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

Anslow, Pete　　　　　　　　　　Ciena

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

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"

Response　　　　　*Response Status* **C**

ACCEPT.

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

Lusted, Kent　　　　　　　　　　Intel

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

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.

Response　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the following definition to 1.4:
"100GBASE-P: An IEEE 802.3 family of Physical Layer devices using the physical coding sublayer defined in Clause 82 and a physical medium dependent sublayer that employs pulse amplitude modulation with more than 2 levels for 100 Gb/s operation. (See IEEE Std 802.3, Clause 82 and Clause 84.)"

Also, modify the definition for 100GBASE-R to make the distinction between BASE-P and BASE-R.

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COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn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

Cl **00**
SC **0**

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Cl **00**   *SC* **0**   *P*   *L*   # **84**
Sela, Oren   Mellanox Technologies

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

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

Use the term "Deep Sleep" mode to contrast with "Fast Wake" - the editor to search for
and replace "normal mode" where the meaning is clear.

Cl **01**   *SC* **1.4.53a**   *P* **21**   *L* **15**   # **353**
Anslow, Pete   Ciena

Comment Type   **E**   *Comment Status*   **A**   *bucket*
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"

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

Check remainder of the draft for other instances where this definition is used and modify
the accordingly.

Cl **30**   *SC* **30.1.1.15**   *P* **23**   *L* **19**   # **93**
Sela, Oren   Mellanox Technologies

Comment Type   **T**   *Comment Status*   **A**   *FEC mgmt*
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.

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

Cl **30**   *SC* **30.1.1.16**   *P* **23**   *L* **25**   # **94**
Sela, Oren   Mellanox Technologies

Comment Type   **T**   *Comment Status*   **A**   *FEC mgmt*
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

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

Option #1, also suggested by comment #367

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

Cl **30**
SC **30.1.1.16**

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Cl **30**   *SC* **30.3.2.1.2**   *P*   *L*   # 354
Anslow, Pete   Ciena

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

"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

Response   *Response Status* **C**

ACCEPT.

Cl **30**   *SC* **30.5.1.1.15**   *P* **23**   *L* **20**   # 355
Anslow, Pete   Ciena

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

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.

Response   *Response Status* **C**

ACCEPT.

Cl **30**   *SC* **30.5.1.1.16**   *P* **23**   *L* **38**   # 356
Anslow, Pete   Ciena

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

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.

Response   *Response Status* **C**

ACCEPT.

The text will be underline whether deleted or not.

Cl **30**   *SC* **30.5.1.1.16**   *P* **23**   *L* **47**   # 367
Anslow, Pete   Ciena

Comment Type **T**   *Comment Status* **A**   *FEC mgmt*

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.

Response   *Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **30**   Page 3 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **30.5.1.1.16**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

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

Dawe, Piers   IPtronics

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

nonresetable

SuggestedRemedy

nonresettable, as in base document. Two places.

Response   *Response Status* **C**

ACCEPT.

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

Anslow, Pete   Ciena

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

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.

Response   *Response Status* **C**

ACCEPT.

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

Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *FEC mgmt*

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

Response   *Response Status* **C**

ACCEPT.

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

Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *FEC mgmt*

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "PCS lanes" to "PCS lanes or FEC lanes" throughout both subclauses.

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

Anslow, Pete   Ciena

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

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"

Response   *Response Status* **C**

ACCEPT.

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

Cl **30**
SC **30.5.1.1.18**

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Cl **30**   *SC* **30.6.1.1.5**   *P* **25**   *L* **22**   # 384
Dawe, Piers   IPtronics

Comment Type **ER**   *Comment Status* **A**   *PHY order*
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

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

The inserted items are in priority resolution order in 30.6.1.1.5.

Comment #90 changes 45.2.1.6 to be the same as 45.2.1.7.4 and 45.2.1.7.5 (i.e. also
priority resolution order).

Cl **45**   *SC* **45.2.1.6**   *P* **28**   *L*   # 90
Sela, Oren   Mellanox Technologies

Comment Type **E**   *Comment Status* **A**   *PHY order*
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

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

Table 45-7 - reverse KR4 & KP4

Cl **45**   *SC* **45.2.1.8**   *P* **29**   *L* **44**   # 297
Dudek, Mike   QLogic

Comment Type **E**   *Comment Status* **A**   *Style*
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.

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

There is no compelling reason to make such a change to the base text. However, the
inserted text must be underlined.

Cl **45**   *SC* **45.2.1.8**   *P* **29**   *L* **53**   # 359
Anslow, Pete   Ciena

Comment Type **E**   *Comment Status* **A**   *Bucket*
The additions to 45.2.1.8 are not shown with underline font

SuggestedRemedy
Show the additions with underline font

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

Cl **45**   *SC* **45.2.1.81**   *P* **31**   *L* **6**   # 302
Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *Training mgmt*
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

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

Registers 1.150 through 1.155 and similarly 1.1100-1.1103; 1.1200-1.1203; 1.1300-1.1303;
1.1400-1.1403 are all used by Clause 94.

Update the wording in these register descriptions. Make references clear in Clause 94.

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

Cl **45**
SC **45.2.1.81**

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Cl **45**   *SC* **45.2.1.93**   *P* **32**   *L* **4**   # 120
Sela, Oren   Mellanox Technologies

Comment Type **T**   *Comment Status* **A**   *FEC mgmt*

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).

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.93a**   *P* **31**   *L* **37**   # 360
Anslow, Pete   Ciena

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

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.

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.93f**   *P* **34**   *L* **21**   # 186
Slavick, Jeff   Avago Technologies

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

"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."

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.93f**   *P* **34**   *L* **23**   # 187
Slavick, Jeff   Avago Technologies

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

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."

Response   *Response Status* **C**

ACCEPT.

Cl **45**   *SC* **45.2.1.93f**   *P* **34**   *L* **24**   # 373
Kvist, Bengt   Ericsson AB

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

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.

Response   *Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **45**   Page 6 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **45.2.1.93f**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

Cl **45**　　*SC* **45.2.1.93g**　　　　*P* **34**　　*L* **39**　　# 368
Anslow, Pete　　　　　　　　　　　Ciena

Comment Type **T**　　*Comment Status* **A**　　　　　　*Bucket*
In Table 45-72f 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"

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

Cl **45**　　*SC* **45.2.1.93g**　　　　*P* **34**　　*L* **39**　　# 192
Slavick, Jeff　　　　　　　　　　　Avago Technologies

Comment Type **T**　　*Comment Status* **A**　　　　　　*Bucket*
Register number is incorrect in the table.

SuggestedRemedy
Change 3.200.15:0 to 1.230.15:0

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

Cl **45**　　*SC* **45.2.3.9**　　　　*P* **36**　　*L* **21**　　# 121
Sela, Oren　　　　　　　　　　　Mellanox Technologies

Comment Type **T**　　*Comment Status* **A**　　　　　　*FW mgmt*
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

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

This bit is a control bit not a status bit, it must select one or the other. However, a status bit is also required.

Add bit 3.20.9 - LPI modes supported:

1=FW only; 0 = both FW and DS.

(not valid for PHYs <40G, returns 0).

Cl **45**　　*SC* **45.2.3.9.6**　　　　*P* **36**　　*L* **19**　　# 362
Anslow, Pete　　　　　　　　　　　Ciena

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

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

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

Cl **45**
SC **45.2.3.9.6**

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Cl **45**   *SC* **45.2.3.9.a**   *P* **35**   *L* **46**   # 361
Anslow, Pete   Ciena

Comment Type **E**   *Comment Status* **A**   *Bucket*
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:"

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

Cl **45**   *SC* **45.2.7.13a**   *P* **39**   *L* **43**   # 193
Slavick, Jeff   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *FW mgmt*
Both is not the best term to use for describing support of Normal and Fast Wake options.

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

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

Change the sense to match register 3.20.9 (proposed).

FW only - 1=FW only, 0= DS and FW modes (not valid for PHYs <40G, always reads 0).
Make appropriate changes in 45-190 & 45-191.

Cl **45**   *SC* **45-72a**   *P* **31**   *L*   # 91
Sela, Oren   Mellanox Technologies

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

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

Cl **72**   *SC* **72.6.10.2.4**   *P* **476**   *L* **34**   # 125
Matthew, Brown   Applied Micro

Comment Type **E**   *Comment Status* **R**   *bucket*
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.

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

Before such a change can be considered, it must first be verified that the error exists in the
published version of IEEE Std 802.3-2012.

Cl **73**   *SC* **6.10**   *P* **49**   *L* **15**   # 194
Slavick, Jeff   Avago Technologies

Comment Type **T**   *Comment Status* **A**
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."

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

Cl **73**   *SC* **7.2**   *P* **50**   *L* **1**   # 195
Slavick, Jeff   Avago Technologies

Comment Type **T**   *Comment Status* **A**
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."

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **73**   Page 8 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **7.2**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

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

D'Ambrosia, John   Dell

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

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."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change Value/Comment for LE17 to:
"PHYs for operation over electrical backplane are not simultaneously advertised with PHYs
for operation over copper cable"

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

Also change order on:
Page 48, Line 52.
Page 49, Line 38.

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

D'Ambrosia, John   Dell

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

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

SuggestedRemedy

add PIC

Response   *Response Status* **C**

ACCEPT.

Add item LE8a as follows.
Feature: Technology ability reserved fields
Subclause: 73.6.4
Value/Comment: Sent as zero and ignored by the receiver
Status: M

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **73**   Page 9 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **73.6.4**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

Cl **78**   *SC* **78.1**   *P* **53**   *L* **30**   # 7
D'Ambrosia, John   Dell

Comment Type **E**   *Comment Status* **A**   *Style*
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
.

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

Some information is missing in the suggested remedy. Change paragraph to:

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

Cl **78**   *SC* **78.1**   *P* **53**   *L* **32**   # 92
Sela, Oren   Mellanox Technologies

Comment Type **T**   *Comment Status* **A**   *Bucket*
Typo - replace 40GBASECR10 with 40GBASE-CR4

SuggestedRemedy
Per comment

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

Nb comment #7 deletes this text.

Cl **78**   *SC* **78.1.4**   *P* **54**   *L* **1**   # 363
Anslow, Pete   Ciena

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

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

Cl **78**   *SC* **78.2**   *P* **55**   *L* **5**   # 348
Anslow, Pete   Ciena

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

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

Cl **78**   *SC* **78.5**   *P* **54**   *L* **47**   # 250
Trowbridge, Steve   Alcatel-Lucent

Comment Type **T**   *Comment Status* **A**   *Terms*
"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

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

Add a figure that illustrates Fast Wake operation.

Change the nomenclature to refer to Deep Sleep operation in contrast to fast Wake (see comment #84)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **78**   Page 10 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **78.5**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

Cl **78**   *SC* **78.5**   *P* **54**   *L* **48**   # 95
Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use suggested option #1

Fast wake is mandatory for 40Gb/s and 100Gb/s PHYs that implement EEE; deep sleep is an additional option for those PHYs

---

Cl **78**   *SC* **78.5**   *P* **55**   *L*   # 96
Sela, Oren   Mellanox Technologies

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See also comment #40, #202

Cl **78**   *SC* **78.5**   *P* **55**   *L* **20**   # 38
Barrass, Hugh   Cisco

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

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.

Response   *Response Status* **C**

ACCEPT.

Cl **78**   *SC* **78.5**   *P* **55**   *L* **32**   # 42
Barrass, Hugh   Cisco

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

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

Response   *Response Status* **C**

ACCEPT.

Cl **78**   *SC* **78.5**   *P* **55**   *L* **32**   # 40
Barrass, Hugh   Cisco

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

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."

Response   *Response Status* **C**

ACCEPT.

Add the rows use timings from comment #202.

See also comment #96

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **78**   Page 11 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **78.5**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

Cl **78**   *SC* **78.5**   *P* **55**   *L* **33**   # 43
Barrass, Hugh   Cisco

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

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

Tw_phy is 5.5uS for all of the rows in D1.2, comment #202 defines additional time for scrambler bypass cases.

Cl **78**   *SC* **78.5**   *P* **55**   *L* **34**   # 34
Barrass, Hugh   Cisco

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

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

Cl **78**   *SC* **78.5**   *P* **55**   *L* **35**   # 35
Barrass, Hugh   Cisco

Comment Type   **T**   *Comment Status* **A**   *Timing*
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.

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

Comment #202 defines the additional time for PHYs that include scrambler bypass.

Cl **78**   *SC* **78.5**   *P* **55**   *L* **8**   # 41
Barrass, Hugh   Cisco

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

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

Cl **78**   *SC* **78.5.2**   *P* **56**   *L* **13**   # 197
Slavick, Jeff   Avago Technologies

Comment Type   **T**   *Comment Status* **A**   *Bucket*
PIASE MDIO register bit has been assigned

SuggestedRemedy
Change 1.n.n to 1.7.9

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

Cl **78**   *SC* **78.5.2**   *P* **56**   *L* **8**   # 196
Slavick, Jeff   Avago Technologies

Comment Type   **T**   *Comment Status* **A**   *Bucket*
Regiset bits for PEASE have been defined.

SuggestedRemedy
Change 1.n.n to 1.7.8

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **78**   Page 12 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **78.5.2**   11/15/2012 12:30:53 PM
SORT ORDER: Clause, Subclause, page, line

Cl **79**   *SC* **79.4**   *P* **58**   *L* **1**   # 36
Barrass, Hugh   Cisco

Comment Type **T**   *Comment Status* **A**   *LLDP*
    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.

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

    See barrass_3bj_02_1112.pdf

Cl **80**   *SC* **80.1.2**   *P* **58**   *L* **29**   # 251
Trowbridge, Steve   Alcatel-Lucent

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

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

    See also #331, #249

    The current draft does not pose any problems with appropriate support for OTN for copper
    interfaces. In order to connect to OTN transport, a device must be used that can act as an
    autonegotiation link partner and can control and terminate any functions that would not be
    supported over OTN (e.g. optional FEC as defined in 802.3ba). Such a device can decline
    the use of optional EEE if the capability is not adequately supported.

    If, at some time in the future, an optical project should choose to define EEE it would need
    to make a number of choices regarding OTN. The operation of EEE Fast Wake might be
    redefined (in a number of different ways) if such choices were made.

Cl **80**   *SC* **80.1.3**   *P* **58**   *L* **48**   # 303
Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *MDI*
    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,"

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

    Note that this is a change to the base standard.

Cl **80**   *SC* **80.1.3**   *P* **58**   *L* **49**   # 97
Sela, Oren   Mellanox Technologies

Comment Type **T**   *Comment Status* **R**   *MDI*
    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.

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

    Although they use 1 fiber, there are 4 lanes of data using 4 wavelengths.

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

Cl **80**
SC **80.1.3**

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

Dawe, Piers   IPtronics

Comment Type **T**   *Comment Status* **R**   *late, Style*

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.

Response   *Response Status* **C**

REJECT.

"CONDITIONAL BASED ON PHY TYPE" and "DEPENDING ON PHY TYPE" have identical meaning in the English language.

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

Sela, Oren   Mellanox Technologies

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

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"

Response   *Response Status* **C**

ACCEPT.

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

Anslow, Pete   Ciena

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

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"

Response   *Response Status* **C**

ACCEPT.

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

Anslow, Pete   Ciena

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

"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"

Response   *Response Status* **C**

ACCEPT.

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

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the beginning of the clause to:

"The terms 40GBASE-R, 100GBASE-R and 100GBASE-P refer ."

On line 7 change "40GBASE-R and 100GBASE-R PCSs" to "Clause 82 PCSs"

Change the beginning of 80.2.5 as 80.2.2

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

Sela, Oren   Mellanox Technologies

Comment Type **E**   *Comment Status* **A**   *PHY order*

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

Response   *Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **80**   Page 14 of 102

COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **80.2.6**   11/15/2012 12:30:54 PM

SORT ORDER: Clause, Subclause, page, line

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

Anslow, Pete   Ciena

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

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"

Response   *Response Status* **C**

ACCEPT.

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

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

Dawe, Piers   IPtronics

Comment Type **T**   *Comment Status* **R**   *late, Style*

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".

Response   *Response Status* **C**

REJECT.

"CONDITIONAL BASED ON PHY TYPE" means the same as "DEPENDING ON PHY TYPE"

Cl **80**   *SC* **80.3.2**   *P* **63**   *L* **32**   # 335

Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The commenter probably missed the content of 83C-2a because two figures were given the same label.

Change the second figure 83C-2a to 83C-2b.

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

Cl **80**
SC **80.3.2**

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Cl **80**   *SC* **80.3.2**   *P* **63**   *L* **32**   # 329

Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The figure is misleading, comment #87 (and comment #337) highlight issues that can be corrected to improve the understanding of the EEE primitives.

Cl **80**   *SC* **80.3.2**   *P* **63**   *L* **32**   # 332

Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The style guide requires that figures are left to float in the draft but the editor will attempt to adjust text and whitespace to improve the placement of these figures.

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

Sela, Oren   Mellanox Technologies

Comment Type **T**   *Comment Status* **A**   *scr bypass*

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.

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.3.3.4.1**   *P* **63**   *L* **52**   # 198

Slavick, Jeff   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *scr bypass*

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."

Response   *Response Status* **C**

ACCEPT.

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

Cl **80**
SC **80.3.3.4.1**

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Cl **80**	*SC* **80.3.3.6.1**	*P* **66**	*L* **15**	# 337

Nicholl, Gary   Cisco

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

In the case where there is a PMA sublayer (or sublayers) between the PCS and the FEC IS_RX_LPI_Active.request must be passed through the PMA.

Add appropriate text in Clause 80.3.3.6 to describe this.

Add the following sentence after "communicates to the FEC that the PCS LPI receive function is active." -

"This primitive may be passed through a PMA sublayer but has no effect on that sublayer."

Cl **80**	*SC* **80.3.3.7**	*P* **66**	*L* **34**	# 338

Nicholl, Gary   Cisco

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

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 :)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This is made clear in the PMD clauses, but needs to be clarified here.

For all of the EEE primitives, add "with the deep sleep mode option" after "optional Energy Efficient Ethernet (EEE) capability" (1 instance) and after "Without EEE capability" (4 instances)

Cl **80**	*SC* **80.4**	*P* **67**	*L* **14**	# 339

Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

REJECT.

The design of pause buffers (and the control of latency, generally) is a matter for system implementers. The delays in this table are intended to help interoperability.

It should be noted that the delay specified for RS-FEC is significantly less than that specified for BASE-R FEC in 802.3ba, so any system designed to tolerate the existing FEC will cope with the newly specified FEC. Furthermore, the delay of the RS-FEC sublayer is of a similar magnitude to the media delay from 100m of fiber.

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

Cl **80**
SC **80.4**

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Cl **80**   *SC* **80.4**   *P* **67**   *L* **20**   # 352
Anslow, Pete   Ciena

Comment Type **E**   *Comment Status* **A**   *PHY order*

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.

Response   *Response Status* **C**

ACCEPT.

Cl **80**   *SC* **80.5**   *P* **67**   *L* **44**   # 333
Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

REJECT.

There is no CAUI-4 defined in this project, however the skew points defined (SP0/SP7)
should remain the same for either CAUI-10 or CAUI-4. If a future project should see fit to
define an interface for CAUI-4 then it will be the responsibility of that project to update the
diagram to include the appropriate labeling for both PMA SERVICE INTERFACE instances
(and adjacent PMAs).

Cl **80**   *SC* **80.5**   *P* **70**   *L* **11**   # 385
Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

REJECT.

In project .3ba it was concluded that 4 lane and 10 lane implementations could suffer from
the same skew (in terms of time). There has been no evidence presented in this project to
overturn that conclusion.

Cl **80**   *SC* **80.5**   *P* **70**   *L* **23**   # 199
Slavick, Jeff   Avago Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

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

Cl **80**
SC **80.5**

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

To reduce confusion:

Add text to the diagram stating that this is only the additional signals for optional EEE.

Delete the specifics for the PMA sublayers (20:10 etc.) and add a PMA between the PCS & the FEC (issue highlighted by comment #337)

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

Sela, Oren   Mellanox Technologies

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

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.

Response   *Response Status* **C**

REJECT.

The skew budgeting mechanism in 40/100G Ethernet is based around interchangeable usage of sublayers. It is likely that future projects will continue to use sublayers in that manner. A system implementer who configures sublayers in a fixed manner may take advantage of reduced skew budgets according to the specific configuration.

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

Cl **80**
SC **80-4**

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

D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

REJECT.

Adding a "shall" and associated PIC would create a requirement in one clause that could
only be satisfied in a different clause. The statement as written matches those used in
other RS clauses.

Cl **81**   *SC* **81.3.1.5**   *P* **73**   *L* **40**   # 334

Nicholl, Gary   Cisco

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

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>).

Response   *Response Status* **C**

REJECT.

The note in this figure states:

Note: TXC and TXD are shown for one lane, all 8 lanes behave identically during LPI

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

Cl **81**   *SC* **81.3.2.4**   *P* **74**   *L* **41**   # 340

Nicholl, Gary   Cisco

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

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.

Response   *Response Status* **C**

REJECT.

The note in this figure states:

Note: RXC and RXD are shown for one lane, all 8 lanes behave identically during LPI

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

Cl **81**
SC **81.3.2.4**

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Cl **81**   *SC* **81.3.4**   *P* **75**   *L* **31**   # 341
Nicholl, Gary   Cisco

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

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.

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

This is the text that was agreed during 802.3ba. This is simple descriptive text, it is unnecessary to go into details regarding other clauses.

Cl **81**   *SC* **81.3a**   *P* **76**   *L* **1**   # 327
Nicholl, Gary   Cisco

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

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 implicitly defined by the fact that this section(81.3a) occurs before the link fault signalling section (81.4) then you can ignore this comment.

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

The position of the LPI assertion and detection mechanism is immaterial. The behavioral definition of the link fault signaling makes it clear that link fault overrides LPI.

Cl **81**   *SC* **81.3a**   *P* **76**   *L* **35**   # 365
Anslow, Pete   Ciena

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

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

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

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

Cl **81**
SC **81.3a**

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Cl **81**   *SC* **81.3a**   *P* **76**   *L* **35**   # 330

Nicholl, Gary   Cisco

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

"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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change: "an assertion of LP_IDLE.request" to "an assertion of Remote Fault or
LP_IDLE.request"

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

D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

ACCEPT.

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

D'Ambrosia, John   Dell

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

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."

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.1.3**   *P* **80**   *L* **27**   # 188

Slavick, Jeff   Avago Technologies

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

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.

Response   *Response Status* **C**

REJECT.

This was addressed by comment #337 on draft 1.1.

Although the comment is correct, the consolidation of the 2 notes may be more easily
achieved during the revision.

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

Cl **82**
SC **82.1.3**

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Cl **82**   *SC* **82.1.4**   *P* **80**   *L* **36**   # 328
Nicholl, Gary   Cisco

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

"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.

Response   *Response Status* **C**

REJECT.

This sentence describes the simple fact that the PCS may or may not be connected directly to the FEC. The existence, or otherwise of a 4-lane CAUI would make no difference to the sense of this section.

Cl **82**   *SC* **82.2.18.2**   *P* **87**   *L* **50**   # 104
Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

Cl **82**   *SC* **82.2.18.2**   *P* **87**   *L* **9**   # 103
Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Note: If EEE has not been negotiated or if the PCS that does not support EEE vectors containing one or more /LI/ control characters are classified as type /E/

Cl **82**   *SC* **82.2.18.2.2**   *P* **86**   *L*   # 37
Barrass, Hugh   Cisco

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

The definition for scr_bypass_enable should be underlined

SuggestedRemedy

Underline it.

Response   *Response Status* **C**

ACCEPT.

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

Cl **82**
SC **82.2.18.2.2**

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

D'Ambrosia, John　　　　　　　　　Dell

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

rx_tq_timer SHALL statement does not have a corresponding PIC statement

SuggestedRemedy

Add PIC

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

There is already an overarching PICS item for timers. Change the wording for this timer to match the others in the set:

"The timer terminal count is set to Twr."

Cl **82**　　*SC* **82.2.18.2.5**　　　　*P* **88**　　　*L* **41**　　　# 201

Slavick, Jeff　　　　　　　　　　Avago Technologies

Comment Type **T**　　*Comment Status* **A**　　　　　*scr bypass*

The state TX_RF_WAKE has been removed.

SuggestedRemedy

Remove the "or TX_RF_WAKE" from the tx_tw_timer definition.

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

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

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Timing values defined in comment #202

Cl **82**　　*SC* **82.2.18.3.1**　　　　*P* **89**　　　*L* **12**　　　# 202

Slavick, Jeff　　　　　　　　　　Avago Technologies

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

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

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the timings from option #2 (slide 16) & the diagram from slide 5. The editor has license to change the form of the diagram to fit the draft without changing the function.

See also comment #39, 201, 283, 284

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

Barrass, Hugh　　　　　　　　　Cisco

Comment Type **T**　　*Comment Status* **A**　　　　　*scr bypass*

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.

Response　　　　　　*Response Status* **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general　　　　　　*Cl* **82**　　　　　Page 24 of 102

COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn　　*SC* **82.2.18.3.1**　　11/15/2012 12:30:54 PM

SORT ORDER: Clause, Subclause, page, line

Cl **82**   *SC* **82.2.18.3.1**   *P* **89**   *L* **20**   # 282
Barrass, Hugh   Cisco

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Timing values are defined in comment #202

Cl **82**   *SC* **82.2.18.3.1**   *P* **97**   *L* **1**   # 284
Barrass, Hugh   Cisco

Comment Type **T**   *Comment Status* **A**   *scr bypass*

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

SuggestedRemedy

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See resolution to comment #202

Cl **82**   *SC* **82.2.3.4**   *P* **81**   *L* **19**   # 6
D'Ambrosia, John   Dell

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

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.

Response   *Response Status* **C**

REJECT.

There are "shall" statements in the base standard for both C5 and C6 in Table 82.7.4.1.

[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* **A**   *Control*

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Note: If EEE has not been negotiated or if the PCS that does not support EEE LPI shall not be transmitted and shall be treated as
an error if received.

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

Cl **82**
SC **82.2.3.4**

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Cl **82**   *SC* **82.2.3.6**   *P* **82**   *L* **52**   # 336
Nicholl, Gary   Cisco

Comment Type **ER**   *Comment Status* **A**   *Bucket*
"/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.

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

Change to "inserted for clock compensation /LI/s may only be inserted following other LPI characters."

Cl **82**   *SC* **82.2.8a**   *P* **83**   *L* **10**   # 17
D'Ambrosia, John   Dell

Comment Type **TR**   *Comment Status* **A**   *Bucket*
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.

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

Add PICS item:

LP-03
RAM insertion
82.2.8a
Insertion of Rapid Alignment Markers meets the requirements of 82.2.8a

---

Cl **82**   *SC* **82.2.8a**   *P* **83**   *L* **2**   # 331
Nicholl, Gary   Cisco

Comment Type **TR**   *Comment Status* **R**   *OTN*
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.

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

See also #251, 249

There is currently no objective for EEE for optical interfaces. It would be premature to make a drastic change based on a possible requirement from another project. If, at some time in the future, an optical project should choose to define EEE it would need to make a number of choices regarding OTN. The operation of EEE Fast Wake might be redefined (in a number of different ways) if such choices were made and the copper Task Force can define the optimal changes to the mechanism.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line
Cl **82**
SC **82.2.8a**
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11/15/2012 12:30:54 PM

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

Trowbridge, Steve   Alcatel-Lucent

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

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.

Response   *Response Status* **C**

REJECT.

See comment #251, 331

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

The choice of the current mechanism for Fast Wake was based on multiple presentations and discussions in the Task Force. It would be premature to make a drastic change based on a possible requirement from another project. If, at some time in the future, an optical project should choose to define EEE it would need to make a number of choices regarding OTN. The operation of EEE Fast Wake might be redefined (in a number of different ways) if such choices were made and the copper Task Force can define the optimal changes to the mechanism.

Note also that RAMs are used to convey state information across sublayer boundaries in the current architecture.

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

Wong, Don   Cisco Systems

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

There should be a foolproof way of distinguishing between the two. Swap the position of the fields M0 - M4; M1 - M5; M2 - M6 for RAMs. The editor will change the diagram and text accordingly (82-9b, 82.2.8a)

Cl **82**   *SC* **82.2.8a**   *P* **83**   *L* **5**   # 200

Slavick, Jeff   Avago Technologies

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

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.

Response   *Response Status* **C**

ACCEPT.

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

Cl **82**
SC **82.2.8a**

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

Wong, Don   Cisco Systems

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

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

Response   *Response Status* **C**

REJECT.

When transitioning to RAMs for normal mode, the LP will stop transmitting and block_lock will fail - which causes an immediate loss of alignment_lock. When transitioning to RAMs in Fast Wake mode, the alignment is checked much more frequently because the RAMs are only 8 or 16 blocks apart - therefore the alignment loss would be 1000 or 2000 times faster then the example. When transitioning back to normal alignment markers, the time to lose alignment is 83.8 msec which is a long time but is the same for all 100G PHYs.

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

Wong, Don   Cisco Systems

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

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

Response   *Response Status* **C**

REJECT.

There is no precise requirement for positioning of the first RAM after transitioning (other than the 4-block boundary rule - 82.2.8a). If such a requirement is necessary it could be added but there has been no justification for such a restriction. Therefore it is left to the system implementer to decide exactly when the terminal count changes, provided that the 8/16 block rule is observed.

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

Sela, Oren   Mellanox Technologies

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

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

SuggestedRemedy

per comment

Response   *Response Status* **C**

ACCEPT.

Cl **83**   *SC* **83.3**   *P* **102**   *L* **50**   # 189

Slavick, Jeff   Avago Technologies

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

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

SuggestedRemedy

Change "two" to "three"

Response   *Response Status* **C**

ACCEPT.

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

Kvist, Bengt   Ericsson AB

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

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

Response   *Response Status* **C**

ACCEPT.

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

Cl **83**
SC **83.3**

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

D'Ambrosia, John　　　　　　　　　Dell

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

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

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

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.

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

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"

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

The editor's note is no longer relevant.

SuggestedRemedy

Delete the editor's note.

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

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.

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Barrass, Hugh　　　　　　　　　Cisco

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

Some instances of CAUI need to be changed

SuggestedRemedy

Change CAUI to XLAUI/CAUI - 2 instances.

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Cl **83A**
SC **83A.3.3.6**

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

Barrass, Hugh Cisco

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

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"

Response *Response Status* **C**

ACCEPT.

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

Barrass, Hugh Cisco

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

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.

Response *Response Status* **C**

ACCEPT.

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

Barrass, Hugh Cisco

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

Some instances of CAUI need to be changed

SuggestedRemedy

Change CAUI to XLAUI/CAUI - 2 instances.

Response *Response Status* **C**

ACCEPT.

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

Barrass, Hugh Cisco

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

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

Response *Response Status* **C**

ACCEPT.

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

Healey, Adam LSI Corporation

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

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.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #292, delete editor's note.

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

Cl **83A**
SC **83A.4**

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

D'Ambrosia, John   Dell

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

PIC statement for LPI, but no corresponding SHALL statement

SuggestedRemedy

add SHALL statement

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The PICS item is for the major capability that is refernced by other PICS items. This does not correspond to a "shall" - compare this to XLAUI.

However, the reference should be to 84.1 as that is the overall description of major capabilities.

Cl **84**   *SC* **84.2**   *P* **106**   *L* **50**   # 203

Slavick, Jeff   Avago Technologies

Comment Type **T**   *Comment Status* **A**   *scr bypass*

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment #106 makes the change in 84.2.

Make the same change in 85.2.

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

Sela, Oren   Mellanox Technologies

Comment Type **T**   *Comment Status* **A**   *scr bypass*

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.

Response   *Response Status* **C**

ACCEPT.

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

Cl **84**
SC **84.2**

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Cl **84**　　*SC* **84.7.2**　　　　　*P* **106**　　　*L* **10**　　　　# 21
D'Ambrosia, John　　　　　　　　　Dell

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

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
.
.

Response　　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the suggested changes to 84.7.2, add 1 PICS item:

FS13 - Transmit function for EEE - Transmitter behavior during ALERT and QUIET

Cl **84**　　*SC* **84.7.2**　　　　　*P* **107**　　　*L* **6**　　　　# 8
D'Ambrosia, John　　　　　　　　　Dell

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

subclause numbering is incorect

SuggestedRemedy

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

Response　　　　　　　　*Response Status* **C**

ACCEPT.

Add paragraph header for 84.7

Cl **84**　　*SC* **84.7.4**　　　　　*P*　　　　*L*　　　　# 22
D'Ambrosia, John　　　　　　　　　Dell

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

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)

Response　　　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Combine to 1 item: signal detect function for EEE.

Cl **84**　　*SC* **84.7.4**　　　　　*P* **107**　　　*L* **21**　　　　# 107
Sela, Oren　　　　　　　　　　　　Mellanox Technologies

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

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

Response　　　　　　　　*Response Status* **C**

ACCEPT.

Cl **84**　　*SC* **84.7.4**　　　　　*P* **107**　　　*L* **31**　　　　# 105
Sela, Oren　　　　　　　　　　　　Mellanox Technologies

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

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,

Response　　　　　　　　*Response Status* **C**

ACCEPT.

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

Cl **84**
SC **84.7.4**

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Cl **84**   *SC* **84.7.4**   *P* **107**   *L* **35**   # 305
Dudek, Mike   QLogic

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence to read:

"When rx_mode = QUIET, SIGNAL_DETECT shall be set to OK within 500ns following the application of a signal at the receiver input that corresponds to an ALERT transmission (see 85.7.2) from the link partner."

See also comment #306

Cl **84**   *SC* **84.7.6**   *P* **106**   *L* **50**   # 23
D'Ambrosia, John   Dell

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

Loopback during blogal_PMD_transmit_disable Shall statement with no corresponding PIC

SuggestedRemedy

add pic to address

Response   *Response Status* **C**

REJECT.

The base standard covers this with item FS9.

Cl **85**   *SC* **85.7.4**   *P* **111**   *L* **19**   # 108
Sela, Oren   Mellanox Technologies

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

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,

Response   *Response Status* **C**

ACCEPT.

Cl **85**   *SC* **85.7.4**   *P* **111**   *L* **31**   # 306
Dudek, Mike   QLogic

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the sentence to read:

"When rx_mode = QUIET, SIGNAL_DETECT shall be set to OK within 500ns following the application of a signal at the receiver input that corresponds to an ALERT transmission (see 85.7.2) from the link partner."

See also comment #305

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

Cl **85**
SC **85.7.4**

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Cl **85**　　*SC* **85.7.6**　　　*P* **110**　　*L* **49**　　# 24
D'Ambrosia, John　　　　　　Dell

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

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

Yes it does. PF12.

Cl **85**　　*SC* **85.7.6**　　　*P* **110**　　*L* **50**　　# 25
D'Ambrosia, John　　　　　　Dell

Comment Type **TR**　*Comment Status* **R**　　　　*PICS*
Output amplitude LPI voltage and Output Amplitude ON voltage PICS
Similar to TC3 and TC4 in Clause 84 PICs) missing

SuggestedRemedy
add PICs

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

See PICS items DS6, DS7

Cl **85**　　*SC* **85.7.6**　　　*P* **111**　　*L* **29**　　# 109
Sela, Oren　　　　　　Mellanox Technologies

Comment Type **T**　*Comment Status* **A**　　　　*Bucket*
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,

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

Cl **91**　　*SC*　　　　　*P* **118**　　*L* **14**　　# 67
Pillai, Velu　　　　　　Broadcom

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

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

The BER monitor is not required by the "Lane block synchronization" or "Alignment lock
and deskew" functions. In the Clause 82 PCS, its function is to inhibit the operation of the
PCS Receive state diagram when the BER is to large to reliably determine synchronization.
It therefore has no function in the Clause 91 RS-FEC sublayer.

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

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

Ofelt, David   Juniper Networks

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

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.

Response   *Response Status* **C**

REJECT.

1. It is not clear what it means to multiplex "at a Reed-Solomon codeword boundary."

2. The requirement is incomplete because it requires that the PMA also identify "codeword boundaries" to correctly demultiplex them for presentation to the RS-FEC sublayer. This is a non-trivial function, as can be seen by the mechanism Clause 91 uses for this purpose, but is omitted from the proposed requirement.

3. The proposed normative requirement applies to a PMA and such requirements should appear in the PMA clause.

4. There is no Physical Layer defined in P802.3bj that requires this feature.

While this feature could extend the applicability of the RS-FEC sublayer to a PHY, yet to be defined, based on less than 4 physical lanes, the suggested remedy is not complete and perhaps misplaced. It seems that the objective of the proposal is to add a new PMA that multiplexes 10-bit Reed-Solomon symbols rather than bits which could be done in the context of that new PHY.

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

Sela, Oren   Mellanox Technologies

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

In bullet c) there is a redundant 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.

Response   *Response Status* **C**

ACCEPT.

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

Sela, Oren   Mellanox Technologies

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

bullet b) - change to tx_xcoded$_{<4:0>}$>=1111

SuggestedRemedy

per comment

Response   *Response Status* **C**

REJECT.

The text is correct as written.

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

Cl **91**
SC **91.5.2.5**
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Cl **91**   *SC* **91.5.2.6**   *P* **120**   *L* **28**   # 69
Pillai, Velu   Broadcom

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

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

Cl **91**   *SC* **91.5.2.6**   *P* **122**   *L* **19**   # 72
Pillai, Velu   Broadcom

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

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

BIP errors are monitored by the alignment marker removal function and the corresponding counters are cited there (see 91.5.2.4).

The paragraph in 91.5.2.6 is an advisory to the user that, while the BIP fields are preserved by the mapping function defined in that subclause, they should NOT be used to monitor errors over the FEC-protected link.

Cl **91**   *SC* **91.5.2.6**   *P* **122**   *L* **28**   # 110
Sela, Oren   Mellanox Technologies

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

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

The reference to 82.2.7a should have been 82.2.8a and pertain to the definition of Rapid Alignment Markers.

tx_lpi_active is set by the Transmit LPI state diagram in Figure 91-10.

Correct the cross-reference to be 82.2.8a.

Cl **91**   *SC* **91.5.2.7**   *P* **123**   *L* **34**   # 374
Cideciyan, Roy   IBM

Comment Type **ER**   *Comment Status* **A**   *bucket*
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"

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

Reduces the risk the someone could interpret it read "holds 110-bit symbol".

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

Cl **91**
SC **91.5.2.7**

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

Cideciyan, Roy   IBM

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

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 ..."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #369.

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

Anslow, Pete   Ciena

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Straw poll (Track 2 ad hoc):
Make error indication mandatory.
Agree: 5
Disagree: 2

Straw poll #3 (Task Force)
Adopt the following proposed response.
Agree: 8+11 = 19
Disagree: 4+2 = 6

Change the third paragraph of 91.5.3.3 as follows:
"The Reed-Solomon decoder shall provide the ability to indicate errors to the PCS sublayer by intentionally corrupting 66-bit block synchronization headers. When FEC_correction_bypass is not supported or is disabled, the decoder shall indicate errors to the PCS and the value of FEC_error_indication_enable has no effect. This feature is enabled by the assertion of the FEC_error_indication_enable variable (see 91.6.2) when FEC_correction_bypass is supported and enabled. [Update cross-reference as necessary.]"

Remove the "FEC error indication ability" variable from Table 91-3 as well as 91.6.4.

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

Cl **91**   Page 37 of 102
SC **91.5.3.3**   11/15/2012 12:30:54 PM

Specify that the default value of FEC_error_indication_enable should be one (error indication is on).

Add the following note to the end of 91.5.3.3:
"NOTE -- The likelihood that errors in a packet will not be detected increases when the error indication function is not enabled. It is the responsibility of the user of this standard to ensure that the PHY is configured to provide the desired mean time to false packet acceptance (MTTFPA)."

Update Clause 45 management and the Clause 91 PICS accordingly.

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

Cideciyan, Roy   IBM

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

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)."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #369.

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

Cideciyan, Roy   IBM

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

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 ..."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #369.

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

Szczepanek, Andre   Inphi

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

"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"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[changed Sublause to 91.5.3.3 for consistent sorting.]

Change the beginning of the first sentence of the last paragraph of 91.5.3.3 to:
"When the error indication function is enabled and the decoder determines that a codeword contains errors (when the bypass correction feature is enabled) or contains errors but was not corrected (when the bypass correction feature is not supported or not enabled)."

See also comment #375.

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

Cl **91**
SC **91.5.3.3**

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

Sela, Oren   Mellanox Technologies

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

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.

Response   *Response Status* **C**

REJECT.

If an implementation were to invalidate the synchronization headers of all 66-bit blocks included in a codeword, the PCS would lose block lock and this would result in an extended loss of data.

The synchronization header error pattern was chosen to ensure no packet could be incorrectly accepted while maintaining block lock.

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

Cideciyan, Roy   IBM

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

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

SuggestedRemedy

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

Response   *Response Status* **C**

ACCEPT.

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

Sela, Oren   Mellanox Technologies

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

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

SuggestedRemedy

per comment

Response   *Response Status* **C**

ACCEPT.

See comment #379.

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

Cideciyan, Roy   IBM

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

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"

Response   *Response Status* **C**

ACCEPT.

Cl **91**   *SC* **91.5.3.3**   *P* **126**   *L* **25**   # 68

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT.

[Changed Subcl from 91.5.3.4 to 91.5.3.3.]

See comment #379.

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

Cl **91**
SC **91.5.3.3**

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

Szczepanek, Andre   Inphi

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

"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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[changed Sublause to 91.5.3.3 for consistent sorting.]

See comment #112.

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

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the last sentence of the second paragraph of 91.5.3.3 to:

"The RS-FEC sublayer shall also be capable of indicating when an errored codeword was not corrected."

Cl **91**   *SC* **91.5.3.4**   *P* **126**   *L* **38**   # 190

Slavick, Jeff   Avago Technologies

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

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"

Response   *Response Status* **C**

ACCEPT.

[Changed Subcl to 91.5.3.4 for consistent sorting.]

In addition, change Page 126, Line 36 to:
"...result in changes in the relative position."

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

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT.

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

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT.

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

Cl **91**
SC **91.5.3.5**

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Cl **91**   *SC* **91.5.3.5**   *P* **127**   *L* **6**   # 74
Pillai, Velu   Broadcom

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

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

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

Cl **91**   *SC* **91.5.4.2**   *P* **130**   *L* **36**   # 115
Sela, Oren   Mellanox Technologies

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

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
posssion 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

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

See comment #207.

Cl **91**   *SC* **91.5.4.2.1**   *P* **130**   *L* **16**   # 205
Slavick, Jeff   Avago Technologies

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

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

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

[Changed Subcl to 91.5.4.2.1 for more consistent sorting.]

Cl **91**   *SC* **91.5.4.2.1**   *P* **130**   *L* **36**   # 207
Slavick, Jeff   Avago Technologies

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

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."

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

[Changed Subcl to 91.5.4.2.1 for more consistent sorting.]

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

Cl **91**   Page 41 of 102
SC **91.5.4.2.1**   11/15/2012 12:30:54 PM

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

Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT.

Cl **91**   *SC* **91.5.4.2.1**   *P* **131**   *L* **50**   # 206

Slavick, Jeff   Avago Technologies

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Subcl to 91.5.4.2.1 for more consistent sorting.]

Strictly speaking, ramps_valid tests for valid Rapid Alignment Marker payloads as the header bits are discarded in the mapping process.

Change the end of the definition of ram_valid to:
"...are valid Rapid Alignment Markers and is set to false otherwise."

See #210 for the definition of ramps_valid.

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

Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the definition of ram_valid to:
"Boolean variable that is set to true when the 66-bit blocks concurrently received on at least 2 PCS lanes are valid Rapid Alignment Markers with identical values in the Count Down fields and is set to false otherwise."

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

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Note that the lane mapping assignment is added by comment #183.

Change the definition of fec_alignment_valid to:
"Boolean variable that is set to true if all FEC lanes are aligned. FEC lanes are considered to be aligned when amps_lock<x> is true for all x, each FEC lane is locked to a unique alignment marker payload sequence (see 91.5.2.6), and the FEC lanes are deskewed. Otherwise, this variable is set to false."

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

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

Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

If correction is bypassed, it seems likely that the error probability is sufficiently low that an error in the Rapid Alignment Marker payload sequence would be very unlikely. If correction is not bypassed, the corrected Rapid Alignment Marker payload sequences are available to be examined with a low likelihood of error.

Given these assumptions, change the definition of ramps_valid to:
"Boolean variable that is set to true if the received 64-bit blocks concurrently received on at least 2 FEC lanes are valid Rapid Alignment Marker payloads with identical values in the Count Down fields and is set to false otherwise."

Cl **91**   *SC* **91.5.4.2.1**   *P* **133**   *L* **17**   # 208

Slavick, Jeff   Avago Technologies

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

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

SuggestedRemedy

see slavick_3bj_01_1112.pdf

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Subcl to 91.5.4.2.1 for more consistent sorting.]

Specify the value of tx_tq_timer to be between 1.8 and 2 ms.
Specify the value of rx_tq_timer to be between 2 and 2.8 ms.

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

Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #208.

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

Cl **91**
SC **91.5.4.2.3**

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Cl **91**   *SC* **91.5.4.3**   *P* **136**   *L* **34**   # 114

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Subcl from 91-10 to 91.5.4.3 for consistent sorting. Added Line 34.]

It is true that a loss of alignment in the "fast wake" mode should should be considered a fault and not a transition to a quiet line state.

Define new variable "fec_lpi_fw" as follows:
"Boolean variable that controls the behavior of the Transmit LPI and Receive LPI state diagrams. This variable is set to true when the local PCS is configured to use the Fast Wake mechanism and set to false otherwise."

Change the transition condition from TX_TEST_NEXT to TX_QUIET to:
!fec_lpi_fw * !rx_align_status

Add a transition from TX_TEST_NEXT to TX_FAULT with the condition:
fec_lpi_fw * !rx_align_status

Change the transition condition from RX_TEST_NEXT to RX_QUIET to:
!fec_lpi_fw * !fec_align_status

Add a transition from RX_TEST_NEXT to RX_FAULT with the condition:
fec_lpi_fw * !fec_align_status

Cl **91**   *SC* **91.5.4.3**   *P* **136**   *L* **35**   # 204

Slavick, Jeff   Avago Technologies

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Subcl to 91.5.4.3 for more consistent sorting.]

Define the following variables:

ram_valid_prev
Boolean variable that holds the value of ram_valid from the previous expected Rapid Alignment Marker position.

ramps_valid_prev
Boolean variable that holds that value of ramps_valid from the previous expected Rapid Alignment Marker payload position.

Add the following assignments:
In TX_LPI, assign "ram_valid_prev <= ram_valid"
In RX_LPI, assign "ramps_valid_prev <= ramps_valid"

Change the state transition conditions in Figure 91-10 and 91-11 as follows.

From TX_TEST_NEXT to TX_LPI:
rx_align_status * ((!ram_valid * ram_valid_prev) + (ram_valid * tx_down_count != 1))

From TX_TEST_NEXT to TX_ACTIVE:
rx_align_status * ((!ram_valid * !ram_valid_prev) + (ram_valid * tx_down_count=1))

From TX_QUIET to TX_FAULT:
tx_quiet_timer_done

From RX_TEST_NEXT to RX_LPI:
fec_align_status * ((!ramps_valid * ramps_valid_prev) + (ramps_valid * rx_down_count != 1))

From RX_TEST_NEXT to RX_ACTIVE:
fec_align_status * ((!ramps_valid * !ramps_valid_prev) + (ramps_valid * rx_down_count=1))

From RX_QUIET to RX_FAULT:

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **91**   Page 44 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **91.5.4.3**   11/15/2012 12:30:54 PM
SORT ORDER: Clause, Subclause, page, line

rx_quiet_timer_done

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

Gustlin, Mark   Xilinx

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

When the RS-FEC sublayer is connected to the PCS via CAUI, the PCS lane mapping for the RS-FEC transmit function would also be of interest.

Add PCS "Lane x mapping" registers similar to Clause 82, Table 82-7 to Table 91-3. The variables lane_mapping<x> are assigned by Alignment marker lock state diagram (Figure 82-11) which is incorporated into Clause 91 by reference.

Add FEC "Lane x mapping" registers to Table 91-3. Add "fec_lane_mapping<x> <= fec_lane" assignment to the "2_GOOD" state of the FEC synchronization state diagram Figure 91-8. Define fec_lane to be an fec_lane number (0 to 3) that is derived from the values of first_pcsl and/or current_pcsl per the mapping defined in 91.5.2.6.

Add corresponding register space to Clause 45.

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

Cideciyan, Roy   IBM

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #369.

| *Cl* **91** | *SC* **91.6.3** | *P* **138** | *L* **47** | # 191 |

Slavick, Jeff   Avago Technologies

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

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

Response   *Response Status* **C**

ACCEPT.

[Changed Subcl to 91.6.3 for more consistent sorting.]

Note changes to Table 91-3 and 91.6.4 in addition to 91.6.3.

FEC_error_indication_ability may be removed per comment #TBD which would overtake that portion of this response.

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

Cideciyan, Roy   IBM

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #369.

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

Cl **91**
SC **91.6.4**

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Cl **91**　　　*SC* **91.7.3**　　　　　*P* **141**　　　*L* **5**　　　　# 26
D'Ambrosia, John　　　　　　　　Dell

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

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

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

The RS-FEC sublayer implements a different Reed-Solomon code depending on whether it is used to form a complete 100GBASE-KR4 PHY or a complete 100GBASE-KP4 PHY. These options are defined in order to specify that conditional requirement (see TF9, TF10, RF3, and RF4).

Change Value/Comment for *KP4 to be "Used to form a complete 100GBASE-KP4 PHY".

Cl **91**　　　*SC* **91.7.4.1**　　　　*P* **142**　　　*L* **31**　　　# 9
D'Ambrosia, John　　　　　　　　Dell

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

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

SuggestedRemedy

Add 100GBASE-CR4

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

In 91.7.3, change item *KR4 as follows.
Feature: "100GBASE-CR4 or 100GBASE-KR4"
Value/Comment: "Used to form complete 100GBASE-CR4 or 100GBASE-KR4 PHY"

Change TF9 Feature to "Reed-Solomon encoder for 100GBASE-CR4 or 100GBASE-KR4"

Change RF3 Feature to "Reed-Solomon decoder for 100GBASE-CR4 ot 100GBASE-KR4"

Cl **91**　　　*SC* **91.7.4.2**　　　　*P* **143**　　　*L* **18**　　　# 4
Szczepanek, Andre　　　　　　　Inphi

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

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

SuggestedRemedy

Delete Item RF5

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

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

Change RF5 Value/Comment to:
"Capable of indicating when a codeword was not corrected."

Cl **91**　　　*SC* **91.7.4.2**　　　　*P* **143**　　　*L* **21**　　　# 5
Szczepanek, Andre　　　　　　　Inphi

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

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

SuggestedRemedy

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

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Change RF6 Value/Comment to:
"When enabled, corrupts 66-bit block synchronization headers for uncorrected errored codewords (or errored codewords when correction is bypassed)"

Cl **91**　　　*SC* **91.7.4.2**　　　　*P* **143**　　　*L* **26**　　　# 10
D'Ambrosia, John　　　　　　　　Dell

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

subclause reference for RF7 wrong

SuggestedRemedy

change to 91.5.3.4

Response　　　　　　*Response Status* **C**

ACCEPT.

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

Cl **91**
SC **91.7.4.2**

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

D'Ambrosia, John   Dell

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

Feature name for SD5 is incorrect

SuggestedRemedy

change to Rx LPI process

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to "Receive LPI process".

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

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

REJECT.

This example is sufficient for the user to verify the correct bit order and implementation of the Reed-Solomon encoder.

Figure 91-3 was provided to illustrate the construction of 257-bit blocks for different mixtures of control and data words.

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

Pillai, Velu   Broadcom

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

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

Response   *Response Status* **C**

REJECT.

The annex clearly states the bit order for the contents of the tables and refers the reader to 91.5.2.7 which defines the how the bits are to be organized and ordered for processing by the Reed-Solomon encoder.

Correct implementation of the rules of 91.5.2.7 would yield the codewords included in Annex 91A.

No additional statements appear to be necessary.

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

Bugg, Mark   Molex

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

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)

Response   *Response Status* **C**

ACCEPT.

Refer to bugg_3bj_01_1112.pdf.

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

Cl **92**
SC **10**

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

Shanbhag, Megha   TE Connectivity

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

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...."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. See comment #322.

Cl **92**   *SC* **11.1.1**   *P* **172**   *L* **36**   # 220

Ghiasi, Ali   Broadcom

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

Please multiply the factor 2 in Eq 92-23

SuggestedRemedy

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response comment #218.

Cl **92**   *SC* **11.1.2**   *P* **172**   *L* **36**   # 218

Ghiasi, Ali   Broadcom

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

Please multiply the factor 2 in front of the equation

SuggestedRemedy

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

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy.

Cl **92**   *SC* **11.2**   *P* **173**   *L* **7**   # 221

Ghiasi, Ali   Broadcom

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

Please multiply factor 1.25

SuggestedRemedy

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

Response   *Response Status* **C**

ACCEPT.

Equation (92-24) multiply factor 1.25
-0.00125+ 0.12sqrt(f)+0.0575f

Cl **92**   *SC* **11.3.1**   *P* **174**   *L* **7**   # 228

Ghiasi, Ali   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response comment #62.

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

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

Cl **92**
SC **11.3.1**

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

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

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

Response   *Response Status* **C**

REJECT.

The current common-mode return loss limit provides some measure of protection and certainly more than no limit at all.

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

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #63.

Cl **92**   *SC* **11.32**   *P* **174**   *L* **3**   # 224
Ghiasi, Ali   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment refers to Equation 92.27.

Use suggested remedy with the exception that the upper limit of the frequency range is 25 GHz per comment #256.

Cl **92**   *SC* **12.1**   *P* **177**   *L* **17**   # 254
Shanbhag, Megha   TE Connectivity

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

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.

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**   *SC* **12.1.1**   *P* **178**   *L* **24**   # 255
Shanbhag, Megha   TE Connectivity

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

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

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92**   Page 49 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **12.1.1**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92**   *SC* **7.12**   *P* **151**   *L* **10**   # 185
Ran, Adee   Intel

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

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.

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

Implement slides 7 and 8 of lusted_3bj_02_1112 in Clause 92 and Clause 93.

Cl **92**   *SC* **8.3.2**   *P* **153**   *L* **33**   # 256
Shanbhag, Megha   TE Connectivity

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

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

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

Per dudek_3bj_02_1112, the test fixture should be specified from 0.01 to 25 GHz.

However, it is the consensus of the Task Force that the transmitter, receiver, and cable assembly need only be specified from 0.01 GHz to 3/4 of the signaling rate, or approximately 19 GHz.

Cable assembly manufactures have resisted extending the frequency range beyond what's absolutely necessary so not to impose unecessary measurement requirements both equipment and the time to perform measurments. Many VNAs used by cable assembly manufacturers are specified to 20 GHz.

If cable assemblies are only specified to 19 GHz, the transmitters and receivers do not need to be specified beyond this range.

Therefore.
a) Change the frequency range for test fixture specifications to 0.01 to 25 GHz.
b) Change the frequency range for transmitter, cable assembly, and receiver specifications to 0.01 to 19 GHz.

Cl **92**   *SC* **8.3.5**   *P* **157**   *L* **45**   # 217
Ghiasi, Ali   Broadcom

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

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

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

Updated equation will be
IL= 0.0807 + 0.57781 sqrt(f) + 0.6090*f   0.01<=f<14 GHz
IL = -19.368 + 2.152 * f for 14 <=f <=19 GHz

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

Cl **92**
SC **8.3.5**

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Cl **92**   *SC* **8.3.6**   *P* **157**   *L* **35**   # 184
Ran, Adee   Intel

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

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".

Response   *Response Status* **C**

REJECT.

The first sentence of 92.8.3.6 states that "even-odd jitter is measured from the two symbols in the middle of a sequence of no fewer than 8 symbols of alternating polarity." By definition, one of those pulses is in an even position while the other is in an odd position.

The suggested remedy is incomplete in that the definition of mean width of "even-numbered pulses" and "odd-numbered pulses" when considering a PRBS pattern with variable run length is unclear, i.e. what constitutes a "pulse".

Cl **92**   *SC* **8.4.1**   *P* **159**   *L* **29**   # 257
Shanbhag, Megha   TE Connectivity

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

In equation (92-5) and (92-6) maximum frequency is defined as 25 GHz. 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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response comment #256.

Cl **92**   *SC* **8.4.1**   *P* **160**   *L* **28**   # 219
Ghiasi, Ali   Broadcom

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

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

Response   *Response Status* **C**

REJECT.

A minimum frequency of 0.01 GHz was chosen for Clause 85 after considerable debate. The commenter offers no justification as to why that decision should effectively be overturned for Clause 92.

Cl **92**   *SC* **8.4.2**   *P* **159**   *L* **42**   # 216
Ghiasi, Ali   Broadcom

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the following equation (changed return loss to a positive number, set frequency range to 0.01 (per comment #219) to 25 GHz.

RL >= 25-(20/25.78)*f, 0.01 <= f < 12.89
RL >= 15, 12.89 <= f <= 19

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

Cl **92**
SC **8.4.2**

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Cl **92**   *SC* **92.1**   *P* **144**   *L* **42**   # 235
Arumugham, Vinu   Cisco

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

"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.

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

Delete 92.8.4.4.

Cl **92**   *SC* **92.1**   *P* **144**   *L* **46**   # 386
Dawe, Piers   IPtronics

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

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.

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

The project objective is to support a BER of better than or equal to 1E-12 at the MAC/PLS service interface which yields the frame error ratio equivalent defined per brown_3bj_02_0912 and cideciyan_3bj_01a_0912.

The adopted baseline proposal (gustlin_01_0312, slide 6) asserts that an output BER of 1E-12 could be achieved with an uncorrected input BER of 2.34E-5 using the RS(528,514) code. The 1E-5 is a conservative approximation to this value.

It is not necessary to include a section that derives these values (there are a number of parameters in the standard where the derivation is present only in the contributions that propose them).

Cl **92**   *SC* **92.1**   *P* **164**   *L* **1**   # 400
Dawe, Piers   IPtronics

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

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.

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

Per comment #64, COM is recommended to be greater than or equal to 3 dB for the TP0 to TP5 channel (Annex 92A).

An analysis of the implications of this requirement on host and cable assembly specifications has not been provided but is necessary to justify changes to those specifcations.

Cl **92**   *SC* **92.10**   *P* **164**   *L* **1**   # 404
Dawe, Piers   IPtronics

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

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.

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

Suggested remedy includes no justification for the proposed specifications or recommendations for specific changes to the draft.

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

Cl **92**
SC **92.10**

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Cl **92**   *SC* **92.10**   *P* **164**   *L* **9**   # 313

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT.

Cl **92**   *SC* **92.10**   *P* **167**   *L* **4648**   # 166

Bugg, Mark   Molex

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

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
$4.1 <= f <= 20$

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #256.

Cl **92**   *SC* **92.10.2**   *P* **165**   *L* **33**   # 314

Dudek, Mike   QLogic

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

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 fint 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%.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See diminico_3bj_01a_1112.pdf.

In Table 92-10
Change a2 from 0.326 to 0.70
Change a4 from 0.0185 to 0.02

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

Cl **92**
SC **92.10.2**

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Cl **92**　　*SC* **92.10.2**　　　　*P* **165**　　*L* **33**　　# 322
Dudek, Mike　　　　　　　QLogic

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

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"

Response　　　　　　*Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the second paragraph starting "The maximum allowed.

Replace with

"The measured insertion loss of the cable shall greater than or equal to the minimum insertion loss given in equation (92-X)

Equation (92-X) ILcamin =0.7*sqrt(f)+0.3*f+0.01*(f^2)

Delete last three rows of Table 92-10
and note (b)
In 92A.5 P283 L22
Replace..is the minimum 0.5
m cable assembly insertion loss using
Equation (92-8)..

With.is the minimum 0.5
m cable assembly insertion loss using
Equation (92-X). Where (92-X) is the minimum cable assembly loss above

---

Cl **92**　　*SC* **92.10.2**　　　　*P* **166**　　*L* **30**　　# 315
Dudek, Mike　　　　　　　QLogic

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

The "Meets equation constraints" is on the wrong side of the curve.

SuggestedRemedy

Move it below the curve.

Response　　　　　　*Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**　　*SC* **92.10.2**　　　　*P* **166**　　*L* **7**　　# 299
Dudek, Mike　　　　　　　QLogic

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

letter got lost

SuggestedRemedy

In Figure 92-8 change "eets" to "meets"

Response　　　　　　*Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**　　*SC* **92.10.4**　　　　*P* **168**　　*L* **9**　　# 408
Dawe, Piers　　　　　　　IPtronics

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

Response　　　　　　*Response Status* **C**

REJECT.

Note that the host trace minimum insertion loss (92A-2) is consistent with the cable assembly test fixture insertion loss. In other words, the insertion loss included in the measurement is also expected to be present in an actual system.

See comment #165.

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

Cl **92**
SC **92.10.4**

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Cl **92**   *SC* **92.10.5**   *P* **168**   *L* **51**   # 316

Dudek, Mike   QLogic

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

There are not 9 lanes in 100GBASE-CR4

SuggestedRemedy

Delete "or nine"

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**   *SC* **92.10.7**   *P* **170**   *L* **29**   # 317

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**   *SC* **92.11**   *P* **171**   *L* **32**   # 318

Dudek, Mike   QLogic

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

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."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change: The requirements in this section are not MDI specifications for an implemented design.
To: The requirements in this section are not MDI connector specifications for an implemented design.

Cl **92**   *SC* **92.11**   *P* **173**   *L* **4**   # 319

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #63 (ICN TBD) and #256 (frequency range).

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

Cl **92**
SC **92.11**

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Cl **92**   *SC* **92.11.3.1**   *P*   *L* **1**   # 62

DiMinico, Christopher   MC Communications

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See diminico_3bj_01a_1112.pdf.

To be consistent with OIF CEI-28G-VSR, set the limits as follows.

ILMTFmax = 0.12+0.475*sqrt(f)+0.221*f for 0.01 <= f <= 14 GHz
ILMTFmax = -4.25+0.66*f for 14 < f <= 25 GHz

ILMTFmin = 0.08*sqrt(f)+0.2*f for 0.01 <= f <= 25 GHz

Cl **92**   *SC* **92.11.3.5**   *P* **177**   *L* **35**   # 63

DiMinico, Christopher   MC Communications

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

To be consistent with OIF CEI-28G-VSR, specify the mated text fixture ICN per
diminico_3bj_01a_1112 slide 12.

Add a sentence similar to the following to 92.11.3 (editorial license):
"The mated test fixtures shall be verified in both directions (exception being differential
insertion loss can be verified in either direction)."

Update PICS accordingly.

Cl **92**   *SC* **92.11.3.5**   *P* **177**   *L* **39-4**   # 326

Li, Mike   Altera

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

parameters are still TBDs

SuggestedRemedy

values for the TBDs will be provided

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #63.

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

Cl **92**
SC **92.11.3.5**

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Cl **92**   *SC* **92.12.1**   *P* **177**   *L* **17**   # 33
D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The normative requirements for each option (Style 1 and Style 2) are captured in 92.11.1.1 and 92.11.1.2 respectively.

Change the first paragraph of 92.12.1 as follows.

"Connectors meeting the requirements of 92.11.1.1 (Style-1) or 92.11.1.2 (Style-2) are used as the mechanical interface between the PMD of 92.7 and the cable assembly of 92.10. The plug connector is used on the cable assembly and the receptacle is used on the PHY. Style-1 or Style-2 connectors may be used as the MDI interface."

Cl **92**   *SC* **92.12.1.1**   *P* **178**   *L* **24**   # 1
Sommers, Scott   Molex

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #255.

Cl **92**   *SC* **92.12.1.1**   *P* **178**   *L* **25**   # 405
Dawe, Piers   IPtronics

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

No need for obfuscatory names.

SuggestedRemedy

Rename "Style-1" as QSFP, "Style-2" as CFP4.

Response   *Response Status* **C**

REJECT.

CFP4 is an MSA HW Specification. Style used in base document for 802.3ba.

Cl **92**   *SC* **92.13**   *P* **183**   *L* **1**   # 371
Kvist, Bengt   Ericsson AB

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

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......

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

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

Correct redundant clauses.

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

Cl **92**
SC **92.13**

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Cl **92**   *SC* **92.13.4.3**   *P* **187**   *L* **3**   # 29
D'Ambrosia, John   Dell

Comment Type **TR**   *Comment Status* **A**   *bucket*
value / comment field does not match text
TC12 value: 0.52 x vf
Text value: 0.5 x vf

SuggestedRemedy
make equations consistent

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

See response comment #321

Cl **92**   *SC* **92.13.4.4**   *P* **188**   *L* **12**   # 30
D'Ambrosia, John   Dell

Comment Type **TR**   *Comment Status* **A**   *bucket*
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.

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

Use suggested remedy

Cl **92**   *SC* **92.13.4.4**   *P* **188**   *L* **20**   # 31
D'Ambrosia, John   Dell

Comment Type **TR**   *Comment Status* **A**   *bucket*
Item RC7 and RC8 refer to the wrong subclause

SuggestedRemedy
change subclause reference to 92.8.4.3.4

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

Use suggested remedy

Cl **92**   *SC* **92.5**   *P* **146**   *L* **1**   # 60
DiMinico, Christopher   MC Communications

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

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

Use suggested remedy

Cl **92**   *SC* **92.7.1**   *P* **148**   *L* **43**   # 387
Dawe, Piers   IPtronics

Comment Type **T**   *Comment Status* **A**   *bucket*
maximum insertion loss

SuggestedRemedy
Change to recommended maximum insertion loss, as D1.1 comment 451.

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

Use suggested remedy.

Comment #451 correctly implemented.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92**   Page 58 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **92.7.1**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92**   *SC* **92.7.12**   *P* **151**   *L* **17**   # 28

D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

ACCEPT.

Add PICS to 92.13.4.2 Management functions.

Cl **92**   *SC* **92.7.12**   *P* **151**   *L* **6**   # 27

D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

ACCEPT.

Include training frame structure PICS to 92.13.4.1 PMD functional specifications

---

Cl **92**   *SC* **92.7.4**   *P* **150**   *L* **22**   # 116

Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Define PMD functional and electrical behavior per healey_3bj_02a_1112 with editorial
license to correct cross-references and other Clause 92 specific details as appropriate.

Cl **92**   *SC* **92.7.7**   *P* **151**   *L* **4**   # 298

Dudek, Mike   QLogic

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

The sentence is incomplete

SuggestedRemedy

Add "to be disabled" on the end of the sentence.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add: to be selectively disabled....to end of sentence
The PMD lane-by-lane transmit disable function is optional and allows the electrical
transmitter in each lane.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92**   Page 59 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **92.7.7**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92**   *SC* **92.7.7**   *P* **151**   *L* **4**   # 370
Kvist, Bengt   Ericsson AB

Comment Type **T**   *Comment Status* **A**   *bucket*
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.

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

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

See comment#298

Cl **92**   *SC* **92.8.1**   *P* **152**   *L* **25**   # 307
Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *bucket*
The AC coupling is in the cable not at the receiver.

SuggestedRemedy
Replace "at the receiver" with "within the cable"

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

Change: coupling at the receiver
To: coupling within the plug connectors

Cl **92**   *SC* **92.8.3**   *P* **153**   *L* **15**   # 398
Dawe, Piers   IPtronics

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

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

Suggested remedy proposal lacking sufficient recommended changes to implement in the
draft.

This is a re-statement of D1.1 comment#445 and no new information has been provided.

Cl **92**   *SC* **92.8.3**   *P* **153**   *L* **21**   # 321
Dudek, Mike   QLogic

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

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

Use suggested remedy.

Correct value is 0.50 [per D1.1 comment #283]

Cl **92**   *SC* **92.8.3.4.1**   *P* **156**   *L* **36**   # 239
Arumugham, Vinu   Cisco

Comment Type **T**   *Comment Status* **A**   *bucket*
0.5xVf does not match value in Table 92-5

SuggestedRemedy
Remove one.

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

See comment #321.

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

Cl **92**
SC **92.8.3.4.1**

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11/15/2012 12:30:55 PM

Cl **92**   *SC* **92.8.3.5**   *P* **157**   *L* **28**   # 390

Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

REJECT.

An analysis of the implications host insertion loss deviation to channel performance has not been provided but is necessary to justify the addition of such a specifcation.

No guidance on an ILD limit or "other metrics" has been provided.

Cl **92**   *SC* **92.8.3.5**   *P* **157**   *L* **32**   # 308

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT.

See also comment #323.

Cl **92**   *SC* **92.8.3.5**   *P* **158**   *L* **6**   # 240

Arumugham, Vinu   Cisco

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

Figure 92-5 Y axis reads ... Max and Min.

SuggestedRemedy

Should be only Max.

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**   *SC* **92.8.3.6**   *P* **158**   *L* **28**   # 399

Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See dawe_3bj_01_1112.pdf.

The proposal includes an alternate method to measure Total Jitter using extrapolation based on the dual-Dirac mathematical model. It was the consensus of the Task Force that a single measurement method (direct measurement per the current draft) should be defined unless the two methods could be shown to produce identical results.

Grant the editor license to implement the following editorial changes.

1. Add subclause headings (92.8.3.6.x) for even-odd jitter, total jitter, data dependent jitter, and effective random jitter.

2. In the definition of even-odd jitter, change references to "symbols" to "bits".

3. In the definition of data dependent jitter, change the first sentence as follows:
"Data dependent jitter (DDJ) is defined in 85.8.3.8. The measurement filter and bandwidth defined in 92.8.3 is used in place of the bandwidth defined in 85.8.3.8."

4. Move the paragraph at line 29 of page 159 to be directly under 92.8.3.6, in a form similar to what is given below:
"Four components of the transmitter output jitter defined in this subclause: even-odd jitter, total jitter (TJ), data dependent jitter, and effective random jitter (RJ)."

"The effect of a single-pole high-pass filter with a 3 dB frequency of 10 MHz is applied to the jitter. The test pattern for TJ and RJ measurements is either PRBS31 (see 83.5.10) or scrambled idle (see 82.2.10). The voltage threshold for the measurement of BER or crossing times is the mid-point (0 V) of the AC-coupled differential signal."

5. In 93.8.1.8, change "Total jitter is characterized." to "Total jitter is defined in 92.8.3.6.x." [cross-reference to be inserted]

6. In 93.8.1.8, change "The effective random jitter is characterized." to "The effective random jitter is defined in 92.8.3.6.x." [cross-reference to inserted]

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

Cl **92**
SC **92.8.3.6**

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Cl **92**   *SC* **92.8.3.6**   *P* **159**   *L* **12**   # 397

Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The definition of J2 and J9 jitter is defined to be the interval that includes all but 1E-2 and 1E-9 of the jitter distribution respectively (see 86.8.3.3.1 and 86.8.3.3.2).

To be consistent with this definition, change item a) to:
"Measure the jitter Jn which is defined to be the interval that includes all but 10^{-n} of the jitter distribution. If measured by plotting BER vs. decision time, it is the time interval between the two points with a BER of $10^{-n}/4$. Measure two values: J9 and J5."

For item b), identify the correct Qn values that correspond to J9 and J5 [editor to compute].

For item c), change the equation to (Q9*J5-Q5*J9)/(Q9-Q5).

Cl **92**   *SC* **92.8.3.6**   *P* **159**   *L* **2**   # 309

Dudek, Mike   QLogic

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

The editor's note is no longer required

SuggestedRemedy

Delete the editor's note.

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

P158 L50- Total jitter excluding data dependent jitter is the difference between TJ and DDJ.

Cl **92**   *SC* **92.8.3.7**   *P* **159**   *L* **36**   # 383

Dawe, Piers   IPtronics

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

Put the subclauses in the same order as Table 92-5 (or vice versa).

SuggestedRemedy

Also in 92.8.4.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Align table and subclause ordering Table 92-5 and Table 92-7

Cl **92**   *SC* **92.8.4**   *P* **159**   *L* **40**   # 241

Arumugham, Vinu   Cisco

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

No sinusoidal jitter mask is specified.

SuggestedRemedy

Add sinusoidal jitter mask spec. like Figure 86A-10.

Response   *Response Status* **C**

REJECT.

See comment #242.

Cl **92**   *SC* **92.8.4.3**   *P* **161**   *L* **12**   # 311

Dudek, Mike   QLogic

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

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.)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change row "Maximum BER" to "Maximum BER before FEC". Change Test 1 and Test 2 values to 1E-5.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92**   Page 62 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **92.8.4.3**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92**   *SC* **92.8.4.3.1**   *P* **161**   *L* **42**   # 391

Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

REJECT.

It is assumed that the commenter is referring to calibration of the input to the "CR4 cable assembly."

Given that, the test channel calibration in 92.8.4.3.3 is based on the calibration of pattern generator parameters at the defined calibration point.

This test channel is intended to represent the channel between TP0 and TP4. Calibration at the output of the TP2 test fixture would require the test channel calibration to be revisited.

The calibration is complete as specified (and the same as done in Clause 85). The proposed improvements suggested by the commenter are incomplete until the complete calibration process is taken into account.

Cl **92**   *SC* **92.8.4.3.1**   *P* **161**   *L* **43**   # 243

Arumugham, Vinu   Cisco

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

Figure 92-6 has PCG.

SuggestedRemedy

Change to PGC.

Response   *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92**   *SC* **92.8.4.3.4**   *P* **162**   *L* **46**   # 61

DiMinico, Christopher   MC Communications

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

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=
$da4=6.05 \cdot 10^{-5} \cdot (tr2^2-19^2)$
tr in ps

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace the 2nd sentence of the first paragraph with the following:
"At the start of transmitter training, the pattern generator output amplitude shall be 800 mV peak-to-peak differential when measured on an alternating one zero pattern. The output amplitude, measured on an alternating one zero pattern, is not permitted to exceed 800 mV peak-to-peak differential during transmitter training."

Assign transition time and da4 definition per suggested remedy.

See also #403 and #310.

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

Cl **92**
SC **92.8.4.3.4**

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Cl **92**   *SC* **92.8.4.3.4**   *P* **162**   *L* **48**   # 310

Dudek, Mike   QLogic

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

As part of transmitter training, the receiver may request a setting that yields a transmitter amplitude less than 800 mV.

See comment #61.

Cl **92**   *SC* **92.8.4.3.4**   *P* **162**   *L* **48**   # 403

Dawe, Piers   IPtronics

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

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".

Response   *Response Status* **C**

ACCEPT.

See comment #61.

Cl **92**   *SC* **92.8.4.4**   *P* **162**   *L* **21**   # 32

D'Ambrosia, John   Dell

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add PICS to 92.13.4.4 Receiver specifications.RSx Bit Error Ratio 92.8.4.4 BER of better than 10^-12

Cl **92**   *SC* **92.8.4.4**   *P* **163**   *L* **21**   # 312

Dudek, Mike   QLogic

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

We should specify the error rate before FEC

SuggestedRemedy

Change "10e-12" to "10e-5 before FEC"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events, see comment #235.

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

Cl **92**
SC **92.8.4.4**

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Cl **92**   *SC* **92-4**   *P***146**   *L***44**   # 59
DiMinico, Christopher   MC Communications

Comment Type **TR**   *Comment Status* **A**
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).

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

Use suggested remedy, except 2048 bit times is 4 pause quanta.

Also, correct Clause 93.

Cl **92A**   *SC*   *P***281**   *L***6**   # 320
Dudek, Mike   QLogic

Comment Type **T**   *Comment Status* **A**   *bucket*
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.

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

Use suggested remedy

Cl **92A**   *SC* **3**   *P***281**   *L***36**   # 222
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
Equation 92A-1 is not consistant with the TP0 to TP2 loss where coeffecient 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

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

There was no presentation ("ghiasi_01_1112") submitted to support this comment.

Equation (92A-1) is the PCB insertion loss. However the TP0-TP2 channel includes a
connector, which will add to sqrt(f) loss and not scale linearly with length, and a TP2 test
fixture.

Therefore, TP0-TP2 should not be linearly scaled from Equation (92A-1).

Cl **92A**   *SC* **4**   *P***280**   *L***37**   # 223
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
Equation 92A-1 is not consistant with the TP0 to TP2 loss where coeffecient 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

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

This is appears to be a duplicate of comment #222. See comment #222 for resolution.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92A**   Page 65 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **4**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92A**   *SC* **5**   *P* **283**   *L* **34**   # 253
Shanbhag, Megha   TE Connectivity

Comment Type **T**   *Comment Status* **A**   bucket
Isn't equation (92A-5) same as (92A-4)?

SuggestedRemedy
Delete eq. (92A-5) if redundant.

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

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

Use suggested remedy.

Cl **92A**   *SC* **92A.4**   *P* **281**   *L* **29**   # 389
Dawe, Piers   IPtronics

Comment Type **T**   *Comment Status* **A**   bucket
maximum insertion loss

SuggestedRemedy
Change to recommended maximum insertion loss, as D1.1 comment 451.

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

Use suggested remedy
Comment#451 correctly implemented.

Cl **92A**   *SC* **92A.4**   *P* **282**   *L* **28**   # 168
Healey, Adam   LSI Corporation

Comment Type **E**   *Comment Status* **A**   bucket
The caption to Figure 92A-1 is corrupted.

SuggestedRemedy
Repair the figure caption.

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

Use suggested remedy

Cl **92A**   *SC* **92A.5**   *P* **283**   *L* **15**   # 170
Healey, Adam   LSI Corporation

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

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

See response comment #308, #313, and #323.

Cl **92A**   *SC* **92A.5**   *P* **284**   *L* **2**   # 323
Dudek, Mike   QLogic

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

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

Per remedy:
Change the Cable Assembly Text Fixture loss from 1.25 dB to 1.17dB
Change the HCB loss from 1.5 dB to 1.87 dB
In addition, change ILPCBmin to 1.17 dB @12.89 Equation (92A-2)

Change the mated cable assembly and test point test fixture loss from 3.82 dB to 4.11 dB.
Change the TP0 to TP2 loss from 10 dB to 10.37dB. Change the TP1 to TP4 loss from
22.64dB to 22.48dB.

The channel insertion equation becomes:
22.48+2*10.37-2*4.11 = 35 dB

Note the 4.11 dB is approximately the average of the minimum and maximum mated test
fixture insertion loss limits (at 12.89 GHz).

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **92A**   Page 66 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **92A.5**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **92A**   *SC* **92A.8**   *P* **285**   *L* **29**   # 64

DiMinico, Christopher   MC Communications

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See diminco_3bj_01a_1112.pdf.

Replace this subclause with a subclause that recommends the following.
"The channel operating margin (COM) for the channel between TP0 and TP5, computed using the procedure in Annex 93A and the parameters in Table 93-8, is recommended to be greater than or equal to 3 dB."

Cl **93**   *SC* **93.1**   *P* **192**   *L* **38**   # 237

Arumugham, Vinu   Cisco

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The project objective is to support a BER of better than or equal to 1E-12 at the MAC/PLS service interface which yields the frame error ratio equivalent defined by brown_3bj_02_0912 and cideciyan_3bj_01a_0912.

The adopted baseline proposal (gustlin_01_0312, slide 6) asserts that an output BER of 1E-12 could be achieved with an uncorrected input BER of 2.34E-5 using the RS(528,514) code. The 1E-5 and 2E-5 values are rough approximations to this value (although the same approximation should be consistently used).

Ensure the uncorrected BER target is consistently set to 1E-5 in 93.1, Table 93-7 Test 3 and Test 4 values, and Table 93-8 (target uncorrected symbol error ratio, SER_0).

The second part of the comment applies to the target uncorrected BER when the Reed-Solomon decoder correction is bypassed (see 91.5.3.3) which would presumably be 1E-12. Coverage of this case is implied by Table 93-8 Test 1 and Test 2 values. However, the definition is incomplete as there is no requirement in 93.9.1 that a channel achieve some minimum COM value, with SER_0 of 1E-12, when correction is bypassed.

Straw poll #1:
Delete Test 1 and Test 2 ("Maximum BER without FEC" = 1E-12) values.
Agree: 4
Disagree: 5

Therefore, change 93.1, page 192, line 37 as follows:
"Differential signals received at the MDI from a transmitter that meets the requirements of 93.8.1 and have passed through the channel specified in
93.9 are received with a BER less than 1E-5. When the correction is bypassed (see 91.5.3.3), differential signals received at the MDI from a transmitter that meets the

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

Cl **93**   Page 67 of 102
SC **93.1**   11/15/2012 12:30:55 PM

requirements of 93.8.1 and have passed through the channel specified in 93.9 are received with a BER less than 1E-12."

It should be noted that the channel requirements in 93.9 do not explicitly consider the case where the target BER without FEC is 1E-12.

The third part of the comment addresses the degradation in MTTFPA when the the decoder is bypassed. Comment #369 proposes to make error detection/indication mandatory and, if accepted, the point about unacceptable MTTFPA need not be made (see gustlin_01a_0712).

Cl **93**   *SC* **93.2**   *P* **193**   *L* **20**   # 174

Healey, Adam   LSI Corporation

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

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.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Define PMD functional and electrical behavior per healey_3bj_02a_1112.

Cl **93**   *SC* **93.4**   *P* **194**   *L* **4**   # 296

Liu, Zhenyu   Marvell Semiconductor

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

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.

Response   *Response Status*   **C**

REJECT.

The delay should be an integer multiple of pause_quanta (e.g. 2048+800 isn't a valid value). It was the intent to keep the delay the same a 84.4 in terms of pause_quanta and increase the medium allocation in recognition that propagation delay does not scale with the bit rate.

It is not clear that 1248 BT is onerous for the PMD sublayer alone. Recall that for a complete Physical Layer, this allocation is to be combined with the PMA sublayer allocation of 9 pause_quanta, RS-FEC allocation of 80 pause_quanta, etc.

Cl **93**   *SC* **93.7.10**   *P* **198**   *L* **9**   # 172

Healey, Adam   LSI Corporation

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

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..."

Response   *Response Status*   **C**

ACCEPT.

Also apply to Clause 92 and Clause 94.

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

Cl **93**   Page 68 of 102
SC **93.7.10**   11/15/2012 12:30:55 PM

Cl **93**   *SC* **93.7.11**   *P* **198**   *L* **20**   # 173
Healey, Adam   LSI Corporation

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

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."

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Change 93.7.11 to:

"The PMD receive fault 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."

Also apply to Clause 92 and Clause 94.

Cl **93**   *SC* **93.7.4**   *P* **196**   *L* **49**   # 118
Sela, Oren   Mellanox Technologies

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

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

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See comment #174.

Cl **93**   *SC* **93.7.5**   *P* **197**   *L* **9**   # 293
Kochuparambil, Beth   Cisco Systems

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

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'

Response   *Response Status*   **C**

ACCEPT.

Note that this subclause may be amended based on the response to comment #174 and therefore this comment could be overtaken.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **93**   Page 69 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **93.7.5**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **93**   *SC* **93.7.9**   *P* **198**   *L* **1**   # 171
Healey, Adam   LSI Corporation

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

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".

Response   *Response Status* **C**

ACCEPT.

Also apply to Clause 92 and Clause 94.

Cl **93**   *SC* **93.8.1.1**   *P* **199**   *L* **46**   # 294
Kochuparambil, Beth   Cisco Systems

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the caption of Figure 93-3, Figure 93-6, Figure 93-8, Figure 93-10, and Figure 93-12 to read "differential return loss" rather than "return loss".

Change the first paragraph of 93.9.3 to begin:
"The differential return loss, in dB, of the channel."

Use the notation RL_d to denote differential return loss and RL_cm to denote common-mode return loss throughout Clause 93 (this is consistent with the notation used in 93.8.1.3.

Also, apply appropriately to Clause 94.

Cl **93**   *SC* **93.8.1.2**   *P* **200**   *L* **20**   # 227
Ghiasi, Ali   Broadcom

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

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

Response   *Response Status* **C**

REJECT.

[Changed Subcl to 93.8.1.2 for consistent sorting.]

The suggested remedy is incomplete.

93.8.1.4 and Equation (93-3) specify the transmitter common-mode output return loss. It is unclear what impact the test fixture will have on this measurement if its common-mode return loss is not defined.

Furthermore, Equation (92-28) applies to mated test fixture including a connector. It is unclear that this limit is applicable to the test fixture defined in this subclause.

Cl **93**   *SC* **93.8.1.4**   *P* **201**   *L* **32**   # 53
Ben-Artsi, Liav   Marvell

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

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

Response   *Response Status* **C**

REJECT.

There is no consensus to make the change.

The limits proposed in benartsi_3bj_01_1112 and comment #229 are not compatible with the TP2 return loss limit defined in Clause 92 Equation 92-1.

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

Cl **93**
SC **93.8.1.4**

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Cl **93**   *SC* **93.8.1.4**   *P* **201**   *L* **32**   # 229
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**
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= 12-0.5f from 0.05<=f<=8
   =5.65-9.71log (f / 14) 8 <= f <= 25 GHz(dB)(92-1)

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

[Changed Subcl to 93.8.1.4 for consistent sorting.]

Equation (92-1) is the return loss limit at TP2 and includes a host channel, connector, and host compliance board (~10 dB loss from the package-board interface).

Even if the same chip were to be used for both backplane and direct attach copper cable applications, the proposed limit does not necessarily apply to both TP0a and TP2.

See comment #53.

Cl **93**   *SC* **93.8.1.5**   *P* **201**   *L* **13**   # 245
Moore, Charles   Avago Technologies

Comment Type **T**   *Comment Status* **R**
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."

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

The term "transition time" is already defined by 86A.5.3.3 and it is unclear that the proposed measurement of the linear fit pulse is equivalent. It is possible that the rising edge of the linear fit pulse will deviate from measured waveform especially when the waveform contains non-linear distortions that do not appear in the fit.

Unless the two methods can be shown to be equivalent, it should not be offered as an alternative definition of "transition time."

Cl **93**   *SC* **93.8.1.6.3**   *P* **203**   *L* **41**   # 175
Healey, Adam   LSI Corporation

Comment Type **T**   *Comment Status* **A**
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).

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

See lusted_3bj_02_0912 which implies that these values should be adequate.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **93**   Page 71 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **93.8.1.6.3**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **93**   *SC* **93.8.1.7**   *P* **204**   *L* **24**   # 176
Healey, Adam   LSI Corporation

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

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)."

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

Cl **93**   *SC* **93.8.1.8**   *P* **204**   *L* **32**   # 236
Arumugham, Vinu   Cisco

Comment Type **E**   *Comment Status* **A**   *bucket*
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.

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

Instances at Lines 34, 37, and 41.

Cl **93**   *SC* **93.8.2**   *P* **204**   *L* **44**   # 242
Arumugham, Vinu   Cisco

Comment Type **T**   *Comment Status* **R**
No sinusoidal jitter mask is specified.

SuggestedRemedy
Add sinusoidal jitter mask spec. like Figure 86A-10.

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

High-frequency sinusoidal jitter is added as an impairment to the interference tolerance test (93.8.2.3). However, the test includes no provision for verifying the receiver can track increasing levels of jitter below a low frequency break point. Historically, this has not been verified for any Backplane Ethernet PHY (see Annex 69A) so it is not clear whether or not it needs to be added.

The suggested remedy is incomplete as it does not suggest the break point, slope, or the high frequency jitter amplitude. It is also not clear if this is proposed to be part of the interference tolerance test or a separate test.

The first two parameters can be assumed to be signaling rate/2500 and 20 dB/decade based on the reference to 86A-10 but the high-frequecy jitter amplitude differs from what is required by the interference tolerance test. However, a contribution that describes the test procedure and remaining parameters is required in order to install it in the draft.

Cl **93**   *SC* **93.8.2.1**   *P* **205**   *L* **16**   # 49
Ben-Artsi, Liav   Marvell

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

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

In addition, extend the upper limit of the frequency range to 25 GHz.

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

Cl **93**
SC **93.8.2.1**

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Cl **93**　　　*SC* **93.8.2.2**　　　*P* **206**　　　*L* **22**　　　# 230
Ghiasi, Ali　　　　　　　　　　　　Broadcom

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

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

[Changed Subcl to 93.8.2.2 for consistent sorting.]

This comment is against receiver return loss.

See comment #229 regarding the applicability of Clause 92 TP2/TP3 return loss limits to Clause 93 TP0a/TP5a test points.

See comment #50.

Cl **93**　　　*SC* **93.8.2.2**　　　*P* **206**　　　*L* **52**　　　# 50
Ben-Artsi, Liav　　　　　　　　　　Marvell

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

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

The proposals in the comment and comment #230 have similar issues to those discussed in comment #53.

See comment #53.

Cl **93**　　　*SC* **93.8.2.2**　　　*P* **206**　　　*L* **52**　　　# 177
Healey, Adam　　　　　　　　　　LSI Corporation

Comment Type **T**　　*Comment Status* **A**
The differential to common-mode return loss limit (Equation 93-7) is TBD.

SuggestedRemedy
Define the limit or remove the placeholder.

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

See comment #325.

Cl **93**　　　*SC* **93.8.2.2**　　　*P* **206**　　　*L* **52-5**　　　# 325
Li, Mike　　　　　　　　　　　　Altera

Comment Type **TR**　　*Comment Status* **A**
Eq (93-7) is still TBD

SuggestedRemedy
A proposed Eq for (93-7) will be provided.

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

No contribution was provided.

Comment #215 against Clause 94 proposes a conversion limit. Given the interest in making return loss requirements for Clauses 93 and 94 similar (with the exception of the frequency range of applicability), change Equation (93-7) to:
25-20*(f/13.89), 0.05<=f<=6.95 GHz
15, 6.95 GHz to 13 GHz

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

Cl **93**
SC **93.8.2.2**

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Cl **93**   *SC* **93.8.2.3**   *P* **207**   *L* **15**   # 46
Ben-Artsi, Liav   Marvell

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

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.

Response   *Response Status*   **C**

REJECT.

The suggested remedy is incomplete in that it is unclear how COM calculation in Annex 93A applies to the interference tolerance test channel. Areas to consider include, but are not limited to the following.

1. The applied jitter terms do not agree with the jitter terms in Table 93-8.

2. The applied broadband noise has no comparable parameter in Table 93-8 (recall this noise would applied at the receiver input and shaped by the receiver continuous time filter, so sigma_r is not a good fit).

3. Two test cases require a 1E-12 BER without FEC whereas Table 93-8 has a fixed SER_0 value that considers FEC coding gain.

4. The test pattern generator is likely to be superior to the assumptions of the device and package filter and transmitter return loss.

Cl **93**   *SC* **93.8.2.3**   *P* **207**   *L* **19**   # 80
Mellitz, Richard   Intel Corporation

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

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

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See comment #178.

Cl **93**   *SC* **93.8.2.3**   *P* **207**   *L* **7**   # 178
Healey, Adam   LSI Corporation

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

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.

Response   *Response Status*   **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **93**   Page 74 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **93.8.2.3**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **93**   *SC* **93.9**   *P***165**   *L***15**   # 48
Ben-Artsi, Liav   Marvell

Comment Type   **T**   *Comment Status* **A**
PKG insertion loss model may cause SBR to become somewhat non-causal

SuggestedRemedy
Update PKG insertion loss model according to BenArtsi_3bj_01_1112

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

[Device and package insertion loss model is defined in Annex 93A. This comment should be applied to the Annex.]

Straw poll #2
For contribution of receiver package insertion loss:
(a) leave RX package insertion loss in Equation 93A-6: 3
(b) remove RX package IL from Equation 93A-6, and specify a fixed penalty budget: 6

In discussion after straw poll there was concensus to implement option (b). (No opposition to this.)

Make the following change in 93A.

Remove the receiver insertion loss term.

Make the following changes in 93.9.1:

(a) Change the required COM value from 3 dB to 4 dB.

(b) Add an editor's note stating that 1 dB of the COM value is to address the penalty due to the receiver package insertion loss.

Delete 93A.1.3.1.

Cl **93**   *SC* **93.9**   *P***209**   *L***10**   # 51
Ben-Artsi, Liav   Marvell

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

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

It was agreed that new transmitter and receiver package return parameters are desired.

Delete in Table 93A-1 Lines 10-14 (transmitter reflection coefficient and receiver reflection coefficient - Two table entries)

Delete in table 93-8 Lines 10-15 (transmitter reflection coefficient and receiver reflection coefficient - Two table entries)

Delete in table 94-17 Lines 26-31 (transmitter reflection coefficient and receiver reflection coefficient - Two table entries)

replace equations: 93a-3 and 94a-4 (gamma1 and gamma2) with

gamma_1 = gamma_2 = -(zpkg-50)/(zpkg+50)

The equation for zpkg is on slide 6 of benartsi_3bj_01_1112.

Following the equations list the coeffcients for the zpkg equation modified after converting w to f (in GHz).

Replace Equation 93A-5 with the equation for h21proposed3 on Slide 19 in benartsi_3bj_01_1112.

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

Cl **93**
SC **93.9**

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Cl **93**   *SC* **93.9**   *P* **209**   *L* **13**   # 52
Ben-Artsi, Liav   Marvell

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

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)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #51.

Cl **93**   *SC* **93.9**   *P* **209**   *L* **48**   # 79
Mellitz, Richard   Intel Corporation

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #237.

The SER0 values should match the BER target for the corresponding interference tolerance test.

The current SER0 value in Table 93-8 is specified to match the BER target of 1E-5 for the interference tolerance test.

The current value of SER0 in Table 94-17 (1E-5) does not match the value in the interference tolerance test (3E-4).

Change the SER0 value in Table 94-17 to 3E-4.

Cl **93**   *SC* **93.9.1**   *P* **209**   *L* **17**   # 54
Ben-Artsi, Liav   Marvell

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

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)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[The definition and application of parameters is defined Annex 93A. Only the parameter values are defined here and there is no proposal to change them. This comment should be applied to the Annex.]

Remove the first instance of Hdp(f) in Equation 93A-6.

See comment #180.

Cl **93**   *SC* **93.9.1**   *P* **209**   *L* **21**   # 180
Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Set fv = ff = 0.375*fb

See healey_3bj_03a_1112.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **93**   Page 76 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **93.9.1**   11/15/2012 12:30:55 PM
SORT ORDER: Clause, Subclause, page, line

Cl **93**　　*SC* **93.9.1**　　　　*P* **209**　　*L* **25**　　# 181
Healey, Adam　　　　　　LSI Corporation

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

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.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

The transmitter equalizer is not required to have a uniform step size so using a fixed grid with the largest step size may yield results that are advantageous for some channels and detrimental for others.

The finer grid should be maintained and penalties related to the coarsest permitted step size considered as part of the minimum COM limit.

Therefore, maintain the 0.02 step size for both c(-1) and c(1).
Update the c(-1) and c(1) ranges to be consistent with the minimum pre- and post-cursor equalization ratios required by the standard.

C(-1) range: -9*0.02 = -0.18 to 0
c(1) range: -19*0.02 = -0.38 to 0

Add editor's note pointing out that the COM includes provision for the step size penalty.

Cl **93**　　*SC* **93.9.1**　　　　*P* **209**　　*L* **45**　　# 182
Healey, Adam　　　　　　LSI Corporation

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

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.

Response　　　　　　*Response Status*　**C**

ACCEPT IN PRINCIPLE.

Change A_DD in Table 93-8 to 0.07 UI.

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

Cl **93**
SC **93.9.1**

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Cl **93**   *SC* **93.9.1**   *P* **209**   *L* **48**   # 388
Dawe, Piers   IPtronics

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

This table assigns a value to parameters defined in Annex 93A. The definition must be addressed first in the annex and changed in Clause 93 and Clause 94 to be consistent.

"Target uncorrected symbol error ratio" was intended to be a catch-all term for both PAM2 and PAM4 modulation, the latter of which conveys 2 bits in a 4-level "symbol". However, it is understood that this could be misunderstood to mean 10-bit Reed-Solomon symbol errors.

Therefore, in Annex 93A, as well as Clause 93 and Clause 94, change "Target uncorrected symbol error ratio" to "Target detector error ratio" with the symbol "DER_0".

Change the second paragraph of 93A.1.6 to:
"The noise amplitude, A_n, is the magnitude of the value of y_0 that satisfies the relationship P(y_0) = DER_0 where DER_0 is the target detector error ratio. The detector error ratio is the probability that the detector fails to identify the signal level that was transmitted."

Cl **93**   *SC* **93.9.2**   *P* **207**   *L* **50**   # 231
Ghiasi, Ali   Broadcom

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

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

[Changed Subcl to 93.9.2 for consistent sorting.]

Cl **93**   *SC* **93.9.2**   *P* **207**   *L* **50**   # 214
Ghiasi, Ali   Broadcom

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

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

[Changed Subcl to 93.9.2 for consistent sorting.]

Cl **93**   *SC* **93.9.3**   *P* **208**   *L* **32**   # 55
Ben-Artsi, Liav   Marvell

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

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

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

Cl **93**
SC **93.9.3**

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Cl **93**   *SC* **93.9.4**   *P* **210**   *L* **24**   # 179
Healey, Adam   LSI Corporation

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove 93.9.4.

See also comment #176.

Cl **93**   *SC* **93.9.5**   *P* **210**   *L* **30**   # 238
Arumugham, Vinu   Cisco

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

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.

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

While it is understood that DC coupling is desirable for some applications, per the response to comment #1 against Draft 1.0, DC-coupled operation is beyond the scope of the standard.

Also refer to goergen_01a_0712.pdf which reflects the consensus that led to this decision.

Cl **93A**   *SC* **93A**   *P* **287**   *L*   # 402
Dawe, Piers   IPtronics

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

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.

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

93.5.10 highlights that a system integrating the 100GBASE-KR4 PHY is expected to operate over a reasonable range of environmental conditions related to temperature, humidity, etc. and that these parameters are beyond the scope of the standard.

Many of the parameters that are specified in the draft have some dependence on manufacturing process, supply voltage, temperature, etc. To be successfully integrated into a system environment, compliance must be maintained over these conditions. Therefore, it is the responsibility of the implementer to verify that these requirements continue to be met across the environmental variables expected for the target environment.

The channel should be no different. If the channel characteristics vary over temperature, for example, then the implementer should verify that the COM requirement is satisfied over the necessary temperature range.

Stability of the COM metric against temperature is not a requirement. It is required to provide a useful performance estimate for a channel measured in whatever environment conditions are appropriate (the definition of which is beyond the scope of the standard).

Cl **93A**   *SC* **93A.1.1**   *P* **286**   *L* **49**   # 244
Moore, Charles   Avago Technologies

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

"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"

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

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **93A**   Page 79 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **93A.1.1**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **93A**   *SC* **93A.1.1**   *P* **289**   *L* **1**   *#* 392
Dawe, Piers   IPtronics

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

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.

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

The annex recommends that the scattering parameters be measured from fmin to fb (see 93A.1.1). In 93A.1.4, it recognizes that the Fourier integral will most likely be implemented as discrete Fourier transform and in NOTE 1 states that the measured data would need to extrapolated to DC and half of the sampling rate for the purpose.

It is left as an exercise for the user determine the sampling frequency and extrapolation method required to achieve the most accurate result. This is analogous to leaving the user to determine which instrument or method of calibration would yield the most accurate measurement. This annex endeavors to specify what is to be calculated in the purest of terms.

Cl **93A**   *SC* **93A.1.3.1**   *P* **290**   *L* **19**   *#* 394
Dawe, Piers   IPtronics

Comment Type **T**   *Comment Status* **A**
Are these losses really per m?

SuggestedRemedy
Check.

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

Overtaken by events.

See comment #48.

Cl **93A**   *SC* **93A.1.3.1**   *P* **290**   *L* **19**   *#* 393
Dawe, Piers   IPtronics

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

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.

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

Overtaken by events.

See comment #48.

Cl **93A**   *SC* **93A.1.4**   *P* **291**   *L* **32**   *#* 395
Dawe, Piers   IPtronics

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

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.

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

This comment is misplaced as fmin is defined in Annex 93A as a parameter and the value of the parameter is assigned by the clause that invokes the method.

In both Clause 93 (Table 93-8) and Clause 94 (Table 94-17) fmin is defined to be 50 MHz. The commenter does not recommend or justify a specific value of fmin for these clauses. There are number of suitable network analyzers that measure down to 50 MHz. The reference to Clause 92 is inconclusive because it pertains to a 5 m cable assembly with a significantly larger propagation delay than the backplane channels considered by Clauses 93 and 94.

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

Cl **93A**
SC **93A.1.4**

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Cl **93A**   *SC* **93A.1.4**   *P* **291**   *L* **33**   # 396

Dawe, Piers   IPtronics

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

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

?

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

The Nyquist frequency is half of the sampling frequency and not necessarily half of the signaling rate.

The calculation of COM requires multiple samples per unit interval, fs/fb, and therefore the sampling rate is fs and the corresponding Nyquist frequency is fs/2. The sampling rate is a choice for an implementer of the algorithm.

Therefore, fs can be expected to be well in excess of fb and the implementer of the COM algorithm has a number of choices for extrapolation, e.g. pad with zeros.

To avoid further confusion regarding "Nyquist frequency", change the last sentence of NOTE 1 to:
".the filtered voltage transfer function may need to be extrapolated (both to DC and to one half of the sampling frequency) for this computation. The extrapolation method and sampling frequency must be chosen carefully to limit the error in the COM computation."

Cl **93a**   *SC* **93A.1.5**   *P* **292**   *L* **9**   # 78

Mellitz, Richard   Intel Corporation

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

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:
$h^\wedge(0)(n) - sgn(h^\wedge(0)(n))min(b\_max*A\_s,|h^\wedge(0)(n)|)$, $1< n < N\_a$

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Replace b_max with As*b_max in Equation (93A-19) for the $1 <= n <= N\_b$.

Also, change references to "DFE coefficient magnitude limit" in Tables 93-8, 94-17, and 93A-1 to "Normalized DFE coefficient magnitude limit".

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

Cl **93a**
SC **93A.1.5**

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Cl **94**   *SC* **94**   *P* **219**   *L* **1**   # 267
Brown, Matthew   APM

Comment Type **E**   *Comment Status* **A**   *bucket*
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"

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

Cl **94**   *SC* **94**   *P* **219**   *L* **1**   # 401
Dawe, Piers   IPtronics

Comment Type **TR**   *Comment Status* **R**   *general*
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.

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

The commenter has provided insufficient justification for the suggested remedy.

Cl **94**   *SC* **94.2.1**   *P* **221**   *L* **23**   # 132
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *eee*
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.

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

Define PMD functional and electrical behavior per healey_3bj_02a_1112 with editorial license to correct cross-references and other Clause 94 specific details as appropriate.

Cl **94**   *SC* **94.2.10**   *P* **228**   *L* **52**   # 262
Brown, Matthew   APM

Comment Type **T**   *Comment Status* **D**   *loopback*
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* **Z**
REJECT.

This comment was WITHDRAWN by the commenter.

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

Cl **94**
SC **94.2.10**

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Cl **94**   *SC* **94.2.11**   *P* **229**   *L* **18**   # 145

Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *test pattern*

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add the follow rows to Table 45-73:
1.1501.8 | JP03A pattern enable | 1 = Enable JP03A pattern; 0 = Disable JP03A pattern | R/W
1.1501.9 | JP03B pattern enable | 1 = Enable JP03B pattern; 0 = Disable JP03B pattern | R/W
1.1501.10 | QPRBS13 pattern enable | 1 = Enable QPRBS13 pattern; 0 = Disable QPRBS13 pattern | R/W

Change row 2 in Table 45-73 to:
1.1500.15:11 | Reserved | Value always zero, writes ignored | RO

Add the following paragraph to 45.2.1.100

Register field 1.1501.8 enables testing with the JP03A pattern defined in 94.2.11.1.
Register field 1.1501.9 enables testing with the JP03B pattern defined in 94.2.11.2.
Register field 1.1501.10 enables testing with the QPRBS13 pattern defined in 94.2.11.3.
The assertion of register 1.1501.8, 1.1501.9, 1.1501.10 are mutually exclusive. If more than one bit are asserted the behavior is undefined. The assertion of 1.1501.8, 1.1501.9, and 1501.10 works in conjunction with register field 1.1501.3. If 1.1501.3 is not asserted then 1.1501.8, 1.1501.9, and 101501.10 have no effect.

Cl **94**   *SC* **94.2.11.3**   *P* **228**   *L* **45**   # 344

Ran, Adee   Intel

Comment Type **ER**   *Comment Status* **A**   *test pattern*

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."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

<Changed sub-clause from 2.11.3 to 94.2.11.3.>

The reference to "training pattern" was to be specific to the "training pattern" specified in "94.3.10.8 Training pattern sub-clause". The specific phase "training pattern" should be retained.

The "training pattern" specified in 94.3.10.8 is 182 training frame words in length. The statement in 94.2.11.3 "8372-symbol (182 training frame words)" is helpful to ensure the reader of which portion is relevant. However, the length is changed per Comment #163.

Replace the second sentence with
"The QPRBS13 test pattern is a repeating 15548-symbol (338 training frame words) sequence equivalent to the training pattern specified in 94.3.10.8."

To address the ambiguity of the pattern re-seeding the second sentence should be added to the sub-clause as follows:

"The PRBS13 pattern generator is re-initialized for each repetition of QPRBS13 with the same seeds specified in Table 94-10."

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

Cl **94**
SC **94.2.11.3**

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Cl **94**   *SC* **94.2.12**   *P* **229**   *L* **50**   # 155
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *bucket*
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.

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

Cl **94**   *SC* **94.2.2**   *P* **223**   *L* **12**   # 259
Brown, Matthew   APM

Comment Type **T**   *Comment Status* **A**   *bucket*
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".

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

Cl **94**   *SC* **94.2.2**   *P* **223**   *L* **25**   # 268
Brown, Matthew   APM

Comment Type **E**   *Comment Status* **A**   *bucket*
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".

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

Cl **94**   *SC* **94.2.2.1**   *P* **223**   *L* **43**   # 122
Matthew, Brown   Applied Micro

Comment Type **E**   *Comment Status* **A**   *bucket*
the word "also" is not required

SuggestedRemedy
delete "also"

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

Cl **94**   *SC* **94.2.2.3**   *P* **224**   *L* **30**   # 142
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *pma encoder*
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.

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

Implement the overhead programming and detection methodology proposed in wang_3bj_01a_1112.

Cl **94**   *SC* **94.2.2.4**   *P* **223**   *L* **42**   # 164
Lusted, Kent   Intel

Comment Type **TR**   *Comment Status* **A**   *bucket*
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.

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

See comment #158.

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

Cl **94**
SC **94.2.2.4**

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Cl **94**   *SC* **94.2.2.4**   *P* **224**   *L* **42**   # 158
Lusted, Kent   Intel

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

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."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Per comment #164, the number of termination blocks should be 348 not 192.

Modify suggested remedy as follows:

"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 384 consecutive termination blocks forms a PMA frame."

Cl **94**   *SC* **94.2.3**   *P* **227**   *L* **4**   # 143
Matthew, Brown   Applied Micro

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

The editor's note points out that the transmit EEE operation must be specified.

SuggestedRemedy

Provide functional specification for transmit EEE operation.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #132.

Cl **94**   *SC* **94.2.4**   *P* **227**   *L* **36**   # 269
Brown, Matthew   APM

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

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".

Response   *Response Status* **C**

ACCEPT.

Cl **94**   *SC* **94.2.4**   *P* **227**   *L* **46**   # 260
Brown, Matthew   APM

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

tx_symbol should be rx_symbol

SuggestedRemedy

Change "tx_symbol" to "rx_symbol".

Response   *Response Status* **C**

ACCEPT.

Cl **94**   *SC* **94.2.5**   *P* **228**   *L* **4**   # 144
Matthew, Brown   Applied Micro

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

The editor's note points out that the receive EEE operation must be specified.

SuggestedRemedy

Provide functional specification for receive EEE operation.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #132.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 85 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.2.5**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.2.6**   *P* **228**   *L* **13**   # 261
Brown, Matthew   APM

Comment Type   **T**   *Comment Status* **A**   *skew*
   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.

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

   See comment #135.

   Delete the editor's note.

   Add the following paragraph after the first paragraph ...
   "Skew considerations for the 100GBASE-KP4 PMA, PMD, and AN are specified in 94.3.4."

Cl **94**   *SC* **94.3.1**   *P* **230**   *L* **24**   # 133
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **A**   *eee*
   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.

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

   See comment #132.

Cl **94**   *SC* **94.3.1.2.1**   *P* **231**   *L* **29**   # 263
Brown, Matthew   APM

Comment Type   **T**   *Comment Status* **A**   *bucket*
   There is no start parameter on the PMD interface.

SuggestedRemedy
   Delete the second sentence in the paragraph "The start parameter ... is otherwise FALSE."

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

Cl **94**   *SC* **94.3.1.2.2**   *P* **231**   *L* **35**   # 264
Brown, Matthew   APM

Comment Type   **T**   *Comment Status* **A**   *bucket*
   tx_symbol should be rx_symbol

SuggestedRemedy
   Change "tx_symbol" to "rx_symbol".

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

Cl **94**   *SC* **94.3.1.3**   *P* **231**   *L* **54**   # 119
Sela, Oren   Mellanox Technologies

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

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

   See comment #132.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 86 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.1.3**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.1.3.1**   *P* **231**   *L* **52**   # 128
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status*   **A**   *pmd service interface*

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.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

See comment #174.

Cl **94**   *SC* **94.3.10.2**   *P* **237**   *L* **24**   # 266
Brown, Matthew   APM

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

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)".

Response   *Response Status*   **C**

ACCEPT.

Cl **94**   *SC* **94.3.10.5.1**   *P* **238**   *L* **19**   # 161
Lusted, Kent   Intel

Comment Type   **TR**   *Comment Status*   **A**   *training frame*

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.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

The positive and negative values are referring to the upper and low levels of the DME cell.

In item b replace "positive value" with "upper level".
In item c replace "negative value" with "lower level".

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 87 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.10.5.1**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.10.5.2**   *P* **239**   *L* **6**   # 159
Lusted, Kent   Intel

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

<Changed sub-clause from Table 94-6 to 94.3.10.5.2>

Delete frame marker row from table.

Cl **94**   *SC* **94.3.10.6.2**   *P* **239**   *L* **3**   # 345
Ran, Adee   Intel

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

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.

Response   *Response Status* **C**

ACCEPT.

<Changed subclause from 3.10.6.2. to 94.3.10.6.2.>

Cl **94**   *SC* **94.3.10.6.4**   *P* **239**   *L* **26**   # 342
Ran, Adee   Intel

Comment Type **E**   *Comment Status* **A**   *training frame*

"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."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

<Change sub-clause from 3.10.6.4 to 94.3.10.6.4.>

The entire sub-clause is normative per the first sentence in Clause 94.3.10.6.4. Adding an extra shall statement here is not necessary.

Use the following in place of the suggested remedy:
"The hold setting must 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."

Cl **94**   *SC* **94.3.10.6.4**   *P* **239**   *L* **30**   # 343
Ran, Adee   Intel

Comment Type **E**   *Comment Status* **R**   *training coefficient update*

"Coefficient increment and decrement update requests are not be sent in combination with initialize or preset."

"Shall" is adequate.

SuggestedRemedy

Change "are" to "shall".

Response   *Response Status* **C**

REJECT.

<Changed sub-clause from 3.10.6.4 to 94.3.10.6.4.>

The entire sub-clause is normative per the first sentence in 94.3.10.6.4. It is not necessary to point out that each element in the sub-clause is normative.

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

Cl **94**
SC **94.3.10.6.4**

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Cl **94**   *SC* **94.3.10.6.4**   *P* **240**   *L* **26**   # 346
Ran, Adee   Intel

Comment Type **ER**   *Comment Status* **A**   *bucket*
"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.

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

<Changed sub-clause from 3.10.6.4 to 94.3.10.6.4. Changed page from 239 to 240.>

Cl **94**   *SC* **94.3.10.7.1**   *P* **241**   *L* **24**   # 273
Brown, Matthew   APM

Comment Type **T**   *Comment Status* **A**   *bucket*
The sub-clause defines the status fields.

SuggestedRemedy
Change "control messages" to "status messages".

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

Cl **94**   *SC* **94.3.10.7.2**   *P* **240**   *L* **37**   # 347
Ran, Adee   Intel

Comment Type **TR**   *Comment Status* **A**   *training countdown*
Countdown must be syncronized on the four lanes. It is currently 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.

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

<Changed sub-clause from 3.10.7.2 to 94.3.10.7.2.>

Per the first sentence in 94.3.10.7.2, the entire sub-clause is normative, so it is not necessary to add more "shalls".

Modify the sentence referred to in the suggested remedy with the following:
"When the received status report receiver ready is 1 in all four received lanes and the transmitted status report receiver ready is 1 in all four transmitted lanes, the transmitter on each transmitted lane will decrement the countdown in three successive frames. The countdown values will be equal in all four lanes".

Cl **94**   *SC* **94.3.10.7.2**   *P* **241**   *L* **31**   # 146
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *training countdown*
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.

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

See comment #347.

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

Cl **94**
SC **94.3.10.7.2**

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Cl **94**   *SC* **94.3.10.8**   *P* **242**   *L* **6**   # 163
Lusted, Kent   Intel

Comment Type **TR**   *Comment Status* **A**   *training pattern*

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.

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

Implemented changes in slides 4 through 13 in lusted_3bj_01_1112.

Cl **94**   *SC* **94.3.10.8**   *P* **243**   *L* **2**   # 324
Wang, Zhongfeng   Broadcom Corp.

Comment Type **TR**   *Comment Status* **D**   *training pattern*

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* **Z**
REJECT.

This comment was WITHDRAWN by the commenter.

Cl **94**   *SC* **94.3.10.8**   *P* **243**   *L* **7**   # 148
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *training pattern*

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.

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

See comment #163.

Cl **94**   *SC* **94.3.10.8**   *P* **243**   *L* **7**   # 149
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *training pattern*

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.

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

See comment #163.

Cl **94**   *SC* **94.3.10.8**   *P* **243**   *L* **7**   # 147
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *training pattern*

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.

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

See comment #163.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 90 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.10.8**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**　　　*SC* **94.3.11**　　　　*P* **244**　　　*L* **21**　　　# 274
Brown, Matthew　　　　　　　　　APM

Comment Type　**T**　　　*Comment Status*　**A**　　　　　　*bucket*
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."

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

Cl **94**　　　*SC* **94.3.12**　　　　*P* **247**　　　*L* **36**　　　# 275
Brown, Matthew　　　　　　　　　APM

Comment Type　**T**　　　*Comment Status*　**D**　　　　　　*bucket*
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*　**Z**
REJECT.

This comment was WITHDRAWN by the commenter.

Cl **94**　　　*SC* **94.3.12.1.1**　　　*P* **245**　　　*L* **45**　　　# 232
Ghiasi, Ali　　　　　　　　　　Broadcom

Comment Type　**TR**　　　*Comment Status*　**R**　　　*test fixture return loss*
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

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

<Changed sub-clause from 3.12.1.1 to 94.3.12.1.1.>

Equation 92-28 specifies common mode conversion loss, not return loss.

Bounding of the common mode return loss of the test fixture is necessary to enable accurate measurement of device transmitter common mode return loss.

See also comment #227.

Cl **94**　　　*SC* **94.3.12.1.1**　　　*P* **246**　　　*L* **45**　　　# 233
Ghiasi, Ali　　　　　　　　　　Broadcom

Comment Type　**TR**　　　*Comment Status*　**A**　　　*test fixture return loss*
Return loss stops at 10 GHz

SuggestedRemedy
change stop frequency of 10 GHz to 14 GHz

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

<Changed sub-clause from 3.12.1.1 to 94.3.12.1.1.>

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general　　　　*Cl* **94**　　　Page 91 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn　　*SC* **94.3.12.1.1**　　11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.12.1.2**   *P* **248**   *L* **6**   # 150

Matthew, Brown   Applied Micro

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the editor's note.

Cl **94**   *SC* **94.3.12.3**   *P* **248**   *L* **28**   # 151

Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *pmd tx peak levels*

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.

Response   *Response Status* **C**

ACCEPT.

Cl **94**   *SC* **94.3.12.4**   *P* **248**   *L* **14**   # 234

Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**   *pmd tx return loss*

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= 12-0.5f from 0.05<=f<=8
  =5.65-9.71log (f / 14)8 <= f <= 14 GHz(dB)(92-1)

Response   *Response Status* **C**

REJECT.

See comment #53.

Cl **94**   *SC* **94.3.12.4**   *P* **249**   *L* **4**   # 276

Brown, Matthew   APM

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

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* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **94**   *SC* **94.3.12.4**   *P* **249**   *L* **8**   # 56

Ben-Artsi, Liav   Marvell

Comment Type **TR**   *Comment Status* **R**   *pmd tx return loss*

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

Response   *Response Status* **C**

REJECT.

See comment #53.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 92 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.12.4**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.12.5**   *P* **248**   *L* **17**   # 246
Moore, Charles   Avago Technologies

Comment Type   **T**   *Comment Status* **R**   *pmd tx transition time*
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."

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

See response to comment #245.

Cl **94**   *SC* **94.3.12.5**   *P* **249**   *L* **42**   # 136
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **R**   *pmd tx transition time*
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.

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

Remedy does not provide sufficient guidance.

Cl **94**   *SC* **94.3.12.6.1**   *P* **249**   *L* **51**   # 247
Moore, Charles   Avago Technologies

Comment Type   **T**   *Comment Status* **A**   *pmd tx pulse response*
TBD's make this spec technically incomplete

SuggestedRemedy
Recommend:

Minimum steady state voltage = 0.4 V
peak value > 0.85 x vf

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

Cl **94**   *SC* **94.3.12.6.1**   *P* **250**   *L* **51**   # 137
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **A**   *pmd tx pulse response*
The vlaues for steady state voltage and peak value are TBD.

SuggestedRemedy
Provide values for the steady state voltage and peak value.

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

See comment #247.

Cl **94**   *SC* **94.3.12.6.2**   *P* **251**   *L* **16**   # 152
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **A**   *pmd tx linear fit*
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.

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

Implement the proposed changes in moore_3bj_01b_1112 slide 2 through 5. The proposal
includes linear fit methodology for PAM4, updates to the SNDR methodology, and
proposed values for steady state voltage and peak pulse, background for the coefficient
update step size.

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

Cl **94**
SC **94.3.12.6.2**

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Cl **94**   *SC* **94.3.12.6.3**   *P* **251**   *L* **30**   # 129
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status*   **A**   *pmd tx initialize*
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.

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

Add the following sentence to the end of 94.3.12.6.3.

"When the PMD enters the INITIALIZE state of the Training state diagram (Figure 72-5) or receives a valid request to "initialize" from the link partner, the coefficients of the transmit equalizer shall be configured such that the ratio $(c(0)+c(1)-c(-1))/(c(0)+c(1)+c(-1))$ is 1.29 +/- 10%, the ratio $(c(0)-c(1)+c(-1))/(c(0)+c(1)+c(-1))$ is 2.57 +/-10%, and the steady state voltage, vf, (see 94.3.12.6) is greater than or equal to 140 mV."

See comment #138.

Cl **94**   *SC* **94.3.12.6.3**   *P* **251**   *L* **32**   # 138
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status*   **A**   *pmd tx initialize*
The values for pre-cursor and post-cursor peaking ratios are specified as TBD.

SuggestedRemedy
Provide values for the TBD peaking ratios.

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

Use values from 85.8.3.3.1. Set the first TBD to "1.29 +/- 10%" and the second TBD to "2.57 +/- 10%".

Cl **94**   *SC* **94.3.12.7**   *P* **252**   *L* **15**   # 139
Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status*   **A**   *pmd tx far end noise*
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.

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

Use the response to comment #176 as a basis with appropriate modifications for Clause 94, e.g., use Test 1 and Test 2 values from Table 94-16.

Cl **94**   *SC* **94.3.12.9**   *P* **253**   *L* **42**   # 277
Brown, Matthew   APM

Comment Type   **T**   *Comment Status*   **A**   *pmd tx linearity*
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".

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

Overtaken by events.

See comment #152.

Cl **94**   *SC* **94.3.13**   *P* **254**   *L* **21**   # 278
Brown, Matthew   APM

Comment Type   **T**   *Comment Status*   **A**   *bucket*
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 = "--"

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

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

Cl **94**
SC **94.3.13**
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Cl **94**   *SC* **94.3.13.2**   *P* **253**   *L* **50**   # 213
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **R**   *pmd rx return loss*
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)

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

<Changed sub-clause from 3.13.2 to 94.3.13.2.>

The proposals in the comment and comment #230 have similar issues to those discussed in comment #53.

See comment #53.

Cl **94**   *SC* **94.3.13.2**   *P* **254**   *L* **4**   # 279
Brown, Matthew   APM

Comment Type **T**   *Comment Status* **D**   *bucket*
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* **Z**
REJECT.

This comment was WITHDRAWN by the commenter.

Cl **94**   *SC* **94.3.13.2**   *P* **254**   *L* **48**   # 58
Ben-Artsi, Liav   Marvell

Comment Type **TR**   *Comment Status* **R**   *pmd rx return loss*
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

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

The proposals in the comment and comment #230 have similar issues to those discussed in comment #53.

See comment #53.

Cl **94**   *SC* **94.3.13.2**   *P* **254**   *L* **7**   # 215
Ghiasi, Ali   Broadcom

Comment Type **TR**   *Comment Status* **A**   *pmd rx return loss*
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

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

<Changed sub-clause from 3.13.2 to 94.3.13.2.>

It is assumed that the suggested remedy is to replace the TBD in Equation 94-16 (differential to common mode conversion).

It is not necessary to specify the return loss to the bit rate. Instead, set the upper limit to 10 GHz to be consistent with similar specifications.

Replace the TBD in Equation 94-16 with:
25-20*(f/13.89), 0.05<=f<=6.95 GHz
15, 6.95 GHz to 10 GHz

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

Cl **94**
SC **94.3.13.2**

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Cl **94**   *SC* **94.3.13.2**   *P* **255**   *L* **5**   # 140

Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **A**   *pmd rx return loss*

The value for CM return loss is specified as TBD.

SuggestedRemedy

Provide specification for CM return loss.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The commenter is referring to the RX differential to common mode return loss in Equation 94-16.

See comment #215.

Cl **94**   *SC* **94.3.13.3**   *P* **254**   *L* **7**   # 248

Moore, Charles   Avago Technologies

Comment Type   **T**   *Comment Status* **A**   *pmd rx interference tolerance*

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Incorporate slides 7 and 8 from dudek_3bj_01a_1112 into 94.3.13.3.

Editor's note:
The method for calibration of the channel interferer is required as COM does not provide
this.

Cl **94**   *SC* **94.3.13.3**   *P* **255**   *L* **31**   # 81

Mellitz, Richard   Intel Corporation

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Clause from 93 to 94.]

The solution for comment #178 resolves this comment.

Refer to new sub-clause in 93A.

Cl **94**   *SC* **94.3.13.3**   *P* **255**   *L* **31**   # 141

Matthew, Brown   Applied Micro

Comment Type   **T**   *Comment Status* **A**   *pmd rx interference tolerance*

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #248.

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

Cl **94**
SC **94.3.13.3**

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Cl **94**   *SC* **94.3.13.3**   *P* **255**   *L* **37**   # 280
Brown, Matthew   APM

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

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.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

[Changed Clause from 00 to 94. Set Subcl to 94.3.13.3, Page to 255, and Line to 37.]

Overtaken by events.

Given the response to comment #248, delete the bottom 5 rows of Table 94-16 and footnotes b and c.

Implement the suggested remedy.

Also, add the new note "c" to the "applied peak to peak sinusoidal jitter" in Table 93-7.

Cl **94**   *SC* **94.3.3**   *P* **232**   *L* **20**   # 134
Matthew, Brown   Applied Micro

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

Delay contraints have TBD values.

SuggestedRemedy

Provide values for TBD delay constraints.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Set the net delay to 16 pause quanta and the medium delay to 800 bit times.

Replace the first paragraph in 94.3.3 with the following:

"The sum of the transmit and the receive delays contributed by the 100GBASE-KP4 PMA, PMD, AN, and the medium in one direction shall be no more than 8192 bit times (16 pause_quanta or 81.92 ns). It is assumed that the one way delay through the medium is no more than 800 bit times (8 ns)."

1 pause quanta = 512 bit times

Cl **94**   *SC* **94.3.4**   *P* **232**   *L* **46**   # 135
Matthew, Brown   Applied Micro

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

Skew contraints have TBD values.

SuggestedRemedy

Provide values for TBD skew constraints.

Response   *Response Status*   **C**

ACCEPT IN PRINCIPLE.

Use values from Table 80-4 and Table 80-5 for skew and skew variation at each skew point.

SP2
skew: 43 ns
skew variation: 0.4 ns

SP3
skew: 54 ns
skew variation: 0.6 ns

SP4
skew: 134 ns
skew variation: 3.4 ns

SP5
skew: 145 ns
skew variation: 3.6 ns

Cl **94**   *SC* **94.3.6.3**   *P* **235**   *L* **9**   # 265
Brown, Matthew   APM

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

tx_symbol should be rx_symbol

SuggestedRemedy

Change "tx_symbol" to "rx_symbol".

Response   *Response Status*   **C**

ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 97 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.6.3**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.6.5**   *P* **235**   *L* **36**   # 126

Matthew, Brown   Applied Micro

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make similar changes in 92.7.5 and 93.7.5.

Cl **94**   *SC* **94.3.6.5**   *P* **235**   *L* **37**   # 127

Matthew, Brown   Applied Micro

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

Only one following paragraph.

SuggestedRemedy

Change "two paragraphs" to "paragraph".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Make the same change to 92.7.5 and 93.7.5.

Cl **94**   *SC* **94.3.6.6**   *P* **235**   *L* **52**   # 271

Brown, Matthew   APM

Comment Type **T**   *Comment Status* **A**   *pmd tx disable*

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)."

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events.

See comment #174.

Cl **94**   *SC* **94.3.6.6**   *P* **235**   *L* **52**   # 270

Brown, Matthew   APM

Comment Type **T**   *Comment Status* **A**   *pmd tx disable*

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".

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Used suggested remedy.

Also, apply to corresponding sub-clauses in 92 and 93, as well.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 98 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.3.6.6**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.3.6.7**   *P* **236**   *L* **13**   # 272
Brown, Matthew   APM

Comment Type **T**   *Comment Status* **A**   *pmd tx disable*
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)."

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

Overtaken by events.

See comment #174.

Cl **94**   *SC* **94.3.6.8**   *P* **236**   *L* **17**   # 131
Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *loopback*
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.

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

Replace the first two paragraphs of 94.3.6.8 with ...
"Local loopback mode is provided 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 and renumber Note 2 to Note 1.

Cl **94**   *SC* **94.3.7**   *P* **236**   *L* **30**   # 123
Matthew, Brown   Applied Micro

Comment Type **E**   *Comment Status* **A**   *bucket*
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.

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

Make similar changes in 92.7.6 and 93.7.6.

Cl **94**   *SC* **94.3.8**   *P* **236**   *L* **42**   # 124
Matthew, Brown   Applied Micro

Comment Type **E**   *Comment Status* **A**   *bucket*
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)".

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

92.7.10 does not require this change.

Make similar changes in 93.7.10.

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

Cl **94**
SC **94.3.8**

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Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **17**   # 153

Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **R**   *channel com*

All COM parameters in Table 94-17 must be reconciled against the transmitter and receiver specifications in 94.2 and 94.3.

SuggestedRemedy

Reconcile all parameters in Table 94-17 with the corresponding transmitter and receiver specifications in 94.2 and 94.3.

Response   *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **21**   # 162

Lusted, Kent   Intel

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

[Changed Clause from 00 to 94. Set Subcl to 94.4.1, Page to 256, and Line to 21.]

In Table 94-17, change the units of signaling rate to be GBd.

Modify Clause 93 (Table 93-8) and Annex 93A (Table 93A-1) to be consistent with this change.

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **26**   # 47

Ben-Artsi, Liav   Marvell

Comment Type **T**   *Comment Status* **A**   *channel com*

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #48.

Make the following changes in 94.4.1:

(a) Change the required COM value from 3 dB to 4 dB.

(b) Add an editor's note stating that 1 dB of the COM value is to address the penalty due to the receiver package insertion loss.

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **26**   # 44

Ben-Artsi, Liav   Marvell

Comment Type **TR**   *Comment Status* **A**   *channel com*

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)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #51.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **94**   Page 100 of 102
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **94.4.1**   11/15/2012 12:30:56 PM
SORT ORDER: Clause, Subclause, page, line

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **29**   # 45
Ben-Artsi, Liav   Marvell

Comment Type **TR**   *Comment Status* **A**   *channel com*

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)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #51.

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **33**   # 57
Ben-Artsi, Liav   Marvell

Comment Type **TR**   *Comment Status* **A**   *channel com*

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)

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events.

See comment #54.

Cl **94**   *SC* **94.4.1**   *P* **256**   *L* **44**   # 130
Matthew, Brown   Applied Micro

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

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.

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement using the response for comment #181.

Cl **94**   *SC* **94.4.2**   *P* **256**   *L* **35**   # 252
Shanbhag, Megha   TE Connectivity

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

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

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

<Changed sub-clause from 4.2 to 94.4.2.>

In Equation (94-17) change "a5+a6*f-f2" to "a5+a6*(f-f2)".

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

Cl **94**
SC **94.4.2**

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Cl **94**   *SC* **94.4.4**   *P* **258**   *L* **27**   # 154

Matthew, Brown   Applied Micro

Comment Type **T**   *Comment Status* **A**   *channel icn*

The editor's note points out that the ICN must be specified here.

SuggestedRemedy

Provide ICN specification(s).

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

The effect of crosstalk is constrained by COM and with a trade off with other channel
parameters.

Remove 94.4.4.

Cl **99**   *SC*   *P* **4**   *L* **26**   # 349

Anslow, Pete   Ciena

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

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."

Response   *Response Status* **C**

ACCEPT.

Cl **99**   *SC*   *P* **6**   *L* **13**   # 156

Lusted, Kent   Intel

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

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"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #167.

Cl **99**   *SC*   *P* **6**   *L* **14**   # 157

Lusted, Kent   Intel

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

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"

Response   *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment #167.

Cl **99**   *SC* **99**   *P* **6**   *L* **13**   # 167

Healey, Adam   LSI Corporation

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

Replace "Task Force name" with the actual Task Force name for both Chair and Editor-in-
Chief.

SuggestedRemedy

Per comment.

Response   *Response Status* **C**

ACCEPT.

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

Cl **99**
SC **99**

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