MDI RL Limit Text Proposal

Contribution to 802.3dm Task Force

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Introduction

- This presentation proposes a specific text for MDI Return Loss Limits for 802.3dm
- This Return Loss Limit was first proposed in Montreal in jonsson_houck_3dm_02_07_15_24.pdf
- This Return Loss Limit was analyzed and found to be a good candidate in Chini_Tazebay_3dm_01a_0924.pdf
- This Return Loss Limit as analyzed from the perspective of PCB design and single inductor PoC implementation in strohmeier_dm_measure_sim_rl_101024_v03.pdf
- It was announced in ad hoc on October 10 that this text will be proposed as a **baseline text in the Vancouver** meeting in jonsson_3dm_02_10_10_24.pdf

Text Proposal

2XX.Y.1 MDI return loss

The differential impedance at the MDI for each transmit/receive channel shall be such that any reflection due to signals incident upon the MDI from the cabling relative to the incident signal are per the relationship shown in Equation (2XX.Y-1). For balanced cabling a nominal differential characteristic impedance of 100Ω is used, and for coaxial cabling a nominal characteristic impedance of 50Ω is used.

$$MDI\_Return\_Loss(f) > \left\{ \begin{array}{cc} 17 + 20log_{10}(\frac{f}{50}) & 10 \leq f < 50 \\ 17 & 50 \leq f < 250 \\ 17 - 10log_{10}(\frac{f}{250}) & 250 \leq f \leq F_{max} \end{array} \right\} (dB) \qquad (2XX.Y\text{-}1)$$

where f is the frequency in MHz.

For 2.5G/100MBASE-T1, 5G/100MBASE-T1, and 10G/100MBASE-T1, the maximum applicable frequency, F_{max}, for the MDI return loss is 1000MHz, 2000MHz, and 4000MHz, respectively.

The MDI return loss for 10G/100MBASE-T1 is illustrated in Figure XXX-1.

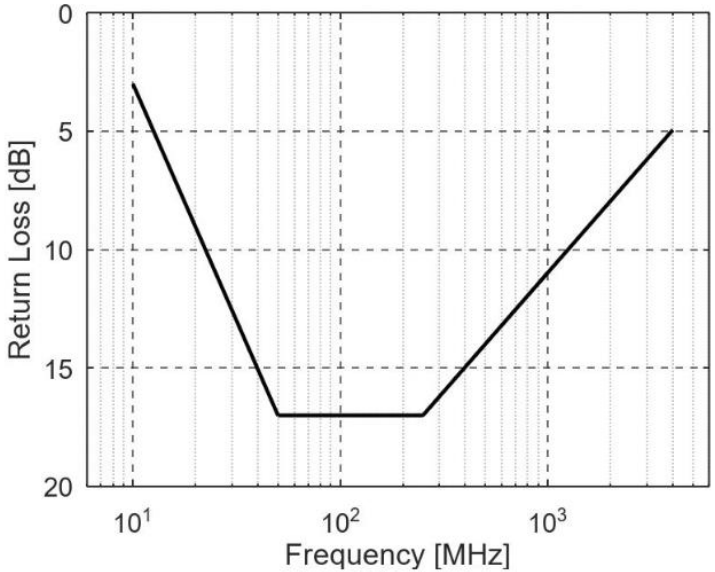

Figure XXX-1—MDI return loss calculated using Equation (2XX.Y-1)

Motion

Move to adopt MDI Return Loss Limit proposal on slide 3 of jonsson_3dm_02_11_11_24 with editorial license.

M: Ragnar Jonsson

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