Cl **00** *SC* *P* *L* # 280

Brown, Matthew APM

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

In table, 94-16 the sinusoidal jitter and random jitter should be characterized using the methodology for CRJrms and CDJ.

SuggestedRemedy

Replace note c with "sinusoidal jitter and random jitter are measured use the methodology for CRJrms and CDJ in 94.3.12.8.1.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 84

Sela, Oren Mellanox Technologies

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

Normal wake mode is not the best name for the "non-FW" mode. Should come up with better naming

SuggestedRemedy

some options: higher power save mode, full power save mode, deap power save mode, physical idle power save mode, full idle power save mode…

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 160

Lusted, Kent Intel

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

The term "100GBASE-P" is now used in 13 separate instances the draft. However, it is not defined.

For example, Clause 30 uses the term in the PhyType and MAUType fields as valid syntax.

To make matters worse, Clause 80.1.4 Nomenclature now states "40GBASE-R or 100GBASE-R represents a family of Physical Layer devices using the Clause 82 Physical Coding Sublayer a physical coding sublayer...and a PMD implementing 2-level pulse amplitude modulation (PAM)." Then it states "100GBASE-P represents Physical Layer devices using the Clause 82 Physical Coding Sublayer for 100 Gb/s operation over multiple PCS lanes (see Clause 82) and a PMD implementing more than 2-level pulse amplitude modulation (PAM)."

Table 80-1 says that 100GBASE-KP4 is a "100 Gb/s PHY using 100GBASE-P encoding...." Why call it out as using BASE-P encoding? All of the other Table 80-1 entries in the base standard imply encoding to be the PCS.

Then the term sneaks into Table 82-5 and attempts to camoflages itself in the PCS column of all places! There is no 100GBASE-P PCS.

Furthermore, the IEEE 802.3bh Draft 3.1 standard defines "100GBASE-R" as "An IEEE 802.3 family of Physical Layer devices using the physical coding sublayer defined in Clause 82 for 100 Gb/s operation. (See IEEE Std 802.3, Clause 82.)"

SuggestedRemedy

Consider adding a "100GBASE-P" to the Definitions section or strike 100GBASE-P from the document.

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* *L* # 350

Anslow, Pete — Ciena

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

Comment #172 against D 1.1 was accepted, but not fully implemented.
Now that IEEE Std 802.3-2012 has been approved, update all references in the draft to reflect 2012.
This has not been done in the page headers.

SuggestedRemedy

Update the all of the page headers for the clauses from the TOC onwards to say "IEEE Std 802.3-2012"

Proposed Response *Response Status* **O**

Cl **00** *SC* **Table 94-17** *P* *L* # 162

Lusted, Kent — Intel

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

It seems quite odd to use the term "signaling rate" with GHertz. Should it be GBaud?

SuggestedRemedy

change Hertz to GBaud or change signaling rate to something else.

Proposed Response *Response Status* **O**

Cl **01** *SC* **1.4.53a** *P* **21** *L* **15** # 353

Anslow, Pete — Ciena

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

This says "insertion loss up to 33 dB at 7.0 GHz"
As stated in 1.2.6, the trailing zeros have no significance, so this should be shown as simply "7 GHz"

SuggestedRemedy

Change:
"insertion loss up to 33 dB at 7.0 GHz" to:
"insertion loss up to 33 dB at 7 GHz"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.1.1.15** *P* **23** *L* **19** # 93

Sela, Oren — Mellanox Technologies

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

aFECability - CL91 FEC is not optional

SuggestedRemedy

Change:
A read-only value that indicates if the PHY supports an optional FEC sublayer for forward error correction (see 65.2, and Clause 74, and Clause 91).
To:
A read-only value that indicates if the PHY supports an optional FEC sublayer for forward error correction (see 65.2, and Clause 74) or support of the Clause 91 mandatory FEC.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.1.1.16** *P* **23** *L* **25** # 94

Sela, Oren — Mellanox Technologies

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

aFECmode - Clause 91 FEC is mandatory so it shouldn't be enabled or disabled

SuggestedRemedy

There are 3 possible ways to handles this:
1. remove CL91 FEC from the text
2. Make the FEC 91 value as RO enabled
3. Use this verible to enable or disable the FEC correction at the receive side

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.3.2.1.2** *P* *L* # 354

Anslow, Pete Ciena

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

"100 Gb/s multi-PCS lane using more than 2-level PAM" could be taken to mean 2-level PAM and something else.
Same issue in 30.3.2.1.3

SuggestedRemedy

Use the format from aMAUType below:
Change:
"100 Gb/s multi-PCS lane using more than 2-level PAM" to:
"100 Gb/s multi-PCS lane using >2-level PAM"

Make the same change in 30.3.2.1.3

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.15** *P* **23** *L* **20** # 355

Anslow, Pete Ciena

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

The text ", and Clause 91" has been added, but is not in underline font.

SuggestedRemedy

Show the inserted text ", and Clause 91" in underline font.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.16** *P* **23** *L* **38** # 356

Anslow, Pete Ciena

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

The text ", and Clause 91" has been added, but is not in underline font.
The text "or FEC enable bit in RS-FEC control register (see 45.2.1.93a)" has been added, but is not in underline font.

SuggestedRemedy

Show the inserted text ", and Clause 91" in underline font.

Show the inserted text "or FEC enable bit in RS-FEC control register (see 45.2.1.93a)" in underline font.

Note: this comment may be OBE due to a companion comment that RS-FEC cannot be disabled.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.16** *P* **23** *L* **47** # 367

Anslow, Pete Ciena

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

This text says "or FEC enable bit in RS-FEC control register (see 45.2.1.93a)".
However, there isn't a FEC enable bit in the RS-FEC control register (Register 1.200) in 45.2.1.93a only "FEC enable error indication" which is quite different.

BASE-R FEC is optional, but I understood RS-FEC is not and hence a "FEC enable" isn't appropriate.

Am I missing something?

SuggestedRemedy

Make no change to 30.5.1.1.16 since RS-FEC cannot be disabled.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.17** *P* **23** *L* **53** # 382

Dawe, Piers IPtronics

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

nonresetable

SuggestedRemedy

nonresettable, as in base document. Two places.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.17** *P* **24** *L* **4** # 357

Anslow, Pete Ciena

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

The base text for 30.5.1.1.17 is different from the in-force standard

SuggestedRemedy

Show the changes to 30.5.1.1.17 with respect to the version in the Revision project D 3.2.
The first sentence of BEHAVIOUR DEFINED AS: in D 3.2 was:
"For 1000BASE-PX, 10/40/100GBASE-R PHYs, an array of corrected FEC block counters."

The last sentence is:
"If a Clause 45 MDIO Interface to the PCS is present, then this attribute maps to the FEC corrected blocks counter(s) (see 45.2.8.5, 45.2.1.91, and 45.2.1.93).;"

Show changes with respect to this text with underline and strikethrough font.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.17** *P* **24** *L* **5** # 300

Dudek, Mike QLogic

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

We should have error counters for 100GBASE-KP4 as well

SuggestedRemedy

Add 100GBase-P Phys to this list. Also to 30.5.1.1.18

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.17** *P* **24** *L* **7** # 301

Dudek, Mike QLogic

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

Does it make sense to have this array of counters per PCS lane when the FEC is not operating on a per PCS lane basis?

SuggestedRemedy

Add after "do not use PCS lanes" "or use the RS-FEC described in clause 91.

Do the same for 30.5.1.1.18

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.18** *P* **24** *L* **36** # 358

Anslow, Pete Ciena

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

In "an array of uncorrectable FEC blocks counters" the "s" at the end of "blocks" is shown with strikethrough font, but it should not be there at all.

At the end in "(see 45.2.8.6, 45.2.1.92 and 45.2.1.94" there is a comma missing.

SuggestedRemedy

Delete the strikethrough "s" at the end of "blocks".
Add the comma after "45.2.1.92"

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.6.1.1.5** *P* **25** *L* **22** # 384

Dawe, Piers IPtronics

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

Order of PHY types.

SuggestedRemedy

Use the order chosen for p48 line 42 73.6.4 Table 73-4-Technology Ability Field encoding or (reversed) in p50 73.7.6 Table 73-5-Priority Resolution. That is: slow to fast, wide to narrow, high power or short reach to low power or long reach. Also in 45.2.1.6 and 45.2.1.7.4

Proposed Response *Response Status* **O**

Cl **45** *SC* **2.1.93f** *P* **34** *L* **21** # 186

Slavick, Jeff — Avago Technologies

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

"register bits 15:0" may cause confusion regarding the size of the error counter register.

SuggestedRemedy

Change "Errors detected in each FEC lane are counted and shown in register bits 15:0 in the corresponding register."
to
"Errors detected in each FEC lane are counted and shown in the corresponding register."

Proposed Response *Response Status* **O**

Cl **45** *SC* **2.1.93f** *P* **34** *L* **23** # 187

Slavick, Jeff — Avago Technologies

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

Typo on the ending FEC lane number.

SuggestedRemedy

Change "FEC lane 2, lower 16 bits are shown in register 1.213; through register 1.217 for FEC lane 1, upper 16 bits."
to
"FEC lane 2, lower 16 bits are shown in register 1.214; through register 1.217 for FEC lane 3, upper 16 bits."

Proposed Response *Response Status* **O**

Cl **45** *SC* **2.1.93g** *P* **34** *L* **39** # 192

Slavick, Jeff — Avago Technologies

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

Register number is incorrect in the table.

SuggestedRemedy

Change 3.200.15:0 to 1.230.15:0

Proposed Response *Response Status* **O**

Cl **45** *SC* **2.7.13a** *P* **39** *L* **43** # 193

Slavick, Jeff — Avago Technologies

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

Both is not the best term to use for descriping support of Normal and Fast Wake options.

SuggestedRemedy

Change "Both EEE modes" to be "Quiescent EEE mode support" for Tables 45-190, 45-191

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.8** *P* **29** *L* **44** # 297

Dudek, Mike — QLogic

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

This is a very long list contained in Text it would be better to use a table

SuggestedRemedy

Create a table for Transmit disable description and point to it from here.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.8** *P* **29** *L* **53** # 359

Anslow, Pete — Ciena

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

The additions to 45.2.1.8 are not shown with underline font

SuggestedRemedy

Show the additions with underline font

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.81** *P* **31** *L* **6** # 302

Dudek, Mike — QLogic

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

Consider whether it would be useful for the 100GBASE-KP4 to provide equivalent information to that contained in 45.2.1.81 to 45.2.1.84

SuggestedRemedy

Either reword this to be BASE-R and Base-P or create equivalent additional registers for Base-P

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.93** *P* **32** *L* **4** # 120

Sela, Oren — Mellanox Technologies

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

when FEC bypass is not supported the FEC bypass should be read only 0

SuggestedRemedy

add the folowing text:
Writes to this bit are ignored and reads return a zero if the RS-FEC does not have the ability to bypass correction (see 91.5.3.3).

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.93a** *P* **31** *L* **37** # 360

Anslow, Pete — Ciena

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

The agreed convention on inserted clause numbering is:
Where a subclause is inserted prior to the existing first subclause it is labelled [existing subclause - one level].[a through z]. Where a subclause is inserted after an existing subclause - assuming it is not the last - the new subclause it is labelled [subclause number][a through z].
For example to insert two subclauses before 43.2.1 the subclauses would be numbered 43.2.a and 43.2.b. Two subclauses between 43.2.1 and 43.2.2 would be numbered 43.2.1a and 43.2.1b. Two subclauses added after the last subclause 43.2.2 would be numbered 43.2.3 and 43.2.4.

The editing instruction:
"Insert 45.2.1.93a through 45.2.1.93f before 45.2.1.93 for RS-FEC registers:" does not follow this.

Also, there are additions of subclauses a through h

SuggestedRemedy

Change to:
"Insert 45.2.1.92a through 45.2.1.92h before 45.2.1.93 for RS-FEC registers as follows:"

Change subclause numbers accordingly.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.93f** *P* **34** *L* **24** # 373

Kvist, Bengt — Ericsson AB

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

FEC lane 1 indicated for register 1.217, should be lane 3

for FEC lane 1, upper 16 bits.

SuggestedRemedy

for FEC lane 3, upper 16 bits.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.93g** *P* **34** *L* **39** # 368

Anslow, Pete — Ciena

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

In Table 45-72f if the "Bit(s) cell should be "1.230.15:0" rather than "3.200.15:0"

SuggestedRemedy

Change "3.200.15:0" to "1.230.15:0"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.9** *P* **36** *L* **21** # 121

Sela, Oren — Mellanox Technologies

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

As LPI FW is mandatory and normal mode is not this register should change to EEE both modes.

SuggestedRemedy

change in table 45-105 3.20.0 in the folwoing way:
Replave LPI_FW with LPI both mode supported.
in the description replace:
1 = Both Fast Wake and normal mode are supported
0 = only Fast Wake is supported
Replace in 45.2.3.9.6 the text with:
LPI normal mode (3.20.0)
If this bit is read as 1 the device support both modes for PHYs with the LPI FW and normal mode.
If this bit is set to 0 device support LPI FW only for those phys

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.9.6** *P* **36** *L* **19** # 362

Anslow, Pete — Ciena

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

The editing instruction says "Insert the following subclause after 45.2.1.9.5:"

Firstly, this should be 45.2.3.9.5
Secondly, 45.2.3.9.6 already exists for bit 3.20.1

SuggestedRemedy

Change editing instruction to "Insert the following subclause after 45.2.1.9.6:" and renumber text for bit 3.20.0 to 45.2.3.9.7

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.3.9.a** *P* **35** *L* **46** # 361

Anslow, Pete — Ciena

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

The editing instruction says "Insert the following subclauses before 45.2.1.9.1:" but this should be 45.2.3.9.1

SuggestedRemedy

Change "45.2.1.9.1:" to "45.2.3.9.1:"

Proposed Response *Response Status* **O**

Cl **45** *SC* **45-7** *P* **28** *L* # 90

Sela, Oren — Mellanox Technologies

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

For consistancy PHYs should be listed in the same order as they are in the Technology ability field and the priority resolution so 100GBASE-KP4 should be listed below 100GBASE-KR4

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **45** *SC* **45-72a** *P* **31** *L* # 91

Sela, Oren — Mellanox Technologies

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

for the FEC enable error indication field it will be better if the case of 0 is phrased like the case for

SuggestedRemedy

change:
0 = FEC decoder does not indicate errors
To:
0 = FEC decoder does not indicate errors to the PCS

Proposed Response *Response Status* **O**

Cl **72** *SC* **72.6.10.2.4** *P* **476** *L* **34** # 125

Matthew, Brown — Applied Micro

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

In Clause 72 of 802.3bh in sub-clause 72.6.10.2.4, the first sub-sub-clause is 72.6.10.2.4.4 (rather than 72.6.10.2.4.1).

SuggestedRemedy

Fix heading numbering so that the first sub-sub-clause under 72.6.10.2.4 is 72.6.10.2.4.1.

Proposed Response *Response Status* **O**

Cl **73** *SC* **6.10** *P* **49** *L* **15** # 194

Slavick, Jeff — Avago Technologies

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

The transmit switch function is only applicable during Auto-Negotiation.

SuggestedRemedy

Change "Prior to entry into the AN_GOOD_CHECK state, the Transmit Switch function shall connect only the DME page generator controlled by the Transmit State Diagram to the MDI."
to:
"During Auto Negotiation and prior to entry into the AN_GOOD_CHECK state, the Transmit Switch function shall connect only the DME page generator controlled by the Transmit State Diagram to the MDI."

Proposed Response *Response Status* **O**

Cl **73** *SC* **7.2** *P* **50** *L* **1** # 195

Slavick, Jeff — Avago Technologies

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

The recieve switch function is only applicable during auto-negotiation.

SuggestedRemedy

Change "Prior to entry into the AN_GOOD_CHECK state, the Receive Switch function shall connect the DME page receiver to the MDI."
to:
"During Auto Negotiation and prior to entry into the AN_GOOD_CHECK state, the Receive Switch function shall connect the DME page receiver to the MDI."

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.10.7** *P* **51** *L* **25** # 83

Sela, Oren — Mellanox Technologies

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

To be consistent we should have the PHY order in the same order as in the technology ability field and priority resolution - switch the order of the link status for KP4 and KR4

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.11** *P* **52** *L* **19** # 12

D'Ambrosia, John — Dell

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

LE17 is in regards to "Incompatible abilities" and per Rev. D3.1, is specific to 40GBASE-CR4 and 40GBASE-KR4. 802.3bj D1.2 adds text to address various rates of backplane and cable PHYs, but PIC LE17 has not been modified to reflect this.

SuggestedRemedy

Add LE17 modification to 73.11.4.3

Change value / comment to

"PHYs for operation over electrical backplane and copper cable assembly shall not be advertised simultaneously."

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.3** *P* **48** *L* **17** # 82

Sela, Oren — Mellanox Technologies

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

The PHYs are listed in the same order as they are in the Technology ability field and the priority resolution so 100GBASE-KP4 should be listed before 100GBASE-KR4

SuggestedRemedy

change:
include 1000BASE-KX, 10GBASE-KX4, 10GBASE-KR, 40GBASE-KR4, 40GBASE-CR4, 100GBASE-CR10, 100GBASE-KR4, 100GBASE-KP4, and 100GBASE-CR4
to:
include 1000BASE-KX, 10GBASE-KX4, 10GBASE-KR, 40GBASE-KR4, 40GBASE-CR4, 100GBASE-CR10, 100GBASE-KP4, 100GBASE-KR4, and 100GBASE-CR4

Proposed Response *Response Status* **O**

Cl **73** *SC* **73.6.4** *P* **49** *L* **3** # 13

D'Ambrosia, John — Dell

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

Statement "Reserved fields shall be sent as zero and ignored on receive." does not have a corresponding PIC.

SuggestedRemedy

add PIC

Proposed Response *Response Status* **O**

Cl **78** *SC* **5.2** *P* **56** *L* **13** # 197

Slavick, Jeff — Avago Technologies

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

PIASE MDIO register bit has been assigned

SuggestedRemedy

Change 1.n.n to 1.7.9

Proposed Response *Response Status* **O**

Cl **78** *SC* **5.2** *P* **56** *L* **8** # 196

Slavick, Jeff — Avago Technologies

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

Regiset bits for PEASE have been defined.

SuggestedRemedy

Change 1.n.n to 1.7.8

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1** *P* **53** *L* **30** # 7

D'Ambrosia, John — Dell

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

Avoid listings of PHYs

SuggestedRemedy

Table 78-1 specifies clauses for EEE operation over twisted-pair cabling systems, electrical backplanes, XGMII extension using the XGXS for 10 Gb/s PHYs and and inter-sub layer service interfaces using the XLAUI for 40 Gb/s PHYs and CAUI for 100 Gb/s PHYs
.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1** *P* **53** *L* **32** # 92

Sela, Oren — Mellanox Technologies

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

Typo - replace 40GBASECR10 with 40GBASE-CR4

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **54** *L* **1** # 363

Anslow, Pete — Ciena

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

The title of 78.1.4 seems to have been changed without this being indicated in the draft

SuggestedRemedy

Add an editing instruction for the title of 78.1.4 and show the changes with underline and strikethrough font

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.2** *P* **55** *L* **5** # 348

Anslow, Pete — Ciena

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

Comment #22 against D 1.1 changed the left hand column heading in both tables 78-2 and 78-4 to "PHY or interface type"
However, in D 1.2 it has been changed to "PHY or interface Type" in both cases (with a spurious capital T in "Type"

SuggestedRemedy

Change "Type" to "type" in the left hand column heading in both tables

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **54** *L* **47** # 250

Trowbridge, Steve — Alcatel-Lucent

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

"Fast Wake" is not a good or accurate term for the second mode of operation for EEE. It is more a different type of sleep which, by not turning off the transmitter, is able to wake faster. Figure 78-3 of the base document does not accurately show the way this new kind of sleep works.

SuggestedRemedy

Come up with a term to better characterize the type of sleep. Add a new figure (besides 78-3) to show the operation of this new type of EEE operation. See supporting presentation trowbridge_01

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **54** *L* **48** # 95

Sela, Oren — Mellanox Technologies

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

The text is:Fast wake is mandatory for PHYs that implement EEE; normal wake is an additional optiont his statement is only true for the 40G and 100G PHYs that support EEE and not to all PHYs

SuggestedRemedy

options 1:
change the text to - Fast wake is mandatory for 40Gb/s and 100Gb/s PHYs that implement EEE; normal wake is an additional option for those PHYs
Option 2:
Fast wake is mandatory for PHYs that implement EEE and are connected to Clause 82 PCS; normal wake is an additional option for those PHYs

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **20** # 38

Barrass, Hugh — Cisco

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

The editor's note is no longer needed - the decision regarding scrambler bypass will be made for other comments, but either way the note can be deleted.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **32** # 42

Barrass, Hugh — Cisco

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

The values in Table 78-4 have been proposed and discussed, these can now be inserted.

SuggestedRemedy

change Tw_sys_rx as follows:

Normal wake - 1.2uS for 40G, 1.0uS for 100G
Fast Wake - 0.25uS for all PHYs

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **32** # 40

Barrass, Hugh Cisco

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

With the addition of scrambler bypass, rows need to be added to table 78-4.

SuggestedRemedy

Add rows for 40GBASE-CR4, 40GBASE-KP4 and 100GBASE-CR10 between Normal and Fast Wake with values of Tw_sys_tx, Tw_phy and Tphy_shrink_rx all 2uS larger than the corresponding values for "Normal."

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **33** # 43

Barrass, Hugh Cisco

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

The values in Table 78-4 have been proposed and discussed, these can now be inserted.

SuggestedRemedy

Change Tw_phy to 5.5uS Normal; 0.30uS Fast Wake

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **34** # 34

Barrass, Hugh Cisco

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

The values in Table 78-4 have been proposed and discussed, these can now be inserted.

SuggestedRemedy

Change Tphy_shrink_tx to 2uS for Normal mode, all PHYs
Change Tphy_shrink_rx to 3uS for Normal mode, all PHYs
Change Tphy_shrink_tx to 0uS for Fast Wake mode, all PHYs
Change Tphy_shrink_rx to 0uS for Fast Wake mode, all PHYs

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **35** # 35

Barrass, Hugh Cisco

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

The values in Table 78-4 have been proposed and discussed, these can now be inserted.

SuggestedRemedy

Change Tw_sys_tx to 5.5uS for Normal mode, all PHYs; 0.34uS for Fast Wake, all PHYs.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.5** *P* **55** *L* **8** # 41

Barrass, Hugh Cisco

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

The timing values for Table 78-2 have been presented and discussed (see separate presentation).

SuggestedRemedy

Insert the following values in every row:

Ts = 0.9/1.1 uS
Tq = 1700/1800 uS
Tr = 5.9/6.5 uS

Proposed Response *Response Status* **O**

Cl **78** *SC* **78-4** *P* **55** *L* # 96

Sela, Oren — Mellanox Technologies

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

In table 78-4 PHYs with the CL74 FEC should have 2 rows under the normal mode - case 1 and case 2 when case 1 is without CL74 FEC and case 2 is with CL74 FEC

SuggestedRemedy

for the 40GBASE-CR4, 40GBASE-KR4 and 100GBASE-CR10 split the normal mode into 2 rows - case 1 and case 2.
in 78.5 change:
Case-1 of the 10GBASE-KR PHY applies to PHYs without FEC. Case-2 of the 10GBASE-KR PHY applies to PHYs with FEC.
To:
Case-1 of the 10GBASE-KR, 40GBASE-KR4, 40GBASE-CR4, and 100GBASE-CR10 PHYs applies to PHYs without FEC. Case-2 of the 10GBASE-KR, 40GBASE-KR4, 40GBASE-CR4, and 100GBASE-CR10 PHYs applies to PHYs with FEC.

Proposed Response *Response Status* **O**

Cl **79** *SC* **79.4** *P* **58** *L* **1** # 36

Barrass, Hugh — Cisco

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

LLDP definitions are required for the exchange and negotiation of Fast Wake.

SuggestedRemedy

Bring Clause 79 into the draft & make the changes included in the separate submission.

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.2** *P* **63** *L* **32** # 335

Nicholl, Gary — Cisco

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

I would like to see another figure added similar to Fig 80-3a, but showing an example where the RS-FEC layer is separated from the 100GBASE-R PCS block by a PMA layer.

I think it is important to include this example, as it makes it very clear that applications where the RS-FEC is implemetned in a separate standalone PHY chip can be, and in fact must be, supported.

I am considered that if we do not include this example in the document we may overlook some subtle inter-layer communication that is required to support this critical application.

to shown an example where the FEC

SuggestedRemedy

Add figure added similar to Fig 80-3a, but showing an example where the RS-FEC layer is separated from the 100GBASE-R PCS block by a PMA layer.

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.2** *P* **63** *L* **32** # 329

Nicholl, Gary — Cisco

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

Comment against Fig 80-3b (physically located on page 65).

The figure shows a PMA (20:10) and a PMA (10:n) layer implemented below a RS-FEC layer. It is my understanding that the only PMA layer that is allowed to be implemented below a Clause 91 RS-FEC layer is a PMA (4:4), i.e. you are not allowed to do any lane bit muxing below the RS-FEC layer.

SuggestedRemedy

Please correct figure accordingly.

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.2** *P* **63** *L* **32** # 332

Nicholl, Gary Cisco

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

Figure 80-3b is referenced in this section, but is physically located in the middle of section 80.3.3.4.3. on page 65 . Why ? I actually found it confusing that Figure 80-3b which shows all of the different primitaves defined in 80.3.3.4 through 80.3.3.7 is stuck in the middle of the sections describing the primatives.

SuggestedRemedy

Propose repositioning Fig 80-3a and Fig 80-3b under section 80.3.2 where they belong.

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.3.4.1** *P* **63** *L* **52** # 198

Slavick, Jeff Avago Technologies

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

WAKE, RF_ALERT and RF_WAKE no longer exist as tx_mode values.

SuggestedRemedy

Change "The tx_mode parameter takes on one of up to eight values: DATA, SLEEP, QUIET, FW, ALERT, RF_ALERT, WAKE or RF_WAKE."
to:
"The tx_mode parameter takes on one of up to five values: DATA, SLEEP, QUIET, FW or ALERT."

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.3.6.1** *P* **66** *L* **15** # 337

Nicholl, Gary Cisco

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

How does this work if there is a intermediate PMA layer between the PCS layer and the FEC layer, i.e. how is the IS_RX_LPI_Active.request primitive transparently passed through the PMA layer than may reside between PCS and FEC layers ?

The description fo this primitive seems a little different than the others as the effect of receipt is defined specifically by the FEC sublayer whereas for the other primitives in this section the effect of receipt is defined by the sublayer which receives it (which in practive may not be the FEC layer)

SuggestedRemedy

Please add some further clarification around how this operates with an intermediate PMA layer between the PCS and the FEC, and whether the intent was in fact that IS_RX_LPI_Active.request primitive should be trated different to the other primitives in the surrounding section, IS_TX_MODE, IS_RX_MODE, etc

Proposed Response *Response Status* **O**

Cl **80** *SC* **3.3.7** *P* **66** *L* **34** # 338

Nicholl, Gary Cisco

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

Does this primitive have to be invoked in the case of fast wake EEE ?

Do we need to clarify that the IS_ENERY_DETECT primitive is never invoked and has no effect when EEE fast wake mode is active ?

SuggestedRemedy

I think we should clarify that this primitive is never invoked and has no effect both for the case on no EEE cappability or fast wake EEE capability ? However this comment could be incorrect sa I still don't fully understand fast wake EEE :)

Proposed Response *Response Status* **O**

Cl **80** *SC* **4** *P* **67** *L* **14** # 339

Nicholl, Gary — Cisco

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

Does the first row of Table 80-3 have any aimplications for supporting a RS-FEC implementation on a 802.3ba host line card not originally designed for supporting RS-FEC.

An example here would be the inclusion of the RS-FEC into an optical module supporting the new 100GBASE-SR4 PMD being developed within 802.3bm, and plugged into an existing 802.3ba host line card. It is critical that this application can be supported so I am wondering if the additional delay of the RS-FEC layer would break anything on an existing 802.3ba host, for example with PAUSE buffering ?

SuggestedRemedy

More of a question for clarification, so no proposed remedy just yet.

Proposed Response *Response Status* **O**

Cl **80** *SC* **5** *P* **67** *L* **44** # 333

Nicholl, Gary — Cisco

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

Do we need to add an additional figure (say Figure 80-5b), showing an example with a CAUI4 interfacae between the 100GBASE-R PCS layer and RS-FEC layer ? Perhaps this is not required if the skew points and skew values would be identical to those shown in Figure 80-5a ?

SuggestedRemedy

If you agree with the comment then add a new figure as described above. If not then don't.

Proposed Response *Response Status* **O**

Cl **80** *SC* **5** *P* **70** *L* **23** # 199

Slavick, Jeff — Avago Technologies

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

Table 80-5 states that SP6 is N/A for 25G rates, but Figure 80-5a shows it coming out of a PMA(4:4) for a 100GBASE-R PHY stackup which would be a 25G signaling location.

SuggestedRemedy

Change the N/A for SP6 in Table 80-5 to~98

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.2** *P* **58** *L* **29** # 251

Trowbridge, Steve — Alcatel-Lucent

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

Concerning the deleted objective "Provide Appropriate Support for OTN", while P802.3bj does not have this objective, it touches three interfaces from the 802.3ba project which do, and the mechanism proposed for EEE does not preserve the OTN mapping.

SuggestedRemedy

Add, in an appropriate place, a warning note about the fact that "normal wake" operation should not be used for an interface that is transparently carried over an OTN network. Modify the operation of the "fast wake" mode so that LPI indication can be carried transparently through the OTN mapper. See supporting presentation trowbridge_01

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **58** *L* **48** # 303

Dudek, Mike — QLogic

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

It states at the top of the next page that there is no electrical or mechanical specification of the MDI for bakplane Physical lanes

SuggestedRemedy

Delete "in Clause 84 for 40GBASE-KR4,"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **58** *L* **49** # 97

Sela, Oren — Mellanox Technologies

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

bullet g and h are wrong - 40GBASE-LR4, 100GBASE-LR4 and 100GBASE-ER4 are single lane MDI and not 4 lanes

SuggestedRemedy

g) The MDIs as specified in Clause 89 for 40GBASE-FR, in Clause 87 for 40GBASE-LR4, in Clause 88 for 100GBASE-LR4 and 100GBASE-ER4 all uses a single lane data path.
h) The MDIs as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4, in Clause 86 for 40GBASE-SR4, and in Clause 92 for GBASE-CR4 all use a 4 lane data path.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **59** *L* **33** # 406

Dawe, Piers — IPtronics

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

This says "CONDITIONAL BASED ON PHY TYPE" but for some PHY types it's not conditional: 74.1 "The 40GBASE-CR4 and 100GBASE-CR10 PHYs described in Clause 85 optionally use the FEC sublayer".

SuggestedRemedy

Change to"DEPENDING ON PHY TYPE". Also Figure 80-3b.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **59** *L* **50** # 98

Sela, Oren — Mellanox Technologies

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

if we state that some 100GBASE-R PHYs use CL91 FEC we should also state that some 40GBASE-R and 100GBASE-R may use CL74 FEC

SuggestedRemedy

after - "...Layer devices also use the transcoding and FEC of Clause 91."
add "Some 40GBASE-R and 100GBASE-R also may use FEC of caluse 74"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.5** *P* **61** *L* **37** # 351

Anslow, Pete — Ciena

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

Comment #175 against D 1.1 changed the nomenclature column of Table 80-2a under Clause 91 to "RS-FEC", however the hyphen is missing.

SuggestedRemedy

Change the nomenclature column of Table 80-2a under Clause 91 from "RS FEC" to "RS-FEC"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* *L* # 366

Anslow, Pete — Ciena

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

"and the PMA specifications defined in Clause 83 and Clause 94" would be better as "and the PMA specifications defined in Clause 83 or Clause 94"

SuggestedRemedy

Change " in Clause 83 and Clause 94" to "in Clause 83 or Clause 94"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.2** *P* **62** *L* **5** # 304

Dudek, Mike — QLogic

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

Clause 94 does not belong in this section unless there is also some description of 100GBASE-P.

SuggestedRemedy

Add 100GBASE-P to the list of Phy types on line 5.

Do so also in Clause 80.2.5 on line 35

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.2.6** *P* **62** *L* **43** # 85

Sela, Oren — Mellanox Technologies

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

For consistancy PHYs should be listed in the same order as they are in the Technology ability field and the priority resolution so 100GBASE-KP4 should be listed before 100GBASE-KR4

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3.1** *P* **62** *L* **51** # 99

Sela, Oren — Mellanox Technologies

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

There are 4 aditional primitive and not 2

SuggestedRemedy

change:
...sublayer service interface includes two additional primitives defined as follows
To:
...sublayer service interface includes four additional primitives defined as follows

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3.1** *P* **62** *L* **51** # 364

Anslow, Pete — Ciena

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

This says "the inter-sublayer service interface includes two additional primitives" but there are four.

SuggestedRemedy

Change to "the inter-sublayer service interface includes four additional primitives"

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3.2** *P* **63** *L* **31** # 407

Dawe, Piers — IPtronics

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

Draft proposes changing OPTIONAL OR OMITTED DEPENDING ON PHY TYPE to CONDITIONAL BASED ON PHY TYPE in Figure 80-3. Yet figure shows 10-lane PMAs below FEC. In general, these can mix up the lanes so are not allowed with Clause 91 FEC.

SuggestedRemedy

Don't do proposed change. I think the same applies to Figure 80–4, Figure 80–5. But if a change is appropriate, use just "DEPENDING ON PHY TYPE".

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.3.3.4** *P* **63** *L* **51** # 100

Sela, Oren — Mellanox Technologies

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

Per changes to the LPI transnit state diagram (Figure 82-16) this should be changed

SuggestedRemedy

change:
The tx_mode parameter takes on one of up to eight values: DATA, SLEEP, QUIET, FW, ALERT, RF_ALERT, WAKE or RF_WAKE.
To:
The tx_mode parameter takes on one of up to six values: DATA, SLEEP, QUIET, FW, ALERT or BYPASS.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.4** *P* **67** *L* **20** # 352

Anslow, Pete — Ciena

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

Comment #178 against D 1.1 was accepted but not fully implemented. Reach order has not been preserved.

SuggestedRemedy

Change the order of the additional rows shown in Table 80-3 to be:
100GBASE-R RS-FEC
100GBASE-KR4
100GBASE-KP4
100GBASE-CR4
In other words, move the CR4 row to the bottom.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.5** *P* **70** *L* **11** # 385

Dawe, Piers — IPtronics

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

The Skew and particularly, Skew Variation allocations were developed for 10 lanes. When there can be no more than 4 lanes, trace length mismatch will be reduced, so these limits are probably higher than needed for 4 lanes, costing buffers that will never be used.

SuggestedRemedy

Review the Skew and Skew Variation allocations, bearing in mind the difference between 10 lanes and 4.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80-3b** *P* **65** *L* # 87

Sela, Oren — Mellanox Technologies

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

Figure 80-3b Optional inter-sublayer service interface for EEE support is confusing need to calrify and split into 2 figures

SuggestedRemedy

1) add a comment that this figure only has the additional signals on top of those in Figrue 80-3a.
2) the PMA attached below an RS-FEC sublayer can only be a 4:4, because the figure has both the RS-FEC and CL74 FEC in the same figure it looks like a 4:n or a 10:n or a 20:10 PMA can be attached to the RS-FEC sublayer.
splitning this into 2 Figures - one with the optional CL74 FEC and one with the madatory RS-FEC will make this more clear

Proposed Response *Response Status* **O**

Cl **80** *SC* **80-4** *P* **69** *L* # 111

Sela, Oren — Mellanox Technologies

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

Table 80-4
The PCS lane to lane skew should not be applicable for the 100GBASE-CR4/KR4/KP4. Those number include significant skew components that are not relevent - optical PMD skew - SP3 and SP4, it also has siginifcant PMA skew that is too high for a 4:4 PMA

SuggestedRemedy

Split the table into 2 table. Table 1 should remain the same as table 80-4 in 802.3-2012.
the second table should only have the 100G skew and should be applicable to the new PHYs.
For the new table SP0 should remain 29ns, SP1 can be 29ns, SP2 should be ~36ns. SP3 should be~41ns, SP4 should be~60ns (copper MDI only), SP5 should be~65ns and SP6 should be~73ns. SP7 should still be 29ns.
as a result the latency at the FEC receive should change from 180ns to~90ns
this should also effect 91.5.3.1 on page 124 line 41.

Proposed Response *Response Status* **O**

Cl **81** *SC* **3.1.5** *P* **73** *L* **40** # 334

Nicholl, Gary — Cisco

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

This line states that LPI is requested by the RS aasserting TXC and setting TXD to 0x06 (in all lanes). However Fig 81-6a at the top of page 74, gives the impression that 0x06 is only sent on lane 0 , i.e. TXD <7:0>.

SuggestedRemedy

Modify Fig 81-6a to show that LPI is signalled as 0x06 on all lanes and not just on lane 0 (TXD<7:0>).

Proposed Response *Response Status* **O**

Cl **81** *SC* **3.2.4** *P* **74** *L* **41** # 340

Nicholl, Gary Cisco

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

This section indicates that the PHY signals LPI to the RS by asserting RXC and setting RXD to 0x06 (on all lanes). However Figure 81-8a gives the impression that only lane 0 , i.e. RXD<7:0> is set to 0x06.

SuggestedRemedy

Propose modfiying the table to show that all RXD lanes are set to 0x06, or at least make it clear that all lanes are set and that only lane 0 is shown in the diagram for clarity.

Proposed Response *Response Status* **O**

Cl **81** *SC* **3.4** *P* **75** *L* **31** # 341

Nicholl, Gary Cisco

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

This section states:

"Sublayers within the PHY are capable of detecting faults that render a link unreliable for communication. Upon recognition of a fault condition, a PHY sublayer indicates Local Fault status on the data path."

The term "unreliable for communication" is very vague and not clearly defined.

Now that were are moving to these higher speed ethernet links customers are starting to take link fault signalling more seriously (and see more value in it), I am getting increasing questions from the field where a customer see a LF condition and wants to know what caused it This is always a difficult question to answer as it is not clearly defined in the stadnard.

SuggestedRemedy

I tihnk we should clearly define in the standard as to which alarm conditions generate a Local Fault (LF). I don't think this is that difficult and the list would be something like PMD:LOS, PMA:LOL, PCS:Loss-of-block-lock: PCS: HI-BER .. basically the basic PHY alarms reported in the MDIO section.

I think standrdizing this would be a great service to the industry.

This is really no different to what has been done in the past for SONET and OTN equipment where the alarm conditions which generate AIS (SONET/OTN equivalent of LF) are clearly defined and implemented consistently across equipment from multiple vendors.

Proposed Response *Response Status* **O**

Cl **81** *SC* **3a** *P* **76** *L* **1** # 327

Nicholl, Gary Cisco

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

What appears to be missing in this section (and in Figure 91-9a) is a description of whether this LPI assertion and detection functional block and associated state machines is implemeted upstream or downstream from the link fault singaling functional block (described in section 81.3.4).

I believe it must be implemented upstream (above) the link fault signalling block as when a Local Fault is received by the RS from the PHY layer, then the trasnmit RS stops sending either MAC date or LPI and instead sends continuous Remote Fault towards the PHY.

SuggestedRemedy

Please clarify where in the data path this function is to be included, with respect to link fault signalling. If the convention is that this is implicitely defined by the fact that this section(81.3a) occurs before the link fault signalling section (81.4) then you can ignore this comment.

Proposed Response *Response Status* **O**

Cl **81** *SC* **3a** *P* **76** *L* **35** # 330

Nicholl, Gary Cisco

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

"The definition of TXC<7:0> and TXD<63:0> is derived from the state of PLS_DATA.request (81.1.7), except when it is overridden by an assertion of LP_IDLE.request."

Is this actually ture ?

In the case of a Remote Fault condtion aren't both the state of PLS_DATA.request and LP_IDLE.request ultimately overwritten by the assertion of Remote Fault.

The definition of TXC<7:0> and TXD<63:0> is derived from the state of the follwoing in priority order:

1. Remote Fault
2. LP_IDLE.request
3. PLS_DATA.request

SuggestedRemedy

If my comment is correct then I suggest updating the text to reflect this.

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.1.7** *P* **72** *L* **43** # 14

D'Ambrosia, John Dell

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

Following sentence
"EEE capability requires the use of the MAC defined in Annex 4A for simplified full duplex operation (with..."

states a requirement, but there is associated SHALL statement

SuggestedRemedy

Change sentence to
"EEE capability shall use the MAC defined in Annex
4A for simplified full duplex operation (with...."

Add corresponding PIC

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3.1.5** *P* **73** *L* **45** # 101

Sela, Oren Mellanox Technologies

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

Might be good to calrify that the time in this statement is Tw_sys_tx

SuggestedRemedy

change to:
The RS should not present a start code for valid transmit data until after
the wake up time specified for the PHY (Tw_sys_tx). The wake times are shown
in Table 78–4

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3a** *P* **76** *L* **35** # 365

Anslow, Pete Ciena

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

Comment #11 against D 1.1 was accepted, but not implemented.

The formatting of the text below Figure 81-9a is not usual (the left margin is indented)

SuggestedRemedy

Correct the formatting

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3a** *P* **77** *L* **11** # 15

D'Ambrosia, John Dell

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

Wake up time / Transmit LPI state diagram has shall statement with no corresponding PIC

SuggestedRemedy

add PIC table for LPI Assertion and Detection
Feature > Wake up time
subclause > 81.3.a.2
Value - Per Transmit LPI state diagram 81-10a

Proposed Response *Response Status* **O**

Cl **81** *SC* **81.3a.3.1** *P* **78** *L* **31** # 16

D'Ambrosia, John Dell

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

RS Mapping function has Shall statement with no corresponding PIC

SuggestedRemedy

add PIC to LPI Asssertion and Detection
Feature > RS Mapping DATA_NOT_VALID
subclause > 81.3.a.3.1
Value - "signal DATA_NOT_VALID on PLS_DATA_VALID.indication while it is detecting LP_IDLE on the XLGMII and CGMII."

Proposed Response *Response Status* **O**

Cl **82** *SC* **1.3** *P* **80** *L* **27** # 188

Slavick, Jeff Avago Technologies

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

Note 1 & 2 now state the same thing.

SuggestedRemedy

Remove NOTE 2 from Figure 82-1 and change all references in the diagram for NOTE 2 (the two instances of AN2) to reference NOTE 1.

Proposed Response *Response Status* **O**

Cl **82** *SC* **1.4** *P* **80** *L* **36** # 328

Nicholl, Gary Cisco

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

"For Physical Layers that use Clause 91 RS-FEC, if an optional physical instantiation, i.e. CAUI, is not implemented directly below the PCS sublayer, then the lower interface connects to the FEC sublayer."

I want to make sure that this text does not preclude a CAUI-4 (i.e. optionaly 4 lane electrical interface) being implemented between the PCS sublayer and the RS-FEC sublayer.

Perhaps this is something that should be punted until we add an optional CAUI4 interface in 802.3bm. I do see applcations however where a standalone backplane PHY chip (FR4,KP4) would be connected to an existing 8023.ba MAC ASIC via a 4x25G (CAUI4) electrical interface.

SuggestedRemedy

More of a question for clarification. Remedy if required may be punted to a comment against a future 802.3bm draft.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.18.2.5** *P* **88** *L* **41** # 201

Slavick, Jeff Avago Technologies

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

The state TX_RF_WAKE has been removed.

SuggestedRemedy

Remove the "or TX_RF_WAKE" from the tx_tw_timer definition.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.18.3.1** *P* **89** *L* **12** # 202

Slavick, Jeff Avago Technologies

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

Tx LPI Transmit state machine needs update to support scrambler bypass modes and such. Changes for Table 82-5a and 82-5b are also needed to support the changes to state machine diagram.

SuggestedRemedy

See slavick_3bj_01_1112.pdf

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.3.6** *P* **82** *L* **52** # 336

Nicholl, Gary Cisco

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

"/LI/s may only be inserted following other LPI characters."

What does this mean ? How would you ever transmit the first /LI/ then ? I thought /LI/s were inserted when the appropriate LPI control characters were recevied from the XLGMII it CGMII.

I guess what is being referred to here is the local insertion of additonal /LI/s by the PCS sublayer itself , as needed to adapt between clockc rates ?

Is there any similar required for the deletion of /LI/s by the PCS sublayer , again for clock adaptation ?

SuggestedRemedy

Suggestion using something like the text above to make it crystal clear that we are referring to the local insertion of /LI/s by the PCS layer for clock rate compensation.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.8a** *P* **83** *L* **2** # 331

Nicholl, Gary Cisco

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

Rapid alignment markers cause issues when running over OTN equipment.

The primary ethernet PMDs used to connect to OTN equipment are likely to be optical (i.e. no backplane or copper).

For optical PMDs I believe the proposal is to only define support for the EEE fast wake mode.

For EEE fast wake mode, where the PCS, PMA and PMD are never turned of I see no reason or value in switching to rapid alignment markers.

For EEE fast wake mode I would propose to continue using standard alignment markers, and this resolves the issue with interop over OTN equipment.

SuggestedRemedy

Propose that rapid alignment makers are only used for EEE normal wake mode (where they are needed and add value), whereas standard alignment makers should continue to be used for EEE fast wake mode.

Proposed Response *Response Status* **O**

Cl **82** *SC* **2.8a** *P* **83** *L* **5** # 200

Slavick, Jeff Avago Technologies

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

RAMs are used for alignment process when we're in a lower power state and not when we're in standard operating mode.

SuggestedRemedy

Change "For the optional EEE function, an alternate method of alignment is used."
to
For the optional EEE function, an alternate method of alignment is used when operating in the low power state.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.2** *P* **87** *L* **50** # 104

Sela, Oren Mellanox Technologies

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

Per latest change the RAMs should be sent every 15 blocks for 40GBASE-R

SuggestedRemedy

Change:
This counter counts 16383 66-bit blocks that separate two consecutive alignment markers for normal alignment markers or 7 66-bit blocks for rapid alignment markers for the optional EEE capability
To:
This counter counts 16383 66-bit blocks that separate two consecutive alignment markers for normal alignment markers. This counter counts 7 66-bit blocks for 100GBASE-R PCS or 15 66-bit blocks for 40GBASE-R PCS that seperate two consecutive rapid alignment markers for optional EEE capability

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.2** *P* **87** *L* **9** # 103

Sela, Oren Mellanox Technologies

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

LPI should not be transmitted or received when EEE is not supported or when it is not enabled.

SuggestedRemedy

change:
Note: A PCS that does not support EEE classifies vectors containing one or more /LI/ control characters as type E
To:
Note: A PCS that does not support EEE or a PCS that does support EEE but EEE is disableed classifies vectors containing one or more /LI/ control characters as type E

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.2.2** *P* **86** *L* # 37

Barrass, Hugh Cisco

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

The definition for scr_bypass_enable should be underlined

SuggestedRemedy

Underline it.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.2.5** *P* **88** *L* **25** # 18

D'Ambrosia, John Dell

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

rx_tq_timer SHALL statement does not have a corresponding PIC statement

SuggestedRemedy

Add PIC

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.3.1** *P* **88** *L* **33** # 39

Barrass, Hugh Cisco

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

Scrambler bypass will require extra time for the wake.

SuggestedRemedy

Change Table 82-5b:

Add a row:

Twr | Time the receiver waits in the RX_WAKE state before indicating a wake time fault, LPI_FW = FALSE & scr_bypass = TRUE | — | 6.5 | uS

Add "& scr_bypass = TRUE" to other row with LPI_FW = FALSE

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.3.1** *P* **89** *L* **18** # 283

Barrass, Hugh Cisco

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

LPI Tx state diagram needs to change to support scrambler bypass. State TX_RF_ALERT is being deleted.

SuggestedRemedy

Delete references to state TX_RF_ALERT.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.3.1** *P* **89** *L* **20** # 282

Barrass, Hugh Cisco

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

LPI Tx state diagram needs to change to support scrambler bypass. In support of this Twl needs to be set for the cases of scr_bypass_enable = TRUE or FALSE.

SuggestedRemedy

Duplicate the row with Twl & LPI_FW = FALSE, the two rows consisting of:

Twl | Time spent in the TX_WAKE states, LPI_FW = FALSE & scr_bypass = FALSE | 3.9 | 4.1 | uS

Twl | Time spent in the TX_WAKE states, LPI_FW = FALSE & scr_bypass = TRUE | 2.4 | 2.6 | uS

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.18.3.1** *P* **97** *L* **1** # 284

Barrass, Hugh Cisco

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

LPI Tx state diagram needs to change to support scrambler bypass.

SuggestedRemedy

Replace Fig 82-16 with the version supplied in a separate submission.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.3.4** *P* **81** *L* **19** # 6

D'Ambrosia, John Dell

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

This subclause calls out the control codes. THe pics in 82.7.4.1 call out c5 (only valid control characters are transmitted), however there isn't a corresponding SHALL statement for this in the text. The included SHALL statements address NOT transmitting values only.

SuggestedRemedy

modify PIC statement to properly address codes to be transmitted and not transmitted.

Proposed Response *Response Status* **W**

[Set CommentType to T (not specified by commenter).]

Cl **82** *SC* **82.2.3.4** *P* **81** *L* **31** # 102

Sela, Oren Mellanox Technologies

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

LPI should not be transmitted or received when EEE is not supported or when it is not enabled.

SuggestedRemedy

Change:
If EEE is not supported LPI shall not be transmitted and shall be treated as an error if received.
To:
If EEE is not supported or EEE is supported but not enabled LPI shall not be transmitted and shall be treated as an error if received.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.8a** *P* **83** *L* **10** # 17

D'Ambrosia, John Dell

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

NO PIC statements for corresponding shall statements in this subclause on this page.
Line 10, Line 15, Line 17, Line 50

SuggestedRemedy

Add corresponding PIC statement or statements.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.2.8a** *P* **83** *L* **294** # 249

Trowbridge, Steve Alcatel-Lucent

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

Rapid alignment markers are only needed for the "Normal Wake" mode of EEE to rapidly frame the refresh or wake signal after turning back on the transmitter. For the "fast wake" mode of operation, LPI control characters should be sent while maintaining normal lane alignment.

SuggestedRemedy

For "fast wake", LPI should be signaled while maintaining lane alignment. LPI control characters are changed to Idle characters Tw prior to resuming transmission of MAC data. This provides a simpler method of "fast wake" operation that could be reused for P802.3bm and maintain OTN compatibility for those interfaces. See supporting presentation trowbridge_01.

Proposed Response *Response Status* **W**

[CommentType set to T (commenter did not specify).]

Cl **82** *SC* **82.2.8a** *P* **83** *L* **49** # 75

Wong, Don Cisco Systems

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

The current propose method of distinguishing between RAM versus existing alignment marker relies upon the replacement of the bip fields with the CD. Upon sampling single a RAM or alignment marker, it's hard to tell if a bip3 or CD field is present.

SuggestedRemedy

The current propose method of distinguishing between RAM versus existing alignment marker relies upon the replacement of the bip fields with the CD. Upon sampling single a RAM or alignment marker, it's hard to tell if a bip3 or CD field is present.

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.6** *P* **92** *L* **38** # 76

Wong, Don Cisco Systems

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

Figure 82-11. When transiting from alignment marker to rapid alignment marker, there is no guidance on when the am_counter terminal count changes from 16K to 8/16 blocks.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **82** *SC* **82.6** *P* **92** *L* **38** # 77

Wong, Don — Cisco Systems

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

Fig 82-11. When transiting from align marker to rapid alignment marker, will take 64K blocks (83.8 msec) to lose alignment lock. 83.8 msec seems like a long time.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **83** *SC* **3** *P* **102** *L* **50** # 189

Slavick, Jeff — Avago Technologies

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

There are 3 additional primitives added by EEE to the PMA sub-clause

SuggestedRemedy

Change "two" to "three"

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.3** *P* **101** *L* **43** # 86

Sela, Oren — Mellanox Technologies

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

Replace 100GBASE-R FEC with 100GBASE-R RS-FEC

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.3** *P* **102** *L* **50** # 372

Kvist, Bengt — Ericsson AB

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

Text talks about two primitives then lists and defines three on next page

interface includes two additional primitives defined as

SuggestedRemedy

interface includes three additional primitives defined as

Proposed Response *Response Status* **O**

Cl **83** *SC* **83.5.8** *P* **27** *L* **28** # 19

D'Ambrosia, John — Dell

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

THere is a shall statement for the PMA adjacne to the PMD sublayer, where 100GBASE-KR4 and 100GBASE-CR4 have been added. However, these PHYs have not been added to the PIC in 83.7.3 for Item *KRCR

SuggestedRemedy

add in Item *KRCR under Feature - 100GBASE-KR4 and 100GBASE-CR4

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.2a** *P* **269** *L* **33** # 286

Barrass, Hugh — Cisco

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

The XLAUI/CAUI EEE behavior can be defined in the same way as 40GBASE-CR4 (etc.) as it is a similar 10Gbps interface.

SuggestedRemedy

If the EEE capability includes XLAUI/CAUI shutdown (see 78.5.2) then when tx_mode is set to ALERT, the transmit direction sublayer sends a repeating 16-bit pattern, hexadecimal 0xFF00 which is transmitted across the XLAUI/CAUI. When tx_mode is QUIET, the transmit direction XLAUI/CAUI transmitter is disabled as specified in 83A.3.3.1.1. Similarly when the received tx_mode is set to ALERT, the receive direction sublayer sends a repeating 16-bit pattern, hexadecimal 0xFF00 which is transmitted across the XLAUI/CAUI. When the received tx_mode is QUIET, the receive direction XLAUI/CAUI transmitter is disabled as specified in 83A.3.3.1.1.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.2a** *P* **270** *L* **30** # 285

Barrass, Hugh Cisco

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

The changes for rx_mode operation from draft 1.1 to draft 1.2 were not reflected in this clause.

SuggestedRemedy

Change "two additional primitives" to "four additional primitives"

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.2a** *P* **270** *L* **33** # 281

Barrass, Hugh Cisco

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

The editor's note is no longer relevant.

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.1.1** *P* **270** *L* **52** # 287

Barrass, Hugh Cisco

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

The XLAUI/CAUI EEE behavior can be defined in the same way as 40GBASE-CR4 (etc.) as it is a similar 10Gbps interface.

SuggestedRemedy

Delete the editor's note.

Change the clause to read:

For EEE capability with XLAUI/CAUI shutdown, the XLAUI/CAUI transmitter lane's differential peak-to-peak output voltage shall be less than 30mV within 500ns of tx_mode changing to QUIET in the relevant direction. Furthermore, the CAUI transmitter lane's differential peak-to-peak output voltage shall be greater than 720mV within 500ns of tx_mode ceasing to be QUIET in the relevant direction.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.6** *P* **270** *L* **22** # 288

Barrass, Hugh Cisco

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

Some instances of CAUI need to be changed

SuggestedRemedy

Change CAUI to XLAUI/CAUI - 2 instances.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.6** *P* **270** *L* **24** # 290

Barrass, Hugh Cisco

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

The rx_mode changes need to be reflected in this paragraph.

SuggestedRemedy

On line 24, change "rx_mode is QUIET" to "the received tx_mode is QUIET"

on line 25, change "tx_mode or rx_mode (as appropriate)" to "the appropriate direction tx_mode"

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.3.6** *P* **270** *L* **35** # 291

Barrass, Hugh Cisco

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

The rx_mode changes need to be reflected in this paragraph.

SuggestedRemedy

Change the paragraph after "If no energy is being received on the CAUI for the ingress direction..." to:

SIGNAL_DETECT is set to FAIL following a transition from rx_mode = DATA to rx_mode = QUIET. When rx_mode = QUIET, SIGNAL_DETECT shall be set to OK within 500 ns following the application of a signal at the receiver input detects an ALERT signal driven from the XLAUI/CAUI link partner. While rx_mode = QUIET, SIGNAL_DETECT changes from FAIL to OK only after the valid ALERT signal is applied to the channel.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.3.4.7** *P* **27** *L* **36** # 289

Barrass, Hugh — Cisco

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

Some instances of CAUI need to be changed

SuggestedRemedy

Change CAUI to XLAUI/CAUI - 2 instances.

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4** *P* **271** *L* **1** # 292

Barrass, Hugh — Cisco

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

PICS items need to be added.

SuggestedRemedy

Add PICS items for:

83A.3.2a - Support for XLAUI/CAUI shutdown

83A.3.3.1.1 - Amplitude & swing for XLAUI/CAUI shutdown

83A.3.3.6 - transmit disable for XLAUI/CAUI shutdown

83A.3.4.7 - signal detect for XLAUI/CAUI shutdown

Proposed Response *Response Status* **O**

Cl **83A** *SC* **83A.4** *P* **271** *L* **6** # 169

Healey, Adam — LSI Corporation

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

The editor's note indicates that the PICS proforma will be updated when the content of this clause stabilizes. The contents appear to be stable enough to complete this section.

SuggestedRemedy

Update the PICS proforma for Annex 83A.

Proposed Response *Response Status* **O**

Cl **84** *SC* **2** *P* **106** *L* **50** # 203

Slavick, Jeff — Avago Technologies

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

RF_ALERT, WAKE nad RF_WAKE are no longer valid settings for tx_mode.

SuggestedRemedy

Remove the references in 84.2 to RF_ALERT, WAKE and RF_WAKE and update the number of valid values to be five. Also fix section 85.2

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.2** *P* **106** *L* **43** # 20

D'Ambrosia, John — Dell

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

PIC statement for LPI, but no corresponding SHALL statement

SuggestedRemedy

add SHALL statement

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.2** *P* **106** *L* **54** # 106

Sela, Oren — Mellanox Technologies

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

per latest change to the LPI transmit state diagram TX_MODE values should change

SuggestedRemedy

change:
The tx_mode parameter takes on one of up to eight values: DATA, SLEEP, QUIET, FW, ALERT, RF_ALERT, WAKE or RF_WAKE.
To:
The tx_mode parameter takes on one of up to six values: DATA, SLEEP, QUIET, FW, ALERT or BYPASS.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.2** *P* **107** *L* **6** # 8

D'Ambrosia, John Dell

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

subclause numbering is incorect

SuggestedRemedy

84.7.2, 84.7.4, 84.7.6 should not be subclauses under 84.2.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.2** *P* **8** *L* **10** # 21

D'Ambrosia, John Dell

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

It would seem that there should be some SHALL statements in here.
PICS missing as well

SuggestedRemedy

change
When tx_mode is ALERT, the transmitter equalizer taps are set to the preset state specified in 72.6.10.2.3.1.
to
When tx_mode is ALERT, the transmitter equalizer taps shall be set to the preset state specified in 72.6.10.2.3.1.

add PIC

Change
When tx_mode is QUIET, the transmitter is disabled as specified in 84.7.6
to
When tx_mode is QUIET, the transmitter SHALL be disabled as specified in 84.7.6
add PIC
.
.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.4** *P* *L* # 22

D'Ambrosia, John Dell

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

two pic statements FS13 (signal detect during LPI) and FS14 (signal detect for EEE) but only one shall statement

SuggestedRemedy

add appropriate shall statement (believe it is for LPI)

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.4** *P* **107** *L* **21** # 107

Sela, Oren Mellanox Technologies

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

The Alert detect is only needed if normal mode is supported

SuggestedRemedy

change:
When the PHY supports the optional EEE capability, PMD_SIGNAL.indication is also used to indicate when the ALERT signal is detected, which corresponds to the beginning of a refresh or a wake
To:
When the PHY supports the optional EEE capability with the normal wake mode, PMD_SIGNAL.indication is also used to indicate when the ALERT signal is detected, which corresponds to the beginning of a refresh or a wake

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.4** *P* **107** *L* **31** # 105

Sela, Oren Mellanox Technologies

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

The Alert detect is only needed if normal mode is supported

SuggestedRemedy

change:
When the PHY supports the EEE capability,
To:
When the PHY supports the EEE capability with the normal wake mode,

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.4** *P* **107** *L* **35** # 305

Dudek, Mike QLogic

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

Once trained the pk-pk output of the channel even with a 16 unit interval square wave will not be 720mV.

SuggestedRemedy

State that the signal detect should be set to OK within 500ns of receiving a signal that is slightly larger than the Transmitter Off amplitude (35mV). 40mV would be a good value. Remove the words about interference tolerance test channels etc.

Proposed Response *Response Status* **O**

Cl **84** *SC* **84.7.6** *P* **106** *L* **50** # 23

D'Ambrosia, John Dell

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

Loopback during blogal_PMD_transmit_disable Shall statement with no corresponding PIC

SuggestedRemedy

add pic to address

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.4** *P* **111** *L* **19** # 108

Sela, Oren Mellanox Technologies

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

The Alert detect is only needed if normal mode is supported

SuggestedRemedy

change:
When the PHY supports the EEE capability,
To:
When the PHY supports the EEE capability with the normal wake mode,

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.4** *P* **111** *L* **31** # 306

Dudek, Mike QLogic

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

Once trained the pk-pk output of the channel even with a 16 unit interval square wave will not be 720mV.

SuggestedRemedy

State that the signal detect should be set to OK within 500ns of receiving a signal that is slightly larger than the Transmitter Off amplitude (30mV). 40mV would be a good value. Remove the words about interference tolerance test channels etc.

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.6** *P* **110** *L* **49** # 24

D'Ambrosia, John Dell

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

THis shall statement
Loopback, as defined in 85.7.8, shall not be affected by Global_PMD_transmit_disable.

has no PIC

SuggestedRemedy

add PIC

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.6** *P* **110** *L* **50** # 25

D'Ambrosia, John Dell

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

Output amplitude LPI voltage and Output Amplitude ON voltage PICS Similar to TC3 and TC4 in Clause 84 PICs) missing

SuggestedRemedy

add PICs

Proposed Response *Response Status* **O**

Cl **85** *SC* **85.7.6** *P* **111** *L* **29** # 109

Sela, Oren — Mellanox Technologies

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

The Alert detect is only needed if normal mode is supported

SuggestedRemedy

change:
When the PHY supports the EEE capability,
To:
When the PHY supports the EEE capability with the normal wake mode,

Proposed Response *Response Status* **O**

Cl **91** *SC* *P* **118** *L* **14** # 67

Pillai, Velu — Broadcom

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

Fig 91-2 does not show the BER Monitor in the transmit path.

SuggestedRemedy

Add a block to show the BER Monitor attached to the Alignment lock and deskew.

Proposed Response *Response Status* **O**

Cl **91** *SC* **3** *P* **116** *L* **37** # 295

Ofelt, David — Juniper Networks

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

The current draft indicates that the RS FEC is only supported on services interfaces with width (p) of 4.

This is overly restrictive and ensures that when we develop 2 and 1 physical lane interfaces that we'll need to rework this part of the standard. It is possible to bit-interleave the four lanes into two or one, but the result does not handle burst errors well. An argument that comes up is that "we'll only support muxing for interfaces that are more unlikely to have burst errors (e.g. no DFE)". This is unsatisfying to me- we have an architecture from .3ba that handles a large variety of interface structures and then we follow it with the next rev of the PCS where we remove all that good flexibility or we can support it for a subset of the interface schemes.

SuggestedRemedy

Add text to 91.3 indicating something like:

"If a PMA wants to multiplex the four FEC lanes into two or one lanes, then the multiplexing shall be done at a Reed-Solomon codeword boundary"

I believe this is the necessary requirement to make FEC work properly once multiplexed.

With this change, we should have the features needed to implement all optics variety being discussed in .3bm.

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.3.4** *P* **126** *L* **38** # 190

Slavick, Jeff — Avago Technologies

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

If rx_lpi_active is asserted, then the Rx will see RAMs every other codeword.

SuggestedRemedy

Change "The rx_lpi_active is true"
to "When rx_lpi_active is true"

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.4.2.1** *P* **130** *L* **16** # 205

Slavick, Jeff — Avago Technologies

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

With the inclusioin of EEE into cluase 82, Figure 82-12 now sets rx_align_status rather then align_status. Other text in Clause 82 states that align_status = rx_align_status when EEE is not supported. However, Clause 91 just references Figure 82-12.

SuggestedRemedy

Change align_status variable name to be rx_align_status
Change Figure 91-10 to use rx_align_status rather then align_status
Change tx_quiet_timer to refer to rx_align_status

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.4.2.1** *P* **130** *L* **36** # 207

Slavick, Jeff — Avago Technologies

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

Setting amp_valid true by comparing alignment markers to PCS lanes 16,17,18,19 is only valid when we're receiving RAMs.

SuggestedRemedy

Change "For the optional EEE capability, each FEC lane also compares the candidate block to the alignment marker payload for PCS lanes 16, 17, 18, and 19."
to:
"For the optional EEE capability, each FEC lane also compares the candidate block to the alignment marker payload for PCS lanes 16, 17, 18, and 19 when rx_lpi_active is true."

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.4.2.1** *P* **131** *L* **50** # 206

Slavick, Jeff — Avago Technologies

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

ram_valid and ramps_valid are testing for valid Rapid Alignment Markers.

SuggestedRemedy

Change "valid alignment markers" to "valid Rapid Alignment Markers" for both ram_valid and ramps_valid variables.

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.4.2.1** *P* **133** *L* **17** # 208

Slavick, Jeff — Avago Technologies

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

TBDs are in place for the quiet timers for Clause 91.

SuggestedRemedy

see slavick_3bj_01_1112.pdf

Proposed Response *Response Status* **O**

Cl **91** *SC* **5.4.3** *P* **136** *L* **35** # 204

Slavick, Jeff — Avago Technologies

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

The last RAM down_count value transmitted is 1 not 0. So figures 91-10 and 91-11 need to reflect that.

SuggestedRemedy

Change the test values on the exit of TX_TEST_NEXT and RX_TEST_NEXT to compare *_down_count against 1.

Proposed Response *Response Status* **O**

Cl **91** *SC* **6.3** *P* **138** *L* **47** # 191

Slavick, Jeff — Avago Technologies

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

The FEC_*_ability registers reference the wrong MDIO registers

SuggestedRemedy

Change FEC_bypass_correction_ability to refer to 1.201.1
Change FEC_error_indication_ability to refer to 1.201.2

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.5** *P* **119** *L* **19** # 88

Sela, Oren — Mellanox Technologies

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

In bullet c) there is a redundent statement. In line 14 we establisth that all synch header are valid so there is no need to state that both c<0> = 1 and c<1> = 0 it is enough to say that c<0> = 1

SuggestedRemedy

change:
Let c be the smallest value of j such that tx_coded_c<0>=1 and tx_coded_c<1>=0. In other words, tx_coded_c is the first 66-bit control block that was received in the current group of four blocks.
To:
Let c be the smallest value of j such that tx_coded_c<0>=1. In other words, tx_coded_c is the first 66-bit control block that was received in the current group of four blocks.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.5** *P* **119** *L* **31** # 89

Sela, Oren — Mellanox Technologies

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

bullet b) - change to tx_xcoded<4:0>=1111

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.6** *P* **120** *L* **28** # 69

Pillai, Velu — Broadcom

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

payloads corresponding to PCS lanes 1, 5, 6, 13, and 17 are

is not correct

SuggestedRemedy

It needs to be

payloads corresponding to PCS lanes 1, 5, 9, 13, and 17 are

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.6** *P* **122** *L* **19** # 72

Pillai, Velu — Broadcom

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

Text talks about bit error monitoring, but there are no counters attached to this statment. Either we should add error counters or remove this line.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.6** *P* **122** *L* **28** # 110

Sela, Oren — Mellanox Technologies

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

The tx_lpi_active reference to 82.2.7a is no loger correct and should be referenced to the new figure 91-10

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.7** *P* **123** *L* **34** # 374

Cideciyan, Roy — IBM

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

Figure 91-5 states "symbol delay element, holds 1 10-bit symbol". The formulation can be improved.

SuggestedRemedy

Replace "symbol delay element, holds 1 10-bit symbol" by "symbol delay element, holds a 10-bit symbol"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **16** # 376

Cideciyan, Roy IBM

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

MTTFPA computations in cideciyan_01_0512.pdf always assume that RS decoder reports (indicates) errors to PCS layer whenever there is an uncorrectable code word (error correction mode) or code word contains errors (error detection mode). Therefore, indication of errors to the PCS sublayer is not an option but a mandatory feature of the RS decoder in order to have satisfactory MTTFPA.

SuggestedRemedy

Replace "The Reed-Solomon decoder may optionally provide ..." by "The Reed-Solomon decoder shall provide ..."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **16** # 369

Anslow, Pete Ciena

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

This says that the indication of uncorrected errors to the PCS is optional.
But if uncorrected errors are not indicated, the MTTFPA will be poor because any FEC frame with uncorrected errors will contain at least 8 or 16 errored symbols.

Doing a simple minded calculation:

If the errors turn up in bursts of 8, then a BER of 1E-12 is a block of errors every 80 seconds. The only thing stopping this from being accepted as a good packet is the CRC. This fails with a probability of 2.3E-10 which is a false packet every 10,000 years.

If the BER falls to 1E-6, this is a false packet every 4 days.

I think Roy Cideciyan has shown that reporting errors with FEC enabled gives a MTTFPA of better than 10,000 years at 1E-6.

This is a huge improvement in performance, so marking uncorrected errors should be mandatory.

SuggestedRemedy

Make the indication of uncorrected errors mandatory in Clause 91.
Make the appropriate changes to the other clauses e.g. Clause 45

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **17** # 377

Cideciyan, Roy IBM

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

MTTFPA computations in cideciyan_01_0512.pdf always assume that RS decoder reports (indicates) errors to PCS layer whenever there is an uncorrectable code word (error correction mode) or code word contains errors (error detection mode). Therefore, indication of errors to the PCS sublayer is not an option but a mandatory feature of the RS decoder in order to have satisfactory MTTFPA.

SuggestedRemedy

Omit the following two sentences: "The presence of this option is indicated by the assertion ... (see 91.6.4). When the option is provided, it is enabled ... (see 91.6.2).

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **21** # 378

Cideciyan, Roy IBM

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

MTTFPA computations in cideciyan_01_0512.pdf always assume that RS decoder reports (indicates) errors to PCS layer whenever there is an uncorrectable code word (error correction mode) or code word contains errors (error detection mode). Therefore, indication of errors to the PCS sublayer is not an option but a mandatory feature of the RS decoder in order to have satisfactory MTTFPA.

SuggestedRemedy

Replace "When the error indication function is enabled and the decoder determines that a code word ..." by "When the decoder determines that a code word ..."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **22** # 3

Szczepanek, Andre Inphi

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

"or is uncorrectable"
See previous comment related to line 9 on the same page.

SuggestedRemedy

Replace "or is uncorrectable"
with
"or contains errors and has not been corrected"

Proposed Response *Response Status* **W**

[changed Sublause to 91.5.3.3 for consistent sorting.]

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **23** # 113

Sela, Oren — Mellanox Technologies

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

Should allow an implementation to nullify more than one 64/66 block in every other transcoding block - for example an implementation should be able to nullify all blocks

SuggestedRemedy

change to:
...it shall ensure that, at least for every other 257-bit block within the codeword starting with the first (1st, 3rd, 5th, etc.), the synchronization header for the first 66-bit block at the output of the 256B/267B to 64B/66B transcoder, rx_coded_0<1:0>, is set to 11. In addition, it shall ensure rx_coded_3<1:0> corresponding to the last (20th) 257-bit block in the codeword is set to 11. This will cause the PCS to discard all frames 64 bytes and larger that are fully or partially within the codeword. The decoder may set rx_coded_j<1:0> to 11 and thus nullify more 66-bit blocks at the PCS.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **23** # 375

Cideciyan, Roy — IBM

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

The formulation "... not supported or enabled" does not seem to be clear.

SuggestedRemedy

Replace "... not supported or enabled), ..." by "... not supported or not enabled), ..."

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **25** # 379

Cideciyan, Roy — IBM

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

Transcoder in the receiver is 256B/257B to 64B/66B transcoder.

SuggestedRemedy

Replace "256B/267B to 64B/66B transcoder" by "256B/257B to 64B/66B transcoder"

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **25** # 117

Sela, Oren — Mellanox Technologies

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

typo - replace 256B/267B with 256B/257B

SuggestedRemedy

per comment

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **9** # 112

Sela, Oren — Mellanox Technologies

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

The RS-FEC can't detect all the uncorrectable codewords

SuggestedRemedy

change:
The RS-FEC sublayer shall also be capable of detecting uncorrectable codewords
To:
The RS-FEC sublayer shall also be capable of detecting some of the uncorrectable codewords

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.3** *P* **126** *L* **9** # 2

Szczepanek, Andre Inphi

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

"The RS-FEC sublayer shall also be capable of detecting uncorrectable codewords"
It is not theoretically possible to detect all possible uncorrectable codewords as some error patterns can change one valid codeword into another valid codeword.
The text in almost all of the rest of the clause has been altered to be consistent with clause 74 and use the termininology "corrected" and "uncorrected" codewords/blocks. This terminology was adopted for Clause 74 to avoid the issue of what is and isn't a correctable block and focus instead on what the sublayer actually does : correct, or fail to correct a block.

SuggestedRemedy

Delete sentence "The RS-FEC sublayer shall also be capable of detecting uncorrectable codewords" as it includes a "shall" that isn't achievable or verifiable.

Proposed Response *Response Status* **W**

[changed Sublause to 91.5.3.3 for consistent sorting.]

Cl **91** *SC* **91.5.3.4** *P* **126** *L* **25** # 68

Pillai, Velu Broadcom

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

256B/267B to 64B/66B transcoder, rx_coded_0<1:0>

SuggestedRemedy

Needs to be

256B/257B to 64B/66B transcoder, rx_coded_0<1:0>, is s

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.5** *P* **127** *L* **31** # 73

Pillai, Velu Broadcom

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

If rx_xcoded<0> is 0 and all rx_coded<j+1>=1
is not correct.

SuggestedRemedy

It needs to be

If rx_xcoded<0> is 0 and all rx_xcoded<j+1>=1

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.5** *P* **127** *L* **34** # 71

Pillai, Velu Broadcom

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

a)Set c = 1 and h<3:0> = 0000.
The variable c is set to 1; On the transcoding side for the case of invalid sync header, c is set to 0

SuggestedRemedy

For consistency sake C should be set to 0

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.3.5** *P* **127** *L* **6** # 74

Pillai, Velu Broadcom

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

If rx_xcoded<0> is 0 and any rx_coded<j+1>=1 is not correct

SuggestedRemedy

It needs to be

If rx_xcoded<0> is 0 and any rx_xcoded<j+1>=0

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2** *P* **130** *L* **36** # 115

Sela, Oren — Mellanox Technologies

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

When EEE is supported lanes 16,17,18 and 19 should only be compared when rx_lpi_active is true - this is because in the next state the amp_counter counts lower only when the rx_lpi_active is true. It is not broken as EEE capble device when rx_lpi_active false and first_pcsl is 16,17,18 or 19 then 4096 FEC code word later there should be lane 16, 17, 18 or 19 in the same possision but this was not the intent

SuggestedRemedy

change:
For the optional EEE capability, each FEC lane also compares the candidate block to the alignment marker payload for PCS lanes 16, 17, 18, and 19
To:
For the optional EEE capability, when rx_lpi_active is true each FEC lane also compares the candidate block to the alignment marker payload for PCS lanes 16, 17, 18, and 19

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2.1** *P* **130** *L* **39** # 212

Healey, Adam — LSI Corporation

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

Editor's note states the maximum distance of 3 nibbles may not be suitable for a 100GBASE-KP4 PHY.

However, the following argument has been suggested (by Zhongfeng Wang):
1. Estimates of the net coding gain imply about 0.4 dB additional coding gain for 100GBASE-KP4 FEC.
2. Therefore roughly assume the uncorrected error ratio for 100GBASE-KP4 could be 10x greater than for 100GBASE-KR4.
3. This implies, for the worst-case scenario, the mechanisn would fail to lock with 6 RS-FEC codewords on an average of once every 1E7 years rather than 1E9 years for 100GBASE-KR4.

If this is the case, the likelihood of failure is very small and thus there is no compelling reason to modify the synchronization mechanism for 100GBASE-KP4.

SuggestedRemedy

Remove the editor's note.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2.1** *P* **131** *L* **51** # 209

Healey, Adam — LSI Corporation

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

The bit error ratio of a CAUI that separates the PCS from the RS-FEC sublayer is expected to be low (less than 1E-12). Furthermore, it is unlikely (on the order of 1/2^50) to detect a valid alignment marker in random data.

Therefore, it is not necessary to check all PCS lanes for rapid alignment markers. The actual number to be checked is TBD.

SuggestedRemedy

For ram_valid, set TBD to 2.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2.1** *P* **131** *L* **8** # 70

Pillai, Velu — Broadcom

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

fec_alignment_valid variable description needs to indicate that each FEC lane needs to lock to a unique AM. This unique requirement is in the alignment_valid variable description in CL82.2.18.2.2

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2.1** *P* **132** *L* **2** # 210

Healey, Adam LSI Corporation

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

The variable ramps_valid checks for "rapid" alignment marker payload sequences on the FEC lanes.

Since FEC codeword boundaries are known during this search, the corrected message could be used as the subject of the search (unless correction is bypassed).

If correction is not bypassed, it is unlikely that the RAM payload patterns would appear in random data. Therefore, it should be sufficient to check that a 64-bit block marker payload on any 2 FEC lanes corresponds to the first rapid alignment marker payload corresponding to that lane.

If the mechanism is intended to be operated with correction bypassed, a more complicated analysis of the appropriate distance between the reference pattern and the observed pattern must be performed.

SuggestedRemedy

Update the definition of ramps_valid accordingly.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.4.2.3** *P* **133** *L* **17** # 211

Healey, Adam LSI Corporation

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

The counters rx_quiet_timer and tx_quiet_timer are both TBD. Both timers should exceed the maximum value of the rx_quiet_timer at the PCS (currently set to 3 ms).

SuggestedRemedy

Set the range of both timers to 3.1 to 3.4 ms.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6** *P* **138** *L* **26** # 183

Gustlin, Mark Xilinx

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

Since a given FEC lane can be received on any of the four service interface lanes, add a register that captures which FEC lane is recieved at a given time on each service interface lane.
This is analogous to Lane x mapping register that is part of Clause 82 (Table 82-7).

SuggestedRemedy

Per the commment.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6.2** *P* **138** *L* **35** # 380

Cideciyan, Roy IBM

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

MTTFPA computations in cideciyan_01_0512.pdf always assume that RS decoder reports (indicates) errors to PCS layer whenever there is an uncorrectable code word (error correction mode) or code word contains errors (error detection mode). Therefore, indication of errors to the PCS sublayer is not an option but a mandatory feature of the RS decoder in order to have satisfactory MTTFPA.

SuggestedRemedy

Omit subclause 91.6.2 as this variable is not needed.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.6.4** *P* **138** *L* **48** # 381

Cideciyan, Roy IBM

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

MTTFPA computations in cideciyan_01_0512.pdf always assume that RS decoder reports (indicates) errors to PCS layer whenever there is an uncorrectable code word (error correction mode) or code word contains errors (error detection mode). Therefore, indication of errors to the PCS sublayer is not an option but a mandatory feature of the RS decoder in order to have satisfactory MTTFPA.

SuggestedRemedy

Omit subclause 91.6.4 as this variable is not needed.

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7.3** *P* **141** *L* **5** # 26

D'Ambrosia, John Dell

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

Item KR4 and KP4 have no corresponding shall statements. Also, both values are set to - KR4, which doesn't make sense.

SuggestedRemedy

delete
the determination of the KR4 and KP4 PHY is not done in the FEC sublayer

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7.4.1** *P* **142** *L* **31** # 9

D'Ambrosia, John Dell

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

TF9 is for 100GBASE-KR4 and 100GBASE-CR4

SuggestedRemedy

Add 100GBASE-CR4

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7.4.2** *P* **143** *L* **18** # 4

Szczepanek, Andre Inphi

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

See previous comments related to the use of "uncorrectable" on page 126

SuggestedRemedy

Delete Item RF5

Proposed Response *Response Status* **W**

[Changed Clause from 19 to 91, changed Sublause to 91.7.4.2 for consistent sorting.]

Cl **91** *SC* **91.7.4.2** *P* **143** *L* **21** # 5

Szczepanek, Andre Inphi

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

See previous comments related to the use of "uncorrectable" on page 126

SuggestedRemedy

Replace "for uncorrectable codewords"
with
"for uncorrected errored codewords"

Proposed Response *Response Status* **W**

[Changed Clause from 19 to 91, changed Sublause to 91.7.4.2 for consistent sorting.]

Cl **91** *SC* **91.7.4.2** *P* **143** *L* **26** # 10

D'Ambrosia, John Dell

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

subclause reference for RF7 wrong

SuggestedRemedy

change to 91.5.3.4

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7.4.3** *P* **143** *L* **53** # 11

D'Ambrosia, John Dell

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

Feature name for SD5 is incorrect

SuggestedRemedy

change to Rx LPI process

Proposed Response *Response Status* **O**

Cl **91** *SC* **91-10** *P* **136** *L* # 114

Sela, Oren — Mellanox Technologies

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

When only FW EEE is supported the arch from TX_TEST_NEXT to TX_QUITE should not be taken

SuggestedRemedy

Add paramter called LPI_FW - true in FW mode false in normal wake modei n
Figrue 91-10 - on the arch from TX_TEST_NEXT to TX_QUITE add
LPI_FW*(false!align_status + !ram_valid). And add an arch
!LPI_FW*(false!align_status + !ram_valid) from TX_TEST_NEXT to TX_FAULT

Proposed Response *Response Status* **O**

Cl **91A** *SC* **91A.1** *P* **276** *L* **1** # 66

Pillai, Velu — Broadcom

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

The example RS-FEC blocks contains only Idle control characters. It will be better if we can have a block that has a mix of data and control codewords that addresses the different combinations. Basically a set that exercises the complex equations in subclause 91.5.2.5 and 91.5.3.5

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **91A** *SC* **91A.2** *P* **277** *L* **1** # 65

Pillai, Velu — Broadcom

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

The CL91 text already clarifies in section 91.5.2.7 that when the transcoded data [0:256] is partitioned into 10-bit message symbols from left to right in the encoder, the resulting values are {m<k-1>[0:9], m<k-2>[0:9],…,m<0>[0:9]}. An additional statement to section 91A.2 to indicate that when these values are used for parity symbol generation, the values must first be flipped end-to-end to become {m<k-1>[9:0], m<k-2>[9:0],…,m<0>[9:0])} before being applied to the parity generation algorithm.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **92** *SC* **10** *P* **167** *L* **4648** # 165

Bugg, Mark — Molex

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

Modify Eqn 92-14 based on measured data

SuggestedRemedy

Change Equation 92-14 from
10.80-13log(f/5.5)
to
10.70-14LOG(f/5.5)

Proposed Response *Response Status* **O**

Cl **92** *SC* **10** *P* **167** *L* **4648** # 166

Bugg, Mark — Molex

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

Return loss limit extending to 25GHz is inconsistent with remainder of cable limits

SuggestedRemedy

Change Frequency limits of Eqn 92-14 from
4.1<=f<=25
to
4.1<=f<=20

Proposed Response *Response Status* **O**

Cl **92** *SC* **10.2** *P* **164** *L* **41** # 258

Shanbhag, Megha — TE Connectivity

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

It reads "b The limit on the maximum insertion loss at 12.8906 GHz....." but the parameter being refered is minimum insertion loss.

SuggestedRemedy

change to "b The limit on the minimum insertion loss at 12.8906 GHz...."

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.1.1** *P* **172** *L* **36** # 220
Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **X**
Please multiply the factor 2 in Eq 92-23

SuggestedRemedy
IL(f) = 0.002 + 0.192*sqrt(f) + 0.092 *f

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.1.2** *P* **172** *L* **36** # 218
Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **X**
Please multiply the factor 2 in front of the equation

SuggestedRemedy
IL(f)= -0.002 + 0.192*sqrt(f) + 0.092*f

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.2** *P* **173** *L* **7** # 221
Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **X**
Please multiply factor 1.25

SuggestedRemedy
IL(f) = -0.00125 + 0.120 * sqrt(f) + 0.0575 * f

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.3.1** *P* **174** *L* **7** # 228
Ghiasi, Ali Broadcom

Comment Type **T** *Comment Status* **X**
Mated test fixture max and minimum loss is TBD

SuggestedRemedy
ILMTFmin=(0.08*sqrt(f)+0.2*f) for 0.01 to 25.78 GHz

ILMTFmax=(-0.114 + 0.45*sqrt(f)+0.21*f) for 0.01 to 14 GH
= 4.5 - 0.66*f for 14 to 25.78 GHz

See ghiasi_01_1112 for the proposed graph

Proposed Response *Response Status* **W**
[CommentType set to T (not specified by the commenter).]

Cl **92** *SC* **11.3.4** *P* **176** *L* **28** # 225
Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **X**
Defining common mode return loss of only 3 dB does not provied any protection, the mated board differential to common mode return have been tighten to limit common mode generation

SuggestedRemedy
Remove section 92.11.3.4

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.3.5** *P* **177** *L* **38** # 226
Ghiasi, Ali Broadcom

Comment Type **TR** *Comment Status* **X**
Near end and far end crosstalk are TBD

SuggestedRemedy
Proposed limit for
NEXT = 1 mV RMS
MDNEXT= 1.7 mV RMS

FEXT= 2.6 mV RMS
MDFEXT=5.2 mV RMS

see ghiasi_01_1112

Proposed Response *Response Status* **O**

Cl **92** *SC* **11.32** *P* **174** *L* **3** # 224

Ghiasi, Ali — Broadcom

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

With the range limited to 18.75 GHz the difference between 18-0.5*f and 11.2-20.5log10(f/14) is only 8.6250 vs 8.599

SuggestedRemedy

Remove the third part of 92-27 and change the range on the 2nd part from 4<=f<=16 to 4<=f<=18.75 GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **12.1** *P* **177** *L* **17** # 254

Shanbhag, Megha — TE Connectivity

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

92.11.1.1 and 92.11.1.2 are referenced for definition of Style-1 and Style-2 connectors. However, 92.11.1.1 and 92.11.1.2 are subclauses for test fixture RL and IL.

SuggestedRemedy

Change 92.11.1.1 and 92.11.1.2 to 92.12.1.1 and 92.12.1.2 respectively.

Proposed Response *Response Status* **O**

Cl **92** *SC* **12.1.1** *P* **178** *L* **24** # 255

Shanbhag, Megha — TE Connectivity

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

Figure 92–21 —Style-2 example MDI board receptacle
Incorrectly labelled as Style-2 when it should be Style-1

SuggestedRemedy

Change Figure title from Style-2 to Style-1

Proposed Response *Response Status* **O**

Cl **92** *SC* **7.12** *P* **151** *L* **10** # 185

Ran, Adee — Intel

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

Choice of seeds to minimize correlation seems like an informative sentence, but there is no hint of how that goal can be achieved, nor criteria on what is considered low enough.

In practice, with the large inter-lane skew allowed in 100GBASE-R, such minimzation cannot be achieved reliably by just selecting seeds.

The original (normative!) requirements of "randomness" in clause 72 and "different for each lane" in clauses 84 and 85 do not achieve this goal, although it seems to be the reason they were included.

The very loose specification of the seed requirements in clause 72 makes it impossible to validate that a product meets it.

It is somewhat pointless to specify something that is both unverifyable and ineffective. Let's avoid copying and repeating an error.

See attached presentation.

SuggestedRemedy

Use a different PRBS11 polynomial for each lane.
Specify the polynomials and the initial bit patterns explicitly (see presentation).
Change PICS item PF18 in 92.13.4.1 accordingly and add a suitable PICS item in 93.11.4.1.

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.3.2** *P* **153** *L* **33** # 256

Shanbhag, Megha — TE Connectivity

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

In equation (92-1) Maximum frequency for Tx Output RL is defined as 25GHz.
But IL in equation (92-4) is defined up to a maximum frequency of 18.75GHz.

SuggestedRemedy

Change Equation (92-1) to reflect a maximum frequency of 18.75GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.3.5** *P* **157** *L* **45** # 217

Ghiasi, Ali — Broadcom

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

Please multiply the constant factor in EQ 92.4

SuggestedRemedy

Updated equation will be
IL= 0.0807 + 0.57781 sqrt(f) + 0.6092 * f 0.01<=f<=14 GHz
IL = 19.368 + 2.152 * f for 14 <=f <=18.75 GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.3.6** *P* **157** *L* **35** # 184

Ran, Adee — Intel

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

Definition of even-odd jitter refers to the difference between the positive pulse and the negative pulse. By its name, it should compare the difference between even pulses and odd pulses. These definitions coincide when the test pattern has period with an even number of symbols, but with odd length (such as PRBS) they measure two differnt things.

SuggestedRemedy

Change
"the difference between the mean width of the positive pulse and the mean width of the negative pulse"
to
"the difference between the mean width of even-numbered pulses and the mean width of odd-numbered pulses".
Consider adding
"If the base pattern period is an odd number of symbols, both even- and odd-numbered pulses should contain both positive and negative polarities".

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.4.1** *P* **159** *L* **29** # 257

Shanbhag, Megha — TE Connectivity

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

In equation (92-5) and (92-6) maximum frequency is defined as 25GHz. But IL in equation (92-4) is defined up to a maximum frequency of 18.75GHz.

SuggestedRemedy

change maximum frequency in Eq. (92-5) and (92-6) to 18.75GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.4.1** *P* **160** *L* **28** # 219

Ghiasi, Ali — Broadcom

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

Traditionally we have used 0.05 GHz for low freq RL measuremnts and in some case 0.01 GHz is used as in the case of Eq 92-5

SuggestedRemedy

Please change 0.01 GHz limit with 0.05 GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **8.4.2** *P* **159** *L* **42** # 216

Ghiasi, Ali — Broadcom

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

Differential to common mode conversion with flat value of 10 dB is too relax and simplistic

SuggestedRemedy

Purpose the following limit
RL>= -25+20*(f/25.78) dB for 0.05<=f<=12.89 GHz
= -15 dB from 12.89 GHz to 25.87 GHz

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1** *P* **144** *L* **42** # 235

Arumugham, Vinu — Cisco

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

"Differential signals received at the MDI from a transmitter that meets the requirements of 92.8.3 and have passed through the cable assembly specified in 92.10 are received with a BER less than 10–5"

"92.8.4.4 Bit error ratio
The receiver shall operate with a BER 10–12 or better when receiving a compliant transmit signal, as defined in 92.8.3, through a compliant cable assembly as defined in 92.10"

Seem like two different BER values for the same configuration?

SuggestedRemedy

Change BER to the same value in both sections or remove one section.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1** *P* **144** *L* **46** # 386

Dawe, Piers IPtronics

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

Where do 1e-5 and 1.7e-10 come from? I'm not convinced they are exactly right.

SuggestedRemedy

Add an informative section documenting the calculations - perhaps in 80.1.2 BER Objective, because the issue is not specific to Clause 92.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.1** *P* **164** *L* **1** # 400

Dawe, Piers IPtronics

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

For 35 dB headline loss, the consensus was that this method of specification is inadequate for backplanes. Cables have worse low frequency loss and the channel is divided in three parts, so it's not likely that this method can deliver as much performance reliably. Technical Feasibility of this draft has not been established.

SuggestedRemedy

Use COM and other analysis to establish what level of performance is reasonable. With this method of specification, a reduced headline loss and reach and/or tighter ILD may be needed.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10** *P* **164** *L* **1** # 404

Dawe, Piers IPtronics

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

Cable needs a spec to control common-mode generation and maybe an Scc22 spec.

SuggestedRemedy

Add an Scd21 or ICMCN spec. Check if other common-mode or mixed-mode specs are missing, add them if appropriate.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10** *P* **164** *L* **9** # 313

Dudek, Mike QLogic

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

With the reduction in loss of the Cable assembly test fixture from 1.25dB at Nyquist (12.89GHz) to 1.17dB with no change in the cable loss as measured with the combliance boards the cable insertion loss in table 92-9 should be increased

SuggestedRemedy

Change Maximum Insertion loss at 12.8906 GHz from 22.64dB to 22.48dB.
Make the same change in Table 92-10

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.2** *P* **165** *L* **33** # 322

Dudek, Mike QLogic

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

In Table 92-10 Having two values for each of the Maximum fitted insertion loss co-efficients is very confusing and isn't what is required. The second set are intended to describe the minimum Insertion loss curve but we do not really want to limit the minimum value of the co-efficients (particularly for the square root and square terms). Also the footnote b certainly isn't true.

SuggestedRemedy

Delete footnote b
Delete the last 3 rows in the table.
Replace the paragraph starting on row 16 with
"The minimum measured loss of the cable should meet the attenuation curve given by IL=0.7*sqrt(f)+0.3*f+0.01*(f^2) which is shown in figure 92-9"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.2** *P* **165** *L* **33** # 314

Dudek, Mike QLogic

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

Having these fitted co-efficients exactly matching the maximum loss at Nyquist heavily constrains the channel fit so that it is likely that many channels that pass the maximum loss at Nyquist will fail one or other of these fit parameters. (It also removes the need for the footnote which should be deleted if the suggested remedy is not adopted)

SuggestedRemedy

Increase the maximum insertion loss parameters by 20%.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.2** *P* **166** *L* **30** # 315
Dudek, Mike QLogic

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

The "Meets equation constraints" is on the wrong side of the curve.

SuggestedRemedy

Move it below the curve.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.2** *P* **166** *L* **7** # 299
Dudek, Mike QLogic

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

letter got lost

SuggestedRemedy

In Figure 92-8 change "eets" to "meets"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.4** *P* **168** *L* **9** # 408
Dawe, Piers IPtronics

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

Because of the (through) loss of the MCB, this return loss limit is ineffective at high frequencies.

SuggestedRemedy

Tighten the limit at high frequencies by up to twice the MCB trace loss.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.5** *P* **168** *L* **51** # 316
Dudek, Mike QLogic

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

There are not 9 lanes in 100GBASE-CR4

SuggestedRemedy

Delete "or nine"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.10.7** *P* **170** *L* **29** # 317
Dudek, Mike QLogic

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

The range for insertion loss in the equation is going to less attenuation than is allowed by the minimum attenuation in table 92-10

SuggestedRemedy

Change the range to start at 8dB in both Equation 92-22 and Figure 92-12

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.11** *P* **171** *L* **32** # 318
Dudek, Mike QLogic

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

I think the intent of the sentence
"The requirements in this section are not MDI specifications for an implemented design" are intended to state that these are not connector specifications. It would be clearer to state so.

SuggestedRemedy

Change the sentence to "The requirements in this section are not connector specifications for an implemented design."

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.11** *P* **173** *L* **4** # 319
Dudek, Mike QLogic

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

Allowing the test boards to have un-restricted performance above 18.75GHz could significantly degrade system performance, resulting in good devices failing. OIF has continued the specifications up to Baud Rate for the equivalent test boards. I hope to have a presentation on this for the San Antonio meeting. OIF has also adopted complete specifications for these test boards in their VSR specification. It would be good to have the same specifications for these two standards so that the same test boards could be used for both, and most of the specifications are already identical.

SuggestedRemedy

Increase the frequency range for the test boards to 25.9GHz for all the equations in this section.
Adopt other specifications from the OIF document for these test boards to fill in any TBD values or missing specifications.(eg Mated MDNEXT=1.8mV Mated MDFEXT=4.8mV

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.11.3.1** *P* *L* **1** # 62

DiMinico, Christopher MC Communications

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

92.11.3.1 Mated test fixtures insertion loss Equations (92-25) and (92-26) and Figure 92-16 are TBDs

SuggestedRemedy

Revise 92.11.3.1 with TBD equations provided here. From D1.1 comment#318 with revison to max frequency.
Equation (92-25)
ILMTFmin=0.08*SQRT(f)+0.2*f
for f= 0.01 GHz to 18.75 GHz
Equation (92-26)
ILMTFmax=0.114+0.45*SQRT(f)+0.21*f
for f= 0.01 GHz to 14 GHz
ILMTFmax=-4.5+0.66*f
for f= 14 GHz to 18.75 GHz
Use Equation (92-25) and Equation (92-26) for Figure 92-16 TBD

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.11.3.5** *P* **177** *L* **35** # 63

DiMinico, Christopher MC Communications

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

92.11.3.5 Mated test fixtures integrated crosstalk noise Table 95-12 includes TBDs.

SuggestedRemedy

diminico_1112.pdf provides the Table 95-12 TBDs

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.11.3.5** *P* **177** *L* **39-4** # 326

Li, Mike Altera

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

parameters are still TBDs

SuggestedRemedy

values for the TBDs will be provided

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.12.1** *P* **177** *L* **17** # 33

D'Ambrosia, John Dell

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

two shall statements do not have PIC statements
Connectors meeting the requirements of 92.11.1.1 (Style-1) or 92.11.1.2 (Style-2) shall be used as the mechanical interface between the PMD of 92.7 and the cable assembly of 92.10. The plug connector shall be used on the cable assembly and the receptacle on the PHY. Style-1 or Style-2 connectors may be used as the MDI interface

SuggestedRemedy

add pic statements

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.12.1.1** *P* **178** *L* **24** # 1

Sommers, Scott Molex

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

Figure 92-21 - Style-2 example MDI board receptacle

SuggestedRemedy

The drawing is a Style 1 connector and not a Style 2, (Style 2 connectors are in the next section of the document, 92.12.1.2). Remedy - need to simply change the -2 to -1 in the text:

Figure 92-21 - Style-1 example MDI board receptacle

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.12.1.1** *P* **178** *L* **25** # 405

Dawe, Piers IPtronics

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

No need for obfuscatory names.

SuggestedRemedy

Rename "Style-1" as QSFP, "Style-2" as CFP4.

Proposed Response *Response Status* **O**

Cl **92** SC **92.13** P **183** L **1** # 371
Kvist, Bengt Ericsson AB

Comment Type **T** *Comment Status* **X**
This is a second sub-clause 92.13

92.13 .Environmental specifications
92.13 Protocol implementation conformance.....

SuggestedRemedy
Change to

92.14 Protocol implementation conformance.....

Proposed Response *Response Status* **W**
[CommentType set to T (commenter did not specify).]

Cl **92** SC **92.13.4.3** P **187** L **3** # 29
D'Ambrosia, John Dell

Comment Type **TR** *Comment Status* **X**
value / comment field does not match text
TC12 value: 0.52 x vf
Text value: 0.5 x vf

SuggestedRemedy
make equations consistent

Proposed Response *Response Status* **O**

Cl **92** SC **92.13.4.4** P **188** L **12** # 30
D'Ambrosia, John Dell

Comment Type **TR** *Comment Status* **X**
PIC RC4 does not have a matching SHALL statement in 92.8.4.1

SuggestedRemedy
change
The reference impedance for differential return loss measurements is 100 Ù.
to
The reference impedance for differential return loss measurements shall be 100 Ù.

Proposed Response *Response Status* **O**

Cl **92** SC **92.13.4.4** P **188** L **20** # 31
D'Ambrosia, John Dell

Comment Type **TR** *Comment Status* **X**
Item RC7 and RC8 refer to the wrong subclause

SuggestedRemedy
change subclause reference to 92.8.4.3.4

Proposed Response *Response Status* **O**

Cl **92** SC **92.5** P **146** L **1** # 60
DiMinico, Christopher MC Communications

Comment Type **TR** *Comment Status* **X**
92.5 Skew constraints includes TBDs

SuggestedRemedy
Revise 92.5 with TBD values provided here. 92.5 Skew constraints
If the PMD service interface is physically instantiated so that the Skew at SP2 can be measured, then the Skew at SP2 is limited to TBD=43 ns and the Skew Variation at SP2 is limited to TBD=400 ps.The Skew at SP3 (the transmitter MDI) shall be less than TBD=54 ns and the Skew Variation at SP3 shall be less than TBD=600 ps.The Skew at SP4 (the receiver MDI) shall be less than TBD=134 ns and the Skew Variation at SP4 shall be less than TBD=3.4 ns. If the PMD service interface is physically instantiated so that the Skew at SP5 can be measured, then the Skew at SP5 shall be less than TBD =145 ns and the Skew Variation at SP5 shall be less than TBD=3.6 ns.

Proposed Response *Response Status* **O**

Cl **92** SC **92.7.1** P **148** L **43** # 387
Dawe, Piers IPtronics

Comment Type **T** *Comment Status* **X**
maximum insertion loss

SuggestedRemedy
Change to recommended maximum insertion loss, as D1.1 comment 451.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.7.12** *P* **151** *L* **17** # 28

D'Ambrosia, John Dell

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

no pic statement for
If the MDIO interface is implemented, then this function shall map these variables to the appropriate bits in

SuggestedRemedy

add pic statement

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.7.12** *P* **151** *L* **6** # 27

D'Ambrosia, John Dell

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

No PIC statement for
The training frame structure used by the 100GBASE-CR4 PMD control function shall be as defined in

SuggestedRemedy

add pic statement

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.7.4** *P* **150** *L* **22** # 116

Sela, Oren Mellanox Technologies

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

signal detect should also function as Alert detect when EEE normal mode is supported and rx_mode is not active

SuggestedRemedy

Add the folowing text:
When the PHY supports the optional EEE capability normal wake mode, PMD_SIGNAL.indication is also used to indicate when the ALERT signal is detected, which corresponds to the beginning of a refresh or a wake.
Can consider adding a condition of PMD:IS_RX_MODE != ACTIV

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.7.7** *P* **151** *L* **4** # 298

Dudek, Mike QLogic

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

The sentence is incomplete

SuggestedRemedy

Add "to be disabled" on the end of the sentence.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.7.7** *P* **151** *L* **4** # 370

Kvist, Bengt Ericsson AB

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

Selective or individual disable dissappeared in last edit.
Compare 93.7.7, 94.3.6.7

The PMD lane-by-lane transmit disable function is optional and allows the electrical transmitter in each lane.

SuggestedRemedy

The PMD lane-by-lane transmit disable function is optional and allows the electrical transmitter in each lane to be selectively disabled.

Proposed Response *Response Status* **W**

[CommentType set to T (commenter did not specify).]

Cl **92** *SC* **92.8.1** *P* **152** *L* **25** # 307

Dudek, Mike QLogic

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

The AC coupling is in the cable not at the receiver.

SuggestedRemedy

Replace "at the receiver" with "within the cable"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3** *P* **153** *L* **15** # 398

Dawe, Piers IPtronics

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

Need specs for common-mode output return loss and output mode conversion loss (from common to differential).

SuggestedRemedy

Add specs for common-mode output return loss and output mode conversion loss (from common to differential). For example, use the InfiniBand FDR specs, scaled for signalling rate.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3** *P* **153** *L* **21** # 321

Dudek, Mike QLogic

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

The Linear fit pulse (min) value in table 92-5 does not match the value in 92.8.3.4.1

SuggestedRemedy

Change the value from 0.52 to 0.5

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.4.1** *P* **156** *L* **36** # 239

Arumugham, Vinu Cisco

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

0.5xVf does not match value in Table 92-5

SuggestedRemedy

Remove one.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.5** *P* **157** *L* **28** # 390

Dawe, Piers IPtronics

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

Recommending insertion loss for host channel is good but not the whole story.

SuggestedRemedy

Add a recommendation for ILD or other metric to control host channel quality.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.5** *P* **157** *L* **32** # 308

Dudek, Mike QLogic

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

With the change in loss of the HCB from 1.5dB at Nyquist (12.89GHz) to 1.87dB at Nyquist for the same host loss the insertion loss from TP0 to TP2 should have increased

SuggestedRemedy

Change 10dB to 10.37dB on line 33.
Change the multipliers in equation 92-4 from 1.076 to 1.115

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.5** *P* **158** *L* **6** # 240

Arumugham, Vinu Cisco

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

Figure 92-5 Y axis reads ... Max and Min.

SuggestedRemedy

Should be only Max.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.6** *P* **158** *L* **28** # 399

Dawe, Piers IPtronics

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

Following up on D1.1 comment 433.
Several editorials and technical points, including that this section needs subheadings for each jitter type.

SuggestedRemedy

Editor see email I sent you on 13 August and again on 18 September.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.6** *P* **159** *L* **12** # 397

Dawe, Piers IPtronics

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

Don't proliferate almost-identical jitter metrics. We already have J9, we don't need "J0 where BER0 is 10^–9".

SuggestedRemedy

Change "J0 where BER0 is 10^–9" to J9, consider changing "J1 where BER0 is 10^–5" to J5 or J4, adjust Q values appropriately.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.6** *P* **159** *L* **2** # 309

Dudek, Mike QLogic

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

The editor's note is no longer required

SuggestedRemedy

Delete the editor's note.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.3.7** *P* **159** *L* **36** # 383

Dawe, Piers IPtronics

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

Put the subclauses in the same order as Table 92-5 (or vice versa).

SuggestedRemedy

Also in 92.8.4.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4** *P* **159** *L* **40** # 241

Arumugham, Vinu Cisco

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

No sinusoidal jitter mask is specified.

SuggestedRemedy

Add sinusoidal jitter mask spec. like Figure 86A-10.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3** *P* **161** *L* **12** # 311

Dudek, Mike QLogic

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

The Interference tolerance test can be performed with a PRBS pattern and hence we need to specify the BER before FEC.

SuggestedRemedy

Change the Parameter in table 92-8 from Maximum BER to Maximum BER before FEC.
Change the Test 2 value from 10e-12 to 10e-5
Consider changing the Test 1 value from 10e-12 to 10e-5. (We may desire that FEC can be turned off in the Rx for this shorter channel.)

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3.1** *P* **161** *L* **42** # 391

Dawe, Piers IPtronics

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

It would be more practical if signals from test equipment were calibrated after a mated MCB/HCB as is normal in the compliance board method, rather than before the MCB. This also puts the LH MCB connector loss and crosstalk within the calibration.

SuggestedRemedy

Define the signals from test equipment (including crosstalk, Figure 92-7) after a mated MCB/HCB rather than at PGC or equivalent.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3.1** *P* **161** *L* **43** # 243

Arumugham, Vinu Cisco

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

Figure 92-6 has PCG.

SuggestedRemedy

Change to PGC.

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3.4** *P* **162** *L* **46** # 61

DiMinico, Christopher MC Communications

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

Subclause 92.8.4.3.4 includes TBDs

SuggestedRemedy

Revise 92.8.4.3.4 with TBD values provided here.

Its output amplitude shall be no more than
TBD = 800 mV.

The transition times of the pattern generator, as defined in
93.8.1.5 are TBD= 19 ps.

If the transition times of the pattern generator, T
r,are less than TBD=19 ps

Equation 92-7: TBD=
da4=6.05·10^-5·(tr2^2-19^2)
tr in ps

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3.4** *P* **162** *L* **48** # 403

Dawe, Piers IPtronics

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

This is supposed to be a DEFINITION of what interference tolerance means. Possible testers with "no more than TBD m"" can make anything fail by setting the amplitude very small.

SuggestedRemedy

Delete "no more than".

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.3.4** *P* **162** *L* **48** # 310

Dudek, Mike QLogic

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

We should make clear that during the training algorithm the pattern generator should refuse to increase its amplitude above the stated value.

SuggestedRemedy

After "alternating one zero pattern" add "including after the training described in 92.8.4.3.5

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.4** *P* **162** *L* **21** # 32

D'Ambrosia, John Dell

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

no pic statement for shall statement
The receiver shall operate with a BER 10 –12 or better when receiving a compliant transmit signal, as defined in 92.8.3 , through a compliant cable assembly as defined in 92.10
.

SuggestedRemedy

add pic statement

Proposed Response *Response Status* **O**

Cl **92** *SC* **92.8.4.4** *P* **163** *L* **21** # 312

Dudek, Mike QLogic

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

We should specify the error rate before FEC

SuggestedRemedy

Change "10e-12" to "10e-5 before FEC"

Proposed Response *Response Status* **O**

Cl **92** *SC* **92-4** *P* **146** *L* **44** # 59

DiMinico, Christopher MC Communications

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

92.4 Delay constraints includes TBDs.

SuggestedRemedy

Revise 92.4 with TBD values provided here. 92.4 Delay constraints
The sum of the transmit and the receive delays at one end of the link contributed by the 100GBASE-CR4 PMD, AN, and the medium in one direction shall be no more than (TBD=2048) bit times (TBD=2 pause_quanta or TBD=20.48 ns). It is assumed that the one way delay through the medium is no more than TBD=6000 bit times (TBD= 60 ns).

Proposed Response *Response Status* **O**

Cl **92A** *SC* *P* **281** *L* **6** # 320

Dudek, Mike QLogic

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

This annex contains a lot more than test point parameters.

SuggestedRemedy

Change the title to "100GBASE-CF4 TP0 and TP5 test point parameters and channel characteristics.

Add to the end of 92A.1 "It also provides information on channel characteristics.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **3** *P* **281** *L* **36** # 222

Ghiasi, Ali Broadcom

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

Equation 92A-1 is not consistant with the TP0 to TP2 loss where coefficent SQRT(F) and f are about the same, but equation 92A-1 linear term is twice the SQRT term. Propose to use scale version of equation 92-4

SuggestedRemedy

If equation 92-4 is multipled by 0.7 then loss at 12.89 Ghz will be 6.8 dB
IL_Prop=0.0565+0.4263*sqrt(f)+0.4045*f where f is from 0.01 to 18.75 GHz

ghiasi_01_1112 will compare these two graphs

Proposed Response *Response Status* **O**

Cl **92A** *SC* **4** *P* **280** *L* **37** # 223

Ghiasi, Ali — Broadcom

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

Equation 92A-1 is not consistant with the TP0 to TP2 loss where coefficent SQRT(F) and f are about the same, but equation 92A-1 linear term is twice the SQRT term. Propose to use scale version of equation 92-4

SuggestedRemedy

If equation 92-4 is multipled by 0.7*0.5/0.092 then loss at 12.89 Ghz will be 1.25 dB
IL_Prop=0.0097+0.0729*sqrt(f)+0.0692*f where f is from 0.01 to 18.75 GHz

ghiasi_01_1112 will compare these two graphs

Proposed Response *Response Status* **O**

Cl **92A** *SC* **5** *P* **283** *L* **34** # 253

Shanbhag, Megha — TE Connectivity

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

Isn't equation (92A-5) same as (92A-4)?

SuggestedRemedy

Delete eq. (92A-5) if redundant.

Proposed Response *Response Status* **W**

[CommentType set to T (commenter did not specify).]

Cl **92A** *SC* **92A.4** *P* **281** *L* **29** # 389

Dawe, Piers — IPtronics

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

maximum insertion loss

SuggestedRemedy

Change to recommended maximum insertion loss, as D1.1 comment 451.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.4** *P* **282** *L* **28** # 168

Healey, Adam — LSI Corporation

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

The caption to Figure 92A-1 is corrupted.

SuggestedRemedy

Repair the figure caption.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.5** *P* **283** *L* **15** # 170

Healey, Adam — LSI Corporation

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

Figure 92A-2 is no longer aligned with Clause 92. For example, the TP2/TP3 test fixture insertion loss from Equation 92-23 is approximately 2 dB but is shown in the figure as 1.5 dB. It is likely the mated test fixture insertion loss will need to be updated as well.

SuggestedRemedy

Re-align Figure 92A-2 with Clause 92.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.5** *P* **284** *L* **2** # 323

Dudek, Mike — QLogic

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

Figure 92A-2 should be updated based on the adopted compliance board losses at 12.8906 GHz of 1.17dB for the Cable Assembly Test Fixture (a.k.a MCB) and 1.87dB for the HCB.

SuggestedRemedy

Change the Cable Assembly Text Fixture loss from 1.25 dB to 1.17dB
Change the HCB loss from 1.5dB to 1.87dB
Change the TP0 to TP2 loss from 10 dB to 10.37dB
Change the TP1 to TP4 loss from 22.64dB to 22.48dB.
Change the mated cable assembly and test point test fixture loss from 3.84dB to 4.11dB.
Also change these numbers in the channel loss equation (it still is correct equalling 35dB.

Proposed Response *Response Status* **O**

Cl **92A** *SC* **92A.8** *P* **285** *L* **29** # 64

DiMinico, Christopher MC Communications

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

92A.8 Channel integrated crosstalk noise (ICN) includes TBDs; Equation 92A-7 and Figure 92A–3

SuggestedRemedy

diminico_1112.pdf provides Equation 92A-7 to be used for Figure 92A-3.

Proposed Response *Response Status* **O**

Cl **93** *SC* **8.1.2** *P* **200** *L* **20** # 227

Ghiasi, Ali Broadcom

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

It is not clear the purpose of the common mode return loss for the test fixture as this will elimiante the option of coupled differential traces to meet RL of 10 dB. Lets insted define what matters the mated test fixture common-mode conversion loss

SuggestedRemedy

Please use EQ 92-28 from section 92.11.3.3 to replace the test fixture common mode RL

Proposed Response *Response Status* **O**

Cl **93** *SC* **8.1.4** *P* **201** *L* **32** # 229

Ghiasi, Ali Broadcom

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

Transmitter output return loss 93-2 is very unreal

SuggestedRemedy

Propose to use EQ 92-1 from section 92.8.3.2 as I assume these are the same chip anyway
RL= 12–0.5ffrom 0.05<=f<=8
=5.65–9.71log (f / 14)8 <= f <= 25 GHz(dB)(92–1)

Proposed Response *Response Status* **O**

Cl **93** *SC* **8.2.2** *P* **206** *L* **22** # 230

Ghiasi, Ali Broadcom

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

Transmitter output return loss 93-5 is very unreal

SuggestedRemedy

Propose to use EQ 92-1 from section 92.8.3.2 as I assume these are the same chip anyway
RL= 12–0.5ffrom 0.05=f=8
=5.65–9.71log (f / 14)8 <= f <= 25 GHz(dB)(92–1)

Proposed Response *Response Status* **O**

Cl **93** *SC* **9.2** *P* **207** *L* **50** # 214

Ghiasi, Ali Broadcom

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

The insertion loss is defined up 13.89 GHz where the loss is~80 dB

SuggestedRemedy

Suggest to limit the range to 60 dB loss

Proposed Response *Response Status* **O**

Cl **93** *SC* **9.2** *P* **207** *L* **50** # 231

Ghiasi, Ali Broadcom

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

The insertion loss is defined up 25.78 GHz where the loss is~80 dB, many specification in this document are only defined up to 18.75 GHz

SuggestedRemedy

Suggest to be conistent and limit the Freq to 18.75 GHz or 60 dB

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.1** *P* **192** *L* **38** # 237

Arumugham, Vinu — Cisco

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

Multiple different BER values in different sub-clauses. (93.1/1e-5, 93.8.2.3/1e-12 and 2e-5).

SuggestedRemedy

Add a section titled BER, FEC and MTTFPA Add the following text to the section:
Channels can be designed to target either a BER of 1e-5 or 1e-12.
When a BER of 1e-5 is the target, the receiver is required to implement error correction using FEC information from transmitter.
When a BER of 1e-12 is the target, the receiver can optionally ignore FEC information from transmitter.
DFE error propagation can result in burst errors. Due to the type of data multiplexing used on these lanes and depending on the channel characteristics, there is a higher probability that such burst errors are undetectable by CRC. This could result is undesirably low MTTFPA (Mean Time To False Packet Acceptance) if receiver ignores FEC.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.2** *P* **193** *L* **20** # 174

Healey, Adam — LSI Corporation

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

The functional and electrical behavior of the 100GBASE-KR4 PMD for the optional Energy Efficient Ethernet capability is undefined.

SuggestedRemedy

Define the functional and electrical behavior as recommended in contribution healey_02_3bj_1112.pdf.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.4** *P* **194** *L* **4** # 296

Liu, Zhenyu — Marvell Semiconductor

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

The delay constraint of PMD is inconsistent with comment #236 of D1.1. Comment 236 suggests PMD/AN delay is fixed at 2048BT, but draft 1.2 says 2048BT is PMD/AN plus medium. If medium is excluded, PMD/AN delay will be 1248BT. Compared with 10G-KR delay constraint which is 1024BT at 10G, this is very tight.

SuggestedRemedy

Put 2048BT as PMD/AN delay only, instead of PMD+AN+medium.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.7.10** *P* **198** *L* **9** # 172

Healey, Adam — LSI Corporation

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

Function/variable name confusion:

The heading of 93.7.10 implies that the name of the function is "PMD transmit fault function" which assigns the variable "PMD_transmit_fault".

SuggestedRemedy

Change the first sentence of 93.7.10 to:
"The PMD transmit fault function is optional."

Change the second paragraph to:
"If PMD_transmit_fault is set to one, then Global_PMD_transmit_disable should also be set to one."

Change the third paragraph to:
"..., then PMD_transmit_fault shall be mapped to the Transmit fault bit..."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.7.11** *P* **198** *L* **20** # 173

Healey, Adam — LSI Corporation

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

Function/variable name confusion:

The heading of 93.7.11 implies that the name of the function is "PMD receive fault function" which assigns the variable "PMD_receive_fault".

Also, what does it mean for a variable to "contribute" to an MDIO bit?

SuggestedRemedy

Change 93.7.11 to:

"The PMD receive function is optional. The faults detected by this function are implementation specific. A fault is indicated by setting the variable PMD_receive_fault to one.

"If the MDIO interface is implemented, then PMD_receive_fault shall be mapped to the Receive fault bit as specified in 45.2.1.7.5."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.7.4** *P* **196** *L* **49** # 118

Sela, Oren — Mellanox Technologies

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

signal detect should also function as Alert detect when EEE normal mode is supported and rx_mode is not active

SuggestedRemedy

Add the folowing text:
When the PHY supports the optional EEE capability normal wake mode, PMD_SIGNAL.indication is also used to indicate when the ALERT signal is detected, which corresponds to the beginning of a refresh or a wake.
Can consider adding a condition of PMD:IS_RX_MODE != ACTIV

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.7.5** *P* **197** *L* **9** # 293

Kochuparambil, Beth — Cisco Systems

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

The first statement ends with "as described in the following two paragraphs" yet there is only one paragraph that follows.

SuggestedRemedy

Remove the word 'two'

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.7.9** *P* **198** *L* **1** # 171

Healey, Adam — LSI Corporation

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

Function/variable name confusion:

"PMD_fault" appears to refer to the definition of a variable, which may optional be mapped to an MDIO bit. Referring to 93.7.10 and 93.7.11, it appears that the name of the function that assigns this variable should be "PMD fault".

SuggestedRemedy

Change heading of 93.7.9 to "PMD fault function".

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.1** *P* **199** *L* **46** # 294

Kochuparambil, Beth — Cisco Systems

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

Differential return loss and return loss are used interchangeably. As well as the same symbol being used for differential return loss and common-mode return loss. This confusion exists throughout the clause.

SuggestedRemedy

Include 'differential' in figure and equation labels and differentiate the equation symbols such as RLdiff vs RLcm.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.4** *P* **201** *L* **32** # 53

Ben-Artsi, Liav — Marvell

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

Transmitter output return loss (eq. 93-2) has a low frequency value that does not correlate to coeficients / equation of 93.9

SuggestedRemedy

Update measured return loss limit acoording to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.5** *P* **201** *L* **13** # 245

Moore, Charles — Avago Technologies

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

Use linear fit pulse to find transition time. It will eliminate a messy test.

SuggestedRemedy

change 93.8.1.5 to read something like:

"Transition times (rise and fall times) are measured on the linear fit pulse.
It is the time the linear fit pulse takes to transition between 20% and 80%
of the steady state value, using linear interpolation to work between sampled values. If the peak of linear fit pulse is less than 80%
of the steady state value the transition time is considered to exceed its minimum value."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.6.3** *P* **203** *L* **41** # 175

Healey, Adam — LSI Corporation

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

The initialized values for the transmitter pre- and post-cursor equalization ratios are TBD.

SuggestedRemedy

Specify the ratio [c(0)+c(1)-c(-1)]/v2 to be 1.29 +/- 10%.
Specify the ratio (c(0)-c(1)+c(-1)]/v2 to be 2.57 +/- 10%.

Note v2=c(0)+c(1)+c(-1).

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.7** *P* **204** *L* **24** # 176

Healey, Adam — LSI Corporation

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

The "low-loss" and "high-loss" channels for the transmitter far-end output noise measurement should have well-defined transfer functions as they filter the noise and influence the measurement. However, the test channel ICN does not need be limited. It only needs to be known so that it can be removed from the measurement.

SuggestedRemedy

Define the shape of the test channels via the polynomial models corresponding to Test 1 and Test 4 in Table 93-7 with reasonable tolerances.

Rather than refer to the ICN requirements in 93.9.4 (which have been TBD for some time), define sigma_l and sigma_h to the be the far-end ICN for for the "low-loss" and "high-loss" test channels respectively.

Finally, the procedure in 85.8.3.2 measures the RMS deviation from the mean amplitude of a fixed point on the square wave test pattern at the output of the test channel. These are labeled RMSldev and RMShdev respectively. To be consistent, rephrase the requirements at follows:

"For the low-loss channel, RMSldev shall be less than or equal to sqrt(sigma_l^2+2^2). For the high-loss channel, RMShdev shall be less than or equal to sqrt(sigma_h^2+1^2)."

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.1.8** *P* **204** *L* **32** # 236

Arumugham, Vinu — Cisco

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

Multiple references to 92.8.3.8, should be 92.8.3.6.

SuggestedRemedy

Multiple references to 92.8.3.8, should be 92.8.3.6.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2** *P* **204** *L* **44** # 242

Arumugham, Vinu — Cisco

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

No sinusoidal jitter mask is specified.

SuggestedRemedy

Add sinusoidal jitter mask spec. like Figure 86A-10.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.1** *P* **205** *L* **16** # 49

Ben-Artsi, Liav — Marvell

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

The test fixture return loss lacks the definition between 13GHz and 20GHz

SuggestedRemedy

Add a slope from 15dB @ 13GHz and 12dB @ 20GHz according to benartsi_3bj_01_0912.pdf slide 14 (already adopted during the September interim)

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.2** *P* **206** *L* **52** # 50

Ben-Artsi, Liav Marvell

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

The Differential receiver return loss at TP5a of equation 93-2 has a low frequency region which does not correlate to the return loss as defined in table 93-3

SuggestedRemedy

Update Measured return loss limit according to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.2** *P* **206** *L* **52** # 177

Healey, Adam LSI Corporation

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

The differential to common-mode return loss limit (Equation 93-7) is TBD.

SuggestedRemedy

Define the limit or remove the placeholder.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.2** *P* **206** *L* **52-5** # 325

Li, Mike Altera

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

Eq (93-7) is still TBD

SuggestedRemedy

A proposed Eq for (93-7) will be provided.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.3** *P* **207** *L* **15** # 46

Ben-Artsi, Liav Marvell

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

Table 93-7 - Receiver interference tolerance parameters lacks a COM definition per test case. Not having such makes to test interconnect ambiguous.

SuggestedRemedy

Reccomend adding a COM parameter per test case - a defaults max value of 3dB can be inserted for now and updated later on.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.3** *P* **207** *L* **19** # 80

Mellitz, Richard Intel Corporation

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

Clause 85 802.3ba-2010~246 ff first defines a1, a2, and a4
93.8.2.3 Receiver interference tolerance table 93-7 adds parameters a0

reference to a0 needs to ripple through standard where appropriate.

SuggestedRemedy

Either update clause 85 or add appendix describing fitting in general

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.8.2.3** *P* **207** *L* **7** # 178

Healey, Adam LSI Corporation

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

Channel insertion loss fit methodology is undefined.

SuggestedRemedy

Define the methodology based on OIF-CEI-3.0 section 12.2 as a new section in Annex 93A (in addition to Channel Operating Margin).

Add a cross-reference to the procedure in 93.8.2.3.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9** *P* **165** *L* **15** # 48

Ben-Artsi, Liav Marvell

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

PKG insertion loss model may cause SBR to become somewhat non-causal

SuggestedRemedy

Update PKG insertion loss model according to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9** *P* **209** *L* **10** # 51

Ben-Artsi, Liav Marvell

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

Transmitter reflection coeficients (as a part of the complex: PKG return loss, Interconnect return loss, reference receiver capabilities) makes target interconnect meeting problematic

SuggestedRemedy

The reflection equation does not represent the appropriate reflection coefficient from a PKG (especially at the low frequency range). Update PKG equation and coefficients according to BenArtsi_3bj_01_1112.
This may require adding a different equation on top of 93-A3 (if 93-A3 is still referenced by other locations within this specification)

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9** *P* **209** *L* **13** # 52

Ben-Artsi, Liav Marvell

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

Receiver reflection coeficients (as a part of the complex: PKG return loss, Interconnect return loss, reference receiver capabilities) makes target interconnect meeting problematic

SuggestedRemedy

The reflection equation does not represent the appropriate reflection coefficient from a PKG (especially at the low frequency range). Update PKG equation and coefficients according to BenArtsi_3bj_01_1112.
This may require adding a different equation on top of 93-A3 (if 93-A3 is still referenced by other locations within this specification)

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9** *P* **209** *L* **48** # 79

Mellitz, Richard Intel Corporation

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

Table 93–8

SER_0 for KR4 should be lower since the KP4 FEC is stronger than the KR4 FEC

SuggestedRemedy

Table 93–8
Change SER_0 to 1e-7

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.1** *P* **209** *L* **17** # 54

Ben-Artsi, Liav Marvell

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

Transmitter victim and Far-end aggressor diferential peak output voltage defined at an ambiguous location along the end to end path

SuggestedRemedy

Define the victim and Far-end aggressor differential peak output voltage at TP0 (min 800mV pk-pk @ the device PKG ball) ==> incorporate only one PKG IL model in the COM code (the Rx side only)

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.1** *P* **209** *L* **21** # 180

Healey, Adam — LSI Corporation

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

It is not clear that the transmitter emulated for the calculation of COM corresponds to the worst-case performance allowed by 93.8.1.

Presumably, a transmitter 3 dB bandwidth of fv = 0.55*fb would yield at linear fit pulse peak value of 0.8*vf at the output of a simulated test fixture.

Furthermore, this fv setting, combined with a differential peak output voltage of Av=0.4 V, this should yield a vf value of about 0.4 at the output of a simulated test fixture.

Such a linkage is necessary to provide confidence that transmitters, channels, and receivers that are compliant to the standard will interoperate.

SuggestedRemedy

Verify the values of fv and Av in Table 93-8 are consistent with the limits in 93.8.1.6 or modify them accordingly. The values of ff and Af should also be adjusted to match.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.1** *P* **209** *L* **25** # 181

Healey, Adam — LSI Corporation

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

The transmitter pre- and post-cursor equalizer coefficients should have a smallest range and largest step size that would be deemed compliant.

Such a linkage is necessary to provide confidence that transmitters, channels, and receivers that are compliant to the standard will interoperate.

SuggestedRemedy

Verify that the range and step sizes in Table 93-8 are consistent with the limits in 93.8.1.6 or modify them accordingly.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.1** *P* **209** *L* **45** # 182

Healey, Adam — LSI Corporation

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

93.8.1.8 implies that a compliant transmitter allowed to have TJ minus DDJ equal to 0.28 UI peak-to-peak at 1E-12 and effective RJ of 0.15 UI peak-to-peak at 1E-12.

A rough calculation shows that the jitter contributed via sigma_RJ and A_DD is 14*0.01+2*0.1 = 0.34 UI peak-to-peak.

This is considerably larger than the corresponding transmitter limit. Is this intended to enforce margin?

SuggestedRemedy

Verify that the range and jitter terms in Table 93-8 are consistent with the limits in 93.8.1.8 or modify them accordingly. If margin enforcement is desired, it may be better to include it as a line item (or point this out in a note to the table) so that correlation to the transmitter specifications is more clear.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.1** *P* **209** *L* **48** # 388

Dawe, Piers — IPtronics

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

What does symbol error ratio mean? In 91.6.7 a symbol is 10 bits on one FEC lane. But this might mean a bit, or a PAM-4 symbol (2 bits, 1 UI).

SuggestedRemedy

Please clarify.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.3** *P* **208** *L* **32** # 55

Ben-Artsi, Liav — Marvell

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

Interconnect return loss (as a part of the complex: PKG return loss, Interconnect return loss, reference receiver capabilities) makes target interconnect meeting problematic

SuggestedRemedy

In order to provide better guidelines and to increase certainty of meeting target interoperability a tighter return loss target is suggested.
Update informative return loss according to BenArtsi_3bj_01_1112.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.4** *P* **210** *L* **24** # 179

Healey, Adam — LSI Corporation

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

This placeholder for channel ICN has existed for multiple drafts but no proposals have been provided to complete this subclause. Since the normative channel specification is based on Channel Operating Margin (COM), a recommendation on ICN may be useful but not necessary.

SuggestedRemedy

Provide a recommendation for channel ICN or remove the subclause.

Proposed Response *Response Status* **O**

Cl **93** *SC* **93.9.5** *P* **210** *L* **30** # 238

Arumugham, Vinu — Cisco

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

DC coupled operation is desirable (DC-blocking implemented outside TP0 and TP5).

SuggestedRemedy

Use OIF CEI 3.0, CEI 11G LR electrical requirements for DC coupled operation.
Add a requirement that transmitter and receiver shall support hot plug.

Proposed Response *Response Status* **O**

Cl **93** *SC* **94.3.13.3** *P* **255** *L* **31** # 81

Mellitz, Richard — Intel Corporation

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

Clause 85 802.3ba-2010~246 ff first defines a1, a2, and a4
94.3.13.3 Receiver interference tolerance Table 94–16 adds parameters a0

reference to a0 needs to ripple through standard where appropriate.

SuggestedRemedy

Either update clause 85 or add appendix describing fitting in general

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A** *P* **287** *L* # 402

Dawe, Piers — IPtronics

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

Is the COM metric stable against small changes in electrical length such as would be caused by thermal expansion? I.e., does it predict the channel at an unlucky temperature?

SuggestedRemedy

Find out, and modify it if it isn't.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.1** *P* **286** *L* **49** # 244

Moore, Charles — Avago Technologies

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

"The input and output return loss" refers to to 2 items: it is plural

SuggestedRemedy

replace
"The input and output return loss is"

with
"The input and output return loss are"

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.1** *P* **289** *L* **1** # 392

Dawe, Piers — IPtronics

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

This says "It is recommended that the scattering parameters be measured with uniform time step no larger than Delta_f from a start frequency no larger than fmin to a stop frequency of at least the signaling rate fb." However, Eq. 93A–17 integrates from -infinity to infinity.

SuggestedRemedy

This annex is a normative definition, so please define which frequencies are to be taken into account in Eq. 93A–17.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.3.1** *P* **290** *L* **19** # 394
Dawe, Piers IPtronics

Comment Type **T** *Comment Status* **X**
Are these losses really per m?

SuggestedRemedy
Check.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.3.1** *P* **290** *L* **19** # 393
Dawe, Piers IPtronics

Comment Type **T** *Comment Status* **X**
Don't use a mixture of units for the same purpose. The rest of this document uses decibels.

SuggestedRemedy
Change the three entries in 93A-2 from nepers to dB. Also adjust Eq. 93A–8.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.4** *P* **291** *L* **32** # 395
Dawe, Piers IPtronics

Comment Type **T** *Comment Status* **X**
This says "the filtered voltage transfer function may need to be extrapolated ... to DC ... The extrapolation method ... must be chosen carefully to limit the error in the COM computation." Agreed, so better to measure what we can.

SuggestedRemedy
Find out what frequency suitable network analysers can support (10 MHz? 20 MHz? Clause 92 host specs are from 10 MHz) and change fmin from 50 MHz to that.

Proposed Response *Response Status* **O**

Cl **93A** *SC* **93A.1.4** *P* **291** *L* **33** # 396
Dawe, Piers IPtronics

Comment Type **T** *Comment Status* **X**
This says "the ... Nyquist frequency must be chosen carefully to limit the error in the COM computation." But the Nyquist frequency (half the signalling rate) is not for choosing, and the S-parameters should be measured "to at least the signaling rate fb". What should be chosen carefully?

SuggestedRemedy
?

Proposed Response *Response Status* **O**

Cl **93a** *SC* **93A.1.5** *P* **292** *L* **9** # 78
Mellitz, Richard Intel Corporation

Comment Type **TR** *Comment Status* **X**
Bmax is "DFE coefficient magnitude limit". It should be related to the avaliable signal.

Equation 93A-19 should have the term b_max multiplied by the avaliable signal, A_s.

SuggestedRemedy
Replace,

Equation 93A-19 middle line with:
h^(0)(n) - sgn(h^(0)(n))min(b_max*A_s,|h^(0)(n)|), 1< n < N_a

Proposed Response *Response Status* **O**

Cl **93A** *SC* **94.4.1** *P* **256** *L* **44** # 130
Matthew, Brown Applied Micro

Comment Type **T** *Comment Status* **X**
The values for the transmitter coefficient step size specified for COM (Table 94-17) of 0.02 are much smaller than the maxiumum step size specified for the transmitter (94.3.12.6.4) of 0.05.

SuggestedRemedy
Modify procedure in 93A.1.3.4, such that after finding the optimal transmitter coefficients re-test COM with each coefficient offset from the optimal value found by half the transmitter maximum step size (e.g., 0.025).

Similar consideration may be required for Clause 93.

Proposed Response *Response Status* **O**

Cl **94** *SC* **2.11.3** *P* **228** *L* **45** # 344

Ran, Adee Intel

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

QPRBS13 is currently specified with a length of 182 training frame words. The intent is to make it equivalent to the training pattern (not just length but also diffferent seeds etc).

Also, there is a proposal (see lusted_3bj_01_1112) to change the training pattern length to align with the PMA frame. If it is accepted, the length should be changed here as well. Preferably, the reference to clause 94.3.10.8 is sufficient without repeating the length.

SuggestedRemedy

Change:
"The QPRBS13 test pattern is a repeating 8372-symbol (182 training frame words) sequence equivalent to the training pattern specified in 94.3.10.8."
To:
"The QPRBS13 test pattern is a repeating sequence equivalent to the pattern used in training frames, as specified in 94.3.10.8. The PRBS13 pattern generator is re-initialized for each repetition of QPRBS13 with the same seeds specified in table 94-10."

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.10.6.2** *P* **239** *L* **3** # 345

Ran, Adee Intel

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

Wrong reference to 72.6.10.3.2. In 802.3-2008 section 5 Initialize is defined in 72.6.10.2.3.2.

SuggestedRemedy

Refer to 72.6.10.2.3.2 instead.

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.10.6.4** *P* **239** *L* **26** # 342

Ran, Adee Intel

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

"A new request to increment or decrement is not to be sent before the incoming status message for that tap reverts to not_updated."

This is a strong enough requirement to deserve the s-word.

SuggestedRemedy

Change this sentence to
"The hold setting shall be maintained until the incoming status message for that tap reverts to not_updated. A new request to increment or decrement a tap may be sent only when the incoming status message for that tap is not_updated."

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.10.6.4** *P* **239** *L* **26** # 346

Ran, Adee Intel

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

"At that point, the outgoing requests for that tap (???) be set to hold"

(???) is missing. Is it "should", "shall", "may", or something else?
My interpretation is that that the request can be kept up for some (undefined) period after one of the status values is detected.

SuggestedRemedy

Insert "may" at the marked position.

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.10.6.4** *P* **239** *L* **30** # 343

Ran, Adee Intel

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

"Coefficient increment and decrement update requests are not be sent in combination with initialize or preset."

"Shall" is adequate.

SuggestedRemedy

Change "are" to "shall".

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.10.7.2** *P* **240** *L* **37** # 347

Ran, Adee Intel

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

Countdown must be syncronized on the four lanes. It is currenly not specified.

SuggestedRemedy

Change:
"When received status report receiver ready is 1 and transmitted status report receiver ready is 1, the transmitter will decrement the countdown in three successive frames."
To:
"When received status report receiver ready is 1 in all four lanes and transmitted status report receiver ready is 1 in all four lanes, the transmitter will decrement the countdown in three successive frames. the countdown values shall be equal in all four lanes".

with editorial license.

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.12.1.1** *P* **245** *L* **45** # 232

Ghiasi, Ali Broadcom

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

It is not clear the purpose of the common mode return loss for the test fixture as this will elimiante the option of coupled differential traces to meet RL of 10 dB. Lets insted define what matters the mated test fixture common-mode conversion loss

SuggestedRemedy

Please use EQ 92-28 from section 92.11.3.3 to replace the test fixture common mode RL

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.12.1.1** *P* **246** *L* **45** # 233

Ghiasi, Ali Broadcom

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

Return loss stops at 10 GHz

SuggestedRemedy

change stop frequency of 10 GHz to 14 GHz

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.12.4** *P* **248** *L* **14** # 234

Ghiasi, Ali Broadcom

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

Transmitter output return loss 94-6 is very unreal

SuggestedRemedy

Propose to use EQ 92-1 from section 92.8.3.2 as I assume these are the same chip anyway
RL= 12–0.5ffrom 0.05<=f<=8
=5.65–9.71log (f / 14)8 <= f <= 14 GHz(dB)(92–1)

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.13.2** *P* **253** *L* **50** # 213

Ghiasi, Ali Broadcom

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

Transmitter output return loss 94-14 is very unreal

SuggestedRemedy

Propose to use EQ 92-1 from section 92.8.3.2 as I assume these are the same chip anyway
RL= 12–0.5ffrom 0.05<=f<=8
=5.65–9.71log (f / 14)8 <= f <= 14 GHz(dB)(92–1)

Proposed Response *Response Status* **O**

Cl **94** *SC* **3.13.2** *P* **254** *L* **7** # 215

Ghiasi, Ali Broadcom

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

Receiver commmon return loss is defined which require termination to virtual ground which result in more complex implementation and will degrade the differential return loss. The key parameter is differential to common mode conversion which captures the key requirements without limiting the implementation

SuggestedRemedy

Purpose the following limit
RL>= -25+20*(f/13.89) dB for 0.05<=f<=6.95 GHz
= -15 dB from 6.95 GHz to 13.89 GHz

Proposed Response *Response Status* **O**

Cl **94** *SC* **4.2** *P* **256** *L* **35** # 252

Shanbhag, Megha — TE Connectivity

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

Equation (94-17) is defined as -> a5+a6.f-f2 for frequency range f2<f<=fmax
It seems like there could be ambiguity on whether this means a6.(f-f2) or (a6.f)-f2

SuggestedRemedy

change Equation (94-17) to a5+a6.(f-f2) for frequency range f2<f<=fmax

Proposed Response *Response Status* **O**

Cl **94** *SC* **94** *P* **219** *L* **1** # 401

Dawe, Piers — IPtronics

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

PAM4 was sold as able to work on KR class channels - now I'm beginning to hear that's not true.

SuggestedRemedy

Unless someone shows a significant class of channels with Broad Market Potential that PAM4 with FEC can handle and PAM2 with FEC can't, delete Clause 94.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94** *P* **219** *L* **1** # 267

Brown, Matthew — APM

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

Various grammar, spelling, etc. errors.

SuggestedRemedy

page 219, line 8, change "sub-layers" to "sublayers".
page 221, line 45, change "client to PMA" to "client to the PMA".
page 222, line 4, change "in the FEC" to "in a FEC".
page 223, line 43, change "i also indicates" to "i indicates"
page 226, line 35, change "P,(i" to "P(i".
page 227, line 12, change "process with meeting" to "process meeting".
page 230, line 10, change "interface based on" to "interface is based on".
page 238, line 3, change "frame marker" to "a frame marker".
page 238, line 18, change "represent" to "represents".
page 238, line 19:20, change "a series" to "a series of".
page 238, line 50, delete "sent".
page 238, line 50 change "updates" to "update fields".
page 240, line 26, change "tap be set" to "tap must be set".
page 240, line 30, change "are not be sent" to "must not be sent".
page 245, line 52, change "indicate" to "indicates".
page 246, line 23, change "always set" to "always be set".
page 248, line 14, change "4th" to "fourth" (consistent with Clause 92)
page 253, line 14, change "each the zero" to "each zero"

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.1** *P* **221** *L* **23** # 132

Matthew, Brown — Applied Micro

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

The editor's note points out that the function of rx_mode and tx_mode must be defined.

SuggestedRemedy

Provide functional specifications for rx_mode and tx_mode.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.10** *P* **228** *L* **52** # 262

Brown, Matthew APM

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

The PMA remote loopback should be mandatory. 94.3.6.8 specifies the remote loopback in the PMA is mandatory.

SuggestedRemedy

Remove "(optional)" for sub-clause title.

Change "from the FEC to" to "from the FEC (the PMA client) to".

Page 228, line 54, delete "PMA remote loopback mode is optional. If implemented,"

Page 229, line 1, delete ", if provided,".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.11** *P* **229** *L* **18** # 145

Matthew, Brown Applied Micro

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

The editor's note points out that management control of the three test patterns must be specified.

SuggestedRemedy

Add test pattern control bits with descriptions in Clause 45.
Add reference to the Clause 45 control bits in 94.2.11.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.12** *P* **229** *L* **50** # 155

Matthew, Brown Applied Micro

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

A summary table should be provided for the PMA-specific MDIO control and status fields.

SuggestedRemedy

Provide PMA MDIO summary table(s) similar to Table 94-3 and Table 94.4 for PMA specific control and status fields: 1.0.0, 1.0.1, 1.8.0, and 1.13.15.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2** *P* **223** *L* **12** # 259

Brown, Matthew APM

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

Clarify that the FEC is PMA client referred to in the previous section.

SuggestedRemedy

Change "from the FEC to" to "from the FEC (the PMA client) to".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2** *P* **223** *L* **25** # 268

Brown, Matthew APM

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

Clarify that the interface between the "insert termination bits" and "gray coding" include the PMA frame as well.

SuggestedRemedy

Change "termination blocks" to "terminations blocks, PMA frames".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2.1** *P* **223** *L* **43** # 122

Matthew, Brown Applied Micro

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

the word "also" is not required

SuggestedRemedy

delete "also"

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2.3** *P* **224** *L* **30** # 142

Matthew, Brown Applied Micro

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

Editor's note points out that the usage of the overhead bits must be specified.

SuggestedRemedy

Specify the usage and behavior of the overhead bits.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2.4** *P* **223** *L* **42** # 164

Lusted, Kent — Intel

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

The number of termination blocks to form a PMA frame is not 192. This number appears to have been mistakenly used from the training 94.3.10.3.

The PMA frame size is 31320 bits. 31320 bits / 90 bits per termination block = 348 termination blocks.

SuggestedRemedy

Update the number to 348.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.2.4** *P* **224** *L* **42** # 158

Lusted, Kent — Intel

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

The first 2 paragraphs are confusing to read. The length of the termination block is defined after it is used to form a PMA frame.

Reordering the existing sentences and combining into 1 paragraph would improve readability.

SuggestedRemedy

Consider this:

"The PMA shall create a sequence of termination blocks by inserting two termination bits for every 90 overhead frame bits as specified in this sub-clause. The termination block is 92 bits in length. The overhead frame mapped into 192 consecutive termination blocks forms a PMA frame."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.3** *P* **227** *L* **4** # 143

Matthew, Brown — Applied Micro

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

The editor's note points out that the transmit EEE operation must be specified.

SuggestedRemedy

Provide functional specification for transmit EEE operation.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.4** *P* **227** *L* **36** # 269

Brown, Matthew — APM

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

Clarify that the interface between the "remove termination bits" and "inverse gray coding" includes the PMA frame as well.

SuggestedRemedy

Change "termination blocks" to "terminations blocks, PMA frames".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.4** *P* **227** *L* **46** # 260

Brown, Matthew — APM

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

tx_symbol should be rx_symbol

SuggestedRemedy

Change "tx_symbol" to "rx_symbol".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.5** *P* **228** *L* **4** # 144

Matthew, Brown — Applied Micro

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

The editor's note points out that the receive EEE operation must be specified.

SuggestedRemedy

Provide functional specification for receive EEE operation.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.2.6** *P* **228** *L* **13** # 261

Brown, Matthew APM

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

The net skew for the PMA/PMD combination is specified the the PMD section.

SuggestedRemedy

Add the following paragraph...
"Skew considerations for the 100GBASE-KP4 PMA, PMD, and AN are specified in 94.3.4."

The values in response to the editor's note should be captured in 94.3.4.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.1** *P* **230** *L* **24** # 133

Matthew, Brown Applied Micro

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

The editor's note points out that the function of rx_mode and tx_mode must be defined.

SuggestedRemedy

Provide functional specifications for rx_mode and tx_mode.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.1.2.1** *P* **231** *L* **29** # 263

Brown, Matthew APM

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

There is no start parameter on the PMD interface.

SuggestedRemedy

Delete the second sentence in the paragraph "The start parameter ... is otherwise FALSE."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.1.2.2** *P* **231** *L* **35** # 264

Brown, Matthew APM

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

tx_symbol should be rx_symbol

SuggestedRemedy

Change "tx_symbol" to "rx_symbol".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.1.3** *P* **231** *L* **54** # 119

Sela, Oren Mellanox Technologies

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

signal detect should also function as Alert detect when EEE normal mode is supported and rx_mode is not active

SuggestedRemedy

Add the folowing text:
When the PHY supports the optional EEE capability normal wake mode, PMD_SIGNAL.indication is also used to indicate when the ALERT signal is detected, which corresponds to the beginning of a refresh or a wake.
Can consider adding a condition of PMD:IS_RX_MODE != ACTIV

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.1.3.1** *P* **231** *L* **52** # 128

Matthew, Brown — Applied Micro

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

This sub-clause redundantly redefines SIGNAL_DETECT, which is fully defined in sub-clause 94.3.6.4. The mapping of SIGNAL_DETECT to SIGNAL_OK is not defined.

SuggestedRemedy

Replace the contents of 94.3.1.3.1 with the following:
PMD:IS_SIGNAL.indication(SIGNAL_OK)
The SIGNAL_OK parameter indicates the global status of the receive lanes. SIGNAL_OK takes on the value of global_signal_detect variable defined in 94.3.6.4.

Replace the contents of 94.3.1.3.2 with...

The PMD generates the PMD_IS_SIGNAL.indication primitive to the PMD client whenever there is a change in the value of the global_signal_detect variable.

Replace the contents of 94.3.6.4 including editor's note with...

The pmd_global_signal_detect variable indicates the successful completion of the start-up protocol on all lanes. The pmd_global_signal_detect variable shall be set to FAIL following system reset or the manual reset of the training state diagram. Upon successful completion of training on all lanes, the pmd_global_signal_detect variable shall be set to OK.

If training is disabled by management, the global_signal_detect variable shall be set to OK.

If the MDIO interface is implemented, then Global PMD signal detect (1.10.0) shall be continuously set to the value of the pmd_global_signal_detect variable as described in 45.2.1.9.7.

Similar changes to Clauses 92 and 93 are required.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.2** *P* **237** *L* **24** # 266

Brown, Matthew — APM

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

Refer to Figure 94-5 not Figure 94-4.
For training frame words refer to describing section.

SuggestedRemedy

Change "Figure 94-4" to "Figure 94-5".
Change "training frame words" to "training frame words (94.3.10.3)".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.5.1** *P* **238** *L* **19** # 161

Lusted, Kent — Intel

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

Items "b" and "c" in the list DME rules.

"b)A positive value is represented by a series PAM4 +1 symbols.
c)A negative value is represented by a series of PAM4 -1 symbols."

These 2 requirements are superfulous because a DME cell does not take on a signed value.

SuggestedRemedy

Strike these 2 lines and re-numerate the list.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.7.1** *P* **241** *L* **24** # 273

Brown, Matthew — APM

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

The sub-clause defines the status fields.

SuggestedRemedy

Change "control messages" to "status messages".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.7.2** *P* **241** *L* **31** # 146

Matthew, Brown — Applied Micro

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

The editor's note points out that the trigger to start countdown must be re-visited.

SuggestedRemedy

Provide functional specification describing when the (training to normal) countdown begins.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.8** *P* **242** *L* **6** # 163

Lusted, Kent — Intel

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

100GBASE-KP4 training pattern details need updating per editors note.

A method for initializing the termination bit generator was not specified in the lusted_01_0912 or lusted_03a_0912.

The PRBS13 seeds were chosen for optimal performance using the PMA encoding specified in Draft 1.1. Since the PMA encoding has changed in Draft 1.2, the seed values must be re-visited.

To ensure interoperability, inclusion of a table or diagram showing the training pattern PAM4 symbol values after PMA encoding is suggested. As an example, see lusted_3bj_01_0912 slide 25.

SuggestedRemedy

See presentation lusted_3bj_01_1112 to be submitted in the future.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.8** *P* **243** *L* **2** # 324

Wang, Zhongfeng — Broadcom Corp.

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

Terminations bits for PMA frame were specified to use PRBS13 to generate in normal mode.

The initial state of PRBS is said to be the ending state of PRBS after training. Then in training mode, how do we determine termination bits? Not clear yet.

In addition, it is not clear whether the PRBS in normal mode will change state only for termination bits.

SuggestedRemedy

In training mode, those termination bits can be defined in another way, e.g., termination symbol=(13th symbol + 33th symbol in previous TB45blk) mod 4.

The PRBS for termination bits in normal mode should change state once every 45 symbols.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.8** *P* **243** *L* **7** # 147

Matthew, Brown — Applied Micro

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

The editor's note points out that a method for initializing the termination bit generator must be specified.

SuggestedRemedy

Specify method for initializing the termination bit generator during training and by extension for EEE alert.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.8** *P* **243** *L* **7** # 149

Matthew, Brown — Applied Micro

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

The editor's note points out that a table or diagram should be provided to show the training pattern content for the first several cycles to ensure correct interpretation by the implementor.

SuggestedRemedy

Provide a table or diagram showing explicit values for the training pattern for several cycles.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.10.8** *P* **243** *L* **7** # 148

Matthew, Brown — Applied Micro

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

The editor's note points out that the training pattern each lane must be re-specified taking into account the new termination symbol generation introduced in Draft 1.2.

SuggestedRemedy

Re-specify the training pattern seeds.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.11** *P* **244** *L* **21** # 274

Brown, Matthew APM

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

Use correct service layer names.

SuggestedRemedy

Change "the PMD_TX_MODE and PMD_RX_MODE requests"
To "PMD:IS_TX_MODE.request and PMD:IS_RX_MODE.request."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12** *P* **247** *L* **36** # 275

Brown, Matthew APM

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

Notes a and b are redundant. These details are fully described in the referenced sections.

There are many crucial details associated with each of the parameters in this table that are provided in the referenced sections. It seems inconsistent to provide details as footnotes for one or two and not the others.

SuggestedRemedy

Remove notes a and b from table 94-13.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.1.2** *P* **248** *L* **6** # 150

Matthew, Brown Applied Micro

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

The editor's note points out where the value for ILD came from.

SuggestedRemedy

If the ILD value is correct, then remove the editor's note.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.3** *P* **248** *L* **28** # 151

Matthew, Brown Applied Micro

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

The editor's note points out that the methodology and values peak signal levels are different for Clause 94 and 93. A common (or at least similar) methodology should be used for both PHY types.

SuggestedRemedy

For measuring the peak value, use the QPRBS13 pattern as specified in 94.2.11.3 and set the peak limit to 1200 mVppd.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.4** *P* **249** *L* **4** # 276

Brown, Matthew APM

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

The reference impedance for the test is not in itself normative. Remove the shall. It doesn't make sense to write a PICS entry for this.

SuggestedRemedy

line 5 and line 13 change "shall be" to "is".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.4** *P* **249** *L* **8** # 56

Ben-Artsi, Liav Marvell

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

Transmitter output return loss (eq. 94-6) has a low frequency value that does not correlate to coeficients / equation of Table 94–17—Channel operating margin parameters.

SuggestedRemedy

Update measured return loss limit acoording to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.5** *P* **248** *L* **17** # 246

Moore, Charles — Avago Technologies

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

Use linear fit pulse to find transition time. It will eliminate a messy test.

Use the same 8ps value as used in 93.8.1.5

SuggestedRemedy

change 94.3.12.5 to read something like:

"Transition times (rise and fall times) are measured on the linear fit pulse.
It is the time the linear fit pulse takes to transition between 20% and 80%
of the steady state value, using linear interpolation to work between sampled
values. The transition time shall be greater than 8 ps. If the peak of linear fit pulse is less than 80%
of the steady state value the transition time is considered to exceed its
minimum value."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.5** *P* **249** *L* **42** # 136

Matthew, Brown — Applied Micro

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

The editor's note indicates that test pattern, methodology, and values are needed.

SuggestedRemedy

Specify test pattern, methodology, and values for transition time or replace with appropriate alternative.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.6.1** *P* **249** *L* **51** # 247

Moore, Charles — Avago Technologies

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

TBD's make this spec technically incomplete

SuggestedRemedy

Recommend:

Minimum steady state voltage = 0.4 V
peak value > 0.85 x vf

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.6.1** *P* **250** *L* **51** # 137

Matthew, Brown — Applied Micro

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

The vlaues for steady state voltage and peak value are TBD.

SuggestedRemedy

Provide values for the steady state voltage and peak value.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.6.2** *P* **251** *L* **16** # 152

Matthew, Brown — Applied Micro

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

The editor's note points out that the test method for linear fit error must be modified to make use of a PAM4 test signal.

SuggestedRemedy

Re-specify the linear fit error test method to make use of a PAM4 test pattern such as the QPRBS13 test pattern specified in 94.2.11.3.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.6.3** *P* **251** *L* **30** # 129

Matthew, Brown — Applied Micro

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

Sub-clause 94.3.12.6.3 specifies emphasis ratios for the INITIALIZE, but provides no specification for the amplitude.

SuggestedRemedy

In addition to the two ratios, specify the amplitude.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.6.3** *P* **251** *L* **32** # 138

Matthew, Brown — Applied Micro

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

The values for pre-cursor and post-cursor peaking ratios are specified as TBD.

SuggestedRemedy

Provide values for the TBD peaking ratios.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.7** *P* **252** *L* **15** # 139

Matthew, Brown — Applied Micro

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

The values for low-loss and high-loss channel insertion loss are specified as TBD.

SuggestedRemedy

Provide values for low-loss and high-loss channel insertion loss.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.12.9** *P* **253** *L* **42** # 277

Brown, Matthew — APM

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

Various fixes to linearity test methodology.

SuggestedRemedy

Line 41, change to "multiple" to "multiple, K,".
line 8, append "p = {1,2,...,M}
line 48.5, change "+1" to "+1/3".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13** *P* **254** *L* **21** # 278

Brown, Matthew — APM

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

In table 94-15 add reference to Interference tolerance test.

SuggestedRemedy

Add new row
parameter = "Interference tolerance"
reference = "94.3.13.3"
value = "N/A"
units = "--"

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13** *P* **255** *L* **5** # 140

Matthew, Brown — Applied Micro

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

The value for CM return loss is specified as TBD.

SuggestedRemedy

Provide specification for CM return loss.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13.2** *P* **254** *L* **4** # 279

Brown, Matthew — APM

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

The reference impedance for the test is not in itself normative. Remove the shall. It doesn't make sense to write a PICS entry for this.

SuggestedRemedy

line 46 and line 53 change "shall be" to "is".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13.2** *P* **254** *L* **48** # 58

Ben-Artsi, Liav — Marvell

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

Receiver output return loss (eq. 94-14) has a low frequency value that does not correlate to coeficients / equation of Table 94–17—Channel operating margin parameters.

SuggestedRemedy

Update measured return loss limit acoording to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13.3** *P* **2255** *L* **31** # 141

Matthew, Brown — Applied Micro

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

In Table 94-16 several parameters for the receiver interference tolerance test are specified as TBD.

SuggestedRemedy

Provide values for each of the parameters in 94-16 currently specified as TBD.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.13.3** *P* **254** *L* **7** # 248

Moore, Charles — Avago Technologies

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

References to Annex 69A may be insufficient to define this test. It will need a PAM4 oriented test pattern which has not been defined. If we use Annex 69A, we need to define the channel in terms of mTC and bTC not a0, a1, a2, a4.

SuggestedRemedy

use method described in separate presentation.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.3** *P* **232** *L* **20** # 134

Matthew, Brown — Applied Micro

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

Delay contraints have TBD values.

SuggestedRemedy

Provide values for TBD delay constraints.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.4** *P* **232** *L* **46** # 135

Matthew, Brown — Applied Micro

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

Skew contraints have TBD values.

SuggestedRemedy

Provide values for TBD skew constraints.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.3** *P* **235** *L* **9** # 265

Brown, Matthew — APM

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

tx_symbol should be rx_symbol

SuggestedRemedy

Change "tx_symbol" to "rx_symbol".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.5** *P* **235** *L* **36** # 126

Matthew, Brown — Applied Micro

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

Concatenation of words with underscore is typically used for variable and function names, whereas as MDIO field names do not.

SuggestedRemedy

replace "PMD_signal_detect_i" with "PMD signal detect i".
replace "PMD_signal_detect_0" with "PMD signal detect 0".
replace "PMD_signal_detect_1" with "PMD signal detect 1".
replace "PMD_signal_detect_2" with "PMD signal detect 2".
replace "PMD_signal_detect_3" with "PMD signal detect 3".

Similar corrections are required in Clause 92 and 93.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.5** *P* **235** *L* **37** # 127

Matthew, Brown — Applied Micro

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

Only one following paragraph.

SuggestedRemedy

Change "two paragraphs" to "paragraph".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.6** *P* **235** *L* **52** # 271

Brown, Matthew — APM

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

Add list item specifying MDIO control.

SuggestedRemedy

Add list item (d):
"If the MDIO interface is implemented, then Global_PMD_transmit_disable is set to one when Global PMD transmit disable bit (1.9.0) is set to one (see 45.2.1.8.7)."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.6** *P* **235** *L* **52** # 270

Brown, Matthew — APM

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

Use consistent terminology with 94.3.6.7.

SuggestedRemedy

Change "may turn off the electrical transmitter in all lanes" to "may set global_pmd_transmit_disable to one".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.7** *P* **236** *L* **13** # 272

Brown, Matthew — APM

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

Add list item specifying MDIO control.

SuggestedRemedy

Add list item (d):
"If the MDIO interface is implemented, then PMD_transmit_disable_i is set to 1 when the corresponding PMD transmit disable bit (1.9.1, 1.9.2, 1.9.3, and 1.9.3) is set to 1 (see 45.2.1.8.3 to 45.2.1.8.7)."

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.6.8** *P* **236** *L* **17** # 131

Matthew, Brown — Applied Micro

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

Specification of the loopback in the PMD is redundant and out of place. It is already specified for the PMA.

SuggestedRemedy

Replace the first two paragraphs of 94.3.6.8 with ...
"Local loopback mode is provide by the PMA (94.2.9). Loopback shall not affect the state of the transmitter, which continues to send data unless disabled (94.3.6.7)."

Delete Note 1.

Similar corrections are required for Clause 92 and 93.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.7** *P* **236** *L* **30** # 123

Matthew, Brown — Applied Micro

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

The names of functions are typically not concatenated with underscore. The underscore is typically used for variable and function names.

SuggestedRemedy

In title of 94.3.7 replace "pmd_fault" with "PMD fault".

In the first paragraph of 94.3.8 replace "PMD_transmit_fault" with "PMD transmit fault".

In the first paragraph of 94.3.9 replace "PMD_receive_fault" with "PMD receive fault".

Similar corrections are required in Clauses 92 and 93.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.3.8** *P* **236** *L* **42** # 124

Matthew, Brown — Applied Micro

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

The fact that PMD transmit fault function is optional is already established in the previous paragraph.

SuggestedRemedy

In the second paragraph in 94.3.8, delete "(optional)".

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.1** *P* **256** *L* **17** # 153

Matthew, Brown — Applied Micro

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

All COM parameters in Table 94-17 must be reconciled against the transmitter and receiver specificiations in 94.2 and 94.3.

SuggestedRemedy

Reconcile all parameters in Table 94-17 with the corresponding transmitter and receiver specificiations in 94.2 and 94.3.

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.1** *P* **256** *L* **26** # 47

Ben-Artsi, Liav — Marvell

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

PAM4 PKG insertion loss model does not represent the worst case insertion loss that meets the PKG definition

SuggestedRemedy

Update according to BenArtsi_3bj_01_1112

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.1** *P* **256** *L* **26** # 44

Ben-Artsi, Liav — Marvell

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

The transmitter reflection equation does not represent the appropriate reflection coefficient from a PKG (especially at the low frequency range).

SuggestedRemedy

Update PKG equation and coefficients according to BenArtsi_3bj_01_1112.
This may require adding a different equation on top of 93-A3 (if 93-A3 is still referenced by other locations within this specification)

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.1** *P* **256** *L* **29** # 45

Ben-Artsi, Liav — Marvell

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

The receiver reflection equation does not represent the appropriate reflection coefficient from a PKG (especially at the low frequency range).

SuggestedRemedy

Update PKG equation and coefficients according to BenArtsi_3bj_01_1112.
This may require adding a different equation on top of 93-A3 (if 93-A3 is still referenced by other locations within this specification)

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.1** *P* **256** *L* **33** # 57

Ben-Artsi, Liav — Marvell

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

Transmitter victim and Far-end aggressor diferential peak output voltage defined at an ambiguous location along the end to end path

SuggestedRemedy

Define the victim differential peak output voltage and Far-end aggressor at TP0 (min 800mV pk-pk @ the device PKG ball) ==> incorporate only one PKG IL model in the COM code (the Rx side)

Proposed Response *Response Status* **O**

Cl **94** *SC* **94.4.4** *P* **258** *L* **27** # 154

Matthew, Brown — Applied Micro

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

The editor's note points out that the ICN must be specified here.

SuggestedRemedy

Provide ICN specification(s).

Proposed Response *Response Status* **O**

Cl **94** *SC* **Table 94-6** *P* **239** *L* **6** # 159

Lusted, Kent — Intel

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

The first data row of the table shows the frame marker. This row's contents of the symbol columns are misleading because the value of "0" is not a valid PAM4 level.

The text in 94.3.10.4 clearly defines the frame marker.

SuggestedRemedy

I can't think of a better way to describe it. Consider striking the frame marker row from the table.

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **4** *L* **26** # 349

Anslow, Pete — Ciena

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

The frontmatter has been updated in accordance with comment #29 against D 1.1 to include a description of the 802.3bj amendment.
There is a spurious quotation mark at the end of the added text.

SuggestedRemedy

Remove the spurious quotation mark after "copper cables."

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **6** *L* **13** # 156

Lusted, Kent — Intel

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

Officer title of Chair contains redundant information.

SuggestedRemedy

Change "IEEE P802.3bj Task Force name Task Force Chair" to "IEEE P802.3bj Task Force Chair"

Proposed Response *Response Status* **O**

Cl **99** *SC* *P* **6** *L* **14** # 157

Lusted, Kent — Intel

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

Officer title of Editor-in-Chief contains redundant information.

SuggestedRemedy

Change "IEEE P802.3bj Task Force name Task Force Editor-in-Chief" to "IEEE P802.3bj Task Force Editor-in-Chief"

Proposed Response *Response Status* **O**

Cl **99** *SC* **99** *P* **6** *L* **13** # 167

Healey, Adam
LSI Corporation

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

Replace "Task Force name" with the actual Task Force name for both Chair and Editor-in-Chief.

SuggestedRemedy

Per comment.

Proposed Response *Response Status* **O**