IEEE 802.3 Ethernet Working Group Liaison Communication

Source:	IEEE 802.3 Working Group[1]	
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Subject:	Reply to Incoming Liaison 25N2461 on 40GBASE-T Return Loss Requirements	
Approval:	Approved at IEEE 802.3 Meeting in Atlanta, GA on 21 January 2016	

Dear Dr Oehler,

Thank you for your liaison on 40GBASE-T Return Loss Requirements. This was considered at the IEEE P802.3bq Task Force meeting in November 2015. Task Force members decided not to implement a length-dependent requirement to the IEEE P802.3bq Link Segment specification and, instead, adopted the Return Loss relaxation adopted for Class I & Class II cabling without any length dependence. The requirements in the latest draft of IEEE P802.3bq are as follows:

[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.

113.7.2.3 Return loss

In order to limit the noise at the receiver due to impedance mismatches in the cabling system, each link segment duplex channel shall meet the values determined using Equation (113–14) at all frequencies from 1 MHz to 2000 × *S* MHz. The reference impedance for the return loss specification is 100 Ω.

$$\text{Return Loss} \geq \begin{cases} 19 & 1 \leq f < 10 \\ 24 - 5\log_{10} f & 10 \leq f < 40 \\ 16 & 40 \leq f < 130 \\ 35 - 9\log_{10} f & 130 \leq f < 1000 \\ 8 & 1000 \leq f < 1250 \\ 8 & 1250 \leq f < 1600 \text{ (for 40GBASE-T)} \\ 8 - 19\log_{10}\left(\frac{f}{1600}\right) & 1600 \leq f < 2000 \text{ (for 40GBASE-T)} \end{cases} \text{ dB} \qquad (113\text{–}14)$$

where

f is the frequency in MHz.

IEEE P802.3bq is has now entered its final stage of review, Sponsor Ballot, and is planned to become an approved standard in September 2016. IEEE P802.3bq makes formal reference to ISO/IEC 11801-1 Edition 3 which we hope will become technically stable in that timeframe. We would be grateful if you could guide us on that point.

Sincerely,

David Law

Chair, IEEE 802.3 Ethernet Working Group