Cl **1** *SC* **1.4** *P* **18** *L* **12** # 48

Choudhury, Mabud OFS

Comment Type **E** *Comment Status* **D**

Indicate Editors' Note will be removed prior to publicatiion

SuggestedRemedy

Change to "Editors' Note (to be removed prior to publication):" Also in clause 167.1, page 41, line 53 and clause 167.1, page 42, line 27.

Proposed Response *Response Status* **O**

Cl **1** *SC* **1.4** *P* **18** *L* **14** # 16

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

1.4.33 "100GBASE-R encoding"

SuggestedRemedy

Do the subclause numbers such as 1.4.33 need updating?

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1..2** *P* **20** *L* **14** # 55

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

I see change bars throughout this section, however when I checked I don't see any actual changes to the text compared with 802.3db D1.1.

I thought the rule was that change bars are only used to highlight changes to the text compared to the previous draft, and not for example all the way back to the x.0 draft?

I suspect this comment applies throughout the draft.

SuggestedRemedy

It is probably too late for this draft, but going forward change bars should be reset at the start of each new draft and removed completely for a x.0 draft.

Proposed Response *Response Status* **O**

Cl **45** *SC* **45.2.1.6** *P* **21** *L* **10** # 17

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **X**

Rubric needs revising for basis of 802.3dc

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.1.4** *P* **25** *L* **22** # 42

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **X**

Here, the order of 100GBASE-SRn PHY types is 4 2 10 1. In Table 80-1, it's 10 2 4 1. In Table 80-4, 10 4 and Table 80-5, 1 2. This seems inconsistent.

SuggestedRemedy

Consider what the order should be, bearing in mind that "100 m" doesn't mean exactly the same thing for the different PHYs, make changes to the order if appropriate.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **27** *L* **7** # 56

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

There is no change bar associated with the editing instruction " Change list item h) in 80.1.3 as follows:", even though the text has changed from 802.3db D1.1.

SuggestedRemedy

It is to late to do anything with regard to this draft, but please ensure that change bars are used appropriately and highlight all changes in the text from one draft to the next.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **27** *L* **11** # 57

Nicholl, Gary Cisco

Comment Type **ER** *Comment Status* **D**

There is an incorrect cross-reference to Clause 167. The current text is "..and in 167 for ..." It should be "... and in Clause 167 for …", where "Clause 167" is a single cross reference.

The same comment applies to the enteries in Table 80-1, i.e. the cross reference text should be "Clause 167" and not "167". Look at the unchaged enteries in the table as an example.

SuggestedRemedy

Fix the cross references according to the comment.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.3** *P* **27** *L* **33** # 58

Nicholl, Gary Cisco

Comment Type **ER** *Comment Status* **D**

References to clauses 86 and 138 in the Table 80-1 are external references , and thus should be converted to text and use the appropriate green font for "external references'. See clause 85, 95 and 140 in the same table as an example. I believe there is a special "External" character style in Frame for exactly this purpose.

SuggestedRemedy

Fix the cross references according to the comment.

Proposed Response *Response Status* **O**

Cl **80** *SC* **80.1.4** *P* **27** *L* **27** # 18

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

As we are making this long table longer

SuggestedRemedy

Make the table full width with the left column sized to contents

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.5.2.7** *P* **30** *L* **11** # 59

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

The underlining in this sentence is incorrect. There would already have been a space between "100GBASE-SR2," and "100GBASE-DR" in the text being changed, and this space should not be underlined (as it is not being added).

SuggestedRemedy

Change the text from " 100GBASE-SR1 " to " 100GBASE-SR1 " or " 100GBASE-SR1 "

Proposed Response *Response Status* **O**

Cl **91** *SC* **91.7.4.2** *P* **33** *L* **26** # 19

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

91.1.0.1

SuggestedRemedy

91.7.4.2

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.2** *P* **35** *L* **9** # 20

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

As 8 lane is g and 4 lane is h...

SuggestedRemedy

2 lane should be i and 1 lane (P802.3cw's "400GBASE-ZR") should be last, at j.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.2** *P* **35** *L* **14** # 60

Nicholl, Gary Cisco

Comment Type **ER** *Comment Status* **D**

Incorrect cross-reference format for clause 167. Current text is "... and 167 for ..." , but it should be "...and Clause 167 for…". Use the "ClauseNumber" format for the cross-reference in FrameMaker.

SuggestedRemedy

Fix the cross reference according to the comment, and review (and fix if necessary) for any similar issues throughout the draft. For example the same issue appears on line 18 of the same page, in Table 116-1 and in Table 116-2.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.3** *P* **36** *L* **14** # 22

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Table layout

SuggestedRemedy

Make Table 116-2 full width with the left column narrower (sized to 400GBASE-LR4-6)

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.4** *P* **37** *L* **12** # 21

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Wrong font

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.1.4** *P* **37** *L* **42** # 61

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

Why is there a change bar associated with 400GBASE-ZR?

SuggestedRemedy

Delete change bar associated with 400GBASE-ZR in the next draft.

Proposed Response *Response Status* **O**

Cl **116** *SC* **116.4** *P* **38** *L* **6** # 23

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Missing context

SuggestedRemedy

Please show the unchanged rows immediately before and after the changed rows, as in other tables.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.1** *P* **41** *L* **24** # 24

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Font too small

SuggestedRemedy

Should be 9 point not 7. Remove override.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.1** *P* **42** *L* **23** # 25

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

78

SuggestedRemedy

78 (no dot)

Proposed Response *Response Status* **O**

Cl **167** SC **167.5.2** P **47** L **43** # 44

Bruckman, Leon Huawei

Comment Type **E** *Comment Status* **X**

It would be clearer to use "each signal stream" instead of "the signal stream". It will also make it consistent with the text in the following section. See also 802.3cu section 151.5.2

SuggestedRemedy

Replace: "The four optical power levels in the signal stream", with: "The four optical power levels in each signal stream"

Proposed Response *Response Status* **O**

Cl **167** SC **167.5.7** P **49** L **9** # 45

Bruckman, Leon Huawei

Comment Type **E** *Comment Status* **X**

PMD_global_transmit_disable disables all lane's transmitters.

SuggestedRemedy

In bullet b) Replace: "turning off the optical transmitter in each lane.", with: "turning off the optical transmitter in all lanes."

Proposed Response *Response Status* **O**

Cl **167** SC **167.7.1** P **51** L **4** # 26

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **X**

per the definitions in .

SuggestedRemedy

167.8 Also in 167.7.2.

Proposed Response *Response Status* **O**

Cl **167** SC **167.7.1** P **51** L **4** # 46

Bruckman, Leon Huawei

Comment Type **T** *Comment Status* **D**

Missing reference

SuggestedRemedy

Add 167.8 at the end of the sentence

Proposed Response *Response Status* **O**

Cl **167** SC **167.7.1** P **51** L **6** # 62

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

It would be appreciated if chage bars are only used to idenitfy rows in the table that have changed from the previous draft. This would make it much easier fr the reviewer to focus on and verify any changes from the previous draft.

SuggestedRemedy

In future drafts please only use change bars to identify rows in tables that include changes from previous draft, rather than marking all rows in a table with change bars (and including rows where there are no changes)

Proposed Response *Response Status* **O**

Cl **167** SC **167.7.1** P **51** L **12** # 27

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Alignment in unit column

SuggestedRemedy

Centre?

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **15** # 68

Swanson, Steven — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

There has been no contributions that prove that the inclusion of 940nm VCSELs will increase market potential and leverage the high volume manufacturing infrastructure currently supplyin 3D sensing applications. The VCSELs used for 3D sensing are not suitable for the IEEE 802.3db application and the added complexity of the receiver does not warrant the inclusion c another wavelength.

SuggestedRemedy

Change the center wavelength specification from 842-948 to 844-863.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **15** # 1

Abbott, John — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

In Table 167-7 Transmit Characteristics the goal for the VR option is to be a low cost option for connections to the server. This was fully summarized in the original CFI for the project. In order to optimize VR for this new market opportunity using existing OM3 and OM4 fiber (optimized for performance at 850nm) we need to balance all options. It makes sense to broaden the wavelength range for VR from 842 to 865 (wider than SR) to make the VR transmitters as low cost as possible, but it is not at all clear that using transmitters at 940nm which need to match a lower fiber BW can match those at 850nm. This comment agrees with basic point of comment 70 of D1.1 that the VR wavelength range should be centered around 850nm (the design wavelength for the fiber).

SuggestedRemedy

Change 842 to 948 to 824 to 865 (2nm wider than SR on both sides)

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **16** # 2

Abbott, John — Corning Incorporated

Comment Type **T** *Comment Status* **D**

Spectral Width of VR is specified as 0.65nm. If we are looking to make 940nm option as low cost as possible does it make sense to have a wider spectral width spec at 940nm? Or if we tighten the wavelength range back to 842-863nm can we make 850nm VCSELS easier to make with an even wider spectral width?

SuggestedRemedy

If line 15 is 842 to 948 increase spectral width at 948 to 0.70. If line 15 is 842 to 863, increas spectral width at 850nm to 0.70

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **16** # 69

Swanson, Steven — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

In the transmitter specification, the only difference appears to be the spectral width of the source. This is offset by a more complex receiver.

In addition, in the CFI for this project, we identified two distinct market needs, one to support the shift from ToR to MoR/EoR architectures,requiring longer, low cost server-attachment links and another support 100G/optical lane to match to emerging 100G SerDes.

100GBASE-SR1, 200GBASE-SR2 and 400GBASE-SR4 variants seem to address the second requirement but it is not clear that the 100GBASE-VR1, 200GBASE-VR2 and 400GBASE-VR4 address the first.

Use cases included SFP112 connections to for next-generation servers, costs at 50% of DR and power consumption at 50% of DR.

I have seen no evidence that VR will support any of these use cases.

SuggestedRemedy

Consider eliminating the VR variants completely; the complexity of supporting two port types with little difference in the cost or power makes no sense. And the VR variant has no chance of competing for server-attachment links.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **25** # 28

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

In general, merging cells with the same content improves readability. Here, the limits for VR and SR look the same but they aren't, because TDECQ means two different things.

SuggestedRemedy

Spell out the entries for VR and SR separately for this row and the next three.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **27** # 7

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

During D1.1 recirculation we changed threshold adjust from +/-1% to +/- 2% with this change the TDECQ will improve somewhat

SuggestedRemedy

Suggest to make TDECQ for both SR/VR=4.1 dB
See ghiasi_db_01_0921 for TDECQ measurements

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **28** # 29

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

There are two competing definitions for OMA (min) in this table. We need to explain what the reader is supposed to do with them.

SuggestedRemedy

One way would be to use max(TECQ, TDECQ). This applies in the text and Figure 167-3 too

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **31** # 66

Palkert, Tom — Macom

Comment Type **TR** *Comment Status* **X**

Based on changes made to sampling window the TDECQ for VR can be improved

SuggestedRemedy

Change TDECQ for VR from 4.4 to 4.0 dB

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **34** # 30

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **D**

Table layout

SuggestedRemedy

Resize column widths to contents

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **35** # 49

Lingle, Robert — OFS

Comment Type **TR** *Comment Status* **X**

The overshoot/undershoot parameter is currently TBD. Although, it is expected that guidance from measurements will be available later in 2021, we have guidance from 802.3cu that a value of 22% protects the receiver sufficiently from over-peaked signals.

SuggestedRemedy

Replace TBD for VRn and SRn PMD types with 22%. The purpose of the Overshoot/Undershoot spec is to protect the Rx from problematic signals from an overly pre-emphasized Tx. A very high value will penalize the Rx; a very low value will unnecessarily penalize the Tx. 802.3cu determined that 22% was a reasonable balance for SMF Tx. Data or VCSEL Tx later in 2021 may allow refinement, but 22% is a very reasonable value.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **37** # 13

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

Transmitter excursion need a reference

SuggestedRemedy

Please refernece 167.8.8

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **44** # 10

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

Overshoot is TBD

SuggestedRemedy

Replace TBD overshoot with 20%
See ghiasi_db_01_0921 for the overshoort measuremetns

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **44** # 9

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D**

At 50G some end users had to use APC cable plants due to reflections and in the 802.3db we have now added the option of APC connectors. If reflections are becoming an issue why are we promoting 12 dB glass-air termination!

SuggestedRemedy

Suggest adding 20 dB transmitt reflectance to the table and suggest to change optical return loss tolerance to 15 dB

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **45** # 6

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

Encircled flux Greater-less than and less than match symbols show up nu and Omega with Preview but its fine if viewed with Acrobat DC

SuggestedRemedy

This seem to be an issue with FM16 that requrie a different way to create PDF to avoid these issues

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **48** # 50

Lingle, Robert — OFS

Comment Type **ER** *Comment Status* **X**

An editor's note was added to TDECQ(max) value to indicate that some TF members preferred a slightly lower value, and to encourage further study on the next draft. Either a compelling reason to change TDECQ(max) from 4.4dB to another value within the cited range will be brought into CR on D1.2, resulting in a parameter value change, or it will not.In either case, this value can be adjusted during comment resolution as the draft progresses through WG ballot as well. There is no need to keep this editor's note in future drafts.

SuggestedRemedy

Remove this editor's note

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **51** *L* **48** # 31

Dawe, Piers Nvidia

Comment Type **T** *Comment Status* **X**

As the channel or signal is relatively slower than for any other optical PMDs so far, we should expect higher Ceq, contributing to TDECQ, but we should not expect higher K because we have 9 taps rather than 5, and 2% threshold adjust rather than 1%. We expect that "false negatives" won't be such an issue with 2% threshold adjust, and we can set the limits closer t what we really want, with less padding for measurement issues. We should re-optimise the spec considering these things, encouraging good equalisable signals both after and before th fibre. Overshoot/undershoot should be a useful additional protection eventually but it's still evolving, and the K limit can catch some bad transmitters that it misses - and K is a free by-product of TDECQ, K' is a free by-product of TECQ.
The K limit is similar to VEC in C2M and EVM in coherent: a screen for signals that are bad after equalisation.

SuggestedRemedy

Insert rows for K'=TECQ-10.log10(Ceq') and K=TDECQ-10.log10(Ceq), limit 4 dB. For both VR and SR.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **52** *L* **4** # 32

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

Figure is a bitmap

SuggestedRemedy

Insert figure another way so it is a vector graphic. Also figures 167-4, 167-5.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1** *P* **52** *L* **19** # 33

Dawe, Piers Nvidia

Comment Type **E** *Comment Status* **D**

TECQ(dB)

SuggestedRemedy

Insert space. Also Figure 167-5.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.1.** *P* **51** *L* **36** # 63

Nicholl, Gary Cisco

Comment Type **ER** *Comment Status* **D**

Table 167-7. The parameter listed as "Transmitter excursion, each lane (max)" should be "Transmitter power excursion, each lane (max)" to be consistent with the name used in 167.8.8 (and in previous specifications such as 802.3cu-2021).

SuggestedRemedy

Change "Transmitter excursion, each lane (max)" to "Transmitter power excursion, each lane (max)"

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **29** # 64

Nicholl, Gary Cisco

Comment Type **E** *Comment Status* **D**

Extra space before the period.

SuggestedRemedy

Remove the extra space.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **29** # 47

Bruckman, Leon Huawei

Comment Type **T** *Comment Status* **D**

Missing reference

SuggestedRemedy

Add 167.8 at the end of the sentence

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **40** # 3

Abbott, John — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

To achieve orignal VR objections for a low cost high data rate connection to the server, restore the receive wavelength range to 842-863; if increasing the range to make VR 850nm transceivers more robust and cost effective for short distance, increase this to 842-865nm. Choose the wavelength range for VR transmitter and receiver based on end user requirements in the data center.

SuggestedRemedy

Change 842 to 948 to 824 to 865 (2nm wider than SR transmitter on both sides) for VR and SR

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **40** # 70

Swanson, Steven — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

The requirement on the receiver to support a center wavelength range of 842-948 complicates the receiver design and adds cost. It will require an AR coating, and while some claim it will not add cost, it is not trivial.

SuggestedRemedy

Change the center wavelength specification from 842-948 to 844-863.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **44** # 11

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

At 50G some end users had to use APC cable plants due to reflections and in the 802.3db we have now added the option of APC connectors. If reflections are becoming an issue why are we promoting 12 dB glass-air termination!

SuggestedRemedy

Suggest adding 20 dB receive reflectance to the table and suggest to change optical return loss tolerance to 15 dB

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **49** # 65

Nicholl, Gary — Cisco

Comment Type **ER** *Comment Status* **D**

Shouldn't the order of the rows "Stressed receiver sensitivity (OMAouter), each lanec (max)" and "Receiver sensitivity (OMAouter), each lane (max)à" be reversed, to be consistent with the definitions in section 167.8 and what was done in 802.3cu-2021

SuggestedRemedy

Reverse the order of the rows mentioned in the comment.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **49** # 35

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **D**

Stressed receiver sensitivity and Conditions of stressed receiver sensitivity test should be nex to each other in the table. Compare Table 151-8 and Table 140-7.

SuggestedRemedy

Swap Stressed receiver sensitivity and Receiver sensitivity rows

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **51** # 67

Palkert, Tom — Macom

Comment Type **TR** *Comment Status* **X**

If TDECQ for VR is changed to 4.0. SECQ needs to match.

SuggestedRemedy

Change SECQfrom 4.4 to 4.0

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **52** *L* **51** # 8

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

Encircled flux Greater-less than and less than match symbols show up nu and Omega with Preview but its fine if viewed with Acrobat DC

SuggestedRemedy

This seem to be an issue with FM16 that requrie a different way to create PDF to avoid these issues

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **53** *L* **7** # 12

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **X**

During D1.1 recirculation we changed threshold adjust from +/-1% to +/- 2% with this change the TDECQ will improve somewhat and associated SECQ will be lower

SuggestedRemedy

Suggest to make SECQ for both SR/VR=4.1 dB
See ghiasi_db_01_0921 for TDECQ measurements

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.2** *P* **53** *L* **16** # 34

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

"Only applies to 200GBASE-VR2, 400GBASE-VR4, 200GBASE-SR2 and 400GBASE-SR4": it's not "applies" that should be qualified by "only". Also, consider "alien crosstalk" in a multilane module operating as single-lane PMDs.
Anyway, we have subclause 167.8.13 defining stressed receiver sensitivity, where the same point is made.

SuggestedRemedy

If making an editorial improvement, change to:
Applies to 200GBASE-VR2, 400GBASE-VR4, 200GBASE-SR2 and 400GBASE-SR4 only.
or much better and in preparation for 800GBASE-VR8 and 800GBASE-SR8,
Not applicable to 100GBASE-VR1 and 100GBASE-SR1.
Or, because the same module suffers the same crosstalk if used as 4 x 100GBASE-VR1 as when running as 1 x 400GBASE-VR4, remove the exception.
Anyway, because this topic is addressed in 167.8.13 and we should not be defining things piecemeal by table footnotes - delete the note. See another comment against 167.8.13.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.3** *P* **53** *L* **14** # 4

Abbott, John — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

In Table 167-9 Illustrative Power Budget if the VR wavelength range is 842-948 the power budget should be executed at 842 and 948nm. The table uses 850nm (which makes sense) but do we need a presentation with power budget at 948nm? Do we need a separate 948nm column?

SuggestedRemedy

Suggested remedy is to leave table 167-9 as is and change table 167.7.1 (transmitter) to 842 to 863nm. 2nd option is to modify table 167-9 to include subcolumns under OM3 and OM4 fo power budgets at 940 using IEC guidance EMBs and putting TBDs in the rest of the items

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.7.3** *P* **54** *L* **45** # 36

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **D**

As far as I can see, Figure 167-5 presents the same information as figure 167-3 and 167-4, but does it better because the information is on a single graph so one can see the relation between transmit and receive OMAs.

SuggestedRemedy

Delete 167-3 and 167-4, move 167-5 to become 167-3 and refer to it instead of the existing 167-3 and 167-4.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.1.1** *P* **56** *L* **28** # 37

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

We specify that each lane has the min OMA and max TDECQ or better, and we specify SRS at min OMA and max TDECQ. The PCS distributes 10-bit symbols across the PAM4 lanes and MSB/LSB equally, so what matters is the aggregate of errors on all the lanes. Specifying this for the receiver, we will still exceed the spec in practice because of scatter on transmit parameters. Clauses 86 and 95 and the copper PMDs have this right.

SuggestedRemedy

Change from "Stressed receiver sensitivity is defined for each lane at the BER specified in 167.1.1." to "Stressed receiver sensitivity is defined for an interface at the BER specified in 167.1.1. The interface BER is
the average of the BERs of the receive lanes when they are stressed."
After "operated as specified.", insert "To find the interface BER, the BERs of all the lanes when stressed are averaged."
In 167.8.13, delete "The BER is required to be met for each lane under test on its own."

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **40** *L* **13** # 54

Tang, Yi — Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **X**

"The TDECQ of each lane shall be within the limits given in Table 167-7 if measured using the methods specified in 121.8.5."
8023-2018 121.8.5 (Page 135, Equation 121-9): The value of Ceq (coefficient for the reference equalizer noise enhancement) can be calculated from N(f) and Heq(f) "Where N(f) is the normalized noise power density spectrum equivalent to white noise filtered by a fourthorder
Bessel-Thomson response filter with a bandwidth of 13.28125 GHz."
Issue: the noise enahncement relates to receiver noise, so its calculation shall be based on reference receiver bandwidth.

SuggestedRemedy

Add to the exception list:
"- The normalized noise power density spectrum, N(f) in Equation (121-9), is equivalent to white noise
filtered by a fourth-order Bessel-Thomson response filter with a bandwidth of 25.5625 GHz." - same as 8023cu-2021

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **20** # 43

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

Problems with "The first filter represents the system receiver": there's no definition of "system receiver", we should not be implying that a product receiver has to be like the TDECQ reference receiver, and a filter is only a small part of a receiver.

SuggestedRemedy

Change to "The first filter represents a receiver front end frequency response", or similar.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **31** # 38

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **X**

151.8.5, TDECQ for 400GBASE-FR4 and 400GBASE-LR4-6, has this exception:
The normalized noise power density spectrum, N(f) in Equation (121-9), is equivalent to white noise filtered by a fourth-order Bessel-Thomson response filter with a bandwidth of 25.5625 GHz.

SuggestedRemedy

I suppose this applies here, too.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **32** # 51

Lingle, Robert — OFS

Comment Type **ER** *Comment Status* **X**

Editor's note states: "Noise handling in the fiber emulation and the fiber response is under further study." I hope that this topic can be addressed with both a comment & supporting contribution in this draft cycle. Otherwise, I think the Editor's Note has served its purpose and can be removed at this point. This topic can still be addressed in WG ballot cycle if further information becomes available.

SuggestedRemedy

Remove this editor's note

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **33** # 14

Ghiasi, Ali — Ghiasi Quantum/Marvell

Comment Type **TR** *Comment Status* **D**

To speed up TDECQ measurement and for better correlation with real DSP suggest to use MMSE optimization over full grid search

SuggestedRemedy

Use MMSE optimization to determine the TDECQ.
Use of MMSE may slighlty increase +0.1 dB the TDECQ, for exact amount see ghiasi_dB_01_0921

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **33** # 52

Lingle, Robert — OFS

Comment Type **ER** *Comment Status* **X**

Editor's note states: "Use of minimum mean squared error optimization in place of optimization of TDECQ has been proposed." While this is an intriuging suggetion, I hope that this topic can be addressed with both a comment & supporting contribution in this draft cycle. Otherwise, I think the Editor's Note has served its purpose and can be removed at this point. This topic can still be addressed in WG ballot cycle if further information becomes available.

SuggestedRemedy

Remove this editor's note

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.5** *P* **57** *L* **40** # 5

Abbott, John — Corning Incorporated

Comment Type **T** *Comment Status* **X**

Table 167-12 the fiber emulation filter needs to model mutiple kinds of pulses with the same 3dB BW, including pre-pulses, post-pulses, dual-Dirac-Delta pulses. The worst case is likely a small pre or post pulse which whos 3dB BW is X but whose 1.5dB BW extrapolated to 3dB is X/2.

SuggestedRemedy

Verify worst case assumption used in TDECQ and compare to fiber minEMBc 1.5dB BW, particularly for VR at 948.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.7** *P* **58** *L* **33** # 39

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **D**

140.7.5b

SuggestedRemedy

140.7.7 Also, delete "(in 802.3cu)". Similarly in 167.8.8.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.13** *P* **59** *L* **50** # 40

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **D**

As SECQ and TECQ are the same

SuggestedRemedy

Change 167.8.5 to 167.8.6. Delete "except that ... from an ideal fourth-order Bessel-Thomson response", which has already been said.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.8.13** *P* **60** *L* **12** # 41

Dawe, Piers — Nvidia

Comment Type **T** *Comment Status* **X**

Looking ahead to 800GBASE-VR8 and 800GBASE-SR8, this might be better stated as an exception. Anyway, what if a multilane module is running as multiple 100GBASE-VR1? Formally, it's "alien crosstalk" but it's just the same.

SuggestedRemedy

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.10.2.1** *P* **63** *L* **24** # 71

Swanson, Steven — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

In Table 167-15, the chromatic dispersion specifications are specified differently for OM3/OM4 and OM5. There is NO difference in the chromatic dispersion of these fibers. In fact the study that led to the specification of OM5 used OM3 and OM4 chromatic dispersion values to set the value for OM5.

A contribution has been submitted to correct this inconsistency in IEC and will be complete long before this standard is published.

SuggestedRemedy

For OM3 and OM4, eplace 1295 </= lambda naught </= 1340 with 1297 </= lambda naught </= 1328

Replace 0.105 for 1295 </= lambda naught </= 1310 and 0.000375 Î (1590 û lambda naught) for 1310 </= lambda naught </= 1340 with û 412/(840(1 û (lambda naught/840)4))

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.10.3.3** *P* **65** *L* **4** # 72

Swanson, Steven — Corning Incorporated

Comment Type **TR** *Comment Status* **D**

The suggestion to support two options, Option A for angled physical contact fiber interface and Option B for flat physical contact fiber interface for the MDI requirement for 200GBASE-VR2,400GBASE-VR4, 200GBASE-SR2 and 200GBASE-SR4 is a bad idea and will cause problems in the market.

SuggestedRemedy

Pick one, either angled or non-angled but not both.

Proposed Response *Response Status* **O**

Cl **167** *SC* **167.10.3.3** *P* **65** *L* **8** # 53

Lingle, Robert — OFS

Comment Type **ER** *Comment Status* **D**

Editor's note states: "a recommendation concerning distinguishing features to inform the user if the MDI is angled or not should be considered." This item should be resolved in this draft cycle or removed, as the answer should be clear by now. It is also not required for IEEE 802.3 to provide such guidance, which is more under the purview of cabling standards.

SuggestedRemedy

Remove this editor's note

Proposed Response *Response Status* **O**

Cl **Front m** *SC* **Front matter** *P* **17** *L* **48** # 15

Dawe, Piers — Nvidia

Comment Type **E** *Comment Status* **X**

These examples, P802.3bj and IEEE P802.3bk, are history now.

SuggestedRemedy

Change to the list of post-802.3dc projects that overlap with this one, as best we know it, including cw and ck; this will help the reader.

Proposed Response *Response Status* **O**