802.3dj D1.2
Comment Resolution
Optical Track

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Introduction

- This slide package was assembled by the 802.3dj editorial team to provide background and detailed resolutions to aid in comment resolution.
- Specifically, these slides are for the various optical track comments.

IEEE P802.3dj Task Force

Optical Return Loss for 800GBASE-FR4-500 Comment 214

CI **181** SC **181.8** P **432** L **17** # 214

Stassar, Peter   Huawei

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

The value for optical return loss (ORL) is the same as Tx optical return loss tolerance, which is wrong. The ORL should be the same as for 100GBASE-DR and 200GBASE-DR1.

SuggestedRemedy

In Table 181-8 change optical return loss to 27 dB minimum

Proposed Response   Response Status **O**

Both FR4 and FR4-500 are on duplex links (single fiber each direction), and also 200GBASE-DR1 and 200GBASE-DR1-2

There are many established specifications for using 25 dB over 2 km duplex links, such as 200GBASE-FR4, 100GBASE-FR1, 50GBASE-FR and 800GBASE-FR4.

There is one precedent for a 500 m duplex link in 100GBASE-DR for 27 dB. The same value has been used for the new 200GBASE-DR1 and there is no technical reason why for FR4-500 the ORL should be different.

Link assumptions (initiated by Paul Kolesar during the bs project) for 500 m and 2 km are different regarding loss and number of connectors.

The 27 dB ORL for 100GBASE-DR was established in the cd project in March 2017 with wide support.

The related presentation can be found at: https://www.ieee802.org/3/cd/public/Mar17/traverso_3cd_01_0317.pdf

Authored by Matt Traverso, Marco Mazzini and Hai-Feng Liu, and supported by Gary Nicoll, Brian Welch, Mike Dudek and Paul Kolesar.

Optical Channel for 800GBASE-FR4/LR4 Comments 215 and 216

CI **183**	*SC* **183.9.5.1**	*P* **491**	*L* **11**	# 126

Brown, Matt   Alphawave Semi

Comment Type **T**   *Comment Status* **D**   *Optical channel*

In Table 183-5... In the column labelled "Insertion loss" the "value" provided for both PMD types is "Minimum". It is not evident what this means. Perhaps it means the minimum insertion loss specified in Table 183-9 "Optical channel characteristics". If that is that case then either use this value (0 dB) or reference this table (e.g., with a footnote). If it means something else then provide a bit more context, perhaps in a footnote.

SuggestedRemedy

Clarify "Minimum" in Table 183-15 per comment.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
All previous PAM4 optical clauses use the same text.
However, it is not defined sufficiently well for a reader of this document to understand what "MINIMUM" means.
The term "Minimum" in the Insertion Loss column means to test TDECQ with a low value of insertion loss, however, it doesn't have to be 0 dB, it just needs to be a small enough value to not stress the sensitivity on the O/E. Footnote b was intended to clarify this.
However, the text in footnote be could be improve to better help the reader of this document.
For task force discussion.

CI **183**	*SC* **183.9.5.1**	*P* **491**	*L* **21**	# 125

Brown, Matt   Alphawave Semi

Comment Type **T**   *Comment Status* **D**   *Optical channel*

Table 183-15 footnote b states "There is no intent to stress the sensitivity of the O/E converter associated with the oscilloscope." 183.9.5.1 specifies characteristics of a test channel to be used for transmitter compliance testing. It seems rather obvious that this isn't about stress testing the scope O/E converter. Is there something subtle that's missing in this statement?

SuggestedRemedy

Either (a) delete footnote c or (b) provide missing context.

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Footnote b was intended to clarify the meaning of "minimum" in the insertion column.

Resolve using the response to comment #126.

Optical Channel for 800GBASE-FR4/LR4 Comments 215 and 216

Table 183–15—Transmitter compliance channel specifications

PMD type	Lane	Dispersion[a] (ps/nm)		Insertion loss[b]	Optical return loss[c] (dB)	Max mean DGD (ps)
		Minimum	**Maximum**			
800GBASE-FR4	L_0	$0.203 \times (\lambda - 1271) - 9.96$	$0.187 \times (\lambda - 1271) - 5.81$	Minimum	17.1	0.8
	L_1	$0.194 \times (\lambda - 1291) - 5.99$	$0.183 \times (\lambda - 1291) - 2.12$			
	L_2	$0.185 \times (\lambda - 1311) - 2.22$	$0.177 \times (\lambda - 1311) + 1.47$			
	L_3	$0.176 \times (\lambda - 1331) + 1.38$	$0.169 \times (\lambda - 1331) + 4.92$			
800GBASE-LR4	All	$0.225 \times \lambda \times [1 - (1321.1 / \lambda)^4]$	$0.2175 \times \lambda \times [1 - (1307 / \lambda)^4]$	Minimum	15.6	0.8

[a] The dispersion is measured for the wavelength of the transmitter lane under test (λ in nm). The coefficient assumes 2 km for 800GBASE-FR4 and 10 km for 800GBASE-LR4. The dispersion specifications are based on the statistical link design methodology documented in ITU-T REC G.652, Appendix I, and the optical channel characteristics methodology described in Annex TBD.

[b] There is no intent to stress the sensitivity of the O/E converter associated with the oscilloscope.

[c] The optical return loss is applied at TP2.

Proposed response to comment #126: Update footnote b to read "The value Minimum implies that the test channel insertion loss should be sufficient low that it does not significantly stress the test receiver."