IEEE 802.3 Ethernet Working Group
DRAFT Liaison Communication

Source: IEEE 802.3 Working Group[1]

To:	Albrecht Oehler	Convenor, ISO/IEC JTC1/SC25 WG3 [redacted]
CC:	Rainer Schmidt	Chair, ISO/IEC JTC1/SC25 [redacted]
	Marco Peter	Committee Manager, ISO/IEC JTC1/SC25 [redacted]
	Thomas H. Wegmann	Asst. Committee Manager, ISO/IEC JTC1/SC25 [redacted]
	Konstantinos Karachalios	Secretary, IEEE-SA Standards Board Secretary, IEEE-SA Board of Governors [redacted]
	Paul Nikolich	Chair, IEEE 802 LMSC [redacted]
	Adam Healey	Vice-chair, IEEE 802.3 Ethernet Working Group [redacted]
	Jon Lewis	Secretary, IEEE 802.3 Ethernet Working Group [redacted]
	Chad Jones	Chair, IEEE P802.3da [redacted]
	James Withey	Liaison Officer, IEEE 802.3 - SC25 WG3 [redacted]
From:	David Law	Chair, IEEE 802.3 Ethernet Working Group [redacted]

Subject: Reply to Incoming Liaison JTC 1/SC 25/WG 3 N 1329

Approval: Agreed to at IEEE 802.3 Working Group meeting, Teleconference, 19 Jan 2023

Dear Dr. Oehler,

We would like to thank you for your liaison communication JTC 1/SC 25/WG 3 N 1329. This liaison reply contains responses from the IEEE 802.3 WG.

Q1: Our analysis of inclusion of potential filter inductance to compensate node return loss appears to exacerbate this concern as the high frequency roll-off of return loss increases leading to excessive reflections at a lower frequency.

[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.

A1: We recognize the impacts of inductance to return losses and have not completed the IEEE P802.3da specification for this subject.

Q2: In light of this concern, would you be able to provide more context into why such a large mode conversion bandwidth is needed in IEEE 802.3cg and any analysis into control of these parameters in multidrop systems?

A2: Mode conversion parameters are important for interference tolerance. The relevant frequencies for interference management may be significantly greater than the relevant frequencies for signal reception. For this reason, the mixed mode parameters are defined to higher frequencies so that out of band interference may be limited. If they were not defined to a higher frequency, one would have to assume 0 dB mode conversion loss just outside the defined frequency. One example, IEC 61000-4-6 defines the RF immunity from 150 kHz up to at least 80 MHz.

Q3: Specifically, could we reduce the maximum frequency to 100 MHz or 40 MHz for all parameters?

A3: Current in-vehicle FM band emission limits for various OEMs require the definition of the mode conversion above 100 MHz. Therefore, a 150 kHz to 200 MHz frequency range for mode conversion bandwidth is required. Constraints on FM band emissions likely apply to other applications as well.

Q4: In response, could you also comment on the expected impedances in mode conversion specifications in mixing segments? More specifically, would this parameter apply to both 50 ohm transmit impedances and 10 kohm high impedance receive impedances?

A4: One could expect to see as low as 25 Ohms common mode. There are concerns at both the transmitter and receiver. However, the 802.3da project has yet to specify these impedances. This issue requires further study.

Thank you for your continued collaboration with the IEEE 802.3 Working Group.

Sincerely,

David Law

Chair, IEEE 802.3 Ethernet Working Group