Cl **73** *SC* **73.10.2** *P* **155** *L* **16** # 1

Lusted, Kent — Synopsys

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

The current value of "link_fail_inhibit_timer" for the 200G/lane PHYs is currently much less than the value of the "max_wait_timer" in Annex 178B.8.3.3. (Per D2.2, the max_wait_timer_duration is 30 seconds in Clause 178.8.9 and 179.8.9).

Additionally, the value of max_wait_timer_duration can be adjusted by MDIO register value and therefore the AN73 timer should have a similar control.

SuggestedRemedy

Update the value of link_fail_inhibit_timer for 200 Gbps/lane PHYs in the table 73-7 to be 30.3 (min) and 30.4 (max)

Add a new MDIO register "AN link_fail_inhibit_timer" 16b MDIO register (R/W) that sets the maximum duration of link_fail_inhibit_timer for 200 Gbps/lane CR and KR PHYs. When the timer is set to 0, the timer duration is infinite.

Presentation to be provided.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.12** *P* **464** *L* **42** # 2

Lusted, Kent — Synopsys

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

the default max_wait_timer_duration of 60 seconds is a long time for optical links. The max_wait_timer is not started until TRAIN_START state, in which many other module specific processes such as power on, firmware load/update, initialization, calibration, etc. have already taken place.

SuggestedRemedy

Reduce the duration of the timer for Cl 180 and 181 and 182 and 183 to 30 seconds.

Presentation to be provided.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.14.4.5** *P* **409** *L* **27** # 3

Lusted, Kent — Synopsys

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

PICS Item CC2 for "AC-coupling" has a value/comment entry containing "100 kHz". However, the resolution to comment #389 against D2.1 set the value to 250 kHz in Table 178-11 and Table 176C-6. The PICS entry was not updated accordingly. (see: https://www.ieee802.org/3/dj/comments/D2p1/8023dj_D2p1_comments_final_id.pdf#page=102)

SuggestedRemedy

Change the value/comment entry for PICS item CC2 from:
"Between TP0d and TP5d, 3 dB cutoff frequency less than 100 kHz"
to:
"Between TP0d and TP5d, 3 dB cutoff frequency less than 250 kHz"

Also update the referenced Subcaluse to be 178.10.5

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.1** *P* **473** *L* **18** # 4

Brown, Matt — Alphawave Semi

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

New jitter specifications require PRBS9Q and refers to 176.7.4.4 for the specification of this pattern. However, this subclauses points out that this pattern is only relevant to PMDs defined in clauses 178 and 179. On the other hand, there are two other suitable patterns defined so alternately consider removing the PRBS9Q pattern for these PMDs.

SuggestedRemedy

In 176.4.4 change "PMD defined in Clause 178 or Clause 179" to "PMD defined in Clause 178 through Clause 181"
Alternately, delete PRBS9Q for optical TX testing. Similarly update Clause 181.
Affects clauses 180, 181, and 176.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.1** *P* **544** *L* **37** # 5

Brown, Matt — Alphawave Semi

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

New jitter specifications require PRBS9Q and refers to 176.7.4.4 for the specification of this pattern. However, the PRBS9Q pattern would be provided by the Clause 177 Inner FEC. This pattern is not defined in Clause 177.
On the other hand, there are two other suitable patterns defined so alternately consider removing the PRBS9Q pattern for these PMDs.

SuggestedRemedy

In 177.6.1 add specification for mandatory PRBS9Q test pattern generator using 176.7.4.4 for a template. Add PRBS9Q to Figure 177-2 along with PRBS13Q, etc. In Table 182-13 change the reference to the new subclause in 177.
Alternately, delete PRBS9Q for optical TX testing.
Affects clauses 182, 183, and 177.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.7** *P* **547** *L* **46** # 6

Brown, Matt — Alphawave Semi

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

As noted in the editor's note, the appropriate parameters for the TDECQ_CER measurement are not defined. The PMDs in Clause 182 and Clause 183 include an inner FEC. Therefore the codeword definition would need to make an assertion about the correction capability of the soft-decode Inner FEC in combination with the RS-FEC.

SuggestedRemedy

I do not have a proposal to address this and hope that the promoters of this methodology might provide some guidance.
Applies also to 183.9.7.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7** *P* **482** *L* **36** # 7

Brown, Matt — Alphawave Semi

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

CER TDECQ was adopted for and implemented in Draft 2.2 based on slides 12 to 19 of https://www.ieee802.org/3/dj/public/25_09/chayeb_3dj_01b_2509.pdf. However, the slides did not specify the necessary parameters though some were assumed. In Table 180-17, the parameters for target SER and and target CER are TBD. Further, the methodology does not take into consideration the contribution for errors from other electrical links between the RS-FEC encoder (PCS transmit) and the RS-FEC decoder (PCS receiver). Nor does it take into consideration the distribution of codewords across multiple physical lanes. For the time being we can make the assumption that the permformance of a single lane PMD will be similar to a multi-lane PHY and that only the random BER allocated to the PMD link is considered. Finally, it is ambiguous which SER, PAM4 or FEC, is being defined; but per 180-22 it is supposed to be the PAM4 symbol error ratio.

SuggestedRemedy

For the short term use the following assumption. Use the BER allocated to the PMD to determine the FEC CER. Per Table 174A-1 a random BER of 2.28E-4 is allocated to the optical PMD. This is equivalent to a CER of 3.81E-13.
In Table 180-17 do the following:
Change "Target SER" to "Target PAM4 SER".
Change the target SER value from TBD to 5.56E-4. This is parameter is redundant however and this row may be deleted.
Change the target CER value from TBD to 3.81E-13.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6** *P* **475** *L* **23** # 8

Brown, Matt — Alphawave Semi

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

With the introduction of TDECQ_CER in 180.9.7 there are now two flavors of TDECQ: one defined in 180.9.6 bases on PAM4 symbol error ratio (SER) and the other on codeword error ratio (CER). Also, in Draft 2.2 the TDECQ subclause 180.9.6 such that it is self-standing without reference back to 121.8.5 with a list of exceptions.

SuggestedRemedy

To differentiate the conventional TDECQ from the new TDECQ_CER, use the parameter TDECQ_SER in place of TDECQ.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2** *P* **387** *L* **12** # 9

Brown, Matt — Alphawave Semi

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

For the transmitter signaling rate range no subclause is referenced. It is not clear how this signal rate is relevant. First, it defines a limit permitted at the transmitter output. But it also defines a range over which all transmitter transmission requirements are to be met. Note that a PMD may not be in control of the transmitter signaling rate since the clock might be the recovered clock from a C2C AUI.

SuggestedRemedy

Add a new subclause in 178.9 as follows:
"178.8.x Transmitter signaling rate
For any signaling rate in the range specified in Table 178-6, a PMD shall comply with the transmitter requirements in 179.9.2.4 through 179.9.2.6."
In Table 178-6, in the signaling rate range row, add a cross-reference to the new subclause.
Update clauses 179, 176C, and 176D similarly.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **465** *L* **35** # 10

Brown, Matt — Alphawave Semi

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

The signaling rate range is defined for the PMD transmitter in Table 180-7 and for the receiver in Table 180-8. However, a descriptive subclause is not provided and the relationship between that specification and the other specifications is not clear.

SuggestedRemedy

Add a new subclause in 180.9 as follows:
"180.9.x Transmitter and receiver signaling rate
For any signaling rate in the range specified in Table 180-7, a PMD shall comply with the other transmitter requirements in Table 180-7.
For any signaling rate in the range specified in Table 180-8, a PMD shall comply with the other receiver requirements in Table 180-8."
In Table 180-7 and Table 180-8, in the signaling rate range row, add a cross-reference to the new subclause.
Update clauses 181, 182, and 183 similarly.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7** *P* **868** *L* **1** # 11

Brown, Matt — Alphawave Semi

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

The ILT is defined assuming that all ISLs in a path support RTS/ILT. There is no guidance on behavior when one or more ISLs in a path do not support do not support those functions. For instance, how does ILT work on an ISL (200 Gb/s per lane) if the other ISLs are 100 Gb/s per lane or lower.

SuggestedRemedy

Add guidance for the case where the path does not support path startup.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **483** *L* **42** # 12

Brown, Matt — Alphawave Semi

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

The acronym PMF is never defined. Perhaps this is intended to be "probability mass function"?

SuggestedRemedy

Change "PMF" to "probability mass function (PMF)".

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.3** *P* **908** *L* **6** # 13

Brown, Matt — Alphawave Semi

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

In Draft 2.1, the reference impedence for mated test fixture measurements was changed to 92.5 Ohms to align with a similar change to the PMD and channel specficaition in Clause 179 and elsewhere. However, a similar change was not applied to the test fixture specificaitions in 179B.2 and 178B.3.

SuggestedRemedy

Add the following text to 179B.1 and remove the similar text in 178B.4.3.
"The reference impedance for differential specifications is 92.5 Ω. The reference impedance for common-mode specifications is 23.125 Ω. Renormalization of S-parameter data may be required, see 178A.1.3."

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.9** *P* **635** *L* **29** # 14

Brown, Matt — Alphawave Semi

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

The maximum value for ETCC is normatively specified in Table 185-5, which also points to 185.8.6 as a reference. 185.8.6 briefly summarizes the ETCC parameter and points to tables 185-14/15/16 which are in 185.9. And finally 185.9 points to Annex 185A and provoides the tables listed previously. There is no good reason to have this additional subclause 185.9.

SuggestedRemedy

Merge 185.9 into 185.8.6.
Similarly, merge 187.9 into 187.8.6.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.1** *P* **883** *L* **5** # 15

Brown, Matt — Alphawave Semi

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

The statement is somewhat misleading as it might apply that beyond this annex it is defined. "The definition of unrecoverable fault is beyond the scope of this annex."

SuggestedRemedy

Change "annex" to "standard".

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.3** *P* **792** *L* **50** # 16

Brown, Matt — Alphawave Semi

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

The note implies that in addition to the functional specification in 178.8 other specifications, transmitter equalizer (176C.6.3.1) and management variables (178.13) are also mandatory. However, this note is informative. Also, this note was added orginally to highlight that indeed ILT was part of the C2C (and C2M) functionality; with the long list, that is now becoming less prominent and why not just list everything? Also, the reference to the explicit locally defined (within this clause) transmitter equalizer specifications is unnecessary and distracting.

SuggestedRemedy

Change the paragraph on page 792 line 50 to the following: "An n-lane C2C component is functionally equivalent to a corresponding n-lane PMD specified in Clause 178. The C2C component shall meet the functional specifications in 178.8 and the management variable specifications in 178.13, unless stated otherwise."
Change the note on line 49 to "NOTE 1—As part of the functional equivalence to a PMD, C2C components include the inter-sublayer link training (ILT) function for a Type E1 interface, specified in Annex 178B."
Alternately, create local subclauses pointing back to Clause 178.
Similarly update 176D.3.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.15** *P* **488** *L* **21** # 17

Brown, Matt — Alphawave Semi

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

The first expection is a bit misleading. "The equalizer setting is fixed for all of the jitter parameters." No transmitter equalizer settings are defined for the PMDs defined in clauses 180 through 183. Perhaps it would be better to just point that out.

SuggestedRemedy

Replace "The equalizer setting is fixed for all of the jitter parameters."
With "No equalizer settings are defined for the optical transmitter."

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9** *P* **744** *L* **45** # 18

Brown, Matt — Alphawave Semi

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

The block error ratio parameter is being used a lot in the industry now with various acronyms emerging. Should create a acronym to line everybody up. The letter "B" is taken already for "bit error ratio". The letter "K" has been used for black in color definitions (e.g., CYMK) and would be equally relevant here for "block".

SuggestedRemedy

Introduce a new acronym for block error ratio: "KER". Add new acronym to 1.5 "Abbreviations".

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.1** *P* **886** *L* **12** # 19

Brown, Matt — Alphawave Semi

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

The definition of the local_rx_ready variable is ambiguous especially for the LOCAL_PATTERN mode (mr_training_enable = false). As defined, it is is not clear how what to do for the LOCAL_PATTERN mode. In this mode, there is no transmitter tuning so by default the remote transmit is already optimized, at least as well as its going to be. Although it says exact criteria are implementation specific, some bounds would be helpful.

SuggestedRemedy

Change the first sentence in the definition to "Boolean variable that is set to true when the local receiver on a lane of the interface has determined that it is receiving a PAM4 signal from the peer interface transmitter and that the peer interface transmitter (if mr_training_enable is set to true) and local receiver equalizers have been optimized."

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7** *P* **868** *L* **23** # 20

Brown, Matt — Alphawave Semi

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

When referring to the transmitter on the peer interface in the context of ILT various terms are used: "peer transmitter", "peer interface transmitter", "remote transmit". Mostly commonly in Annex 178B the term "peer interface transmitter" is used.

SuggestedRemedy

Change instances of "peer transmitter" and "remote transmit" to "peer interface transmitter".
Annex 178B: page 886 line 13, page 868 line 23, page 868 line 54
Clause 178: page 421 line 12
Clause 180: page 464 line 35
Clause 181: page 504 line 27
Clause 182: page 535 line 48
Clause 183: page 566 line 37

Proposed Response *Response Status* **O**

Cl **187** *SC* **187.6.1** *P* **704** *L* **16** # 21

Brown, Matt — Alphawave Semi

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

UI_RMS and UI_PP are not appropriate units. The nature of the parameter is defined by the description and the related test method.

SuggestedRemedy

Change "UI_RMS" and "UI_pp" to "UI".
Also, in Clause 185 on page 628 line 9 and line 11

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.4.1** *P* **438** *L* **11** # 22

Brown, Matt — Alphawave Semi

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

Editor's note has expired.

SuggestedRemedy

Delete editor's note.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.6** *P* **439** *L* **40** # 23

Brown, Matt Alphawave Semi

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

Editor's note has expired.

SuggestedRemedy

Delete editor's note.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **479** *L* **3** # 24

Brown, Matt Alphawave Semi

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

Editor's note has expired.

SuggestedRemedy

Delete editor's note.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.2.1** *P* **905** *L* **3** # 25

Brown, Matt Alphawave Semi

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

Editor's note has expired.

SuggestedRemedy

Delete editor's note.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.2** *P* **906** *L* **46** # 26

Brown, Matt Alphawave Semi

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

Editor's note has expired.

SuggestedRemedy

Delete editor's note.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.2.9** *P* **170** *L* **35** # 27

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change the title of 116.2.9 to: Path startup functions

Change: "Inter-sublayer link training (ILT) (see Annex 178B) facilitates the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. ILT, ISL, and path are defined in 178B.3.
To: "The Path startup (PSU) ready to send (RTS) function and the inter–sublayer link training (ILT) function (see Annex 178B) facilitate the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. RTS, ILT, ISL, and path are defined in 178B.3."

Change: "ILT is used by the following PMD and AUI types"
To: "PSU is used by the following PMD and AUI types"

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.3.3.3** *P* **175** *L* **50** # 28

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change: "and to indicate the ILT status for Physical Layer implementations that use the ILT function defined in Annex 178B"
To: "and to indicate the PSU status for Physical Layer implementations that use the PSU functions defined in Annex 178B"

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.3.3.3.1** *P* **176** *L* **12** # 29

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change: "If ILT is not used then the SIGNAL_OK parameter takes one of two values as follows:"
To: "If PSU is not used then the SIGNAL_OK parameter takes one of two values as follows:"

In line 20 change: "If ILT is used then the SIGNAL_OK parameter takes one of four values as follows:"
To: "If PSU is used then the SIGNAL_OK parameter takes one of four values as follows:"

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.3.3.4** *P* **176** *L* **41** # 30

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change: "to indicate the ILT status for Physical Layer implementations that use the ILT function defined in Annex 178B."
To: "to indicate the PSU status for Physical Layer implementations that use the PSU functions defined in Annex 178B.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.3.3.4.1** *P* **176** *L* **52** # 31

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change: "for Physical Layer implementations that use the ILT function"
To: "for Physical Layer implementations that use the PSU functions"

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.3** *P* **191** *L* **53** # 32

Bruckman, Leon Nvidia

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

It is not obviuos how to handle uncorrectable FEC error detected in the FEC block previous to the one carrying the AMs

SuggestedRemedy

Add text that clarifies what happens in the case noted in the comment:
"In case of an uncorrectable error detected in the codeword preceding a codeword carrying the AMs the marked 66-bit blocks are the first ones after the AMs are removed. "

Proposed Response *Response Status* **O**

Cl **169** *SC* **169.2.10** *P* **206** *L* **39** # 33

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change the title of 169.2.10 to: Path startup functions

Change: "Inter-sublayer link training (ILT) (see Annex 178B) facilitates the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. ILT, ISL, and path are defined in 178B.3."
To: "The Path startup (PSU) ready to send (RTS) function and the inter–sublayer link training (ILT) function (see Annex 178B) facilitate the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. RTS, ILT, ISL, and path are defined in 178B.3."

In the next page line 1 change: "ILT is used by the following PMD and AUI types:"
To: "PSU is used by the following PMD and AUI types"

Proposed Response *Response Status* **O**

Cl **174** *SC* **174.2.12** *P* **272** *L* **44** # 34

Bruckman, Leon Nvidia

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

The name of Annex 178B changed, ILT is one of the PSU functions.

SuggestedRemedy

Change the title of 174.2.12 to: Path startup functions

Change: "Inter-sublayer link training (ILT) (see Annex 178B) facilitates the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. ILT, ISL, and path are defined in 178B.3."
To: "The Path startup (PSU) ready to send (RTS) function and the inter–sublayer link training (ILT) function (see Annex 178B) facilitate the orderly startup of an inter-sublayer link (ISL) and coordinates the startup of a series of ISLs along a path. RTS, ILT, ISL, and path are defined in 178B.3."

In line 49 change: "ILT is used by the following PMD and AUI types:"
To: "PSU is used by the following PMD and AUI types"

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.1** *P* **379** *L* **48** # 35

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In tables 178-1, 178-2, 178-3 and 178-4 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.8.1** *P* **385** *L* **33** # 36

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 178-2 change "ILT function" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.8.9** *P* **386** *L* **30** # 37

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change the title of 178.8.9 to: Path startup functions

Change: "The PMD inter-sublayer link training function specification is identical to that of 179.8.9."
To: "The PMD path startup specification is identical to that of 179.8.9."

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.1** *P* **412** *L* **23** # 38

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In tables 179-1, 179-2, 179-3 and 179-4 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.2** *P* **419** *L* **21** # 39

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 179-2 change "ILT function" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.4** *P* **420** *L* **21** # 40

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "the successful completion of the startup protocol by the inter-sublayer training (ILT) function (see 179.8.9)."
To: "the successful completion of the startup protocol (see 179.8.9)."

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.9** *P* **421** *L* **7** # 41

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change the title of 179.8.9 to: Path startup (PSU) functions

Change: "The PMD shall provide the inter-sublayer link training (ILT) function with E1 format, specified in Annex 178B."
To: "The PMD shall provide the PSU inter-sublayer link training (ILT) function with E1 format, specified in Annex 178B."

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.14** *P* **448** *L* **17** # 42

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "Additional variables associated with the ILT function"
To: "Additional variables associated with the PSU functions"

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.15.3** *P* **451** *L* **52** # 43

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "PMDILT"
To: "PMDPSU"

Change: "Inter-sublayer link training in PMD"
To: "Path startup functions in PMD"

Change: "ILT function is implemented in the PMD"
To: "PSU functions are implemented in the PMD"

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.15.3** *P* **452** *L* **3** # 44

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "AUIILT"
To: "AUIPSU"

Change: "Inter-sublayer link training in AUI-C2C"
To: "Path startup functions in AUI-C2C"

Change: "ILT function is implemented in the AUI-C2C"
To: "PSU functions are implemented in the AUI-C2C"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.1** *P* **455** *L* **45** # 45

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In tables 180-1, 180-2, 180-3 and 180-4 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.1** *P* **461** *L* **47** # 46

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "The ILT function indicated in Figure 180–2 is defined in Annex 178B."
To: "The PSU functions indicated in Figure 180–2 are defined in Annex 178B."

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.1** *P* **462** *L* **7** # 47

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 180-2 change "ILT" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.12** *P* **464** *L* **31** # 48

Bruckman, Leon Nvidia

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

The Annex 178b name changed. Also the text is different from a similar section 179.8.9

SuggestedRemedy

Change the title of 180.5.12 to: Path startup (PSU) functions

Change: "A PMD shall provide the ILT function for a Type O1 interface, specified in Annex 178B."
To: "The PMD shall provide the PSU inter-sublayer link training (ILT) function with O1 format, specified in Annex 178B."

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.1** *P* **561** *L* **43** # 49

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In table 183-1 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.5.1** *P* **564** *L* **6** # 50

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "The ILT function indicated in Figure 183–2 is defined in Annex 178B."
To: "The PSU functions indicated in Figure 183–2 are defined in Annex 178B."

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.5.1** *P* **564** *L* **11** # 51

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 183-2 change "ILT" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.5.13** *P* **566** *L* **31** # 52

Bruckman, Leon Nvidia

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

The Annex 178b name changed. Also the text is different from a similar section 179.8.9

SuggestedRemedy

Change the title of 183.5.12 to: Path startup (PSU) functions

Change: "A PMD shall provide the ILT function for a Type O1 interface, specified in Annex 178B."
To: "The PMD shall provide the PSU inter-sublayer link training (ILT) function with O1 format, specified in Annex 178B."

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.11** *P* **585** *L* **18** # 53

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "Additional variables associated with the ILT function are listed"
To: "Additional variables associated with the PSU functions are listed"

Proposed Response *Response Status* **O**

Cl **73A** *SC* **73A.1a** *P* **722** *L* **22** # 54

Bruckman, Leon Nvidia

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

The note in section 179.9 says: "A PMD can comply with one or more host classes". It is not clear then what should such an interface report

SuggestedRemedy

Add text: "If the interface complies with more than one host class it shall report the class with the minimum loss"

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.3** *P* **792** *L* **50** # 55

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In the note change: "C2C components include the inter-sublayer link training (ILT) function for a Type E1 interface, specified in Annex 178B"
To: "C2C components include the path startup (PSU) functions with Type E1 format, specified in Annex 178B

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.3** *P* **793** *L* **21** # 56

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 176C-2 change "ILT" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.3.1** *P* **796** *L* **41** # 57

Bruckman, Leon Nvidia

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

Type #1 is not defined in section 179.8.9, or any place else in the document.

SuggestedRemedy

Change: "(ILT) function for Type #1 interface as defined in 179.8.9"
To: "(ILT) function with E1 format as defined in 179.8.9"

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.3** *P* **814** *L* **20** # 58

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In the note change: "C2M components include the inter-sublayer link training (ILT) function with E1 format as specified in Annex 178B"
To: "C2M components include the path startup (PSU) functions with Type E1 format, specified in Annex 178B"

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.2** *P* **863** *L* **25** # 59

Bruckman, Leon Nvidia

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

The text "RTS status indicates when an ISL is ready, or not," can be improved

SuggestedRemedy

Change: "RTS status indicates when an ISL is ready, or not,"
To: "RTS status indicates whether an ISL is ready, or not,"

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **21** # 60

Bruckman, Leon Nvidia

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

The words "in both directions" are confusing, the text already stated that local_rts is being transmitted and remote_rts is being received.

SuggestedRemedy

Delete: "in both directions"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.11** *P* **491** *L* **41** # 61

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "Additional variables associated with the ILT function are listed"
To: "Additional variables associated with the PSU functions are listed"

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.1** *P* **499** *L* **41** # 62

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In table 181-1 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.5.1** *P* **501** *L* **53** # 63

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "The ILT function indicated in Figure 181–2 is defined in Annex 178B."
To: "The PSU functions indicated in Figure 181–2 are defined in Annex 178B."

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.5.1** *P* **502** *L* **2** # 64

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 181-2 change "ILT" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.5.12** *P* **504** *L* **23** # 65

Bruckman, Leon Nvidia

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

The Annex 178b name changed. Also the text is different from a similar section 179.8.9

SuggestedRemedy

Change the title of 181.5.12 to: Path startup (PSU) functions

Change: "A PMD shall provide the ILT function for a Type O1 interface, specified in Annex 178B."
To: "The PMD shall provide the PSU inter-sublayer link training (ILT) function with O1 format, specified in Annex 178B."

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.11** *P* **520** *L* **4** # 66

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "Additional variables associated with the ILT function are listed"
To: "Additional variables associated with the PSU functions are listed"

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.1** *P* **526** *L* **41** # 67

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In tables 182-1 , 182-2, 182-3 and 182-4 change "ILT" to: "Path startup functions"

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.5.1** *P* **532** *L* **10** # 68

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "The ILT function indicated in Figure 182–2 is defined in Annex 178B."
To: "The PSU functions indicated in Figure 182–2 are defined in Annex 178B."

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.5.1** *P* **533** *L* **21** # 69

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

In Figure 182-2 change "ILT" to "PSU functions" twice.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.5.12** *P* **535** *L* **44** # 70

Bruckman, Leon Nvidia

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

The Annex 178b name changed. Also the text is different from a similar section 179.8.9

SuggestedRemedy

Change the title of 182.5.12 to: Path startup (PSU) functions

Change: "A PMD shall provide the ILT function for a Type O1 interface, specified in Annex 178B."
To: "The PMD shall provide the PSU inter-sublayer link training (ILT) function with O1 format, specified in Annex 178B."

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.11** *P* **520** *L* **4** # 71

Bruckman, Leon Nvidia

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

The Annex 178b name changed

SuggestedRemedy

Change: "Additional variables associated with the ILT function are listed"
To: "Additional variables associated with the PSU functions are listed"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **15** # 72

Brown, Matt Alphawave Semi

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

The description of the error mask is provided twice. Once in the paragraph on page 485 line 15 and in the footnotes of Table 180-18 on page 486 line 1. The descriptions are inconsistent with each other. Since the table itself is definitive , the description in the paragraph can be deleted. The two footnotes need not be separate. Footnote a contradicts footnote b for bins for k in the range 9 to 16. Since the paragraph relates the BER to the Test_Margin variable the full context should be provided in the paragraph and the footnotes deleted.

SuggestedRemedy

Replace the following sentence "The error mask, calculated based on 174A.9.5 using BER = 2.4 × 10–5 and p = 1, is listed in Table 180–18."
With "The error mask is provided in Table 180-18. The limit Hmax(k) for k in the range 1 to 8 is calculated based on 174A.9.5 using BER = 2.4x10^-5 and p = 1. The limit Hmax(k) for k in the range 1 to 8 is is are set to H_max(16) calculated based on 174A.9.5 using BER = 2.28x10^-4 and p = 1."
In Table 180-18 delete footnotes a and b.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.6** *P* **384** *L* **14** # 73

Brown, Matt Alphawave Semi

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

In Table 178-5, footnote b defines pause_quanta as "See 31B.2 for the definition of pause_quanta." This reference gives rather ambiguous definition. Instead, Table 169.4 and Table 174-4 point to 1.4.459 which give a more clear definition. Note also that sublayers defined in clauses 175 through 177 and 180 through 187 do not define pause_quanta locally and rather rely upon the reference to clause 169 and 174 for the definition.

SuggestedRemedy

In Table 178-5, Table 179-5, Table 176C-1, and Table 176D-1 do one of the following:
(1) Change "31B.2" to "1.4.459"
(2) Delete "See 31B.2 for the definition of pause_quanta." from the footnote.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.7** *P* **384** *L* **24** # 74

Brown, Matt — Alphawave Semi

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

There is no FEC lane. This is likely text copied from a previous clause define 100GBASE-R PMDs.

SuggestedRemedy

Change "PCS or FEC" to "PCS", three times.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.3** *P* **814** *L* **52** # 75

Brown, Matt — Alphawave Semi

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

The word "components" is overloaded in the title since the diagram includes a host C2M component, and module C2M component, a channel, a connector, etc. The title used in FIgure 176C-2 would serve as good template.

SuggestedRemedy

Change the title of Figure 176D-2 to "200 Gb/s per lane AUI-C2C link diagram"

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.2** *P* **817** *L* **26** # 76

Brown, Matt — Alphawave Semi

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

The last sentence refers 179B.4 which defines the mated test fixture (MTF). Like the previous sentences it would be good to relate the mated compliance board defined here to the MTF defined in 179B.4.

SuggestedRemedy

Change the sentence to "The mated compliance board characteristics are described in 179B.4 where the mated compliance board is equivalent to the mated test fixture (MTF)."

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.4** *P* **818** *L* **27** # 77

Brown, Matt — Alphawave Semi

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

In Table 176D-2, for the "transmitter output waveform, the cross-reference is unnecessarily repeated for each parameter associated with the transmitter output waveform and is inconsistent with the jitter parameters below. It would be helpful to highlight that all of these are defined in one subclause.

SuggestedRemedy

Reduce to one cross-reference in the cell and align with "Transmitter output waveform". Repeat for Table 176D-3, Table 179-7, and Table 178-6.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **423** *L* **5** # 78

Brown, Matt — Alphawave Semi

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

The parameter title "transmitter waveform" is inconsistent with the referenced subclause. Note also that 176D and 176C refer to "transmitter output waveform".

SuggestedRemedy

Change "transmitter waveform" to "transmitter output waveform in Table 179-7 and Table 178-6.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.6** *P* **820** *L* **24** # 79

Brown, Matt — Alphawave Semi

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

Table 176D-4 footnote a seems unnecessary and redundant. "Specified as the steady-state voltage (as defined in 176D.8.5) of the test transmitter, measured at TP4a." The title of the table is "Summary of host input specifications at TP4a" so respecifying that the measurement is at TP4a is not necessary. The referenced subclause 178D.8.12 repeats clearly defines the parameter as in the footnote "The transmitter steady-state voltage is measured as specified in 176D.8.5 at the output of the pattern generator used in the test." See similar comment for Clause 178.

SuggestedRemedy

In Table 176D-4 and Table 176D-5 delete footnote a.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3** *P* **391** *L* **21** # 80

Brown, Matt Alphawave Semi

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

Table 178-9 footnote a is redundant and perhaps contradictory. "Specified as the steady-state voltage (as defined in 178.9.2.4) measured at the test transmitter's output." The referenced subclause 178.9.3.3 defines this fully, and perhaps more accurately, including "Amplitude tolerance of a receiver is defined as the maximum transmitter steady-state voltage that the receiver can tolerate... The transmitter steady-state voltage is measured as specified in 179.9.4.1.2 at the output of the pattern generator used in the test."

SuggestedRemedy

In Table 178-9, delete footnote a.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.7** *P* **820** *L* **41** # 81

Brown, Matt Alphawave Semi

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

There is no cross-reference to the subclause that defines this parameter.

SuggestedRemedy

Add a cross-reference to the subclause that defines the parameter "Single-ended voltage tolerance (range)"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **485** *L* **8** # 82

Brown, Matt Alphawave Semi

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

The quality of the jitter tolerance (clock tracking bandwidth) for the TXSEH functional receiver is unbounded. The only constraint is that it complies with (i.e., exceeds) the receiver characteristics in Table 180-8. Care is being taken to properly calibrate the vertical noise but no consideration is given for jitter (horizontal noise). A real receiver is required only to support a clock tracking bandwidth of 4 MHz based on jitter tolerance mask specified in 121.8.10.4. If the TXSEH functional has a tracking bandwidth much higher than 4 MHz then it would permit transmitters with excessive low-frequency jitter to pass.

SuggestedRemedy

Specify that the jitter tolerance of the TXSEH optical receiver (ORx) shall minimally comply with the jitter tolerance mask defined in 121.8.10.4 particularly for jitter frequencies 4 MHz and lower.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **484** *L* **22** # 83

Brown, Matt Alphawave Semi

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

Based on the calculation of target CER in equation 180-22 the assumption is the target SER is random (independent and identically distributed). This assumption should be noted in the discussion preceding equation 180-22.

SuggestedRemedy

On page 484 line 23 append the following sentence to the paragraph: "The target PAM4 symbol error ratio assumes that the errors independent and identically distributed."

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **483** *L* **23** # 84

Brown, Matt Alphawave Semi

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

In equation 180-15, for the bottom subequation, Ln should be 3, not 0.

SuggestedRemedy

Change "0" to "3".

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **14** # 85

Brown, Matt Alphawave Semi

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

Reference to "n symbol errors" should be "n test symbol errors".

SuggestedRemedy

Change "n symbol errors" to "n test symbol errors"

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4** *P* **187** *L* **13** # 86

Xu, Li — Huawei Technologies.

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

When describing the nominal rate of PMA at each lane, the 26.5625 Gtransfer/s is so strange and not aligned with that in PMA.

SuggestedRemedy

to aligh the description with PMA, 26.5625 Gtransfer/s should be changed to 26.5625 GBd

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4** *P* **187** *L* **14** # 87

Xu, Li — Huawei Technologies.

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

The MAC data rate of 200 Gb/s is the speed, not the capacity.

SuggestedRemedy

delete "capacity for", like "which provides capacity for the MAC data rate of 200 Gb/s--> which provides the MAC data rate of 200 Gb/s "

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4.2** *P* **188** *L* **35** # 88

Xu, Li — Huawei Technologies.

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

PMA:IS_UNITDATA_i.indication is one of the PMA service interface primitives, not data streams. So the sentence is technically not correct.

SuggestedRemedy

change 'as' to 'using' and the sentence is " In the receive direction, the PCS receives n parallel streams of data using PMA:IS_UNITDATA_i.indication " primitive

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4.2** *P* **188** *L* **39** # 89

Xu, Li — Huawei Technologies.

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

same as the above line

SuggestedRemedy

same as the above line

Proposed Response *Response Status* **W**

[Editor's note] The comment and suggested remedy are referring to comment #88.

Cl **119** *SC* **119.2.4.1** *P* **191** *L* **20** # 90

Xu, Li — Huawei Technologies.

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

The descriptioin of the contents of each 66-bit block are not aligned in different clauses,with some mentioning transcoder and some not.
To align the descriptions in 175.2.4.1 and 172.2.4.1, mentioning of transcoder should be deleted.

SuggestedRemedy

Delete the transcoder, and modify the sentence as that in 172.2.4.1, as below:
"The contents of each 66-bit block are
contained in a vector tx_coded<65:0> with tx_coded<1:0> containing the sync header and the remainder of the bits the payload."

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.3** *P* **191** *L* **51** # 91

Xu, Li — Huawei Technologies.

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

Technically speaking, using created to describe 64B/66B blocks from FEC codeword is not accurate.

SuggestedRemedy

change created to decoded, and the sentence is "This may be achieved by
setting the synchronization header to 11 for all 66-bit blocks decoded from these codewords by the
256B/257B to 64B/66B transcoder. "

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.3** *P* **191** *L* **51** # 92

Xu, Li — Huawei Technologies.

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

In the sentence, 'then' is not necessary.

SuggestedRemedy

delete 'then'

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.3** *P* **192** *L* **1** # 93

Xu, Li — Huawei Technologies.

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

the number of 66-bit blocks and error block are not equal.

SuggestedRemedy

change 'an error block' to 'error blocks' , and the sentence is "
the first four 66-bit blocks from the next two associated codewords processed by the Reed-Solomon decoder shall also be set to error blocks to account for the possible error propagation by the descrambler. "

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.8** *P* **192** *L* **13** # 94

Xu, Li — Huawei Technologies.

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

when describing rate adaptation at the transmit PCS, LPI control character is also mentioned. But at the receive PCS, there is no LPI mentioned for rate adaptation. For insertion and deletion rules, 119.2.3.5 and 119.2.3.8, and 82.2.3.6 and 82.2.3.9 are referenced seperately.

SuggestedRemedy

The description and reference of rate adaptation at the two directions should be aligned, including LPI and reference for specific insertion and deletion rules.

Proposed Response *Response Status* **O**

Cl **172** *SC* **172.1.5.2** *P* **257** *L* **19** # 95

Xu, Li — Huawei Technologies.

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

inst:IS_UNITDATA_0:31.indication is a primitive, not data stream. The accuracy of the description very similar to the comments above should be improved.

SuggestedRemedy

change 'as' to 'using' and the sentence is " In the receive direction, the PCS receives 32 parallel streams of data using inst:IS_UNITDATA_0:31.indication primitive and signal status information using the inst:IS_SIGNAL primitive. "

Proposed Response *Response Status* **O**

Cl **172** *SC* **172.1.5.2** *P* **257** *L* **22** # 96

Xu, Li — Huawei Technologies.

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

same as the above line, the inst:IS_UNITDATA_0:31.request is a primitive, not data stream. The suggested change is the same as above.

SuggestedRemedy

same as the above line

Proposed Response *Response Status* **O**

Cl **172** *SC* **172.2.5.9** *P* **261** *L* **51** # 97

Xu, Li — Huawei Technologies.

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

a comma is missed in the sentence.

SuggestedRemedy

add a comma, and the sentence is "If using a stateless method, the stateless decoder defined in
119.2.5.8.2 should be used while the stateless decoder defined in 172.2.5.9.2 may be used."

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.16** *P* **488** *L* **42** # 98

Galan, Jose MaxLinear, Inc.

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

The error mask when measuring receiver sensitivity of a complete PHY at the PCS is not defined

SuggestedRemedy

Add the mask required for measuring receiver sensitivity of a complete PHY at the PCS

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **7** # 99

Galan, Jose MaxLinear, Inc.

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

The error mask for this Transmitter functional symbol error histogram test is calculated based on 174A.9.5 (PMA measurements), while in the receiver sensitivity test there is a note (page 488, line 42), that allows the receiver sensitivity test to be done at the PCS using the method of 174A.11. And the allowed patterns for the receiver sensitivity test are PRBS31Q and scramble idle (see Table 180-14).

SuggestedRemedy

Add a note in the Transmitter functional symbol error histogram test allowing this test to be done at the PCS using the method of 174A.11. Add scramble idle as an allowed pattern for this test in Table 180-14.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.16** *P* **518** *L* **3** # 100

Galan, Jose MaxLinear, Inc.

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

The error mask when measuring receiver sensitivity of a complete PHY at the PCS is not defined

SuggestedRemedy

Add the mask required for measuring receiver sensitivity of a complete PHY at the PCS

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.16** *P* **550** *L* **5** # 101

Galan, Jose MaxLinear, Inc.

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

The error mask when measuring receiver sensitivity of a complete PHY at the PCS is not defined

SuggestedRemedy

Add the mask required for measuring receiver sensitivity of a complete PHY at the PCS

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.16** *P* **583** *L* **1** # 102

Galan, Jose MaxLinear, Inc.

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

There is no note allowing this test to be done at the PCS level, as in Clauses 180-181-182.

SuggestedRemedy

Add text allowing this test to be done at the PCS level using the method in 174A.11, as in Clauses 180-181-182. And include the corresponding mask required for this test at the PCS level.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.1** *P* **513** *L* **23** # 103

Galan, Jose MaxLinear, Inc.

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

The allowed patterns for the receiver sensitivity test are PRBS31Q and scramble idle, while the only pattern allowed for the Transmitter functional symbol error histogram test is PRBS31Q (see Table 181-12)

SuggestedRemedy

Add scramble idle as an allowed pattern for this test in Table 181-12.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.1** *P* **544** *L* **17** # 104

Galan, Jose MaxLinear, Inc.

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

The allowed patterns for the receiver sensitivity test are PRBS31Q and scramble idle, while the only pattern allowed for the Transmitter functional symbol error histogram test is PRBS31Q (see Table 182-14)

SuggestedRemedy

Add scramble idle as an allowed pattern for this test in Table 182-14.

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.1** *P* **578** *L* **4** # 105

Galan, Jose MaxLinear, Inc.

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

The allowed patterns for the receiver sensitivity test are PRBS31Q and scramble idle, while the only pattern allowed for the Transmitter functional symbol error histogram test is PRBS31Q (see Table 183-14)

SuggestedRemedy

Add scramble idle as an allowed pattern for this test in Table 183-14.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.3** *P* **391** *L* **52** # 106

Kutscher, Noam Marvell

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

The name - "low loss test channel" was changed on the previous draft

SuggestedRemedy

rephrase "low loss test channel" to "Test L low loss test channel"

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.3** *P* **814** *L* **46** # 107

Kutscher, Noam Marvell

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

There are no values for the connector, host and module

SuggestedRemedy

specify what's the budjet of all as done on 802.3ck-2022 page 244

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.4.5.3** *P* **803** *L* **22** # 108

Kutscher, Noam Marvell

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

The minimum loss for Test L is not specified whereas the ATOL on page 799 line 9 refers to this test.

SuggestedRemedy

change the N/A to 15dB. Reasoning for the new range: Simple Loss Calculationa. ~1.5' escaping = ~1.8dB b. 2 X Via = ~2dB c. PCB- 3inch = ~3.6dB d. SMA = ~0.5dB e. Coupler = 3dB f. Cable to ISI PCB ~30cm = ~2dB Total estimated loss ~12.9dB → change to 15dB.

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.4.2** *P* **799** *L* **9** # 109

Kutscher, Noam Marvell

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

The name - "low loss test channel" was changed on the previous draft

SuggestedRemedy

rephrase "low loss test channel" to "Test L low loss test channel"

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.4.3** *P* **395** *L* **38** # 110

Kutscher, Noam Marvell

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

The minimum loss for Test L is not specified whereas the ATOL on page 391 line 52 refers to this test.

SuggestedRemedy

Change the N/A to 20dB - Reasoning for the new range: Simple Loss CalculationTwice of the below calculation: a. ~1.5' escaping = ~1.8dB b. 2 X Via = ~2dB c. PCB- 3inch = ~3.6dB d. SMA = ~0.5dB +connector = ~3dB Total estimated loss ~18.8dB → change to 20dB.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11** *P* **441** *L* **21** # 111

Ellison, Jason TE Connectivity

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

The current SCMR_CH specification limit of 20 in table 179-16 has proven to be overly stringent and is not consistently achievable with production-level components. Moreover, no data has been presented demonstrating a correlation between SCMR_CH and field failures. In the absence of such data, we propose revising the limit using empirical results from a statistically significant sample of production cables.

SuggestedRemedy

Update the SCMR_CH specification to statistically align with values observed in production cable assemblies that pass Channel Operating Margin (COM). Use one of two proposed limits that reflect expected manufacturing variation and correspond to yield rates of 95% and 98%. A supporting presentation is planned for the October 30th meeting.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7** *P* **482** *L* **37** # 112

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

Target SER for TDECQ_CER is currently TBD

SuggestedRemedy

Change value to 4.56e-4

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7** *P* **482** *L* **38** # 113

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

Target CER for TDECQ_CER is currently TBD

SuggestedRemedy

Change value to 3.82e-13

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.7** *P* **547** *L* **48** # 114

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

TDECQ_CER parameters are not defined

SuggestedRemedy

Copy table 180-17 from clause 180.9.7 and use the following values:

Number of symbols per FEC codeword, d: 64
Codeword interleaving depth, r: 8
Number of correctable FEC symbols per FEC codeword, k: 3
Number of PAM4 symbols per FEC symbol, m: 1
Target SER, SERtarget: 9.60e-3
Target CER, CERtarget: 3.41e-3

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.7** *P* **580** *L* **49** # 115

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

TDECQ_CER parameters are not defined

SuggestedRemedy

Copy table 180-17 from clause 180.9.7 and use the following values:

Number of symbols per FEC codeword, d: 64
Codeword interleaving depth, r: 8
Number of correctable FEC symbols per FEC codeword, k: 3
Number of PAM4 symbols per FEC symbol, m: 1
Target SER, SERtarget: 9.60e-3
Target CER, CERtarget: 3.41e-3

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.3** *P* **478** *L* **18** # 116

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

Including the DFE tap b1 in the limit: |w(1)/w(0)-b(1)-w(-1)/(w0)| <= .25 makes the implementation makes the limit non-linear limit, introduces complexity and increases the measurement time

SuggestedRemedy

Remove b(1) from the equation

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **482** *L* **44** # 117

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

The number of samples/UI required for the waveform acquisition is not defined.

SuggestedRemedy

Add the text below at the end of the first sentence is sub-clause 180.9.7.1:

The waveform should be acquired with greater than 25 samples/UI, for the histogram width of 0.04 UI, to guarantee at least one sample falls within both the left and right histogram for each symbol.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **483** *L* **9** # 118

El-Chayeb, Ahmad Keysight (ahmad.el-chayeb@keysight.com)

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

The definition for the probability of error for each symbol Ln is not clear.

SuggestedRemedy

Change the text on lines 9-25 to:

The probability of error for each symbol Ln is calculated by first taking all the samples points within the limits of the target histogram of the nth symbol. The amplitude of the M samples are y(n,i).

The probability that the nth symbol is in error, can be calculated as:

$P_{err,n}(\sigma) = 1/M \sum P_{n,i}(\sigma)$

where,

$P_{n,i}(\sigma)$ = ...

Exact formula for $P_{n,i}(\sigma)$ will be provided in a supporting presentation.

Proposed Response *Response Status* **O**

Cl **185A** *SC* **185A.2.2.1.1** *P* **943** *L* **24** # 119

Pfeifle, Joerg Keysight Technologies

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

The parameters Effective number of bits (ENOB) and Oversampling ratio should be minimum quantities.

SuggestedRemedy

In Tables 185A-1, 185-14 and 187-12, add (min) to the Description for the lines ENOB and oversampling ratio.

Proposed Response *Response Status* **O**

Cl **185A** *SC* **185A.2.3** *P* **944** *L* **27** # 120

Pfeifle, Joerg — Keysight Technologies

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

There is a contraditction between the introductory description of 185A.2.3 and the descriptions of the individual processing blocks. The last sentence of the second paragraph reads "Processing steps can be consolidated and changed in order but cannot perform any additional signal processing with the purpose of compensating for signal distortions resulting for example from chromatic dispersion, polarization mode dispersion, skews, and crosstalk.", while the added reference post-equalizer description in 185A.2.3.7 states: "A reference post-equalizer for each polarization is placed after the carrier phase recovery, and used to compensate for transmit I-Q skew and transmit I-Q phase error impairments."

SuggestedRemedy

Change the wording in the introductory description to "Processing steps can be consolidated and changed in order but cannot perform any additional signal processing with the purpose of compensating for transmitter signal distortions except for those explicitely mentioned below."

Proposed Response *Response Status* **O**

Cl **178A** *SC* **178A** *P* **833** *L* **35** # 121

Mellitz, Richard — Samtec

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

Modal ERL requires section to describe

SuggestedRemedy

Add section derived from 93A.5 but change reference from return loss to modal return loss. Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification" (mellitz_3dj_01_adhoc_251030)

Proposed Response *Response Status* **O**

Cl **178A** *SC* **178A.1.3** *P* **832** *L* **13** # 122

Mellitz, Richard — Samtec

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

4 port Renormalization is Required to Compute Correct Modal S-parameters

SuggestedRemedy

Define method in 173A.1.3 to convert from 4 port s-parameters to modal s parameters and renormalize using equation (178A-4). Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification" (mellitz_3dj_01_adhoc_251030)

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2** *P* **387** *L* **24** # 123

Mellitz, Richard — Samtec

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

There appears to be little connection between the
Common-mode to common-mode return loss, RLcc (min) mask
and link performance, as small excursions beyond the mask may show negligible impact.
See: Table 178–6

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for “Common-mode to common-mode return loss, RLcc (min)” and remove section: 178.9.2.3 Transmitter common-mode to common-mode return loss
Add 3 rows to Table 178–6
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3** *P* **391** *L* **19** # 124

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 178–9

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)Remove row for “Differential-mode to common-mode return loss, RLcd” and remove section: 178.9.3.7 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 178–9
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.10** *P* **398** *L* **10** # 125

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 178–13

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)Remove row for “Differential-mode to common-mode return loss, RLcd” and remove section: 178.10.4 Channel mode conversion insertion loss
Add 3 rows to Table 178–13
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **422** *L* **38** # 126

Mellitz, Richard Samtec

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

There appears to be little connection between the
Common-mode to common-mode return loss, RLcc(min)” and “Common-mode to differential-mode return loss, RLdc (min) masks
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 179–7

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
179.9.4.8 Common-mode to common-mode return loss
179.9.4.9 Common-mode to differential-mode return loss
Add 3 rows to Table 179–7
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5** *P* **432** *L* **44** # 127

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 179–11

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification".
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
179.9.5.6 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 179–11
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11** *P* **441** *L* **16** # 128

Mellitz, Richard Samtec

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

There appears to be little connection between the
" Differential-mode to common-mode return loss, RLcd (min)" and "Common-mode to common-mode return loss, RLcc" masks
to performance in Table 179–16.and link performance, as small excursions beyond the mask may show negligible impact.

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
'Differential-mode to common-mode return loss, RLcd (min)"
"Common-mode to common-mode return loss, RLcc" (min)"
Remove sections
179.11.4 Differential-mode to common-mode return loss
179.11.5 Common-mode to common-mode return loss
Add 3 rows to Table 179–16
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.3** *P* **796** *L* **36** # 129

Mellitz, Richard Samtec

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

There appears to be little connection between the
Common-mode to differential-mode return loss, RLdc mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176C–2

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
176C.6.3.7 Transmitter common-mode to differential-mode return loss
Add 3 rows to Table 176C-2
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.4** *P* **798** *L* **48** # 130

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176C-4

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
Common-mode to differential-mode return loss, RLdc (min)
Remove sections
176C.6.4.4 Receiver differential-mode to common-mode return loss
Add 3 rows to Table 176C-4
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.7** *P* **777** *L* **17** # 131

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176C-8

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
In table 176C-8 Remove row for “Differential-mode to common-mode return loss, RLcd” and remove section: 178.10.4 Channel differential-mode to common-mode return loss
Add 3 rows to Table 176C-8
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.4** *P* **818** *L* **18** # 132

Mellitz, Richard Samtec

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

There appears to be little connection between the
Common-mode to common-mode return loss, RLcc(min)” and “Common-mode to differential-mode return loss, RLdc (min) masks
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176D-2

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to 176D-2
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: ” Modal ERL and modal Return Loss” appendix

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.5** *P* **819** *L* **25** # 133

Mellitz, Richard Samtec

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

There appears to be little connection between the
Common-mode to common-mode return loss, RLcc(min)" and "Common-mode to differential-mode return loss, RLdc (min) masks
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176D-3

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove rows for
Common-mode to common-mode return loss, RLcc(min)
Common-mode to differential-mode return loss, RLdc (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to 176D-3
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.6** *P* **820** *L* **16** # 134

Mellitz, Richard Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176D-4

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to Table 176D-4
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.7** *P* **820** *L* **47** # 135

Mellitz, Richard — Samtec

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

There appears to be little connection between the
Differential-mode to common-mode return loss, RLcd mask
and link performance, as small excursions beyond the mask may show negligible impact.
See Table 176D-5

SuggestedRemedy

Refer to the 10-30-2025 electrical ad-hoc presentation by mellitz "Moving toward an ERL CC, DC, and CC specification". (mellitz_3dj_01_adhoc_251030)
Add section for computing Modal ERL and 4 port renormalization. (2 comments submitted for this)
Remove row for
" Differential-mode to common-mode return loss, RLcd (min)
Remove section
176D.8.4 Return loss specifications
Add 3 rows to Table 176D-5
ERL_CC(min) = 3 dB
ERL_CD(min) = 20 dB
ERL_DC(min) = 20 dB
Reference: " Modal ERL and modal Return Loss" appendix

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.3** *P* **477** *L* **2** # 136

Nowell, Mark — Cisco

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

Submitting this comment on behalf of the Task Force.

The 200G SMF IMDD clauses currently include four separate transmitter quality metric test criteria which is likely more than is required to provide specification criteria that guarantees interoperability.

Currently there has been insufficient supporting evidence to justify the need to include all of the tests as a requirement in order to stay in the specification in order to guarantee interoperability. Without enough supporting evidence being contributed to the Task Force, it is proposed to remove each test due to lack of support or validity of effectiveness.

SuggestedRemedy

Remove the changes to the TDECQ methodology which include the addition of the DFE equalizer to the reference receiver.

See resolution to comment #384 of D2.0 comments to identify the changes that were made and remove. Within subclause 180.9.6.3 remove references to the DFE equalizer in the reference equalizer and remove any associated references or parameters. Apply the equivalent changes to clauses 181, 182 and 183.

A background presentation will be provided.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7** *P* **482** *L* **10** # 137

Nowell, Mark Cisco

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

Submitting this comment on behalf of the Task Force.

The 200G SMF IMDD clauses currently include four separate transmitter quality metric test criteria which is likely more than is required to provide specification criteria that guarantees interoperability.

Currently there has been insufficient supporting evidence to justify the need to include all of the tests as a requirement in order to stay in the specification in order to guarantee interoperability. Without enough supporting evidence being contributed to the Task Force, it is proposed to remove each test due to lack of support or validity of effectiveness.

SuggestedRemedy

Remove the changes made due to the adoption of the TDECQ_CER methodology into D2.2

See resolution to comment #179 of D2.1 comments to identify the changes and remove. Delete subclause 180.9.7 and associated references. Apply the equivalent changes to clauses 181, 182 and 183.

A background presentation will be provided.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **8** # 138

Nowell, Mark Cisco

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

Submitting this comment on behalf of the Task Force.

The 200G SMF IMDD clauses currently include four separate transmitter quality metric test criteria which is likely more than is required to provide specification criteria that guarantees interoperability.

Currently there has been insufficient supporting evidence to justify the need to include all of the tests as a requirement in order to stay in the specification in order to guarantee interoperability. Without enough supporting evidence being contributed to the Task Force, it is proposed to remove each test due to lack of support or validity of effectiveness.

SuggestedRemedy

Remove the changes made due to the adoption of the TFSEM methodology into D2.1 and modifications into D2.2.

See resolution to comment #392 of D2.0 comments to identify the changes and remove. See resolution to comment # 510 of D2.1 comments to identify the changes and remove.

Delete subclause 180.9.9 and associated references. Apply the equivalent changes to clauses 181, 182 and 183.

A background presentation will be provided.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.15** *P* **488** *L* **17** # 139

Nowell, Mark Cisco

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

Submitting this comment on behalf of the Task Force.

The 200G SMF IMDD clauses currently include four separate transmitter quality metric test criteria which is likely more than is required to provide specification criteria that guarantees interoperability.

Currently there has been insufficient supporting evidence to justify the need to include all of the tests as a requirement in order to stay in the specification in order to guarantee interoperability. Without enough supporting evidence being contributed to the Task Force, it is proposed to remove each test due to lack of support or validity of effectiveness.

SuggestedRemedy

Remove the changes made due to the adoption of the jitter test methodology for the optical IMDD specs methodology into D2.2

See resolution to comment #399 of D2.1 comments to identify the changes and remove.

Delete subclause 180.9.15 and associated references. Apply the equivalent changes to clauses 181, 182 and 183.

A background presentation will be provided.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.1** *P* **904** *L* **14** # 140

Healey, Adam Broadcom, Inc.

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

The subclause begins "Transmitter and receiver measurements at TP2 or TP3 for the 200GBASE-CR1, 400GBASE-CR2, 800GBASE-CR4, and 1.6TBASE-CR8 hosts (see Annex 179D)…". Annex 179D does not define transmitter and receiver measurements at TP2 or TP3 for hosts so the reference does not seem to be correct.

SuggestedRemedy

Change the reference to 179.8.1.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.2.1** *P* **904** *L* **40** # 141

Healey, Adam Broadcom, Inc.

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

For the TP2/TP3 test fixture, the reference point is defined to be the "center of the edge connector pad". In 179B.3.1, it is stated that the reference point for the cable assembly test fixture is the "mating point of the MDI connector". There is a note in 179B.4.2 that states the reference insertion loss for the mated test fixture is the sum of the reference insertion losses for the TP2/TP3 test fixture and cable assembly test fixture. This suggests that the "center of the edge connector pad" and the "center of the edge connector pad" are the same reference point. If this is the case, then the same name/description should be used in both instances.

SuggestedRemedy

Call the reference point either "center of the edge connector pad" or "mating point of the MDI connector" consistently in both 179B.2.1 and 179B.3.1. Consider adding a note to Figure 179A-1 to describe the this reference point since the illustrations do not clearly show it.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4.9** *P* **432** *L* **6** # 142

Healey, Adam Broadcom, Inc.

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

Figure 179-5 does not agree with Equation (179-13).

SuggestedRemedy

Assuming the equation is correct, update the figure.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **422** *L* **44** # 143

Healey, Adam Broadcom, Inc.

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

The linear fit pulse peak ratio specifications should agree with the host reference models that are used to calculate cable assembly channel operating margin (COM). The specifications appear to be placeholders.

SuggestedRemedy

Update the specifications to agree with the Rpeak value calculated for the COM reference model for each host class.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2.5** *P* **389** *L* **44** # 144

Healey, Adam Broadcom, Inc.

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

The calculation of dRpeak should be subject to the same exceptions that are listed for the calculation of dvf in 178.9.2.4. This subclause only states that the parameters specified in Table 178-14 should be used but does not include the parameters in Table 178-15 or the values for Nv, M, or Dp.

SuggestedRemedy

Merge subclauses 178.9.2.4 and 178.9.2.5 so that the same list of exceptions in 178.9.2.4 is applied to both dvf and dRpeak.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2.4** *P* **389** *L* **36** # 145

Healey, Adam Broadcom, Inc.

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

Difference steady-state voltage compares a value calculated from a measurement to a reference value calculated for the COM transmitter model measured through the same test setup. This subclause states that the parameters in Table 178-15 are to be used which means fr = 0.55*fb = 58.4375 GHz. However, in this context, the value of fr is intended to represent the bandwidth of the filter used for signal measurements which in 178.9.2 is specified to be 60 GHz. While the values are close, it seems just as easy to state that fr is 60 GHz so that it is clear that the calculation emulates the specified test setup.

SuggestedRemedy

Add a statement that fr is set to 60 GHz.

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.3** *P* **796** *L* **12** # 146

Healey, Adam Broadcom, Inc.

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

In Table 176C-2, the subclause reference for dRpeak is 163A.3.2.1. This is incomplete since values need to be defined for the parameters that are used in 163A.3.2.1. The subclause reference for dvf is 178.9.2.4 which defines the parameter values but the values are based on tables in Clause 178 and not Annex 176C. While the relevant parameter values happen to be the same, it would be better if the parameter values for Annex 176C calculations were based on Annex 176C tables.

SuggestedRemedy

Add a subclause similar to 178.9.2.4 in Annex 176C to define the values for the calculation of dvf and dRpeak and update the subclause references in Table 176C-2 accordingly.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2.4** *P* **389** *L* **35** # 147

Healey, Adam Broadcom, Inc.

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

It is stated that dvf is computed using the procedure in 163A.3.2.1 with Nv = 400 and Dp = 4. 163A.3.2.1 states thate linear fit pulse is defined 162.9.4.1.1. In 162.9.4.1.1, the value of Np is set to 200. Using Nv = 400 when Np = 200 does not make sense.

SuggestedRemedy

Add an exception stating that the linear fit pulse is computed using the procedure defined in 179.9.4.1.1 (which defines Np to be 400).

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.2.4** *P* **389** *L* **36** # 148

Healey, Adam — Broadcom, Inc.

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

This subclause states that dvf is computed using the procedure in 163A.3.2.1 with the values specified in Table 178-14. This includes an R0 value of 46.25 Ohms. 163A.3.2.1 refers to 163A.3.1.1 which sets R0 to 50 Ohms. Which takes precedence? It seems that R0 should be 50 Ohm since Annex 163A.3.1 states that the TP0 to TP0v channels is measured using the method specified in 93A.1.1 which in turn defines the differential reference impedance to be 100 Ohms. Also, 163A.3.1.1 specifies that GAMMA2 is set to 0 for the calculation of the voltage transfer function which would be appropriate for a 50 Ohm scope termination (as specified in 178.9.2) relative to a R0 of 50 Ohms.

SuggestedRemedy

Clarify that the R0 value in Table 178-14 is not used and that it is 50 Ohms as specified in Annex 163A. Further clarify that the measured TP0 to TP0v channel s-parameters are normalized to 50 Ohms (in constrast to other channel measurements in this clause).

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7** *P* **868** *L* **26** # 149

Brown, Matt — Alphawave Semi

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

In Draft 2.2, the ILT function includes an alternate mode of operation, referred to as LOCAL_PATTERN mode, when the management variable mr_training_enable is set to false. In this mode, instead of sending bidirectional training frames and permitting parallel start-up of all ISLs in a path, this mode sends a locally generated pattern when the upstream receiver is done acquiring. It is not clear that this mode of operation is necessary. There are known issues with this mode of operation that need to be addressed. This mode of operation is redundant and complex and thus should be removed from the draft.

SuggestedRemedy

Remove the LOCAL_PATTERN mode of operation (mr_training_enable set to false) from Annex 178B.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B** *P* **863** *L* **1** # 150

Brown, Matt — Alphawave Semi

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

As a result of significant reorganization of Annex 178B the related references to the functionality defined in Annex 178B (path startup PSU, inter-sublayer link training ILT, ready-to-send RTS) need to be updated.

SuggestedRemedy

A contribution (likely brown_3dj_04_2511) will be provided to address this comment.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178** *P* **383** *L* **37** # 151

Brown, Matt — Alphawave Semi

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

The SIGNAL_OK parameters is set based on rts_status managed by the RTS function.

SuggestedRemedy

Change "training_status of the inter-sublayer training function"
To "rts_status of the RTS function"
Make similar changes at:
Clause 179 page 416 line 26
Clause 180 page 460 line 6
Clause 181 page 501 line 2
Clause 182 page 531 line 14
Clause 183 page 563 line 8
Annex 176C page 794 line 3
Annex 176D page 815 line 13

Proposed Response *Response Status* **O**

Cl **186A** *SC* **186A** *P* **950** *L* **18** # 152

Brown, Matt — Alphawave Semi

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

No vectors have been provided for the Clause 186 FEC. This sublayer, though well-specified, is very complex and likely it is difficult to ensure interoperability without reference test vectors.

SuggestedRemedy

If no test vectors are provided delete Clause 186 and Clause 187.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.1** *P* **379** *L* **48** # 153

Brown, Matt — Alphawave Semi

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

178B defines both ILT and RTS co-functions

SuggestedRemedy

In tables 178-3, 178-4, 178-5, and 178-6, change "178B--ILT" to "178B--RTS/ILT"
Update clauses 179 through 182 similarly.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B** *P* **863** *L* **1** # 154

Brown, Matt — Alphawave Semi

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

178B defines both ILT and RTS co-functions. Previous references to ILT should refer to both. As an example, in Figure 178-2 the functional block labelled ILT should be relabelled as "RTS/ILT".

SuggestedRemedy

Throughout the draft when referring to the combination of RTS and ILT functions change "ILT" to "RTS/ILT".

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **43** # 155

Maniloff, Eric — Ciena

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

For symbol errors ≥ 9 Table 180-18 specifies flat counts, consistent with a pre FEC BER ~2.3E-4. This implies that a transmitter could have a large error floor and still pass the test. It would be preferable to specify the actual probabilities consistent with a value of ~1e-26 or include no values with an informative note indicating these bins should have no measured occurances.

SuggestedRemedy

Update the values in Table 180-18 for symbol errors > 9 to remove the flat mask.

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.8.7** *P* **633** *L* **13** # 156

Maniloff, Eric — Ciena

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

In the expression 10log10[(Imean2 + Qmean2)/Psignal], mean and signal should be subscripts

SuggestedRemedy

Update formatting to put mean and signal as subscripts

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.8.8** *P* **633** *L* **18** # 157

Maniloff, Eric — Ciena

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

In the expression 10log10[(Imean2 + Qmean2)/Psignal], mean and signal should be subscripts

SuggestedRemedy

Update formatting to put mean and signal as subscripts

Proposed Response *Response Status* **O**

Cl **187** *SC* **187.8.7** *P* **709** *L* **13** # 158

Maniloff, Eric — Ciena

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

In the expression 10log10[(Imean2 + Qmean2)/Psignal], mean and signal should be subscripts

SuggestedRemedy

Update formatting to put mean and signal as subscripts

Proposed Response *Response Status* **O**

Cl **187** *SC* **187.8.8** *P* **709** *L* **19** # 159

Maniloff, Eric — Ciena

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

In the expression 10log10[(Imean2 + Qmean2)/Psignal], mean and signal should be subscripts

SuggestedRemedy

Update formatting to put mean and signal as subscripts

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **32** # 160

Johnson, John — Broadcom

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

Requirements for optical TX jitter testing were adopted during Sept. CRG with weak consensus. The supporting presentation (ran_3dj_04_0925) did show using a 100G TX that TECQ is not very sensitive to RJ or low levels of SJ. However, it did not demonstrate that the measurement was sufficiently sensitive at 200G, did not provide sufficient evidence the need for Jrms and EOJ03, did not show that the proposed spec limits were in the right place (the 100G example would fail J4u03) or that the existing TX functional symbol error histogram (TFSEH) test was insufficient to screen out TX with high jitter (the 100G example showed good FEC bin correlation with increasing jitter).

SuggestedRemedy

Remove the output jitter specs from Table 180-7, and remove the output jitter test description in 180.9.15. Make corresponding changes in clauses 181, 182 and 183.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.1** *P* **476** *L* **10** # 161

Johnson, John — Broadcom

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

The diagram in Figure 180-9 shows a single block for "Reference equalizer and analysis" which are unrelated functions. The reference equalizer is a separate entity defined in 180.9.6.3. Although the reference equalizer is iteratively optimized in the TDECQ analysis, it should be treated as separate from it.

SuggestedRemedy

Break the "Reference equalizer and analysis" block in Figure 180-9 into two separate blocks, one for "Reference equalizer" and one for "Analysis".

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6** *P* **475** *L* **29** # 162

Johnson, John — Broadcom

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

It's unnecessary to define how the reference receiver may be implemented, since that is already done in 180.9.2.

SuggestedRemedy

Replace:
"The reference receiver and reference equalizer may be implemented in software or may be part of an oscilloscope."
with:
"The reference equalizer may be implemented in software or may be part of an oscilloscope."
with editorial license.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **482** *L* **3** # 163

Johnson, John — Broadcom

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

The definition of Q_t is incomplete. It isn't stated in the text that it is the Q-factor of the sub-eyes at the target SER, and there is an undefined reference to "the BER" that isn't needed. 180.9.7 contains a more complete definition and a formula for Q_t that can be referenced.

SuggestedRemedy

Replace:
"Q_t is 3.428, consistent with the BER and target symbol error ratio for Gray coded PAM4."
with:
"Qt is 3.428, consistent with the target symbol error ratio for Grey coded PAM4, and can be calculated according to Equation (180–26)."
with editorial license.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **478** *L* **53** # 164

Johnson, John Broadcom

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

Now that the Reference equalizer is not just FFE, update the text to replace references to "FFE equalizer" with "Reference equalizer".

SuggestedRemedy

Replace:
"The TDECQ reference point where OMA_TDECQ is referenced to and noise is added is at the input of the FFE equalizer."
with:
"The TDECQ reference point where OMA_TDECQ is referenced to and noise is added is at the input of the Reference equalizer."
with editorial license.

Proposed Response *Response Status* **O**

Cl **176B** *SC* **176B.3** *P* **772** *L* **50** # 165

Ofelt, David Juniper Networks / HPE

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

This sub-clause is "Special case for 200GBASE-R, 400GBASE-R, and 800GBASE-R PMAs" which discusses the bit-mux to symbol-mux conversion needed for 200GBASE-R and 400GBASE-R interfaces. There are actually two incompatible sets of 200GBASE-R and 400GBASE-R PMAs- one based on 100ppm signaling and the other on 50ppm signaling. The rest of the clause is accurate for the second (50ppm) group and shows that you just need a PMA-BM in addition to a PMA-SM to convert between the generations. For the first group (100ppm) there also needs to be a XS inserted in order to rate match between the different ppm domains. It would be useful to add some text to this part of 176B to indicate that the 100ppm interfaces need an XS - this would be similar to the text we added to 120.1.4

SuggestedRemedy

Add a new subclase either under or after 176B.3 called "Special case for 200GBASE-R and 400GBASE-R using 100ppm signaling" with text indicating that an XS is required to rate match between ppm domains. Detailed suggestions for the text will come in a presentation.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.4** *P* **392** *L* **21** # 166

Dudek, Mike Marvell

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

The test methods in 174A.9.5 or 174A.9.7 are called out (single lane tests) but the multilane test is 174A.9.6 is not mentioned. However 174A.9.5 states that if the single lane test fails the multilane test in 174A.9.6 can be used. It is somewhat ambiguous if this multilane test can be used.

SuggestedRemedy

Change "174A.9.5 or 174A.9.7" to "174A.9.5 or 174A.9.6 or 174A.9.7" Make this change here and in 178.9.3.3, 178.9.3.4 and in all equivalent places in clauses 178, 179, 180, 181,182 and 183.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.3.1** *P* **905** *L* **24** # 167

Dudek, Mike Marvell

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

This is related to the unsatisfied comment #20513 against D2.0. Measuring the cable assembly test fixture loss by itself is difficult as the unterminated connector will behave differently than the mated connector. Having an accurate estimate of this loss is necessary for correcting the cable assembly loss measurements.

SuggestedRemedy

Add the following to the end of the paragraph. "The insertion loss of the actual test fixture is equal to the measured loss of the actual test fixture mated with a TP2 or TP3 test fixture minus the loss of the specific TP2 or TP3 test fixture used in that measurement."

Proposed Response *Response Status* **O**

Cl **180A** *SC* **180A.3.2** *P* **933** *L* **36** # 168

Dudek, Mike Marvell

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

The angled end facet is not an "exception" so it shouldn't be part of the "but"

SuggestedRemedy

Delete "an angled end face" i.e Change from "depicted in Figure 180A–1, but with an angled end facet, 16 fibers, an offset keyway, and different pin diameters and locations." to "depicted in Figure 180A–1, but with 16 fibers, an offset keyway, and different pin diameters and locations."

Proposed Response *Response Status* **O**

Cl **180A** *SC* **180A.3.2** *P* **936** *L* **1** # 169

Dudek, Mike Marvell

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

These are single 8-lane PMDs

SuggestedRemedy

Change "4-lane" to 8-lane"

Proposed Response *Response Status* **O**

Cl **120** *SC* **120.1.4** *P* **200** *L* **14** # 170

Dudek, Mike Marvell

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

The wording here is very strange. The 200GMII extender is not part of the PHY. Saying " Alternatively" and "shall be implemented within an extender" isn't appropriate.

SuggestedRemedy

Replace the second sentence with an additional bullet. "For a Physical Layer that includes a 200GAUI-1 interface or a 200GBASE-KR1, 200GBASE-CR1, 200GBASE-DR1, or 200GBASE-DR1-2 PMD, and a 200GAUI-8, 200GAUI-4, or 200GAUI-2 PMA output that is only limited to ±100ppm the 200GAUI-8, 200GAUI-4, or 200GAUI-2 PMA shall be implemented within a 200GMII Extender (see Clause118) with rate matching (see 119.2.4.1). Do the same for the 400G bullet.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.10** *P* **372** *L* **29** # 171

Dudek, Mike Marvell

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

Some of the status variable counter names in table 177-8 were changed from "inner_FEC …." to just "FEC…." in draft 2.2 This was done based on comment #286. However they are still called "inner FEC" in the referenced section 177.5.5.

SuggestedRemedy

Make the names consistent. For preference revert to "inner_ FEC ….." however changing the names in 177.5.5 and anywhere else they are used would be another option, but note that they are called "inner_FEC in the equivalent table 184-5 in clause 145..

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.10** *P* **375** *L* **29** # 172

Dudek, Mike Marvell

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

delay names in table 177-8 were changed from "inner FEC …." to just "FEC…." in draft 2.2 based on comment #287 to align with descriptions in clauses 45, but they are still called "inner FEC" in the referenced section 177.9

SuggestedRemedy

Make the names consistent. Change the names to just FEC in 177.9 and anywhere else they are used if consistency with clause 45 is needed. (I do wonder however how clause 45 handles both the RS FEC delay and the Inner FEC delay Aren't two different sets of registers needed). Note that in clause 184 "Inner_FEC" is used in both the equivalent table and in the descriptive sections.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.3** *P* **392** *L* **7** # 173

Dudek, Mike Marvell

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

It would be clearer to the reader if the note followed the description of how the transmit equalization is adjusted.

SuggestedRemedy

Reverse the order of the note paragraph and the final paragraph of 178.9.3.3. Making the note paragraph the last one in the section. Make equivalent changes in 179.9.5.2, 176C.6.4.2 and 176D.8.12

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.4.3** *P* **395** *L* **26** # 174

Dudek, Mike Marvell

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

The phrase "During the test, the transmitters in the device under test transmit the same pattern type specified for the test," might be mis-interpreted as meaning the transmitter has to use the same pattern as the receiver is receiving which is not necessary (use of word same). It would be good to clarify this is not the intent.

SuggestedRemedy

Change "During the test, the transmitters in the device under test transmit the same pattern type specified for the test," to "During the test, the transmitters in the device under test transmit either scrambled idle or PRBS31Q". or alternatively (less preferred) to "During the test, the transmitters in the device under test transmit one of the patterns specified for the test," Make the same change in 179.9.5.3.5 and 176C.6.4.5.3

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.5.1** *P* **396** *L* **10** # 175

Dudek, Mike Marvell

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

The second sentence here is effectively duplicating the first bullet of 178.9.3.5.2, and the reference to figure 110-3a in that bullet isn't appropriate as that is for CR not KR.

SuggestedRemedy

Delete this sentence and change the 1st bullet in 178.9.3.5.2 to "For each case in Table 179–15, The synthesizer is set to the specified frequency and the synthesizer output amplitude is adjusted to obtain the peak-to-peak jitter specified for that frequency measured atTP0v." Make the equivalent changes in 176C.4.6.4.6.1 and 176C.6.4.6.2

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.5.2** *P* **396** *L* **24** # 176

Dudek, Mike Marvell

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

The jitter tolerance test is calling out the interference tolerance test with exceptions. The interference tolerance calls out 174A.9 which is a per lane test, and 174A.11 which is a complete Phy test using PCS measurements but 174A.11.4 only requires the stress to be applied to one lane at a time. There is therefore no need to apply the jitter to all lanes.

SuggestedRemedy

Delete "with jitter added to all lanes". Make the same change in 176C.6.4.6.2 and 176D.8.14.2

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4.9** *P* **432** *L* **8** # 177

Dudek, Mike Marvell

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

Equation 179-13 didn't get changed correctly per the resolution to C2.1 comment #169. (It was changed to the requirement for the mated test fixture not the TP2 point. Figure 179-5 does not match the equation and appears to be correct.

SuggestedRemedy

Make equation 179-13 match equation 179-20 (but the parameter is correctly RLdc not RLcd)

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.2** *P* **433** *L* **20** # 178

Dudek, Mike Marvell

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

174A.8 is the wrong reference and it should be a hot link. Consider also whether testing as a complete PHY should also be allowed.

SuggestedRemedy

Change 174A.8 to 174A. 9 and make it a hot link. Consider adding "and 174A.11"

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.4.2** *P* **438** *L* **27** # 179

Dudek, Mike Marvell

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

The jitter tolerance test is calling out the interference tolerance test with exceptions. The interference tolerance calls out test methods 174A.9.5 and 174A.9.7 which are per lane tests. There is therefore no need to apply the jitter to all lanes.

SuggestedRemedy

Delete "with jitter added to all lanes".

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.7** *P* **878** *L* **42** # 180

Dudek, Mike Marvell

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

Polarity detection and correction is described in 178B.7.7 and required in 179.8.3 and clause 178 and annexes 176C and 176D by reference to 179.8.3. Nothing is however mentioned for the optical clauses leaving it somewhat ambiguous whether it is required or not.

SuggestedRemedy

Change the NOTE from "NOTE—Polarity detection and correction is not available when training is disabled." to "NOTE—Polarity detection and correction is not available when training is disabled, or for interfaces using the O1 format.

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.6.4.5.2** *P* **802** *L* **37** # 181

Dudek, Mike Marvell

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

Incorrect reference. The jitter values are not provided in Table 176C-7 and the correct reference (Table 176C-2) has different jitter values for the different packages.

SuggestedRemedy

Change "Table 176C-7" to "Table 176C-2 for package A"

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.5** *P* **876** *L* **42** # 182

Dudek, Mike Marvell

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

The order of the Coefficient select echo entries in table 178B-4 was changed in D2.2 and no longer matches the order for the coefficient control in Table 178B-2, the natural order of the taps, or what was used for 100G in Clause 162.

SuggestedRemedy

Revert the order to match the control field.

Proposed Response *Response Status* **O**

Cl **179C** *SC* **179C.1** *P* **916** *L* **3** # 183

Dudek, Mike Marvell

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

Annex 180A provides normative requirements for which fibers should be used when connectors are not fully utilized. Whereas for the equivalent situation for CR there is just a "recommendation" with the use of "should"

SuggestedRemedy

Change "When an MDI connector is not fully utilized the lower PMD numbers in Table 179C–2 should be used." to "When an MDI connector is not fully utilized the lower PMD numbers in Table 179C–2 shall be used"

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.17** *P* **550** *L* **44** # 184

Dudek, Mike Marvell

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

The reference to 182.9.13.1 is not a hot link and is incorrect.

SuggestedRemedy

Change it from 182.9.13.1 to 182.9.17.1 and make it a hot link

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.15** *P* **488** *L* **20** # 185

Dudek, Mike Marvell

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

The test pattern table 180-13 is a list of all the possible test patterns. The correct reference is table 180-14 which lists which test pattern should be used for each test including output jitter.

SuggestedRemedy

Change the reference from 180-13 to 180-14.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.15** *P* **517** *L* **32** # 186

Dudek, Mike Marvell

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

Table 181-13 is Transmitter compliance channel specifications. The correct reference is table 181-12 which lists which test pattern should be used for each test including output jitter.

SuggestedRemedy

Change the reference from 181-13 to 181-12.

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.8.15** *P* **634** *L* **4** # 187

Dudek, Mike Marvell

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

The block error ratio requirements in 185.2 refer to the use of test methods 174A.10 or 174A.11 not 174A.9.4 or 174A.9.5

SuggestedRemedy

Change "174A.9.4 or 174A.9.5" to "174A.10 or 174A.11". Change the error mask method reference on page 634 line 5 from "174A.9.4" to "174A.10.4" Make the same changes in section 185.8.16 (page 635 line 18 and 19).

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.6** *P* **748** *L* **1** # 188

Dudek, Mike Marvell

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

The order of the sections 174A.9.5, 174A.9.6 and 174A.9.7 is strange. 174A.9.5 is a per lane measurement that uses the histogram mask. 174A.9.6 is the multilane full test with error convolution which is the most relaxed test that is expected to meet inter-operability requirements. 174A.9.7 is the per lane measurement with error convolution and is somewhat intermediate between the other two.

SuggestedRemedy

Change the order preferably to 174A.9.6, followed by 174A.9.7, followed by 174A.9.5, but alternatively to 174A.9.5, followed by 174A.9.7, followed by 174A.9.6

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.5** *P* **747** *L* **38** # 189

Dudek, Mike Marvell

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

If the error mask fails it is also possible to use the single lane method with convolution (174A.9.7) without going to the extra complication of multilane measurements.

SuggestedRemedy

Change "method in 174A.9.6" to "methods in 174A.9.6 or 174A.9.7

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.7** *P* **748** *L* **40** # 190

Dudek, Mike Marvell

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

If the Block error ratio for single lane method fails the PMD or AUI could still pass the multilane test (174A.9.6). It would be good to state that.

SuggestedRemedy

Add to the end of the last paragraph. "If this test fails, then the performance may be further verified using the method in 174A.9.6."

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **42** # 191

Dudek, Mike Marvell

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

It is strange to include the "Test_SMF_power_budget loss and penalty are zero" as part of the definitions (under the "where" heading)

SuggestedRemedy

Make this statement as a separate statement. Either delete it at line 42 add it at line 10 changing "The transmitter under test is connected to the FRx by a short test SMF, or patch cord." to "The transmitter under test is connected to the FRx by a short test SMF, or patch cord and therefore the Test_SMF_power_budget is zero. "
Or delete it at line 42 and add it as a separate paragraph at line 50.
Having made this change the sentences "where in Equation (180–29)—
Test_SMF_power_budget, loss and penalty are non-zero." should be deleted from 181.9.9, 182.9.9 and 183.9.9.
See also an alternative solution requiring more editorial changes with moving most of the content from 180.9.9.1 into Clause 181 in a separate comment.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **16** # 192

Dudek, Mike Marvell

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

Tx_DUT_power_budget given in equation 180-28 when added to RxS_OMA@TECQ = 0 does not give Tx_DUT_OMA(min) when max(DUT_TDECQ, DUT_TECQ) is less than 0.9dB.

SuggestedRemedy

Change "added to RxS_OMA@TECQ = 0 gives Tx_DUT_OMA(min) in Table 180–7 and is given by Equation (180–28)" to "is given by Equation (180–28) and when added to RxS_OMA@TECQ = 0 gives Tx_DUT_OMA(min) in Table 180–7
for max(DUT_TDECQ, DUT_TECQ) >=0.9dB." Make the equivalent change in 181.9.9, 182.9.9, and 183.9 .9 (note for 183.9.9 it is "for max(DUT_TDECQ, DUT_TECQ) >=0.9dB for 800GBASE-FR4 and >=1.4dB for 800GBASE-LR4) .

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **41** # 193

Dudek, Mike Marvell

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

It would be helpful to provide some guidance as to how to estimate the Test_SMF_ DUT_CD penalty

SuggestedRemedy

Add an Informative Note. "Note:- If the test SMF has the dispersion characteristics of the optical channel used to measure TDECQ then Test_SMF_DUT_CD is equal to DUT_TDECQ-DUT_TECQ.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **6** # 194

Dudek, Mike Marvell

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

It would read better if the full equations for the functional receiver were moved from Clause 180 to Clause 181, rather than including the full equations in clause 180 and then saying "Test_SMF_power_budget loss and penalty are zero". This would be similar to how TDECQ and TECQ are handled (with TDECQ being fully described and then TECQ being TDECQ with a patch cord).

SuggestedRemedy

Move the contents of 180.9.9.1 with the full equations for the functional receiver from Clause 180 to Clause 181. In Clause 180 reference this content in Clause 181 with the exception that the Test SMF or emulator is replaced by a short test SMF or patch cord and Test_SMF_DUT power budget becomes equal to zero. Implement with editorial license.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.4.5** *P* **358** *L* **32** # 195

Ran, Adee Cisco Systems

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

"preceding equation": The equation defining p<7:0> should be numbered to enable referencing it

SuggestedRemedy

Format the paragraph of line 30 as "Equation" to make it a numbered equation, and refer to that equation.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.4.5** *P* **358** *L* **32** # 196

Ran, Adee Cisco Systems

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

I assume that generation of the parity bits in the Hamming code is done using XOR operations across the participating bits as in most error correcting codes. The text in this subclause explains the calculation in detail and then states that the "•" denotes a matrix dot multiplication.
The problem is that matrix multiplication inherently involves addition; If readers don't already know what the "•" operator does, they might interpret it as matrix multiplication using "normal" addition, rather than XOR (addition in GF(2)). Especially since XOR is used in the second paragraph of this subclause without referring to it as addition.

SuggestedRemedy

Indicate that the addition operation inside the matrix multiplication is done modulo 2, or in GF(2), or is an XOR operation.

Implement with editorial license (since this may require text outside of the "where" paragraph to align with the previous use of XOR).

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.4.7.2** *P* **360** *L* **48** # 197

Ran, Adee Cisco Systems

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

"a self-synchronizing PRBS13 scrambler as shown in Figure 94–6": the figure does not show a "self-synchronizing" (multiplicative) scrambler, only the LFSR that generates the PRBS13 - which can be interpreted incorrectly as an additive scrambler. Referring to this figure can lead readers to wrong conclusions.

The term "self-synchronoizing" describes a descrambler, but here there is no specificaiton of a descrambler. Thus, "multiplicative scrambler" is preferable.

The suggested remedy keeps the definition as it is (a multiplicative scrambler). As an alternative remedy, since the input to this scrambler is always zeros (we have not specified any other input), it can be replaced with a simple PRBS13 sequence. This would be a simpler definition and would not require a new figure. Any future use of the pad bits that would modify the pattern will need to redefine the input bits and add a descrambling operation to extract them. which would be significant changes.

SuggestedRemedy

Change "a self-synchronizing PRBS13 scrambler as shown in Figure 94–6 and using the polynomial defined in Equation (94–3)" to "a multiplicative scrambler using the polynomial defined in Equation (94–3)".

Consider adding a new figure here, based on Figure 94-6 but showing a multiplicative scrambler (input XORed with the feedback).

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.10.** *P* **372** *L* # 198

Ran, Adee Cisco Systems

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

The implementation of comment #266 against D2.1 changed the names of some of the variables in lane 0 (deleting the prefix "Inner_")., but not all variables, and the variable names in lanes 1-7 were note changed at all. I assume this was not the intent.

Also, the references for the variables whose names were modified are 177.5.5 and 177.9, which both still use the original names.(with "Inner_").

SuggestedRemedy

Align all variable names in all lanes, either with "Inner_" or without. Use the same names in 177.5.5 and 177.9.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.2** *P* **419** *L* **39** # 199

Ran, Adee Cisco Systems

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

"PMD control function" is a remnant from older PMD clauses.
Also in 179.8.5, 179.8.7.

SuggestedRemedy

Change "PMD control function" to "ILT function".

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **422** *L* **44** # 200

Ran, Adee Cisco Systems

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

The R_peak maximum values for each host in Table 179–7 were adopted by comment #303 against D1.3 with the purpose of replacing TBDs with values that seemed reasonable. To tie the transmitter, receiver, and channel specifications together, the transmitter specification values should match the reference transmitter of each host class (part of the COM model). However, no analysis was presented to show how the R_peak specifications correspond to the reference transmitter.

Also for host and module output specifications, Table 176D–2 and Table 176D–3.

SuggestedRemedy

A presentation with analysis and a proposal for R_peak values is planned.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4.6.2** *P* **429** *L* **43** # 201

Ran, Adee Cisco Systems

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

In D2.2 jitter specifications were added for optical PMDs that use the method in 179.9.4.6.2 for J4u03.
Table 180–14 specifies that jitter is measured using test patterns 4, 6, or 8. Test pattern 6 (SSPRQ) is used for several other transmitter tests, so there may be motivation to use it for jitter measurement too. However, it is 8 times longer than PRBS13Q used in electrical jitter measurements, and thus measuring J4u03 (which requires about 100,000 samples) will be 8 times longer.

Since jitter measurement at transitions with similar slopes should yield similar distributions, it may be possible to create the two distributions f_i(t) from multiple transitions with similar slope, which could reduce the test time, especially for optical transmitters with SSPRQ.

SuggestedRemedy

Modify the J4u03 calculation to allow using multiple transitions with similar slopes for generation of f_i(t).

A presentation with a detailed proposal is planned.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.2** *P* **433** *L* **5** # 202

Ran, Adee Cisco Systems

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

"The error ratio requirements are identical to those of 179.9.5.3"
The error ratio requirements are the same for all tests (they are based on the expectation stated in 179.2). It makes more sense to have a separate subclause that all three tests will refer to.

Similarly in the corresponding subclauses in clause 178.
Implementation in clause 180 should be considered, although its structure is different.

SuggestedRemedy

Create a new subclauses between the current 179.9.5.1 and 179.9.5.2, titled "Error ratio requirements for receiver tests".
Move the content the describes the error ratio parameters and requirements from 179.9.5.3 (Receiver interference tolerance) into the new subclause.
Add cross-references from all three receiver tests to the new subclause.

Make the corresponding changes in Clause 178. Consider making similar changes in clause 180.
Implement with editorial license.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.5.3** *P* **434** *L* **8** # 203

Ran, Adee Cisco Systems

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

In Table 179–13, the receiver error mask for p values other than 1 goes to very low probabilities that would make the test extremely long and impractical to implement. These probabilities are too far from reasonable test times to use extrapolation with reasonable confidence that it represents real results.

Having users of the standard attempt to perform these tests would cause confusion and impression that the standard requirements are unrealistic.

It is more reasonable that stress tests would be performed as if each lane in the PMD is an individual PMD with p=1, or alternatively with the method of 174A.9.7 (convolving the results of shorter measurements of each lanes), in which case the error mask table is not used.

Therefore, the columns with p values 2, 4, and 8 are not useful and should be removed.

Similarly in the corresponding tables in clauses 178 and 180-183.

SuggestedRemedy

In the first paragraph of 179.9.5.3, change from
"The error mask Hmax(k) to be used in the method of 174A.9.5 is provided in Table 178–10"
to
"The error mask Hmax(k) to be used in the method of 174A.9.5 with p=1 is provided in Table 178–10. For larger values of p, the method of 174A.9.5 requires much lower error mask values and thus longer measurement times, and it is recommended to use the method of 174A.9.7 instead".

Delete the columns for p values larger than 1 in Table 179-13.

Apply the corresponding changes in clauses 178 and 180-183.

[CC 178, 179, 180, 181, 182, 183]

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11.6.1** *P* **444** *L* **50** # 204

Ran, Adee Cisco Systems

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

Comment #357 against D2.1 stated that the loss allocation for the MCB is larger than real MCBs by about 1 dB. Since designing new MCBs with higher loss will increase the measured loss of the cable assembly by 2 dB, this is not desirable.
One of the proposals is to reduce the reference MCB loss by 1 dB.

The NOTE at the top of page 445 reminds us of the relationship between the insertion losses of the reference test fixture, the partial host channel, and the recommended maximum host channel.
In order to keep the host channel allowance the same, if the reference MCB loss is reduced by 1 dB, then the partial host channel loss should be increase by 1 dB to compensate.

The partial host channel parameters were proposed in
https://www.ieee802.org/3/dj/public/24_11/ran_3dj_02a_2411.pdf.
The difference between the ILdd at 53.125 GHz of the recommended TP0d-TP2 (Table 179A-1) and the MTF (Figure 179A-1) are:
For HL: 12.75-9.75 = 3 dB
For HN:17.75-9.75 = 8 dB
For HH: 22.75-9.75 = 13 dB
They should be increased to 4, 9, and 14 dB respectively.
For C2M (Table 176D–6) the partial channel loss should be increased from 32-9.75=22.25 dB to 23.25 dB.
The suggested remedy includes parameters that would yield these values.

SuggestedRemedy

Change the values in Table 179-20 as follows:
For HL (Pkg class A): zp(1)=9, zp(h)=27
For HN (Pkg class B): zp(1)=15, zp(h)=82
For HH (Pkg class B): zp(1)=45, zp(h)=95

And in Table 176D-6: zp(1)=45, zp(h)=280.

Reduce the reference MCB and MTF IL at 53.125 to 4.95 and 8.75 dB respectively, across the draft. Scale the equations in Annex 179B as necessary to achieve that change.

Implement with editorial license.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11.6.1** *P* **445** *L* **2** # 205

Ran, Adee Cisco Systems

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

The NOTE says that the sum <…> including the reference mated test fixtures is equal to the recommended maximum host channel IL in 179A.4. This is incorrect; the host channel as defined in 179A.4 does not include the HCB, so the sum should only include the MCB, not the mated test fixtures.

SuggestedRemedy

Change the note to read:
NOTE—For each host class, the sum of the differential insertion loss (ILdd) at 53.125 GHz of the partial host channel (excluding the device termination) and the reference cable assembly test fixture (see Equation (179B–2) and Figure 179A–1) is equal to the recommended maximum host channel insertion loss in Table 179A–1 for that host class.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.2** *P* **462** *L* **49** # 206

Ran, Adee Cisco Systems

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

"in the ISL training function (see 178B.7 and Figure 178B–6)"
178B.7 is titled "ILT function".

Also in 181.5.2.

SuggestedRemedy

Change to "in the ILT function (see 178B.7 and Figure 178B–6)", in 180.5.2 and 181.5.2.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **34** # 207

Ran, Adee
Cisco Systems

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

The limit value of J4u03 is based on the suggested remedy of comment #399 against D2.1 (values from 176D.8.9 except that J4u03 is increased by 10%), resulting in 0.130 UI.
However, the data provided to support the comment (see https://www.ieee802.org/3/dj/public/25_09/ran_3dj_04_2509.pdf#page=7) showed that the measured J4u03 is significantly larger than what is expected from the injected SJ, and the larger J4u03 can still be tolerated. With 12 MHz SJ, the receiver performance was acceptable (extrapolated FLR below the maximum allowed by Ethernet) even with measured J4u03 of 0.244; the next lower measured value 0.228 showed several orders of magnitude lower FLR.

It is known that J4u and EOJ03 are sensitive to measurement noise, and it is likely that this noise is larger in optical test setups. JRMS as currently defined should not be as sensitive.

In order to reduce the chance that good enough transmitters will fail the test, it is proposed to relax the J4u03 and EOJ03 limit from 130 mUI to 230 mUI (increase by about 77%) and correspondingly relax EOJ03 from 25 mUI to 44 mUI.

Similar relaxations should be applied in all IM-DD PMD clauses (which currently have somewhat different limits for J4u03) and the maximum values (in UI) should be the same, unless decided otherwise by other comments.

SuggestedRemedy

In Table 180–7, change the maximum value of J4u03 from 0.130 to 0.23, and the maximum EOJ03 from 0.025 to 0.044, both in UI units.
Use the same values in Table 181-5, Table 182-7, and Table 183-6.

[CC 180, 181, 182, 183]

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **142** *L* **31** # 208

Ran, Adee
Cisco Systems

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

State diagrams are generally referenced using their title followed by the figure number in parentheses, such as "the training control state diagram (Figure 178B–10)" (in 178B.7.8). However, it is inconsistent across the draft - often the figure title is missing, and sometimes "see" is included in the parentheses too.
Omitting the state diagram name is not reader-friendly, especially with external links, and "see" is redundant.

SuggestedRemedy

Make all references to state diagrams have the format "<title> (<figure cross-reference>)", without "see". Any further detials (such as a specific state) should follow the parentheses.

I originally found this issue in 178B so I listed in detail the places where corrections should be made (subclauses and the cross-reference they include):
178B.4: Figure 178B-10
178B.6: Figure 178B-9
178B.7: Figure 178B-10, Figure 178B-11, Figure 178B-12
178B.7.2: Figure 178B-10, Figure 178B-11, Figure 178B-12
178B.7.3.3: Figure 178B-10
178B.7.6: Figure 178B-11
178B.8.2.1: Figure 178B-9
178B.8.2.3: Figure 178B-9
178B.8.3: Figure 178B-10, Figure 178B-12
178B.8.3.1: Figure 178B-10, Figure 178B-11, Figure 178B-12
178B.8.3.3: Figure 178B-10
178B.8.3.4: Figure 178B-10
178B.9: Figure 178B-9

Other instances are in 73.4.3, 119.2.4.1.1, 119.2.5.8.1, 175.2.6.2, 175.2.6.2.2, 175.2.6.3, 176.4.2.2, 176.4.3.2.1, 176.4.3.2.2, 176.4.3.2.3, 176.4.4.2, 176.4.4.2.1, 177.5.2, 177.5.3, 177.7.2.1, 184.5.4, 184.7.2.2, 185.6.1, 186.2.4.7, 186.4.2.1. (I only looked for the string "state diagram"; please check for bare references to the corresponding figures in addition).

Implement with editorial license across the draft where applicable.

[CC 178B, 73, 119, 175, 176, 177, 184, 185, 186]

Proposed Response *Response Status* **O**

Cl **175** *SC* **175.2.4.1** *P* **287** *L* **18** # 209

Ran, Adee Cisco Systems

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

Here "The transmit PCS may use either the state-diagram encoder defined by Figure 119–14 or the stateless encoder defined in 119.2.4.1.2"
In 119.2.4.1 "The transmit PCS generates 66-bit blocks using either the state-diagram encoder defined in 119.2.4.1.1 or the stateless encoder defined in 119.2.4.1.2"

The text should be consistent in referring to a subclause rather than a figure for the definition.

Note that 172.2.4.1 also uses subclause references.

SuggestedRemedy

Change "defined by Figure 119–14" to "defined in 119.2.4.1.1".

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.2.** *P* **353** *L* **41** # 210

Ran, Adee Cisco Systems

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

The new NOTE added after Table 177-1 says "A value of OK for the SIGNAL_OK <...> does not guarantee that the stream provided to the Inner FEC sublayer through PMD:IS_UNITDATA_i.indication is a valid signal".

This sentence is incorrect: the PMD below the clause 177 inner FEC is one of 800GBASE-DR4-2, 800GBASE-FR4, or 800GBASE-LR4, all of which include the ILT function, and thus SIGNAL_OK=OK means that ILT has completed and "mission data" is being received (or about to be), so it is definitely a valid signal; arguably the quality of the signal is not guaranteed by the PMD, but that is never guaranteed and is not worth mentioning.

This sentence does not match the service interface definitions in 182.3 and 183.3

SuggestedRemedy

Change the NOTE to state that a value of OK means the PMD has completed the path startup procedure, and any other information that is worth menioning, with editorial license.

Alternatively, detete the NOTE.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.5** *P* **475** *L* **2** # 211

Ran, Adee Cisco Systems

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

The text says "OMAouter is measured using the waveforms captured at the output of the reference receiver defined in 180.9.2". That means that the reference equalizer is not applied.
Figure 180-8 is supposed to illustrate runs of 7 threes and 6 zeros, but before the reference equalizer these runs will not be flat and will have significantly different levels compared to other symbols - contrary to what is shown in the figure. So the figure does not match the definition.

Ideally OMAouter would be measured after a long enough run such that any ISI will die out. But with the far ISI implied by the length of the reference receiver, the test patterns do not include such runs. If the signal is not stable at the measurement point then the OMAouter could be reduced and made dependent on the pattern or test setup. That would not match the assumed meaning of this parameter.

Since the reference equalizer is defined to have unity gain at DC, it is expected to preserve the asymptotic value of a long run, and to equalize the signal such that shorter runs will also reach the same value. Therefore, measuring after the reference receiver would provide a less ISI-dependent result that corresponds to long runs, which is arguably what OMAouter is expected to represent. It would also make Figure 180-8 representative of the measurement specification.

Note that this argument holds for the signal but not for the noise. The noise levels (N0 and N3, used for RINxxOMA) would be amplified by the reference equalizer. Whether the noise should be measured with or without the reference receiver is a separate question.

SuggestedRemedy

Change the quoted sentence to "OMAouter is measured using the waveforms captured at the output of the reference equalizer defined in 180.9.6.3".

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **480** *L* **23** # 212

Ran, Adee
Cisco Systems

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

SER is an overloaded acronym; in most contexts it is used as FEC symbol error ratio, but for TDECQ it is defined (earlier in this subclause) as "PAM4 symbol error ratio".
Additional uses of this acronym should also use "PAM4".
A maintenance request to apply a similar change in Clause 121 is planned.

SuggestedRemedy

Change "the partial SER" to "the partial PAM4 SER".
Change "the three partial SERs is the SER" to "the three partial PAM4 SER values is the PAM4 SER".
Change "target SER" to "target PAM4 SER".
Change "consistent with the BER and target symbol error ratio for Gray coded PAM4" to "Consistent with the target PAM4 SER and Gray coded PAM4".

Apply in all instances of the above.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.14** *P* **488** *L* **2** # 213

Ran, Adee
Cisco Systems

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

Following up on comment #401 (unsatisfied) against D2.1.

As noted in comment #401, Equation 180-31 includes a log of a quantity that is not a pure number - it has a dimension of 1/Hz, or time (since B in the denominator is in Hz).
The equation does not state the dimensions of RINxxOMA, but in Table 180-7 it is specified as dB/Hz, and this matches the previous definition of this parameter, in 52.9.6.3, it is stated as dB/Hz (Equation 52-1). However, the expression there also includes log of a quantity with time dimensions. In order to have the stated dimension of dB/Hz, the bandwidth should have been outside of the equation (i.e., "10*log(Pn/Pm) / BW") such that multiplying by the BW would result in a value in dB..

To demonstrate the problem, multiplying the spec value of -139 dB/Hz (Table 180-7) by the reference receiver bandwidth of 53.125 GHz (180.9.2) yields an absurd result of -7.4e12 dB.

The source of this error seems to be that physically RIN is frequency-dependent and thus accurate characterization should be of its spectral density. But the measurement for this specification is the integrated noise, not the density. The bandwidth inside the log causes the specs to change with signaling rate for similar PHY types (e.g. -139 dB/Hz in Clause 180, -136 dB/Hz in clause 124, -132 dB/Hz in clause 121 - all are DR4 using PAM4 with the same performance metrics).

Ideally the equation should be changed to eliminate the bandwidth completely (yielding a result be in dB). Alternatively the bandwidth could be outside of the log (yielding a result in dB/Hz). Both of these changes would make more sense than the current definition but would require completely different spec values.

Assuming that changes to the spec limits are not desired, it is suggested to change the equation and the units of RINxxOMA in the transmitter specification table, while keeping the numerical maximum values the same.

Assuming the CRG agrees that a change should be made, I intend to take the required action to propagate it to other clauses via maintenance.

As an alternate remedy, the RINxxOMA specification can be deleted, based on no data having been presented to show its importance with respect to other transmitter specifications.

SuggestedRemedy

Change equation 180-31 to yield a value in dB, as follows::
RINxxOMA = 20*log10((N3+N0)/OMA_outer) - 10*log10(B/1 Hz) [dB]
In the definition of B, delete "(Hz)".

In Table 180-7, Table 181-5, Table 182-7, and Table 183-6, change the RINxxOMA units from dB/Hz to dB.

[CC 180, 181, 182, 183]

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.14** *P* **488** *L* **12** # 214

Ran, Adee Cisco Systems

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

Following up on comment #402 against D2.1.
The comment was resolved by stating that B is the noise bandwidth of the reference receiver. However, the reference receiver in 180.9.2 is defined in terms of its 3 dB bandwidth, not its noise bandwidth. These are not the same and readers might not be aware of the difference.

Moreover, finding the noise bandwidth of a specific filter may be error prone, as definitions vary.

For a 4th-order Bessel filter, the ratio of noise bandwidth to the 3 dB bandwidth is approximately 1.04. This value can be found, for example, from Table I in "Noise Bandwidth of Common Filters", Shelton et al., IEEE Transactions on Communication Technology, December 1970 (https://ieeexplore.ieee.org/document/1090431). The value in the table is 2.08 but the footnote indicates that "B_N is two-sided" so the ratio should be halved.

SuggestedRemedy

Add the following informative NOTE after the variable list of Equation 180-31:
NOTE---The noise bandwidth of a 4th-order Bessel-Thomson filter is 1.04 times its 3 dB bandwidth.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.16** *P* **518** *L* **1** # 215

Ran, Adee Cisco Systems

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

"with parameters provided in Table 180–19"
Table 180-19 is specific to clause 180 - it includes the PMD types defined therein and the value of p for each one. Clause 181 has one PMD type and it is different, apparently only with p=4.

The same reference appears also in 181.9.17 (same clause).

SuggestedRemedy

Add a specific table for clause 181 instead of referring to Table 180-19.

Make any necessary resulting changes in the text, with editorial license.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.5.2** *P* **534** *L* **9** # 216

Ran, Adee Cisco Systems

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

"PMD control function" is a remnant from older PMD clauses.

SuggestedRemedy

Change "PMD control function" to "ILT function".

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.5.2** *P* **564** *L* **9** # 217

Ran, Adee Cisco Systems

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

"PMD control function" is a remnant from older PMD clauses.

SuggestedRemedy

Change "PMD control function" to "ILT function".

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.16** *P* **583** *L* **16** # 218

Ran, Adee Cisco Systems

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

"with parameters provided in Table 182–16"
Table 182-16 is specific to clause 182 - it includes the PMD types defined therein and the value of p for each one. Clause 183 has one PMD type and it is different, apparently only with p=4.

The same reference appears also in 183.9.17 (same clause).

SuggestedRemedy

Add a specific table for clause 183 instead of referring to Table 182-16.

Make any necessary resulting changes in the text, with editorial license.

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.2.** *P* **595** *L* **1** # 219

Ran, Adee Cisco Systems

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

There seems to be consensus that PHYs and modules using coherent optics should participate in path startup. For that purpose, a method for communicating RTS across coherent optics ISL should be defined.
Since the 800GBASE-LR1 PMD (Clause 185) is just a converter between electrical signals and an optical signal, while all the logic functions reside in the inner FEC sublayer (Clause 184), the location of the ILT function for this PHY should be in Clause 184.

Similarly, the 800GBASE-ER1 PMDs (Clause 187) have all the logic functions in the FEC sublayer (Clause 186), so the location of the ILT function for this PHY should be in Clause 184.

We need to make the following changes:
- Expansion of the service interface of the inner FEC (C184) and FEC (C186) sublayers to support ILT/PSU signaling
- addition of ILT function in the functional specifications and its location in the transmit and receive data paths
- a training frame format for coherent optics
- specification of the effect of tx_disable

SuggestedRemedy

A presentation with a detailed proposal for ILT over coherent is planned.
[CC 184, 185, 186, 187, 178B]

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.13** *P* **755** *L* **12** # 220

Ran, Adee Cisco Systems

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

The BER for entire PCS-to-PCS path should be given with greater precision, to correspond to BER_added used for AUI-C2C.

SuggestedRemedy

Change 2.92e-4 to 2.921e-4, in both Table 174A-1 and Table 174A-2.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.3** *P* **888** *L* **11** # 221

Ran, Adee Cisco Systems

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

The new max_wait_timer is specified to have a duration controlled by the variable max_wait_timer_duration, with a resolution of 1 second. The tolerance is specified as 0.1%, that is, 1 millisecond times max_wait_timer_duration. With the fault values of 30 or 60 this becomes ±30 or ±60 ms.

The reasoning for having the timer tolerance relative to its terminal count and with such fine precision is unclear. It is not expected to be related to clock accuracy. Other ILT timers are specified with absolute tolerances, and these tolerances are much larger relative to the timer values.

The ILT baseline proposal was deliberately loose on timers in order to enable implementation in multi-tasking firmware. The accuracy of the timeout for the training phase is not critical and can be relaxed. Also, it can be specified in absolute time units, enabling a clear design target.

The proposed tolerance is [0, 1] seconds relative to the variable. This would provide implementation flexibility while not affecting interoperability.

SuggestedRemedy

Change from
"The terminal count of this timer is max_wait_timer_duration variable in seconds ± 0.1%"
to
"The terminal count of this timer is between N and N+1 seconds, where N is the value of the max_wait_timer_duration variable".

Implement with editorial license.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **12** # 222

Ran, Adee
Cisco Systems

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

An apparent issue in the Training control state diagram (Figure 178B–10) is that, if mr_training_enable is false, then lane_training_status can only have the values (IN_PROGRESS, OK, FAIL). It is never set to TRAINED. This means that the interface-level training_status cannot be set to READY, only to OK; the READY value is never propagated across the service interface. This might interfere with the path startup procedure when some of the ISLs have training disabled.

SuggestedRemedy

A presentation with more detailed analysis and a proposal is planned.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **15** # 223

Dawe, Piers
Nvidia

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

D2.1 comment 162: overshoot limit should be reduced. Notice that according to 140.7.7, 1% of the signal is allowed to be above the upper limit and another 1% below. Compare this with P=1e7 for electrical signals (176D.8.2), which recognises that rare excursions could defeat the FEC, although 1e-7 is impractical for an optical measurement without addressing the measurement noise.

SuggestedRemedy

Reduce the overshoot limit. Tighten the 1% to 0.3% as in 167.8.8 (100G/lane MMF).

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.15** *P* **488** *L* **17** # 224

Dawe, Piers
Nvidia

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

T(D)ECQ and T(D)ECQ_CER provide holistic measures of a signal's penalty and integrity, including jitter. A separate jitter measurement is an unnecessary diagnostic. The method in 179.9.4.6 is known to not work for J4u. Even if it did, fixed limits for jitter metrics are not appropriate because the margin for jitter depends on other things about the signal.

SuggestedRemedy

Remove this section and the output jitter table entries for all optical clauses

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **41** # 225

Dawe, Piers
Nvidia

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

The FEC bin limits have been revised to address impossible test times, but still they are very far from consistent with the project objective "BER of better than or equal to 10^-13 at the MAC/PLS service interface (or the frame loss ratio equivalent)". If the FEC bin curve has half the theoretical gradient, bin 9 at 3.5e-13 might correspond to bin 16 at 1e-27, which is less than the age of the universe but (if my quick calculation is right) corersponds to a bad FEC block every 100 years on a million-link network - far beyond the lifetime of the equipment.

SuggestedRemedy

Rescale the x axis so that the last bin limit >3.5e-13 is bin 11, giving a BER equivalent substantially better than OIF's 1e-15 target.
Consider tightening the 1e-13 objective.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **8** # 226

Dawe, Piers
Nvidia

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

Test receivers are usually well specified but the definition of the "functional receiver" is so loose that this test has very limited value. For example, without any control of the jitter tolerance spectrum, a bad transmitter matched with a high-jitter-bandwidth receiver will pass when it shouldn't. For another example, a "functional receiver" could tolerate mis-emphasised signals at the borderline of what TECQ and overshoot specs catch. For a third, the receiver does not need to achieve 3.5e-13 in bin 9 under any condition, so a good transmitter matched with an unknown receiver can fail when both, and the link they make, are compliant and good. The test cannot distinguish between transmitter and receiver; either can have memory effects. It only tells is if a pair "play nicely" with each other.
We moved away from a line-rate receiver (TDP) to an oscilloscope (TxVEC -> TDEC -> T(D)ECQ and T(D)ECQ_CER) in 2014 (802.3bm) because the scope has very little memory effect and it is well calibrated. That reasoning is still valid.
This "functional receiver" test is not suitable for compliance but could be developed to provide information about transmitter-receiver pairs to build an interop matrix (which is not the 802.3 way).

SuggestedRemedy

Move the method into an informative annex as a diagnostic of interest to network operators. Remove the rows in the optical transmitter spec tables.
Plug some of the gaping holes in the "functional receiver" definition.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **480** *L* # 227

Dawe, Piers Nvidia

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

Pulse shape of DFE feedback signal

SuggestedRemedy

Needs to be slowed down to make TDECQ respond consistently to jitter

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **12** # 228

Dawe, Piers Nvidia

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

It seems that VOA_level is derived from 9 powers or power-ratios, of which 7 are measured or estimated. As the headline margin is 1.5 dB, there are too many measurement errors.

SuggestedRemedy

This needs to be greatly simplified.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **42** # 229

Dawe, Piers Nvidia

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

"Test_SMF_power_budget loss and penalty are zero": what is this? Is Test_SMF_power_budget a loss and penalty? Is Test_SMF_power_budget loss zero; if so why is there an equation for it?

SuggestedRemedy

Delete

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **12** # 230

Dawe, Piers Nvidia

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

This section is quite involved with no introduction of what it is trying to do. It puts far too much burden on the reader's patience and reverse engineering skills.

SuggestedRemedy

Explain what the intention is. Show the various items adding and subtracting in a diagram.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.3** *P* **477** *L* **37** # 231

Dawe, Piers Nvidia

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

D2.0 comments 448, 489 and 491 points out that over equalizing transmitters can cause BER floor issues as shown in kimber_3dj_01a_2505, and proposes adding aspecification line, Noise Enhancement Factor, Ceq (min) 1.

SuggestedRemedy

As an explicit tap weight limit is easier to implement in the TDECQ optimizer than a Ceq limit - in Table 180-16, increase main tap coefficient limit from 0.8 to 0.95.

Proposed Response *Response Status* **O**

Cl **179A** *SC* **179A.5** *P* **901** *L* **21** # 232

Heck, Howard — TE Connectivity

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

Comment #140 against D1.4 resulted in a change to Figure 179A-1 that resulted in the loss of the MCB PCB and the via+connector being lumped into a single value. This has the unintended consequence of requiring adjustment to the MCB PCB design to compensate for any difference in via+connector insertion loss from the amount allocated to it prior to D1.5, which can increase the amount of MCB trace loss included in a TP1-TP4 cable assembly measurement.

Specifics: The MTF loss specified in the lower left of Figure 179A-1 specifies values for TP1-TP2 (9.75 dB), the HCB from TP2 to the via+connector (3.8 dB), and the MCB from TP1 (5.95 dB) to the far side of the via+connector (the same point as for the HCB). The MCB loss specification therefore includes PCB, PCB via and the via+connector. Up through D1.4, the MCB loss was specified as PCB only with a value of 2.7 dB, effectively allocating 3.25 dB for the via+connector. Existing MCB designs with which all cable assemblies have been measured were designed to the 2.7 dB trace insertion loss. Hardware measurements are showing 1 dB or more lower loss for the via+connector. Since the MCB loss includes the via+connector, the MCB traces now require 1 dB additional loss to compensate for the lower via+connector loss. This additional MCB loss increases the MCB loss in a TP1-TP4 cable assembly measurement by 2 dB, effectively reducing cable assembly portion of the loss by 2 dB (2 MCBs in a measurement), compromising the ability to meet the existing TP1-TP4 insertion loss specs.

SuggestedRemedy

Change Figure 179A-1: TP1-to-connector 'far side' insertion loss = 4.95 dB, TP1-TP2 insertion loss = 8.75.
In Table 179-14 reduce the "Test H (High Loss)" min/max test channel insertion loss values by 1 dB.
In Table 179A-1 reduce the insertion loss values for Host Channels and for TP0d-TP2/TP3-TP5d by 1 dB.
Change the values for Rpeak and J4u03 in Table 179-7 to account for the change in host loss.
A supporting contribution is planned for the November plenary meeting.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11** *P* **441** *L* **9** # 233

Heck, Howard — TE Connectivity

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

Cable assembly TP1-TP4 insertion loss specifications are proving challenging to meet when accounting for all sources of variation, specifically for the CA-A and CA-B cable assembly classes. A more manufacturable specification needs an additional 1 dB insertion loss to be allocated to the cable assembly for CA-A and CA-B.

SuggestedRemedy

In Table 179A-1 reduce the insertion loss allocation for all three host classes (HL/HN/HH) by 0.5 dB.
Increase the TP1-TP4 cable assembly insertion loss (Table 179-14) for CA-A from 19 dB to 20 dB, and for CA-B from 24 dB to 25 dB.
Change the partial host PCB trace lengths in Table 179-19.
In Table 179-7 change the values for Rpeak and J4u03 to account for the change in host loss.
In Table 179-14 reduce the "Test H (high loss)" min/max test channel insertion loss values by 0.5 dB.
In Table 179-14 change the Test H (high loss) cable assembly insertion loss for Host class HH to 24.5(min)-25.5(max) dB.
A contribution is planned for the November plenary meeting.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **2** # 234

Mascitto, Marco — Nokia

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

It may be helpful to the reader to reiterate what is stated about PSU in 178B.2.

SuggestedRemedy

Add: PSU is not intrinsically a function; rather, it is an externally observable behavior resulting from the RTS and ILT functions.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **10** # 235

Mascitto, Marco Nokia

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

PSU applies to any Physical Layer implementation that includes at least one ISL with data rate of 200Gb/s (or higher) per lane. Furthermore, PSU applies to any Physical Layer implementation that includes at least one ISL with data rate of 200Gb/s (or higher) per lane (e.g., 1.6TBASE-DR8) and any number of ISLs for which ILT is not defined (e.g., 1.6TAUI-16 C2M).

PSU must not depend on an ISL's support of the ILT function. PSU must apply to all ISLs in the path, whether they will be trained by the ILT function or not. PSU must only depend on the ISL's support of the RTS function. Decoupling the PSU from the training simplifies the architecture and avoids the need to introduce flows in the state diagrams to allow for ISLs for which ILT is not defined by this annex.

The ILT function defines training of ISLs that make use of 200Gb/s lanes.

The RTS function must define how an ISL signals its readiness end-to-end along the path.

SuggestedRemedy

For all paths that require PSU, allow all ISLs in that path to support RTS, regardless of whether they support ILT or not. Delete "and the ILT function (see 178B.7)" from this bullet.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.4** *P* **884** *L* **7** # 236

Mascitto, Marco Nokia

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

The following are examples of variable updates that do not appear in state diagrams: training_status, local_mc_mode, local_tp_mode, adjacent_intf_rx_ready. The absence of these variable updates in the state diagrams makes the diagrams less useful.

SuggestedRemedy

Add the variable updates to the state diagrams.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.1** *P* **863** *L* **12** # 237

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

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

The scoped is stated as
"This annex defines the path startup functions for Physical Layer implementations that include one or more
inter-sublayer links (ISLs) (see 178B.3) with data rate of 200 Gb/s or higher per lane."
However, based on brown_3dj_05a_2509, it was noted that the startup was for the path - which was defined as RS to RS, which would be all of the ISL's in the path.
A note was also added - "AUI components and PMDs that are not specified to support the ILT function or the RTS function as defined in
this annex may include equivalent capabilities, however this is beyond the scope of this standard." Thus the specification is not defining their use.

SuggestedRemedy

Change -
"This annex defines the path startup functions for Physical Layer implementations that include one or more
inter-sublayer links (ISLs) (see 178B.3) with data rate of 200 Gb/s or higher per lane."
to
"This annex defines the path startup functions for Physical Layer implementations based on inter-sublayer links (ISLs) (see 178B.3) with data rate of 200 Gb/s or higher per lane."

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.3** *P* **863** *L* **42** # 238

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

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

Any terminology being defined in the annex should be identified in 178B.3.

SuggestedRemedy

Change -
"For the purpose of this annex, the following definitions apply. Refer to 1.4 for terms not defined in this annex."
to
"For the purpose of this annex, the following definitions apply. Refer to 1.4 for terms not defined in 178B.3."

Proposed Response *Response Status* **O**

Cl **174** *SC* **174.1.4** *P* **270** *L* **5** # 239

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

Prior ethernet speeds have always introduced the electrical PHY type correlation before the optics. THis clause does the reverse for no clear reason.

SuggestedRemedy

Reverse positions of Table 174-2 and 174-3.
Change references to tables as appropriate.

Proposed Response *Response Status* **O**

Cl **174** *SC* **174.2.12** *P* **272** *L* **45** # 240

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

Given the change of the title for annex 178b, it would seem appropriate to modify the title of 174.2.12, as well as update the description.

SuggestedRemedy

Change title from "Inter-sublayer link training (ILT)" to "Path Startup"
Modify description text to "Path startup (PSU) is the coordinated, orderly initialization of all ISLs in a path (See Annex 178B). PSU is
facilitated by the combination of the ready to send (RTS) function and the inter–sublayer link training (ILT) function.

Do same thing for 116.2.9 and 169.2.10.

Proposed Response *Response Status* **O**

Cl **169** *SC* **169.2.4b** *P* **206** *L* **7** # 241

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

While the title is singular "FEC sublayer", the actual ext address multiple FEC sublayers

SuggestedRemedy

Change title from "FEC sublayer" to "FEC sublayers"

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.1** *P* **455** *L* **45** # 242

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

Annex 178B is no longer titled "ILT"

SuggestedRemedy

Suggest 2 possible changes to 178B entry in Table 180-1
1. Change "ILT" to "Path startup" or
2. Change "ILT" to "RTS / ILT"

Choose 1

Apply to Table 178-1, 178-2, 178-3, 178-4, 179-1, 179-2, 179-3, 179-4, 180-1, 180-2, 180-3, 180-4, 181-1, 182-1, 182-, 182-3, 182-4, 183-1, 185-1, 187-1.

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.1** *P* **620** *L* **13** # 243

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

Table 185-1 indicates that there are two optional PMAs - which are further clarified by Note A. However, there is no PMA sublayer denoted in Figure 185-1. Furthermore, a PMA sublayer would be necessary if a physical implementaiton was done - and that would need to be above the Inner FEC sublayer.

SuggestedRemedy

A PMA sublayer above the Inner FEC sublayer should be added to Figu 185-1.

Proposed Response *Response Status* **O**

Cl **185** *SC* **185.1** *P* **619** *L* **24** # 244

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

A 800G AUI-n can only be implemented in a 800GBASE-LR1 PHY above the Inner FEC. Note A in Table 185-1 points to 176B.6.1, However upon reviewing 176B.1, it is unclear how this text denotes that an AUI can only be above the Inner FEC sublayer.

SuggestedRemedy

Figure 176B-2 is the clearest indication that an AUI can onlly be above the inner FEC sublayer. A reference to this figure should be added to Note A for Table 185-1

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.1** *P* **528** *L* **24** # 245

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

A x00G AUI-n can only be implemented in a x00GBASE-DRn-PHY above the Inner FEC. Note D in Tables 182-1/2/3/4 points to 176B.6.1, However upon reviewing 176B.4.1, 176B.5.1, 176B.6.1, 176B.7.1, it is unclear how this text denotes that an AUI can only be above the Inner FEC sublayer.

SuggestedRemedy

Figure 176B-2 is the clearest indication that an AUI can onlly be above the inner FEC sublayer. A reference to this figure should be added to Note D for Tables Tables 182-1/2/3/4.

Proposed Response *Response Status* **O**

Cl **187** *SC* **187.1** *P* **695** *L* **36** # 246

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

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

An 800G AUI-n can only be implented above the 800GBASE-ER1 FEC Sublayer. Note A in Table 187-1 points to 17B.6.1. However upon reviewing 176B.1, it is unclear how this text denotes that an AUI can only be above the 800GBASE-ER1 FEC Sublayer.

SuggestedRemedy

Figure 176B-2 is the clearest indication that an 800G AUI can onlly be above the 800GBASE-ER1 FEC Sublayer. A reference to this figure should be added to Note A for Table 187-1

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **11** # 247

Rodes, Roberto — Coherent

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

The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable.

SuggestedRemedy

Remove the TDECQ CER from the spec

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.7.1** *P* **506** *L* **28** # 248

Rodes, Roberto — Coherent

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

The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable.

SuggestedRemedy

Remove the TDECQ CER from the spec

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.7.1** *P* **537** *L* **32** # 249

Rodes, Roberto — Coherent

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

The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable. In addition, no guidance has been presented or adopted for PMDs incorporating inner FEC.

SuggestedRemedy

Remove the TDECQ CER from the spec

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **568** *L* **41** # 250

Rodes, Roberto — Coherent

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

The TDECQ CER specification was adopted despite experimental analyses revealing significant consistency issues. A fix from Keysight is expected soon; however, at this point, the specification remains untestable. In addition, no guidance has been presented or adopted for PMDs incorporating inner FEC.

SuggestedRemedy

Remove the TDECQ CER from the spec

Proposed Response *Response Status* **O**

Cl **185A** *SC* **185A.2** *P* **941** *L* **15** # 251

Williams, Tom Cisco

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

The consistency of the ETCC methodology can be improved by refining the reference receiver de-embedding process. Specifically, the receiver frequency response should be equalized, and the receiver noise should be whitened prior to the noise-loading stage. This ensures that the estimated ETCC parameters are independent of the receiver, and accurately represent the transmitter characteristics only. A supporting contribution will be provided.

SuggestedRemedy

Implement changes per the supporting contribution

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **15** # 252

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% and
see ghiasi_3dj_01_2511 as also suggested by unsatisfied comment 162

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.7.1** *P* **506** *L* **24** # 253

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% and
see ghiasi_3dj_01_2511 as also suggested by unsatisfied comment 163

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.7.1** *P* **537** *L* **36** # 254

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% and
see ghiasi_3dj_01_2511 as also suggested by unsatisfied comment 163

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **569** *L* **8** # 255

Ghiasi, Ali Ghiasi Qunatum/Marvell

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

In D2.0 1T DFE was added to the TDECQ equalizer which reduces the need for transmiteer overshoot where TDECQ doesn't capture peak-to-average ratio and may result in BER degradation with improving TDECQ.

SuggestedRemedy

Reduce transmitter overshoot from 22% to 12% and
see ghiasi_3dj_01_2511 as also suggested by unsatisfied comment 163

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **33** # 256

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

In D2.1 optical output jitter was added and was initially considered during IEEE meeting in Hmaburg, see https://www.ieee802.org/3/dj/public/24_09/ghiasi_3dj_01a_2409.pdf. The contribution showed that jitter is already captured by TDECQ unless one has band-limited low frequency RJ where only occasionally some of the KP4 frame affected. Average measuremnt will not identify this bad transmiter even measuing EOJ, JRMS, and J4u. Block TDECQ was one option but due to need for real time scope, stake holders defined Transmitter Functional test, which was somehting Marco Mazzini used to determine bad transmitters. It is not clear what additional value jitter provides and current jitter limits are too restricated.

SuggestedRemedy

Some of the issue with pre-D2.0 TDECQ were:
- Transmitter with higher TDECQ had better BER than one with lower TDECQ with more overshoot
- Now we have DFE and there is no reason to have 22% overshoot and assuming we do the wise thing the issue of excessive overshoot is addressed
- The one remaining issure was low frequency RJ that affect some of the KP4 frame where any average measurment will miss it but to address this issue we added Transmitter Functional test.

So what specific issue are we solving by adding jitter?
see ghiasi_3dj_02_2511

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.7.1** *P* **506** *L* **44** # 257

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

In D2.1 optical output jitter was added and was initially considered during IEEE meeting in Hmaburg, see https://www.ieee802.org/3/dj/public/24_09/ghiasi_3dj_01a_2409.pdf. The contribution showed that jitter is already captured by TDECQ unless one has band-limited low frequency RJ where only occasionally some of the KP4 frame affected. Average measuremnt will not identify this bad transmiter even measuing EOJ, JRMS, and J4u. Block TDECQ was one option but due to need for real time scope, stake holders defined Transmitter Functional test, which was somehting Marco Mazzini used to determine bad transmitters. It is not clear what additional value jitter provides and current jitter limits are too restricated.

SuggestedRemedy

Some of the issue with pre-D2.0 TDECQ were:
- Transmitter with higher TDECQ had better BER than one with lower TDECQ with more overshoot
- Now we have DFE and there is no reason to have 22% overshoot and assuming we do the wise thing the issue of excessive overshoot is addressed
- The one remaining issure was low frequency RJ that affect some of the KP4 frame where any average measurment will miss it but to address this issue we added Transmitter Functional test.

So what specific issue are we solving by adding jitter?
see ghiasi_3dj_02_2511

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.7.1** *P* **538** *L* **18** # 258

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

In D2.1 optical output jitter was added and was initially considered during IEEE meeting in Hmaburg, see https://www.ieee802.org/3/dj/public/24_09/ghiasi_3dj_01a_2409.pdf. The contribution showed that jitter is already captured by TDECQ unless one has band-limited low frequency RJ where only occasionally some of the KP4 frame affected. Average measuremnt will not identify this bad transmiter even measuing EOJ, JRMS, and J4u. Block TDECQ was one option but due to need for real time scope, stake holders defined Transmitter Functional test, which was somehting Marco Mazzini used to determine bad transmitters. It is not clear what additional value jitter provides and current jitter limits are too restricated.

SuggestedRemedy

Some of the issue with pre-D2.0 TDECQ were:
- Transmitter with higher TDECQ had better BER than one with lower TDECQ with more overshoot
- Now we have DFE and there is no reason to have 22% overshoot and assuming we do the wise thing the issue of excessive overshoot is addressed
- The one remaining issure was low frequency RJ that affect some of the KP4 frame where any average measurment will miss it but to address this issue we added Transmitter Functional test.

So what specific issue are we solving by adding jitter?
see ghiasi_3dj_02_2511

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **569** *L* **22** # 259

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

In D2.1 optical output jitter was added and was initially considered during IEEE meeting in Hmaburg, see https://www.ieee802.org/3/dj/public/24_09/ghiasi_3dj_01a_2409.pdf. The contribution showed that jitter is already captured by TDECQ unless one has band-limited low frequency RJ where only occasionally some of the KP4 frame affected. Average measuremnt will not identify this bad transmiter even measuing EOJ, JRMS, and J4u. Block TDECQ was one option but due to need for real time scope, stake holders defined Transmitter Functional test, which was somehting Marco Mazzini used to determine bad transmitters. It is not clear what additional value jitter provides and current jitter limits are too restricated.

SuggestedRemedy

Some of the issue with pre-D2.0 TDECQ were:
- Transmitter with higher TDECQ had better BER than one with lower TDECQ with more overshoot
- Now we have DFE and there is no reason to have 22% overshoot and assuming we do the wise thing the issue of excessive overshoot is addressed
- The one remaining issure was low frequency RJ that affect some of the KP4 frame where any average measurment will miss it but to address this issue we added Transmitter Functional test.

So what specific issue are we solving by adding jitter?
see ghiasi_3dj_02_2511

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7** *P* **482** *L* **36** # 260

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ CER target SER and CER are TBDs

SuggestedRemedy

Target SER=4.56e-4 and target CER=8.16E-13

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **11** # 261

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ CER limit of 3.4 dB may need to be increased given that TDECQ CER captures additional impairements. To meet TDECQ CER of 3.4 dB one may need to have TDECQ/TECQ ≤3.0 dB.

SuggestedRemedy

TDECQ CER may need to raised to 3.8 dB or keep current limit with understanding TDECQ/TECQ have to be ≤3 dB typically to meet the TDECQ CER. If we raise the TDECQ CER from 3.4 dB and not accouting link budget that is problematic as well. See ghiasi_3dj_03_2511

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **11** # 262

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ CER limit of 3.4 dB may need to be increased given that TDECQ CER captures additional impairements. To meet TDECQ CER of 3.4 dB one may need to have TDECQ/TECQ ≤3.0 dB.

SuggestedRemedy

TDECQ CER may need to raised to 3.8 dB or keep current limit with understanding TDECQ/TECQ have to be ≤3 dB typically to meet the TDECQ CER. If we raise the TDECQ CER from 3.4 dB and not accouting link budget that is problematic as well. See ghiasi_3dj_03_2511

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.7.1** *P* **466** *L* **11** # 263

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ CER limit of 3.4 dB may need to be increased given that TDECQ CER captures additional impairements. To meet TDECQ CER of 3.4 dB one may need to have TDECQ/TECQ ≤3.0 dB.

SuggestedRemedy

TDECQ CER may need to raised to 3.8 dB or keep current limit with understanding TDECQ/TECQ have to be ≤3 dB typically to meet the TDECQ CER. If we raise the TDECQ CER from 3.4 dB and not accouting link budget that is problematic as well. See ghiasi_3dj_03_2511

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.7.1** *P* **506** *L* **28** # 264

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ CER limit of 3.4 dB may need to be increased given that TDECQ CER captures additional impairements. To meet TDECQ CER of 3.4 dB one may need to have TDECQ/TECQ ≤3.0 dB.

SuggestedRemedy

TDECQ CER may need to raised to 3.8 dB or keep current limit with understanding TDECQ/TECQ have to be ≤3 dB typically to meet the TDECQ CER. If we raise the TDECQ CER from 3.4 dB and not accouting link budget that is problematic as well. See ghiasi_3dj_03_2511

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.1** *P* **475** *L* **48** # 265

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 144

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **465** *L* **20** # 266

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Unless xAUI-n interface operate with condition of jitter tolerance Functional reciver will not catch anything, see also unsatisfied comment 145

SuggestedRemedy

Add: AUI lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.6** *P* **514** *L* **50** # 267

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 146

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **465** *L* **25** # 268

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Unless xAUI-n interface operate with condition of jitter tolerance Functional reciver will not catch anything, see also unsatisfied comment 147

SuggestedRemedy

Add: AUI lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.6** *P* **546** *L* **38** # 269

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 148

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **7** # 271

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Section 180.9.9 defines error histogram then section 180.9.9.1 defines functional receiver FRx definition, actually it doesn't define but rather defines the condition for FRx test

SuggestedRemedy

Propsoed modification:
Move 180.9.9 to 180.9.9.1
Move 180.9.9.1 to 180.9.9.2
Change the name of 180.9.9.2 to Functional receiver (FRx) test condition
In 180.9.9 define what is a functional receiver -
Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 180-8 and is capable of symbol error reporting.
Move 3rd paragraph in 180.9.9 "For thoes cases ..." in the new section 180.9.9 with definition of FRx.

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.6** *P* **579** *L* **46** # 270

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear, see also unsatisfied comment 144

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.9** *P* **516** *L* **1** # 272

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Section 181.9.9 Transmitter functional symbol error histogram that should move into 181.9.9.1

SuggestedRemedy

Propsoed modification:
Make 181.9.9 Functional Receiver
Add the following to section 181.9.9 - "Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 181-8 and is capable of symbol error reporting."
and Move 3rd paragraph in 180.9.9 into the same section "For thoes cases ..."
Move the current content of 181.9.9 into 181.9.9.1

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.9** *P* **546** *L* **7** # 273

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Section 182.9.9 Transmitter functional symbol error histogram that should move into 182.9.9.1

SuggestedRemedy

Propsoed modification:
Make 182.9.9 Functional Receiver
Add the following to section 182.9.9 - "Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 182-8 and is capable of symbol error reporting."
and Move 3rd paragraph in 182.9.9 into the same section "For thoes cases ..."
Move the current content of 182.9.9 into 182.9.9.1

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.9** *P* **581** *L* **10** # 274

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Section 183.9.9 Transmitter functional symbol error histogram that should move into 183.9.9.1

SuggestedRemedy

Propsoed modification:
Make 183.9.9 Functional Receiver
Add the following to section 183.9.9 - "Functional receiver is an optical receiver with a PMA that meets or exceed receiver sensitivity condition in table 183-8 and is capable of symbol error reporting."
and Move 3rd paragraph in 183.9.9 into the same section "For thoes cases ..."
Move the current content of 183.9.9 into 183.9.9.1

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.5** *P* **462** *L* **8** # 275

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

TDECQ mission mode test definition should be made more clear

SuggestedRemedy

Propsoed text
TDECQ is defined with all receive xAUI-n lanes when instantiated in operation using test pattern 3 or 5 (see Table 180–13). xAUI-n lanes operate with receiver jitter tolerance condition defined by applicable instantiated xAUI-n.
The received test patterns shall be asynchronous to the pattern used to test the transmitter, and shall
have power levels as specified in Table 180–8 for the aggressor lanes in the stressed receiver
sensitivity test.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.4** *P* **817** *L* **37** # 276

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

We currenlty have no effective output compliance test method for C2M or input caliburtion of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than a year without any proof that using jitter alone is sufficent for C2M interoperability. Number of other stadnard that generally follow 802.3 still will go with VEC or EECQ and number of Ethernet customers still want VEC or EECQ. See also unsatisfied comment 20352

SuggestedRemedy

TDECQ/EECQ already captrues the jitter as shown in ghiasi_3dj_01a_2409 but also captures amplitude penalty and the effect of PM to AM conversion in thre same way as receiver will observe the penalty. In COM we use reference equalizer to determine compliance, in 802.3ck we used VEC/VEO with a reference equalizer and in OIF Linear and RTLR we use EECQ with reference equalizer for compliance. We have not proven that discrete jitter measurements without a referecne equalizer is sufficent for C2M compliance. Task force need to investigate either show that current methdology works otherwise replace it with CKmethod or OIF EECQ before going to SA ballot.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.5** *P* **817** *L* **39** # 277

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

We currenlty have no effective output compliance test method for C2M or input caliburtion of stressor. We replaced VEC with with JRMS, EOJ, and J4U back in Sept 2024 and it has been more than a year without any proof that using jitter alone is sufficent for C2M interoperability. Number of other stadnard that generally follow 802.3 still will go with VEC or EECQ and number of Ethernet customers still want VEC or EECQ. See also unsatisfied comment 20353

SuggestedRemedy

TDECQ/EECQ already captrues the jitter as shown in ghiasi_3dj_01a_2409 but also captures amplitude penalty and the effect of PM to AM conversion in thre same way as receiver will observe the penalty. In COM we use reference equalizer to determine compliance, in 802.3ck we used VEC/VEO with a reference equalizer and in OIF Linear and RTLR we use EECQ with reference equalizer for compliance. We have not proven that discrete jitter measurements without a referecne equalizer is sufficent for C2M compliance. Task force need to investigate either show that current methdology works otherwise replace it with CKmethod or OIF EECQ before going to SA ballot.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9** *P* **485** *L* **7** # 278

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Transmitter functional test wihout ILT may not produce reliable result as the adaptation may vary and the receiver wouldn't be able to request pre-coding.

SuggestedRemedy

Add follwing in section 180.9.9 -
Transmitter Functional receiver
configures the DUT transmitter precoding to the settings it would select
using the ILT protocol (see 178B). The settings may be communicated via the ILT protocol or by other
means.

Proposed Response *Response Status* **O**

Cl **181** *SC* **181.9.9** *P* **516** *L* **2** # 279

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Transmitter functional test wihout ILT may not produce reliable result as the adaptation may vary and the receiver wouldn't be able to request pre-coding.

SuggestedRemedy

Add follwing in section 181.9.9 -
Transmitter Functional receiver
configures the DUT transmitter precoding to the settings it would select
using the ILT protocol (see 178B). The settings may be communicated via the ILT protocol or by other
means.

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.9** *P* **548** *L* **8** # 280

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Transmitter functional test wihout ILT may not produce reliable result as the adaptation may vary and the receiver wouldn't be able to request pre-coding.

SuggestedRemedy

Add follwing in section 182.9.9 -
Transmitter Functional receiver
configures the DUT transmitter precoding to the settings it would select
using the ILT protocol (see 178B). The settings may be communicated via the ILT protocol or by other
means.

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.9** *P* **581** *L* **10** # 281

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Transmitter functional test wihout ILT may not produce reliable result as the adaptation may vary and the receiver wouldn't be able to request pre-coding.

SuggestedRemedy

Add follwing in section 183.9.9 -
Transmitter Functional receiver
configures the DUT transmitter precoding to the settings it would select
using the ILT protocol (see 178B). The settings may be communicated via the ILT protocol or by other
means.

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.5** *P* **747** *L* **41** # 282

Ghiasi, Ali — Ghiasi Qunatum/Marvell

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

Hmax(k) is introduced but we don't say what Hmax(k) is!

SuggestedRemedy

Add sentence-Hmax(k) is the probability of maximum symbol errored, where k denotes number of errored symbol in a frame.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **43** # 291

Maki, Jeffery — Juniper Networks

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

The exit conditions from the “PATH_UP” state are not defined in the Training State Control diagram. In the absence of a defined exit path, there is a possibility that the link may remain down in certain scenarios. Example Scenario:
(1) A path, which includes 3 ISLs:
• ISL1: the host-module electrical interface between host 1 and module 1, which implements Type E1 ILT.
• ISL2: the optical link between optical module 1 and optical module 2, which implements Type O1 ILT.
• ISL3: the host-module electrical interface between module 2 and host 2, which implements Type E1 ILT.
(2) The path is in DATA mode, which means all Training State Control state machines of all lanes of all interfaces on this path are in “PATH_UP” state.
(3) If ISL2 needs to re-do the O1 ILT, for example, plug out and then plug in the fiber connector.
(4) How should the interfaces of ISL1 and ISL3 behave?
• Should all Training State Control state machines of all lanes of ISL1 and ISL3 stay at “PATH_UP” states? Since the interfaces of ISL2 are re-doing the ILT, during which process, the DATA is interrupted and there is no more recovered clock for interfaces of ISL1 and ISL3.
• Should all Training State Control state machines of all lanes of ISL1 and ISL3 go back to “ISL_READY” states to wait for the ILT completion of ISL2 and then again switch to DATA mode? The local clock source is used in “ISL_READY” state. The recovered clock source is used in “PATH_UP” state. The two states are in different clock domains. Going back to “ISL_READY” state means back and forth switching of clock source. Is this permitted?
• Should all Training State Control state machines of all lanes of ISL1 and ISL3 go back to the “QUIET” state (the beginning of Training Control State Diagram) to do ILTs again? Should the re-doing of ILTs at ISL1 and ISL3 be triggered automatically (by ?) or be triggered by host using “mr_restart” control?

SuggestedRemedy

Define the exit conditions from the “PATH_UP” state in the Training State Control diagram for consistent behavior so vendor/user-specific implementations do not lead to a lack of interoperability.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.1** *P* **883** *L* **19** # 292

Maki, Jeffery — Juniper Networks

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

Clause 178B.8.2.1 defined a per-interface variable “reset”, but it is NOT in Table 178B-6 or Table 178B-7. According to the definition, the “reset” variable is to control the global resetting of the RTS and ILT state machines. Any situation when a reset is necessary, it could be TRUE. The situations include but are not limited to PMA_reset for AUI components, PMA_reset for PMDs, during power on.

SuggestedRemedy

Add a “reset” (maybe in a different name more exactly showing its real function) to Table 178B-6 and define its own per-lane based MDIO register.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.1.3** *P* **351** *L* **3** # 293

Maki, Jeffery — Juniper Networks

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

"outer RS-FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **479** *L* **3** # 294

Maki, Jeffery — Juniper Networks

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

Editor's note: "outer FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **182** *SC* **182.9.7** *P* **547** *L* **48** # 295

Maki, Jeffery — Juniper Networks

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

Editor's note: "outer FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.7** *P* **580** *L* **50** # 296

Maki, Jeffery — Juniper Networks

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

Editor's note: "outer FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.1.3** *P* **592** *L* **50** # 297

Maki, Jeffery — Juniper Networks

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

"outer RS-FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.4.5** *P* **598** *L* **37** # 298

Maki, Jeffery — Juniper Networks

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

"outer RS(544,514) FEC" is used with outer as an adjective except many workers think outer is part of compound noun since Inner FEC is defined as a compound noun (term).

SuggestedRemedy

Clarify the use of outer. Is Outer FEC a defined compound noun (term) or not?

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11.3** *P* **441** *L* **46** # 299

Kocsis, Sam — Amphenol

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

The phrase "discontinuity of the MDI connector" is confusing with more context. More specifically, which side of the MDI connector is the Tfx definition referring to, given the new definition of the MCB in Annex179B.

SuggestedRemedy

Add more descriptive text like "discontinuity of the MCB via at the MDI connector" or "discontinuity of the MDI connector up to reference plan of the TP2 or TP3 (HCB) test fixture". Alternatively additional context could be provided in a separate figure, or notes on Figure 179A-1.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11.6.1** *P* **444** *L* **443** # 300

Kocsis, Sam — Amphenol

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

The reference partial host channels do not explicitly define a minimum Host channel, aligned with the informative reference in 179A.4. The current HL specfication creates the corner cases for the asymetric channel configurations. This highlights a potential issue that may apply to 178 and 176D as well.

SuggestedRemedy

There may be a number of ways to solve this, some of which were presented in rysin_3dj_01a_2509. Additional details and options planned for a contribution to follow at the November plenary.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.3** *P* **908** *L* **24** # 301

Kocsis, Sam — Amphenol

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

In D2P2, both the s-parameter reference impedance and the ERL reference impeance are now 92.5-ohm differential (46.25-ohm single-ended). The RF connectors used in MTF measurements introduce a significant impact to the computed ERL result, making a limit of 10.3dB very challenging to achieve.

SuggestedRemedy

Change the ERL limit to account for the deltaERL with the RF coax connector, OR allow for a fixed Tfx setting to remove the impact of the RF coax connector. Contribution to follow at the November plenary.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.6** *P* **910** *L* **9** # 302

Kocsis, Sam — Amphenol

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

The extrapolation of common-mode to common-mode return loss requirements for the MTF based on KR/CR/C2M common-mode to differential-mode may have been too aggressive. Channels with fixtures that "pass" KR/CR/C2M requirements, still fail the MTF requirements.

SuggestedRemedy

Change Equation 179B-7 and Figure 179B-4 to be compatible with test fixtures used in KR/CR/C2M compliance settings. And extend the frequency mask to 67GHz. Contribution to follow at the November plenary.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11.2** *P* **441** *L* **39** # 303

Kocsis, Sam — Amphenol

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

The minimum cable assembly insertion loss of 16dB, may exclude working cables from compliance.

SuggestedRemedy

Adjust the minimum cable assembly insertion loss to a value aligned with working cables as demonstrated in contribution. Contribution to follow at the November plenary.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.11** *P* **441** *L* **21** # 304

Kocsis, Sam — Amphenol

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

The minimum SCMR_CH value of 20dB, may exclude working cables from compliance.

SuggestedRemedy

Adjust the minumum SCMR_CH requirement to a value aligned with working cables as demonstrated in contribution. Contribution to follow at the November plenary.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.3.1** *P* **905** *L* **29** # 305

Noujeim, Leesa — Google

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

Cable assembly test fixture should not refer to PCB since the definition now includes everything between the reference plane of the coax connector and the mating point of the MDI connector

SuggestedRemedy

Remove "PCB" in the definition of Ildd_catfref(f)

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.2** *P* **905** *L* **20** # 306

Noujeim, Leesa — Google

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

Ildd_MTFmin is, at fNyquist, 4dB lower than Ildd_MTFmax. This large allowed variation in MTF IL introduces too much uncertainty as to whether a given DUT (host or cable assembly) passes or fails due to variation in the test fixture.

SuggestedRemedy

Decrease the spread between ILddMTFmin and ILddMTFmax to ~2dB, by adjusting equations 179B-3 and 179B-4.

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.6** *P* **748** *L* **12** # 307

Mi, Guangcan — Huawei Technologies Co., Ltd.

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

When using Equation (174A-5) to calculate Ha(k), the value of p should be specified to be 1 as Ha(k) is a theoretical histogram without per-lane simulation. Ha(k) should reflect the error distribution over all lanes of an AUI.

SuggestedRemedy

Change the sentence "Calculate the error histogram Ha(k) for the added BER using Equation (174A–5) with BER = BERadded." to "Calculate the error histogram Ha(k) for the added BER using Equation (174A–5) with
BER = BERadded and p = 1."
Do the same change for Line 33 on Page 748 and Line 10 on Page 751.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **483** *L* **24** # 308

Mi, Guangcan — Huawei Technologies Co., Ltd.

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

The last condition in equation 180-15 should be Ln = 3

SuggestedRemedy

Change Ln = 0 to Ln = 3

Proposed Response *Response Status* **O**

Cl **175A** *SC* **175A** *P* **757** *L* **52** # 309

Mi, Guangcan — Huawei Technologies Co., Ltd.

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

In the equations, cx_C should correspond to c_C, instead of c_A. Besides, cx_D should correspond to c_D, instead of c_B

SuggestedRemedy

Change c_A to c_C in Line 52;
Change c_B to c_D in Line 53.

Proposed Response *Response Status* **O**

Cl **175A** *SC* **175A** *P* **761** *L* **18** # 310

Mi, Guangcan Huawei Technologies Co., Ltd.

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

After my checking, I found that the hexadecimal representation of codeword A assumes that bit<9> is the first transmitted bit in each RS symbol. However, bit<0> should be the first transmitted bit per 175.2.4.7 (Line 17, Page 294). In Annex 175A, it is also mentioned that the most significant bit of each hex symbol is transmitted first (Line 16, Page 757). So, the codeword examples should be consistent with what is defined.

SuggestedRemedy

Revise the hexadecimal representation of all codeword examples in Table 175A-3, Table 175A-4, Table 175A-5, Table 175A-6 such that bit<0> is transmitted first.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **484** *L* **26** # 311

Mi, Guangcan Huawei Technologies Co., Ltd.

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

An FEC symbol consists of m PAM4 symbols. The probability of an FEC symbol error p should be 1-(1-SER_target)^m instead of SER^m_target.

SuggestedRemedy

Change SER^m_targe to 1-(1-SER_target)^m.

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.2** *P* **746** *L* **24** # 312

Mi, Guangcan Huawei Technologies Co., Ltd.

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

In a set of 4x544/p consecutive test symbols, the description of which 544/p test symbols form a test block could be clearer. For example, the test symbols of indices 0,4,…,4x544/p-4 belong to a test block. The test symbols of indices 1,5,…,4x544/p-3 belong to a test block. The test symbols of indices 2,6,…,4x544/p-2 belong to a test block. The test symbols of indices 3,7,…,4x544/p-1 belong to a test block. On the other hand, it is not clear whether all above mentioned test blocks or only one type of them shall be considered by the bin counters.

SuggestedRemedy

Add the suggested description of test blocks in the comment, or any equivalent but concise description. Besides, make it clear which test blocks shall be considered by bin counters.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **483** *L* **46** # 313

Mi, Guangcan Huawei Technologies Co., Ltd.

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

In Equation (180-18), for e = 0, P_{FEC,n}σ should be P_{FEC,n}(σ).

SuggestedRemedy

Change P_{FEC,n}σ to P_{FEC,n}(σ).

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.7.1** *P* **484** *L* **26** # 314

Mi, Guangcan Huawei Technologies Co., Ltd.

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

When assuming i FEC symbol errors in a codeword, the probability should be nchoosek(d,i)p^i(1-p)^{d-i}.

SuggestedRemedy

Change (1-p)^{k-i} to (1-p)^{d-i} in Equation (180-22).

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **45** # 315

Mi, Guangcan Huawei Technologies Co., Ltd.

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

When max_recovery_events is set to zero, unlimited number of recovery_event is allowed (Line 36 on Page 886). As a consequence, only recovery_timer is used to limit time cost for the lock recovery of training frames. Then, consider one interface and its peer interface in ISL_READY state, if the values of local_tf_lock of them always opposite, and the value of local_tf_lock of each interface keeps on switching between true and false without exceeding recovery_timer duration, a dead loop exists and the training control state diagram never has transition from ISL_READY to PATH_READY.

SuggestedRemedy

A presentation will be provided to discuss a solution to this issue.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.6.4** *P* **478** *L* **54** # 316

Mi, Guangcan — Huawei Technologies Co., Ltd.

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

The OMA in the subsection of TDECQ method is used to claculat the P_thi, I = 1,2,3 in Equation 180-1,-2,-3. P_thi is then used to calculated the propability of the histogram captured from the equalized eye diagram. Figure 180-11 showed the relation between P_thi and OMA. For the instances of OMA in 180.9.6.4, they should be consistent. P_thi is determined based on the equalized eye, therefore the associated OMA should be based on the equalized eye. To differentiate this OMA from the OMA_outer in the Tx spec, which is based on the non-equalized eye.

SuggestedRemedy

change instances of OMA_outer in Figure 180-11, Equation 180-1, 180-2, 180-12 to OMA_TDECQ, add a sentence that OMA_TDECQ is calculated based on the method described in 180.9.5 except the reference point is after the reference equalizer.

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.9.9.1** *P* **486** *L* **48** # 317

Mi, Guangcan — Huawei Technologies Co., Ltd.

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

TECQ = 0 dB and is given in Table 180–8(-4.3dBm). The " is given in Table 180-8" is misleading, and can be intepreted as RxS_OMA@TECQ=0 is given in 180-8.

SuggestedRemedy

is extrapolating the receiver sensitivity OMA for TECQ >= 0.9 dB, as given in Table 180-8, down to
TECQ = 0 dB.

Apply similar changes to CL 181~183.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **5** # 318

Slavick, Jeff — Broadcom

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

Is the word "both" necessary.

SuggestedRemedy

Delete the word "both" from the 2nd list item for Support for PSU.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.6** *P* **867** *L* **42** # 319

Slavick, Jeff — Broadcom

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

Not all retimers will swap clocks.

SuggestedRemedy

Add the following after "retimer"
"that uses the recovered clock in DATA mode"

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **15** # 320

Slavick, Jeff — Broadcom

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

local_rts is just status of the transmit path being in a state for sending data.

SuggestedRemedy

Change in the first bullet after PSU is the result...
"ready to send and receive normal data (it reached the ISL_READY state in Figure 178B–10) and propagates"

To: "ready to send data and propagates"

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.6** *P* **867** *L* **45** # 321

Slavick, Jeff — Broadcom

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

Needs to be "of local_status" or "of the local_status variable". Same with rts_status (which is already the rts_status variable).

SuggestedRemedy

Insert the word "variable" after local_rts.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.2** *P* **869** *L* **1** # 322

Slavick, Jeff Broadcom

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

Which format is used is specified by the user of the protocol.

SuggestedRemedy

Change:
The required format is defined by the clause or annex that defines the interface.

To:
The clause or annex that defines this interfaces specifies which format is used.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.3.2** *P* **870** *L* **20** # 323

Slavick, Jeff Broadcom

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

Which format is used is specified by the user of the protocol.

SuggestedRemedy

Change:
The training frame format is specified by the clause or annex that defines the interface.

To:
Which training frame format is used is specified by the clause or annex that defines the interface.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.3.2** *P* **870** *L* **40** # 324

Slavick, Jeff Broadcom

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

NOTEs are not normative, but being in PAM4 mode is required.

SuggestedRemedy

Remove the words "NOTE" and make the contents of the NOTE be the last paragraph of the subclause.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.1** *P* **882** *L* **52** # 325

Slavick, Jeff Broadcom

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

local_rts is just status of the transmit path being in a state for sending data.

SuggestedRemedy

Remove "and receive" from the local_rts definition.

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4** *P* **199** *L* **39** # 326

Slavick, Jeff Broadcom

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

We have both IS_SIGNAL.request and IS_SIGNAL.indication, both are not present in a 200/400GAUI-n

SuggestedRemedy

Change
"inst:IS_SIGNAL.indication which is carried outside"

To:
"inst:IS_SIGNAL.indication and inst.IS_SIGNAL.request which are carried outside"

In two places in item b)

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.1.4** *P* **200** *L* **13** # 327

Slavick, Jeff Broadcom

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

If there is a 200Gbps link then all links, regardless of their proximity to the PCS, need to be at 50ppm or hidden within an XS with rate compensation.

SuggestedRemedy

Remove "that is in the same package as the PCS" from item 7) and item 9)

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.4** *P* **383** *L* **37** # 328
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **179** *SC* **179.4** *P* **416** *L* **27** # 329
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **180** *SC* **180.3** *P* **460** *L* **6** # 330
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **181** *SC* **181.3** *P* **501** *L* **2** # 331
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **182** *SC* **182.3** *P* **531** *L* **14** # 332
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **183** *SC* **183.3** *P* **563** *L* **8** # 333
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.4** *P* **794** *L* **3** # 334
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.4** *P* **815** *L* **13** # 335
Slavick, Jeff Broadcom
Comment Type **TR** *Comment Status* **X**
RTS function status is now rts_status
SuggestedRemedy
Change training_status to rts_status
Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.1** *P* **883** *L* **29** # 336

Slavick, Jeff Broadcom

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

When remote_rts is false but training_tatus is READY what do we do?

SuggestedRemedy

Add " or remote_rts is false and training_status is READY" to the IN_PROGRESS indication for rts_status

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3** *P* **884** *L* **51** # 337

Slavick, Jeff Broadcom

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

What about the coeff update FSM it's not mentioned until the end of the section. Also the n physial lanes is a leftover from but we don't talk about physical lanes in 178B

SuggestedRemedy

Remove the last paragraph and change first paragraph from:
An interface implements one instance of each of the Training control and the Training frame lock state diagrams, and their associated variables, functions, counters and timers defined in this subclause, independently for each of the n physical lanes.

To:
An interface using E1 format implements one instance of each of the Training control, the Training frame lock and the Coefficient update state diagrams, and their associated variables, functions, counters and timers defined in this subclause, independently for each lane.

An interface using O1 format implements one instance of each of the Training control and the Training frame lock state diagrams, and their associated variables, functions, counters and timers defined in this subclause, independently for each lane.

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.3** *P* **611** *L* **47** # 338

Slavick, Jeff Broadcom

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

Part of the line below LOCK_DONE is missing

SuggestedRemedy

Make the line whole

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.9** *P* **881** *L* **25** # 339

Slavick, Jeff Broadcom

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

The local_mc_mode and local_tp_mode are the values sent in the status bits from the local interface in response to the received request bits. That is not clearly specified.

SuggestedRemedy

Change from:
When a change to the modulation and precoding request bits or the training pattern request bits is detected, the transmitted training pattern (see 178B.7.3.3) is chosen accordingly. To confirm that the change to the format of the training pattern was completed, the local_mc_mode variable is set to the value of the modulation and precoding request bits and the local_tp_mode variable to the value of the training pattern request bits. local_mc_mode and local_tp_mode are encoded in status fields (see 178B.7.5.2 and 178B.7.5.3).

To:
When a change to the received modulation and precoding request bits or the training pattern request bits is detected, the transmitted training pattern (see 178B.7.3.3) is set accordingly. To confirm that the change to the format of the training pattern was completed, the local_mc_mode variable is set to the value of the received modulation and precoding request bits and the local_tp_mode variable to the value of the received training pattern request bits. local_mc_mode and local_tp_mode are encoded in status fields (see 178B.7.5.2 and 178B.7.5.3).

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **26** # 340

Slavick, Jeff Broadcom

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

We have statements that you can't be in PAM2 when you finish up training. This should be part of the FSM as well.

SuggestedRemedy

In 178B.8.3.1 add this variable:
local_mc_request
Enumerated variable that holds the state of training pattern modulation and coding request sent in the control field (see 178B.7.4.3). It is assigned one of the following values: PAM2, PAM4 without precoding, PAM4 with precoding.

In Figure 178B-10 add the condition " * local_mc_request != PAM2" to the transition from TRAIN_LOCAL to TRAIN_REMOTE.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.1** *P* **886** *L* **22** # 341

Slavick, Jeff Broadcom

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

local_tf_lock is just one of the conditions for having the status field frame lock bit be set to a 1.

SuggestedRemedy

Remove the last sentence from the definition of local_tf_lock.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.1** *P* **887** *L* **17** # 342

Slavick, Jeff Broadcom

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

training is true when runing ILT with training frames, but if you run with local pattern it's false.

SuggestedRemedy

Change "is in progress"
To "is in progress using training frames (see 178B.7.3)."

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **888** *L* **38** # 343

Slavick, Jeff Broadcom

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

The training control function is for the ILT function not the RTS function.

SuggestedRemedy

change RTS to ILT.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.5** *P* **889** *L* **10** # 344

Slavick, Jeff Broadcom

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

D2.1 comment #463 brought up an issue with local pattern mode. Nothing was changed in the resolution to address that local pattern mode. A potential fix was supplied on slide 22 of https://ieee802.org/3/dj/public/25_09/slavick_3dj_02a_2509.pdf but this may be a larger change than are necessary.

SuggestedRemedy

In Figure 178B-10 make the following changes:
Remove local_rts as a condition to enter SEND_LOCAL from QUIET
Change the assignement of tx_disable to be ~local_rts in SEND_LOCAL
add a recirculation from SEND_LOCAL to SEND_LOCAL when local_rts * tx_disable
add a transition from SEND_LOCAL to QUIET when !local_rts * !tx_disable
Update the transition from SEND_LOCAL to PATH_READY to also require !tx_disable

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B** *P* **879** *L* **18** # 345

Slavick, Jeff Broadcom

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

In the initiali condition setting request response step b) specifies that coef_sts response will be not-updated. However the initial condition setting reponses process specified in 178B.7.8.2 states if ic_req is not supported (CHECK_REQ returns false) then the reponse will be coeff_not_supported. So the text in 178B.7.8.1 needs to be updated to align with that being a possible response. Follow up on unsatisifed comment #477 from D2.1.

SuggestedRemedy

add "or "coefficient not supported" " to the end of item b)

Proposed Response *Response Status* **O**

Cl **172** *SC* **172.2.5.9** *P* **261** *L* **52** # 346

Slavick, Jeff Broadcom

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

The new sentence states to use the stateless decoder from 119 over using the 172 version. But there is also the error marking that should be done too, but we only point them towards the decoder. Indicate to th reader that if they choose to use the 119 decoder to also do the error marking too! Follow up to unsatisifed comment #459 from D2.1.

SuggestedRemedy

Insert the following after 119.2.5.8 ", including the additional error marking specified in 119.2.5.3,"

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.2.2** *P* **169** *L* **24** # 347

Slavick, Jeff Broadcom

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

Add note to the description of the XS that is can be used for ppm domain adjustments.

SuggestedRemedy

NOTE — The Clause 176 PMA specifies 50ppm clock accuracy while Clause 120 PMA specifies 100ppm for some rates and situations. A 200/400GMII Extender with clock rate compensation may be used to adapt between the different ppm domains.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.3.3** *P* **882** *L* **25** # 348

Slavick, Jeff Broadcom

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

The description of how stop timer works should be up where we actually refer to 14.2.3.2.

SuggestedRemedy

Remove "All timers operate as described in 14.2.3.2 with one addition. A timer is reset and stops counting upon entering a state where “stop x_timer” is stated." from 178B.8.3.3 and add "A timer is reset and stops counting upon entering a state where “stop x_timer” is stated." to the end of the first paragraph of 178B.8.1

Proposed Response *Response Status* **O**

Cl **174A** *SC* **174A.9.5** *P* **747** *L* **32** # 349

Slavick, Jeff Broadcom

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

To be consistent with 178B use the order of AUI component or PMD instead of PMD or AUI component

SuggestedRemedy

Change "PMD or AUI component" to "AUI component or PMD" in the following places:
174A.9.5 first paragraph
174A.9.6 first paragraph
174A.9.7 first paragraph
Table 174A-1 footnote a
Table 174A-2 footnote a

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.3** *P* **864** *L* **5** # 350

Slavick, Jeff Broadcom

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

Isn't "Path" the same as "path" as definedin 1.4 now? I only see "Path" used once in the title of the Figure 178B-1.

SuggestedRemedy

Remove the definition of "Path", change Path to path in Figure 176B-1 and make the title of Figure 178B-1 be ISL and path

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.8.2.4** *P* **884** *L* **13** # 351

Slavick, Jeff Broadcom

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

The exit condition from WAIT_ADJ is the same as the exit from the TX_CLOCK_READY. So we can clarify this diagram by removing the WAIT_ADJ state

SuggestedRemedy

See presentation.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.3** *P* **863** *L* **53** # 352

Slavick, Jeff Broadcom

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

Interface is pointing to Figure 178B-2 which is providing the adjacent interface and peer interfaces. Should this be pointing to Figure 178B-3.

SuggestedRemedy

Change Figure 178B-2 to Figure 178B-3.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B** *P* **893** *L* **54** # 353

Slavick, Jeff Broadcom

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

MDIO table says the offset is 2800 in the footnote but 45.2.1.272 uses an offset of 4000.

SuggestedRemedy

Change 2800 to 4000 in the footnote a of Table 178B-6

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.2.2** *P* **608** *L* **48** # 354

Slavick, Jeff Broadcom

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

restart_lock uses the phrase "M PS" which looks a bit odd. Make it more generic and less defining how the decision to restart the lock occurs, that's what the FSM does.

SuggestedRemedy

Change "M" to "too many"

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.9.3.4.3** *P* **395** *L* **24** # 355

Sakai, Toshiaki Socionext

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

The phrase “the transmitters in the device under test” is ambiguous. It is unclear whether it refers only to the transmitter lane(s) associated with the receiver lane(s) under test, or to all transmitters in a multi-lane device (e.g., 512 lanes). Requiring all lanes to transmit simultaneously would be impractical and may alter thermal and supply conditions.
In addition, the behavior of non-tested receiver lanes is not defined; inactive or asynchronous lanes could create supply or PLL coupling that affects the measured receiver performance. Clarification is needed.

Clarifies the intended scope of “device under test” to avoid the unintended requirement of activating all transmitter lanes during a single-lane receiver test, and provides guidance for the state of non-tested receivers to mitigate supply or clock-coupled interference. Ensures test reproducibility and practicality for high-lane-count implementations (e.g., CPO or multi-die packages).

SuggestedRemedy

Change from:

c) Configure the test transmitter to transmit either scrambled idle or PRBS31Q. During the test, the transmitters in the device under test transmit the same pattern type specified for the test, with equalization turned off (preset 1 condition).

Change to:

c) Configure the test transmitter to transmit either scrambled idle or PRBS31Q. During the test, only the transmitter lane(s) associated with the receiver lane(s) under test within the device under test (DUT) shall transmit the same pattern type specified for the test, with equalization turned off (preset 1 condition). Activation of all transmitter lanes is not required unless explicitly specified by the test plan.

NOTE 1 — For devices implementing a large number of lanes (e.g., 512 lanes), restricting operation to the lane(s) under test avoids unnecessary power and thermal loading.

NOTE 2 — If the DUT architecture includes shared PLLs or supply rails such that inter-lane coupling could influence receiver performance, non-tested receiver lanes should be operated in a nominal receive state with valid input signals (e.g., scrambled idle or PRBS31Q) to preserve representative coupling conditions.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.4.2** *P* **906** *L* **33** # 356

Sakai, Toshiaki Socionext

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

Equation (179B-5) produces negative insertion-loss values for frequencies below approximately 0.2 GHz. Also, Equation (179B-4) produces negative insertion-loss values for frequencies below approximately 0.7 GHz. Since insertion loss physically cannot be < 0 dB for a passive mated test fixture, the requirement “for 0.01 ≤ f ≤ 67 GHz” cannot be satisfied in the sub-GHz range. Moreover, other clauses defining fixture IL (e.g., 178.9.2.1.1) specify 0.05 GHz ≤ f ≤ 67 GHz, suggesting that the intent was to restrict applicability to that range. As written, the text could mislead implementers into interpreting the equation as a hard compliance mask down to 10 MHz, which is non-physical.

This correction eliminates the non-physical negative insertion-loss region below ≈0.2 GHz (179B-5) and ≈0.7 GHz (179B-4) aligns the frequency range with 178.9.2.1.1 (0.05–67 GHz), and clarifies that sub-GHz values from the polynomial fit are extrapolation artifacts, not measurement requirements. It ensures consistency across test-fixture clauses and prevents.

SuggestedRemedy

Option A (preferred): Replace “for 0.01 ≤ f ≤ 67 GHz” with “for 0.05 ≤ f ≤ 67 GHz.” Add a Note: Values of ILddMTFmax(f), ILddMTFmin(f) and ILddMTFref(f) below 0 dB are not physically meaningful and shall be treated as 0 dB; such frequencies are not enforced for compliance.

Option B: Keep the existing range but modify the equations by applying a 0 dB floor:
ILddMTFmax'(f) = max(0 dB, ILddMTFmax(f)),
ILddMTFmin'(f) = max(0 dB, ILddMTFmin(f)),
ILddMTFref'(f) = max(0 dB, ILddMTFref(f)).
Add a Note indicating that values below 0 dB are ignored for compliance evaluation.

Proposed Response *Response Status* **O**

Cl **178** *SC* **178.14.4.5** *P* **409** *L* **29** # 357

Li, Tobey MediaTek

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

In item CC3, reference to AC coupling, 93.9.4, is outdated. Maximum AC coupling frequency does not match the value in referenced subclause, which was changed to 250 kHz.

SuggestedRemedy

Update referenced subclause to 178.10.5. Change maximum cutoff frequency to 250 kHz.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.6.4** *P* **818** *L* **39** # 358

Rysin, Alexander NVIDIA

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

J4u measurements at TP1a are highly affected by the effects of slew rate and noise and do not reflect actual uncorrelated jitter. These effects are exacerbated by the characteristics of practical channels between TP0d and TP1a - loss and reflections, and are highly dependent on the transmitted signal amplitude. Accounting only for the faster edges does not work for practical channels at 106.25 Gbd rate and the currently proposed numbers cannot be met even with commercial test equipment PPG. The issue was demonstrated in rysin_3dj_01a_2407. A new method for JRMS, that largely resolves the demonstrated issue was adopted, yet J4u was not resolved. A different methodology that will better quantify phase-only uncorrelated jitter has to be explored. See also unsatisfied comment 739 against D2.0.

SuggestedRemedy

Other method of uncorrelated total jitter measurement, that provides a better estimation of the horizontal only jitter, while eliminating the effects of vertical noise, including test equipment noise, should be considered.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **423** *L* **18** # 359

Rysin, Alexander NVIDIA

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

J4u measurements at TP2 are highly affected by the effects of slew rate and noise and do not reflect actual uncorrelated jitter. These effects are exacerbated by the characteristics of practical channels between TP0d and TP2 - loss and reflections, and are highly dependent on the transmitted signal amplitude. Accounting only for the faster edges does not work for practical channels at 106.25 Gbd rate and the currently proposed numbers cannot be met even with commercial test equipment PPG. The issue was demonstrated in rysin_3dj_01a_2407. A new method for JRMS, that largely resolves the demonstrated issue was adopted, yet J4u was not resolved. A different methodology that will better quantify phase-only uncorrelated jitter has to be explored. See also unsatisfied comment 739 against D2.0.

SuggestedRemedy

Other method of uncorrelated total jitter measurement, that provides a better estimation of the horizontal only jitter, while eliminating the effects of vertical noise, including test equipment noise, should be considered.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **422** *L* **44** # 360

Rysin, Alexander NVIDIA

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

The current limits for Rpeak seem to be placeholders and in some cases (specifically for HN) are not practical. Data, obtained with an instrument-grade pattern generator and practical channels representing the different host classes was presented in rysin_3dj_01a_2509. The limits are to be revised based on the presented data.

SuggestedRemedy

Change the Rpeak limit for HH from 0.456 to 0.425. Change the Rpeak limit for HN from 0.345 to 0.3.

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.9.4** *P* **426** *L* **9** # 361

Rysin, Alexander NVIDIA

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

SNDR limits for most of the presets cannot be met even with a test equipment PPG with practical host channels. Data, obtained with an instrument-grade pattern generator and practical channels representing the different host classes was presented in rysin_3dj_01a_2509.

SuggestedRemedy

Revise the SNDR limits based on data collected with practical channels.

Proposed Response *Response Status* **O**

Cl **175** *SC* **175.2.6.2.2** *P* **299** *L* **47** # 362

Opsasnick, Eugene Broadcom

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

The variable restart_lock is set by a state diagram but can also be set if any the restart_lock<z> is set. This is hard to follow because it is set by both the state diagram and by its own defintion based on another variable that is set by a different state diagram. Also, the naming of the restart_lock and restart_lock<z> should be changed since they are different variables with names that are too similar.

SuggestedRemedy

Add a new variable in 175.2.6.2.2, deskew_failed, with the following definition:
"Boolean variable that indicates the deskew process failed to identify 16 unique PCS lanes and is used to set the restart_lock variable. The value of deskew_failed is set by the PCS synchronization state diagram (see Figure 175–8)."

In Figure 175-8, replace the restart_lock variable with the new deskew_failed variable in the LOSS_OF_ALIGNMENT and DESKEW_FAIL states.

Change the name of the "restart_lock<z>" variable to "three_bad_cw<z>" in 175.6.2.2 and in Figure 175-9.

Change the definition of the restart_lock variable from:
"Boolean variable that is set by the PCS synchronization state diagram (see Figure 175–8) to restart the alignment marker lock process on all PCS lanes. It is set to true in the DESKEW_FAIL state or if restart_lock<z> is true for any z. It is set to false upon entry into the LOSS_OF_ALIGNMENT state."
To:
"Boolean variable that is used to restart the alignment marker lock process on all PCS lanes in Figure 119-12. Its value is set to true if deskew_failed is true or if three_bad_cw<z> is true for any z. Otherwise, this variable is set to false."

Proposed Response *Response Status* **O**

Cl **176** *SC* **176.4.4.2.1** *P* **331** *L* **13** # 363

Opsasnick, Eugene Broadcom

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

Update the definition of deskew_enable_mux to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Change the definition of variable deskew_enable_mux
From:
"Boolean variable that is set to true in the DESKEW state (see Figure 176–10) to start the deskew process. Otherwise it is set to false."
To:
"Boolean variable that is used to start the deskew process. Its value is set by the PMA multiplex synchronization state diagram (see Figure 176–10)."

Proposed Response *Response Status* **O**

Cl **176** *SC* **176.4.4.2.1** *P* **331** *L* **24** # 364

Opsasnick, Eugene Broadcom

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

Update the definition of restart_lock_mux to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Change the definition of variable restart_lock_mux
From:
"Boolean variable that is set in the state diagram shown in Figure 176–10. The variable is set to true when the lane synchronization process fails to lock, and is set to false upon entering the
LOSS_OF_ALIGNMENT state, causing the alignment marker lock process to restart on all input lanes."
To:
"Boolean variable that indicates the lane synchronization process has failed and is used to restart the alignment marker lock process on all input PCS lanes (see 176.4.2.2). Its value is set by the PMA multiplex synchronization state diagram (see Figure 176–10)."

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.2.2** *P* **608** *L* **7** # 365

Opsasnick, Eugene Broadcom

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

Update the definition of alignment_status to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Another comment suggests removing this variable and the deskew state diagram. If it is not removed, then change the definition of variable alignment_status
From:
"A Boolean variable set by the deskew process to reflect the status of the X polarization symbol stream to Y polarization symbol stream alignment. Set to true when the polarization symbol streams are synchronized and aligned and set to false otherwise."
To:
"A Boolean variable that indicates when the X polarization symbol stream and Y polarization symbol stream are synchronized and aligned. The value of alignment_status is set by the Deskew state diagram (see Figure 184-10)."

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.3** *P* **612** *L* **6** # 366

Opsasnick, Eugene Broadcom

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

The value of the variable alignment_status follows the value of the alignement_valid as defined in Figure 184-10. Therefore alignment_status can be removed, and alignment_valid used in its place everywhere in clause 184.

Likewise, the variable enable_deskew always has the opposite value of alignment_valid and can also be removed. Especially since enable_deskew is not used anywhere in Clause 184, it should be remove.

This means the deskew state diagram figure 184-10 is not needed. And the variable all_locked is also not needed.

SuggestedRemedy

Delete state diagram figure 184-10. Delete line 8 on page 610 which refers to Figure 184-10. Remove SM2 from 184.11.4.4.

Delete variables alignment_status, enable_deskew, and all_locked from the variables definition list in 184.7.2.2.

Whereever "alignment_status" appears in the text of Clause 184, replace it with alignment_valid. It appears twice in 184.3 and in the definitions of the counters in 184.5.7.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.5.5** *P* **364** *L* **26** # 367

Opsasnick, Eugene Broadcom

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

The defintion of Inner_FEC_cw_counter states:
"A 48-bit counter that counts once for each FEC codeword received when alignment_status is true."

However, there is no definition of a variable called "alignment_status" in Clause 177. It looks like it should actually be referencing the variable Inner_FEC_sync_status.

SuggestedRemedy

Change the the definition of Inner_FEC_cw_counter
From:
"A 48-bit counter that counts once for each FEC codeword received when alignment_status is true."
To:
"A 48-bit counter that counts once for each FEC codeword received when Inner_FEC_sync_status is true."

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.2.2** *P* **608** *L* **28** # 368

Opsasnick, Eugene Broadcom

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

Update the definition of dsp_ps_id<x> to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Add a second sentence to the definition of dsp_ps_id<x> that states:
"The value of dsp_ps_id<x> is set by the DSP lock state diagram (see Figure 184-9)."

Proposed Response *Response Status* **O**

Cl **184** *SC* **184.7.2.2** *P* **609** *L* **15** # 369

Opsasnick, Eugene Broadcom

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

The definition of test_ps refers to the FIND_1ST state but it should also point to the state diagram with that state.

SuggestedRemedy

Change the defintion of the test_ps variable
From:
"A Boolean variable that is set to true when a candidate PS symbol position is available for testing and false when the FIND_1ST state is entered."
To:
"A Boolean variable that is set to true when a candidate PS symbol position is available for testing and false upon entering the FIND_1ST state of the DSP lock state diagram (See Figure 184-9)."

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **675** *L* **39** # 370

Opsasnick, Eugene Broadcom

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

Update the definition of faw_slip_done to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Change the definition of the variable faw_slip_done
From:
"A Boolean variable that is set to true when the FAW_SLIP requested by the FAW field lock state diagram has been completed and the next candidate 22-symbol block position is available for testing."
To:
"A Boolean variable that indicates the next candidate 22-symbol block position is available for testing. It is set to true when the FAW_SLIP function completes and is set to false upon entering the GET_BLOCK state of the 800GBASE-ER1 PMA FAW field lock state diagram (see Figure 186-17).""

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **683** *L* **27** # 371

Opsasnick, Eugene Broadcom

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

In Figure 186-19, in state COUNT_NEXT, there seems to be a missing assignment to the first_fam variable. Note that a similar assignment for first_pma_pss is done in the COUNT_NEXT state of Fig. 186-17.

SuggestedRemedy

Add the following statement to the COUNT_NEXT state in Fig. 186-19:
"first_fam <= current_fam"

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **677** *L* **6** # 372

Opsasnick, Eugene Broadcom

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

There should be a reference to the state machine which sets first_fam.

SuggestedRemedy

At the end of the first sentence of the definition of first_fam add "(see Figure 186-19)."

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **677** *L* **13** # 373

Opsasnick, Eugene Broadcom

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

There should be a reference to the state machine which sets first_pma_pss.

SuggestedRemedy

At the end of the first sentence of the definition of first_pma_pss add "(see Figure 186-17)."

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **682** *L* **1** # 374

Opsasnick, Eugene Broadcom

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

The value of the variable pma_align_status follows the value of the pma_alignement_valid as defined in Figure 186-18. Therefore, pma_align_status can be removed, and pma_alignment_valid used in its place everywhere in clause 186.

Likewise, the variable pma_enable_deskew always has the opposite value of pma_alignment_valid and can also be removed. Especially since pma_enable_deskew is not used anywhere in Clause 186, it should be remove.

This means the deskew state diagram figure 186-18 is not needed. And the variable pma_all_locked is also not needed.

SuggestedRemedy

Delete state diagram figure 186-18. Delete line 50 on page 679 which refers to Figure 186-18.

Delete variables pma_alignment_status, pma_enable_deskew, and pma_all_locked from the variable definition list in 186.4.2.1.

Whereever "pma_align_status" appears in the text of Clause 186, it can be replaced with pma_alignment_valid; however, it does not seem to appear anywhere else in the clause.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.2.4.1** *P* **658** *L* **31** # 375

Opsasnick, Eugene Broadcom

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

FEC_total_bits_counter and FEC_corrected_bits_counter are not qualified by pma_alignment_valid, but should be. The counters FEC_corrected_cw_count and FEC_uncoirrected_cw_counter are correctly qualified. This is very similar to the counters in 184.5.7.

SuggestedRemedy

Change the first sentence in the definition of FEC_total_bits_counter
From:
"The FEC_total_bits_counter is a 64-bit counter that counts once for each bit processed by the FEC decoder."
To:
"The FEC_total_bits_counter is a 64-bit counter that counts once for each bit processed by the FEC decoder when pma_alignment_valid is true."

Change the first sentence in the definition of FEC_corrected_bits_counter
From:
"The FEC_corrected_bits_counter is a 64-bit counter that counts once for each bit corrected by the FEC decoder."
To:
"The FEC_corrected_bits_counter is a 64-bit counter that counts once for each bit corrected by the FEC decoder when pma_alignment_valid is true."

Proposed Response *Response Status* **O**

Cl **187** *SC* **187.3** *P* **697** *L* **18** # 376

Opsasnick, Eugene Broadcom

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

In Figure 187-2, the ER1 FEC, ER1 PMA, and ER1 PMS service interfaces are using underscore where a colon ":" should be.

SuggestedRemedy

Change FEC_IS_UNITDATA.request to FEC:IS_UNITDATA.request
Change FEC_IS_SIGNAL.indication to FEC:IS_SIGNAL.indication
Change FEC_IS_UNITDATA.indication to FEC:IS_UNITDATA.indication

Make similar changes to the PMA and PMD service interface signals in the same figure.

Make similiar fixes throughout Clause 187 as needed.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **677** *L* **12** # 377

Opsasnick, Eugene Broadcom

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

PMA_IS_UNITDATA PMA_IS_SIGNAL are using incorrect punctuation.

SuggestedRemedy

Change PMA_IS_UNITDATA to PMA:IS_UNITDATA on line 12 of page 677.

Change PMA_IS_SIGNAL to PMA:IS_SIGNAL on line 8 of page 677.

Change PMD_IS_SIGNAL to PMD:IS_SIGNAL on line 39 of page 677.

Make similar fixes to the service interface signal names as necessary in the rest of Clause 186.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **677** *L* **42** # 378

Opsasnick, Eugene Broadcom

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

Update the definition of pma_pss_mapping<x> to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Add a second sentence to the definition of pma_pss_mapping<x> that states:
"The value pma_pss_mapping<x> is set by the 800GBASE-ER1 PMA FAW field lock state diagram (see Figure 186-17)."
And make the cross-reference a live link.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **677** *L* **51** # 379

Opsasnick, Eugene Broadcom

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

The definition of raml_max_count says it indicates a number of 257-bit blocks between alignment markers. This variable is used in state diagram figure 186-21 in comparisons to raml_counter, but it is never set to any value in any of the state diagrams or in text. How is its value actually set?

SuggestedRemedy

If the value of this variable is suppoed to be the number 257-bits between alignment markers as they are inserted by the 800GBASE-R PCS, then add to the definition that the value equals the 800G AM interval of 16k cw * 20 block/cw = 327,680. This number includes the AMs, but if raml_max_count is supposed to be only the number blocks "between" the AMs, not including the AMs, then subtract 16 from this number.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **685** *L* **12** # 380

Opsasnick, Eugene Broadcom

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

In Figure 186-21, the condition to leave the RAML_CNT_INC and re-enter the same state says:
"!raml_align *
block_tx *
raml_counter = raml_max_count"

The last condition of "raml_counter = raml_max_count" looks incorrect. It should either be "raml_counter < raml_max_count" or maybe "raml_counter != raml_max_count"

SuggestedRemedy

Change the condition to leave the RAML_CNT_IN state and go back to itself
From:
"!raml_align *
block_tx *
raml_counter = raml_max_count"
To:
"!raml_align *
block_tx *
raml_counter < raml_max_count"

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **685** *L* **36** # 381

Opsasnick, Eugene Broadcom

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

In the RAML_INVALID state of the state diagram in Figure 186-21, there is a conditional statement with "if (AML = 0) …". However "AML" is not a defined state diagram variable in 186.2.4.1. It appears to be referring to the value of the 24-bit AML field of the OH data. Suggest changing "AML" to "aml_value" and defining this new variable.

SuggestedRemedy

Change "if (AML = 0) …" to "if (aml_value) = 0) …".

Add new valiable aml_value to list of variable definitions in 186.2.4.1 with definition:

aml_value
Set to the 24-bit value received in the AML fields of the multi-frame overhead (see 186.2.3.5.10).

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **678** *L* **14** # 382

Opsasnick, Eugene Broadcom

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

Update the definition of sof_raml to follow the guidelines adopted during D2.1 comment resolution.

SuggestedRemedy

Add a second sentence to the definition of sof_raml that states:
"The value sof_raml is set by the 800GBASE-ER1 FEC sublayer alignment marker location state diagram (see Figure 186-21)."
And make the cross-reference a live link.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **685** *L* **19** # 383

Opsasnick, Eugene Broadcom

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

The global transition entry to the state WAIT_FOR_FRAME in state diagram Figure 186-21 says "!mfas_lock". However, mfas_lock is an indexed variable with 8 different values - it is defined as mfas_lock<x>, for x=0 to 7. This condition should probable be taken if any of the 8 mfas_lock<x> variables is false, but it is not possible to tell if it currently means any of the 8 values is false or if all 8 are false or maybe just testing mfas_lock<0>. There is already a variable defined for when any of the values is false.

SuggestedRemedy

Change the condition for the global transition into the WAiT_FOR_FRAME state from "!mfas_lock" to "!fec_all_mfas_locked".

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **685** *L* **23** # 384

Opsasnick, Eugene Broadcom

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

sof_raml is set to the value contained in raml_counter upon entering the WAIT_FOR_FRAME state; however, it should probably only be set after the frame_counter_done is true which indicates a start of frame has been received.

SuggestedRemedy

Move the assignment of "sof_raml <= raml_counter" from the WAIT_FOR_FRAME state to be the first statement in the RAML_CHK state.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **684** *L* **16** # 385

Opsasnick, Eugene Broadcom

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

The introduction to the state diagram figures on page 680 states that there are to be 8 instances of the multi-frame alignment process shown in Figure 186-20. The purpose of this state diagram is to set mfas_lock<x> to true when alignment lock is achieved and to set it to false when lock is lost. The state diagram should be using separate variables/counters in each instance (like it does for mfas_lock<x>), but it is not doing so for some.

SuggestedRemedy

In state diagram 186-20, change frame_counter and frame_counter_done to frame_counter<x> and frame_counter_done<x>. Change mfas_valid to mfas_valid<x>. Change mfas_bad_count to mfas_bad_count<x>. Update the variable defintions as appropriate.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **683** *L* **25** # 386

Opsasnick, Eugene Broadcom

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

In 5_BAD state of state diagram 186-19, the assignment "fam_lock<x> <= false" is redundant with the same assignment in state LOCK_INIT, and should be removed. Setting fec_restart_lock to true will restart all 8 instances of the 186-19 state diagram (x=0 to 7), and they will all go to LOCK_INIT state and each one will set it's fam_lock<x> to false. Having the redundant adsigment in 5_BAD seems to imply that just the single instance is being reset, but if that were the case then fec_restart_lcok should also be indexed with <x> for each instance of the state diagram.

SuggestedRemedy

In 5_BAD state of state diagram Fig. 186-19, remove the assignment of fam_lock<x> to false, and leave only the assignment of fec_restart_lock to true.

Similarly, in the state diagram in Figure 186-17, the assignment of faws_lock<x> to false in state 15_BAD should be removed.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **676** *L* **1** # 387

Opsasnick, Eugene Broadcom

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

The variable faws_lock<x> is defined for x = 0:1. However, fam_lock<x> and mfas_lock<x> are defined for x = 0 to 7. It is hard for the reader to follow the state diagrams when different variables use different ranges for the same index variable.

SuggestedRemedy

Change faws_lock<x> to be faws_lock<y> for y = 0 to 1, so it's indexing does not get confused with the version of x that has a range of 0 to 7. Make associated changes to the state diagrams and any usage of the faws_lock<> variables.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **684** *L* **16** # 388

Opsasnick, Eugene Broadcom

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

The introduction to the state diagram figures on page 680 states that there are to be 8 instances of the fam lock process process shown in Figure 186-19. The purpose of this state diagram is to set fam_lock<x> to true when lock is achieved and to set it to false when lock is lost. The state diagram should be using separate variables/counters in each instance (like it does for fam_lock<x>), but it is not doing so for some.

SuggestedRemedy

In state diagram 186-19, change fam_counter and fam_counter_done to fam_counter<x> and fam_counter_done<x>. Change fam_valid to fam_valid<x>. Change fam_match to fam_match<x>. Change test_fam to test_fam<x>. Change fam_slip_done to fam_slip_done<x>.Change fam_bad_count to fam_bad_count<x>. Update the variable defintions as appropriate.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **681** *L* **2** # 389

Opsasnick, Eugene Broadcom

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

There are two required instances of the PMA FAW field lock process state diagram 186-17 - it sets faws_lock<x> for x = 0:1. Many variables used in the state diagram should be indexed, but are not.

SuggestedRemedy

Update these variables in Figure 186-17 to be be indexed (from non-indexed):
test_faw<>
faw_slip_done<>
faw_valid<>
first_pma_pss<>
current_pma_pss<>
faw_match<>
faw_counter<>
faws_bad_count<>

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.3** *P* **685** *L* **26** # 390

Opsasnick, Eugene Broadcom

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

In the state diagram in Figure 186-21, the transition from state WAIT_FOR_FRAME to RAML_CHK is made when frame_counter_done is true. However, this counter is started in a different state diagram and it is very hard to tell how this is working since there are 8 instances of that other state diagram. It would be easier to follow if there were a separate counter for this state diagram that is started locally, and then wait for done and then resetthe done variable in the next state.

SuggestedRemedy

Add a new frame_counter with a unique name for use in the FEC sublayer alignment marker location state diagram.

Proposed Response *Response Status* **O**

Cl **186** *SC* **186.4.2.1** *P* **676** *L* **29** # 391

Opsasnick, Eugene Broadcom

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

Variable definitions should be in alphbetical order.

SuggestedRemedy

Fix the order of the variable definitions in 186.4.2.1. This seem to be limited to moving mfas_lock and mfas_valid. Move any other variables as necessary so all variables are in alphabetical order.

Proposed Response *Response Status* **O**

Cl **119** *SC* **119.2.5.3** *P* **191** *L* **53** # 392

Opsasnick, Eugene Broadcom

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

There are newly added instructions to set the first 4 66-bits blocks following an uncorrectable codeword to an error block due to scrambler error extension. However, if the next 4 blocks are part of an Alignment Marker, the affected 4 blocks from the scrambler error extension are the 4 blocks after the AMs since the AMs are removed before descrambling.

SuggestedRemedy

Update the wording either in 119.2.5.3 or in the descrambler subclause 119.2.5.6 to explain the need to mark the 4 blocks after an AM as an error block.

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.5.5** *P* **364** *L* **18** # 393

Opsasnick, Eugene Broadcom

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

The Inner FEC total_bits counter, correct_bits counter, and bin counters should be qualified by the Inner_FEC_sync_status variable being true. The Inner_FEC_corrected_cw_counter and INNER_FEC_uncorrected_cw_counter are already qualified by this variable being true.

SuggestedRemedy

Change the first sentence in the definition of Inner_FEC_total_bits_counter
From:
"A 64-bit counter that counts once for each bit processed by the Inner FEC decoder."
To:
"A 64-bit counter that counts once for each bit processed by the Inner FEC decoder when Inner_FEC_sync_status is true."

Change the first sentence in the definition of Inner_FEC_corrected_bits_counter
From:
"A 64-bit counter that counts once for each bit modified by the Inner FEC decoder."
To:
"A 64-bit counter that counts once for each bit modified by the Inner FEC decoder when Inner_FEC_sync_status is true."

Change the first sentence in the definition of Inner_FEC_codeword_error_bin_k
From:
"A set of four 32-bit counters where counter k counts once for each codeword received with exactly k bits corrected (flipped) when fas_lock is true (k = 0 to 3)."
To:
"A set of four 32-bit counters where k = 0 to 3. While Inner_FEC_sync_status is true, Inner_FEC_codeword_error_bin_k counts once for each codeword received with exactly k bits corrected (flipped)."

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.2.1** *P* **904** *L* **45** # 394

Swenson, Norman Nokia, Point2

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

The subscript on Ildd is inconsistent with that used on line 49.

SuggestedRemedy

Change the subscript "tref" to "tfref".

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.3.1** *P* **905** *L* **26** # 395

Swenson, Norman Nokia, Point2

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

The subscript on Ildd is inconsistent with that used on line 29.

SuggestedRemedy

Change the subscript "catref" to "catfref".

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.1** *P* **418** *L* **13** # 396

Swenson, Norman Nokia, Point2

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

As described in Table 179-6, TP1, TP2, TP3, and TP4 are not at the locations shown in Figure 179-2. They are at the input or output of test fixtures that are not shown in the figure. However, the figure does show the corresponding locations in the link, though these locations are not accessible in a real system.

SuggestedRemedy

Change
"The test points are illustrated in Figure 179–2, which shows ..."
to
"The test points are illustrated at their corresponding link locations in Figure 179–2, which shows ..."

Proposed Response *Response Status* **O**

Cl **179** *SC* **179.8.1** *P* **418** *L* **13** # 397

Swenson, Norman Nokia, Point2

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

Note 3 would be clearer if reference were made to Figure 179A-1, as in Note 2.

SuggestedRemedy

Change Note 3 from
"A mated connector pair is included in transmitter specifications at TP2 and in receiver specifications at TP3."
to
"A mated connector pair is included in transmitter specifications at TP2 and in receiver specifications at TP3, as illustrated in Figure 179A-1."

Proposed Response *Response Status* **O**

Cl **179A** *SC* **179A.2** *P* **898** *L* **23** # 398

Swenson, Norman Nokia, Point2

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

It is a little confusing that the transmitter for Clause 179 PMDs points to characterisitcs for Clause 178 PMDs, unless the point is that the same transmitter characteristics are intended for both PMDs.

SuggestedRemedy

Add a sentence to the beginning of Clause 179A.2:
"The transmitter characteristics for Clause 179 PMDs are intended to match those for Clause 178 PMDs."

Proposed Response *Response Status* **O**

Cl **179A** *SC* **179A.3** *P* **898** *L* **29** # 399

Swenson, Norman Nokia, Point2

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

It is a little confusing that the receiver for Clause 179 PMDs points to characterisitcs for Clause 178 PMDs, unless the point is that the same receiver characteristics are intended for both PMDs.

SuggestedRemedy

Add a sentence to the beginning of Clause 179A.3:
"The receiver characteristics for Clause 179 PMDs are intended to match those for Clause 178 PMDs."

Proposed Response *Response Status* **O**

Cl **179A** *SC* **179A.4** *P* **898** *L* **42** # 400

Swenson, Norman Nokia, Point2

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

The singular "loss" does not gramatically agree with the verb "are" in the sentence.

SuggestedRemedy

Change
"The recommended maximum differential insertion loss (TP0d-to-TP2) or (TP3-to-TP5d) are consistent with the host channels and the reference TP2 or TP3 test fixture specified in 179B.2.1."
to
The recommended maximum differential insertion loss (TP0d-to-TP2) or (TP3-to-TP5d) is consistent with the host channels and the reference TP2 or TP3 test fixture specified in 179B.2.1.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.2** *P* **160** *L* **6** # 401

Swenson, Norman Nokia, Point2

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

Figure 116-1 shows only a single PMA sublayer in the architectural diagram with the PCS above and the PMD below. There is no indication that multiple PMA sublayers (interconnected by AUI-n channels) can exist between the PCS and the PMD.

SuggestedRemedy

Add a note to Figure 116-1 as follows: "Note: The single PMA sublayer shown can optionally be realized as several layered PMA sublayers, as illustrated in Annex 120A or Annex 176B.

Proposed Response *Response Status* **O**

Cl **169** *SC* **169.1.2** *P* **201** *L* **6** # 402

Swenson, Norman Nokia, Point2

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

Figure 169-1 shows only a single PMA sublayer in the architectural diagram with the PCS above and the PMD below. There is no indication that multiple PMA sublayers (interconnected by AUI-n channels) can exist between the PCS and the PMD.

SuggestedRemedy

Add a note to Figure 169-1 as follows: "Note: The single PMA sublayer shown can optionally be realized as several layered PMA sublayers, as illustrated in Annex 120F, Annex120G, or Annex 176B.

Proposed Response *Response Status* **O**

Cl **169** *SC* **169.3.2** *P* **207** *L* **24** # 403

Swenson, Norman Nokia, Point2

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

The PMA service interface can service a PMA sublayer above, but that is not indicated in the definition of PMA service interface. This is inconsistent with the wording in 116.3.2 for 200Gbps and 400Gbps networks.

SuggestedRemedy

Change
"PMA: for primitives issued on the interface between the PMA and the PCS or DTE 800GXS above called the PMA service interface"
to
"PMA: for primitives issued on the interface between the PMA and the PCS, DTE 800GXS, or PMA above called the PMA service interface"

Proposed Response *Response Status* **O**

Cl **174** *SC* **174.1.2** *P* **268** *L* **34** # 404

Swenson, Norman Nokia, Point2

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

Figure 174-1 shows only a single PMA sublayer in the architectural diagram with the PCS above and the PMD below. There is no indication that multiple PMA sublayers (interconnected by AUI-n channels) can exist between the PCS and the PMD.

SuggestedRemedy

Add a note to Figure 174-1 as follows: "Note: The single PMA sublayer shown can optionally be realized as several layered PMA sublayers, as illustrated in Annex 120F, Annex120G, or Annex 176B.

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.8.3** *P* **826** *L* **24** # 405

Swenson, Norman Nokia, Point2

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

The text refers to the MDI connector of the test fixture, but for this annex, the test fixture does not have an MDI connector. The MDI is below the PMD as shown in Figure 176D-1.

SuggestedRemedy

Change
"the discontinuity of the MDI connector"
to
"the discontinuity of the AUI-C2M connector"

Proposed Response *Response Status* **O**

Cl **176D** *SC* **176D.7.1** *P* **821** *L* **27** # 406

Swenson, Norman Nokia, Point2

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

The depiction of the connector in Figure 176D-6 is inconsistent with the connector shown in other figures in the document (e.g., Figures 120C-2, 135E-2,135G-2, . The end point of the Host channel loss is ambiguous.

SuggestedRemedy

Change Figure 176D-6 to that shown to the right. Change the note under the figure to read: "NOTE—For loss budgeting purposes, the Host channel loss is from TP0d to the center of the edge connector of the module.

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.1** *P* **904** *L* **13** # 407

Swenson, Norman Nokia, Point2

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

This is the normative clause that defines the TP2 or TP3 test fixtures. The test fixtures assume an MDI connector, a PCB board, and a coaxial connector enabling connection to test equipment, but that is not stated anywhere.

SuggestedRemedy

Replace the first paragraph of 179B.1 with the following:
"Transmitter and receiver measurements at TP2 or TP3 for the 200GBASE-CR1, 400GBASE-CR2, 800GBASE-CR4, and 1.6TBASE-CR8 hosts (see Annex 179D) and at TP1a or TP4a (see Figure 176D–4) for the 200GAUI-1, 400GAUI-2, 800GAUI-4, and 1.6TAUI-8 C2M hosts (see Annex 176D), are made utilizing test fixtures. Each such test fixture has an edge connector plug that is compatible with the MDI receptacle on the host board, a coaxial connector for each lane suitable for connection to test equipment, and a PCB connecting the lanes from the edge connector plug to the coaxial connectors. The test fixture reference insertion loss is specified in 179B.2."

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.1** *P* **904** *L* **13** # 408

Swenson, Norman Nokia, Point2

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

This is the normative clause that defines the Cable test fixtures. The test fixtures assume an MDI connector, a PCB board, and a coaxial connector enabling connection to test equipment, but that is not stated anywhere.

SuggestedRemedy

Replace the second paragraph of 179B.1 with the following:
"Cable assembly measurements for the cable assembly types (see Annex 179D) are made between TP1 and TP4 with cable assembly test fixtures at both ends. Each such test fixture has an MDI receptacle compatible with the MDI plug at the end of the cable assembly, a coaxial connector for each lane suitable for connection to test equipment, and a PCB connecting the lanes from the MDI receptacle to the coaxial connectors. The test fixture reference insertion loss is specified in 179B.3. The TP2 or TP3 test fixture and the cable assembly test fixture are specified in a mated state to enable connections to measurement equipment. The reference insertion loss of the mated test fixtures is 9.75 dB at 53.125 GHz using Equation (179B–5)."

Proposed Response *Response Status* **O**

Cl **179B** *SC* **179B.1** *P* **904** *L* **23** # 409

Swenson, Norman Nokia, Point2

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

The equivalence of the Module Compliance Board and the Cable Assembly Test Fixture can be made more clear.

SuggestedRemedy

Replace the second third of 179B.1 with the following:
"Module measurements for modules specified in Annex 176D are made at module compliance points TP1 and TP4 (see Figure 176D–5) with test fixtures known as Module Compliance Boards that are equivalent to Cable Assembly Test Fixtures. Reference insertion loss for each such test fixture is specified in 179B.3."

Proposed Response *Response Status* **O**

Cl **180** *SC* **180.5.12** *P* **464** *L* **33** # 410

Ran, Adee Cisco Systems

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

O1 is defined as "format" in 178B.7.3.2.
Also in 181.5.12, 182.5.12, 183.5.12.

SuggestedRemedy

Change "for a Type O1 interface" to "with O1 format", with editorial license.
[CC 180, 181, 182, 183]

Proposed Response *Response Status* **O**

Cl **176C** *SC* **176C.3** *P* **792** *L* **50** # 411

Ran, Adee Cisco Systems

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

E1 is defined as "format" in 178B.7.3.2.
Also in 176D.3, 176D.8.7.

SuggestedRemedy

Change "for a Type E1 interface" to "with E1 format", with editorial license.
[CC 176C, 176D]

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.2** *P* **863** *L* **18** # 412

Ran, Adee Cisco Systems

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

"Path startup" is a poor term for what is defined by this annex. Paths have been started up before the functionality in this annex was specified. Also, the acronym is in conflict with the well-known Power Supply Unit.

The functionality can be better described as "Autonomous path startup", or "Auto path startup" (parallel to Auto-Negotiation), which would result in the acronym APS. APS seems to be an available acronym (except maybe EAPS, "Ethernet Automatic Protection Switching").

The annex name may be changed accordingly but can also stay as it is.

SuggestedRemedy

Rename "Path startup" to "Autonomous path startup" and "PSU" to "APS".
Implement across the draft with editorial license.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.3** *P* **863** *L* **46** # 413

Ran, Adee Cisco Systems

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

The definition of "Adjacent interface" should note that the adjacent interface is "in the same package".

SuggestedRemedy

Add "in the same package", with editorial license.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **3** # 414

Ran, Adee Cisco Systems

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

The first paragraph and dashed list define "support for PSU" in a very confusing way. The word "support" is overloaded and is used here recursively (support is defined by support). The order of the dashed list is top-down, and the reader needs to read the last item to get a chance to understand what "supported" means, and even then, the last item is defines "An ISL supports" (PSU) using "the interface supports" (functions), which is not well defined, so it's an incomplete definition. Functions are not "supported", they are specified, and should be implemented; these are not optional features.

Also it is not explained what happens when PSU is not "supported".

The suggested remedy rewrites this part of 178B.4 without "support", and from the bottom up.

SuggestedRemedy

Replace the first paragraph and list with the follows:

Support for PSU is defined as follows:
— An ISL between two interfaces can be activated using PSU if these interfaces and the associated sublayers (e.g., PMA, Inner FEC), implement the RTS function (see 178B.6) and the ILT function (see 178B.7), or have equivalent functions.
— A PHY can be activated using PSU if every ISL within the PHY can be activated using PSU.
— An xMII Extender can be activated using PSU if every ISL within it can be activated using PSU.
— A Physical Layer can be activated using PSU if the PHY and xMII Extender (if implemented) can be activated using PSU.
— A path can be activated using PSU if the Physical Layer at each end can be activated using PSU.

An ISL, PHY, Physical Layer or path that cannot be activated using PSU may be activated using management or other means beyond the scope of this annex.

Implement with editorial license.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.6** *P* **867** *L* **28** # 415

Ran, Adee Cisco Systems

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

facilitates the transfer

SuggestedRemedy

facilitates the indication

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7** *P* **868** *L* **6** # 416

Ran, Adee Cisco Systems

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

passes the readiness of the transmitter to send data

SuggestedRemedy

indicates the readiness of the transmitter to send data

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.2** *P* **868** *L* **53** # 417

Ran, Adee Cisco Systems

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

The receiver is not strictly required to "configure its peer transmitter to optimize performance". Also, this is not the only purpose of "the frame format" - it is used for other things such as handshaking, changing from PAM2 to PAM4, and indicating readiness, which are not mentioned here.

SuggestedRemedy

Change "the frame format" to "the training protocol".
Change "is used" to "may be used".

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.7.5** *P* **876** *L* **42** # 418

Ran, Adee
Cisco Systems

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

Three values are marked as undefined, but other fields use "reserved".

SuggestedRemedy

Change the three "undefined" to "reserved".

Proposed Response *Response Status* **O**

Cl **177** *SC* **177.10** *P* **372** *L* **29** # 419

Shrikhande, Kapil
Marvell Technologies

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

The name of the variable "FEC_corrected_cw_counter (Inner FEC lane 0)" used to be "Inner_FEC_corrected_cw_counter (Inner FEC lane 0)" in D2.1. The "Inner_FEC" preceding the counter name was removed in D2.2. Similar counters for Inner FEC lanes 1-7 continue to have "Inner_FEC" in the name. It seems the variable name for lane 0 was changed (in D2.2) due to the MDIO register being shared between the Cl177 Inner FEC and the Cl186 ER1 FEC. It is confusing to have the Lane 0 counter named differently from the counters for Lanes 1-7. The other confusion is that the variable name in the referenced sub-clause, 177.5.5, has "Inner_FEC" in the name. The same issue in naming is also present in the subsequent 3 counters in Table 177-8 , these are for uncorrected cw counter, total bits counter and corrected bits counter.

SuggestedRemedy

There is perhaps no good solution here other than creating new MDIO registers for the CL186 ER1 FEC, so that Cl177 Inner FEC can have its unique MDIO registers, and the names of the Inner FEC lane 0 counters in Table 177-8 can go back to using the D2.1 convention and will match the names of the counters for Lanes 1-7 and the variable name in 177.5.5. If this cannot be done (for some reason), consider adding a footnote under Table 177-8 to explain the naming quirk.

Proposed Response *Response Status* **O**

Cl **73A** *SC* **73A.1a** *P* **722** *L* **17** # 420

Shrikhande, Kapil
Marvell Technologies

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

Extended FEC ability is part of the Message code 2 encoding -- bits EF0 through EF3. However, there isn't a specific use of extended FEC ability for any PHY in 802.3dj. Why reserve 4 bits for extended FEC ability when we do not have any application for this ?

SuggestedRemedy

It seems better to just call bits EF0-EF3 "Reserved" and let future projects define how to use them. Change EFO-EF3 in Table 73A-1a from "Reserved for extended FEC ability" to "Reserved".

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.3** *P* **864** *L* **2** # 421

Shrikhande, Kapil
Marvell Technologies

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

Sentence could use a comma

SuggestedRemedy

Insert a comma as shown in the sentence below after the word "between".
An ISL is either a pair of AUI components and the AUI channel between, or a pair of PMDs (in different PHYs) and the medium between.

Proposed Response *Response Status* **O**

Cl **178B** *SC* **178B.4** *P* **865** *L* **19** # 422

Shrikhande, Kapil
Marvell Technologies

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

remote_rts "propagates similarly and independently from RS to RS in both directions". But similarly and independently to what ?

SuggestedRemedy

Assuming the sentence is meant to say remote_rts propagates similarly to and independent from local_rts, change the sentence to state that explicitly.

Proposed Response *Response Status* **O**

Cl **178B** SC **178B.4** P **867** L **30** # 423

Shrikhande, Kapil — Marvell Technologies

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

Missing cross-reference

SuggestedRemedy

Add cross-reference to Figure 178B-9

Proposed Response *Response Status* **O**

Cl **178B** SC **178B.7** P **868** L **13** # 424

Shrikhande, Kapil — Marvell Technologies

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

Missing cross-reference

SuggestedRemedy

Add cross-reference to 178B.7.3.1

Proposed Response *Response Status* **O**

Cl **178B** SC **178B.8.2.1** P **883** L **2** # 425

Shrikhande, Kapil — Marvell Technologies

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

mr_restart uses "system management" , whereas mr_training enable (few lines below) uses just "management". Both system mangement and management are intended to be the same ?

SuggestedRemedy

replace "system management" by "management"

Proposed Response *Response Status* **O**

Cl **178B** SC **178B.8.2.1** P **883** L **16** # 426

Shrikhande, Kapil — Marvell Technologies

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

Shouldn't "mr_training" be "mr_training_enable"

SuggestedRemedy

replace "mr_training" by "mr_training_enable"

Proposed Response *Response Status* **O**

Cl **178B** SC **178B.8.3.3** P **888** L **14** # 427

Shrikhande, Kapil — Marvell Technologies

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

max_wait_time_done should be max_wait_timer_done

SuggestedRemedy

Change max_wait_time_done to max_wait_timer_done.

Proposed Response *Response Status* **O**

Cl **176** SC **176.11** P **344** L **13** # 428

Nicholl, Gary — Cisco Systems

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

In order to support PMAs such as "1.6TBASE-R 8:8" an additional set of block error counters are required (see Figure 176-13), one set for the PMA service interface (i.e. transmit direction of the PMA) and one set for the service interface below the PMA (i.e. the receive direction of the PMA).

SuggestedRemedy

In Table 176-9, insert an additional set of block error counters (17 counters per lane and 8 lanes in total). Add a corresponding set of MDIO registors in Clause 45.

To distinguish between the two sets of counters (one set in the transmit direction and one set in the receive direction), use the following variable names "test_block_error_bin_tx_i_k" and "test_block_error_bin_rx_i_k" respectively.

Update 176.7.4.7 and 45.2.1.267 as necessary.

Also consider simplifying "test_block_error_bin" to "block_error_bin" throughout the document. I think the word "test" is unnecessary, and shorter variable names are preferred.

Proposed Response *Response Status* **O**

Cl **176** *SC* **176.11** *P* **344** *L* **13** # 429

Nicholl, Gary Cisco Systems

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

There is a discrepency between the set of MDIO registors assigned for the block error counters in Table 176-9 (1.2600-1.3007) and the block of registers defined in 45.2.1.267 (1.2650-1.3057).

SuggestedRemedy

Assuming that 45.2.1.267 is correct, then update the MDIO registers for the block error counters in Table 176-9 to match those in 45.2.1.267.

Proposed Response *Response Status* **O**

Cl **176** *SC* **176.4.1** *P* **319** *L* **43** # 430

Nicholl, Gary Cisco Systems

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

Figure 176-2. In the footnote, " inst: PMA or PMD or FEC or AUI" , inst cannot be "AUI" as "AUI" is not a sublayer.

SuggestedRemedy

Delete "AUI" from the footnote " inst: PMA or PMD or FEC or AUI" in Figure 176-2.

Make a similar change to Figure 176-12 and Figure 176-13.

Proposed Response *Response Status* **O**

Cl **176** *SC* **176.7.1** *P* **338** *L* **36** # 431

Nicholl, Gary Cisco Systems

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

Figure 176-13, footnote d. I assume that block error counters are only applicable to 200G/lane interfaces and therefore not to a 1.6AUI-16 ?

SuggestedRemedy

Update 176.7.4.7 to make it clear that block error detection and counters do not apply to 1.6TAUI-16, i.e. to 100Gb/s lanes ? Maybe this is already implicit in that the term "PAML" only refers to 200Gb/s lanes ? Perhaps adding a note to call out the exception for the 1.6TAUI-16 would be the simplest way to address this.

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **568** *L* **31** # 432

He, Michael He TeraHop

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

The TDECQ for LR4 is likely to be too large to be measurable, especially at negtive CD limit.

SuggestedRemedy

Replace max(TECQ, TDECQ) with max(TECQ, TECQ+CD_penalty). Noted that CD_penalty could be positve or negtive.
Will prepare proposal to indicate details.

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **568** *L* **35** # 433

He, Michael He TeraHop

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

TDECQ could be replaced with TECQ+CD_penalty for LR4

SuggestedRemedy

Just reserve TDECQ for FR4, and use TECQ+CD_penalty instead for LR4

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.7.1** *P* **568** *L* **40** # 434

He, Michael He TeraHop

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

I TDECQ - TECQ I should be change to I CD penalty I for LR4.

SuggestedRemedy

Replace | TDECQ – TECQ | with I CD_penalty I for LR4

Proposed Response *Response Status* **O**

Cl **183** *SC* **183.9.9** *P* **581** *L* **25** # 435

He, Michael He
TeraHop

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

Per the proposed updates for TDECQ and CD_penalty in 183.7.1 for LR4, Tx_DUT_power_budget equation need to be updated accordingly.

SuggestedRemedy

Tx_DUT_power_budget = Channel_insertion_loss + MPI_DGD_penalty_allocation + CD_penalty_allocation + DUT_TECQ, in which CD_penalty_allocation<=2.5dB (exect value set by requirement)

Proposed Response *Response Status* **O**