Cl **180** *SC* **180.8.5** *P* **364** *L* **23** # 1

Johnson, John Broadcom

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

121.8.5.2 Table 121-11 specifies ORL of 21.4dB be applied for TX testing. For 200GBASE-DR1, this needs to be 15.1dB.

SuggestedRemedy

Add a new exception to the list in 180.8.5:
"- The optical return loss is as given in Table 180-6."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add a new exception to the list in 180.8.5:
"- The optical return loss is as given in Table 180-7."

Implement with editorial license.

Cl **182** *SC* **182.8.5** *P* **411** *L* **30** # 3

Johnson, John Broadcom

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

121.8.5.2 Table 121-11 specifies ORL of 21.4dB be applied for TX testing. For 200GBASE-FR1, this needs to be 17.1dB.

SuggestedRemedy

Add a new exception to the list in 182.8.5:
"- The optical return loss is as given in Table 182-7."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **181** *SC* **181.6.1** *P* **378** *L* **13** # 6

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *TX specs*

Total average launch power (max) in Table 181-5 is TBD for 800GBASE-FR4-500.

SuggestedRemedy

Replace TBD with a value equal to the Average launch power, each lane (max) + 6 dB, which is 4.9 + 6 = 10.9 dB. This methodology is consistent with previous FR4 PMDs (clauses 122, 151).

Response *Response Status* **C**

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

Cl **183** *SC* **183.6.1** *P* **425** *L* **16** # 7

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *TX specs*

Total average launch power (max) in Table 183-6 is TBD for 800GBASE-FR4.

SuggestedRemedy

Replace TBD with a value equal to the Average launch power, each lane (max) + 6 dB, which is 4.9 + 6 = 10.9 dB. This methodology is consistent with previous FR4 PMDs (clauses 122, 151) and 800GBASE-LR4 in this Table.

Response *Response Status* **C**

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

Cl **181** *SC* **181.6.1** *P* **378** *L* **23** # 8

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *TX specs*

Difference in launch power between any two lanes (OMAouter) (max) in Table 181-5 is TBD for 800GBASE-FR4-500.

SuggestedRemedy

Replace TBD with a value of OMAouter(max) minus OMAouter(min) or 4 dB, whicher is smaller, consistent with other FRn/LRn clauses (122, 151).

Response *Response Status* **C**

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

Cl **183** *SC* **183.6.1** *P* **425** *L* **28** # 9

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *TX specs*

Difference in launch power between any two lanes (OMAouter) (max) in Table 183-6 is TBD for 800GBASE-FR4.

SuggestedRemedy

Replace TBD with a value of OMAouter(max) minus OMAouter(min) or 4 dB, whicher is smaller, consistent with other FRn/LRn clauses (122, 151).

Response *Response Status* **C**

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

Cl **181** *SC* **181.6.2** *P* **380** *L* **21** # 10

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *RX specs*

Difference in receive power between any two lanes (OMAouter) (max) in Table 181-6 is TBD for 800GBASE-FR4-500.

SuggestedRemedy

Replace TBD with a value of 4.1 dB, consistent with other FR4 PMDs (Cl. 122, 151)

Response *Response Status* **C**

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

Cl **183** *SC* **183.6.2** *P* **427** *L* **21** # 11

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *RX specs*

Difference in receive power between any two lanes (OMAouter) (max) in Table 183-7 is TBD for 800GBASE-FR4.

SuggestedRemedy

Replace TBD with a value of 4.1 dB, consistent with other FR4 PMDs (Cl. 122, 151)

Response *Response Status* **C**

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

Cl **183** *SC* **183.6.1** *P* **425** *L* **24** # 12

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *TX specs*

The TX must be compliant over the full range of fiber length (dispersion), so the use of TDECQ alone is insufficient to determine Outer Optical Modulation Amplitude (OMAouter), each lane
(min) in Table 183-6 for 800GBASE-FR4/LR4.

SuggestedRemedy

Replace TDECQ with max(TECQ, TDECQ) for both PMDs, as has been done in all other PMDs in Clauses 180-182. Note that max(TECQ, TDECQ) is already in Equation 183-1. For consistency, replace "Equation 183-1" with "-0.1 + max(TECQ, TDECQ)" in Table 183-6, and delete Equation 183-1 on page 435, line 20. Also update Figures 183-3, 183-5, 183-6 and surrounding text with max(TECQ, TDECQ).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggest remedy with editorial license.

Cl **180** *SC* **180.8.11** *P* **365** *L* **52** # 13

LeCheminant, Greg Keysight Technologies

Comment Type **T** *Comment Status* **A** *RIN-OMA*

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetetor to be substaitially higher than 120 GHz to achieve the current system bandiwdth required for the test system, as defined in clause 52)

SuggestedRemedy

The bandiwdth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518

Cl **181** *SC* **181.8.11** *P* **388** *L* **52** # 14

LeCheminant, Greg Keysight Technologies

Comment Type **T** *Comment Status* **A** *RIN-OMA*

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetetor to be substaitially higher than 120 GHz to achieve the current system bandiwdth required for the test system, as defined in clause 52)

SuggestedRemedy

The bandiwdth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518

Cl **182** *SC* **182.8.11** *P* **413** *L* **10** # 15

LeCheminant, Greg Keysight Technologies

Comment Type **T** *Comment Status* **A** *RIN-OMA*

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetetor to be substaitially higher than 120 GHz to achieve the current system bandiwdth required for the test system, as defined in clause 52)

SuggestedRemedy

The bandiwdth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518

Cl **183** *SC* **183.8.11** *P* **437** *L* **41** # 16

LeCheminant, Greg Keysight Technologies

Comment Type **T** *Comment Status* **A** *RIN-OMA*

The required -3dB BW for the measurement system is not achievable with existing technology. (State of the art power meters with a maximum 120 GHz bandwidth, would require the bandwidth of the photodetetor to be substaitially higher than 120 GHz to achieve the current system bandiwdth required for the test system, as defined in clause 52)

SuggestedRemedy

The bandiwdth of the RIN-OMA test system should be based on the expected bandwidth of the system receivers and consider the expected noise spectrum of transmitters. Spec limits for RIN OMA may need adjustment to adapt to any changes in the test method

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #518

Cl **180** *SC* **180.8.5** *P* **364** *L* **23** # 17

LeCheminant, Greg Keysight Technologies

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

The current method for optimizing the tap weighs of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: ôThe lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibrationö. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today

SuggestedRemedy

Add the following text at line 36 (end of exceptions list):

The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy with editorial license.

Cl **181** *SC* **181.8.5** *P* **386** *L* **41** # 18

LeCheminant, Greg — Keysight Technologies

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

The current method for optimizing the tap weighs of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: ôThe lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibrationö. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today

SuggestedRemedy

Add the following text at line 53 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #17

Cl **182** *SC* **182.8.5** *P* **411** *L* **30** # 19

LeCheminant, Greg — Keysight Technologies

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

The current method for optimizing the tap weighs of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: ôThe lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibrationö. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today

SuggestedRemedy

Add the following text at line 44 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #17

Cl **183** *SC* **183.8.5** *P* **435** *L* **25** # 20

LeCheminant, Greg — Keysight Technologies

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

The current method for optimizing the tap weighs of equalizer in the TDECQ reference receiver is described in clause 121.8.5. The equalizer tap coefficients are iteratively adjusted to effectively minimize the TDECQ penalty. Although not explicitly stated, one way to view this is that ANY combination of tap weights is valid and that ALL combinations should be tried to ensure the optimum tap weight combination is used when calculating TDECQ. As the equalizer length has been increased from 5 taps to 15 taps, the time required to verify all possible tap weights is likely problematic. This issue was managed in the 802.3 db project, where a 9 tap virtual equalizer is used for TDECQ. The following text was added to clause the definition of the TDECQ method: ôThe lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibrationö. Note that the MMSE optimization method is used in almost all TDECQ measurements performed today

SuggestedRemedy

Add the following text at line 40 (end of exceptions list): The lowest measured TDECQ values are achieved with the equalizer optimization method described in 121.8.5. Alternative optimization methods such as minimum mean squared error (MMSE) may be used to determine equalizer tap weights to reduce test time, and are expected to report equal or higher values of TDECQ. These alternative methods should not be used for receiver sensitivity and stressed receiver sensitivity calibration

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #17

Cl **176** *SC* **176** *P* **242** *L* **10** # 21

Liu, Cathy — Broadcom

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

In this section, precoding is mentioned to CR, KR and C2C links. How about C2M link? It should add C2M since C2M LT session specifies precoding as one of the options.

SuggestedRemedy

Add C2M link into the statement: ôThe precoding specifications in this subclause apply to the input and output lanes of a PMA that are connected to the service interface of an xBASE-CRn or xBASE-KRn PMD, or are part of an xAUI-n C2C/C2M link.ö

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Background and proposed changes are provided on slides 4 to 10 in the the following presentation:
https://www.ieee802.org/3/dj/public/24_06/brown_3dj_02_2406.pdf

Implement the proposed text on slide 4 of brown_3dj_02_2406.
Implement with editorial license.

Cl **177** *SC* **177** *P* **257** *L* **28** # 22

Liu, Cathy — Broadcom

Comment Type **T** *Comment Status* **R** *Inner FEC coding gain*

This section only mentions that the inner FEC decoder is soft-decision decoder and the details implementation is beyond the scope of the this standard. However, shall we specify the soft-decision decoder's performance bound? If not, the optical PMD BER target or link budget might be missed.

SuggestedRemedy

To specify the soft-decision decoder shall provide TBD dB (say 2dB) coding gain over end-end FEC provided that the error statistics are sufficiently random.

Response *Response Status* **C**

REJECT.
Specifying the effectiveness of the Inner FEC is not as simple a coding gain. It needs include the relationship between the errors on the input, errors on the output, and the effect those errors have on the RS-FEC.
A consensus presentation to appropriately define the expected Inner FEC performance is encouraged.

Cl **178** *SC* **178.9.2.1.2** *P* **277** *L* **37** # 28

Mellitz, Richard Samtec

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

scale ERL parameter form 0.3ck

SuggestedRemedy

in table 178-7 change TBD's as follows
Tr 0.005 ns
[redacted]x 0 GHz
?x 0.618
N 400 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2.2** *P* **278** *L* **26** # 29

Mellitz, Richard Samtec

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

scale ERL parameter form 0.3ck

SuggestedRemedy

in table 163-7 change TBD's as follows
Tr 0.005 ns
[redacted]x 0 GHz
?x 0.618
N 400 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
It is assumed based on the subclause/page/line, the suggested remedy seems to ask to change Table 178-8.

The comment addresses an open TBD and the suggested remedy is reasonable.

There are several comments on this topic. The editorial team prepared a proposal in slide 5 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01_2406.pdf.

For the ERL tables in the following subclauses:
178.9.2.2, 178.9.2.1.2, 178.10.3, 179.9.4.8, 179.11.3, 179B.4.2
And the corresponding tables in annex 176D and annex 176E, use the following values:
Tr = 0.005 ns
beta_x = 0
rho_x = 0.618

Additionally, use the following values:
178.9.2.2: N=400, min dERL=-3 dB
178.9.2.1.2: N=400
178.10.3: N=7000, min ERL=11 dB
179.9.4.8: N=1600
179B.4.2: N=1600, tw=1, DER0=2e-5

Cl **178** *SC* **178.9.3.3** *P* **281** *L* **41** # 32

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

The Bessel-Thomson filter should track fr which betwee 0.5 and 0.6 has been shown in presenations.

SuggestedRemedy

change TBD to 67GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **178** *SC* **178.10** *P* **284** *L* **11** # 33

Mellitz, Richard Samtec

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

Use 3 dB as minimum COM as in .3ck or

SuggestedRemedy

change TBD to 3 (same in 178.10.1 line 28)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **178** *SC* **178.10.2** *P* **287** *L* # 42

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **R** *Multiple COM parameters*

Selecting values the "Receiver discrete-time equalizer parameters" are critical for making progress. Many presentations a have shown quite a variation. Select values based on what seems consistent or use straw ballot to determine.

SuggestedRemedy

use straw polls from the following
Dw 4, 6, or 8
Nfix 10, 15, 24
Ng 1, 2, 3
Nf 3, 4, 5
Nmax 40 60 120
Wmax(j)=1
Wmin(-1,0,1)=0. otherwise -0.5
bmax(1) = 0,5 0.75 0 85
bmin(1)= 0 -0,5 -0.75 -0 85

Response *Response Status* **C**

REJECT.
The suggested remedy does not propose an actionable (within the draft) remedy.

Proposed changes should preferably be backed by technical justification and not just straw polls.

Cl **178** *SC* **178.10.3** *P* **288** *L* **29** # 43

Mellitz, Richard Samtec

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

scale ERL parameter form 0.3ck

SuggestedRemedy

in table 178-14 change TBD's as follows
Tr 0.005 ns
■x 0 GHz
?x 0.618
N 7000 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **179** *SC* **179.9.4.8** *P* **315** *L* **41** # 48

Mellitz, Richard Samtec

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

scale ERL parameter form 0.3ck

SuggestedRemedy

in table 163-7 change TBD's as follows
Tr 0.005 ns
■x 0 GHz
?x 0.618
N 1600 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is assumed that, based on the subclause/page/line, the suggested remedy is asking to change Table 179-9.

Resolve using the response to comment #29.

Cl **179** *SC* **179.9.5.3** *P* **319** *L* **22** # 49

Mellitz, Richard Samtec

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

The COM values need to be set to make progress. Until a more comprehensive proposal is presented use what is in 0.3ck and many other prior standards

SuggestedRemedy

set COM to 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **179** *SC* **179.11** *P* **326** *L* **21** # 50

Mellitz, Richard Samtec

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

The COM values need to be set to make progress. Until a more comprehensive proposal is presented use what is in 0.3ck and many other prior standards

SuggestedRemedy

set COM to 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **179** *SC* **179.11.3** *P* **327** *L* **41** # 51

Mellitz, Richard Samtec

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

The data rate was doubled and cable length was scale by a factor of 2 from .3ck. Adjust ERL parameters accordingly

SuggestedRemedy

in table 179-14 change TBD's as follows
Tr 0.005 ns
■x 0 GHz
?x 0.618
N 4500 UI

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **179** *SC* **179.11.7** *P* **333** *L* **11** # 54

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **R** *Multiple COM parameters*

(table 179-16)Selecting values the "Receiver discrete-time equalizer parameters" are critical for making progress. Many presentations a have shown quite a variation. Select values based on what seems consistent or use straw ballot to determine.

SuggestedRemedy

use straw polls from the following
Dw 4, 6, or 8
Nfix 10, 15, 24
Ng 1, 2, 3
Nf 3, 4, 5
Nmax 40 60 120
Wmax(j)=1
Wmin(-1,0,1)=0. otherwise -0.5
bmax(1) = 0,5 0.75 0 85
bmin(1)= 0 -0,5 -0.75 -0 85

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #42.

Cl **179A** *SC* **179A.7** *P* **668** *L* **12** # 57

Mellitz, Richard Samtec

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

The COM values need to be set to make progress. Until a more comprehensive proposal is presented use what is in 0.3ck and many other prior standards

SuggestedRemedy

set COM to 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **179B** *SC* **179B.4.2** *P* **673** *L* **13** # 58

Mellitz, Richard Samtec

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

scale ERL parameter form 0.3ck

SuggestedRemedy

in table 178-14 change TBD's as follows
Tr 0.005 ns
■x 0 GHz
?x 0.618
N 1600 UI
Tfx 0
tw 1
DER0 2e-5

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
It is assumed that, based on the subclause/page/line, the suggested remedy is asking to change Table 179B-1.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2** *P* **275** *L* **48** # 60

Mellitz, Richard Samtec

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

The Bessel-Thomson filter should track fr. Between 0.5 fb and 0.6 fb have been shown in presenations.

SuggestedRemedy

change TBD to 67GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The comment addresses an open TBD and the suggested remedy is reasonable.

There are several comments on this topic. The editorial team prepared a proposal in slide 4 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01_2406.pdf.

Use 60 GHz for signal measurements in 178, 179, 176D, 176E. Replace all TBDs and the "40 GHz" that wasn't adopted.

Cl **179** *SC* **179.11.7** *P* **332** *L* **12** # 70

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **R** *Multiple COM parameters*

The COM parameter values for the 200GBASE-CR1, 400GBASE-CR2, 800GBASE-CR4 and 1.6TBASE-CR8 PMDs are TBDs

SuggestedRemedy

In table 179-16, Use the COM parameter values from https://www.ieee802.org/3/dj/public/24_01/healey_3dj_01_2401.pdf slide 18, which are:

f_r = 0.58
c(-3) = 0
c(-2) = 0
c(-1) = 0
c(0) = 1
c(1) = 0
A_v = 0.413
A_fe = 0.413
A_ne = 0.45
eta_0 = 6e-9
SNR_TX = 33
sigma_RJ = 0.01
A_DD = 0.02
R_LM = 0.95
d_w = 5
Nfix = 10
N_g = 0
N_f = 0
N_max = 0
b_max(1) = 0.85
b_min(1) = 0

additionally, set MLSE = 0 (not enabled)

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **178** *SC* **178.10.1** *P* **286** *L* **12** # 71

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **R** *Multiple COM parameters*

The COM parameter values for the 200GBASE-KR1, 400GBASE-KR2, 800GBASE-KR4 and 1.6TBASE-KR8 PMDs are TBDs

SuggestedRemedy

In table 178-13, use the COM parameter values from https://www.ieee802.org/3/dj/public/24_01/healey_3dj_01_2401.pdf slide 18, which are:

f_r = 0.58
c(-3) = 0
c(-2) = 0
c(-1) = 0
c(0) = 1
c(1) = 0
A_v = 0.413
A_fe = 0.413
A_ne = 0.45
eta_0 = 6e-9
SNR_TX = 33
sigma_RJ = 0.01
A_DD = 0.02
R_LM = 0.95
d_w = 5
Nfix = 10
N_g = 0
N_f = 0
N_max = 0
b_max(1) = 0.85
b_min(1) = 0

additionally, set MLSE = 0 (not enabled)

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **176E** *SC* **176E.4.2** *P* **632** *L* **48** # 72

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **A** *Multiple COM parameters*

The COM parameter values for the AUI C2M electrical interfaces in Annex 176E are different from the AUI C2C

SuggestedRemedy

Create a new COM parameter values table in 176E.4.2 and use the COM parameter values from https://www.ieee802.org/3/dj/public/24_03/lit_3dj_01a_2403.pdf slide 6 and 11, which are:

f_r = 0.58
c(-3) = 0
c(-2) = 0 min, 0.12 max
c(-1) = -0.4 min, 0 max
c(0) = 0.54
c(1) = 0
A_v = 0.413
A_fe = 0.413
A_ne = 0.45
eta_0 = 1.25e-8
SNR_TX = 33
sigma_RJ = 0.01
A_DD = 0.02
R_LM = 0.95
d_w = 5
Nfix = 10
N_g = 1
N_f = 4
N_max = 60
w_max(1) = 1
w_min(1) = 0
b_max(1) = 0.75
b_min(1) = 0

additionally, set MLSE = 0 (not enabled)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
[Editor's note: Page/line changed from 605/50 to 632/48]
There are several comments on this topic. The editorial team prepared a proposal in slide 13 of
https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

Add a COM table in 176E.4.2 which will replace the reference to Table 176D-7. Use the values in Table 176D-7 with the exception of DER0=2e-5, and the additional values and editor's note on slides 3, 4, and 5 of
https://www.ieee802.org/3/dj/public/24_06/lusted_3dj_01a_2406.pdf.

Implement with editorial license.

Cl **176E** *SC* **176E.4.1** *P* **632** *L* **6** # 73

Lusted, Kent — Intel Corporation

Comment Type **TR** *Comment Status* **R** *Channel ILdd*

The IL_dd for AUI C2M channel is a TBD

SuggestedRemedy

Set IL_dd = 33 per https://www.ieee802.org/3/dj/public/24_01/lusted_3dj_03_2401.pdf

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #130.

Cl **176** *SC* **176.6.1** *P* **213** *L* **5** # 80

Huber, Thomas — Nokia

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

The 800G 32:4 PMA, 400G 16:2 PMA and the 200G 8:1 PMA are basically the same, other than the numbers of lanes. The 1.6T 16:8 is different since it has 40b deskew and 4-symbol interleaving. All of the PMAs with the same number of lanes on both sides are essentially the same. It would simplify maintenance and likely reader understanding as well if the number of lanes were parameterized as m and n

SuggestedRemedy

Reorganize 176.5 through 176.8 into 3 clauses: one for 200/400/800 m:n PMAs, one for 1.6T m:n PMAs, and one for 200/400/800/1.6T m:m PMAs, and use a single set of text and figures with the parameters m and n for the number of lanes. Include a table showing PHY rates and the values of m an n (e.g, with columns PHY, m, and n, and rows 200GBASE-R, 8, 1; 400GBASE-R, 16, 2; etc.).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Reorganize the Clause to reduce repetition of text and figures, and make the state diagrams more generic across the SM-PMAs.
Implement with editorial license.

Cl **177** *SC* **177.5** *P* **256** *L* **24** # 85

Huber, Thomas Nokia

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

According to figure 177-2, the first process the receiver performs is PAM4 decoding (or soft-decision decoding).

SuggestedRemedy

Add a subclause for the decoding process.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #547.

Cl **184** *SC* **184.4.2** *P* **445** *L* **26** # 92

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *Reorder (bucket1p)*

It is not clear why this description is needed. Other clauses about reordering don't have this.

SuggestedRemedy

Delete the last paragraph

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #178

Cl **184** *SC* **184.4.3** *P* **446** *L* **1** # 93

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *Reorder (bucket1p)*

This figure is not clear, nor is the relatoinship of the figure to the pseudocode beneath it. I think the columns 0-3 are just numbers that relate to the post-FEC distribution process. I have no idea why there are 32 sets of 4 symbols, as the algorithm doesn't do anything on a four-symbol basis. The function is simply reversing flow1 and flow0 every two columns, so that each lane has interleaved symbols from all four codewords. This could be described more simply by using blocks of 16 symbols in the figure (i.e.., block 0 would be lanes 0-15 in column 0, block 1 would be lanes 16-31 in column 0, etc.).

SuggestedRemedy

Revise the figure as suggested. The input side would look like this (where each row here is corresponding to 16 PCS lanes i nthe figure):
0 2 4 6
1 3 5 7
and the output would be
0 2 5 7
1 3 4 6

This will remove any confusion about whether the 32 blocks are supposed to be somehow related to the 32 PCS lanes, and it will be it easier to see what is changing between the figures.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change:
"The lane permutation function distributes RS-FEC symbols from the four RS(544,514) codewords present in
the 32 PCS lanes as shown in Figure 184-3."
to:
"The lane permutation function distributes RS-FEC symbols from the four RS(544,514) codewords present in
the 32 PCS lanes as defined by the following pseudocode and illustrated in Figure 184-3."

Move the pseudo-code before Figure 184-3.

Update Figure 184-3 to make it more clear per the suggested remedy and remain consistent with the pseudocode.

Implement with editorial license.

Cl **184** *SC* **184.4.3** *P* **446** *L* **45** # 94

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *Algorithm (bucket1p)*

The algorithm is unnecessarily complex. There is no need for bit-level detail since the operation is performed on 10-bit symbols - though really it seems to be performed on 160-bit entities. Per figure 184-3, it's essentially receiving as input alternating sets of 160 bits from flow0 and flow1, and changing the order from 0, 1, 0, 1, 0, 1, 0, 1 to 0, 1, 0, 1, 1, 0, 1, 0.

SuggestedRemedy

A minimal change would be to state that the algorithm operates on 10-bit symbols, delete the for jà loop and its terminator, and replace "10i+j" with "I" in the statement that describes the permutation..

Another option would be to rewrite the description around the 160-bit entities as described, and perhaps also change the figure to show those instead of 40-bit entities (which as noted in a previous comment seem to have no relevance to this process, or to the convolutional interleaver process that follows it).

Response *Response Status* **C**

REJECT.
The algorithm is correct and unambiguous as written, and reflects the adopted baseline. This bit-wise mapping shows explicitly how the bits are mapped into the larger vector.

There is sympathy for the direction of the suggested remedy; however, a more complete consensus proposal would be needed to change the current description.

Cl **184** *SC* **184.4.4** *P* **447** *L* **48** # 96

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *Algorithm (bucket1p)*

Since the convolutional interleaver operates separately on each PCS lane, there's no value in having an algorithm that includes the PCS lanes. Since it operates on 40-bit units, there's also no need to include bit-level description.

SuggestedRemedy

State that the algorithm describes the operation on the 40 bit entities and is run on each PCS lane independently. This allows elimination of the p and j variables.

Response *Response Status* **C**

REJECT.

The algorithm is correct and unambiguous as written, and reflects the adopted baseline.

Cl **184** *SC* **184.4.4** *P* **448** *L* **3** # 97

Huber, Thomas Nokia

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

The algorithm relating the convolutional interleaver output to its input doesn't work when i<36 - it refers to negative block numbers for the input (permo) whlie the delay lines are filling, and those negative numbers need to be ignored as the process starts up. In other words, given the input sequence of 40-bit blocks 0, 1, 2, 3, à, the convolutional interleaver is supposed to produce the output sequence 0, 3, 6, 9, 12, 15, 18, 1, 21, 4, 24, 7, 27, 10, 30, 13, 33, 16, then 36, 19, 2, and then each successive set of 3 is 3 more than the previous (so it continues 39, 22, 5, 42, 25, 8, ...). The algorithm says that output 0 is input 0-18 x (0 mod 3), so that produces 0 as expected, but output 1 is then supposed to be input 1-18 x (1 mod 3), which is -17, not 3.

SuggestedRemedy

The text above figure 184-4 already provides an algorithmix description of how the interleaver works. Rather than a second algorithmic description, it might be better to show the worked example as noted in the comment - i.e., show a table of input blocks from 0 to 42, and the corresponding output blocks.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #613

Cl **184** *SC* **184.4.5** *P* **448** *L* **40** # 99

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *Algorithm (bucket1p)*

The variable p is being overloaded - it is used at line 35 as a lane index, and at line 40 as the parity polynomial. Since the BCH encoding is done per lane, there is really no need to have a variable related to the lane number. The text can simply state that the algorithm is applied to each lane individually.

SuggestedRemedy

Change the line above the dashed list to say "The BCH encoding is done separately on each lane. The encoding of of each BCH codeword u is deined as follows:

At the top of page 449, remove the 'for pà' loop from the pseudocode.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The algorithm is correct as written, and reflects the adopted baseline. However, "p" is used for another purpose in the previous subclause.

Change the flow index from p to q and implement with editorial license.

Cl **184** *SC* **184.4.6** *P* **449** *L* **16** # 100

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **R** *Algorithm (bucket1p)*

Clarify that the circular shift is applied per lane.

SuggestedRemedy

Make similar changes to what was suggested in previous sections - remove the unnecessary variable p and associated for loop in the pseudocode, and add a sentence stating that the circular shift process is performed on each lane individually.

Response *Response Status* **C**

REJECT.
The algorithm is correct and unambiguous as written, and reflects the adopted baseline.

Cl **187** *SC* **187.5.1** *P* **501** *L* **8** # 109

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *TX specs*

The ppm value for this PMD should be 20 ppm

SuggestedRemedy

Repalce TBD with 20

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Implement suggest remedy with editorial license.

Cl **187** *SC* **187.5.2** *P* **501** *L* **8** # 110

Huber, Thomas Nokia

Comment Type **T** *Comment Status* **A** *TX specs*

The ppm value for this PMD should be 20 ppm

SuggestedRemedy

Repalce TBD with 20

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggest remedy with editorial license.

Cl **182** *SC* **182.8.5** *P* **411** *L* **30** # 113

Stassar, Peter Huawei Technologies

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

Currently reference is made to compliance channel in 121.8.5.2, which is for 500m instead of 2km

SuggestedRemedy

Create new subclause 182.8.5.1 and refer to it instead of 121.8.5.2. Create 182.5.2.1 with contents along the lines of 124.8.5.1 from 802.3df with the same compliance channel. Develop with editorial license

Response *Response Status* **C**

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

Cl **185** *SC* **185.3** *P* **473** *L* **31** # 114

Stassar, Peter Huawei Technologies

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

The TBDs need to be replaced by values. Follow the same methodology as in 154 and latest draft D3.0 of P802.3cw

SuggestedRemedy

Replace contents by The sum of the transmit and receive delays at one end of the link contributed by the 800GBASE-LR1 PMD including 2 m of fiber in one direction shall be no more than 16 384 bit times (32 pause_quanta or 20.48 ns).
A description of overall system delay constraints and the definitions for bit times and pause_quanta can be found in 169.4 and its references.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy and update Table 169-4 with editorial license.

Cl **187** SC **187.3** P **497** L **31** # 115

Stassar, Peter Huawei Technologies

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

The TBDs need to be replaced by values. Follow the same methodology as in 154 and latest draft D3.0 of P802.3cw

SuggestedRemedy

Replace contents by The sum of the transmit and receive delays at one end of the link contributed by the 800GBASE-LR1 PMD including 2 m of fiber in one direction shall be no more than 16 384 bit times (32 pause_quanta or 20.48 ns).
A description of overall system delay constraints and the definitions for bit times and pause_quanta can be found in 169.4 and its references.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the suggested remedy and update Table 169-4 with editorial license.

Cl **187** SC **187.6** P **503** L **44** # 116

Stassar, Peter Huawei Technologies

Comment Type **T** *Comment Status* **A** *optical channel specs*

Negative dispersion does not occur around 1550 nm. 0 ps/nm is the minimum. Only need min and max dispersion as in draft D3.0 of P802.3cw. A safe upper limit of 20 ps/nm.km can be used for a wavelength close to 1550 nm

SuggestedRemedy

Replace "Positive dispersion (max)" by "Chromatic dispersion (max)" with value 400 ps/nm for ER1-20 and 800 ps/nm for ER1. Replace "Negative dispersion (min)" by "Chromatic dispersion (min)" with value 0 ps/nm for both ER1-20 and for ER1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggest remedy with editorial license.

Cl **187** SC **187.5** P **502** L **17** # 117

Stassar, Peter Huawei Technologies

Comment Type **T** *Comment Status* **A** *RX specs*

Previously for Clause 154 and draft Clause 156 in D3.0 for P802.3cw 20 dB maximum receiver reflectance has been used, which is a common value in the industry and in draft Clause 155.5.2

SuggestedRemedy

For Receiver reflectance (max) replace TBD by 20 dB for both ER1-20 and ER1

Response *Response Status* **C**

ACCEPT.

Cl **179** SC **179.9.4** P **309** L **23** # 124

Sakai, Toshiaki Socionext

Comment Type **T** *Comment Status* **A** *B-T filter BW*

Ttransmitter signal measurement filter bandwidth description.
"Unless specified otherwise, transmitter signal measurements are made for each lane separately using a fourth-order Bessel-Thomson low-pass response with 3 dB bandwidth of 40 GHz, with AC-coupled connection from TP2 to the test equipment."
The 4th-BW filter BW should be "TBD GHz", the same as for CL178.9.2, AN176D.3.3 and AN176E.3.3, as the Nyquist frequency of the signal is 53.125GHz and 40GHz is too low..

SuggestedRemedy

Change 40GHz to TBD GHz.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Cl **183** SC **183.7.1** P **431** L **31** # 125

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *optical channel specs*

Clause 183.7.1 is TBD.

SuggestedRemedy

Use the same text and table as given in 182.7.1. Since this sub-clause only reiterates fiber cable specs from external standards, not 802.3 specific specs, this should not be controversial.

Response *Response Status* **C**

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

Cl **183** SC **183.7.2** P **431** L **41** # 126

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *optical channel specs*

Clause 183.7.2 is TBD.

SuggestedRemedy

Use the same text as given in 182.7.2: "An optical fiber connection, as shown in Figure 183û7, consists of a mated pair of optical connectors." Since this is a basic definition of terms, it should not be controversial.

Response *Response Status* **C**

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

Cl **180** *SC* **180.6.3** *P* **356** *L* **47** # 127

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *power budget*

The power budget does not explicitly say what the penalty allocation is for MPI and DGD. It's implied by the difference between Allocation for penalties (for max TDECQ) and TDECQ(max). This makes it hard for average readers to understand the power budget.

SuggestedRemedy

Add toTable 180-9, footnote (b), "This value includes an allocation of 0.1 dB for MPI and DGD penalties."

Response *Response Status* **C**

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

Cl **181** *SC* **181.6.3** *P* **381** *L* **48** # 128

Johnson, John Broadcom

Comment Type **T** *Comment Status* **A** *power budget*

The power budget does not explicitly say what the penalty allocation is for MPI and DGD. It's implied by the difference between Allocation for penalties (for max TDECQ) and TDECQ(max). This makes it hard for average readers to understand the power budget.

SuggestedRemedy

Add toTable 181-7, footnote (d), "This value includes an allocation of 0.5 dB for MPI and DGD penalties."

Response *Response Status* **C**

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

Cl **176E** *SC* **176E.2** *P* **615** *L* **23** # 129

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Channel ILdd (bucket1p)*

Figure depicts loss should be bump-bump

SuggestedRemedy

...application and the associated ILdd bump-bump budget at 53.125 GHz
To make it more clear Host C2M Component should be changed to Host C2M Device and Module C2M Device

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The C2M loss budget is currently TBD, but it is expected that it will be inclusive of packages.
However, the suggested remedy does not significantly clarify this fact.

Add an editor's note stating that the losses in the diagram are intended to be die to die, and contributions are encouraged.

Cl **176E** *SC* **176E.2** *P* **615** *L* **33** # 130

Ghiasi, Ali Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **R** *Channel ILdd*

Loss budgets are TBD

SuggestedRemedy

See Ghiasi C2M May-24 Contribution for background on the numbers
IlDD=28 dB
Connector with one via = 3 dB
Module Ildd = 3.6 dB
Host Ildd=21.4 dB

Response *Response Status* **C**

REJECT.
The comment is against Figure 176E-2.
The following presentation was reviewed by the task force in the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/ghiasi_3dj_02a_2405.pdf
The comment addresses several open TBDs and the suggested remedy is reasonable, but consensus is not obvious.

The editorial team prepared a proposal in slide 25 of
https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

Comment #73 suggests 33 dB for the Channel ILdd.

There is no consensus for adopting values. More work toward consensus loss budget for C2M in conjunction with reference receiver parameters is encouraged.

Cl **176E** *SC* **176E.3.3** *P* **617** *L* **13** # 131

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *B-T filter BW*

3 dB BW is TBD

SuggestedRemedy

propose to use 0.55*Baudrate=58.4375 GHz but in current OCM code we use Butterworth, should the COM for C2M be changed to BT4 fitler?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #60.

[Editor's note: changed line from 33 to 13]

Cl **176E** *SC* **176E.3.5** *P* **621** *L* **7** # 133

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *B-T filter BW*

BW is TBD

SuggestedRemedy

propose to use 0.55*Baudrate=58.4375 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **176E** *SC* **176E.4.1** *P* **632** *L* **6** # 134

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **R** *(bucket1p)*

Loss is TBD

SuggestedRemedy

See Ghiasi C2M May-24 Contribution for background on the numbers
Bump-bump Insertion loss at Nyquist frequency (53.125 GHz) is less than or equal to 28 dB

Response *Response Status* **C**

REJECT.
[Editor's note: changed page from 621 to 632]
The following presentation was reviewed by the task force in the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/ghiasi_3dj_02_2405.pdf
The presentation does not include a proposal for equation 176E-3.
Resolve using the response to comment #130

Cl **181** *SC* **181.4** *P* **373** *L* **33** # 145

Ghiasi, Ali — Ghiasi Quantum/Marvell

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

Prior to 181.4 add section for PMA function to support precoder to mitigate burst errors

SuggestedRemedy

The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #21

Cl **180** *SC* **180.4** *P* **349** *L* **10** # 146

Ghiasi, Ali — Ghiasi Quantum/Marvell

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

Prior to 180.4 add section for PMA function to support precoder to mitigate burst errors

SuggestedRemedy

The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #21

Cl **182** *SC* **182.4** *P* **397** *L* **20** # 147

Ghiasi, Ali — Ghiasi Quantum/Marvell

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

Prior to 182.4 add section for PMA function to support precoder to mitigate burst errors

SuggestedRemedy

The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using response to comment #547.

Cl **183** *SC* **183.4** *P* **420** *L* **37** # 148

Ghiasi, Ali — Ghiasi Quantum/Marvell

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

Prior to 183.4 add section for PMA function to support precoder to mitigate burst errors

SuggestedRemedy

The transmitter need to supports 1/(1+D) mod 4 precoding, as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using response to comment #547.

Cl **181** *SC* **181.6.3** *P* **381** *L* **36** # 161

Yu, Rang-chen — InnoLight

Comment Type **TR** *Comment Status* **A** *power budget*

Power budget (for maximum TDECQ)' for 800GBASE-FR4-500 in Table 181-7 could be incorrect. It should be equal to channel IL + allocation for penalties (for maximum TDECQ).

SuggestedRemedy

Power budget (for maximum TDECQ)' in Table 181-7 should be updated to 7.4 dB

Response *Response Status* **C**

ACCEPT.

Cl **181** *SC* **181.6.1** *P* **378** *L* **16** # 162

Yu, Rang-chen — InnoLight

Comment Type **TR** *Comment Status* **A** *TX specs*

recommend relationship between 'Tx_OMAout (min)' and 'Tx_Pavg (min)' (in Table 181û5) follow 400G FR4, with delta=3dB, assuming max. OER infinite.

SuggestedRemedy

With 'OMAout (min)'=0.8dBm, then 'Average launch power, each lane (min) ' in Table 181-5 should be changed to -2.2dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 181-5 change "Average launch power, each lane (min)" from -1.8 to -2.2

In Table 181-5, add a footnote to the value "-2.2" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -2.2 dBm corresponds to an OMA of 0.8 dBm with an infinite extinction ratio."

With editorial license.

Cl **181** *SC* **181.6.2** *P* **380** *L* **18** # 163

Yu, Rang-chen — InnoLight

Comment Type **TR** *Comment Status* **A** *RX specs*

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (3.5dB for FR4-500)

SuggestedRemedy

Rx_Pavg (min)' in Table 181û6 should be -2.2dBm-3.5dB=-5.7dBm

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 181-6, change the value for "Average receive power, each lane (min)" to -5.7.

Cl **183** *SC* **183.6.1** *P* **425** *L* **19** # 164

Yu, Rang-chen InnoLight

Comment Type **TR** *Comment Status* **A** *TX specs*

recommend relationship between 'Tx_OMAout (min)' and 'Tx_Pavg (min)' (in Table 183û6) follow 400G FR4, with delta=3dB, assuming max. OER infinite.

SuggestedRemedy

With 'OMAout (min)'=0.8dBm, then 'Average launch power, each lane (min) ' in Table 183û6 should be changed to -2.2dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In Table 183-6 for FR4 change "Average launch power, each lane (min)" from -1.8 to -2.2

In Table 183-6, add a footnote to the value "-2.2" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -2.2 dBm corresponds to an OMA of 0.8 dBm with an infinite extinction ratio."

With editorial license.

Cl **183** *SC* **183.6.2** *P* **427** *L* **18** # 165

Yu, Rang-chen InnoLight

Comment Type **TR** *Comment Status* **A** *RX specs*

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' should equal to 'Channel insertion loss' (4.0dB for FR4)

SuggestedRemedy

Rx_Pavg (min)' in Table 183û7 should be -2.2dBm-4.0dB=-6.2dBm

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

For Table 183-7, in the 800GBASE-FR4 column, change the value for "Average receive power, each lane (min)" to -6.2.

Cl **183** *SC* **183.6.1** *P* **425** *L* **19** # 166

Yu, Rang-chen InnoLight

Comment Type **TR** *Comment Status* **A** *TX specs*

Recommended relationship between 'Tx_OMAout (min)' and 'Tx_Pavg (min)' for 800G LR4 (in Table 183û6) should follow 400G LR4-6, with delta equal to 3dB, assuming max . OER infinite.

SuggestedRemedy

With 'OMAout (min)'=1.9dBm, then 'Average launch power, each lane' for 800G LR4 in Table 183û6 should be changed to -1.1dBm.

Response *Response Status* **C**

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

In Table 183-6 for LR4 change "Average launch power, each lane (min)" from -0.9 to -1.1

In Table 183-6, add a footnote to the value "-1.1" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -1.1 dBm corresponds to an OMA of 1.9 dBm with an infinite extinction ratio."

With editorial license.

Cl **183** *SC* **183.6.2** *P* **427** *L* **18** # 167

Yu, Rang-chen InnoLight

Comment Type **TR** *Comment Status* **A** *RX specs*

The delta between 'Tx_Pavg(min)' and 'Rx_Pavg(min)' for 800G LR4 should equal to 'Channel insertion loss' (6.3dB for LR4)

SuggestedRemedy

Rx_Pavg (min)' for 800G LR4 in Table 183û7 should be -1.1dBm-6.3dB=-7.4dBm

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

For Table 183-7, in the 800GBASE-LR4 column, change the value for "Average receive power, each lane (min)" to -7.4.

Cl **183** *SC* **183.6.3** *P* **429** *L* **6** # 168

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

Footnote e did not clarify what's the compisiton of total 5dB allocation for penalties.

SuggestedRemedy

Recommend to add "Allocations to penalties for 800G-LR4 including penalties due to dipersion 3.9dB, DGD 0.7dB and MPI 0.4dB" to footnote e.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #502.

Cl **181** *SC* **181.6.3** *P* **381** *L* **48** # 169

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

Footnote d did not clarify what's the compisiton of total 3.9dB allocation for penalties.

SuggestedRemedy

Recommend to add "Allocations to penalties for 800G-FR4-500 including penalties due to dipersion 3.4dB, DGD and MPI 0.5dB" to footnote d.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #128

Cl **180** *SC* **180.6.3** *P* **356** *L* **47** # 170

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

Footnote b did not clarify what's the compisiton of total 3.5dB allocation for penalties.

SuggestedRemedy

Recommend to add "Allocations to penalties for DRx series including penalties due to dipersion 3.4dB, DGD and MPI 0.1dB" to footnote b.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #127.

Cl **182** *SC* **182.6.3** *P* **404** *L* **3** # 171

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

Although TDECQmax is still TBD. However, the footnote b should also indicate the allocation for penalties, just leave dispersion section as TBD for future update.

SuggestedRemedy

Recommend to add "Allocations to penalties for DRx-2 series including penalties due to dipersion TBDdB, DGD and MPI 0.4dB" to footnote b.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #128 with the exception that the value is 0.4dB and not 0.5dB.
Implement with editorial license.

Cl **183** *SC* **183.6.3** *P* **429** *L* **6** # 172

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

Although TDECQmax is still TBD. However, the footnote b should also indicate the allocation for penalties, just leave dispersion section as TBD for future update.

SuggestedRemedy

Recommend to add "Allocations to penalties for 800G-FR4 including penalties due to dipersion TBDdB, DGD and MPI 0.5dB" to footnote e.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #171.

Cl **181** *SC* **181.7** *P* **383** *L* **16** # 173

Yu, Rang-chen InnoLight

Comment Type **T** *Comment Status* **A** *power budget*

DGDmax (in Table 181û8) probably used DGDmean=0.8ps, it should be 2.24ps refer to 802.3df DR series.

SuggestedRemedy

Recommend change to 2.24ps

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement proposed remedy with editorial license.

Cl **184** *SC* **184.4.1** *P* **445** *L* **12** # 178

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **A** *Functional (bucket1p)*

The process provided in 184.4.1 "Alignment lock and deskew" merely maps bits on the FEC service interface to vectors; it does not include and RS-FEC symbol alignment. The process in 184.4.2 remaps the vectors such that there is alignment to the RS-FEC symbols and the lanes are properly ordered.

SuggestedRemedy

Either combine the two subclauses and process into one subclause or move the RS-FEC symbol alignment process in 184.4.2 to 184.4.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the following with editorial license.
Move the RS-FEC symbol alignment process in 184.4.2 to 184.4.1.

Cl **174** *SC* **174.1.2** *P* **155** *L* **47** # 180

Brown, Matt — Alphawave Semi

Comment Type **T** *Comment Status* **A** *List of interfaces*

This list of interface widths has been traditionally included in "new ethernet rate introduction" clauses since 10 Gb/s Ethernet. It seems unecessary and present and extra burden to amend with each new interface added. The number of lanes is abundantly clear in each clause that defines and interface. The original intent was to point out that the structural detail of the specified interfaces are to be as specified while others that are not are not specified.

SuggestedRemedy

Delete the paragraph and lists from page 155 line 47 to page 156 line 12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Retain the first sentence:
"While this specification defines interfaces in terms of bits, octets, and frames, implementations may choose
other data-path widths for implementation convenience."
Add a future-proof exception and delete the lettered-list of interfaces.
Implement with editorial license.

Cl **174A** *SC* **174A.3** *P* **539** *L* **25** # 190

Ran, Adee — Cisco

Comment Type **TR** *Comment Status* **A** *BER/FLR*

174A.3 "Frame loss ratio for a Physical Layer implementation" is empty.

I assume a "Physical Layer implementation" means the path between the RS and the MDI. It is unclear how frame loss ratio can be defined for this path, because the two interfaces are not equivalent; frames are defined only at the RS, and cannot be identified, checked for errors, or counted on the MDI. Similarly, the signals on the MDI cannot be compared to the data stream on the RS, so no other "error metric" can be defined.

This is in contrast to "RS to RS link" and other subclauses, in which such checking and counting is possible.

This subclause should be deleted.

SuggestedRemedy

Delete 174A.3.

Response *Response Status* **C**

ACCEPT.

Cl **174A** *SC* **174A.4** *P* **539** *L* **30** # 191

Ran, Adee — Cisco

Comment Type **TR** *Comment Status* **A** *BER/FLR*

174A.4 "Frame loss ratio for an xMII Extender" is empty.

Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

SuggestedRemedy

A presentation with proposed content is planned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #205.

Cl **174A** *SC* **174A.5** *P* **539** *L* **36** # 192

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *BER/FLR*

174A.5 "Frame loss ratio for PHY" is empty.

Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

SuggestedRemedy

A presentation with proposed content is planned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #205.

Cl **176A** *SC* **176A** *P* **548** *L* **6** # 196

Ran, Adee Cisco

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

The annex title includes "Control function and start-up protocol", while in the subclauses and text there are alternative terms such as "interface control function", "Start-up protocol", and "training" (176A.9).

This mega-function requires nomenclature to describe it. It would be good to have an acronym-friendly name so that it can be included in tables of other clauses (e.g. Table 116-3, Table 179-1).

SuggestedRemedy

A presentation with proposed nomenclature is planned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/law_3dj_01_2405.pdf

May Interim Straw poll # has the following results:
Straw Poll #4
The nomenclature that I prefer for function defined in Annex 176A is:
A. "Inter-sublayer link training" (ILT or ISLT)
B. "Sublink training" (SLT)
Results (all): A: 81, B: 5

See:
https://www.ieee802.org/3/dj/public/24_05/motions_3dj_2405.pdf

Update the draft such that references to the link training function (AKA control function) use the following name and acronym instead:
"inter-sublayer link training"
"ILT".
Implement with editorial license.

[Editor's note: The comment type was change from ER to T as it was deemed somewhat technical.]

Cl **174A** SC **174A.1** P **539** L **10** # 205

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *BER/FLR*

The first subclause of Annex 174 is currently a mini "table of contents" of the clause. This isn't required.

Instead, an introduction to the annex would be helpful for readers. It should provide the relationship between bit error ratio as defined in the project's objective and the frame loss ratio, as well as the purpose of defining error requirements for internal interfaces within the physical layer.

SuggestedRemedy

A presentation with proposed content is planned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the IEEE 802.3dj task force as the May Interim meeting.
https://www.ieee802.org/3/dj/public/24_05/ran_3dj_04a_2405.pdf

Implement the following with editorial license.

Update Annex 174A as proposed on slides 7 to 13 of ran_3dj_04a_2405 excluding option A in slides 11, 12, and 13.

Update clauses/annexes 171, 178, 179, 179D, 179E, 180 to 183, 185, 187 appropriately.

[Editor's note: CC many]

Cl **174A** SC **174A.2** P **539** L **19** # 206

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *BER/FLR*

174A.2 "Frame loss ratio for RS to RS link" is empty.

Since this annex defines several performance metrics, the titles of specific subclauses should be based on the sub-link in question, while the specific requirement (FLR, BER, etc.) should preferably be in the subclause text.

SuggestedRemedy

A presentation with proposed content is planned.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #205.

Cl **181** SC **181.8.5.1** P **387** L **19** # 207

Parsons, Earl CommScope

Comment Type **T** *Comment Status* **A** *optical channel specs*

The maximum and minimum dispersion values in this table should be replaced by equations similar to ones found in previous clauses (i.e. Table 151-12). This method is sometimes called "CM1".

SuggestedRemedy

In the minimum column replace "-2.94" with "0.0115 x ? x [1-(1324/?)^4]". In the maximum column replace "1.66" with "0.0115 x ? x [1-(1300/?)^4]". These are the same values as in Table 151-12 with the coefficient divided by 4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

Note that "?" in the suggested remedy is the lambda symbol.

Cl **183** SC **183.7** P **431** L **12** # 208

Parsons, Earl CommScope

Comment Type **T** *Comment Status* **R** *optical channel specs*

The positive and negative dispersion values in this table should come from a channel model that uses a statistical approach. A contribution on fiber disperison statistics will be submitted.

SuggestedRemedy

Replace TBDs with values agreed upon by the Task Force.

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/parsons_3dj_01a_2405.pdf
The presentation provided an overview of the latest fiber data set that could be used to determine dispersion parameters but no specific values were provided or directions on how to modify the draft.

Cl **178A** SC **178A.1.11** P **660** L **27** # 211

Shakiba, Hossein Huawei Technologies Canada

Comment Type **T** *Comment Status* **A** *)M methodology MLSD_PAM*

The factor 2/3 in equation (178A-36) is specific to PAM4. This change does not apply if the equation is rewritten.
See contributions lim_3dj_02_2405.pdf and shakiba_3dj_01_2405.pdf.

SuggestedRemedy

Change 2/3 to L/2(L-1) to make it general. Note that L=4 still yields 2/3. Please refer to contribution tbd.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contribution was reviewed at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/shakiba_3dj_01_2405.pdf

The modifications to Equations (178A-36) and (178A-37) are also influenced by the responses to comments #285 and #362.

Resolve using the response to comment #362.

[Editor's note: changed subclause to 178A.1.11.]

Cl **178A** SC **178A.1.11** P **660** L **33** # 212

Shakiba, Hossein Huawei Technologies Canada

Comment Type **T** *Comment Status* **A** *)M methodology MLSD_PAM*

The factor 3/4 in equation (178A-37), as is or rewritten, is specific to PAM4.
See contributions lim_3dj_02_2405.pdf and shakiba_3dj_01_2405.pdf.

SuggestedRemedy

Change 3/4 to (L-1)/L to make it general. Note that L=4 still yields 3/4.Please refer to contribution tbd.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contributions were reviewed at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_02_2405.pdf
https://www.ieee802.org/3/dj/public/24_05/shakiba_3dj_01_2405.pdf
The modifications to Equations (178A-36) and (178A-37) are also influenced by the responses to comments #285 and #362.
Resolve using the response to comment #362.

[Editor's note: changed subclause to 178A.1.11.]

Cl **179** SC **179.11.2** P **326** L **42** # 217

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **A** *B-T filter BW*

The maximum frequency of 40GHz is is insufficient for 200Gbps/lane PAM4

SuggestedRemedy

Increase to 65GHz, consistent with test equipment capabilities and demonstrated channel rolloff eg in https://www.ieee802.org/3/dj/public/23_11/weaver_3dj_01_2311.pdf and https://www.ieee802.org/3/dj/public/24_01/benartsi_3dj_01_2401.pdf OR change to TBD

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Cl **179** SC **179.11.3** P **327** L **31** # 218

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **R** *ERL Tfx*

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

SuggestedRemedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host -facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #227.

Cl **179** SC **179.9.5.5** P **324** L **5** # 219

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **R** *ERL Tfx*

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

SuggestedRemedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host -facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #227.

Cl **176E** *SC* **176E.3.3.3** *P* **620** *L* **32** # 220

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **R** *ERL Tfx*

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

SuggestedRemedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host -facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response *Response Status* **C**

REJECT.
Resolve using the reponse to comment #227.

Cl **176E** *SC* **176E.3.4.2** *P* **622** *L* **49** # 221

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **R** *ERL Tfx*

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

SuggestedRemedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host -facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response *Response Status* **C**

REJECT.
Resolve using the reponse to comment #227.

Cl **179** *SC* **179.9.4** *P* **309** *L* **23** # 225

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **A** *B-T filter BW*

Adopted baseline https://www.ieee802.org/3/dj/public/24_01/ran_3dj_01a_2401.pdf has BT filter bandwidth as TBD but D1.0 has 40GHz. 3dB bandwidth of 40GHz is insufficient for 200Gbps/lane PAM4

SuggestedRemedy

Increase to 65GHz, consistent with test equipment capabilities and demonstrated channel rolloff eg in https://www.ieee802.org/3/dj/public/23_11/weaver_3dj_01_2311.pdf and https://www.ieee802.org/3/dj/public/24_01/benartsi_3dj_01_2401.pdf OR change to TBD

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Cl **179** *SC* **179.9.4.8** *P* **315** *L* **35** # 227

Noujeim, Leesa Google

Comment Type **T** *Comment Status* **R** *ERL Tfx*

Practical test fixtures may have discontinuities close to 0.2ns from the host-facing connection (mating interface). If the intent is to remove the test fixture discontinuities from the ERL calculations, we should adjust the 0.2ns

SuggestedRemedy

Change text to "...Tfx equal to twice the delay between the test fixture connector and the test fixture host -facing connection minus 0.2ns or as needed to remove test-fixture discontinuities from the ERL result"

Response *Response Status* **C**

REJECT.
There are several comments on this topic. The editorial team prepared a proposal in slide 6 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01a_2406.pdf.

Comments #227, #219 and #220 are about host ERL. In this case the existing specification of Tfx is suitable, although subtracting less than 0.2 ns may be appropriate in some cases. There was no consensus on how this should be specified.

Comments #218 and #221 are about module and cable assembly ERL. In this case the proposal may result in ambiguity in the definition of ERL. There was no consensus on making a change.

Additional study of this parameter and consensus building is encouraged.

Cl **178** *SC* **178.9.2** *P* **275** *L* **48** # 230

Li, Mike Intel

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

3dB BW is TBD

SuggestedRemedy

Change it to 65 GHz.
Rational, considering the common and cost effective 1.85mm connector BW, and associated ~7% measurement error, give rise to this number.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **178** *SC* **178.9.2** *P* **276** *L* **19** # 231

Li, Mike Intel

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

dERL (min) is TBD

SuggestedRemedy

Change it to -3 dB. See lim_3dj_01_2403a.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2.2** *P* **278** *L* **26** # 237

Li, Mike Intel

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

Tr is TBD

SuggestedRemedy

repalce it with 0.005 ns, see lim_3dj_01_2403a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2.2** *P* **278** *L* **27** # 238

Li, Mike Intel

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

Betax is TBD

SuggestedRemedy

repalce it with 0 GHz, see lim_3dj_01_2403a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2.2** *P* **278** *L* **29** # 239

Li, Mike Intel

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

Rox is TBD

SuggestedRemedy

repalce it with 0.618, see lim_3dj_01_2403a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.9.2.2** *P* **278** *L* **31** # 240

Li, Mike Intel

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

N is TBD

SuggestedRemedy

repalce it with 400, see lim_3dj_01_2403a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** SC **178.9.2.2** P **278** L **32** # 241

Li, Mike Intel

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

Nbx is TBD

SuggestedRemedy

repalce it with 44, see lim_3dj_01_2403a, lim_3dj_01_2405

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** SC **178.9.3** P **280** L **9** # 244

Li, Mike Intel

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

dERL is TBD

SuggestedRemedy

repalce it with -3dB, see lim_3dj_01_2403a

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** SC **178.9.3.3** P **281** L **40** # 245

Li, Mike Intel

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

3dB BW is TBD

SuggestedRemedy

Change it to 65 GHz.
Rational, considering the common and cost effective 1.85mm connector BW, and associated ~7% measurement error, give rise to this number

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.
[Editor's note: Page changed from 280 to 281]

Cl **178** SC **178.9.3.3** P **282** L **16** # 249

Li, Mike Intel

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

COM for test1 and test2 are TBDs

SuggestedRemedy

Repalced both with 3 dB, see lim_3dj_01_2405

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **178** SC **178.10** P **284** L **11** # 250

Li, Mike Intel

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

COM(min) is TBD

SuggestedRemedy

Repalced both with 3 dB, see lim_3dj_01_2405

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The comment addresses an open TBD and the suggested remedy is reasonable.

There are several comments on this topic. The editorial team prepared a proposal in slide 7 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01a_2406.pdf.

Use the value 3 dB for minimum COM for channels and for test setup calibration in Annex 176D.

Use the value 3 dB for minimum COM for channels and for test setup calibration in Clauses 178 and 179.

Cl **178** SC **178.10** P **284** L **14** # 252

Li, Mike Intel

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

Channel ERL TBD

SuggestedRemedy

Repalced it with 11 dB, see oif2023.531.00

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #29.

Cl **178** *SC* **178.10.1** *P* **284** *L* **28** # 253

Li, Mike Intel

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

COM TBD

SuggestedRemedy

Repalced it with 3 dB, see lim_3dj_01_2405

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **178** *SC* **178.10.1** *P* **286** *L* **32** # 263

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM CTLE parameters*

g1 inherited from 802.3ck, no simod support, not approproaite

SuggestedRemedy

Replace them w
-15 :0, 1 (min, max, step)
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There are several comments on this topic. The editorial team prepared a proposal in slide 15 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

There was no consensus to make the suggested change.

Cl **178** *SC* **178.10.1** *P* **286** *L* **32** # 264

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM CTLE parameters*

g2 inherited from 802.3ck, no simod support, not approproaite

SuggestedRemedy

Replace them w
-5 :0, 1 (min, max, step)
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #263.

Cl **178** *SC* **178.10.1** *P* **286** *L* **40** # 265

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM CTLE parameters*

fz1,fz2 from 802.3ck, no simod support, not approproaite

SuggestedRemedy

Replace them w
fb/4.223, fb/80 (fz1,fz2)
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #263.

Cl **178** *SC* **178.10.1** *P* **286** *L* **42** # 266

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM CTLE parameters*

f1,fp2, fp3 from 802.3ck, no simod support, not approproaite

SuggestedRemedy

Replace them w
fb/1.8973, fb/2.6562, fb/80 (fp1,fp2, fp3)
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #263.

Cl **178** *SC* **178.10.1** *P* **286** *L* **53** # 269

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM eta0*

eta0

SuggestedRemedy

Replace it w 5e-9 V^2/GHz
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.

The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The presentation is based on COM4.50draft3 using MLSE. The MLSE implementation within that code is however tentative and has not been fully debugged. Making a decision on the critical eta0 parameter is therefore premature.
The comment and the presentation do not provide sufficient justification to support the suggested remedy.
Although Straw Poll #7 in the May 2024 meeting showed consensus for the value 1e-8 for C2C and C2M, CR/KR were not addressed.
The values 5e-9 and 6e-9 are suggested in other comments.
Further analysis and consensus building are encouraged.

Cl **178** *SC* **178.10.1** *P* **287** *L* **13** # 274

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM ref Rx*

dw TBD

SuggestedRemedy

Replace it w 6,
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Cl **178** *SC* **178.10.1** *P* **287** *L* **13** # 275

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM ref Rx*

Nfix TBD

SuggestedRemedy

Replace it w 24,
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Cl **178** *SC* **178.10.1** *P* **287** *L* **15** # 276

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM ref Rx*

Ng TBD

SuggestedRemedy

Replace it w 4,
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Cl **178** SC **178.10.1** P **287** L **16** # 277

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM ref Rx*

Nf TBD

SuggestedRemedy

Replace it w 5,
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Cl **178** SC **178.10.1** P **287** L **17** # 278

Li, Mike Intel

Comment Type **TR** *Comment Status* **R** *COM ref Rx*

Namx TBD

SuggestedRemedy

Replace it w 60,
see lim_3dj_01_2405, slide 5

Response *Response Status* **C**

REJECT.
The comment appears to address the parameter Nmax.
The following presentation was reviewed by the task force at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_01_2405.pdf
The comment and the presentation do not provide sufficient justification to support the suggested remedy.

There is no consensus to implement the suggested remedy. Further contributions on this topic are encouraged.

Cl **178A** SC **178A.1.10.2** P **659** L **12** # 285

Li, Mike Intel

Comment Type **TR** *Comment Status* **A** *DER0*

DER0 EQ is wrong

SuggestedRemedy

change P(y0)= DER0 to 1-P(y0) =DER0, see slide 3 of lim_3dj_02_2405, see also a marked version in the support data sheet.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following contribution was reviewed at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_02_2405.pdf

Resolve using the response to comment #362.

Cl **178A** SC **178A.1.11** P **660** L **27** # 286

Li, Mike Intel

Comment Type **TR** *Comment Status* **A** *)M methodology MLSD_PAM*

EQ (178A-36)

SuggestedRemedy

Update the equation per slide 4 of lim_3dj_02_2405, see also a marked version in the support data sheet.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following contribution was reviewed at the May 2024 interim meeting:
https://www.ieee802.org/3/dj/public/24_05/lim_3dj_02_2405.pdf
The modifications to Equations (178A-36) and (178A-37) are also influenced by the responses to comments #285 and #362.
Resolve using the response to comment #362.

Cl **178A** SC **178A.1.11** P **660** L **33** # 287

Li, Mike Intel

Comment Type **TR** *Comment Status* **A** *)M methodology MLSD_PAM*

EQ (178A-37)

SuggestedRemedy

Update the equation per slide 4 of lim_3dj_02_2405, see also a marked version in the support data sheet.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #362.

Cl **176** *SC* **176C** *P* **594** *L* **1** # 298

Loewenthal, Arnon alphawave semi

Comment Type **T** *Comment Status* **A** *Test Vectors*

Annex 176C "SM-PMA test vectors" is currently empty.

SuggestedRemedy

Add test vectors for 200GBASE-R 8:1, 400GBASE-R 16:2, 800GBASE-R 32:4, and 1.6TBASE-R 16:8 to Annex 176C based on supporting contribution on May interim.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The CRG reviewed the presentation:
https://www.ieee802.org/3/dj/public/24_06/loewenthal_3dj_01a_2406.pdf

The associated vector files located at:
https://www.ieee802.org/3/dj/public/24_06/loewenthal_3dj_02_2406.zip

Add test vectors to Annex 176C with editorial license.

Cl **184** *SC* **184.6.5** *P* **462** *L* **3** # 307

Bruckman, Leon Huawei

Comment Type **TR** *Comment Status* **A** *Diagrams (bucket1p)*

Set TBD values of N and M

SuggestedRemedy

Set N=12, M=8. See contribution bruckman_3dj_01_241205

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following presentation (referenced in the suggested remedy) was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/bruckman_3dj_01a_2405.pdf
Implement the suggested remedy with editorial license.

Cl **116** *SC* **116.1.3** *P* **92** *L* **30** # 311

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

Comment Type **TR** *Comment Status* **A** *FR1*

With the adoption of the objective to do 500m over 4 WDM lanes on a single mode fiber and its nomenclature 800GBASE-FR4-500, "FR" is no longer limited to just represent 2km (e.g. FR-500). This introduces an inconsistency for 200GBASE-FR1 and 200GBASE-DR1 (DR1 is not FR1-500). In addition, when looking at 2km for 1,2,4,8 fibers- a confusing "family" of PHYs emerges (200GBASE-FR1, 400GBASE-DR2-2, 800GBASE-DR4-2, and 1.6TBASE-DR8-2)

SuggestedRemedy

Rename 200GBASE-FR1 to 200GBASE-DR1-2

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following presentation was reviewed by the 802.3dj task force at the May Interim meeting.

https://www.ieee802.org/3/dj/public/24_05/dambrosia_3dj_02a_2405.pdf
Implement the suggested remedy with editorial license.

Cl **180** *SC* **180.8.5** *P* **364** *L* **39** # 324

Welch, Brian Cisco

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

Current baseline proposal is lacking tap weight restrictions, which were indicated as TBD when adopted.

SuggestedRemedy

Propose adopting the TDECQ tap weight restrictions as presented in welch_3dj_01_0524.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/welch_3dj_01_2405.pdf.

Implement slide 7 of the presentation with editorial license with the following exceptions:

n = -1 and n = 1 being TBD for the min values.

Cl **181** *SC* **181.8.5** *P* **387** *L* **3** # 325

Welch, Brian Cisco

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

Current baseline proposal is lacking tap weight restrictions, which were indicated as TBD when adopted.

SuggestedRemedy

Propose adopting the TDECQ tap weight restrictions as presented in welch_3dj_01_0524.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #324.

Cl **180** *SC* **180.6.1** *P* **353** *L* **33** # 326

Welch, Brian Cisco

Comment Type **TR** *Comment Status* **A** *TX specs*

In later 100GPL specs (ie, 100GBASE-FR1) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.5 dB as it was not updated to reflect the changes to effective TDECQ(min).

SuggestedRemedy

Propose changing "Average launch power, each lane (min)" in Table 180-7 from -2.8 dBm to -3.3 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Average launch power, each lane (min)" in Table 180-7 from -2.8 dBm to -3.3 dBm.

In Table 180-7, add a footnote to the value "-3.3" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -3.3 dBm corresponds to an OMA of -0.3 dBm with an infinite extinction ratio."

Implement with editorial license.

Cl **181** *SC* **181.6.1** *P* **378** *L* **16** # 327

Welch, Brian Cisco

Comment Type **TR** *Comment Status* **A** *TX specs*

In later 100GPL specs (ie, 400GBASE-FR4) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.6 dB as it was not updated to reflect the changes to effective TDECQ(min).

SuggestedRemedy

Propose changing "Average launch power, each lane (min)" in Table 181-5 from -1.8 dBm to -2.2 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #162

Cl **182** *SC* **182.6.1** *P* **401** *L* **21** # 328

Welch, Brian Cisco

Comment Type **TR** *Comment Status* **A** *TX specs*

In later 100GPL specs (ie, 100GBASE-FR1) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.5 dB as it was not updated to reflect the changes to effective TDECQ(min).

SuggestedRemedy

Propose changing "Average launch power, each lane (min)" in Table 182-7 from -2.1 dBm to -2.6 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Average launch power, each lane (min)" in Table 182-7 from -2.1 dBm to -2.6 dBm.

In Table 182-7, add a footnote to the value "-2.6" on the row for "Average launch power, each lane (min)" with the following text:
"Average launch power of -2.6 dBm corresponds to an OMA of 0.4 dBm with an infinite extinction ratio."

Implement with editorial license.

Cl **183** *SC* **183.6.1** *P* **425** *L* **19** # 329

Welch, Brian Cisco

Comment Type **TR** *Comment Status* **A** *TX specs*

In later 100GPL specs (ie, 400GBASE-FR4) the difference between OMA(min) and Pave(min) was 3dB, to reflect the case of infinite extinction ratio. In the adopted baselines this narrowed to 2.6 dB as it was not updated to reflect the changes to effective TDECQ(min).

SuggestedRemedy

Propose changing "Average launch power, each lane (min)" in Table 183-6 from -1.8 dBm to -2.2 dBm.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #164.

Cl **175** *SC* **175** *P* **169** *L* **1** # 332

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *timesync (bucket1p)*

Has any thought been given to how to calculate the latency through the 1.6TBASE-R PCS, i.e. the path data delay values for the purposes of TimeSync?
I do not see anything within the 1.6TBASE-R PCS that would prevent proper calculation of the path data delay values.
Clause 90.7.1 is instructive here, explaining that the path data delays should be "reported as if the DDMP is at the start of the FEC codeword". However, the existing language in 90.7.1 is awkward for PCSs with more than one FEC engine like the 1.6TBASE-R PCS, which has four FEC codewords in parallel.

SuggestedRemedy

No proposed change to Clause 175.
Clause 90.7.1 could be cleaned up to account for when there are multiple FEC codewords in parallel, but I assume that is out-of-scope for the 802.3dj project? I'll submit a maintenance request.

Response *Response Status* **C**

REJECT.
The suggested remedy does not propose an actionable (within the draft) remedy.

This comment is related to the calculation of the path data delay values in Clause 90, and points out that Subclause 90.7.1 is not clear on how the path data delays values are calculated for PCSs with more than one FEC engine and interleaved FEC codewords. This applies to the 200GbE/400GbE PCS (Clause 119), the 800GbE PCS (Clause 172) as well as the new 1.6TbE PCS being added by this project (Clause 175). As pointed out in the suggested remedy it would be better to address this with a maintenance request that equally applies to all PCS clauses with multiple interleaved FEC codewords and all of their related PHYs (many of which are out of scope for 802.3dj).

Cl **180** *SC* **180.7.1** *P* **358** *L* **28** # 335

Ferretti, Vince Corning

Comment Type **TR** *Comment Status* **R** *optical channel specs*

ITU-T G.652.B cabled fiber attenuation is only specified for 1310 nm and 1550 nm wavelengths. It is not specified for wavelengths between 1260 nm and 1310 nm and not meant to be used in xWDM applications

SuggestedRemedy

Remove ITU-T G.652.B (dispersion unshifted) as a fiber option.

Response *Response Status* **C**

REJECT.

There is no xWDM in this PMD clause.

Cl **181** *SC* **181.7.1** *P* **383** *L* **26** # 336

Ferretti, Vince Corning

Comment Type **TR** *Comment Status* **A** *optical channel specs*

ITU-T G.652.B cabled fiber attenuation is only specified for 1310 nm and 1550 nm wavelengths. It is not specified for wavelengths between 1260 nm and 1310 nm and not meant to be used in xWDM applications

SuggestedRemedy

Remove ITU-T G.652.B (dispersion unshifted) as a fiber option.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement suggested remedy.

Implement the same change in clause 183.7.1.

With editorial license

Cl **182** *SC* **182.7.1** *P* **405** *L* **31** # 337

Ferretti, Vince Corning

Comment Type **TR** *Comment Status* **R** *optical channel specs*

ITU-T G.652.B cabled fiber attenuation is only specified for 1310 nm and 1550 nm wavelengths. It is not specified for wavelengths between 1260 nm and 1310 nm and not meant to be used in xWDM applications

SuggestedRemedy

Remove ITU-T G.652.B (dispersion unshifted) as a fiber option.

Response *Response Status* **C**

REJECT.

There is no xWDM in this PMD clause.

Cl **180** *SC* **180.7.3.2** *P* **361** *L* **9** # 338

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-1-1 has been superseded by IEC 61753-1.

SuggestedRemedy

Change "IEC 61753-1-1" to "IEC 61753-1"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "IEC 61753-1-1" to "IEC 61753-1" in the PMD clause.

Add "IEC 61753-1, Fibre optic interconnecting devices and passive components - Performance standard - Part 1: General and guidance" to 1.3 Normative references.

With editorial license.

Cl **180** *SC* **180.7.3.2** *P* **361** *L* **9** # 339

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "IEC 61753-021-2" to "IEC 61753-021-02" in the PMD clause.

Add "IEC 61753-021-02, Fibre optic interconnecting devices and passive components - Performance standard - Part 021-02: Single-mode fibre optic connectors terminated as pigtails and patchcords for category C - Controlled environment" to 1.3 Normative references.

With editorial license.

Cl **180** *SC* **180.7.3.3** *P* **361** *L* **42** # 340

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **180** *SC* **180.7.3.4** *P* **361** *L* **50** # 341

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **180** *SC* **180.9.1** *P* **366** *L* **31** # 342

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 60950-1 has been superseded by IEC 62368-1.

SuggestedRemedy

Change "IEC 60950-1" to "IEC 63268-1".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "IEC 60950-1" to "IEC 62368-1" in the PMD clause.

Cl **181** *SC* **181.7.3** *P* **384** *L* **43** # 343

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **182** *SC* **182.7.3** *P* **406** *L* **45** # 344

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-1-1 has been superseded by IEC 61753-1.

SuggestedRemedy

Change "IEC 61753-1-1" to "IEC 61753-1"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #338.

Cl **182** *SC* **182.7.3** *P* **406** *L* **45** # 345

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **182** *SC* **182.7.3.2** *P* **408** *L* **22** # 346

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-1-1 has been superseded by IEC 61753-1.

SuggestedRemedy

Change "IEC 61753-1-1" to "IEC 61753-1"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #338.

Cl **182** *SC* **182.7.3.2** *P* **408** *L* **22** # 347

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **182** SC **182.7.3.3** P **409** L **1** # 348

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **182** SC **182.7.3.4** P **409** L **8** # 349

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **182** SC **182.9.1** P **413** L **43** # 350

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 60950-1 has been superseded by IEC 62368-1.

SuggestedRemedy

Change "IEC 60950-1" to "IEC 63268-1".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #342.

Cl **183** SC **183.7.3** P **432** L **40** # 351

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **185** SC **185.6.3** P **480** L **52** # 352

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **185** SC **185.11.4.6** P **490** L **27** # 353

Lambert, Angie Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **187** *SC* **187.6.3** *P* **504** *L* **48** # 354

Lambert, Angie — Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **187** *SC* **187.11.4.6** *P* **514** *L* **25** # 355

Lambert, Angie — Corning

Comment Type **T** *Comment Status* **A** *IEC revision*

IEC 61753-021-2 has been superseded by IEC 61753-021-02.

SuggestedRemedy

Change "IEC 61753-021-2" to "IEC 61753-021-02".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #339.

Cl **178A** *SC* **178A.1.10** *P* **658** *L* **43** # 362

Healey, Adam — Broadcom Inc.

Comment Type **T** *Comment Status* **A** *DER0*

The relationship between "detector error ratio", "PAM-L symbol error ratio", and "bit error ratio" is not documented and, as a result, not generally understood. While these quantities are related, they are not interchangeable. Prior assumptions that they are interchangeable has led to errors in the translation between COM results and expected (measured) receiver performance. This new annex gives us an opportunity to clarify the relationship between DER0 and other terms or to replace DER0 with a more generally understood term.

SuggestedRemedy

Slide 5 of <https://www.ieee802.org/3/dj/public/23_11/healey_3dj_01a_2311.pdf> suggest expressions for relationship between detector error ratio and other terms. Either replace "DER0" with a target PAM-4 symbol error ratio (or bit error ratio) and adjust the equations for calculating COM accordingly, or document the relationship between DER0 and the other two terms.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There are several comments on this topic. The editorial team prepared a proposal in slides 28-29 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

Implement the changes on slide 29 of ran_3dj_01b_2406, with editorial license.

Cl **184** *SC* **184.6.5** *P* **462** *L* **1** # 372

He, Xiang — Huawei

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

It is possible that one polarization is locked but the other polarization can not get locked. With the current variable list and state diagrams this can not be identified or reported. (This is a little different from AM lock process across PCS lanes, where it is way up in the sublayers higher than the pilot sequence lock, and it may not be a problem.)

SuggestedRemedy

Recommend to add a timer (value TBD) to indicate that it has waited long enough after one polarization is locked but the other is still not locked.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The DSP lock state diagram is implemented per polarization, so there is an indication of sync per polarization. There are no timers defined for alarm indications in the standard. Add a status variable with mapping to MDIO address, to allow the user reading the status of the synchronization process per polarization.
[Editor's note: CC 184 45]

Cl **184** *SC* **184.8** *P* **464** *L* **10** # 373

He, Xiang Huawei

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

Only "alignment_valid" is reported, not individual "dsp_lock<x>" variables.

SuggestedRemedy

It is recommend to report both "dsp_lock<x>" in table 184-7, as we did for PCS lane lock where we reported "Lane x aligned" for all PCS lanes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #372.

Cl **185** *SC* **185.5.1** *P* **477** *L* **8** # 380

Maniloff, Eric Ciena

Comment Type **T** *Comment Status* **A** *TX specs*

800GBASE-LR1 is being defined to allow unlocked lasers with frequency errors larger than the DSP digital acquisition range. Additional parameters are required for the Tx laser to accommodate this. Values will be provided after further study, but the new paramaters can be added to Table 185-4. A supporting contribution will be provided.

SuggestedRemedy

Add the following parameters to Table 185-4:

Maximum Tx laser frequency slew rate: Preacquisition [Units GHz/s]

Maximum Tx laser frequency slew rate: Post acquisition [Units GHz/ms]

Laser Relative Frequency tracking accuracy [Units GHz]

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/maniloff_3dj_01_2405.pdf
Implement suggest remedy with editorial license.

Cl **185** *SC* **185.5.1** *P* **477** *L* **8** # 381

Maniloff, Eric Ciena

Comment Type **T** *Comment Status* **A** *TX specs*

The specification should have a Tx clock noise defined.

SuggestedRemedy

Add an entry for Tx clock phase noise (PN): Maximum PN mask

Add an entry for: Tx clock phase noise (PN); Maximum total integrated random jitter

Add an entry for: Tx clock phase noise (PN); Maximum total periodic jitter

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggest remedy with editorial license.

Cl **185** *SC* **185.5.3** *P* **478** *L* **43** # 382

Maniloff, Eric Ciena

Comment Type **T** *Comment Status* **A** *optical channel specs*

A value of -27dB is appropriate for Maximum discrete reflectance

SuggestedRemedy

Replace TBD for Maximum discrete reflectance with -27

Response *Response Status* **C**

ACCEPT.

Cl **185** *SC* **185.6** *P* **479** *L* **51** # 383

Maniloff, Eric Ciena

Comment Type **T** *Comment Status* **A** *optical channel specs*

A value of 24dB is appropriate for Optical Return Loss

SuggestedRemedy

Replace TBD in Table 185-7 with 24

Response *Response Status* **C**

ACCEPT.

Cl **185** SC **185.5.1** P **477** L **8** # 384

Maniloff, Eric Ciena

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

TQM is currently undefined. Recommend adopting RSNR Penalty as a TQM. Supporting Contribution to be provided.

SuggestedRemedy

Replace TQM with RSNR Penalty

Response *Response Status* **C**

REJECT.
The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/maniloff_3dj_02_2405.pdf

No agreement yet on an appropriate quality metric therefore no consensus to make a change.

Cl **171** SC **171.5** P **141** L **47** # 385

Nicholl, Gary Cisco

Comment Type **T** *Comment Status* **A** *Link fault signaling*

There sentence below the editor's not is a repeat of what is captured in 171.3.2. It is also not releated to ôlink fault signalingö as defined in 81.3.4, which is the topic of this subclause.

SuggestedRemedy

Delete the sentence below the editor's note.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Delete the sentence below the editor's note, and remove the Editor's note.

Cl **179** SC **179.9.4** P **309** L **23** # 388

Kocsis, Sam Amphenol

Comment Type **T** *Comment Status* **A** *B-T filter BW*

BT LP 3dB BW of "40GHz"

SuggestedRemedy

"TBD" as cited in other places of the document

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Cl **178** SC **178.9.2** P **275** L **49** # 399

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

Transmitter measurement bandwidth is TBD

SuggestedRemedy

Replace TBD with 62 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **178** SC **178.9.3.3** P **282** L **16** # 400

Li, Tobey MediaTek

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

COM values in Table 178û10 are TBD

SuggestedRemedy

Replace TBD with 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **178** SC **178.10** P **284** L **11** # 402

Li, Tobey MediaTek

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

Minimum COM in Table 178û11 is TBD

SuggestedRemedy

Replace TBD with 3 dB in Table 178-11 and in line 28 of page 284

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **178** *SC* **178.10.1** *P* **286** *L* **53** # 408

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **R** *COM eta0*

One sided noise spectral density in Table 178-13 is TBD

SuggestedRemedy

Replace TBD with 6e-9 V^2/GHz

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #269.

Cl **179** *SC* **179.9.4** *P* **309** *L* **23** # 410

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

"4th order Bessel-Thomson filter with 3 dB bandwidth of 40 GHz" is inconsistent with Clause 178.9.2, Annex 176D.3.3, and Annex 176E.3.3

SuggestedRemedy

Change "40 GHz" to either "TBD" or "62 GHz"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The value 40 GHz is a leftover from an older clause and has not been adopted.
Resolve using the response to comment #60.

Cl **179** *SC* **179.9.5.3** *P* **319** *L* **22** # 411

Li, Tobey MediaTek

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

COM values in Table 179û11 are TBD

SuggestedRemedy

Replace TBD with 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **179** *SC* **179.9.5.3.3** *P* **320** *L* **18** # 412

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

4th order Bessel-Thomson filter BW is TBD

SuggestedRemedy

Replace TBD with 62 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **179** *SC* **179.11** *P* **326** *L* **21** # 413

Li, Tobey MediaTek

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

Minimum COM is TBD

SuggestedRemedy

Replace TBD with 3 dB in Table 179û13 and in line 41 of page 330

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **179** *SC* **179.11.7** *P* **332** *L* **53** # 419

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **R** *COM eta0*

One sided noise spectral density in Table 179û16 is TBD

SuggestedRemedy

Replace TBD with 6e-9 V^2/GHz

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #269.

Cl **176D** SC **176D.3.3** P **597** L **22** # 422

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

Transmitter measurement bandwidth is TBD

SuggestedRemedy

Replace TBD with 62 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **176D** SC **176D.3.4.4** P **603** L **18** # 425

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *B-T filter BW*

4th order Bessel-Thomson filter BW is TBD

SuggestedRemedy

Replace TBD with 62 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #60.

Cl **176D** SC **176D.3.4.4** P **603** L **34** # 427

Li, Tobey MediaTek

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

COM values in Table 176Dû4 are TBD

SuggestedRemedy

Replace TBD with 3 dB

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **176D** SC **176D.4** P **604** L **24** # 430

Li, Tobey MediaTek

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

Minimum COM is TBD

SuggestedRemedy

Replace TBD with 3 dB in Table 176Dû5 and in line 38 of page 604

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #250.

Cl **176D** SC **176D.4.1** P **606** L **33** # 433

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *COM CTLE parameters*

Zero 2 frequency and pole 3 frequency of Continuous time filter are inconsistent with Table 178û13

SuggestedRemedy

Replace zero 2 frequency with fb/80
Change pole 3 frequency from "fb" to "fb/80"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

There are several comments on this topic. The editorial team prepared a proposal in slide 15 of https://www.ieee802.org/3/dj/public/24_06/ran_3dj_01b_2406.pdf.

Use the CTLE parameters from Table 178-13 (which are identical to those in Table 179-16), without change, in Table 176D-6 and C2M (Table 176E-7 and COM parameters table).

Remove fLF from Table 176D-7.

Implement with editorial license.

Cl **176E** *SC* **176E.5.2** *P* **634** *L* **34** # 440

Li, Tobey MediaTek

Comment Type **TR** *Comment Status* **A** *COM CTLE parameters*

Pole & zero frequency values of continuous time filter are TBD

SuggestedRemedy

Replace zero 1 frequency, fz1, with fb/2.5 GHz
Replace zero 2 frequency, fz2, with fb/80 GHz
Replace pole 1 frequency, fp1, with fb/2.5 GHz
Replace pole 2 frequency, fp2, with fb GHz
Replace pole 3 frequency, fp3, with fb/80 GHz

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #433.

Cl **171** *SC* **171.8** *P* **145** *L* **6** # 462

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **R** *(withdrawn)*

The MDIO mapping table is different from Clause 175, it should use the new form that Clause 175 is using.

SuggestedRemedy

Have Tables 171-5a through 171-5d use the same format as Clause 175

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **175** *SC* **175.2.5.3** *P* **181** *L* **40** # 468

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *FEC error counters*

The counters for correctd, uncorrected and error have always been mandatory, while the cw counter and bin counters have been optional. So Should is not appropiate.

SuggestedRemedy

Change:
"The following counters should be implemented to aid a network operator in determining the link quality. "
To:
"The PCS provides the following counters that track FEC decoder statistics."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
There is a list of 5 FEC counters in 175.2.5.3.
The first three are definitely required (as they were also required in CL 91, 108, 119, 134, and 172) which makes the "should" wording incorrect.
(FEC_corrected_cw_counter, FEC_uncorrected_cw_counter, and FEC_symbol_error_counter_i)
The 4th and 5th counters (FEC_cw_counter and FEC_codeword_error_bin_i) are explictly "optional" in 161.6.21, 172.3.5 and 172.3.6.
The importance of these counters is well recognized in the industry so should be mandatory for the 1.6TBASE-R PCS
Make all 5 counters required for the 1.6TBASE-R PCS.
Implement with editorial license.

Cl **176** *SC* **176.5.1.6.1** *P* **205** *L* **31** # 485

Slavick, Jeff Broadcom

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

The Variables state that these all of them, not inheriting Cl119 functions except for some replacements.

SuggestedRemedy

Copy Figure 119-12 into Cl 176 and modify it to use:
restart_lock_dir **with dir in italics **
amps_lock_dir ** with dir in italics **
pcs_lane_mapping_dir ** with dir in italics **
add a NOTE that italics dir is either mux or demux

In Variables, Constants and Counters sections define everything that is used, referring to Cl 119 when possible.

Change referenes to Figure 119-12 to point to the new figure.

With editorila license

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl **176** *SC* **176.6.1.2.1** *P* **215** *L* **22** # 486

Slavick, Jeff Broadcom

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

The deskew process doesn't need an exception since the referred texts says to do it across "ALL" PCSLs

SuggestedRemedy

Remove the deskew across 16 lanes exception in 176.6.1.2.1
Remove the deskew across 32 lanes exception in 176.7.1.2.1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl **176** *SC* **176.5.1.6.1** *P* **208** *L* **14** # 487

Slavick, Jeff Broadcom

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

To support 400G also using the same state machines we need to make Figure 176-8 and the definition of symbol_pair_lock_demux have a <y> in it.

SuggestedRemedy

Add a <y> to symbol_pair_lock_demux defintion and in Figure 176-8. Upate the definition in 176.5.1.6.1 for symbol_pair_lock_demux<y> to have a range of of y=0

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl **183** *SC* **183.6.3** *P* **428** *L* **51** # 502

Rodes, Roberto Coherent

Comment Type **T** *Comment Status* **A** *power budget*

Adding explanation on allocation for penalties calculation.

SuggestedRemedy

Use same approach than for the inserion loss adding a note in the LR4 value with the text:"Allocation for penalties is calculated using an additional penalty of 0.7dB from DGD, and 0.4dB from MPI"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

Cl **183** *SC* **183.6.1** *P* **425** *L* **27** # 503

Rodes, Roberto Coherent

Comment Type **T** *Comment Status* **A** *TX specs*

Change spec format consistent with FR4

SuggestedRemedy

Replace 0.5+TDECQ by 0.5+Max(TECQ,TDECQ)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #12

Cl **177** *SC* **177.6** *P* **262** *L* **5** # 505

Ren, Hao — Huawei

Comment Type **TR** *Comment Status* **A** *Inner FEC Sync*

In Figure 177-8, the input variable of state FS_LOCK_INIT is not correct. It would cause a FS lock error.

SuggestedRemedy

FS_LOCK_INIT state should be entered after all the 8 flows obtain their inner FEC codeword boundaries and inner FEC flow 0 is identified, when fs_lock is false.

Propose change:
Change the input variable from ' !all_synced ' to ' all_synced * !fs_lock '.

Change the definition of all_synced
from
'A Boolean variable that is set to true when sync_flow<x> is true for all eight flows and is set to false when sync_flow<x> is false for any x.'
to
'A Boolean variable that is set to true when inner FEC flow 0 is identified and is set to false when sync_flow<x> is false for any x.'
(in page 258 line 48-50)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Background and proposed changes are provided on slides 4 and 5 in the following presentation:
https://www.ieee802.org/3/dj/public/24_06/nicholl_3dj_01_2406.pdf.

Implement the proposed changes shown on slide 5 of nicholl_3dj_01_2406, with editorial license.

Cl **180** *SC* **180.6.2** *P* **354** *L* **35** # 517

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **A** *RX specs*

In 802.3db we acknowledged that single-lane PMDs are often packaged in multilane modules, and subject to much the same crosstalk as multilane PMDs.

SuggestedRemedy

Delete footnote e, "No aggressors needed for 200GBASE-DR1." In 180.8.13 Stressed receiver sensitivity, add "For a receiver in a multilane device, the OMA outer of the aggressor lanes is specified in Table 180-8."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change footnote e, to "No aggressors needed for 200GBASE-DR1 in a single lane device."

With editorial license.

Cl **180** *SC* **180.8.11** *P* **365** *L* **51** # 518

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **A** *RIN-OMA*

"The upper -3 dB limit of the measurement apparatus is to be approximately equal to the signaling rate": I believe this dates back at least to the first Fibre Channel, ~1 Gb/s, long before adaptive equalisers that optimise the receiver bandwidth. We have a RIN spec to help the accuracy of the TDECQ spec, which is the actual assessment of signal quality. Gigabit Ethernet now uses 937.5 MHz, 75% of the signalling rate. Measuring a peaky noise spectrum in too much bandwidth gives a flattering average, which is not what we want.

SuggestedRemedy

Change the bandwidth for RIN measurement to be the same as the TDECQ receiver's BT4 filter (50% of signalling rate ~ 53.1 GHz) or 75%, or something in between.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the 802.3dj task force at the May Interim meeting:
https://www.ieee802.org/3/dj/public/24_05/johnson_3dj_03a_2405.pdf

Implement slides 8 and 9 of the presentation with editorial license.

Cl **176** *SC* **176.5.1.6.6** *P* **208** *L* **34** # 538

Rechtman, Zvi Nvidia

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

The comment refers to Figure 176û8ùPMA receive symbol-pair lock state diagram
The state diagram is defined as single state machine per the entire PMA. However, each PMA lane may have a different reference skew, leading to varying SLIP operation requirements per PMA lane (e.g. one PMA lane doesn't require SLIP because all PCS lanes of that lane are locked, but other PMA lane still need to skew to find the 20 symbol bit boundaries)therefore the state diagram should be define per PMA lane and not for per PMA.

SuggestedRemedy

Modify the state diagram per PMA lane and not per PMA, this include change in the variables to be defined per <y>:
restart_lock_demux<y>
symbol_pair_lock_demux<y>
start symbol_pair_lock_counter_demux<y>
symbol_pair_lock_demux<y>

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment # 80.

Cl **176** *SC* **176.9.1.2** *P* **242** *L* **12** # 540

Rechtman, Zvi Nvidia

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

The text currently refers to xAUI-n C2C. However, the adopted PMA baseline proposal stated that the ôPrecoding capability in all physically instantiated interfaces is æTx:required, Rx:optionalÆö (per ran_3dj_01a_2303 slide 10). This specification should also encompass xAUI-n C2M.

SuggestedRemedy

Add xAUI-n C2M

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #21

Cl **176** *SC* **176.9.1.2** *P* **242** *L* **23** # 541

Rechtman, Zvi Nvidia

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

The paragraph refers only to the case of PMD control function operation, need to refer to Annex 176A for all electrical interfaces

SuggestedRemedy

Replace:
"If the PMA is connected to the service interface of an xBASE-CRn or xBASE-KRn PMD and training is enabled by the management variable mr_training_enable (see 136.7), then recoder_tx_out_enable_i and precoder_rx_in_enable_i shall be set as determined by the PMD control function in the LINK_READY state on lane i (see 136.8.11.7.5 and Figure 136û7). The method by which the MD control function affects these variables is implementation dependent."

With:
"If the PMA support the Control function and start-up protocol for electrical interfaces and training is enabled by the management variable mr_training_enable (see Annex 176A), then precoder_tx_out_enable_i and
precoder_rx_in_enable_i shall be set as determined by the control function in the LINK_READY state on lane i (see 176A.10.4 and Figure 176Aû6). The method by which the PMA control function affects these
variables is implementation dependent"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #21

Cl **177** *SC* **177.4.7.2** *P* **256** *L* **12** # 547

Rechtman, Zvi Nvidia

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

The 128,120 Hamming code is very sensitive to error propagation since it can correct up to one error in hard decoding and three errors in soft decoding. Hence, precoding is required

SuggestedRemedy

Add precoding, and use the same definition of precoding similar to 176.9.1.2.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Background and proposed changes are provided on slides 4 to 10 in the the following presentation:
https://www.ieee802.org/3/dj/public/24_06/brown_3dj_02_2406.pdf

Implement the proposed text on slides 8 and 9 of brown_3dj_02_2406.

Implement with editorial license.

Cl **184** *SC* **184.6.5** *P* **462** *L* **22** # 560

Law, David HPE

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

N (the number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock), and M (the number of consecutive PS symbols that don't match the expected value for a given polarization stream required to exit frame lock) used in Figure 184û9 'DSP lock state diagram' aren't defined in subclause 184.6 'Inner FEC state diagrams' or its subclauses.
á
Suggest that these values should be defined in one place (I assume in subclause 184.5.4 'DSP frame synchronization and pilot removal' which includes the text 'The values of N and M are TBD.), with a pointer to this subclause elsewhere.

SuggestedRemedy

[1] Insert a new subclause 184.6.5 'Constants' as follows, renumbering the following subclause.
á
184.6.5 Constants
M
The number of consecutive PS symbols that fail to match the expected value for a given polarization stream required to exit frame lock (see 184.5.4).
N
The number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock (see 184.5.4).
á
{2] In subclause 184.6.2 'Variables', change the text 'It is set to true when TBD PS symbols ...' to read 'It is set to true when M PS symbols ...' in the variable 'restart_lock' description.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In the first paragraph of clause 184.5.4 remove: "The values of N and M are TBD."

Insert new subclause 184.6.5 "Constants" after subclause 184.6.4 as follows, renumbering the subsequent subclause:
****
184.6.5 Constants

M
The number of consecutive PS symbols that fail to match the expected value for a given polarization stream required to exit frame lock (see 184.5.4). M = 8.

N
The number of consecutive PS symbols matching the expected value for a given polarization stream required to enter frame lock (see 184.5.4). N=12.
****

In subclause 184.6.2 'Variables', change the text for "restart_lock" from:
"It is set to true when TBD PS symbols ..." to: "It is set to true when M PS symbols ..."

Implement with editorial license.

Cl **176A** *SC* **176A.1** *P* **548** *L* **12** # 577

Law, David HPE

Comment Type **TR** *Comment Status* **A** *ILT General*

The use of the terms 'segment' and 'link' in Annexe 176A, for example in 176A.1 where it says, 'in single-segment or multiple-segment links', are problematic.
á
IEEE Std 802.3 subclause 1.4.505 'segment' defines it as 'The medium connection, including connectors, between Medium Dependent Interfaces (MDIs) in a CSMA/CD local area network.'. Subclause 1.4.372 'link' defines it as 'The transmission path between any two interfaces of generic cabling. (From ISO/IEC 11801.)'.
á
As a result, I believe it would only be correct to call an electrical channel between two PMD sublayers a 'segment'. I do not believe that the electricaláchannel between any other combinations of sublayers is a 'segment'.

SuggestedRemedy

I would suggest 'section' as an alternate to 'segment', but that was used for 'The portion of the link between the PSE Power Interface (PI) and the PD PI.' (see 1.4.378) when PoE had a similar definition problem. Alternatives, therefore, might be 'Division' and 'Sector'.

As another approach, the following is a rewording of 176A.1 to avoid the use of the terms 'segment' and 'link' without the use of a new term. I acknowledge, however, that such an approach would require a significant rewrite of the Annexxe.

The start-up protocol facilitates timing recovery and equalization of the electrical channel between adjacent sublayers, or chains of multiple adjacent sublayers while providing a mechanism through which the receiver can configure the transmitter to optimize performance. The protocol supports these functions through the continuous exchange of fixed-length training frames across the electrical channel between adjacent sublayers and the transport of end-to-end indications across chains of multiple adjacent sublayers.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following contribution was reviewed by the 802.3dj Task Force during the May 2024 Interim meeting https://www.ieee802.org/3/dj/public/24_05/law_3dj_01_2405.pdf

Implement the following with editorial license.

In Annex 176A (and other clauses where appropriate), replace "segment" with "section" and "link" with "path".

Cl **185** *SC* **185.5.1** *P* **477** *L* **12** # 578

Kota, Kishore — Marvell Semiconductor

Comment Type **TR** *Comment Status* **R** *(withdrawn)*

Minimum transmit power specification has a big impact on coherent module designs. This has been defined in the initial proposals as a specification on the average power following other coherent physical layer specifications defined for DWDM systems. However, there is opportunity for a 800GBASE-LR1 PMD to change this in a way which can relax module transmit specifications

SuggestedRemedy

Define the minimum transmit power specification to be defined per lane instead of average. See https://grouper.ieee.org/groups/802/3/dj/public/23_11/kota_3dj_01a_2311.pdf for an initial proposal based on this concept. Defining the power per lane provides an opportunity to relax lane mismatch specs.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **185** *SC* **185.5.1** *P* **477** *L* **15** # 579

Kota, Kishore — Marvell Semiconductor

Comment Type **TR** *Comment Status* **R** *(withdrawn)*

The draft contains separate specifications of X-Y power imbalances and I-Q imbalance. However, there is an opportunity for a 800GBASE-LR1 PMD to change this in a way which can relax module transmit specifications

SuggestedRemedy

Having a separate X-Y and I-Q imbalance specification splits the imbalance power budget and results in a tighter specification than necessary. These specifications should be combined into a single lane-to-lane imbalance specification. See https://grouper.ieee.org/groups/802/3/dj/public/23_11/kota_3dj_01a_2311.pdf for an initial specification methodology proposal.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **185** *SC* **185.5.2** *P* **478** *L* **15** # 580

Kota, Kishore — Marvell Semiconductor

Comment Type **TR** *Comment Status* **R** *(withdrawn)*

Average receiver power (min) and the per-lane transmit power (min) specifications should be tied to an appropriate transmit quality metric similar to the TDECQ specifications in other IMDD clauses

SuggestedRemedy

See https://grouper.ieee.org/groups/802/3/dj/public/24_01/kota_3dj_01a_2401.pdf and https://grouper.ieee.org/groups/802/3/dj/public/23_11/kota_3dj_01a_2311.pdf for initial proposals on how to tie the RX sensitivity and TX power specifications with a transmit quality metric. This provides flexibility to allow module designers to explore design tradeoffs to simplify designs in ways which can benefit end users.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **177** *SC* **177.4.7.2** *P* **256** *L* **13** # 582

Ghiasi, Ali — Ghiasi Quantum/Marvell

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

Pre-coding was shown on riani_3dj_01a_2303 FECI baseline that when was adopted, and pre-coding is essential for FECi PMDs

SuggestedRemedy

Please insert text for pre-coder in this sub-clause. as specified in 135.5.7.2, 120.5.7.2, and 173.5.7.2, 6 and 176.9.1.2, that may be enabled or disabled as needed with OLT, without OLT the optical transmitter should enable 1/(1+D) mod 4 precoding to mitigate burst error. See Ghiasi/Riani May-24 presentation on the need for pre-coder

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using response to comment #547

Cl **182** *SC* **182.7.3.1.1** *P* **407** *L* **11** # 587

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-2 connector should be labled as Tx1Tx2 ------ Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #590.

Cl **182** *SC* **182.7.3.1.2** *P* **407** *L* **27** # 588

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-4 connector should be labled as Tx1Tx2Tx3Tx4 ------ Rx4Rx3Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #590.

Cl **182** *SC* **182.7.3.1.3** *P* **408** *L* **15** # 589

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-8 connector should be labled as Tx1Tx2Tx3Tx4Tx5Tx6Tx7Tx8
Rx8Rx7Rx6Rx5Rx4Rx3Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #590.

Cl **180** *SC* **180.7.3.1.1** *P* **360** *L* **11** # 590

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-2 connector should be labled as Tx1Tx2 ------ Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

While the labeling modification as proposed was not part of the adopted Baseline Proposal for Optical Link Training "OLT", it is necessary to support the adopted baseline.

Implement suggested remedy with editorial license.

Cl **180** *SC* **180.7.3.1.2** *P* **260** *L* **27** # 591

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-4 connector should be labled as Tx1Tx2Tx3Tx4 ------ Rx4Rx3Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #590.

Cl **180** *SC* **180.7.3.1.3** *P* **361** *L* **46** # 592

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **T** *Comment Status* **A** *Connector labeling*

To support breakout, loopback, and OAN/OLT connectro should be labled

SuggestedRemedy

DR2-8 connector should be labled as Tx1Tx2Tx3Tx4Tx5Tx6Tx7Tx8
Rx8Rx7Rx6Rx5Rx4Rx3Rx2Rx1

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #590.

Cl **177** *SC* **177.4.3** *P* **252** *L* **37** # 606

de Koos, Andras — Microchip Technology

Comment Type **T** *Comment Status* **R** *Circular Shift (bucket)*

I'm not convinced that the circular shift really adds any robustness. Yes, it distances bit-pairs belonging to the same RS-FEC codeword, butà
Without the shift, the consecutive bit pairs (after 8:1 multiplexing) belonging to the same RS-FEC code words would each protected by different Inner FEC code words, would they not?
So is the circular shift just protecting against uncorrected inner-FEC codewords that would all land on the same RS-FEC codeword? Seems overkill. Are there simulations/models showing the benefit of including circular shift?

SuggestedRemedy

Consider removing the circular shift if it does not offer any worthwhile benefit.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **177** *SC* **177.4.3** *P* **252** *L* **37** # 607

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *Circular Shift (bucket)*

Was there not a proposal to make the circular shift optional, in order to minimize latency?

SuggestedRemedy

Consider removing the circular shift if it does offer not any worthwhile benefit.

Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **184** *SC* **184.4.4** *P* **448** *L* **5** # 613

Huang, Kechao Huawei Technologies Co., Ltd.

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

For permo[p, 40x(i-18x i mod 3)+j], the column index 40x(i-18x i mod 3)+j may be a negative value

SuggestedRemedy

Suggest to add one sentence after Line 9: When 40x(i-18x i mod 3)+j is negative, permo[p, 40x(i-18x i mod 3)+j] will be undetermined value from initial buffer of the convolutional interleaver.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the following with editorial license.
Add the following sentence after Line 9: "When 40x(i-18x i mod 3)+j is negative, permo is undefined."