

IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group¹

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Subject: Liaison letter to TIA TR-42.13 requesting development of a standard for higher return loss MPO-16 plug and corresponding active device receptacle

Approval: Agreed to at IEEE 802.3 plenary meeting, Whistler, B.C., Canada, May 26, 2016

Dear Mr. Emplit and Mr. Sandels,

Thank you for timely developing standard ANSI/TIA-604-18 *FOCIS 18 Fiber Optic Connector Intermateability Standard – Type MPO-16* within subcommittee TR-42.13. The P802.3bs Task Force presently references this standard in draft Clause 121 for the media dependent interface (MDI) of the 400GBASE-SR16 physical media dependent (PMD) sublayer.

¹ This document solely represents the views of the IEEE 802.3 Working Group, and does not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

The FOCIS 18 standard defines only non-angled end-face geometry plugs that are expected to ensure a minimum return loss of 35 dB when used in cable plants. The active device receptacle defined in FOCIS 18 also optically mates only with non-angled plugs.

As lane rates are increasing from approximately 25 Gb/s to 50 Gb/s, the P802.3bs Task Force adopted the use of 4-level pulse amplitude modulation (PAM4) instead of non-return to zero (NRZ) modulation. [The P802.3cd Task Force is also expected to employ PAM4 modulation.](#) While PAM4 delivers twice the number of bits per symbol as NRZ, it also increases sensitivity to multipath interference (MPI) effects. [Increasing the return loss of connection interfaces reduces MPI and its attendant power penalty.](#) ▼

Because the MPO-16 can be deployed not only at the MDI but also in cable plants, we request TR-42 standardize plugs and associated device receptacles that can deliver minimum return loss of at least 45 dB at end of life. For example, the use of angled polish connectors (APC) has proven to be a robust way of delivering this return loss performance.

Thank you for your consideration.

Sincerely,

David Law

Chair, IEEE 802.3 Ethernet Working Group

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Deleted: The performance of the MPO style connector is also being discussed by the P802.3bs Task Force in relation to the single-mode specifications being written for 200 Gb/s and 400Gb/s Ethernet, and increasing the minimum return loss of these cable plant connections could reduce the MPI penalty that needs to be addressed by these specifications.