Cl **FM** *SC* **FM** *P* **9** *L* **31** # 1

Anslow, Pete Ciena

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

"The following members of the individual balloting" has a double underline

SuggestedRemedy

Remove the underline

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.1** *P* **23** *L* **13** # 2

Anslow, Pete Ciena

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

The changes shown do not correctly reflect the base document as modified by IEEE Std 802.3bq-2016.
The "and" in strikethrough is in the wrong place and "25GBASE-T" should not be underlined.

SuggestedRemedy

Change to "25GBASE-KR-S, 25GBASE-SR, and 25GBASE-T, 25GBASE-LR, and 25GBASE-ER" where the first "and " is in strikethrough font and just ", 25GBASE-LR, and 25GBASE-ER" is underlined.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.5** *P* **25** *L* **14** # 3

Anslow, Pete Ciena

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

space missing in "2016)and"

SuggestedRemedy

Change to "2016) and"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **108** *SC* **108.7.4.2** *P* **27** *L* **29** # 4

Anslow, Pete Ciena

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

Comments #43 and #83 against D2.0 were ACCEPT:
"Show the entry in the Status column as a change from the version in 802.3by."

SuggestedRemedy

In "BEC*(SR or LR or ER):M" show "(" and " or LR or ER)" in underline font

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.11** *P* **39** *L* **50** # 5

Anslow, Pete Ciena

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

"Table 114-12" should be a cross-reference

SuggestedRemedy

Make it a cross-reference

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.6** *P* **20** *L* **10** # 6

Anslow, Pete Ciena

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

As the changes to table 45-7 involve some deletion, an insert editing instruction is not appropriate.

SuggestedRemedy

Change the editing instruction to "Change two reserved rows in Table 45-7 (as modified by IEEE Std 802.3bq-2016) as follows (unchanged rows not shown):
Show "25GBASE-ER PMA/PMD", "1 1 0 1 0 1 = 25GBASE-LR PMA/PMD" and "1 1 0 1 0 0 = reserved" in underline font.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.2** *P* **23** *L* **22** # 7

Anslow, Pete Ciena

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

The text "in Clause 113 for 25GBASE-T," has been added in D2.1.
Where did this come from?
IEEE Std 802.3bq-2016 added "d) The MDI as specified in Clause 113 for 25GBASE-T uses a 4 lane data path."

SuggestedRemedy

Delete "in Clause 113 for 25GBASE-T," from item c)

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.2** *P* **23** *L* **31** # 8

Anslow, Pete Ciena

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

The text "25GBASE-T, " has been added in D2.1.
Where did this come from?
IEEE Std 802.3bq-2016 added a new third paragraph to cover 25GBASE-T which is not covered by the term "25GBASE-R"

SuggestedRemedy

Delete "25GBASE-T, " from 105.1.3

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.12** *P* **41** *L* **2** # 9

Anslow, Pete Ciena

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

As type was changed to types in the name of the clause by comment #84, this should be reflected in the title of 114.12 and the text in 114.12.1

SuggestedRemedy

In the title of 114.12 and the text in 114.12.1, change "type" to "types"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.7.2** *P* **36** *L* **46** # 10

Anslow, Pete Ciena

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

The text "if measured" has been changed to "when measured".
This text was proposed to be changed by comment #87, but this was REJECTed.
Why was a change made?
The modified text can be read to say that this measurement must be made, which is not the intent.

SuggestedRemedy

Change "when measured" back to "if measured" as it was in D2.0.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.11** *P* **39** *L* **52** # 11

Anslow, Pete Ciena

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

The text in 114.11 would be improved by following that in 87.12 more closely.

SuggestedRemedy

Change "given in Table 114-12" to "given in Table 114-12 for the two link directions separately"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.11** *P* **40** *L* **31** # 12

Anslow, Pete Ciena

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

The two footnotes to Table 114-12 do not come from the equivalent table in 87.12 and cause more confusion than clarity.

SuggestedRemedy

Delete both footnotes

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Propose to make similar to table in 87.12.

Cl **114** *SC* **114.11** *P* **40** *L* **27** # 13

Anslow, Pete Ciena

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

The insertion loss requirements in Table 114-12 do not seem to be correct.
LR Tx to ER Rx
The LR transmitter has an average launch power of -7 dBm min and 2 dBm max
The ER receiver can receive an average power of -21 dBm min and -4 dBm max
This limits the LR Tx to ER Rx channel insertion loss to be between 14 dB and 6 dB
At max TDP, the LR transmitter has an OMA of -5 + 2.7 = -2.3 dBm min and 2.2 dBm max
For max TDP the ER receiver sensitivity OMA is -19 + 2.7 = -16.3 dBm and overloads at -4 dBm
This limits the LR Tx to ER Rx channel insertion loss to be between 14 dB and 6.2 dB. As this is the more stringent requirement, this sets the values for this direction.
ER Tx to LR Rx
The ER transmitter has an average launch power of -3 dBm min and 6 dBm max
The LR receiver can receive an average power of -13.3 dBm min and 2 dBm max
This limits the ER Tx to LR Rx channel insertion loss to be between 10.3 dB and 4 dB
At max TDP, the ER transmitter has an OMA of -1 + 2.7 = 1.7 dBm min and 6 dBm max
For max TDP the LR receiver sensitivity OMA is -11.3 + 2.7 = -8.6 dBm and overloads at 2.2 dBm
This limits the ER Tx to LR Rx channel insertion loss to be between 10.3 dB and 3.8 dB. As the average power requirements are more stringent, they set the values for this direction.

SuggestedRemedy

For LR Tx to ER Rx change the min loss to 6.2 dB and the max loss to 14 dB.

For ER Tx to LR Rx change the max loss to 10.3 dB.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Discuss. Existing values were based on practical values for attenuators and their tolerance. Loss range was intended to maintain some margin from extremes. But if group prefers to specify full range of loss, then can change as proposed.

Cl **105** *SC* **105.1.1** *P* **23** *L* **13** # 14

Law, David HPE

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

As IEEE Std 802.3bq 25GBASE-T is an approved IEEE standard the base text at the end of the first paragraph of subclause reads '... 25GBASE-KR-S, 25GBASE-SR, and 25GBASE-T.'. On that basis the change text should read '... 25GBASE-KR-S, 25GBASE-SR, <S>and </S>25GBASE-T<U>, 25GBASE-LR, and 25GBASE-ER</U>.

SuggestedRemedy

See comment.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.2** *P* **23** *L* **16** # 15

Law, David HPE

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

Rather than modify item c) of subclause 105.1.2 to add 25GBASE-T the published IEEE Std 802.3bq-2016 25GBASE-T standard adds a new item d) to the list that reads 'd) The MDI as specified in Clause 113 for 25GBASE-T uses a 4 lane data path.' (see IEEE Std 802.3bq-2016 page 69). I believe that this is because item c) lists the single-lane data path PHYs yet 25GBASE-T uses a 4 lane data path. The change to item c) in IEEE P802.3cc draft D2.1 however adds 25GBASE-T to the item c) list, as well as 25GBASE-LR, and 25GBASE-ER. I don't believe it is correct to add 25GBASE-T and this change should be removed.

SuggestedRemedy

Suggest that:

[1] The subclause 105.1.2 editing instructions text '... (as inserted by IEEE Std 802.3by-2016 and modified by IEEE Std 802.3bq- 2016) ...' be changed to read '... (as inserted by IEEE Std 802.3by-2016) ...'.
[2] The subclause 105.1.2 item c) change text be changed to read '... 25GBASE-KR-S, <S>or </S>in Clause 112 for 25GBASE-SR<U>, or in Clause 114 for 25GBASE-LR and 25GBASE-ER</U> uses a single-lane data path.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.3** *P* **23** *L* **27** # 16

Law, David HPE

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

Typo.

SuggestedRemedy

The text '... by Std 802.3by-2016 ...' should read '... by IEEE Std 802.3by-2016 ...'.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **105** *SC* **105.1.3** *P* **23** *L* **32** # 17

Law, David HPE

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

Rather than modify the second paragraph of 105.1.3 to add 25GBASE-T the published IEEE Std 802.3bq-2016 25GBASE-T standard adds a new third paragraph. I believe that this is because the second paragraph describes 64B/66B PHYs which I don't believe 25GBASE-T is. The change to the second paragraph of 105.1.3 in IEEE P802.3cc draft D2.1 however adds 25GBASE-T, as well as 25GBASE-LR, and 25GBASE-ER. I don't believe this is correct and should be removed.

SuggestedRemedy

Suggest that:

[1] The subclause 105.1.3 editing instructions text '... (as inserted by Std 802.3by-2016 and modified by IEEE Std 802.3bq- 2016) ...' be changed to read '... (as inserted by IEEE Std 802.3by-2016) ...'.
[2] The subclause 105.1.3 change text be changed to read '... 25GBASE-KR-S, <S>and </S>25GBASE-SR<U>, 25GBASE-LR, and 25GBASE-ER</U>.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **45** *SC* **45.2.1.14b** *P* **21** *L* **23** # 18

Slavick, Jeff Broadcom Limited

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

100G, 200G, 400G have a bit indicating when the PMA supports remote loopback Ability bit. This bit is missing from the 25GE extended ability register

SuggestedRemedy

Define bit 15 of the 25G extended ability register (1.19) to be:
1.19.15 25G PMA remote loopback
ability
1 = 25G PMA has the ability to perform a remote loopback function
0 = 25G PMA does not have the ability to perform a remote loopback function
RO

45.2.1.14b.aa 25G PMA remote loopback ability (1.19.15)
When read as a one, bit 1.19.15 indicates that the 25G PMA is able to perform the remote loopback function. When read as a zero, bit 1.19.15 indicates that the 25G PMA is not able to perform the remote loopback function. If a 25G PMA is able to perform the remote loopback function, then it is controlled using the PMA remote loopback bit 1.0.1 (see 45.2.1.1.4).

Proposed Response *Response Status* **W**

PROPOSED REJECT.

IEEE Std 802.3by-2016 defines the 25G PMA remote loopback capability in bit 1.13.15 in the 40G/100G PMA/PMD extended ability register. See Clause 109 (Table 109-3).

Cl **00** *SC* **0** *P* **39** *L* **49** # 19

Maguire, Valerie Siemon

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

Capitalization error.

SuggestedRemedy

Replace, "the Fiber optic cabling" with, "the fiber optic cabling".

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.7.10** *P* **39** *L* **15** # 20

Dudek, Mike Cavium

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

The test reference to 95.8.8 includes 95.8.8.2 which requires the SEC to be 2.5dB with the sinusoidal jitter, interferers and noise turned off. This will make it impossible to turn them on and be only at the 2.5dB SEC that is the target.

It also includes the requirement to meet the stressed receiver eye mask of Table 95-7.

SuggestedRemedy

Add an additional exception f) "The SEC created by the selection of the appropriate bandwidth for the combination of the low-pass filter and the E/O converter with the sinusoidal jitter, sinusoidal interferer 1, sinusoidal interferer 2, and the Gaussian noise generator turned off is at least 2.0dB.

Add to the exceptions in bullet c), SRS eye mask.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.10** *P* **39** *L* **43** # 21

Dudek, Mike Cavium

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

The specification is referred to 88.11. However that clause requires compliance to table 88-14 which is not correct for these PMD's (note that this is a repeat of comment #96 on draft 2.0 what was accepted but not implemented).

SuggestedRemedy

Add "with the exception that Table 88-14 is replaced by Table 114–11"

Proposed Response *Response Status* **W**

PROPOSED ACCEPT.

Cl **114** *SC* **114.6.2** *P* **35** *L* **30** # 22

Dudek, Mike Cavium

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

The stressed eye closure is measured at +/-0.05UI offset with histograms that are 0.02UI wide whereas the TDP is measured with a minimally narrow sample at the middle of the eye. There is nothing in the budget to allow for this discrepancy which creates a "hole" in the budget.

SuggestedRemedy

Change the stressed eye closure value to account for this difference. Changing the value from 2.5dB to 2.6dB with no other changes is suggested.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Discuss appropriate value.

Cl **114** *SC* **114.11** *P* **40** *L* **33** # 23

Dudek, Mike Cavium

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

Footnote b to the max loss of table 114-12 is confusing. What is the "channel insertion loss of 25GBASE-LR". This should be the loss of the specific cable being used not what is allowed by the standard.

SuggestedRemedy

Delete footnote b.

In section 114.11 add the following. "These maximum and minimum insertion loss values can be created by using additional fixed optical attenuators in the channel whose values are dependent on the channel loss without the attenuator."

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Propose to remove both footnotes to make similar to Table 87-16, as suggested in Comment #12.

Cl **114** *SC* **114.6.1** *P* **34** *L* **7** # 24

Dawe, Piers Mellanox

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

The 25GBASE-ER extinction ratio limit should be relaxed to allow low cost transmitters that operate over a wide temperature range. 10GBASE-ER has a 3 dB limit with the same receiver reflectance and worse TDP than 25GBASE-ER, so there is room to relax the extinction ratio. The APD receiver is protected by limits on max OMA, max average power and min IL, that mean that the highest power in 0, 1 or average is not affected by this change.

SuggestedRemedy

Change 4 dB to 3.5 dB

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Repeat of past discussion, where consensus was for 4 dB.

Cl **114** *SC* **114.5.4** *P* **32** *L* **6** # 25

Dawe, Piers Mellanox

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

The signal detect limit for 25GBASE-ER (-25 dBm) is now too near the minimum average receive power (-21 dBm). There should be at least 6 dB, preferably 7 dB, between them.

SuggestedRemedy

Either, change the Average optical power at TP3 FAIL limit in Table 114-4 for ER from -25 to -27 dBm.
Or, change the Average launch power (min) in Table 114-6 for ER from -3 to -2.2, and change the Average optical power at TP3 FAIL limit in Table 114-4 for ER from -25 to -26 dBm. This does not make any difference to transmitters with more than 1.8 dB TDP or a DC extinction ratio less than 10, nor does it stop implementers making high extinction transmitters. To preserve the LR-ER interop, increase the LR Tx and Rx min average by 0.8 dB or tweak the max and min losses in Table 114-10.

Proposed Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Cl **114** *SC* **114.6.1** *P* **34** *L* **7** # 26

Dawe, Piers Mellanox

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

The 25GBASE-LR extinction ratio limit should be relaxed to allow low cost transmitters that operate over a wide temperature range. The limit should be lower than 10GBASE-LR because the laser has to run faster. This can be done here because 25GBASE-LR has better receiver reflectance and TDP than 10GBASE-LR. The receiver is protected by limits on max OMA and max average power that mean that the highest power in 0, 1 or average is not affected by this change.

SuggestedRemedy

Change 3.5 dB to 3 dB

Proposed Response *Response Status* **W**

PROPOSED REJECT.

Repeat of past discussion, where consensus of group was for 3.5 dB for consistency with other related specifications, such as CWDM4 or PSM4.