Cl **FM** *SC* **FM** *P* **11** *L* **54** # 11

Dawe, Piers Nvidia

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

There are more amendments, ahead of this one but not yet published

SuggestedRemedy

Add IEEE Std 802.3cp-202x and possibly more

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add 802.3cp-202x and others

Cl **00** *SC* **0** *P* *L* # 6

Anslow, Pete Independent

Comment Type **ER** *Comment Status* **A** *Bucket*

All external cross-references should be "Forest green" by using the "External" character tag as per the 802.3 FrameMaker template.

SuggestedRemedy

Make all external cross-references "Forest green" by applying the "External" character tag as per the 802.3 FrameMaker template.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* *L* # 5

Anslow, Pete Independent

Comment Type **ER** *Comment Status* **A**

Recent convention in 802.3 PHY naming when there are existing -?R2 PHY types in existence is to name the single lane variant ?R1. Examples being: -KR1, -CR1, -FR1, -LR1

SuggestedRemedy

Change 100GBASE-SR to 100GBASE-SR1 throughout the draft

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Change all instances of 100GBASE-VR to 100GBASE-VR1 and all instances of 100GBASE-SR to 100GBASE-SR1

Cl **30** *SC* **30.5.1.1.2** *P* **7** *L* **14** # 8

Dawe, Piers Nvidia

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

If ordered by length

SuggestedRemedy

Should VR come before SR before100GBASE-SR4, VR2 before SR2 before 200GBASE-SR4, VR4 before SR4 before 400GBASE-SR16?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Put VR before SR before 100GBASE-SR4, VR2 before SR2 before 200GBASE-SR4, VR4 before SR4 before 400GBASE-SR16

Cl **30** *SC* **30.5.1.1.2** *P* **7** *L* **25** # 9

Dawe, Piers Nvidia

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

200GBASE-SR, 200GBASE-VR, 400GBASE-SR, 400GBASE-VR

SuggestedRemedy

200GBASE-SR2, 200GBASE-VR2, 400GBASE-SR4, 400GBASE-VR4

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.6** *P* **9** *L* **21** # 10

Dawe, Piers Nvidia

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

Shouldn't you show the modified reserved rows?

SuggestedRemedy

per comment

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.6** *P* **21** *L* **21** # 1

Anslow, Pete Independent

Comment Type **TR** *Comment Status* **A** *Bucket*

The draft shows :
1 1 0 1 0 0 0 = 400GBASE-SR4 PMA/PMD
1 1 0 0 1 1 1 = 400GBASE-VR4 PMA/PMD
1 1 0 0 1 1 0 = 200GBASE-SR2 PMA/PMD
1 1 0 0 1 0 1 = 200GBASE-VR2 PMA/PMD
1 1 0 0 1 0 0 = 100GBASE-SR PMA/PMD
1 1 0 0 0 1 1 = 100GBASE-VR PMA/PMD
but four of these choices are already allocated to other PMD types:
1 1 0 1 0 0 0 is 10GBASE-BR20-D in P802.3cp
1 1 0 0 1 1 1 is 10GBASE-BR10-D in P802.3cp
1 1 0 0 1 1 0 is not currently allocated
1 1 0 0 1 0 1 is not currently allocated
1 1 0 0 1 0 0 is 400GBASE-ZR in P802.3cw
1 1 0 0 0 1 1 is 400GBASE-ER8 in IEEE Std 802.3cn-2019
It seems that a better solution would be to put all six new PMDs together above the block used by P802.3cp

SuggestedRemedy

Change the allocation to:
1 1 1 1 1 1 0 = 400GBASE-SR4 PMA/PMD
1 1 1 1 1 0 1 = 400GBASE-VR4 PMA/PMD
1 1 1 1 1 0 0 = 200GBASE-SR2 PMA/PMD
1 1 1 1 0 1 1 = 200GBASE-VR2 PMA/PMD
1 1 1 1 0 1 0 = 100GBASE-SR PMA/PMD
1 1 1 1 0 0 1 = 100GBASE-VR PMA/PMD

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.20** *P* **22** *L* **38** # 2

Anslow, Pete Independent

Comment Type **TR** *Comment Status* **A** *Bucket*

The draft shows :
1.23.8 200GBASE-SR2 ability
1.23.7 200GBASE-VR2 ability
But these bits are already allocated in P802.3ck to:
1.23.8 200GBASE-CR2 ability
1.23.7 200GBASE-KR2 ability

SuggestedRemedy

Change the allocation to:
1.23.10 200GBASE-SR2 ability
1.23.9 200GBASE-VR2 ability

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.21** *P* **23** *L* **23** # 3

Anslow, Pete Independent

Comment Type **TR** *Comment Status* **A** *Bucket*

The draft shows :
1.24.11 400GBASE-VR4 ability
But this bit is already allocated in P802.3cw to:
1.24.11 400GBASE-ZR ability

SuggestedRemedy

To maintain the usual increasing reach with bit number, change the allocations to:
1.24.13 400GBASE-SR4 ability
1.24.12 400GBASE-VR4 ability

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.21a** *P* **24** *L* **9** # 4

Anslow, Pete Independent

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

The draft shows :
1.26.11 100GBASE-SR ability
However, a gap in the allocations was previously made for 100GBASE-SR ability as 1.26.2

SuggestedRemedy

Change the allocation to:
1.26.2 100GBASE-SR ability

Response *Response Status* **C**

ACCEPT.

Cl **78** *SC* **78.1.4** *P* **13** *L* **12** # 12

Dawe, Piers Nvidia

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

after 400GBASE-SR4.2

SuggestedRemedy

after 400GBASE-SR16, or possibly after 400GBASE-SR8

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Put 400GBASE-SR4 after 400GBASE-SR8

Cl **78** *SC* **78.1.4** *P* **13** *L* **13** # 13

Dawe, Piers Nvidia

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

This is too hard to follow

SuggestedRemedy

Please show at least one existing row before and after each new one, as 802.3cd did

Response *Response Status* **C**

ACCEPT.

Cl **80** *SC* **80.1.4** *P* **15** *L* **18** # 14

Dawe, Piers Nvidia

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

Please show the changes in context

SuggestedRemedy

Please show one existing row before and after each new one, as 802.3ck does. Also for Table 80-5.

Response *Response Status* **C**

ACCEPT.

Cl **91** *SC* **91.7.4.1** *P* **21** *L* **12** # 15

Dawe, Piers Nvidia

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

Inconsistent font size

SuggestedRemedy

Response *Response Status* **C**

ACCEPT.

Cl **116** *SC* **116.1.3** *P* **23** *L* **41** # 16

Dawe, Piers Nvidia

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

after 400GBASE-SR4.2

SuggestedRemedy

Before, going by reach

Response *Response Status* **C**

ACCEPT.

Cl **116** *SC* **116.1.4** *P* **25** *L* **29** # 17

Dawe, Piers Nvidia

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

400GBASE-SR4 should come before 400GBASE-SR4.2, and I think it goes after 400GBASE-SR8

SuggestedRemedy

Swap 400GBASE-SR4 and 400GBASE-SR4.2, both row and column

Response *Response Status* **C**

ACCEPT.

Cl **167** *SC* **167.1** *P* **30** *L* **9** # 18

Dawe, Piers Nvidia

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

This table can be presented better by leaving out the unnecessary "Not applicable" entries

SuggestedRemedy

Use columns for clause/annex no., description for 200G, description for 400G, and required/optional status. Similarly for tables 163-2 and 3.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Adapt table

Cl **167** *SC* **167.1** *P* **31** *L* **7** # 19

Dawe, Piers Nvidia

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

Empty line

SuggestedRemedy

Remove

Response *Response Status* **C**

ACCEPT.

Cl **167** *SC* **167.1.1** *P* **31** *L* **50** # 20

Dawe, Piers Nvidia

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

FEC (Clause 134 or Clause 91) and PCS (Clause 133 or Clause 82).

SuggestedRemedy

FEC (Clause 91) and PCS (Clause 82).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Remove references to Clause 134 and Clause 133. Will read: "FEC (Clause 91) and PCS (Clause 82)".

Cl **167** *SC* **167.2** *P* **32** *L* **20** # 21

Dawe, Piers Nvidia

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

116.3

SuggestedRemedy

80.3?

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. Correct reference to Clause 80.3.

Cl **167** *SC* **167.7.1** *P* **39** *L* **32** # 23

Dawe, Piers Nvidia

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

As the channel is relatively slower than for other optical PMDs, we should recognise a different balance of penalties while encouraging good (equalisable) transmitters.

SuggestedRemedy

Insert rows for TECQ-10.log10(Ceq') and TECQ-10.log10(Ceq'), limit TBD between 3.4 and 4 dB. Consider if TDECQ max (and SECQ) should be increased. TECQ limit is probably about right.

Response *Response Status* **C**

REJECT.

There are currently two specs (three if one counts TDECQ) to limit the use of "poor" optical signals: (a) overshoot/undershoot, and (b) minimum value of cursor in Rx FFE.

An example of a Tx waveform that passes these specifications but fails a link test would be useful in promoting a limit on TECQ - 10*log10(Ceq').

Propose a value for max TDECQ and SECQ.

Cl **167** *SC* **167.7.1** *P* **39** *L* **32** # 22

Dawe, Piers Nvidia

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

This has TECQ before TDECQ while 802.3cu has the reverse.

SuggestedRemedy

Consider which is preferable. Plan to adjust 802.3cu in maintenance, or modify this table.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Location of TDECQ and TECQ specifications in Table 167-7 will be swapped.

Cl **167** *SC* **167.7.3** *P* **41** *L* **24** # 7

Bruckman, Leon Huawei

Comment Type **E** *Comment Status* **R**

Unnecessary text "cabled optical" in Note b. I believe this text has been removed also in the similar clause in 802.3cu

SuggestedRemedy

Remove "cabled optical"

Response *Response Status* **C**

REJECT.
This wording is used throughout the base document and is the description per the ISO/IEC 11801 nomenclature.

Cl **167** *SC* **167.8.1** *P* **41** *L* **51** # 24

Dawe, Piers Nvidia

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

Scrambled idle 119.2.4.9

SuggestedRemedy

Scrambled idle or scrambled Remote Fault 82.2.11 or 82.2, 119.2.4 or 119.2.4.9

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Subsequent to the close of commenting period Piers sent an email:

"First, the scrambled idle or scrambled Remote Fault is generated by the PCS, and PMDs to this clause use one of two PCS/FECs, depending how many lanes there are in a logical port:

82, 91 for 100G (1 lane)

119 for 200G or 400G (2 or 4 lanes)

This clause is the multimode equivalent of the combination of

140. Physical Medium Dependent (PMD) sublayer and medium, type 100GBASE-DR...
and
124. Physical Medium Dependent (PMD) sublayer and medium, type 400GBASE-DR4
and a little more for 200G (but it's the same PCS clause).

Table 140–9—Test patterns
Pattern 5
Pattern description Scrambled idle encoded by RS-FEC
Defined in 82.2.11, 91

Table 124–9—Test patterns
Pattern 5
Pattern description Scrambled idle
Defined in 119.2.4.9

The second issue is that an Ethernet port
with its transmitter connected to a scope and nothing connected to its input will generate Remote Fault automatically, not idle. One has to put the port into a test mode to make it produce idle. As the scrambler is very long, both are as good as random so a test can be done with either.

BUT, as I check this I am reminded that in
Table 167–11—Test-pattern definitions and related subclauses, following Table 138–12—Test-pattern definitions and related subclauses, wherever we have

pattern 5, we also have "or valid ... signal", which is said to cover Remote Fault (I hope readers don't think that as it has Fault in its name it's not a valid signal – it is supposed to be received correctly, like any other valid signal).

So we can drop the explicit Remote Fault items, but we should add the 100G FEC, giving:

Scrambled idle encoded by RS-FEC
82.2.11 and 91, or 119.2.4.9

This is my new proposal."

Change the entry in Table 167-10 to Scrambled idle encoded by RS-FEC 82.2.11 and 91, or 119.2.4.9

Cl **167** *SC* **167.8.5** *P* **43** *L* **25** # 30

Le Cheminant, Greg — Keysight Technologies

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

The reference receiver bandwidth for TDECQ analysis is typically at half baud to emulate DSP based receivers with anti-aliasing filters. For multimode transmitter test, the observation bandwidth is reduced further to emulate the dispersion that is created by the fiber span. An alternative approach should be considered. The transmitter waveform is acquired in the half-baud bandwidth. For TECQ, this waveform can be directly analyzed. For TDECQ, the waveform is additionally passed through a second processing block that emulates the fiber. This could be as simple as a low-pass Bessel-Thomson filter, but could be something that better emulates the physical impact of the fiber span, to be determined by the group. This method has the advantage of being able to provide several transmitter metrics, for both SR and VSR requirements, with a single oscilloscope acquisition, reducing overall test time and cost, and likely better emulating the true channel respnse

SuggestedRemedy

Change the text of lines 24-34 of page 43 (55 in the overall document) to read: The combination of the O/E converter and the oscilloscope used to measure the optical waveform has a 3 dB bandwidth of approximately 26.5 GHz with a fourth-order Bessel-Thomson response to at least 1.5 × 26.5 GHz. At frequencies above 1.5 × 26.5 GHz, the response should not exceed 24 dB. Compensation may be made for any deviation from an ideal fourth-order Bessel-Thomson response. Prior to TDECQ analysis the waveform is passed through a function that emulates the response of the maximum allowed fiber span. This function is described as TBD

Response *Response Status* **C**

ACCEPT IN PRINCIPLE. The proposal allows recording of multiple parameters with a single measurement. Some open questions that were brought up a) noise handling, b) differences between using a single hardware filter vs. half baud rate hardware filter plus fiber emulation, and c) is a fourth order BT filter the best emulation of fiber bandwidth.

Add editors' note: The noise handling in the fiber emulation and the fiber response is under further study.

3 dBe bandwidth of the Bessel-Thomson filter is 18 GHz for the SR links and TBD for VR links.

Presentation was reviewed by the Task Force:
Le_cheminant_3db_01_052721

Cl **167** *SC* **167.8.5.1** *P* **43** *L* **51** # 25

Dawe, Piers Nvidia

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

We have 9 taps rather than the usual 5 because the channel is relatively slower than for other optical PMDs. So the last few taps should be correcting the tail of the response and should be quite small.

SuggestedRemedy

Impose limits on the absolute values of tap coefficients 7, 8 and 9. Also for the last taps for TECQ, depending how long that reference equalizer is.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

What are the proposed limits for the tap coefficients 7, 8 and 9? An analysis of constraints placed on Tx by these limits would help evaluate the impact.

Add an editors' note stating that limits on taps 7, 8, and 9 may be considered.

Cl **167** *SC* **167.8.7** *P* **44** *L* **42** # 26

Dawe, Piers Nvidia

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

1E-2 allows too much of the waveform beyond the limit and does a poor job of controlling overshoot

SuggestedRemedy

Change to 3E-3 TBC for now, and let people try that in the lab

Response *Response Status* **C**

ACCEPT.

Change the hit ratio for overshoot/undershoot calculation to 3E-3 TBC in the draft.

Cl **167** *SC* **167.8.10** *P* **45** *L* **18** # 27

Dawe, Piers Nvidia

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

This sentence (and one in 167.8.13) is too long and hard to understand. It should be divided in two, as in 167.8.5 and 167.8.6.

SuggestedRemedy

Change "response to at least 1.3 x 53.125 GHz and at frequencies above 1.3 x 53.125 GHz the response should not exceed -24 dB." to "response to at least 1.3 x 53.125 GHz. At frequencies above 1.3 x 53.125 GHz the response should not exceed -24 dB."
Similarly in 167.8.13.

Response *Response Status* **C**

ACCEPT.

Cl **167** *SC* **167.10.1** *P* **49** *L* **25** # 28

Dawe, Piers Nvidia

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

and400GBASE-SR4.

SuggestedRemedy

insert a space

Response *Response Status* **C**

ACCEPT.

Cl **167** *SC* **167.10.3.3** *P* **52** *L* **24** # 31

Xie, Chongjin Alibaba

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

Figure 167-8 only includes diagrams for flat 12 fiber MPO connectors.

SuggestedRemedy

Add diagrams that illustrate APC 12 fiber MPO connectors

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
Add a diagram like Figure 124-7 in clause 124.

Cl **167** *SC* **167.11.3** *P* **54** *L* **6** # 29

Dawe, Piers

Nvidia

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

PICS needs work

SuggestedRemedy

Revise PICS

Response *Response Status* **C**

ACCEPT.