Cl **114** *SC* **114.8** *P* **36** *L* **30** # 4

Slavick, Jeff — Broadcom Limited

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

Have a shall statement but no matching PICS

SuggestedRemedy

Add COM10 for subclause 114.8

Response *Response Status* **U**

REJECT.

114.11.4.6 is the matching PICS for 114.8. 114.8 references 112.8, and the subclauses from 112.8 are directly referenced in the table.

Cl **108** *SC* **108.7.4.2** *P* **24** *L* **30** # 5

Slavick, Jeff — Broadcom Limited

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

The "OR" operator is a + sign.

SuggestedRemedy

Change the 2 instances of "or" in the status column for RF3 to be + instead.

Response *Response Status* **U**

REJECT.

Syntax defined in Clause 21. Use of "OR" is correct in PICS.

Cl **FM** *SC* **FM** *P* **1** *L* **2** # 7

Remein, Duane — Huawei

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

"Amendment of .. " Should list all pervious amendments.

SuggestedRemedy

Change to "Amendment of IEEE Std 802.3™-2015 as amended by IEEE Std 802.3bw™-2015, IEEE Std 802.3by™-2016,
IEEE Std 802.3bq™-2016, IEEE Std 802.3bp™-2016, IEEE Std 802.3br™-2016, IEEE Std 802.3bz™-2016, and IEEE Std 802.3bn™-2016" (There might possibly be other, check with Pete Anslow for the full list)

Response *Response Status* **U**

ACCEPT.

Cl **FM** *SC* **FM** *P* **7** *L* **16** # 8

Remein, Duane — Huawei

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

Missing list of WG participants

SuggestedRemedy

Get list from Mr. Law (or Pete Anslow) and incorporate in draft.

Response *Response Status* **U**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **31** # 9

Remein, Duane — Huawei

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

Update copyright date

SuggestedRemedy

to 2017 in FM and footer of all Masters

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Updated to 2017, but final year depends on completion date.

Cl **FM** *SC* **FM** *P* **10** *L* **31** # 10

Remein, Duane — Huawei

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

I agree with the Editors note that you should list all amendment here.

SuggestedRemedy

Please update to current amendment list (get from Pete Anslow)

Response *Response Status* **U**

ACCEPT.

Cl **114** *SC* **114.1.1** *P* **26** *L* **36** # 14

Remein, Duane Huawei

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

BER Objective is: "Support a BER of better than or equal to 10-12 at the MAC/PLS service interface (or the frame loss ration equivalent)". Here you state a BER of 5 x 10-5. Perhaps this is because here you refer to some other point (pre FEC?).

SuggestedRemedy

Clarify that this BER target is pre FEC. For example change "The bit error ratio (BER) shall be less than …" to "The bit error ratio (BER) measured at the PMD service interface shall be less than …"

Response *Response Status* **U**

REJECT.

The conditions for the BER requirement for 25GBASE-LR and 25GBASE-ER are described in 114.1.1. The basic requirement is that the frame loss ratio be <6.2E-10 for 64-octet frames with minimum interpacket gap when processed according to Clause 108. Clause 108, as amended by P802.3cc, requires RS-FEC for 25GBASE-LR and -ER.

Cl **114** *SC* **114.1.1** *P* **26** *L* **36** # 15

Remein, Duane Huawei

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

Untestable requirement; "The bit error ratio (BER) shall be less than …" (also on line 40). Per text5 on pg 27 line 52 there is no requirement that this requirement can tested "TP1 and TP4 are informative reference points... (these test points will not typically be accessible in an implemented system)." All requirements should be testable, hence this should not be a requirement.

SuggestedRemedy

Change language to be informative, remove PICS CF3

Response *Response Status* **U**

REJECT.

Statement has precedent in 802.3by.

Cl **45** *SC* **45.2.1.6** *P* **17** *L* **17** # 20

Lusted, Kent Intel

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

In table 45-7, the PMA/PMD control 2 register bit definitions does not list the reserved values.

There already is an editors note to add these bit definitions "later". Now is a great time to do it! :)

SuggestedRemedy

Add the reserved bit definitions to Table 45-7

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Comments #11, #20 address same point. Confirm definitions before adding.

Cl **114** *SC* **114.11.2.1** *P* **38** *L* **37** # 24

Winkel, Ludwig Siemens AG

Comment Type **ER** *Comment Status* **R**

Note shall not provide provisions and requirements. Note shall only provide statements of facts.

SuggestedRemedy

Reformat the note to a text.

Response *Response Status* **U**

REJECT.

Wording matches precedent set by related standards (see Clause 112.11.2.1 from P802.3by).

Cl **114** *SC* **114.6** *P* **30** *L* **8** # 46

Anslow, Pete Ciena

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

This says "The 25GBASE-ER PMD interoperates with the 25GBASE-LR PMD provided that the channel requirements for 25GBASE-LR are met".
However, a 25GBASE-ER transmitter can launch 6 dBm average power and the channel requirements for 25GBASE-LR allow 0 dB loss, so the 25GBASE-LR receiver could see 6 dBm average power, which is above the 2 dBm average power (max) spec.

SuggestedRemedy

Either remove the statement about interoperation or modify the specifications so that the PMDs will interoperate.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Comments #46, #53, #55 (#97 is duplicate of #55), #66 address the same topic of interoperability between 25GBASE-LR and -ER.

Follow example of Clause 87.12 using numbers in tamura_02c_3cc_0117 with editorial license.

Cl **114** *SC* **114.6.2** *P* **32** *L* **18** # 48

Anslow, Pete Ciena

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

The average receive power (min) for 25GBASE-ER is -19.6 dBm. However, the average launch power (min) is -3 dBm and the channel insertion loss (max) is 18 dB, so this should be -21 dBm.

SuggestedRemedy

Change the average receive power (min) for 25GBASE-ER to -21 dBm.

Response *Response Status* **U**

ACCEPT.

Comments #48, #56, #93 address same point.

Cl **114** *SC* **5.6** *P* **29** *L* **33** # 52

Stassar, Peter Huawei

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

There is a spurious "the" in strike-through

SuggestedRemedy

Remove the "the" in strike-through

Response *Response Status* **U**

ACCEPT.

See note on Comment #16.

Cl **114** *SC* **6** *P* **30** *L* **7** # 53

Stassar, Peter Huawei

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

The following statement is included: The 25GBASE-ER PMD interoperates with the 25GBASE-LR PMD provided that the channel requirements for 25GBASE-LR are met.
The current parameter values in Tables 114-6 and Table 114-7 do not support this statement.
The Average Launch power (max) of the ER transmitter is 6 dBm, which is above the damage threshold of the LR receiver and the maximum average receiver power of the LR receiver (2dBm), not allowing zero loss in the link. Actually in this case the minimum loss would need to be 4 dB which would be not acceptable. In a similar way the max OMA value of the ER transmitter is 3.8dB higher than the maximum receive OMA of the LR receiver.
The other way around the maximum power into a ER receiver from an LR transmitter is 2 dBm, 5 dB above the damage threshold of the ER receiver and even 6dB above the maximum receive power of -4dB of the ER receiver.

SuggestedRemedy

Option 1: significantly increase the values of the ER receiver for Damage Threshold, maximum average receive power and Receive power (OMA), (Max) to match the performance of the LR receiver.
Additionally reduce the Average launch power (max) and the OMA max of the ER transmitter to be below the maximum power values for the LR receiver.

The first of the 2 required changes may be extremely difficult for implementations deploying APD receivers and therefore the following option 2 is provided for consideration:
Option 2: remove the statement "The 25GBASE-ER PMD interoperates with the 25GBASE-LR PMD provided that the channel requirements for 25GBASE-LR are met." plus reduce the center wavelength range for the ER receiver in Table 114-7 from 1295 - 1325 nm to 1295 - 1310nm (as specified for the ER transmitter)

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #46.

Cl **114** *SC* **114.6.2** *P* **32** *L* **16** # 55

Dudek, Mike — Cavium

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

Section 114.6 says that the ER and LR will interoperate provided the channel meets the LR specifications. The LR specifications do not include a minimum attenuation, therefore it must be assumed that the minimum attenuation is 0dB. The Receivers must therefore not overload with the highest OMA and average power that either LR or ER provides.

SuggestedRemedy

Change the damage threshold to 7dBm for both LR and ER. Change the average receive power (max) to 6dBm for both LR and ER. Change the Receive power (OMA) Max to 6dBm for both LR and ER. Add afootnote to these rows equivalent to footnote b in table 88-8

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #46.

Cl **114** *SC* **114.6.1** *P* **30** *L* **47** # 57

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER) It is the same reason with Line 46, the OMA min is shifted 2.8dB, so as OMA min-TDP

SuggestedRemedy

1.8

Response *Response Status* **U**

REJECT.

Comments #57 and #104 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.2** *P* **32** *L* **18** # 58

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER), we change the average power in Tx side to 2.8dB in Line 46, Page 30, to keep 18dB link power budget, the Average receiver power (Min) should be +2.8-18=-16.8dBm

SuggestedRemedy

-16.8

Response *Response Status* **U**

REJECT.

Comments #58 and #105 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.2** *P* **32** *L* **24** # 59

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER),To allow lower cost pin based implementation for 25G SMF 40Km, link budget shifts the 2.8 dB of OMA from the receiver to the transmitter. Thus, supports all 4 combination of the device type, i.e., EML/DML+PIN and EML/DML+APD. We think Receiver sensitivity (OMA), (max) of -16.2dBm is reasonable. See our corresponding proposal for clarification.

SuggestedRemedy

-16.2

Response *Response Status* **U**

REJECT.

Comments #59 and #106 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.2** *P* **32** *L* **26** # 60

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER),In D2.0, the gap between Receiver sensitivity (OMA), (max) and Stressed receiver sensitivity (OMA), (max) is 2.5dB. We use the same value to shift the Stressed receiver sensitivity (OMA), (max) from -16.5dBm to -13.7dBm.

SuggestedRemedy

-13.7

Response *Response Status* **U**

REJECT.

Comments #60 and #107 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.1** *P* **30** *L* **42** # 61

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER)To allow lower cost PIN based implementation, the Average launch power（min）need to increase from -3dBm to -0.2dBm (2.8dB increment).

SuggestedRemedy

-0.2

Response *Response Status* **U**

REJECT.

Comments #61 and #108 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.1** *P* **30** *L* **46** # 62

Huang, Xi — Huawei Technologies

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

(Only for 25GBASE-ER) Based on DML or EML, Tx side has the capability to achieve 2.8dBm in OMA. See our corresponding proposal for clarification

SuggestedRemedy

2.8

Response *Response Status* **U**

REJECT.

Comments #62 and #103 are identical.

Motion #3 to adopt proposal failed to pass:
Y:5 N:8 A:4

Cl **114** *SC* **114.6.1** *P* **31** *L* **5** # 63

Dawe, Piers — Mellanox

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

The 25GBASE-LR extinction ratio limit should be relaxed to allow low cost transmitters that operate over a wide temperature range. This can be done here because 25GBASE-LR has better receiver reflectance and TDP than 10GBASE-LR.

SuggestedRemedy

Change 3.5 dB to 3 dB

Response *Response Status* **U**

REJECT.

No consensus to change.

Cl **114** *SC* **114.6.1** *P* **31** *L* **5** # 64

Dawe, Piers — Mellanox

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

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 max average and OMA and min IL specs continue to protect the APD.

SuggestedRemedy

Change 4 dB to 3.5 dB

Response *Response Status* **U**

REJECT.

Data presented was for 4dB extinction ratio. No consensus for change.

Cl **114** *SC* **114.6.2** *P* **32** *L* **29** # 65

Dawe, Piers — Mellanox

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

Vertical eye closure penalty as defined by 87.8.11 (1e-3 at the time center of the eye) is not a very accurate way of calibrating a stressed eye for a PMD that uses FEC. Now that we have a parameter that aligns more closely to TDP with FEC (right timing offset, right statistics, more consistent over a range of stressed eye generators and scope noises), we should use it.

SuggestedRemedy

Change from 1.9 dB vertical eye closure penalty to 2.5 dB stressed eye closure (SEC). Modify footnote e. Change the VECP entry in Table 114-9 to an SEC entry, referring to 95.8.8.2. In 114.7.10, change "vertical eye closure penalty" to "stressed eye closure (SEC)". Add a sentence after the list to say that 2.5 dB SEC and 1.9 dB VECP represent very similar stressed eyes. This will also make the budget and spec limits easier to understand, and maintain if necessary.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

Comments #49, #65, #98 refer to SRS.

1. Change VECP to SEC in Table 114-7.
2. Set value of SEC to 2.5 dB.
3. Modify Clause 114.7.10 to reference Clause 95.8.8 with exception of position of histograms, which will be at 0.45 UI and 0.55 UI to match TDP, and width of histogram window, which will be 0.02 UI.
4. Change SRS eye mask in Table 114-7 to Tx eye mask in Table 114-6.

Cl **114** *SC* **114.6.3** *P* **33** *L* **9** # 66

Dawe, Piers — Mellanox

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

114.6 says that the 25GBASE-ER PMD interoperates with the 25GBASE-LR PMD provided that the channel requirements for 25GBASE-LR are met. However this isn't the case; we need to control the minimum attenuation, and the maximum attenuation can be higher than for LR. This reemedy assumes the same attenuation is used in both directions for convenience and avoiding misconfiguration.

SuggestedRemedy

Either remove the claim for interoperation in 114.6, or:
Add columns to Table 114-8, illustrative link power budgets:
LR to ER and ER to LR, max loss 6.3, min loss 6.2, additional loss allowed 4 dB.
See another comment to make this comprehensible (would have max loss 10.3, min loss 4, no additional IL row).
These numbers are consistent with proposed new minimum power limits (see another comment). If the overload limits are changed without adding cost, the minimum loss would change.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #46.

Cl **114** *SC* **114.6.1** *P* **30** *L* **42** # 68

Dawe, Piers — Mellanox

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

The minimum average power at ER receiver is not consistent with the minimum average power at ER transmitter and max loss. For LR, the limits could be improved for better network maintenance. Average power max-min spread is 9 dB, much more than the OMA spread and more than is useful. The proposed numbers reduce this to 8.2 dB, so still convenient for high extinction ratio transmitters.

SuggestedRemedy

Change the minimum average powers:
LR Tx min from -7 to -6.2
LR Rx min from -13.3 to -12.5
ER Tx from -3 to -2.2
ER Rx from -19.6 to -20.2
In Table 114-6, transmit characteristics, delete note a.
In Table 114-7, receive characteristics, change note b from:
Average receive power (min) is informative and not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
to:
Average receive power (min) is not the principal indicator of signal strength. A received power below this value cannot be compliant; however, a value above this does not ensure compliance.
Or delete note b.

Response *Response Status* **U**

REJECT.

How to relate OMA (min), Pavg (min), ER specs was resolved in a previous comment resolution (follow precedent of CL 88). No consensus to change.

Cl **114** *SC* **114.5.4** *P* **29** *L* **6** # 73

Dawe, Piers — Mellanox

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

The transmit disable and signal detect limits should be made more friendly to quad modules with shared lasers, as recently done for 100GBASE-DR.

SuggestedRemedy

Change the Average launch power of OFF transmitter (max) in Table 114-6 from -25 to -20 dBm.
Change the Average optical power at TP3 FAIL limit in Table 114-4 for LR from -25 to -20 dBm. Do not increase the -25 dBm limit for ER receiver because it always sees the signal after a minimum loss.

Response *Response Status* **U**

ACCEPT.

Cl **114** *SC* **114.6.2** *P* **32** *L* **16** # 97

Dudek, Mike — Cavium

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

Section 114.6 says that the ER and LR will interoperate provided the channel meets the LR specifications. The LR specifications do not include a minimum attenuation, therefore it must be assumed that the minimum attenuation is 0dB. The Receivers must therefore not overload with the highest OMA and average power that either LR or ER provides.

SuggestedRemedy

Change the damage threshold to 7dBm for both LR and ER. Change the average receive power (max) to 6dBm for both LR and ER. Change the Receive power (OMA) Max to 6dBm for both LR and ER. Add afootnote to these rows equivalent to footnote b in table 88-8

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #46.

Cl **114** *SC* **114.6.2** *P* **32** *L* **30** # 98

Dudek, Mike — Cavium

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

The conditions for the stressed receiver sensitivity do not appear to be stringent enough. They should be equivalent to what is seen with the max TDP (2.7dB) Comparing to 100GBASE-LR4 the vertical eye closure penalty is only 0.1dB larger, the J2 is 0.03UI smaller and the J4 jitter is significantly smaller than the J9 jitter for 100GBASE-LR4. evem though the TDP for 100GBASE-LR4 is only 2dB. The mask is also significantly tighter than that allowed for the Tx, even though this is equivalent to the output of the fiber not the input.

SuggestedRemedy

Change the vertical eye closure penalty to 2.7dB and the SRS eye mask to match the Tx output values.

Response *Response Status* **U**

ACCEPT IN PRINCIPLE.

See response to Comment #65.

Cl **00** *SC* **0** *P* **1** *L* **28** # 99

Thompson, Geoff — GraCaSI S.A.

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

Descriptive paragraph says this is for Task Force review. This is a Working Group Ballot.

SuggestedRemedy

Change from: "Task Force". Change text to: "Working Group".

Response *Response Status* **U**

ACCEPT.

Cl **114** *SC* **114.1** *P* **24** *L* **9** # 102

Ghiasi, Ali — Ghiasi Quantum

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

Lack of economically viable and more reliable PIN based solution

SuggestedRemedy

Include PIN lower cost- more reliable PIN based receiver, by shifting the link power budget by about 2 dB from transmitter to the receiver

Response *Response Status* **U**

REJECT.

This particular comment lacks sufficient detail to be considered. However, the same subject is addressed in other comments that have enough detail to be considered (see Comments #57~#62 and #103~#108).

Cl **114** *SC* **114.6.1** *P* **30** *L* **46** # 103

Xu, Yu — Huawei Technologies

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

(Only for 25GBASE-ER) Based on DML or EML, Tx side has the capability to achieve 2.8dBm in OMA. See our corresponding proposal for clarification

SuggestedRemedy

2.8

Response *Response Status* **U**

REJECT.

See response to Comment #62.

Cl **114** *SC* **114.6.1** *P* **30** *L* **47** # 104

Xu, Yu — Huawei Technologies

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

(Only for 25GBASE-ER) It is the same reason with Line 46, the OMA min is shifted 2.8dB, so as OMA min-TDP

SuggestedRemedy

1.8

Response *Response Status* **U**

REJECT.

See response to Comment #57.

Cl **114** *SC* **114.6.2** *P* **32** *L* **18** # 105

Xu, Yu — Huawei Technologies

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

(Only for 25GBASE-ER), we change the average power in Tx side to 2.8dB in Line 46, Page 30, to keep 18dB link power budget, the Average receiver power (Min) should be +2.8-18=-16.8dBm

SuggestedRemedy

-16.8

Response *Response Status* **U**

REJECT.

See response to Comment #58.

Cl **114** *SC* **114.6.2** *P* **32** *L* **24** # 106

Xu, Yu — Huawei Technologies

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

(Only for 25GBASE-ER),To allow lower cost pin based implementation for 25G SMF 40Km, link budget shifts the 2.8 dB of OMA from the receiver to the transmitter. Thus, supports all 4 combination of the device type, i.e., EML/DML+PIN and EML/DML+APD. We think Receiver sensitivity (OMA), (max) of -16.2dBm is reasonable. See our corresponding proposal for clarification.

SuggestedRemedy

-16.2

Response *Response Status* **U**

REJECT.

See response to Comment #59.

Cl **114** *SC* **114.6.2** *P* **32** *L* **26** # 107

Xu, Yu
Huawei Technologies

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

(Only for 25GBASE-ER),In D2.0, the gap between Receiver sensitivity (OMA), (max) and Stressed receiver sensitivity (OMA), (max) is 2.5dB. We use the same value to shift the Stressed receiver sensitivity (OMA), (max) from -16.5dBm to -13.7dBm.

SuggestedRemedy

-13.7

Response *Response Status* **U**

REJECT.

See response to Comment #60.

Cl **114** *SC* **114.6.1** *P* **30** *L* **42** # 108

Xu, Yu
Huawei Technologies

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

(Only for 25GBASE-ER)To allow lower cost PIN based implementation, the Average launch power（min）need to increase from -3dBm to -0.2dBm (2.8dB increment).

SuggestedRemedy

-0.2

Response *Response Status* **U**

REJECT.

See response to Comment #61.