Cl **FM** *SC* **FM** *P* **1** *L* **10** # I-7

Grow, Robert RMG Consulting

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

I think Mr. Law has assigned this project an amendment number.

SuggestedRemedy

Amendment 11

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **30** # I-8

Grow, Robert RMG Consulting

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

IEEE Std 802.3ch-2020 is now published. P802.3cr has been assigned amendment number 10.

SuggestedRemedy

Change "IEEE Std 802.3ch-20xx" to "IEEE Std 802.3ch-2020". Add "IEEE Std 802.3cr-20xx" to the end of the list and appropriately move the "and".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **1** *L* **31** # I-10

Grow, Robert RMG Consulting

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

PHY is not the acronym for Physical Layer, it is the acronym for Physical Layer Device.

SuggestedRemedy

Delete "(PHY)".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **3** *L* **1** # I-11

Grow, Robert RMG Consulting

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

PHY is not the acronym for Physical Layer, it is the acronym for Physical Layer Device.

SuggestedRemedy

Delete "(PHY)".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **3** *L* **5** # I-9

Grow, Robert RMG Consulting

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

Per the 802.3 list of terms, "Energy-Efficient Ethernet" should be hyphenated.

SuggestedRemedy

"Energy-Efficient Ethernet". Also fix on p. 63, lines 38 and 47.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **20** # I-12

Grow, Robert RMG Consulting

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

This amendment is no published.

SuggestedRemedy

Change "IEEE Std 802.3ch-20xx" to "IEEE Std 802.3ch-2020".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **20** # I-1

Lewis, Jon Dell EMC

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

IEEE Std 802.3ch has been published.

SuggestedRemedy

Change "IEEE Std 802.3ch™-20xx" to "IEEE Std 802.3ch™-2020"

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **20** # I-58

Trowbridge, Stephen — Nokia

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

P802.3ch has been published

SuggestedRemedy

Change IEEE Std 802.3chTM-20xx to IEEE Std 802.3chTM-2020

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **22** # I-13

Grow, Robert — RMG Consulting

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

This amendment has a number.

SuggestedRemedy

Insert "Amendment 8 --".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **22** # I-3

Lewis, Jon — Dell EMC

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

Amendment number is missing

SuggestedRemedy

Add "Amendment 8 --" where "--" is an em-dash

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **26** # I-14

Grow, Robert — RMG Consulting

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

Until published, the reference year should be incomplete.

SuggestedRemedy

Change "2020" to "20xx".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **28** # I-4

Lewis, Jon — Dell EMC

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

Amendment number is missing

SuggestedRemedy

Add "Amendment 9 --" where "--" is an em-dash

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **28** # I-15

Grow, Robert — RMG Consulting

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

This amendment has a number.

SuggestedRemedy

Insert "Amendment 9 --".

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **37** # I-16

Grow, Robert — RMG Consulting

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

Because this draft references Annex J2 (151.9.1), IEEE Std 802.3cr needs to precede this project in amendment number because it adds the Annex. And, P802.3cr has been assigned Amendment 10.

SuggestedRemedy

IEEE Std 802.3crTM-20xx Amendment 10 -- This amendment includes changes to IEEE Std 802.3-2018 and adds Annex J. This amendment replaces references to the IEC 60950 series of standards (including IEC 60950-1 "Information technology equipment—Safety—Part 1: General requirements") with appropriate references to the IEC 62368 "Audio/video, information and communication technology equipment" series and makes appropriate changes to the standard corresponding to the new references This amendment includes changes to IEEE Std 802.3-2018 and adds Annex J. This amendment replaces references to the IEC 60950 series of standards (including IEC 60950-1 "Information technology equipment—Safety—Part 1: General requirements") with appropriate references to the IEC 62368 "Audio/video, information and communication technology equipment" series and makes appropriate changes to the standard corresponding to the new references.

Proposed Response *Response Status* **O**

Cl **FM** *SC* **FM** *P* **12** *L* **38** # I-2

Lewis, Jon
Dell EMC

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

IEEE Std 802.3cr is currently ahead of P802.3cu in the publication order but is missing from the list of ammendments.

SuggestedRemedy

Add "IEEE Std 802.3cr™-20xx
This amendment includes changes to IEEE Std 802.3-2018 and adds Annex J. This amendment
replaces references to the IEC 60950 series of standards (including IEC 60950-1 "Information technology
equipment—Safety—Part 1: General requirements") with appropriate references to the IEC 62368
"Audio/video, information and communication technology equipment" series and makes appropriate
changes to the standard corresponding to the new references."

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **0** *L* # I-92

Nicholl, Gary
Cisco Systems, Inc.

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

Implement new FM template (Version 4.3)

SuggestedRemedy

Implement new FM template (Version 4.3), based the email from Pete Anslow to the 802.3_EDITORS reflector on 7/6/2020

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **12** *L* **20** # I-5

Maguire, Valerie
The Siemon Company

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

802.3ch has published.

SuggestedRemedy

Replace, "802.3ch-20xx" with, "802.3cg-2020" and insert "Amendment 8—" before "This amendment…" on line 22

Proposed Response *Response Status* **O**

Cl **00** *SC* **0** *P* **12** *L* **28** # I-6

Maguire, Valerie
The Siemon Company

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

Missing some template text.

SuggestedRemedy

Insert "Amendment 9—" before "This amendment…".

Proposed Response *Response Status* **O**

Cl **00** *SC* **122.8.4** *P* **79** *L* **36** # I-86

Dawe, Piers J G
Mellanox Technologies

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

Too much duplication of established TDECQ method. Also, contradictory: says specified in 121.8.5.1, 121.8.5.2, and 121.8.5.3 then repeats it all below.

SuggestedRemedy

Remove the duplicate material.

Proposed Response *Response Status* **O**

Cl **30** *SC* **30.5.1.1.2** *P* **19** *L* **12** # I-50

Ran, Adee
Intel

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

According to the style manual (18.2.2):

"Change shall be used when text or tables are being modified; therefore, strikethrough (for deletions) and underscore (for insertions) should be indicated"
and
"Insert shall be used to add new text, equations, tables, or figures in the standard".

Here an existing subclause is being modified, not a new one inserted.

SuggestedRemedy

Change the instructions to "change" (3 times) and underline the new text.

Proposed Response *Response Status* **O**

Cl **78** *SC* **78.7.4** *P* **24** *L* **7** # I-51

Ran, Adee Intel

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

According to the style manual (18.2.2):

"Change shall be used when text or tables are being modified; therefore, strikethrough (for deletions) and underscore (for insertions) should be indicated"
and
"Insert shall be used to add new text, equations, tables, or figures in the standard".

Here an existing table is being modified, not a new one inserted.

Also in the following places, page/subclause/Line:
25 80.1.4 14
26 80.4 42
32 116.1.3 18
33 116.4 38

SuggestedRemedy

Change the instruction to "change" and underline the new text. Apply in all listed places.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.1** *P* **37** *L* **34** # I-43

Lewis, David Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

In footnote a, change must to shall.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.1** *P* **38** *L* **1** # I-52

Ran, Adee Intel

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

According to the style manual (18.2.2):

"Change shall be used when text or tables are being modified; therefore, strikethrough (for deletions) and underscore (for insertions) should be indicated"
and
"Insert shall be used to add new text, equations, tables, or figures in the standard".

Here a figure is being repalced and its title is changed (the "change" instruction can't be applied to a figure).

SuggestedRemedy

Change the instruction to "replace" the figure and "change" the title. Remove the underlines in the figure.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6** *P* **40** *L* **16** # I-22

Dudek, Michael Marvell

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

In 140.10a.1 there are requirements for interoperation for the output power as well as the channel loss. This should be stated here.

SuggestedRemedy

Change "channel requirements" to "Channel and 100GBASE-FR1 transmitter average power requirements.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6** *P* **45** *L* **15** # I-48

Zhang, Bo Inphi Corporation

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

Y axis is listed as OMA_outer (dBm) whereas the Figure and the sub-section is on Rx sensitivity

SuggestedRemedy

Suggest change the Y axis to Receiver Sensitivity.

This proposed change also applies to page 51 (Fig 140-5), and page 74 (Fig 151-4).

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **41** *L* **32** # I-60

Sommers, Scott — Molex Incorporated

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

In Table 140-6; change the contents for "Wavelength (range)" from “1304.5 to 1317.5” to “1300 to 1320”. Reason: To enable uncooled DFB laser application for industrial temperature operation.

SuggestedRemedy

1300 to 1320

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **41** *L* **37** # I-63

Dawe, Piers J G — Mellanox Technologies

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

100GBASE-DR and 100GBASE-FR1 are expected to be interoperable (whether this standard says so or not). So the 100GBASE-FR1 transmitter must not be weaker than the 100GBASE-DR one. It's not worth making a special case for 0.2 dB that most transmitters can't use anyway, without super-high extinction ratio.

SuggestedRemedy

Change 100GBASE-FR1 average launch power (min) from -3.1 to -2.9, same as for 100GBASE-DR. As a consequence, change average receive power (min) from -7.1 to -6.9 dBm.
In 140.10a.1, delete "and the 100GBASE-FR1 transmitter average power is greater than or equal to the value for average launch power (min) for 100GBASE-DR in Table 140–6."

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **41** *L* **51** # I-64

Dawe, Piers J G — Mellanox Technologies

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

The receiver must be protected from over-emphasised very bad signals as in all other optical PAM4 clauses, 400ZR and 100GBASE-ZR. Over/under-shoot and peak-to-peak power don't exclude all of these (but if you believe they do, the K limit won't hurt you).

SuggestedRemedy

Limit TDECQ - 10log10(Ceq) and TECQ - 10log10(Ceq) for 100GBASE-FR1 and 100GBASE-LR1 to 3.4 dB.
As there's now no need to generate such bad signals for Rx stress test or test the receiver against them, in Table 140-7 Conditions of stressed receiver sensitivity test, add limits for SECQ – 10log10(Ceq) (max) of 3.4 dB.
Remove the inserted wording in 140.7.5 and 5th item in list in 140.7.10.
Similarly for 400GBASE-FR4 400GBASE-LR4-6.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **7** # I-65

Dawe, Piers J G — Mellanox Technologies

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

100GBASE-DR and 100GBASE-FR1 are interoperable. So the 100GBASE-FR1 transmitter must not transmit a worse signal than the 100GBASE-DR one.

SuggestedRemedy

Limit TECQ - 10log10(Ceq) for 100GBASE-FR1 to 3.4 dB.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **8** # I-66

Dawe, Piers J G — Mellanox Technologies

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

I can see that | TDECQ - TECQ | (max) limits sort-of dispersion penalty, but as we can't expect that the minimum penalty is at zero dispersion, it doesn't tell us the sensitivity to dispersion after a long link. Also, I would prefer a transmitter with low back-to-back penalty than one with high penalty at each dispersion - at least it's good somewhere. This spec rejects mediocre but acceptable transmitters simply because they are good when used back-to-back, which is silly.

SuggestedRemedy

Delete the "| TDECQ - TECQ | (max)" row.
Similarly for 400GBASE-FR4 400GBASE-LR4-6.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **14** # I-67

Dawe, Piers J G — Mellanox Technologies

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

The transmitter transition time (max) is probably ineffective: only the most exceptional signals could pass this and fail TDECQ. But an effective spec usefully protects the receiver against ultra-slow signals that are hard to receive.

SuggestedRemedy

Change 17 ps to 16 ps for for 100GBASE-FR1 and 100GBASE-LR1.
Similarly for 400GBASE-FR4 400GBASE-LR4-6.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **17** # I-68

Dawe, Piers J G — Mellanox Technologies

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

The transmitter peak-to-peak power (max) limits are 0.8 and 0.5 dB above the max OMA limits. As these PMDs may be used back-to-back with zero loss, this impacts receiver design.

SuggestedRemedy

Consider reducing these, particularly for 100GBASE-LR1, by a couple of tenths of a dB.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **25** # I-69

Dawe, Piers J G — Mellanox Technologies

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

This note "Average launch power (min) is informative and not the principal indicator of signal strength" dates back to when OMA was new and unfamiliar. Part of it is contrary to the style manual: not allowed to mix informative and normative in a table, although it's grandfathered in. Depending on the exact values, it may be technically wrong, and there was no need to say it anyway.

SuggestedRemedy

Change to just "Average launch power (min) is not the principal indicator of signal strength".
Same in Table 151-7 (Tx).

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **28** # I-44

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

In footnote b, change must to shall.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **32** # I-23

Dudek, Michael — Marvell

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

It does not say at what point the figure and text should be inserted.

SuggestedRemedy

Add "at the end of section 140.6.1"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **42** *L* **32** # I-53

Ran, Adee Intel

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

Where are the new table and text inserted?

SuggestedRemedy

Add to the instruction "after Table 140–6" or wherever it is intended.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.1** *P* **43** *L* **21** # I-70

Dawe, Piers J G Mellanox Technologies

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

I wonder if putting the knee at 1.4 dB is a bit high, these days? This applies more to 100GBASE-FR1 where the dispersion penalty might be small.

SuggestedRemedy

Consider moving the knee to 1.2 dB by reducing the minimum OMA. If wished, the Average launch power (min) for 100GBASE-LR1 could be reduced in step.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.2** *P* **43** *L* **32** # I-24

Dudek, Michael Marvell

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

It does not say at what point the figure and text should be inserted.

SuggestedRemedy

Add "at the end of section 140.6.2"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.2** *P* **43** *L* **38** # I-54

Ran, Adee Intel

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

Where are the new figure and text inserted?

In the next page, Table 140-7 is changed but there is no coresponding editorial instruction.

SuggestedRemedy

Change the instruction to "change" and include context to identify the location of the new text. Add "insert" instruction for the figure.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.2** *P* **44** *L* **9** # I-61

Sommers, Scott Molex Incorporated

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

In Table 140-7; change the contents for "Wavelength (range)" from “1304.5 to 1317.5” to “1300 to 1320”. Reason: To enable uncooled DFB laser application for industrial temperature operation.

SuggestedRemedy

1300 to 1320

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.2** *P* **44** *L* **18** # I-25

Dudek, Michael Marvell

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

There is an erroneous footnote reference "e" on the receiver sensitivity row. (These aren't test conditions).

SuggestedRemedy

Delete the footnote reference

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **46** *L* **21** # I-91

Cole, Christopher R — II-VI

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

The inclusion of a section reference in Table 140-8 for "Maximum discrete reflectance" for 100GBASE-FR1 and 100GBASE-LR1 is cumbersome to use and inconsistent with changes that the 802.3cu working group made in 802.3cu D2.2 to remove similar references in other tables. Also in Table 140-14 in section 140.10.2.2 (page 56), having the units along side the values within the table, rather than as a separate "units column", is inconsistent with practice throughout the rest of the document.

Similar comments against Table 151-9 (page 75) and Table 151-15 (page 89) in Clause 151.

This topic was discussed during the 802.3cu ad-hoc conference call on 14 August 2020, in conjuction with presentation https://www.ieee802.org/3/cu/public/cu_adhoc/cu_archive/cole_3cu_adhoc_081420_v2.pdf.

SuggestedRemedy

Implement the proposed changes to Table 140-8, Table 140-14, Table 151-9 and Table 151-15, and associated footnotes, as captured in https://www.ieee802.org/3/cu/public/cu_adhoc/cu_archive/cole_3cu_adhoc_081420_v2.pdf.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **46** *L* **32** # I-26

Dudek, Michael — Marvell

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

It does not say at what point the figure and text should be inserted.

SuggestedRemedy

Add "at the end of section 140.6.3"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **46** *L* **34** # I-71

Dawe, Piers J G — Mellanox Technologies

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

Wordsmithing for clarity and accuracy: change:
a The channel insertion loss is calculated using the maximum distance specified in Table 140-5 for 100GBASE-DR and 100GBASE-FR1 and cabled optical fiber attenuation of 0.5 dB/km plus an allocation for connection and splice loss given in 140.10.2.1.
b The channel insertion loss is calculated using the maximum distance specified in Table 140-5 for 100GBASE-LR1 and fiber attenuation of 0.43 dB/km at 1304.5 nm plus an allocation for connection and splice loss given in 140.10.2.1.

SuggestedRemedy

To:
a The channel insertion losses for 100GBASE-DR and 100GBASE-FR1 are calculated using the maximum distances specified in Table 140-5 and cabled optical fiber attenuation of 0.5 dB/km plus an allocation for connection and splice loss given in 140.10.2.1.
b The channel insertion loss for 100GBASE-LR1 is calculated using the maximum distance specified in Table 140-5 and fiber attenuation of 0.43 dB/km at 1304.5 nm plus an allocation for connection and splice loss given in 140.10.2.1.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **46** *L* **43** # I-55

Ran, Adee — Intel

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

Where are the new figures and text inserted?

SuggestedRemedy

Add to the instruction "after Table 140–8" or wherever it is intended.

Add the numbers of the new figures, 140-2c and 140-2d.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.6.3** *P* **46** *L* **46** # I-59

Stassar, Peter — Huawei Technologies Co. Ltd

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

The clarification of Figures 140-2c and 140-2d are insufficient to make the reader understand the relationship between these figures and the illustrative power budget in Table 140-8. Also applies to new Clause 151, subclause 151.7.3.

SuggestedRemedy

The clarification needs to be expanded. A presentation with specific text proposals will be submitted to the relevant comment resolution meeting(s).

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5** *P* **49** *L* **37** # I-47

Maki, Jeffery — Juniper Networks, Inc.

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

No subclause appears or external-subclause addition appears for "Channel requirements" including a table providing "Transmitter compliance channel specifications" for 100GBASE-FR1 and 100GBASE-LR1.

SuggestedRemedy

Add subclause or insert external-subclause addition for "Channel requirements" including a table providing "Transmitter compliance channel specifications" for 100GBASE-FR1 and 100GBASE-LR1.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5** *P* **49** *L* **42** # I-37

Lewis, David — Lumentum Inc.

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

There are no reference channels for TDECQ testing of 100GBASE-FR1 or 100GBASE-LR1 at the linked locations (121.8.5.2).

SuggestedRemedy

Change text from "…measured using the methods specified in 121.8.5.1, 121.8.5.2, and 121.8.5.3.." to "…measured using the methods specified in 121.8.5.1, 121.8.5.2 for 100GBASE-DR only, and 121.8.5.3….". Insert a new paragraph before 140.7.5.1: " 100GBASE-FR1 and 100GBASE-LR1 transmitters are tested using optical channels that meet the requirements in Table 140-10a. Insert the new Table 140-10a in the same format as Table 151-12 but with PMD types 400GBASE-FR4 replaced by 100GBASE-FR1 and 400GBASE-LR4-6 replaced by 100GBASE-LR1. Change the coefficient values for minimum and maximum dispersion of 100GBASE-LR1 from 0.138 to 0.23. Change footnotes with editorial license.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5** *P* **49** *L* **44** # I-49

Zhang, Bo — Inphi Corporation

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

This paragraph ended with and incomplete phrase, 'with the following exceptions:'

SuggestedRemedy

Suggest complete the exception if any or remove this phrase at the end of this paragraph in section 140.7.5 Transmitter and dispersion eye closure for PAM4 (TDECQ).

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5a** *P* **50** *L* **7** # I-27

Dudek, Michael — Marvell

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

There is only one lane for these Phys

SuggestedRemedy

Delete "of each lane"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5a** *P* **50** *L* **8** # I-72

Dawe, Piers J G — Mellanox Technologies

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

Never write "shall be measured" in 802.3; it's not a test spec. Use the standard form of words.

SuggestedRemedy

The TECQ of each lane shall be within the limits given in Table 140–6 for 100GBASE-FR1 and
100GBASE-LR1 if measured measured using the methods specified for TDECQ in 140.7.5, except that the test fiber is not used. The test pattern specified for TECQ is given in Table 140–10.
Similarly in 151.8.6.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5b** *P* **50** *L* **10** # I-73

Dawe, Piers J G — Mellanox Technologies

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

Misleading name: "Transmitter over/under-shoot"

SuggestedRemedy

Change to "Signal over/under-shoot" or "Relative over/under-shoot" or "Over/under-shoot". Also in 151.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5b** *P* **50** *L* **13** # I-74

Dawe, Piers J G — Mellanox Technologies

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

percentage

SuggestedRemedy

Delete: we don't say TDECQ decibellage. The % is in the table. Calling it "relative overshoot" makes the point another way.
Similarly in 151.8.9 if it remains.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5b** *P* **50** *L* **20** # I-75

Dawe, Piers J G — Mellanox Technologies

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

Wordsmithing: change:
Transmitter overshoot is defined as the maximum power from the transmitter (Pmax) relative to the level 3
power and the transmitter OMAouter according to:

SuggestedRemedy

to:
Signal overshoot is defined as the maximum power (Pmax) of a signal above the level 3 power and relative to the signal's OMAouter according to:
Similarly for undershoot. Same in 151.8.9 if it remains.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5b** *P* **50** *L* **31** # I-76

Dawe, Piers J G — Mellanox Technologies

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

A 1% hit ratio is very lax, much different to the spec SER. This isn't the same situation as a traditional mask hit ratio.

SuggestedRemedy

Determine what correlates to receiver performance. If appropriate, change to 1e-3, with corresponding change to the limit (see rodes_3cu_01a_052620 for measurements on one particular build standard). Use explicit scope noise loading to get consistent results with strong and weak signals.
Same in 151.8.9 if it remains.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5c** *P* **50** *L* **45** # I-77

Dawe, Piers J G — Mellanox Technologies

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

Misleading name: "Transmitter peak-to-peak power"

SuggestedRemedy

Change to "Signal peak-to-peak power" or "Peak-to-peak power" (or see another comment). Also in 151.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5c** *P* **50** *L* **49** # I-94

Rodes, Roberto — II-VI

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

There is no reason to spec Transmitter peak-to-peak over fiber. Peak-to-peak power over fiber will always be lower than back to back. It creates confusion for people using the specs.

SuggestedRemedy

Replace text:
Transmitter peak-to-peak power is measured using the waveform captured for the TECQ test (see 140.7.5a), but without the reference equalizer being applied in each case.

With:
Transmitter peak-to-peak power is measured using the waveforms captured for the TDECQ test (see 140.7.5) and the waveform captured for the TECQ test (see 140.7.5a), but without the reference equalizer being applied in each case.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5c** *P* **50** *L* **52** # I-79

Dawe, Piers J G — Mellanox Technologies

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

The positive and negative peaks of an optical signal can be very different. An obvious example is a directly modulated laser, but other transmitters are not symmetric also, and chromatic dispersion can make this worse. An optical receiver copes with positive and negative excursions from the mean and needs protection from both extremes; the positive and negative peaks must be limited separately.

SuggestedRemedy

Change "Transmitter peak-to-peak power" which is Pmax - Pmin to "Transmitter power excursion", defined as max(Pmax-Paverage, Paverage-Pmin). Take 3 dB off the limits in Table 140-6.
Or, define "effective peak-to-peak power" as 2*max(Pmax-Paverage, Paverage-Pmin).
Make similar changes in Clause 151.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.5c** *P* **50** *L* **50** # I-78

Dawe, Piers J G — Mellanox Technologies

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

For 100GBASE-LR1, the combination of the loss in a long channel and the over/under-shoot limit means that limiting peak-to-peak power at TP3 may be unnecessary. For 100GBASE-FR1, the loss might be only 0.6 dB.

SuggestedRemedy

Consider not requiring compliance to peak-to-peak power for 100GBASE-LR1 at TP3. For 100GBASE-FR1, adjust the measured result by the adding the loss of the test channel and subtracting 0.5 dB. It may be easier to create separate entries and limits for peak-to-peak power for 100GBASE-LR1 at TP2 and at TP3.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.9** *P* **51** *L* **15** # I-80

Dawe, Piers J G — Mellanox Technologies

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

Here, the penalty in the signal for RS testing is called SECQ, while in 140.6.3 and p52 line 7 it's TECQ. Rule says use the same name for the same thing, every time.

SuggestedRemedy

Options are:
Change to SECQ to align with base document. Consider repurposing SECQ to "signal eye closure (quaternary)"; or
Define ECQ "eye closure (quaternary)" for general use including when it's not necessarily of transmitted signal at TP2 (TECQ), dispersed signal at TP3 (TDECQ), or stressed signal at TP3 (SECQ).
Adjust 151 for consistency.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.9** *P* **51** *L* **26** # I-56

Ran, Adee Intel

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

Is Figure 140-5 a new figure, a replacement, or no change to existing figure 140-5?

SuggestedRemedy

If no change, separate the editorial instruction to two changes, before and after the figure.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.10** *P* **52** *L* **23** # I-28

Dudek, Michael Marvell

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

The RINx does not have to meet the requirements for all of the Phys just the one being tested.

SuggestedRemedy

Change "for 100GBASE-DR,
100GBASE-FR1, and 100GBASE-LR1." to "for the PHY under test"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.10** *P* **52** *L* **35** # I-81

Dawe, Piers J G Mellanox Technologies

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

Do we need to say that the stressed receiver conformance test signal obeys the rules for over/under-shoot and peak-to-peak power (if applicable)?

SuggestedRemedy

Add another item to the list saying so.
Also in 151.8.13.2.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.7.10** *P* **52** *L* **35** # I-29

Dudek, Michael Marvell

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

The overshoot/undershoot for the FR1/LR1 transmitters is limited. Testing a receiver with more than this would over-stress it.

SuggestedRemedy

Add an additional bullet. "For 100GBASE-FR1 and 100GBASE-LR1 the transmitter over/undershoot does not exceed the value specified in table 140-6 for the PHY under test".

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.8.1** *P* **52** *L* **38** # I-17

Grow, Robert RMG Consulting

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

This subclause has no text.

SuggestedRemedy

Delete the heading.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.9** *P* **54** *L* **21** # I-62

Sommers, Scott Molex Incorporated

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

In the note b for Table 140-11, change note b," b Over the wavelength range 1304.5 to 1317.5 to 1300-1320. Reason: To enable uncooled DFB laser application for industrial temperature operation.

SuggestedRemedy

1300 to 1320

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.9** *P* **54** *L* **23** # I-41

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

In footnote c, change "system must tolerate" to "system shall tolerate"

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.10.1** *P* **55** *L* **20** # I-82

Dawe, Piers J G — Mellanox Technologies

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

Tidy up

SuggestedRemedy

Make the table full width. Also Table 151-14.

Proposed Response *Response Status* **O**

Cl **140** *SC* **140.10a** *P* **56** *L* **45** # I-35

Lewis, David — Lumentum Inc.

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

Interoperation between PMDs is not a requirement. This information should be informative to advise those who might want to interoperate between different PMDs.

SuggestedRemedy

In the headings for 140.10a, 140.10a.1, 140.10a.2 and 140.10a.3 change "Requirements for interoperation…" to "Informative guidance for interoperation…". Change the captions for Tables 140-15 and 140-16 from "Channel insertion loss requirements…" to "Channel insertion loss ranges...".

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.1** *P* **63** *L* **40** # I-42

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

In footnote a, change must to shall.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.3.2** *P* **65** *L* **36** # I-38

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

change "must be kept within limits" to "shall be kept within limits".

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.4** *P* **66** *L* **51** # I-46

Lewis, David — Lumentum Inc.

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

The use of will is deprecated and cannot be used when stating mandatory requirements, will is only used in statements of fact

SuggestedRemedy

change "these test points will not typically be accessible" to "these test points are not typically accessible"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.5.4** *P* **68** *L* **10** # I-57

Huber, Thomas — Nokia

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

The paragraph above Table 151-4 and the final paragraph of clause 151.5.4 (two paragraphs below the table) are both providing additional information on how to interpret the information in the table. It would be better to combine these into a single paragraph, above the table.

SuggestedRemedy

Change the paragraph above Table 151-4 to read as shown below (inserting the contents of the last paragraph as the third sentence), and delete the last paragraph in clause 151.5.4.

SIGNAL_DETECT shall be a global indicator of the presence of optical signals on all four lanes. The value
of the SIGNAL_DETECT parameter shall be generated according to the conditions defined in Table 151–4.
Various implementations of the Signal Detect function are permitted by this standard, including
implementations that generate the SIGNAL_DETECT parameter values in response to the amplitude of the
modulation of the optical signal and implementations that respond to the average optical power of the
modulated optical signal. The PMD receiver is not required to verify whether a compliant 400GBASE-R signal is being received. This
standard imposes no response time requirements on the generation of the

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.5.4** *P* **68** *L* **22** # I-83

Dawe, Piers J G — Mellanox Technologies

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

There is no average receive power, each lane (min) in Table 151-8 for 400GBASE-FR4 and 400GBASE-LR4-6. There's one for each.

SuggestedRemedy

Either delete "for 400GBASE-FR4 and 400GBASE-LR4-6" (as Table 140-4) or change "and" to "or" and modify Table 140-4.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.5.4** *P* **68** *L* **30** # I-40

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

change "implementations must " to "implementations should"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.7.1** *P* **71** *L* **15** # I-95

Rodes, Roberto — II-VI

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

FR4 and LR4-6 spec on 'Average launch power, each lane (max)' constrains effective Tx OMA range.
This is an unnecessary constrain since receivers overload is mainly affected by max OMA, not AOP.
Even FR1 and LR1 spec, with the same Rx technology and no Rx demux loss, have higher maximum AOP spec.
This flexibility in AOP will be especially important to achieve uncooled operation.
We recommend increasing spec 'Average launch power, each lane (max)' to 0.7 dB higher than spec 'Outer Optical Modulation Amplitude (OMAouter), each lane (max)'
With this change, the effective maximum OMA per lane is maintained for extinction ratios of 4dB and higher.

SuggestedRemedy

Change spec on 'Average launch power, each lane (max)' to 4.4dB for FR4 and 5.1dB for LR4-6

Same changes to Average receive power, each lane (max).

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.7.1** *P* **71** *L* **23** # I-84

Dawe, Piers J G — Mellanox Technologies

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

The difference in launch power between any two lanes is limited to 4 dB here, while the rows above limit it to 3.9 or 4.1 dB.

SuggestedRemedy

Delete the row or tighten the limit e.g to 3 dB. Adjust the receive table in step.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.7.3** *P* **75** *L* **21** # I-30

Dudek, Michael — Marvell

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

Footnotes "a" and "b" only differ by the name of the Phy. It would be better to combine them.

SuggestedRemedy

Make a single footnote referenced from the parameter column. Footnote to say "The channel insertion loss is calculated using the maximum distance specified in Table 151–6 and fiber attenuation of 0.5 dB/km plus an allocation for connection and splice loss given in 151.11.2.1"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.4** *P* **79** *L* **11** # I-85

Dawe, Piers J G — Mellanox Technologies

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

Apart from the first two sentences, this is identical to 122.8.4.

SuggestedRemedy

Remove all but the first two sentences; refer to 122.8.4.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.5** *P* **79** *L* **40** # I-31

Dudek, Michael — Marvell

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

The bandwidth is not equivalen to any reference receiver. It is the specific reference receiver for that PHY.

SuggestedRemedy

Change "equivalent to a reference receiver" to "equivalent to that of the reference receiver"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.9** *P* **82** *L* **26** # I-88

Dawe, Piers J G — Mellanox Technologies

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

Put the subclauses in 151.8 the same order as in 140.7 (following D2.1 comment 65) and the same order as in the Tx and Rx tables. But, because we now have several specs derived from the same measured waveform, more than in previous projects, it's time to group them all together.

SuggestedRemedy

In the Tx tables (140-6 and 151-7):
TDECQ
TDECQ - 10log10(Ceq)
TECQ
| TDECQ - TECQ | if it remains
Transmitter over/under-shoot
Transmitter peak-to-peak power
Transmitter transition time
Average launch power of OFF transmitter *OR* Extinction ratio
In the Definition of optical parameters and measurement methods, e.g.:
151.8.5 Transmitter and dispersion eye closure for PAM4 (TDECQ)
151.8.6 Transmitter eye closure for PAM4 (TECQ)
151.8.7 Transmitter over/under-shoot
151.8.8 Transmitter peak-to-peak power
151.8.9 Transmitter transition time
151.8.10 Extinction ratio

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.9** *P* **82** *L* **26** # I-87

Dawe, Piers J G — Mellanox Technologies

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

Too much duplication of over/under-shoot method.

SuggestedRemedy

Delete from line 31 and say it is analogous to 140.7.5b.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.10** *P* **83** *L* **10** # I-93

Rodes, Roberto — II-VI

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

There is no reason to spec Transmitter peak-to-peak over fiber. Peak-to-peak power over fiber will always be lower than back to back. It creates confusion for people using the specs.

SuggestedRemedy

Replace text:
Transmitter peak-to-peak power is measured using the waveforms captured for the TDECQ test (see 151.8.5) and the waveform captured for the TECQ test (see 151.8.6), but without the reference equalizer being applied in each case.

With:
Transmitter peak-to-peak power is measured using the waveform captured for the TECQ test (see 151.8.6), but without the reference equalizer
being applied in each case.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.10** *P* **83** *L* **11** # I-89

Dawe, Piers J G — Mellanox Technologies

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

The combination of the loss in a long channel and the over/under-shoot limit means that the peak-to-peak power at TP3 has to be at least ~0.6 dB or ~1.8 dB less than at TP2.

SuggestedRemedy

For 400GBASE-FR4, adjust the measured result by the adding the loss of the test channel and subtracting 0.5 dB.
For 400GBASE-LR4, adjust the measured result by the adding the loss of the test channel and subtracting 1.5 dB.
It may be easier to create separate entries and limits for peak-to-peak power at TP2 and at TP3.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.8.13** *P* **83** *L* **43** # I-90

Dawe, Piers J G — Mellanox Technologies

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

Too much duplication of stressed receiver sensitivity method. Figure wastes the reader's time - is it identical to Figure 122-8, if not what ddiffers?

SuggestedRemedy

Define 151's SRS by reference to 121 and 122, in the style of 140.7.10.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.9.4** *P* **86** *L* **22** # I-45

Lewis, David — Lumentum Inc.

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

The use of will is deprecated and cannot be used when stating mandatory requirements, will is only used in statements of fact

SuggestedRemedy

Change "will be met" to "are met"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.10** *P* **87** *L* **42** # I-39

Lewis, David — Lumentum Inc.

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

The use of the word must is deprecated and cannot be used when stating mandatory requirements, must is used only to describe unavoidable situations.

SuggestedRemedy

In footnote c, change must to shall.

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.11.2.1** *P* **88** *L* **29** # I-32

Dudek, Michael — Marvell

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

There is 1.3dB additional insertion loss allowed in the LR4-6 budget (table 151-9). It would be good to point out that this can be used for additional connection loss.

SuggestedRemedy

Insert an extra sentence after the example sentence. Sentence to say. "The additional insertion can also be allocated to connection loss resulting in a total connection loss of 3.3dB."

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.12** *P* **89** *L* **34** # I-36

Lewis, David — Lumentum Inc.

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

Interoperation between PMDs is not a requirement. This information should be informative to advise those who might want to interoperate between different PMDs.

SuggestedRemedy

In the heading for 151.12 change "Requirements for interoperation…" to "Informative guidance for interoperation…". Change the captions for Tables 151-16 from "Channel insertion loss requirements…" to "Channel insertion loss ranges...".

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.13.4.2** *P* **93** *L* **15** # I-33

Dudek, Michael — Marvell

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

The value/comment is wrong.

SuggestedRemedy

Change "local fault" to "transmit fault"

Proposed Response *Response Status* **O**

Cl **151** *SC* **151.13.4.2** *P* **93** *L* **18** # I-34

Dudek, Michael — Marvell

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

The value/comment is wrong.

SuggestedRemedy

Change "local fault" to "receive fault"

Proposed Response *Response Status* **O**