Cl **80** *SC* **80.1.1** *P* **98** *L* **14** # i-1

Rannow, R K self

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

40 Gb/s and 100 Gb/s Physical Layer entities such as those specified in Table 80-1, provide

SuggestedRemedy

40 Gb/s and 100 Gb/s Physical Layer entities, such as those specified in Table 80-1, provide

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.1.1** *P* **98** *L* **48** # i-2

Rannow, R K self

Comment Type **G** *Comment Status* **R** *editorial*

The MDIs as specified in Clause 84 for 40GBASE-KR4, in Clause 85 for 40GBASE-CR4, in Clause 86 for 40GBASE-SR4, in Clause 87 for 40GBASE-LR4, and in Clause 88 for 100GBASELR4
and 100GBASE-ER4, and in Clause 92 for 100GBASE-CR4 all use a 4 lane data path.

SuggestedRemedy

The MDIs as specified in Clause 84 for 40GBASE-KR4, Clause 85 for 40GBASE-CR4, Clause 86 for 40GBASE-SR4, Clause 87 for 40GBASE-LR4, Clause 88 for 100GBASE-LR4 and 100GBASE-ER4, and Clause 92 for 100GBASE-CR4all use a 4 lane data path.

Response *Response Status* **C**

REJECT.

The "in" helps to reduce ambiguity and improve readability.

Cl **80** *SC* **80.1.3** *P* **99** *L* **1** # i-3

Rannow, R K self

Comment Type **G** *Comment Status* **R** *editorial*

Although there is no electrical or mechanical specification of the MDI for backplane Physical
Layers, the PMDs as specified in Clause 84 for 40GBASE-KR4, in Clause 93 for 100GBASE-KR4
and in Clause 94 for 100GBASE-KP4 all use a 4 lane data path.

SuggestedRemedy

Although there is no electrical or mechanical specification of the MDI for backplane Physical
Layers, the PMDs as specified in Clause 84 for 40GBASE-KR4, Clause 93 for 100GBASE-KR4 and Clause 94 for 100GBASE-KP4 all use a 4 lane data path.

Response *Response Status* **C**

REJECT.

The "in" helps to reduce ambiguity and improve readability.

Cl **80** *SC* **80.3.1** *P* **103** *L* **7** # i-4

Rannow, R K self

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

If the optional Energy Efficient Ethernet (EEE) capability with the deep sleep mode option is supported (see
Clause 78, 78.3) then the inter-sublayer service interface includes five additional primitives defined as follows:

SuggestedRemedy

If the optional Energy Efficient Ethernet (EEE) capability with deep sleep mode is supported (see
Clause 78, 78.3) then the inter-sublayer service interface includes five additional primitives defined as follows:

OR

If the optional Energy Efficient Ethernet (EEE) capability with deep sleep mode is supported (see
Clause 78, 78.3), then the inter-sublayer service interface shall include five additional primitives defined as follows:

Response *Response Status* **C**

REJECT.

Some commenters have indicated the importance of highlighting that deep sleep is an optional extra mode - beyond the optional EEE capability.

Cl **80** *SC* **80.3.3.6** *P* **107** *L* **2** # i-5

Rannow, R K — self

Comment Type **G** *Comment Status* **A** *editorial*

The IS_RX_LPI_ACTIVE.request primitive 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. This primitive
is only used for a PMA sublayer that is between the PCS and a Clause 74 FEC sublayer, in all other
cases the primitive is never invoked and has no effect. Without EEE capability (with the deep sleep mode
option), the primitive is never invoked and has no effect.

SuggestedRemedy

The IS_RX_LPI_ACTIVE.request primitive 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. This primitive is only used for a PMA sublayer that is between the PCS and a Clause 74 FEC sublayer. In all other
cases the primitive is never invoked and has no effect. Without EEE capability (with the deep sleep mode
option), the primitive is never invoked and has no effect.

OR

The IS_RX_LPI_ACTIVE.request primitive 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. This primitive is only used for a PMA sublayer that is between the PCS and a Clause 74 FEC sublayer; in all other
cases the primitive is never invoked and has no effect. Without EEE capability (with the deep sleep mode
option), the primitive is never invoked and has no effect.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
This primitive is only used for a PMA sublayer that is between the PCS and a Clause 74 FEC sublayer, in all other
cases the primitive is never invoked and has no effect.

To:
This primitive is only used for a PMA sublayer that is between the PCS and a Clause 74 FEC sublayer; in all other
cases the primitive is never invoked and has no effect.

Cl **00** *SC* **0** *P* *L* # i-6

Rannow, R K — self

Comment Type **G** *Comment Status* **R**

General comment

SuggestedRemedy

There appears to be editorial opportunities relative to clarifying statements by including the use of commas or semicolons. The run-on sentences make technical interpretation somewhat confusing.

Response *Response Status* **C**

REJECT.

It is not clear to which sentences the commenter is referring. Insufficient detail in the suggested remedy to implement.

Cl **01** *SC* **1.4.50b** *P* **24** *L* **28** # i-7

Rolfe, Benjamin — Blind Creek Associate

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

"with reach up to at least 5 m." is extra information not needed in the definition.

SuggestedRemedy

Delete extra information in definition

Response *Response Status* **C**

REJECT.

Inclusion of the reach distance in the definition is consistent with definitions in 802.3-2012 for other 40G and 100G copper cable PHYs including 100GBASE-CR10 (1.4.52) and 40GBASE-CR4, (1.4.61). It is also consistent with all 40G and 100G optical PHY definitions.

Also, refer to the response for similar comment #179 for Draft 2.0.

Cl **01** *SC* **1.4.52b** *P* **24** *L* **39** # i-8

Rolfe, Benjamin — Blind Creek Associate

Comment Type **G** *Comment Status* **R**

"with a total insertion loss up to 35 dB at 12.9 GHz" sounds like a requirement. Definitions shouldn't contain requirements because people don't always read the definitions clause carefully.

SuggestedRemedy

Delete normative requirements from definitions

Response *Response Status* **C**

REJECT.

Since the word "shall" is not used, this is not a normative statement.

Inclusion of the reach in the definition is consistent with definitions in 802.3-2012 for other 40G and 100G copper PHYs including 40GBASE-KR4 (1.4.63), 100GBASE-CR10 (1.4.52), and 40GBASE-CR4 (1.4.61). It is also consistent with all 40G and 100G optical PHY definitions.

Inclusion of the medium length is appropriate as it gives tangible indication of the application space. Loss rather than distance is used to define reach since the distance depends upon the materials chosen for the channel. The inclusion of the reach in terms of loss also helps to differentiate the application space of the 100GBASE-KR4 and 100GBASE-KP4 PHYs.

Also, refer to the response for similar comments #180 and #181 for Draft 2.0.

Cl **01** *SC* **1.4.52a** *P* **24** *L* **33** # i-9

Rolfe, Benjamin — Blind Creek Associate

Comment Type **G** *Comment Status* **R**

with a total insertion loss up to 33 dB at 7 GHz" sounds like a requirement. Definitions shouldn't contain requirements because people don't always read the definitions clause carefully

SuggestedRemedy

remove normative requirements from definition clause.

Response *Response Status* **C**

REJECT.

Since the word "shall" is not used, this is not a normative statement.

Inclusion of the reach in the definition is consistent with definitions in 802.3-2012 for other 40G and 100G copper PHYs including 40GBASE-KR4 (1.4.63), 100GBASE-CR10 (1.4.52), and 40GBASE-CR4 (1.4.61). It is also consistent with all 40G and 100G optical PHY definitions.

Inclusion of the medium length is appropriate as it gives tangible indication of the application space. Loss rather than distance is used to define reach since the distance depends upon the materials chosen for the channel. The inclusion of the reach in terms of loss also helps to differentiate the application space of the KR4 and KP4 PHYs.

Also, refer to the response for similar comments #180 and #181 for Draft 2.0.

Cl **83** *SC* **83.5.11.4** *P* **145** *L* **40** # i-10

Rolfe, Benjamin — Blind Creek Associate

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

"shall be inferred" seems odd normative language and different from the language used in the base standard. "infer" suggests indirect observation or uncertainty (guess or surmise). The description that follows seems direct and precise. Was 'infer" chosen to be distinct from "assigned" in this case? "inferred" is used several other places in the draft, please review each one to determine (not guess or surmise :-) if this is really the word you mean.

SuggestedRemedy

change to "shall be assigned as follows" (seems consistent with language used in this clause)

Response *Response Status* **C**

ACCEPT.

Cl **83** *SC* **83.5.11.5** *P* **146** *L* **6** # i-11

Rolfe, Benjamin — Blind Creek Associate

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

Another "inferred"

SuggestedRemedy

"shall be determined" or "shall be set" seems to work here

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use "shall be assigned".

Cl **83** *SC* **83.5.11.5** *P* **146** *L* **13** # i-12

Rolfe, Benjamin — Blind Creek Associate

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

another "inferred" .

SuggestedRemedy

"shall be assigned"

Response *Response Status* **C**

ACCEPT.

Cl **83** *SC* **83.5.11.6** *P* **146** *L* **36** # i-13

Rolfe, Benjamin — Blind Creek Associate

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

"inferred" means "assigned" (or "set")? Use same wording as the base standard and elsewhere in this amendment for consistency

SuggestedRemedy

"shall be assigned as follows"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Cl **83** *SC* **83.5.11.6** *P* **146** *L* **43** # i-14

Rolfe, Benjamin — Blind Creek Associate

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

"inferred" again

SuggestedRemedy

"assigned" ?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"assigned"

Cl **92** *SC* **92.9** *P* **211** *L* **48** # i-15

Rolfe, Benjamin — Blind Creek Associate

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

Acronym COM should be included in abbreviations (1.5) and expanded the first time used (which is page 208 I think), then COM can be thereafter.

SuggestedRemedy

See comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Page 208, L39 add acronym (COM) after "channel operating margin".

In clause 92, replace all instances thereafter of "Channel Operating Margin" and "Channel Operating Margin (COM)" with "COM", as appropriate.

In Clause 1, annotate a definition for "Channel Operating Margin" and an abbreviation for "COM".

For the definition text use: "Channel Operating Margin (COM): A figure of merit for a channel derived from a measurement of its scattering parameters (see IEEE 802.3 Std., 93A.1)."

Cl **92** *SC* **92.14.4.1** *P* **234** *L* **28** # i-16

Rolfe, Benjamin — Blind Creek Associate

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

"The polynomial identifier for each
lane shall be unique; therefore no
two lanes have the same identifier." should be stated in the referenced normative clause.

SuggestedRemedy

Move to appropriate clause

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The normative clause that is quoted here is not from Clause 92, it is from Clause 45.2.1.98a. Furthermore, the "shall" applies to a user of the system - not the implementation. It doesn't make sense to make a normative requirement for a user, it should be a recommendation. The PICS item should be deleted & Clause 45 amended to fix the problem.

Delete PICS item PF23.

In Clause 45.2.1.98a, change
"The polynomial identifier for each lane shall be unique; therefore no two lanes have the same identifier"
to read
"The polynomial identifier for each lane should be unique; two lanes having the same identifier could impair operation of the PMD control function"

Cl **92** *SC* **92.14.4.1** *P* **234** *L* **11** # i-17

Rolfe, Benjamin — Blind Creek Associate

Comment Type **G** *Comment Status* **A**

"Each lane shall use the same
control function as
10GBASE-KR, as defined in
72.6.10" is repeating a normative requirement already stated in the referenced clause

SuggestedRemedy

delete repeated 'shall' and replace with reference

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

P234,L11 In comment/value field change "shall use" to "uses".

Cl **92** *SC* **92.14.4.2** *P* **234** *L* **49** # i-18

Rolfe, Benjamin — Blind Creek Associate

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

"If training is disabled by management, PMD_signal_detect_i shall be set to one for i=0 to 3." is repeating a normative requirement already stated in the referenced clause.

SuggestedRemedy

Delete

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change MF4 Value/Comment from "shall be" to "is".

Cl **92** *SC* **92.14.4.3** *P* **235** *L* **45** # i-19

Rolfe, Benjamin — Blind Creek Associate

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

"When the transmitter is disabled,the peak-to-peak differential output voltage shall be greater than 720 mV within 500 ns of the transmitter being enabled." seems to be repeating the requirements stated in 92.8.3.1, but inconsistently (that is contradicting those requirements).

SuggestedRemedy

Remove normative requirements from PICS, it is better to cross reference than repeat (and easier to keep consistent that way)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In TC9 Value/Comment field P235, L45 change "shall be" to "is".

Cl **92** *SC* **92.14.4.3** *P* **235** *L* **51** # i-20

Rolfe, Benjamin — Blind Creek Associate

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

repeating a normative requirement

SuggestedRemedy

remove "shall"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In TC10 Value/Comment field P235, L51 change "shall meet" to "meets".

Cl **92** *SC* **92.14.4.3** *P* **236** *L* **5** # i-21

Rolfe, Benjamin — Blind Creek Associate

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

Repeating a normative requirement

SuggestedRemedy

remove "shall"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In TC11 Value/Comment field P236, L5 change "shall be" to "is".

Also, change feature from "The peak-to-peak differential output voltage" to "DC common-mode output voltage".

Cl **92** *SC* **92.14.4.3** *P* **236** *L* **47** # i-22

Rolfe, Benjamin — Blind Creek Associate

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

repeating a normative requirement again

SuggestedRemedy

remove "shall"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. The response to comment #175 removes the requirement for effective random jitter.

Cl **69** *SC* **69.1.1** *P* **69** *L* **7** # i-23

Thompson, Michael — Not Applicable (N/A)

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

If this sentence is describing the standard, then the "or" should be changed to "and" to show that the standard supports all of these possible speeds, not just one of the speeds in the list.

SuggestedRemedy

Backplane Ethernet supports the IEEE 802.3 full duplex MAC operating at 1000 Mb/s, 10 Gb/s, 40 Gb/s, and 100 Gb/s providing a bit error ratio (BER) better than or equal to 10-12 at the MAC/PLS service interface.

Response *Response Status* **C**

REJECT.

The sentence is correctly stating that the MAC may operate at any one of the rates listed at any given time.

Cl **00** *SC* **0** *P* **1** *L* **9** # i-24

Hajduczenia, Marek — Bright House Network

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

This is the second amendment to 802.3-2012 that is going through the Sponsor Ballot, hence the number should not be X anymore

SuggestedRemedy

Change "X" to "2" - would be nice to change that now, rather than only at publication time.

Response *Response Status* **C**

ACCEPT.

While it is correct that it is more or less certain that IEEE P802.3bj will become the second amendment to IEEE Std 802.3-2012, it is a publication activity to allocate the amendment number. It must therefore be understood that the amendment number may change in prior to publication.

Cl **30** *SC* **30.12** *P* **34** *L* **7** # i-25

Hajduczenia, Marek — Bright House Network

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

Extra empty lines that are unnecessary

SuggestedRemedy

Battle with Frame and remove empty lines under 30.12 and above it. Note that there are many more locations in Clause 30 where extra spaces exist today and are unnecessary ... please srub the Clause and remove them all
The same problem exists in Clause 45, 78, 79

Response *Response Status* **C**

ACCEPT.

Extra lines will be scrubbed in multiple places.

Note that some instances have extra lines to try and control the pagination or readability of the draft. All of these will be removed for final publication.

Cl **30** *SC* **30.12.2.1.30** *P* **34** *L* **17** # i-26

Hajduczenia, Marek — Bright House Network

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

*** Field CommentType updated on 1/22/2014 from ER to E ***
Inconsistent formatting of the individual attributes, when comparing with the published version of 802.3

SuggestedRemedy

Please reproduce the formatting for individual attributes from 802.3-2012, which includes spacing, use of text styles, etc.
Consider using 30.3.5.1.1 as a reference for style use

Response *Response Status* **C**

ACCEPT.

The editor will copy the format from the original Framemaker file.

Cl **45** *SC* **45.2.1** *P* **37** *L* **7** # i-27

Hajduczenia, Marek — Bright House Network

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

*** Field CommentType updated on 1/22/2014 from ER to E ***
Text inserted into Table 45-3 should be shown with underline, especially when we show the removed text in strike-through.
Also, consider showing a single Table 45-3 instance, with text that is being removed (with strike-through), text that is being inserted (in underline) and text that stays the same (no markup). Start from register 1.162 going into 1.499

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the table from 1.162 to 1.1499, showing underlines, strikethroughs and unchanged text (as suggested at the end of the comment).

Cl **45** *SC* **45.2.1.2** *P* **38** *L* **17** # i-28

Hajduczenia, Marek — Bright House Network

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

Text inserted into Table 45-5 is not show with underline ...

SuggestedRemedy

Please use proper markup for text that is being inserted ...

Response *Response Status* **C**

REJECT.

The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **45** *SC* **45.2.1.6** *P* **39** *L* **1** # i-29

Hajduczenia, Marek — Bright House Network

Comment Type **E** *Comment Status* **A** *802.3bk*

*** Field CommentType updated on 1/22/2014 from ER to E ***
Table 45-7 was modified by P802.3bk, yet it is not shown in the current table right now - the following entries were added
0 1 1 1 11 = 10/1GBASE-PRX-U4
0 1 1 1 10 = 10GBASE-PR-U4
0 1 1 1 0 1 = 10/1GBASE-PRX-D4
0 1 1 1 0 0 = 10GBASE-PR-D4

SuggestedRemedy

Align Table 45-7 with changes in IEEE Std 802.3bk-2013

Response *Response Status* **C**

ACCEPT.

See comment #176.

Cl **45** *SC* **45.2.1.12** *P* **42** *L* **3** # i-30

Hajduczenia, Marek — Bright House Network

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

Rather than relying on description, please show the removed row with reserved bits 1.13.14:12 and then show the new text as its replaced (with underline, please)

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The editing instruction is clear and unambiguous, following the format suggested by the previous commenter.

Cl **45** *SC* **45.2.1.100** *P* **58** *L* **27** # i-31

Hajduczenia, Marek — Bright House Network

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

New text in table 45-73 should be shown as inserted (underline)

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **45** *SC* **45.2.3** *P* **60** *L* **1** # i-32

Hajduczenia, Marek — Bright House Network

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

Any special reason why 45.2.3 is separated into a new page?

SuggestedRemedy

Move to the end of page 59
Same for 45.2.3.9

Response *Response Status* **C**

ACCEPT.

Cl **73** *SC* **73** *P* **74** *L* **5** # i-33

Hajduczenia, Marek — Bright House Network

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

It is of very little relevance what the "original" intent was. What matters is what we do with Auto Negotiation today.

SuggestedRemedy

Change lines 5-7 to a new reading (editing changes not shown): "Auto-Negotiation as defined in this clause, is specified for the use with various Ethernet PHYs operating over backplane and copper cable assembly, including 40GBASE-CR4, 100GBASE-CR10, and 100GBASE-CR4 PHYs."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Rather than list the cable PHYs (already listed in 73.3) and not the backplane PHYs, the following text is proposed in place of the text in the suggested remedy.

"Auto-Negotiation, as defined in this clause, is specified for use with Ethernet PHYs operating over a backplane and for use with certain Ethernet PHYs operating over a copper cable assembly."

Cl **73** *SC* **73.6.4** *P* **74** *L* **51** # i-34

Hajduczenia, Marek — Bright House Network

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

"e.g." should be folowed by ","

SuggestedRemedy

Insert "," after "e.g." in line 51, 53, and other locations where text is being modified or added by this project.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.4** *P* **83** *L* **3** # i-35

Hajduczenia, Marek — Bright House Network

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

The new title of 78.1.4 reads just strange - EEE is optional for the PHYs we list in Table 78-1, and this is what the subclause title should reflect

SuggestedRemedy

Change title of 78.1.4 to read: "PHYs optionally supporting EEE"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change title of 78.1.4 to read: "PHY types optionally supporting EEE"

Cl **78** *SC* **78.1.4** *P* **83** *L* **7** # i-36

Hajduczenia, Marek — Bright House Network

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

"for each PHY type and interfaces" - to make it read correctly, it should be "interface"

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.2** *P* **83** *L* **39** # i-37

Hajduczenia, Marek — Bright House Network

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

"Replace table title and body of Table 78-2 as shown" - if what you're after is complete replacement of Table 78-2, the editorial instructions should read as follows: "Remove Table 78-2 as published in IEEE Std 802.3-2012. Insert new Table 78-2 as shown below:" - the staff editor needs to know here literally what to do. If changes are too extensive, copying and pasting a new table will be quicker

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

"Replace Table 78-2 as shown" is the style used elsewhere.

Cl **78** *SC* **78.4.3** *P* **90** *L* **3** # i-38

Hajduczenia, Marek — Bright House Network

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

"Insert the following at the end of 78.4.3" - likely should read "Insert the following text at the end of 78.4.3"
Same issue on page 90, line 34, and on page 91, line 6

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.5** *P* **92** *L* **1** # i-39

Hajduczenia, Marek — Bright House Network

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

Inserted text in Table 78-4 should be shown in underline, just like changes to caption or column titles.

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **78** *SC* **78.6** *P* **93** *L* **1** # i-40

Hajduczenia, Marek — Bright House Network

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

If no changes to PICS are needed, remove 78.6 altogether, with the editorial note. It is confusing right now, to have it there and read that no changes are needed.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **79** *SC* **79.3** *P* **94** *L* **7** # i-41
Hajduczenia, Marek Bright House Network

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

Inserted text in Table 79-1 should be shown in underline

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **79** *SC* **79.3.6** *P* **94** *L* **22** # i-42
Hajduczenia, Marek Bright House Network

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

"... systems operating at links speeds >10 Gb/s" - elsewhere, we speak of "speeds greater than 10 Gb/s"

SuggestedRemedy

Change to read "systems operating at links speeds greater than 10 Gb/s"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change to read "systems with links operating at speeds greater than 10 Gb/s"

Cl **79** *SC* **79.4.2** *P* **95** *L* **22** # i-43
Hajduczenia, Marek Bright House Network

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

Changes to Table 79-9 should be shown in underline and strikethroughs

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **79** *SC* **79.5.6a** *P* **79** *L* **38** # i-44
Hajduczenia, Marek Bright House Network

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

Item EFW4 does not have a referenced subclause. Either add "NA" or "-" or alternatively provide reference to where this specific item has a "should" statement to match it

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There is no corresponding "may" for EFW4. However, there is a recommendation that that the EEE TLV should contain no more than 1 EEE TLV which (by analogy) should be echoed for EEE FW TLV. Therefore:

Insert: 79.3.6.4 EEE Fast Wake TLV usage rules

An LLDPDU should contain no more than one EEE Fast Wake TLV.

Also, delete the item EFW4 in the PICS as a recommendation requires no corresponding PICS.

Cl **82** *SC* **82.2.12** *P* **125** *L* **29** # i-45
Anslow, Peter Ciena Corporation

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

Missing space between the number and unit. "0.4ns" should be "0.4 ns"

SuggestedRemedy

Change "0.4ns" to "0.4 ns"

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.5** *P* **111** *L* **14** # i-46
Anslow, Peter Ciena Corporation

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

References to "88.3.2" and "89.3.2" are not links so they should be in Forest Green (3 instances of each)

SuggestedRemedy

Change "88.3.2" and "89.3.2" to Forest Green (3 instances of each)

Response *Response Status* **C**

ACCEPT.

Cl **93** *SC* **93.7.12** *P* **247** *L* **34** # i-47

Anslow, Peter — Ciena Corporation

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

The reference to "72.6.10.2.5" is not a link so it should be in Forest Green

SuggestedRemedy

Change "72.6.10.2.5" to Forest Green

Response *Response Status* **C**

ACCEPT.

Cl **94** *SC* **94.3.13.3** *P* **307** *L* **27** # i-48

Anslow, Peter — Ciena Corporation

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

The reference to "94.3.12.8.1" is not a link but it should be

SuggestedRemedy

Change "94.3.12.8.1" to be a link

Response *Response Status* **C**

ACCEPT.

Cl **92** *SC* **92.14.4.5** *P* **238** *L* **3** # i-49

Anslow, Peter — Ciena Corporation

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

The reference to "92.10.8" is not a link but it should be

SuggestedRemedy

Change "92.10.8" to be a link

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **78** *SC* **78.1.3.3.1** *P* **82** *L* **5** # i-50

Anslow, Peter — Ciena Corporation

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

According to 802.3 spelling rules "Physical Layer" is always capped.

SuggestedRemedy

Change "Physical layer" to "Physical Layer"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The commenter is correct that the text needs an editorial fix. However, there are more problems with this section than the one highlighted.

Change "Physical layer" to "Physical Layer" on line 5.

Change the first paragraph to read:

For PHYs with an operating speed of 40 Gb/s or greater that implement the optional EEE capability, two modes of LPI operation may be supported: deep sleep and fast wake. Deep sleep refers to the mode for which the transmitter ceases transmission during Low Power Idle (as shown in Figure 78-3) and is similar to the mechanism defined for PHYs with an operating speed less than 40 Gb/s. For some PHYs with an operating speed of 40 Gb/s or greater, deep sleep is optional as shown in Table 78-1. Fast wake refers to the mode for which the transmitter continues to transmit signals during Low Power Idle so that the receiver can resume operation with a shorter wake time (as shown in Figure 78-3a). Fast wake is mandatory for PHYs with an operating speed of 40 Gb/s or greater that implement EEE.

Cl **69** *SC* **69.1.2** *P* **69** *L* **53** # i-51

Anslow, Peter — Ciena Corporation

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

According to http://www.ieee802.org/3/WG_tools/editorial/requirements/words.html this should be "IEEE 802.3 MAC (not CSMA/CD MAC)".
Since this paragraph is being modified by the P802.3bj amendment, this should be corrected.

SuggestedRemedy

Change "the IEEE 802.3 (CSMA/CD) MAC" to "the IEEE 802.3 MAC", i.e. show "(CSMA/CD)" in strikethrough font.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.4** *P* **83** *L* **7** # i-52

Anslow, Peter Ciena Corporation

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

This text now reads: "Normative requirements for the EEE capability for each PHY type and interfaces are in the associated clauses". Here, "interfaces" should be "interface".

SuggestedRemedy

Change "interfaces" to "interface".

Response *Response Status* **C**

ACCEPT.

Cl **94** *SC* **94** *P* **305** *L* **38** # i-53

Anslow, Peter Ciena Corporation

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

Clause 94 is not consistent in the style used for multi-part equations.
Equations 94-3, 94-6, 94-7, use a format (with a closing curly brace) that is consistent with IEEE Std 802.3ba and the other clauses in the P802.3bj amendment (except that they don't include "(dB)" at the end), whereas Equations 94-17, 94-20, 94-21 and 94-22 don't include a closing curly brace.

SuggestedRemedy

Make the Clause 94 multi-part equations consisten in style with those in the rest of the draft.
Change Equations 94-17, 94-20, 94-21 and 94-22 to have a closing curly brace.
Add "(dB)" at the end of Equations 94-3, 94-6, 94-7, 94-17, 94-20, 94-21 and 94-22.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Equation 94-17 describes time so adding dB is not appropriate.

Change Equations 94-17, 94-20, 94-21 and 94-22 to have a closing curly brace.

Add "(dB)" at the end of Equations 94-3, 94-6, 94-7, 94-20, 94-21 and 94-22.

On page 311 line 8 change:
"IL(f) is the insertion loss at frequency f"
to:
"IL(f) is the insertion loss in dB at frequency f"

Cl **94** *SC* **94.3.12.1.1** *P* **300** *L* **12** # i-54

Anslow, Peter Ciena Corporation

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

Equation 94-4 is for RLmax(f) but the value of 10 dB is a minimum (a high return loss is a good thing).
Likewise for Equation 94-20.
Equation 94-22 is correct but the text referring to it and Figure 94-18 say RLmax where it should be RLmin.

SuggestedRemedy

In Equation 94-4 change RLmax to RLmin.
In Equation 94-20 change RLmax to RLmin.
In the text immediately above Equation 94-22 change RLmax to RLmin.
In Figure 94-18 change RLmax to Rlmin.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There is a typo in the suggested remedy. For Figure 94-18 it should be RLmin rather than Rlmin.

Note the L in Rlmin needs to be capitalized.

Implement suggested remedy using RLmin.

Cl **45** *SC* **45.2.1.88b** *P* **44** *L* **38** # i-55

Anslow, Peter Ciena Corporation

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

The title of Table 45-67b is "PMA overhead control 1, 2, and 3 register bit definitions" but should be "PMA overhead status 1 and 2 register bit definitions"

SuggestedRemedy

Change the title of Table 45-67b from "PMA overhead control 1, 2, and 3 register bit definitions" to "PMA overhead status 1 and 2 register bit definitions"

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **37** *L* **34** # i-56

Anslow, Peter — Ciena Corporation

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

Some of the new register names in Table 45-3 don't match the names in the subclauses defining them.
Registers 1.210 through 1.217 are "RS-FEC symbol error counter, FEC lanes 0 to 3" here but are "RS-FEC symbol errors counter lane 0" in 45.2.1.92f and 45.2.1.92g.
Registers 1.230 through 1.249 are "RS-FEC BIP error counter, PCS lanes 0 to 19" here but just use "lanes 0 to 19" (no PCS) in 45.2.1.92h and 45.2.1.92i.
Also, each register only relates to one lane so the names should be "lane x to y"

SuggestedRemedy

In Table 45-3 for 1.210 through 1.217 change "RS-FEC symbol error counter, FEC lanes 0 to 3" to "RS-FEC symbol error counter, lane 0 to 3" and add a cross-reference to 45.2.1.92g in the Clause column.
Change the title of 45.2.1.92f to "RS-FEC symbol error counter lane 0 (Register 1.210, 1.211)" and make the same change (errors to error) in the first sentence of the text.
Change the title of Table 45-71f to "RS-FEC symbol error counter lane 0 register bit definitions"
Change the title of 45.2.1.92g to "RS-FEC symbol error counter lane 1 through 3 (Register 1.212, 1.213, 1.214, 1.215, 1.216, 1.217)" and make the same changes (errors to error and lanes to lane) in the first sentence of the text.
In Table 45-3 for 1.230 through 1.249 change "RS-FEC BIP error counter, PCS lanes 0 to 19" to "RS-FEC BIP error counter, lane 0 to 19" and add a cross-reference to 45.2.1.92i in the Clause column.
Change the title of 45.2.1.92i to "RS-FEC BIP error counter, lane 1 through 19 (Registers 1.231 through 1.249)" (lane rather than lanes).

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **37** *L* **9** # i-57

Anslow, Peter — Ciena Corporation

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

The right hand column headings in the three parts of Table 45-3 are wrong

SuggestedRemedy

Change "Clause" to "Subclause" in 3 places

Response *Response Status* **C**

ACCEPT.

Cl **01** *SC* **1** *P* **1** *L* **1** # i-58

Byrd, William — PRIVACOM VENTUR

Comment Type **G** *Comment Status* **R**

This Standard has a terrible Introduction and format style. If it meets the IEEEs Style format, then it barely does meet it.

SuggestedRemedy

This Standard should have a proper Introduction written in it before it is published. An Intro that is nothing more than a jump to defining various Jargon that is going to be used is no Introduction at all. At least write a purpose for this standard.

Response *Response Status* **C**

REJECT.

This draft is an amendment and has to be read in conjunction with the base standard IEEE Std 802.3-2012 including amendments that precede publication of IEEE Std 802.3bj-xxxx (in this case likely to be just IEEE Std 802.3bk-2013). It is not a stand-alone document.

As an example, page 24 of the draft it reads '1. Introduction' then '1.4 Definitions', then ' Insert the following definition after 1.4.49 "10GBASE-X" (renumbered from 1.4.50 due to the deletion of 1.4.27 by IEEE Std P802.3bk-2013) as follows:'. This therefore is not the 'introduction' but is instead the instructions in respect to how to modify the definitions found in subclause 1.4, a subclause of Clause 1 which is the introduction. The introduction text itself is IEEE 802.3-2012 Clause 1 as modified by IEEE Std 802.3bk-2013 and IEEE P802.3bj.

Cl **84** *SC* **84.11.4.3** *P* **152** *L* **46** # i-59

Karocki, Piotr — independent

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

90%

SuggestedRemedy

There should be space between numeral and percent sign - at least in SI ("a space separates the number and the symbol %", http://www.bipm.org/en/si/si_brochure/chapter5/5-3-7.html)

Response *Response Status* **C**

REJECT.

The suggested remedy is not consistent with the use of "%" in 802.3-2012.

Cl **80** *SC* **80.1.4** *P* **100** *L* **11** # i-60

Hajduczenia, Marek — Bright House Network

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

Word order

SuggestedRemedy

change "devices also may" to "devices may also" - there are several locations where such changes are needed

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.4** *P* **108** *L* **20** # i-61

Hajduczenia, Marek — Bright House Network

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

Changes to Table 80-3 shuld be shown in more detail, i.e., show where the text is to be inserted in the overal table.

SuggestedRemedy

Per comment - use underline to show new text

Response *Response Status* **C**

REJECT.

This style of editing instruction was preferred by earlier commenters. The editorial instructions say "insert" therefore the inserted text is not underlined.

Cl **80** *SC* **80.5** *P* **110** *L* **1** # i-62

Hajduczenia, Marek — Bright House Network

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

Table 80-4 and 80-5 contain a thick border line below SP7. it should be a thin line

SuggestedRemedy

Apply the border style correctly.

Response *Response Status* **C**

ACCEPT.

<The editor changed the Clause from 00 to 80 and the Subclause from 0 to 80.5.>

Cl **80** *SC* **80.2.3** *P* **102** *L* **16** # i-63

Hajduczenia, Marek — Bright House Network

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

Serial comma missing in "It is optional for 40GBASE-KR4, 40GBASE-CR4 and 100GBASE-CR10 PHYs and mandatory for 100GBASE-CR4, 100GBASE-KR4 and 100GBASE-KP4 PHYs."

SuggestedRemedy

Change to "It is optional for 40GBASE-KR4, 40GBASE-CR4, and 100GBASE-CR10 PHYs and mandatory for 100GBASE-CR4, 100GBASE-KR4, and 100GBASE-KP4 PHYs."

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.2.4** *P* **102** *L* **29** # i-64

Hajduczenia, Marek — Bright House Network

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

"The 40GBASE-R and 100GBASE-R PMAs are specified in Clause 83 and the PMA specific to the 100GBASE-KP4 PHY is specified in Clause 94." could be readable more if the new text was separated into a new sentence

SuggestedRemedy

Change the text to read: "The 40GBASE-R and 100GBASE-R PMAs are specified in Clause 83. The PMA specific to the 100GBASE-KP4 PHY is specified in Clause 94."

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.4** *P* **108** *L* **20** # i-65

Hajduczenia, Marek — Bright House Network

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

"Insert rows in Table 80-3 as shown (insert 100GBASE-R RS-FEC below 100GBASE-R FEC; insert the other 3 rows below 100GBASE-R PMA):" - for clarity, the insertion into Table 80-3 should be (a) either divided into two separate instructions, showing separately 100GBASE-R RS-FEC from the remaining three rows, or (b) show the whole Table 80-3 with the specific changes, i.e., insertion of specific rows where needed.

SuggestedRemedy

My personal preference is for option (b), since it makes changes exp[licit for a reader.

Response *Response Status* **C**

REJECT.

This style of editing instruction was preferred by earlier commenters. It is unambiguous and therefore sufficient for purpose. Table 80-3 is large and uninteresting for this project.

Cl **81** *SC* **81.3a** *P* **116** *L* **47** # i-66

Hajduczenia, Marek Bright House Network

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

*** Field CommentType updated on 1/22/2014 from ER to E ***
According to Style Manual 2012, "... The use of the word willis deprecated and shall not be used when stating mandatory requirements; will is only used in statements of fact." - it seems that in this particular location, we are expressing a requirement and not a fact.

SuggestedRemedy

Change "will be set" to "shall be set". There are many instances in the text of this ammendment, where "will" seems to be used to imply a requirement. Examples include (page/line): 31/27, 116/47, 122/43, 145/50, 146/15, 146/45, 146/54 (first instance), 170/11, 293/1 (first instance), 293/9, 293/10

There are also other locations where the use of "will" is not necessary and should be replaced with Present Simple tense instead. These locations include (page/line): 29/17, 29/40, 30/18, 31/13, 31/33, 31/47, 32/8, 32/24, 32/42, 33/6, 80/5, 80/7, 80/21, 80/24, 118/32, 126/41, 126/43, 126/44, 128/35, 128/48, 128/51, 129/7, 129/11, 129/15, 129/19, 129/22, 129/26, 145/48, 145/51, 146/9, 146/16, 146/46, 146/51, 146/54 (second instance), 159/3, 160/53, 165/4, 169/47, 170/5, 170/10 (two instances), 204/26, 211/9, 218/49, 219/15, 228/1, 253/45, 293/1 (second instance), 293/2, 293/4, 295/37, 295/38, 296/45, 304/27, 342/17, 345/11, 345/12, 345/22, 347/32, 347/33

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the suggested remedy to the example instances identified in the suggested remedy with the exception that instances:

31/27, 116/47, 170/11, 293/1 (first instance), 293/9, 293/10

should also be changed to present simple tense (they are descriptive, not normative).

Also, for the cases where "will" is changed to "shall" include a PICS statement.

Note clauses affected by this comment:

30.5.1.1.26
81.3a
82.2.8
83.5.11.4
83.5.11.5
83.5.11.6
91.5.3.3
94.3.10.7.2
94.3.10.7.3
30.5.1.1.11
30.5.1.1.15
30.5.1.1.16
30.5.1.1.17
30.5.1.1.26
30.5.1.1.27
30.5.1.1.28
30.5.1.1.29
30.5.1.1.30
30.5.1.1.31
74.7.4.8
81.3a.3
82.2.18.2.2
82.2.18.2.4
82.2.18.2.5
83.5.11.4
83.5.11.5
83.5.11.6
91.2
91.5.2.4
91.5.3.3
92.8.3.6.5
92.8.4.4.5
92.10.8
92.10.9
92.12.1
93.8.1.5.5
94.3.10.7.2
94.3.11
94.3.11.1.6
94.3.12.5.6
93A.1.2.1
93A.1.5
93A.1.6
93A.1.7.1

Cl **81** *SC* **81.3a.1** *P* **117** *L* **7** # i-67

Hajduczenia, Marek — Bright House Network

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

Individual definitions of primitives should be separated to improve readability

SuggestedRemedy

Please use the format similar to what was used elsewhere in published 802.3-2012, e.g., 76.3.2.5.5
Similar issue in 81.3a.2.1. There are multiple locations in the amendment where the format of variables / messages is not consistent with the rest of published 802.3-2012.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The format will be made consistent with 802.3-2012 clauses 80-88.

Cl **81** *SC* **81.3a.2** *P* **117** *L* **24** # i-68

Hajduczenia, Marek — Bright House Network

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

Remove the editorial note - given that it is removed from the text prior to publication, the final readers will not see it anyway.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **81** *SC* **81.3a.2.1** *P* **117** *L* **32** # i-69

Hajduczenia, Marek — Bright House Network

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

Variables and counters defined in other locations, e.g., 802.3-2012, Clause 76, include also type definition, e.g., Boolean, Unsigned Integer, etc. Here, we do not include any type definitions.

SuggestedRemedy

Consider using the definition format for variables and counters per 76.3.2.5.3.
This change applies to the whole amendment.

Response *Response Status* **C**

REJECT.

The variable definitions in this clause and throughout the amendment follow the format of definitions in 802.3-2012 clauses 80-88 where appropriate and also use the format of other RS clauses for new EEE material.

Cl **81** *SC* **81.3a.2.2** *P* **118** *L* **3** # i-70

Hajduczenia, Marek — Bright House Network

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

The conventions of the use of timers in this Clause (and likely others) is not very consistent across 802.3-2012. It is also more readable when the timer is explicitly started and loaded using the [start timer_name, timer_value] command, as shown in Figure 76-22 - see the "[start interval_timer, BER_Monitor_Interval]".

SuggestedRemedy

In Figure 81-10a, remove "tw_timer <= 0" and replace "start_tw_timer" with [start tw_rimer, XXX]" with "XXX" indicating the proper value of the timer to count down to zero.
Also, adopt the timer conventions from Clause 76.

Response *Response Status* **C**

REJECT.

This state diagram is identical to those in 802.3-2012 clauses 22, 35 and 46. The format is also broadly similar to fig. 81-9 in the base standard.

Cl **81** *SC* **81.3a.3** *P* **118** *L* **33** # i-71

Hajduczenia, Marek — Bright House Network

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

"Buffering and queue management should be designed to accommodate this" - is it intended to be an optional requirement?
It is also not clear what "this" refers to in this particular statemnt

SuggestedRemedy

Clarify what "this" means. Additionally, consider removing the optional requirement from this statement

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The sentence is clearly a recommendation (as denoted by "should") for system design. It is not an option (as would be denoted by "may").

The word "this" in the sentence can be understood by most readers to refer to the object of the immediately preceding sentence (i.e. that egress data flow will be halted for at least resolved Tw_sys_tx etc.).

Change the sentence to the following:
"Buffering and queue management should be designed to accommodate this behavior."

Cl **81** *SC* **81.4.3.6** *P* **119** *L* **19** # i-72

Hajduczenia, Marek — Bright House Network

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

There are many "should" statements in the added text in the amendment that are not covered right now in PICS.

SuggestedRemedy

Please add the new optional requirements added in new text in this Clause into PICS.

Response *Response Status* **C**

REJECT.

The word "should" denotes a recommendation; it is not an option (as would be denoted by "may"). Thus, PICS items are not required.

Cl **82** *SC* **82.1.4.1** *P* **120** *L* **34** # i-73

Hajduczenia, Marek — Bright House Network

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

Text in 82.1.4.1 is not modified and as such, should not be shown

SuggestedRemedy

Remove 82.1.4.1 and the associated text

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete subclause, add editor's instruction to change 82.1.4.2

Cl **82** *SC* **82.2.3.4** *P* **121** *L* **48** # i-74

Hajduczenia, Marek — Bright House Network

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

Only the second paragraph in 82.2.3.4 is modified. No need to show the first one

SuggestedRemedy

Remove the first para from 82.2.3.4.
Change the editorial note prior to 82.2.3.4 to read: "Change the second paragraph in 82.2.3.4"

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.3.6** *P* **122** *L* **25** # i-75

Hajduczenia, Marek — Bright House Network

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

82.2.3.6 is modified by adding a new paragraph - no need to show existing test

SuggestedRemedy

Remove the first para in 82.2.3.6
Change the editorial note prior to 82.2.3.6 to read: "Insert a paragraph at the end of 82.2.3.6 as shown:". No need to underline new text

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.8a** *P* **124** *L* **5** # i-76

Hajduczenia, Marek — Bright House Network

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

Extra empty lines on page 124

SuggestedRemedy

Please remove them

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.11** *P* **125** *L* **12** # i-77

Hajduczenia, Marek — Bright House Network

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

"by Figure 82-17 the LPI receive state diagram" - I do not see the need for "the LPI receive state diagram" in this text. It is enough to point to figure.

SuggestedRemedy

Remove "the LPI receive state diagram" in the referenced text
The same change in line 20 on the same page

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.18.2.2** *P* **125** *L* **41** # i-78

Hajduczenia, Marek Bright House Network

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

"controlled by the Alignment marker lock state diagram" - it would be more meaningful to use reference to a specific figure and not reference it by name

SuggestedRemedy

Replace the statement "controlled by the Alignment marker lock state diagram" with "controlled according to Figure XX-YY", with the proper live reference to the respectiev figure.
Similar change on page 125, lines 46/47 for "Block lock state diagram"
Similarly, on page 126, line 2, change "Variable used by the Block lock state diagram" to "Variable used in Figure XXX-YY", with the proper live reference to the respectiev figure.
Similarly, on page 126, line 36, replace "as described by the LPI receive state diagram (Figure 82-17)" with "as defined in Figure 82-17"

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.18.2.2** *P* **126** *L* **40** # i-79

Hajduczenia, Marek Bright House Network

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

Does not make sense: "This Boolean variable is used to bypass the Tx PCS scrambler" - variable is not used to bypass anything, it might at best reflect the state in which the said scrambler is being bypassed"

SuggestedRemedy

Consider using the following statement: "This Boolean variable indicates whether the Tx PCS scrambler is to be bypassed "

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.2.18.2.2** *P* **126** *L* **47** # i-80

Hajduczenia, Marek Bright House Network

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

Missing "is" before "indicate"

SuggestedRemedy

Per comment

Response *Response Status* **C**

REJECT.

The style is consistent with many other variable definitions in this subclause.

Cl **82** *SC* **82.2.18.2.4** *P* **128** *L* **23** # i-81

Hajduczenia, Marek Bright House Network

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

Missing "." after "markers" - right now, it is shown as underlined space.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.6** *P* **131** *L* **30** # i-82

Hajduczenia, Marek Bright House Network

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

Rather than change the figures (where changes in amy places can be misinterpreted and are hard to follow), suggest to perform a complete replacement. There is no other project changing these right now anyway.

SuggestedRemedy

Change "Change figures 82-10, 82-11, 82-12, 82-13, 82-14 and 82-15;" to "Replace Figures 82-10, 82-11, 82-12, 82-13, 82-14 and 82-15;"

Response *Response Status* **C**

REJECT.

Showing the changes is useful for commenters who can see how the state diagrams change.

Cl **85** *SC* **85.2** *P* **153** *L* **29** # i-83

Hajduczenia, Marek Bright House Network

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

"If the optional Energy Efficient Ethernet (EEE) capability ... " - the acronyms need to be expanded only on the first use, and that is already done in newly added text in line 20 on the same page.

SuggestedRemedy

Change the selected text to "If the optional EEE capability"
Similarly, change "Energy Efficient Ethernet (EEE)" to "EEE" on page 154, line 11

Response *Response Status* **C**

ACCEPT.

Cl **85** *SC* **85.2** *P* **153** *L* **29** # i-84

Hajduczenia, Marek — Bright House Network

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

"see Clause 78, 78.3" - direct reference to 78.3 is sufficient

SuggestedRemedy

Change selected text to "see 78.3"

Response *Response Status* **C**

ACCEPT.

Cl **85** *SC* **85.2** *P* **153** *L* **37** # i-85

Hajduczenia, Marek — Bright House Network

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

Incorerct format for a note: "Note: if Clause 74 FEC is in use, only the values DATA, QUIET and ALERT may be passed through the FEC to the PMD (see 74.5.1.7)."

SuggestedRemedy

Either change to "Note that if Clause 74 FEC is in use, only the values DATA, QUIET and ALERT may be passed through the FEC to the PMD (see 74.5.1.7).", or apply the proper style for a NOTE - see 77.2.2.3, book 5, page 665 for an example

Response *Response Status* **C**

ACCEPT.

"Note that if Clause 74 FEC is in use, only the values DATA, QUIET and ALERT may be passed through the FEC to the PMD (see 74.5.1.7)."

Cl **91** *SC* **91.5.2.5** *P* **162** *L* **1** # i-86

Hajduczenia, Marek — Bright House Network

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

"For the optional EEE capability, transitions between normal alignment markers and Rapid Alignment markers ..." - previously, "Rapid Alignment markers" were defined as "RAMs" - we ought to use the same acronym here as well.

SuggestedRemedy

Change the text to read: "For the optional EEE capability, transitions between normal alignment markers and Rapid Alignment Markers (RAMs) ..."

Response *Response Status* **C**

ACCEPT.

This comment is actually against 91.5.2.4 (page and line numbers are correct).

Cl **91** *SC* **91.5.2.5** *P* **162** *L* **7** # i-87

Hajduczenia, Marek — Bright House Network

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

"refer to 82.2.8" - we usually use the "see xxx" fromat

SuggestedRemedy

Change "refer to 82.2.8" to "see 82.2.8"

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.2.2.3** *P* **81** *L* **35** # i-88

Marris, Arthur — Cadence Design Syst

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

This comment is to implement maintenance request 1248 (http://www.ieee802.org/3/maint/requests/maint_1248.pdf). Please correct the 'When generated' description of LP_IDLE.indication.

SuggestedRemedy

Bring the following text into 802.3bj
"78.1.2.2.3 When generated
This primitive is generated by the PHY when it receives an LPI signal or a wake signal from its link partner."
Insert text above:
"Change subclause 78.1.2.2.3 as shown:"

Strike through "This primitive is generated by the PHY when it receives an LPI signal or a wake signal from its link partner."

Add the following underlined text: "This primitive is generated by the RS when it starts or stops receiving Assert LPI encoded on the receive xMII according to the rules defined in 78.1.3.2."

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1** *P* **81** *L* **37** # i-89

Marris, Arthur — Cadence Design Syst

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

Delete the editor's note as it needs to be removed prior to publication.

SuggestedRemedy

Delete the editor's note.

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.3.3.2** *P* **82** *L* **25** # i-90

Marris, Arthur — Cadence Design Syst

Comment Type **TR** *Comment Status* **A** *EEE description*

Need to mention Fast Wake in PHY LPI receive operation. The current text in 78.1.3.3.2 says that the transmitter shuts down in LPI mode. This is not true for Fast Wake mode.

SuggestedRemedy

Bring subclause 78.1.3.3.2 into 802.3bj and change:
"After sending the sleep signal, the link partner ceases transmission."
To:
"After sending the sleep signal, the link partner ceases transmission if not in Fast Wake mode."

Change "The link partner periodically transmits refresh signals"
To "If in deep sleep mode the link partner periodically transmits refresh signals"

So add text:
"Change subclause 78.1.3.3.2 as follows:"
Copy the two paragraphs of 78.1.3.3.2 into 802.3bj and add underlined text of:
"if not in Fast Wake mode" and
"If in deep sleep mode"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use the suggested remedy, except that "if not in fast wake mode" (note capitalization) should be used for both instances - "deep sleep" is not defined for speeds less than 40Gb/s, so the sentence would be incorrect.

Cl **80** *SC* **80.3.1** *P* **103** *L* **21** # i-91

Marris, Arthur — Cadence Design Syst

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

It is important to make clear that the IS_RX_LPI_ACTIVE.request signal is only used by the Clause 74 BASE-R
FEC and not by the Clause 91 RS_FEC.

SuggestedRemedy

Change:
"The IS_RX_LPI_ACTIVE.request primitive is used to communicate to the FEC that the PCS is using its receive LPI function."
To:
"The IS_RX_LPI_ACTIVE.request primitive is used to communicate to the Clause 74 BASE-R FEC that the PCS has detected LPI signalling. This allows the FEC to use rapid block lock. The RS-FEC does not use this signal."

On page 107 line 17 change the text in "80.3.3.6.2 When generated" from:
"This primitive is generated to indicate the state of the PCS LPI receive function."
To:
"This primitive is generated to indicate the state of the PCS LPI receive function. It is FALSE when in the RX_ACTIVE state and TRUE in all other states."

On page 107 line 21 change:
"In general, when"
to:
"When"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"The IS_RX_LPI_ACTIVE.request primitive is used to communicate to the FEC that the PCS is using its receive LPI function."
To:
"The IS_RX_LPI_ACTIVE.request primitive is used to communicate to the BASE-R FEC (see Clause 74) that the PCS has detected LPI signalling. This allows the FEC to use rapid block lock. The RS-FEC does not use this signal."

On page 107 line 17 change the text in "80.3.3.6.2 When generated" from:
"This primitive is generated to indicate the state of the PCS LPI receive function."
To:
"This primitive is generated to indicate the state of the PCS LPI receive function. It is FALSE when in the RX_ACTIVE state and TRUE in all other states."

On page 107 line 21 change:
"In general, when"
to:
"When"

Cl **82** *SC* **82.2.8** *P* **122** *L* **44** # i-92

Marris, Arthur — Cadence Design Syst

Comment Type **TR** *Comment Status* **R** *fast wake*

BIP statistics should continue to be updated in Fast Wake mode. The PCS should operate as normal in Fast Wake mode of operation.

SuggestedRemedy

Assuming the RX_FW state is deleted from Figure 82-17 the LPI Receive state diagram by another comment and the PCS remains in the RX_ACTIVE state in Fast Wake mode then delete the text:
"when LPI_FW is FALSE and on the second received AM after entering the RX_ACTIVE state when LPI_FW is TRUE"

Response *Response Status* **C**

REJECT.

See also comment 101.

A receiver that saves energy during fast wake would benefit from having BIP monitoring suspended. This is an example of the reason why fast wake should not be identical to normal PCS operation.

Cl **91** *SC* **91.5.2.6** *P* **165** *L* **13** # i-93

Hajduczenia, Marek — Bright House Network

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

"It should be noted that these fields cannot be used ..." - unnecessary optional requirement "should"

SuggestedRemedy

Reword to say "Note that these fields cannot be used ... "

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the beginning of the second sentence of the paragraph starting at page 165, line 12 to:

"These fields cannot be used to monitor errors on the link."

Cl **91** *SC* **91.5.2.5** *P* **164** *L* **17** # i-94

Thaler, Patricia — Broadcom Corporation

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

The notation in Figure 91-3 is not described. The terms f_x (x representing a number from 0 to 3) and s_x are particularly non obvious, but c_x and d_x shouuld also be defined.

SuggestedRemedy

Add definitions for the terms used in the figure: e.g. f_x is the first nibble of the Block Type Field, s_x is the second nibble of the Block Type Field, c_x contains the rest of the block payload for Control Blocks and d_x contains the block payload for data blocks.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Append the following text to the end of the paragraph starting on page 162, line 48.

"In Figure 91-3, d_j indicates the jth 66-bit block contains only data octets, c_j indicates the jth 66-bit block contains one or more control characters, f_j denotes the first nibble of the block type field for 66-bit block j, and s_j denotes the second nibble of the block type field for 66-bit bit block j."

Cl **80** *SC* **80.1.2** *P* **98** *L* **19** # i-95

Nikolich, Paul — YAS Broadband Ventu

Comment Type **G** *Comment Status* **R** *objectives*

Why was the 80.1.2 Objectives subclause deleted?

SuggestedRemedy

no change needed, I'm just wondering what the rationale for the deletion is.

Response *Response Status* **C**

REJECT.

This change was made as a result of comment #20 in draft 1.0 with strong support from the task force.

The inclusion of task force objectives in the standard leads to confusion (as they refer to objectives of the task force, not the PHY) and creates difficulties as the work of multiple task forces is combined into one clause. The objectives are archived and are accessible through the working group website.

Cl **45** *SC* **45.2.3.9** *P* **61** *L* **32** # i-96

Marris, Arthur — Cadence Design Syst

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

"deep sleep" missing for 40GBASE-KR4

SuggestedRemedy

Change:
1 = EEE is supported for 40GBASE-KR4
0 = EEE is not supported for 40GBASE-KR4
to:
1 = EEE deep sleep is supported for 40GBASE-KR4
0 = EEE deep sleep is not supported for 40GBASE-KR4

Response *Response Status* **C**

ACCEPT.

See also #204

Cl **78** *SC* **78.1** *P* **81** *L* **36** # i-97

Marris, Arthur — Cadence Design Syst

Comment Type **T** *Comment Status* **A** *EEE description*

There is no high level description of how EEE signalling operates between the various PHY sublayers in Clause 78. There is however subclause "78.1.1.1 Interlayer service interfaces" but this only talks about the RS service interface.

SuggestedRemedy

Bring 78.1.1.1 into 802.3bj and rename subclause title.
Change:
78.1.1.1 Interlayer service interfaces
To:
78.1.1.1 Reconciliation Sublayer service interface

Bring 78.1.1 subclause title into 802.3bj
78.1.1 LPI Signaling
Insert the following text at the end of 78.1.1

The LPI Client connects to the RS service interface. LPI signalling between the RS and PCS is performed by LPI encoding on the Media Independent Interface. The transmit PCS encodes LPI symbols which are decoded by the link partner receive PCS. The receive and transmit PCS also generate a request signals each. These are passed down to the lower PHY sublayers and indicate when receive and transmit PHY functions may be powered down.

The EEE request signals from the PCS typically request quiet or normal operation. The Clause 49 and Clause 82 PCSes also request transmit alert operation to enable the partner device PMD to detect the end of the quiescent state. Additionally the PCS generates the RX_LPI_ACTIVE signal which indicates to the Clause 74 BASE-R FEC that it can use rapid block lock because the link partner PCS has bypassed scrambling.

Coding is defined in Clause 83 to allow LPI tranmsit quiet requests from the PCS to be signalled over the XLAUI and CAUI interfaces. The XLAUI and CAUI infer the receive quiet request from the data received from the link partner or from the RX_TX_MODE indication signal. The value of the RX_TX_MODE indication signal is itself inferred from the received data and is used when the EEE quiet coding has been corrupted by transcoding, FEC or bit multiplexing.

The receive PCS checks that the end of the quiescent state occurs at the correct time. The ENERGY_DETECT indicate signal is passed up from the PMD to the PCS for this purpose.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Some minor changes to the suggested remedy:

Bring 78.1.1 subclause title into 802.3bj
78.1.1 LPI Signaling

Bring 78.1.1.1 subclause title into 802.3bj and rename subclause title.
Change:
78.1.1.1 Interlayer service interfaces
To:
78.1.1.1 Reconciliation Sublayer service interface

Insert the following text at the end of 78.1.1

The LPI Client connects to the RS service interface. LPI signalling between the RS and PCS is performed by LPI encoding on the Media Independent Interface. The transmit PCS encodes LPI symbols which are decoded by the link partner receive PCS. The receive and transmit PCS also generate service interface signals which are passed down to the lower PHY sublayers and indicate when receive and transmit PHY functions may be powered down.

The EEE request signals from the PCS control transitions between quiescent and normal operation. The Clause 49 PCS and Clause 82 PCS also request transmit alert operation to assist the partner device PMD to detect the end of the quiescent state. Additionally the Clause 49 PCS and Clause 82 PCS generate the RX_LPI_ACTIVE signal which indicates to the Clause 74 BASE-R FEC that it can use rapid block lock because the link partner PCS has bypassed scrambling.

Coding defined in Clause 83 also allows LPI tranmsit quiet requests from the PCS to be signalled over the XLAUI and CAUI interfaces. The XLAUI and CAUI receive interfaces infer the quiet request from the data received over the interface and use that to recreate the transmit or receive direction signaling.

The receive PCS checks that the link cycles out of the quiescent state at the correct time and that the received signals return to their expected state within the required time. The ENERGY_DETECT indicate signal is passed up from the PMA to the PCS to allow the PCS to monitor the waking process.

Cl **82** *SC* **82.2.8a** *P* **138** *L* **8** # i-98

Marris, Arthur — Cadence Design Syst

Comment Type **T** *Comment Status* **R** *LPI state*

This comment refers to Figure 82-16--LPI Transmit state diagram.
The reset operation does not reset down_count.

SuggestedRemedy

Add down_count <= 0 to TX_ACTIVE state

Response *Response Status* **C**

REJECT.

There is no need to reset down_count - it is initialized to the required value in each state where it is used.

Cl **82** *SC* **82.2.18.3.1** *P* **138** *L* **24** # i-99

Marris, Arthur — Cadence Design Syst

Comment Type **TR** *Comment Status* **A** *fast wake*

This comment refers to Figure 82-16--LPI Transmit state diagram.

PCS operation in fast wake mode needs to be identical to normal PCS operation.

SuggestedRemedy

Delete the TX_FW state.

Delete T_TYPE(tx_raw) /= LI transition out of the TX_ACTIVE state.

Delete "or TX_FW" on line of page 123 in 82.2.8a Rapid alignment marker insertion.

Re-arrange the blocks and arcs in the diagram so the layout is a bit neater.

Response *Response Status* **C**

ACCEPT.

See also comment #101

Cl **82** *SC* **82.2.18.3.1** *P* **138** *L* **13** # i-100

Marris, Arthur — Cadence Design Syst

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

This comment refers to Figure 82-16--LPI Transmit state diagram.

Delete the FW, BYPASS and SLEEP tx_mode values as nothing uses these.

SuggestedRemedy

Delete
tx_mode <= SLEEP
tx_mode <= FW
tx_mode <= BYPASS
assignments from the state diagram.

In 84.2 on page 149 line 34 change:
The tx_mode parameter takes on one of up to six values: DATA, SLEEP, QUIET, FW, ALERT or BYPASS.
to:
The tx_mode parameter takes on one of up to threevalues: DATA, QUIET, or ALERT.

Make similar change in 74.5.1.7, 80.3.3.4.1, 85.2, 94.2.1.4.1

Response *Response Status* **C**

ACCEPT.

See also comment #118.

Cl **82** *SC* **82.2.18.3.1** *P* **139** *L* **26** # i-101

Marris, Arthur — Cadence Design Syst

Comment Type **TR** *Comment Status* **R** *fast wake*

This comment refers to Figure 82-17--LPI Receive state diagram.

The PCS should operate the same in fast wake mode as in normal operation, so delete the RX_FW state.

SuggestedRemedy

Delete the RX_FW state.

Gate the transition from RX_ACTIVE to RX_TIMER with "* LPI_FW = FALSE"

Delete "If Fast Wake is selected then the receiver is expected to maintain sufficient state to allow much faster wake up." on line 42 on page 129 in 82.2.18.3.1.

Response *Response Status* **C**

REJECT.

PCS operation does not "need" to be identical to normal PCS operation. There are distinct advantages (particularly for receivers) if the operation is different - e.g., energy may be saved on decoding (etc.) when it is understood that there will be a wake time allowed to restore full function in advance of real data.

Cl **45** *SC* **45.2.3.9.h** *P* **62** *L* **26** # i-102

Marris, Arthur — Cadence Design Syst

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

Should be 40GBASE-KR4 EEE deep sleep supported

SuggestedRemedy

Change:
40GBASE-CR4 EEE deep sleep supported
To:
40GBASE-KR4 EEE deep sleep supported

Response *Response Status* **C**

ACCEPT.

See also #204

Cl **82** *SC* **82.6** *P* **133** *L* **1** # i-103

RAN, ADEE — Intel Corporation

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

Variable name is current_am.

Typo exists in base document.

SuggestedRemedy

change curent_am => current_am (4 times)

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.6** *P* **133** *L* **1** # i-104

RAN, ADEE — Intel Corporation

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

Transition between normal AMs and RAMs is not clearly handled in this diagram. As a result, the behavior when TX is in TX_SLEEP may lead to transition to SLIP too early or too late, which may impact the LPI receive process (figure 82-17)

Behavior following TX entering TX_SLEEP (and sending RAMs) should be defined in a way that prevents transition to SLIP state while RAMs are present on the wire. Probably something along the lines of figure 91-10.

SuggestedRemedy

Add an equivalent of figure 91-10 and the required variables (ram_valid, tx_down_count) and counters (ram_counter, 1st_ram_counter).

A presentation suggesting a detailed remedy will be supplied if necessary.

Response *Response Status* **C**

ACCEPT.

1. Use the changes similar to those in the receive LPI state diagram on slide 13 – explicitly change the following in the draft figure 82-17:

Delete the transition from RX_SLEEP to RX_ACTIVE.
Add a new transition from RX_SLEEP to RX_WAKE with the condition:!rx_tq_timer_done * align_status * rx_down_count<255

In transition from RX_WAKE to RX_TIMER, replace R_TYPE(rx_coded) = LI with rx_down_count = 255
In looparound transition from RX_SLEEP to itself, replace R_TYPE(rx_coded) = LI with rx_down_count = 255

In transition from RX_WAKE to RX_ACTIVE, replace R_TYPE(rx_coded) = C with rx_down_count = 1
In transition from RX_WTF to RX_TIMER, replace R_TYPE(rx_coded) = LI with rx_down_count = 255
In transition from RX_WTF to RX_ACTIVE, replace R_TYPE(rx_coded) = C with rx_down_count = 1

2. Use the change to am_counter definition on slide 7 of ran_3bj_02_0114.pdf with the following exception:

Insert “and LPI_FW is false” after “when rx_LPI_active.”

3. Make the following changes in the draft:

Define a new variable – first_rx_LPI_active, with the definition “first rx_lpi_active is TRUE

when the receiver is in state RX_ACTIVE in the receive LPI state diagram and R_TYPE(rx_coded) = LI and is otherwise FALSE.

Add a new state QUICK_FIND as shown in the barrass_3bj_01_0114.pdf in the PCS receive AM lock state diagram, Figure 82-11. (note that the arrow pointing into this state has the effect of forcing a transition into that state from any other state).

4. Make the variable changes from slide 9 in ran_3bj_02_0114.pdf.

5. Make the following changes in 91.5.4.2.1.

Replace the definition of ram_valid with the following:
“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 for rx_down_count and is set to false otherwise.”

Replace the definition of ramps_valid with the following:
“Boolean variable that is set to true when the 64-bit block payloads concurrently received on at least 2 FEC lanes are valid Rapid Alignment Marker payloads with identical values for rx_down_count and is set to false otherwise.”

Cl **82** *SC* **82.6** *P* **134** *L* **1** # i-105

RAN, ADEE — Intel Corporation

Comment Type **T** *Comment Status* **R** *deskew process*

The "deskew process" is referenced by three status variables which convey only one bit of information, and a state diagram (82-12), but isn't actually defined anywhere. This makes the text too complicated, and hides the fact that deskewing is implementation specific.

Details:

Figure 82-12 is supposed to define the deskew process (as referred to in 82.2.18.3 and 91.5.2.2), but it is equivalent to stating that rx_align_status is equal to alignment_valid, and enable_deskew is the logical inverse of rx_align_status. For these assignments we don't need a state diagram... (and do we need three variables for one bit of information?)

enable_deskew is not used anywhere except for its definition in 82.2.18.2.2, which only says that it controls the deskew process; similarly, alignment_valid is defined but not used anywhere except for this diagram, which practically defines rx_align_status to be equal to it. rx_align_status is then used in many places.

The real deskew process is not actually specified anywhere - it is an implementation dependent process, and only the meaning of its input and output (effectively, both are rx_align_status) should be specified.

SuggestedRemedy

Bring in subclauses 82.2.1, 82.2.12 and 82.2.18.3, which all refer to the PCS deskew process; remove references to figure 82-12, and instead add the following statements

1. The deskew process is enabled when alignment_valid is false and disabled when alignment_valid is true.
2. The precise method for deskewing lanes is not specified and is implementation dependent.

Delete figure 82-12.

Modify reference to the deskew function in 91.5.2.2 and to the diagram in 91.6.11 accordingly.

In addition, consider merging the definition of alignment_valid into the definition of rx_align_status in 82.2.18.2.2, removing the definitions of enable_deskew and alignment_valid, and using rx_align_status instead of alignment_valid in statement 1 above.

Response *Response Status* **C**

REJECT.

This method of specifying the deskew process was agreed after many rounds of review in P802.3ba. To change that would be out of scope for this project.

See also comment #109

Cl **82** *SC* **82.6** *P* **131** *L* **30** # i-106

RAN, ADEE — Intel Corporation

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

The editing instruction refers to figures which are logically part of subclause 82.2.18.3 (State diagrams).

SuggestedRemedy

Move the instruction and the figures near subclause 82.2.18.3 (page 130, above 82.3.1).

Response *Response Status* **C**

REJECT.

In standard 802.3-2012 these state diagrams are allowed to float after subclause 82.6, this amendment doesn't change this style.

Cl **82** *SC* **82.2.11** *P* **125** *L* **11** # i-107

RAN, ADEE — Intel Corporation

Comment Type **T** *Comment Status* **R** *align status*

The distinction between align_status/rx_align_status when EEE is supported is not clear.

align_status is assigned from rx_align_status in the LPI receive state diagram (82-17), and only there. Both variables are used in the transition condition. This seems to be a requirement that rx_align_status is "stable" when R_TYPE(rx_coded)=LI is detected. But the state diagram conditions are continuously evaluated, so the "not equal" condition can exist only momentarily, and can't affect the transition to RX_TIMER. This is meaningless, and rx_align_status can be used alone.

A similar comparison exists in the LPI Receive function in Clause 49 (Figure 49-13) as well, but there the variable in question is block_lock, which can be assigned in another state (RX_LINK_FAIL); So it has a different meaning.

SuggestedRemedy

If there is a reason for this "stability check", please add an explanation for it.

If it is redundant, remove align_status from the assignment in RX_ACTIVE state; use rx_align_status directly in the condition for transition to RX_TIMER, and remove the term "align_status != rx_align_status" from the "loop" transition condition. Consider merging these two variables into one.

Response *Response Status* **C**

REJECT.

Align_status is used externally to this clause. During LPI align_status stays TRUE while rx_align_status reflects the current alignment. This is necessary to allow the link signaling to be shut down & restarted for EEE without causing other functions to declare link failure (with all the negative consequences).

The transition to RX_TIMER includes both terms to avoid the situation where LPI coincidentally arriving just as rx_align_status changes state would cause ambiguity.

Cl **83** *SC* **83.5.11** *P* **143** *L* **51** # i-108

RAN, ADEE Intel Corporation

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

The conditions and status of this subclause requirements should be clarified. There are corresponding PICS items, which have an optional status; this should be a normative statement (conditional on EEE and nAUI).

SuggestedRemedy

Change
"When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported, additional functions are required when the PMA service interface is physically instantiated as XLAUI or CAUI."

To
"When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported and the PMA service interface is physically instantiated as XLAUI or CAUI, The additional functions listed in this subclause (83.5.11) shall be supported."

In addition, in 83.7.7: change the status of both PICS items from LPI:O to mandatory with the suitable combination of LPI and XLAUI/CAUI; I think that LPI*USP1SP6:M LPI*DSP1SP6 can be used (using conditions defined in the base document, 83.7.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change
"When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported, additional functions are required when the PMA service interface is physically instantiated as XLAUI or CAUI."

To
"When the optional Energy Efficient Ethernet (EEE) deep sleep capability is supported and the PMA service interface is physically instantiated as XLAUI or CAUI, the additional functions listed in this subclause (83.5.11) shall be supported."

In addition, in 83.7.7: change the status of both PICS items from LPI:O to mandatory with the suitable combination of LPI and XLAUI/CAUI. Use LPI*USP1SP6:M or LPI*DSP1SP6:M (using conditions defined in the base document, 83.7.3).

Cl **91** *SC* **91.5.3.1** *P* **169** *L* **1** # i-109

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **R** *deskew process*

Figure 91-9 specifies when the inter-lane skew removal process should execute, but does not specify the process itself. The skew removal process is actually implementation specific.

SuggestedRemedy

Change from:

After alignment marker lock is achieved on all 4 lanes, all inter-lane Skew is removed as specified by the FEC alignment state diagram shown in Figure 91-9. The FEC receive function shall support a maximum Skew of 180 ns between FEC lanes and a maximum Skew Variation of 4 ns.

To:

After alignment marker lock is achieved on all 4 lanes, inter-lane skew is removed. The FEC receive function shall support a maximum Skew of 180 ns between FEC lanes and a maximum Skew Variation of 4 ns. The precise method for deskewing lanes is implementation specific. After alignment is achieved, it is maintained until three consecutive uncorrectable codewords are detected, as specified by the FEC alignment state diagram shown in Figure 91-9.

Response *Response Status* **C**

REJECT.

The text and state diagram are correct as written. They define observable behavior and do not imply a specific implementation. 91.5.3.1 is structured similarly to the 40GBASE-R and 100GBASE-R deskew definitions (82.2.12).

Cl **91** *SC* **91.5.3.2** *P* **169** *L* **10** # i-110

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **R** *deskew process*

Lane reorder does not appear in figure 91-9 and does not have any associated process or variables. It is not specified to complete at any specific time. If it is assumed that it is completed when deskew is done, then it can be viewed as a part of the deskew process.

Note that in Figure 91-7 these operations appear as a single block.

SuggestedRemedy

Rename subclause 91.5.3.1 to "Alignment lock, deskew and lane reorder", and merge the lane reorder functionality into it.

Delete subclause 91.5.3.2.

Response *Response Status* **C**

REJECT.

The text is correct as written. 91.5.3.1 and 91.5.3.2 are structured similarly to the 40GBASE-R and 100GBASE-R deskew and lane reorder definitions (82.2.12 and 82.2.13 respectively).

Cl **91** *SC* **91.6.11** *P* **184** *L* **17** # i-111

RAN, ADEE Intel Corporation

Comment Type **TR** *Comment Status* **A** *deskew process*

The PCS deskew state diagram assigns the variable rx_align_status, not align_status. This is also the variable used in state diagrams.

Note another comment I made which suggests removing figure 82-12.

SuggestedRemedy

Change align_status to rx_align_status here and in Table 91-4.

If my other comment is accepted, remove reference to figure 82-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the first sentence of 91.6.11 to the following.

"This variable is assigned the value of rx_align_status as defined by the PCS deskew state diagram shown in Figure 82-12 (see 91.5.2.2)."

Cl **92** *SC* **92.8.3.9.2** *P* **207** *L* **16** # i-112

RAN, ADEE Intel Corporation

Comment Type **T** *Comment Status* **A** *jitter value*

Comment applies to both clause 92 and clause 93.

For large multi-port ASICs with significant switching activity, it may be challenging to meet The 0.1 UI PTP BUJ requirement without decreasing port density. On the other hand, RJ specifications can be met more easily.

There is a tradeoff between BUG and RJ, and it is suggested to shift some of the jitter budget towards BUJ.

The values in the suggested remedy were tested with the contributed channels; the limiting channels which passed with previous values still pass with the suggested values.

A presentation comparing COM results will be supplied.

SuggestedRemedy

Change BUJ specification to less than 0.12 UI PTP.
Change RJ specification to less than 0.008 UI RMS.

Update tables 92-6 and 93-4 accordingly.

Change values of A_DD and Sigma_RJ in COM parameters (table 93-8) accordingly.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See the response to comment #175. The response changes the specification from effective bounded uncorrelated jitter (EBUJ) and effective random jitter (ERJ) to EBUJ and effective total uncorrelated jitter (ETUJ). This new specification allows a trade off between ERJ and EBUJ, while bounding EBUJ to 0.1. Also, the methodology tends to be more lenient on EBUJ that looks more Gaussian.

Cl **94** *SC* **94.3.10.7.5** *P* **293** *L* **21** # i-113

RAN, ADEE — Intel Corporation

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

The additional requirement to respond to requests following the first acknowledged request in less than 2 ms may be impossible to fulfill if the frame_lock variable is set to false, e.g. due to SLIP function (see figure 72-4). There is currently way to abort the coefficient update state diagram or the training state diagram in that case; so there is no compliant behavior when this requirement can't be met.

It is unusual for such "handshake" related state diagram in the receiver not to have a compliant abort path. Examples include: TRAINING_FAILURE state in figure 72-5; several paths leading to TRANSMIT_DISABLE in figure 73-11; and RX_LINK_FAIL in figure 49-13.

It is possible that a designer wishing to avoid violating this requirement would defer its response to the first request (possibly, until the SLIP condition is unlikely). Such a delay is still compliant, but would undermine the purpose of the PMD control function.

Comment also applies to subclause 92.7.12 and 93.7.12.

SuggestedRemedy

A detailed remedy will be submitted separately.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Presentation: ran_3bj_01_0114.

In 92.7.12, 93.7.12 and 94.3.10.7.5
Replace "after responding to the first request after training begins" with "within 50 ms of beginning training (as demarked by the entry to the AN_GOOD_CHECK state in Figure 73-11)"

So the text reads in 94.3.10.7.5:
"In addition, within 50 ms of beginning training (as demarked by the entry to the AN_GOOD_CHECK state in Figure 73-11), the period from receiving a new request to responding to that request shall be less than 2 ms."

and in 92.7.12 and 93.7.12:
"In addition to the coefficient update process specified in 72.6.10.2.5, within 50 ms of beginning training (as demarked by the entry to the AN_GOOD_CHECK state in Figure 73-11), the period from receiving a new request to responding to that request shall be less than 2 ms." Modify as necessary to accommodate the response to comment 134.

add "within 20 ms" to the end of the last sentence in 73.6.10 so that it reads:
"When a PHY is connected to the MDI through the Transmit Switch function, the signals at the MDI shall conform to all of the PHY's specifications within 20 ms"

Cl **83A** *SC* **83A.3.2a** *P* **323** *L* **18** # i-114

RAN, ADEE — Intel Corporation

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

aui_tx_mode is described in subclause 83.5.11.3.

SuggestedRemedy

change cross reference from 83.5.11 to 83.5.11.3.

Response *Response Status* **C**

ACCEPT.

Cl **82** *SC* **82.1.4** *P* **120** *L* **25** # i-115

RAN, ADEE — Intel Corporation

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

Clause 91 is the RS-FEC sublayer; here it is referred to as FEC sublayer, which is used earlier in this paragraph referring to Clause 74.

SuggestedRemedy

Change "connects to the FEC sublayer" to "connects to the RS-FEC sublayer".

Response *Response Status* **C**

ACCEPT.

Cl **69** *SC* **69.1.1** *P* **69** *L* **16** # i-116

Healey, Adam — LSI Corporation

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

The editorial instruction "Replace the third paragraph as shown" should be "Change the third paragraph as shown" with the strikethrough and underline text shown together, i.e. not as separate paragraphs. Similar changes are required for the next editorial instruction "Change the fourth paragraph as shown."

SuggestedRemedy

Per comment.

Response *Response Status* **C**

ACCEPT.

Cl **99** *SC* **99** *P* **6** *L* **8** # i-117

Healey, Adam LSI Corporation

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

Update working group officers and populate sponsor balloters list.

SuggestedRemedy

Per comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Update officers list as appropriate.

The balloters list will be populated at publication.

Cl **74** *SC* **74.5.1** *P* **79** *L* **79** # i-118

Healey, Adam LSI Corporation

Comment Type **TR** *Comment Status* **A** *EEE service*

Changes to the service interface are misplaced. 74.5.1 pertains to 10GBASE-R service primitives. Changes to the 40GBASE-R and 100GBASE-R service primitives should have been made to 74.5.2.

SuggestedRemedy

Remove changes to 74.5.1. Amend 74.5.2 with the new service interface primitives required for the optional EEE capability at 40 and 100 Gb/s.

Response *Response Status* **C**

ACCEPT.

Cl **92** *SC* **92.8.3.6.1** *P* **203** *L* **12** # i-119

Healey, Adam LSI Corporation

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

This method specifies the waveform capture method defined in 85.8.3.3.4. Referring to 85.8.3.3.4, the sampling rate is defined to be at least 7 times the signaling rate. When the oversampling ratio is this low, the method defined in 92.8.3.6.1 will yield erroneous results.

SuggestedRemedy

Change the first sentence to read "...PRBS9 as specified in 83.5.10 at TP2 per 85.8.3.3.4 with M not less than 32."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the first sentence to read

"...PRBS9 as specified in 83.5.10 at TP2 per 85.8.3.3.4 with M not less than 32 samples per unit interval."

Cl **92** *SC* **92.10.7.1.1** *P* **217** *L* **28** # i-120

Healey, Adam LSI Corporation

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

The transmitter and receiver PCB model should consist of 141 sections, not 185, based on the revised section model per Table 92-12. Also, sentences could be changed to avoid expressing these large numbers in words.

SuggestedRemedy

Change the second paragraph to "...the transmitter and receiver PCB model each consist of 141 sections representing an insertion loss of 6.26 dB..." Apply similar changes to the third paragraph.

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92** *SC* **92.10.7** *P* **216** *L* **46** # i-121

Healey, Adam — LSI Corporation

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

Cable assembly COM definition is incomplete because no COM parameters are specified.

SuggestedRemedy

Change the last sentence of the first paragraph to "COM is computed using the procedure in 93A.1 with the values in Table 93-8 and the signal paths defined in 92.10.7.1 and 92.10.7.2."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the last sentence of the first paragraph to "COM is computed using the procedure in 93A.1 with the Test 1 and Test 2 values in Table 93-8 and the signal paths defined in 92.10.7.1 and 92.10.7.2. Test 1 and Test 2 differ in the value of the device package model transmission line length zp."

Change last sentence of the second paragraph to "The cable assembly COM shall be greater than or equal to 3 dB for each test. This minimum value allocates margin for practical limitations on the receiver implementation as well as the largest step size allowed for transmitter equalizer coefficients."

Cl **92** *SC* **92.11.3.2** *P* **224** *L* **23** # i-122

Palkert, Thomas — Molex Incorporated

Comment Type **G** *Comment Status* **A**

MCB's and HCB's that are within reasonable manufacture impedance tolerances (~5%) can fail the 92.11.3.2 Mated test fixtures return loss specifications.
Change 92.11.3.2 Mated test fixtures return loss specifications to proposed limits.
See supporting presentation

SuggestedRemedy

Change 92.11.3.2 Mated test fixtures return loss specifications to..

Return loss(f)>/=
20-1.429*f 0.01 </= f < 4.9 GHz
14.4-0.286*f 4.9 </= f < 10.85 GHz
12.05-51.1*log(f/10.5) 10.85 </= f < 13.8 GHz
5 13.8 </= f </= 25 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Presentation: diminico_01a_0114.pdf was considered.

Implement the following changes:

TP2-TP3 reference insertion loss
Equation 92-41
=-0.00144+0.13824*sqrt(f)+0.06624*f

Minimum mated test fixture insertion loss
Equation 92-44
= 0.0656*sqrt(f)+0.164*f

Conversion loss for:

mated test fixtures.
Equation 92-46
=30-29/22*f
f from 0.01 to 16.5 GHz
=8.25
f from 16.5 to 25 GHz

cable assembly conversion loss minus insertion loss
Equation 92-29
10
f from 0.01 to 12.89 GHz
27-29/22*f
f from 12.89 to 15.7 Ghz
6.30

f from 15.7 to 19 GHz

CM to diff return loss for:

mated test fixtures
EQ 92-48
30 - 30/25.78*f
f from 0.01 to 12.89 GHz
18-6/25.78*f
f from 12.89 to 25 GHz

cable assembly
EQ 92-28
22 - 20/25.78*f
f from 0.01 to 12.89 GHz
15-6/25.78*f
f from 12.89 to 19 GHz

Receive input at TP3
EQ 92-21
22 - 20/25.78*f
f from 0.01 to 12.89 GHz
15-6/25.78*f
f from 12.89 to 19 GHz

ILD RMS for mated test fixture
Incorporate ILD RMS calculation from OIF-CEI-03.0 10.2.6.4
using 9.6 ps transition time and integration range 0.01 to 19 GHz.
Using the definition of ILD in 93A.3 with fitting parameters
fmin: 0.01 GHz, fmax: 19 GHz, delta f: 10 MHz
specify maximum of 0.13 dB RMS

Page 204 line 42 "Note that the recommended maximum insertion loss from TP0 to TP2 or from TP3 to TP5 is 10.37 dB at 12.8906 GHz."
Change "10.37" to "9.85".

Figure 92A-2
Change 1.87 to 1.35.
Change 4.11 to 3.59
Change 10.37 to 9.85

Update related figures and PICS as necessary.

Cl **92** *SC* **92.10.7.1.1** *P* **217** *L* **28** # i-123

Dudek, Michael QLogic Corporation

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

There are two conflicting definitions of the same quantity (SHOSP) and an inconsistency in the loss per mmm of the traces.

SuggestedRemedy

On line 28 change "one hundred and eighty five" to "one hundred and forty one" to match what is on this page on line 32.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Use response i-120.

Cl **92** *SC* **92.7.12** *P* **197** *L* **18** # i-124

Dudek, Michael QLogic Corporation

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

Poor grammar

SuggestedRemedy

Change "indicated" to "indicate"

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92** *SC* **92.7.12** *P* **197** *L* **7** # i-125

Dudek, Michael QLogic Corporation

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

It would be good to point out that there are differences to 72.6.10

SuggestedRemedy

Add "with the following differences" to the end of the sentence.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #134.

Cl **92** *SC* **92.8.3.2** *P* **200** *L* **17** # i-126

Dudek, Michael QLogic Corporation

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

It would be good to provide a graph of this return loss function.

SuggestedRemedy

Add a graph and a reference similar to that on line 40.

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

See also comment #149.

Cl **92** *SC* **92.8.3.6.1** *P* **203** *L* **13** # i-127

Dudek, Michael QLogic Corporation

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

The equalizer used here for measuring the transmitter waveform only has Np=11 whereas that used in the Tx SNDR test (92.8.3.8) and clause 93 has Np=14. They should be the same.

SuggestedRemedy

Change Np=11 to Np=14. If this is accepted also delete the exception "and Np is set to 14." in section 93.8.1.5.1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change Np to 14 in the second sentence of the first paragraph of 92.8.3.6.1 so that it reads:

"Compute the linear fit pulse response p(k) from the captured waveform per 85.8.3.3.5 using Np = 14 and Dp = 2."

Given that Np is the same for Clauses 92 and 93, it is no longer an exception. Change the first paragraph in 93.8.1.5.1:

"The transmitter output waveform is characterized using the procedure described in 92.8.3.6.1 with the exceptions that the measurement is performed at TP0a rather than TP2 and Np is set to 14."

To:

"The transmitter output waveform is characterized using the procedure described in

Cl **92** *SC* **92.10.7** *P* **216** *L* **51** # i-128

Dudek, Michael QLogic Corporation

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

The COM calculation for the cable uses perfect trace loss in addition to the measured cable response that is measured with instrument grade cable assembly test fixtures. It is un-realistic to expect a real channel to be as good., and the Tx specifications at TP2 and TP3 (eg return loss) do not require that.

SuggestedRemedy

Increase the required cable assembly COM value to 3.5dB.

Response *Response Status* **C**

REJECT.

The COM calculation for the CL92 assumes 110 Ohm traces for the host PCB between TP0 and TP1 which in combination with the assumed package impedance (lower than nominal) and termination (higher than nominal) will create reflections.

Cl **92** *SC* **92.8.3.8** *P* **205** *L* **45** # i-129

Dudek, Michael QLogic Corporation

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

It is intended that the same chips can be used for KR4 and CR4 however the SNDR values for the two systems are the same despite the CR4 value being measured after the host trace and connector. There should be an allowance for degradations due to these components.

SuggestedRemedy

Change the SNDR requirement to 26dB and use this 26dB number in the COM calculation for the cable COM.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

P205 L45 change 27 dB to 26 dB to account for difference in the transmitter test point references between CL92 and CL93.

No change to COM SNDR is required. The noise contribution of the tranmitter is already accounted for in COM. The crosstalk contribution of a typical host is already accounted for by the module compliance board used to measure the cable assembly.

Cl **92** *SC* **92.11** *P* **220** *L* **42** # i-130

Dudek, Michael QLogic Corporation

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

This paragraph would read better with a change of order.

SuggestedRemedy

Move "to enable connections to measurement equipment" to the start of the paragraph as it applies to all the fixtures.

Response *Response Status* **C**

REJECT.

The sentence communicate the same thing either way.

Cl **92** *SC* **92.12.1.2** *P* **229** *L* **17** # i-131

Dudek, Michael QLogic Corporation

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

Table 92-15 is missing two important signal grounds that if not present would influence the performance.

SuggestedRemedy

Add Signal gnd for S32 and S20 MDI connector contacts.

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92** *SC* **92.8.3.1** *P* **235** *L* **3** # i-132

Dudek, Michael QLogic Corporation

Comment Type **T** *Comment Status* **A** *when vs while*

The timing requirement isn't when the Transmitter is disabled it is when it is enabled after having been disabled.

SuggestedRemedy

replace "When the transmitter is disabled" with "After the transmitter has been in the disabled state" also in the PICS for both TC9 and TC10.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See comment response i-135.

Remove "When the transmitter is disabled, "

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **35** # i-133

Dudek, Michael QLogic Corporation

Comment Type **T** *Comment Status* **A** *jitter method*

The method of determining the bin numbers for the extrapolation depend on the number of samples taken. With a somewhat truncated Gaussian which is likely due to low probability bounded jitter from eg Crosstalk the values of the Random and Bounded jitter will be different depending on the number of samples taken leading to inconsistent results.

SuggestedRemedy

Change the formula for determining the bins for extrapolation to one that is consistent in probabilities at 1e-4 and 1e-6.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #175.

Cl **93** *SC* **93.7.12** *P* **247** *L* **30** # i-134

Dudek, Michael QLogic Corporation

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

The differences to 72.6.10 could be better explained.

SuggestedRemedy

Add "with the following differences" to the end of the sentence. "Each lane of the 100GBASE-KR4 PMD shall use the same control function as 10GBASE-KR, as defined in 72.6.10.". Make the rest of this paragraph into the first bullet. The next three paragraphs become 3 additional bullets.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the first sentence of 93.7.12 as follows.

"Each lane of the 100GBASE-KR4 PMD shall use the same control function as 10GBASE-KR, as defined in 72.6.10, with the following differences."

Include a lettered list with item a) specifying the difference in the signaling rate, item b) defining the reaction time requirement, and item c) replacing the training pattern.

The remaining two paragraphs pertain to management and do not need to be included in the list of exceptions.

Make a similar change to 92.7.12. See comment #125.

Also, coordinate implementation with the response to comment #113.

Cl **93** *SC* **93.8.1.3** *P* **250** *L* **40** # i-135

Dudek, Michael — QLogic Corporation

Comment Type **T** *Comment Status* **A** *when vs while*

The timing requirement isn't when the Transmitter is disabled it is when it is enabled after having been disabled.

SuggestedRemedy

replace "When the transmitter is disabled" with "After the transmitter has been in the disabled state" .

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the second sentence of the paragraph starting at page 250 line 40 as follows:

"The peak-to-peak differential output voltage shall be less than or equal to 30 mV while the transmitter is disabled (refer to 93.7.6 and 93.7.7)."

Change the last sentence of 93.8.1.3 as follows:

"While the transmitter is disabled, the DC common-mode output voltage."

Make similar changes to 92.8.3.1 and 94.3.12.3.

On page 250, line 48 remove:
"When the transmitter is disabled, "

Cl **92** *SC* **92.8.4.4** *P* **209** *L* **19** # i-136

Dudek, Michael — QLogic Corporation

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

Depending on the ILD characteristics of the test channel the amount of noise required to be equivalent to the COM of a passing channel will vary. By using a fixed value of ICN independent of the ILD of the test channel the receiver may be understressed or overstressed.

SuggestedRemedy

Replace the cablibrated ICN row with COM. Delete the FEXT row. Set the COM value to that used as the pass/fail criterion for the Cable, and refer to section 92.8.4.4.3. In section 92.8.4.4.3 replace "The amplitudes of the disturbers should be such that the calibrated far-end crosstalk in Table 92-8 is met in the calibration setup at the LUT point with no signal applied at the PGC,
and HTx and PGC terminated in 100 Ohms differentially" with "The amplitudes of the disturbers should be such that the COM calculated between the pattern generator and the output of the Cable Test fixture is equal to the value in Table 92-8 using the method of 92.10.7 except that the channel is not concatenated with the second S(HOSP).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Refer to dudek_01_0114.pdf.

Also, remove the constraint on minimum NEXT for COM. The NEXT contribution is within the host and thus does not need to be considered in the cable contribution.

Implement with editorial license the following.

In table 92-8:
- Replace the calibrated far-end crosstalk row with “COM” with a value of 3 dB.
- Remove row for "calibrated noise - sigma_nx".

On page 210 line 5:
Replace "insertion loss, near-end integrated crosstalk noise, and far-end crosstalk" with "s-parameters".

• On page 210 line 35:

Replace “The amplitudes of each of the disturbers should not deviate more than 3 dB from the mean of the disturber amplitudes. The amplitudes of the disturbers should be such that the calibrated far-end crosstalk in Table 92–8 is met in the calibration setup at the LUT point with no signal applied at the PGC,and HTx and PGC terminated in 100 Ohms differentially.”

With “The amplitudes of each of the disturbers should be set to the value that results in the COM value given in Table 92-8 when calculated by the method given below."

Insert the following new text on page 210 at line 39.
"The COM shall be calculated using the method and parameters of section 92.10.7 with the following exceptions.
•The Channel signal path is cascade(cascade(S(CTSP),S(HOSP)), where S(CTSP) is the measured channel between the test references for the LUT in Figure 92.9.
•The Channel far end crosstalk path is cascade(cascade(S(CTFXTk),S(HOSP)), where S(CTFXTk) is the measured FEXT channel between the test references in Figure 92.9 between the [3 Tx] and the LUT_Rx
•The value of the far-end aggressor amplitude (Afe) is adjusted until the required COM is achieved. The far end aggressors ([3 Tx] in Figure 92.8) peak to peak amplitude is set to twice the resulting value for the test."

With an additional bullet, replicate the paragraph on page 349 line 7 as well as equation 93A-44.

Delete the paragraph starting on page 210 line 26.

Then on page 210 line 45:

delete the text "The transition times of the pattern generator, as defined in 86A.5.3.3, are 19 ps. If the transition times of the pattern generator, Tr, are less than 19 ps, the value of a4 in Table 92–8 is increased by da4 from Equation (92–22).

Delete equation 92-22 and related variable definitions.

Cl **94** *SC* **94.2.1.4.3** *P* **272** *L* **52** # i-137
Dudek, Michael QLogic Corporation

Comment Type **E** *Comment Status* **A** *Bucket*
poor English

SuggestedRemedy
Change "may be" to "may"

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

Cl **94** *SC* **94.3.10.8** *P* **293** *L* **26** # i-138
Dudek, Michael QLogic Corporation

Comment Type **E** *Comment Status* **A** *Bucket*
poor English

SuggestedRemedy
Change "updated to indicated" to "updated to indicate"

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

Cl **94** *SC* **94.3.10.9** *P* **294** *L* **35** # i-139
Dudek, Michael QLogic Corporation

Comment Type **E** *Comment Status* **A** *Bucket*
poor English

SuggestedRemedy
delete the "a" in "by the a training frame"

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

Cl **94** *SC* **94.3.12.5.5** *P* **304** *L* **13** # i-140
Dudek, Michael QLogic Corporation

Comment Type **T** *Comment Status* **A**
There are not 12 steps listed in the linear fit procedure in 94.3.12.5.2

SuggestedRemedy
delete "step 12 of"

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

Cl **93C** *SC* **93C** *P* **352** *L* **9** # i-141
Dudek, Michael QLogic Corporation

Comment Type **E** *Comment Status* **A** *Bucket*
poor English

SuggestedRemedy
Delete the "for" in "specifies for the following items"

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

Cl **93C** *SC* **93C.1** *P* **352** *L* **50** # i-142

Dudek, Michael QLogic Corporation

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

A noise crest factor of 4 is rather small for measuring the BER of 1e-12 for clause 93 without FEC

SuggestedRemedy

Add after at least 4. "unless the required BER is 1e-12 in which case the crest factor shall be at least 6.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Annex 69A in 802.3-2012 specifies testing with a crest factor of no less than 5; because the primary noise source, crosstalk, is bounded with a crest factor of around 5. Also, the value of 5 is consistent with the capabilities of current test equipment.

So change:
"The noise is Gaussian with a crest factor of at least 4."
to:
"The noise is Gaussian with a crest factor of at least 5."

Cl **93C** *SC* **93C.2** *P* **355** *L* **22** # i-143

Dudek, Michael QLogic Corporation

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

There aren't necessarily just two test cases.

SuggestedRemedy

Change "for test 1 and test 2" to "for each test case"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"The following method is repeated for each lane for Test 1 and Test 2."
To:
"The interference tolerance test is performed using the following method."

Cl **93C** *SC* **93C.2** *P* **355** *L* **31** # i-144

Dudek, Michael QLogic Corporation

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

In the COM calculation the random jitter and noise are assumed to be independent. However during the calibration of the interference tolerance test the additional noise will create random jitter which is correlated and shouldn't be added in twice. The result is likely to understress the receiver.

SuggestedRemedy

At the start of step 4 change to "Disable the transmit noise source and measure..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Remove the transmitter noise source by implementing the changes provided in moore_3bj_02a_0114 with editorial license. Note that all instances of TPta should be changed to TP0a.

Cl **45** *SC* **45.2.1.92b** *P* **46** *L* **13** # i-145

Szczepanek, Andre Inphi Corporation

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

FEC alignment only has one global status bit : 1.201.14 "FEC alignment status" indicating alignment of all lanes, whereas PCS alignment has both a global "PCS lane alignment status" and individual PCSL block and AM lock status bits. If PCS alignment fails it is easy to determine the failing lane, whereas FEC alignment provides no indication of which lane is failing. We really need per lane FEC alignment status bits.

SuggestedRemedy

Add four bits "FEC AM Lock 3" through "FEC AM Lock 0" to register 1.201 (1.201.11:8 ?) or in a different register at the editors discretion.

Response *Response Status* **W**

ACCEPT.

Add the bits at the location suggested.

See also comment #146 (Clause 91)

Cl **91** *SC* **91.6** *P* **182** *L* **24** # i-146

Szczepanek, Andre — Inphi Corporation

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

See my clause 45.2.1.92b comment

SuggestedRemedy

Update Table 91-3 to include per lane FEC alignment, as per my Clause 45 comment

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Modify 91.6 to be consistent with changes to 45.2.1.92b in comment 145.

Cl **83A** *SC* **83A.3.2a** *P* **323** *L* **15** # i-147

RAN, ADEE — Intel Corporation

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

This subclause is missing a normative statement.

SuggestedRemedy

Change "includes" to "shall include".

Add suitable PICS item.

Response *Response Status* **C**

REJECT.

This part of the sentence is descriptive - the normative requirement is in 83.3. There is an optional requirement (denoted by "may") at the end of the sentence and an associated PICS item.

Cl **93** *SC* **93.11.4.4** *P* **267** *L* **34** # i-148

RAN, ADEE — Intel Corporation

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

The items in this table characterize the channel, which is practically separate from the rest of the PICS, and conformance is not stated by the same vendor. Maybe they should be marked by a separate option similar to "CBL" in 92.14.3.

Also applies to 94.6.4.5.

SuggestedRemedy

Add option "CHAN" in 93.11.3 and make items in this table conditional on it.

Similarly for clause 94.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 93.11.3, add a row for the following item.

Item: *CHNL
Feature: Channel
Subclause: 93.9
Value/Comment: Channel specifications not applicable to a PHY manufacturer.
Status: O
Support: Yes [ ], No [ ]

In 93.11.4.4, mark the status of all items as "CHNL:M" and mark the support for all items as "Yes [ ], N/A [ ]".

Make similar changes to the PICS for Clause 94.

Cl **92** *SC* **92.8.3.2** *P* **200** *L* **26** # i-149

Dawe, Piers J G — Mellanox Technologie

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

S-parameter limits are illustrated - except this one.

SuggestedRemedy

Add the curve for this limit. There is space on Figure 92-5, and those who read the material already in this clause will be able to cope with two lines on one chart.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Use response comment #126.

Cl **92** *SC* **92.8.3.3** *P* **201** *L* **6** # i-150

Dawe, Piers J G — Mellanox Technologie

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

The graphs in this clause and Annex 92A are bitmaps, with their disadvantages. Unlike others e.g. in 72, 85, 93, 86A.

SuggestedRemedy

Replace with vector graphics e.g. emf files

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The graphed equations are EMF format.

However, the figure quality will be addressed in the next draft.

Cl **92** *SC* **92.8.3.8** *P* **205** *L* **42** # i-151

Dawe, Piers J G — Mellanox Technologie

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

Second equation 92-1, following 92-10.

SuggestedRemedy

Fix equation numbering.

Response *Response Status* **C**

ACCEPT.

Change equation P205, L42 to (92-11) and reorder following equations.

Cl **92** *SC* **92.8.3.9** *P* **205** *L* **49** # i-152

Dawe, Piers J G — Mellanox Technologie

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

Because they have definitions, even-odd jitter, effective bounded uncorrelated jitter, and effective random jitter are proper nouns so should be given capitals. See the front matter in Merriam-Webster, as the style guide says - or as another spec neatly puts it: "Some terms are capitalized to distinguish their definition in the context of this document from their common English meaning. Words not capitalized have their common English meaning." Without the capitals, one could imagine one's own definitions for these terms, with different results to what is intended (although even-odd jitter might be self-evident).

SuggestedRemedy

Even-Odd Jitter, Effective Bounded Uncorrelated Jitter, and Effective Random Jitter throughout the document.

Response *Response Status* **C**

REJECT.

The use of capital letters for the cited jitter terms are consistent with similar terms in 802.3-2012.

This response is consistent with responses given for similar comments #231 on Draft 2.0 and #135 on Draft 1.0.

Cl **92** *SC* **92.8.3.9.1** *P* **206** *L* **3** # i-153

Dawe, Piers J G — Mellanox Technologie

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

"a repeating pattern with an odd number of bits and at least two transitions" could be just 101,101,101 which would be a bad choice (very unbalanced).

SuggestedRemedy

Might as well just define it for PRBS9, as for EBUJ and ERJ below. Implementers can cut corners and use e.g. PRBS7 if they wish.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Replace:
"Even-odd jitter is measured on two repetitions of a repeating pattern with an odd number of bits and at least two transitions between one and zero or zero and one. PRBS9 is such a pattern."
With:
"Even-odd jitter is measured using two repetitions of a PRBS9 pattern."

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **26** # i-154

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A** *jitter method*

"Acquire a horizontal histogram with at least 20 000 samples ... with resolution no coarser than 20 fs per bin":
This is supposed to be a standard defining EBUJ and ERJ, not a software specification for an instrument. Sample and bin size affect accuracy but do not make or break the method. The DEFINITION of EBUJ and ERJ should be precise, and should be of the "expectation": i.e. the likely result if you repeated the measurement many times with accurate equipment and enough samples. Something like bin coarseness is like voltmeter accuracy: give advice if you like but it should not be normative. Normative imperfections such as bin size in this case degrade the presision of the definition.
Note also "1.2.6 Accuracy and resolution of numerical quantities
Unless otherwise stated, numerical limits in this standard are to be taken as exact, with the number of significant digits and trailing zeros having no significance."

SuggestedRemedy

Move advice about sample size and bin size into an informative NOTE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #175.

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **26** # i-155

Dawe, Piers J G — Mellanox Technologie

Comment Type **E** *Comment Status* **A** *jitter method*

"a horizontal histogram ... measured at ... [a] point". Oxymoron?

SuggestedRemedy

Change "measured at the zero crossing point" to "measured around the zero crossing point".

Response *Response Status* **C**

ACCEPT.

See response to comment #175.

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **28** # i-156

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A** *jitter method*

A window of 1 % of the signal VMA is slow, with a sampling scope, because most samples will miss the vertical window. Why not 2%?

SuggestedRemedy

Increase this to 2% or more.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events. The response to comment #175 removes the text cited in the comment.

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **35** # i-157

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A** *jitter method*

"Determine the bin numbers IL1, IL2, IR1, and IR2 meeting the following criteria:
CDFLIL1>=20/NS and CDFLIL1-1<20/NS,
CDFLIL2<=500/NS and CDFLIL2+1>=500/NS,"
1. Don't need to mention bins, should not do so.
2. This is a roundabout way of saying exclude the first 20 samples and use the next 480. But, someone who took 100,000 or 1,000,000 samples rather than 20,000 would be then be fitting further down the curve and would have a different "expectation" (different results) if the CDFs do not exactly follow the dual-Dirac model.

SuggestedRemedy

Just say fit to the curves between x and y on the CDFs.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #175.

Cl **92** *SC* **92.8.3.9.2** *P* **207** *L* **14** # i-158

Dawe, Piers J G — Mellanox Technologie

Comment Type **T** *Comment Status* **A** *jitter method*

"effective random jitter = 2 / (mright - mleft)"
m has the units of inverse time so 1/m is the standard deviation: let's call it s. You could combine two standard deviations as (s1+s2)/2 (sum them) or sqrt((s1^2+s2^2)/2) (RSS, weighted to the worse s), but this uses 2/(1/s1+1/s2) (weighted to the better s). Why?

SuggestedRemedy

RSS the two standard deviations?
This all might be easier with equations of the form Q.sigma=t-t0 rather than Q=m*t+b.s.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See the response to comment #175; the response uses an average of sigmas rather than slopes.

Cl **92** *SC* **92.8.4.2** *P* **208** *L* **11** # i-159

Dawe, Piers J G — Mellanox Technologie

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

Equation 92-20, for receiver differential input return loss, is just the same as Equation 92-1 for transmitter differential output return loss. Don't waste the reader's time.

SuggestedRemedy

Remove Equation 92-20, refer to Equation 92-1.

Response *Response Status* **W**

REJECT.

Parameter is identified in PICS (RC4). PICS (requirement) linked directly to reference (92.8.4.2) . Don't agree it's a waste of the readers time as commentor states, should save reader time as PICS reference is to requirement.

Cl **92** *SC* **92.8.4.4.4** *P* **210** *L* **46** # i-160

Dawe, Piers J G — Mellanox Technologie

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

"transition times ... 19 ps"

SuggestedRemedy

Review. Is this still the right number?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Overtaken by events.

See the response to comment #136, which removes this reference to transition time.

Cl **92** *SC* **92.11** *P* **220** *L* **40** # i-161

Dawe, Piers J G — Mellanox Technologie

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

Test Fixtures

SuggestedRemedy

Test fixtures (even if the name of a particular type is a proper noun)

Response *Response Status* **C**

ACCEPT.

P220, L40 Change Fixtures to fixtures

Cl **92** *SC* **92.11.1** *P* **220** *L* **49** # i-162

Dawe, Piers J G — Mellanox Technologie

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

TP2 or TP3 Test fixture

SuggestedRemedy

TP2 or TP3 test fixture

Response *Response Status* **C**

ACCEPT.

P220, L49
Change: TP2 or TP3 Test fixture
To: TP2 or TP3 test fixture

Cl **92** *SC* **92.11.2** *P* **222** *L* **27** # i-163

Dawe, Piers J G — Mellanox Technologie

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

As in 92.11.1, we should use the usual industry term so readers can recognise that this is a something they have seen before.

SuggestedRemedy

The test fixture of Figure 92-16 (also known as Module Compliance Board) or its equivalent, is...

Response *Response Status* **W**

ACCEPT.

Use suggested remedy

Cl **93** *SC* **93** *P* **240** *L* **7** # i-164

Dawe, Piers J G — Mellanox Technologie

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

This says "There are two associated annexes" but there are three. Also, should 91 mention its Annex 91A at the beginning?

SuggestedRemedy

Correct. Add text mentioning 93C. In 91.1, add text mentioning 91A.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a sentence to the end of the only paragraph in 91.1.1.

"Annex 91A provides examples of RS-FEC codewords constructed with the method specified in this clause."

Change the last two sentences of 93.1 starting at page 240, line 7 as follows.

"There are three associated annexes. Annex 93A defines characteristics of electrical backplanes, Annex 93B extends the electrical backplane reference model with additional informative test points, and Annex 93C defines the test method for receiver interference tolerance."

Cl **93** *SC* **93.8.2.3** *P* **256** *L* **17** # i-165

Dawe, Piers J G — Mellanox Technologie

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

"low-pass response with 33 GHz 3 dB bandwidth ... for measurements of the broadband noise."
This isn't realistic: product receivers won't have that much bandwidth, so it's building an error into the method that we don't need. Also the spec is inconsistent: 92.10.10 has "fr is the 3 dB reference receiver bandwidth, which is set to 18.75 GHz", Table 93-8 (COM parameters) has fr = 0.75*fb, 93A.2, Test channel calibration using Channel Operating Margin (COM), has "The power spectral density of the noise is flat from -fb / 2 to fb / 2 and is zero elsewhere", Annex 93C Receiver interference tolerance noise sources are controlled up to only fb/2, S-parameter specs stop at 19 GHz. At the last meeting we established that we could change from 33 to 25 GHz without needing to adjust the linear fit pulse peak spec. We should bring the observation bandwidth more in line with product receivers, and the range of frequencies specified in the S-parameter specs, and other parts of the spec. This will also allow for lower cost, lower noise measurements (or, more accurate results from a real-time scope with a set sampling rate), and in some circumstances, measurements that correlate better to performance.

SuggestedRemedy

Change 33 GHz to 25 GHz, or if feasible, 19.34 GHz = 0.75*fb. Here and in 93.8.1.1, 92.8.3 and 92.8.4. If necessary, make small (<0.3 dB for 19 GHz, much less for 25 GHz) adjustments to the linear fit pulse peak limits.

Response *Response Status* **W**

REJECT.

This is a restatement of Working Group ballot comment #109 against Draft 2.2.

Regarding the correlation to product receiver bandwidth:
It is difficult to say how much bandwidth product receivers will have over the lifetime of the standard. In the context of the standard, it can be said that the Channel Operating Margin (COM) calculation includes a receiver noise filter with bandwidth set to the 3/4 of the signaling rate fb. However, this bandwidth is subsequently modified (increased) by the continuous time filter (i.e. equalizer) in a channel-dependent way.

Regarding the interference tolerance noise sources:
There are two receiver interference tolerance noise sources. The amplitude of the channel noise source is computed from the measured noise spectral density per Equation (93C-3). Since the integration is from DC to fb/2, whether the measurement filter bandwidth is 19, 25, or 33 GHz is unlikely to influence this computed value. The shape of the transmitter noise source is controlled from some minimum frequency (0.1 GHz for 100GBASE-KR4) to fb/2, but its amplitude is controlled by the "noise parameter" (SNDR for 100GBASE-KR4). In this case, it is more important that the measurement bandwidth be the same for the calibration as it is for the actual transmitter measurements whether it is 19, 25, or 33 GHz. The choice of fb/2 as an upper limit ensures the receiver under test experiences the intended stress. In other words, it is a bandwidth that the product receiver is expected to exceed so that it does not filter the noise and thereby reduce the stress.

Given that the product receiver bandwidth is unknown and unspecified, the relationship between lower bandwidth and improved correlation to performance cannot be rigorously established. Improvements to the cost and accuracy of measurements corresponding to lower measurement bandwidth have not been established. It has not been established that the measurement bandwidth for signal parameters should agree with the frequency range for specifications based on S-parameters.

Cl **93** *SC* **93.8.2.4** *P* **256** *L* **47** # i-166

Dawe, Piers J G — Mellanox Technologie

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

Receiver Jitter Tolerance

SuggestedRemedy

Receiver jitter tolerance

Response *Response Status* **C**

ACCEPT.

Cl **93** *SC* **93.9.1** *P* **259** *L* **41** # i-167

Dawe, Piers J G — Mellanox Technologie

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

A 14-tap DFE seems expensive for high density applications: one would expect that a shorter equaliser and improvements in something else would be a better approach. And we have FEC now.

SuggestedRemedy

Reduce 14 to a lower number.

Response *Response Status* **C**

REJECT.

No supporting material has been provided to establish that 14 taps implies excessive complexity or cost relative to the project objectives.

No supporting material has been provided to establish a what value of Nb less than 14 enables 100GBASE-KR to satisfy the project objectives. The importance (or lack thereof) of supporting channels that would be disqualified by reducing Nb from 14 to lower number has also not been established.

Cl **93A** *SC* **93A** *P* **339** *L* **29** # i-168

Dawe, Piers J G — Mellanox Technologie

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

There are several "summary" tables, e.g. Table 93-4, Summary of transmitter characteristics at TP0a, that list spec limits. Table 93A-1 is different, so help the reader and show it's different.

SuggestedRemedy

Change "The parameters used to calculate COM are summarized in Table 93A-1." to "The parameters used to calculate COM are listed in Table 93A-1."
Change table title from "Summary of parameters" to"[List of] Channel Operating Margin parameters".
Change title of Table 93-8 from "Channel Operating Margin parameters" to "Channel Operating Margin parameter values". Similarly for Table 94-17.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy for both Clause 93 and Clause 94.

For the caption of Table 93A-1, use "Channel Operating Margin parameters".

Cl **93A** *SC* **93A.1** *P* **339** *L* **31** # i-169

Dawe, Piers J G — Mellanox Technologie

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

This annex is a pain to use because it unhelpfully says "The values assigned to these parameters are defined by the Physical Layer specification that invokes the method" rather than giving specific, clickable cross-references, although there are cross-references in the other direction.

SuggestedRemedy

Provide specific, clickable cross-references to the filled-in versions of Table 93A-1 (which are Table 93-8 in 93.9.1 and Table 94-17 in 94.4.1).

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Add a sentence to the end of the paragraph starting at page 339 line 29 as follows from:

"The Physical Layer specifications that employ this method are listed in Table 93A-x."

Add Table 93A-x with column headings "Physical layer" and "Parameter values".

Include rows for 100GBASE-KR4 and 100GBASE-CR4 with cross-references to Tables 93-8 and 94-17 respectively.

Cl **93A** *SC* **93A.1.4.3** *P* **344** *L* **41** # i-170

Dawe, Piers J G — Mellanox Technologie

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

This reference equalizer and the OIF-like one used in 802.3bm differ: this has poles at 6.4 and 26 GHz, that has poles at 14.1 and 15 to 19 GHz. The difference is an impediment to making and testing dual-purpose electrical receivers, and I have not seen a justification for the difference.

SuggestedRemedy

Can these two be made consistent enough? As the OIF equalizer was established earlier and has been studied more, is there a justification for this one being different?

Response *Response Status* **W**

REJECT.

The receiver equalizer in 93A.1 was included in D1.2 of IEEE P802.3bj (August 2012) and has been extensively studied. No supporting material has been provided to establish that filters can and should be the same. The magnitude of the impediment to implementing and testing dual-purpose receivers has not been established.

The response to comment 173 permits the characteristics of the COM receiver equalizer to be set as required by the invoking clause.

Cl **93A** *SC* **93A.1.4.3** *P* **344** *L* **46** # i-171

Dawe, Piers J G — Mellanox Technologie

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

the application of rectangular pulse one unit interval in duration at its input.

SuggestedRemedy

the application of *a* rectangular pulse one unit interval in duration at its input.
or
the application at its input of a rectangular pulse one unit interval in duration.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the first sentence of 93A.1.5 as follows.

"...the application of a rectangular pulse one unit interval in duration at its input."

Cl **93A** *SC* **93A.1.2.3** *P* **342** *L* **37** # i-172

Moore, Charles — Avago Technologies

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

equation 93A-9 for return loss is a polynomial In frequency and will diverge at high frequencies, which is unphysical

SuggestedRemedy

replace equation 93A-9 with s11=s22=rho_bb + rho0(1-exp(-2*pi*j*f*tau)) in table 93A-2 delete all rho lines. add lines for rho_bb= 1e-3 no units rho0 =-1.06e-1 no units tau = 1.22e-2 1/GHz in table 92-12 delete all rho lines. add lines for rho_bb= 4e-4 no units rho0 = 4.5e-2 no units tau = 1.21e-2 1/GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The models in Draft 3.0 are polynomial fits to templates based on detailed models of transmission lines. The proposed models show better agreement to the templates over a broader range of frequencies and will not diverge at high frequencies.

Add text explaining that the resultant trasmission line would have an impedance of approximately 81 Ohms representing a package trace with manufacturing variation.

Add text near Table 92-12, that the resultant host trasmission line would have an impedance of approximately 110 Ohms representing a PCB trace with manufacturing variation. See comment #128.

Cl **93A** *SC* **93A.1.4.3** *P* **344** *L* **41** # i-173

Moore, Charles — Avago Technologies

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

Annex 93A is intended to support numerous PMDs. Some of them may have a CTLE which does not match equation 93A-20. Lets make the equation a bit more general by moving the pole locations into the PMDs

SuggestedRemedy

Change equation 93A-20 to H_ctf(f) = {10^G_DC/20 + j(f/fpctf_2)}/{(1+j(f/fpctf_1))(1+j(f/fpctf_2))} in table 93A-1 add lines referring to 93A.1.4.3 for fpctf_1 and fpctf_2, both in units of GHz. in table 93-8 add lines referring to pfctf_1=f_b and pfctf_2=f_b/4 in table 94-17 add lines referring to pfctf_1=f_b and pfctf_2=f_b/4

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Generalize the form of the equation further. Redefine H_ctf(f) as follows.

H_ctf(f) = {10^(g_DC/20) + j*f/f_z}/{(1+j*f/f_p1)(1+j*f/f_p2)}

Add f_z, f_p1, and f_p2 to the Channel Operating Margin parameters (Table 93A-1). In Tables 93-8 and 94-17, define f_z=f_p1=f_b/4 and f_p2=f_b.

Cl **93A** *SC* **93A.1.5** *P* **345** *L* **17** # i-174

Moore, Charles — Avago Technologies

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

Equation 93A-22, NOTE 2 to the equation and various tables, imply that h^(k)(t) extends in time from t=0 to 100ns. But the COM code provided to the task force, which is the de facto definition of COM, truncates the pulse response from t=0 to shortly before t_s and from some time around t_s+100T_b on. It would be good to get alignment between the written and the de-facto standards.

SuggestedRemedy

Either eliminate truncation from the COM code or document how to truncate in the written standard.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The "COM code" referenced by the editor's note on page 339, line 15 is an implementation of Annex 93A but is not part of the draft. The commenter is referred to the authors of the tool to discuss its implementation, suggest changes, etc.

If the channel does not adhere to delayed causality, truncating prior to the main lobe of the pulse (i.e. to shortly before t_s) could have a significant influence on the results. Annex 93A deliberately avoids any discussion of how to test and/or correct causality. If the data is good, a meaningful result will be obtained. If the data is not good, the results will be suspect (and results will likely vary between implementations of COM that enforce causality differently, or not at all). The quality of data is also an intrinsic limitation of any measurement defined in this draft.

Small errors in the measurement or the numerical methods employed to perform these calculations will likely yield small values close to zero that may or may not correspond to the actual response of the channel. Users may benefit from some statement regarding what values are "close enough" to zero and can safely be ignored.

Add the following note to 93A.1.7.1.
"NOTE 2 - It is recommended that components of the pulse response whose amplitude is less than 0.1% of A_s be ignored as they likely correspond to measurement noise or numerical artifacts."

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **24** # i-175

Moore, Charles — Avago Technologies

Comment Type **T** *Comment Status* **A** *jitter method*

Jitter measurement method specifies a minimum number of samples but no maximum. But due to fixed number of hits on endpoints of fitting region linear fit will give different results for different number of settings. This could make the measurement un-repeatable between labs.

SuggestedRemedy

A presentation will be given.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Presentation moore_3bj_01_0114 provides background and will be reviewed by task force.

Detailed editorial changes to Clause 92 are provided in brown_3bj_02_0114.

Implement the following with editorial license.

A summary of the changes 92.8.3.9.2 follows:
1. In the methodolology:
1a. Rather than setting line fit range by number of samples, use a fixed range bound by probabilites of 2.5E-2 and 1E-3.
1b. Remove explicit specification of bin size and number of samples and provide a note suggesting that an appropriate number of samples be acquired to ensure repeatable measurement.
2. Replace the specification of effective random jitter with a specification for effective total uncorrelated jitter.
2a. Determine EBUJ and ERJ using the current methodology with the amendments suggested above.
2b. Determine ETUJ from EBUJ and ERJ, where the peak-to-peak value of ERJ is determined relative to a bit error ratio of 1E-5 (~7.9x the RMS value).
2c. Leave specification of effective bounded uncorrelated jitter as is.
2d. Remove specification of effective random jitter.
2e. Add specification of effective total uncorrelated jitter with a limit of 0.18 UI peak-to-peak.

Implement the following:
Update Table 92-6, Table 93-4, and 93.8.1.7 as follows:
Remove effective random jitter specification.
Add effective total uncorrelated jitter specification.
Update PICS in 92 and 93.
In table 92-6, point each jitter term to the corresponding subclause.

Cl **45** *SC* **45.2.1.6** *P* **39** *L* **28** # i-176

Law, David — Hewlett-Packard Ltd

Comment Type **T** *Comment Status* **A** *802.3bk*

It appears that Table 45-7 does not include the changes published in IEEE Std 802.3bj-2013.

SuggestedRemedy

[1] Add the following entries to Table 45-7:

0 1 1 1 1 1 = 10/1GBASE-PRX-U4
0 1 1 1 1 0 = 10GBASE-PR-U4
0 1 1 1 0 1 = 10/1GBASE-PRX-D4
0 1 1 1 0 0 = 10GBASE-PR-D4

[2] Delete the following entry from Table 45-7:

0 1 1 1 x x = reserved

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Also, to align the text with 802.3-2012, change all instances in Table 45-7 of "PMA/PMD type" in the description for PMA/PMD type selection to "PMA/PMD".

Cl **45** *SC* **45.2.1.100** *P* **58** *L* **52** # i-177

Law, David Hewlett-Packard Ltd

Comment Type **T** *Comment Status* **A** *test pattern*

I assume that the Test-pattern ability register (1.1500) does not need ability bits for the JP03A, the JP03B and the QPRBS13 test patterns since the JP03A, the JP03B and the QPRBS13 test patterns are mandatory for a 100GBASE-KP4 PMA/PMD (subclause 94.2.9.1, 94.2.9.2 and 94.2.9.3 respectively) and therefore the 100GBASE-KP4 ability bit (1.13.12) determines if they are supported or not.

SuggestedRemedy

Suggest that it be made clear that these test patterns bits will only operate for a 100GBASE-KP4 PMA/PMD, based on this:

[1] Change 'Register 1.1501 bit 8 enables testing with the JP03A pattern defined in 94.2.9.1.' to read 'Register 1.1501 bit 8 enables 100GBASE-KP4 PMA/PMD testing with the JP03A pattern defined in 94.2.9.1.'.

[2] Change 'Register 1.1501 bit 9 enables testing with the JP03B pattern defined in 94.2.9.2.' to read 'Register 1.1501 bit 9 enables 100GBASE-KP4 PMA/PMD testing with the JP03B pattern defined in 94.2.9.2.'.

[3] Change 'Register field 1.1501 bit 10 enables testing with the QPRBS13 pattern defined in 94.2.9.3.' to read 'Register field 1.1501 bit 10 enables 100GBASE-KP4 PMA/PMD testing with the QPRBS13 pattern defined in 94.2.9.3.'.

[4] Change 'The assertion of 1.1501.8, 1.1501.9, and 1.501.10 operates in conjunction with register 1.1501 bit 3.' to read 'The assertion of 1.1501.8, 1.1501.9, and 1.501.10 operates in conjunction with register 1.1501 bit 3 and the PMA/PMD ability.'.

[5] Change 'If bit 1.1501.3 is not asserted then 1.1501.8, 1.1501.9, and 1.1501.10 have no effect.' to read 'If bit 1.1501.3 is not asserted, or the 100GBASE-KP4 ability (1.13.12) bit is not one, then 1.1501.8, 1.1501.9, and 1.1501.10 have no effect.'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Slight change to wording from the suggested remedy:

[1] Change 'Register 1.1501 bit 8 enables testing with the JP03A pattern defined in 94.2.9.1.' to read 'Register 1.1501 bit 8 enables testing with the JP03A pattern defined in 94.2.9.1 for 100GBASE-KP4 PMA/PMD.'.

[2] Change 'Register 1.1501 bit 9 enables testing with the JP03B pattern defined in 94.2.9.2.' to read 'Register 1.1501 bit 9 enables testing with the JP03B pattern defined in 94.2.9.2 for 100GBASE-KP4 PMA/PMD.'.

[3] Change 'Register field 1.1501 bit 10 enables testing with the QPRBS13 pattern defined in 94.2.9.3.' to read 'Register field 1.1501 bit 10 enables testing with the QPRBS13 pattern defined in 94.2.9.3 for 100GBASE-KP4 PMA/PMD.'.

[4] Change 'The assertion of 1.1501.8, 1.1501.9, and 1.501.10 operates in conjunction with register 1.1501 bit 3.' to read 'The assertion of 1.1501.8, 1.1501.9, and 1.501.10 operates in conjunction with bit 1.1501.3 for 100GBASE-KP4 PMA/PMD.'.

[5] Change 'If bit 1.1501.3 is not asserted then 1.1501.8, 1.1501.9, and 1.1501.10 have no effect.' to read 'For other PMA/PMD types or if bit 1.1501.3 is not asserted then 1.1501.8, 1.1501.9, and 1.1501.10 have no effect.'.

Cl **94** *SC* **94.2.9** *P* **280** *L* **13** # i-178

Law, David Hewlett-Packard Ltd

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

Aren't the JP03A, the JP03B and the QPRBS13 test patterns mandatory for the implementation of a 100GBASE-KP4 PMA rather than a 100GBASE-KP4 PHY since Clause 94 specifies a 100GBASE-KP4 PMA/PMD, subclause 94.2.9 is titled 'PMA test patterns'.

SuggestedRemedy

Suggest that:

[1] Change 'A 100GBASE-KP4 PHY shall include a JP03A test pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PMA shall include a JP03A test pattern generator as specified in this subclause.'.

[2] Change 'A 100GBASE-KP4 PHY shall include a JP03B test pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PMA shall include a JP03B test pattern generator as specified in this subclause.'

[3] Change 'A 100GBASE-KP4 PHY shall include a quaternary PRBS13 (QPRBS13) pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PHY shall include a quaternary PRBS13 (QPRBS13) pattern generator as specified in this subclause.'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The suggested remedy should have changed PHY to PMA for [3] as has been done for [1] and [2]. Change "PHY" to "PMA" for the three cases.

[1] Change 'A 100GBASE-KP4 PHY shall include a JP03A test pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PMA shall include a JP03A test pattern generator as specified in this subclause.'

[2] Change 'A 100GBASE-KP4 PHY shall include a JP03B test pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PMA shall include a JP03B test pattern generator as specified in this subclause.'

[3] Change 'A 100GBASE-KP4 PHY shall include a quaternary PRBS13 (QPRBS13) pattern generator as specified in this subclause.' to read 'A 100GBASE-KP4 PMA shall include a quaternary PRBS13 (QPRBS13) pattern generator as specified in this subclause.'

Cl **91** *SC* **91.2** *P* **159** *L* **23** # i-179

Law, David Hewlett-Packard Ltd

Comment Type **T** *Comment Status* **A** *optional eee deep sleep*

Is it correct that the two additional PMD service interface primitives are required to 'support the optional EEE capability', aren't they only required to support the optional EEE deep sleep capability, and are not required to support Fast Wake (see figure 80-3b).

SuggestedRemedy

Suggest that 'If the optional EEE capability is supported ...' be changed to read 'If the optional EEE deep sleep capability is supported ...'.

Similarly, suggest that this change be also made in subclause 92.2 (page 191, line 7), subclause 92.7.2 (page 195, line 3), subclause 92.7.5 (page 195, line 34), subclause 92.7.6 (page 196, line 1), subclause 92.8.3.1 (page 200, line 1), subclause 93.2 (page 242, line 7), subclause 93.7.2 (page 245, line 23), subclause 93.7.5 (page 246, line 1), subclause 93.7.6 (page 246, line 22), subclause 93.8.1.3 (page 250, line 47), subclause 94.3.1 (page 282, line 21), subclause 94.3.6.2 (page 285, line 43), subclause 94.3.6.5 (page 287, line 7), subclause 94.3.6.6 (page 287, line 27) and subclause 94.3.12.3 (page 300, line 36).

Response *Response Status* **C**

ACCEPT.

In addition to the references in the suggested remedy, change "optional EEE capability" to "optional EEE deep sleep capability" in the following instances:

91.5.2.4 (page 162, line 1)
91.5.2.6 (page 165, line 23)
91.5.3.3 (page 170, line 13)
91.5.3.4 (page 170, line 28)
91.5.3.7 (page 172, line 30)
91.5.4.2.1 (page 174, line 37)
91.5.4.2.1 (page 175, line 48)
91.5.4.2.3 (page 177, line 16)

Cl **82** *SC* **82.3.1** *P* **130** *L* **38** # i-180

Law, David — Hewlett-Packard Ltd

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

While I realise this is existing text from IEEE Std 802.3-2012 is the title for Table 82-6 'MDIO/PMD control variable mapping' correct, isn't this actually the MDIO to PCS control variable mapping. The last column of the table reads 'PCS control variable' and the text in IEEE Std 802.3-2012 reads 'Mapping of MDIO control variables to PCS control variables is shown in Table 82-6.'.

SuggestedRemedy

Suggest that 'MDIO/PMD control variable mapping' be changed to read 'MDIO/PCS control variable mapping'.

Response *Response Status* **C**

ACCEPT.

Cl **92** *SC* **92.8.3.9.2** *P* **206** *L* **40** # i-181

Brown, Matthew — Applied Micro (AMCC)

Comment Type **T** *Comment Status* **A** *jitter method*

The straight line fit in step (d) will be different depending on the the number of samples acquired since the fit region is dependent upon number of samples.

SuggestedRemedy

Fix this problem by implementing one of the following changes. (1) Specify a range of Q to be used regardless of the number of samples required and specify a minimum number of samples accordingly. (2) Rather than calculating the jitter components using a straight-line extrapolation, calculate the INVERFC parameters to fit the data.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See the response to comment #175.

Cl **92** *SC* **92.10.7** *P* **216** *L* **47** # i-182

Brown, Matthew — Applied Micro (AMCC)

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

COM must be calculated using the parameters in Table 93-8 for both Test 1 and Test 2 using wording from 93.9.1. Also, it should be explained that the end to end channel is assembled according to 92.10.7.1.

SuggestedRemedy

Replace the last sentence in the first paragraph of 92.10.7 with:
"The Channel Operating Margin (COM) is computed using the procedure in 93A.1 with the Test 1 and Test 2 values in Table 93-8 and with the channel specified in 92.10.7.1. Test 1 and Test 2 differ in the value of the device package model transmission line length zp."
Add the following after the sentence on line 51:
"This minimum value allocates margin for practical limitations on the receiver implementation as well as the largest step size allowed for transmitter equalizer coefficients."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #121.

Cl **92** *SC* **92** *P* **201** *L* **25** # i-183

Brown, Matthew — Applied Micro (AMCC)

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

According to style guide, text in figures should be either Arial or Helvetica font with size 8 pt. Many figures have font larger or smaller than this. In particular, most of the parameter vs frequency plots have a much larger font.

SuggestedRemedy

Change text in the all figures to conform to the 8 pt text size.

Response *Response Status* **C**

ACCEPT.

The style manual is quoted incorrectly. Per Table 1 in the 2012 IEEE Standards Style Manual, "Times New Roman and Arial fonts are preferred" and "IEEE-SA uses 8-point type size."

Use suggested remedy

Cl **93** *SC* **93** *P* **240** *L* **25** # i-184

Brown, Matthew — Applied Micro (AMCC)

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

According to style guide, text in figures should be either Arial or Helvetica font with size 8 pt. Many figures have font larger or smaller than this. In particular, most of the parameter vs frequency plots have a much larger font.

SuggestedRemedy

Change text in the figures 93-12, 93-9, and 93-8 to conform to the 8 pt text size.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The style manual is quoted incorrectly. Per Table 1 in the 2012 IEEE Standards Style Manual, "Times New Roman and Arial fonts are preferred" and "IEEE-SA uses 8-point type size."

The parameter vs. frequency plots in Clause 93 do not use "much larger" fonts.

Figure 93-6 uses 10 pt font. Figures 93-9 and 93-12 use 9 pt font. These will be reduced to 8 pt font.

Cl **94** *SC* **94** *P* **269** *L* **25** # i-185

Brown, Matthew — Applied Micro (AMCC)

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

According to style guide, text in figures should be either Arial or Helvetica font with size 8 pt. Many figures have font larger or smaller than this. In particular, most of the parameter vs frequency plots have a much larger font.

SuggestedRemedy

Change text in figures 94-2 and 94-3 to use Arial or Helvetica font.
Change text in the figures 94-5, 94-6, 94-8, 94-11, 94-12, 94-17 (ILmax), 94-18 (RLmax) to conform to the 8 pt text size.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The style manual is quoted incorrectly. Per Table 1 in the 2012 IEEE Standards Style Manual, "Times New Roman and Arial fonts are preferred" and "IEEE-SA uses 8-point type size."

Use suggested remedy. To align the font type with other figures in 92, 93, and 94, use suggested remedy with Arial font.

Cl **92** *SC* **92.8.3.7** *P* **204** *L* **30** # i-186

Brown, Matthew — Applied Micro (AMCC)

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

Grammar.

SuggestedRemedy

Change "greater then" to "greater than" on line 30 and line 33.

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **92** *SC* **92.1** *P* **189** *L* **43** # i-187

Brown, Matthew — Applied Micro (AMCC)

Comment Type **TR** *Comment Status* **A** *frame loss ratio*

Subsequent to adoption of the FLR target in 802bj, further analysis and colloboration has determined that the appropriate number for the target FLR corresponding to BER of 1E-12 should be 6.2E-10 as adopted in 802.3bm rather than 1.7E-10. To unify the specifications among the various clauses, which should have the same target, adopt the target from 802.3bm. See anslow_03_0113_optx.pdf.

SuggestedRemedy

Change the FLR target from 1.7E-10 to 6.2E-10.

Response *Response Status* **C**

ACCEPT.

Also see comments 189 (CL94) and 188 (CL93).

Cl **93** *SC* **93.1** *P* **240** *L* **52** # i-188

Brown, Matthew — Applied Micro (AMCC)

Comment Type **TR** *Comment Status* **A** *frame loss ratio*

Subsequent to adoption of the FLR target in 802bj, further analysis and colloboration has determined that the appropriate number for the target FLR corresponding to BER of 1E-12 should be 6.2E-10 as adopted in 802.3bm rather than 1.7E-10. To unify the specifications among the various clauses, which should have the same target, adopt the target from 802.3bm. See anslow_03_0113_optx.pdf.

SuggestedRemedy

Change the FLR target from 1.7E-10 to 6.2E-10.

Response *Response Status* **C**

ACCEPT.

Also see comments 187 (CL92) and 189 (CL94).

Cl **94** *SC* **94.1** *P* **269** *L* **44** # i-189

Brown, Matthew — Applied Micro (AMCC)

Comment Type **TR** *Comment Status* **A** *frame loss ratio*

Subsequent to adoption of the FLR target in 802bj, further analysis and colloboration has determined that the appropriate number for the target FLR corresponding to BER of 1E-12 should be 6.2E-10 as adopted in 802.3bm rather than 1.7E-10. To unify the specifications among the various clauses, which should have the same target, adopt the target from 802.3bm. See anslow_03_0113_optx.pdf.

SuggestedRemedy

Change the FLR target from 1.7E-10 to 6.2E-10.

Response *Response Status* **C**

ACCEPT.

Also see comments 187 (CL92) and 188 (CL93).

Cl **94** *SC* **94.3.12.1.1** *P* **300** *L* **8** # i-190

Brown, Matthew — Applied Micro (AMCC)

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

No figures showing a plot of Differential and CM return loss.

SuggestedRemedy

Add DRL and CMRL plot figures.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add plots for equations 94-3 and 94-4.
Also add RLmin(f)= to equation 94-3

See also comment #54

Cl **94** *SC* **94.3.12.4** *P* **301** *L* **26** # i-191

Brown, Matthew — Applied Micro (AMCC)

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

No figures showing a plot of Differential and CM return loss.

SuggestedRemedy

Add DRL and CMRL plot figures.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add plots for equations 94-6 and 94-7

Also add RLmin(f)= to the equations

See also comment #54

Cl **94** *SC* **94.3.13.2** *P* **307** *L* **9** # i-192

Brown, Matthew — Applied Micro (AMCC)

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

No figures showing a plot of CM return loss.

SuggestedRemedy

Add CMRL plot figure.

Response *Response Status* **C**

ACCEPT.

Add plot for equation 94-20

see also comment #54

Cl **92** *SC* **92.8.3** *P* **199** *L* **51** # i-193

Brown, Matthew Applied Micro (AMCC)

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

The footnote (a) is an important piece of information that system implementors should be aware of. Since this table is a summary and all normative aspects are specified in 92.8.3.1, the footnote text should be in 92.8.3.1, not in a footnote.

SuggestedRemedy

Move the footnote text in Table 92-6 to a note at the end of 92.8.3.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Move the footnote text in Table 92-6 to a paragraph after the second paragraph in 92.8.3.1.

Delete footnote and footnote reference in Table 92-6.

Cl **92** *SC* **92.8.4** *P* **207** *L* **42** # i-194

Brown, Matthew Applied Micro (AMCC)

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

Table 92-7 is a summary (not normative) table. The footnote (a) provides measurement specific already provided in 92.8.4.2. 92.8.4.2 also contains other as-important specifics so the footnote is redundant and incomplete.

SuggestedRemedy

Remove footnote from Table 92-7.

Response *Response Status* **C**

ACCEPT.

Use suggested remedy

Cl **93** *SC* **93.8.1** *P* **248** *L* **42** # i-195

Brown, Matthew Applied Micro (AMCC)

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

Table 93-4 is a summary (not normative) table. The footnote (a) provides measurement specific already provided in 93.8.1.3. 93.8.1.3 also contains other as-important specifics so the footnote is redundant and incomplete.

SuggestedRemedy

Remove footnote from Table 93-4.

Response *Response Status* **C**

ACCEPT.

Cl **94** *SC* **94.3.12** *P* **299** *L* **32** # i-196

Brown, Matthew Applied Micro (AMCC)

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

Table 94-13 is a summary (not normative) table. The footnote (a) provides measurement specific already provided in 94.3.12.3. 94.3.12.3 also contains other as-important specifics so the footnote is redundant and incomplete.

SuggestedRemedy

Remove footnote from Table 94-13.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete footnote and reference to it on line 9.

Cl **93** *SC* **93.8.1** *P* **248** *L* **25** # i-197

Brown, Matthew Applied Micro (AMCC)

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

The subclause reference is a top-level sub-clause for a number of corresponding sub-subclauses. Refer to the specific subclause for each parameter as is done in 92 and 94.

SuggestedRemedy

Steady-state voltage vf (max.) -- 93.8.1.5.2
Steady-state voltage vf (min.) -- 93.8.1.5.2
Linear fit pulse peak (min.) -- 93.8.1.5.2
Normalized coefficient step size (min.) -- 93.8.1.5.4
Normalized coefficient step size (max.) -- 93.8.1.5.4
Pre-cursor full-scale range (min.) -- 93.8.1.5.5
Post-cursor full-scale range (min.) -- 93.8.1.5.5

Response *Response Status* **C**

ACCEPT.

Cl **94** *SC* **94.3.12.5.1** *P* **302** *L* **31** # i-198

Brown, Matthew — Applied Micro (AMCC)

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

The transmitter linearity test pattern should be defined in a subclause along with the other test patterns.

SuggestedRemedy

Create a new subclause "94.2.9.4 Transmitter linearity test pattern" with the following text:
"Transmitter linearity test pattern is a 160-symbol pattern with a sequence of 10 voltage levels each 16 UI in duration. The 10 levels correspond to the set of PAM4 symbols show in Equation (94-xx). The resulting waveform is shown in Figure 94-yy.
{-1,-1/3,+1/3,+1,-1,+1,-1,+1,+1/3,-1/3} (94-xx)"
Move figure 94-13 to the new 94.2.9.4.
Replace the first sentence in 94.3.12.5.1 with:
"Transmitter linearity is measured using the transmitter linearity test pattern (see 94.x.x.x).
Delete the first sentence of the second paragraph in 94.3.12.5.1 (line 37).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed page number to 302 from 320.

Figure 94-13 shows voltage levels so it should stay in the PMD section.

Create a new subclause
"94.2.9.4 Transmitter linearity test pattern"
with the following text:
"A 100GBASE-KP4 PMA shall include a transmitter linearity test pattern generator as specified in this subclause.

The transmitter linearity test pattern is a 160-symbol pattern with a sequence of 10 symbol values each 16 UI in duration. The 10 values correspond to the set of PAM4 symbols shown in Equation (94-xx).

{-1,-1/3,+1/3,+1,-1,+1,-1,+1,+1/3,-1/3} (94-xx)"
"

Replace the first paragraph in 94.3.12.5.1 and equation 94-8 with:
"Transmitter linearity is measured using the transmitter linearity test pattern (see 94.2.9.4)."

Cl **94** *SC* **94.3.12.6.1** *P* **305** *L* **3** # i-199

Brown, Matthew — Applied Micro (AMCC)

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

The transmitter jitter measurement filter is defined by a -3 dB gain at 1.6 MHz point and a +3 dB peak 6 MHz. The effect of this filter will vary greatly depending on how a filter matching these two criteria are achieved. The shape of the filter should be explicitly specified (and replaced) by an equation that matches the two criteria.

SuggestedRemedy

Replace step (5) with the following text.
"Apply the effect of a high-pass filter with the response given by Equation 94-xx where fn is equal to 2.12E6 and T is equal to 28.6E-9."
Add Equation 94-xx after the current 94-15 as follows:
"G(f) = | f / (f + fn * exp(j*2*pi*f*T)) |"
Also, provide a figure with a plot of the of the filter response.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The equation should be:
G(f) = | j*f / (j*f + fn*exp(j*2*pi*f*T))

The preferred response is as follows:
G(f) = j*f / (j*f + fn*exp(j*2*pi*f*T)) = f / (f - j*fn*exp(j*2*pi*f*T))

Replace step (5) with the following text.

"Apply the effect of a high-pass filter with the response given by Equation 94-xx to the jitter samples to obtain tHPF(j)."

For Equation 94-xx use:
G(f) = f / (f - j*fn*exp(j*2*pi*f*T))
where:
f is the frequency in MHz
fn is 2.12 MHz
T is 0.0286 us
j = sqrt(-1)

Include a plot of the response.

Cl **94** *SC* **94.3.12.6.2** *P* **305** *L* **24** # i-200

Brown, Matthew — Applied Micro (AMCC)

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

The KP4 transmitter random and deterministic jitter components are specified at half the values (in terms of UI, same in time) specified for similar jitter components for the KR4 transmitter. Yet, the KP4 even odd jitter is specified for KP4 (0.03) is only slightly smaller than the EO jitter specified for KR4 (0.035). Since the EO jitter is primarily due to clock duty cycle, the time value should be no worse than for KR4 so the value should be set to 0.035/2 or 0.0175 UIPP.

SuggestedRemedy

Change the specified value for even jitter to 0.0175 UI PP. Updates are required to Table 94-13 and to line 24 on page 305.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Instead of 0.0175 as suggested scale by baud rate: 0.35*13.59375/25.78125 = 0.0185. Or 0.019 UI to three significant digits.

Change the specified value for even-odd jitter to 0.019 UI PP. Updates are required to Table 94-13 and to line 24 on page 305.

Cl **92** *SC* **92.8.3** *P* **198** *L* **1** # i-201

Brown, Matthew — Applied Micro (AMCC)

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

In order to foster effective re-use of transmitter test methodologies, several of the transmitter test methods should be moved to a new annex.

SuggestedRemedy

Create a new Annex 93D "Specification Methods for Transmitters".
Move the text describing the methodology from the following subclauses and parameters/subclauses.
- Linear fit in 92.8.3.6.1
- Steady state voltage and pulse peak in 92.8.3.6.2
- SNDR in 92.8.3.8
- effective bounded uncorrelated jitter, effective random jitter, and even-odd jitter in 92.8.3.9.

Re-write each subclause to point to the corresponding method in Annex 93D.
93 and 94 must be modified to point to the Annex subclauses as well.

Response *Response Status* **C**

REJECT.

The transmitter test methodology is sufficient as written for re-use in other Clauses.

Also, such a drastic change to this draft should be accompanied by a detailed editorial proposal.

Cl **45** *SC* **45.2.1.92a.1** *P* **45** *L* **45** # i-202

Law, David — Hewlett-Packard Ltd

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

Isn't it normal to order the subclauses in reverse numerical order for the bits, therefore the subclause describing register bit 1.200.1 would appear before the subclause describing register bit 1.200.0.

SuggestedRemedy

Suggest that subclause 45.2.1.92a.1 should be 'FEC bypass indication enable (1.200.1)' and that 45.2.1.92a.2 should be 'FEC bypass correction enable (1.200.0)'.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.92b.1** *P* **46** *L* **28** # i-203

Law, David Hewlett-Packard Ltd

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

Isn't it normal to order the subclauses in reverse numerical order for the bits, therefore the subclause describing register bit 1.201.15 would appear before the subclause describing register bit 1.201.14.

SuggestedRemedy

Suggest that subclause 45.2.1.92b.1 should be 'PCS align status (1.201.15)', subclause 45.2.1.92b.2 should be 'RS-FEC align status (1.201.14)', subclause 45.2.1.92b.3 should be 'RS-FEC high SER (1.201.2)', subclause 45.2.1.92b.4 should be 'FEC bypass indication ability (1.201.1)' and subclause 45.2.1.92b.5 should be 'FEC bypass correction ability (1.201.0)'.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.9** *P* **61** *L* **1** # i-204

Law, David Hewlett-Packard Ltd

Comment Type **T** *Comment Status* **A** *EEE indication*

Register 3.20 'EEE control and capability' is a PCS register (MMD 3). I'm therefore not sure how the implementer of a PCS supporting register 3.20 can implement bits 3.20.14 '100GBASE-CR4 deep sleep', 3.20.13 '100GBASE-KR4 deep sleep', 3.20.12 '100GBASE-KP4 deep sleep', '3.20.11 100GBASE-CR10 deep sleep', 3.20.8 '40GBASE-CR4 deep sleep' or ' 3.20.7 40GBASE-KR4 deep sleep' since the support of deep sleep is depended on the support of deep sleep in the associated RS-FEC (if present), PMA(s), and PMD which could potentially be pluggable.

If my comment is correct it seems that these capability bits should be removed from the EEE control and capability PCS register, so that only the 40GBASE-R fast wake and 100GBASE-R fast wake capability bits remain. Deep sleep capability bits should then be added to a new PMA/PMD EEE capability registers defined in the PMA/PMD MMD register space (device address 1). While support for deep sleep in the PMA/PMD can be inferred from the 'PMA ingress AUI stop ability' and 'PMA egress AUI stop ability' bits it would appear that this bits do not need to be supported by RS-FECs/PMAs/PMDs that do not support a physical instantiation of the PMA service interface.

In addition it would seem that the deep sleep capability should not be advertised in the EEE advertisement register for a PHY unless all sublayers (PCS/RS-FEC/PMAs/PMD) as well as all physical instantiation of the PMA service interface that for the PHY in question supports deep sleep.

SuggestedRemedy

Suggest that:

[1] Remove bits 3.20.14 '100GBASE-CR4 deep sleep', 3.20.13 '100GBASE-KR4 deep sleep', 3.20.12 '100GBASE-KP4 deep sleep', '3.20.11 100GBASE-CR10 deep sleep', 3.20.8 '40GBASE-CR4 deep sleep' or ' 3.20.7 40GBASE-KR4 deep sleep' from register 3.20 and renumber the remaining bits as required.

[2] Define new MMD 1 register bits to enable RS-FECs/PMAs/PMDs to indicate if they support deep sleep mode.

[3] Add text to the subclauses describing the new bits being added to the 'EEE advertisement register' to make it clear that deep sleep should only be advertised if all sublayers (PCS/RS-FEC/PMAs/PMD) as well as all physical instantiation of the PMA service interface for that PHY supports deep sleep mode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment is correct that a PCS cannot "answer for" PMA/PMD sublayers. However, there is still a need for some indication of PCS capability.

Suggest that:

[1] Remove bits 3.20.14 '100GBASE-CR4 deep sleep', 3.20.13 '100GBASE-KR4 deep sleep', 3.20.12 '100GBASE-KP4 deep sleep', '3.20.11 100GBASE-CR10 deep sleep', 3.20.8 '40GBASE-CR4 deep sleep' or ' 3.20.7 40GBASE-KR4 deep sleep' from register 3.20. Add '100GBASE-R deep sleep' and '40GBASE-R deep sleep' and renumber the remaining bits as required.

[2] Define new MMD 1 register bits to enable RS-FECs/PMAs/PMDs to indicate if they support deep sleep mode.

[3] Add text to the subclauses describing the new bits being added to the 'EEE advertisement register' to make it clear that deep sleep should only be advertised if all sublayers (PCS/RS-FEC/PMAs/PMD) as well as all physical instantiation of the PMA service interface for that PHY supports deep sleep mode.

[4] Each PMD clause needs to be updated, adding the new management variables, descriptions, and updating the MDIO mapping tables.

Cl **83A** *SC* **83A.3.2a** *P* **323** *L* **19** # i-205

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *EEE wording*

It needs to be made clear that the ALERT pattern here overwrites the data or the ALERT pattern defined in 83.5.11.1.

SuggestedRemedy

Insert after "transmitted across the XLAUI/CAUI.." - in 2 instances. "This pattern replaces the data or the pattern defined in 83.5.11.1."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert after "transmitted across the XLAUI/CAUI." in 2 instances.
"This sequence is transmitted regardless of the value of tx_bit presented by the PMA:IS_UNITDATA_i.request primitive or the rx_bit presented by the PMA:IS_UNITDATA_i.indicate primitive."

Cl **83** *SC* **83.3** *P* **143** *L* **7** # i-206

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *EEE interface*

The transmit disable in the Rx direction is incorrect.

SuggestedRemedy

Replace "ingress AUI when rx_mode (or rx_tx_mode, as appropriate) is QUIET" with "ingress AUI when aui_tx_mode is QUIET"

Response *Response Status* **C**

ACCEPT.

Cl **83** *SC* **83.5** *P* **143** *L* **11** # i-207

Barrass, Hugh — Cisco Systems, Inc.

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

The bookmarks don't show 83.5.xx subclauses correctly

SuggestedRemedy

Insert dummy header for 83.5

Response *Response Status* **C**

ACCEPT.

Cl **84** *SC* **84.2** *P* **149** *L* **35** # i-208

Barrass, Hugh — Cisco Systems, Inc.

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

It should be made clear that the where the ALERT & QUIET behavior is defined.

SuggestedRemedy

Add (see 84.7.2) after "the alert signal is transmitted"

Response *Response Status* **C**

ACCEPT.

Cl **85** *SC* **85.2** *P* **153** *L* **35** # i-209

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *EEE wording*

It should be made clear that the where the ALERT & QUIET behavior is defined.

SuggestedRemedy

Add (see 85.7.2) after "the alert signal is transmitted"

Response *Response Status* **C**

ACCEPT.

Cl **84** *SC* **84.7.2** *P* **150** *L* **11** # i-210

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *EEE wording*

The PMD behavior is not sufficiently clear in this clause (the style of 92.7.2 is better).

SuggestedRemedy

Change "when tx_mode is set to ALERT, the adjacent PMA sends a repeating 16-bit pattern, hexadecimal 0xFF00, to the PMD, which the PMD transmits" - to - "when tx_mode is set to
ALERT, the PMD transmit function shall transmit a repeating 16-bit pattern, hexadecimal 0xFF00, on each lane. This pattern replaces the data or the pattern received from the PMA."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "when tx_mode is set to ALERT, the adjacent PMA sends a repeating 16-bit pattern, hexadecimal 0xFF00, to the PMD, which the PMD transmits" - to - "when tx_mode is set to ALERT, the PMD transmit function shall transmit a repeating 16-bit pattern, hexadecimal 0xFF00, on each lane. This sequence is transmitted regardless of the value of tx_bit presented by the
PMD:IS_UNITDATA_i.request primitive."

Cl **85** *SC* **85.7.2** *P* **154** *L* **11** # i-211

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *EEE wording*

The PMD behavior is not sufficiently clear in this clause (the style of 92.7.2 is better).

SuggestedRemedy

Change "when tx_mode is set to ALERT, the adjacent PMA sends a repeating 16-bit pattern, hexadecimal 0xFF00, to the PMD, which the PMD transmits" - to - "when tx_mode is set to
ALERT, the PMD transmit function shall transmit a repeating 16-bit pattern, hexadecimal 0xFF00, on each lane. This pattern replaces the data or the pattern received from the PMA."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "when tx_mode is set to ALERT, the adjacent PMA sends a repeating 16-bit pattern, hexadecimal 0xFF00, to the PMD, which the PMD transmits" - to - "when tx_mode is set to ALERT, the PMD transmit function shall transmit a repeating 16-bit pattern, hexadecimal 0xFF00, on each lane. This sequence is transmitted regardless of the value of tx_bit presented by the
PMD:IS_UNITDATA_i.request primitive."

Cl **92** *SC* **92.7.2** *P* **195** *L* **6** # i-212

Barrass, Hugh — Cisco Systems, Inc.

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

It needs to be made clear that the ALERT pattern here overwrites the data comingf from the PMA.".

SuggestedRemedy

Insert after the second sentence of the second paragraph: "This pattern replaces the data or the pattern received from the PMA."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following sentence before the last sentence of the paragraph starting at page 195 line 3.
"This sequence is transmitted regardless of the value of tx_bit presented by the PMD:IS_UNITDATA_i.request primitive."

Cl **92** *SC* **92.7.2** *P* **195** *L* **3** # i-213

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *optional eee deep sleep*

This is only needed for deep sleep.

SuggestedRemedy

Change "If the optional EEE capability is supported" to "If the optional EEE capability with the deep sleep mode option is supported"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In addition to the referenced location, change "optional EEE capability" to "optional EEE deep sleep capability" in the following instances:

Subclause 92.2 (page 191, line 7)
subclause 92.7.2 (page 195, line 3)
subclause 92.7.5 (page 195, line 34)
subclause 92.7.6 (page 196, line 1)
subclause 92.8.3.1 (page 200, line 1)

See comment i-179.

Cl **93** *SC* **93.7.2** *P* **245** *L* **26** # i-214

Barrass, Hugh — Cisco Systems, Inc.

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

It needs to be made clear that the ALERT pattern here overwrites the data comingf from the PMA.".

SuggestedRemedy

Insert after the second sentence of the final paragraph: "This pattern replaces the data or the pattern received from the PMA."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Insert the following sentence before the last sentence of the paragraph starting at page 245 line 23.

"This sequence is transmitted regardless of the value of tx_bit presented by the PMD:IS_UNITDATA_i.request primitive."

Cl **93** *SC* **93.7.2** *P* **245** *L* **23** # i-215

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *optional eee deep sleep*

This is only needed for deep sleep.

SuggestedRemedy

Change "If the optional EEE capability is supported" to "If the optional EEE capability with the deep sleep mode option is supported"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See 179.

Cl **94** *SC* **94.3.6.2** *P* **285** *L* **26** # i-216

Barrass, Hugh — Cisco Systems, Inc.

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

It needs to be made clear that the ALERT pattern here overwrites the data comingf from the PMA.".

SuggestedRemedy

Insert after the first sentence of the final paragraph: "This frame replaces the data or the pattern received from the PMA."

Response *Response Status* **C**

REJECT.

Inserting this text is redundant because alert signaling is already fully explained in 94.3.11.1 which is referenced.

The Clause 94 PMD always attaches directly to the Clause 94 PMA.

Cl **94** *SC* **94.3.6.2** *P* **285** *L* **23** # i-217

Barrass, Hugh — Cisco Systems, Inc.

Comment Type **T** *Comment Status* **A** *optional eee deep sleep*

This is only needed for deep sleep.

SuggestedRemedy

Change "If the optional EEE capability is supported" to "If the optional EEE capability with the deep sleep mode option is supported"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

On line 42 change to:
"If the optional EEE deep sleep capability is supported,"

Cl **78** *SC* **78.4.2.5** *P* **88** *L* **3** # i-218

Anslow, Peter
Ciena Corporation

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

Comment #180 against P802.3bm D2.0 points out that leaving the INITIALIZE state of Figure 78-7 in P802.3bj D3.0 relies on completion of auto-negotiation with a link partner that has indicated at least one EEE capability and that this will not happen for the optical PHYs in P802.3bm.
It seems preferable to address this issue directly in the P802.3bj draft rather than modify Figure 78-7 in the P802.3bm amendment.

The Comment section of comment #180 against P802.3bm D2.0 was:
The INITIALIZE state of the Figure 78-7 'EEE DLL Transmitter fast wake state diagram' of IEEE P802.3bj draft D3.0 (page 88) is entered based on an open arrow with the conditions (!tx_dll_enabled + !tx_dll_ready). Table 78-3 of IEEE Std 802.3-2012 (section 6, page 31) shows that the aLldpXdot3LocDllEnabled attribute maps to the tx_dll_enabled variable (aLldpXdot3LocDllEnabled => tx_dll_enabled) and subclause 30.12.2.1.29 of IEEE Std 802.3-2012 (section 2, page 506) defines the aLldpXdot3LocDllEnabled attribute as follows:
30.12.2.1.29 aLldpXdot3LocDllEnabled
ATTRIBUTE
APPROPRIATE SYNTAX:
A BOOLEAN value
FALSE: Local system has not completed auto-negotiation with a link partner that has indicated at least one EEE capability.
TRUE: Local system has completed auto-negotiation with a link partner that has indicated at least one EEE capability.
BEHAVIOUR DEFINED AS:
A GET operation returns the status of the EEE capability negotiation on the local system.;

Based on the above, the attribute aLldpXdot3LocDllEnabled, and hence the tx_dll_enabled variable, will remain false, holding the EEE DLL Transmitter fast wake state diagram in the INITIALIZE state, until auto-negotiation with a link partner that has indicated at least one EEE capability. This was not a problem for IEEE P802.3bj as all the PHYs that support EEE also support auto-negotiation, however with the addition of the PHYs in IEEE P802.3bm draft that do not support auto-negotiation, there is now no way for the EEE DLL Transmitter fast wake state diagram to exit the INITIALIZE state.

SuggestedRemedy

The Suggested remedy section of comment #180 against P802.3bm D2.0 was:
Potentially the simplest approach would seem to be to remove tx_dll_enabled as a condition in the open arrow equation leading to the INITIALIZE state. This however would leave tx_dll_ready as the only condition to exit the INITIALIZE state, meaning that EEE Fast Wake TLVs will be transmitted to the link partner once the local system is ready, to do so regardless of the ability of the link partner to process them. This may not be ideal from a diagnosis point of view - in this situation would the lack of response from the link partner indicate a fault in the link partner - or indicate the link partner is unable to support EEE.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Removing tx_dll_enabled as a start condition will explicitly make fast wake compatible with optical interfaces and also with legacy copper PMA/PMDs that pre-date EEE. The latter was considered an advantage for fast wake when it was first adopted, so this change restores a desirable feature. A station transmitting TLVs that aren't understood by a link partner is part of the normal behavior of LLDP as new capabilities are continuously being added.

Change figures 78-7 and 78-8 as follows:
Remove terms tx_dll_enabled and rx_dll_enabled, respectively, from entry condition into INITIALIZE state.