Cl **FM** *SC* **FM** *P* **1** *L* **31** # 47

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

"adds MAC parameters, Physical Layers, and management parameters" but we talk about "the Physical Layer" like "the sky", although we have many "Physical Layer types" (and Physical Layer device types). This should be more like the text in the PAR 5.2.b.
Compare other projects' self descriptions:
adds Physical Layer specifications and management parameters;
includes Physical Layer specifications and management parameters;
adds 2.5 Gb/s, 5 Gb/s, 10 Gb/s, 25 Gb/s and 50 Gb/s Physical Layer specifications and management parameters;
adds 400 Gb/s Physical Layer specifications and management parameters;
adds physical layer specifications and management parameters;
includes Physical Layer specifications and management parameters.
As the PAR says, a feature of this project is "based on 100 Gb/s per lane signaling technology".
I don't see that we are adding any MAC parameters (the PAR says "Define Ethernet MAC parameters" and it looks like we are re-using what we have).

SuggestedRemedy

Change these three texts:
Page 1 line 30:
This amendment includes Media Access Control parameters for 800 Gb/s and Physical Layers and management parameters for 400 Gb/s and 800 Gb/s operation.
Page 3, Abstract:
The amendment adds MAC parameters, Physical Layers, and management parameters for the transfer of IEEE 802.3 format frames at 400 Gb/s and 800 Gb/s.
Page 13, self description:
This amendment includes Physical Layer specifications and management parameters for 400 Gb/s and 800 Gb/s operation.
All to:
This amendment adds Physical Layer specifications and management parameters for 400 Gb/s and 800 Gb/s based on based on 100 Gb/s per lane signaling.

Response *Response Status* **C**

REJECT.
This amendment is indeed defining MAC parameters for 800 Gb/s. It is intentional that it defines the parameters to be the same as for some previously defined Ethernet rates. This amendment defines a 800 Gb/s Ethernet generally including RS/MII, MII extender that are intended to support PHYs with lane rates other than 100 Gb/s per lane.

Cl **FM** *SC* **FM** *P* **8** *L* **15** # 40

Nicholl, Shawn AMD

Comment Type **ER** *Comment Status* **A** *(bucket1)*

There is a typo in "Gary Nichol".

SuggestedRemedy

It should be "Gary Nicholl".

Response *Response Status* **C**

ACCEPT.

Cl **1** *SC* **1.4.145a** *P* **31** *L* **1** # 48

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Missing definitions for 800GAUI-n C2C and 800GAUI-n C2M

SuggestedRemedy

Add 1.4.145a 800 Gb/s Attachment Unit Interface (800GAUI-n): Two kinds of physical instantiation of the PMA service interface to extend the connection between 800 Gb/s capable PMAs over n lanes, used for chip-to-chip (C2C) or chip-to-module (C2M) interconnections. One width of 800GAUI-n is defined: the eight-lane 800GAUI-8 C2C and 800GAUI-8 C2M. (See IEEE Std 802.3, Annex 120E.)

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add a new definition for 800GAUI-n based on the definition for 400GAUI-n in 1.4.145.
Implement with editorial license.

Cl **45** *SC* **45.2.1.7.5** *P* **40** *L* **3** # 49

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

D1.0 comment 118: Missing entries in transmit fault, *receive fault and transmit disable tables*

SuggestedRemedy

In the tables for receive fault and transmit disable, include rows for 100GBASE-VR1, 100GBASE-SR1, 200GBASE-VR2, 200GBASE-SR2, 400GBASE-VR4, 400GBASE-SR4, 800GBASE-VR8, 800GBASE-SR8 and 400GBASE-DR4, 400GBASE-DR4-2, 800GBASE-DR8, 800GBASE-DR8-2 Revise the rubrics.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.138** *P* **44** *L* **25** # 50

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

It's not clear if Table 45-107 - 50GAUI-n, 100GAUI-2, 200GAUI-n, and 400GAUI-n chip-to-chip transmitter equalization, receive direction, lane 0 register bit definitions - applies for 100G/lane AUIs or not. Most of 120F implies it doesn't except 120F.3.2.4 Receiver interference tolerance "Receiver interference tolerance is defined by the procedure in Annex 93C with the exception that transmitter equalization is configured by management (see 120D.3.2.3)".

SuggestedRemedy

If it applies, update 45.2.1.135, 45.2.1.136, 45.2.1.137, 45.2.1.138 to include 800GAUI-n.
If it doesn't, say so in these sections because the terms "100GAUI-2, 200GAUI-n, and 400GAUI-n" with unqualified n are too wide now, and address their use (or not) in 120F.3.2.4.
It would help to add these registers to MDIO/PMA variable mapping tables, either in the PMA clauses where there are such tables already, or the AUI annexes.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Include "800GAUI-n" in 45.2.1.135, 45.2.1.136, 45.2.1.137, 45.2.1.138 and update Annex 120F if appropriate.
Implement with editorial license.

Cl **45** *SC* **45.2.3** *P* **46** *L* **26** # 45

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

There is some ambiguity in the use of green vs black coloring for the clause references in Table 45-233. In my understanding, green text is used to indicate a reference to a clause (or a table or figure) that is not itself present in this amendment

SuggestedRemedy

Assuming my understanding of the convention is correct, since 45.2.3.25, 45.2.3.49, and 45.2.3.58 are all present in 802.3df (because they are being modified), they should be in black text rather than green text.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.19** *P* **47** *L* **28** # 51

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

BASE-R PCS test-pattern control register (Register 3.42)
... Scrambled idle test patterns are defined for 25/40/50/100/200/400GBASE-R PCS only.

SuggestedRemedy

Add 800G

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.25** *P* **47** *L* **31** # 33

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

45.2.3.25 describes the lane alignment register, with one subclause per bit; this continues in 45.2.3.26 and in the new 45.2.3.26a. With 32 lanes, we have 32 subclauses that are essentially the same.

This is repetitive, not helpful for readers, and will require further editorial work when future PCSs are defined (for example 1.6TBASE-R).

It may be better to have one subclause, 45.2.3.25.1, with a full definition of "lane 7 aligned", and have all the remaining bits defined together using something like "defined similarly to 45.2.3.25.1" - as done for example in 45.2.3.49 and 45.2.3.50.

This can remove most of the text in 45.2.3.25 (for register 3.52), 45.2.3.26 (for register 3.53), and 45.2.3.26a (for register 3.54). It may also be possible to merge these three subclauses into one (similar to 45.2.3.50).

The new text should address the number of lanes that exist in every PCS when referring to clause 82, clause 119, and clause 172.

Similar changes can be applied in 45.2.4.16 and 45.2.4.16a for PHY XS, and in 45.2.5.16 and 45.2.5.16a for DTE XS.

SuggestedRemedy

Change the structure as suggested in the comment, with editorial license.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.3.26.11** P **51** L **34** # 35

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

Stray "1" in "(see 1119.2.6.2.2 and 172.2.6.2.2)."

SuggestedRemedy

Change "1119" to "119".

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.3.26.a** P **49** L **39** # 34

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

The new subclauses 45.2.3.2.26.a through 45.2.3.2.26.d refer to lanes 23 through 20, which exist only in the 800G PCS (clause 172). References to 82.2.19.2.2 are not required in these subclauses.

Similarly in 45.2.3.26a.1 through 45.2.3.26a.8 for lanes 31 through 24.

SuggestedRemedy

In 45.2.3.26.a, change "This bit reflects the state of am_lock[19] (see 82.2.19.2.2) or amps_lock[19] (see 172.2.6.2.2)" to "This bit reflects the state of amps_lock[19] (see 172.2.6.2.2)".

Apply similar changes in 45.2.3.26.b through 45.2.3.26.d and in 45.2.3.26a.1 through 45.2.3.26a.8.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The suggested remedy should refer to am_lock[23] rather than am_lock[19].
Implement proposed remedy, with editorial license.

Cl **45** SC **45.2.3.26a** P **49** L **39** # 123

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

df added PCS lanes 20-31, they do not exist in clause 82.

SuggestedRemedy

Remove "am_lock[##] (see 82..2.19.2.2) or" from PCS lanes 20-31

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.3.48a** P **53** L **46** # 52

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The text should mention that this is an optional feature. Also, 172.3.5 doesn't define the register (Clause 45 does that), it defines the counter.

SuggestedRemedy

For example, change
See 172.3.5 for a definition of this register.
to
See 172.3.5 for a definition of this optional counter.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement proposed remedy with editorial license

Cl **45** SC **45.2.3.48b** P **54** L **20** # 53

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

assignment of bits ... is identical to that of bin 1

SuggestedRemedy

for bin 1 ?

Response *Response Status* **C**

REJECT.
The wording is correct as written. The proposed solution does not improve the accuracy or clarity of the draft.

Cl **45** SC **45.2.3.48b** P **54** L **23** # 54

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

The text should mention that this is an optional feature.

SuggestedRemedy

Add: these counters are optional.

Response *Response Status* **C**

REJECT.
There is no need to mention that these counters are optional in Clause 45 because their optionality is mentioned in 172.3.6 which is referenced.
Also Clause 45 often reuses the same register definitions for different PHY types and these might differ in whether or not they are optional and mandatory

Cl **45** SC **45.2.3.49** P **54** L **51** # 97

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Subject and verbs number don't match (editorial bug in base document)

SuggestedRemedy

Consider changing
The contents of the Lane 0 mapping register is valid when Lane 0 aligned bit (3.52.0) is set to one and is invalid otherwise.
to content ... is ... is or contents ... are ... are
At some stage, a wider clean-up and harmonisation (contents vs. values) would be helpful.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "is" to "are" in two places.

Cl **45** SC **45.2.3.63** P **57** L **8** # 98

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

See 119.3.3 and 172.3.3 for a definition of this counter.

SuggestedRemedy

See 119.3.3 or 172.3.3 for a definition of this counter.

Response *Response Status* **C**

REJECT.
Common practice in Clause 45 is to use the word "and" where there is a list of cross references

Cl **45** SC **45.2.4.4.a** P **59** L **3** # 46

Huber, Tom Nokia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The title of the new clause should be 800G capable rather than 400G capable

SuggestedRemedy

Change 400G to 800G.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.4.4.a** P **59** L **59** # 44

Dudek, Mike Marvell

Comment Type **T** *Comment Status* **A** *(bucket1)*

The sub-clause title is wrong

SuggestedRemedy

Change "400G capable" to "800G capable"

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.4.16a** P **63** L **25** # 99

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

5register

SuggestedRemedy

insert space. Also in 45.2.5.16a.

Response *Response Status* **C**

ACCEPT.

Cl **45** SC **45.2.4.16a.1** P **64** L **18** # 36

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

The new subclauses 45.2.4.16a.1 through 45.2.4.16a.8 refer to lanes 31 through 24, which exist only in the 800GXS (clause 171, based on clause 172 PCS). References to 119.2.6.2.2 are not required in these subclauses.

Also in 45.2.5.16a subclauses for the DTE XS.

SuggestedRemedy

In 45.2.4.16a.1, change "This bit reflects the state of amps_lock[31] (see 119.2.6.2.2 and 172.2.6.2.2)." to "This bit reflects the state of amps_lock[31] (see 172.2.6.2.2).".

Apply similar changes in 45.2.4.16a.2 through 45.2.4.16a.8 and in 45.2.5.16a.1 through 45.2.5.16a.8.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.4.17** *P* **65** *L* **25** # 100

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

"XS described in Clause 118 and Clause 171"
But a product complies to applies to one or the other, at any time.

SuggestedRemedy

XS described in Clause 118 or Clause 171
Also in 45.2.5.17, 45.2.5.22.2, 45.2.5.22.3 and so on

Response *Response Status* **C**

REJECT.
Common practice in Clause 45 is to use the word "and" where there is a list of cross references

---

Cl **45** *SC* **45.2.7.12.3** *P* **78** *L* **10** # 101

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **R** *(bucket1)*

Base text says "these bits in register 7.48 and register 7.49 indicate the negotiated port type. Only one of these bits is set depending on the priority resolution function" but is this correct? There are FEC options in these registers as well as port types.

SuggestedRemedy

Revise text if appropriate

Response *Response Status* **C**

REJECT.
The bits listed in the title of 45.2.7.12.3 are all for port types and not FEC options. Only one of the bits listed can be set.

Cl **90** *SC* **90** *P* **86** *L* **8** # 5

Brown, Matt Huawei

Comment Type **T** *Comment Status* **R** *800GMII signals*

IEEE 802.3cx has introduced two new optional signals (RX_NUM_BIT_CHANGE and TX_NUM_BIT_CHANGE) at the PCS service interface (xMII) used for time synchronization that are not defined in the 800GBASE-R PCS or the DTE/PHY 800GXS.

SuggestedRemedy

Define these optional signals in the 800GBASE-R PCS and DTE 800GXS service interfaces (800GMII) and as inputs to the PHY 800GXS (service interface below). For a definition of these signals refer to Clause 90 as appropriate. A presentation will be provided.

Response *Response Status* **C**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **116** *SC* **116.1.4** *P* **89** *L* **9** # 37

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **D** *(withdrawn)*

Table 116-5 column order is different from the order in the published Std 802.3db-2022 and Std 802.3ck-2022.

SuggestedRemedy

Reorder the columns to align with the published standard.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **120** *SC* **120.5.6** *P* **90** *L* **6** # 102

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

Annex 120F, which specifies the 200GAUI-2 and 400GAUI-4 interfaces for chip-to-chip applications.
Annex 120G, which specifies the 200GAUI-2 and 400GAUI-4 interfaces for chip-to-module applications.

SuggestedRemedy

Add 800GAUI-8

Response *Response Status* **C**

REJECT.
Annex 120 specifies the PMA sublayer for 50 Gb/s Ethernet and 100 Gb/s Ethernet only. Clause 173 specifies the PMA for 800 Gb/s Ethernet. Clause 173 refers back to Clause 120 where applicable.

Cl **120F** *SC* **120F.1** *P* **234** *L* **35** # 136

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(late) (bucket1)*

Line 28 says "These interfaces", here we have "the interfaces"

SuggestedRemedy

If appropriate, change the to these at lines 35 and 42, and in 120G page 242 lines 28 and 35.

Response *Response Status* **C**

REJECT.
The text is correct as written, and the suggested remedy does not improve it.
On line 28, the word "these" refers to the interfaces defined in this annex right after the first time they have been listed as the subject of the previous sentence. The word "these" refers to that subject and is intended to avoid repeating the same list of names (subject of the previous sentence) in the current sentence.
On lines 35 and 42, the word "the" is part of the phrase "the C2C interfaces", and in line 42 the preceding sentence has these interfaces as part of a subordiate clause rather than as a subject.

Cl **120F** *SC* **120F.2** *P* **235** *L* **1** # 137

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(late) (bucket1)*

The C2C transmitter and the receiver use PAM4 signaling.

SuggestedRemedy

The C2C transmitter and receiver use PAM4 signaling.

Response *Response Status* **C**

ACCEPT.

Cl **120F** *SC* **120F.5.3** *P* **240** *L* **35** # 138

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(late) (bucket1)*

Very wordy, could be condensed, but compare 120G.6.3

SuggestedRemedy

Change to
One, two, four, or eight independent data paths in each direction for 100GAUI-1 C2C, 200GAUI-2 C2C, 400GAUI-4 C2C, and 800GAUI-8 C2C, respectively

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The PICS as a form applies to a single implementation, which does not necessarily have all four C2C listed. Therefore, using the word "and" as suggested is inappropriate, and grouping the statements with "or" instead would reduce clarity.
However, the word "and" appears in the current text, and should be changed to "or".
Change: "One independent data path in each direction for 100GAUI-1 C2C, two independent data paths in each direction for 200GAUI-2 C2C, four independent data paths in each direction for 400GAUI-4 C2C, and eight independent data paths in each direction for 800GAUI-8 C2C"
to: "One independent data path in each direction for 100GAUI-1 C2C, two independent data paths in each direction for 200GAUI-2 C2C, four independent data paths in each direction for 400GAUI-4 C2C, or eight independent data paths in each direction for 800GAUI-8 C2C".

Cl **120G** *SC* **120G.3.1.5** *P* **246** *L* **26** # 32

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

120.5.11.2.2 is now included in this draft.
Also in 120G.3.2.2, 120G.3.3.5.2, 120G.3.3.5.3, 120G.3.4.3.2, and 120G.3.4.3.3.

SuggestedRemedy

Make all instances of 120.5.11.2.2 active cross references.

Response *Response Status* **C**

ACCEPT.

Cl **124** *SC* **124.1** *P* **91** *L* **21** # 103

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Need a section to explain interoperability of DRn and DRn-2. Compare 140.11 and 151.12 but this is simpler.

SuggestedRemedy

Add a new sentence "The 400GBASE-DR4 and 400GBASE-DR4-2 PMDs can interoperate with each other provided that the fiber optic cabling (channel) characteristics for 400GBASE-DR4 are met, and similarly for 800GBASE-DR8 and 800GBASE-DR8-2". This could be a new subclause 124.11a but because it's so simple this time and it helps the reader understand what these PMDs can be used for, it could be added to 124.1 before 124.1.1 Bit error ratio.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Create new content, similar to subclause 140.11.1, with editorial license

Cl **124** *SC* **124.1.1** *P* **94** *L* **3** # 130

Opsasnick, Eugene Broadcom

Comment Type **TR** *Comment Status* **A** *PMD FLR*

Same as previous comment

SuggestedRemedy

Change 1.7E-12 to 3.4E-12

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
It assumed that "previous comment" is comment #131.
See response to comment #131.
Implement suggested remedy with editorial license.

Cl **124** *SC* **124.2** *P* **94** *L* **39** # 104

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *muxing rules*

If as we hope and expect, we set the bit multiplexing rules so that the transition density problem won't happen on 8-lane 800GBASE-R, this sentence and similar ones will need modification. But it remains for 200GBASE-R and 400GBASE-R, so the same point should be made in Clause 167.

SuggestedRemedy

Change: See NOTE
to: For 400GBASE-DR4 and 400GBASE-DR4-2, NOTE
Similarly in 124.7.2
Add equivalent texts in Clause 167

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

New text in Clause 167 for PHYs other than 800GBASE-R would be out of scope as defined by the project PAR.

Change:
See NOTE at the end of 120.5.2 concerning the transition density of lanes operating at this nominal signaling rate.
To:
For 400GBASE-DR4 and 400GBASE-DR4-2, see NOTE at the end of 120.5.2 concerning the transition density of lanes operating at this nominal signaling rate.

Make similar changes in 124.7.2.

Implement with editorial license.

See also the response to comments #21 and #27 related to 800GBASE-R PHYs.

Cl **124** *SC* **124.7.1** *P* **101** *L* **27** # 105

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

The OMAouter (max) limits are all the same (deliberately, for interoperability)

SuggestedRemedy

Change "values" to "value"

Response *Response Status* **C**

REJECT.
The expression "values" is generic, independent of whether values for parameters are the same or not.

Cl **124** *SC* **124.7.2** *P* **104** *L* **27** # 106

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

800GBASE-
DR8

SuggestedRemedy

Use non-breaking hyphen?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Replace hyphen with non-breaking hyphen.

Cl **124** *SC* **124.8.1** *P* **107** *L* **9** # 107

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **R** *(bucket1)*

This has e.g. "3, 5, 6, valid 400GBASE-R signal, or 800GBASE-R signal". 138 has "3, 4, 5, 6, or valid 50GBASE-SR, 100GBASE-SR2, 200GBASE-SR4, or 400GBASE-SR8 signal". 167 has "3, 4, 5, 6, or valid 100GBASE-VR1, 200GBASE-VR2, 400GBASE-VR4, 800GBASE-VR8, 100GBASE-SR1, 200GBASE-SR2, 400GBASE-SR4, or 800GBASE-SR8 signal". Is a non-valid 800GBASE-R signal allowed?

SuggestedRemedy

Change "valid 400GBASE-R signal, or 800GBASE-R signal" to "or valid 400GBASE-R or 800GBASE-R signal" three times.
Maybe in maintenance we should delete "valid" in multiple clauses.

Response *Response Status* **C**

REJECT.
The text of the draft is not broken. No change required

Cl **124** *SC* **124.8.5** *P* **107** *L* **1** # 1

Stassar, Peter Huawei

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

The text in the last bullet under 124.8.5 "The 400GBASE-DR4-2 or 800GBASE-DR8-2 transmitter is tested using an optical channel with dispersion and insertion loss as specified for 100GBASE-FR1 in 140.7.5.2, and optical return loss at the maximum for optical return loss tolerance specified in Table124–6." was agreed as a resolution to comment #130 to D1.0. The embedded compliance channel requirements are somewhat indirect and it would be much clearer if a special section be created with details and especially a Table with channel requirements, following the style of 151.8.5.1, especially because there is no precedence for channel requirements for DR type PMDs over 2 km.

SuggestedRemedy

Create a new subclause 124.8.5.1 with channel requirements for 400GBASE-DR4, 400GBASE-DR4-2, 800GBASE-DR8, and 800GBASE-DR8-2, following the specific proposal in a presentation

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The task force reviewed the following presentation:
https://www.ieee802.org/3/df/public/23_01/0130/stassar_3df_01_230130.pdf

Implement slides 4 to 6 of stassar_3df_01_230130 with editorial license.

Cl **124** *SC* **124.8.9** *P* **109** *L* **1** # 108

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Missing tab or format issue

SuggestedRemedy

fix

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement proposed remedy, with editorial license

Cl **124** *SC* **124.8.9.1** *P* **109** *L* **11** # 38

Ran, Adee Cisco

Comment Type **E** *Comment Status* **R** *(bucket1)*

The parameter in this subclause is called "receiver sensitivity (OMA_outer)" in Table 124-7 and in 124.8.9.2. For 400GBASE-DR4 it is optional, but I assume the name should be the same.

SuggestedRemedy

Insert "(OMA_outer)" after "receiver sensitivity", 3 instances in this subclause.

Response *Response Status* **C**

REJECT.
The existing wording is consistent with the wording in existing clauses, e.g. Clause 151. The term "receiver sensitivity" is generic and (OMAouter) just refers to the usage of OMAouter instead of average power. The proposed change does not improve the accuracy or clarity of the draft.

Cl **124** *SC* **124.11.3.3** *P* **113** *L* **33** # 39

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

IEC 61754-7-4 does not appear in the normative references list (1.3); only 7-1 and 7-2 are listed.

SuggestedRemedy

Add a reference to the appropriate document in 1.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #6.

Cl **124** *SC* **124.11.3.3** *P* **113** *L* **35** # 6

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"interface 7-4-1: <…>" - where is that one defined? Is it also IEC 61754-7-4?

SuggestedRemedy

Add "as defined in IEC 61754-7-4" after the interface name.

(If it's another document, add that instead, and make sure the document is listed in 1.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add "as defined in IEC 61754-7-4" after the interface name and add a reference to this document in subclause 1.3.

Cl **124** *SC* **124.12.4.4** *P* **115** *L* **24** # 109

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Items to OM12 depend on PMD type

SuggestedRemedy

Add major options for PMD types. These items will be conditionally mandatory.
Also, adjust:
124.12.4 PICS proforma tables for Physical Medium Dependent (PMD) sublayer and medium, type 400GBASE-DR4
F1 Compatible with 400GBASE-R PCS and PMA

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add subclauses for 400GBASE-DR4-2, 800GBASE-DR8 and 800GBASE-DR8-2, similar to in-force 124.12.4.2, with editorial license.

Cl **162** *SC* **162.1** *P* **116** *L* **39** # 110

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The document uses a mixture of 800GMII extender and 800GMII Extender (aside from "800GMII Extender Sublayer"

SuggestedRemedy

Make consistent

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "extender" to "Extender" in Table 162-3a, Table 163-3a, Table 169–4 footnote d, and the second paragraph of 170.1.

Cl **162** *SC* **162.1** *P* **117** *L* **4** # 7

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

In the published 802.3ck-2022, the definition of frame loss ratio is in 1.4.344.
Also in 163.1.

SuggestedRemedy

Change "1.4.275" to "1.4.344", in both clauses.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.1** *P* **117** *L* **7** # 131

Opsasnick, Eugene Broadcom

Comment Type **TR** *Comment Status* **A** *PMD FLR*

The FLR value that results from 2.4E-4 BER is referred to in two places, in lines 7 and 10:

"This BER allocation enables a frame loss ratio lower tha 9.2 x 10^-13 after processing by the PCS …".

And on line #10. "… to maintain a frame loss ratio lower than 9.2 x 10^-13."

This FLR value, 9.2E-13, corresponds to a "non-interleaved" RS(544,514) FEC as used in the 50G & 100G PCS. The value should be changed to 1.7E-12 for 200G and 400G PCS which have 2-way interleaved FEC, and should be changed to 3.4E-12 for 800G PCS with 4-way interleave FEC.

This same issue was addressed in comment #62 of 802.3bs D1.3:
https://www.ieee802.org/3/bs/comments/P802d3bs_D1p3_comments_final_ID.pdf#page=13

The FLR scaling factor of (1 +MFC)/MFC should be modified to be (1 + 2*MFC)/MFC for the 2-way interleave PCS and to (1 + 4*MFC)/MFC for the 4-way interleaved PCS.

SuggestedRemedy

Remove 800G from this paragraph. Keep origin paragraph referring to 200G/400G, but change the FLR value to 1.7E-12.

Add a similar pargraph after this one with references changed from 200G/400G to 800G and FLR value to 3.4E-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The text in question is from 802.3ck. It is descriptive in nature, and the normative requirement is the BER (at the PMD).

For 200G and 400G, it is correct that a BER of 2.4e-4 would result in FLR of 1.7e-12 rather than 9.2e-13, and indeed, in 802.3-2022 clauses 121, 122, 123 and 124 have 1.7e-12. However, changes to technical specifications for 200G and 400G are not within the scope defined by the PAR for this project.

For 800G, it is assumed that the PMDs/PMAs have the same BER as for 400G, and having that BER results in FLR of 3.4e-12. This is still smaller than the complete physical layer requirement of 6.2e-11.

In clauses 162 and 163...
Remove 800G from this paragraph.
Add a new similar paragraph for 800G, but with the FLR value of 3.4E-12.
Implement with editorial license.

Cl **162** *SC* **162.7** *P* **122** *L* **47** # 111

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Register for lanes 1 to 3 7 are located at an offset from the lane 0 register.

SuggestedRemedy

Suggest: Registers for lanes 1 to 3 7 are located at offsets from the lane 0 register.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Register" to "Registers".

Cl **162** *SC* **162.8.1** *P* **123** *L* **37** # 8

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

The location of the "NOTE" in Figure 162-2 is unusual.

SuggestedRemedy

Move the NOTE label to the lower left of the figure.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.8.11.1** *P* **130** *L* **11** # 112

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket1)*

These default seeds are different to the ETC defaults. Also, as the Training state machines on each lane are independent, there is no guarantee that setting the seed will have the desired effect of de-correlating the signals of lanes that share a polynomial. It would be better to give the implementer the freedom to make a good choice for his implementation. 45.2.1.168 already says "should".

SuggestedRemedy

Change "the default value of seed_i" to "the recommended default value of seed_i"

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.9.4** *P* **125** *L* **15** # 9

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

In the published 802.3ck-2022, the subclause reference for "Signaling rate" in Table 162-11 has been deleted. The change in the first row is not required anymore.

SuggestedRemedy

Delete the struck-out subclause reference, and delete "the first row and" in the editorial instruction.

Response *Response Status* **C**

ACCEPT.

Cl **162** *SC* **162.14.3** *P* **129** *L* **27** # 113

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

!CR4:O.2 looks like a copy and paste from 802.3cd

SuggestedRemedy

I think it should be CR1:O.2. Also for KR in 163.13.3

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
This item is from 802.3ck and is not changed by this project.
In clauses 162 and 163, AUIFEC is not a condition for any PICS item, and has no importance in these clauses.
Delete this item in both clauses.

Cl **162** *SC* **162.14.3** *P* **129** *L* **35** # 10

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

In the published 802.3ck-2022, the reference for item PCS400 is 162.1

SuggestedRemedy

Change 162.9.4.8 to 162.1

Response *Response Status* **C**

ACCEPT.

Cl **163** *SC* **163.1** *P* **131** *L* **7** # 132

Opsasnick, Eugene Broadcom

Comment Type **TR** *Comment Status* **A** *PMD FLR*

Same as previous comment.

SuggestedRemedy

FLR for 200G/400G should be changed to 1.7E-12. For 800G, FLR should be changed to 3.4E-12.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #131.

Cl **167** *SC* **167.1.1** *P* **141** *L* **46** # 133

Opsasnick, Eugene Broadcom

Comment Type **TR** *Comment Status* **A** *PMD FLR*

Same as previous comment, except the value is already updated to 1.7E-12 in part that instructs to "Insert a new third paragraph in 167.1.1"

SuggestedRemedy

Change 1.7E-12 to 3.4E-12 in two places

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

See response to comment #131.

Implement suggested remedy with editorial license.

Cl **167** *SC* **167.8.1** *P* **148** *L* **41** # 11

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

120.5.11.2.2 is now included in this draft.

SuggestedRemedy

Make 120.5.11.2.2 an active cross reference.

Response *Response Status* **C**

ACCEPT.

Cl **167** *SC* **167.9.2** *P* **150** *L* **41** # 114

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

800GBASR-VR8

SuggestedRemedy

800GBASE-VR8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change to "800GBASE-VR8"

Cl **167** *SC* **167.10.3.1a** *P* **154** *L* **11** # 115

Dawe, Piers Nvidia

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

Discussions at the last round indicated that "Option A (24 fibers in two rows in one connector shell) is the least used of three connector formats for 8-lane multimode. It should not be the first option.

SuggestedRemedy

Take whatever polls are necessary to establish consensus and delete Option A.

Response *Response Status* **C**

REJECT.

The inclusion of 2 optical lane assignment options was discussed in the resolution of D1.0 comment #146 and the task force decided to retain both options in the draft. The comment does not provide sufficient justification to support the suggested remedy.

There is no consensus to delete the option A connector.

[Editor's note: The comment page/line were set to 154/11, since the original comment did not include these.]

Cl **167** *SC* **167.10.3.4** *P* **155** *L* **12** # 12

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"interface 7-4-1: <…>" - where is that one defined? Is it also IEC 61754-7-4?

SuggestedRemedy

Add "as defined in IEC 61754-7-4" after the interface name.

(If it's another document, add that instead, and make sure the document is listed in 1.3).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add "as defined in IEC 61754-7-4" after the interface name and add a reference to this document in subclause 1.3.

Cl **167** *SC* **167.11.4.6** *P* **158** *L* **13** # 116

Dawe, Piers Nvidia

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

These PICS need work to align them to the clause

SuggestedRemedy

Removing Option A will make this task simpler

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Some fixes to the PICS are required to better align with the rest of the clauses.

Per comment #115 there was no consensus to remove option A.

Updating the PICS is addressed in comment #13.

Cl **167** *SC* **167.11.4.6** *P* **158** *L* **31** # 13

Ran, Adee Cisco

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

The status of items OC15 through OC20 includes "AFI:", which makes them conditional on an angled fiber interface. However, the reference 167.10.3.4 also specifies flat fiber interfaces.

The value/comment needs to be different for angled and flat.

SuggestedRemedy

Add or change PICS items for 167.10.3.4 as appropriate.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement slide 6 in the following presentation:
https://www.ieee802.org/3/df/public/23_01/0130/brown_3df_03b_230130.pdf
Implement with editorial license.

Cl **167** *SC* **167.11.4.6** *P* **158** *L* **37** # 14

Ran, Adee Cisco

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

The value/comment for OC18 includes "or per ANSI/TIA-604-18-A designation FOCIS 18 A-1-0 or FOCIS 18 R-1x16-1-0-1-2-0".

These do not appear in the referenced subclause 167.10.3.4.

Also in OC19.

SuggestedRemedy

Align the value/comment and the subclause text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #13.

Cl **169** *SC* **169.5** *P* **167** *L* **14** # 117

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

"as illustrated in Figure 169–7 (single 800GAUI-n interface) and Figure 169–8 (multiple 800GAUI-n interfaces)": tautology, ambiguous as one could say that a physically instantiated AUI has an interface at each end, and the figure titles do this differently.

SuggestedRemedy

Change to "as illustrated in Figure 169-7 for a PHY with a single 800GAUI-n and in Figure 169-8 for a PHY with multiple 800GAUI-n"
In Annex 173A, adjust figure titles to be consistent with the way Figure 169-7 and Figure 169-8 are done.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
It is assumed that the comment refers to Figure 169-4 and Figure 169-5, rather than Figure 169-7 and Figure 169-8.
Implement suggested remedy with editorial license.

Cl **169** *SC* **169.5** *P* **169** *L* **8** # 118

Dawe, Piers Nvidia

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

These Skew limits were created 14 years ago assuming FPGAs clocked at 160 Mb/s (see e.g. https://ieee802.org/3/ba/public/may08/giannakopoulos_01_0508.pdf). As the number of bits to buffer goes up with the width, we should revisit this and take out the padding that modern FPGAs don't need. For example, if we assume 644 Mb/s clocking, we might save 38 ns out of a total of 180 ns, which is enough to be interesting.
With the current limits, the Skew can be significantly more than the FEC block time (25.6 ns), which is unfortunate; we would get better protection against error bursts on the line if the four FEC streams overlapped in time.

SuggestedRemedy

Take out the allocation for slow wide FPGA internal interfaces, that are no longer necessary, from the allocations for PMA Skew. This could be 3/4 * 12.8 ns for each PMA. Make coordinated changes in the subclauses that repeat the Skew limits (e.g. 120.5.3, 124.3.2, 162.6.2, 163.6.2, 167.3.2, 171.8.4.2).

Response *Response Status* **C**

REJECT.

Resolve using the response to comment #15.

Cl **169** *SC* **169.5** *P* **169** *L* **9** # 15

Ran, Adee
Cisco

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

The skew constraints for 800 Gb/s in ns are the same as those for earlier generations, as early as 40 Gb/s, Table 80-8.

The size of PCS buffers required for deskewing grows linearly with the data rate; the size is quite large even at 400G, and would be doubled at 800G, due to the doubling of the number of PCS lanes. The current skew limit of 160 ns at the PCS receive requires about 150 kilobits per port just for deskewing. This affects both latency and power consumption across the industry.

The original skew limits were probably exaggerated even for 40G, and there is no need to carry them on for new technologies and new PCS designs. The numbers we set in 802.3df will also affect hosts and modules (with XS) in 802.3dj, so are worth considering carefully now.

The numbers below are in "UI" of a PCS lane equal to 37.64706, although most skews are created on physical interfaces where the real UI is 18.82 ps.

- Limit of Skew generated at SP1 is currently 770 "UI", it can safely be reduced to 256 "UI" (512 UI of a PMD, or 8 clock cycles in a typical SerDes).
- Limit of Skew generated at SP2 is currently 1142 "UI", allowing additional skew of ~350 "UI" by the PMA in the module; this can safely be reduced to 128 "UI" (4 clock cycles of a typical SerDes; 384 "UI" including the reduced SP1)
- Limit of Skew generated at SP3 is currently 1434 UI, allowing additional skew of ~290 "UI" by the PMD; this can safely be reduced to 128 "UI" (4 clock cycles of a typical SerDes; 512 "UI" including the reduced SP2)
- Limit of Skew generated at SP4 is currently 3559 UI, allowing additional skew of 2125 "UI" (80 ns, ~16 m of fiber) by the media; this can safely be reduced to ~4 m of fiber or 512 "UI" (1024 "UI" including the reduced SP3)
- Limit of Skew generated at SP5 is currently 3852 UI, allowing additional skew of ~300 "UI" by the PMD; this can safely be reduced to 128 "UI" (4 clock cycles of a typical SerDes; 1152 "UI" including the reduced SP4)
- Limit of Skew generated at SP6 is currently 4250 UI, allowing additional skew of ~400 "UI" by the PMA; this can safely be reduced to 128 "UI" (4 clock cycles of a typical SerDes; 1280 "UI" including the reduced SP5)
- Limit of Skew generated at the PCS receive is currently 4781 UI, allowing additional skew of ~530 "UI" by the PMA collocated with the PCS; this can safely be reduced to 128 "UI" (4 clock cycles of a typical SerDes; 1408 "UI" including the reduced SP6)

The result could be a reduction of the allowed skew by 70%, which allows a significant saving in PCS buffer size.

The suggested remedy lists skew as an exact number of "UI" and an approximate number in ns (unlike the current table). It can also be the other way around.

SuggestedRemedy

Change the skew table to
Skew point | max skew ns (approx.) | max skew UI
==========
SP1 | 6.8 | 256
SP2 | 10.2 | 384
SP3 | 13.6 | 512
SP4 | 27.2 | 1024
SP5 | 30.6 | 1152
SP6 | 34 | 1280
PCS input | 37.4 | 1408

Change skew limits in the PCS, PMA, and PMD clauses accordingly.

Response *Response Status* **C**

REJECT.

The task force reviewed the following presentation:
https://www.ieee802.org/3/df/public/23_01/0130/ran_3df_03_230130.pdf

There is no consensus to make the proposed changes at this time. However, further analysis and consensus building on this topic is encouraged.

Cl **169** *SC* **169.5** *P* **169** *L* **18** # 3

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *time sync*

As explained in 802.3cx (D3.3) Clause 90.7.3, transmitter skew can be problematic for timestamping. This should be flagged when discussing the skew limits for SP1, SP2, SP3.

"Lane skew is possible on a transmitter with multiple PCS and PMA/PMD lanes when these lanes have different static latencies such that their alignment markers appear staggered as they depart the device at the MDI output. Since transmit skew in series with medium skew is not strictly additive, transmit skew can contribute to time synchronization error by obscuring the actual latency of the medium. Transmit skew is expected to be minimized, ideally to zero, representing an ideal case for the accuracy of a TimeSync Client."

SuggestedRemedy

After Table 169-5, add a note that for 800GEGb/s devices that implement timestamping, transmitter skew (skew points SP1, SP2 and SP3) should be minimized, ideally to zero. Can point to Clause 90.7.3.

Response *Response Status* **C**

REJECT.

The restrictions that are being requested in this comment apply only when time synchronization accuracy is required. Requirements for time synchronzation are specified in Clause 90 (see 802.3cx). Subclause 90.7.3 "Lane skew" makes a recommendation similar to that requested in this comment. There is no need to repeat this in the introductory and sublayer clauses.

There was no consensus to make the proposed change.

Cl **169** *SC* **169.5** *P* **169** *L* **38** # 16

Ran, Adee Cisco

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

Skew variation is dominated by SP4 minus SP3 - the media contribution - which is currently 3.4-0.6=2.8 ns, corresponding to more than 0.5 m of fiber.

It seems unlikely that fibers dynamically "shrink" or "expand" (effectively) that much.

It is suggested to reduce this contribution by a factor of 4, to 0.7 ns (about 14 cm of fiber). This will affect the maximum skew variation at points below SP4 too.

SuggestedRemedy

Change the values in the SP4 row and below:
SP4 | 1.3 | 69
SP5 | 1.5 | 80
SP6 | 1.7 | N/A
At PCS receive | 1.9 | N/A

Change skew variation limits in the PCS, PMA, and PMD clauses accordingly.

Response *Response Status* **C**

REJECT.

The difference in delay of physical lanes is dependent on many factors . Skew variation may be due to fiber length (parallel fiber only) as well as variation in wavelengths, variation in polarization, variation in fiber characteristics, etc. A rigorous analysis of any anticipated multi-lane PMD/medium is required.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/df/public/23_01/0130/ran_3df_03_230130.pdf

There is no consensus to make the proposed changes at this time. However, further analysis and consensus building on this topic is encouraged.

Cl **169** *SC* **169.6** *P* **169** *L* **48** # 17

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **R** *FEC degrade*

The FEC degrade functionality in clause 119 is not useful, especially at 100 Gb/s per lane signaling. It is now common knowledge that correlated errors (which can occur due to DFEs and other reasons) can cause FEC failure even when the average SER is "good", so the average SER that this feature measures is not enough to predict when errors are going to occur.

We now have a better way to predict FEC performance through the codeword bin counters, which can be accessed through management; the FEC degrade "feature" should not be carried over to 800G Ethernet.

SuggestedRemedy

Delete 169.6 and 171.5, and edit other places where FEC degrade is mentioned in this draft to remove this feature.

Replace all references to the FEC degrade in clause 119 with text stating that FEC degrade is not defined for the 800GBASE-R PCS and XS.

Response *Response Status* **C**

REJECT.
The FEC degrade feature is specified for the 200GBASE and 400GBASE PHYs. The adopted baselines for the PCS and 800GXS sublayers proposed that these sublayers be based upon specifications for 200GBASE and 400GBASE PHYs. Thus the initial P802.3df draft included the FEC degrade as an optional feature.
During the discussion it was pointed out that there are other industry specifications and applications that leverage this feature, and that it is useful for Ethernet applications when using an MII Extender.

There was no consensus to make the proposed change.

Cl **169** *SC* **169.8** *P* **171** *L* **9** # 119

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Same as what?

SuggestedRemedy

Change "conforms to the same notation and conventions used in 21.6" to "conforms to the notation and conventions used in 21.6" or "conforms to the same notation and conventions as used in 21.6".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
The word "same" is superfluous.
Change "conforms to the same notation and conventions used in 21.6"
To "conforms to the notation and conventions used in 21.6"

Cl **171** *SC* **171.1** *P* **179** *L* **26** # 124

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

Table 171-1 lists the AUI as Optional but at least one of them must exist.

SuggestedRemedy

Attach a footnote to each Optional that specifies that at least one is required.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement with editorial license.

Cl **171** *SC* **171.1.1** *P* **180** *L* **39** # 120

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

Some more basic, strategic concepts are missing from this list

SuggestedRemedy

Say that the 800GMII Extender uses two PCS-like entities, DTE 800GXS and PHY 800GXS, that communicate to each other over an 800GAUI-n. Say that the DTE 800GXS is similar to the Clause 72 PCS, and the PHY 800GXS is similar but used "upside down".

Response *Response Status* **C**

REJECT.
The figures and descriptions already provides such concepts.

Cl **171** *SC* **171.1.1** *P* **180** *L* **40** # 121

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

The 800GXS doesn't support physical instantiations of the 800GAUI-n. The 800GMII Extender uses them, or it. The XGSs connect to them or it. There are two 800GXS, not the same as each other. A 800GAUI-n has to be physical.

SuggestedRemedy

Change "The 800GXS leverages all functions in the Clause 172 PCS and supports physical instantiations of the 800GAUI-n" to "Each 800GXS leverages all functions in the Clause 172 PCS and connects to a 800GAUI-n, as shown in Figure 171-1"

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.2** *P* **180** *L* **45** # 55

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *FEC degrade*

FEC degrade is an optional feature of the PCS. As the AUI inside the 800GMII Extender shouldn't be making many errors, the main interest for the DTE 800GXS is in receiving any FEC degrade from the line PCS in the module. The host could have got similar information from the module's management interface. So if it's optional for the PCS it should be optional for the DTE 800GXS, although one could split receiving a FEC degrade signal, and generating FEC degrade from a bad BER, into two separate options.

SuggestedRemedy

Delete "with the additional FEC degrade signaling defined in 171.5"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "with the additional FEC degrade signaling defined in 171.5" to "with the modified FEC degrade signaling defined in 171.5"

Cl **171** *SC* **171.3** *P* **181** *L* **3** # 2

de Koos, Andras Microchip Technology

Comment Type **T** *Comment Status* **R** *time sync*

From 802.3cx (D3.3) Clause 90.7.2, an MII extender device should avoid insertion/deletion of alignment markers and idles. But as described in Clause 171, there is no provision to do this in the 800GXS Sublayer.

I can make a presentation to explain this further, if needed.

"NOTE 5—When TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE are not available (e.g., over physical interfaces such as instantiated xMII or AUI), it is recommended to avoid insertion and removal of Idles, alignment markers, and codeword markers in the sublayers below the xMII/AUI, when possible, to reduce timestamping accuracy impairments (see Annex 90A)."

SuggestedRemedy

There should be a provision that an MII Extender device (PHY 800GXS + standard 800G PHY) can optionally avoid any modification to the MII stream, and any modification of the position of alignment markers or codeword markers with respect to the MII, between the input and output.

Response *Response Status* **C**

REJECT.

Although the additional text proposed in this comment makes sense in consideration of time synchronization, it should be stated in Clause 90 along with all other requirements and recommendation related to time synchronization.

The task force reviewed the following presentation:
https://www.ieee802.org/3/df/public/23_01/0130/dekoos_3df_01_230130.pdf

There was no consensus to make the proposed change.

Cl **171** *SC* **171.3** *P* **181** *L* **8** # 56

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *FEC degrade*

The FEC degrade feature is not very interesting for the errors on the AUI inside the 800GMII Extender, and if it is optional for the PCS, it should be optional for the PHY 800GXS in the same module.

SuggestedRemedy

Delete "Additional FEC degrade signaling defined in 171.5 is included."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change "Additional FEC degrade signaling defined in 171.5 is included." to "FEC degrade signaling is defined in 171.5"

Cl **171** *SC* **171.3** *P* **182** *L* **9** # 57

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Figure 171-2 contains the rogue capitals that have just been removed from Figure 172-2. Also, "66B" should be "66-bit", twice

SuggestedRemedy

Fix

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Update figure according to Clause 172 and change 66B to 66-bit.
Implement with editorial license.

Cl **171** *SC* **171.3** *P* **182** *L* **45** # 58

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

As in Figure 172-2, functional block diagram for the PCS

SuggestedRemedy

Please indicate the position of the 800GMII

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.3.1** *P* **183** *L* **3** # 126

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

Isn't Figure 169-3 a better reference?

SuggestedRemedy

Change the Figure referecne to 169-3

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.3.2** *P* **183** *L* **23** # 18

Ran, Adee Cisco

Comment Type **E** *Comment Status* **A** *(bucket1)*

"defined for the 32:8 PMA defined in 173.3"
The first "defined" is superfluous. Compare to the previous paragraphs, which do not have it.

SuggestedRemedy

Delete the first instance of "defined".

Response *Response Status* **C**

ACCEPT.

Cl **171** *SC* **171.5** *P* **183** *L* **46** # 4

Brown, Matt Huawei

Comment Type **T** *Comment Status* **D** *800GMII signals*

Support of FEC degrade in the 800GMII extender sublayers requires that the 800GXS uses monitor states in the PCS below, but the base standard (Clause 117, 118, and 119) do not define a signal across the 800GBASE-R PCS and DTE 800GXS service interfaces (800GMII). Instead Clause 118 makes reference to status bits in the PCS (Clause) 119. Keeping with common conventions, signals across the PCS service interface should be defined to convey the degrade state and the signal referenced in each sublayer.

SuggestedRemedy

Update 800GMII to include FEC degrade signaling across the 800GMII. Update the 800GBASE-R PCS to include the generation of the FEC degrade signal. Update the PHY 800GXS to use the new FEC degrade signal rather than the status bit(s) in the PCS. A presentation will be provided.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **171** SC **171.5** P **183** L **49** # 59

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *FEC degrade*

According to 171.8.3, FEC degrade for 800GXS. According to 116.6 and 118.5.3, it's optional for 200GXS and 400GXS. It's optional for the 800GBASE-R PCS too.

SuggestedRemedy

Add a sentence: FEC degrade signaling is optional.

Response *Response Status* **C**

ACCEPT.

Cl **171** SC **171.7** P **185** L **46** # 60

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Broken variable name but it looks like there is space in this table to avoid it

SuggestedRemedy

Make the right column two characters wider, making the third column narrower.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **171** SC **171.7** P **186** L **6** # 125

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **A** *(bucket1)*

Table 171-3 and 171-5 map the FEC_cw_counter and FEC_codeword_error_bin counters to PCS space.

SuggestedRemedy

Create new registers in the PHY XS and DTE XS MDIO space for these counters and map them to the new registers appropriately.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **171** SC **171.8.3** P **189** L **12** # 41

Nicholl, Shawn AMD

Comment Type **E** *Comment Status* **A** *(bucket1)*

Fourth row of table has text wrapped in first column.

SuggestedRemedy

Propose to widen the first column slightly to prevent wrap of *800GXS text.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **171** SC **171.8.4.3** P **190** L **50** # 61

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

According to 82.2.3.6, "deletion" doesn't get a special capital letter

SuggestedRemedy

Change Deletion to deletion

Response *Response Status* **C**

ACCEPT.

Cl **171** SC **171.8.4.4** P **191** L **5** # 62

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

The two scramblers must be desynchronised to it's not exactly as in Clause 49 without qualification

SuggestedRemedy

Point to 172 instead of 49

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "Performs as shown in Figure 49–8"
to "Performs as described in 172.4.2.3"

Cl **172** *SC* **172** *P* **194** *L* **1** # 63

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

This style of title follows 49. Physical Coding Sublayer (PCS) for 64B/66B, type 10GBASE-R. "for" isn't great but I see why it was there in 49. Back then, 64B/66B was new and a big thing, to be contrasted with 8B/10B. Here, it's only an internal step on the way to 256B/257B with RS-FEC. Type R is very familiar now.
By the way, the copy in 172.7.2.2 differs.

SuggestedRemedy

Change the title of 172 from "172. Physical Coding Sublayer (PCS) for 64B/66B, type 800GBASE-R" to 172. Physical Coding Sublayer (PCS), type 800GBASE-R"
Here and in the PICS.

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.1.3** *P* **194** *L* **47** # 64

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

There are three things with essentially the same title:
172. Physical Coding Sublayer (PCS) for 64B/66B, type 800GBASE-R
172.1.3 Physical Coding Sublayer (PCS)
172.2 Physical Coding Sublayer (PCS)
A new reader does not see something that indicates it's an introduction.
Compare e.g. 171:
171. 800GMII Extender and 800GMII Extender Sublayer (800GXS)
171.1.1 Summary of major concepts
(and then the various hard specification subclauses are one level higher)
Also note
173.1.3 Summary of functions
173.4 Functions within the PMA

SuggestedRemedy

Change the title of 172.1.3 to "Summary of major concepts", "Principal features of the 800GBASE-R PCS" or equivalent
Change the title of 172.2 to "Detailed specifications of the 800GBASE-R PCS" or equivalent
For consistency, 137.4 Functions within the PMA could be something like Detailed specifications of functions within the PMA

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change: "172.1.3 Physical Coding Sublayer (PCS)"
To: "172.1.3 Summary of functions"

Change: "172.2.4 Transmit"
To: "172.2.4 Transmit function"

Change "171.1.1 Summary of major concepts"
To: "171.1.1 Summary of functions"
Implement with editorial license.

Cl **172** *SC* **172.1.3** *P* **194** *L* **53** # 128

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

In Section 8, "based on" appears 75 times, "based upon" 9 times. In this document, "based on" appears 11 times, "based upon" 5 times

SuggestedRemedy

Maybe we should change all the new "based upon" to "based on"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "based upon" to "based on" in this Clause

Cl **172** *SC* **172.1.3** *P* **195** *L* **5** # 66

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Scrambling, lane synchronisation and lane re-ordering (or identification) are important enough that they should appear in this list, particularly as alignment markers appear without explanation at item e.

SuggestedRemedy

Please add them

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement suggested remedy with editorial license.

Cl **172** *SC* **172.1.3** *P* **195** *L* **5** # 65

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

Reed-Solomon encoding (decoding) the 257-bit blocks. As this code is "systematic", it can be decoded by throwing away the parity block, but that's not the point. Also, it would be good to mention FEC.

SuggestedRemedy

Change to "Encoding (decoding with correction) the 257-bit blocks with Reed-Solomon FEC

Response *Response Status* **C**

REJECT.
The RS decoder is specified in 119.2.5.3 which lists correction as one of the functions of the decoder.
Per 119.2.5.3 Reed-Solomon decoder "The Reed-Solomon decoder extracts the message symbols from the codeword, corrects them as necessary, and discards the parity symbols."
The proposed change is unecessary since correction is explicitly defined as being part of the decoding process.

Cl **172** *SC* **172.1.4** *P* **195** *L* **21** # 67

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

"It is important to note that": pompous fluff, and singling out a point that isn't so special. Section 8, for example, uses "while this specification defines" three times with "It is important to note that" and three times without.

SuggestedRemedy

Delete. This is the only one in this draft.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change "It is important to note that, while this specification defines interfaces..." to "While this specification defines interfaces..."

Cl **172** *SC* **172.2.1** *P* **197** *L* **31** # 68

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Change of subject without indication. According to line 5, there are only two processes, Tx and Rx.

SuggestedRemedy

Insert "In | for the receive direction | Receive process". Reconcile whether PCS Synchronization process is a component of the Receive process or not.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add "In the receive direction" to the beginning of the sentence.
The sentence becomes "In the receive direction, the PCS Synchronization process continuously monitors ..."

Cl **172** *SC* **172.2.1** *P* **197** *L* **36** # 69

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

and then reordered, deskewed, and the align_status flag is set.

SuggestedRemedy

and then reordered and deskewed, and the align_status flag is set.

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **28** # 42

Nicholl, Shawn AMD

Comment Type **TR** *Comment Status* **R** *stateless enc-dec*

To allow use of the PCS stateless encoder at both 400 Gb/s and 800 Gb/s data rates, place the new sub-clause 172.2.4.1.1 (PCS stateless encoder) into Clause 119 directly.

SuggestedRemedy

Propose to create a new sub-clause 119.2.4.1.1 containing the current text of 172.2.4.1.1 (PCS stateless encoder), except replace (twice) "800GMII vector(s)" with "MII vector(s)". Or replace with "tx_raw vector(s)" instead.

In sub-clause 119.2.4.1 (Encode and rate matching), change "... state diagram as shown in Figure 119-14." to "... state diagram as shown in Figure 119-14 or (for 400GBASE-R PCS or 800GBASE-R PCS) by the stateless encoder specified in 119.2.4.1.1."

In sub-clause 172.2.4.1 (Encode, rate matching, and block distribution), change "stateless encoder specified in 172.2.4.1.1." to "stateless encoder specified in 119.2.4.1.1."

Response *Response Status* **C**

REJECT.
Based on scope defined by the P802.3df PAR, any changes to the 400GBASE-R PCS may apply only to the 400GBASE-DR4-2 PMD and associated PHY. The proposed changes are therefore out of scope for this project.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **32** # 70

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

alternate ... alternative: shouldn't it be the same word each time? But the second one is unnecessary and there is no other stateless encoder.

SuggestedRemedy

Delete "alternative". Also in 172.2.5.8.1.

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **37** # 71

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

Usually we write function(something) with no space

SuggestedRemedy

Delete "alternative". Also in Table 172-4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete the space in between the functions and the brackets in Table 172-1 and Table 172-4.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **37** # 19

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

Table 172–1 has "reset" as the first column, but reset is not defined in clause 172.

Similarly, LBLOCK_T, EBLOCK_T, T_TYPE and the block types C, T, S, D, ENCODE, and tx_raw are not defined anywhere in this draft.

SuggestedRemedy

Add text pointing to the definitions of LBLOCK_T and EBLOCK_T in 119.2.6.2.1, reset and tx_raw in 119.2.6.2.2, and T_TYPE and ENCODE in 119.2.6.2.3.

Response *Response Status* **C**

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

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **39** # 72

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Because Figure 119-14 specifically doesn't apply, we need cross-references to define LBLOCK_T, C, T, S, ENCODE and so on

SuggestedRemedy

Provide the cross-references. Also for the stateless decoder in 172.2.5.8.1.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Resolve using the response to comment #19.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **40** # 20

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *stateless enc-dec*

Table 172-1 column "T_TYPE (tx_raw_i-1)" has cells with the strings "C + T" and "S + D". These seem to be based on the state diagram convention that "+" is a logical-OR, but this is not a state diagram, and the letters are not conditions, so it isn't very clear. Using "or" would be preferable (as in the similar Table 172–4).

In addition, for each of these two strings there are two rows with two values in "T_TYPE (tx_raw_i)" column; these can be merged with the word "or" as well.

SuggestedRemedy

Merge rows 2 and 5 to a single row with columns:
"0 | C or T | C or S | ENCODE (tx_raw_i)".
Merge rows 3 and 4 to a single row with columns:
"0 | S or D | D or T | ENCODE (tx_raw_i)".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The table is correct as is.

However, the "+" symbol should be changed to the word "or". Also, reordering the rows would be helpful.
Replace "+" with "or" in Tables 172-1.
Move row 5 to row 2, where row 1 is the row with reset = 1.

There was no consensus to merge the rows in the table as proposed in the comment.

Cl **172** *SC* **172.2.4.1.1** *P* **198** *L* **40** # 73

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

No indication as to how to add block types

SuggestedRemedy

If you mean "or" as in Table 172-4, change + to or, 4 times.

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.2.4.3** *P* **199** *L* **10** # 21

Ran, Adee Cisco

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

If the two scramblers are initialized to the same value and have the same input, their outputs will be equal. This may cause various problems when PCSLs from the two flows are muxed together into the same physical lane, such as pairs of identical PAM4 symbols.

The scrambler specification goes back to 49.2.6 which says "there is no requirement on the initial value for the scrambler". But implementations may force some initial value, e.g. during reset, and with the new concern, some guidance should be given.

A presentation with more details will be supplied.

SuggestedRemedy

Add the following paragraph in 172.2.4.3:
"Although there is no requirement on the initial value of each scrambler, if an implementation sets the scrambler state at any time (e.g., when reset is asserted), the two scramblers should be set to different states."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the changes captured in slide 10 of
https://www.ieee802.org/3/df/public/23_01/0130/ran_3df_02_230130.pdf

Cl **172** *SC* **172.2.4.3** *P* **199** *L* **10** # 74

Dawe, Piers Nvidia

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

The two scramblers must be desynchronised to avoid a gross failure of signal statistics after restricted bit multiplexing the two flows. It is hard to say whether they need to be offset by more than the Skew limit at SP1 or whether any offset is enough. However, it's very easy to provide a big offset by choosing the scramblers' initial conditions appropriately.

SuggestedRemedy

Say that the two scramblers should be started so that their outputs are offset by at least enough so that they will not be aligned when Skewed as allowed when forming the 8-lane PMA/PMD signals.

Response *Response Status* **C**

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

Cl **172** *SC* **172.2.4.4** *P* **199** *L* **23** # 75

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

"n"

SuggestedRemedy

Usually n is a number of things (cardinal number) and i is an index (ordinal) number. Wouldn't i (italic) be more usual?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change variable "n" to "k" in 172.2.4.4 and in Figure 172-3.

Cl **172** *SC* **172.2.4.4** *P* **199** *L* **25** # 76

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

It would help the reader understand tables 172-2 and 3 to provide some of the information from 119.2.4.4. Also to save reverse engineering the tables, we can say what the difference between the tables is.

SuggestedRemedy

Add: In Table 172-2 and Table 172-3, CM0 to CM5 are the same for all PCS lanes, UM0 to UM5 are unique per lane, and UP0 to UP2 are a pad per lane. UP0 to UP2 for lanes 16 to 31 are the same as those for lanes 0 to 15, respectively.

Response *Response Status* **C**

REJECT.
Subclause 172.2.4.4 points the reader to subclause 119.2.4.4 which describes the CM, UM and UP fields. No need to repeat it since the clause refers to Clause 119.

Cl **172** *SC* **172.2.4.4** *P* **200** *L* **4** # 22

Ran, Adee Cisco

Comment Type **E** *Comment Status* **R** *(bucket1)*

The PCS AM tables do not convey to the reader the structure of the AMs (common and unique contents).

This can be improved by splitting the "Encoding" column into 4 columns:
- CM0, CM1, CM2 (straddled, the same values for all lanes)
- UP0 (unique per lane)
- CM3, CM4, CM5 (straddled, the same values for all lanes)
- The rest (unique per lane)

The two tables can also be joined to one table with 32 rows.

SuggestedRemedy

Change tables 172-2 and 172-3 as described.
Consider merging the two tables.

Response *Response Status* **C**

REJECT.
The format of tables 172-2 and 172-3 are same as the AM tables from Cl119. There isn't sufficient justification to support the suggested remedy.

Cl **172** *SC* **172.2.4.4** *P* **200** *L* **5** # 77

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

These tables are still very hard to use because the ~headers don't line up with the ~columns

SuggestedRemedy

For the header row, insert a space after each comma

Response *Response Status* **C**

REJECT.
The format of tables 172-2 and 172-3 are same as the AM tables from Cl119. There isn't sufficient justification to support the suggested remedy."

Cl **172** *SC* **172.2.4.4** *P* **201** *L* **39** # 78

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

x

SuggestedRemedy

Use multiplication symbol, twice

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.2.4.9** *P* **202** *L* **48** # 122

Slavick, Jeff Broadcom

Comment Type **T** *Comment Status* **R** *(bucket1)*

To make this section agnostic to the MII rate for referencing in the future. We could refer to the service interface insteead.

SuggestedRemedy

Change "PCS at the 800GMII" to "PCS, at the PCS service interface,"

Response *Response Status* **C**

REJECT.
Clause 172 defines a PCS for 800 Gb/s Ethernet so there is no reason for the specification to be rate agnostic. The term 800GMII is more frequently used than "PCS Service Interface" for similar context. The proposed change does not improve the accuracy or clarity of the draft.

Cl **172** *SC* **172.2.4.9** *P* **202** *L* **52** # 79

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *test pattern*

This mentions the test-pattern control register (bit 3.42.3). But does 3.42.7 Scrambled idle test-pattern apply also?

SuggestedRemedy

Please clarify, and please refer to 172.3.1 PCS MDIO function mapping

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Implement the changes captured on slide 14 of
https://www.ieee802.org/3/df/public/23_01/0130/brown_3df_03a_230130.pdf.

Cl **172** *SC* **172.2.5.2** *P* **203** *L* **12** # 80

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

PCS lanes can be received on different lanes of the service interface from which they were originally transmitted - needs rewording?

SuggestedRemedy

Suggest:
The signals received by a PCS can contain PCSLs in a different arrangement to the lane ordering at the transmitting PCS. The PCS receiver is capable of receiving PCSLs in any arrangement.

Response *Response Status* **C**

REJECT.
This text is consistent with the text Clause 119. The text is sufficiently clear as written. The proposed remedy does not improve the clarity or accuracy of the draft.

Cl **172** *SC* **172.2.5.8.1** *P* **204** *L* **10** # 43

Nicholl, Shawn AMD

Comment Type **TR** *Comment Status* **R** *stateless enc-dec*

To allow use of the PCS stateless decoder at both 400 Gb/s and 800 Gb/s data rates, place the new sub-clause 172.2.5.8.1 (PCS stateless decoder) into Clause 119 directly.

SuggestedRemedy

Propose to create a new sub-clause 119.2.5.8.1 containing the current text of 172.2.5.8.1 (PCS stateless decoder), except replace "800GMII vector" with "MII vector". Or replace with "rx_raw vector" instead.

In sub-clause 119.2.5.8 (Decode and rate matching), change "... state diagram as shown in Figure 119-15." to "... state diagram as shown in Figure 119-15 or (for 400GBASE-R PCS or 800GBASE-R PCS) by the stateless decoder specified in 119.2.5.8.1."

In sub-clause 172.2.5.8 (Block collection, decode, and rate matching), change "stateless decoder specified in 172.2.5.8.1." to "stateless decoder specified in 119.2.5.8.1."

Response *Response Status* **C**

REJECT.
Resolve using the response to comment #42.

Cl **172** *SC* **172.2.5.8.1** *P* **204** *L* **18** # 23

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *(bucket1)*

Table 172–4 has "reset" as the first column, but reset is not defined in clause 172.

Similarly, LBLOCK_R, EBLOCK_R, R_TYPE, and the block types E, S, D, T, C, DECODE, and rx_raw are not defined anywhere in this draft.

SuggestedRemedy

Add text pointing to the definitions of LBLOCK_R and EBLOCK_R in 119.2.6.2.1, reset and rx_raw in 119.2.6.2.2, and R_TYPE and DECODE in 119.2.6.2.3.

Response *Response Status* **C**

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

Cl **172** *SC* **172.2.5.8.1** *P* **204** *L* **23** # 24

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *stateless enc-dec*

In Table 172-4, row 3, column "R_TYPE (rx_coded_i)", the value is "S or D or T or C".

The possible R_TYPE values (based on 119.2.6.2.3) are C, LI, S, T, D, and E; LI is not valid for clause 172 (per 172.2.3, EEE and low power idle are not supported). Therefore, "S or D or T or C" is equivalent to "not E". This excludes only the combination "E | E".

However, the combination "E | E" matches the second row, and therefore results in the same rx_raw, EBLOCK_R. So having R_TYPE(rx_coded_i-1)=E with any value of R_TYPE(rx_coded_i) would result in EBLOCK_R.

This means the table can be simplified and made more readable.

SuggestedRemedy

Change the third row to the following contents:
"0 | E | any block type | EBLOCK_R".

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.2.6.1** *P* **204** *L* **38** # 81

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

"its value is to be incremented": by how much? Does it depend on the circumstances?

SuggestedRemedy

Add "by one", or whatever is meant.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change from "is to be incremented" to "is to be incremented by 1".

Cl **172** *SC* **172.2.6.2.2** *P* **205** *L* **21** # 82

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

this variable mapped per Table

SuggestedRemedy

this variable is mapped per Table
Also at line 28

Response *Response Status* **C**

ACCEPT.

Cl **172** *SC* **172.3.3** *P* **209** *L* **20** # 83

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **R** *(bucket1)*

Without the information in 119.3.3, the title is ambiguous or misleading. This isn't a count of uncorrected codewords which would include the ones that didn't have errors and didn't need correcting; it's a count of errored codewords that were not corrected.

SuggestedRemedy

Add sentence: This counter counts FEC codewords that contain errors that were not corrected.

Response *Response Status* **C**

REJECT.
The text says the definition of the counter is same as in 119.3.3 and provides the reference. The name of the counter is same as in Cl119. Not sufficient justification to make the proposed change.

Cl **172** *SC* **172.3.6** *P* **209** *L* **34** # 25

Ran, Adee Cisco

Comment Type **T** *Comment Status* **R** *CW counters*

The PMA lane muxing is specified with restrictions intended to ensure that all codewords are represented on each physical lane (and ideally have the same BER).

In practice, devices might use muxing that does not meet these restrictions, and the PCS has to work with any muxing scheme. In some schemes, the four FEC decoders may have different BER and different codeword bin counts. This information can be important for link performance analysis and prediction.

It is suggested to have separate counters for each flow. This is sufficient because, within each flow, the BER seen by the two codewords is inherently the same, due to the checkerboard pattern. Also, FEC_cw_counter in 172.3.5 is the same for both flows and need not be duplicated.

SuggestedRemedy

Replace the FEC_codeword_error_bin_i variables with two sets of variables, flow<j>_FEC_codeword_error_bin_i, where j goes from 0 to 1.

Add MDIO addresses for these variables and update variable mapping tables as appropriate.

Response *Response Status* **C**

REJECT.
The MDIO registers show the combined count from both flows with the intent of providing the net performance of the link. They provide some insight into the correlation of errors on the link. The comment is asking for capability beyond the intented use of these registers. There was no consensus to make the proposed change.

Cl **173** *SC* **173.1.3** *P* **212** *L* **51** # 84

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *PCSL grouping*

Adapt the PCSL (PCS lane) formatted signal to the appropriate number of abstract or physical lanes

SuggestedRemedy

Adapt the PCSL (PCS lane) formatted signal to the appropriate number and grouping of abstract or physical lanes

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The constrained grouping of lanes is part of the "adapt" process and does not need to be listed as a detail here. Instead, this detail is specified in 173.4. The proposed change is not necessary.
However, the acronym PCSL is not properly introduced in this clause.
Change "PCSL (PCS lane)" to "PCS lane (PCSL)".

Cl **173** *SC* **173.1.3** *P* **213** *L* **10** # 85

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *link status*

In common cases (800GAUI-8) receive link status information may be used but isn't forwarded.
"Provide receive link status information in the receive direction": do we need another bullet, that when connected to a PHY XS, it provides link status information in the transmit (egress) direction?

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the last bullet to the following:
"Provide signal status information"

Cl **173** *SC* **173.1.3** *P* **213** *L* **11** # 86

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

173.4 says "Three forms of the 800GBASE-R PMA are defined: 32:8, 8:32, and 8:8" but that information is needed earlier, in 173.1.4, 173.2 and 173.3

SuggestedRemedy

Insert a sentence here, saying that.

Response *Response Status* **C**

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

Cl **173** *SC* **173.3** *P* **215** *L* **43** # 127

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **R** *(bucket1)*

"For the 8:32 PMA ... In this case a PHY_XS:IS_SIGNAL.indication primitive is not received from the PHY 800GXS". Why not? The module knows if its incoming signal is good or not, so it can pass that information to the 8:32 PMA, which can e.g. squelch appropriately. This would be a normal behaviour for non-XS modules.

SuggestedRemedy

Discuss

Response *Response Status* **C**

REJECT.
A PHY_XS:IS_SIGNAL.indication is not defined for the PHY XS. See Figure 171-2 and Figure 169-3. The PCS below the PHY 800GXS does not pass any signal state information up to the PHY 800GXS on the receive path. Similarly, the PHY 800GXS receiver path has no signal state detection so there is no status to pass along.

Cl **173** *SC* **173.3** *P* **215** *L* **49** # 26

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

"The PHY_XS:IS_SIGNAL.request primitive is generated through a set of SIL that reports signal health"

"SIL" is defined in 173.2 as a function, not a set.

SuggestedRemedy

Change the quoted sentence to "The PHY_XS:IS_SIGNAL.request primitive is generated through a signal indication logic (SIL) function that reports signal health".

Response *Response Status* **C**

ACCEPT.

Cl **173** *SC* **173.4** *P* **217** *L* **6** # 87

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **R** *PMA SI*

PMA:IS_UNITDATA_0:31.request would be better shown as PMA:IS_UNITDATA_0:15.request and PMA:IS_UNITDATA_16:31.request as in Figure 172-2. The PMA doesn't really know lane numbers, it doesn't read alignment markers, but it needs to know the two groups to apply the restricted bit muxing rules.
The output lanes can stay as one group.

SuggestedRemedy

Show two groups of 16 input lanes, PMA:IS_UNITDATA_0:15.request and PMA:IS_UNITDATA_16:31.request.
Similarly for the 32 PHY_XS:IS_UNITDATA_0:31.indication lanes in Figure 173-4, 8:32 PMA functional block diagram.

Response *Response Status* **C**

REJECT.

There are 32 PCS lanes represented by PMA:IS_UNITDATA_0:31. Figure 172-2 shows the two groups, one from 0:15 and the other from 16:31, to show how the lanes from each flow map to the set of 32 PCS lanes. Showing the separation of the two groups of lanes in this PMA diagram is not helpful. Since the PMA is connected directly to the PCS (colocated), the lane numbers are known by the PMA.

There is no consensus to make the proposed changes.

Cl **173** *SC* **173.4.2** *P* **220** *L* **1** # 88

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *muxing rules*

Ensure that the restricted bit multiplexing rules exclude combinations of lanes and Skew that suffer the "clock content" (transition density) issue mentioned at the end of 120.5.2.

SuggestedRemedy

Per comment

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comments #21 and #27.

Cl **173** *SC* **173.4.2.1** *P* **220** *L* **15** # 27

Ran, Adee Cisco

Comment Type **TR** *Comment Status* **A** *muxing rules*

As observed in comment #6 against D1.0, the existing restrictions enable a muxing scheme where one of the two PCS flows is always assigned to the LSBs of the PAM4 symbols, while the other flow is always assigned to the MSB.
This scheme (labeled "option B" in ran_3df_01a_2212) will cause an increase of x34 in the frequency of uncorrectable errors in the link partner, compared to the scheme that was assumed for the baseline proposal, which splits the LSBs equally between the two flows ("option A").

Comment #6 suggested restricting the muxing further to prevent using "option B" in the transmitter. The receiver is required to tolerate any muxing order, so transmitters using "option B" would be interoperable, but they should not be considered compliant.

Straw polls taken during the resolution of comment #6 had inconclusive results indicating need for additional information. In discussions since then, no specific examples of applications that would break by the additional restrictions have been found. These restrictions are therefore suggested again. If there is no consensus to have them as mandatory requirements, they can be added as recommendations.

A presentation providing further explanations and justification for the suggested restrictions will be provided.

SuggestedRemedy

In 173.4.2.1 and 173.4.2.2, change the second list item to
"The multiplexing function has an additional constraint that each of the 8 output lanes contain two unique PCSLs from PMA client lanes i = 0 to 15 followed by two unique PCSLs from PMA client lanes i = 16 to 31".

In 173.4.2.3, change the second list item to
"The 4 PCSLs received on an input lane shall be mapped to an output lane such that the Gray-coded PAM4 symbol sequence on the output lane is identical to the Gray-coded PAM4 symbol sequence on the input lane (see 173.4.7.1)."

Modify wording and/or add illustrations with editorial license.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The following presentation was reviewed by the task force:
https://www.ieee802.org/3/df/public/23_01/0130/ran_3df_01b_230130.pdf

There was consensus to implement the changes on slide 21 of brown_3df_03b_230130.

Implement the changes on brown_3df_03b_230130 slide 21 with editorial license.

Strawpoll #2 (choose one):
I support the proposed bit muxing restrictions for the 32:8 and 8:32 PMAs ("part 1" on brown_3df_03b_230130 Slide 21)
Yes: 45
No: 1
Need more information: 14

Strawpoll #3 (choose one)
I support adding further restrictions on the multiplexing rules for 8:8 PMA.
Yes: 32
No: 4
Need more information: 18

Strawpoll #4 (Chicago Rules)
Strawpoll #5 (Pick One)
I support the following multiplexing restrictions approach for the 8:8 PMA:
A: changed per part 2 on brown_3df_03b_230130 Slide 21
B: add additional recommended restriction per part 2 on brown_3df_03b_230130 Slide 21
C: a different approach
SP4: A: 37 B: 26 C: 9
SP5: A: 31 B: 16 C: 5

Cl **173** *SC* **173.4.2.1** *P* **220** *L* **16** # 89

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *muxing rules*

Avoid the bad "option B" bit muxing that Adee has described.
Fixing this is more useful than applying any restricted muxing on the XS.
I doubt that the language of lanes containing lanes will stretch to the ordering restriction needed, so wordsmithing to "constructed from".

SuggestedRemedy

Change
The multiplexing function has an additional constraint that each of the 8 output lanes contain two unique PCSLs from PMA client lanes i = 0 to 15 and two unique PCSLs from PMA client lanes i = 16 to 31
to
The multiplexing function has an additional constraint that each of the 8 output lanes is constructed from two PCSLs from PMA client lanes i = 0 to 15 and two PCSLs from PMA client lanes i = 16 to 31, arranged so that after PAM4 encoding, the first bits of the pairs used to form PAM4 symbols are taken alternately from one of the two PCSLs from PMA client lanes i = 0 to 15, and one of the two PCSLs from PMA client lanes i = 16 to 31.
Similarly in 173.4.2.2, or delete the restricted muxing rule from the 8:32 PMA, as the XS AUI shouldn't make enough errors to trouble the FEC.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #27.

Cl **173** *SC* **173.4.2.1** *P* **220** *L* **17** # 90

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *muxing rules*

I doubt that one can have two unique anythings. Unique means one of a kind, so if there are two, they aren't unique. I think we mean different, but as it is obvious enough from 120.5 that each PCS lane is used just once, there is no need for any such word.

SuggestedRemedy

Delete "unique", twice

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #27.

Cl **173** *SC* **173.4.2.3** *P* **221** *L* **9** # 91

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *muxing rules*

"The 4 PCSLs received on any input lane shall be mapped to the same output lane" is ambiguous: this could mean the same lane number (which seems unnecessary) or merely that the PCSLs are kept together. (I know this text is based on my comment - apologies.)

SuggestedRemedy

Clarify. And see next comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #27.

Cl **173** *SC* **173.4.2.3** *P* **221** *L* **10** # 92

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *muxing rules*

"The order of PCSLs from an input lane does not have to be maintained on the output lane": but to avoid a rogue 8:8 PMA turning the benign properly bit-muxed "option A" into the defective "option B", we can't allow all possible re-ordering.

SuggestedRemedy

As there is no practical reason not to, require that the PMA output the streams of PAM4 symbols that it receives (but without requiring preservation of lane number).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Resolve using the response to comment #27.

Cl **173** *SC* **173.4.3.1** *P* **221** *L* **27** # 93

Dawe, Piers Nvidia

Comment Type **TR** *Comment Status* **A** *(bucket1)*

This says "the PMA ... shall produce no more than" while 173.4.3.3 says "the PMA ... shall generate no more than"

SuggestedRemedy

If there is a difference between produce and generate, as I suspect there is, explain. If there isn't, use one word not two.
See another comment that the limits are higher than needed now.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Wording should be consistent with other similar specifications and the heading titles. In 173.4.3.1, change "produce" to "generate".

Cl **173** *SC* **173.4.3.3** *P* **221** *L* **43** # 94

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

Not clear "as well" as what.

SuggestedRemedy

Please explain.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the last sentence in 173.4.3.3
from:
"If there is a physically instantiated 800GAUI-8 as well, then the Skew measured at SP1 is limited to no more than 29 ns of Skew and no more than 200 ps of Skew Variation."
to:
"In an implementation with one or more physically instantiated 800GAUI-8 interfaces, then the Skew measured at the input to the PMA adjacent to the PMD service interface (SP1 in Figure 169–4 and Figure 169–5) is limited to no more than 29 ns of Skew and no more than 200 ps of Skew Variation"

Cl **173** *SC* **173.4.5** *P* **222** *L* **38** # 95

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **A** *(bucket1)*

This says that the clock architecture is identical to that specified in 120.5.5.
Clocking architecture not clock architecture
Rates in 120.5.5 are based on bit rates, here bit rate is not mentioned.
120.5.5 addresses cases of 200GBASE-R and 400GBASE-R, not 800G.
120.5.5 says "... rearrangement of PCSLs between input lanes and output lanes (although rearrangements are allowed)" but this clause has rules forbidding some rearrangements.

SuggestedRemedy

Add material to define what the clocking architecture for this clause is

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Rewrite this subclause such that the differences in 800GBASE-R are clear.

Cl **173** *SC* **173.4.7.2** *P* **223** *L* **1** # 28

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

The title "Precoding for PAM4 encoded lanes" is used in clause 120, but in clause 173 all lanes are PAM4 encoded.

SuggestedRemedy

Change the title to "Precoding".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Implement the suggested remedy and make a similar change to 173.4.7.1

Cl **173** *SC* **173.4.7.2** *P* **223** *L* **3** # 29

Ran, Adee Cisco

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

The first paragraph of this subclause effectively excludes 800GAUI-8 C2M, making precoding impossible over this interface.

Precoding can also be beneficial for C2M in certain cases, and it is likely implemented as part of the SerDes in many products. Therefore, it would be good to allow it as an optional feature that, if available, can be enabled as required by the application.

This would only apply in the interface lanes connected to the AUI, and not to those that are connected to the PMD, so the optical signal will not be affected.

The fact that this option is not explicitly defined for 400GAUI-4 C2M etc. does not preclude it from being defined in this project.

SuggestedRemedy

With editorial license, make both precoding and decoding optional for PMAs lanes that are part of a 800GAUI-8 C2M link (this may affect both Clause 167 and annex 120G).

Response *Response Status* **C**

REJECT.
Precoding is not defined for 100GAUI-1, 200GAUI-2, or 400GAUI-4 C2M in IEEE Std 802.3ck-2022.
In order for precoding to be helpful, precoding would have to be mandatory on the transmitter as is the case for 100GAUI-1, 200GAUI-2, and 400GAUI-4 C2C in IEEE Std 802.3ck-2022.
If precoding is not mandatory on the transmitter, then the receiver must be able to meet the performance requirements without precoding. Therefore precoding would not be required to meet the performance requirements, only to potentially exceed it.

There was no consensus to make the proposed change.

Cl **173** *SC* **173.4.8** *P* **223** *L* **30** # 129

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

This says that the PMA link status functions identically to that specified in 120.5.8. 120.5.8 says "the PMA shall provide link status information to the PMA client using the PMA:IS_SIGNAL.indication primitive." That's too simple; this primitive is not carried over the AUI, and for the 8:32 PMA, link status

SuggestedRemedy

Please write out what actually happens

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Delete the reference to 120.5.8. Add text to explain how the PMA link status is handled for the different PMA options and highlight the fact that PMA:IS_SIGNAL.indication primitive. is not carried over an AUI. Implement with editoiral licence.

Cl **173** *SC* **173.4.11** *P* **223** *L* **47** # 30

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

120.5.11.2 is now included in this draft.

SuggestedRemedy

Make 120.5.11.2 an active cross reference.

Response *Response Status* **C**

ACCEPT.

Cl **173** *SC* **173.5** *P* **224** *L* **10** # 96

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(bucket1)*

This says MMDs 8, 9, and 10 while 173.1.4 says 1, 8, 9, 10, and 11

SuggestedRemedy

Reconcile 11

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change the text at line 9 from:
"For implementations with multiple PMA sublayers, additional PMA sublayers use the corresponding register and bit numbers in MMDs 8, 9, and 10 as necessary."
to:
"For implementations with multiple PMA sublayers, additional PMA sublayers use the corresponding register and bit numbers in MMDs 8, 9, 10 and 11 as necessary."

Cl **173** *SC* **173.5** *P* **225** *L* **12** # 134

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *registers (late)*

I expected to see registers 1.604, 1.605 and 1.606, precoder request, in Table 173-4, MDIO/PMA status variable mapping

SuggestedRemedy

Add these registers

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

It is assumed that the comment refers to Table 173-3 rather than Table 173-4.

In Table 173-3, add rows for registers 1.604, 1.605, and 1.606.

In registers 1.605 (subclause 45.2.1.144) and 1.606 (subclause 45.2.1.145) add bits for lanes 2 to 7. Make similar updates for 1.600, 1.601, 1.602, and 1.603, expanding to 8 lanes for each.

Implement with editorial license.

Cl **173** *SC* **173.6.3** *P* **227** *L* **12** # 135

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **A** *(late) (bucket1)*

Upstream and downstream have defined meanings: see 1.4.291 and 1.4.586. Upstream is towards the core of the network and downstream is towards the periphery. NOT towards the MAC vs. towards the medium.

SuggestedRemedy

These could be called TOP and BOT, or A and B for above and below, picking up wording used later in this table

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
There is a editor's note on page 226 that states "Editor’s note: In this draft, the PICS are not yet complete and further updates will be made in a future draft."
Rewrite the PICS as appropriate for this clause.

Cl **173** *SC* **173.6.5** *P* **229** *L* **20** # 31

Ran, Adee Cisco

Comment Type **ER** *Comment Status* **A** *(bucket1)*

120.5.11.2.2 is now included in this draft.

SuggestedRemedy

Make all instances of 120.5.11.2.2 in this table active cross references.

Response *Response Status* **C**

ACCEPT.