802.3ck Frequency Domain Limits for Mated Cables

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17 June 2020

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Overview:

- OBJECTIVE: To propose frequency domain limits for mated cable TBDs in the 802.3ck D1.2 draft
  - Differential to common-mode return loss (Section 162.11.4)
  - Differential to common-mode conversion loss (Section 162.11.5)
  - Common-mode to common-mode return loss (Section 162.11.6)
- The data on the following slides is measured 2m 25awg proof of concept (POC; see next slide) QSFP-DD cable

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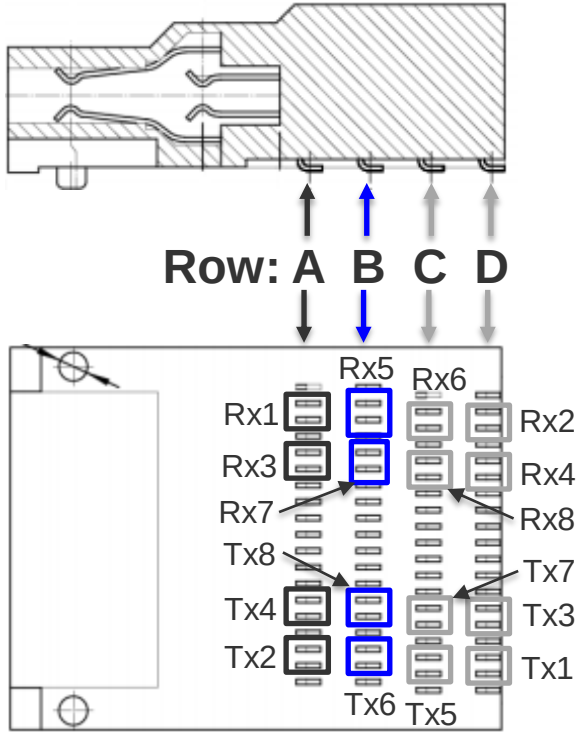
Proof of Concept Connectors and Cables:

- Proof of concept connectors are partially populated
  - Only the two shortest rows of contacts are available
- Cables were pinned out to accommodate these connectors:

Cable Pinout:

P1	P2
Tx2	Rx5
Tx4	Rx7
Tx6	Rx1
Tx8	Rx3
Tx2	Rx5
Tx4	Rx7
Tx6	Rx1
Tx8	Rx3



Bottom of connector

Legacy Pairs
DD Pairs
Unpopulated

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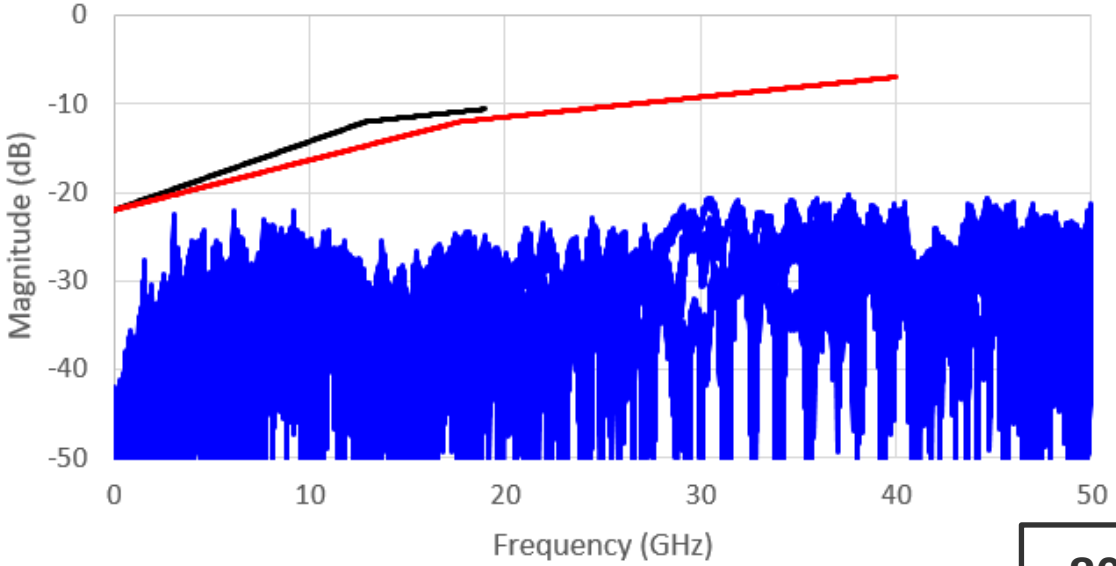
Differential to Common-Mode Return Loss:



Key:
BLUE = POC Data
BLACK = 802.3cd
RED = 802.3ck proposal

802.3ck proposal:

$$\left(22 - \frac{15}{26.56} f\right) dB \qquad 0.05\ GHz \leq f < 17.7\ GHz$$

$$\left(16 - \frac{6}{26.56} f\right) dB \qquad 17.7\ GHz \leq f \leq 40\ GHz$$

Differential to Common-Mode Conversion Loss:

Key:
BLUE = POC Data
BLACK* = 802.3cd
RED = 802.3ck proposal

This limit to be revisited at a later date

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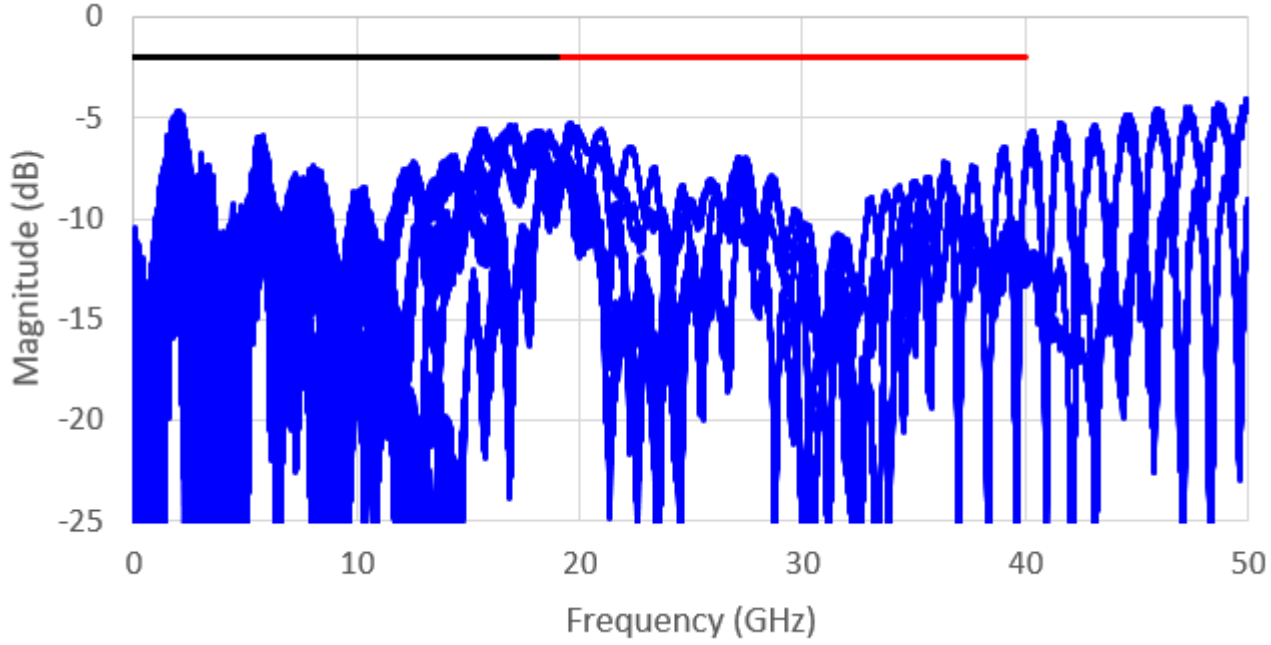
Common-Mode to Common-Mode Return Loss:

Key:
BLUE = POC Data
BLACK* = 802.3cd
RED = 802.3ck proposal



802.3ck proposal: 2 dB $0.05\ GHz \leq f < 40\ GHz$

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Proposal Summary:

- Differential to common-mode return loss (Section 162.11.4)

$$\left(22 - \frac{15}{26.56} f\right) dB \qquad 0.05\ GHz \leq f < 17.7\ GHz$$

$$\left(16 - \frac{6}{26.56} f\right) dB \qquad 17.7\ GHz \leq f \leq 40\ GHz$$

- Differential to common-mode conversion loss (Section 162.11.5)
  - This limit to be revisited at a later date

- Common-mode to common-mode return loss (Section 162.11.6)

$$2\ \text{dB} \qquad 0.05\ GHz \leq f < 40\ GHz$$

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