Cl **184** *SC* **184.4.8** *P* **481** *L* **38** # 6

Huang, Kechao Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

In the DSP frame, the 63 symbols after one pilot symbol are typically called as payload symbols, which include the Information or parity symbols. See subclause 186.3.3.1.2 page 545, line 7 for reference.

SuggestedRemedy

Suggest to change "one 4-bit PS, 63 4-bit message blocks" as "one 4-bit PS, 63 4-bit payload blocks"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184** *SC* **184.4.9** *P* **483** *L* **15** # 7

Huang, Kechao Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

In Table 184-2, the Index 27 pilot output 2 "10" after signal mapping does not match the Level "-3" in Table 184-4, the Index 27 pilot Y_I

SuggestedRemedy

Suggest to change the Index 27 pilot output 2 "10" in Table 184-2 as "00"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **186** *SC* **186.3.1** *P* **542** *L* **29** # 8

Huang, Kechao Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

In Figure 186-11, in the transmit direction, the "PS field insertion" should be after "FAW/TS fields insert" following the discription in the first paragraph in subclause 186.3.1.3. Also, the reserved filed insertion should be included.
Make similar modification in the receive direction.

SuggestedRemedy

Suggest to redraw the figure 186-11 such that,
1) in the transmit direction, after Gray mapping and polarizatoin distribution, there are "FAW/TS/reserved fields insertion" and then "PS field insertion";
2) in the receive direction, modify "FAW alignment remove FAW, PS, and TS fields" as "FAW alignment remove FAW, PS, TS, and reserved fields"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
To maintain alignment with the way other SDOs describe the mapping, the proposed changes should be implemented. It may be necessary to change text as well as Figure 186-11.
Implement with editorial license.

Cl **90A** *SC* **90A.3** *P* **593** *L* **39** # 9

Marris, Arthur Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

Update Table 90A-1 in accordance with mainenance request
https://www.ieee802.org/3/maint/requests/maint_1432.pdf

SuggestedRemedy

For AM/CWM collumn change 200/400/800G values to 5.12 from 2.56 ns, adding appropriate editors note

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license

Cl **179** *SC* **179.14** *P* **363** *L* **35** # 10

Marris, Arthur — Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

Per lane signal detect status variables are missing from Table 179-20

SuggestedRemedy

Add PMD_signal_detect_0 to PMD_signal_detect_7 in bits 1.10.9:1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
[Editor's note: technically incomplete - missing variables]

Cl **45** *SC* **45.2.1** *P* **61** *L* **37** # 11

Marris, Arthur — Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

There are 146 Inner FEC control and status registers so there is not adequate space for them at the space starting at 1.2000

SuggestedRemedy

Move start location of inner FEC control/status registers from 1.2000 to 1.2400

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license

Cl **176** *SC* **176.4.3.1** *P* **243** *L* **38** # 14

Marris, Arthur — Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

PAM4 decode is only required for 1.6TAUI-16

SuggestedRemedy

Change "The transmit PAM4 decode is only required if the sublayer above the PMA is an AUI. " to "The transmit PAM4 decode is only required if the sublayer above the PMA 1.6TAUI-16. "

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change from "The transmit PAM4 decode is only required if the sublayer above the PMA is an AUI."
to "The transmit PAM4 decode is only required if there is a 1.6TAUI-16 above the PMA".

Implement with editorial license.

Cl **176** *SC* **176.4.4.1** *P* **250** *L* **9** # 15

Marris, Arthur — Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

This is describing the receive direction not the transmit direction.

SuggestedRemedy

Change "transmit" to "receive"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176** *SC* **176.4.4.6** *P* **251** *L* **34** # 16

Marris, Arthur — Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

PAM4 encode is only required for 1.6TAUI-16

SuggestedRemedy

Change "The PAM4 encode process is required if the adjacent sublayer is an AUI or PMD." to "The PAM4 encode process is required if the adjacent sublayer is 1.6TAUI-16."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change from "The PAM4 encode process is required if the adjacent sublayer is an AUI or PMD."
to "The receive PAM4 encode is only required if there is a 1.6TAUI-16 above the PMA".

Implement with editorial license.

Cl **182** *SC* **182.9.5** *P* **441** *L* **31** # 26

Johnson, John — Broadcom

Comment Type **TR** *Comment Status* **D** *(bucket)*

Clause 182.9.5 still points to TX compliance channel specification in 121.8.5.1, not local sub-clause 182.9.5.1.

SuggestedRemedy

Change reference to 121.8.5.1 to 182.9.5.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178** *SC* **178.9.2.5** *P* **304** *L* **42** # 30

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

"receiver" should be "transmitter"

SuggestedRemedy

Replace "receiver" with "transmitter"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **178** *SC* **178.9.3.3** *P* **306** *L* **31** # 31

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

The text specifies using the transmitter device model in 93A.1.2. The models for .dj are described in 178A.1.4

SuggestedRemedy

Change the reference to 178A.1.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #370.

Cl **179** *SC* **179.1** *P* **323** *L* **13** # 32

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

The text says there are 5 associated annexes, but the paragraph only describes 4 of them.

SuggestedRemedy

Change "There are five associated…" to "There are four associated…"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176D** *SC* **176D.3.4.1** *P* **681** *L* **29** # 34

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

"The receiver shall comply with the requirements of and for any signaling rate in the range specified in Table 176D–3." The cited sentence is missing text to describe the specific requirements, which are meeting the Itol (176D.3.4.4) and Jtol (176D.3.4.5).

SuggestedRemedy

Insert references to 176D3.4.4 and 176D3.3.5.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The suggested remedy includes a typo in the second reference.
Resolve using the response to comment #140.

Cl **176D** *SC* **176D.4.1** *P* **687** *L* **5** # 36

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

Table 176D-7 entries for d_w, N_fix, N_g, N_f, N_max, w_max(j), w_min(j), N_b, b_max(j), and b_min(j) are duplicated.

SuggestedRemedy

Remove the duplicate entries on lines 5-17 of Table 76D-7.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **179A** *SC* **179A.6** *P* **744** *L* **25** # 38

Heck, Howard — Intel Corporation

Comment Type **T** *Comment Status* **D** *(bucket)*

The text states that the CR channels are recommended to meet the ERL specified in 178.9.2. Subclause 178.9.2. contains specifications for transmitters, and so is not the correct reference. Channel ERL requirements are specified in 178.10.3.

SuggestedRemedy

Change "178.9.2" to "178.10.3".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.213h** *P* **86** *L* **52** # 41

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

These seem to be the bin counters for lanes 1 to 7. The text is not clear and the register addresses seems to be wrong. Too many addresses (17 per lane), only 6 per lane (total 42) are required.

SuggestedRemedy

Change the title of subclause 45.2.1.213g to: "Inner FEC codeword error bin registers 1 through 3 for lane 0"
Change: the subcaluse 45.2.1.213h title to: " Inner FEC bin counter registers for lanes 1 through 7 (Registers 1.2020 through 1.2061)"
Change the text of subclause 45.2.1.213h to: "Registers 1.2014 through 1.2019 are repeated for each Inner FEC lane present, with registers 1.2020 through 1.2024 being for lane 1, registers 1.2025 through 1.2030 being for lane 2, etc."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The counter registers from 1.2002 to 1.2019 are repeated for all 8 inner FEC lanes. So each lane needs 18 registers for the counters.
Add "for lane 0" to title of 45.2.1.213g, and add "The eighteen counter registers" to the body of 45.2.1213h.
Implement these changes with editorial license.

Cl **169** *SC* **169.1.3** *P* **144** *L* **40** # 44

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

800GBASE-LR1 is also dual polarization 16-state quadrature amplitude modulation (DP-16QAM), and coherent detection

SuggestedRemedy

Make the description of all coherent PHYs (800GBASE-LR1, 800GBASE-ER1, 800GBASE-ER1-20) consistent.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #310.

Cl **174** *SC* **174.2.11** *P* **198** *L* **30** # 45

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

"module" is not the right term

SuggestedRemedy

Change "module" to "modulation"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **174** *SC* **174.2.11** *P* **198** *L* **33** # 46

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

There are two ILT formats A1 and A2. Indicate which is used by each PMD

SuggestedRemedy

Separate the list into two, one for CR8 and KR8 titled: "ILT using format A1 frames is supported by the following PHY types:"
and another for DR8 and DR8-2 titled: "ILT using format A2 frames is supported by the following PHY types:"

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This amongst many other unique details are provided in the respective PMD clauses. This introduction clause would become rather large if we includes details to this level. Also, such details may become out of sync over time and must be accurately maintained in future base standard revisions.

Cl **184** *SC* **184.4.4** *P* **479** *L* **4** # 49

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

There are 2 switches that shall be updated

SuggestedRemedy

In bullet e) change: "The switch position"
to: "The switches position"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In bullet e) change: "The switch position"
to: "The position of the switches"

[Editor's note: changed page from 477 to 479]

Cl **184** *SC* **184.5.8** *P* **489** *L* **33** # 50

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

There are 2 switches that shall be updated

SuggestedRemedy

In bullet e) change: "The switch position"
to: "The switches position"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **186** *SC* **186.2.4.6.7** *P* **532** *L* **41** # 53

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

The PT values are OIF values

SuggestedRemedy

It would be worthwhile to add a note indicating the fact that the PT values are assigned to OIF.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #253

Cl **186** *SC* **186.2.4.5.1** *P* **530** *L* **22** # 54

Bruckman, Leon Nvidia

Comment Type **T** *Comment Status* **D** *(bucket)*

It will be beneficial for the reader not to have to search for the ITU-T standard in order to learn the AM value

SuggestedRemedy

Change the second sentence in the paragraph to: "The content of the AM field is 16 bytes of 0x09 followed by 16 bytes of 0xD7 as specified in clause 9.1 of Recommendation ITU-T G.709.6."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The AM field in G.709.6 is the 32 bytes as noted in the suggested remedy, plus an additional 28 reserved bytes that are transmitted as 0x00. The specification in G.709.6 (and in the corresponding OIF document) is that MSB is transmitter first; since the normal convention in 802.3 is to transmit all fields LSB first, the text either needs to be clear that the values are MSB first or needs to reverse the values.
Change the second sentence to "The content of the AM field is 16 bytes of 0x09, followed by 16 bytes of 0xD7, followed by 28 bytes of 0x00. All bytes are transmitted MSB first."

Cl **186** *SC* **186.3.1.3** *P* **541** *L* **48** # 56

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

The 800GBASE-ER1 and ER1-20 PMDs are not DWDM

SuggestedRemedy

Delete: "the dense wavelength division multiplexing (DWDM)"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **186** *SC* **186.3.2.2.1** *P* **543** *L* **50** # 58

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

Missing parenthesis

SuggestedRemedy

Add opening parenthesis to the four equations

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **186** *SC* **186.3.3.1.2** *P* **546** *L* **3** # 59

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

P0 is a pilot symbol

SuggestedRemedy

Change: "is the symbol P0" to: "is the pilot symbol P0"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.3.1** *P* **625** *L* **34** # 60

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

Fail state may also be reached if there are a specific number of LT frame losses

SuggestedRemedy

Change: "While waiting for rx_ready and remote_rts, losing frame lock and not recovering it after a specified recovery time (recovery_timer, see Figure 176A–7) would cause training to fail"
to: "While waiting for rx_ready and remote_rts, losing frame lock and not recovering it after a specified recovery time (recovery_timer, see Figure 176A–7) or lossing frame lock for a configured number of times (recovery_event_count, see Figure 176A-7), would cause training to fail"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy except change "lossing" to "losing".

Cl **176A** *SC* **176A.12** *P* **650** *L* **28** # 65

Bruckman, Leon Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

Missing thershold configuration in Table 176A-7

SuggestedRemedy

Add max_recovery_events to Table 176A-7

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **180** *SC* **180.9.5** *P* **390** *L* **24** # 69

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

Reference equalizer in 120.8.5.4 is not applicable as it is only 5 tap FFE

SuggestedRemedy

Remove the reference and update the exception sentence:
- The reference equalizer is a T-spaced, 15 taps feed-forward equalizer (FFE) with sum of the equalizer tap coefficients equal to 1, where T is the symbol period,
Reference equalizer tap coefficient constraints as shown in Table 180–15.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **178** *SC* **178.1** *P* **296** *L* **27** # 70

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket) OSI reference figure*

We show AN and not ILT, given that some interfaces have both and other just ILT

SuggestedRemedy

Suggest to add ILT to the AN box

Proposed Response *Response Status* **W**

PROPOSED REJECT.
[Editor's note: This comment proposes an update to a technically complete area in the draft]
ILT is not a sublayer but a function that is part of some sublayers (PMDs or PMAs that have an AUI).
There can be mutiple instances of ILT in the sublayer stack.

Cl **179** *SC* **179.1** *P* **327** *L* **27** # 71

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *'bucket), OSI reference figure*

We show AN and not ILT, given that some interfaces have both and other just ILT

SuggestedRemedy

Suggest to add ILT to the AN box

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Resolve using the response to comment #70.

Cl **180** *SC* **180.6** *P* **378** *L* **39** # 99

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

Section 180.6 would fit better earlier

SuggestedRemedy

Consider moving 180.6 to 180.5.2 and increase index for current 180.5.2 by +1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **181** *SC* **181.6** *P* **403** *L* **40** # 104

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

Section 181.6 would fit better earlier

SuggestedRemedy

Consider moving 181.6 to 181.5.2 and increase index for current 181.5.2 by +1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **182** *SC* **182.6** *P* **429** *L* **31** # 107

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

Section 182.6 would fit better earlier

SuggestedRemedy

Consider moving 182.6 to 182.5.2 and increase index for current 182.5.2 by +1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license
[Editor's note: CC: 180, 181, 182, 183]

Cl **183** *SC* **183.6** *P* **455** *L* **40** # 112

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

Section 183.6 would fit better earlier

SuggestedRemedy

Consider moving 183.6 to 183.5.2 and increase index for current 183.5.2 by +1

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #99 .

Cl **176E** *SC* **176E.4.3** *P* **698** *L* **22** # 116

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket), VEC*

Transmitter jitter specifications is ineffective and. Not sensitive for farend TP1a specifications as was demonstrted by Rysin_3dj_01_2407.pdf
It makes no sense to use transmit jitter at TP1a when TP1a is actually at receiver pin, and what receiver care about is VEO, VEC, and possibly EW.

SuggestedRemedy

Replace Ouput jitter and SNDR with, see ghiasi_01_2407
VEO=8 mV
VEC=10.7 dB
If you want jitter then we should consider adding EW.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Jitter is an important parameter to measure in especially in lossy/dispersive interconnects. Presentations have shown that jitter can be measured with good precision. Some improvements may be possible, but the suggested remedy does not suggest any improvements.
SNDR is mentioned in the suggested remedy but the comment does not claim any issue with it. Note that SNDR has been redefined to be less sensitive to loss to the measurement point.
The suggested remedy refers to the presentation https://www.ieee802.org/3/dj/public/24_07/ghiasi_3dj_01_2407.pdf, but this presentation does not include a detailed proposal for adding VEO/VEC specification as suggested. In addition, the suggested values seem to be met by only two channels. There is insufficient evidence that these values are feasible and sufficient.

Cl **176E** *SC* **176E.4.4** *P* **699** *L* **41** # 117

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D** *(bucket), VEC*

Transmitter jitter specifications is ineffective and. Not sensitive for farend TP1a specifications as was demonstrted by Rysin_3dj_01_2407.pdf
It makes no sense to use transmit jitter at TP1a when TP1a is actually at receiver pin, and what receiver care about is VEO, VEC, and possibly EW.

SuggestedRemedy

Replace Ouput jitter and SNDR with, see ghiasi_01_2407
VEO=8 mV
VEC=10.7 dB
If you want jitter then we should consider adding EW.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
This comment appears to be parallel of comment #116 addressed to module output instead of host output, although the comment relates to TP1a and has the same suggested remedy.
Resolve using the response to #116.

Cl **179D** *SC* **179D.1.1** *P* **771** *L* **30** # 129

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

Typo "112"

SuggestedRemedy

Replace 112 with SFP-DD224

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176D** *SC* **176D.2** *P* **675** *L* **42** # 135

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

The C2C interface is more similar to KR than CR.

SuggestedRemedy

Change the inter-sublayer service interface reference from 179.4 to 178.4

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176D** *SC* **176D.2** *P* **676** *L* **10** # 136

Dudek, Mike — Marvell

Comment Type **TR** *Comment Status* **D** *Link diagram (bucket)*

Figure 176D-2 is confusing. Note 2 is correctly saying that the device package is part of the channel, and implying that the "component" includes the package. The Figure however looks as though TP0d and TP5d are at the edge of the component.

SuggestedRemedy

In figure 176D-2 Move the C2C componet box edges significantly closer to the connector so that there is a much longer trace between what represents the package edge and the TP0/5d points.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Update the diagram to visualize the components, package, die, TP0d, TP5d, etc., based on Figure 178-2, with editorial license.

Cl **176D** *SC* **176D.2** *P* **676** *L* **18** # 138

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

Figure 176D-2 title is wrong.

SuggestedRemedy

Change C2M to C2C.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176D** *SC* **176D.3.4.1** *P* **681** *L* **29** # 140

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

There are blanks in the text. Comparing with 802.3ck they should be the references to Interference tolerance and jitter tolerance.

SuggestedRemedy

replace with "176D.3.4.4 and 176D.3.4.5

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add 176D.3.4.4 and 176D.3.4.5 as references to "Interference tolerance" and "Jitter tolerance", respectively.

Cl **176E** *SC* **176E.3** *P* **695** *L* **3** # 144

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

It is ambiguous as to what a C2M component is. From the diagram it appears to be the die which is inconsistent with the usage of C2C component in 176D which includes the package.

SuggestedRemedy

If the intent is to include the packages in the "component" then amend Figure 176E-2 to show the TP0/1/4/5d interfaces well inside the "component" box. Or change the name "component" to be different than what is used for C2C both in figure 176E-2 and appropriately in the test above. I suggest "die" is used. If neither of these is done then add a note. "The C2M component is different from a C2C component as the C2C component includes the package while the C2M component does not.".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the responses to comments #145 and #411.

Cl **176E** *SC* **176E.4.1** *P* **696** *L* **14** # 145

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

The characteristics defined at the compliance points are for the host and module are not for the "C2M componets" (assuming these refer to the die with/without package see separate comment). They include the connector and host channel for the host and the module channel for the module.

SuggestedRemedy

Change the sentence "The electrical characteristics for the C2M components are defined at compliance points for the host and
module." to "The electrical characteristics for the C2M host and module are defined at compliance points" or possibly "The electrical characteristics for the C2M host and module interfaces are defined at compliance points"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change from
"The electrical characteristics for the C2M components are defined at compliance points for the host and module"
to
"The electrical characteristics for the C2M host and module are defined at compliance points".

Change other instances in 176E where "components" refer to the host and module rather than their parts, similarly, with editorial license.

Cl **176E** *SC* **176E.5.2** *P* **703** *L* **42** # 149

Dudek, Mike Marvell

Comment Type **TR** *Comment Status* **D** *(bucket)*

There is not intended to be multiple different host designations for C2M and having this name would lead to confusion with the host designations for CR. The only requirement for a PCB model would be for calibration of noise addition for the host input stressed test.

SuggestedRemedy

Replace the 3 rows labelled Host PCB model with one row labelled "Host PCB model for Host stressed input calibration".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176E** *SC* **176E.6.6** *P* **707** *L* **48** # 151

Dudek, Mike Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

Table 176E-6 does not have a list of presets and the reference should be to the table of presets in clause 179

SuggestedRemedy

Change the reference from table 176E-6 to table 179-8

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Table 176E-8 includes presets for C2M (which are currently the same as those of CR in Table 179-8). The exception enables having different presets in the future.

Change "instead of the ones in Table 176E–6" to "instead of the ones in Table 179–8".
Add an editor's note (to be removed prior to publication) stating that Table 176E-6 and Table 179-8 are currently identical, and that the exception and table 176E-8 may be removed if it stays this way.

Cl **176E** *SC* **176E.6.12.1** *P* **709** *L* **50** # 153

Dudek, Mike Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

Incomplete sentence that needs to be completed to make the test complete

SuggestedRemedy

Add "meets the COM value in table 176E-9

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **176E** *SC* **176E.6.13.2** *P* **713** *L* **6** # 156

Dudek, Mike — Marvell

Comment Type **T** *Comment Status* **D** *(bucket)*

The reference to table 176E-10 is missing

SuggestedRemedy

Change "in at" to "in table 176E-10 at"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.
[Editor's note: technically incomplete - obvious error]

Cl **179** *SC* **179.9.4** *P* **335** *L* **35** # 175

Hidaka, Yasuo — Credo Semiconductor, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket), Tx jitter*

J3u03 for Host-Low is specified as 0.115 UI that is same as clause 162.9.4.
Since the loss to the measurement point is higher than clause 162, we need to relax the jitter spec value to take account of larger measurement errors due to higher insertion loss or improve the jitter measurement methodology, for example by UPOJ in calvin_3dj_01b_2407.

SuggestedRemedy

Relax J3u03 for host-low to 0.15 UI, J3u03 for host-nominal to 0.159 UI, and J3u03 for host-high to 0.166 UI, or extend and apply UPOJ method in calvin_3dj_01b_2407 to J3u03.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The assumed host channel IL for Host-Low is 6.5 dB (Table 179A-1), and with addition of 3.8 dB for the HCB and ~2 dB for the connector the TP0d-TP2 loss is expected to be 12.3 dB.
In comparison, in Annex 162A the TP0-TP2 loss is assumed to be ~11 dB. This doesn't include the host package which is likely more than 1.3 dB.
Therefore, for Host-Low, the existing limits are justified.

The UPOJ method is mentioned on slide 8 of https://www.ieee802.org/3/dj/public/24_07/calvin_3dj_01b_2407.pdf but isn't described in detail. A more complete proposal is required to implement it into a standard.

Cl **176E** *SC* **176E.4.3** *P* **698** *L* **22** # 179

Rysin, Alexander — NVIDIA

Comment Type **TR** *Comment Status* **D** *(bucket), Tx jitter*

J3u and JRMS 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 (and sometimes cannot be measured) even with commercial test equipment PPG. The issue was demonstrated in rysin_3dj_01a_2407.

SuggestedRemedy

Other method of uncorrelated jitter measurement should be considered.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The referenced presentation is https://www.ieee802.org/3/dj/public/24_07/rysin_3dj_01a_2407.pdf.
Ideas for improvements of uncorrelated jitter measurement have been presented, e.g., in https://www.ieee802.org/3/dj/public/24_07/calvin_3dj_01b_2407.pdf. Further work in this direction is encouraged.

The suggested remedy does not provide sufficient detail to implement.

Cl **176E** *SC* **176E.4.4** *P* **699** *L* **41** # 180

Rysin, Alexander — NVIDIA

Comment Type **TR** *Comment Status* **D** *(bucket), Tx jitter*

J4u and JRMS measurements at TP4 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 test fixtures - 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. The issue was demonstrated in rysin_3dj_01a_2407.

SuggestedRemedy

Other method of uncorrelated jitter measurement should be considered.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Resolve using the response to comment #179.

Cl **179** *SC* **179.9.4** *P* **335** *L* **33** # 181

Rysin, Alexander NVIDIA

Comment Type **TR** *Comment Status* **D** *(bucket), Tx jitter*

J3u and JRMS 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 (and sometimes cannot be measured) even with commercial test equipment PPG. The issue was demonstrated in rysin_3dj_01a_2407.

SuggestedRemedy

Other method of uncorrelated jitter measurement should be considered.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Resolve using the response to comment #179.

Cl **176** *SC* **176.1.4** *P* **237** *L* **30** # 182

Marris, Arthur Cadence Design Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

Add PCSL lane delay to the list of principal PMA functions

SuggestedRemedy

Add extra line item for "Delaying odd PCS lanes in one direction and delaying even PCS lanes in the corresponding direction"
Also change "Adapt" to "Adapting" in the first line item

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The list of principal functions is intended to provide the key high-level functions provided by the PMA. For example, symbol-level multiplexing is listed as a principal function whereas the various functions within symbol multiplexing such as alignment marker lock, PCS lane delay, deskew, etc. are not called out one by one in the list of principal functions.

Cl **116** *SC* **116.5** *P* **131** *L* **12** # 183

He, Xiang Huawei

Comment Type **TR** *Comment Status* **D** *(bucket)*

Figure 116-5, 200GAUI-n and 400GAUI-n above SP6 should be 200GAUI-m and 400GAUI-m.

SuggestedRemedy

Change the "200GAUI-n" below PMA(8:m) to "200GAUI-m";
Change "400GAUI-n" below PMA(16:m) to "400GAUI-m".

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The labels for each of the xAUI-n are the standard nomenclature. Note that the "n" is not italicized. This aligns with the figure title. Note also that this is consistent with other diagrams in Clause 116 in the base standard (e.g., Figure 116-5).

Cl **30** *SC* **30.13.1.1** *P* **60** *L* **1** # 185

He, Xiang Huawei

Comment Type **TR** *Comment Status* **D** *(bucket)*

TimeSync related registers for Inner FEC sublayer were added in Clause 45, but were not reflected in 30.13. Suggest to add the new registers to TimeSync entity managed object class, and corresponding subclause numbers in 30.13.1.1 - 30.13.1.12.

SuggestedRemedy

Add following text after subclause 30.6:
"30.13 Management for oTimeSync entity
30.13.1 TimeSync entity managed object class
Change the items in 30.13.1 (as amended by IEEE Std 802.3cx-2023) as follows (some unchanged items not shown):
30.13.1.1 aTimeSyncCapabilityNsTX
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1800.5, see 45.2.1.175
30.13.1.2 aTimeSyncCapabilityNsRX
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1800.4, see 45.2.1.175
30.13.1.3 aTimeSyncDelayNsTXmax
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1813 and 1.1814, see 45.2.1.177a
30.13.1.4 aTimeSyncDelayNsTXmin
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1815 and 1.1816, see 45.2.1.177a
30.13.1.5 aTimeSyncDelayNsRXmax
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1819 and 1.1820, see 45.2.1.177b
30.13.1.6 aTimeSyncDelayNsRXmin
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1821 and 1.1822, see 45.2.1.177b
30.13.1.7 aTimeSyncCapabilitySubNsTX
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1800.7, see 45.2.1.175
30.13.1.8 aTimeSyncCapabilitySubNsRX
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1800.6, see 45.2.1.175
30.13.1.9 aTimeSyncDelaySubNsTXmax
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1817, see 45.2.1.177a
30.13.1.10 aTimeSyncDelaySubNsTXmin
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1818, see 45.2.1.177a
30.13.1.11 aTimeSyncDelaySubNsRXmax
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1823, see 45.2.1.177b
30.13.1.12 aTimeSyncDelaySubNsRXmin
If a Clause 45 MDIO Interface to PMA/PMD, Inner FEC, WIS, PCS, PHY XS, DTE XS, and/or TC is present, ...
— For Inner FEC: 1.1824, see 45.2.1.177b

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license

Cl **178A** *SC* **178A.1.6** *P* **728** *L* **14** # 187

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **D** *(bucket)*

In healey_3dj_01_2401.pdf, M samples per UI was used as well as in Annex 93A. Use M instead of 32 to align.

SuggestedRemedy

Change instances of 32 to M

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Draft 1.0 comment #360 observed that parameters such as "M" are independent of PMD/AUI type, signaling rate, etc. and have historically been assigned the same values. The response to Draft 1.0 comment #360 was to remove these parameters from the COM parameter/value tables and instead provide general guidance in Annex 178A. The note referenced by this comment is part of the guidance written in the response to that comment. It recommends that the time step be no larger than Tb/32, which is consistent with the prior practice where M has always been set to 32, and allows for smaller time steps to be used (which is expected to yield simlar results). Changing "32" to "M" would remove any specific guidance since "M" is no longer a COM parameter value for PMDs/AUIs that refer to Annex 178A.

Cl **178A** *SC* **178A.1.7.2** *P* **731** *L* **4** # 188

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **D** *(bucket)*

In 178A.1.8 ts is defined as the timing sample point that minimizes the mean square error. Annex 93A ts has similar meaning. ts^(k) should be interpreted as any sampling time for the kth crosstalk element. This is confusing without a note clarifying since they are both use the terminology ts.\

SuggestedRemedy

Insert a line initiating that ts^(k) is not the same ts which is to be used for the victim response but any aligned to any of M samples per UI.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The "(k)" superscript corresponds to the signal path index defined in 178A.1.2. This superscript notation is used consistently throughout Annex 178A (e.g., it is also used to label the voltage transfer functions and time-domain responses for each signal path). Any confusion may be due to the use of "ts" as shorthand for "ts(0)" where k=0 corresponds to the victim signal path (again, see 178A.1.2).
The suggested remedy also suggests that the value of ts(k) should correspond to a sampled value in the (oversampled) discrete-time signal. This seems unnecessarily restrictive since interpolation could be used to derive values between samples in the discrete-time signal. If the time step of the discrete-time signal is small enough, further interpolation should not be needed to achieve an accurate result. However, if an implementation of this calculation can achieve the same result with a larger time step and interpolation, then it should be allowed.

In the first sentence of 178A.1.7.2, change "sampled crosstalk signal corresponding to signal path k" to "sampled crosstalk signal corresponding to signal path k (k > 0)". Change instances of "ts" (without superscript) to "ts(0)" (i.e., add a "(0)" superscript).
Implement with editorial license.

Cl **179** *SC* **179.11.7** *P* **357** *L* **28** # 192

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **D** *(bucket), CA COM*

It not clear what COM case are to be run.

SuggestedRemedy

Add a table/matrix after table 179-15 which annotates which of the 1728 permutations of 2 package types, 2 lengths, 3 hosts, and 4 cables need to be evaluated and provide a designator for each.
For the time being, start with columns:
Package type, Package Zp. Host type, cable type, Zp for SCHS_p^(k), C0 for SCHS_p^(k), c1 for SCHS_p^(k), and a case designator.
Row entries can start out at TBD.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #397.

Cl **179** *SC* **179.11.7.1.1** *P* **360** *L* **24** # 193

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **D** *(bucket), Host channel model*

Then host may not contain a PCB.

SuggestedRemedy

replace the designation "host PCB" with "host interconnect" or "host PCB assembly" everywhere

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
[Editor's note: This comment proposes an update to a technically complete area in the draft]
The host model is described as including a PCB, but hosts can be built in multiple ways.
Add a statement in 179.11.7.1 that for the purpose of calculating COM, a host model is used, which includes a combination of a pacakge and a PCB (with references to the models), but this model is not a host specification and implementations can use different constructions.

Cl **179A** *SC* **179A.7** *P* **744** *L* **30** # 197

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **D** *(bucket)*

COM is normative.

SuggestedRemedy

Change line 28 to
179A.7 (Normative) Channel (TP0d-TP5d) Operating Margin (COM)
And
Line 31 to
procedure in 178A.1 and the parameters in Table 178–13, and shall be to be greater than or equal to

Proposed Response *Response Status* **W**

PROPOSED REJECT.
[Editor's note: This comment proposes an update to a technically complete area in the draft]
Annex 179A is informative.
COM is normative for cable assemblies between TP1-TP4.
The channel (TP0d-TP5d) subject of 179A.7 is not owned by a single vendor and cannot be normative.

Cl **178A** *SC* **178A.1.11** *P* **737** *L* **6** # 206

Lusted, Kent Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

The calculated COM value for the MLSD-based receiver DER value depends on the value "Q", per equation 178A-36. However, Q is not parameter in a table in the annex.

SuggestedRemedy

Add a new table in Annex178.1.11 with the additional receiver parameter "Q"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Add a table in Annex 178A to summarize parameters specific to the MLSD reference receiver, as needed, with editorial license.
Add the parameters in other clauses as necessary.

Cl **178A** *SC* **178A.1.8.1** *P* **737** *L* **25** # 207

Lusted, Kent Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

It was not obvious that the Table 178A-10 summary of discrete-time equalizer parameters would apply to the Annex178A1.11 equalizer with maximum likelihood sequence detection.

SuggestedRemedy

Add a note near Table 178A-10 or in Annex178A.1.11 indicating that the parameters are used for both.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

During the review of this comment, it was noted that the parameter "b1" is not defined in the draft and the parameter "blim(1)" ("lim" in subscript) should have been used instead.

In 178A.1.11, replace the second paragraph with the following.
"The receiver discrete-time equalizer coefficients are determined using the procedure defined in 178A.1.8.1 using the parameters defined in Table 178A-10 but with the value of Nb set to 1. COM is then computed as defined in 178A.1.10 and the resulting value is labeled COMDFE. The value of COMDFE and the feedback filter coefficient blim(1), along with the corresponding noise and residual inter-symbol interference computed at the output of the feed-forward filter, are used to calculate a modification to COMDFE that represents the advantage the MLSD-based receiver has over the DFE-based receiver. This modification is defined by Equation (178A–36)."
Replace references to "b1" in 178A.1.11 and its subclauses with "blim(1)".
Implement with editorial license.

Cl **176A** *SC* **176A.5** *P* **632** *L* **25** # 210

Lusted, Kent Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

The term for the training pattern in Table 176A-2 Bit 6:5 and Table 176A-3 does not align with the term used in Figure 176A-2. Furthermore, the use of "test" in the name suggests that it only for test use.

SuggestedRemedy

Change "test pattern request" to "training pattern request" in Table 176A-2 and Table 176A-3.

Also update title of 176A.5.3 and elsewhere in the Annex as appropriate

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **176A** *SC* **176A.6** *P* **634** *L* **15** # 211

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

The term for the training pattern in Table 176A-4 Bit 13:12 and Table 176A-5 does not align with the term used in Figure 176A-2. Furthermore, the use of "test" in the name suggests that it only for test use.

SuggestedRemedy

Change "test pattern status" to "training pattern status" in the tables

Also update title of 176A.6.3 and elsewhere in the Annex as appropriate

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **176A** *SC* **176A.4.3.1** *P* **630** *L* **5** # 215

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

The output of the PRBS13 training patterns when the precoder is enabled depends on the initial value of the precoder.

SuggestedRemedy

Add a statement such as "The precoder state is initialized to 0 at the beginning of each training pattern, so that P(j–1)=0 in Equation (135–1) for the first PAM4 symbol of the training pattern"

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Precoder initialization as proposed is already defined in 176A.4.4.

Cl **176A** *SC* **176A.8** *P* **637** *L* **3** # 219

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **D** *(bucket)*

Equalization control is only available for devices uses "Type A1" link training. Eq contril is not supported for "Type A2" link training. (Note: another comment proposed to change the terms "Type A1" and "Type A2")

SuggestedRemedy

Denote in the first paragraph that equalization control is only available with "Type A1" link training

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **116** *SC* **116.2.5** *P* **119** *L* **48** # 220

Huber, Thomas — Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The changes made to this text have removed 400GBASE-CR4 from the list of PHYs supporting auto-negotiation, and did not add 400GBASE-CR2. This is not consistent with what is in table 116-3a and 116-3b.

SuggestedRemedy

Update the list of PHYs to include 400GBASE-CR4 and 400GBASE-R2.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add the following two PHY types to the list: 400GBASE-CR4, 400GBASE-CR2

Cl **116** *SC* **116.3.1** *P* **121** *L* **2** # 221

Huber, Thomas — Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The newly added sentence about IS_SIGNAL.request isn't folowing the same structure as the sentences about the other primitives, all of which have this layer as the subject and the adjacent layer as the object.

SuggestedRemedy

Change the last sentence from:
"The IS_SIGNAL.request primitive is used to define the transfer of signal status from the next higher layer to a sublayer"
to
"The IS_SIGNAL.request primitive is used to define the transfer of signal status from a sublayer to the next lower sublayer."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **116** *SC* **116.3.3.4** *P* **126** *L* **42** # 222

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

It is confusing to be referring to both the next higher sublayer and the next lower sublayer when discussing this primitive - any given primitive should be between "a sublayer" and an adjacent sublayer..

SuggestedRemedy

Rewrite the text as follows (essentially deleting the first sentence and clarifying the remaining text):
The IS_SIGNAL.request primitive is generated by the transmit process to propagate the detection of severe error confitions (e.g., no valid signal being received by a sublayer) to the next lower sublayer, and, for physical layer implemenations that use the inter-sublayer link training function defined in Annex 176A, to indicate the status of the inter-sublayer link training.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **116** *SC* **116.3.3.4.1** *P* **127** *L* **1** # 223

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The value OK means there is valid data being presented to the lower layer whether or not ILT is used.

SuggestedRemedy

Revise the paragrah as follows:
A value of OK indicates that communication between the next higher sublayer and this sublayer has been established and valid data is being presented by the sublayer to the next lower sublayer.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The value of ILT is that it confirms unambiguously that data being received at each physical interface is indeed valid. The phrase "service interface supports the values IN_PROGRESS and READY" implies that ILT is being used. Without ILT a value of "OK" means only that there are no indications that the data is not valid, but at the same there is no confirmation that it is valid.

Cl **116** *SC* **116.3.3.4.1** *P* **127** *L* **7** # 224

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The IN_PROGRESS and READY values are only supported if ILT is being used. It would be more clear to make support of ILT the condition rather than support of the values.

SuggestedRemedy

Change "supports the values IN_PROGRESS and READY" to "supports inter-sublayer link training".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The suggested change is an improvement, except that it might be interpreted as meaning this particular ILS supports link training.
Change "If the service interface supports the values IN_PROGRESS and READY,"
To "If the Physical Layer implementation supports ILT"
Implement with editorial license to multiple instances.

Cl **116** *SC* **116.3.3.4.1** *P* **127** *L* **15** # 225

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The phrase "communication with some upper sublayer is not fully established yet" is confusing. Any sublayer only directly communicates with the immediately adjacent sublayer(s). The corresponding indication primitive refers to communication with the link partner; while that is still not really clear, it is at least some improvement.

SuggestedRemedy

Change "with some upper sublayer" to "with the link partner".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The SIGNAL_OK parameter value is potentially propagated through multiple sublayers in a PHY. As an example, this READY value might emanate from an AUI component (indicating that this AUI is not done ILT) and this might propagate through a PMA, and Inner FEC, and final to the PMD. The suggested remedy is not correct.
But it might be better to refer to the ILT process.
Change "but communication with some upper sublayer is not fully established yet"
To "but ILT at an upper ILS has failed"
Implement with editorial license.

Cl **119** *SC* **119.7.4.1** *P* **141** *L* **12** # 226

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

In clauses 171, 172, and 175, the PICS has separate elements for using the state diagram and stateless encoder; here they seem to be lumped together.

SuggestedRemedy

Align the PICS items for 66b encoder/decoder with what is in clauses 171/172.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editoiral license

Cl **176** *SC* **176.1.3** *P* **237** *L* **13** # 227

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

Since the description of the 1.6T PCS uses A, B, C, and D to identify the four FEC encoders, the definition of a symbol-pair could be misinterpreted as literally only being from codeword A and codeword B, when what is intended is that a symbol pair is any pair of symbols that come from two different FEC encoders.

SuggestedRemedy

Change the nomenclature in the symbol-pair and symbol-quartet definitions to use something other than A, B, C, D (e.g., 1, 2, 3, 4), or to more explicitly state that the symbols are from codewords produced by different FEC encoders without naming them (e.g., a symbol-pair is defined as two adjacent RS-FEC symbols where the two symbols were produced by two different FEC encoders).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The ordering of the symbols in the symbol-pair and symbol-quartet is important. A symbol-pair is always a symbol from FEC codeword A followed by a symbol from FEC codeword B as captured in the current symbol-pair definition in the draft. Similarly, a symbol-quartet is always a symbol from FEC codeword A, followed by B, C and D which is also captured in the current symbol-quartet definition in the draft. In addition, symbol-pairs are only applicable to the 200GBASE-R, 400GBASE-R and 800GBASE-R symbol-muxing PMAs, and symbol-quartets are only applicable to 1.6TBASE-R symbol-muxing PMA - the proposed change is to add this detail to the definitions.

Change the symbol-pair definition to:
"A symbol-pair is defined as two adjacent RS-FEC symbols (for example, on a PCS lane) where the first symbol in the pair is from RS-FEC codeword A and the second symbol is from RS-FEC codeword B. Symbol-pairs are used in the 200GBASE-R, 400GBASE-R and 800GBASE-R symbol-multiplexing PMAs."

Change the symbol-quartet definition to:
"A symbol-quartet is defined as four adjacent RS-FEC symbols (for example, on a PCS lane) where the first symbol in the quartet is from RS-FEC codeword A, the second symbol is from RS-FEC codeword B, the third symbol is from RS-FEC codeword C, and the fourth symbol is from RS-FEC codeword D. Symbol-quartets are used in 1.6TBASE-R symbol-multiplexing PMAs."

Additionally, copy the legend from Fig. 176-4 and add it to Fig. 176-7, and copy the legend from Fig. 176-5 and add it to Fig. 176-6.

Implement with editorial license.

Cl **176** *SC* **176.4.3.3.1** *P* **244** *L* **14** # 230

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

"until there is an integer number of four RS-FEC codewords between the start of the alignment markers on any two PCSLs" could be misinterpreted as meaning exactly 4 (literally, "an integer number of four"), when the intent was a mulitple of four.

SuggestedRemedy

Change to "… until the number of RS-FEC codewords between the start of the alignment markers on any two PCSLs is an integer multiple of four."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change from ".. until there is an integer number of four RS-FEC codewords between the start of the alignment markers on any two PCSLs. "
to ".. until there is an integer multiple of four RS-FEC codewords between the start of the alignment markers on any two PCSLs. "

Implement with editorial license.

Cl **176** *SC* **176.4.3.3.2** *P* **244** *L* **34** # 231

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

"until there is an integer number of two RS-FEC symbols (20 bits) between the start of the alignment markers on any two PCSLs" could be misinterpreted as meaning exactly 2 (literally, "an integer number of two"), when the intent was a mulitple of two.

SuggestedRemedy

Change to "… until the number of RS-FEC symbols between the start of the alignment markers on any two PCSLs is an integer multiple of two."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change from "...until there is an integer number of two RS-FEC symbols (20 bits) between the start of the alignment markers of any two PCSLs."
to "until there is an integer multiple of two RS-FEC symbols (20 bits) between the start of the alignment markers of any two PCSLs."

Implement with editorial license.

Cl **176** *SC* **176.4.3.3.3** *P* **244** *L* **45** # 232

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

"until there is an integer number of four RS-FEC symbols (40 bits) between the start of the alignment markers on any two PCSLs" could be misinterpreted as meaning exactly 4 (literally, "an integer number of four"), when the intent was a mulitple of four.

SuggestedRemedy

Change to "… until the number of RS-FEC symbols between the start of the alignment markers on any two PCSLs is an integer multiple of four."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change from "until there is an integer number of four RS-FEC symbols (40 bits) between the start of the alignment markers of any two PCSLs."
to "until there is an integer multiple of four RS-FEC symbols (40 bits) between the start of the alignment markers of any two PCSLs."

Implement with editorial license.

Cl **176** *SC* **176.4.3.4.1** *P* **245** *L* **39** # 233

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

In figure 176-3, since this subclause is about m:n PMAs, and m is the number of PSCL, it would be more clear to use m as the variable to represent the number of PCSLs.

SuggestedRemedy

Change x=7 and x=15 in the figure to m=7 and m=15

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Sub-clause 176.4 uses m to indicate the number of input lanes of the m:n PMAs. While in Fig 176-3, the variable x is used as the index to the PCS lane. For example, m = 8 and x = 7 for the 200GBASE-R 8:1 PMA. The variable x is also used as the index of the PCS lane in the state diagrams sub-clause (176.4.5) and in various PCS clauses (e.g. Cl119). Hence, using x as the index for the PCS lane in Fig 176-3 is a better choice, while reserving the use of m to denote number of lanes (where needed).

The draft as written is technically correct, and the suggested remedy will not improve the readability of the draft.

Cl **176** *SC* **176.4.3.4.2** *P* **247** *L* **11** # 234

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

In figure 176-5, since this subclause is about m:n PMAs, and m is the number of PSCL, it would be more clear to use m as the variable to represent the number of PCSLs.

SuggestedRemedy

Change x=7 and x=15 in the figure to m=7 and m=15

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Sub-clause 176.4 uses m to indicate the number of input lanes of the m:n PMAs. While in Fig 176-5, the variable x is used as the index to the PCS lane. For example, m = 8 and x = 7 for the 200GBASE-R 8:1 PMA. The variable x is also used as the index of the PCS lane in the state diagrams sub-clause (176.4.5) and in various PCS clauses (e.g. Cl119). Hence, using x as the index for the PCS lane in Fig 176-5 is a better choice, while reserving the use of m to denote number of lanes (where needed).

The draft as written is technically correct, and the suggested remedy will not improve the readability of the draft.

Cl **177** *SC* **177.4.4** *P* **273** *L* **48** # 239

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The symbol + is used to mean two different things in this equation; the first instance is intended to mean the Boolean XOR operation, while the second is normal arithmetic addition.

SuggestedRemedy

Change the first + to XOR

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184** *SC* **184.1.3** *P* **473** *L* **54** # 240

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The next two bullets after this one talk about per-flow functions. That terminology was introduced because after the lane permutation, the PCS lanes aren't really the PCS lanes any more. It would be useful to add some text in this bullet about the lane permutation to clarify that it creates 32 flows.

SuggestedRemedy

Add "to create 32 Inner FEC flows" at the end of the bullet

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184** *SC* **184.2** *P* **476** *L* **2** # 241

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

With the introduction of the flow terminology, most of the functions are per-flow rather than per PCS lane

SuggestedRemedy

Change "PCS lane" to "Inner FEC flow"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184** *SC* **184.2** *P* **476** *L* **6** # 242

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

It will be useful here to explicitly state that the permutation process creates 32 inner FEC flows.

SuggestedRemedy

Change the end of the sentence to "… by a permutation function to create 32 Inner FEC flows."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184** *SC* **184.4.4** *P* **479** *L* **40** # 248

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

It is correct that a negative index for permo is not defined, but this isn't clearly stating what the value of convio is when the algorithm produces a negative index into permo. If the intent is that the corresponding convio value should then also be considered as unspecified (i.e., it is some random 40-bit pattern), that should be explicitly stated.

SuggestedRemedy

Change the sentence to say "When the algorithm produces a negative index to permo, the value of convio is unspecified."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **186** *SC* **186.2.4.6.7** *P* **532** *L* **40** # 253

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The specified values for the PT field were taken from OIF 800ZR. Since 800GBASE-ER1[-20] adds additional overhead to improve PTP accuracy, it should have its own payload type values.

SuggestedRemedy

Change 0x40 and 0x41 to TBD. Send a liaison to ITU-T Q11/15 requesting assignment of payload types for the 800GBASE-ER1[-20] application. (and yes, I will write a draft of said liaison :-))

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change payload types to TBD, send liaison to ITU-T SG15 requesting new payload type codepoints

Cl **186A** *SC* **186A** *P* **774** *L* **13** # 258

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **D** *(bucket)*

The PCS transmit function is in 186.2.4. The PMA transmit function is in 186.3.3.1.

SuggestedRemedy

Update the first and last TBDs with the clause numbers. Delete the words "including TBD" from the sentence, as there is no need to reiterate what functions the PMA includes in this annex.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **181** *SC* **181.9.11** *P* **416** *L* **32** # 263

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **D** *(bucket)*

The RINxxOMA measurement definition in 181.9.11 unnecessarily duplicates the definition in 180.9.11.

SuggestedRemedy

Shorten 181.9.11 with reference to 180.9.11 as follows:

RINxxOMA, with “xx” referring to the value for optical return loss tolerance in Table 181–5, shall be within the limit given in Table 181–5 when measured using the test pattern and sampling range specified for OMAouter measurement in 181.9.4, but with applied xx dB optical reflection and the reference receiver specified for TDECQ measurement in 181.9.5. RINxxOMA is measured using the methods specified in 180.9.11.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **182** *SC* **182.9.11** *P* **444** *L* **1** # 264

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **D** *(bucket)*

The RINxxOMA measurement definition in 182.9.11 unnecessarily duplicates the definition in 180.9.11.

SuggestedRemedy

Shorten 182.9.11 with reference to 180.9.11 as follows:

RINxxOMA, with “xx” referring to the value for optical return loss tolerance in Table 182–7, shall be within the limit given in Table 182–7 when measured using the test pattern and sampling range specified for OMAouter measurement in 182.9.4, but with applied xx dB optical reflection and the reference receiver specified for TDECQ measurement in 182.9.5. RINxxOMA is measured using the methods specified in 180.9.11.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **183** *SC* **183.9.11** *P* **469** *L* **32** # 265

Johnson, John Broadcom

Comment Type **TR** *Comment Status* **D** *(bucket)*

The RINxxOMA measurement definition in 183.9.11 unnecessarily duplicates the definition in 180.9.11.

SuggestedRemedy

Shorten 183.9.11 with reference to 180.9.11 as follows:

RINxxOMA, with “xx” referring to the value for optical return loss tolerance in Table 183–6, shall be within the limit given in Table 183–6 when measured using the test pattern and sampling range specified for OMAouter measurement in 183.9.4, but with applied “xx” dB optical reflection and the reference receiver specified for TDECQ measurement in 183.9.5. RINxxOMA is measured using the methods specified in 180.9.11.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **177** *SC* **177.4.1** *P* **272** *L* **23** # 280

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **D** *(bucket)*

The order of the delay lines is specified 0,1,2 round robin. It is hinted at, but not stated explicitly, that the order of the symbols within each codeword is thus 0000,1111,2222. Is this always the case, or would 1111,2222,0000 or 2222,0000,1111 also be possible? Asked another way, is the start of the CI output sequence guaranteed to line up with the start of the 120-bit output? If they don't line up, then the bit chosen for the path data delay would not be correct.

SuggestedRemedy

Assuming the delay-line to inner-FEC CW symbol order is deterministic, add a sentence (and maybe even a figure) showing the exact order symbols from each delay line within each 120-bit output (000011112222)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Mark the order of symbols in the figure and add a sentence describing the order.
Implement the suggested remedy with editorial license.

Cl **176** *SC* **176.4.4.2.1** *P* **250** *L* **34** # 296

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **D** *(bucket)*

Is a 1-bit SLIP appropriate? Why not SLIP by two bits, since the AM alignment necessarily lines up with PAM4 symbols in the received PMA lane?
Implementations are free to do something more optimal, but the base algorithm presented here could still have a two-bit SLIP.
Using 1 bit does not do any lasting harm, but does double the expected lock time.

SuggestedRemedy

Consider changing to a 2-bit SLIP.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
When transmitting PAM4 symbols, there is no requirement that the PAM4 symbols align with RS-FEC symbols. There can be scenarios where the 2 bits of a PAM4 symbol belong to adjacent RS-FEC symbols. Therefore a PMA demux symbol lock mechanism that uses a 2-bit slip per the suggested remedy (instead of the 1 bit slip in the current draft) will not be able to guarantee finding the RS-FEC symbol boundary and achieving AM lock.

The suggested remedy will not work and the 1-bit slip present in the current draft is necesary.

Cl **186** *SC* **186.2.4.1** *P* **527** *L* **4** # 304

de Koos, Andras — Microchip Technology

Comment Type **T** *Comment Status* **D** *(bucket)*

It is true that the Tx PCS needs to remove idles with respect to the MII stream in order to generate the proper outgoing rate. However, WHERE to remove them may complicate timestamping, since the MII is no longer transparent from end-to-end if the MII-Extenders do not insert/extract at the same place. If there is a new input indicating discontinuities due to AM removal in the PHY_XS Transmit, then the same interface can be used to indicate discontinuities due to idle insertion done by the PHY_XS Transmit. Idles removed by the TxPCS can thus be at the same positions as the idles inserted by the PHY_XS, meaning that the MII is transparent from end-to-end.
Implementation-wise, this may not be a concern, since the PHY_XS Transmit would not have inserted idles only for the CL186 PCS Transmit to remove them. Simpler for the Tx PHY_XS to not have inserted idles at all.

SuggestedRemedy

Consider integrating the idle removal function with the AM location relay function. They are both discontinuities on the MII and can be indicated on the same input interface. Specific idles can thus be removed, rather than arbitrary idles.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
In terms of how to write the standard, removing idles to accomodate AMs has been part of the encoding/rate adaptation process since clause 82. It would be awkward to change this in clause 186 and not elsewhere. In terms of implementation, there are many options for where the Idles could be removed, and the choice can indeed make a difference wrt timestamping, but clause 186 isn't the place to discuss that.

Cl **186** *SC* **186.2.5.10** *P* **541** *L* **4** # 305

de Koos, Andras — Microchip Technology

Comment Type **T** *Comment Status* **D** *(bucket)*

It is true that the Rx PCS needs to add idles in order to generate the proper outgoing MII rate. However, WHERE to add them may complicate timestamping, since the MII is not necessarily the same from end-to-end if MII-Extenders do not insert/extract at the same MII positions. If there is a new output indicating the AM position from the Rx PCS then the same interface can be used to indicate discontinuities due to idle insertion done by the RxPCS. Idles added by the Rx PCS can thus be at the same positions as the idles removed by the Rx PHY_XS, meaning that the MII is transparent from end-to-end.
Implementation-wise, this may not be a concern, since the Rx PCS would not have inserted idles only for the Rx PHY_XS to remove them. Simpler for the Rx PCS to not have inserted idles at all.

SuggestedRemedy

Consider integrating the idle addition function with the AM location relay function. They are both discontinuities on the MII and can thus be indicated on the same output interface (can re-use RX_NUM_BIT_CHANGE).

Proposed Response *Response Status* **W**

PROPOSED REJECT.
In terms of how to write the standard, adding idles to accomodate removed AMs has been part of the encoding/rate adaptation process since clause 82. It would be awkward to change this in clause 186 and not elsewhere. In terms of implementation, there are many options for where the Idles could be removed, and the choice can indeed make a difference wrt timestamping, but clause 186 isn't the place to discuss that.

Cl **1** *SC* **1.4.184ea** *P* **52** *L* **30** # 306

Mi, Guangcan — Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **D** *(bucket)*

missing discription of modulation format of 800GBASE-LR1

SuggestedRemedy

IEEE 802.3 physical layer specification for 800Gb/s PHY using 800GBASE-R encoding, dual polarization 16 state quadrature amplitude modulation(DP-16QAM), and coherent detection, over single-mode fiber, with reach up to at least 10km.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the definition to the following:
IEEE 802.3 Physical Layer specification for 800Gb/s PHY using 800GBASE-R encoding, dual polarization 16-state quadrature amplitude modulation (DP-16QAM), and coherent detection, over single-mode fiber, with reach up to at least 10 km.

Cl **30** *SC* **30.5.1.1.2** *P* **58** *L* **36** # 307

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **D** *(bucket)*

wrong PCS type for 800GBASE-ER1

SuggestedRemedy

change to 800GBASE-ER1 PCS/PMA encoding over single-mode fiber ….

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
change to 800GBASE-ER1 PCS/PMA over single-mode fiber ….
Implement the suggested remedy with editorial license

Cl **30** *SC* **30.5.1.1.2** *P* **58** *L* **38** # 308

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **D** *(bucket)*

wrong PCS type for 800GBASE-ER1-20

SuggestedRemedy

change to 800GBASE-ER1 PCS/PMA encoding over single-mode fiber ….

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
change to 800GBASE-ER1 PCS/PMA over single-mode fiber ….
Implement the suggested remedy with editorial license

Cl **169** *SC* **169.1.3** *P* **144** *L* **41** # 310

Mi, Guangcan Huawei Technologies Co., Ltd

Comment Type **TR** *Comment Status* **D** *(bucket)*

missing discription of modulation format of 800GBASE-LR1

SuggestedRemedy

change discription to , 800Gb/s PHY using 800GBASE-R encoding, dual polarization 16 state quadrature amplitude modulation(DP-16QAM), and coherent detection, over single-mode fiber, with reach up to at least 10km.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the discription to: "800Gb/s PHY using 800GBASE-R encoding, dual polarization 16-state quadrature amplitude modulation (DP-16QAM), and coherent detection, over single-mode fiber, with reach up to at least 10km."

Cl **178** *SC* **178.9.3.3** *P* **306** *L* **23** # 330

Healey, Adam Broadcom Inc.

Comment Type **T** *Comment Status* **D** *(bucket)*

Annex 178A specifies the calculation of COM for this PMD and therefore references to Annex 93A in this test procedure should be changed to the corresponding references in Annex 178A. E.g., at line 23, the reference to "the transmitter pacakge model in 93A.1.2" should be replaced with "the transmitter package model defined in 178A.1.4.2".

SuggestedRemedy

Update references to Annex 93A to point to equivalent content in Annex 178A as appropriate.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #370.

Cl **179** *SC* **179.11.7.1** *P* **359** *L* **34** # 331

Healey, Adam Broadcom Inc.

Comment Type **T** *Comment Status* **D** *(bucket), Host channel model*

The host channel model is defined Annex 178A (see 178A.1.4.3) and the calculations described in 179.11.7.1 are redundant. The information about the host transmission lines (e.g., transmission line parameters, zp values for transmitters, receivers, and aggressors) should now be part of the COM parameter value tables and any explanatory material, if needed, moved to 179.11.7.

SuggestedRemedy

Delete subclause 179.11.7.1. Define host transmission line parameters and lengths in the table of COM parameter values. If the information about the loss of the host transmission line model is considered valuable, it can be moved to 179.11.7. In 179.9.5.3.3, re-phrase item a) to indicate that the s-parameters measured from the Tx test reference to the Rx test reference (see Figure 110-3b) are used for the computation of COM and that the transmitter device, package, and host models are omitted from the calculation. For item c) delete the first sentence, delete Equation (179-11), and re-phrase the text to state that Tr is set to the transition time measured at the Tx test reference (measured using the method in 120E.3.1.5, etc.).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **120F** *SC* **120F.1** *P* **597** *L* **14** # 337

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **D** *'bucket), OSI reference figure*

The OSI Reference Model "Physical" includes the MDI - the lower border should align with the MDI / Medium border. As currently shown, it appears to be showing the bottom border of the PHY.
Two instances in Figure 120F-1

SuggestedRemedy

Redraw the bottom of the OSI Reference model so it aligns to the MDI / Medium Border

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **120G** *SC* **120G.1** *P* **603** *L* **14** # 338

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **D** *'bucket), OSI reference figure*

The OSI Reference Model "Physical" includes the MDI - the lower border should align with the MDI / Medium border. As currently shown, it appears to be showing the bottom border of the PHY.
Two instances in Figure 120G-1

SuggestedRemedy

Redraw the bottom of the OSI Reference model so it aligns to the MDI / Medium Border

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176D** *SC* **176D.1** *P* **675** *L* **14** # 339

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **D** *'bucket), OSI reference figure*

The OSI Reference Model "Physical" includes the MDI - the lower border should align with the MDI / Medium border. As currently shown, it appears to be showing the bottom border of the PHY.
Figure 176D-1

SuggestedRemedy

Redraw the bottom of the OSI Reference model so it aligns to the MDI / Medium Border

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176E** *SC* **176E.1** *P* **694** *L* **14** # 340

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

Comment Type **TR** *Comment Status* **D** *'bucket), OSI reference figure*

The OSI Reference Model "Physical" includes the MDI - the lower border should align with the MDI / Medium border. As currently shown, it appears to be showing the bottom border of the PHY.
Figure 176E-1

SuggestedRemedy

Redraw the bottom of the OSI Reference model so it aligns to the MDI / Medium Border

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **185** *SC* **185.1** *P* **499** *L* **44** # 343

D'Ambrosia, John Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note C for Table 185-1 states the following -
One or two 800GAUI-n may be instantiated within a 800GBASE-DR4 PHY as described in 176B.6.1.
However, it does not appear from the inner FEC functional block diagram in Fig 184-2, it does not appear that an AUI can be instantiated below the inner FEC sublayer.
Additionally, it is pointing to the wrong PHY

SuggestedRemedy

Modify Note C
One or two 800GAUI-n may be instantiated within a 800GBASE-LR1 PHY above the Inner FEC sublayer as described in 176B.6.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The note points to 176B.6.1 which clearly describes where the AUIs may reside. The suggested change in this regard is not an improvement to the draft.
However, the PHY types in the footnote should be corrected...
Change "800GBASE-DR4-500" to "800GBASE-LR1"

Cl **182** *SC* **182.1** *P* **420** *L* **31** # 344

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note C for Table 182-1 reads
One or two 200GAUI-n may be instantiated within a 200GBASE-DR1-2 PHY as described in 176B.4.1.
However, the lane rate below the inner FEC is at a different BAUD rate than what a 200G AUI lane is specified for (106.25 vs 113.4375), therefore an AUI can only exist in a PHY above the inner FEC sublayer

SuggestedRemedy

Modify Note C
One or two 200GAUI-n may be instantiated within a 200GBASE-DR1-2 PHY above the Inner FEC sublayer as described in 176B.4.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The note does not imply in any way that the AUI signaling rates are the same as the PMD signaling rates. The note points to 176B.4.1 which clearly describes where the AUIs may reside. The suggested changes are not an improvement to the draft.

Cl **182** *SC* **182.1** *P* **421** *L* **15** # 345

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note C for Table 182-2 reads
One or two 400GAUI-n may be instantiated within a 400GBASE-DR2-2 PHY as described in 176B.5.1.
However, the lane rate below the inner FEC is at a different BAUD rate than what a 200G AUI lane is specified for (106.25 vs 113.4375), therefore an AUI can only exist in a PHY above the inner FEC sublayer

SuggestedRemedy

Modify Note C
One or two 400GAUI-n may be instantiated within a 400GBASE-DR2-2 PHY above the Inner FEC sublayer as described in 176B.5.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Resolve using the response to comment #344.

Cl **182** *SC* **182.1** *P* **422** *L* **16** # 346

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note C for Table 182-3 reads
One or two 800GAUI-n may be instantiated within a 800GBASE-DR4-2 PHY as described in 176B.6.1.
However, the lane rate below the inner FEC is at a different BAUD rate than what a 200G AUI lane is specified for (106.25 vs 113.4375), therefore an AUI can only exist in a PHY above the inner FEC sublayer

SuggestedRemedy

Modify Note C
One or two 800GAUI-n may be instantiated within a 800GBASE-DR4-2 PHY above the Inner FEC sublayer as described in 176B.6.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Resolve using the response to comment #344.

Cl **182** *SC* **182.1** *P* **423** *L* **44** # 347

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note b for Table 182-4 reads
If one or two 1.6TAUI-n is implemented in a PHY, additional 1.6TBASE-R SM-PMA sublayers
are required according to the guidelines in 176B.7.1.
However, the lane rate below the inner FEC is at a different BAUD rate than what a 200G AUI lane is specified for (106.25 vs 113.4375), therefore an AUI can only exist in a PHY above the inner FEC sublayer

SuggestedRemedy

Modify Note C
One or two 1.6TAUI-n may be instantiated within a 1.6TBASE-DR8-2 PHY above the Inner FEC sublayer as described in 176B.7.1.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Resolve using the response to comment #344.

Cl **183** *SC* **183.1** *P* **450** *L* **31** # 348

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Note C for Table 183-1 reads
One or two 800GAUI-n may be instantiated within a 800GBASE-FR4-500 PHY as described in 176B.6.1.
However, the lane rate below the inner FEC is at a different BAUD rate than what a 200G AUI lane is specified for (106.25 vs 113.4375), therefore an AUI can only exist in a PHY above the inner FEC sublayer
Additionally, Note C does not address the 800GBASE-LR4 PHY.

SuggestedRemedy

Modify Note C
One or two 800GAUI-n may be instantiated within a 800GBASE-FR4-500 PHY or 800GBASE-LR4 PHY above the Inner FEC sublayer as described in 176B.6.1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The note does not imply in any way that the AUI signaling rates are the same as the PMD signaling rates. The note points to 176B.6.1 which clearly describes where the AUIs may reside. The suggested change in this regard is not an improvement to the draft.
However, the PHY types in the footnote should be corrected...
Change "800GBASE-FR4-500 PHY" to "800GBASE-FR4 PHY or 800GBASE-LR4 PHY"

Cl **176B** *SC* **176B** *P* **654** *L* **1** # 349

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Annex 176B is noted as normative - but there are no corresponding SHALL statements or PICS.

SuggestedRemedy

Add Shall statement where intended or make informative.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
A normative annex need not have either shall statements or PICS to be normative. As an example, Annex 93A, which defines channel operating margin and other test methodologies, does include shall statements, but it has no PICS subclause. As another example, Annex 93C, which provides test methodologies for 25 Gb/s signaling, is normative, but includes no shall statement and no PICS.
The content of this annex is indeed normative. However, the normative relavance is set by piecemeal reference from another clause. Therefore no shall statements or PICS are required here. Those will be part of the referencing clauses and annexes.

Cl **174A** *SC* **174A** *P* **611** *L* **1** # 350

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Annex 174B is noted as normative - but there are no corresponding SHALL statements or PICS.

SuggestedRemedy

Add Shall statement where intended or make informative.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
A normative annex need not have either shall statements or PICS to be normative. As an example, Annex 93A (COM) does include shall statements, but it has no PICS subclause. As another example, Annex 93C, which provides test methodologies for 25 Gb/s signaling, is normative, but includes no shall statement and no PICS.
The content of this annex is indeed normative. However, the normative relavance is set by piecemeal reference from another clause. Therefore no shall statements or PICS are required here. Those will be part of the referencing clauses and annexes.

Cl **176A** *SC* **176A** *P* **624** *L* **1** # 351

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Annex 176A is noted as normative - but there are no corresponding SHALL statements or PICS.

SuggestedRemedy

Proposed Change

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

There are several "shall" in the Annex.

Add PICS entries for all "shall" in the Annex.

Cl **178A** *SC* **178A** *P* **721** *L* **1** # 352

D'Ambrosia, John — Futurewei, U.S. Subsidiary of Huawei

Comment Type **T** *Comment Status* **D** *(bucket)*

Annex 178A is noted as normative - but there are no corresponding SHALL statements or PICS.

SuggestedRemedy

Proposed Change

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The annex is labeled "normative" since it contains content required for implementation of the standard (see the 2021 IEEE-SA Standards Style Manual 12.6.2). Multiple clauses and annexes (e.g., 178.10.1, 176D.4.1) require the calculation of COM to verify normative requirments. There is no requirement for a normative annex to use the "shall" keyword or include a PICS proforma.
Finally, the suggested remedy does not contain sufficient detail to understand the impact of the proposed change or implement it in the draft.

Cl **186** *SC* **186.4.6.7** *P* **532** *L* **41** # 355

Maniloff, Eric — Ciena

Comment Type **T** *Comment Status* **D** *(bucket)*

Currently the PT defined is for 800ZR. Since there is an optional PTP timing mode defined using JC7-JC9 to carry AM locations, a second PT should be defined.

SuggestedRemedy

Update text to refer to a separate PT value for the AM location control defined in 186.2.4.6.10

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Resolve using the response to comment #253

Cl **178** *SC* **178.8.1** *P* **299** *L* **32** # 364

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

In 178.10 the channel is defined from TP0d to TP5d but these are not defined in this clause. These "test points" should appear in Figure 178-2, Figure 178-3, and Figure 178-4.

SuggestedRemedy

Update the figures per the comment. Extend the "Channel" arrow to be from TP0d to TP5d.

Add descriptive text if necessary.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **178** *SC* **178.9.3.3** *P* **306** *L* **32** # 369

Ran, Adee — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

The third dash item describes a case of a transmitter in a packaged device but with unknown package S-parameters.
In that case, one of the reference packages in this amendment should be used, not the one in 93A.1.2 (which was defined for much lower bandwidth).

Which of the two package class should be used should depend on the package class that the test transmitter adheres to.

SuggestedRemedy

Refer to Table 178–12 instead, and change the text to refer to the package class that the test transmitter adheres to.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **178** *SC* **178.9.3.3** *P* **306** *L* **6** # 370

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *(bucket)*

This subclause refers to the procedure in Annex 93C. Annex 93C has a few references to Annex 93A for calculation of COM, but in this project we use a different calculation of COM in Annex 178A.

Relevant places in Annex 93A are:
- 93A.2 Test channel calibration (referenced by 93C.1, and Figure 93A-2 by 93C.2)
- Equation 93A-19 (referenced by 93C.2)

SuggestedRemedy

Add exceptions to the list as required to replace the references to Annex 93A with appropriate references to Annex 178A. Add content to 178A as necessary.

Also apply in 176D as appropriate.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with consideration of comments #330 and #31, with editorial license.

Cl **179** *SC* **179.11.7.1.1** *P* **360** *L* **23** # 396

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *(bucket), Host channel model*

The method of host channel calculation is defined in 178A.1.4.3 and its combination with . The package and device model for usage in COM are defined in 178A.1.4 and 178A.1.5. These definitions should be referenced for both through and crosstalk path calculations.

SuggestedRemedy

Replace the text and equations in 179.11.7.1.1 and 179.11.7.1.2 with references to 178A.1.4.3 and the appropriate parameter values.

Also change references to these subclauses, e.g., 176E.6.12.2, with editorial license.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
[Editor's note: This comment proposes an update to a technically complete area in the draft]
Implement the suggested remedy in alignment with the response to comment #331, with editorial license.

Cl **179** *SC* **179.11.7.1.1** *P* **360** *L* **24** # 397

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *(bucket), Host channel model*

The text in 179.11.7.1.1 and 179.11.7.1.2 about calculations of the channel signal and crosstalk paths is inherited from clause 162. It does not account for the new possibility that the hosts on both sides of the cable are of different designations.

Regardless of the host model parameters, The through and FEXT paths should be set by the combination of the transmitter's host designation, the cable assembly, and the receiver's host designation; while the NEXT path is set only by the receiver's host designation.

This inherently creates multiple test conditions for a cable assembly, because the NEXT effect can different in each direction. All combinations need to be addressed.

SuggestedRemedy

Rewrite 179.11.7.1.1 to address the combination of host designations on both ends of the channel. Clarify that a cable assembly needs to comply with all valid combinations of hosts on its two ends.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Implement the suggested remedy (possibly using a table as suggested in comment #192).
Align with the response to comment #331.
Implement with editorial license.

Cl **180** *SC* **180.9.1** *P* **389** *L* **4** # 406

Ran, Adee Cisco Systems, Inc.

Comment Type **T** *Comment Status* **D** *(bucket)*

The title of Table 180-14 is incorrect. These are not the test pattern definitions; these are the test patterns used for measuring each parameter. The "related subclause" column contains references to the parameters, not to the test patterns.

Also in other optical subclauses.

SuggestedRemedy

Change the title of Table 180-14 to "Parameter to test pattern mapping".
Apply in other optical PMD clauses.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **176E** *SC* **176E.5.2** *P* **703** *L* **38** # 421

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

There are three separate rows for host PCB model, based on the three designations in clause 179. But these designations are irrelevant for this annex.

SuggestedRemedy

Change to one row with parameter name "Host PCB model". The content of that model should be TBD unless a model is adopted by other comments.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **179A** *SC* **179A.5** *P* **743** *L* **25** # 433

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

The horizontal locations of TP0d and TP5d appear almost aligned with those of TP1 and TP4, but these are very different test points. This could be improved.
The boxes labeled "Transmit function" and "Receive function" are not helpful here and do not appear in the similar Figure 179A-4.

SuggestedRemedy

Delete the boxes labeled "Transmit function" and "Receive function".
Move TP0d further to the left and TP5d further to the right.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
[Editor's note: This comment proposes an update to a technically complete area in the draft]
Move TP0d further to the left and TP5d further to the right

Cl **179A** *SC* **179A.5** *P* **743** *L* **33** # 434

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

"NOTE—The 11.5 dB ILdd includes allowance for BGA and connector footprint vias"

The host connector via is clearly shown as part of the 11.5 dB arrow.
The BGA footprint via is obviously included in the combination of "Device package + Host PCB".

The allocation includes the package too, so the NOTE as written is partial and misleading.

SuggestedRemedy

Delete the NOTE.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **179A** *SC* **179A.5** *P* **743** *L* **41** # 435

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket), MTF IL*

"Mated cable assembly and test point test fixture" is confusing. This thing is well known as "Mated test fixtures".

SuggestedRemedy

Change the label to "Mated test fixtures".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **179A** *SC* **179A.5** *P* **744** *L* **12** # 437

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *CA ILdd (bucket)*

The label showing the calculation of 40 dB is unnecessary. 40 dB and 11.5 dB appear in the figure and are easy to understand. The number 17 dB seems to come out of nowhere - is not found elsewhere and is only a result of this calculation (cable assembly loss without its test fixtures?)

SuggestedRemedy

Delete the label "Channel (TP0d-TP5d) ILdd = 40 dB @ 53.125 GHz = (2*11.5)+17"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Delete =(2*11.5)+17 and NOTE—Channel (TP0d-TP5d) ILdd derived from cable assembly host, and mated test fixture.

Cl **179C** *SC* **179C.1** *P* **756** *L* **36** # 448

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

"the mechanical interface between the PMD and the cable assembly may be a mated pair of connectors..."

Subsequent paragraphs have "is" instead of "may be". This is adequate in this paragraph too because it is a closed list (unlike subsequent subclauses).

SuggestedRemedy

Change "may be" to "is".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45** *P* **61** *L* **1** # 453

Sluyski, Mike — Cisco Systems Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

Clause 45 has no visibility to whether there is or is not an inner nor outer FEC added in the PMA/PMD or an extender sublayer. It seems "inner FEC was added after 2022" to cover aapplications where there is an XS either segmented or concatenated.

SuggestedRemedy

Remove … "inner" … from all Clause 45 FEC descriptions. When a FEC or XS is present the latency should be added as a fixed additive value. These could be added as separate terms but they shouldn't be referred to as either inner or outer FEC. These adders should also be "fixed" in nature (unlike the dynamic adjustments done for idle insert/remove.

Proposed Response *Response Status* **Z**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **172** *SC* **172.1.3** *P* **185** *L* **17** # 459

Sluyski, Mike — Cisco Systems Inc.

Comment Type **TR** *Comment Status* **D** *(bucket)*

subbullet i) is not relevant or consistent with an External XS layer. Rate compensation

SuggestedRemedy

make optional for external XS layer.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
The current text is consistent with other PCS clauses, such as 82, 119 and 175. Even in the case where an Extender Sublayer (XS) is implemented, the XS and the PHY are allowed to run asynchronous to each other, and so this rate compensation function in the PCS is required. However if in a given implementation the XS and PHY are synchronous to each other, then this funciton is not required to be implemented (becuase in this case there would be "no rate difference between the 800GMII and the sublayer below the PCS").

Cl **179** *SC* **179.11.1** *P* **352** *L* **26** # 462

Kocsis, Sam — Amphenol

Comment Type **T** *Comment Status* **D** *(bucket)*

This section no longer says anything about Characteristic Impedance

SuggestedRemedy

Remove "Characteristic impedance" from the section title.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **183** *SC* **183.7.2** *P* **459** *L* **39** # 472

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

BER should be block error ratio as in Table 180-8, Table 181-6, and Table 182-8.

SuggestedRemedy

Change "BER" to "block error ratio".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **1** *SC* **1.5** *P* **53** *L* **22** # 474

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

Need to include ISL here

SuggestedRemedy

Add new abbreviation as follows:
ILS inter-sublayer link

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add new abbreviation as follows:
ISL inter-sublayer link

Cl **180** *SC* **180.5.4** *P* **376** *L* **51** # 477

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *Signal detect (bucket)*

Define signal detect in context of OLT.

SuggestedRemedy

Redefine global_pmd_signal_detect to be function of ILT rather than optical power similar to the definition in 179.8.4.
Similarly for 181.5.4, 182.5.4, and 183.5.4.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Given the updated definition of SIGNAL_OK in 180.3 no changes to the global_signal_detect function is required.
Delete the editor's note here and in 181.5.4, 182.5.4, and 183.5.4.
[Editor's note: CC: 180, 181, 182, 183]

Cl **174A** *SC* **174A.6** *P* **613** *L* **2** # 479

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *error ratio (bucket)*

BER_added is not just for other ISLs in the PHY, but also between PHYs, and in the other PHY.

SuggestedRemedy

Change to "BER_added represents the total random BER account for other physically instantiated inter-sublayer links within the same
the PHY-to-PHY link (see 174A.5) or xMII Extender (see 174A.4)."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change to "BER_added represents the total random BER accounting for other physically instantiated inter-sublayer links within the same PHY-to-PHY link (see 174A.5) or xMII Extender (see 174A.4)."

Cl **176A** *SC* **176A.3** *P* **625** *L* **1** # 481

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

This is not really ILT, or at least excludes a great deal of what ILT is. This is actually more about the path start-up than ILT. Also, the bullets do not describe operation, but rather the mechanisms that allow path start-up to occur.

SuggestedRemedy

Change "ILT operation is as follows:"
To "Path start-up are achieved as follows:"
A similar overview description of ILT, between peer interfaces on the same ILS is still missing.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
This description is needed to help the reader understand the end-to-end control that is not explained in detail elsewhere. The rest of the ILT is detailed and easy to undestand, so no need for an overview here; also, the suggested remedy does not provide sufficient detail to implement.
Change: "ILT operation is as follows:"
To: "Path start-up is achieved as follows:"

Cl **176A** *SC* **176A.3** *P* **625** *L* **8** # 485

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

Not clear what "all the ISLs" means. I expect it means all of the ISL along the same path (see definition in 176A.2).

SuggestedRemedy

Change "all the ISLs" to "all the ISLs on the same path (see 176A.2)".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.3** *P* **625** *L* **10** # 486

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

It could be a path between XSs as well. Path is defined completely in 172A.2 so no need to embellish the end points of a path. Also, what is established?

SuggestedRemedy

"the path between the PCSs is established" to "communication on the path is established"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.3** *P* **625** *L* **13** # 487

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

What does it mean that "training is available and enabled". Not clear what "available" means. This annex applies only to sublayers that require it, so it must be implemented. Perhaps the though is that for some future sublayers that reference 176A, it is optional only.

SuggestedRemedy

Change "if training is available and enabled" to either "if training is enabled" or "if training is implemented and enabled".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "if training is available and enabled"
to "if training is enabled"

Cl **176A** *SC* **176A.3** *P* **625** *L* **17** # 488

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

the term "earlier PMAs" has no significance in the base standard. All are defined concurrently. Should either reference specific PMA clauses or use other defining criteria. Furthermore, previously specified electrical PMDs do not include the "extend training" bit, so they are excempt as well.

SuggestedRemedy

Change to "Interaction with PMAs and PMDs that do not support ILT, as specified in this annex, employs the second method."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change: "Interaction with earlier PMAs (e.g. those defined in Clause 120 or Clause 173) and with optical PMDs that do not support training, is performed using the second method.
to: "Interaction with PMAs and PMDs that do not support ILT as specified in this annex (e.g. those defined in clause 120 or Clause 173) use the second method"

Cl **176A** *SC* **176A.3** *P* **625** *L* **30** # 489

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

This sentence doesn't make sense: "If there are multiple lanes, all lanes switch within this time."
First, no time limit is defined in the previous sentence. Secondly, the previous sentence applies to each and all lanes so not need for this elaboration.

SuggestedRemedy

Delete the sentence or rewrite it to convey the intended meaning.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change: " If there are multiple lanes, all lanes switch within this time."
to: "The condition is shared by all lanes within an ISL, and therefore the switching of all lanes occurs in a period within the limits of propagation_timer 176A.11.3.3".

Cl **176A** *SC* **176A.3** *P* **625** *L* **32** # 490

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

rx_ready and remote_rts are always available. Perhaps it means waiting for them to switch to the value 1. Also, the word "receiver" is redundant since the variables are well defined.

SuggestedRemedy

Change the sentence to: "There is no specified timeout when waiting for either rx_ready or remote_rts to change to the value 1."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.3.2** *P* **626** *L* **29** # 491

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

Why use binary labels? These are not registers, just labels to map the enumerated modes to the mux.

SuggestedRemedy

Change "00", "01", and "10" to "0", "1", "2", respectively; four times in Figure 176A-1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.4.3.1** *P* **627** *L* **27** # 494

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

"At the start of the training pattern" is ambigous. I think it means the training pattern portion of the training frame.

SuggestedRemedy

Change to "At the start of the training pattern in each training frame".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **176A** *SC* **176A.4.3.2** *P* **630** *L* **41** # 496

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

The phrase "changes between subsequent training frames" is somewhat incorrect. It should be different between current and the subsequent frame. In general, it is always different in the next many frames.

SuggestedRemedy

Change "changes between subsequent training frames" to "is different in each training frame" or "is different in subsequent training frames".
Apply similarly in 176A.4.3.3 on page 631 line 3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change "changes between subsequent training frames"
to "is different in subsequent training frame".
Apply similarly in 176A.4.3.3 on page 631 line 3.

Cl **176A** *SC* **176A.4.3.2** *P* **631** *L* **18** # 498

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

These bits are not from the PAM4 encoder, they are from the generator.

SuggestedRemedy

change "the sequence of PAM4 symbols
derived by mapping only the A bits"
to "the A bits from the pattern generator"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "the sequence of PAM4 symbols derived by mapping only the A bits"
to "the A bits from the pattern generator"

Change: "the sequence of PAM4 symbols
derived by mapping only the A bits such that logical 0 is transmitted as 0 and logical 1 is transmitted as 3"
To: "the sequence of PAM4 symbols derived by mapping the A bits from the pattern generator such that logical 0 is transmitted as 0 and logical 1 is transmitted as 3"

[Editor's note: changed page/line from 630/52 to 631/18]

Cl **176A** *SC* **176A.4.4** *P* **631** *L* **22** # 499

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

Reference to gray coding and precoding in 120.5.7.1 and 135.5.7.2 is ambiguous since it specifies coding for both inputs and outputs.

SuggestedRemedy

On page 631 line 21…
change "by Gray coding the {A, B} pairs as specified in 120.5.7.1"
to "by Gray coding the {A, B} pairs as specified for output lanes in 120.5.7.1"
On page 631 line 25...
change "Gray coding the {A, B} pairs as specified in 120.5.7.1 and precoding the result as specified in 135.5.7.2"
to "Gray coding the {A, B} pairs as specified for outputs in 120.5.7.1 and precoding the result
as specified for outputs in 135.5.7.2"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **176A** *SC* **176A.4.4** *P* **631** *L* **28** # 500

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

The following paragraph is a repeat of specifications in 176A.4.3.1 through 176A.4.3.3. "For PRBS13, at the beginning of each training pattern the test pattern generator state is set to seed_i (see 176A.4.3.1) and the precoder state is set to 0 such that P(j–1) = 0 in Equation (135–1) for the first PAM4 symbol of the training pattern. For free-running PRBS13 and PRBS31, these operations are not performed."

SuggestedRemedy

Delete paragraph.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Precoding initial state is not defined elsewhere. Delete: "the test pattern generator state is set to seed_i (see 176A.4.3.1) and".
With editorial license

Cl **176A** *SC* **176A.4.3.1** *P* **629** *L* **23** # 501

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

The term "PRBS13" to describe the frame synchronous PRBS13 training pattern in ambiguous given there is a second pattern using PRBS13 generator. Am embellished name for this function and the corresponding bit in the control/status fields is necessary.

SuggestedRemedy

Change the pattern name to "synchronous PRBS13". Apply wherever appropriate including:
page 628, lines 28, 33
page 629, lines 25, 27, 35
page 631 line 28
page 632 line 29
page 633 line 19
page 634 line 18
page 635 line 15
page 644 line 3, 29

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement the suggested remedy with editorial license.

Cl **176A** *SC* **176A.6.8** *P* **636** *L* **22** # 502

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

The name of this field implies a state that occurs after normal training period, thus extension. It is asserted when ILT starts and goes to zero when ILT is complete.

SuggestedRemedy

Change the name of this bit to one of the following or similar:
"continue training"
"training in progress"
Update here and elsewhere where this bit is referenced.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the name of the Extend training bit to: "Continue training".
Implement with editorial license.

Cl **176A** *SC* **176A.7** *P* **636** *L* **42** # 503

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

This clause conflates training frame lock and polarization detection/correction. The former is not well defined and should be separate. The frame lock process should allow for locking on the defined frame marker or its inverse.

SuggestedRemedy

Create new subclause before 176A.7 Training frame lock.
Define the training frame lock process here including reference to the lock state machine.
Remove the first paragraph in 176A.7.
In 176A.11.3.1, redefine marker_valid as follows:
"Boolean variable that is set to true when the candidate frame marker matches the frame marker pattern defined in 176A.4.1 or its inverse and is set to false otherwise."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **176A** *SC* **176A.7** *P* **636** *L* **45** # 504

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

This specification is incomplete in a few ways:
#1 inversion or not is not conveyed to a managent status variable
#2 it is not clear if the correction persists after training is complete
#3 there should be some text in the PMD and AUI clause referring to the correction state and what to do with it

SuggestedRemedy

Update 176A.7 as follows with editorial license...
When training starts for each lane, the variable polarity_correction is set to false. [This should be included in the frame lock state diagram.]
If inverted frame markers are detected during the frame lock process, the polarity_correction variable shall be set to true.
The state of the polarity_correction variable persists until training restarts.
If polarity_correction is true, the lane input shall be corrected by mapping the received PAM4 symbols 0, 1, 2, and 3 to PAM4 symbols 3, 2, 1, and 0, respectively.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Add propossed change to 176A.7. Add new variable as propossed.
Implement with editorial license

Cl **176A** *SC* **176A.10** *P* **641** *L* **12** # 506

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

What is meant by a time-out? The only once I could find was due to a time-out in the recovery state in Figure 176A-7, where a time-out there causes a transition to the FAIL state. Why not reference that instead.

SuggestedRemedy

Clarify what specifically this is referring to. Perhaps "ILT should not be restarted based on entering the FAIL state in the Training control state diagram (see Figure 176A-7)"
But that seems like an unrecoverable fault.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

The comment is against the note in 176A.11.2.1.

Delete: "based on a timeout"
Add the following at the beginning of the note:
"There is no specified time limit for the ILT protocol."
Add the following at the end of the note: "The definition of an unrecoverable fault is beyond the scope of this Annex."

[Editor's note: Changed the page/line from 640/3 to 641/12.]

Cl **176A** *SC* **176A.11.2.1** *P* **641** *L* **20** # 507

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

The defintion of how to set remote_rts to true and false is a bit convoluted and the last sentence is redundant.

SuggestedRemedy

Change the second sentence to:
If mr_training_enable is true and "extend training" bit of the status field of received training frames
on all lanes of the interface is zero then remote_rts is true otherwise it is false. If mr_training is false then remote_rts is always true.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **176A** *SC* **176A.11.3** *P* **643** *L* **4** # 509

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

These statements indicate what to due if precoding is selecting but not if precoding is not selected.

SuggestedRemedy

Add text here or in Clause 176 indicating either:
For the PMA output and Inner FEC transmitter output the precoder is disabled unless set otherwise by management or the ILT process as defined in 176A.11.3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
The right place to implement this comment is Clause 176.
Implement with editorial license in Clause 176.
[Editor's note: CC: 176, 176A]

Cl **176A** *SC* **176A.11.3.1** *P* **644** *L* **45** # 510

Brown, Matt Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

There is no allotted time limit for training. There is one for recovery after a coefficient update by entering the FAIL state in Figure 176A-7 where training_failure is asserted.

SuggestedRemedy

Change definition to:
Boolean variable that is set to true when training failed to complete. The value is set by the Training control state diagram (see Figure 176A-x).

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **184** *SC* **184** *P* **475** *L* **40** # 513

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket)*

It is rather confusing that the signal names between the PMD receiver and the Inner FEC are the same as as for the transmitter even though the content is quite different, e.g., RX_XI contains a bit of TX_XI, TX_XQ, TX_YI, and TX_YQ. A different signal name might help to drive that point home.

SuggestedRemedy

Change the signal names RX_XI/XQ/YI/YQ to RX_AI/AQ/BI/BQ.
Update Clause 185 (PMD) to match.
Do the same in Clause 186/187 for 800GBASE-ER1.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license
[Editor's note: CC 185, 186, 187]

Cl **176E** *SC* **176E.3** *P* **695** *L* **35** # 517

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **D** *(bucket), C2M link diagram*

The service interface to the left of the host component and to the right of the module component are by definition specifically the PMA service interface. The AUI is a physical instantiation of the PMA service interface.

SuggestedRemedy

Change "inter-sublayer service interface" to "PMA service interface" in two places.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **178** *SC* **178.10** *P* **309** *L* **21** # 544

Li, Tobey — MediaTek

Comment Type **TR** *Comment Status* **D** *(bucket)*

Reference to the wrong section 178.10.2

SuggestedRemedy

Change reference of channel ERL from 178.10.2 to 178.10.3.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **184A** *SC* **184A** *P* **773** *L* **14** # 549

Kota, Kishore — Marvell Semiconductor

Comment Type **TR** *Comment Status* **D** *(bucket)*

Missing testvectors for 800GBASE-LR1

SuggestedRemedy

Add the testvectors which were provided in kota_3dj_04_2407.zip with supporting presentation in kota_3dj_01a_2407.pdf. If necessary, additional text to assist editors will be provided in supporting presentation.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license

Cl **179** *SC* **179.9.4.3** *P* **340** *L* **1** # 565

Dawe, Piers — Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket), VEC, SNR_ISI*

SNR_ISI is not needed as a separate spec: it is a component of eye opening. There is no need for a special Nb for this.

SuggestedRemedy

Delete the SNR_ISI section and the editor's note. See another comment for the holistic VEC-like, TDECQ-like spec that includes it.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The comment does not provide sufficient justification to support the suggested remedy.

SNR_ISI has been added in clause 179 after recognizing that reflections within the transmitter's internal host channel can create excessive degradation that cannot be equalized by the reference receiver and such reflections are not captured in other Tx measurements.
In essence, SNR_ISI guards against large difference between the host under test and the reference host channel (which is a package+PCB model with limited reflections).
SNR_ISI is an important specification for a CR host that should not be deleted.

In addition, the suggested remedy does not provide sufficient detail to understand the impact of the proposed change and to implement.

Cl **176E** *SC* **176E.4.1** *P* **696** *L* **13** # 568

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket)*

802.3 is not a component spec. We define observable behaviour of complete equipment ("hosts") at specified interfaces. For example, an optical signal at TP2 is the product of the host and the module. And see NOTE 2 below.

SuggestedRemedy

Change " for the C2M component" to "for C2M"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Resolve using the response to comment #145.

Cl **176E** *SC* **176E.4.3** *P* **698** *L* **5** # 571

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket), VEC*

Several inappropriate backplane-style "micro-managing" many-quotas spec items have appeared that are wasteful and unnecessary diagnostics, and some are not feasible with the losses allowed in C2M with reasonable reflections. This is not the way to specify an observable signal. See other comments noting the impracticality of the 120D style jitter measurement method for this project. See dawe_3dj_01a_2406, calvin_3dj_02a_2407 and successor.

SuggestedRemedy

Remove vf (min), Rpeak, SNDR, SNR_ISI and output jitter. Add a VEC-like, TDECQ-like spec, which can be measured in a scope using the COM reference receiver parameters from Table 176E-12. The VEC limit is derived from the COM table too.
Remove RLM; I think it was for 120E we decided we didn't need a separate eye linearity spec.
Add an eye height spec based on the same measurement.
Note that because of instrument noise, VEC and EH (like SNDR) should not be measured on small signals, but on nominal-minimum signals before any training process has reduced them ("presets").
Apply to C2M throughout 176E.
Another comment proposes the same approach for 179, CR.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The comment does not provide sufficient justification to support the suggested remedy.

The host output specifiction methodology has been adopted by the response to comment #186 against D1.0 following support shown in straw poll #3 in the May meeting:
I would support the approach for the AUI-C2M host and module output specifications outlined in ran_3dj_02_2405
Results (all): Y: 38, N: 9, NMI: 9, A: 42

Additionally, improvement to the original SNDR method has been adopted by comment #45 against D1.0, and there is an ongoing discussion on improvement of jitter measurement at the expected loss of C2M host.

No evidence of the claims in the comment has been provided.

In addition, the suggested remedy does not provide sufficient detail to understand the impact of the proposed change and to implement.

Cl **176E** *SC* **176E.6** *P* **705** *L* **32** # 572

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **D** *ucket), Output test diagrams*

The figures "Example host output test configuration" and "Example module output test configuration" have gone missing.

SuggestedRemedy

Reinstate them

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The output specification methodology adopted for C2M is different from the one previously used. It does not include counter-propagating crosstalk and its calibration As a result, most of the content of the previously used figures is irrelevant.

Note that the content is based on that of CR transmitter specifications, which is used for several generations and does not have similar figures.

Cl **1** *SC* **1.3** *P* **48** *L* **43** # 574

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **D** *(bucket)*

The QSFP-DD specification has been updated. Notice that 1.3 says "Standards may be subject to revision, and parties subject to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below"

SuggestedRemedy

Update QSFP-DD from Rev 7.0, September 29, 2023 to Rev 7.1, June 25, 2024, or remove the date and revision number from the reference.
Update any other references as appropriate if new revisions are published.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Change the revision number and date as proposed in the suggested remedy.
Implement with editorial license.

Cl **179** *SC* **179.9.4.3** *P* **335** *L* **20** # 578

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **D** *(bucket), VEC, RLM*

If we look at the signal at TP2 and its equalised eye rather than just hypothesising about it (see other comments), we probably don't need a separate RLM spec.

SuggestedRemedy

Delete the RLM spec and 179.9.4.2. See another comment for the holistic VEC-like, TDECQ-like spec that includes it.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

The comment does not provide sufficient justification for the suggested remedy.
RLM is measured directly from the signal without "hypothesising".
RLM is specified to limit the level mismatch in the transmitter output. Removing RLM would enable any level mismatch, which some receivers may not be able to handle in practice.

Cl **176** *SC* **176.4.3.5.2** *P* **249** *L* **15** # 584

Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

In Figure 176-8, consider changing the example lane numbers from 0 and 1 to "x" and "y" since they can be any two PCSLs for 1.6T.

SuggestedRemedy

In Figure 176-8 change the example lane numbers to be "x" and "y" and indicate in the text that x and y can be any two PCSLs.

Proposed Response *Response Status* **W**

PROPOSED REJECT.
Figure 176-8 is meant to illustrate an example of the symbol quartet multipexing and hence uses specific PCS lane numbers to illustrate the function. The description in 176.4.3.5.2 clearly states that any two PCS lanes can be used as inputs to the symbol quarter multiplexer. This is consistent with the other figures (Fig 176-7 and 176-6) that are also showing examples using specific PCS lane numbers, which makes it much easier to follow.

The suggested remedy will not improve the accuracy or readability of the draft.

Cl **175** *SC* **175.2.4.10** *P* **220** *L* **50** # 586

Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

Table 175-7 is missing the legend to define the potential values of "inst".

SuggestedRemedy

Update Table 175-7 to add a legend to define the potential values of "inst" for the service interface below the PCS. See Figure 175-2 as an example.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Assume the comment and suggested remedy is referring to Figure 175-7 and not Table 175-7.
Implement the suggested remedy with editorial license.
[Editor's note: CC 119]

Cl **176** *SC* **176.4.3.4.1** *P* **246** *L* **22** # 587

Nicholl, Gary Cisco Systems

Comment Type **T** *Comment Status* **D** *(bucket)*

In figure 176-4 it is very difficult in the pdf (at least on screeen) to distinguish the shading betweenB, C and D codewords. Given that each codeword is uniquely identifed by a letter is the shading even necessary in the first place. Similar comment against other similar figures.

SuggestedRemedy

Either find a better way to distinguish the shading between B, C and D, or just delete all the shading in the diagram. Make similar changes to all of the similar diagrams.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Modify or remove the shading used for the RS-FEC symbols in the figures, to better distinguish (while viewing the pdf) between: (1) symbols belonging to FEC B, C, D in Figs 176-4, 176-7 and 176-8; and (2) symbols belonging to FEC B, A', B' in Figs 176-5, 176-6.