

IEEE 802.3 Ethernet Working Group
Liaison Communication

Source: IEEE 802.3 Working Group¹

To: Glenn Parsons Chair, ITU-T Study Group 15
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Frank Effenberger Rapporteur ITU-T Q2/15
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Kazuhide Nakajima Rapporteur ITU-T Q5/15
██

Fabio Cavaliere Rapporteur ITU-T Q6/15
██

CC: Konstantinos Karachalios Secretary, IEEE-SA Standards Board
Secretary, IEEE-SA Board of Governors
██

Paul Nikolich Chair, IEEE 802 LMSC
██

Adam Healey Vice-chair, IEEE 802.3 Ethernet Working Group
██

Jon Lewis Secretary, IEEE 802.3 Ethernet Working Group
██

John D'Ambrosia Chair, IEEE P802.3dj Task Force
██

Yuanqiu Luo Chair, IEEE P802.3dk Task Force
██

Mark Nowell Vice-Chair, IEEE P802.3dj Task Force
██

From: David Law Chair, IEEE 802.3 Ethernet Working Group
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Subject: Liaison reply to ITU-T SG15 regarding G.652 fiber link property

Approval: Agreed at IEEE 802.3 plenary meeting, Honolulu, HI, USA, 16 November 2023

Dear Mr Parsons and members of ITU-T SG 15,

Thank you again for your liaison letter, sent on 28 April 2023, regarding the planned correspondence activity to gather information on zero-dispersion wavelength property, particularly in short length (typically within 10 km) installed links. We are interested in receiving an update from this activity as it is of great importance to the work of the IEEE P802.3dj and the IEEE P802.3dk Task Forces. We hope we can gain mutual benefits for both our standards development organizations.

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.

Per the scope of IEEE 802.3, we define our fiber specifications by reference to external specifications such as those developed by ITU-T. Changing those specifications is out of our scope. Historically IEEE 802.3 has always used worst case fiber specifications as part of the channel model used in link analysis, which may result in excess penalty and increased cost of optical interfaces for higher optical lane rates. The IEEE P802.3dj Task Force has an interest in developing a statistical channel model for its link analysis based upon published fiber specifications. We are currently considering the adoption of a technical baseline for the 800GBASE-LR4 (4x200G PAM4 over 10km SMF using an LWDM wavelength configuration) which uses such statistical models for chromatic dispersion (CD) and polarization mode dispersion (PMD).

Continuing to use worst case fiber specifications as a basis for the channel model, using the parameters in ITU-T G.652/G.657 for the proposed 800GBASE-LR4 baseline specification, results in worst case channel chromatic dispersion values of -28.1 ps/nm at 1294.53 nm and +9.3 ps/nm at 1310.19 nm, which may be overly conservative.

We would appreciate any guidance or analysis that would lead to more detailed cabled fiber specifications so that we can develop more accurate and not overly conservative channel models.

An example of a statistical channel model in a recent proposal for an 800GBASE-LR4 baseline specification to the IEEE P802.3dj Task Force can be found at: https://www.ieee802.org/3/dj/public/23_11/rodes_3dj_01_2311.pdf or some relevant discussion (Straw Poll #15) within the IEEE P802.3dj Task Force on this topic captured here: https://www.ieee802.org/3/dj/public/23_07/minutes_3cwfdfj_2307_approved.pdf.

Regarding the plan going forward, the IEEE P802.3dj and the IEEE P802.3dk Task Forces met during the 13 – 16 November IEEE 802.3 Working Group plenary meetings. Both Task Forces will meet next 22 – 25 January 2024 where IEEE P802.3dj is aiming for baseline adoption to be complete. We look forward to receiving an expeditious update on the following:

- Methodology and results from your survey of fiber chromatic dispersion to best develop our channel models.
- Insights into the ITU-T workplan for modifying G.652/G.657 Recommendations.
- The calculation of cabled fiber PMD for shorter link distances

We look forward to the continued collaboration between our two groups.

Sincerely,
David Law
Chair, IEEE 802.3 Ethernet Working Group