

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 168 SC 168.1.1 P55 L # I-1

Tandon, Jas Individual

Comment Type T Comment Status R

The BER requirement is expressed only via post-FEC frame-loss ratio. For interoperability and test reproducibility we also need an explicit pre-FEC BER/SER target for PAM4 with RS-FEC(544,514) (Clause 91) and guidance when RS-FEC-Int (Clause 161) is used.

SuggestedRemedy

Add normative text: "The pre-FEC BER at the PMA service interface shall be $\leq 2.4 \times 10^{-4}$ for random errors when Clause 91 RS-FEC is used (measured per 91.5.2.7). When RS-FEC-Int (Clause 161) is used, specify the corresponding pre-FEC threshold and test method. State that burst-error performance shall meet the same frame-loss objective with a burst model defined by [insert reference to existing 802.3 burst method]."

Response Response Status C

REJECT.
The RS-FEC-Int is specified as optional in Table 168-1 and note d explains that RS-FEC-Int can improve link robustness. Subclause 168.1.1 specifies the BER requirements for the mandatory RS-FEC. Therefore, there's no need to add BER requirements for the optional FEC functions.

CI 45 SC 45.2.1 P23 L # I-2

Tandon, Jas Individual

Comment Type T Comment Status R

The draft exposes multiple FEC options (Clause 91 RS-FEC required; Clause 161 RS-FEC-Int optional; Clause 152 inverse RS-FEC optional) but lacks a priority/selection rule. Multi-vendor OLT/ONU interop will suffer.

SuggestedRemedy

Define in 91.5.2.7 (or 168.5) an ordering: default to Clause 91; upgrade to 161 only if both ends assert "100G RS-FEC-Int ability" (1.201.5) and a new "FEC preference" MDIO bit is set. Add a PICS item for mandatory support of the default rule.

Response Response Status C

REJECT.
Table 168-1 defines FEC functions in 100GBASE-BRx. Specifically, entry "91—RS-FEC" is the mandatory FEC, entry "152—Inverse RS-FEC" and entry "161—RS-FEC-Int" are the optional FEC.
In Table 168-1, note c and note d explain the use of the optional FEC functions.

In 168.11.4.2, PICS item F1 is defined for the mandatory RS-FEC.

CI 168 SC 168.3.2 P56 L19 # I-3

Macijuk, Greg Mountainside Digital Consulting Inc.

Comment Type E Comment Status A

The original line references Clause 80.5.3.4 but I've been unable to locate such a clause so think it's 83.5.3.4?

SuggestedRemedy

Skew at SP2 is limited to 43 ns as defined by 83.5.3.4. Since the signal at the PMD service interface 43 ns as defined by

Response Response Status C

ACCEPT IN PRINCIPLE.

Change 80.5.3.4 to 83.5.3.4.

CI 168 SC 168.7.12 P68 L37 # I-4

Macijuk, Greg Mountainside Digital Consulting Inc.

Comment Type E Comment Status A

minor capitalization error .. the original line reads "The receiver sensitivity For 100GBASE-BR40 is optional and is defined for a transmitter with a value of"

SuggestedRemedy

Should read:
"The receiver sensitivity for 100GBASE-BR40 is optional and is defined for a transmitter with a value of"

Response Response Status C

ACCEPT.

CI 168 SC 168.11.1 P74 L7 # I-5

Macijuk, Greg Mountainside Digital Consulting Inc.

Comment Type E Comment Status A

The line seems to be missing the clause number and reads
"The supplier of a protocol implementation that is claimed to conform to Clause, Physical Medium"

SuggestedRemedy

Revision
"The supplier of a protocol implementation that is claimed to conform to Clause 168, Physical Medium"

Response Response Status C

ACCEPT IN PRINCIPLE.

See the response to comment #I-6.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 168 SC 168.11.1 P72 L7 # I-6

Rannow, R K

Silverdraft

Comment Type T Comment Status A

The supplier of a protocol implementation that is claimed to conform to Clause, Physical Medium Dependent (PMD) sublayer and medium, types 100GBASE-BR10, 100GBASE-BR20, and 100GBASEBR40, shall complete the following protocol implementation conformance statement (PICS) proforma.

appears ambiguous

SuggestedRemedy

The supplier of a protocol implementation that is claimed to conform to Clause 168.11, Physical Medium Dependent (PMD) sublayer and medium, types 100GBASE-BR10, 100GBASE-BR20, and 100GBASEBR40, shall complete the following protocol implementation conformance statement (PICS) proforma.

Alternative:

The supplier of a protocol implementation that is claimed to conform to this Standard, shall complete the following protocol implementation conformance statement (PICS) proforma.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add "168" after "Clause " in the first line of the paragraph in 168.11.1, and mark it as cross-reference.

CI 168 SC 168.6 P62 L11 # I-7

Rannow, R K

Silverdraft

Comment Type T Comment Status A

Note that the table is split between pages, so not "a" does not appear in page 63. However, in the document, when tables are split between pages, "continue" is used to help ensure no ambiguity

SuggestedRemedy

Make the document consistent.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add "(continued)" in table title of Table 168-7, and make the same changes to other tables split between pages with editorial license.

CI 45 SC 45.2.1.33 P22 L24 # I-8

Effenberger, Frank

Futurewei Technologies

Comment Type E Comment Status A

1.35.5 50GBASE-BR50-U ability should be "BR40" - but it is already existing text so it likely just a typo.

SuggestedRemedy

Change "BR50" to "BR40"

Response Response Status C

ACCEPT.

CI 135 SC 135.5.7.2 P44 L24 # I-9

Brown, Matthew

Alphawave Semi

Comment Type TR Comment Status R

The wording on the last sentence is awkward as the exception is on the PMA not the stated requirement.

I would further challenge with this optional (permitted) functionality is worth including in this standard. If it is optional then the receiver cannot count on it and must assume desired performance must be achievable without it. The precoding is conventionally not mandatory on the receiver since the need is dependent on the receiver architecture; and the transmitter precoding state is set based on the need of the receiver. If optional output precoding is retained then some explanation about how it is coordinated between distantly located terminals will be coordinated.

SuggestedRemedy

Change the last sentence to:

"A PMA that is not connected to the service interface of a 100GBASE-BRx PMD shall provide $1/(1+D) \bmod 4$ precoding capability on each output lane. A PMA that is connected to the service interface of a 100GBASE-BRx PMD may provide $1/(1+D) \bmod 4$ precoding capability on each output lane."

Alternately, consider leaving the the base standard text as is.

Response Response Status U

REJECT.

In the base standard text, the optional functionality is for input. The current text in the IEEE P802.3dk draft doesn't change the functionality. The IEEE P802.3dk draft adds an exception for 100GBASE-BRx to the output capability.

For 100GBASE-BRx PHYs, the precoding ability registers are defined in 45.2.1.145a. The main users are service providers who have control over which PMDs are used, and they can manage this outside of IEEE Std 802.3.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 168 SC 168.6.3 P62 L36 # I-10

Maniloff, Eric Ciena Corporation

Comment Type TR Comment Status A

The channel insertion loss for 100GBASE-BR10 in Note b says it is based on 0.4dB/km + the loss allocation from 168.10.2.1 (2dB). This doesn't equal 6.3 dB.

SuggestedRemedy

Modify the note for Channel insertion loss to indicate that 100GBASE-BR10 to indicate that it is calculated using fiber attenuation of 0.43dB/km

Response Response Status C

ACCEPT IN PRINCIPLE.

Change note b in Table 168-8 to: "The channel insertion loss is calculated using the maximum distance specified in Table 168-5 for 100GBASEBR10, and fiber attenuation of 0.43 dB/km plus an allocation for connection and splice loss given in 168.10.2.1." Add a new note in Table 168-8 for Channel insertion loss of 100GBASEBR20 and 100GBASEBR40 as: "The channel insertion loss is calculated using the maximum distance specified in Table 168-5 for 100GBASE-BR20 and 100GBASE-BR40, and fiber attenuation of 0.4 dB/km plus an allocation for connection and splice loss given in 168.10.2.1."

Implement with editorial license.

CI 168 SC 168.7.5.1 P65 L54 # I-11

Maniloff, Eric Ciena Corporation

Comment Type ER Comment Status A

A statistical approach is used to determine the zero dispersion wavelengths in Table 168-11. This is indicated for the values in Table 168-12, but should also be noted in Table 168-11

SuggestedRemedy

Add a note for Dispersion in Table 168-11 with the following text: "The dispersion specifications are based on the statistical link design methodology documented in ITU-T REC G.652, Appendix I."

Response Response Status C

ACCEPT IN PRINCIPLE.

Add "The dispersion specifications are based on the statistical link design methodology documented in ITU-T REC G.652, Appendix I." at the end of note a in Table 168-11 with editorial license.

CI 168 SC 168.10.1 P72 L7 # I-12

Maniloff, Eric Ciena Corporation

Comment Type ER Comment Status A

Channel insertion Loss includes note b. Note b relates to Dispersion.

SuggestedRemedy

Remove note b from Channel Insertion Loss

Response Response Status C

ACCEPT.

CI 168 SC 168.10.1 P72 L13 # I-13

Maniloff, Eric Ciena Corporation

Comment Type ER Comment Status A

All of the dispersion entries should include note b, as they are based on statistical analysis

SuggestedRemedy

Add Note b to all of the entries for Dispersion

Response Response Status C

ACCEPT.

CI 168 SC 168.10.1 P72 L35 # I-14

Maniloff, Eric Ciena Corporation

Comment Type TR Comment Status A

Table 168-13 includes values of 0.43dB and 0.5dB/km for fiber attenuation. However the losses for 100GBASE-BR20 and 100GBASE-BR40 are based on 0.4dB/km

SuggestedRemedy

The fiber characteristics in Table 168-13 should include 0.4 dB/km, and/or some description on how the Channel Insertion Loss is calculated.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the value of Cabled optical fiber attenuation (max) in Table 168-13 to: 0.4a, 0.43a or 0.5b.

Change note a to: The 0.4 dB/km at 1310 nm attenuation, and 0.43 dB/km at 1304.5 nm attenuation for optical fiber cables are derived from Appendix I of ITU-T G.695.

Implement with editorial license.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 0 SC 0 P7 L38 # I-15

McClellan, Brett Marvell Semiconductor, Inc.

Comment Type E Comment Status A

typo, please correct name spelling

SuggestedRemedy

change McClellan to McClellan

Response Response Status C

ACCEPT.

CI 168 SC 168.3.2 P56 L28 # I-16

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status A

The subclause 168.3.2 contains the following requirement: "If the PMD service interface is physically instantiated so that the Skew at SP5 can be measured, then the Skew at SP5 shall be less than 145 ns." The corresponding PICS entry SC3 is marked as optional, while it should be marked as conditional mandatory.

SuggestedRemedy

The instantiation of the PMD service interface should be specified in text as an optional requirement, and that requirement should serve as a condition to the measured skew requirement.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the status of item SC3 in 168.11.4.1 to conditional mandatory with editorial license.

CI 168 SC 168.11.4.2 P76 L28 # I-17

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status R

PICS F1 and M1 are missing the Value/Comment

SuggestedRemedy

Copy the relevant requirements from specification body

Response Response Status U

REJECT.

IEEE P802.3dk needs to be consistent with existing clauses, such as IEEE Std 802.3 Clause 140, since the 100GBASE-BRx PHY specification references Clause 140.

CI 168 SC 168.11.4.2 P76 L30 # I-18

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status R

There appears no optional requirement in subclause 168.1 that would correspond to PICS F2

SuggestedRemedy

Remove the PICS entry

Response Response Status C

REJECT.

The PICS F2 corresponds to the last sentence in 168.1: "to the medium through the MDI and optionally with the management functions that may be accessible through the management interface defined in Clause 45, or equivalent."

CI 168 SC 168.11.4.2 P76 L33 # I-19

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status A

The general convention in 802.3 is that every mandatory or optional requirement should have its corresponding PICS entry. But this is not done in this draft. For example, there are two mandatory requirements in 168.1.1, but only a single PICS entry (F3) for both. Overall, clause 168 contains 50 mandatory requirements ("shall") and 6 optional requirements ("should"). However, there are only 28 mandatory or conditional mandatory PICS entries and 15 optional or conditional optional PICS entries.

SuggestedRemedy

Review all the PICS entries and revise as needed to ensure one-to-one correspondence with the individual mandatory and optional requirements given in the specification body.

Response Response Status C

ACCEPT IN PRINCIPLE.

In general, there could be a many-to-one mapping of requirements to PICS entries. Therefore, they do not have to have the same numbers.
Review the draft and ensure that every requirement is covered by one PICS.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 168 SC 168.11.3 P75 L75 # I-20

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status R

PICS TP1 and TP2 do not have corresponding requirements in the body of subclause 168.5.1

SuggestedRemedy

Remove PICS entries or add the necessary requirements to 168.5.1.

Response Response Status C

REJECT.

IEEE P802.3dk needs to be consistent with existing clauses, such as IEEE Std 802.3 Clause 160, since the 100GBASE-BRx PHY share the similar block diagram with Clause 160.

CI 168 SC 168.5.2 P58 L3 # I-21

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status A

The subclause 168.5.2 contains three mandatory requirements. Only the second and third requirements have corresponding PICS entries. The first requirement has no PICS entry.

SuggestedRemedy

Add PICS for the following requirement: "The PMD Transmit function shall convert the symbol stream requested by the PMD service interface messages PMD:IS_UNITDATA_0.request into an optical signal."

Response Response Status C

ACCEPT IN PRINCIPLE.

Add an PICS item for "The PMD Transmit function shall convert the symbol stream requested by the PMD service interface messages PMD:IS_UNITDATA_0.request into an optical signal." in 168.11.4.2 before F4 with editorial license.

CI 168 SC 168.11.4.2 P76 L42 # I-22

Kramer, Glen Broadcom Corporation

Comment Type TR Comment Status R

PICS entries F6 and F7 both correspond to a single requirement in text

SuggestedRemedy

Combine both PICS entries into one entry. Make the Value/Comment field read: "Converts the optical signal received from the MDI into a symbol stream for delivery to the PMD service interface using the message PMD:IS_UNITDATA_0.indication"

Response Response Status U

REJECT.

IEEE P802.3dk needs to be consistent with existing clauses, such as IEEE Std 802.3 Clause 140, since the 100GBASE-BRx PHY specification references Clause 140.

CI 0 SC 0 P12 L3 # I-23

McClellan, Brett Marvell Semiconductor, Inc.

Comment Type E Comment Status R

802.3dk should be amendment 10 not 11, the prior corrigendum is not considered an amendment.

SuggestedRemedy

change 'Amendment 11' to 'Amendment 10'

Response Response Status C

REJECT.

Amendment #11 is assigned to 802.3dk by the IEEE 802.3 Working Group Chair, while Amendment #10 is assigned to 802.3da.

CI 168 SC 168.5.1 P57 L29 # I-24

Dudek, Michael Marvell

Comment Type T Comment Status A

Figure 168-2 does not show the required patch cord in the 2nd direction. (that is needed to be able to test at TP2)

SuggestedRemedy

Add the additional patch cord to the figure

Response Response Status C

ACCEPT IN PRINCIPLE.

Add an additional patch cord on the right side to make the figure symmetric. Implement suggested remedy with editorial license.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 168 SC 168.10.1 P71 L49 # I-25

Maguire, Valerie Copperopolis

Comment Type TR Comment Status A

I think what the draft is trying to do is accomodate legacy cable types, but calling out 'newer, higher performing cables with exceptions' as the specification is a confusing way to do this. The proposed text is aligned with changes made to clause 180.8.1 of P802.3dj to address this same concern.

SuggestedRemedy

Replace, "The optical fiber cable requirements are satisfied by cables containing ITU-T G.652.B (dispersion unshifted), type G.652.D (low water peak, dispersion unshifted), or type G.657.A1 or type G.657.A2 (bend insensitive) fibers, or the requirements in Table 168–13 where they differ."

with, "The optical fiber cable requirements are satisfied by cables meeting the characteristics in Table 168–13. The use of optical fiber cables containing ITU-T G.652.B (dispersion unshifted), type G.652.D (low water peak, dispersion unshifted), or type G.657.A1 or type G.657.A2 (bend insensitive) fibers is recommended."

Response Response Status C

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

CI 168 SC 168.10.1 P72 L41 # I-26

Maguire, Valerie Copperopolis

Comment Type E Comment Status A

A dash is missing between "TIA" and "568" in the ANSI/TIA-568.3-C reference.

SuggestedRemedy

Replace, "ANSI/TIA 568-C.3."

with, "ANSI/TIA-568-C.3"

Response Response Status C

ACCEPT.

CI 30 SC 30.5.1.1.2 P18 L18 # I-27

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status R

The editorial instruction "Insert" is used for adding new material without changing existing material, so existing content should not be included. The text in the amendment looks as if the types 50GBASE-SR and 100GBASE-CR2 are inserted, but these are existing types. If this content is included in the amendment then the instruction should be "Change" and the new content should be underlined (this would be an alternative to the suggested remedy).

SuggestedRemedy

Delete the items 50GBASE-SR and 100GBASE-CR2.

Response Response Status C

REJECT.

The rational for having the row before and after is to give context for the insertion.

CI FM SC FM P16 L # I-28

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status A

Amendments typically include a title page prior to the first clause (right after the "contents" section). As an example, see page 29 of 802.3df-2024. There is no such page here.

SuggestedRemedy

Add the title page per the comment.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add the title page after the contents with editorial license.

CI FM SC FM P1 L11 # I-29

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status A

"Amendment: 11" should be "Amendment 11:."

SuggestedRemedy

Change per comment.

Response Response Status C

ACCEPT.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI	FM	SC	FM	P1	L13	#	I-30
Ran, Ade				Cisco Systems, Inc.			
Comment Type	G			Comment Status	R		
The title is "Bidirectional 100 Gb/s Optical Access PHYs" but the project title in the PAR is "Greater than 50 Gb/s Bidirectional Optical Access PHYs". I assume the title should match the PAR.							
<i>SuggestedRemedy</i>							
Change the title to match the PAR on page 1, in the header of all pages, and elsewhere as necessary.							
Response				Response Status	C		
REJECT.							
The title is within the scope of PAR.							
Subclause 4.2.3.2 'Review of draft standards' of the IEEE-SA Standards Board Operations Manual							
< https://standards.ieee.org/wpcontent/uploads/import/documents/other/sb_om.pdf#page=10							
> lists 'Title of Document. The title on the draft document and submittal form shall be within the scope as stated on the most recently approved PAR, or action(s) shall be taken to ensure this.'. Further, the IEEE-SA 2021 Style manual has similar text that reads, 'Per 4.2.3.2 of the IEEE-SA Standards							
Board Operations Manual, the title on the draft document shall be within the scope as stated on the most recently approved PAR.'							
< https://mentor.ieee.org/myproject/Public/mytools/draft/styleman.pdf#page=13 >.							
Based on the above, the title of the draft standard must be within the scope of the approved PAR and does not have to match the title of the approved PAR. The scope of the IEEE P802.3dk PAR is 'Define physical layer specifications and management parameters for symmetric bidirectional operation at greater than 50 Gb/s over a single strand of single mode fiber of at least 10 km.'. Since '... Bidirectional 100 Gb/s Optical Access ...' is greater than 50 Gb/s over a single strand of single-mode fibre, the title of the draft is within the scope of the PAR as required.							

CI	45	SC	45.2.1.117.7a	P23	L50	#	I-31
Ran, Ade				Cisco Systems, Inc.			
Comment Type	T			Comment Status	A		
The new "100G RS-FEC-Int ability" bit definition says "applies to 100GBASE-BRx" but it does not say what happens in other PHYs.							
Most other PHYs do not have RS-FEC-Int, but there are two (100GBASE-CR1 and 100GBASE-KR1) that do, and for these it is mandatory, not optional, so there is no "ability" bit, so this bit is reserved and reading it would return 0; this can be confusing.							
Also in 161.6.10a, which contains similar text describing a variable.							
<i>SuggestedRemedy</i>							
Add the following paragraph:							
"For physical layers other than 100GBASE-BRx, this bit is always 0".							
Add a similar paragraph in 161.6.10a but with "variable".							
Response				Response Status	C		
ACCEPT IN PRINCIPLE.							
Change "100G RS-FEC-Int ability bit applies to 100GBASE-BRx." to "100G RS-FEC-Int ability bit is defined only for 100GBASE-BRx and is set to 0 for all other PHYs." in 45.2.1.117.7a with editorial license.							
Change "The 100G_RS_FEC_Int_ability variable applies to 100GBASE-BRx." to "The 100G_RS_FEC_Int_ability variable is relevant only for 100GBASE-BRx" in 161.6.10a with editorial license.							

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 30 SC 30.5.1.1.16 P18 L # I-32

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status R

RS-FEC-Int is mentioned in 30.5.1.1.16 (as amended by 802.3ck-2022) but it is not included in this amendment.
100GBASE-BRx should be added to the list of PHYs in the second paragraph of the "BEHAVIOUR DEFINED AS:" section of 30.5.1.1.16.

SuggestedRemedy

Bring in the subclause from 802.3ck-2022 and apply the necessary additions, with editorial license.

Response Response Status C

REJECT.

The "BASE-R enabled", "RS-FEC enabled" and "RS-FEC-Int enabled" are only used by PHYs which support more than one type of FEC operation.

For 100GBASE-BRx, RS-FEC is mandatory and RS-FEC-Int is optional.

In Table 168-1, RS-FEC-Int in CL161 is marked as optional and note d explains the default state for bidirectional application.

CI 1 SC 1.4 P17 L 22 # I-33

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status A

There are new definitions of 100GBASE-BR10, 100GBASE-BR20, and 100GBASE-BR40, but there is no definition of 100GBASE-BRx, which is used in many places (not just in clause 168).
Unfortunately the base standard does not include definitions for the similar terms 10GBASE-BRx, 25GBASE-BRx, and 50GBASE-BRx either. These terms are used across introduction clauses (44, 56, 157) without being defined first (157.1.3 is not a definition of these specific terms). Definitions for these should be added too. If these additions are out of scope then it could be done by a maintenance request (but it should preferably be done in this project).

SuggestedRemedy

Add an appropriate definition for 100GBASE_BRx in 1.4.
If considered within scope, add similar definitions for 10GBASE-BRx, 25GBASE-BRx, and 50GBASE-BRx. If not, I could open a maintenance request with suggested definitions based on the response to this comment.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add definitions of 10GBASE-BRx after 1.4.65, 25GBASE-BRx after 1.4.119, 50GBASE-BRx after 1.4.168, and 100GBASE-BRx after 1.4.34c in CL1.4 with editorial license.

CI 45 SC 45.2.1.145 P26 L 3 # I-34

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status A

Subclause 45.2.1.145 is not changed so it should be included in the amendment text

SuggestedRemedy

Delete the heading "45.2.1.145 PMA precoder request Tx input status (Register 1.606)".

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.145a P24 L 15 # I-35

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status A

For PMA precoding, the existing subclauses 45.2.1.139 through 45.2.1.145 use the terms "input" and "output" an addition to "Tx" and "Rx". "Tx" and "Rx" are the directions of the PMA. interface It is not clear what "Tx" and "Rx" mean in the newly added subclauses. I assume the intent is to enable precoding on the medium (below the PMA), so it is the output in the Tx direction and input in the Rx direction. If the intent is also to enable optional precoding on the AUI (above the PMA) then additional bits would be required (not included in the suggested remedy).

Also, "Rx" and "Tx" should not be used in the text as abbreviations. These appear only in variable names, register names, etc., or as parts of compound labels (e.g. "Rx input precoder"). See 45.2.1.89 for an example: the "RX" is part of the register name but the term "receive" is used in the text.

SuggestedRemedy

Change the description of 1.607.1 from "1 = Precoding is supported by Rx" to "1 = Precoding at Rx input is supported", and apply similar changes for other descriptions in the table and in the new subclauses (45.2.1.145a.1 and 45.2.1.145a.2).

Change any other instances of "Tx" and "Rx" as abbreviations to "transmitter" and "Receiver" (or as appropriate).

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace "Rx" with "Rx input", "Tx" with "Tx output" in CL45 and CL161 with editorial license.
Replace "Rx" with "receiver", "Tx" with "transmitter" in CL168 with editorial license.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 56 SC 56.1.3 P26 L1 # I-36

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status A

The editorial instruction is incorrect. Splitting a table into two is not a simple insertion of new material ("Insert" instruction), nor is it a simple correction of existing text ("Change" instruction).

This is also done in 80.1.4, 80.4 and maybe other places.

SuggestedRemedy

Change the editorial instruction to "Replace Table 56-1 with the following table (for P2P):" and after the replacement table add a new editorial instruction "insert new Table 56-1a (for P2MP) after Table 56-1 as follows"

In both tables, there is no need to use underline or strikethrough, because this is a "replace" instruction.

Apply similar changes in 80.1.4, 80.4, and elsewhere if necessary.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the editorial instruction of Table 56-1 to: "Change Table 56-1 as follows:". Change Table 56-1 showing the existing P2MP entries in strikeout and add new entries on 100GBASE-BRx with editorial license, and change Table 56-1 title to "Summary of P2P EFM Physical Layer signaling systems". Change the editorial instruction of Table 56-1a to: "Insert new Table 56-1a as follows:".

Change the editorial instruction of Table 80-1 to: "Change Table 80-1 as follows:". Change Table 80-1 showing the existing 100Gb/s entries in strikeout, and change Table 80-1 title to "40 Gb/s PHYs". Change the editorial instruction of Table 80-1a to: "Insert new Table 80-1a as follows:".

Change the editorial instruction of Table 80-7 to: "Change Table 80-7 as follows:". Change Table 80-7 showing the existing 100Gb/s entries in strikeout, and change Table 80-7 title to "Sublayer delay constraints of 40 Gb/s PHYs". Change the editorial instruction of Table 80-7a to: "Insert new Table 80-7a as follows:". Change Table 80-7a title to "Sublayer delay constraints of 100 Gb/s PHYs".

CI 80 SC 80.1.4 P32 L30 # I-37

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status A

The order of rows in Table 80-1a is not consistent with the original table and the amendments (which use the "Illuminati order" defined in <https://www.ieee802.org/3/WG_tools/editorial/requirements/words.html#phy_sort>). For example, KR2 should appear before KR1, and CR10, CR4, and CR2 should appear before CR1. (there are other required swaps)

Also in Table 80-7a and maybe others.

SuggestedRemedy

Reorder the rows to match the Illuminati order in all tables.

Response Response Status C

ACCEPT IN PRINCIPLE.
Move 100GBASE-SR10 before 100GBASE-SR4 in Table 80-1a.
Implement suggested remedy with editorial license.

CI 91 SC 91.7.3 P41 L27 # I-38

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status A

New content in "**KP4 / Feature" is not underlined

SuggestedRemedy

Add underline for ", 100GBASE-BR10, 100GBASE-BR20, or 100GBASE-BR40"

Response Response Status C

ACCEPT.

CI 91 SC 91.7.4.1 P42 L15 # I-39

Ran, Adee Cisco Systems, Inc.

Comment Type E Comment Status A

The content of "TF11 / Status" is already "KP4:M" in 802.3-2022, 802.3ck-2022, and 802.3db-2022. No need to change it.

Similarly for RF4 in 91.7.4.2.

SuggestedRemedy

Delete the letter "R" and remove the change indication in both places.

Response Response Status C

ACCEPT.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 135 SC 135.7.3 P45 L 17 # I-40

Ran, Adeo Cisco Systems, Inc.

Comment Type T Comment Status A

The "Item" name of "100GBASE-BRx" does not match the feature and status, and subclause 135.1.4 does not address 100GBASE-BRx. The feature is used as part of the conditional status in C2 and C3, so it seems that "100GBASE-BRx" is correct but the feature and status definitions are not.

Also the usage for C2 and C3 is incorrect: these features are defined as "for physically instantiate PMA service interface" but in this case the precoding is intended to be on the PMD service interface, which is addressed by items C4 and C4 (duplicate labels in .802.3-2022...)

SuggestedRemedy

In item *100GBASE-BRx, change the "Feature" text to "PMA lanes connected to the service interface of a 100GBASE-BRx PMD", change subclause to 135.5.7.2, and change status to "APMD*100G*NLD=1:O" (this means: optional when above a 100G single-lane PMD).

Remove the rows for items C2 and C3.

Copy the two rows labeled C4 from 802.3-2022.

In the first row for C4 (which is "PMA supports output precoding for PMD service interface"), change "Status" from "PMDE:M" to "PMDE:M or 100GBASE-BRx:O", and add a "No" option in "Support".

Rename the second row for C4 (which is "PMA supports input precoding for PMD service interface") to "C5", change "Status" from "PMDE:O" to "(PMDE+100GBASE-BRx):O".

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

CI 157 SC 157 P46 L 5 # I-41

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status A

"BiDi PHYs" is existing text

SuggestedRemedy

Remove underline format

Response Response Status C

ACCEPT.

CI 157 SC 157.2.2 P49 L 10 # I-42

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status R

CAUI-10 and CAUI-4 are not compatible with the KP FEC used in the PHYs of this project. These interfaces are specified for a signaling rate of 25.78125 GBd and can only be used for NRZ signaling with RS-FEC (e.g. SR4, clause 95) or without any FEC (LR4, clause 88).

Th 100GBASE-BRx always operate with the KP FEC on the medium. If the module form factor is SFP (single lane on the host side), there will always be KP FEC on the AUI as well.

The CAUI-4 is only relevant if the module is QSFP and the host uses the KR FEC, and then the module converts between KR and KP (using the inverse RS-FEC sublayer) - which seems a rather wasteful situation, and perhaps can be dropped from the documented options (people can still implement it even if it's not listed in the standard). Note that the 50G BiDi PHYs do not list the corresponding "LAUI-2" (Annex 135B, 135C).

I don't see any application that would use CAUI-10, and maybe it's time to deprecate it.

If it is accepted that CAUI-4 does not need to be supported, then the clause 83 PMA and Clause 152 inverse RS-FEC can be dropped too.

SuggestedRemedy

Delete the two columns for annexes 83A and 83B.

If it is agreed that stacks with KR FEC do not need to be included, delete also the columns for Clauses 83 and 152, and for annexes 83D, 83E.

Implement the corresponding changes in Table 168-1.

Response Response Status C

REJECT.

CAUI-10 and CAUI-4 are not limited to just signaling rate of 25.78125 GBd and NRZ signaling, since Clause 140 uses these interfaces at 53.125 GBd and PAM4. As a result, CAUI-10 and CAUI-4 are compatible with this project.

IEEE P802.3dk needs to be consistent with existing clauses, such as IEEE Std 802.3 Clause 140, since the 100GBASE-BRx PHY specification references Clause 140.

CI 168 SC 168.7.7 P66 L 27 # I-43

Ran, Adeo Cisco Systems, Inc.

Comment Type E Comment Status A

Missing cross-reference in "(see)"

SuggestedRemedy

Add the appropriate reference.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change "see" to "see 168.7.5" and mark it as cross-reference.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI 45 SC 45.2.1.145a P24 L7 # I-44

Dawe, Piers J G

NVIDIA

Comment Type E Comment Status A

Some interfaces have mandatory precoding ability without this bit. This is likely to cause confusion unless explained.

SuggestedRemedy

Insert: This register applies to 100GBASE-BRx.

Add "PMA Tx precoding ability bit applies to 100GBASE-BRx" in 45.2.1.145a.1.

Add "PMA Rx precoding ability bit applies to 100GBASE-BRx" in 45.2.1.145a.2.

Implement with editorial license.

Response Response Status C

ACCEPT IN PRINCIPLE.

Add "PMA Tx precoding ability bit applies only to 100GBASE-BRx" in 45.2.1.145a.1.

Add "PMA Rx precoding ability bit applies only to 100GBASE-BRx" in 45.2.1.145a.2.

Implement with editorial license.

CI 56 SC 56.1.3 P30 L27 # I-45

Dawe, Piers J G

NVIDIA

Comment Type E Comment Status A

As this table includes 161 RS-FEC-Int, it should include 152 Inverse RS-FEC also

SuggestedRemedy

Insert 152 Inverse RS-FEC, between 91 and 161, optional for the three PHY types of this project.

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

CI 135 SC 135.6 P5287 L # I-46

Dawe, Piers J G

NVIDIA

Comment Type E Comment Status A

In Table 135-3, MDIO/PMA status variable mapping (in the base document)

SuggestedRemedy

Insert new rows:

MDIO status variable PMA/PMD register name Register/bit number PMA status variable

PMA Rx precoding ability PMA precoding ability 1.607.1 Rx_precoding_ability

PMA Tx precoding ability PMA precoding ability 1.607.0 Tx_precoding_ability

Response Response Status C

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.

CI 168 SC 168.7.5 P65 L8 # I-47

Dawe, Piers J G

NVIDIA

Comment Type T Comment Status A

This says "there's a proposal to add the maximum tap weight for the tap immediately after the largest tap: max 0.07 in CL 168.7.5.". chayeb_3dj_01_2505 slide 8 shows that a very asymmetric signal can pass all the specs and still be troublesome to receive. P802.3dj D2.0 comment 392 proposed "The absolute difference between c(-1) and c(1) shall be less than 0.3", P802.3dj D2.1 had

$|w(1) - w(-1)| \max 0.25$, for $w(1) > 0$ (this was based on no DFE). However, a limit with a "for" or "if" rule may be more difficult to implement in the TDECQ solver than one without. However, ordinary filtering effects (pulses decay slower than they build up) can cause the optimum setting for the tap immediately after the largest tap to be more negative than the one immediately before; this is expected. Having the tap before at -0.2 and the tap after at +0.1 would be more undesirable than the reverse, as can be seen in chayeb_3dj_01_2505.

SuggestedRemedy

Add two specs:

Tap weight for the tap immediately after the largest tap: max 0.08. (Typically this tap would be -ve)

$-0.3 \leq (\text{tap after} - \text{tap before}) \leq 0.15$

Remove the editor's note

Response Response Status C

ACCEPT IN PRINCIPLE.

Adopt the tap weight limits in IEEE P802.3dj with editorial license.

IEEE 802.3dk D3.0 Bidirectional 100Gb/s Optical Access PHYs Initial Sponsor ballot comments

CI **168** SC **168.10.1** P**72** L**7** # **I-48**

Dawe, Piers J G NVIDIA

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

Note b about dispersion doesn't relate to the insertion loss row.

SuggestedRemedy

Remove note b from channel insertion loss row, and add note b to all dispersion rows.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Implement suggested remedy with editorial license.