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

Dawe, Piers J G — Mellanox Technologies

Comment Type **TR** *Comment Status* **R** *specifications (updated 0929)*

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.

Response *Response Status* **U**

REJECT.

The comment is proposing values for parameters for that are not currently in Draft D3.0, for 100GBASE-FR1, 100GBASE-LR1, 400GBASE-FR4 and 400GBASE-LR4-6.

The IEEE P802.3cu Task Force reviewed these parameters previously during both task force review and working group ballot, and reached consensus to not include them.

While the comment does not request the addition of these parameters into the draft, that may have been the intention of the commenter.

There is no consensus to make the proposed change.

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

Dawe, Piers J G — Mellanox Technologies

Comment Type **TR** *Comment Status* **R** *specifications (updated 0929)*

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.

Response *Response Status* **U**

REJECT.

The comment is proposing a value for a parameter that is not currently in Draft D3.0, for 100GBASE-FR1.

The IEEE P802.3cu Task Force reviewed this parameter previously during both task force review and working group ballot, and reached consensus to not include it.

While the comment does not request the addition of this parameter into the draft, that may have been the intention of the commenter.

There is no consensus to make the proposed change.

Cl **140** *SC* **140.10a.1** *P* **59** *L* **12** # R1-12

Dawe, Piers J G — Mellanox Technologies

Comment Type **TR** *Comment Status* **R** *10LogCeq*

As pointed out in D3.0 comment 65, a 100GBASE-FR1 or 100GBASE-LR1 transmitter is allowed to transmit a bad signal that a 100GBASE-DR may not, and that a 100GBASE-DR receiver is not qualified for. This breaks interoperability. The K limit is missing, and the over/under-shoot, while useful, does not catch all bad transmitters that would fail the K limit. The response to comment 65 does not address the failure of interoperability, it only says that there was a previous decision to remove the K limit. Comment 65 and this one point out that that should be changed.

SuggestedRemedy

As interoperability with 100GBASE-DR applies over much shorter distances than the full distance for 100GBASE-FR1 or 100GBASE-LR1,
and as it is expected that decent transmitters will have no problem meeting the spec proposed below, and there is no extra measurement needed,
In Table 140-6, insert a limit of 3.4 dB for TECQ - 10log10(Ceq') (max), derived from TECQ in the same way that K = TDECQ - 10log10(Ceq) is derived from TDECQ

Response *Response Status* **U**

REJECT.

This comment is considered substantively similar to the previously rejected comment i-65.

The comment is again arguing that the over/under-shoot test, while useful, does not catch all bad transmitters that would fail a K limit (10LogCeq) test, and therefore leaves the potential for 100GBASE-FR1 and 100GBASE-LR1 transmitters that would not interoperate with a 100GBASE-DR receiver.

Note that the "TDECQ-10log10(Ceq)" parameter for 100GBASE-FR1 and 100GBASE-LR1 was removed in draft D2.0 and replaced with the over/under-shoot parameter.

The response to i-65 is shown here for reference:

"
REJECT.

The comment is proposing a value for a parameter that is not currently in Draft D3.0, for 100GBASE-FR1.

The IEEE P802.3cu Task Force reviewed this parameter previously during both task force review and working group ballot, and reached consensus to not include it.

While the comment does not request the addition of this parameter into the draft, that may have been the intention of the commenter.

There is no consensus to make the proposed change."

Cl **140** *SC* **140.10a.1** *P* **59** *L* **12** # R2-1

Dawe, Piers J G — Mellanox Technologies

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

As pointed out in D3.0 comment 65 and D3.1 comment 12, a 100GBASE-FR1 or 100GBASE-LR1 transmitter is allowed to transmit a bad signal that a 100GBASE-DR receiver is not required to receive.
This breaks interoperability.
The over/under-shoot limit catches the worst of these bad signals but others pass that but fail the K limit for 100GBASE-DR.
These signals are bad even after the equalizer, and a 100GBASE-FR1 or 100GBASE-LR1 transmitter would be better than the worst allowed for 100GBASE-DR.
The response to D3.0 comment 65 did not provide an explanation for the rejection of the comment or for revision of the change proposed by the commenter. It did not address the failure of interoperability; it only said that in previous ballot and review processes, there were decisions to remove the K limit. See WG comments 20068 and 20062. But these comments and responses do not address interoperability between a 100GBASE-FR1 or 100GBASE-LR1 transmitter and a 100GBASE-DR receiver. The response to D3.1 comment 12 states the issue but still does not fix it.

SuggestedRemedy

Either:
As interoperability with 100GBASE-DR applies over much less than the full distance for 100GBASE-FR1 or 100GBASE-LR1,
and as it is expected that reasonable transmitters that pass the over/undershoot limit will have no problem meeting the spec proposed below,
and as there is no extra measurement needed:
In Table 140-6, for 100GBASE-FR1 and 100GBASE-LR1, insert a limit of 3.4 dB for TECQ - 10log10(Ceq) (max). Add note:
In this case, Ceq is derived from the TECQ analysis, not the TDECQ analysis (see 140.7.5a and 121.8.5.3).
or
Do as discussed in the previous meeting:
Change 140.10a.1 to:
The 100GBASE-FR1 and 100GBASE-DR PMDs can interoperate with each other provided that:
the fiber optic cabling (channel) characteristics for 100GBASE-DR (see 140.10 and Table 140-12) are met;
the 100GBASE-FR1 transmitter average power is greater than or equal to the value for average launch power average launch power (min) for 100GBASE-DR in Table 140-6; and for the 100GBASE-FR1 transmitter, TECQ - 10log10(Ceq) is less than or equal to 3.4 dB, where Ceq is derived from the TECQ analysis, not the TDECQ analysis (see 140.7.5a and 121.8.5.3).
and
Make equivalent changes in 140.10a.2 for 100GBASE-LR1.

Response *Response Status* **U**

REJECT.

This comment is a restatement of previous comments that have already been recirculated (i-65 and r1-12).

The comment raises the potential of an interop issue between 100GBASE-FR1 or 100GBASE-LR1 and 100GBASE-DR.

While there is no normative requirement for different PMDs to be interoperable, an expectation of interoperation (within certain constraints) exists within the user community. This is the purpose of the informative subclause 140.10a “Interoperation between 100GBASE-DR, 100GBASE-FR1, and 100GBASE-LR1”. It should be noted that the guidelines in this section make sure the baseline power requirements are met when interconnecting two PMDs, but is not meant to guarantee interop.

For the new 100GBASE-FR1 and 100GBASE-LR1 PMDs defined in this project, there has been an update in the specification methodology which differs from some other PMDs (e.g. 100GBASE-DR) defined previously. As captured in the comment this change in the test methodology does open the theoretical possibility of an interop issue between an 100GBASE-FR1 or 100GBASE-LR1 transmitter and a 100GBASE-DR receiver (as these new transmitters are tested using a difference compliance methodology than the 100GBASE-DR transmitter), although no evidence was provided in the comment of an actual interop issue.

Both options in the suggested remedy (one normative and one informative) propose to address this potential issue by introducing a new parameter “TECQ - 10log10(Ceq)” that is not currently defined in the draft. The addition of this parameter to address the issue raised in the comment has been debated multiple times by the task force, and on each occasion there was no consensus to make the proposed change.

As the comment itself points out, any interop between the PMDs occurs over much less than the full distance of the 100GBASE-FR1 and 100GBASE-LR1 PMDs and as such, the PMDs will have additional margin which compensate for any minor discrepancies that might possibly arise due to the methodology differences. It is the consensus of the Task Force that the risk of interop issues between a 100GBASE-FR1 or 100GBASE-LR1 transmitter and a 100GBASE-DR receiver PMDs is negligible and as such no change to the draft is required.