Cl **45** *SC* **45.2.1.1.4a** *P* **42** *L* **1** # 1

Ran, Adee Intel

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

If local clock frequencies are different, line-side loopback at bit-level requires that TX path be clocked using RX (recovered) clock instead of local clock in normal operation (buffering cannot work at bit-level). This is not guaranteed to meet TX jitter spec and may prevent remote RX from receiving correct data, although both one-way paths are fully operational. Therefore, this test mode is over-stressing.

SuggestedRemedy

Delete subclauses 45.2.1.1.4a and 83.5.8

Proposed Response *Response Status* **W**

[Editor's note: Comment also applies to Clause 83]

Cl **83** *SC* **83.5.8** *P* **192** *L* **21** # 2

Ran, Adee Intel

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

Line 21 seems to be out of place, the paragraph makes no sense

SuggestedRemedy

Remove line 21 and/or rephrase paragraph

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **223** *L* **38** # 3

Ran, Adee Intel

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

Data dependent pulse width shrinkage is due to ISI and can be dealt with using equalization in either RX or TX side. Adaptive equalization is assumed in KR and should also be assumed in CR4, CR10. Therefore, only DCD in 1010 pattern (which is not solved by equalization) should be specified.

SuggestedRemedy

remove editor's note and do not address data dependent pulse width.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.2** *P* **351** *L* **12** # 48

Ghiasi, Ali Broadcom

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

sdd21 MASK was defined in ghiasi_01_0708 but is TBD in the draft

SuggestedRemedy

please use the mask per definition of ghiasi_01_0708
SDD21= -0.108 - 0.845*sqrt(f) - 0.802*f from 0.01 to 7 GHz
SDD21=20-4*f from 7 to 8 GHZ
SDD21=-21 dB from 8 to 11.1 GHz

Also see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.2** *P* **351** *L* **12** # 49

Ghiasi, Ali Broadcom

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

XLAUI/CAUI in addition to loss definition it also require min return loss definition.

SuggestedRemedy

Per ghiasi_01_0708 page 16
SDD11= -12.5 dB from 0.01 to 5 Ghz
SDD11=-12.5 + 27.5*log10(f/5) f is from 0.01 to 5 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **27** # 50

Ghiasi, Ali Broadcom

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

To gurantee interoperability min transmitter pre-emhasis must be defined

SuggestedRemedy

xAUI transmitter at complaince point near end must have 3.5 dB of de-emhasis
see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.2** *P* **351** *L* **24** # 51
Ghiasi, Ali Broadcom

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

I submitted a comment to add lable on the transmit and receive compliance points

SuggestedRemedy

I suggest we use lable A and B

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **14** # 52
Ghiasi, Ali Broadcom

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

Jitter methodology need to be updated

SuggestedRemedy

In both SFP+ and CL 86 we have moved away from dual dirac DJ definition since DJ amount can go down as RJ is increased. Instead of breaking down the jitter componnets these group have just defined TJ at BER1E-2 as replacement for DJ and J12 as the TJ at 1E-12. Please see ghiasi_01_0109 for more details

Base on the above definition
then TJ(J12)=0.3 UI (to support BER 1E-15) otherwise it would be 0.32
J2=0.19 UI replacing DJ
Add DDPWS=0.1 UI when measured with PRBS9

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **30** # 53
Ghiasi, Ali Broadcom

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

To gurantee min eye opening at the receiver the transmitter output VMA or eye opening with de-emphasis must be defined

SuggestedRemedy

Propose to define min vertical eye opening=280 mV diff p-p with de-emphasis
see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **28** # 54
Ghiasi, Ali Broadcom

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

Min receiver eye opening can not be gurnateed with min transmitter level and slow rise time and fall time

SuggestedRemedy

Y2=-16 + 9*[min (tr,tf)], tr/tf are 20-80% in ps
see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.5** *P* **355** *L* **35** # 55
Ghiasi, Ali Broadcom

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

Jitter methodology need to be updated

SuggestedRemedy

In both SFP+ and CL 86 we have moved away from dual dirac DJ definition since DJ amount can go down as RJ is increased. Instead of breaking down the jitter componnets these group have just defined TJ at BER1E-2 as replacement for DJ and J12 as the TJ at 1E-12. Please see ghiasi_01_0109 for more details

Base on the above definition
then TJ(J12)=0.3 UI (to support BER 1E-15) otherwise it would be 0.32
J2=0.19 UI replacing DJ
Add DDPWS=0.1 UI when measured with PRBS9

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **357** *L* **13** # 56
Ghiasi, Ali Broadcom

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

Sine xAUI has defined mandatory de-emphasis there is little benifit to define non-EQJ which is difficult parameter to test or verify

SuggestedRemedy

Repalce non-EQJ with J2=0.48 UI
J12=0.62 UI this will result in J15 of 0.65 UI.
To to increase the test time the transmitter and receiver can be tested at J12 but the jitter tolerance defined at J15, see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.8** *P* **360** *L* **50** # 57
Ghiasi, Ali Broadcom

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

no-EQJ require definition of channel s-parameter response too much complications when xAUI defines transmit de-emphasis

SuggestedRemedy

Replace non-EQJ with TJ(J2) value of 0.48 UI
and TJ(J12)=0.62 UI and J15=0.65 UI

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.8** *P* **52** *L* # 58
Ghiasi, Ali Broadcom

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

Optional operation at BER 1E-15

SuggestedRemedy

A receiver capable of operating at stress jitter tolerance of TJ(J12)=0.65 UI would have sufficent margin for operation at BER 1E-15 since the max TJ(J12) from the worst case channel is TJ(J12)=0.62 UI
see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4** *P* **361** *L* **26** # 59
Ghiasi, Ali Broadcom

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

XLAUI/CAUI in addition to loss definition it also require min return loss definition.

SuggestedRemedy

Per ghiasi_01_0708 page 16
SDD11= -12.5 dB from 0.01 to 5 Ghz
SDD11=-12.5 + 27.5*log10(f/5) f is from 0.01 to 5 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4.1** *P* **361** *L* **36** # 60
Ghiasi, Ali Broadcom

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

sdd21 MASK was defined in ghiasi_01_0708 but is TBD in the draft

SuggestedRemedy

please use the mask per definition of ghiasi_01_0708
SDD21= -0.108 - 0.845*sqrt(f) - 0.802*f from 0.01 to 7 GHz
SDD21=20-4*f from 7 to 8 GHZ
SDD21=-21 dB from 8 to 11.1 GHz

Also see ghiasi_01_0109

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.1** *P* **220** *L* **12** # 61
Ghiasi, Ali Broadcom

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

Editor note on the location of the AC coupling

SuggestedRemedy

All cable assembly shall incorporate ac coupling between TP3 and MDI on the receive function with 0.1 uf capacitor.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.1** *P* **220** *L* **9** # 62
Ghiasi, Ali Broadcom

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

TP2 test method missing

SuggestedRemedy

PPI test method of the CL 86 can be used to test CR4/CR10 please see ghiasi_02_0109 for the PPI detial proposal

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **223** *L* **38** # 63
Ghiasi, Ali Broadcom

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

DDPWS not included in current DCD value

SuggestedRemedy

Copy 86.7.4.4 for definition and test method of DDPWS and with value of 0.07 UI

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.2** *P* **223** *L* **41** # 64
Ghiasi, Ali Broadcom

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

Proposal for jitter methodology needed

SuggestedRemedy

In SFP+ and CL86 we have moved away from dual dirac jitter to J2=0.26 UI, J9=0.18 UI and DDPWS=0.07 UI, please anslow_04_0109_draft4.pdf

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **224** *L* **11** # 65
Ghiasi, Ali Broadcom

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

Table is missing vertical eye opening or Qsq per CL68 definition, since there is channel and connector there could be several dB of penalty

SuggestedRemedy

Add Qsq to table 85-4 with linear value of 63.1

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **224** *L* **1** # 66
Ghiasi, Ali Broadcom

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

TP0 specifications are missing

SuggestedRemedy

Duplicate table 85-4 at TP0 with folowing row
signaling speed - same
Unit iinterval -same
Differential output voltage -same
Common mode volatage limit - same
Differential Output return loss - see ghiasi_03_0109
Common mode retrun loss - see ghiasi_03_0109
transition time - 24 ps min
common mode output voltage - 12 mV RMS

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4** *P* **226** *L* **19** # 67
Ghiasi, Ali Broadcom

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

Table 85-5 is missing Differential to common mode conversion

SuggestedRemedy

Add row to table 85-5 for
SCD11 with value of -10 dB max from 0.01 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.3** *P* **225** *L* **51** # 68
Ghiasi, Ali Broadcom

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

Since TP2 include a connector with about 4" of PCB traces tabel 85-5 then specificaitons for TP0 are missing

SuggestedRemedy

Please duplicate section 85.8.4 for TP0 specificaitons, for detail return loss and testing see ghiasi_03_0109

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9.1** *P* **227** *L* **13** # 69

Ghiasi, Ali Broadcom

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

Current ILPCB limit Eq 85-1 only allow about 5" of PCB traces on FR-6 not meeting nicole_01_0708 objetive of 4". Transmit and receive PCB loss each must be specifed with max limit.

SuggestedRemedy

Propose to allocate 3.5 dB of loss for the TX and RX PCB loss to allow 4" on FR4-6 or 6" on FR4-13. Change 0.2032 to 0.15 then the loss for both TX and RX are given by EQ 85-1

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **229** *L* **10** # 70

Ghiasi, Ali Broadcom

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

Cable missing pulse response or group delay, this is required for development of comprehensive stress generator as well as non compliant cables

SuggestedRemedy

Please add pulse response for the cable, for response see ghiasi_03_0109

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **229** *L* **13** # 71

Ghiasi, Ali Broadcom

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

Retrun loss missing

SuggestedRemedy

Add differential retrun loss=-12 + 2*sqrt(f) f from 0.01 to 4.1 GHz
= -6.3 + 13*log10(f/5.5) from 4.1 to 11.1 GHz

Add common more retrun loss = -7.51 + 1.1 *f from 0.01 to 4.1 GHz and -3 dB from 4.1 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **229** *L* **14** # 72

Ghiasi, Ali Broadcom

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

Output common mode voltage missing

SuggestedRemedy

Add output common mode voltage of 13.5 mV RMS when input driver to the cable has 12 mV of RMS common mode voaltage.

An acceptable method of generating common mode voltage if the driver does not have sufficent common mode is by adjusting P and N.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4** *P* **226** *L* **50** # 73

Ghiasi, Ali Broadcom

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

Comperehensive stress receiver is requried for both TP0 and TP3

SuggestedRemedy

Please see ghaisi_03_0109 for block diagram and test method for comeprehensive receiver test method

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.8.3** *P* **224** *L* **11** # 74

Ghiasi, Ali Broadcom

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

Table 85-4 is missing common mode output voltage limit, since the connector and the cable are guided differential mode excess common mode from the driver may result in unacceptable BER and EMI

SuggestedRemedy

Add row to table 85-4
Output AC common mode voltage with max value of 15 mV RMS

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.5** *P* **255** *L* **25** # 75
Ghiasi, Ali Broadcom

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

Optical lane assignment are missing

SuggestedRemedy

Please see ghiasi_02_010 for detail diagrams. Fibre # need to be added to figure 86-2 and a digram need to be created for connector lane and fiber number.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.5** *P* **255** *L* **29** # 76
Ghiasi, Ali Broadcom

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

Optical lane assignment are missing

SuggestedRemedy

Please see ghiasi_02_010 for detail diagrams. Fibre # need to be added to figure 86-2 and a digram need to be created for connector lane and fiber number.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **226** *L* **17** # 77
Ghiasi, Ali Broadcom

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

DDPWS and DJ are TBD, based on the value of DJ then TJ need to be adjusted

SuggestedRemedy

TJ(J9)=0.26 UI, J2=0.18 UI, DDPWS=0.07 UI please see anslow_04_0109

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **226** *L* **46** # 78
Ghiasi, Ali Broadcom

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

DDPWS and DJ are TBD, based on the value of DJ then TJ need to be adjusted

SuggestedRemedy

TJ(J9)=0.26 UI, J2=0.18 UI, DDPWS=0.07 UI please see anslow_04_0109

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1.1** *P* **257** *L* **13** # 79
Ghiasi, Ali Broadcom

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

It would be better to seperate the equation in to two

SuggestedRemedy

SDD11=-12 + 2*SQRT(f) from 0.01 to 4.1 GHz
SDD11=-6.3 +13*log10(f/5.5) from 4.1 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.1.2** *P* **257** *L* **23** # 80
Ghiasi, Ali Broadcom

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

SCC22 at TP1a and TP4 is little too tight with some of the connectors

SuggestedRemedy

Propose to slightly relax the mask
SCC22=-7.51 + 1.1*f from 0.01 to 4.1 GHz and -3 from 4.1 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5.1** *P* **261** *L* **6** # 81
Ghiasi, Ali Broadcom

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

It would be better to seperate the equation in to two

SuggestedRemedy

SDD11=-12 + 2*SQRT(f) from 0.01 to 4.1 GHz
SDD11=-6.3 +13*log10(f/5.5) from 4.1 to 11.1 GHz

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **6** # 82
Ghiasi, Ali Broadcom

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

The total jitter and DJ at TP4 are at the same level as SFP+, 4x and 10x SerDes and host need some margin due to PCB degradation and crosstalk

SuggestedRemedy

Propose to use J9=0.63 and J2=0.46 UI per anslow_04_0109

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **34** # 83
Ghiasi, Ali Broadcom

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

The total jitter and DJ at TP4 are at the same level as SFP+, 4x and 10x SerDes and host need some margin due to PCB degradation and crosstalk

SuggestedRemedy

Propose to use J9=0.63 and J2=0.46 UI per anslow_04_0109

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.1** *P* **262** *L* **23** # 84
Ghiasi, Ali Broadcom

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

MCB and HCB compliance board are used to measure TP1a, TP4a, TP1, and TP4 but the response of these are board are not included

SuggestedRemedy

Add SDD11/SDD22, SDD21/SDD12, SCC11/SCC22, SCD21/SCD12, and NEXT/FEXT for the mated HCB-MCB boards. In addition MCB and HCB PCB loss less the connector need to be defined. For detail description see ghiasi_02_0109

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.9** *P* **271** *L* **29** # 85
Ghiasi, Ali Broadcom

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

Max and min SDD21/12 need to defined based on meeting of 4" of PCB board and accounting for worst case HCB loss

SuggestedRemedy

Propose to use max loss of SDD21=-0.0929 -0.0.7267*sqrt(f) - 0.6897*f from 0.01 to 7 GHz
SDD21 = -29.39 - 5.16* f from 7 to 8 GHz
SDD21 = -14 dB from 8 GHz to 11.1 GHz

Min loss of SDD21=0.5 -0.5*f from 1 to 7 GHz
SDD21=-3 dB from 7 to 11.1 GHz
see ghiasi_02_0109

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.2.1.4** *P* **201** *L* **29** # 86
Marris, Arthur Cadence

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

Renumber subcluse 84.2.1.4 to 84.2.2

SuggestedRemedy

As above

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.4** *P* **202** *L* **38** # 87
Marris, Arthur Cadence

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

Remove TBDs for the delay constraints

SuggestedRemedy

It is OK to make these the same as Clause 72 as the delays will be equivalent to 10GBASE-KR.

Change TBD (1024) to 1024 and TBD (160) to 160.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.6** *P* **203** *L* **18** # 88
Marris, Arthur Cadence

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

Table number is wrong

SuggestedRemedy

Change Table 84-1 on page 203 to 84-2 and similarly for Table 84-2 on page 204

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7** *P* **205** *L* **18** # 89
Marris, Arthur Cadence

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

Add lane by lane signal detect function similar to the one described in Clause 85.

SuggestedRemedy

As above

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7** *P* **205** *L* **32** # 90
Marris, Arthur Cadence

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

Add lane by lane transmit disable similar to the one defined in Clause 85

SuggestedRemedy

As above

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.10** *P* **206** *L* **22** # 91
Marris, Arthur Cadence

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

Missing shalls

SuggestedRemedy

Line 22 change 'uses' to 'shall use'
Line 37 change 'is' to 'shall be'
Line 41 change 'are' to 'shall be'
Page 207 line 3 change 'are' to 'shall be'

also change PICS as necessary

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **231** *L* **15** # 92
Cole, Chris Finisar

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

40GBASE-LR4 Transmit Characteristics specifies:

Average Launch Power per Lane (max) 2.3dBm

However, there is no practical limit specified on Launch Power to limit Receiver TIA overload requirements.

SuggestedRemedy

Add a new Table 87-7 40GBASE-LR4 Transmit Characteristics table entry:

Optical Modulation Amplitutde (OMA), each lane (max) 3.5dBm

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number: This comment refers to Clause 87 and page number 289]

Cl **87** *SC* **87.7.2** *P* **291** *L* **11** # 93
Cole, Chris Finisar

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

Table 87-8 40GBASE-LR4 Receive Characteristics specifies:

Average receive power, per lane (max) 2.3dBm

However, there is no practical limit specified to limit Receiver TIA overload requirements.

SuggestedRemedy

Add a new Table 87-8 40GBASE-LR4 Receive Characteristics entry:

Receive Power per lane(OMA)(max) 3.5dBm

Proposed Response *Response Status* **W**

[Editor's note: Corrected the clause number to Clause 87]

Cl **87** *SC* **87.7.1** *P* **231** *L* **15** # 94
Cole, Chris Finisar

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

Table 87-7 40GBASE-LR4 Transmit Characteristics specifies no limit on Difference in Launch power between any two lanes (max), to limit Receiver cross-talk requirements.

SuggestedRemedy

Add a new Table 87-7 40GBASE-LR4 Transmit Characteristics table entry:

Difference in launch power between any two lanes (Average and OMA) (max) 6.5dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number: This comment refers to Clause 87 and page number 289]

Cl **87** *SC* **87.7.2** *P* **291** *L* **11** # 95
Cole, Chris Finisar

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

Table 87-8 40GBASE-LR4 Receive Characteristics specifies no limit on difference in launch power between any two lanes (max), to limit Receiver cross-talk requirements.

SuggestedRemedy

Add a new Table 87-8 40GBASE-LR4 Receive Characteristics entry:

Difference in receive power between any two lanes (Average and OMA) (max) 7.5dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number: This comment refers to Clause 87]

Cl **88** *SC* **88.7.1** *P* **316** *L* **15** # 96
Cole, Chris Finisar

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

Table 88-7 100GBASE-LR4 Transmit Characteristics specifies no limit on Difference in Launch power between any two lanes (max), to limit Receiver cross-talk requirements.

SuggestedRemedy

Add a new Table 88-7 100GBASE-LR4 Transmit Characteristics entry:

Difference in launch power between any two lanes (Average and OMA) (max) 5.0dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number: This comment refers to Clause 88]

Cl **88** *SC* **88.7.2** *P* **317** *L* **19** # 97
Cole, Chris Finisar

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

Table 88-8 100GBASE-LR4 Receive Characteristics specifies no limit on difference in launch power between any two lanes (max), to limit Receiver cross-talk requirements.

SuggestedRemedy

Add a new Table 88-8 100GBASE-LR4 Receive Characteristics entry:

Difference in receive power between any two lanes (Average and OMA) (max) 5.5dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number: This comment refers to Clause 88]

Cl **88** *SC* **88.8.1** *P* **319** *L* **15** # 98
Cole, Chris Finisar

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

Table 88-11 100GBASE-ER4 Transmit Characteristics specifies a limit on:

Difference in Launch power between any two lanes (max) 3.0dB

to limit SOA crosstalk requirements. This limit has been found difficult to support in practical transmitter implementations.

SuggestedRemedy

Change Table 88-11 100GBASE-ER4 Transmit Characteristics entry to:

Difference in launch power between any two lanes (Average and OMA) (max) 3.6dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number and missing comment type: This comment refers to Clause 88. Added missing comment type as T]

Cl **88** *SC* **88.8.2** *P* **320** *L* **14** # 99
Cole, Chris Finisar

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

Table 88-12 100GBASE-ER4 Receive Characteristics specifies:

Difference in launch power between any two lanes (max) 4.0dB

to limit SOA cross-talk requirements. This limit has been found difficult to support in practical transmitter implementations.

SuggestedRemedy

Change Table 88-12 100GBASE-ER4 Receive Characteristics entry to:

Difference in receive power between any two lanes (Average and OMA) (max) 4.5dB

Proposed Response *Response Status* **W**

[Editor's note: Corrected clause number and missing comment type: This comment refers to Clause 88. Added missing comment type as T]

Cl **82** *SC* **82.1.3.1** *P* **149** *L* **1** # 100
Bergmann, Ernie Circadiant/JDSU

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

makes not sense: "...entity via when..."

SuggestedRemedy

change to:
"... entity via the MDIO when ..." (matching other sections)

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **20** # 101
Bergmann, Ernie Circadiant/JDSU

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

Editor's note asking for resolution on choice of shorter test pattern

SuggestedRemedy

use PRBS9 here and elsewhere as it is already the choice in the LRM and SFP+ 10G documents.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **11** # 102
Bergmann, Ernie Circadiant/JDSU

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

"eyemask as defined in Figure 83A-5" appears to contain a bad reference.

SuggestedRemedy

replace the reference 83A-5 -----> 83A-6

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **24** # 103
Bergmann, Ernie Circadiant/JDSU

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

"In this case the 1% level and..."

SuggestedRemedy

change to:
"In this case the 0% level and..." (the ZeroLevel is 0%!)

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7.1** *P* **268** *L* **37** # 104
Bergmann, Ernie Circadiant/JDSU

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

equation (86-9) appears "clipped" in that the leading symbol and trailing symbols are not clearly seen

SuggestedRemedy

make the leading symbol be "y"
make the trailing symbol be "GHz"
[now matches equation (52-3)]

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.5.1** *P* **284** *L* **51** # 105
Bergmann, Ernie Circadiant/JDSU

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

nonsensical reference:
"The PMD block diagram is shown in Figure 87-1."

SuggestedRemedy

replace with:
"The PMD block diagram is shown in Figure 87-2."

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.5** *P* *L* # 106
Bergmann, Ernie Circadiant/JDSU

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

The PMD service interface in Figure 87-2 is similar to that of Figure 86-2 so why not have the PPI interface of section 86 (40G version) available as the physically instantiated PMD service interface for 40GBASE-LR4?

SuggestedRemedy

Copy where possible, sections of 86 relating to the PPI
or
Make references to those sections in 86 relating to PPI

Proposed Response *Response Status* **O**

Cl **87** *SC* **Table 87-7** *P* **290** *L* **7** # 107
Bergmann, Ernie Circadiant/JDSU

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

It is good practice to not duplicate values in multiple places, in particular, there are multiple places where wavelength ranges are given.

SuggestedRemedy

instead of using 4 lines of wavelength ranges, simply replace with:
"see Table 87-5"

Proposed Response *Response Status* **O**

Cl **87** *SC* **Table 87-7** *P* **290** *L* **22** # 108
Bergmann, Ernie Circadiant/JDSU

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

"Transmitter and dispersion penalty, each lane(min)" is a variation in wording from elsewhere, leading to possible confusion.

SuggestedRemedy

replace with:
"Transmitter and dispersion penalty (TDP), each lane(min)"
["(TDP)" inserted]

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 87.7.1]

Cl **87** *SC* **87.8.1** *P* **292** *L* **42** # 109
Bergmann, Ernie Circadiant/JDSU

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

The TBD should be removed

SuggestedRemedy

replace TBD with PRBS9 and do this elsewhere for the short test pattern such as commneted for page 193

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.5** *P* **293** *L* **45** # 110
Bergmann, Ernie Circadiant/JDSU

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

The OMA measurement has become less variable than what is given in 52.9.5 with the LRM and SFP+ work.

SuggestedRemedy

Can add a sentence that the test pattern is to be a square wave consisting of 8 zeros and 8 ones. [NOT just N zeros and N ones where N is in the range of 4 to 11]

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.6.1** *P* **294** *L* **12** # 111
Bergmann, Ernie Circadiant/JDSU

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

reference to 52.9.9.3 is not in accord with 52.9.10.2

SuggestedRemedy

change reference to 52.9.9.2 [to align with 52.9.10.2]

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.6.1** *P* **294** *L* **48** # 112
Bergmann, Ernie Circadiant/JDSU

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

The paragraph appears to be lifted from 52.9.10.3 but the reference to 52.9.7 was replaced by the reference to 87.8.9

SuggestedRemedy

revert reference back to 52.9.7 [detailed description of BT characteristic]

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.9** *P* **295** *L* **40** # 113
Bergmann, Ernie Circadiant/JDSU

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

Table 87-11 does not contain mask parameters

SuggestedRemedy

replace:
"and 87-11 are"
with
"is"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.12** *P* **296** *L* **18** # 114
Bergmann, Ernie Circadiant/JDSU

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

Several references are made to Clause 53 which is not applicable becuse Claus 53 assumes a transmission cod that is 8B/10B

SuggestedRemedy

References instead to Clauses 49, 51, 52 or to LRM would be better.

Could call out specifically the test pattern: PRBS31 should be used.

Proposed Response *Response Status* **O**

Cl **88** *SC* **Table 88-7** *P* **316** *L* **7** # 115
Bergmann, Ernie Circadiant/JDSU

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

It is a bad practice to have variable values duplicated in several places

SuggestedRemedy

replace the 4 wavelength range values by:
"see Table 88-5"

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.7.1]

Cl **88** *SC* **Table 88-7** *P* **316** *L* **14** # 116
Bergmann, Ernie Circadiant/JDSU

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

In analogy to Table 8-11, should there be an entry for "Difference in launch power between any tow lanes (max)" ?

SuggestedRemedy

Add such an entry with a value (3 dB?)

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.7.1]

Cl **88** *SC* **Table 88-8** *P* **317** *L* **13** # 117
Bergmann, Ernie Circadiant/JDSU

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

It is bad practice to have duplicate values for paramters in several places.

SuggestedRemedy

Replace the 4 wavelength ranges given by" "see Table 88-5"

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.7.2]

Cl **88** *SC* **Table 88-8** *P* **317** *L* **18** # 118
Bergmann, Ernie Circadiant/JDSU

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

Shouldn't there be an entry: "Difference in receive power between any two lanes (max)" ?
[cf. Table 88-12]

SuggestedRemedy

Add such an entry with value (4 dB?)

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.7.2]

Cl **88** *SC* **Table 88-11** *P* **319** *L* **7** # 119
Bergmann, Ernie Circadiant/JDSU

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

It is bad practice to duplicate values for parameters in several places.

SuggestedRemedy

Replace 4 entries of wavelength ranges with: "see Table 88-5".

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.8.1]

Cl **88** *SC* **Table 88-7** *P* **316** *L* **24** # 120
Bergmann, Ernie Circadiant/JDSU

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

"Transmitter and dispersion penalty, each lane (max)"

SuggestedRemedy

replace with:
"Transmitter and dispersion penalty (TDP), each lane (max)"
[inserted "(TDP)"]

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.7.1]

Cl **88** SC **Table 88-11** P **319** L # 121
Bergmann, Ernie Circadiant/JDSU

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

There is no TDP specification in this table, but one would expect one in analogy to Table 88-7 and the reference to a measurement for it in 88.9.5, page 322, line 46,

SuggestedRemedy

Add an entry:
"Transmitter and dispersion penalty (TDP), each lane (max)" with a value (2.2 dB?)

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.8.1]

Cl **88** SC **Table 88-12** P **320** L **7** # 122
Bergmann, Ernie Circadiant/JDSU

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

It is bad practice to have multiple locations where the same parametric value is specified.

SuggestedRemedy

Replace the 4 wavelength range entries with "see table 88-5".

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.8.2]

Cl **88** SC **Table 88-14** P **321** L **40** # 123
Bergmann, Ernie Circadiant/JDSU

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

Remove TBD for short test pattern

SuggestedRemedy

repalce TBD with PRBS9 to match other Standards work such as LRM and SFP+

Proposed Response *Response Status* **W**

[Editor's note: Subclause field has Table number instead of 88.9.1]

Cl **45** SC **45.2.1** P **37** L **9** # 124
Barrass, Hugh Cisco

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

MMD1 - missingspace

SuggestedRemedy

add a space

Proposed Response *Response Status* **O**

Cl **45** SC **45.2.1** P **37** L **9** # 125
Barrass, Hugh Cisco

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

45.2, Table 45-2.

SuggestedRemedy

Change to a reference - Table 45-2

Proposed Response *Response Status* **O**

Cl **45** SC **45.2.1** P **37** L **12** # 126
Barrass, Hugh Cisco

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

Editor's note asks a question...

The answer is "no"

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **37** *L* **45** # 127

Barrass, Hugh Cisco

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

Register must support PRBS31 and PRBS9.

SuggestedRemedy

Change register names from PRBS31 to PRBS

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **37** *L* **46** # 128

Barrass, Hugh Cisco

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

Two sets of registers are needed for PRBS error counters.

SuggestedRemedy

Change PRBS31 error counters to PRBS Tx error counters
Add PRBS Rx error counters, lane 0 through lane 9 (registers 1.30 - 1.39)

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12b** *P* **50** *L* **46** # 129

Barrass, Hugh Cisco

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

This comment cycle will resolve the issues raised by the editor's note

SuggestedRemedy

Delete the editor's note

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12b** *P* **50** *L* **49** # 130

Barrass, Hugh Cisco

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

Title of register needs to change

SuggestedRemedy

Change PRBS31 to PRBS

Register title, 3 instances in text and 1 in Table.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12b** *P* **51** *L* **10** # 131

Barrass, Hugh Cisco

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

Table 45-12b and associated text needs to change to accommodate PRBS31 & PRBS9, with generate and check in both directions.

SuggestedRemedy

Change Table 45-12b so that the bit assignments are as follows:

15 - PRBS pattern ability
14 - PRBS31 ability
13 - PRBS9 ability

11 - Tx generator ability
10 - Tx checker ability
9 - Rx generator ability
8 - Rx checker ability

7 PRBS31 enable
6 PRBS9 enable

3 Tx generator enable
2 Tx checker enable
1 Rx generator enable
0 Rx checker enable

Replace the text following the table as follows:

Register 1.19, bit 14 indicates that the device supports PRBS31 generation or checking. Register 1.19, bit 13 indicates that the device supports PRBS9 generation or checking. In both cases, if the device indicates support for the PRBS type, then it shall support that test for all of the generator and checker types that are indicated by the assertion of bits 11:8.

Register 1.19, bit 11 indicates that the device supports PRBS generation in the transmit direction. Register 1.19, bit 10 indicates that the device supports PRBS checking in the transmit direction. Register 1.19, bit 9 indicates that the device supports PRBS generation in the receive direction. Register 1.19, bit 8 indicates that the device supports PRBS checking in the receive direction.

Register 1.19, bit 7 enables testing with the PRBS31 pattern defined in 83.6.7. Register 1.19, bit 6 enables testing with the PRBS9 pattern defined in 83.6.7. The assertion of register 1.19 bits 7 and 6 is mutually exclusive. If both bits are asserted the behavior is undefined. The assertion of register 1.19, bits 7 and 6 works in conjunction with register 1.19, bits 3:0. If none of the bits 3:0 are asserted then bits 7 and 6 have no effect.

Register 1.19, bit 3 enables PRBS generation in the transmit direction. Register 1.19, bit 2 enables PRBS checking in the transmit direction. Register 1.19, bit 1 enables PRBS generation in the receive direction. Register 1.19, bit 0 enables PRBS checking in the receive direction.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12c** *P* **51** *L* **25** # 132

Barrass, Hugh Cisco

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

Register name needs to change

SuggestedRemedy

Change PRBS31 to PRBS Tx

Title, 7 instances in text, 1 Table title.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12c** *P* **51** *L* **49** # 133

Barrass, Hugh Cisco

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

Add a set of registers for Rx direction error counters.

SuggestedRemedy

Add subclause 45.2.1.12d

PRBS Rx pattern testing error counter (Register 1.30, 1.31, 1.32, 1.33, 1.34, 1.35, 1.36, 1.37, 1.38, 1.39)

The PRBS Rx pattern testing error counter registers are used for PHY types that implement PRBS pattern testing in the PMA. This function is described in 83.6.7. The assignment of bits in the PRBS Rx pattern testing error counter registers is identical to the PRBS Tx pattern testing error counter as shown in Table 45–12c. Register 1.30 contains the PRBS pattern testing error counter for lane 0, register 1.31 contains the PRBS pattern testing error counter for lane 1, and registers 1.22 through 1.29 contain the PRBS pattern testing error counters for lanes 2 through 9 respectively. Counters corresponding to lanes that are not implemented in a PMA shall read all zeroes.

The PRBS Rx pattern testing error counter is a twelve bit count as defined in 83.6.7. These bits shall be reset to all zeros when the register is read by the management function or upon execution of the PMA reset. These bits shall be held at all ones in the case of overflow.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12c** *P* **51** *L* **32** # 134
Barrass, Hugh Cisco

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

Double period..

SuggestedRemedy

Delete one of the periods.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **192** *L* **9** # 135
Barrass, Hugh Cisco

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

This paragraph should point to the Clause 45 ability & control bits

SuggestedRemedy

Replace the first sentence

If a Clause 45 MDIO is implemented, then this function maps to the PMA loopback function as specified in TBD.

with

If a Clause 45 MDIO is implemented, then the ability to perform this function is indicated in register 1.8.0 (45.2.1.7.15).

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **191** *L* **10** # 136
Barrass, Hugh Cisco

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

Fix the TBDs

SuggestedRemedy

Replace: TBD control register TBD

with: the PMA/PMD control 1 register (register 1.0.0, see 45.2.1.1.4)

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **31** # 137
Barrass, Hugh Cisco

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

The reference to Clause 45 should be fixed - it should also match the one in the previous subclause.

SuggestedRemedy

Change the first sentence in the paragraph from

If a Clause 45 MDIO is implemented, then this function maps to the PMA line loopback function as specified in 45.2.1.1.4.

to

If a Clause 45 MDIO is implemented, then the ability to perform this function is indicated in register 1.13.15 (45.2.1.12a.1).

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **33** # 138
Barrass, Hugh Cisco

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

Control register bit reference needs fixing

SuggestedRemedy

After "PMA/PMD Control register 1"

Add "(register 1.0.1, see 45.2.1.1.4a)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **44** # 139

Barrass, Hugh Cisco

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

Much more description is needed to map the functions to Clause 45.

SuggestedRemedy

Replace "If a Clause 45 MDIO is supported, then these functions map to the PMA test pattern functions as specified in TBD."

With

If a Clause 45 MDIO is implemented, then the ability to perform this function is indicated in PRBS pattern testing control and status (register 1.19.15, see 45.2.1.1.12b). Support for PRBS31 is indicated by bit 1.19.14, support for PRBS9 is indicated by bit 1.19.13.

Support for transmit direction generation is indicated by 1.19.11 and checking by 1.19.10; support for receive direction generation is indicated by 1.19.9 and checking by 1.19.8.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **47** # 140

Barrass, Hugh Cisco

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

Ditch the TBD!

SuggestedRemedy

Replace "(see TBD) is enabled"

With "is enabled by register 1.19.3 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **52** # 141

Barrass, Hugh Cisco

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

Ditch the TBD!

SuggestedRemedy

Replace "(see TBD) is enabled"

With "is enabled by register 1.19.1 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **4** # 142

Barrass, Hugh Cisco

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

Need a reference for Clause 45 register.

SuggestedRemedy

After "is enabled" add "by register 1.19.2 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **6** # 143

Barrass, Hugh Cisco

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

Ditch the TBD!

SuggestedRemedy

Replace TBD with "registers 1.20 through 1.29 (see 45.2.1.1.12c)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **12** # 144
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Need a reference for Clause 45 register.

SuggestedRemedy
After "is enabled" add "by register 1.19.0 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **14** # 145
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Ditch the TBD!

SuggestedRemedy
Replace TBD with "registers 1.30 through 1.39 (see 45.2.1.1.12d)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **20** # 146
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Editor's note suggests a choice between PRBS7 and PRBS9.

Choose PRBS9

SuggestedRemedy
Delete the editor's note.

Replace the TBD's on line 23 and 28 with: "PRS9" "(see 68.6.1)" and "PRBS9"
Replace the TBD on line 25 and 31 with "PRBS9"

Replace both the TBDs on line 34 and 42 with "PRBS9"
Replace the second TBD on line 36 and 44 with "PRBS9"
Replace the TBD on line 34, 39, 45 and 47 with "PRBS9"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **23** # 147
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Need a reference for Clause 45 register.

SuggestedRemedy
After "is enabled" add "by register 1.19.3 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **28** # 148
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Need a reference for Clause 45 register.

SuggestedRemedy
After "is enabled" add "by register 1.19.1 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **34** # 149
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Need a reference for Clause 45 register.

SuggestedRemedy
After "is enabled" add "by register 1.19.2 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **42** # 150
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Need a reference for Clause 45 register.

SuggestedRemedy
After "is enabled" add "by register 1.19.0 (see 45.2.1.1.12b)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **36** # 151
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Ditch the TBD!

SuggestedRemedy
Replace "TBD count" with "registers 1.20 through 1.29 (see 45.2.1.1.12c)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **44** # 152
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Ditch the TBD!

SuggestedRemedy
Replace "TBD count" with "registers 1.30 through 1.39 (see 45.2.1.1.12d)"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6** *P* **194** *L* **16** # 153
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Ditch the TBD!

SuggestedRemedy
Replace "as described in 45.TBD" with "at identical locations in MMD 8, 9 and 10."

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6** *P* **194** *L* **28** # 154
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Table 83-1.

Register names & locations to be filled in.

SuggestedRemedy
Each lane...

Name = Lane n PRBS Tx pattern testing error counter

Locations = 1.20..1.29

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6** *P* **195** *L* **5** # 155
Barrass, Hugh Cisco

Comment Type **T** *Comment Status* **D**
Table 83-1.

Register names & locations to be filled in.

SuggestedRemedy
Each lane...

Name = Lane n PRBS Rx pattern testing error counter

Locations = 1.30..1.39

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.1** *P* **272** *L* **46** # 156
Chung, Hwan Seok ETRI

Comment Type **E** *Comment Status* **D**
At 86.10.2.1 optical fiber cable, line 46, correct typo. 'fulfil' to 'fulfill'.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5** *P* **103** *L* **44** # 157
Chung, Hwan Seok ETRI

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

For the entire document, the unit description for baud rate is GBd, not Gbd. Thus, 10.3125 Gbd should be changed to 10.3125 GBd. Also, in page 105, line 32, 'Gbd' shuld be 'GBd'.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3** *P* **138** *L* **20** # 158
Chung, Hwan Seok ETRI

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

There two types of description for 'signaling' in D1.1 such as 'singling' or 'signalling.' Both description are correct, but 'singaling' is mostly used across the entire document. So, to maintain consistency, it will be better to change 'signalling' to 'signaling'. These change also should be done in the following line.

page 255, line 39
page 278, line 6
page 279, line 6
page 352, line 17 & line 24
page 351, line 46
page 352, line 35, ...

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.2** *P* **113** *L* **25** # 159
Chung, Hwan Seok ETRI

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

According to comment#466 in 'p8023ba-D10_AcceptedResponses_by_Clause.pdf', 'at least' which descirbed operating distance of PHY was changed to 'up to at least', because the wording 'at least' implied that shorter cables are not compliant. Thus, to avoid any misunderstanding, 'at least' in 80.1.2 shuld be changed to 'up to at least' .

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.2.1.2** *P* **105** *L* **32** # 161
Gustlin, Mark Cisco

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

Gbd s/b/ GBd.

SuggestedRemedy

as above.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.2.2.2** *P* **106** *L* **4** # 162
Gustlin, Mark Cisco

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

Here you used Gtransfers/s, but in 74.5.2.1.2 you used GBd, should be consistent.

SuggestedRemedy

Change to GBd.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.4.9** *P* **156** *L* **47** # 163

Gustlin, Mark Cisco

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

Add a period at the end.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.2** *P* **181** *L* **32** # 164

Gustlin, Mark Cisco

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

This is the first time that PCSL is introduce, add the non abreviation here, PCS Lane. Then remove PCS Lane from the followin page (line 42).

SuggestedRemedy

as above.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **20** # 165

Gustlin, Mark Cisco

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

Make the short PRBS pattern PRBS9.

SuggestedRemedy

Delete the editor's nots, and anywhere that there is a TBD for the short PRBS pattern replace that will PRBS9 as appropriate. We had a meeting of interested parties (as solicited via the reflector) to discuss PRBS9 vs. other short patterns and the consensus was PRBS9 is the right choice.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3** *P* **118** *L* **44** # 166

Gustlin, Mark Cisco

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

Remove "b[Editor's note (to be removed prior to publication) - The adopted delay number of 4800 BT (see Comment #300) has
been been rounded to the nearest pause quanta]"

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6** *P* **194** *L* **7** # 167

Gustlin, Mark Cisco

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

Add in the PMA round trip delay constraints, and make it consistent with the summary of constraints in clause 80. Also add in an appropirate PICS for this.

SuggestedRemedy

as above

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3** *P* **118** *L* **25** # 168

Gustlin, Mark Cisco

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

Add in the round trip delay for the PMA:
First lets look at the dynamic skew since some PMAs have to account for that:

SP1, SP5, SP1 and back to SP5 again is what we need to worry about, plus we need to multiply these numbers by 2 since people will start fifos at the half full mark...

So: (3.6ns + .2ns)*2*2 = 15.2ns or 1474 bits due to dynamic skew buffers.

Now in the worst case you can have multiple PMAs, but they still have to meet the above skew points so I think we don't have to add any more for the skew for multiple PMAs.

Now there is some inherent delay in the muxing stages etc, and we put down for max skew 13ns per pma stage. So delay must be at least that much. Lets add another 66b word to that , so that is 13 + 6.4 = 19.4ns, now multiply x4 = 77.6ns or 7540 bits.

So a total of 1474 + 7540 = 9014 bits, or rounded up to the nearest 512 chunk is 18*512 = 9216 BT.

SuggestedRemedy

Change the TBDs to 9216 BT, or 18 pause quanta. Make this applicable for 100GBASE-R and 40GBASE-R PMAs (right now it only has an entry for 40GBASE-R PMAs)

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.8** *P* **159** *L* **4** # 169

Gustlin, Mark Cisco

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

Add BIP error detection to the pcs alignment markers per gustlin_01_0109.

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74** *P* **101** *L* **3** # 170

Gustlin, Mark Cisco

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

Remove the Editor's note.

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.2** *P* **113** *L* **25** # 171

Gustlin, Mark Cisco

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

Here the phrasing is "at least 10 km on a single mode fiber", but then in 80.1.4 the phrasing changes to "up to at least 10 km in length", we need to be consistent. This applies for all of the physical layers.

SuggestedRemedy

Change to make it consistent.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.1** *P* **115** *L* **36** # 172

Gustlin, Mark Cisco

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

Remove the editor's note. It is made clear what the 40 and 100G instantiations of the MII are.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **116** *L* **18** # 173

Gustlin, Mark Cisco

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

In table 80-1, the clause 74 heading is 10GBASE-R FEC, but now we differentiate FEC based on 40GBASE-R and 100GBASE-R, so we should add columns for 40GBASE-R FEC and 100GBASE-R FEC, then mark the columns appropriately.

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **116** *L* **12** # 174

Gustlin, Mark Cisco

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

In table 80-1 we should add in a column on the PPI interface? And mark it appropriately?

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2.2** *P* **116** *L* **51** # 175

Gustlin, Mark Cisco

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

Change:
"In addition the PMAs perform clock recovery from the received data stream and optionally provide data loopback at the PMA service interface."
to:
"In addition the PMAs perform clock recovery from the received data stream, optionally provide data loopback at the PMA or PMD service interface, and optionally provide test pattern generation and checking."

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1** *P* **123** *L* **49** # 176

Gustlin, Mark Cisco

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

Remove the editor's note and live with the MII name.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **121** *L* **44** # 177

Gustlin, Mark Cisco

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

Tabel 80-4 does not have an entry for 100GBASE-R dynamic skew in UIs at the PCS receive, in clause 82 we do have it.

SuggestedRemedy

Add in 21 UI for a pcs lane dynamic skew at the 100GBASE-R rx pcs.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **183** *L* **3** # 178

Gustlin, Mark Cisco

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

Change:
"An implementation may use one or more PMA sublayers to adapt from the PCS formatted lanes to the supported PMD."

To:
"An implementation may use one or more PMA sublayers to adapt from the number and rate of the PCS lanes to the number and rate of PMD lanes."

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **183** *L* **6** # 179
Gustlin, Mark Cisco

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

Remove the editor's note and add in the informative annex.

SuggestedRemedy

as above.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **183** *L* **49** # 180
Gustlin, Mark Cisco

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

Change:
"MMD 8 is the closest to the PMD and MMD 10 is the farthest from the PMD"
to:
"MMD 8 is the 2nd closest PMA to the PMD and MMD 10 is the farthest from the PMD"

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.2** *P* **186** *L* **4** # 181
Gustlin, Mark Cisco

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

In figure 83-5, the indications and requests should have an x to indicate that they apply to multiple bits.

SuggestedRemedy

Add the italic x to each indication and request (except for the status).

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **192** *L* **1** # 182
Gustlin, Mark Cisco

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

Make system side loopbacks optional for any PMA sublayer, not just the umppermost. Many devices will implement them, so it would be good to have the management information to be consistent.

SuggestedRemedy

As above.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.1** *P* **272** *L* **11** # 183
Kolesar, Paul CommScope

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

The "Fiber cable attenuation (max)" description is incomplete. The wavelength must also be specified as the attenuation value changes with wavelength. The nominal operating wavelength of clause 86 is 850 nm.

SuggestedRemedy

Change the description to "Fiber cable attenuation at 850 nm (max)"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.1** *P* **273** *L* **14** # 184
Kolesar, Paul CommScope

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

The chromatic dispersion specifications were modified by comment to draft 1.0, but contain an error. The upper wavelength limit for the 0.105 value should be 1310 nm not 1305 nm to be consistent with the fiber specification standards in TIA and IEC. The existing value leaves a 5 nm range unspecified.

SuggestedRemedy

Change 1305 to 1310.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.3** *P* **273** *L* **33** # 185

Kolesar, Paul CommScope

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

A specific optical connector form should be selected within the subclause to provide users with unambiguous understanding of the standard physical hardware connectivity for patch cords. The selection of the connector form should be compatible with structured cabling practices for array connectivity defined in TIA-568 and draft ISO 24764.

SuggestedRemedy

See contribution kolesar_01_0109 for slides containing rationale and specific content in the form of text and figure. The slides within this contribution intended for subclause 86.10.2.3 are so entitled atop each slide. The proposed content is intended to be a replacement for the present text. Note: This contribution also contains proposed content for related subclauses 86.5.1 and 86.5.2.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.5.1** *P* **255** *L* **25** # 186

Kolesar, Paul CommScope

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

Optical lane assignments for 40GBASE-SR4 must be defined to provide an interoperable interface that provides proper connectivity over standard structured cabling infrastructures. The editor's note invites contributions proposing content for this subclause.

SuggestedRemedy

See contribution kolesar_01_0109 for slides containing rationale and specific content in the form of text and figure. The slides within this contribution intended for subclause 86.5.1 are so entitled atop each slide. Note: This contribution also contains proposed content for related subclauses 86.5.2 and 86.10.2.3.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.5.2** *P* **255** *L* **30** # 187

Kolesar, Paul CommScope

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

Optical lane assignments for 1000GBASE-SR10 must be defined to provide an interoperable interface that provides proper connectivity over standard structured cabling infrastructures. The editor's note invites contributions proposing content for this subclause.

SuggestedRemedy

See contribution kolesar_01_0109 for slides containing rationale and specific content in the form of text and figures. The slides within this contribution intended for subclause 86.5.2 are so entitled atop each slide. Note: This contribution also contains proposed content for related subclauses 86.5.1 and 86.10.2.3.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.3** *P* **27** *L* **38** # 188

Anslow, Peter Nortel Networks

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

Subclause 30.3.2.1.3 is missing an editing instruction

SuggestedRemedy

Add "Change 30.3.2.1.3 for PHY type list:

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **30** *L* **31** # 189

Anslow, Peter Nortel Networks

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

Inserted text says "and the PCS control 2 register 45.2.3.6.." - missing "specified in" and double ".."
Also, some external links in this paragraph are not shown blue and some internal paragraphs are not cross-referenced.

SuggestedRemedy

Change to "and the PCS control 2 register specified in 45.2.3.6."
Clause 22, clause 35, 22.2.4.1, Clause 28, Clause 37 should be dark blue.
45.2.3.6.1, 45.2.1.6.1, 45.2.1.1, 45.2.3.6, Clause 73 should be cross-references.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.2.5** *P* **34** *L* **22** # 190

Anslow, Peter Nortel Networks

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

There is just a heading for 30.2.5 after 30.6.1.1.5

SuggestedRemedy

Remove heading or pace in correct order if there are further changes to be inserted in this clause.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45** *P* **35** *L* **3** # 191

Anslow, Peter Nortel Networks

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

The actions in the Editor's note have been performed.

SuggestedRemedy

Remove note.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **37** *L* **3** # 192

Anslow, Peter Nortel Networks

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

Spaces missing, internal reference

SuggestedRemedy

insert space in 40Gb/s (line 3) and MMD1 (line 9)
Table 45-2 should be cross reference (line 10)

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.4** *P* **41** *L* **35** # 193

Anslow, Peter Nortel Networks

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

The terms "PMA line-side loopback" and "PMA system loopback" do not clearly convey what function they perform. Also, clause 83 uses the term "line loopback"
A seperate comment is submitted against clause 83 - these comments must be resolved together.

SuggestedRemedy

Change all instances of "line-side loopback" to "remote loopback" and all instances of "system loopback" to "local loopback"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1.4a** *P* **42** *L* **11** # 194

Anslow, Peter Nortel Networks

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

This says "the system loopback ability bit is specified in"
This should be "line loopback" if comment to re-name is rejected and "remote loopback" if comment to re-name is accepted.

SuggestedRemedy

change to "the remote loopback ability bit is specified in" or "the line loopback ability bit is specified in"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1.4a** *P* **42** *L* **10** # 195

Anslow, Peter Nortel Networks

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

83.xxxx should be a cross-reference to 83.5.8

SuggestedRemedy

change 83.xxxx to a cross-reference to 83.5.8

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.1.4** *P* **42** *L* **30** # 196

Anslow, Peter Nortel Networks

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

83.xxxx should be a cross-reference to 83.5.7

SuggestedRemedy

change 83.xxxx to a cross-reference to 83.5.7

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3.4** *P* **138** *L* **20** # 197

Anslow, Peter Nortel Networks

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

"Clause 46" is an external link

SuggestedRemedy

Make it dark blue

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.1.2** *P* **147** *L* **27** # 198

Anslow, Peter Nortel Networks

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

Two instances of "Clause 49" which is an external link

SuggestedRemedy

show as dark blue

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.10** *P* **160** *L* **32** # 199

Anslow, Peter Nortel Networks

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

The term used for the PCS generated test pattern is "pseudo-random". This name, however, is easily confused with two of the PMA generated patterns PRBS31 and (likely) PRBS9. It would be better to change the name in line with that used in Tables 87-10 and 88-14 "Scrambled idle"

SuggestedRemedy

Change to:
"There is a single type of required PCS transmit test pattern: scrambled idle. The scrambled idle test-pattern mode is ..."
and "When scrambled idle pattern is selected, the test pattern..."

Also in 82.2.17 change "pseudo-random" to "scrambled idle" in 6 places

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.3.1** *P* **167** *L* **10** # 200

Anslow, Peter Nortel Networks

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

In Table 82-6 Row 2 (excluding heading) MDIO status variable column 10/40/100 has the /40/100 in underline font.
In Table 82-6 Row 7 (excluding heading) PCS register name column has a "/" in underline font.

SuggestedRemedy

Remove underline from these two places in the table

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.3** *P* **182** *L* **47** # 201

Anslow, Peter Nortel Networks

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

The terms "system loopback" and "line loopback" do not clearly convey what function they perform. Also, clause 45 uses the term "line-side loopback"
A seperate comment is submitted against clause 45 - these comments must be resolved together.

SuggestedRemedy

Change all instances of "system loopback" to "local loopback" and all instances of "line loopback" to "remote loopback".

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **20** # 202

Anslow, Peter Nortel Networks

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

The text says: "When line loopback is enabled, each bit received over the PMD service interface via the x=0 to q-1. Note that “PMA server” can represent the FEC, PMD, or another PMA sublayer. PMAserver_UNITDATA.indicationx(rx_bit) primitive is sent back toward the PMD via the
PMAserver_UNITDATA.requestx(tx_bit) primitive." which doesn't make sense.

SuggestedRemedy

Change to "When line loopback is enabled, each bit received over the PMD service interface via the PMAserver_UNITDATA.indicationx(rx_bit) primitive is sent back toward the PMD via the
PMAserver_UNITDATA.requestx(tx_bit) primitive."

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.1** *P* **220** *L* **25** # 203

Anslow, Peter Nortel Networks

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

In figure 85-2 on the left and right edges are shown "tx_bit<0:3> or x_bit<0:9>". However the latest service primitives all have the same parameter "tx_bit".

SuggestedRemedy

change figure 85-2 to use the same labelling as Figure 86-2 (and 87-2 and 88-2) "PMD_UNITDATA.request0 to PMD_UNITDATA.requestn"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.6** *P* **261** *L* **32** # 204

Anslow, Peter Nortel Networks

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

In Table 86-13 notes b and d say:
b [Editor’s note (to be removed prior to publication) - For further study]
d [Editor’s note (to be removed prior to publication) - Connector loss under study]
These values seem to be as stable as any others in this clause, so these notes are no longer needed.

SuggestedRemedy

Remove editor's notes b and d

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **36** # 205

Anslow, Peter Nortel Networks

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

Table 86-15 pattern 4
Since the DDPWS measurement is specified to use PRBS9, make this the short TBD

SuggestedRemedy

Change "Short TBD" to "PRBS9"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **264** *L* **5** # 206

Anslow, Peter Nortel Networks

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

In Table 86-16 most of the test patterns are undefined.
Also, alternative patterns should not be shown with footnotes.

SuggestedRemedy

Leave "Transmitter OMA (modulated optical power)" as "Square"
Set "RIN12OMA" to "Square"
Set "Calibration of OMA for receiver tests" to "Square"
Set "Data Dependent Pulse Width Shrinkage (DDPWS)" to "4"
Set "Transition time" to "Square"
Set the pattern for all other rows to: "3, 5 or valid 40/100GBASE-R signal"
Remove all three footnotes

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7** *P* **268** *L* # 207
Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

change ", such as TBD signal, are likely" to ", such as a 223-1 PRBS, are likely" where 223 is 2 raised to the power 23

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **48** # 208
Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

Change "TBD, or a valid 40GBASE–R4" to "Test patterns 3 or 5, or a valid 40GBASE–R4"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 209
Anslow, Peter Nortel Networks

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

typo "w\ve"

SuggestedRemedy

change "w\ve" to "wave"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.1** *P* **262** *L* **10** # 210
Anslow, Peter Nortel Networks

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

In Figure 86-3 SP5 is shown as the same as TP4. However, in Figures 80-2 and 80-3 SP5 is shown as the input to the PMA and therefore includes all skew due to the interconnect between the PMD and the PMA

SuggestedRemedy

Move SP5 to be at TP5 in the figure.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **262** *L* **42** # 211
Anslow, Peter Nortel Networks

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

This says "NOTE—The longer test patterns are designed to emulate system operation; however, they do not form valid 10GBASE-R, 40GBASE-R4 or 100GBASE-R10 frames." This is not correct for test pattern 5 in Table 86-15. This is scrambled idles and is a valid signal. Also the use of the term "frame" is not helpful here.

SuggestedRemedy

Cghange to: "NOTE—Test patterns 3 and 4 are designed to emulate system operation; however, they do not form valid 40GBASE-R4 or 100GBASE-R10 signals."

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.2** *P* **265** *L* **45** # 212
Anslow, Peter Nortel Networks

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

Equation 86-6 uses a mixture of "x" and "." for multiply

SuggestedRemedy

To be consistent with other equations in clause 86 change to "x"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.2** *P* **266** *L* **3** # 213

Anslow, Peter Nortel Networks

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

Figure 86-4 uses the same symbol for an electrical connector as the previous figures used for an optical connector.

SuggestedRemedy

Change the symbol for the electrical connectors to be the same as was used in Figure 86-3 for an electrical connector.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.1** *P* **262** *L* **6** # 214

Anslow, Peter Nortel Networks

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

The symbol used in Figure 86-3 for the optical connector to the modules is not consistenmt with that used in Figure 86-2 (or 87-2 or 88-2)

SuggestedRemedy

Change the optical connector symbol to the modules to be consistenmt with that used in Figure 86-2

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7.1** *P* **268** *L* **37** # 215

Anslow, Peter Nortel Networks

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

In equation 86-9 the "y" at the beginning is clipped off

SuggestedRemedy

Highlight equation, Special, Equations, click on the equations button and select "Shrink-Wrap Equation"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **34** # 216

Anslow, Peter Nortel Networks

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

There are two tables numbered 86-17

SuggestedRemedy

Change Autonumber format of secind instance from "H:Table <n>\=< >< >< >< >< ><n>\m" to "H:Table <n>\=< >< >< >< >< ><n+>\m"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.12.4.5** *P* **304** *L* **33** # 217

Anslow, Peter Nortel Networks

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

Value/comment says "Conforms to IEC 60950:1"

SuggestedRemedy

Change to "Conforms to IEC 60950-1"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.3.1** *P* **284** *L* **7** # 218

Anslow, Peter Nortel Networks

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

The max round trip delay including 2m of fiber for 40GBASE-LR4 is TBD. The values for 40GBASE-SR4 have been set at 1024 bit-times, or 2 pause_quanta and the delay for 40GBASE-LR4 should be similar.

SuggestedRemedy

Change "of not more than TBD (1536) bit-times, or TBD (3) pause_quanta" to "of not more than 1024 bit-times, or 2 pause_quanta"
Remove editor's note

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.2** *P* **291** *L* **28** # 219

Anslow, Peter Nortel Networks

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

Stressed eye jitter, each lane is TBD.
Since each lane of 40GBASE-LR4 is similar to 10GBASE-LR, use the value from Table 52-13 of 0.3 UI pk-pk

SuggestedRemedy

set the Stressed eye jitter, each lane to 0.3 UI pk-pk

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.3** *P* **292** *L* **18** # 220

Anslow, Peter Nortel Networks

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

In Table 87-9 footnote b contains an editor's note. This note is no longer needed as the value of 2.3 dB for penalties has been stable for some time.

SuggestedRemedy

Remove editor's note from footnote b

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **292** *L* **41** # 221

Anslow, Peter Nortel Networks

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

Pattern 4 is TBD. Since PRBS9 is required for DDPWS in clause 86, change TBD to PRBS9

SuggestedRemedy

Change pattern 4 from "TBD" to PRBS9"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **292** *L* **47** # 222

Anslow, Peter Nortel Networks

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

Remove TBD.
The square wave isn't really designed to emulate system operation and pattern 5 is a valid 40GBASE-R signal.

SuggestedRemedy

Change "TBD test patterns are designed" to "Test patterns 3 and 4 are designed". Also remove double ".."

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **293** *L* **5** # 223

Anslow, Peter Nortel Networks

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

In Table 87-11 most of the test patterns are undefined.

SuggestedRemedy

Leave "Optical modulation amplitude (OMA)" as "Square"
Change parameter name "RINxOMA" to "RIN20OMA" and leave as "Square"
Set "Calibration of OMA for receiver tests" to "Square"
Set the pattern for all other rows to: "3, 5 or valid 40GBASE-LR signal"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.6.1** *P* **294** *L* **10** # 224

Anslow, Peter Nortel Networks

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

The rise/fall times and RIN requirements for the reference transmitter are TBD. Since each lane of 40GBASE-LR4 is similar to 10GBASE-LR, use the values from 52.9.10.1 of 30 ps and -136 dB/Hz

SuggestedRemedy

change "less than TBD ps at 20% to 80%" to "less than 30 ps at 20% to 80%"
change "less than –TBD dB/Hz" to "less than –136 dB/Hz"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.9** *P* **295** *L* **49** # 225
Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

change ", such as TBD signal, are likely" to ", such as a 223-1 PRBS, are likely" where 223 is 2 raised to the power 23

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.10** *P* **296** *L* **1** # 226
Anslow, Peter Nortel Networks

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

Clause 87.8.10 consists only of an editor's note. The PMD specifications for 10GBASE-LR and -ER in clause 52 do not have separate transmitter jitter requirements and 40GBASE-LR4 is very similar to this so remove this clause

SuggestedRemedy

Remove clause 87.8.10 entirely.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.12** *P* **296** *L* **26** # 227
Anslow, Peter Nortel Networks

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

Table 87-13 for the applied sinusoidal jitter is TBD. Since each lane of 40GBASE-LR4 is similar to 10GBASE-LR, use the values from Table 52-19

SuggestedRemedy

Remove Table 87-13 and refer to Table 52-19 instead.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.12** *P* **296** *L* **34** # 228
Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

change "TBD, or valid" to "Test patterns 3 or 5, or valid"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.5.1** *P* **284** *L* **51** # 229
Anslow, Peter Nortel Networks

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

This says "The PMD block diagram is shown in Figure 87–1." this should be Figure 87-2

SuggestedRemedy

Correct c ross reference to be Figure 87-2

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.12.4.1** *P* **302** *L* **13** # 230
Anslow, Peter Nortel Networks

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

XLF2 is optional so there should be a No [ ] option

SuggestedRemedy

Add a No [ ] option

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.3.1** *P* **310** *L* **7** # 231

Anslow, Peter Nortel Networks

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

The max round trip delay including 2m of fiber for 100GBASE-LR4 and ER4 is TBD. The values for 100GBASE-SR10 have been set at 2048 bit-times, or 4 pause_quanta and the delay for 100GBASE-LR4 or ER4 should be similar.

SuggestedRemedy

Change "of not more than TBD (1536) bit-times, or TBD (3) pause_quanta" to "of not more than 2048 bit-times, or 4 pause_quanta"
Remove editor's note

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.7.1** *P* **316** *L* **24** # 232

Anslow, Peter Nortel Networks

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

In Table 88-7, the value 2.2 for "Transmitter and dispersion penalty, each lane (max)" has an associated editor's note. Since there have been no proposals to change this value, remove the editor's note.
Also applies to Allocation for penalties in Table 88-9

SuggestedRemedy

Remove editor's note and show values of 2.2 in normal font in Tables 88-7 and 88-9

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.7.1** *P* **316** *L* **47** # 233

Anslow, Peter Nortel Networks

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

Beneath Tables 88-7 and 88-11 there are notes stating "a possible peak power specification is under consideration for 100GBASE-LR4 and ER4".

SuggestedRemedy

Either introduce such a specification and remove the editor's notes or just remove the editor's notes.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.7.2** *P* **317** *L* **36** # 234

Anslow, Peter Nortel Networks

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

Stressed eye jitter, each lane is TBD in Tables 88-8 and 88-12.
Since each lane of 100GBASE-LR4/ER4 is similar to 10GBASE-LR except for the higher lane rate, use the value from Table 52-13 of 0.3 UI pk-pk

SuggestedRemedy

set the Stressed eye jitter, each lane to 0.3 UI pk-pk in Tables 88-8 and 88-12

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.1** *P* **321** *L* **39** # 235

Anslow, Peter Nortel Networks

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

Pattern 4 is TBD. Since PRBS9 is required for DDPWS in clause 86, change TBD to PRBS9

SuggestedRemedy

Change pattern 4 from "TBD" to PRBS9"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.1** *P* **321** *L* **44** # 236

Anslow, Peter Nortel Networks

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

Remove TBD.
The square wave isn't really designed to emulate system operation and pattern 5 is a valid 40GBASE-R signal.

SuggestedRemedy

Change "TBD test patterns are designed" to "Test patterns 3 and 4 are designed"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.1** *P* **322** *L* **1** # 237

Anslow, Peter Nortel Networks

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

In Table 88-15 most of the test patterns are undefined.

SuggestedRemedy

Leave "Optical modulation amplitude (OMA)" as "Square"
Change parameter name "RINxOMA" to "RIN20OMA" and leave as "Square"
Set "Calibration of OMA for receiver tests" to "Square"
Set the pattern for all other rows to: "3, 5 or valid 100GBASE-R signal"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.5.1** *P* **323** *L* **6** # 238

Anslow, Peter Nortel Networks

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

The rise/fall times and RIN requirements for the reference transmitter are TBD. Since each lane of 100GBASE-LR4/ER4 is similar to 10GBASE-LR except for the higher lane rate, use the values from 52.9.10.1 of 30 ps and -136 dB/Hz scaled by the relative lane rates.

SuggestedRemedy

change "less than TBD ps at 20% to 80%" to "less than 12 ps at 20% to 80%"
change "less than –TBD dB/Hz" to "less than –140 dB/Hz"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.8** *P* **324** *L* **47** # 239

Anslow, Peter Nortel Networks

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

The filter tolerances are TBD.
The tolerances specified for STM-64 in G.691 are:
+/- 0.85 dB for f/fr from 0.001 to 1
and +/- 0.85 dB to +/- 4.0 dB for f/fr from 1 to 2

SuggestedRemedy

Change "filter tolerances TBD" to "filter tolerances as specified for STM-64 in ITU-T G.691"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.8** *P* **324** *L* **48** # 240

Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

change ", such as TBD signal, are likely" to ", such as a 223-1 PRBS, are likely" where 223 is 2 raised to the power 23

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.9** *P* **324** *L* **51** # 241

Anslow, Peter Nortel Networks

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

Clause 88.9.9 consists only of an editor's note. The PMD specifications for 10GBASE-LR and -ER in clause 52 do not have separate transmitter jitter requirements and 100GBASE-LR4/ER4 is similar to this so remove this clause

SuggestedRemedy

Remove clause 88.9.9 entirely.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.11** *P* **325** *L* **18** # 242

Anslow, Peter Nortel Networks

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

Table 88-17 for the applied sinusoidal jitter is TBD. Since each lane of 100GBASE-LR4/ER4 is similar to 10GBASE-LR except for the higher lane rate,
use the values from Table 52-19 with the frequencies scaled by the relative lane rates.

SuggestedRemedy

Set the Jitter values according to the values in Table 52-19 with the three rows as:
f < 100 kHz, Not specified
100 kHz < f <= 10 MHz, 2×10^5/f + S - 0.05
10 MHz < f < 10 LB, 0.05 <= S <= 0.15
with a note for S "S is the magnitude of sine jitter actually used in the calibration of the stressed eye per the methods of 52.9.9.3"

Proposed Response *Response Status* **O**

Cl **88** SC **88.9.11** P **325** L **30** # 243
Anslow, Peter Nortel Networks

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

Remove TBD

SuggestedRemedy

change "TBD, or valid" to "Test patterns 3 or 5, or valid"

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.1.1** P **350** L **27** # 244
Latchman, Ryan Gennum Corp

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

Remove Editors Note:

[Editor's note: (to be removed prior to publication) - condition for total jitter error rate at 1E-15 is proposed]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.2** P **350** L **49** # 245
Latchman, Ryan Gennum Corp

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

Remove Editor's note:
Editor's note: (to be removed prior to publication) - Include definition of XLAUI, CAUI link block diagram,
test points and channel boundaries in this section]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.2.1** P **351** L **5** # 246
Latchman, Ryan Gennum Corp

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

Remove Editor's Note:

[Editor's note: (to be removed prior to publication) - Insert or change, to include definition of transmit
test points]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.2.2** P **351** L **15** # 247
Latchman, Ryan Gennum Corp

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

Remove: [Editor's note: (to be removed prior to publication) - Insert or change, to include definition of receive test
points]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.3.3** P **352** L **11** # 248
Latchman, Ryan Gennum Corp

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

Delete Editor Comments:
[Editor's note: (to be removed prior to publication) - transmiter eyemask as defined in figure 83A-5 is not
considered a sufficient description to guarantee performance; additional test methods are required]
Editor's note: (to be removed prior to publication) - proposals for jitter methodology to be submitted
against D1.1 for completion of TBDs]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **46** # 249

Latchman, Ryan Gennum Corp

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

XLAUI / CAUI Receive Eye mask can only be met by specifying a minimum level of de-emphasis.

SuggestedRemedy

Add De-emphasis Specification to table

Parameter: Minimum De-emphasis
Value: 3.5dB

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.1** *P* **353** *L* **2** # 250

Latchman, Ryan Gennum Corp

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

Output Amplitude definition does not include de-emphasis which is needed to meet Rx compliant point

SuggestedRemedy

Modify Text to:
Driver differential output amplitude shall be less than 760 mVp-p and greater than 380mVppd including transmit equalization. DC referenced logic levels are not defined since the receiver is AC-coupled. Single-ended output voltage range shall be between –0.4 V and 4.0 V with respect to ground.
De-emphasis shall be the ratio between the amplitude following a transition and the amplitude during a non-transition bit as seen in equation EEE. Amplitude measurements are taken using an averaged waveform and taken at the center of the respective UI.
See Figure 83A–3 for an illustration of absolute driver output voltage limits, definition of differential peak-to-peak amplitude, and definition of pre-emphasis.

Modify Diagram to de-emphasis levels as seen in latchman_xlc_01_1208.pdf

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.2** *P* **353** *L* **31** # 251

Latchman, Ryan Gennum Corp

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

Rise/fall definition does not take into account de-emphasis

SuggestedRemedy

Modify text to:
Rise and fall times are measured from the 20% to the 80% levels of the differential voltage level. Note that, with de-emphasis, the voltage thresholds corresponding to 20% and 80% vary depending on the voltage level of the previous UI. Only those transitions crossing the zero threshold need to meet TR/TF limits defined in Table 83A-1. In Figure YYY, there are three distinct thresholds corresponding to deemphasized transitions from high to low, low to high, and full swing transitions in either direction. Rise / Fall Time must be validated for all four possible cases.

Include diagram from latchman_xlc_01_1208.pdf

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.5** *P* **355** *L* **40** # 252

Latchman, Ryan Gennum Corp

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

Remove Editor's Note
Editor's note: (to be removed prior to publication) - Presentations needed with respect to corresponding
BER for Jitter measurements]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **356** *L* **26** # 253
Latchman, Ryan Gennum Corp

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

Remove Editor's Note:
Editor's note: (to be removed prior to publication) - proposals for jitter methodology to be submitted
against D1.1 for completion of TBDs]

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **356** *L* **37** # 254
Latchman, Ryan Gennum Corp

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

Minimum Differential Input Voltage Parameter is not useful in the table since it points to another area in the table (See receiver eye mask definition).

SuggestedRemedy

Remove Minimum Differential Input Voltage Parameter

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **357** *L* **13** # 255
Latchman, Ryan Gennum Corp

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

Maximum non-EQ Jitter is not well defined.

SuggestedRemedy

Change Parameter to Maximum Deterministic Jitter

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.1** *P* **357** *L* **26** # 256
Latchman, Ryan Gennum Corp

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

BER Target BER 1E-12. Section for lower BER values to be added

SuggestedRemedy

Change TBD to 1E-12

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.2** *P* **357** *L* **41** # 257
Latchman, Ryan Gennum Corp

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

No input has been received from Statistical Eye Adhoc. Remove:
Editor's note: (to be removed prior to publication) - Receiver Eye Mask may change as an outcome of the
Statistical eye adhoc]

SuggestedRemedy

Remove
Editor's note: (to be removed prior to publication) - Receiver Eye Mask may change as an outcome of the
Statistical eye adhoc]

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.3** *P* **358** *L* **23** # 258
Latchman, Ryan Gennum Corp

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

No input has been received on Rx input amplitude. This is covered by the Receiver template and therefore unnecessary

SuggestedRemedy

Remove section 83A.3.4.3

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.8** *P* **360** *L* **51** # 259

Latchman, Ryan Gennum Corp

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

non-EQ jitter is no longer specified. Replace with DJ / RJ terms

SuggestedRemedy

The XLAUI/CAUI receiver shall have a peak-to-peak total jitter amplitude tolerance of at least 0.62 UI. This total jitter is composed of two components: Deterministic Jitter and Random Jitter. Deterministic jitter tolerance shall
be at least 0.42 UIp-p. The XLAUI/CAUI receiver shall tolerate sinusoidal jitter with any frequency and amplitude defined by the mask of Figure 83A–10. This sub-component of deterministic is intended to ensure margin for low-frequency jitter, wander, noise, crosstalk and other variable system effects.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4** *P* **361** *L* **24** # 260

Latchman, Ryan Gennum Corp

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

Replace Editor's comments with text from latchman_xlc_01_1208.pdf

SuggestedRemedy

This section describes informative characteristics which are used to describe an XLAUI / CAUI channel.
• The informative values for insertion loss are summarized in table YYY and equation ZZZ. Other impairments such as crosstalk can have a material impact on the link performance and should be minimized

Where tables are found in latchman_xlc_01_1208.pdf

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.5** *P* **355** *L* **31** # 261

Latchman, Ryan Gennum Corp

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

Transmitter jitter specification should be measured with de-emphasis off since this will unnecessairly contribut to the transmitter DJ

SuggestedRemedy

Change text to:

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 for a maximum total jitter of 0.32 UI peak-to-peak and a maximum deterministic component 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.5.2, and are conducted with de-emphasis off.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4.1** *P* **361** *L* **32** # 262

Latchman, Ryan Gennum Corp

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

Replace editorial (Editor’s note: (to be removed prior to publication) - Insert or change, to include interconnect definition]) comment with loss discription found in latchman_xlc_01_1208.pdf

SuggestedRemedy

Add the following text:

Interconnect loss limit is discribed by the following equation:
(equation from latchman_xlc_01_1208.pdf)

where b1, b2, b3, b4, f1, f2, fmax are given in the following table
(table from latchman_xlc_01_1208.pdf)

Insert plot from latchman_xlc_01_1208.pdf

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4.1.1** *P* **362** *L* **31** # 263

Latchman, Ryan Gennum Corp

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

No material received with respect to characteristic impedance

SuggestedRemedy

Remove section and comment

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5** *P* **362** *L* **39** # 264

Latchman, Ryan Gennum Corp

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

Replace editor's comment with actual text

SuggestedRemedy

This section describes the measurement methodology which is to be used to verify XLAUI / CAUI compliance

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.2.1** *P* **362** *L* **43** # 265

Latchman, Ryan Gennum Corp

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

Incomplete transmit jitter measurement methodology. Replace following text: The clock recovery unit (CRU) used in the transmit jitter measurement has a corner frequency of less than or
equal to 4 MHz and a slope of -20 dB/decade (need figure consistent with text). When using a CRU as a
clock for jitter measurements.
[Editor's note: (to be removed prior to publication) - Insert or change, to include transmit jitter]

With below

SuggestedRemedy

Include the following text:

Transmit jitter is defined with respect to a test procedure resulting in a BER bathtub curve such as that described in Annex 48B.3. For the purpose of jitter measurement, the effect of a singlepole high-pass filter with a 3 dB point at 4 MHz is applied to the jitter. The data pattern for jitter measurements shall be test patterns YYY or WWW as defined in CCCCC. Crossing times are defined with respect to the mid-point (0 V) of the AC-coupled differential signal. Equalization shall be off during jitter testing.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.1** *P* **362** *L* **45** # 266

Latchman, Ryan Gennum Corp

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

No input on eye template measurements. Remove section.

SuggestedRemedy

Remove

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.2** *P* **363** *L* **19** # 267

Latchman, Ryan Gennum Corp

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

Editor's comments replace with text. Remove:
[Editor's note: (to be removed prior to publication) - Insert or change, to include jitter test requirement]
[Editor's note: (to be removed prior to publication) - need a proposal to use a reference clock recovery
unit]
[Editor's note: (to be removed prior to publication) - This section should include at what BER the eye
mask has to be met]

SuggestedRemedy

Replace with:

The following sections describe how to measure transmit jitter compliance and receive jitter compliance

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.2.2** *P* **363** *L* **38** # 268

Latchman, Ryan Gennum Corp

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

Formal text on jitter tolerance / stressed test required

SuggestedRemedy

See presentation

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.3** *P* **363** *L* **48** # 269

Latchman, Ryan Gennum Corp

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

Remove section (rise/fall time measurement is described in rise / fall time section)

SuggestedRemedy

Remove 83A.5.3

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.7** *P* **364** *L* **1** # 270

Latchman, Ryan Gennum Corp

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

Ensure all PICS have corresponding Shall statement

SuggestedRemedy

modify text to include shall statements as per the PICS

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.4.7** *P* **156** *L* **29** # 271

Kim, Seung-Hwan ETRI

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

At the sentence " Receipt of an /S/ on any other octet of TxD indicates an error.", TxD is wrong spelling.

SuggestedRemedy

Spelling : TxD should be changed TXD.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.4.4** *P* **155** *L* **22** # 272

Kim, Seung-Hwan ETRI

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

"O0D1D2D3D4D5D6D7" at the Data Block Format column is wrong description.

SuggestedRemedy

Should be changed from "O0D1D2D3D4D5D6D7" to "O0D1D2D3C4C5C6C7"

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.4.9** *P* **156** *L* **42** # 273

Kim, Seung-Hwan ETRI

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

The sentence "Ordered sets consist of a control character followed by seven data characters on the MII." is wrong description. In Figure 82-5 line 22, Ordered sets consist of data and control characters.

SuggestedRemedy

Should be changed from : "Ordered sets consist of a control character followed by seven data characters on the MII." to : "Ordered sets consist of a Block Type Field followed by three data characters and four control characters on the MII." or The sentence should be changed properly.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.4.9** *P* **156** *L* **43** # 274

Kim, Seung-Hwan ETRI

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

The sentence "Ordered sets always begin on the first octet of the MII." is wrong information. In Figure 82-5 line 22, Ordered sets located between data and control characters.

SuggestedRemedy

Should be changed from : "Ordered sets always begin on the first octet of the MII." to : "Ordered sets may be located between data and control characters." or The sentence should be changed properly.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3.4** *P* **138** *L* **20** # 275

Chang, Sun Hyok ETRI

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

'signalling' is used at the same time with 'signaling' through the draft 1.1.

SuggestedRemedy

I suggest to use one kind of spelling.
I suggest 'signaling'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.1** *P* **247** *L* **21** # 276

Chang, Sun Hyok ETRI

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

'Minimum range' is written in Table 86-1.
In Draft 1.0 comments #78 - #81, it is decided to change 'Minimum range' to 'Required operating range'.

SuggestedRemedy

Change 'Minimum range' to 'Required operating range' in Table 86-1.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6** *P* **255** *L* **37** # 277

Chang, Sun Hyok ETRI

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

At line 37, Table 86-18 is refered.
However, I think the specificaitons of multimode fibers is written in Table 86-19.

SuggestedRemedy

Change 'Table 86-18' to 'Table 86-19'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6** *P* **255** *L* **37** # 278

Chang, Sun Hyok ETRI

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

At line 37 'operational range requirement', and at line 38 'mimimum range requirement' are written.
In Draft 1.0 comments #78 and #81, it was decided to write it as 'operating range requirement'.

SuggestedRemedy

Change 'operational range requirement' to 'operating range requirement'.
Change 'mimimum range requirement' to 'operating range requirement'.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.2.2** *P* **363** *L* **38** # 279

SUZUKI, Toshihiro Anritsu Company

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

There are two Editor's Notes on 83A 5.2.2.
One is "interference tolerance test" and the other is "test pattern".
This proposal compensates these two items.

SuggestedRemedy

No.1 Interference test
For the interference test of the high speed backplanes, at least three synchronized-pattern streams are required;
one stream is a victim under the test and two adjacent streams are as aggressors.
To maximize the interference, aggressors' amplitude should be set at the maxim. And switching timing among
aggressors and victim pattern should be same.
But the pattern should be different aggressors and victim to increase the simultaneous switching effect.
Victim's amplitude should be set at the minimum.

No.2 Test pattern of the jitter tolerance
PRBS31 is good for testing the jitter tolerance of the optical modules, which simply requires the physical characterizations.
But for the equipments, the test pattern should include the "Alignment Marker" to drive the alignment circuit.
In the large scale of the FPGA / ASIC, the higher percentage usage of the circuit makes the internal power level drifting
due to the simultaneous switching.
The switching reduces the jitter tolerance margin of the chips in the asynchronous clocks.
Inside of FPGA / ASIC, there are two different clocks to drive 66bit logic block and 64bit logic block.
Between these asynchronous clocks, the amount of jitter is difference. So this makes jitter tolerance worse.
To test the switching affects of the equipment the test pattern of the jitter tolerance test should include the "Alignment Marker".

For more detail about test system and test pattern, please refer to presentation.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **121** *L* # 280

Isono, Hideki Fujitsu Limited

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

Regarding the skew values at SP3 & SP4, they should be revised considering the flexible Optical MUX/DEMUX device selection.
In case of using 1x2 port O-MUX/DEMUX devices, the skew of 10nm each (for Sending & Receiving portion, respectively) is necessary.

SuggestedRemedy

Regarding Table80-3, the skew value at SP3 & SP4 should be revised.
SP3: 44ns-->53ns, 454UI-->547UI, 227UI-->273UI
SP4: 144ns-->136ns, 1484UI-->1403UI, 742UI-->701UI

Related sections below should be revised accordingly,
Sec 84.5 The 3rd & 4th paragraph
Sec 85.5 The 3rd & 4th paragraph
Sec 86.2.2 The 3rd & 4th paragraph
Sec 87.3.2 The 3rd & 4th paragraph
Sec 88.3.2 The 3rd & 4th paragraph

There exists a presentation on this issue.

Proposed Response *Response Status* **W**

[Editor's note: This comment also affects Clause 84, Clause 85, Clause 86, Clause 87, and Clause 88]

Cl **84** *SC* **84.4** *P* **202** *L* **39** # 281

Healey, Adam LSI Corporation

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

Delay constraints are marked TBD. There is no clear reason why the 40GBASE-KR requirements should differ significantly from 10GBASE-KR requirements.

SuggestedRemedy

Remove "(TBD)" and text highlighting to set the PMD plus medium delay to 1024 bit times.
Also remove the TBD and highlighting to indicate that the assumed delay through the medium is 160 bit times.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.12** *P* **161** *L* **4** # 282

Healey, Adam LSI Corporation

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

Text does not make the relationship between Total Skew and Dynamic Skew clear. It Total Skew the average difference between the earliest PCS lane and the latest, or is it the maximum difference. In other words, is Dynamic Skew as subset of Total Skew, or is Dynamic Skew to be added to Total Skew?

SuggestedRemedy

Modify text to clarify the intended relationship.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.5** *P* **202** *L* **48** # 283

Healey, Adam LSI Corporation

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

Figure 80–3 does not apply to 40GBASE-KR4.

SuggestedRemedy

Remove reference.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **223** *L* **38** # 284

Healey, Adam LSI Corporation

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

Data dependent pulse width shrinkage (DDPWS) does not need to be addressed for 40GBASE-CR4 and 100GBASE-CR10.

1. DDPWS measured at TP2 will be a function of the equalization state of the transmitter. Since 40GBASE-CR4 and 100GBASE-CR10 intend to use the 10GBASE-KR start-up protocol to automatically optimize the equalization state for the channel and receiver, the DDPWS required at this point will also be a function of the channel and receiver.

2. The copper cable assembly is a linear and passive medium. DDPWS measured at each point in the link is a function inter-symbol interference which can be readily mitigated with an appropriate combination of transmitter and receiver equalization. In contrast, optical link designs control the DDPWS at the input to, and output of, non-linear functions such as laser drivers and limiting amplifiers whose outputs in turn drive channels of limited bandwidth. The DDPWS at the output of the non-linear function cannot be completely equalized and furthermore these narrow pulses are most severely impacted by the channel that follows.

3. Duty cycle distortion (DCD) at the transceiver output for linear passive is analogous to DDPWS for optical links and is the appropriate parameter for this clause.

SuggestedRemedy

Remove editor's note.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.3** *P* **226** *L* **50** # 285

Healey, Adam LSI Corporation

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

Recommended coupling capacitor value is TBD. This value should be set to 100 nF in accordance with 10GBASE-KR and to avoid additional link penalties associated with baseline wander.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **229** *L* **10** # 286

Healey, Adam LSI Corporation

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

Reported insertion loss deviation at 5.15625 GHz does not appear to be consistent with 85.10.3.

SuggestedRemedy

Please correct to be consistent.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9.2** *P* **228** *L* **8** # 287

Healey, Adam LSI Corporation

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

Note states that "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."

While the more stringent ILD limits for the cable assembly shown in 85.10.3 would imply a reduction of ILD penalty, it is not obvious that the ILD penalty for the _channel_ is reduced by 2.5 dB. The ILD penalty is a function of the cable assembly ILD, transmit and receive PCB trace impedances, and transmitter and receiver return loss.

SuggestedRemedy

Supply analysis that supports the assertion that the ILD penalty is reduced by 2.5 dB. A presentation that investigates this issue will be presented to the Task Force.

Proposed Response *Response Status* **O**

Cl **45** *SC* **2.1.12c** *P* **51** *L* **46** # 288

Szczepanek, Andre Texas Instruments

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

The PRBS31 pattern testing error counter is a twelve bit count as defined in 83.6.7

There is no sub-clause 83.6.7 in Draft 1.1

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.4.4** *P* **155** *L* **22** # 289

Szczepanek, Andre Texas Instruments

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

FIGURE 82-5

The Payload encoding for Ordered Sets : OoD1D2D3D4D5D6D7 as D1-D2-D3-Oo-C4-C5-C6-C7 is confusing and imprecise.

Although Table 82-1 indicates "control codes are set to 0x00", defining this fixed 28 bit zero field in terms of control characters is confusing as there are no coresponding control characters on the MII, no definition of what happens on decode if non-zero control fields are received, what happens if D4-D5-D6-D7 are non-zero from the MII, or how D4-D7 are generated on decode.

Note that the definition of valid and invalid blocks in 82.2.4.5 only requires "Any control character contains a value not in Table 82-1". This is insufficient to invalidate Ordered set control field values of 0x1e.

Clearly what we intend is that the C4-C7 payload bits be zero and the D4-D7 MII characters be zero data bytes, anything else should be invalid.
So state this explicitly in the figure - don't pretend these fields are equivalent to the data or control fields in other block types, they aren't !.

SuggestedRemedy

Define the payload field bits corresponding to C4-C5-C6-C7 explicitly as zero in Figure 82-5. Show these 28 bits as a single 0x000_0000 field. There are hex values in the figure already - just merge the C4-C7 cells and put 0x000_0000 in the merged cell.

Define the Input "data block format" for ordered sets as OoD1D2D3Z4Z5Z6Z7 where Zn is a zero value data character.

These 2 changes will explicitly define the encoding and decoding process for ordered sets.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.4.9** *P* **156** *L* **42** # 290

Szczepanek, Andre Texas Instruments

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

Ordered sets consist of a control character followed by seven data characters on the MII.

SuggestedRemedy

Ordered sets consist of a control character followed by three data characters followed by 4 zero data characters on the MII.

Proposed Response *Response Status* **O**

Cl **69B** *SC* *P* **345** *L* # 291

Marris, Arthur Cadence

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

Multilane correlated cross needs to be described in Annex 69B

SuggestedRemedy

As above

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.4** *P* **102** *L* **1** # 292

Marris, Arthur Cadence

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

Need to remove gearbox for 40G and 100G operation as this has a bit stream interface

SuggestedRemedy

As above and also check for any places where Clause 74 needs to be updated for the 40G/100G service interface definition.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **35** # 293

Cole, Chris Finisar

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

PMA test patterns sub-clause states in the text that PMA test patterns maybe optionally generated (line 38). However, the title of the sub-clause does not state that it is optional, which may lead to confusion that PMA test patterns have to be supported in a PMD.

SuggestedRemedy

The title of the sub-clause should be changed to:

PMA test patterns (optional)

Similar for example to sub-clause 83.5.7 title (PMA system loopback mode (optional).

Further clarification should be added that if the PMA contains a SerDes function (for example 10:4 as in 100GBASE-LR4 and 100GBASE-ER4) then test pattern support is not opitonal, and test patterns have to be supported.

Further clarification should be added that if the PMA does not support test patterns, then sub-clause 83.5.7 is not optional, and PMA system loopback mode must be supported. In other words, either PMA test patterns are optional or PMA PMA system loopback is optional, but not both. This is to permit verification of nAUI functionality by the host.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **Annex 83A** *P* **349** *L* **4** # 295

Cole, Chris Finisar

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

Annex 83A (XLAUI and CAUI) only specifies a chip to chip (i.e. component to componentO) interface and does not specify a chip to module (i.e. component to module) interface.

The optical interfaces specified in sub-clause 87 (40GBASE-LR4) and sub-clause 88 (100GBASE-LR4 and 100GBASE-ER4) require a chip (component) to module XLAUI and Caui interface, respectively. Unfortunately, the nAUI terminating component test points inside the module are not available as compliance or test points. They are permanently mounted inside the module, and the only available compliance and test points are at the module pins. This means that for sub-clause 87 and sub-clause 88, the electrical interface is not specified. The chip to chip specifications are not usable.

SuggestedRemedy

Annex 83B 40Gb/s Attachment Unit Interface (XLAUI) and 100Gb/s Attachment Unit Interface (CAUI) should be added, which mirrors all the specifications in Annex 83A but with different values. While it is preferrable for Annex 83B to be Normative, it can be discussed if Annex 83B could be Informative.

Block diagram, 83A.2.2 becomes block diagram 83B.2.2 with the right side box name changed from XLAUI/CAUI component to XLAUI/CAUI module.

All the specification in 83B then only apply to right side (module) test points The left hand side, or component or chip test points, are still specified in Annex 83A.

The updated specifications for the module test points can be based on the following channel parameters, which can be further discussed to get general agreement as to the appropriate values:

Max module trace length 3”
Max module vias: 2
Max host trace length 8” (or 6")
Max host vias: 2

Connector limits (similar to XFP connector):

Max connector insertion loss: 0.5dB at 5GHz
Max connector return loss: 21dB at 5GHz
Max crosstalk: 36dB at 5GHz

Compliance curves can be generated based on these limiting values.

Proposed Response *Response Status* **W**

[Editor's note: Commenter did not indicate the comment type, hence added comment type as Technical]

Cl **85** *SC* **85.7.1** *P* *L* # 296

DiMinico, Christopher MC Communications

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

Remove editors note: [Editors note (to be removed prior to publication) - Transmitter and receiver testing and definitions need to be addressed; e.g., transmitter testing from TP2 and TP2 definition.]

Consider removing any other editors notes in this subclause that are not addressed by specific comment(s) proposal(s) against draft 1.1.

SuggestedRemedy

Remove editors note: [Editors note (to be removed prior to publication) - Transmitter and receiver testing and definitions need to be addressed; e.g., transmitter testing from TP2 and TP2 definition.]

Consider removing any other editors notes in this subclause that are not addressed by specific comment(s) proposal(s) against draft 1.1.

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.1** *P* **226** *L* **30** # 297

DiMinico, Christopher MC Communications

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

Remove editors note.

SuggestedRemedy

[Editor’s note (to be removed prior to publication) - The ambiguity between the requirements of 85.8.4.1 and subclause 71.7.2.1, receiver interference tolerance, which references Annex 69A, needs to be resolved.]

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.5** *P* **221** *L* **40** # 298
DiMinico, Christopher MC Communications

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

Remove editors note. Subclause 85.7.5 text is sufficient to describe lane-by-lane signal detect function.

SuggestedRemedy

Remove editors note line 40-41.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8** *P* **223** *L* **11** # 299
DiMinico, Christopher MC Communications

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

Remove editors note as uneccessary.

SuggestedRemedy

Delete editors note line 223 lines 11-13.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **229** *L* **10** # 300
DiMinico, Christopher MC Communications

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

insertion loss deviation cell should be min=-1.73 dB and max=1.73 per equations (85-16) and (85-17).

SuggestedRemedy

Table 85.6 delete "Maximum" in "description" cell for insertion loss deviation at 5.15625 GHz and delete "8.89" in "value" cell. Replace deleted cell with min=-1.73 and max=1.73. The values were determined using equations (85-16) and (85-17).

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9** *P* **227** *L* **1** # 301
DiMinico, Christopher MC Communications

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

Remove TBDs - 85.9 Channel characteristics
85.9.1 Transmitter and receiver differential printed circuit board trace loss - equation (85-1) and 85.9.2 Channel insertion loss to crosstalk ratio (ICRch) - equation (85-8)

SuggestedRemedy

Remove TBDs - 85.9 Channel characteristics
85.9.1 Transmitter and receiver differential printed circuit board trace loss - equation (85-1) and 85.9.2 Channel insertion loss to crosstalk ratio (ICRch) - equation (85-8)

See diminico_02_1108.pdf.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **228** *L* **36** # 302
DiMinico, Christopher MC Communications

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

Remove TBDs- 85.10 Cable assembly characteristics
85.10.2 Cable assembly insertion loss - equation (85-9)
85.10.3 Cable assembly insertion loss deviation (ILD) - equation (85-16 and 85-17)
85.10.8 Cable assembly insertion loss to crosstalk ratio (ICRCA) - equation (85-23)

SuggestedRemedy

Remove TBDs - 85.10 Cable assembly characteristics
85.10.2 Cable assembly insertion loss - equation (85-9)
85.10.3 Cable assembly insertion loss deviation (ILD) - equation (85-16 and 85-17)
85.10.8 Cable assembly insertion loss to crosstalk ratio (ICRCA) - equation (85-23)

See diminico_02_1108.pdf.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.4** *P* **217** *L* **14** # 303

DiMinico, Christopher MC Communications

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

Remove TBDs; The sum of the transmit and the receive delays contributed by the 40GBASE-CR4 and 100GBASE-CR10 PMDs and medium shall be no more than TBD (2560) bit times. It is assumed that the round-trip delay through the medium is TBD (1135) bit times.

SuggestedRemedy

Change text line 14-17 to: The sum of the transmit and the receive delays contributed by the 40GBASE-CR4 and 100GBASE-CR10 PMDs and medium shall be no more than (2560) bit times. It is assumed that the round-trip delay through the medium is (1135) bit times.

See supporting material in presentation to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.4** *P* **217** *L* **39** # 304

DiMinico, Christopher MC Communications

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

The measurements of Total Skew and
Dynamic Skew are outside the scope of an interoperability standard i.e., 802.3ba.

SuggestedRemedy

Delete sentence: The measurements of Total Skew and
Dynamic Skew are defined in 85.xx.xx.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **223-224** *L* **32** # 305

DiMinico, Christopher MC Communications

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

Remove TBDs Table 85–4—Transmitter characteristics' summary.
Remove editors note line 32-36 page 223. Consider removing any other editors notes in this subclause that are not addressed by specific comment(s) proposal(s) against draft 1.1.

CR4 and CR10 channel characteristics consistent with 10GBASE-KR. Table 85-4 Transmitter characteristics to be met at TP0 for consistent test/reference point consistent with 10GBASE-KR channel.

SuggestedRemedy

Remove TBDs in Table 85–4—Transmitter characteristics summary.

Remove editors note line 32-36 page 223. Consider removing any other editors notes in this subclause that are not addressed by specific comment(s) proposal(s) against draft 1.1.

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4** *P* **225** *L* **49** # 306

DiMinico, Christopher MC Communications

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

Remove TBDs Table 85–5—Receiver characteristics' summary. Remove editors note lines 49-54 page 225.

CR4 and CR10 transmitter and channel characteristics consistent with 10GBASE-KR therefore 10GBASE-KR receiver is sufficiently specified.

SuggestedRemedy

Remove TBDs Table 85–5—Receiver characteristics' summary. Remove editors note line 32-36 page 223.

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **224** *L* **13** # 307

DiMinico, Christopher MC Communications

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

Define Table 85-4 Transmitter characteristics to be met at TP0 for consistent test/reference point consistent with 10GBASE-KR.

In addition, to maintain test/reference point at TP2, specify transmitter characeristics to be met at TP2 to account for Tx_PCB, mated connector, and test fixture insertion loss between TP1 and TP2.

SuggestedRemedy

(1)Page 223 line 1 replace TP2 with TP0.
Transmitter characteristics in Table 85-4 shall meet specifications at TP0, unless otherwise noted.

(2)Page 225 line 6-7 replace 85.8.3 with new reference for TP2 transmitter characteristics including TP2 transmitter characteristics. See supporting presentation for recommended transmitter characteristics at TP2.
(3)Update resultant changes in PICs.

(4)Page 219 line 46-54 revise text in subclause 85.7.1 Link block diagram..add reference to TP0.

(5)Add TP0>>>The electrical transmit signal is defined at (TP0) and TP2.

(6)Replace current reference to TP2 with TP0 in sentence>> Unless specified otherwise, all transmitter
measurements and tests defined in Table 85–4 are made at TP0.

(7)Add sentence to link TP2 with adjusted transmitt characteristics>>Unless specified otherwise, all transmitter
measurements and tests defined in Table 85–X are made at TP2.
(8)Revise 85.8.3.1 Test fixtures and 85.8.3.2 Test-fixture impedance to reference 10GBASE-KR including the return loss TBD and add additional text for testing at TP2.

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.11.2** *P* **238** *L* **36** # 308

DiMinico, Christopher MC Communications

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

Remove TBDs for the SFF-8642 connector.

SuggestedRemedy

The connector for each end of the cable assembly shall be the SFF-8642 plug with the mechanical mating interface defined by IEC XXXXX-X-XX and illustrated in Figure 85–14.

The MDI connector shall be the SFF-8642 receptacle with the mechanical mating interface defined by IEC XXXXX-X-XX and illustrated in Figure 85–15.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.3** *P* *L* **40** # 309

DiMinico, Christopher MC Communications

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

Remove editors notes and provide value for coupling capacitor TBD.

SuggestedRemedy

(1)Remove editors note Page 220 line 11-12.
(2)Remove editors note page 226 line 42-43.
(3)provide TBD capacitor value.

See presentation material to be submitted in support of Clause 85 Draft 1.1. comment resolutions.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3.4** *P* **138** *L* **20** # 310

Estes, Dave UNH - IOL

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

"signalling" should be "signaling"

SuggestedRemedy

change "signalling" to "signaling"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.16b** *P* **70** *L* **25** # 311

Ofelt, David Juniper Networks

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

The text says that "These bits shall be held at all ones in the case of overflow". Given the paragraph is for just the upper bits and there is an explicit indication for the lower bits that they do not saturate if the high-order register is implelemented, I think the text should be explicit in referring to the 22b counter being held at all ones.

SuggestedRemedy

Change the text to read "The 22 bit counter shall be held at all ones in the case of overflow".

Proposed Response *Response Status* **W**

[Editor's note: The commenter did not indicate the comment type, hence added comment type as Technical]

Cl **82** *SC* **83.1.4** *P* **183** *L* **49** # 312

Ofelt, David Juniper Networks

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

The text describes the MMD register numbering scheme.

" By default, the PMA sublayer that is closest to the PMD is addressed as MDIO Manageable Device (MMD) 1. More addressable instances of PMA sublayers, each one separated from lower addressable instances by chip-to-chip interfaces, may be implemented and addressed as MMD 8, 9 and 10, where MMD 8 is the closest to the PMD..."

The PMA closest to the PMD seems to be numbered both 1 and 8 in this part of the text, but it is clear later on that MMD 8 is for the second-closest PMA to the PMD.

SuggestedRemedy

Change the text to read:

"where MMD 8 is the second closest to the PMD.."

Proposed Response *Response Status* **W**

[Editor's note: The commenter did not indicate the comment type, hence added comment type as Technical]

Cl **45** *SC* **2.1.77** *P* **54** *L* **1** # 313

Ofelt, David Juniper Networks

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

Most of the register descriptions subsections seem to go from most significant bit to least significant. This section goes the other way - from bit zero to bit fifteen. Spot checking the full clause 45- it looks like msb->lsb is the normal order.

Other subsections with the same problem:

45.2.1.81a
45.2.1.81b
45.2.1.84
45.2.1.85
45.2.3.4.4
45.2.3.4.5

There may be others, so if this matters, please double check the other sections.

SuggestedRemedy

Flip the order of the subsections.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.18.3** *P* **169** *L* **20** # 314

Ofelt, David Juniper Networks

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

Figure 82-10

The block labeled "TSEST_SH2" should be "TEST_SH2"

SuggestedRemedy

Change label to "TEST_SH2"

Proposed Response *Response Status* **O**

Cl **82** SC **2.18.3** P **170** L **24** # 315
Ofelt, David Juniper Networks

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

Figure 82-11

Goto labels are different style than other figures.

Figure 82-14 on page 172 has house shaped boxes for the gotos and circled letters for the destination markers, but 82-11 just has plain letters.

SuggestedRemedy

Make the figure style consistant.

Proposed Response *Response Status* **O**

Cl **45** SC **2.1** P **37** L **12** # 316
Ofelt, David Juniper Networks

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

The editors note asks if a figure describing the PMA numbering as well as possibly showing the system and line loopback definitions would be useful.

SuggestedRemedy

I think it would be useful to have a figure in this section clearly showing the PMA addresses for each level. Pictorially showing what the "line" and "system" loopbacks are would also make the document clearer.

An alternative to adding a figure here would be to reference the figure 83-2 for the PMA numbering (and to add the numbers to the figure rather than just having them in the text in 83.1.4 p183 line 43) and figure 83-5 for the loopback definition. That said, a new figure would likely be better.

Proposed Response *Response Status* **O**

Cl **45** SC **2.3.16a** P **69** L **49** # 317
Ofelt, David Juniper Networks

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

The text says that "These bits shall be held at all ones in the case of overflow". Given the paragraph is for just the upper bits and there is an explicit indication for the lower bits that they do not saturate if the high-order register is implelemented, I think the text should be explicit in referring to the 20b counter being held at all ones.

SuggestedRemedy

Change the text to read "The 20 bit counter shall be held at all ones in the case of overflow".

Proposed Response *Response Status* **O**

Cl **82** SC **2.10** P **160** L **27** # 318
Ofelt, David Juniper Networks

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

The text says that the PCS sends out the test pattern on four or twenty lanes simultaneously and then goes on to say that the scrambler generates the test pattern. I think the text would be clearer if it made explicit that the test pattern is generated as a single stream by the scrambler and then distributed to the lanes in the same way as normal packet data coming from the upper layers.

SuggestedRemedy

Move the third paragraph to be the first in the subsection, then change the current first to read something like:

"When the transmit channel is operating in test-pattern mode, the encoded data stream is distributed to the PCSL in the same way as normal packet data. There will be four separate data streams ..."

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.14** *P* **161** *L* **30** # 319

Ofelt, David Juniper Networks

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

There is no mention of the fact the PCSL need to get muxed back into a single stream in this part of the document. 82.2.2 does mention re-forming the single stream of 66b blocks, but it seems appropriate to also include it in the more detailed list of functions.

SuggestedRemedy

Add text to the Alignment marker removal subsection:

"Once the alignment markers are removed, the lanes are muxed together in the proper order to reform the single stream of blocks"

Proposed Response *Response Status* **O**

Cl **83** *SC* **1.4** *P* **183** *L* **14** # 320

Ofelt, David Juniper Networks

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

Figure 83-2

I think the text describing the MMD numbering would be clearer if the figure was labeled with the MMD register numbers.

SuggestedRemedy

Add MMD 1, 8, and 9 labels to the figure. If there are more example figures in an annex, then label them as well.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.2.1** *P* **265** *L* **12** # 321

CHANG, Frank Vitesse

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

SuggestedRemedy

Center the Eq.86-4.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **183** *L* **4348** # 322

CHANG, Frank Vitesse

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

MDIO serial interface first appear for clause 83.

SuggestedRemedy

MDIO stands for the Managament data input/output interface, speficied in 802.3ae clause 45.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5** *P* **189** *L* **724** # 323

CHANG, Frank Vitesse

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

Depending CDR or serdes implementation, PMA don't have to recover clock from the received signal if for CDR.

SuggestedRemedy

"....optionally to recover clock from the received signal, and to provide test signals...."

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.5** *P* **191** *L* **3139** # 324

CHANG, Frank Vitesse

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

Assume 87.2 will also specify PMD service interface (for 40G-LR4), expecting 40G-LR4 will likely implement the similar limiting interface based on 4xLR.

SuggestedRemedy

Should add 87.2.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **3546** # 325
CHANG, Frank Vitesse

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

to define various test patterns.

SuggestedRemedy

Suggestto add the following paragraph:
PMA test patterns can be the square wave, PRBS31, and mixed-frequency test patterns as described in section 50.3.8 of IEEE Standard 802.3ae as well as the Test Signal Structure (TSS) and continuous identical digits (CID) pattern....

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.3** *P* **182** *L* **3749** # 326
CHANG, Frank Vitesse

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

Comment on PMA loopback modes, pattern generator and checkors.
As indiated by nicholl_01_1108.pdf, every 10GbE PHY device supports some kinds of PMA Loopbacks. I would recommend 802.3ba adopt at least PMA line loopback as mandatory which is extremely usefully for RX SRS test.

Actually currently IC advances has enabled the implementation of much more test features such as embedded BER monitoring, waveform viewing etc. I plan to provide some slides for this.

SuggestedRemedy

Suggest to eliminate optional for g) and add the following after h)-
"The system and line loopback modes can be useful for both physical-layer test and debug purpose such as RX SRS test."

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **184** *L* **17** # 327
CHANG, Frank Vitesse

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

Refering to Fig. 83-2, {1,2,4} or {1,2,4,5,10,20} causes confusions for PMA input/output lanes.

SuggestedRemedy

Actually only one option {4} for 40G-R; while {4,10,20} for 100G-R.

Or to take the whole paragraph out.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **14** # 328
CHANG, Frank Vitesse

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

Recommend 802.3ba adopt at least PMA line loopback as mandatory which is extremely usefully for RX SRS test.

SuggestedRemedy

Take out (optional)??

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* *L* # 329
CHANG, Frank Vitesse

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

Refering to Fig. 86-3, TP1a could be critical interface between module to host board. Taking into account of existing SFP+ implementation, pre-emphasis would be likely necessary for system robustness.

SuggestedRemedy

Suggest to add a row into Table 86-6 for transmit pre-emphasis with optional pre-emphasis as 6dB (or TBD), plan to present one slide.

Proposed Response *Response Status* **O**

Cl **86** SC **86.6.6** P **261** L **1630** # 330
CHANG, Frank Vitesse

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

Refering to baseline proposal pepeljugoski_01_0508.pdf, in slide#13 PMD will with PMA as a CDR, possibly with simple EDC.
The allocation for penalties (6.4dB) and power budget (8.3dB) could be too pessimistic.

SuggestedRemedy

Plan to address this from the slides for SRS test.

Proposed Response *Response Status* **O**

Cl **86** SC **86.6.2-4** P **257-9** L # 331
CHANG, Frank Vitesse

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

Comment on Table 86-8 (TP2) and Table 86-10 (TP3). Suggest to reuse 802.3ae 10GBASE-SR Stress RX sensitivity for TP3 specs as in Table 86-10 by taking into acount xtalk impacts.

SuggestedRemedy

Specify RX stressed sens. in OMA about -5.5dBm. (pls see slides to review 802.3ae 10GBASE-SR Stress RX sensitivity test/margin results.)

Proposed Response *Response Status* **O**

Cl **86** SC **86.7.3.1** P **263** L **36** # 332
CHANG, Frank Vitesse

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

From the experience of LRM and SFP+, PRBS9 should be the short pattern

SuggestedRemedy

PRBS9 in Table 86-15.

Same in Table 87-10.

Proposed Response *Response Status* **O**

Cl **86** SC **86.7.5.9** P **269** L **3442** # 333
CHANG, Frank Vitesse

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

Same argument to reuse 802.3ae 10GBASE-SR Stress RX sensitivity test for TP3 specs.

SuggestedRemedy

To address two TBDs in Table 86-17 by refering 802.3qae 52.8.1.

same for Table 87-13.

Proposed Response *Response Status* **O**

Cl **87** SC **87.2** P **281** L **3742** # 334
CHANG, Frank Vitesse

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

Baseline proposal cole_01_0908.pdf didnot indicate clearly module implementation (Slide#4). I feel it's quite likely 40GBASE-LR4 will be based on 4x10GBASE-LR with CDR in the host, similar to 40GBASE-SR4, using limiting interface instead of retimed interface like XLAUI. So there is possibility that PMD service interface may be the actual interface between module and host, so not in an abstract manner.

SuggestedRemedy

Go ahead to define Tp1 or Tp4 specs??

Proposed Response *Response Status* **O**

Cl **99** SC P **5** L **27** # 335
Ganga, Ilango Intel

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

Check with 802.3 Chair and add new sections to the front matter regarding "Laws and regulations", "copyright" message and "revisions" to IEEE documents.

See 802.3av-D2.2 front matter for reference.

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.3** *P* **22** *L* **49** # 336
Ganga, Ilango Intel

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

New references have been added to 1.3, hence delete Editor's note.

SuggestedRemedy

Delete the Editor's note in 1.3

Proposed Response *Response Status* **O**

Cl **04** *SC* **4.4.2** *P* **25** *L* **5** # 337
Ganga, Ilango Intel

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

Change "40 Gb/s and 100Gb/s" to "40 Gb/s and 100 Gb/s"

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **30** *SC* **30** *P* **27** *L* **3** # 338
Ganga, Ilango Intel

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

Delete the Editor's note below Clause title.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **30** *L* **3** # 339
Ganga, Ilango Intel

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

Add "cross-reference" links to Clause 84 through Clause 88 in the list (total of 10 instances from line 3 to line 30)

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **30** *L* **10** # 340
Ganga, Ilango Intel

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

Rephrase the PMD discription in the list as follows to match the definition of PMDs in 1.4.

SuggestedRemedy

Change the following definition in the list as suggested:

"40GBASE-R PCS/PMA over 4 WDM lane single mode fiber PMD, with long reach, as specified in Clause 87."

"100GBASE-R PCS/PMA over 4 WDM lane single mode fiber PMD, with long reach, as specified in Clause 88."

"100GBASE-R PCS/PMA over 4 WDM lane single mode fiber PMD, with extended reach, as specified in Clause 88."

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.2.5** *P* **34** *L* **22** # 341
Ganga, Ilango Intel

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

Since there are no changes identified for 30.2.5 Capabilities, delete this subclause title.

SuggestedRemedy

Delete 30.2.5 Capabilities

Proposed Response *Response Status* **O**

Cl **45** *SC* **45** *P* **35** *L* **3** # 342

Ganga, Ilango Intel

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

Delete Editor's note below Clause 45 title

Add the following subclause title "45.2 MDIO Interface Registers" next to Editing instructions, since table 45-1 is under subclause 45.2

SuggestedRemedy

As per comment.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **37** *L* **3** # 343

Ganga, Ilango Intel

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

Change "40Gb/s" to "40 Gb/s".
Also add cross-reference link to Clause 83 on line 4
Add cross-reference link to 45.2, Table 45-2 on line 9

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1** *P* **37** *L* **12** # 344

Ganga, Ilango Intel

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

Provide a diagram to show how multiple PMA sublayers are addressed and delete the Editor's note.

An example illustration will definitely help as this is the first time such multiple PMA instances are addressed.

Also clarify the second sentence in 45.2.1 on line 2 "These sublayers are all addressed by MMD 1 by default, but may also be instantiated in multiple addressable instances."

As per this statement if all sublayers can be addressed by MMD1 by default, provide explanation on how this is performed.

SuggestedRemedy

Provide a diagram and additional clarification for second sentence in 45.2.1

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.15** *P* **32** *L* **44** # 345

Ganga, Ilango Intel

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

30.5.1.1.15 aFECCorrectedBlocks counter needs to be enumerated for 4 lanes and 20 lanes for multilane BASE-R Phys

30.5.1.1.16 aFECUncorrectableBlocks counter is defined as a single counter, this needs to be enumerated for 4 and 20 lanes for multilane BASE-R PHYs

SuggestedRemedy

Update 30.5.1.1.15 and 30.5.1.1.16 to include multiple FEC counters for 4 and 20 lanes for BASE-R PHYs and update the text and cross references to registers in Clause 45 accordingly.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.5** *P* **34** *L* **14** # 346

Ganga, Ilango Intel

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

30.6.1.1.5 aAutoNegLocalTechnologyAbility

Mapping of FEC Requested bit is missing in the list for aAutoNegLocalTechnologyAbility attribute.

This has been missing in the base spec as well.

SuggestedRemedy

Add the following sentence to the list below "FEC Capable"

FEC Requested FEC Requested as specified in Clause 73 (See 73.6.5) and Clause 74.

Also update the sentence for FEC Capable to included reference to Clause 73 and Clause 74 as follows:

FEC Capable FEC ability as specified in Clause 73 (See 73.6.5) and Clause 74.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.3** *P* **101** *L* **51** # 347

Ganga, Ilango Intel

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

Change Figure 74-1 title to BASE-R (from 10GBASE-R) as suggested:

BASE-R FEC relationship to ISO/IEC Open Systems Interconnection (OSI) reference model and the IEEE 802.3 CSMA/CD LAN model

SuggestedRemedy

Change Figure 74-1 title as follows:

BASE-R FEC relationship to ISO/IEC Open Systems Interconnection (OSI) reference model and the IEEE 802.3 CSMA/CD LAN model

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.2** *P* **105** *L* **12** # 348

Ganga, Ilango Intel

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

Add cross reference link to Clause 83 and also provide exact reference to 83.3.

The FEC service interface directly maps to the PMA service interface defined in Clause 83 (See 83.3)

SuggestedRemedy

Change sentence as follows:

The FEC service interface directly maps to the PMA service interface defined in Clause 83 (See 83.3)

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.2.2.2** *P* **106** *L* **4** # 349

Ganga, Ilango Intel

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

Change 10.3125 Gtransfers/s to 10.3125 GBd to be consistent with other subclauses (for example tx_bit is defined in GBd).

Also change Gbd to GBd throughout this clause.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.8** *P* **108** *L* **24** # 350

Ganga, Ilango Intel

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

In Table 74-1, change the width of the last column, to fit the variable to fall within a single line. Currently the last digit spils over the next line.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4** *P* **106** *L* **40** # 351

Ganga, Ilango Intel

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

74.7.4 Functions within the FEC sublayer, should be updated to include the operation of a bit serial interface for 40GBASE-R and 100GBASE-R PHYs.

The reverse gearbox function is not needed. A presentation or text will be provided to show the operation of Clause 74 FEC for operation with 40 and 100G multi lane PHYs

SuggestedRemedy

A supporting presentation will be submitted to show the operation of Clause 74 FEC with multi lane operation with 40GBASE-R and 100GBASE-R PHYs. Text and figures in 74.7.4 needs to be updated accordingly.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.11** *P* **111** *L* **1** # 352

Ganga, Ilango Intel

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

74.11 PICS and requirements for 40GBASE-R and 100GBASE-R:

Current PICS in 74.11 in base specification applies to 40GBASE-R and 100GBASE-R implementations as well. Add any new PICS entries that are specific to 40GBASE-R and 100GBASE-R PHYs.

For example add separate shall statements in 74.7.4.5 to indicate the decoding errors requirements to PCS for 40GBASE-R and 100GBASE-R. So this will result in separate PICS entries for single lane and muli-PCS lane implementations.

Current statements in 74.7.4.5 does not provide clarity regarding specific requirements for single and multi-PCS lane PHYs.

SuggestedRemedy

Update 74.7.4.5 to provide separate requirements for 40GBASE-R and 100GBASE-R PHYs and add corresponding PICS entries. (for e.g. PICS entry FE9 or FE11 in 74.11.5 may get split accordingly)

Also do the same for other requirements of 40GBASE-R and 100GBASE-R in Clause 74, if any.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5.2.3.1** *P* **106** *L* **22** # 353

Ganga, Ilango Intel

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

The FEC_SIGNAL.indication is set to True only if fec_signal_ok variable is true for all lanes or data streams and is set to fail if fec_signal_ok is false in any one or more of the lanes. Hence rephrase the approprite sentences in 74.5.2.3.1 to provide clarity.

SuggestedRemedy

Change two sentences in 74.5.2.3.1 as follows:

"..PMA sublayer indicated by the fec_signal_ok variable equal to true, for all data streams, and this payload.."

"A value of FAIL denotes that errors have been detected by the Receive process indicated by the fec_signal_ok variable equal to false, in any of the data streams, that prevent valid data.."

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.4** *P* **202** *L* **39** # 354

Ganga, Ilango Intel

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

Update the Transmit and Receive delay contributed by 40GBASE-KR4 PMD to 1024 BT and round trip medium delay to 160BT and remove the TBDs.

SuggestedRemedy

In 84.4 Delay constraints change the delay requirements as follows and also update corresponding entry in Table 80-2:

The sum of the transmit and the receive delays contributed by the 40GBASE-KR4 PMD and medium shall be no more than 1024 bit times. It is assumed that the round-trip delay through the medium is 160 bit times.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.5** *P* **203** *L* **7** # 355

Ganga, Ilango Intel

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

Measurment total skew and dynamic skew for 40GBASE-KR4 is not defined and is left to the implementors to comply with the skew requirements.

Hence delete the last sentence of 84.5.

SuggestedRemedy

Delete the following sentence at the end of 84.5

The measurements of Total Skew and Dynamic Skew are defined in 84.xx.xx.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.5** *P* **217** *L* **40** # 356

Ganga, Ilango Intel

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

Measurment total skew and dynamic skew for 40GBASE-CR4 and 100GBASE-CR10 is not defined and is left to the implementors to comply with the skew requirements.

Hence delete the last sentence of 85.5.

SuggestedRemedy

Delete the following sentence at the end of 84.5

The measurements of Total Skew and Dynamic Skew are defined in 85.xx.xx.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.4** *P* **217** *L* **16** # 357

Ganga, Ilango Intel

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

Update the Transmit and Receive delay contributed by the 40GBASE-CR4 and 100GBASE-CR10 PMDs to 2560 BT and round trip medium delay to 1135 BT and remove the TBDs.

SuggestedRemedy

In 84.4 Delay constraints change the delay requirements as follows and also update corresponding entry in Table 80-2:

"The sum of the transmit and the receive delays contributed by the 40GBASE-CR4 and 100GBASE-CR10 PMDs and medium shall be no more than 2560 bit times. It is assumed that the round-trip delay through the medium is 1135 bit times."

Also add the missing "period" at the end of the sentence.

In corresponding PICS "DC" in 85.13.4, do not add absolute delay number in PICS entry instead refer back to the requirements in 85.4. "Value/Comment: Device conforms to Delay constraints specified in 85.4"

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.13.4** *P* **242** *L* **32** # 358

Ganga, Ilango Intel

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

Missing status field in the PICS for AN. Add "M" to the status field. Also change subclause reference to 85.1 that specifies this requirement for AN.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.13.4** *P* **242** *L* # 359

Ganga, Ilango Intel

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

Add a separate PICS entry for the AN service interface primitive for the PCS associated with CR PMD. (See 84.11.4.1 for reference or Clause 72 in base standard)

SuggestedRemedy

Insert a separate subclause 85.13.4.1 PCS requirements for AN Service interface below and add the PICS entry named PR1 as shown below:

Item: PR1, Feature: AN service interface primitive, Subclause: 85.3, Value/Comment: The PCS associated with this PMD supports the AN service interface primitive AN_LINK.indication defined in 73.9, Status: M, Support: Yes []

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.4** *P* **205** *L* **1** # 360

Ganga, Ilango Intel

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

Add a subclause below 84.7.4 for lane by lane signal detect function and renumber the subclauses accordingly.

SuggestedRemedy

Add 84.7.5 PMD lane-by-lane signla detect function

When the MDIO is implemented, each PMD_signal_detect_n value, where n represents the lane number in the range 0:3, shall be continuously updated according to the requirements of 84.7.4.

Add description for lane by lane signal detect 0 to 3 in 84.7.5 (see 85.7.4 for reference or 84.7.4 last paragraph has description for PMD_signal_detect_n).

Add corresponding register bit references to Table 84-1.

Add corresponding PICS entry

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.5** *P* **205** *L* **19** # 361

Ganga, Ilango Intel

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

Add a subclause below 84.7.5 for lane by lane transmit disable function and renumber the subclauses accordingly.

SuggestedRemedy

Add 84.7.6 PMD lane-by-lane transmit disable function

See 85.7.7 for reference.

Corresponding register bit references are already added to Table 84-1.

Add corresponding PICS entry as appropriate

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.12** *P* **223** *L* **3** # 362

Ganga, Ilango Intel

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

Add a PICS entry for the requirements specified in 85.7.12 PMD control function. Also update the text in 85.7.12 to indicate the requirement by including a shall statement.

SuggestedRemedy

Change sentence as follows and add a corresponding PICS entry to 85.13.

Each lane of the 40GBASE-CR4 or 100GBASE-CR10 PMD shall use the same control function as 10GBASE-KR, as defined in 72.6.10.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.5** *P* **221** *L* **40** # 363

Ganga, Ilango Intel

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

Provide description of lane by lane signal detect function in 85.7.5 and delete the Editor's note.

The description for lane by lane PMD_signal_detect_n function is provided in the last paragraph of 85.7.4

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.10** *P* **206** *L* **22** # 364

Ganga, Ilango Intel

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

Update the text in 84.7.10 to indicate the PMD control function requirement by including a shall statement.

Also add a PICS entry for the requirements specified in 84.7.10 PMD control function.

SuggestedRemedy

Change sentence as follows and add a corresponding PICS entry to 84.11.

Each lane of the 40GBASE-KR4 PMD shall use the same control function as 10GBASE-KR, as defined in 72.6.10.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.8** *P* **206** *L* **32** # 365

Ganga, Ilango Intel

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

Update the text in 84.8.1 and 84.8.2 to indicate the Transmit and recieve requirements by including a shall statements.

Add corresponding shall statements for each requirement.

SuggestedRemedy

Change the following sentences in 84.8 and add corresponding PICS entries to 84.11 to cover those requirements.

Transmitter electrical characteristics at TP1 for 40GBASE-KR4 shall be the same as 10GBASE-KR, as detailed in 72.7.1.1 through 72.7.1.11.

The same test fixture as 10GBASE-KR shall be used on all lanes as described in 72.7.1.1

The receiver interference tolerance tests shall be the same as those described for 10GBASE-KR in 72.7.2.1 and Annex 69A.

Receiver electrical characteristics at TP4 for 40GBASE-KR4 shall be the same as 10GBASE-KR, as detailed in 72.7.1.1 through 72.7.2.5.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.9** *P* **207** *L* **14** # 366

Ganga, Ilango Intel

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

Include appropriate multilane cross talk for 40GBASE-KR4 per Editor's note and delete the Editor's note.

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.2** *P* **353** *L* **32** # 367

Ganga, Ilango Intel

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

Include the Rise/fall time requirements in a shall statement and add corresponding PICS entry.

SuggestedRemedy

Change sentence as follows and add a corresponding PICS entry.

Differential rise/fall times shall be greater than 24 ps, as measured between the 20% and 80% levels.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **20** # 368

Ganga, Ilango Intel

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

Add an additional column to Table 83A-1 and provide reference to appropriate subclause where the transmit paratemeters are specified (See tables in Clause 84 or 85 for reference).

Same comment applies to Table 83A-3 Receiver characteristics

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **183** *L* **6** # 369

Ganga, Ilango Intel

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

Provide addtional examples in an informative annex as per Editor's note and/or delete the Editors note.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.4** *P* **188** *L* **28** # 370

Ganga, Ilango Intel

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

Other PMD clauses refer back to this subclause regarding the effect of receipt of this primitive etc. So organize the description of PMA server service interface similar to be consistent with other service interface definitions in Clasue 83 and other Clauses.

SuggestedRemedy

Organize the description with the following outline as example.

83.4 PMA server service interface:
List all the server interface primitives and proivde any overview

83.4.1 PMAserver_UNITDATA.requestx
Move the definition of this primitive under this subclause
83.4.1.1 Semantics of the service primitive
83.4.1.2 When generated
83.4.1.3 Effect of receipt

Similarly structure for descriptions of other server interface primitives.

In Figure 83-5 name the primitives as per the exact definition of the primitives, as follows:

PMAserver_UNIDATA.requestx
PMAserver_UNITDATA.indicationx
PMAserver_SIGNAL.indication

and

PMA_UNITDATA.requestx
PMA_UNITDATA.indicationx
PMA_SIGNAL.indication

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **292** *L* **48** # 371

Ganga, Ilango Intel

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

Delete the double period at the end of the NOTE- below Table 87-10.

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **30** *L* **32** # 372

Ganga, Ilango Intel

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

Delete double period at the end of sentence:
"PCS control 2 register 45.2.3.6."

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12** *P* **51** *L* **33** # 373

Ganga, Ilango Intel

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

Delete double period at the end of sentence: "shall read all zeroes."

Page 53, line 5: Similarly delete double period at the end of sentence in 45.2.1.77: "is shown in Table 45-54."

Also in Page 57, line 22

SuggestedRemedy

As per comment

Proposed Response *Response Status* **O**

Cl **82** SC **82.2.8** P **158** L **52** # 374
Nicholl, Gary Cisco

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

Several customers have commented that while counting sync header errors (nicholl_02_0508 and implemented in D1.1) is very useful for monitoring the long term bit error rate performance of a link, it does not provide a method to detect isolated and/or infrequent error events.

SuggestedRemedy

Modify the format of the alignment marker to include a BIP8 (Bit Interleaved Parity) error check for each PCS lane. Please see nichol_01_0109 for details of the proposal.

Proposed Response *Response Status* **O**

Cl **88** SC **88.7** P **317** L # 375
O'Mathuna, Padraig GigOptix

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

Table 88-8 and Table 88-12: 3dB frequency is specified as max frequency (31 GHz). We believe the reason for this is that the device with higher BW should be not able to filter higher harmonics, but it should be important to have some specification about the minimum BW or, taking into account that we refer to limiting devices, at least a spec for jitter.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **88** SC **88.8** P **320** L # 376
O'Mathuna, Padraig GigOptix

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

Table 88-12: the -21.4 dBm sensitivity needs to be better defined for the specifiction for both the PD and the TIA. We should have more information about the overall system:
-APD instead of PIN photodiode?
-Optical amplifier at the TIA input?
We should also consider that if APD of Optical amplifier comes into the picture, it will imply a tight constraint on the overload specification.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **86** SC **86.6** P **256** L # 377
O'Mathuna, Padraig GigOptix

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

Table 86-7
Single ended input voltage tolerance -0.3 4.0
This spec needs to be better defined. If it is for non-operational conditions, then it is fine. If it is operational, then it needs to be defined with a swing size.

SuggestedRemedy

Preferred range would be from -0.3 to Vsupply + 0.3

Proposed Response *Response Status* **O**

Cl **87** SC **87.7** P **291** L # 378
O'Mathuna, Padraig GigOptix

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

Table 87-8
Should specify a maximum ER, otherwise the dynamic range is poorly defined.

SuggestedRemedy

Recommended value of <9dB

Proposed Response *Response Status* **O**

Cl **99** SC P **1** L **32** # 379
D'Ambrosia, John Force10 Networks

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

Draft D1.1 is prepared by the IEEE 802.3ba 40Gb/s and 100Gb/s Ethernet Task Force....

Proper name for Task Force is IEEE P802.3.ba 40Gb/s and 100Gb/s Ethernet Task Force

SuggestedRemedy

Replace part of sentence shown with:
Draft D1.1 is prepared by the IEEE 802.3ba 40Gb/s and 100Gb/s Ethernet Task Force

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **11** *L* **38** # 380
D'Ambrosia, John Force10 Networks

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

TOC for Clause 73: Subclauses are shown indented under wrong top clauses. For example 73.5.1 is shown indented under 73.3.

This is also happening for TOC for clause 74

SuggestedRemedy

correct the subclauses so they are shown indented under the correct top clauses.

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **11** *L* **21** # 381
D'Ambrosia, John Force10 Networks

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

wrap around error in TOC

SuggestedRemedy

correct TOC

Proposed Response *Response Status* **W**

[Editor's note: Commenter did not indicate comment type, hence added comment type as Editorial]

Cl **99** *SC* *P* **20** *L* **1** # 382
D'Ambrosia, John Force10 Networks

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

83A.2 is not shown in TOC.
Also, 83A.7.2.x is shown indented under 83A7.1.

SuggestedRemedy

correct properties of 83A.2 so it shows up in ToC.
Make sure 83A.7.2 is included in ToC, and that subclauses 83A.7.2.x are indented under it.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4** *P* **23** *L* **23** # 383
D'Ambrosia, John Force10 Networks

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

The XLAUI is defined as a 4 lane intra-sublayer, but this is actually in only one direction.

SuggestedRemedy

Change
"A 4 lane"

to

"An"

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4** *P* **23** *L* **44** # 384
D'Ambrosia, John Force10 Networks

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

The CAUI is defined as a 10 lane intra-sublayer, but this is actually in only one direction.

SuggestedRemedy

Change
"A 10 lane"

to

"An"

Proposed Response *Response Status* **W**

[Editor's note: Commenter did not indicate comment type, hence added comment type as Editorial]

Cl **99** *SC* *P* **4** *L* **17** # 385

D'Ambrosia, John Force10 Networks

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

Projects in development include a "P" in front of 802.3xx

SuggestedRemedy

Replace "Std. 802.3at" with "Std. P802.3at"
Replace "Std. 802.3av" with "Std. P802.3av"
Replace "Std. 802.3az" with "Std. P802.3az"
Replace "Std. 802.3ba" with "Std. P802.3ba"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **30** *L* **4** # 386

D'Ambrosia, John Force10 Networks

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

Listing of PHYs defines the number of conductors or fibers formedium for simplex operation (includes 40GBASE-CR4, 40GBASE-SR4, 100GBASE-CR10, and 100GBASE-SR10), i.e. 40GBASE-CR4 is over 4 lane shielded copper ballanced cable, when actually 40GBASE-CR4 uses 8 lanes, 4 in each direction.

SuggestedRemedy

Two options:
1. use the number of lanes for full duplex operation
2. delete the number of lanes and leave in general terms

example 40GBASE-CR4 over shielded copper balance cable

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.76** *P* **52** *L* **3** # 387

D'Ambrosia, John Force10 Networks

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

Amendment reads
The BASE-R PMD control register is used for 10GBASE-KR and other PHY types using the backplane PMD described in Clause 72, 84 or 85.

The PMD is not just for backplanes.

There are multiple instances of this sentence throughout Clause 45.

SuggestedRemedy

Delete the work "backplane" in the sentence. Do this for all instances of this sentence in Clause 45.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.81a** *P* **56** *L* **3** # 388

D'Ambrosia, John Force10 Networks

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

The BASE-R PMD status register 2 is used for 100GBASE-CR10 and other PHY types using the backplane PMD described in Clause 72, 84 or 85 over more than 4 lanes.

Issue 1 - use of "backplane" PMD
Issue 2 - "more than 4 lanes" - this is for simplex operation.

SuggestedRemedy

reword sentence
The BASE-R PMD status register 2 is used for 100GBASE-CR10 and other PHY types using the PMD described in Clause 72, 84 or 85 over more than 4 lanes in a given direction.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.3** *P* **92** *L* **1** # 389

D'Ambrosia, John Force10 Networks

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

the reader is pointed to Clauses 80, 81, 82, and 84. It would seem we could be a bit more specific. Relevant subclauses are 80.3, 81.1.4, 82.5, and 84.4.

Also, 80.3 only provides informative specifications.

SuggestedRemedy

Suggest rewording

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

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.2** *P* **93** *L* **29** # 390

D'Ambrosia, John Force10 Networks

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

The use of "AUTONEG" in the figure is inconsistent with other layer diagrams that use "AN"

SuggestedRemedy

Change "AUTONEG" to "AN"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.3** *P* **101** *L* **38** # 391

D'Ambrosia, John Force10 Networks

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

"BASE-R FEC" is inconsistent with other layer diagrams

SuggestedRemedy

Change "BASE-R FEC" to "FEC"

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.5** *P* **103** *L* **5** # 392

D'Ambrosia, John Force10 Networks

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

The FEC service interface section does not discuss that the implementation shown in Fig 83-2, where the XLAUI / CAUI is above the FEC sublayer.

SuggestedRemedy

Add the following sentence at the end of the first paragraph in 74.5:

The XLAUI / CAUI is an optional physical instantation that may be used for the logical FEC interface.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.5.1** *P* **107** *L* **42** # 393

D'Ambrosia, John Force10 Networks

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

The last sentence of the last paragraph contains a "shall" statement but there is no corresponding PICS

SuggestedRemedy

Generate PIC statement

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **114** *L* **7** # 394

D'Ambrosia, John Force10 Networks

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

In Fig 80-1 FEC sub-layer is noted as being "conditional", but it is actually conditional for the PHY type, but then optional.

SuggestedRemedy

add second note that indicates that the FEC sub-layer is also optional. Apply to other layer diagrams throughout the document, where appropriate.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.4** *P* **191** *L* **9** # 395
D'Ambrosia, John Force10 Networks

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

It is unclear that for physical instantations XLAUI / CAUI that retiming is required and no apparent PIC for it.

SuggestedRemedy

Presentation with proposed remedy to be provided.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **115** *L* **29** # 396
D'Ambrosia, John Force10 Networks

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

use of "optical lanes" should clarify that optical lanes can either be via wavelengths or number of fibers

SuggestedRemedy

modify sentence
The numeric suffix in the port type (e.g. 40GBASE-CR4 or 100GBASE-CR10) represents the number of electrical or optical lanes.

to

The numeric suffix in the port type (e.g. 40GBASE-CR4 or 100GBASE-CR10) represents the number of electrical or optical (i.e. number of wavelengths or optical fibers) lanes.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1** *P* **124** *L* **8** # 397
D'Ambrosia, John Force10 Networks

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

The MII is scalable and capable of supporting speeds of operation above 10 Gb/s.

anything other than 40 Gb/s or 100 Gb/s is out of scope for the project

SuggestedRemedy

reword sentence -
The MII is scalable and capable of supporting speeds of 40Gb/s and 100Gb/s.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1.5** *P* **124** *L* **52** # 398
D'Ambrosia, John Force10 Networks

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

rewording

The XLGMII and CGMII (like the original MII, GMII and XGMII) maximize media independence by cleanly separating the Data Link and Physical Layers of the OSI seven-layer reference model.

SuggestedRemedy

The XLGMII and CGMII maximize media independence by cleanly separating the Data Link and Physical Layers of the OSI seven-layer reference model.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.1** *P* **181** *L* **12** # 399
D'Ambrosia, John Force10 Networks

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

The PMAs can support any of the respective PMDs

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

SuggestedRemedy

change "one" to "any"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.3.4** *P* **190** *L* **39** # 400

D'Ambrosia, John Force10 Networks

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

the PMA adjacent to SP5 shall tolerate at least 3.6ns of Dynamic Skew seems incorrect, as the point was to limit dynamic skew to keep the channel to the same physical channel. The current wording does not put an upper bound on the amount of dynamic skew.

SuggestedRemedy

suggest rewording.

change "shall tolerate at least"
to
"shall tolerate a maximum of"

This sentence is repeated throughout Clause 83, and suggested remedy should be used throughout it.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6.4** *P* **191** *L* **10** # 401

D'Ambrosia, John Force10 Networks

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

THis should be a requirement

A PMA with m input lanes and n output lanes must clock the output lanes at m/n times the rate of the input lanes. This applies in both the Tx and Rx directions of transmission.

SuggestedRemedy

change sentence to
A PMA with m input lanes and n output lanes shall clock the output lanes at m/n times the rate of the input lanes. This applies in both the Tx and Rx directions of transmission.

generate respective PIC

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.3** *P* **226** *L* **46** # 402

D'Ambrosia, John Force10 Networks

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

statement seems like a remnant from cut-n-paste

The 40GBASE-CR4 and 100GBASE-CR10 receiver shall be AC-coupled to the cable assembly to allow for maximum interoperability between various 10 Gb/s components.

SuggestedRemedy

change to

The 40GBASE-CR4 and 100GBASE-CR10 receiver shall be AC-coupled to the cable assembly to allow for maximum interoperability.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9.1** *P* **227** *L* **25** # 403

D'Ambrosia, John Force10 Networks

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

units should be metric

represents 8 inches (0.2032 m)

SuggestedRemedy

change to

represents approximately 0.20 m

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.11.1.1** *P* **237** *L* **1** # 404

D'Ambrosia, John Force10 Networks

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

spelling error - receivr

SuggestedRemedy

change to receiver

Proposed Response *Response Status* **O**

Cl **86** SC **86.5.1** P **255** L **24** # 405
D'Ambrosia, John Force10 Networks

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

subclauses for optical lane assignments for 40 & 100G SR are blank.

SuggestedRemedy

delete if no presentations are provided.

Proposed Response *Response Status* **O**

Cl **88** SC **88.7.1** P **316** L **50** # 406
D'Ambrosia, John Force10 Networks

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

The Statistical Eye Ad hoc has not met in several months and is not provding any feedback into the task force.

[Editor's note (to be removed prior to publication) - Details of the transmit eye mask measurement are being studied by the Statistical Eye Ad Hoc and consequently the contents of clause 88.9.8 together with the mask parameters in Tables 88-7 and 88-11 are provisional.]

SuggestedRemedy

delete editor's notes related to Statistical Eye Ad Hoc throughout the document

Proposed Response *Response Status* **O**

Cl **86** SC **86.7.4.3** P **266** L **19** # 407
D'Ambrosia, John Force10 Networks

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

spelling error - "w/ve"

SuggestedRemedy

replace with "wave"

Proposed Response *Response Status* **O**

Cl **83A** SC **83a.3.3.3** P **354** L **26** # 408
D'Ambrosia, John Force10 Networks

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

typo - Returnloss

SuggestedRemedy

change to "Return Loss"

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.4.1** P **362** L **30** # 409
D'Ambrosia, John Force10 Networks

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

longer reaches for nAUI interconnects are possible via use of better board materials

SuggestedRemedy

change first paragraph on 362 to read

The XLAUI/CAUI is primarily intended as a point-to-point interface of up to approximately 25 cm between integrated circuits using controlled impedance traces on low-cost printed circuit boards (PCBs). Longer reaches for the XLAUI / CAUI may be achieved by the use of better PCB materials, as the performance of an actual XLAUI/CAUI interconnect is highly dependent on the implementation.

Proposed Response *Response Status* **O**

Cl **83A** SC **83A.6** P **363** L **53** # 410

D'Ambrosia, John Force10 Networks

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

environmental specifications are missing.

SuggestedRemedy

Copy environmental specifications from 84.10

83A.6.1 General safety
All equipment subject to this clause shall conform to applicable sections (including isolation requirements) of IEC 60950-1.
83A.6.2 Network safety
The designer is urged to consult the relevant local, national, and international safety regulations to ensure compliance with the appropriate requirements.
83A.6.3 Installation and maintenance guidelines
It is recommended that sound installation practice, as defined by applicable local codes and regulations, be followed in every instance in which such practice is applicable.
83A.6.4 Electromagnetic compatibility
A system integrating the 40GBASE-KR4 PHY shall comply with applicable local and national codes for the limitation of electromagnetic interference.
83A.6.5 Temperature and humidity
A system integrating the 40GBASE-KR4 PHY is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, and physical handling (such as shock and vibration). Specific requirements and values for these parameters are considered to be beyond the scope of
this standard.

Proposed Response *Response Status* **O**

Cl **80** SC **80.4** P **119** L **11** # 411

D'Ambrosia, John Force10 Networks

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

Fig 80-2 and Fig 80-3 are very complex drawings as they try to capture the flexibility and multiple options inherent in the draft.

Neither figure shows that XLAUI / CAUI is an optional physical instantation. Also, FEC should be conditional based on PMD type.

Given the various architectures it is also not obvious which SPx need to be measured.

SuggestedRemedy

Note that the XLAUI / CAUI are optional.
Note that FEC is also conditional based on PMD type.

add a statement that the reader should review the relevant clauses, as shown in Tables 80-3 and 80-4, to see which skew points need to be measured.

Proposed Response *Response Status* **O**

Cl **83** SC **83.1.2** P **181** L **32** # 412

D'Ambrosia, John Force10 Networks

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

First instance of PCSL should define what the acronym means.

SuggestedRemedy

replace "PCSL" with "PCS Lane"

replace "PCS Lane (PCSL)" on Page 182, bullet A under 83.1.3

Proposed Response *Response Status* **O**

Cl **85** SC **85.9.2** P **228** L **14** # 413

D'Ambrosia, John Force10 Networks

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

font on fig 85-4 (and other channel related figures in clause 85) are very small and very difficult to read.

SuggestedRemedy

use larger font on figures

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1** *P* **349** *L* **29** # 414

D'Ambrosia, John Force10 Networks

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

XLAUI / CAUI are optional, but not noted that way in Fig 83A-1.l

SuggestedRemedy

note that xlaui / caui are optional in figure

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **43** # 415

Petrilla, John Avago Technologies

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

In table 86-8, parameters Max & Min Average launch power and Aggregate signal parameter contain TBDs and/or are noted for further study.

SuggestedRemedy

Accept the changes in anslow_04_0109 for table 86-6.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **259** *L* **15** # 416

Petrilla, John Avago Technologies

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

In table 86-10, the Stressed Rx sensitivity parameter and associated test conditions are TBD.

SuggestedRemedy

In table 86-10, change the Stressed Rx sensitivity parameter and associated test conditions from TBD as follows:
Stressed Rx sensitivity to -5.4
Vertical eye closure penalty to 2.0
Stressed eye J2 jitter to 0.35

A presentation, petrilla_01_0109, will be provided in support.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **5** # 417

Petrilla, John Avago Technologies

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

In table 86-11, jitter parameters, TP4 TJ and DJ, are noted for further study.

SuggestedRemedy

Accept the changes in anslow_04_0109 for table 86-6. for table 86-11 jitter parameters.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **10** # 418

Petrilla, John Avago Technologies

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

In table 86-11, eye mask coordinate X1 = 0.35 is based on TJ. Anslow_04_0109 proposes shifting to a hit ratio of 1E-5 but doesn't take into account the reduced allocation at TP1.

The same issue holds for table 86-12.

SuggestedRemedy

Accept the hit ratio, 1E-5, proposed in anslow_04_0109, but change X1 to 0.27.

Repeat in table 86-12.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2.** *P* **264** *L* **15** # 419

Petrilla, John Avago Technologies

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

Table 86-16 contains a parameter, Aggregate TP2 metric. Anslow_04_0109 proposes TDP and OMA-TDP as aggregate metrics.

SuggestedRemedy

If the TDP or OMA-TDP proposal in anslow_04_0109, is accepted, replace the term, 'aggregate TP2 metric' with TDP and/or OMA-TDP.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **264** *L* **16** # 420

Petrilla, John Avago Technologies

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

Table 86-16 contains a parameter, RIN12OMA, that was included until an aggregate Tx metric was defined. Anslow_04_0109 proposes TDP and OMA-TDP as aggregate metrics permitting RIN12OMA to be deleted or declared informative.

SuggestedRemedy

In Table 86-16 delete parameter, RIN12OMA, if TDP or OMA-TDP is included.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.6** *P* **267** *L* **18** # 421

Petrilla, John Avago Technologies

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

Shouldn't the reference impedance for common mode measurements be 25 Ohms?

SuggestedRemedy

Change 100 to 25.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.6** *P* **268** *L* **1** # 422

Petrilla, John Avago Technologies

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

The parameter, RIN12OMA, was in lieu of or until an aggregate signal parameter was defined. TDP and OMA-TDP are now defined and RIN12OMA can be made informative or deleted.

SuggestedRemedy

Delete subclause 86.7.5.6, if TDP or OMA-TDP is included.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.4** *P* **267** *L* **39** # 423

Petrilla, John Avago Technologies

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

TDP & OMA-TDP hve been proposed in anslow_04_0109 as aggregate signal parameters. Unfortunately there seems to be a minor error in calculation of the bandwidth of the reference receiver/filter combination.

SuggestedRemedy

Accept the changes to 86.7.5.4 in anslow_04_0109, except in item e, change 6.0 to 6.2.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.1** *P* **262** *L* **49** # 424

Petrilla, John Avago Technologies

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

Clause 86.7.3.1 only refers to 82.2.12 without defining measurement methods. Unfortunately, the definitions of clause 82.2.12 do not lend themselves to pragmatic test implementation as they refer to timing changes or differences over the extent of time the link is operational.

SuggestedRemedy

Accept the relevant change proposed in anslow_04_0109, except add appropriate time durations for these measurements, e.g. 24 hrs for dynamic skew & 7 days for total skew at SP1 and SP4 to capture effect of equipment power-up and daily cycles. Durations at SP2, SP3 and SP5 may be substanially shorter as only the PMA and PMD are involved.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **256** *L* **13** # 425

Petrilla, John Avago Technologies

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

In table 86-6, parameters TP1a TJ, DJ & DDPWS, contain TBDs and/or are noted for further study. It appears the 0.30 UI Max for TP1a TJ is unnecessarily high and can be reduced to 0.26 UI. Further, the eye mask coordinate, X1 & X2 do not appear to be consistent with eye mask coordinates proposed for TP2 and/or the requirements of the receiver at TP3.

The same issue holds for table 86-7.

SuggestedRemedy

Accept the changes in anslow_04_0109 for table 86-6 except, change the Eye Mask Coordinates X1 & X2 to 0.10 & 0.25 respectively to account for the shifts in TJ from 0.30 UI to 0.26 UI, the shift from TJ to J9 and the shift to the hit ratio of 5E-5 as well as be consistent with eye mask coordinates at TP2 and optical receiver requirements.

Repeat for table 86-7

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **50** # 426

Petrilla, John Avago Technologies

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

In table 86-8 the parameter RIN12OMA is noted for further study and becoming informative if its effects are included in an aggregate signal parameter. Such aggregate signal parameters, TDP & OMA-TDP, have been proposed. If TDP is accepted RIN12OMA can be noted as informative or deleted.

SuggestedRemedy

If TDP is accepted RIN12OMA, note as informative or delete.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.2.2** *P* **258** *L* **8** # 427

Petrilla, John Avago Technologies

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

In table 86-8 eye mask coordinates, X1, X2, X3, Y1, Y2, Y3, shown as 0.25, 0.4, 0.45, 0.25, 0.28 0.4, respectively, are noted for further study. These values are just carried over from clause 52 and do not take into account the shift to a hit ratio of 5E-5 nor the requirements of the optical receiver for SRn. Further, since it has been shown, petrilla_03_1108, that a six-sided mask is sufficient, an eight-sided mask should be rejected due to the increase in test time or loss of yield due to the additional corners.

SuggestedRemedy

In table 86-8 change eye mask coordinates, X1, X2, X3, Y1, Y2, Y3, to 0.23, 0.34, 0.34, 0.17, 0.17 0.4, respectively.

A presentation, petrilla_01_0109, will be provided in support.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.2** *P* **264** *L* **40** # 428

Petrilla, John Avago Technologies

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

Clause 86.7.3.2, defining eye mask measurements, makes no mention of minimum test equipment requirements or de-embedding for the efects of the test equipment. To avoid over rejection of otherwise acceptable product and for consistent results this should be explicitly addressed and applied consistently at the various interfaces. Since it is difficult to de-embed the test equipment from eye mask results, setting minimum test equipment requirement should be considered first.

SuggestedRemedy

Add a statement to 86.7.3.2 declaring that the equipment for measuring and displaying eye mask results meet minimum requirements for sensitivity (e.g. 3 dB better than the downstream receiver requirement), timing uncertainity (e.g. < 300 fs), and bandwidth (e.g. 7.5 GHz for optical interfaces and 12 GHz for electrical interfaces). After the approach is decided, then all eye mask coordinates should be evaluated for fit with this approach.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.1** *P* **262** *L* **44** # 429

Abbott, John Corning Incorporated

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

lines 44-54 (total skew, dynamic skew for MM fibers)

Need to be sure MM defintions of skew are correct and correctly references in subclauses 80.4 and 82.2.12

SuggestedRemedy

make sure the defintions of total skew and dynamic skew are correct and functional for MM fiber. Make sure the values of the parameters are consistent with those definions. Cross-reference to subclauses 82.2.12 and 80.4

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **80** *SC* **80.4** *P* **120** *L* **1** # 430

Abbott, John Corning Incorporated

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

Need to consolidate definitions of skew/dyanamic skew so that they appear at earliest reference (here), that they agree for all PMD types. Also "time that the link is operational" needs to be defined -- is it only the length of time needed to measure BER = 10^-12 or something shorter or longer?

SuggestedRemedy

a.move this text which is nomenclature/definition to the front of subclause 80.4
b.this line references a later clause 82.2.12. It is appropriate for the definition to appear in the first subclause it is used, hence move the 82.2.12 definition to this subclause.
c.Note in subclause 86.7.3.1 it is noted that the correct definition of skew and dynamic skew may need to be redefined differently for multimode fiber. This difference in definition should be noted in subclauses 80.4 and/or 82.2.12. There is a problem because 82.2.12 is primarily a definition appropriate to electronics.
d.For completeness, the definition in 82.2.12 says the dynamic skew is defined as the change in total skew over the "time that the link is operational". This "operational time" itself needs to be defined - is it only the length of time needed to measure BER = 10^-12 or something shorter or longer?

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.1.12** *P* **161** *L* **4** # 431

Abbott, John Corning Incorporated

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

(skew definition)
This definition (a) needs to be located in subclause 80.4 and (b) needs to be modified to include definitions for multimode and single mode fiber if necessary. For the definition of dynamic skew the definition of "time that the link is operational" needs to be more specific.

SuggestedRemedy

(a) move to subclause 80.4 and refer to 80.4 at this point in text.
(b) make sure definition is consistent for all link types.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **38** # 432

Abbott, John Corning Incorporated

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

Lines 38-41
Table 86-8. RMS spectral width. The RMS spectral width is not a good way to characterize the spectral content of VCSEL lasers, whose spectra consists of two or more narrow lines separated by a gap in wavelength. The RMS spectral width pre-supposes a Gaussian character to the spectral power vs. wavelength which is incorrect.

This change is needed in order to have an accurate link budget and for accurate link models.

A simple suggestion is to include both RMS width and full width quarter max.

SuggestedRemedy

One solution is to include both RMS width and full width quarter max. Need to involve transceiver manufacturers

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.6** *P* **261** *L* **10** # 433

Abbott, John Corning Incorporated

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

lines 10-37
Summarize link power budget and a link model in an informative annex with more detail. The link power budget in Table 86-13 should be incorporated into a link model spreadsheet similar to 10GEPBud3_1_16a.xls found at http://ieee802.org/3/ae/public/index.html (for 10GBASE).

However, the link model should be kep current with the 802.3ba project and summarized in annex 86A at the end of the project. Note that the spreadsheet 10GEPBud3_1_16a.xls does not accurately represeent the 10GBASE link budget for all PMDs because it was a proposal early in the project. This has the potential to cause misunderstandings among users and also in subsequent standards.

SuggestedRemedy

Summarize link power budget and a link model in an informative annex 86A with more detail.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **115** *L* **22** # 434

Abbott, John Corning Incorporated

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

Subclause 80.1.4(Nomenclature) page 115 lines 22-25

For 10GBASE, The letters S and L represent the wavelength, with S being approximately 850nm and L being approximately 1300nm+. For example 10GBASE-LX4 and 10GBASE-LRM use 1310nm lasers, while 10GBASE-SR uses 850nm lasers over the same link distance as LX4.

SuggestedRemedy

40Gb/s and 100Gb/s should retain the same terminology.

Alternatively, if the change in terminology is intentional, additional text should be added in this section clarifying that a change in terminology has been made to eliminate any misunderstanding.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 435

king, jonathan finisar

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

typo: square w/ve

SuggestedRemedy

square wave

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **42** # 436

king, jonathan finisar

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

If the PMA doesn't generate test patterns it should at least support them (ie, allow them to be transmitted through the PMA)

SuggestedRemedy

Add after "....operations described in 83.5.2.": If the PMA does not generate the test patterns, it should at least support them.

(or words to that effect)

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **264** *L* **9** # 437

king, jonathan finisar

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

Table 86-16
Some CDRs will not support a square wave test pattern because the transition density is too low for clock rate aquistition. An equivalent measurement can be made using PRBS9 (pattern 4).

SuggestedRemedy

Add "or 4" after Square on lines 9, 20, 31 in table 86-16
Add "or 68.6.2" to the 'Related subclause' column on lines 9, 20

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **293** *L* **11** # 438

king, jonathan finisar

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

Table 87-11
Some CDRs will not support a square wave test pattern because the transition density is too low for clock rate aquistition. An equivalent measurement can be made using PRBS9 (pattern 4).

SuggestedRemedy

Add "or 4" after Square on line 11 in table 87-11 and add "or 68.6.2" after "87.8.5" in the 'related subclause' column

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.1** *P* **322** *L* **11** # 439

king, jonathan finisar

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

Table 88-11
Some CDRs will not support a square wave test pattern because the transition density is too low for clock rate aquisition. An equivalent measurement can be made using PRBS9 (pattern 4).

SuggestedRemedy

Add "or 4" to Square on line 11 in table 88-15 and add "or 68.6.2" after "88.9.4" in the 'related subclause' column

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.4** *P* **322** *L* **38** # 440

king, jonathan finisar

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

OMA measurement is defined in 52, for a square wave.
Definition of a test method using PRBS9 is needed.

SuggestedRemedy

After "is as defined in 52.9.5" insert "or 68.6.2"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.5** *P* **293** *L* **43** # 441

king, jonathan finisar

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

OMA measurement is defined in 52, for a square wave.
Definition of a test method using PRBS9 is needed.

SuggestedRemedy

After "is as defined in 52.9.5" insert "or 68.6.2"

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.8** *P* **158** *L* **12** # 442

Lee, Kyusang ICU

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

Actually figure 82-7 and 82-8 shows n lanes.

SuggestedRemedy

Lane start with Lane0 and finish Lane n. The number of Lane is n+1. Lane n should be (n-1) Lane n-1

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **82** *SC* **82.2.7** *P* **157** *L* **34** # 443

Lee, Kyusang ICU

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

PCS distributes the 66-bit block to n lanes. Actually figure 82-6 shows (n+1) distributions.

SuggestedRemedy

66b Block distribution should end with '66b Block n-1', '66b Block 2(n-1)', and etc. Or, First 66b Block distribution should start with 66b Block 1, 66b Block n+2, and etc.

Proposed Response *Response Status* **O**

Cl **73** *SC* **7.4.1** *P* **96** *L* **40** # 444

Valliappan, Magesh Broadcom

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

Draft says "Parallel Detection is not performed for 10GBASE-KR"

Similarly, parallel detection can not be performed for 40GBase-CR4/KR4 and 100GBase-CR10. Specify those PMDs as well

SuggestedRemedy

Change to "Parallel Detection is not performed for 10GBASE-KR, 40GBase-CR4, 40GBase-KR4 and 100GBase-CR10."

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **80** *SC* **80.4** *P* **121** *L* **10** # 445

Dudek, Mike JDSU

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

There is insufficient skew allowed for some desirable implementations between SP2 and SP3, and between SP4 and SP5 for the WDM mux/demuxes. There is more than enough skew allocated for the transmission medium

SuggestedRemedy

Change SP3 Total skew to 54ns (558 UI for 40G, and 279 UI for 100G) and SP4 skew to 134ns (1380 UI for 40G and 690 UI for 100G). in table 80-3

Also in clause 83 section 83.5.3.5 page 190 line 53 change 144ns to 134ns

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.7.5** *P* **198** *L* **24** # 446

Dudek, Mike JDSU

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

We should use PRBS9

SuggestedRemedy

Replace "TBD short pattern" with "PRBS9" 4 places.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **23** # 447

Dudek, Mike JDSU

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

The most useful short pattern is the PRBS9, the same as the pattern used in Clause 68. This is needed for measuring DDPWS as used in Clause 86

SuggestedRemedy

Change TBD to PRBS9 18 places. Remove if PRBS9

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.5.9** *P* **194** *L* **3** # 448

Dudek, Mike JDSU

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

We do need to be able to generate square wave pattern on one lane and typical data on the other lanes to measure RIN or QSQ with crosstalk effects included. There is no need to generate the square wave pattern on all lanes at the same time.

SuggestedRemedy

At this sentence change "on each of the lanes" to "on the specified lane". Add per lane enabling of the sqare wave pattern, here and in clause 45. Note that if the PMA is set to transmit PRBS31 and any lanes are set to transmit square wave, then the square wave will be transmitted on those lanes and all other lanes will transmite PRBS31.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.4.1** *P* **226** *L* **29** # 449

Dudek, Mike JDSU

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

It is not clear that the BER has to be met in the complete worst case condition (not just worst case attenuation).

SuggestedRemedy

Add to the end of the sentence "the maximum insertion loss deviation of 85.10.3 and the maximum cable assembly loss to crosstalk ratio of 85.10.8"

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **86** *SC* **86.6.1** *P* **256** *L* **14** # 450

Dudek, Mike JDSU

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

The system effects of jitter and better represented by the jitter probabilities at 1% jitter and 1e^-9. A good value for DDPWS is 0.07

SuggestedRemedy

In both tables 86-6 and 86-7
Replace Total Jitter (0.3) with J9 jitter (0.26)
Replace Deterministic Jitter (TBD) with J2 Jitter (0.18)
Remove the reference to BER 1e-12
Replace the TBD for DDPWS with 0.07
Remove the editors footnotes.

Note that these are the same as the proposed changes in Anslow_04.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **256** *L* **30** # 451

Dudek, Mike JDSU

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

Some of the specifications (return losses) in table 86-7 apply at TP1 while others apply at TP1a.

SuggestedRemedy

In the table title change "TP1a" to "TP1 and TP1a", or better split the table and references to it, into two tables
"PPI electrical transmit signal input specifications at TP1" with the SDD11 and SCD11 specifications and
"PPI electrical transmit signal input tolerance at TP1a" with all the other specifications.

Note this change is also needed in Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86-8** *P* **257** *L* **47** # 452

Dudek, Mike JDSU

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

TDP is the best aggregate signal metric for this system. It also enables a trade off between minimum OMA and signal impairments.

SuggestedRemedy

In table 86-8 Replate Aggregate signal parameter tbd with Transmission and Dispersion Penalty (TDP) max value of 4dB.
Change Optical Modulation Ampitude (OMA), each lane min from -3dBm to -6dBm
Add a row "Optical Modulation Amplitude (OMA) minus TDP min -7dBm.
Replace the TBD for Averagne launch power in with -8dBm

Also make equivalent changes to Table 86-9

Note that these are the proposed changes in Anslow_04

Also (not in Anslow_04) in table 86-16 page 264 change Aggregate TP2 metric to TDP.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **43** # 453

Dudek, Mike JDSU

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

In order to reduce the overload requirements on the receiver the maximum OMA and the Peak Power from the transmitter should be specified. The values suggested assume that at the maximum average power the extinction ratio is <=9.4dB and at this extinction ratio the overshoot is <13% .

If the average power is not at it's max value then the extinction ratio can be higher and/or the overshoot can be larger. Similarly if the average power is at the maximum value but the extinction ratio is less than the overshoot can be larger.

It is expected that the vast majority of transmitters would be compliant to these requirements anyway.

SuggestedRemedy

Add specifications to Table 86-8 for Maximum OMA per lane of 3dBm and Peak power per lance of 4dBm.

Also make equivalent changes to table 86-9

Note that this is as proposed in Anslow_04

In addition add rows to table 86-10 (receiver specs) page 259 for Optical Modulation Amplitude max +3dBm and Peak Power max +4dBm. (These changes are not in Anslow_04)

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **259** *L* **21** # 454

Dudek, Mike JDSU

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

Specifying the stressed receiver input signal as having minimal random jitter and noise for 10G was a bad idea as this was too difficult for test equipment vendors to produce resulting in over-stressful tests, also it is better to test with a signal that more accurately represents a worst case input signal.

SuggestedRemedy

Add a row to table 86-10. stressed eye J9 jitter. Value TBD Also include a definition of J9 jitter in the test section.

Note that these are changes proposed in Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **11** # 455

Dudek, Mike JDSU

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

Eye mask tests are best specified at a reasonable hit rate to provide statistical significance in a reasonable test time. 5e-5 is an appropriate hit ratio. with this hit ratio and to reduce the stress on the electrical receiver the value of X1 should be reduced.

SuggestedRemedy

In Tables 86-11 and 86-12
Change X1 value to 0.29 and add "Hit Ratio = 5x10^-5 to the conditions for both tables.

Note that these are proposed changes in Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **6** # 456

Dudek, Mike JDSU

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

From a system standpoint J9 and J2 are better specification parameters than Dj and Tj. Also some relaxation in the requirements for the electrical receiver appears to be a better compromise

SuggestedRemedy

In tables 86-11 and 86-12
Change total Jitter to J9 Jitter value 0.63 and Deterministic jitter to J2 jitter value 0.46

Note that these are changes proposed in Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **260** *L* **27** # 457
Dudek, Mike JDSU

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

Some of the specifications (jitter and eye mask) in Table 86-12 should be calibrated after the connector while others (reflection coefficients) are tested before the connector.

SuggestedRemedy

Either change the title to "TP4 and TP4a" and add "at TP4" to the jitter and eye mask rows and "at TP4a" to the other rows or better split the table moving the jitter and eye mask rows into a new table labelled "PPI receiver electrical input tolerance specifications at TP4".

Note that this change is also required to Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5.1** *P* **261** *L* **8** # 458
Dudek, Mike JDSU

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

two "where"s

SuggestedRemedy

Delete one

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.6** *P* **261** *L* **22** # 459
Dudek, Mike JDSU

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

The link budget is with the largest TDP

SuggestedRemedy

Add "for max TDP" to the Power budget and allocation for penalties rows.

this is proposed in Anslow_04

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **37** # 460
Dudek, Mike JDSU

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

The 40G and 100Gb/s pseudo-random pattern is at the PCS. This isn't useful for testing the PMD. Also as there is a PMA PRBS as well it's confuing to have this.

SuggestedRemedy

Either delete pattern no 5 or add PCS between Gb/s and pseudo

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.10** *P* **160** *L* **28** # 461
Dudek, Mike JDSU

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

It is not clear whether the test pattern is at the bit rate or whether the test pattern is generated separately for each lane. It needs to be at the bit rate as having the same pattern sent out on all lanes at the same time will result in 11 00 etc patterns on the lanes after bit interleaving. Note that a property of a PRBS is that when taking every n bits of the PRBS the resulting data stream is the same PRBS with a time shift so each stream will still have the same PRBS, but they will be offset in time such that when interleaved the 11 00 problem doesn't occur.

SuggestedRemedy

Change "sends the test pattern in 4 separate data streams(for 40GBASE-R) or 20 separate data streams (for 100GBASE-R) to "sends the serial test pattern distributed in the normal manner over the 4 separate data streams(for 40GBASE-R) or 20 separate data streams (for 100GBASE-R)."

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **41** # 462
Dudek, Mike JDSU

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

The Clause 52 square wave isn't helpful because it had variable run length. Clause 68 improved the definition by standardizing on a single run length making measurements more reproducible.

SuggestedRemedy

Delete the clause 52 square pattern row in table 86-15.
In talbe 86-16 change all the square pattern references to Square, eight one's and eight zero's.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **37** # 463
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
We should use the PRBS9 pattern as the short pattern

SuggestedRemedy
replace "short TBD" with PRBS9. Pattern defined in 68.6.1

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **264** *L* **35** # 464
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
footnote b isn't helpful. Using a portion of a 40Gbase-R4 signal to measure spectral width isn't easy.

SuggestedRemedy
Delete footnote b

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 465
Dudek, Mike JDSU

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

SuggestedRemedy
replace w\ve with wave.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.4** *P* **266** *L* **34** # 466
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
Jitter methodology should use J2 and J9 and define these test methodologies.

SuggestedRemedy
Replace 86.7.4.4 with appropriate text from Anslow-04.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.4** *P* **267** *L* **39** # 467
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
TDP should be used for the Aggregate TP2 signal

SuggestedRemedy
Replace section 86.7.5.4 with TDP as proposed in Anslow_04

Proposed Response *Response Status* **W**
[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **86** *SC* **86.6.5.7** *P* **268** *L* **22** # 468
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
We do not need an additional TBD test signal.

SuggestedRemedy
delete "or with other patterns, such as TBD signal"

Proposed Response *Response Status* **W**
[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **48** # 469
Dudek, Mike JDSU

Comment Type **T** *Comment Status* **D**
PRBS31 is a good pattern for stressed sensitivity

SuggestedRemedy
replace TBD with PRBS31.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **50** # 470
Dudek, Mike JDSU

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

There is no requirement stated for the relative positions of the prbs sequences on the various lanes.

SuggestedRemedy

Add at the end of the paragraph. There shall be at least 31 bits delay between the PRBS31 patterns generated on one lane and any other lane.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.1** *P* **272** *L* **20** # 471
Dudek, Mike JDSU

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

100ns of skew is much more than is needed. A separate comment has been made to re-allocate 20ns of this skew to the PMD's.

SuggestedRemedy

Change 100ns to 80ns.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.1** *P* **273** *L* **18** # 472
Dudek, Mike JDSU

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

The fact that this new chromatic spec is met by the old spec would have had lasting value however the editor's note is technically incorrect and should be deleted. The correct note would have stated that fibers manufactured to the old specification in practice actually meet the new tighter specification.

SuggestedRemedy

Delete the editors note

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **32** # 473
Dudek, Mike JDSU

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

Test pattern 2 in clause 52 was generated to stress CDR circuits. It includes pattern transitions that are considered likely to be more stressful than PRBS31. There is no provision in the PMA to generate a pattern like this. Is it necessary?

SuggestedRemedy

If necessary add this test pattern to the PMA on a per lane basis.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.3.2** *P* **284** *L* **25** # 474
Dudek, Mike JDSU

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

A separate comment changes the skew value in Table 80-3. If that is accepted the skew values on lines 25 and 28 should change

SuggestedRemedy

SP3 skew changes from 44ns to 54ns and SP4 skew changes from 144ns to 134ns.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **293** *L* **6** # 475
Dudek, Mike JDSU

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

Of the available patterns PRBS31 or valid 40GBASE-LR Signal is appropriate for all the tests that have TBD except Calibration of OMA which should be square.

However Clause 52 deemed it necessary to create a more stressful pattern than PRBS31 for testing CDR's.

SuggestedRemedy

Make this change

Consider however whether a pattern such as pattern 2 in clause 52 should be used for stressed receiver sensitivity testing.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.6** *P* **294** *L* **3** # 476

Dudek, Mike JDSU

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

Crosstalk within the PMD Tx needs to be part of this test.

SuggestedRemedy

Add. The lanes not under test shall be operating with PRBS31 or valid 64/66B data.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.6.1** *P* **294** *L* **10** # 477

Dudek, Mike JDSU

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

There are TBD's for the reference Tx rise/fall time and RIN. The exact values are not critical as their effect is to be calibrated out of the measurement, however they are specified so that the correction factor is not large (as it's calculation may not be that accurate)

SuggestedRemedy

use 25ps for the rise/fall times and 135dB/Hz for RIN.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.12** *P* **296** *L* **34** # 478

Dudek, Mike JDSU

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

PRBS31 is a suitable pattern for the lanes not under test

SuggestedRemedy

Replace TBD with PRBS31.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.3.2** *P* **310** *L* **25** # 479

Dudek, Mike JDSU

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

A separate comment changes the skew value in Table 80-3. If that is accepted the skew values on lines 25 and 28 should change

SuggestedRemedy

SP3 skew changes from 44ns to 54ns and SP4 skew changes from 144ns to 134ns.

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **83A** *SC* **83A.1.1** *P* **350** *L* **21** # 480

Dudek, Mike JDSU

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

XLAUI/CAUI is the physical instantiation of the PMA to PMA interface. For correct operation XLAUI/CAUI requires the CDR of the PMA and the scrambling, and MLD coding of the PCS it therefore cannot be used for chip to chip communication other than from PMA to PMA.

SuggestedRemedy

Delete bullet a).

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **38** # 481

Dudek, Mike JDSU

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

The specifications in this clause are for a transmitter without pre-emphasis (low Tx jitter) and a receiver with equalization (separate spec for non-equalizable jitter). It is intended that this transmitter will have pre-emphasis and the receiver will not require equalization. A transmitter with pre-emphasis is unlikely to meet these specs. Note it is unacceptable in a standard to say measure with pre-emphasis turned off and then turn on pre-emphasis with an assumption that this doesn't degrade the effective jitter as a solution to this.

SuggestedRemedy

Either
A. Specify the Tx output with low present jitter and eye mask specs at the output of a specified compliance channel of intermediate length, such that shorter and longer channels will achieve the Rx input jitter and eye mask specs.
B Specify the Tx output with the same jitter and eye mask as the Rx input at both the Tx (no trace length) and at the end of a worst case specified compliance channel.
C Specify the Tx output with a pulse mask. However this is likely to be difficult to control jitter without being very restrictive.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.5** *P* **355** *L* **34** # 482

Dudek, Mike JDSU

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

Incorrect reference

SuggestedRemedy

Change Table 83A-1 to 83A-7

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.2** *P* **357** *L* **38** # 483

Dudek, Mike JDSU

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

To test the receiver the worst case input should be used.

SuggestedRemedy

Replace "does not exceed" with "equals"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **290** *L* **18** # 484

Dudek, Mike JDSU

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

In order to not require the receiver to tolerate an OMA of 5.3dBm and a peak power of 6.7dBm the max OMA and max peak power should be restricted, particularly as it is unlikely that a transmitter will be operating simultaneously with max average power, max extinction ratio and max overshoot.
The suggested values are equivalent at max average power to an ER of <= 6.8dB and an overshoot of 25%.

SuggestedRemedy

Add extra rows to tables 87-7 and 87-8.
Optical Modulation Amplitude (OMA) each lane (max) 3.5dBm
Peak Power per lane (max) 5.3dBm

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **290** *L* **23** # 485

Dudek, Mike JDSU

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

With the specification of OMA minus TDP there is little downside to allowing a larger value of TDP. 10Gbase-LR allowed 3.2dB and didn't have potential crosstalk issues, however such a large value is unlikely to be needed with present technology. The only consequent change would be to increase the stressed sensitivity and vertical eye closure penalty for testing the Rx.

SuggestedRemedy

In table 87-7
Change TDP max to 2.8dB
In table 87-8 change stressed sensitivity to max to -9.4 and increase the vertical eye closure penalty to 2.1 dB.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.3** *P* **292** *L* **1** # 486

Dudek, Mike JDSU

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

This link budget is for one particular value of TDP. It would be good to note this.

SuggestedRemedy

Add a footnote to the Power budget and allocation for penalties rows.

Footnote to say "This exmple power budget is with a TDP of 2.3dB.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.10** *P* **296** *L* **1** # 487

Dudek, Mike JDSU

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

The transmitter jitter requirements in clause 53 are because jitter, rise/fall times, and RIN are individually specified rather than using the aggregate TDP metric. TDP is used in this clause so this section is unnecessary.

SuggestedRemedy

Delete subclause 87.8.10

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.7.1** *P* **316** *L* **24** # 488

Dudek, Mike JDSU

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

With the specification of OMA minus TDP there is no need to have a tight specification on RIN or such a tight specification on TDP. Relaxations in these values allow implementers more possible trade-offs without degrading the link budget. There is no drawback to increasing RIN max. The only drawback to increasing the maximum value of TDP is that the receiver needs to be tested with somewhat larger VECP, but at a higher power.

Note that the LR TDP max was 3.2dB.

SuggestedRemedy

In table 88-7
Increase RIN specification to -130dB/Hz.
Increase TDP max to 2.8dB

In table 88-8
Increase stressed receiver sensitivity to -6.2dBm
Increase VECP to 2.4dB.

In table 88-9
Increase power budget to 9.1, increase the allocation for penalties to 2.8dB. Also add a footnote to these rows. Footnote to say "The link power budget is with the maximum TDP allowed.

delete the editors notes related to TDP value

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **316** *L* **20** # 489

Dudek, Mike JDSU

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

With the specified max average power and max OMA and maximum overshoot the peak power into the receiver can be 7.3dBm. It would be good to reduce this by including a peak power specification. This will only significantly restrict the over-shoot for transmitters that have maximum average power and simultaneously maximum OMA. The value specified is equivalent to 20% overshoot with maximum average power and maximum OMA

SuggestedRemedy

Insert rows into Table 88-6 and 88-7.

"Peak Power (max) 6.8dBm.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.8.1** *P* **319** *L* **17** # 490

Dudek, Mike JDSU

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

Restricting the transmitter to a maximum OMA of only 4.0dBm when the receiver is specified to receive 4.5dBm OMA is unnecessary. It also seems surprising that the OMA max for the 40km part is less than for the 10km part. The same arguements hold for the maximum average power however there is no point in increasing this beyond 2.9dBm as the minimum ER allowed is 8dB

SuggestedRemedy

In table 88-11 change the maximum OMA from 4.0dBm to 4.5dBm Change the maximum average power from 2.4dB to 2.9dBm.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.8.1** *P* **319** *L* **23** # 491

Dudek, Mike JDSU

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

There is no specification that requires good transmitter signal quality other than the eye diagram which is not a good predictor of system performance, also there is no restriction on chirp. By adding the TDP specification and using OMA minus TDP as the key specification metric (like LR4) the chirp specification hole is filled and trade-offs are allowed that don't impact the system budget but make it easier to make transmitters.

It is also then unnecessary to have such a tight RIN spec

SuggestedRemedy

In table 88-11
Insert row Transmitter and Dispersion Penalty (max) 3.5dB.
Insert row Optical Modulation Amplitude minus TDP each lane (min) -3.4dBm
Row Optical Modulation Amplitude each lane min change 0.1dBm to -2.4dBm.
Row Average launch power per lane min from -2.9dBm to -5.4dBm.
Rin change from -132dB/Hz to -130dB/Hz.

In table 88-13
Add footnote to the power budget and allocation for penalties. Footnote to say "This link budget is with the maximum TDP allowed"

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.7.1** *P* **316** *L* **17** # 492

Dudek, Mike JDSU

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

It is expected that external modulators with high extinction ratios could be used for this system and therefore specifying a minimum average power that is not equivalent to the minimum OMA at infinite extinction ratio is a significant restriction

SuggestedRemedy

In Table 88-7 Change Average power per lane min from -4.3dBm to -5.3dBm.
In Table 88-8 Change Average receive power per lane (min) from -10.6dBm to -11.6dBm.

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.8.2** *P* **320** *L* **15** # 493

Dudek, Mike JDSU

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

It would be good to explain the reason for the large maximum average receiver power

SuggestedRemedy

in table 88-12 Add a footnote to the Average receive power per lane (max). footnote to say "The Average receive power per lane (max) is larger than the transmitter value for compatibility with 100GBASE-LR4 units at short distances."

Proposed Response *Response Status* **O**

Cl **86** *SC* **Tables 86-6, 86-7, 86-1** *P* **256-** *L* **260** # 494

Li, Mike Altera

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

D1.0 jitter specifications in those tables were specified in terms of conventional TJ and DJ. However, in the D1.1 editor's notes, it is recorded that proposals were made to replace DJ with the so-called 99% jitter. 99% jitter is nothing but a TJ at higher probabality (approx. 10^-4) that has a mixture of both Dj and RJ. In the case when the DJ pk-to-pk occurs at a smaller probability (e.g., 10^-8), 99% jitter will not be able to bound the DJ, and much larger DJ exists in the link can break the link.

SuggestedRemedy

Keep the deterministic jitter since it has been used and worked well for many other standards (FC, GBE (e.g., 802.3ae, 802.3ap), PCI Express, CEI/OIF, SATA, etc.).

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.1** *P* **357** *L* **2633** # 495

Li, Mike Altera

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

BER for XLAUI/CAUI is still not settled in D1.1. The current concensus is that the normative specification will be set at a BER=10^-12, while BER=10^-15 will still be allowed for those who want to meet it. Current specification in D1.1 is thus considered to be for BER=10^-12, and specifications for 10^-15 are yet to be defined.

SuggestedRemedy

Specification text for meeting BER=10^-15 for XLAUI/CAUI is needed.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.2.1.1** *P* **215** *L* **22** # 498

Anslow, Peter Nortel Networks

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

spurious space in "PMD_UNITDATA.request0 (tx_bit)" to "PMD_UNITDATA.request9 (tx_bit)" excluding "PMD_UNITDATA.request3(tx_bit)
Also applies to 85.2.2.1

SuggestedRemedy

Remove the space. ie change "PMD_UNITDATA.request0 (tx_bit)" to "PMD_UNITDATA.request0(tx_bit)" etc.

Do the equivalent in 85.2.2.1

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.2.1.1** *P* **201** *L* **10** # 499

Anslow, Peter Nortel Networks

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

spurious space in "PMD_UNITDATA.request0 (tx_bit)" to "PMD_UNITDATA.request3 (tx_bit)"
Also applies to 84.2.2

SuggestedRemedy

Remove the space. ie change "PMD_UNITDATA.request0 (tx_bit)" to "PMD_UNITDATA.request0(tx_bit)" etc.

Do the equivalent in 84.2.2

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.2.1.4** *P* **201** *L* **29** # 500

Anslow, Peter Nortel Networks

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

84.2.1.4 PMD_UNITDATA.indication should be a heading 3 i.e. 84.2.2 and the next heading (currently 84.2.2) should be a heading 4 i.e. 84.2.2.1

SuggestedRemedy

change the current 84.2.1.4 to heading 3 and change the current 84.2.2 to heading 4

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 501

Anslow, Peter Nortel Networks

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

The draft is not consistent in its use of significant digits. For example, Table 86-11 has limits of 4.0 V and 5 %. Why not 4 V or 5.0 %?
The base standard is not consistent on this issue. Table 52.16 has "Transmitter and dispersion penalty (max)" of "3.0 dB" but, "Extinction ratio (min)" of "3 dB"
It would be a good idea to decide on a format and use it consistently throughout the draft. Since the limits given do not have any associated tolerance, i.e. a Max limit of 3 dB is the same as one of 3.0 dB where 2.999999 is compliant and 3.000001 is not, it is proposed to only use as many digits as is required to express the number.

SuggestedRemedy

Throughout the draft, only use as many significant digits as is required to express the number. Values less than 1 are shown with a leading 0.
Valid examples are:
0.1 nm
3 dB
100 m

Invalid examples are:
0.10 nm
3.0 dB
100.0 m

Proposed Response *Response Status* **O**

Cl **86** *SC* **86** *P* **247** *L* **1** # 502
Anslow, Peter Nortel Networks

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

Remove TBDs in the power budget for clause 86 in Tables 86-6 to 86-12 and associated definitions.

SuggestedRemedy

Apply changes shown in anslow_04_0109.pdf

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.2** *P* **292** *L* **51** # 503
Anslow, Peter Nortel Networks

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

Clause 87.8.2 Total Skew and Dynamic Skew consists of only an editor's note.

SuggestedRemedy

Replace the editor's note with:
"Total Skew and Dynamic Skew are defined in 82.2.12. The measurement of Total Skew and Dynamic Skew is made by separating optical lanes with an optical de-multiplexer and then the acquiring the data on each lane using a clock and data recovery unit with a high frequency corner bandwidth as specified in Table 86-17 and a slope of -20 dB/decade. The arrival times of the one to zero transition of the alignment marker sync bits on each lane are then compared. This arrangement ensures that any high frequency jitter that is present on the signals is not included in the skew measurement."

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.2.2** *P* **251** *L* **28** # 504
Anslow, Peter Nortel Networks

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

The editor's note says "The Dynamic Skew limit at SP2 may be too high, further information is invited. The limits may be different for 40G and 100G"
However, the skew limit at SP2 is independent of the PMD type and hence it is inappropriate to have this note here.

SuggestedRemedy

Remove editor's note

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **28** # 505
Anslow, Peter Nortel Networks

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

Table 86-15 lists pattern types that are appropriate for 10GBASE-R PHYs rather than 40/100GBASE-SR and is in a different format from Tables 87-10 and 88-14.
Patterns 1 and 2 could never be seen in 40/100GBASE-SR and could only be generated by test gear. In this case there is a huge variety of test patterns that could be used. Why not add SONET/SDH or CEI test patterns?
Also, it is poor practice to define the test pattern in two places. This is done in 83.5.9 with a reference to 49.2.8 for PRBS31, it should not be done again here.
Why are there two square patterns?

SuggestedRemedy

Replace Table 86-15 with the same table as 87-10

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.2.2.3** *P* **216** *L* **29** # 506
Anslow, Peter Nortel Networks

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

This says "The effect of receipt of this primitive by the client (the PMA) is described in 83.3.1.3", however that clause describes receipt of data from the layer above the PMA.

SuggestedRemedy

change to "The effect of receipt of this primitive by the client (the PMA) is described in 83.4"

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.3** *P* **354** *L* **32** # 507
Dawe, Piers Avago Technologies

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

Obsolete editor's note

SuggestedRemedy

Delete

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.7.3** *P* **197** *L* **5** # 508

Dawe, Piers Avago Technologies

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

PICS overlooks some of the basics

SuggestedRemedy

Add major options:
40G or 100G
Number of lanes above this PMA (would be better done as a field to enter a number in like 'Date of Statement' on the previous page, rather than a yes/no multiple choice)
Number of lanes below this PMA
SP1SP6 needs to be split in two: nAUI above and nAUI below

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1** *P* **350** *L* **26** # 509

Dawe, Piers Avago Technologies

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

What does 'Self-timed interface allows timing control at higher layers' mean?

SuggestedRemedy

Delete 'allows timing control at higher layers'

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1** *P* **350** *L* **26** # 510

Dawe, Piers Avago Technologies

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

What does 'Shared functionality with other 40 Gb/s or 100 Gb/s ethernet blocks' mean? It looks like a copy from Clause 47. As nAUI doesn't do its own coding, I don't see what functional blocks are shared.

SuggestedRemedy

Delete. If kept, correct 'ethernet' to 'Ethernet'.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1.3** *P* **350** *L* **26** # 511

Dawe, Piers Avago Technologies

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

'the data stream is converted into four lanes at the chip interface' - not. The conversion is done well inside an IC, not necessarily the IC with the nAUI interface.

SuggestedRemedy

Change to 'For 40 Gb/s applications, the data stream is presented in four lanes as described in Clause 83, and for 100 Gb/s applications, it is presented in ten lanes.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.5.3** *P* **363** *L* **47** # 512

Dawe, Piers Avago Technologies

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

Rise/fall time is defined in 86.7.4.3 Transition time. No need to do it again.

SuggestedRemedy

Either,
Replace editor's note with
Rise/fall time is defined as transition time in 86.7.4.3.
Change title to
Rise/Fall time
OR
Replace editor's note with
Transition time is defined as transition time in 86.7.4.3.
Change title to
Transition time
In Table 83A-1, change 'Output Rise and Fall time' to 'output transition time', and similarly in Table 83A-2 and in 83A.7.4. In the footnote, change 'Rise/Fall time' to 'Transition time'.
In 83A.3.3.2, change Rise/fall to Transition.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **47** # 513

Dawe, Piers Avago Technologies

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

defined in where?

SuggestedRemedy

Change '83A.4.4' to a proper cross-reference to 86.7.4.3.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **357** *L* **13** # 514

Dawe, Piers Avago Technologies

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

Need something as well as TJ. Other comment objects to Maximum non-EQ Jitter (TJ - ISI)

SuggestedRemedy

Replace Maximum non-EQ Jitter (TJ - ISI) with a J2 spec. Refer to Clause 86 for definition.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **357** *L* **18** # 515

Dawe, Piers Avago Technologies

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

Receiver eye mask definition Y1 45 mV is radically different to the similar thing in Table 86-11 (150 mV). While some difference is expected, this makes me think someone has miscalculated

SuggestedRemedy

Review.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1.1** *P* **350** *L* **26** # 516

Dawe, Piers Avago Technologies

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

The project objective is 10^-12 BER. This draft says '[Editor's note: (to be removed prior to publication) - condition for total jitter error rate at 1E-15 is proposed]' which is not consistent with the objective.
For those who want a very low BER nAUI-like non-Ethernet interface, when we have a spec for nAUI with module connector, they will have an ideal basis for a 10^-15 link without connector. Alternatively, we have FEC available. So there is no need to divert this project.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.2** *P* **351** *L* **21** # 517

Dawe, Piers Avago Technologies

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

Diagram lacks the connector.

SuggestedRemedy

Show the connector. The transmit compliance points are looking upstream into the connector through a compliance board. The receive compliance points are looking upstream into the connector through a compliance board (for the compliance signal) and looking downstream into the connector through a compliance board (for S-parameters). If there is no connector, the implementer can slice the channel at a point of his choosing to create a point of observation. This might be at the smae point in the channel for both directions but I don't think this is necessary. In other words, the implementer gets to choose the mix of transmit and receive emphasis when there is no connector.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3** *P* **352** *L* **11** # 518

Dawe, Piers Avago Technologies

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

Draft says 'transmiter eyemask as defined in figure 83A-5 is not considered a sufficient description to guarantee performance; additional test methods are required'.
When you have proper test points - a combination of a somewhat tighter absolute eye mask, jitter specs and either, relative eye mask, or, Qsq spec and control over baseline wander, should be adequate.

SuggestedRemedy

Reduce X2. Add a relative eye mask. Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.1** *P* **247** *L* **33** # 519

Dawe, Piers Avago Technologies

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

Reference material has moved.

SuggestedRemedy

Change 82.1.4 to 80.2.

Proposed Response *Response Status* **O**

Cl **99** *SC* **99** *P* **10** *L* **49** # 520

Dawe, Piers Avago Technologies

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

There is a newer version of this page.

SuggestedRemedy

Ask P802.3av for it.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.3** *P* **354** *L* **22** # 521

Dawe, Piers Avago Technologies

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

GRATUITOUS capitals: the huge majority of 802.3 figures in new clauses use mixed upper and lower case (as do the axes here).

SuggestedRemedy

Change 'PASS REGION' to 'Pass region' in several figures

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **116** *L* **16** # 522

Dawe, Piers Avago Technologies

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

AUTO-NEGOTIATION

SuggestedRemedy

Auto-Negotiation

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.3** *P* **117** *L* **10** # 523

Dawe, Piers Avago Technologies

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

The subclauses summarising the sublayers are nearly all in order, from top to bottom (the management interface is a special case) - except FEC.

SuggestedRemedy

Move 80.2.3 Forward Error Correction (FEC) sublayer to after 80.2.2.1 Physical Coding Sublayer (PCS) and before 80.2.2.2 Physical Medium Attachment (PMA) sublayer.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.3** *P* **182** *L* **53** # 524
Dawe, Piers Avago Technologies

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

Can you have a list with just one entry?

SuggestedRemedy

Change to
In addition, the PMA provides receive link status information in the receive direction.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.2** *P* **181** *L* **35** # 525
Dawe, Piers Avago Technologies

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

Wasted space. In general, figures and tables should float.

SuggestedRemedy

Set Figure 83-1 to float, remove any blank line.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.3.2.1** *P* **150** *L* **6** # 526
Dawe, Piers Avago Technologies

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

Following D1.1 comment 335 through.

SuggestedRemedy

Change
PMA_UNITDATA.indicationx (rx_bit)
to
PMA_UNITDATA.indicationx(rx_bit)
i.e. without the space. Same in following subclauses e.g. 83.3.3.1.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **255** *L* **47** # 527
Dawe, Piers Avago Technologies

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

Excessive cross-referencing. We have already told the reader at line 40 that test points are defined in 86.7.1.

SuggestedRemedy

Delete the second '(see 86.7.1)'

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.4.1** *P* **252** *L* **31** # 528
Dawe, Piers Avago Technologies

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

Three cross-references to 86.7.1 in four lines is excessive.

SuggestedRemedy

Delete '(see 86.7.1)' twice.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 529
Dawe, Piers Avago Technologies

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

w\ve

SuggestedRemedy

wave

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7.1** *P* **269** *L* **17** # 530
Dawe, Piers Avago Technologies

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

The distance between -Y3 and 0 should be the same as between 1 and 1+Y3.

SuggestedRemedy

Move the -Y3 section lower down.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.8** *P* **269** *L* **24** # 531
Dawe, Piers Avago Technologies

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

There are no optical transmit jitter specs in this clause, although J2 and J9 are used for stressed receiver signal calibration.

SuggestedRemedy

Delete 86.7.5.8 Transmit jitter... and its Editor's note.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **20** # 532
Dawe, Piers Avago Technologies

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

via the x=0 to q- ?

SuggestedRemedy

Correct the paragraph.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **191** *L* **52** # 533
Dawe, Piers Avago Technologies

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

this Clause (83.5.7).

SuggestedRemedy

this subclause (83.5.7). Also for 83.5.8.

Proposed Response *Response Status* **O**

Cl **69** *SC* **69.2.3** *P* **91** *L* **28** # 534
Dawe, Piers Avago Technologies

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

AUTO-NEGOTIATION

SuggestedRemedy

Auto-Negotiation

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.10** *P* **160** *L* **36** # 535
Dawe, Piers Avago Technologies

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

figure 82-5

SuggestedRemedy

Figure 82-5 and make it a cross-reference.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.1** *P* **248** *L* **2** # 536
Dawe, Piers Avago Technologies

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

Waste of space

SuggestedRemedy

Change:
LAN
CSMA/CD
LAYERS
to: LAN CSMA/CD LAYERS
or better, LAN CSMA/CD layers
or even better, Ethernet layers

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **248** *L* **28** # 537
Dawe, Piers Avago Technologies

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

Why 'MEDIUM:'? We don't have category headings for the other abbreviations. Also, the medium IS multimode fiber, it's not FOR multimode fiber.

SuggestedRemedy

Delete 'MEDIUM:'

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **259** *L* **30** # 538

Dawe, Piers Avago Technologies

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

Needless repetition; these similar footnotes are not coincidence.

SuggestedRemedy

Change
Vertical eye closure penalty is a test condition for measuring stressed receiver sensitivity. It is not a required characteristic of the receiver.
Stressed eye jitter is a test condition for measuring stressed receiver sensitivity. It is not a required characteristic of the receiver.
to
Vertical eye closure penalty and stressed eye jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3** *P* **118** *L* **24** # 539

Dawe, Piers Avago Technologies

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

Table of delay limits is incomplete.

SuggestedRemedy

Add rows for FEC and AN. If AN delay is counted as part of PMD delay, say so in a table note and give a cross-reference

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3** *P* **118** *L* **25** # 540

Dawe, Piers Avago Technologies

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

Defining delay for PMA or PMD in MAC bit times is inappropriate as well as misleading; these sublayers have no knowledge or visibility of the MAC clock, or MAC bits. With multi-lane sublayers, 'bit time' becomes even more confusing. We improved things a little in D1.1 but not enough.
Is a table note that says 'Note that' normative or informative?
I suppose that we mean that if a clock is running slow (within the +-100ppm limits), one is allowed extra time.

SuggestedRemedy

Turn note a into a NOTE (or regular text) at line 13, add extra sentence 'One pause_quantum is 512 MAC bit times.'
Either,
If MAC and PCS engineers want their 'bit time' entries, insert a heading below the PCS in the second column 'Maximum at nominal signaling rate (ns)' and give the PMA and PMD entries in ns.
Or,
As MAC and PCS engineers can multiply by 512 and probably aren't considering a serial MAC or PCS implementation anyway, replace the whole second column with 'Maximum at nominal signaling rate (ns)' and give all the entries in ns.

Proposed Response *Response Status* **O**

Cl **74** *SC* **74.7.4.5** *P* **79** *L* **46** # 541

Dawe, Piers Avago Technologies

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

Follow-up from D1.0 comment 322: need to determine whether the error bursting expected in 40GBASE-CR4 and 100GBASE-CR10 degrades MTTFPA too much.

SuggestedRemedy

Do the analysis.
If it does, several options are available.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **116** *L* **1** # 542

Dawe, Piers Avago Technologies

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

Order of material; the table specifying the correlation between nomenclature and clauses interrupts the list of sublayers.

SuggestedRemedy

Move 80.2.2 to become 80.1.5.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.3.1** *P* **166** *L* **6** # 543

Dawe, Piers Avago Technologies

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

Layout

SuggestedRemedy

In Table 82-6, resize right column to contents. Make left two columns wider using the whole width (432 points for the whole table). Let 82.4 Loopback start anywhere.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **50** # 544

Dawe, Piers Avago Technologies

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

Editor's note says: Per comment #485, RIN testing involves transmitting
a square wave on one lane only and another pattern (PRBS31) on the other lanes.
Actually, it's one lane not modulated and a mixed-frequency pattern on the other lanes, and separately, square wave on one lane and don't care on the others.

SuggestedRemedy

Make RIN spec informative and don't provide pattern support for it. This works for Clause 86. However, 87 and 88 have RIN specs and there might be other reasons to have one lane with a different pattern. Will try to provide more info.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.5** *P* **255** *L* **20** # 545

Dawe, Piers Avago Technologies

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

Changes to the last draft made things worse; electrical lanes should not get a special mention when optical lanes are in the same situation. The empty 86.5.1 and 86.5.2 are unnecessary. Stop digging a hole. But it's worth pointing out that e.g. optical receive lane and signal detect lanes should correspond.

SuggestedRemedy

Change
There are no lane assignments for 40GBASE-SR4 and 100GBASE-SR10. While it is expected that a PMD will map electrical lane i to optical lane i and vice versa, there is no need to define where the electrical lanes are physically, as the PCS is capable of receiving the lanes in any arrangement.
to
A common lane numbering is used for optical transmitter and lane by lane transmit disable. A common lane numbering is used for optical receiver and lane by lane signal detect. As the PCS is capable of receiving the lanes in any arrangement, the PMD layer is not required to preserve lane numbering. This standard does not specify physical lane numbering at the PPI or MDI. A PMD may map electrical lane i to optical lane i and vice versa. MSA definitions of specific implementations of PPI or MDI, or connector specifications, distinguish transmit lanes from receive lanes.
Delete 86.5.1 and 86.5.2.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **255** *L* **45** # 546

Dawe, Piers Avago Technologies

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

As far as I can see, all the specifications in Table 86-6 will be appropriate and applicable to the electrical transmit signal.

SuggestedRemedy

Delete 'appropriate', twice. Also in 86.6.5.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.1** *P* **262** *L* **35** # 547

Dawe, Piers Avago Technologies

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

Need to define the compliance board losses.

SuggestedRemedy

Add new 86.7.1.1 Compliance board transfer characteristics. Add equations for nominal S21 of HCB and MCB, from instrumentation connectors to just before module connector. Use the SFP+ equations scaled up by 0.2 to 0.3 dB at Nyquist.
Add new 86.7.1.2 Transfer characteristics of mated HCB and MCB, consistent with above.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.9** *P* **270** *L* **44** # 548

Dawe, Piers Avago Technologies

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

Filling the TBDs in the channel S-parameter equation. This is for about 4 inches of PCB or 3.5 dB at Nyquist. The equations below are based on the SFP+ channel; the low loss limit is scaled by 0.6 and the high loss limit by 0.568, with a glitch around 250 MHz removed. Unlike the equation in the editor's note, it does not include the loss of the connector and the host compliance board, so it is more informative for IC and board designers (and it is 'informative').

SuggestedRemedy

20xlog10(|SDD21|) <= 0.3 -0.3xf 10^9 <= f <= 9.333x10^9
20xlog10(|SDD21|) <= -2.5 9.333x10^9 <= f <= 11.1x10^9
20xlog10(|SDD21|) >= -0.3 10^6 <= f <= 135x10^6
20xlog10(|SDD21|) >= -0.061 -0.48xsqrt(f) -0.456xf 135x10^6 <= f <= 7x10^9
20xlog10(|SDD21|) >= 11.36 -2.272xf 7x10^9 <= f <= 8x10^9
20xlog10(|SDD21|) >= -9 8x10^9 <= f <= 11.1x10^9
Revise figure 86-7 to illustrate this.
Change 'between the PMA IC and TP1 or TP4,' to 'between the PMA IC (TP0 or TP5) and the back of the module electrical connector (i.e. not including the module connector)'.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.1** *P* **281** *L* **16** # 549

Dawe, Piers Avago Technologies

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

Isn't it quite feasible to interoperate between a nAUI lane and an XFI spec part? Even to comply to both at once? Response to D1.1 comment 360 said 'Although this is feasible, there may be risks in explicitly stating it is interoperable with XFI. XFI loss budget including connector at 5.5GHz is 6dB. nAUI is looking at a 10dB budget.' This sounds like a yes.

SuggestedRemedy

Say that this spec is similar to XFI (part of XFP), add informative reference for XFP document, state to what extent they are interoperable. Is it when the loss is 6 dB or less at 5.5 GHz?

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3** *P* **224** *L* **11** # 550

Dawe, Piers Avago Technologies

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

If you have stated the signalling rate there is no need to give the unit interval, and writing down a recurring decimal is a nuisance. The other clauses don't have this.

SuggestedRemedy

Delete the row 'Unit interval nominal 85.8.3.3 96.969697 ps'. In 85.8.3.3, delete 'The corresponding unit interval is nominally 96.969697 ps.'. Similarly in 85.8.4 and 85.8.4.2.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.4** *P* **359** *L* **4** # 551

Dawe, Piers Avago Technologies

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

Figure 83A-8 Differential input return loss
is the same as
Figure 83A-4 Differential Output Returnloss
The file for D1.1 is already nearly as big as 802.3 Section 5 (3 projects, 19 clauses).

SuggestedRemedy

Remove Figure 83A-8 and refer to Figure 83A-4. Change the title of Figure 83A-4 to Differential input or output return loss.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4** *P* **357** *L* **13** # 552
Dawe, Piers Avago Technologies

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

'non-EQ Jitter (TJ - ISI)' There's no definition of what 'non-EQ Jitter' means in this document, nor this usage of 'ISI'. I suspect if I saw one I would not agree with it ;-)

SuggestedRemedy

Find a better metric, or explain these terms.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **119** *L* **20** # 553
Dawe, Piers Avago Technologies

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

Figures 80-2 and 80-3 imply that the PMA next to the PMD is optional. Yet there must always be a PMA next to the PMD; one cannot connect to a PMD with nAUI.

SuggestedRemedy

Mark the XLAUIs and CAUIs with 1 for optional.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.4.5** *P* **254** *L* **19** # 554
Dawe, Piers Avago Technologies

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

PMD lane by lane signal detect function would be implemented by the same methods (various implementations are permitted) as PMD global signal detect function. 'the magnitude of the optical signal' while suitably un-defined, might be read as denying this.

SuggestedRemedy

Delete 'the magnitude of '.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.1** *P* **71** *L* **50** # 555
Dawe, Piers Avago Technologies

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

Point out that cabling does not have to preserve lane numbering.

SuggestedRemedy

Add: As the PCS is capable of receiving the lanes in any arrangement, the cabling is not required to preserve lane numbering.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **256** *L* **15** # 556
Dawe, Piers Avago Technologies

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

Filling the TBDs and other improvements.

SuggestedRemedy

Accept the changes proposed in anslow_04_0109 with exceptions as resolved.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1.1** *P* **257** *L* **14** # 557
Dawe, Piers Avago Technologies

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

Illustrate the reflection specs.

SuggestedRemedy

Show the reflection specs in a figure, delete '[To do: illustrate these specs]'

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **30** # 558

Dawe, Piers Avago Technologies

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

Expecting that we will have a normative TDP spec per anslow_04_0109, we don't need a normative RIN spec. We are asked not to mix normative and informative material.

SuggestedRemedy

Delete the RIN12OMA row in Table 86-9. Here, add 'The transmitter's RIN12OMA should not exceed -128 dB/Hz.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5** *P* **260** *L* **19** # 559

Dawe, Piers Avago Technologies

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

Is this the best choice for AC blocking?

SuggestedRemedy

Consider having the AC coupling in the host receiver rather than the PMD receive side. If not, Table 86-11 should say 'Single ended output voltage tolerance' and Table 86-12 should say 'Single ended output voltage'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.5.1** *P* **261** *L* **6** # 560

Dawe, Piers Avago Technologies

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

Repetition; notice that equation 86-3 is the same as 86-1. Also 'where where'.

SuggestedRemedy

Replace:
given by:
20xlog10(|SDDnn|) LE max(-12, -12 + 2xsqrt(f), -6.3+13xlog10(f/5.5)) (86.3)
where where SDDnn is SDD22 or SDD11 and f is the frequency in GHz.
with
given by Equation 86-1.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.6** *P* **261** *L* **22** # 561

Dawe, Piers Avago Technologies

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

Power budget may change as a consequence of other changes.

SuggestedRemedy

Revise entries in power budget table 86-13 following other changes.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **30** # 562

Dawe, Piers Avago Technologies

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

Pattern 1 is a suitable test pattern and it may be convenient for factories and others to use the same patterns for 10G, 40G and 100G production.

SuggestedRemedy

Turn the row for Pattern 1 from italic to upright. Move or remove the footnote depending on decision for Pattern 2.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **32** # 563

Dawe, Piers Avago Technologies

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

Pattern 2 is as suitable for 40G and 100G as it is for 10G, and it may be convenient for factories and others to use the same patterns for 10G, 40G and 100G production.

SuggestedRemedy

Turn the row for Pattern 2 from italic to upright. Remove footnote a.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **36** # 564

Dawe, Piers Avago Technologies

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

Adopt PRBS9.

SuggestedRemedy

Change 'Short TBD' to 'PRBS9', change '[PRBS9 (if chosen) is defined in 68.6.1]' to '68.6.1' (upright text).

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **41** # 565

Dawe, Piers Avago Technologies

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

The information about alternative square waves should not be in a normative table. One could move the information to the NOTE on the previous page, or...

SuggestedRemedy

Delete the row 'Square'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **264** *L* **3** # 566

Dawe, Piers Avago Technologies

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

Completing table of test patterns. Remove rows for TJ and DJ, add rows for J2 and J9. Replace 'Aggregate TP2 metric' with 'TDP, OMA-TDP'. For rows that say '1 or 3' and for J2, allow Pattern 1, 2 or 3, the appropriate portion of a valid 40GBASE-R4 or 100GBASE-R10 signal (this includes Pattern 5), or a valid 10GBASE-R signal. For Tx eye, don't allow Pattern 2. For TDP, stressed sensitivity and J9, don't allow Pattern 1. For J9, don't allow Pattern 2 or PRBS9 (this last needs review). For DDPWS, PRBS9 only. For OMA and transition time, square 8+8 or PRBS9. Delete the RIN12OMA row as RIN12OMA should not be a normative spec and the test procedure in 52.9.6 is not appropriate for a system level test.

SuggestedRemedy

See separate file to follow.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.2** *P* **264** *L* **38** # 567

Dawe, Piers Avago Technologies

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

Editor's note may not be not needed after this round: the eye mask measurement is pretty much there although the exact levels of statistical significance need review.

SuggestedRemedy

Consider deleting the editor's note.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.3.2** *P* **264** *L* **42** # 568

Dawe, Piers Avago Technologies

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

In eye mask testing, if use of CRU makes a difference we must specify whether it is used or not. If it doesn't make a difference, the test implementer can take short cuts whatever we say. We cannot fail a transmitter for wander that the receiver is specified to tolerate, or credit it for low jitter or noise that will be overwritten by any receiver that can tolerate the wander.
Note Clauses 87 and 88 rely on this text.

SuggestedRemedy

Change
A clock recovery unit (CRU) should be used to trigger the oscilloscope for mask measurements, as shown in Figure 52-9. It should have a high frequency corner bandwidth as specified in Table 86–17 and a slope of –20 dB/decade.
to
A clock recovery unit (CRU) shall be 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.
And add a PICS.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 569

Dawe, Piers Avago Technologies

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

Having to use a pattern as unnatural as the 8+8 square wave is a pain, and is not necessary here.

SuggestedRemedy

Swap the normative and alternative procedures with editorial adjustments to make the text flow.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **27** # 570

Dawe, Piers Avago Technologies

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

Unwanted question

SuggestedRemedy

Delete '[TBC]'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.5** *P* **267** *L* **11** # 571

Dawe, Piers Avago Technologies

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

Depending on the outcome of another comment, there may be both absolute and relative electrical masks.

SuggestedRemedy

Revise 86.7.4.5 as appropriate.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.7** *P* **267** *L* **20** # 572

Dawe, Piers Avago Technologies

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

Any more electrical parameter definitions to be added?

SuggestedRemedy

Delete this heading or add them.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.3** *P* **267** *L* **37** # 573

Dawe, Piers Avago Technologies

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

The OMA definition is the only thing that causes us to need square wave generators. We need a measure with low experimental scatter for the clean reference signal in the TDP definition, and for the compliance signal in the stressed receiver sensitivity - both these (after averaging) are very 'linear' signals. We don't need such a good measure for the OMA of the product transmitter.

SuggestedRemedy

Look again at deriving OMA from a captured PRBS9 waveform. If this method is accurate enough (as it will be for the first two cases above), make it normative and delete the square wave generators in the PMA.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.6** *P* **268** *L* **3** # 574

Dawe, Piers Avago Technologies

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

Having to provide lane-by-lane square wave generators would be a nuisance, especially as RIN12OMA should be just informative.

SuggestedRemedy

Change subclause to:
The RIN measurement methodology of 52.9.6 may be used with these exceptions:
a) All lanes are operational in both directions (transmit and receive);
b) Each lane is tested individually;
c) The signal on the lanes not under test should be Pattern 1, 2, 3 (PRBS31), 5 or parts of valid 10GBASE-R, 40GBASE-R or 100GBASE-R signals;
d) It may be more convenient to find the equivalent of P_M with Pattern 1, 2, 3, 4, 5 or parts of valid 10GBASE-R, 40GBASE-R or 100GBASE-R signals and apply a correction factor.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7** *P* **268** *L* **12** # 575

Dawe, Piers Avago Technologies

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

With TDP, TDP-OMA and the eye mask in the draft we have adequate TP2 specs, although with more study, the mask could be better optimised.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.7.1** *P* **268** *L* **43** # 576

Dawe, Piers Avago Technologies

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

Are the 0 and 1 amplitudes or levels? Gratuitous capitals; Clause 45 doesn't use capitals.

SuggestedRemedy

Change 'amplitudes' to 'levels', ZERO to zero, ONE to one.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.4** *P* **266** *L* **34** # 577

Dawe, Piers Avago Technologies

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

J2 and J8 have optical application.

SuggestedRemedy

Define J2 and J9 at 86.7.3.3.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **31** # 578

Dawe, Piers Avago Technologies

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

Differences between this stressed receiver sensitivity procedure and 52.9.9 include:

Sinusoidal amplitude interferer is replaced by a Gaussian noise generator.
The signal has the VECP, J2 and J9 given in Table 86–10.

SuggestedRemedy

Revise text per list.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **32** # 579

Dawe, Piers Avago Technologies

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

For the same reasons as for LRM, sinusoidal jitter tolerance testing should be separated.

SuggestedRemedy

For the stressed receiver sensitivity, use just one SJ setting e.g. at 80 GHz.
Delete Table 86-17. Add rows to Table 86-8:
Conditions of receiver jitter tolerance test:
Jitter frequency and peak to peak amplitude (75, 5) (kHz, UI)
Jitter frequency and peak to peak amplitude (375, 1) (kHz, UI)
Add new subclause:
86.7.5.10 Receiver jitter tolerance
Receiver jitter tolerance for each lane is defined as in 68.6.11, with the following differences:
a) The pattern to be received is specified in Table 86-16;
b) The other receive lanes not being tested are receiving Pattern 1, 2, 3, 5, or portion(s) of a 10GBASE-R, 40GBASE-R4 or 100GBASE-R10 signal, and the transmitter is transmitting one of these signals using all lanes, and
c) The transmitter and the receiver are not synchronous.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **48** # 580

Dawe, Piers Avago Technologies

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

Patterns for transmit side for stressed sensitivity.

SuggestedRemedy

Change
TBD, or a valid 40GBASE–R4 or 100GBASE–R10 signal
to
Pattern 1, 2, 3, 5, or portion(s) of a 10GBASE-R, 40GBASE-R4 or 100GBASE-R10 signal
Also add:
If multiple copies of a single-lane pattern are used, they are arranged with adequate phase differences so that the bits on the lanes at any instant are not correlated. If a multi-lane pattern such as Pattern 5 is used, no dephasing is necessary.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.9** *P* **269** *L* **49** # 581

Dawe, Piers Avago Technologies

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

The bits or patterns in these tests are not data.

SuggestedRemedy

Change
The data being transmitted is asynchronous to the received data.
to
The compliance signal is not synchronous to the transmitter of the receiver under test.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.1** *P* **272** *L* **20** # 582

Dawe, Piers Avago Technologies

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

Need to reduce cabling skew and Dynamic Skew limits by the skew and Dynamic Skew that could be caused by wavelength changes, which are attributable to the transmitter not the channel. We aren't required to spend all the skew budget.

SuggestedRemedy

Change Cabling skew Max from 100 to e.g. 99 ns. Change table title to:
Fiber optic cabling (channel) characteristics at 850 nm.
Change footnote b to:
These channel insertion loss values include cable, connectors, and splices.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.1** *P* **272** *L* **31** # 583

Dawe, Piers Avago Technologies

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

Is the channel insertion loss going to receive further study?

SuggestedRemedy

Review the 1.9 dB allocation and delete footnote c.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.1** *P* **273** *L* **17** # 584
Dawe, Piers Avago Technologies

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

The effective modal bandwidth when measured with the launch conditions specified in Table 86–8 is irrelevant. Cable vendors and network operators will use the launch in the relevant standard.

SuggestedRemedy

Change 'Table 86–8' to whatever the relevant IEC standard for effective modal bandwidth measurement for OM3 is.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.2.1** *P* **273** *L* **23** # 585
Dawe, Piers Avago Technologies

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

There is only one sort of maximum link distance, and only one maximum link distance, in this clause. 'calculated based on' seems like a mistake.

SuggestedRemedy

Change 'The maximum link distances for multimode fiber are calculated based on' to 'The maximum link distance is based on'.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.10.2.3** *P* **273** *L* **44** # 586
Dawe, Piers Avago Technologies

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

While I do not object to the MPO as an example connector, this is not the right document for defining optical connectors.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.11.4.1** *P* **276** *L* **25** # 587
Dawe, Piers Avago Technologies

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

As n is 3 or 9, there are not n optical signal streams.

SuggestedRemedy

Change 'n' to '4 or 10'.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12c** *P* **51** *L* **10** # 588
Dawe, Piers Avago Technologies

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

Bit 1.19.15 cannot always be 1. MMDs are expected to return zero for addresses they don't use - and e.g. 10G MMDs don't use this address. In other words, the register is implemented even if the feature isn't.

SuggestedRemedy

Change table entry and text to the usual 1 for able, 0 for not able.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.9** *P* **271** *L* **44** # 589
Dawe, Piers Avago Technologies

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

If no crosstalk mask is ready,

SuggestedRemedy

Delete the whole of the editor's note.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **192** *L* **1** # 590

Dawe, Piers Avago Technologies

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

Having the PMA system loopback at the top of the PMA stack (i.e. inside the same chip as the PCS) means that doesn't test most of the PMA, and is not the way loopback is usually done. For example, 51.8 says NOTE-Loopback mode may be implemented either in the parallel or the serial circuitry of a device. and 50.3.9 says NOTE-The signal path through the WIS that is exercised in the Loopback mode of operation is implementation specific, but it is recommended that this signal path encompass as much of the WIS circuitry as is practical.
Three uses of system loopback - exercising the sublayers above, verifying correct operation of most of the PMA, and identifying a faulty part are achieved by this. If sometimes the lanes are re-ordered, so much the better for exercising the sublayers above. Diagnosing one bad lane is a specialist situation that this loopback need not cover - the lane by lane pattern checkers may be useful for this (although not in D1.1 where the checkers are below the loopback point).
The system loopback should be in the lowest PMA above any connector.

SuggestedRemedy

Change
At the PMA service interface, the uppermost PMA sublayer (the one closest to the PCS) may provide a system loopback function. The function involves looping back each input lane to the corresponding output lane. Each bit received from the PMA_UNITDATA.requestx(tx_bit) primitive is looped back in the direction of the PCS using the PMA_UNITDATA.indicationx(rx_bit) primitive.
to
The PMA sublayer directly above the higher of any demountable electrical connectors between sublayers (if there is no such connector, the lowest PMA) may provide a system loopback function. The function involves looping back each input lane to an output lane. NOTE-The signal path through the PMA that is exercised in the Loopback mode of operation is implementation specific, but it is recommended that this signal path encompass as much of the PMA circuitry as is practical.

Adjust Fig 83-5 and change note 3 to 'See 83.5.7'

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5** *P* **189** *L* **10** # 591

Dawe, Piers Avago Technologies

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

The PMA has no concern with the 'bit-rate'; that's what the MAC uses and the rate is modified by the line coding in the PCS before the PMA sees a signal.

SuggestedRemedy

Change 'nominal bit-rate' to 'nominal signaling rate', twice in this paragraph.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.4** *P* **32** *L* **9** # 592

Dawe, Piers Avago Technologies

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

In clause 45, the MDIO bits are not 'logic one' and 'logic zero', they are just one and zero.

SuggestedRemedy

Delete 'logic', 7 times on this page.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.7** *P* **192** *L* **11** # 593

Dawe, Piers Avago Technologies

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

In Clause 45, the MDIO bits are not 'logic one' and 'logic zero', they are just one and zero.

SuggestedRemedy

Delete 'logic', four times on this page.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **192** *L* **40** # 594

Dawe, Piers Avago Technologies

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

Draft says
These test patterns are not intended to traverse more than one sublayer or to be carried over an end-to-end Ethernet link. The test patterns may not be recoverable if they are rearranged through the bit multiplexing operations described in 83.5.2.
I expect they may be used for e.g. stressed sensitivity or TDP testing where they will traverse at least a whole PMD sublayer plus part of a PMA. I believe that PRBS9 and PRBS31 are always recoverable even if rearranged through the bit multiplexing operations described in 83.5.2.

SuggestedRemedy

Delete both sentences. If you want some text, say what is intended not what is not. E.g. 'These test patterns are intended for testing an individual sublayer.'

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **16** # 595

Dawe, Piers Avago Technologies

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

I believe that 'does not indicate a valid signal since the test pattern cannot, in general, transit the PMA and still be recognized.' is not correct. If the input is PRBS31 on all lanes, the output will be PRBS31 on all lanes. However, the PCS won't know what to do with it.

SuggestedRemedy

Change to 'does not indicate a valid signal since the test pattern is not meaningful to the PCS.'
Same at line 46.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **26** # 596

Dawe, Piers Avago Technologies

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

The only use for checking PRBS9 is if one can e.g. have most lanes carrying PRBS9 and one lane carrying PRBS31 for lane-by-lane diagnostics when the lanes may have been re-ordered. But I suspect this would need too much little-used PMA circuitry.

SuggestedRemedy

Consider deleting the check Tx TBD test pattern mode and check Rx TBD test pattern mode.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **194** *L* **5** # 597

Dawe, Piers Avago Technologies

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

When transmit test pattern is disabled

SuggestedRemedy

When transmit square wave test pattern is disabled
These sentences 'When ... is disabled, the PMA returns to normal operation' need reworking or removal anyway, as another bit may divert the PMA from normal operation.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.6** *P* **194** *L* **13** # 598

Dawe, Piers Avago Technologies

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

four addressable instances for each possible PMA sublayer.

SuggestedRemedy

four addressable instances, one for each possible PMA sublayer.
or
four addressable instances for each port.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.3** *P* **186** *L* **45** # 599
Dawe, Piers Avago Technologies

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

If the PMD uses Auto-negotiation, there is another primitive AN_LINK.indication which think is passed without modification from PMD to PCS.

SuggestedRemedy

Add conditional AN_LINK.indication.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9.1** *P* **227** *L* **13** # 600
Dawe, Piers Avago Technologies

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

This maximum insertion loss allocation, halved if it covers the sum of transmit and receive PCB traces, is only 2.3 dB at Nyquist. Another opinion has 3.5 dB for 4 inches of PCB.

SuggestedRemedy

I think this would be a more useful standard if the allocation for PCB loss were increased and the allocation for cable loss reduced in step.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.10** *P* **228** *L* **228** # 601
Dawe, Piers Avago Technologies

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

The SFP+ direct attach cable specification includes DC blocking capacitors. Maybe this has grounding advantages.

SuggestedRemedy

Why doesn't this cable specification?

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.3.3.2** *P* **188** *L* **17** # 602
Dawe, Piers Avago Technologies

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

If we have PMAserver_SIGNAL.indication(SIGNAL_OK) it would be better to:

SuggestedRemedy

Change Signal Indicate Logic to Signal Indication Logic, throughout.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.10** *P* **160** *L* **36** # 603
Dawe, Piers Avago Technologies

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

It's not desirable to test a DTE receiver's sensitivity by sending it scrambled idle, because if the DTE is not explicitly put into test mode it will start sending frames to the tester. Better to send it scrambled RF. A network operator may wish to assess a signal received from another operator whose equipment it cannot put into test mode. That signal will be RF unless the other operator's receiver is receiving correctly, when it will be idle.

SuggestedRemedy

It would be helpful if the test-pattern generator and checker could generate and check scrambled RF as well as scrambled idle. I expect that a checker could be made that counts errors well enough without being told whether RF or idle is intended.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **4** # 604
Dawe, Piers Avago Technologies

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

D1.1 comment 89 expresses concern at the burden of counting at 10 GHz. If this was a concern for one lane at 10G, it will be a concern for 4 or 10 lanes wide here.

SuggestedRemedy

Investigate. We may wish to allow counting errored 66-bit blocks, which would be quite adequate if the errors are not bursty.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **290** *L* **22** # 605

Dawe, Piers Avago Technologies

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

Table uses the abbreviation for OMA but not for TDP. This makes it easy to miss the TDP spec especially if using a string search.

SuggestedRemedy

Change 'Transmitter and dispersion penalty, each lane' to 'Transmitter and dispersion penalty (TDP), each lane'. Also in Clause 88.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **290** *L* **19** # 606

Dawe, Piers Avago Technologies

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

In this:
Launch power per lane (min) in OMA minus TDP
We don't sum the powers and divide by the number of lanes. TDP may differ across the lanes. Min and max are generally at the end.

SuggestedRemedy

Change to 'Launch power in OMA minus TDP, each lane (min). Change 'Average launch power per lane (max)' to 'Average launch power, each lane (max)'. Change 'Average launch power per lane (min)' to 'Average launch power, each lane (min)'. Also in Clause 88.

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.7.1** *P* **290** *L* **19** # 607

Dawe, Piers Avago Technologies

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

Footnote b, 'TDP is transmitter and dispersion penalty, see 87.8.6.' is anomalous. As we say right before the table, 'The 40GBASE–LR4 transmitter shall meet the specifications defined in Table 87-7 per the definitions in
87.8.' This footnote implies that the definitions of wavelength, OMA and the rest are not there. Footnoting each and every parameter would be silly.

SuggestedRemedy

Delete footnote b. If others think some footnote is needed, footnote the first parameter (wavelength in this table) with a general footnote such as 'Parameters and associated test patterns are defined in 87.8'.
Also in Clause 88.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **257** *L* **50** # 608

Dawe, Piers Avago Technologies

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

With a normative TDP spec (see anslow_04_0109), we don't need a normative RIN spec. IEEE are tightening their request to not mix normative and informative material.
Also, not having a normative RIN12OMA should simplify the lane-by-lane pattern generation requirements in the PMA.

SuggestedRemedy

Please delete the RIN12OMA row in Table 86-9. At 86 86.6.2 p257 line 30 (just above this table), add 'The transmitter's RIN12OMA should not exceed -128 dB/Hz.'

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.2** *P* **258** *L* **9** # 609

Dawe, Piers Avago Technologies

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

To be clear, we should give the eye mask hit ratio spec in the table as we do for the other eye masks. Also this is preparation towards a common definition of eye mask.

SuggestedRemedy

Insert row in table under Transmitter eye mask definition, (indented) Eye hit ratio 5 x 10^-5 hits per sample.
In 86.7.5.7.1, change
The transmitter shall achieve a hit ratio lower than 5 × 10–5 hits per sample, where "hits" are...
to
The transmitter shall achieve a hit ratio lower than the limit of hits per sample specified in the appropriate table e.g. Table 86-8 or 5 × 10–5 hits per sample if not otherwise specified. "Hits" are...
Revise PICS SOM8 to match.
Consider making similar changes in tables 87-7, 88-7 and 88-11 and clauses 86.7.3.2.1, 86.7.5.7, 86.7.5.7.1, 87.8.9 and 88.9.8.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **259** *L* **30** # 610

Dawe, Piers Avago Technologies

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

Needless repetition; the similar footnotes are not coincidence.

SuggestedRemedy

Change
Vertical eye closure penalty is a test condition for measuring stressed receiver sensitivity. It is not a required characteristic of the receiver.
Stressed eye jitter is a test condition for measuring stressed receiver sensitivity. It is not a required characteristic of the receiver.
to
Vertical eye closure penalty and stressed eye jitter are test conditions for measuring stressed receiver sensitivity. They are not characteristics of the receiver.
And similarly in Clauses 87 and 88.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.4** *P* **259** *L* **21** # 611

Dawe, Piers Avago Technologies

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

For the same reasons as for LRM, sinusoidal jitter tolerance testing should be separated.

SuggestedRemedy

For the stressed receiver sensitivity, use just one SJ setting e.g. at 80 GHz.
Add rows to Table 86-8:
Conditions of receiver jitter tolerance test:
Jitter frequency and peak to peak amplitude (75, 5) (kHz, UI)
Jitter frequency and peak to peak amplitude (375, 1) (kHz, UI)
Add new subclause:
86.7.5.10 Receiver sinusoidal jitter tolerance
Receiver sinusoidal jitter tolerance for each lane is defined as in 68.6.11, with the following differences:
a) The pattern to be received is specified in Table 86-16;
b) The other receive lanes not being tested are receiving Pattern 1, 2, 3, 5, or portion(s) of a 10GBASE-R, 40GBASE-R4 or 100GBASE-R10 signal, and the transmitter is transmitting one of these signals using all lanes, and
c) The transmitter and the receiver are not synchronous.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.5.4** *P* **267** *L* **45** # 612

Dawe, Piers Avago Technologies

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

Clause 52 stressed sensitivity for 10GBASE-S uses a comparison of a sensitivity measurement of a good signal with a reference receiver without a transversal filter, and of the signal (transmitter) under test with the same reference receiver but with the transversal filter in place. This is disliked.

SuggestedRemedy

I hope we can get to a TDP definition where the same reference receiver is used with both the reference signal and the signal under test.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.1** *P* **171** *L* **30** # 613

Dawe, Piers Avago Technologies

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

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.

SuggestedRemedy

Add text in Clause 85 saying that 40GBASE-CR4 and 100GBASE-CR10 use Parallel Detection.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.8.3.1** *P* **225** *L* **17** # 614

Dawe, Piers Avago Technologies

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

It is very good that TP1, TP2, TP3, TP4 are positioned in relation to the connector, but not clear enough where they are exactly with respect to the connector. While for some measurements like S-parameter measurements on a passive cable, de-embedding can be used to infer the performance right next to the connector, For measurements of nonlinear active elements like transmitters and receivers, in general this cannot be done.

SuggestedRemedy

Use the same defined reference losses (HCB losses) between MDI and TP2 and between MDI and TP3 as Clause 86 has between MDI and TP1a and between MDI and TP4a. See presentation by Ali.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.8** *P* **206** *L* **28** # 615

Dawe, Piers Avago Technologies

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

Submitted again with clarification as the response did not address the main point.
84.8 refers to 72.7, which says '...the PMD sublayer is standardized at test points TP1 and TP4 as shown in Figure 72-1. The electrical path from the transmitter block to TP1, and from TP4 to the receiver block, will affect link performance and the measured values of electrical parameters used to verify conformance to this standard. Therefore, it is recommended that this path be carefully designed.' In other words, there is no expectation that a board from vendor A, a backplane from B and another board from C can be expected to interoperate reliably, because each of them can spend as much of the shared channel budget as he pleases. This is not an interoperability spec, it's just an advertisement for some ICs. Is this what we want?
An interoperability spec must have PMD electrical specs related to the connectors so that boards from different vendors can be interchanged. This true whether or not the channel is normative. For my part, I can't see why the backplane from one connector to the other should not be normative.

SuggestedRemedy

Discuss. Options are: make Clause 84 into a proper interoperability spec with PMD test points related to the connectors (Clause 86 will have to do much of that work anyway), delete the clause, move it to an annex, or accept that it's not a proper spec.
Also consider giving a normative backplane spec from one connector to the other - Clause 85 has a normative cable spec.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.3.2** *P* **190** *L* **44** # 616

Dawe, Piers Avago Technologies

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

Tracking the last little bit of skew costs power in high speed analog circuitry. The PCS and PMA implemented as a silicon chip in a package on a PCB have no need to generate as much as 200 ps of Dynamic Skew. There could be several x 10 ps gate delay, most of which is correlated lane to lane (giving maybe 5 ps Dynamic Skew) plus perhaps 2" or 400 ps mismatched lane lengths on the PCBs, which might change by 5% over temperature and humidity: that's 20 ps. Total 25 ps. 50 ps should be adequate. Because the last fraction of a bit must be tracked in an analog way, rounding up to the next UI is not helpful. After padding, CEI chose a 1.5 UI limit for 'Relative Wander' (their term for Dynamic Skew).

SuggestedRemedy

Change SP1 Dynamic Skew output and tolerance limits to 150 ps or less, e.g. 100 ps. Similarly, reduce SP2 Dynamic Skew output and tolerance limits to 300 ps or less, e.g. 200 ps.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2** *P* **350** *L* **51** # 617

Dawe, Piers Avago Technologies

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

The primary purpose of the nAUI spec is the same as the XFI spec at 10G: to provide a standardised and interoperable spec for plugging retimed transceiver modules into line cards or similar. Like XFI (part of XFP), it needs to take a connector into account (does not need to define the connector mechanicals) and define the compliance points with reference to the connector.
As the reflector thread said, having this incomplete spec would be worse than no spec in 802.3ba at all.

SuggestedRemedy

Use the six TP compliance points and the compliance card transfer characteristics defined in 86.7.1, relegate the points in Fig 83A-2 to informative reference points like A and D in SFP+. Or if desperate, delete all of 83A.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.8** *P* **289** *L* **14** # 618

Dawe, Piers Avago Technologies

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

It's not clear that these jitter specs allow the two concatenated CDRs and an optical link, XFP style, that will be wanted when connecting e.g. a 40GBASE-LR4 module.

SuggestedRemedy

Modify the jitter specifications to be sure they do. This may mean that the specs on the transmit side and receive side differ - I think the single-tone sinusoidal jitter masks (Fig. 83A-10) have to differ. See dawe_03_1108.pdf.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.3** *P* **182** *L* **47** # 619

Dawe, Piers Avago Technologies

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

There seem to be more test pattern and loopback options than are needed.

SuggestedRemedy

See presentation.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.9.1** *P* **227** *L* **15** # 620

Dawe, Piers Avago Technologies

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

Specification range for cable insertion loss is not adequate at either end. SFP+ Annex E cable S-parameter specs go from 10 MHz to 11.1 GHz. This is not about 1G operation; a channel that is not controlled below 100 MHz WILL be expected to fail at 10G/lane.

SuggestedRemedy

Extend the range of Cable assembly insertion loss, Cable assembly return loss, Near-End Crosstalk, MDNEXT, FEXT and MDELFEXT and maximum insertion loss allocation for the transmitter and receiver differential controlled impedance
printed circuit boards to at least 10 MHz to 10 GHz.

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.2.2** *P* **251** *L* **14** # 621

Dawe, Piers Avago Technologies

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

Dynamic Skew at SP2 (400 ps or 2 UI) is excessive; OIF has 1.5 UI at SP1(?) and that's after they sandbagged it. Because a group of 4 differential traces can be kept more equal in length than a group of 10, the Dynamic Skew for 40G should be lower than that for 100G. Removing an editor's note.

SuggestedRemedy

Change limit for Dynamic Skew at SP2 to 300 ps (which is 3 UI). Remove the editor's note at line 28.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **119** *L* **44** # 622

Dawe, Piers Avago Technologies

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

Nomenclature: D1.1 uses 'Total Skew' and 'Dynamic Skew'. D1.0 used 'skew' and 'dynamic skew'. I saw nothing in the comment database to justify 'Total Skew', and it isn't a total. It is not likely that what is called 'Dynamic Skew' will be dynamic (means fast-moving) and however slowly it changes, it still matters.
Before this project, OIF-CEI-02.0 had defined 'Uncorrelated Wander' but they don't seem to have a good name for the largest skew between any two lanes in a group, either. Names like 'Maximum Skew' or 'Greatest Skew' could allow confusion between a maximum across lane-pairs and a maximum through time.
I've made this a TR because it affects multiple clauses.

SuggestedRemedy

Change 'Dynamic Skew' to 'Uncorrelated Wander' throughout.
Change 'Total Skew' to 'All-lanes Skew' (unless people prefer something else, e.g. 'Maximum Skew' or 'Greatest Skew').

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.6** *P* **363** *L* **51** # 623

Dawe, Piers Avago Technologies

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

Like a PMA or PCS clause, nAUI is completely on a single line card or similar, so the draft doesn't need environmental specifications for it. Compare 14.7: the only part that might apply is
14.7.1 General safety
All equipment meeting this standard shall conform to IEC 60950:1991.

SuggestedRemedy

Delete the subclause or replace the editor's note with 'All equipment subject to this clause shall conform to IEC 60950-1.'

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **192** *L* **19** # 624

Dawe, Piers Avago Technologies

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

Line loopback is something you should not expect of the module. In particular, small 100G modules are likely to use a double decker construction with the separate transmit and receive planes and no cheap and satisfactory way of making a high speed connection between them.

SuggestedRemedy

Change
Line loopback is only applicable for the lowermost PMA (the one closest to the PMD) at the PMD service interface. When line loopback is enabled, each bit received over the PMD service interface via the x=0 to q-
1. Note that “PMA server” can represent the FEC, PMD, or another PMA sublayer. PMAserver_UNITDATA.indicationx(rx_bit) primitive is sent back toward the PMD via the PMAserver_UNITDATA.requestx(tx_bit) primitive.
to
If the PMD can be removed, line loopback is only applicable for the PMA directly above the demountable electrical connector closest to the PMD at the PMD service interface. If the PMD cannot be removed, line loopback is only applicable for the lowermost PMA (the one closest to the PMD) at the PMD service interface.
Adjust Fig 83-5 and change note 4 to 'See 83.5.7'

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **121** *L* **33** # 625

Dawe, Piers Avago Technologies

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

Dynamic Skew at SP2 (400 ps or 4 UI) is excessive; OIF has 1.5 UI at SP1(?) and that's after they sandbagged it. Because a group of 4 differential traces can be kept more equal in length than a group of 10, the Dynamic Skew for 40G should be lower than that for 100G. See another comment for estimates of dynamic skew; it's hard to see it being as large as 50 ps at SP1.

SuggestedRemedy

Change limit for Dynamic Skew at SP1 to 0.1 or 0.15 ns (which is 1.5 UI for 10G lanes).
Change limit for Dynamic Skew at SP2 to 0.2 or 3 ns (which is 3 UI for 10G lanes).

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.6.1** *P* **256** *L* **21** # 626

Dawe, Piers Avago Technologies

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

The eye mask coordinates allow the host to generate a really large, slow, noisy eye. Reflections with a large eye will degrade the small opening specified in the eye. Slow and noisy edges will cause the transmitted optical signal to have excessive jitter. This same problem was observed and fixed in SFP+. Options for fixing are:
Reduce X2 from 0.33;
Introduce a relative mask;
Introduce a Qsq limit of 50 or so, and require the host to keep its baseline wander in check (SFP+ is attempting this);
Tighten the hit ratio.
Because the measurement time can be used for a relative and absolute mask, the first and last options do not add test cost.

SuggestedRemedy

Reduce X2. Apply a relative mask with the same X1, X2, and Y1, Y2 of 0.25, 0.25.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **38** # 627

Dawe, Piers Avago Technologies

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

Expecting the analog-oriented power-challenged semiconductors in a module to generate and check all these test patterns. It is much easier done in a bigger more digitally oriented IC in the host.

SuggestedRemedy

Change
Where the output lanes of the PMA appear on a physically instantiated interface XLAUI/CAUI or the PMD service interface (whether or not it is physically instantiated), the PMA may optionally generate and detect test patterns.
to
Where the connection to the sublayer below uses a demountable connector, the PMA may optionally generate and detect test patterns.
Change Figure 83-5 notes 1 and 2 to one note 'See 83.5.9'.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.2** *P* **186** *L* **32** # 628

Dawe, Piers Avago Technologies

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

Text says all these pattern generators, checkers and loopbacks are optional. This diagram implies otherwise.

SuggestedRemedy

Add new first note:
Loopbacks and test pattern generators and detectors are optional.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.3** *P* **202** *L* **26** # 629

Dawe, Piers Avago Technologies

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

This clause can't tell the PCS what to do. That's what the PCS clause is for - and it already does so in 82.6

SuggestedRemedy

Change 'shall' to 'must', delete 84.11.4.1.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.1** *P* **171** *L* **30** # 630

Dawe, Piers Avago Technologies

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

Direct attach links can be set up with the transmit emphasis appropppriate to the lossiest rated cable and would be expected to be fine with all other cables. Or, the cable's I2C registers can be interrogated and transmit emphasis chosen accordingly. I don't yet see any evidence that Clause 73's handshaking Training is needed for 40GBASE-CR4 and 100GBASE-CR10 as opposed to KR.

SuggestedRemedy

If there is evidence, present it. If not, define a fixed transmit emphasis and don't use Training.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.2** *P* **351** *L* **12** # 631

Latchman, Ryan Gennum Corp

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

KR felt it sufficient to state that the path between the receiver to testpoint be "carefully designed". To ensure future flexability, perhaps we should do the same for the following TBD. "Any interconnect which has a loss less than (SDD21(dB) (TBD)) f is given in GHz)"

SuggestedRemedy

Change
Any interconnect which has a loss less than (SDD21(dB) (TBD)) f is given in 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.

to

Any interconnect which minimizes the loss between the XLAUI/
CAUI receive pin and Receive Compliance Point may be used as long as receiver parameters of Table 83A-2 are met. The electrical path from the receiver block to receiver compliance point will affect link performance and the measured values of electrical parameters used to verify conformance to this standard.
Therefore, it is therefore recommended that this path be carefully designed.

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **83A** *SC* **83A.3.3.3** *P* **354** *L* **31** # 632

Latchman, Ryan Gennum Corp

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

following editor note has been addressed:

[Editor's note: (to be removed prior to publication) - The Return Loss limits in Figure 83A–5 and
Figure 83A–9 may have to be plotted in log linear scale with loss being positive. The definition or formatting
to be reconciled similar to the definition or plots in base spec 802.3-2008 Annex 69B]

SuggestedRemedy

remove editors comment

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **83** *SC* **83.1.3** *P* **182** *L* **49** # 633

Latchman, Ryan Gennum Corp

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

Test Pattern generation / detection is optional. (see 83.5.9 - Where the output lanes of the PMA appear on a physically instantiated interface XLAUI/CAUI or the PMD service interface (whether or not it is physically instantiated), the PMA may optionally generate and detect test patterns)

SuggestedRemedy

Change "Provide test pattern generation and detection" to "Optionally provide test pattern generation and detection"

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.2** *P* **263** *L* **41** # 634

Latchman, Ryan Gennum Corp

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

Many potential test patterns are listed. Suggest that square wave patterns are not necessairy expecially if short (PRBS9) patterns is included

SuggestedRemedy

remove square wave patterns from test pattern list (also change transmitter OMA test pattern to PRBS9)

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.7.4.3** *P* **266** *L* **19** # 635

Latchman, Ryan Gennum Corp

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

Transition time can be measured with PRBS9 pattern which is used in jitter measurements. Change trasition time pattern to PRBS9

SuggestedRemedy

Change text to "The normative test pattern is the PRBS9 test pattern"

Proposed Response *Response Status* **O**

Cl **87** *SC* **87.8.1** *P* **292** *L* **38** # 636

Latchman, Ryan Gennum Corp

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

Square wave pattern is not a necessary pattern if a short PRBS (PRBS9) pattern is included in the test pattern list.

SuggestedRemedy

Remove square pattern from test pattern list. Replace square wave with short PRBS (in OMA evaluation section)

Proposed Response *Response Status* **O**

Cl **88** *SC* **88.9.1** *P* **321** *L* **36** # 637

Latchman, Ryan Gennum Corp

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

Square wave pattern is not a necessary pattern if a short PRBS (PRBS9) pattern is included in the test pattern list.

SuggestedRemedy

Remove square pattern from test pattern list. Replace square wave with short PRBS (in OMA evaluation section)

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.2.1** *P* **351** *L* **1** # 638

Latchman, Ryan Gennum Corp

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

KR felt it sufficient to state that the path between the transmitter to testpoint be "carefully designed". To ensure future flexability, perhaps we should do the same for the following TBD. "Any interconnect which has a loss less than (SDD21(dB) (TBD)) f is given in GHz)"

SuggestedRemedy

change:
Any interconnect which has a loss less than (SDD21(dB) (TBD)) f is given in 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.
to
Any interconnect which minimizes the loss between the XLAUI/
CAUI transmit pin and Transmit Compliance Point may be used as long as transmitter parameters of Table 83A-1 are met. The electrical path from the transmitter block to transmit compliance point will affect link
performance and the measured values of electrical parameters used to verify conformance to this standard.
Therefore, it is therefore recommended that this path be carefully designed.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3.4** *P* **138** *L* **21** # 639

Trowbridge, Stephen Alcatel-Lucent

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

Since the same external encoding is used for ordered sets as in clause 46, better to say that they are aligned to 8-byte boundaries rather than that they are extended to 8 bytes.

SuggestedRemedy

Replace "The behavior of the fault signalling is the same as it is for Clause 46 with the exception that the ordered sets are extended to eight bytes." with "The behavior of the fault signalling is the same as it is for Clause 46 with the exception that the ordered sets are aligned to eight byte boundaries."

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **80** *SC* **80.1.3** *P* **114** *L* **48** # 640

Trowbridge, Stephen Alcatel-Lucent

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

physically implemented or physically instantiated?

SuggestedRemedy

No preference, but different clauses have made different choices of words and it should probably be consistent. Also line 51 and many other places.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **116** *L* **35** # 641

Trowbridge, Stephen Alcatel-Lucent

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

Legend of O=Optional, M=Mandatory can be done just as a note rather than a table footnote as it applies to all of the cells and not just the two indicated with the superscript "a"

SuggestedRemedy

Eliminate the superscript "a"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **121** *L* **22** # 642

Trowbridge, Stephen Alcatel-Lucent

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

Should use same number of significant digits for 1 ui for 40GBASE-R and 100GBASE-R. Also line 46-47.

SuggestedRemedy

Use same number of significant digits for both 40GBASE-R and 100GBASE-R.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1.6** *P* **125** *L* **33** # 643
Trowbridge, Stephen Alcatel-Lucent

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

Don't need to phrase descriptive text as a requirement.

SuggestedRemedy

Replace "The 64 TXD and eight TXC signals shall be organized into eight data lanes, as shall the 64 RXD and eight RXC signals (see Table 81–2)." with "The 64 TXD and eight TXC signals are organized into eight data lanes, as are the 64 RXD and eight RXC signals (see Table 81–2)."

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1.7** *P* **125** *L* **44** # 644
Trowbridge, Stephen Alcatel-Lucent

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

Don't need to phrase descriptive text as a requirement

SuggestedRemedy

Replace "The Reconciliation Sublayer (RS) shall map the signals provided at the MII to the PLS service primitives defined in Clause 6" with "The Reconciliation Sublayer (RS) maps the signals provided at the MII to the PLS service primitives defined in Clause 6"

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.1.1** *P* **147** *L* **12** # 645
Trowbridge, Stephen Alcatel-Lucent

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

The PCS connects to the PMD via the PMA and possibly FEC, not "directly"

SuggestedRemedy

Delete the word "directly"

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.8** *P* **158** *L* **22** # 646
Trowbridge, Stephen Alcatel-Lucent

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

Better to consider "n" to be the number of PCS lanes which are numbered 0 through n-1

SuggestedRemedy

Replace largest lane number by n-1

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.2** *P* **215** *L* **47** # 647
Trowbridge, Stephen Alcatel-Lucent

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

Could parameterize description of primitives.

SuggestedRemedy

Describe as PMD_UNITDATA.request/indication0 through PMD_UNITDATA.request/indication n-1 for an n-lane interface (n=4 or 10)

Proposed Response *Response Status* **O**

Cl **86** *SC* **86.1** *P* **247** *L* **29** # 648
Trowbridge, Stephen Alcatel-Lucent

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

Letting n=3 or n=9 isn't intuitive since n doesn't correspond to any attribute of the implementation. Use n=4 or n=10 (the number of lanes), and number primitives and lanes throughout the clause as 0 through n-1

SuggestedRemedy

Let n=the number of lanes and number primitives and lanes throughout the clause as 0 through n-1.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12a.9** *P* **51** *L* **21** # 649
Trowbridge, Stephen Alcatel-Lucent

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

Reference to 83.6.7 seems incorrect - 83.5.9 is test patterns, 83.6 is PMA MDIO function mapping. Same in line 22.

SuggestedRemedy

Replace with 83.5.9 or 83.6 depending on what was intended.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **115** *L* **27** # 650
Trowbridge, Stephen Alcatel-Lucent

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

Should we say here that links >30km are engineered links with attenuation below the limits described in clause 88?

SuggestedRemedy

Qualify the 40km of SMF optical fiber to be 40km with attenuation less than the worst case specified for B1.1 or B1.3 SMF.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.7** *P* **117** *L* **46** # 651
Trowbridge, Stephen Alcatel-Lucent

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

lanes should be 0 to n-1 (rather than 0 to n) to align with description in clause 83

SuggestedRemedy

replace "n" with "n-1". Also on line 47.

Note that the PMD service interface description seems to have "n" be 3 or 9 with the number of lanes being "n+1". Consider aligning.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3** *P* **118** *L* **15** # 652
Trowbridge, Stephen Alcatel-Lucent

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

Missing row in table for 100GBASE-R PMA

SuggestedRemedy

Add row below 40GBASE-R PMA for 100GBASE-R PMA. Note that value for PMA roundtrip delay expected from Mark Gustlin presentation.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **119** *L* **7** # 653
Trowbridge, Stephen Alcatel-Lucent

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

Need to qualify statement about dynamic skew since it isn't absolute (there is no guarantee that if the link is brought down and back up again, the PCS lanes will be on the same physical lanes).

SuggestedRemedy

Replace "The Dynamic Skew must be limited to ensure that a given PCS lane always traverses the same physical lane." with "From the time the link is brought up, Dynamic Skew must be limited to ensure that a given PCS lane always traverses the same physical lane while the link remains in operation."

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.1.4** *P* **181** *L* **6** # 654
Trowbridge, Stephen Alcatel-Lucent

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

Add informative Annex and remove editor's note

SuggestedRemedy

Add informative Annex to be provided as contribution to January 2009 meeting

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.2** *P* **186** *L* **35** # 655

Trowbridge, Stephen Alcatel-Lucent

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

Decide whether (a) System loopback should be optional anywhere there is an exposed interface above; and if so, (b) Can test pattern generation/detection be limited to generating in transmit path and detecting in receive path, combining with loopback? Tradeoff of extra complexity and more registers for finer granularity fault localization.

SuggestedRemedy

A presentation will be provided to illustrate the two options. A decision should be made based on the consensus.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **193** *L* **38** # 656

Trowbridge, Stephen Alcatel-Lucent

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

Note other comment on decision between test pattern generation/detection in both directions or only generate in Tx path and detect in Rx path combined with loopback.

SuggestedRemedy

In the event that it is decided to only generate test patterns in the Tx path and detect in the Rx path combined with loopback, the editors note can be removed since the case in question does not occur. If the decision is to generate and detect test patterns in both directions, one possibility is to send a test pattern downward in the Tx direction when in check test pattern mode for the Tx path from above. But this could be problematic if the interface below is not physically instantiated.

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.9** *P* **194** *L* **1** # 657

Trowbridge, Stephen Alcatel-Lucent

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

Reconcile Tx square wave pattern with optical interface comment resolution. Is it necessary to have separate Tx square wave for each lane, with lanes not under test sending PRBS31?

SuggestedRemedy

Align per consensus to be reached in January 2009. If separate Tx square wave per lane, also need clause 45 registers for enabling per lane.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12c** *P* **51** *L* **24** # 658

Trowbridge, Stephen Alcatel-Lucent

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

The PMA clause indicates a per lane error counter register (up to 10 lanes toward a physically instantiated interface) and not only a single register. Also need error counters in Tx and Rx direction. Can use the same error counter register for PRBS31 and whatever is selected as the short test pattern (e.g., PRBS9)

SuggestedRemedy

Change to per lane test pattern error counter registers in each direction.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12b** *P* **55** *L* **4** # 659

Trowbridge, Stephen Alcatel-Lucent

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

Clause 83 indicates separate enable for test pattern generate and test patttern detect. Also need enable for selected short test pattern (e.g., PRBS9)

SuggestedRemedy

Add seperate enable for test patttern checker (which may be in different PMA from the generator), and for short test pattern generate and check.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.12b** *P* **55** *L* **4** # 660

Trowbridge, Stephen Alcatel-Lucent

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

Need enable square wave test pattern, per lane?

SuggestedRemedy

Add enable square wave test pattern.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A1.2** *P* **350** *L* **31** # 661

Palkert, Thomas Luxtera

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

The XLAUI/CAUI should include specifications to guarantee operation with a connectorized module.

SuggestedRemedy

Change from 'The application of the optional XLAUI/CAUI is primarily intended as a chip-to-chip (integrated circuit to integrated circuit) interface implemented with traces and potentially one connector on a printed circuit
board. The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board, see 83A.4.1.'
To: 'The application of the optional XLAUI/CAUI is intended as:
1) a chip-to-chip (integrated circuit to integrated circuit) interface implemented with traces on a printed circuit board.
or
2) a chip-to-module (integrated circuit to connector) interface implemented with traces on a printed circuit board and one connector.
The XLAUI/CAUI allows interconnect distances of approximately 25 cm over printed circuit board, see 83A.4.1.'

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **83A** *SC* **83A2.2** *P* **351** *L* **21** # 662

Palkert, Thomas Luxtera

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

Fig. 83A-2 does not include a connectorized module interface

SuggestedRemedy

Modify Fig. 83A-2 to include a connectorized module interface or add an additional diagram.

Proposed Response *Response Status* **W**

[Editor's note: Commenter has not indicated the comment type. Assigned comment type as Technical]

Cl **85** *SC* **10.4** *P* **232** *L* **1** # 663

Palkert, Thomas Luxtera

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

The return loss spec needs to be modified to accept short cables with bad return loss and longer cables with good return loss.

SuggestedRemedy

Consider adding an Insertion loss to return loss ratio similiar to the ICR curve. (Presentation will be provided)

Proposed Response *Response Status* **O**

Cl **85** *SC* **13** *P* **245** *L* **33** # 664

Balasubramanian, Vittal FCI USA, Inc.

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

Row 2, column 2 in the Table in section 85.13.4.5 showing channel specifications has a spelling mistake.

SuggestedRemedy

Correct "Iinsertion loss" to "Insertion loss"

Proposed Response *Response Status* **O**

Cl **69B** *SC* **4** *P* **346** *L* **32** # 665

Balasubramanian, Vittal FCI USA, Inc.

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

The equation for generating the fit line for any data to test to the limit line as specified in Figure 69B-8 is faulty (See attached supporting document.)

The fit line, as it stands now, can cause some connectors which actually pass the 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.

Resolution will be provided in a supporting document.

Proposed Response *Response Status* **O**

Cl **85** *SC* **9** *P* **227** *L* **29** # 666

Balasubramanian, Vittal FCI USA, Inc.

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

The equations for generating the fit line for any data to test to the limit line as specified in equations 85-3 through 85-8 are faulty (See attached supporting document.)

The equation just extends what was accepted in IEEE 802.3ap as the equation. In light of the presented data, it is necessary to revisit the equation. The fit line, as it stands now, can cause some connectors which actually pass the 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.

Resolution will be provided in a supporting document.

Proposed Response *Response Status* **O**

Cl **85** *SC* **10** *P* **233** *L* **48** # 667

Balasubramanian, Vittal FCI USA, Inc.

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

The equations for generating the fit line for any data to test to the limit line as specified in equations 85-24 through 85-29 are faulty (See attached supporting document.)

The equation just extends what was accepted in IEEE 802.3ap as the equation. In light of the presented data, it is necessary to revisit the equation. The fit line, as it stands now, can cause some connectors which actually pass the 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.

Resolution will be provided in a supporting document.

Proposed Response *Response Status* **O**