

## IEEE 802.3 Ethernet Working Group Liaison Communication

Source: IEEE 802.3 Working Group<sup>1</sup>

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From: David Law Chair, IEEE 802.3 Ethernet Working Group  
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Subject: Liaison letter to IEC 86B WG6 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, Macau, China, 17 March 2016

Dear Ms. McGlashon,

The IEEE P802.3bs Task Force presently references the published TIA 604-18 *FOCIS 18 Fiber Optic Connector Intermateability Standard – Type MPO-16* standard in draft Clause 121 for the media dependent interface (MDI) of the 400GBASE-SR16 physical media dependent (PMD) sublayer.

As with the TIA standard, draft IEC 61754-7-3 *Fibre optic interconnecting devices and passive components – Fibre optic connector interfaces – Part 7-3: Type MPO connector family – Two fibre rows 16 fibre wide* presently defines only non-angled end-face geometry MPO-16 plugs that are expected to ensure a minimum return loss of 35 dB when used in cable plants. The active device receptacle defined in draft IEC 61754-7-3 also optically mates only with non-angled plugs. Thank you for developing this standard to support our work in P802.3bs. Some additional issues related to optical connections have emerged during the P802.3bs development for which we seek your support.

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<sup>1</sup> 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.

As lane rates are increasing from approximately 25 Gb/s to 50 Gb/s, the P802.3bs Task Force has adopted the use of 4-level pulse amplitude modulation (PAM4) instead of non-return to zero (NRZ) modulation. While PAM4 delivers twice the number of bits per symbol as NRZ, it also increases sensitivity to multipath interference (MPI) effects. 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, and increasing the minimum return loss of these cable plant connections could reduce the MPI penalty that needs to be addressed by these specifications.

Because the MPO-16 can be deployed not only at the MDI but also in cable plants, we request IEC 86B WG6 standardize plugs and associated device receptacles that can deliver minimum return loss of at least 55 dB. 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