Comment Status**    **A**  
 "Signaling rate" and "signaling speed" are used interchangeably at various points throughout the clause. "Signaling speed" is the term used in other clauses of IEEE Std. 802.3

**SuggestedRemedy**  
 Replace occurrences of "signaling rate" with "signalling speed" for consistency.

**Response**    **Response Status**    **C**  
 ACCEPT IN PRINCIPLE. The draft as a whole uses both; 18 of one and 25 of the other. It isn't a speed, as there is no distance involved, so "signaling rate" is the correct term. Change all occurrences of "signaling speed" in draft 802.3ba to "signaling rate". Anyone can raise a maintenance request to correct other clauses of IEEE Std. 802.3.

CI 86 SC 86.1 P267 L28 # 306  
Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

To match other clauses, n should represent the number of lanes, and the lanes are numbered 0 through n-1. The numbers 3 and 9 are not numbers that correspond to anything in the PMD.

*SuggestedRemedy*

Replace "In this clause, where there are four or ten items depending on PMD type, the number of items is represented by n+1, and an example item by i. Thus n is 3 or 9." with "In this clause, the number of lanes (depending on PMD type) is represented by n, and an example lane by i, which indicates one of the lanes 0 through n-1."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "In this clause, where there are four or ten items depending on PMD type, the number of items is represented by n+1, and an example item by i. Thus n is 3 or 9." to: "In this clause, where there are four or ten items (depending on PMD type) such as lanes, the items are numbered from 0 to n-1, and an example item is numbered i. Thus n is 4 or 10.

Grant editorial license to make the rest of the clause consistent with this change

CI 86 SC 86.1 P267 L29 # 90  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

InfiniBand has 12 lanes, numbered 0 to 11. We will be using the same cable plant, the same optical connectors, and the same electrical connectors, using the middle ten lanes.

*SuggestedRemedy*

It would be a huge benefit and avoid many problems if we numbered our lanes from 1 to 10.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Commenter may wish to propose that the entire draft is modified to have lanes numbered from 1 rather than 0

CI 86 SC 86.1 P267 L39 # 92  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Not clear what would be needed for a PMD to be "combined" with the management functions. Especially a pluggable module.

*SuggestedRemedy*

Change "combined with" to "connected to".

Response Response Status C

ACCEPT.

CI 86 SC 86.1 P267 L7 # 586  
Booth, Brad AMCC

Comment Type ER Comment Status A

Clause 86 doesn't follow the same format of previous or following clauses.

*SuggestedRemedy*

Stick with the format set by the other clauses as it helps make readability easier.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See response to comment 450

CI 86 SC 86.1 P267 L7 # 241  
Swanson, Steven Corning Incorporated

Comment Type ER Comment Status R

Consistent with Clauses 87 and 88, consider moving the last sentence on line 8 and Table 86-1 to Clause 86.6, PMD to MDI specifications. This is where Table 86-1 is referenced.

*SuggestedRemedy*

Move "Table 86-1 shows the primary attributes of each PMD type." and Table 86-1 to Page 275 under Clause 86.6.

Response Response Status C

REJECT.  
Table 86-1 is first referenced in 86.1 Overview (line 8 on the page). Both the sentence and the table are at the beginning of the document to give the reader the most basic information about this PMD. The reader of 86.6 has probably read 86.1 (and can click on the link) but not necessarily vice versa.

CI 86 SC 86.1 P267 L7 # 266  
 Coleman, Doug Corning, Incorporated

Comment Type ER Comment Status R

Existing text implies that all 40/100G links will be point-to-point which is not accurate for structured cabling.

*SuggestedRemedy*

Replace existing text with..

"The 40GBASE-SR and 100GBASE-SR10 PMD sublayers provide 40 Gb/s and 100 Gb/s Ethernet connections over four or ten pairs of multimode fiber, up to at least 100 m."

Response Response Status C

REJECT. The links (or link segments) are point-to-point. Compare Clause 60 which is point-to-multipoint. This standard does not constrain cable topology except where necessary, and this sentence is talking about the optical paths, not the cables viewed from the outside.

CI 86 SC 86.1 P267 L8 # 329  
 Young, George AT&T

Comment Type TR Comment Status R OM2\_4

Introduction of 40GBASE-SR4 and 100GBASE-SR10 PMD overview should specify OM3 multimode fiber operation in keeping with the objectives.

*SuggestedRemedy*

Change "... multimode fiber ..." to "... OM3 multimode fiber ...".

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

If we add OM2 and OM4 (see comment 217), don't do this. If we don't, could change as suggested but it's stated at line 16 anyway.

CI 86 SC 86.1 P269 L4 # 377  
 Kipp, Scott Brocade

Comment Type E Comment Status A

[Table 86-2]

This table is referenced in 86.1, but appears much later. Every other PMD has this table before any other table so it is inconsistent

*SuggestedRemedy*

Move this table to the first page of section 86.

Response Response Status C

ACCEPT IN PRINCIPLE. [Editor's note: Moved commenter's table number from subclause field to comment field]

The problem is that none of the first two tables and the first figure will share a page. Re-organise Table 86-2 so it is more compact.

CI 86 SC 86.1.1.1.1 P268 L51 # 307  
 Trowbridge, Stephen Alcatel-Lucent

Comment Type TR Comment Status A

To be consistent with the convention of n being the number of lanes, the final primitive should be n-1 rather than n.

*SuggestedRemedy*

Replace "PMD\_UNITDATA.requestn(tx\_bit)" with "PMD\_UNITDATA.requestn-1(tx\_bit)" (n-1 italicized). Also replace "PMD\_UNITDATA.indicationn(rx\_bit)" with "PMD\_UNITDATA.indicationn-1(rx\_bit)" (n-1 italicized), page 270 line 8.

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment 306

Cl 86 SC 86.1.1.1.2 P269 L37 # 760  
Muller, Shimon Sun Microsystems, Inc

Comment Type E Comment Status A

In the context of this clause "lowest PMA" is a bit vague, since there is no mention of any other PMAs anywhere else in this clause.

*SuggestedRemedy*

Replace "The lowest PMA..." with "The PMA that resides just above the PMD...".  
Same comment applies to:  
- Page 270, line 21.  
- Page 270, line 46.

Response Response Status C

ACCEPT IN PRINCIPLE. In 86.1.1, change "The PMD service interface supports the exchange of encoded data between the PMA and PMD entities." to "The PMD service interface supports the exchange of encoded data between the the PMA entity that resides just above the PMD, and the PMD entity."  
Make the equivalent change in 87.2 and 88.2.  
In 86.1.1.1.2, 86.1.1.2.3, 86.1.1.3.3, delete "lowest".

Cl 86 SC 86.10 P296 L49 # 260  
Pepeljugin, Petar IBM

Comment Type T Comment Status R 86budget

It is specified in subclause 86.10.2.2.1 and in Table 86.18 that the insertion loss is 1.9dB. This value is the same as in single lane standards for multimode fibers. Multilane connectors normally have higher loss than the assumed 0.75dB. It would make more sense to change the insertion loss to 2.4 dB and adjust the TX minimum OMA accordingly. Change all informative channel loss values accordingly (Table 86-9 and 86-13). Please see my other comments related to the link budget, since they are all interrelated.

*SuggestedRemedy*

Change the TX minimum OMA to -5dBm. Change all informative channel loss values to 2.4 dB (Table 86-9 and 86-13). Adjust the connector loss values from 0.75dB to 1 dB.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Have we not considered connector loss before and decided that multilane connectors can be similar to (mediocre) single-lane connectors?  
See king\_01\_0508

Any budget changes should be coordinated; note comments 261, 693.

Cl 86 SC 86.10.1 P296 L23 # 242  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

We need to allow both the 1 jumper method and the 3 jumper method for the measurement of insertion loss because field test equipment may not have the MPO connector.

*SuggestedRemedy*

Replace: "...Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2. The fiber optic cabling model (channel) defined here is the same as a unidirectional fiber optic link segment. The term channel is used here for consistency with generic cabling standards. [Editor's note (to be removed prior to publication) - IEC 61280-4-1/Method 2 will be renamed IEC 61280-4-1/Annex A when a revised IEC 61280-4-1 (currently at FDIS stage) is published.]" with: "...Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2 or IEC 61280-4-1/Method 3. The fiber optic cabling model (channel) defined here is the same as a unidirectional fiber optic link segment. The term channel is used here for consistency with generic cabling standards. [Editor's note (to be removed prior to publication) - IEC 61280-4-1/Method 2 will be renamed IEC 61280-4-1/Annex A and IEC 61280-4-1/Method 3 will be renamed IEC 61280-4-1/Annex B when a revised IEC 61280-4-1 (currently at FDIS stage) is published.]"

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment 267

CI 86 SC 86.10.1 P296 L23 # 267  
 Coleman, Doug Corning, Incorporated

Comment Type T Comment Status A

Referenced 1 jumper method is restrictive as it requires usage of field test equipment with MPO connector interfaces. To my knowledge, field test equipment with a MPO interface is not commercially available now or in the near future. Recommend inclusion of the 3 jumper method to accommodate utilization of legacy and existing commercial field test equipment.

*SuggestedRemedy*

Replace:"...Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2. The fiber optic cabling model (channel) defined here is the same as a unidirectional fiber optic link segment. The term channel is used here for consistency with generic cabling standards. [Editor's note (to be removed prior to publication) - IEC 61280-4-1/Method 2 will be renamed IEC 61280-4-1/Annex A when a revised IEC 61280-4-1 (currently at FDIS stage) is published.]"

with:

"...Insertion loss measurements of installed fiber cables are made in accordance with IEC 61280-4-1/Method 2 or IEC 61280-4-1/Method 3. The fiber optic cabling model (channel) defined here is the same as a unidirectional fiber optic link segment. The term channel is used here for consistency with generic cabling standards. [Editor's note (to be removed prior to publication) - IEC 61280-4-1/Method 2 will be renamed IEC 61280-4-1/Annex A and IEC 61280-4-1/Method 3 will be renamed IEC 61280-4-1/Annex B when a revised IEC 61280-4-1 (currently at FDIS stage) is published.]"

Response Response Status C  
 ACCEPT.

CI 86 SC 86.10.1 P296 L8 # 91  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status R OM2\_4

In other projects, as well as giving the normative range on the target fibre type, we give the range on other compatible fibre types. Apart from OM3, I believe the only relevant types are OM2 and, in the future, OM4. As OM3 has about 4x the effective modal bandwidth of OM2, the operating distance would be about 25 m; enough for many data centre links.

*SuggestedRemedy*

Consider adding a column for OM2 to Table 86-18. Change "Value" to fibre type.

Response Response Status C  
 REJECT.

Links for 40GBASE-SR4 and 100GBASE-SR10 require 8 or 20 parallel fibres and will largely be new build, therefore there is no need to support OM2 fibre

CI 86 SC 86.10.1 P71 L50 # 82  
 Dawe, Piers Avago Technologies

Comment Type E Comment Status A

On re-reading "but the locations are intentionally not assigned", "intentionally" seems rhetorical and unnecessary.

*SuggestedRemedy*

Delete

Response Response Status C  
 ACCEPT.

CI 86 SC 86.10.2.2.1 P296 L49 # 83  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Is the flexibility allowed by "Connections with different loss characteristics may be used provided the requirements of Table 86-18 and Table 86-19 are met." too lax? A single connector with 1.5 dB loss could be a cause of modal noise (and is out of spec for a connector)

*SuggestedRemedy*

Consider imposing a maximum loss per connector, around 1 dB.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Impose a maximum loss per connector of 0.75 dB.

A vote of the sub-task force was taken on whether the above comment should be accepted:

Yes 12  
 No 3

Cl 86 SC 86.10.2.2.1 P296 L50 # 243  
Swanson, Steven Corning Incorporated

Comment Type ER Comment Status A

Connections with different loss characteristics only impact the CIL and not the fiber and cable characteristics

*SuggestedRemedy*

Replace: "...Connections with different loss characteristics may be used provided the requirements of Table 86-18 and Table 86-19 are met." with: "...Connections with different loss characteristics may be used provided the requirements of Table 86-18 are met."

Response Response Status C

ACCEPT.  
Also see response to comment 83.

Cl 86 SC 86.10.3.3 P299 L29 # 191  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

TP3 is at the MDI so the note:  
"NOTE--Compliance testing is performed at TP2 and TP3 as defined in 86.4.1, not at the MDI" is unintelligible.

*SuggestedRemedy*

Remove the comment (or revise it!).

Response Response Status C

ACCEPT IN PRINCIPLE.  
Change " NOTE-Compliance testing is performed at TP2 and TP3 as defined in 86.4.1, not at the MDI." to "NOTE-Transmitter compliance testing is performed at TP2 as defined in 86.4.1, not at the MDI."  
Also see comment 345.

Cl 86 SC 86.10.3.3 P299 L3 # 85  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

While recommending the MPO seems good in the short term, REQUIRING it isn't good; we may want to use a smaller connector, for example. Or something like 4 x 4-lanes (next generation QSFP).

*SuggestedRemedy*

Change:  
The MDI adapter or receptacle shall meet the dimensional specifications of IEC 61754-7 interface 7-3, the MPO adapter interface. The plug terminating the optical fiber cabling shall meet the dimensional specifications of IEC 61754-7 interface 7-4, MPO female plug connector flat interface.

to

It is recommended that the MDI adapter or receptacle meets the dimensional specifications of IEC 61754-7 interface 7-3, the MPO adapter interface. It is recommended the plug terminating the optical fiber cabling meets the dimensional specifications of IEC 61754-7 interface 7-4, MPO female plug connector flat interface.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

Replace text with:

"The recommended MDI format is the MPO. If the MDI uses the MPO format, the MDI adapter or receptacle shall meet the dimensional specifications of IEC 61754-7 interface 7-3 (the MPO adapter interface) and the plug terminating the optical fiber cabling shall meet the dimensional specifications of IEC 61754-7 interface 7-4 (MPO female plug connector flat interface)."

Cl 86 SC 86.11.4.2 P303 L15 # 192  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status R

Status is given as "!MD:O" which is unique(!?)

*SuggestedRemedy*

Change it to "MD:O"

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

!MD: means "If feature MD is not implemented".



Cl 86 SC 86.2.2 P271 L5 # 388  
Kipp, Scott Brocade

Comment Type T Comment Status A 80tables

Why are skew numbers repeated here when they have been defined in other places like Table 80-3. Parameters should be defined in one place and not multiple to prevent errors.

*SuggestedRemedy*

Delete this section or say where it is different from Tble 80-3.

Response Response Status C

ACCEPT IN PRINCIPLE.

The Skew requirements for each sublayer belong in the clause for that sublayer. This allows a PICS entry in the relevant clause (see 86.11.4.1 for this clause). A footnote has been added to Tables 80-3 and 80-4 to clarify that the requirements of the sublayer clause take precedence over those tables. See response to comment 429. In title 86.2 Delay and skew, change skew to Skew

Cl 86 SC 86.3 P271 L43 # 493  
Healey, Adam LSI Corporation

Comment Type E Comment Status R

It is unclear why Transmit disable 9 is given a row separate from Transmit disable 8 through 0.

*SuggestedRemedy*

Combine the rows.

Response Response Status C

REJECT. It's so that no-one associates Transmit disable 9 with register/bit number 1.9.1 and so on (numbering backwards).

Cl 86 SC 86.3 P272 L13 # 494  
Healey, Adam LSI Corporation

Comment Type E Comment Status R

It is unclear why PMD signal detect 9 is given a row separate from PMD signal detect 8 through 0.

*SuggestedRemedy*

Combine the rows.

Response Response Status C

REJECT. See response to comment 493.

Cl 86 SC 86.4.1 P272 L28 # 344  
Dudek, Mike Independent

Comment Type ER Comment Status A

The inputs and outputs from the compliance boards are described without first referencing the boards etc.

*SuggestedRemedy*

Add an extra sentence on line 27, either instead of or as well as the similar sentence on line 39. Sentence to say "Figure 86-4 shows the test points".

Response Response Status C

ACCEPT IN PRINCIPLE.

Add an extra sentence on line 27, "Figure 86-4 shows the test points". Delete the sentence on line 39.

Cl 86 SC 86.4.1 P273 L1 # 457  
D'Ambrosia, John Force10 Networks

Comment Type T Comment Status A

In Fig 86-2 the representation of the PMD Service interface is incorrect and misleading. The PMD service interface is not at the connector interface to the optical module.

*SuggestedRemedy*

delete each instance of dashed line and PMD service interface text

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "PMD service interface" to "nPPI"

CI 86 SC 86.4.2 P272 L44 # 375  
Kipp, Scott Brocade

Comment Type E Comment Status A

The PMD Transmit function shall convert the four or ten electronic bit streams requested by the PMD service interface messages PMD\_UNITDATA.request0 to PMD\_UNITDATA.requestn into separate optical signal streams.

Separate is not as descriptive as ten.

SuggestedRemedy

Change to:

The PMD Transmit function shall convert the four or ten electronic bit streams requested by the PMD service interface messages PMD\_UNITDATA.request0 to PMD\_UNITDATA.requestn into ten optical signal streams.

This is how other clauses did it.

Response Response Status C

ACCEPT IN PRINCIPLE. Change "into separate optical signal streams" to "into the same number of optical signal streams".

CI 86 SC 86.4.7 P274 L33 # 376  
Kipp, Scott Brocade

Comment Type E Comment Status A

so that the each

is incorrect

SuggestedRemedy

change to:  
so that each

Response Response Status C

ACCEPT.

CI 86 SC 86.4.9 P275 L1 # 182  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

"86.4.9 PMD fault function" does not parallel next two subsections.

SuggestedRemedy

Rename:  
"86.4.9 PMD fault function(optional)"

Response Response Status C

ACCEPT.

CI 86 SC 86.5 P275 L19 # 389  
Kipp, Scott Brocade

Comment Type T Comment Status A

There are no lane assignments.

Then it says:

The positioning of transmit and receive lanes at the MDI is specified in 86.10.3.

Is positioning different than assignment?

SuggestedRemedy

Require lane assignments because the PCS should not have to reassemble lanes in any order. I have comments against this in the PCS section and this section would need to change if the comment is accepted.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "There are no lane assignments for 40GBASE-SR4 and 100GBASE-SR10" to

"There are no lane assignments (within a group of transmit or receive lanes) for 40GBASE-SR4 and 100GBASE-SR10"

Also change "define where each electrical lane is physically" to "define the physical ordering of the lanes".

CI 86 SC 86.6 P278 L3 # 259  
 Pepeljuginoski, Petar IBM

Comment Type T Comment Status R

The values for the minimum average launch power and minimum OMA in Table 86-8 are unrealistic. Please provide more appropriate values, in particular the minimum average power, which would cause the extinction ratio to be very high at the lowest OMA. High extinction ratios will increase the jitter. While technically speaking the values do not break anything, they do not provide any guidance either.

*SuggestedRemedy*

Set the minimum average power to -7dB and the minimum OMA to -5 dBm (please see my other comment about the broken link budget). Also, introduce maximum value for the extinction ratio. Proposed value 8dB.

Response Response Status C

REJECT. The intention is that the OMA spec is primary, and the average launch power will always be met without special testing or cost in yield, therefore it allows higher extinction ratios than one would use. This is not a problem. As transmitter specs are there to protect the receiver or user, not to protect a bad transmitter implementer from himself, there is no need for a maximum extinction ratio spec.

CI 86 SC 86.6 P279 L23 # 261  
 Pepeljuginoski, Petar IBM

Comment Type T Comment Status A 86budget

The J9 jitter allocation does not take the impact of modal noise appropriately. In calculating the fiber contribution to the noise, it was assumed that the modal noise has Gaussian distribution. Previous work has shown this not to be the case. The jitter allocation to the fiber should be increased by 2 ps.

*SuggestedRemedy*

Increase the random jitter allocation to the fiber by 2ps. To reduce the pain, allocate 1ps to the TX. Set J9 in Table 86-10, line 23 to 0.48 for the stressed eye jitter J9. Modify X1, X2 and X3 accordingly: 0.225, 0.335 and 0.425.

Response Response Status C

ACCEPT IN PRINCIPLE.  
 Make no change to X1, X2 or X3.  
 A 0.75 dB connector loss limit has been added to limit the impact of modal noise. See response to comment 83

CI 86 SC 86.6 P279 L36 # 257  
 Pepeljuginoski, Petar IBM

Comment Type T Comment Status R

BER measurement is not adequately specified.  
 We prescribe many measurements in the document in great detail, but surprisingly nothing at all on the BER measurement. For example, the measurement uncertainty depends on the duration of the measurement. The manufacturers can test for 1e-12 in 1s or 10s. The standard should provide guidance here.

*SuggestedRemedy*

Specify duration time for BER measurements. I do not have the right value, but since I am required to propose something, let say 10s.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

As this is a standard for equipment, not for test procedures, we merely define parameters with the level of detail needed to explain what we mean by e.g. TDP (although the way we do this is by a recipe). BER is well understood and does not need further elaboration. It would be difficult to give succinct advice about test times because there is a trade-off between test time, margin, correlation to other tests, sampling or 100% testing, and "right by design" which is the implementer's responsibility.  
 [Editor's Note: The commenter has not indicated the comment type. Classified comment type as T]

CI 86 SC 86.6.1 P275 L # 470  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

The text is very CONFUSING when trying to figure out what is being referred to as either the transmitter or receiver.

For example

Each lane of the electrical transmit signal for a 40GBASE-SR4 or 100GBASE-SR10 transmitter, if measured at TP1a (see 86.7.1), shall meet the specifications of Table 86-6 per the definitions in 86.7. Each lane of the 40GBASE-SR4 or 100GBASE-SR10 transmitter, if measured at TP1 and TP1a, shall meet the specifications of Table 86-7 per the definitions in 86.7.

The above text actually specifies PPI Tx at the Host and PPI Rx at the Module. the sametype of confusion exists at the receiver end.

*SuggestedRemedy*

Change caption of Table 86-6 to "Host PPI Tx Characteristics"  
Add note that all measurements made at TP1a (per Fig 86-4)

Change caption of Table 86-7 to "Module PPI Rx Characteristics"

Change caption of Table 86-11 to "Module PPI Tx Characteristics"  
Add note that all measurements made at TP4 (per Fig 86-4)

Change caption of Table 86-12 to "Host PPI Rx Characteristics"

Response Response Status C

ACCEPT IN PRINCIPLE.

Need to avoid using "receive" or "receiver" on the transmit path (down the stack, PMA to MDI) or "transmit" or "transmitter" on the receive path (up the stack, MDI to PMA).

Change names using the terms host, module, input and output. For example, in the caption of Table 86-6 change "PPI electrical transmit signal output specifications at TP1a" to "nPPI host electrical output specifications at TP1a"

Make the draft consistent by using "AC-coupling" or "AC coupling" throughout.

CI 86 SC 86.6.1 P275 L24 # 467  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status R

The first line states that "Each lane of the electrical transmit signal for a 40GBASE-SR4 or 100GBASE-SR10 transmitter, if measured at TP1a (see 86.7.1), shall meet the specifications of Table 86-6 per the definitions in 86.7."

86.6.1.1 addresses Differential Return Loss. It does not state that it is illustrated in Fig. 86-3

86.6.1.2 addresses Common Mode Return Loss, and it is stated that the limit is shown in Fig 86-3.

Fig. 86-3 also shows Differential to Common Mode Return Loss. There is no corresponding section or equation. The specification for SCD11 is in Table 86-7.

The PICS do not call out an item for SCD11.

*SuggestedRemedy*

Add the following text for a new subclause

86.6.1.3 Differential to Common Mode Return Loss

The transmitter Differential to Common-Mode Return loss RLCD, measured in dB at TP1, shall be greater than or equal to RLCDmin, as defined by Equation (86.x):

$$RLCD(f) \geq RLCDmin(f) = 10 \quad (86-x)$$

for 10 MHz  $\leq$  f < 11.1 GHz

The return loss limit is illustrated in Fig 86-x.

Add appropriate pics statement.

Response Response Status U

REJECT. The SCD11 limit is fully defined in Table 86-7, which has its PICS. There's no need for an equation. 86.6.1.1 states that the limit for SDD11 or SDD22 is illustrated in Fig. 86-3 (p276 line 53).

CI 86 SC 86.6.1 P275 L33 # 455  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

PPI electrical specifications are listed under PMD to MDI specifications. However, the PPI is an optional physical instantiation for the PMD service interface, not between the PMD to MDI. Furthermore, this indicates a general problem with the organization of this clause, trying to fit this electrical interface in.

*SuggestedRemedy*

The PPI electrical interface needs to be moved out from being a subclause under 86.6. From an organizational perspective making it a normative annex would work much clearer and lead to a better organized document.

Response Response Status C

ACCEPT IN PRINCIPLE.  
Move the PPI specifications in to a normative Annex 86A with editorial licence

The sub-task force voted on whether to accept the above response  
Yes 10  
No 3

CI 86 SC 86.6.1 P275 L33 # 264  
Mellitz, Richard Intel Corporation

Comment Type TR Comment Status R

Table 86-7 seems remarkably similar in nature to table 85-5. The intent seems to be about the same. That is, measuring electrical characteristics after a connector. The tables appear quite different. For example Table 86-7 refers to an eye mask, jitter tolerance, and DDPWS and table 85-5 refers to max total jitter, min KR transmit waveform, and vertical eye opening. In my opinion there should be consistency with this document.

*SuggestedRemedy*

Make the two tables more similar in form and terminology

Response Response Status W

REJECT. Because the SRn link is limiting and the receiver noise is after the test points, and the CRn link is linear, and the dominant noise is crosstalk before the last test point, it is reasonable that the specification methods would be different. The choice of parameters in Clause 86 is based on painful experience and very thorough review in SFF-8431. Note Table 85-5 has a Qsq spec and comment 89 proposes adding one for Table 86-7. See also response to comment 265

CI 86 SC 86.6.1 P276 L1 # 508  
Healey, Adam LSI Corporation

Comment Type E Comment Status A

It would be useful to add a column to Table 86-6 and similar tables that contains a cross-reference to the subclause that describes how the cited parameter is to be measured.

Table 86-16 does the reverse by referring to subclauses that define parameters that may be verified with the cited test. However, a user of the standard is likely to start reading the requirements and then seek how to verify them rather looking at the test procedures and seeing what specifications he might verify with that procedure.

*SuggestedRemedy*

Add columns to the tables accordingly.

Response Response Status C

ACCEPT IN PRINCIPLE. This would make some of the tables significantly longer and be repetitive.  
In Table 86-16, replace the row "Transmitted waveform (eye mask)" with two rows "Transmitted optical waveform (eye mask)", reference 86.7.3.2 and 86.7.5.6, and Electrical waveform (eye mask)", reference 86.7.3.2 and 86.7.4.5. Same pattern choices for both. In Table 86-11 and 86-12, delete "See 86.7.4.5".

CI 86 SC 86.6.1 P276 L16 # 89  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

These specifications can be met by a slow, noisy electrical eye that could cause degraded performance at TP2.

*SuggestedRemedy*

As 85.8.3 has a Qsq spec, consider adding one here. It can be more relaxed than 85.8.3's minimum 55.6.

Response Response Status C

ACCEPT IN PRINCIPLE.  
For comparison, SFP+ for optical has 50; 10GSFP+Cu has 63.1, CRn has 55.6. Add Qsq min 45 (linear dimensionless ratio, not dB). Add Qsq to Table 86-16, pattern Square wave or 4, reference to new Qsq section under 86.7.4. Text and equation to define Qsq similar to 68.6.7 but in electrical domain.

Cl 86 SC 86.6.1 P276 L17 # 460  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status R

Table 86-6 and 86-7 include the parameter DDPWS, but there is no description of it at this point in the clause, and no pointer to the explanation in 86.7.4.4.

*SuggestedRemedy*

Add a pointer to 86.7.4.4 in the "Conditions" column

Response Response Status U

REJECT.

Pointers in the table should not be added to some parameters and not others.

There is a general pointer on the previous page "specifications of Table 86-6 per the definitions in 86.7".

Also see response to comment 508.

Cl 86 SC 86.6.1 P276 L21 # 693  
Misek, Brian Avago Technologies

Comment Type T Comment Status A 86budget

The X1 point has been rounded down to .1 and is too restrictive. If you assume the difference between J2 and J9 is caused by RJ then this would lead to RJ of 11.3mUIrms. When you back this back to the Q for 5E-5 of 3.89 then this would give a added peak to peak of 29.7mUI when added to the J2 of 180mUI. Deviding by 2 for the X1 point would give .1049. Since the original assumption is that it would be all RJ is optimistic at these low of Q values with PRBS31 types of patterns, the rounding down of this eye mask point is the wrong way to go as the residual DJ will push the past the assumed RJ intercept of J2 and then the curve will steepen to hit the J9 point.

*SuggestedRemedy*

Change X1 in Tables 86-6 and 86-7 to 1.1

Response Response Status C

ACCEPT IN PRINCIPLE.

J2 and J9 control the jitter. The mask test is intended to control the general waveshape and is not intended to be the primary jitter specification.

Change X1 in Tables 86-6 and 86-7 to 0.11

Cl 86 SC 86.6.1 P276 L21 # 471  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Given the confusion with the usage of Tx and Rx terminology in this clause, it is unclear in Tables 86-6, 86-7, 86-11, and 86-12, which eye mask template at TP1a and TP4 is to be used with the provided eye mask coordinates provided in each table. 86.7.4.5 calls out 83A-6 and 83A-7, but as example eye masks.

Does 83A-6 apply to TP1a and 83A-7 apply to TP4.

*SuggestedRemedy*

Specify in 86.7.4.5 which eye mask is to be used at each test point.

Response Response Status C

ACCEPT IN PRINCIPLE. To the commenter's question, yes.

In 86.7.4.5, change "See Figure 83A-6 and Figure 83A-7 for example eye masks, showing the meaning of the parameters."

to

"Figure 83A-6 (an example of a hexagonal eye mask such as at TP1a) and Figure 83A-7 (a diamond mask such as at TP4), show the meaning of the parameters X1, X2, Y1 and Y2."

Cl 86 SC 86.6.1 P276 L30 # 47  
Anslow, Peter Nortel Networks

Comment Type E Comment Status A

In Table 86-7 the Max value of "Single ended input voltage tolerance" is given as 4.0 V.

This should be 4 V in accordance with the response to comment 501 against draft 1.2.

Same issue in Tables 86-11 and 86-12

*SuggestedRemedy*

Change the Max value of "Single ended input voltage tolerance" in Table 86-7 from "4.0" to "4"

Make the same change in Tables 86-11 and 86-12

Response Response Status C

ACCEPT.

[Editor's note - Subclause changed from 86.61 to 86.6.1]

CI 86 SC 86.6.1.1 P275 L47 # 507  
Healey, Adam LSI Corporation

Comment Type T Comment Status R

What is the significance of the 11.1 GHz upper bound on the specification of S-parameters? My recollection is that this was based on 10 Gigabit Ethernet with a G.709 FEC wrapper. That seems irrelevant here. A specification range of 10 GHz seems more than adequate.

*SuggestedRemedy*

Limit the upper bound on S-parameter requirements to 10 GHz here and throughout.

Response Response Status C

REJECT.

An 11.1 GHz upper bound is easy to achieve  
OTU4 striped across 10 lanes (OTL4.10) and OTU3 striped across 4 lanes (OTL3.4) have been defined in ITU-T. Keeping the 11.1 GHz upper bound allows re-use of these modules for both applications which increases volumes.

CI 86 SC 86.6.1.1 P275 L50 # 590  
Petrilla, John Avago Technologies

Comment Type E Comment Status A

In the various equations, e.g. Eqs 86-1 & 86-2, there doesn't appear to be a consistent practice of separating the operators, e.g. +, - & x, from the constants and variables. Sometimes a space is used as a separator and sometimes there is no separation. The inconsistency can lead to confusion when equations are compared. A consistency practice would reduce the potential for confusion and possibly improve the aesthetics.

*SuggestedRemedy*

In all equations, use a single space to separate the operators, +, -, x, & /, from constants and variables.

Response Response Status C

ACCEPT IN PRINCIPLE. Each "term" (things multiplied together) is separated from others by a space and + or -.  
Delete spaces following +

CI 86 SC 86.6.1.1 P275 L51 # 468  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status R

The limit defining SDDii is defined by two equations, but only a single equation # has been assigned.

This also applies to the limits currently defined by:

Equation 86-2  
Equation 86-3  
Equation 86-7  
Equation 86-8  
Equation 86-9  
Equation 86-10  
Equation 86-11  
Equation 86-12  
Equation 86-13  
Equation 86-20  
Equation 86-21

*SuggestedRemedy*

Assign an equation # to each equation that makes up a specified limit.

Response Response Status U

REJECT.

The format of the equations in clause 86 follows that used in clause 47 in that there is only a single left hand side as:

$$20 \times \log_{10}(|SDD_{ii}|) = -12 + 2 \times V(f) \\ = -6.3 + 13 \times \log_{10}(f/5.5)$$

This means that there is only one equation present and therefore only one equation number is required. This also makes references to the equations easier.

CI 86 SC 86.6.1.1 P277 L1 # 459  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

The title for Fig 85-3 is Differential and common-mode reflection specifications. The naming of the figure has to be corrected (noted in other comment), but the graph shows 3 types of return losses: Differential In, Differential Out, common-mode, and Differential to Common-mode.

*SuggestedRemedy*

Change caption of figure to just "Return Loss Specifications"

Response Response Status U

ACCEPT IN PRINCIPLE.

Change caption of figure to "Reflection specifications"

CI 86 SC 86.6.2 P277 L44 # 228  
Oulundsen III, George OFS

Comment Type T Comment Status R

There has not been a well enough developed publicly shared model to assure with a high-enough level of confidence that the values in Table 86-8 and Table 86-10 will in fact work in a system. In addition, there has not been a demonstration that a system based on the values in Table 86-8 and Table 86-10 will work.

*SuggestedRemedy*

A model needs to be developed and shared that shows that the values stated in Table 86-8 and Table 86-10 (and subsequent relevant tables) in fact work. An experimental demonstration of parts according to Table 86-8 and Table 86-10 should be conducted and shared.

Response Response Status C

REJECT. Rejected because no change to the document is being recommended. However, past projects have set themselves experimental verification targets; the P802.3ae committee agreed "10 Gb/s Ethernet technology will be demonstrated during the course of the project, prior to the completion of the sponsor ballot", and there were experimental verification reports for all PMD types. No other PMD in this project has a model. The editor can respin the 10 Gigabit Ethernet model with the numbers for this PMD. Models are becoming more complicated and proprietary; see slide 26 of diminico\_02\_0708 for an example of what one gets to see. The comments in this database imply that reviewers believe the draft limits are pretty near to right, and will be refined if necessary.

CI 86 SC 86.6.2 P278 L18 # 93  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Units of OMA - TDP should be dBm

*SuggestedRemedy*

Change dB to dBm

Response Response Status C

ACCEPT.

CI 86 SC 86.6.2 P278 L18 # 46  
Anslow, Peter Nortel Networks

Comment Type T Comment Status A

In Table 86-8 the units for the parameter "Launch power in OMA minus TDP, each lane" (Min) are "dB", but should be "dBm"

*SuggestedRemedy*

Change the units for the parameter "Launch power in OMA minus TDP, each lane" (Min) from "dB" to "dBm"

Response Response Status C

ACCEPT.

CI 86 SC 86.6.2 P278 L7 # 779  
Lingle, Jr., Robert OFS

Comment Type T Comment Status R

The value of 0.65 nm for RMS spectral width in Table 86-8, although consistent with the adopted baseline proposal, is too large, limiting the usefulness of the 40GBASE-SR4 and 100GBASE-SR10 PMDs for achieving longer reach than 100m with OM3 MMF having effective modal bandwidth greater than 4700 MHz-km.

*SuggestedRemedy*

Either the value in Table 86-8 should consider reducing the value to 0.45 nm or else add additional PMDs having spectral width 0.45 nm.

Response Response Status C

REJECT. The objective is economic feasibility (meaning VERY low cost, size and power) at the objective 100 m. 0.65 nm was chosen to address this. A narrower spectral width, would jeopardise this objective.

CI 86 SC 86.6.3 P277 L47 # 84  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

No need to mark this as informative.

*SuggestedRemedy*

Here and for Table 86-9, delete "(informative)".  
At bottom of page, add  
NOTE--Table 86-9 provides information for diagnostic purposes that is needed by network operators in maintenance. There is no need to assure compliance to it in normal circumstances.

Response Response Status C

ACCEPT.



CI 86 SC 86.6.3 P277 L47 # 421  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

*SuggestedRemedy*

change subclause to

"86.6.3 Characteristics of signal within, and at the receiving end of, a compliant optical channel"

Response Response Status C

ACCEPT.

CI 86 SC 86.6.3 P277 L47 # 591  
Petrilla, John Avago Technologies

Comment Type E Comment Status R

In the heading for 86.6.3, "Characteristics of signal within, and at the receiving end of, a compliant optical channel ..." the commas are not needed. This is also found in the title for Table 86-9

*SuggestedRemedy*

Change the heading for 86.6.3 from, "Characteristics of signal within, and at the receiving end of, a compliant optical channel ..." to "Characteristics of signal within and at the receiving end of a compliant optical channel ...". Repeat for the title of Table 86-9.

Response Response Status C

REJECT. Prefer not to change; same as 68.5.2, distinguishes from "Characteristics of signal within, and at, the receiving end of a compliant optical channel".

CI 86 SC 86.6.3 P277 L47 # 495  
Healey, Adam LSI Corporation

Comment Type ER Comment Status A

Per the 2009 IEEE Standards Style Manual:

"Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

The content of this subclause should be the subject of an informative annex.

*SuggestedRemedy*

Move this subclause to an informative annex.

Response Response Status W

ACCEPT IN PRINCIPLE.

See response to comments 421 and 84.

CI 86 SC 86.6.3 P278 L # 422  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Table 86-9 is listed as informative. This table does not meet the suggested formatting of the 2009 Style Guide.

Per 2009 Style Guide -

Simple tabulations that are not referred to outside of the subclause in which they appear may be organized into informal tables that do not exceed five or six lines in depth; no table number or title is required. However, it is recommended that all tables be numbered and titled if possible.

*SuggestedRemedy*

Change title to

"Table 86-9-Characteristics of signal within, and at the receiving end of, a compliant optical channel"

Response Response Status C

ACCEPT.

CI 86 SC 86.6.4 P279 L3 # 262  
 Pepeljugin, Petar IBM

Comment Type TR Comment Status A

This comment is against the combined impact of the minimum OMA specified in Table 86-8 and the stress receiver sensitivity in Table 86-10.

The minimum launch OMA minus the TPD (line 18 in Table 86-8) is -7dBm. Taking into account the allowed channel loss of 1.9 dB (1.5 for connectors and 0.4 for loss) the receiver may see OMA with -8.9dBm. Even in the absence of TDP in the TX, it would be -7.9 dBm. On the other hand, the receiver is specified with stress test sensitivity in OMA of -5.4 dBm (Table 86-10, line 16). The test signal is specified with 2 dB of VECP. This is equivalent of -7.4dBm OMA, which is short of what the TX can provide (-7.9 dBm).

Therefore, the link is broken, although both the TX and RX may pass the specs.

#### SuggestedRemedy

At first order, provide a change to the transmit OMA to set it to -5.5dBm. I believe that this value may not be sufficient, since not all corners of the trade-offs have been investigated to set the values and a better value may be -5 dBm.

Response Response Status W

ACCEPT IN PRINCIPLE. The OMA that the receiver may see cannot be -8.9 dBm. It has to be at or above -7.9, as stated in Table 86-9.

Add to table note c:

The apparent discrepancy between VECP and TDP is because VECP is defined at eye center while TDP is defined with +/-0.15 UI offsets of the sampling instant.

CI 86 SC 86.6.5 P280 L31 # 504  
 Healey, Adam LSI Corporation

Comment Type TR Comment Status A

In Table 86-12, what does it mean to "tolerate" a single-ended input voltage? Does it imply that the receiver should not suffer permanent damage when presented with a signal of this magnitude, or that there should furthermore be no degradation in the bit error ratio?

In particular for Table 86-12, it is unclear why the requirement is present in the first place since 86.6.5 states that "The PMD receiver shall be AC-coupled, i.e. it shall present a high DC common mode impedance at TP4." What is the mechanism that would generate these large DC offset voltages.

#### SuggestedRemedy

For Table 86-7, define what it means to "tolerate" a single-ended output voltage.

In addition, for Table 86-12, adjust the requirements to account for the AC-coupled PMD receiver (which includes deleting this requirement entirely).

Response Response Status W

ACCEPT IN PRINCIPLE. "Tolerate" means meet all the other specs; no explanation is needed. If it were for damage rather than operation, we would say so (as in Table 87-8).

In Table 86-11, change "Single ended output voltage" to "Single ended output voltage tolerance", in Table 86-12 change "Single ended input voltage tolerance" to "Single ended input voltage", change "Referred to TP4 signal common" to "Referred to signal common". Also see response to comment 462.

CI 86 SC 86.6.5 P280 L33 # 500  
 Healey, Adam LSI Corporation

Comment Type TR Comment Status A

In Table 86-7, what does it mean to tolerate an AC common mode input voltage? No test procedure is defined.

#### SuggestedRemedy

Define an AC common mode input voltage tolerance test or remove the parameter.

See also 86.6.1, Table 86-7.

Response Response Status W

ACCEPT IN PRINCIPLE. "Tolerate" means meet all the other specs; no explanation is needed.

See response to comment 501

Cl 86 SC 86.6.5 P280 L35 # 501  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

J2 jitter tolerance and J9 jitter tolerance at TP4 are defined presumably for the purpose of a receiver jitter/signal tolerance requirement (possibly in addition to the eye mask requirement at TP4). No test apparatus or procedure for electrical receiver jitter/signal tolerance is defined.

*SuggestedRemedy*

Add a subclause to 86.7.4 defining electrical receiver signal/jitter tolerance. Suggest the use of relevant content from SFF-8431 Appendix D.11.2 as a starting point.

Response Response Status W

ACCEPT IN PRINCIPLE. Add a subclause to 86.7.4 defining electrical receiver signal/jitter tolerance. Consider content of SFF-8431 Appendix D.11 as a starting point. If feasible, be more succinct.

Cl 86 SC 86.6.5 P280 L5 # 503  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A

In Table 86-12, the single-ended output voltage at TP4 is allowed to be between -0.3 and 4.0 V. This implies a significant DC voltage offset. However, 86.6.5 states that "The PMD receiver shall be AC-coupled, i.e. it shall present a high DC common mode impedance at TP4." If the PMD receiver is AC coupled, what is the source of this DC offset?

*SuggestedRemedy*

Adjust the requirement to account for the AC-coupled PMD receiver (which includes deleting this requirement entirely).

Response Response Status W

ACCEPT IN PRINCIPLE.  
See response to comment 504.

Cl 86 SC 86.6.6 P281 L13 # 423  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

This table does not meet the suggested formatting of the 2009 Style Guide.

Per 2009 Style Guide -  
Simple tabulations that are not referred to outside of the subclause in which they appear may be organized into informal tables that do not exceed five or six lines in depth; no table number or title is required. However, it is recommended that all tables be numbered and titled if possible.

*SuggestedRemedy*

Change subclause title to :  
86.6.6 40GBASE-SR4 and 100GBASE-SR10 link power budget

change table caption to :  
Table 86-13-40GBASE-SR4 and 40GBASE-SR10 link power budget

Response Response Status C

ACCEPT IN PRINCIPLE.

Change subclause title to :  
86.6.6 40GBASE-SR4 and 100GBASE-SR10 illustrative link power budget

change table caption to :  
Table 86-13-40GBASE-SR4 and 100GBASE-SR10 illustrative link power budget

Cl 86 SC 86.6.6 P281 L14 # 443  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause 86.6.6 and Table 86-13 are marked "Informative"

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The first sentence notes that what is shown in Table 86-13 is illustrative.

*SuggestedRemedy*

Change Sub-clause title to  
"86.6.6 40GBASE-SR4 and 100GBASE-SR10 link power budget"

Change caption of Table 86-13 to  
"Table 86-13-40GBASE-SR4 and 40GBASE-SR10 link power budget"

Response Response Status C

ACCEPT IN PRINCIPLE. Duplicate comment. See response to comment 423.

CI 86 SC 86.7 P280 L45 # 258  
 Pepeljugin, Petar IBM

Comment Type E Comment Status A

Measuring J2 and J9 with two different instruments is impractical and adds time. Direct the task force to change the wording and provide instructions how to measure both the J2 and J9 with a single instrument. The task force may provide instructions how to conduct each measurement (J2, J9) with both a scope or an error detector.

SuggestedRemedy

None provided at this time.

Response Response Status C

ACCEPT IN PRINCIPLE. Page 288.  
 The standard does not compel the implementer to use any particular instrument. J2 is as defined whatever it is measured with, and measuring J9 with a sampling scope would take too long to be cost effective.  
 Change to:  
 J2 Jitter is defined as the time interval that includes all but 10-2 of the jitter distribution, which is the time interval from the 0.5th to the 99.5th percentile of the jitter histogram. This may be measured using an oscilloscope, or if measured by plotting BER vs. decision time, J2 is the time interval between the two points with a BER of  $2.5 \times 10^{-3}$ . Oscilloscope histograms should include at least 10 000 hits, and should be taken over about 1% of the signal amplitude.

CI 86 SC 86.7 P281 L48 # 440  
 D'Ambrosia, John Force10 Networks

Comment Type E Comment Status A

HCN and MCB are not defined in Clause 1.5 Abbreviations

SuggestedRemedy

Add to Clause 1.5 Abbreviations  
 HCN Host Compliance Board  
 MCB Module Compliance Board

Response Response Status C

ACCEPT IN PRINCIPLE. In D2.0 they are used in Clause 86 only. If they are used in Clause 85 or Annex 83B add to 1.5.

CI 86 SC 86.7.1 P281 L44 # 331  
 Young, George AT&T

Comment Type E Comment Status A

Separate phrases into separate sentences for readability.

SuggestedRemedy

Change "These are TP1, TP1a, TP2, TP3, TP4 and TP4a, and four of these are skew points SP2, SP3, SP4 and SP5 as shown." to  
 "These are TP1, TP1a, TP2, TP3, TP4 and TP4a. Four of these are skew points SP2, SP3, SP4 and SP5 as shown."

Response Response Status C

ACCEPT IN PRINCIPLE. Prefer "These are TP1, TP1a, TP2, TP3, TP4 and TP4a; four of these are skew points SP2, SP3, SP4 and SP5 as shown."

CI 86 SC 86.7.1 P281 L45 # 462  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

The following sentence implies that SMA connectors are to be used.  
 Compliance boards are defined which bridge between the specific connector used by a PMD and generic test equipment with SMA connectors, for example.

SuggestedRemedy

Change text  
 Compliance boards are defined that will enable interconnection between generic test equipment and a PMD for test purposes.

Response Response Status C

ACCEPT IN PRINCIPLE. Change to:  
 These compliance boards are defined to connect generic test equipment to the PMD and host using the PPI connector, for test purposes.  
 At line 53, add:  
 Caution--A PMD with a PPI interface is AC coupled, however an HCN is not. The user should take care that the test equipment does not improperly load or damage a host under test.

CI 86 SC 86.7.1 P281 L48 # 497  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A CB

The text states that the host and module compliance boards have specified loss and other S-parameters. However, what follows are a set of recommendations and not specifications. These recommendations are essentially informative text and should be the subject of an informative annex.

However, if the recommended performance of the compliance boards is, in fact, required to verify compliance to the specification, then the recommendations should become normative ("the differential through response of the mated HCB and MCB shall be...") with associated PICS.

*SuggestedRemedy*

Indicate normative specifications with the "shall" keyword and associated PICS and move all informative content to an informative annex.

Response Response Status W

ACCEPT IN PRINCIPLE.  
See response to comment 465

CI 86 SC 86.7.1 P282 L1 # 458  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

In Fig 86-4 TP0 and TP5 are shown, but there is no reference to them in Table 86-14 or elsewhere in Clause 86.

*SuggestedRemedy*

Delete TP0 and TP5 and associated arrows from Figure.

Response Response Status C

ACCEPT IN PRINCIPLE. At the end of 86.7.1, insert:  
Also, TP0 and TP5 define the host end of the electrical channel, at the PMA IC.  
In 86.9, change "between the PMA IC and TP1 or TP4" to "between the PMA IC (TP0 or TP5) and TP1 or TP4".

CI 86 SC 86.7.1 P282 L1 # 456  
D'Ambrosia, John Force10 Networks

Comment Type T Comment Status A

In Fig 86-4, the definition of the location of the PMA and PMD sublayers above is misleading. The PMD service interface (PMDSI) is not at the edge of the optical module. The PPI is.

*SuggestedRemedy*

delete the lines and text for PMA / PMD / Medium / PMD / PMA at the top of the drawing.  
Delete the dashed line and text for each instance of PMDSI

Response Response Status C

ACCEPT IN PRINCIPLE.  
Change "PMDSI" to "nPPI"

CI 86 SC 86.7.1 P282 L3 # 231  
Lynskey, Eric Teknovus

Comment Type T Comment Status R

The 10G-EPON draft, which is in the middle of the Sponsor Ballot phase, has defined new PMD test points: TP5, TP6, TP7, and TP8 (see Figure 75-3 of IEEE P802.3av/D3.0). TP5 is the equivalent of TP1, except that TP1 refers to the downstream direction and TP5 refers to the upstream direction. Similarly, TP6, TP7, and TP8 are equivalent to TP2, TP3, and TP4, respectively.

It's not clear if the test points in Figure 86-4 represent the same points in both this draft and the 10G-EPON draft. To simplify understanding and readability, test points with the same number should represent the same location for all PMDs. If you want to define new test points, then you should give them new and distinct names. Although TP0 and TP5 are shown in the Figure, they are not mentioned in the text, and they are not mentioned in Table 86-14. Are they used at all? I have a similar concern with TP5 as used in Figure 85-2. In this case, it is described in the text. In this instance, I recommend that the test point be renamed.

*SuggestedRemedy*

Remove TP0 and TP5 from Figure 86-4. Rename TP5 to TP4' (prime) and TP0 to TP1' (prime) in Figure 85-2.

Response Response Status C

REJECT.

The TP0, TP5 notation is straightforward and already in use. EPON is clearly different (different upstream and downstream) so aligning with it is not practical, and there is no confusion if labels are re-used. We already have TP1 and TP1a; adding TP1' would be unpleasant.

See also response to comment 458.

**Cl 86**    **SC 86.7.1**    **P282**    **L34**    # 469  
 D'Ambrosia, John    Force10 Networks

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

Table 86-14 lists redundant information that is captured in other tables and causes confusion.

**SuggestedRemedy**  
 delete table 86-14

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

REJECT.  
 This table is a useful reference to the test points, what they are for, and what is measured where.

**Cl 86**    **SC 86.7.1**    **P282**    **L7**    # 183  
 Bergmann, Ernest    Circadian/JDSU

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

"Use Model" is ambiguous in that "Use" could be the imperative form of the verb or it could be an adjective.

**SuggestedRemedy**  
 Replace the label with "Usage model"

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

ACCEPT.  
 [Editor's note: Moved commenter's "Figure 86-4" from subclause field]

**Cl 86**    **SC 86.7.1**    **P283**    **L1**    # 345  
 Dudek, Mike    Independent

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

The receiver optical measurements are not made at the output of the patch cord. (if they were we'd need to redefine TP3).

**SuggestedRemedy**  
 Insert "Transmitter" between "All" and "optical".

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

ACCEPT.  
 Also in Clause 87.8 and 88.9  
 For correction to 86.10.3.3, see comment 191.

**Cl 86**    **SC 86.7.1.1**    **P283**    **L35**    # 463  
 D'Ambrosia, John    Force10 Networks

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

title of Fig 86-5 is confusing and uses wrong parameter

**SuggestedRemedy**  
 change caption to "PCB Differential Insertion Loss"

**Response**    **Response Status**    **U**

ACCEPT IN PRINCIPLE. The parameter is correct; S-parameters are how compliance boards are defined. See FC-PI-4 and SFF-8431. InfiniBand also uses S-parameters.  
 Change title to:  
 Figure 86-5-Through response (SDD21) of HCB and MCB excluding connector  
 Change title of next figure to:  
 Figure 86-6-Through response (SDD21) of mated HCB-MCB

**Cl 86**    **SC 86.7.1.1**    **P283**    **L5**    # 465  
 D'Ambrosia, John    Force10 Networks

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

86.7.1.1 addresses Compliance Board Parameters. All of the parameters listed in the associated sub-clauses are stated to be "recommended." This means they are not normative, but must be interpreted as informative.

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative. This would imply taking this text out related to compliance parameters and making it part of an informative annex.

However, given that the compliance boards are also part of normative measurements, it seems perfectly reasonable to interpret the parameters of these test boards must be normative.

Regardless of the interpretation, the overall clarity of Clause 86 will improve if this data is moved to an annex.

**SuggestedRemedy**  
 Move 86.7.1.1 into a normative annex for Clause 86 named "Compliance Test Boards Interconnect Characteristics."

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

ACCEPT IN PRINCIPLE.  
 The response to comment 455 has moved this subclause to Annex 86A

Change the requirements on the mated MCB-HCB from "recommended" to become normative requirements with editorial license

CI 86 SC 86.7.1.1 P283 L5 # 505  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A XT

No far-end crosstalk requirements (single aggressor FEXT, power-sum FEXT or PSFEXT) for the mated HCB and MCB are defined. In some cases, FEXT could be more significant than NEXT.

*SuggestedRemedy*

Include both single-aggressor FEXT and PSFEXT for the mated HCB and MCB.

Response Response Status W

ACCEPT IN PRINCIPLE.

Introduce a PSFEXT limit for the mated HCB and MCB that is 3 dB above the single aggressor FEXT limit

See also response to 404 which modifies the single-aggressor FEXT limit already defined on page 286

see also response to comment 506 for PSNEXT.

CI 86 SC 86.7.1.1 P283 L6 # 352  
Dudek, Mike Independent

Comment Type TR Comment Status A CB

The characteristics of the compliance boards affect the measured normative parameters. We need something stronger than "recommended characteristics".

*SuggestedRemedy*

Delete the word "recommended" throughout this sub-section.

Page 283 lines 7 and 50,

Page 284 lines 36 and 50

Page 285 lines 36, and 45

Page 286 line 30

Change "recommended" to "compliant"

Page 284 line 12.

Page 285 line 21

Page 286 line 18

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment 465

CI 86 SC 86.7.1.1 P283 L8 # 404  
Ghiasi, Ali Broadcom

Comment Type TR Comment Status A

The compliance board parameters must be updated based on the final version of board supporting SR4 and SR10.

*SuggestedRemedy*

Based on measured result as given in ghiasi\_04\_0509

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace equation 86-13 with an equation representing the blue limit line on slide 5 of ghiasi\_04\_0509

CI 86 SC 86.7.1.1 P284 L40 # 464  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

The specified return losses by equations 86-8 and 86-9 and illustrated in Fig 86-7 are practically on top of each other in the 0 to 11.1 GHz range. The explanation of these two equations as they relate to HCB and MCB are totally unclear, as to which equation applies to which board.

*SuggestedRemedy*

Use the worst case equation of the two return loss curves. Assuming that the illustration is correct, then only use equation for curve labeled "SDDii looking into HCB"b

Response Response Status U

ACCEPT IN PRINCIPLE.

In Figure 86-7 replace "SDDii looking into MCB" with "SDDmm looking into MCB"  
Also replace "SDDii looking into HCB" with "SDDhh looking into HCB"

The feasibility of using a single equation for both limits requires further experimental results.

Cl 86 SC 86.7.1.1 P285 L45 # 506  
Healey, Adam LSI Corporation

Comment Type TR Comment Status A XT

Single-aggressor NEXT requirements are set to accommodate a subset of dominant aggressors while the remaining aggressors contribute less to the overall NEXT. To avoid implementations where all NEXT aggressors exhibit the worst-case single aggressor NEXT, the requirement should be supplemented by a power-sum NEXT, or PSNEXT, requirement that limits the combined contribution of all aggressors.

*SuggestedRemedy*

Include a PSNEXT limit. The PSNEXT limit implied by 4 or 10 aggressors meeting the single-aggressor NEXT requirement shown is too large.

Response Response Status W

ACCEPT IN PRINCIPLE.  
Introduce a PSNEXT limit for the mated HCB and MCB that is 3 dB above the single aggressor NEXT limit

see also response to comment 505 for PSFEXT.

Cl 86 SC 86.7.1.1 P285 L48 # 88  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A XT

The NEXT and FEXT limits in the draft are the same. One is appropriate for SFP+, the other is (I think) not verified. Anyway, these limits may need revision to support QSFP, CXP (and CFP?) connectors.

*SuggestedRemedy*

To progress this we need information on connector performance. If this is not available or can't be digested in the May meeting, add an editor's note and work the issue after.

Response Response Status C

ACCEPT IN PRINCIPLE.  
See response to comment 404

Cl 86 SC 86.7.1.1 P286 L1 # 466  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A XT

Fig 86-8 is labeled Mode Conversion of mated HCB-MCB, which is really Different to Common Mode Insertion Loss (see dambrosia\_02\_0509). However, this figure also includes a plot of NEXT. FEXT from equation 86-13 is not illustrated.

Equations only address single aggressors, and there is no limit on # of aggressors or total crosstalk.

*SuggestedRemedy*

Change caption of Fig 86-7 to "Differential to Common-mode Insertion Loss"  
Remove plot of NEXT from 86-8.

Propose to limit total NEXT to power sum of 2 aggressors per Eq 86-12. Add appropriate equation.

Propose to limit total FEXT to power sum of 2 aggressors per Eq 86-13. Add appropriate equation.

Add new figure that illustrates new equations above for Total NEXT and Total FEXT.

Response Response Status C

ACCEPT IN PRINCIPLE.  
PSFEXT and PSNEXT have been added by the responses to comments 505 and 506

The caption of Figure 86-8 has been modified by the response to comment 185

Cl 86 SC 86.7.1.1 P286 L14 # 184  
Bergmann, Ernest Circulant/JDSU

Comment Type T Comment Status A XT

(Reworking figure to support FEXT as well as NEXT)

*SuggestedRemedy*

replace the label:  
"NEXT" --> "NEXT, FEXT"

Response Response Status C

ACCEPT IN PRINCIPLE.  
The FEXT limit will be illustrated in response to comment 186.

Ensure y-axis labels remain appropriate for revised figures.

[Editor's note: Moved commenter's "Figure 86-8" from subclause field]



Cl 86 SC 86.7.1.1 P286 L28 # 185  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A XT

The figure caption does not adequately describe the figure function

*SuggestedRemedy*

Change the figure caption to:  
"Figure86-8--Limits on mode conversion of mated HCB-MCB, NEXT, and FEXT"

Response Response Status C

ACCEPT IN PRINCIPLE.  
Change figure caption as proposed if still appropriate after figures have been modified to include PSFEXT and PSNEXT limits.

[Editor's note: Moved commenter's "Figure 86-8" from subclause field]

Cl 86 SC 86.7.1.1 P286 L31 # 186  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A XT

Having comments to make Figure 86-8 handle FEXT, we should reference it!

*SuggestedRemedy*

Replace:  
"given in Equation 86-13." -->  
"given in Equation 86-13 and shown in Figure 86-6."

Response Response Status C

ACCEPT IN PRINCIPLE.  
The FEXT limit has been modified by the response to comment 404.  
Illustrate this equation and add a reference to appropriate figure

Cl 86 SC 86.7.2 P287 L23 # 188  
Bergmann, Ernest Circadian/JDSU

Comment Type ER Comment Status A

"Square or 4" [3 places]

*SuggestedRemedy*

Replace with:  
"Square wave or 4" [3 places]

Response Response Status C

ACCEPT. [Editor's note: Moved commenter's "Table 86-16" from subclause field]

Cl 86 SC 86.7.2 P287 L5 # 187  
Bergmann, Ernest Circadian/JDSU

Comment Type ER Comment Status A

The "pattern": "Square(8 ones, 8 zeros)" is a square wave

*SuggestedRemedy*

Replace:  
"Square(8 ones, 8 zeros)" -->  
"Square wave (8 ones, 8 zeros)"

Response Response Status C

ACCEPT. [Editor's note: Moved commenter's "Table 86-15" from subclause field]

Cl 86 SC 86.7.3.2 P288 L18 # 330  
Young, George AT&T

Comment Type T Comment Status A

Signaling speed of 25.78125 GBd/lane is not applicable to Clause 86 PMDs. As is necessary to specify clock recovery unit specifications to be employed for skew and skew variation testing of Clause 88 PMDs, a subclause on skew and skew variation testing needs to be added under subclause 88.9, similar to that of subclause 87.8.2. This is where CRU specifications for 25.78125 GBd lane testing should be stated. See companion comment on subclause 88.9.

*SuggestedRemedy*

Remove second line specifying 25.78125 GBd from Table 86-17.

Response Response Status C

ACCEPT IN PRINCIPLE.

Place the requirement for the Clock recovery unit high frequency corner bandwidth for 25 GBd lanes in clause 88. Replace Table 86-17 with a single requirement for 10 GBd lanes and make the appropriate changes elsewhere in the draft to be consistent with these changes.

See also response to comments 461 and 332.

CI 86 SC 86.7.3.2 P288 L18 # 461  
 D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Table 86-17 calls out a signaling speed for each lane of 25..78125 GBd. There is no such signaling rate for an SR PHY.

*SuggestedRemedy*

delete the table entry for 25.78125 Gbd.

Response Response Status C

ACCEPT IN PRINCIPLE.  
 See Response comment 330

See also response to comment 332.

CI 86 SC 86.7.3.2 P288 L6 # 346  
 Dudek, Mike Independent

Comment Type T Comment Status A

On line 3 it says this applies, to both electrical and optical, but on line 6 the definition is unnecessarily restricted to optical only

*SuggestedRemedy*

Delete the word "optical" on line 6.

Response Response Status C

ACCEPT.

CI 86 SC 86.7.3.2.1 P288 L26 # 424  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

*SuggestedRemedy*

change subclause title to :  
 86.7.3.2.1 Transmitter eye mask acceptable hit count

add sentence before first sentence:

Examples of appropriate oscilloscope settings for measuring the transmitter eye mask are detailed below.

Response Response Status C

ACCEPT IN PRINCIPLE. Change subclause title to:  
 86.7.3.2.1 Eye mask acceptable hit count examples  
 Insert new first sentence:

An example calculation relating hit count to hit ratio for an eye mask measurement using an oscilloscope is detailed below.

At line 29 and 39, change "transmitter" to "signal".

CI 86 SC 86.7.3.2.1 P288 L26 # 441  
 D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause 86.7.3.2.1 is labled informative

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

*SuggestedRemedy*

Change subclause title to  
 "86.7.3.2.1 Transmitter eye mask acceptable hit count examples"

Response Response Status C

ACCEPT IN PRINCIPLE.  
 See response to 424.

CI 86 SC 86.7.3.2.1 P288 L27 # 498  
Healey, Adam LSI Corporation

Comment Type ER Comment Status A

Per the 2009 IEEE Standards Style Manual:

"Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

The content of this subclause should be the subject of an informative annex.

*SuggestedRemedy*

Move this subclause to an informative annex.

Response Response Status W

ACCEPT IN PRINCIPLE.  
See response to 424.

CI 86 SC 86.7.3.3.1 P288 L47 # 604  
Petrilla, John Avago Technologies

Comment Type T Comment Status A P3\_P5

Test pattern information is missing from the J2 paragraph

*SuggestedRemedy*

Copy and paste into 86.7.3.3.1 the last two sentences of 86.7.3.3.2, "The normative test patterns are given in Table 86-16. As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-R or 100GBASE-R bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the required limit using Pattern 3."

Response Response Status C

ACCEPT IN PRINCIPLE.  
As J2 is not affected by the tail of the distribution, no difference between the two patterns is expected. Also there are 4 possible test patterns for J2

Add to the end of 86.7.3.3.1 "Test patterns are given in Table 86-16."

CI 86 SC 86.7.3.3.2 P288 L53 # 499  
Healey, Adam LSI Corporation

Comment Type T Comment Status R P3\_P5

"As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-KR or 100GBASE-KR bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the requirement limit using Pattern 3."

I believe this is more succinctly, and sufficiently, summarized in Table 86-16 as "3 or 5" and this rationalization is not required.

*SuggestedRemedy*

Strike text.

See also 86.7.5.4 item b), 86.7.5.7 item d) and 86.7.5.8 item a).

Response Response Status C

REJECT.  
See response to comment 472.

CI 86 SC 86.7.4.1 P289 L9 # 189  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

"common mode voltage is calculated" is not the only way.

*SuggestedRemedy*

Replace with:  
"common mode voltage may be calculated"

Response Response Status C

ACCEPT.

Cl 86 SC 86.7.4.4 P290 L23 # 694  
 Misek, Brian Avago Technologies

Comment Type T Comment Status A

Shouldn't this measurement have a 4MHz CDR applied to remove the low frequency jitter?

*SuggestedRemedy*

Add a line

A clock recovery unit (CRU) is used to trigger the oscilloscope for mask measurements, as shown in Figure 52-9. It has a high frequency corner bandwidth as specified in Table 86-17 and a slope of -20 dB/decade.

Response Response Status C

ACCEPT IN PRINCIPLE.

At line 18, add:

A clock recovery unit (CRU) as defined in 86.7.3.2 is used to trigger the oscilloscope.

Cl 86 SC 86.7.5.1 P291 L22 # 244  
 Swanson, Steven Corning Incorporated

Comment Type E Comment Status R

Add international reference.

*SuggestedRemedy*

Replace: "The wavelength of each optical lane shall be within the range given in Table 86-8 if measured using the method given in TIA-455-127-A." with: "The wavelength of each optical lane shall be within the range given in Table 86-8 if measured using the method given in TIA-455-127-A or IEC 61280-1-3."

Response Response Status C

REJECT.

Maintaining dual references would be too onerous and TIA-455-127-A dated 2006 is an improvement on IEC 61280-1-3 (1998).

A revised version of IEC 61280-1-3 is currently being developed by IEC but it is only expected to be completed by July 2010 so it is better retain the reference to TIA-455-127-A

Cl 86 SC 86.7.5.2 P291 L28 # 245  
 Swanson, Steven Corning Incorporated

Comment Type E Comment Status A

Add international reference.

*SuggestedRemedy*

Replace: "The average optical power of each lane shall be within the limits given in Table 86-8 if measured using the methods given in TIA/EIA-455-95A." with: "The average optical power of each lane shall be within the limits given in Table 86-8 if measured using the methods given in TIA/EIA-455-95A or IEC 61280-1-1"

Response Response Status C

ACCEPT IN PRINCIPLE. Change "methods given in TIA/EIA-455-95A" to "methods given in IEC 61280-1-1"

Also add reference to clause 1.3:

IEC 61280-1-1 (1998), Fibre optic communication subsystem basic test procedures-Part 1-1: Test procedures for general communication subsystems-Transmitter output optical power measurement for single-mode optical fibre cable.

For reference: TIA/EIA-455-95-A (with extra hyphen) is dated April 2000, R 2005. IEC 61280-1-1 is dated 1998-05-08.

Cl 86 SC 86.7.5.3 P291 L32 # 190  
 Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

"square (8 ones, 8 zeros) test pattern"

*SuggestedRemedy*

replace with:

"square wave (8 ones, 8 zeros) test pattern"

Response Response Status C

ACCEPT.

CI 86 SC 86.7.5.4 P291 L36 # 276  
Kolesar, Paul CommScope

Comment Type TR Comment Status R

The TDP test fails to assess the true chromatic dispersion impairment of the 40G/100GBASE-SR4/10 PMDs. Instead it places a surrogate filter into the test fixture receiver that is set to insert a reduction in channel bandwidth based on assumptions about the optical spectral behavior of the transmitter that are not true. Specifically, the filter-based methodology wrongly assumes the spectrum is constant as a function of time and the spectral shape is smooth and continuous. In fact the spectrum of multi-transverse mode lasers is strongly affected by modulation, typically changing in wavelength throughout a bit period, and their spectrum consists of a few discrete wavelengths with irregular adjacent amplitudes. These features affect the actual dispersion and cannot be accurately represented by a static filter. The problems associated with a filter-based approach are avoided when testing TDP of singlemode PMDs because an actual singlemode test fiber is used in the fixture that inserts the worst-case dispersion of the maximum length channel. This approach captures the effects of modulation and the wavelength variation called "chirp" of SM lasers, providing a much more accurate assessment of the transmitter performance and transmitter/fiber interaction. The availability of multimode fibers with bandwidths exceeding 10,000 MHz\*km now permits the benefits of using a test fiber instead of a filter to be applied to the TDP test for multimode PMDs. In addition to greater accuracy, this approach adds the dimension of dispersion, presently frozen at a single value, to the compliance space. This added dimension enables maximal trade-off of jitter, distortion and dispersion which can positively impact production yield. More details are provided in kolesar\_01\_0509.pdf.

#### SuggestedRemedy

See complete proposal in kolesar\_02\_0509.pdf. Synopsis: a) insert into the TDP test bench a 50 μm fiber with modal bandwidth  $\geq 10,000$  MHz\*km of a length chosen to apply the worst-case chromatic dispersion; b) adjust the receiver filter to remove the component associated with the present static surrogate for dispersion.

Response Response Status U

REJECT.

The sub task force voted on whether to implement the changes in kolesar\_02\_0509.pdf

Yes 12

No 5

Another comment points out that the surrogate filter causes problems and can be dispensed with anyway.

The proposed technique is interesting at a university level but unfamiliar, unproven and prone to unstable results with VCSELs.

This PMD is supposed to be cost-effective for the objective distance, where chromatic dispersion is not dominant. A new and unfamiliar test element would add cost and be misleading because the chromatic dispersion effects vary over time. It would be far too expensive and time-consuming to do this measurement with a useful level of confidence. Therefore any yield benefit would not flow to cost as hoped.

CI 86 SC 86.7.5.4 P291 L38 # 610  
Petrilla, John Avago Technologies

Comment Type TR Comment Status A

Subclause 86.7.5.4 refers to 52.9.10 where the associated test setup shown in Fig 52-12 shows a single mode fiber and a polarization rotator connecting the Tx DUT to the splitter. Since clause 86 only addresses multimode fiber, these elements have no utility and would be problematic.

#### SuggestedRemedy

Add to the list of exceptions in 86.7.5.4, The polarization rotator is removed from the setup and the single-mode fiber replaced with a multimode fiber.

Response Response Status C

ACCEPT IN PRINCIPLE.

This is an issue in the base document for 10GBASE-S also.

Modify 52.9.10 according to proposal in Maintenance request 1211

CI 86 SC 86.7.5.4 P291 L45 # 277  
Kolesar, Paul CommScope

Comment Type TR Comment Status R

The use of a fiber-based channel in the TDP test fixture proposed in another comment permits the fixture to easily adapt to screen transmitters with performance that supports distances exceeding the minimum requirements of clause 86. Such transmitters address the need for a cost-effective solution for channels exceeding 100 m (see kolesar\_01\_0908). The adjustment to the TDP test fixture should be described within the standard to ensure interoperability, for example in an informative annex. See kolesar\_01\_0509.pdf for supporting information and details.

*SuggestedRemedy*

Create informative annex 86A entitled "Transmitter and dispersion penalty (TDP) test for extended-reach capability". If the TDP test fixture adjustment to clause 86.7.5.4 proposed in another comment is accepted, the proposed content for the annex is found in kolesar\_03\_0509.pdf. If the TDP test fixture adjustment is not accepted, the proposed content for the annex is found in kolesar\_04\_0509.pdf.

Response Response Status U

REJECT. [Editor's note: the supporting material that was to be in kolesar\_01\_0509 is now in kolesar\_05\_0509]

A straw poll of the sub-task force was taken.

Do you support the creation of an informative annex similar to that proposed in kolesar\_04\_0509.pdf?

Yes 10  
No 9  
Abstain 7

Based on this result, the a vote of the sub-task force was taken on the following Response:  
ACCEPT IN PRINCIPLE  
Create an informative annex similar to that proposed in kolesar\_04\_0509.pdf with editorial license

Yes 12  
No 12  
Abstain 6

CI 86 SC 86.7.5.4 P291 L47 # 605  
Petrilla, John Avago Technologies

Comment Type T Comment Status A

86.7.5.4 item d calls for S of the Ref Rx to come from the lower value (i.e. better sensitivity) when testing at +/- 0.15 UI offsets from the center of the UI, while calling for the larger of the two TDP values. There appears no good reason to penalize the DUT for Ref Rx attributes. Consequently, S should come from the larger value to be consistent.

*SuggestedRemedy*

Change 86.7.5.4 item d from, "... displaced from the eye center by  $\pm 0.15$  UI and the lower S value used" to "... displaced from the eye center by  $\pm 0.15$  UI and the higher S value used"

Response Response Status C

ACCEPT IN PRINCIPLE.

Base the TDP value on the largest difference between the reference and the DUT at + 0.15 UI offset and at - 0.15 UI offset

CI 86 SC 86.7.5.4 P291 L48 # 353  
Dudek, Mike Independent

Comment Type TR Comment Status R

It would be good to include the chromatic dispersion effects of the transmitter in the TDP measurement as is done for the single mode systems in clauses 87 and 88.

*SuggestedRemedy*

Introduce a wide band fiber into the measurement as described in Kolesar\_02\_0509.

Response Response Status U

REJECT.

See response to comment 276

Cl 86 SC 86.7.5.4 P291 L49 # 87  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Effectively, this TDP definition requires two reference receivers; a 7.5 GHz one for observing the reference transmitter and a 6.2 GHz one for observing the transmitter under test. This causes practical difficulties.

*SuggestedRemedy*

Seek a single receiver. Investigate what reproducibility would be sacrificed if just one receiver with the usual 7.5 GHz, were used. Add editor's not if information not available in May, work between the meetings to close the issue in July.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change bullet e from "The effect of the transversal filter is realised by a reference receiver / filter combination having a fourth order Bessel-Thomson filter response with a bandwidth of 6.2 GHz;"

to "The reference receiver (including the effect of the decision circuit) has a fourth order Bessel-Thomson filter response with a bandwidth of 6.2 GHz. The transversal filter of 52.9.10.3 is not used;"

After the bullets, add NOTE--Because practical receivers and decision circuits have noise and timing impairments, the sampling instant offsets have to be calibrated. One method of doing this is via a jitter bathtub method using a known low-jitter signal.

Because we now use the same receiver filter for measuring both reference transmitter and transmitter under test, in Table 86-8, revise the limit for TDP to be 3.7 dB, and OMA-TDP to be -6.7 dBm.

Cl 86 SC 86.7.5.6 P292 L14 # 347  
Dudek, Mike Independent

Comment Type T Comment Status A

Table 86-8 allows the use of normal system operation and hence normal operation gives an "identical" not "similar" result.

*SuggestedRemedy*

Delete the last sentence of the paragraph (line 14)

Response Response Status C

ACCEPT.

Cl 86 SC 86.7.5.8 P293 L43 # 472  
D'Ambrosia, John Force10 Networks

Comment Type T Comment Status R P3\_P5

The pattern to be received is specified in Table 86-16. As Pattern 3 is more demanding than Pattern 5 (which itself is the same or more demanding than other 40GBASE-R or 100GBASE-R bit streams) an item which is compliant using Pattern 5 is considered compliant even if it does not meet the required limit using Pattern 3;

This is summarized adequately in Table 86-16

*SuggestedRemedy*

delete noted text

Response Response Status C

REJECT.

Just saying "3 or 5" does not tell the reader what to do in case of a conflict. This sentence is necessary to clarify this issue.

Cl 86 SC 86.9 P294 L38 # 442  
D'Ambrosia, John Force10 Networks

Comment Type TR Comment Status A

Subclause 86.9 is labled as "informative"

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The first line of the sub-clause indicates the maximum attenuation is recommended.

*SuggestedRemedy*

Rename the subclause -

86.9 Recommended electrical channel

Response Response Status C

ACCEPT IN PRINCIPLE.

See response to comment 425

Cl 86 SC 86.9 P294 L38 # 425  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

*SuggestedRemedy*

create informative annex and move all channel related information into informative annex

Response Response Status C

ACCEPT IN PRINCIPLE.

The response to comment 455 has moved this subclause to Annex 86A

Change the title of the subclause to:

"Recommended electrical channel"

Cl 86 SC 86.9 P294 L38 # 496  
Healey, Adam LSI Corporation

Comment Type ER Comment Status A

Per the 2009 IEEE Standards Style Manual:

"Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

The content of this subclause should be the subject of an informative annex.

*SuggestedRemedy*

Move this subclause to an informative annex.

Response Response Status C

ACCEPT IN PRINCIPLE. See response to comment 425.

Cl 86 SC 86.9 P294 L38 # 86  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Recommended is more than informative.

*SuggestedRemedy*

Delete "(informative)".

Response Response Status C

ACCEPT IN PRINCIPLE.

See Response to comment 425

Cl 86 SC 86.9 P294 L43 # 502  
Healey, Adam LSI Corporation

Comment Type TR Comment Status R

The maximum recommended electrical channel insertion loss (less the host compliance board loss, excluding connector 86.7.1.1) is approximately double the loss allowed in 85.9.1 (40GBASE-CR4, 100GBASE-CR10). This is considerably more loss than what may be attributed to the mated connector.

Since a common receptacle may accept either an optical transceiver or a copper cable assembly, the loss allocations should be identical. Otherwise, a compliant copper cable assembly whose specifications are based on the host electrical channel loss described in 85.9.1 may not interoperate with systems that exhibit a higher loss within the recommendations of 86.9.

*SuggestedRemedy*

Ensure 86.9 and 85.9.1 are consistent.

Response Response Status C

REJECT.

This comment was WITHDRAWN by the commenter.

The minimum losses are consistent between the two clauses as a result of comments against clause 85

The maximum losses only differ by 1.1 dB

see dawe\_05\_0509

The system implementer can choose whether or not to comply with the more stringent requirements of clause 85.

see also comment 521



Cl 87 SC 87.1 P309 L33 # 96  
Dawe, Piers Avago Technologies

Comment Type E Comment Status A

The readers of this clause may be expert in analog electronics and fibre optics and laser technology but may not have worked on an 802.3 product before and deserve more guidance through the voluminous Ethernet spec.  
This comment applies to 88.1 also.

*SuggestedRemedy*

Add:  
40 Gb/s and 100 Gb/s Ethernet is introduced in Clause 80 and the purpose of each PHY sublayer is summarized in 80.2. Further relevant information may be found in Clause 1 (terminology and conventions, references, definitions and abbreviations) and Annex A (bibliography, entries referenced here in the format [Bn]).

Response Response Status C

ACCEPT IN PRINCIPLE.  
Add "40 Gb/s and 100 Gb/s Ethernet is introduced in Clause 80 and the purpose of each PHY sublayer is summarized in 80.2." at the end of 87.1 and 88.1.

Further relevant information can be found in far too many places within the 802.3 standard to make it worth mentioning specifically clause 1 and Annex A.

Cl 87 SC 87.1 P309 L7 # 97  
Dawe, Piers Avago Technologies

Comment Type T Comment Status A

Instead of "In order to form a complete PHY", text should say "When forming a complete PHY" (see e.g. 802.3-2008 72.1). Strictly, as the RS is not part of the PHY, that should be "complete Physical Layer".

*SuggestedRemedy*

Change "In order to form a complete PHY" to "When forming a complete Physical Layer".

Response Response Status C

ACCEPT IN PRINCIPLE.

Change:  
"In order to form a complete physical layer, the PMD shall be connected to the appropriate sublayers indicated in Table 87-1 and optionally with the management functions that may be accessible through the management interface defined in Clause 45."

to:  
"A complete physical layer comprises the PMD and other sublayers indicated in Table 87-1. The PMD may optionally be connected to the management functions that may be accessible through the management interface defined in Clause 45."

Make the equivalent change to subclause 88.1

Cl 87 SC 87.1 P310 L16 # 390  
Kipp, Scott Brocade

Comment Type T Comment Status R

Figure 87-1 Why does 40GBASE-SR4 have a PPI and 40GBASE-LR4 doesn't?

*SuggestedRemedy*

Add the PPI interface to LR4 or remove it from SR4.

Response Response Status C

REJECT.

PPI for SR4 has been a topic for much work and many contributions.  
The PPI specs are specified in clause 86 because the PPI is designed to allow an unretimed SR4 PMD embodiment, which is possible because the SR4 application has low fibre distortion and loss, and enough power budget to constrain jitter into the PPI.

Since the PPI affects possible SR4 implementations, it's position within the physical layer diagram is helpful in clause 86.

LR4 has higher fibre distortion, less available power budget and is almost certain to need retiming within the PMD. Implementing PPI doesn't enable an unretimed LR4 PMD implementation, although an LR4 PMD with retimer may interoperate with the PPI specified in clause 86.

[Editor's note: Commenter has incorrectly marked figure number in subclause field. Moved figure number to comment field]

CI 87 SC 87.11.1 P326 L3 # 246  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

We need to add bend insensitive fibers and add the correct reference.

*SuggestedRemedy*

Replace: "The fiber optic cable requirements are satisfied by type B1.1 (dispersion un-shifted single-mode) and type B1.3 (low water peak single-mode) fibers specified in IEC 60793-2 and the requirements in Table 87-15 where they differ." with: "The fiber optic cable requirements are satisfied by cables containing IEC 60793-2-50 type B1.1 (dispersion un-shifted single-mode), type B1.3 (low water peak single-mode) or type B6\_A (bend insensitive) fibers and the requirements in Table 87-15 where they differ."

Also add reference to clause 1.3:

"IEC 60793-2-50 (2008), Optical fibres-Part 2-50: Product specifications-Sectional specification for class B single-mode fibres."

Response Response Status C  
ACCEPT.

CI 87 SC 87.11.3 P326 L51 # 203  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

TP3 is at the MDI according to Fig 87-2 (page 314), so the note:  
"NOTE--Compliance testing is performed at TP2 and TP3 as defined in 87.5.1, not at the MDI." is unintelligible.

*SuggestedRemedy*

Remove the note (or rewrite it!).

Response Response Status C

ACCEPT IN PRINCIPLE.  
[Editor's note - Subclause changed from 11.3 to 87.11.3]  
Change "NOTE - Compliance testing is performed at TP2 and TP3 as defined in 87.5.1, not at the MDI." to "NOTE - Transmitter compliance testing is performed at TP2 as defined in 87.5.1, not at the MDI."

CI 87 SC 87.3.1 P312 L6 # 761  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

*SuggestedRemedy*

Delete the text in the parenthesis.

Response Response Status C  
ACCEPT.  
Delete the text in the parenthesis since this subclause now references 80.3 (see response to comment 275)

CI 87 SC 87.5.5 P315 L20 # 193  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

Subclause 87.5.5 should parallel 88.5.5 where there is no need to differ.

*SuggestedRemedy*

Change:  
"PMD\_signal\_detect\_n" -->  
"PMD\_signal\_detect\_i"

Response Response Status C  
ACCEPT.  
[Editor's note - Subclause changed from 5.5 to 87.5.5]

CI 87 SC 87.5.8 P315 L42 # 194  
 Bergmann, Ernest Circadian/JDSU

Comment Type ER Comment Status A

Subclause 87.5.8 should parallel 88.5.8 where there is no need to differ.

*SuggestedRemedy*

Change:  
 "PMD\_transmit\_disable\_n (where n represents" -->  
 "PMD\_transmit\_disable\_i (where i represents"

and 4 places later this page:

Change:  
 "PMD\_transmit\_disable\_n" -->  
 "PMD\_transmit\_disable\_i" [4 places]

Response Response Status C

ACCEPT.  
 [Editor's note - Subclause changed from 5.8 to 87.5.8]

CI 87 SC 87.5.9 P316 L1 # 195  
 Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

"87.5.9 PMD fault function" does not parallel next two subsections.

*SuggestedRemedy*

Rename:  
 "87.5.9 PMD fault function (optional)"

Response Response Status C

ACCEPT.  
 [Editor's note - Subclause changed from 5.9 to 87.5.9]

CI 87 SC 87.6 P316 L19 # 94  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status A

There is a "shall" here that isn't actionable. The wavelength requirements are separately dealt with in an actionable way in Table 87-7 and 87-8.

*SuggestedRemedy*

Remove this "shall" and PICS. Consider putting the WDM lane assignments in a summary table. Applies to 88.6 also.

Response Response Status C

ACCEPT IN PRINCIPLE.  
 In 87.6 change "The wavelength range for each lane of the 40GBASE-LR4 PMD shall be as defined in Table 87-5." to "The wavelength range for each lane of the 40GBASE-LR4 PMD is defined in Table 87-5."  
 In 87.12.4.3 delete PICS requirement XLLR1

CI 87 SC 87.7 P316 L42 # 247  
 Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

We need to include bend insensitive fibers.

*SuggestedRemedy*

Replace: "...A 40GBASE-LR4 compliant PMD operates on type B1.1 and type B1.3 single-mode fibers according to the specifications defined in Table 87-14...." with: "...A 40GBASE-LR4 compliant PMD operates on type B1.1, B1.3 or B6\_A single-mode fibers according to the specifications defined in Table 87-14...."

Response Response Status C

ACCEPT.

CI 87 SC 87.7 P316 L50 # 95  
 Dawe, Piers Avago Technologies

Comment Type T Comment Status R

A table with just one entry is bad style.

*SuggestedRemedy*

Either change

The operating range for the 40GBASE-LR4 PMD is defined in Table 87-6.  
to

The required operating range for the 40GBASE-LR4 PMD is 2 m to 10 km.  
and delete the table

or, better, move the table entries into a summary table.

This applies to Table 88-6 also. It would help the reader to have the information in Table 88-6 and 88-10 brought together.

Response Response Status C

REJECT.

The information contained in these tables is found in a table in many other PMD clauses in the base standard. Continuing to place this information in a table here makes it much easier to find for readers who are familiar with the 802.3 standard. The 2009 IEEE Standards Style Manual does not prohibit tables with only one entry.

CI 87 SC 87.7.1 P317 L44 # 334  
 Simsarian, Jesse Alcatel-Lucent

Comment Type T Comment Status R

Tables 87-7 and 87-8 are specifying "Average launch power, each lane (min)" and "Average receive power, each lane (min)" of -7 dBm and -13.7dBm, respectively, that does not ensure compliance as indicated by the notes a and b, respectively. Looking at the typical receiver sensitivity of a 10G PIN receiver of -14dBm at extinction ratio of 8.2dB, the currently specified average power values indicate 4.7 dB higher receiver sensitivity requirement, considering 2dB for Demux insertion loss and a sensitivity penalty of 3dB between extinction ratios of 3.5dB, as specified at table 87-7, and 8.2dB. Thus, unfortunately, the currently specified average power values provide misleading information and are not feasible.

*SuggestedRemedy*

Add the text, "as a higher extinction ratio may be required than specified." to note a of Table 87-7 so that it reads:

a: Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance, as a higher extinction ratio may be required than specified.

Add the text, "as a higher extinction ratio may be required than specified." to note b of Table 87-8 so that it reads:

b: Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance, as a higher extinction ratio may be required than specified.

Response Response Status C

REJECT.

[Editor's note - Subclause changed from 7 to 87.7.1]

The current text is very clear. It states:

"Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance."

Adding the text proposed by the commenter "as a higher extinction ratio may be required than specified" makes the text very confusing.

CI 87 SC 87.7.3 P318 L40 # 444  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause 87.7.3 is labeled "informative"

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The text in the subclause indicates that the subclause contains an illustrative power budget.

*SuggestedRemedy*

Rename Subclause to

"87.7.3 40GBASE-LR4 link power budget"

Response Response Status C

ACCEPT IN PRINCIPLE.

Change title of subclause to:

"87.7.3 40GBASE-LR4 illustrative link power budget"

See also 426

CI 87 SC 87.7.3 P318 L42 # 426  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title 87.7.3 is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

Additionally, the text of the subclause indicates this is an illustrative example.

*SuggestedRemedy*

change title of subclause to:

"87.7.3 40GBASE-LR4 link power budget"

Response Response Status C

ACCEPT IN PRINCIPLE.

see response to 444

CI 87 SC 87.7.3 P319 L1 # 196  
Bergmann, Ernest Circadian/JDSU

Comment Type T Comment Status A

"Table 87-9--40BASE-LR4 link power budget" is informative

*SuggestedRemedy*

Replace with:

"Table 87-9--40BASE-LR4 link power budget (informative)"

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note - Subclause changed from "Table 87-9" to 87.7.3]

Clause 10.1 of the 2009 IEEE Standards Style Manual states: "Interspersed normative and informative text is not allowed." The text of the subclause already makes it clear that the power budget is illustrative.

Change the title of Table 87-9 to "40BASE-LR4 illustrative link power budget"

See also Response to comment 444

CI 87 SC 87.7.3 P319 L13 # 98  
Dawe, Piers Avago Technologies

Comment Type T Comment Status R

The allocation for penalties (for max TDP) should be higher than the max TDP by 0.1 dB, to allow for the polarisation dispersion penalty, which is not captured in TDP

*SuggestedRemedy*

Review the consistency of the numbers.

Response Response Status C

REJECT.

Expected PMD penalty for 10km single mode fibre is less than 0.05dB (ie zero for all intents and purposes) for PMD <0.6ps/rt-km, compared to a max PMD specs in G.652 which has two categories of PMD limit:

- For G.652.A&C Max. PMDQ = 0.5 ps/Vkm
- For G.652.B&D Max. PMDQ = 0.2 ps/Vkm

**Cl 87**    **SC 87.8.1**                      **P319**    **L32**                      # **197**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
**Comment Type**    **ER**                      **Comment Status**    **A**  
 [Table 87-10]  
 "Square" is not properly descriptive.  
**SuggestedRemedy**  
 Replace:  
 "Square" --> "Square wave"    [2 places]  
**Response**                                      **Response Status**    **C**  
 ACCEPT.  
 [Editor's note - Subclause changed from "Table 87-10" to 87.8.1]

**Cl 87**    **SC 87.8.1**                      **P320**    **L11**                      # **198**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
**Comment Type**    **T**                                      **Comment Status**    **A**  
 [Table 87-11]  
 "Square" is not properly descriptive.  
**SuggestedRemedy**  
 For lines 11, 16, 22 [3 places]  
 Replace:  
 "Square" --> "Square wave"    [3 places]  
**Response**                                      **Response Status**    **C**  
 ACCEPT.  
 [Editor's note - Commenter has not indicated comment type. Classified comment type as T.  
 Subclause changed from "Table 87-11" to 87.8.1]

**Cl 87**    **SC 87.8.10**                      **P322**    **L47**                      # **201**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
**Comment Type**    **T**                                      **Comment Status**    **A**  
 "87.8.10 Receiver sensitivity" is informative.  
**SuggestedRemedy**  
 Replace with:  
 "87.8.10 Receiver sensitivity (informative)"  
**Response**                                      **Response Status**    **C**  
 ACCEPT IN PRINCIPLE.  
 Clause 10.1 of the 2009 IEEE Standards Style Manual states: "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative." The text of the subclause already makes the status of the receiver sensitivity clear.  
  
 Don't change the title of 87.8.10  
 However, Table 87-8 should be made consistent with text of 87.8.10 by adding a footnote to say 'Receiver sensitivity is informative'  
 [Editor's note - Subclause changed from 8.10 to 87.8.10]

**Cl 87**    **SC 87.8.11**                      **P323**    **L1**                                      # **202**  
 Bergmann, Ernest                      Circadiant/JDSU  
  
**Comment Type**    **T**                                      **Comment Status**    **R**  
 "87.8.11 Stressed receiver sensitivity" is normative  
**SuggestedRemedy**  
 Replace with:  
 "87.8.11 Stressed receiver sensitivity (normative)"  
**Response**                                      **Response Status**    **C**  
 REJECT.  
 [Editor's note - Subclause changed from 8.11 to 87.8.11]  
 Labelling this clause as normative would make it different from all of the other normative clauses in the draft and would therefore be confusing.

CI 87 SC 87.8.11 P323 L4 # 614  
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status A

The 0.5 nm wavelength tuning of adjacent channels specified in 53.9.15 (c) is for LX4.

Reference:

53.9.15 (c)

When setting the wavelength of the channels adjacent to the channel under test, the center wavelength of the adjacent channels are set within 0.5nm of the edge of that channel's wavelength band while remaining within that channel's wavelength band.

SuggestedRemedy

An additional exception needs to be made in regards to the wavelength tuning of adjacent channels. The value of 0.5 nm used for LX4 needs to be scaled appropriately for the CWDM passbands of 40GBASE-LR4.

Response Response Status C

ACCEPT IN PRINCIPLE.

The gap between channels in 10GBASE-LX4 is 11.1 nm whereas for 40GBASE-LR4 it is 7 nm. Keeping the same relationship between the required accuracy and the gap gives a tolerance of 0.3 nm.

In 87.8.11, add item d):

d) when setting the wavelength of the channels adjacent to the channel under test, the center wavelength of the adjacent channels are set within 0.3 nm of the edge of that channel's wavelength band while remaining within that channel's wavelength band.

[Editor's note: The commenter has not indicated the comment type. Classified comment type as TR]

CI 87 SC 87.8.3 P320 L31 # 248  
Swanson, Steven Corning Incorporated

Comment Type E Comment Status A

Add international reference.

SuggestedRemedy

Replace: "The wavelength of each optical lane shall be within the ranges given in Table 87-5 if measured per TIA/EIA-455-127-A." with: "The wavelength of each optical lane shall be within the ranges given in Table 87-5 if measured per TIA/EIA-455-127-A or IEC 61280-1-3."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "measured per TIA/EIA-455-127-A" to "measured per TIA-455-127-A or IEC 61280-1-3"

See also response to comment 244

CI 87 SC 87.8.4 P320 L36 # 249  
Swanson, Steven Corning Incorporated

Comment Type E Comment Status A

Add international reference.

SuggestedRemedy

Replace: "The average optical power of each lane shall be within the limits given in Table 87-7 for 40GBASE-LR4 if measured using the methods given in TIA/EIA-455-95, with the sum of the optical power from all of the lanes not under test below -30 dBm, per the test set-up in Figure 53-6." with: "The average optical power of each lane shall be within the limits given in Table 87-7 for 40GBASE-LR4 if measured using the methods given in TIA/EIA-455-95 or IEC 61280-1-1, with the sum of the optical power from all of the lanes not under test below -30 dBm, per the test set-up in Figure 53-6."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "methods given in TIA/EIA-455-95" to "methods given in TIA/EIA-455-95-A or IEC 61280-1-1"

See also response to comment 249

CI 87 SC 87.8.5 P320 L43 # 199  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"Square" is not properly descriptive.

SuggestedRemedy

Replace:

"square" --> "square wave"

Response Response Status C

ACCEPT.

[Editor's note - Commenter has not indicated comment type. Classified comment type as T. Subclause changed from 8.5 to 87.8.5]

Cl 87 SC 87.8.6 P321 L1 # 200  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Unclear how ripple is measured.

*SuggestedRemedy*

Replace:  
"limited to 0.5 dB" --> "limited to 0.5 dB p-p"

Response Response Status C

ACCEPT IN PRINCIPLE.  
[Editor's note - Subclause changed from 8.6 to 87.8.6]  
Replace "passband ripple shall be limited to 0.5 dB" with "passband ripple shall be limited to 0.5 dB peak-to-peak"

Cl 88 SC 88.12.1 P352 L40 # 250  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

We need to add bend insensitive fibers and add the correct reference.

*SuggestedRemedy*

Replace: "The fiber optic cable requirements are satisfied by type B1.1 (dispersion un-shifted single-mode) and type B1.3 (low water peak single-mode) fibers specified in IEC 60793-2 and the requirements in Table 87-15 where they differ." with: "The fiber optic cable requirements are satisfied by cables containing IEC 60793-2-50 type B1.1 (dispersion un-shifted single-mode), type B1.3 (low water peak single-mode) or type B6\_A (bend insensitive) fibers and the requirements in Table 87-15 where they differ."

Also add reference to clause 1.3:

"IEC 60793-2-50 (2008), Optical fibres-Part 2-50: Product specifications-Sectional specification for class B single-mode fibres."

Response Response Status C

ACCEPT.

Cl 88 SC 88.12.3 P353 L34 # 211  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

TP3 is at the MDI so the note:  
"NOTE--Compliance testing is performed at TP2 and TP3 as defined in 88.5.1, not at the MDI" is unintelligible.

*SuggestedRemedy*

Remove the note (or rewrite it).

Response Response Status C

ACCEPT IN PRINCIPLE.  
[Editor's note - Subclause changed from 12.3 to 88.12.3]

Change "NOTE-Compliance testing is performed at TP2 and TP3 as defined in 88.5.1, not at the MDI." to "NOTE-Transmitter compliance testing is performed at TP2 as defined in 88.5.1, not at the MDI."

Cl 88 SC 88.3.1 P336 L6 # 762  
Muller, Shimon Sun Microsystems, Inc

Comment Type ER Comment Status A

The MAC Control Pause operation is currently being revised by 802.1bb. By the time this standard is published, the references to Clause 31 and Annex 31B are most likely to become inadequate. Furthermore, this functionality is quite easy to locate in our current standard, so I do not believe that a reference here is necessary.

*SuggestedRemedy*

Delete the text in the parenthesis.

Response Response Status C

ACCEPT.  
Delete the text in the parenthesis since this subclause now references 80.3 (see response to comment 275)



Cl 88 SC 88.3.2 P336 L21 # 391  
Kipp, Scott Brocade

Comment Type T Comment Status R

Since the interface to the PMD is 4 lanes of 25G, shouldn't the skew be different for this PMD?

*SuggestedRemedy*

Adjust the skew for the speed difference.

Response Response Status C

REJECT.

The skew requirements (which are specified in units of time) are only weakly coupled to the lane rate of the PMA to PMD interface. See giannakopoulos\_01\_1108

Cl 88 SC 88.5.1 P337 L10 # 392  
Kipp, Scott Brocade

Comment Type TR Comment Status R

[Figure 88-2]

I thought the interface to the PMD would be 10 lanes of 10G like what was presented in cole\_01\_0708.pdf. There is only mention of CGMII and 4X25G.

The PMDs that I've seen like CFP ([www.cfp-msa.org](http://www.cfp-msa.org)) have the 10X10G interface.

*SuggestedRemedy*

Let's have the standard match reality and show the 10G X10 interface. Shouldn't it have the PPI interface?

Response Response Status W

REJECT.

[Editor's note - Subclause changed from Figure 88-2 to 88.5.1]

The interface to a module may well be 10 lanes of 10G. However this will then be converted to 4 lanes of 25G in a PMA (see clause 83). Clause 88 only deals with the PMD layer. Since the PPI only runs at 10G it could not be used for the interface between the PMA and the PMD for clause 88.

Cl 88 SC 88.5.4 P339 L10 # 239  
Szczepanek, Andre Harwood & Szczepane

Comment Type TR Comment Status R

"AND (compliant 100GBASE-R signal input)"  
is indicated as a requirement for SIGNAL\_DETECT = OK

Validating 100GBASE-R signaling in a PMD clause seems like over-kill to me.  
I am interpreting 100GBASE-R signalling as 64B66B coding.

*SuggestedRemedy*

Either remove "AND (compliant 100GBASE-R signal input)" or explain what it means.

Response Response Status C

REJECT.

[Editor's note - Subclause changed from 88.4 to 88.5.4]

The reason for this is that there is no requirement for a PMD to assert SIGNAL\_DETECT = OK if the input signal is not a valid data stream. This does not place a requirement on the PMD to validate the signal since for a non-compliant signal and a power above the receiver sensitivity the output is "unspecified".

Subclause 88.5.4 already contains "The PMD receiver is not required to verify whether a compliant 100GBASE-R signal is being received."

This function is the same in clauses 52, 53, 58, 59, 60, 68, 86, 87, 88

Cl 88 SC 88.5.9 P340 L1 # 204  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

"88.5.9 PMD fault function" appears to be optional when compared to the next two subclauses.

*SuggestedRemedy*

Repalce with:  
"88.5.9 PMD fault function (optional)"

Response Response Status C

ACCEPT.

[Editor's note - Subcl changed from 5.9 to 88.5.9]

*Cl* **88**    *SC* **88.7**    *P* **340**    *L* **42**    # **251**  
 Swanson, Steven    Corning Incorporated

*Comment Type*    **TR**    *Comment Status*    **A**  
 We need to include bend insensitive fibers.

*SuggestedRemedy*  
 Replace: "...A 100GBASE-LR4 compliant PMD operates on type B1.1 and type B1.3 single-mode fibers according to the specifications defined in Table 88-18...." with: "...A 100GBASE-LR4 compliant PMD operates on type B1.1, B1.3 or B6\_A single-mode fibers according to the specifications defined in Table 88-18...."

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

*Cl* **88**    *SC* **88.7**    *P* **341**    *L* **44**    # **335**  
 Simsarian, Jesse    Alcatel-Lucent

*Comment Type*    **T**    *Comment Status*    **R**  
 Tables 88-7 and 88-8 are specifying "Average launch power, each lane (min)" and "Average receive power, each lane (min)" of -4.3 dBm and -10.6dBm, respectively, that does not ensure compliance as indicated by the notes a and b, respectively. Associated with the low specified extinction ratio value of 4 dB, the currently specified average power values provide misleading information and are not feasible.

*SuggestedRemedy*  
 Add the text, "as a higher extinction ratio may be required than specified." to note a of Table 88-7 so that it reads:

a: Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance, as a higher extinction ratio may be required than specified.

Add the text, "as a higher extinction ratio may be required than specified." to note b of Table 88-8 so that it reads:

b: Average receive power, each lane (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance, as a higher extinction ratio may be required than specified.

*Response*    *Response Status*    **C**  
 REJECT.  
 [Editor's note - Subclause changed from 7 to 88.7]

The current text is very clear. It states:  
 "Average launch power, each lane (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance."  
 Adding the text proposed by the commenter; "as a higher extinction ratio may be required than specified" makes the text very confusing.

CI 88 SC 88.7.3 P342 L1 # 445  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause 88.7.3 is labeled informative.

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The text in the clause indicates that this is an illustrative power budget.

SuggestedRemedy

Rename Subclause 88.7.3 to

88.7.3 100GBASE-LR4 link power budget

Response Response Status C

ACCEPT IN PRINCIPLE.

Change title of subclause to:

"88.7.3 100GBASE-LR4 illustrative link power budget"

CI 88 SC 88.7.3 P343 L1 # 427  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title 88.7.3 is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

Additionally, the text of the subclause indicates this is an illustrative example.

SuggestedRemedy

change title of subclause to:

"88.7.3 100GBASE-LR4 link power budget"

Response Response Status C

ACCEPT IN PRINCIPLE.

Duplicate comment. See Response to comment 445.

CI 88 SC 88.8 P343 L28 # 252  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

We need to include bend insensitive fibers.

SuggestedRemedy

Replace: "...A 100GBASE-ER4 compliant PMD operates on type B1.1 and type B1.3 single-mode fibers according to the specifications defined in Table 88-18..." with: "...A 100GBASE-ER4 compliant PMD operates on type B1.1, B1.3 or B6\_A single-mode fibers according to the specifications defined in Table 88-18..."

Response Response Status C

ACCEPT.

CI 88 SC 88.8 P343 L32 # 763  
Muller, Shimon Sun Microsystems, Inc

Comment Type TR Comment Status A

Compatibility between LR4 and ER4 is sort of implied in this clause, but it has not been explicitly stated anywhere. The only reference to it that I could find is buried in a note to Table 88-12.

SuggestedRemedy

Add the following sentence at the end of the paragraph:

"The 100GBASE-ER4 PMD is compatible with the 100GBASE-LR4 PMD at shorter distances."

Response Response Status W

ACCEPT IN PRINCIPLE.

Add "The 100GBASE-ER4 PMD interoperates with the 100GBASE-LR4 PMD provided that the channel requirements for 100GBASE-LR4 are met."

Cl 88 SC 88.8 P343 L42 # 253  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

Add bend insensitive fiber.

*SuggestedRemedy*

In Table 88-10, replace:"a Links longer than 30 km for the same link power budget are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1 or B1.3 single-mode fiber." with: "a Links longer than 30 km for the same link power budget are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1, B1.3 or B6\_A single-mode fiber."  
-13, replace: "a Links longer than 30 km are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1 or B1.3 single-mode fiber." with: "a Links longer than 30 km for the same link power budget are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1, B1.3 or B6\_A single-mode fiber."

Response Response Status C

ACCEPT IN PRINCIPLE.

In Table 88-10 footnote a, replace "for B1.1 or B1.3" with "for B1.1, B1.3 or B6\_A"

Cl 88 SC 88.8.3 P346 L1 # 446  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause 88.8.3 is labeled informative.

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative.

The text in the clause indicates that this is an illustrative power budget.

*SuggestedRemedy*

Rename Subclause 88.7.3 to

88.8.3 100GBASE-ER4 link power budget

Response Response Status C

ACCEPT IN PRINCIPLE.

change title of subclause to:

"88.8.3 100GBASE-ER4 illustrative link power budget"

Cl 88 SC 88.8.3 P346 L1 # 428  
D'Ambrosia, John Force10 Networks

Comment Type ER Comment Status A

Subclause title 88.8.3 is listed as (Informative).

Per the 2009 Style Manual - "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative."

Additionally, the text of the subclause indicates this is an illustrative example.

*SuggestedRemedy*

change title of subclause to:  
"88.8.3 100GBASE-ER4 link power budget"

Response Response Status C

ACCEPT IN PRINCIPLE.

Duplicate comment. See Response to comment 446.

Cl 88 SC 88.8.3 P346 L19 # 254  
Swanson, Steven Corning Incorporated

Comment Type TR Comment Status A

Add bend insensitive fiber.

*SuggestedRemedy*

In Table 88-13, replace:"a Links longer than 30 km are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1 or B1.3 single-mode fiber."with:"a Links longer than 30 km for the same link power budget are considered engineered links. Attenuation for such links needs to be less than the worst case specified for B1.1, B1.3 or B6\_A single-mode fiber."

Response Response Status C

ACCEPT.

Cl 88 SC 88.9 P346 L48 # 332  
 Young, George AT&T

Comment Type T Comment Status A

A subclause on skew and skew variation testing needs to be added under subclause 88.9, similar to that of subclause 87.8.2. This is where CRU specifications for 25.78125 GBd lane testing should be stated. See companion comment on subclause 86.7.3.2.

*SuggestedRemedy*

Add a subclause on Clause 88 PMD Lane skew and skew variation testing to subclause 88.9, similar to that of subclause 87.8.2 for Clause 87. Move specifications for 25.78125 GBd lane signaling rate clock recovery unit here from Table 86-17.

Response Response Status C

ACCEPT IN PRINCIPLE.

In 88.3.2 change "The measurements of Skew and Skew Variation are defined in 87.8.2." to "The measurements of Skew and Skew Variation are defined in 87.8.2 with the exception that the clock and data recovery units' high frequency corner bandwidths are 10 MHz"

The sub-Task force voted on the above response:

Yes 6  
 No 2

Cl 88 SC 88.9.1 P346 L41 # 205  
 Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

[Table 88-14]  
 "Square" is an incomplete description.

*SuggestedRemedy*

Replace with:  
 "Square wave" [2 places]

Response Response Status C

ACCEPT.  
 [Editor's note Subclause changed from Table 88-14 to 88.9.1]

Cl 88 SC 88.9.1 P347 L11 # 206  
 Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

[Table 88-15]  
 "Square" is an incomplete description.

*SuggestedRemedy*

Replace in lines 11, 16, and 22:  
 "Square" --> "Sqaure wave" [3 places]

Response Response Status C

ACCEPT IN PRINCIPLE.  
 [Editor's note Subclause changed from Table 88-15 to 88.9.1]

In Table 88-15, change "Square" to "Square wave" in 3 places

Cl 88 SC 88.9.10 P349 L50 # 210  
 Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status R

"88.9.10 Stressed receiver sensitivity" is normative.

*SuggestedRemedy*

Replace with:  
 "88.9.10 Stressed receiver sensitivity (normative)"

Response Response Status C

REJECT.  
 Labelling this clause as normative would make it different from all of the other normative clauses in the draft and would therefore be confusing.  
 See also Response to comment 209

CI 88 SC 88.9.10 P349 L53 # 615  
Maki, Jeffery Juniper Networks, Inc.

Comment Type TR Comment Status A

The 0.5 nm wavelength tuning of adjacent channels specified in 53.9.15 (c) is for LX4.

Reference:

53.9.15 (c)

When setting the wavelength of the channels adjacent to the channel under test, the center wavelength of the adjacent channels are set within 0.5nm of the edge of that channel's wavelength band while remaining within that channel's wavelength band.

SuggestedRemedy

An additional exception needs to be made in regards to the wavelength tuning of adjacent channels. The value of 0.5 nm used for LX4 needs to be scaled appropriately for the LAN-WDM passbands of 100GBASE-LR4.

Response Response Status C

ACCEPT IN PRINCIPLE.

[Editor's note - The commenter has not indicated the comment type. Classified comment type as TR]

The gap between channels in 10GBASE-LX4 is 11.1 nm whereas for 100GBASE-LR4 and 100GBASE-ER4 it is about 2.5 nm. Keeping the same relationship between the required accuracy and the gap gives a tolerance of 0.1 nm.

In 88.9.10, add item d):

d) when setting the wavelength of the channels adjacent to the channel under test, the center wavelength of the adjacent channels are set within 0.1 nm of the edge of that channel's wavelength band while remaining within that channel's wavelength band.

CI 88 SC 88.9.2 P346 L51 # 255  
Swanson, Steven Corning Incorporated

Comment Type E Comment Status A

Add international reference.

SuggestedRemedy

Replace:"The wavelength of each optical lane shall be within the ranges given in Table 88-5 if measured per TIA/EIA-455-127-A."with:"The wavelength of each optical lane shall be within the ranges given in Table 88-5 if measured per TIA/EIA-455-127-A or IEC 61280-1-3."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "measured per TIA/EIA-455-127-A" to "measured per TIA-455-127-A or IEC 61280-1-3"

See also response to comment 244

CI 88 SC 88.9.3 P347 L30 # 256  
Swanson, Steven Corning Incorporated

Comment Type E Comment Status A

Add international reference.

SuggestedRemedy

Replace: "The average optical power of each lane shall be within the limits given in Table 88-7 for 100GBASE-LR4 or Table 88-11 for 100GBASE-ER4 if measured using the methods given in TIA/EIA-455-95, with the sum of the optical power from all of the lanes not under test below -30 dBm, per the test set-up in Figure 53-6." with: "The average optical power of each lane shall be within the limits given in Table 88-7 for 100GBASE-LR4 or Table 88-11 for 100GBASE-ER4 if measured using the methods given in TIA/EIA-455-95 or IEC 61280-1-1, with the sum of the optical power from all of the lanes not under test below -30 dBm, per the test set-up in Figure 53-6."

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "methods given in TIA/EIA-455-95" to "methods given in TIA/EIA-455-95-A or IEC 61280-1-1"

See also response to comment 249

CI 88 SC 88.9.4 P347 L38 # 207  
Bergmann, Ernest Circadiant/JDSU

Comment Type ER Comment Status A

"Square" is an incomplete description.

SuggestedRemedy

Replace:

"Square" --> "Sqaure wave"

Response Response Status C

ACCEPT.

CI 88 SC 88.9.5 P347 L50 # 208  
Bergmann, Ernest Circadiant/JDSU

Comment Type T Comment Status A

Unclear how ripple is measured.

SuggestedRemedy

Replace:

"limited to 0.5 dB" --> "limited to 0.5 dB p-p"

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "passband ripple shall be limited to 0.5 dB" with "passband ripple shall be limited to 0.5 dB peak-to-peak"

**Cl 88**    **SC 88.9.9**    **P349**    **L44**    # **209**  
 Bergmann, Ernest    Circadiant/JDSU

**Comment Type T**    **Comment Status A**  
 "88.9.9 Receiver sensitivity" is informative

**SuggestedRemedy**  
 Replace with:  
 "88.9.9 Receiver sensitivity (informative)"

**Response**    **Response Status C**  
 ACCEPT IN PRINCIPLE.  
 Clause 10.1 of the 2009 IEEE Standards Style Manual states: "Interspersed normative and informative text is not allowed. As such, neither clauses nor subclauses shall be labeled as informative." The text of the subclause already makes the status of the receiver sensitivity clear.

Don't change the title of 88.9.9  
 However, Tables 88-8 and 88-12 should be made consistent with text of 88.9.9 by adding a footnote to say 'Receiver sensitivity is informative'

**Cl 99**    **SC**    **P1**    **L5**    # **616**  
 Ganga, Ilango    Intel

**Comment Type E**    **Comment Status A**  
 Missing "ba" in draft title

**SuggestedRemedy**  
 Change "IEEE 802.3TM D2.0" to IEEE 802.3baTM/D2.0

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

**Cl 99**    **SC**    **P18**    **L13**    # **212**  
 Bergmann, Ernest    Circadiant/JDSU

**Comment Type T**    **Comment Status A**  
 "87.5.9 PMD fault function" should mirror the "optional character of the next two subclauses"

**SuggestedRemedy**  
 replace with:  
 "87.5.9 PMD fault function(optional)"

[similar comment in clause 87 is being submitted also]

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

This ToC entry is generated based on text in Clause 87. See response to comment #195 for specific changes to 87.5.9

**Cl 99**    **SC**    **P18**    **L31**    # **213**  
 Bergmann, Ernest    Circadiant/JDSU

**Comment Type T**    **Comment Status A**  
 "87.8.10Receiver Sensitivity" is informative

**SuggestedRemedy**  
 replace with:  
 "87.8.10Receiver Sensitivity(informative)"

[similar comment in clause 87 is being submitted also]

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

This ToC entry is generated based on text in Clause 87. See response to comment #201

Cl 99 SC P18 L32 # 214  
 Bergmann, Ernest Circadiant/JDSU  
 Comment Type T Comment Status A  
 "87.8.11 Stressed receiver sensitivity" is normative  
 SuggestedRemedy  
 replace with:  
 "87.8.11 Stressed receiver sensitivity(normative)"  
 [similar comment in clause 87 is being submitted also]  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 This ToC entry is generated based on text in Clause 87. See response to comment #202

Cl 99 SC P19 L42 # 215  
 Bergmann, Ernest Circadiant/JDSU  
 Comment Type T Comment Status A  
 "88.9.9 Receiver sensitivity" is informative  
 SuggestedRemedy  
 replace with:  
 "88.9.9 Receiver sensitivity(informative)"  
 [similar comment in clause 88 is being submitted also]  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 This ToC entry is generated based on text in Clause 88. See response to comment #209

Cl 99 SC P19 L43 # 216  
 Bergmann, Ernest Circadiant/JDSU  
 Comment Type T Comment Status A  
 "88.9.10 Stressed receiver sensitivity" is normative  
 SuggestedRemedy  
 replace with:  
 "88.9.10 Stressed receiver sensitivity(normative)"  
 [similar comment in clause 88 is being submitted also]  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 This ToC entry is generated based on text in Clause 88. See response to comment #210

Cl 99 SC P3 L13 # 617  
 Ganga, Ilango Intel  
 Comment Type E Comment Status A  
 Update text in the box for 802.3ba  
 SuggestedRemedy  
 Rephrase paragraph in text box as follows:  
 This introduction is not part of IEEE Std 802.3ba-20xx, IEEE Standard for Information technology-Telecommunications and information exchange between systems-Local and metropolitan area networks-Specific requirements, Part 3: CSMA/CD Access Method and Physical Layer Specifications, Amendment:Media Access Control Parameters, Physical Layers and Management Parameters for 40 Gb/s and 100 Gb/s Operation."  
 Response Response Status C  
 ACCEPT.

Cl 99 SC P3 L20 # 621  
 Ganga, Ilango Intel  
 Comment Type E Comment Status A  
 Change IEEE 802.3an-2006 to IEEE Std 802.3an-2006  
 SuggestedRemedy  
 Change IEEE 802.3an-2006 to IEEE Std 802.3an-2006  
 Response Response Status C  
 ACCEPT.



CI 99 SC P4 L23 # 618  
Ganga, Ilango Intel

Comment Type E Comment Status A  
n line 23, change "Clauses 75 through 77" to "Clauses 75 through Clause 77"

*SuggestedRemedy*

On line 23, change "Clauses 75 through 77" to "Clauses 75 through Clause 77"

Response Response Status C  
ACCEPT IN PRINCIPLE.

On line 23, change "Clauses 75 through 77" to "Clause 75 through Clause 77"

CI 99 SC P5 L31 # 619  
Ganga, Ilango Intel

Comment Type E Comment Status A  
Fix the broken URL link as suggested.

*SuggestedRemedy*

Change URL link as follows:  
<http://standards.ieee.org/reading/ieee/interp/index.html>

Response Response Status C  
ACCEPT.

CI 99 SC P6 L29 # 620  
Ganga, Ilango Intel

Comment Type E Comment Status A  
Update the participants list with members of WG ballot pool for 802.3ba.

*SuggestedRemedy*

Update the participants list with members of WG ballot pool for 802.3ba.

Response Response Status C  
ACCEPT.

CI 99 SC 99 P1 L4 # 532  
Booth, Brad AMCC

Comment Type ER Comment Status A  
Incorrect title.

*SuggestedRemedy*

Change P802.3 to be P802.3ba.

Response Response Status C  
ACCEPT.

CI 99 SC 99 P4 L10 # 99  
Dawe, Piers Avago Technologies

Comment Type E Comment Status A  
Further update to common front matter

*SuggestedRemedy*

Please change "subscriber access physical layers" to "subscriber access and other physical layers".

Should the -- be long dashes?

Response Response Status C  
ACCEPT IN PRINCIPLE.

Check and change, if applicable, as per latest front matter update to 802.3 amendments

CI 99 SC 99 P4 L20 # 649  
Marek, Hajduczenia ZTE Corporation

Comment Type E Comment Status A  
Although it is not critical, there are more changes in the P802.3av than the ones mentioned and more clauses are added (annexes).

*SuggestedRemedy*

Add the missing information, including the Annexes.

Response Response Status C  
ACCEPT IN PRINCIPLE.

Check and change, if applicable, as per latest front matter update to 802.3 amendments

Cl 99 SC 99 P6 L30 # 533  
Booth, Brad AMCC

Comment Type E Comment Status A

Working Group voters at the time the ballot opened is now know.

SuggestedRemedy

Add list of WG voters.

Response Response Status C

ACCEPT.

Cl A SC P362 L1 # 378  
Kipp, Scott Brocade

Comment Type E Comment Status R

Why the blank page?

SuggestedRemedy

Delete the page if you can. Do a global search for this.

Response Response Status C

REJECT.

The document page setting is configured for a new Clause to start on the right side (odd numbered page). This follows a printed book format.

Cl A SC A P361 L10 # 581  
Booth, Brad AMCC

Comment Type ER Comment Status A

These is no reference within 802.3ba to FC-PI-4 or SFF-8431.

SuggestedRemedy

Either remove references in biblio or add an applicable references.

Response Response Status C

ACCEPT IN PRINCIPLE.

Remove references to FC-PI-4 and SFF-8431 from Annex A