
162.11.5 cable assembly differential to common-mode conversion loss Comment #201

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Comment #201

CI 162 SC 162.11.5 P 168 L 41 # 201

Dudek, Mike

Marvell

Comment Type TR Comment Status D CL-IL difference

The differential to common mode conversion loss specification is very relaxed particularly at higher frequencies. As an example at 25GHz this specification is only approx 6dB more than the insertion loss. There is no specification for the common mode to common mode return loss of the Rx so all this common mode energy can be reflected back to the cable where through common mode to differential conversion it then becomes a differential signal interferer. Assuming this common mode to differential mode has approximately the same value as the differential to common mode conversion of approx 12.5dB this unwanted interferer is only 18.5dB below the wanted signal and will severely degrade the BER.

Suggested Remedy

Add 10dB to this equation

Proposed Response Response Status W

PROPOSED REJECT.

The basis for a 10 dB tightening of the limit is not obvious in the stated comment and the correlation to the degradation of the BER is not provided.

162.11.5 Differential to common-mode conversion loss

The difference between the cable assembly differential to common-mode conversion loss and the cable assembly insertion loss shall meet Equation (162-12) illustrated in Figure 162-7.

$$Conversion_loss(f) - IL(f) \geq \begin{cases} 10 & 0.05 \leq f < 12.89 \\ 14 - 0.3108f & 12.89 \leq f \leq 40 \end{cases} \quad (162-12)$$

where

$Conversion_loss(f)$ is the cable assembly differential to common-mode conversion loss at frequency f in dB

$IL(f)$ is the cable assembly insertion loss at frequency f in dB

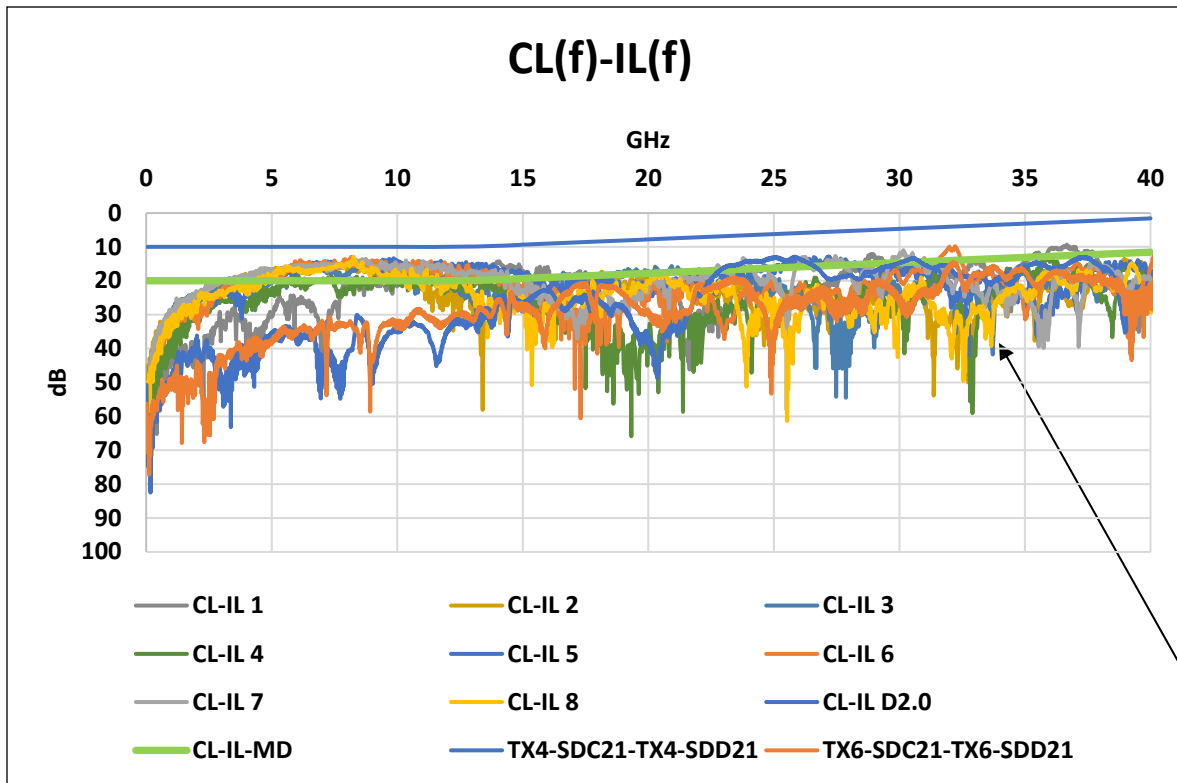
f is the frequency in GHz

Add 10 dB to 162-12

Proposed resultant equation [(162-12)]

$$CL(f) - IL(f) \geq 20 \text{ dB } [0.5 \leq f \text{ GHz} < 12.89]$$
$$24 - 0.3108 * (f \text{ GHz}) \text{ dB } [12.89 \leq f \leq 40]$$

162.11.5 Cable Assembly CL(f)-IL(f)



https://www.ieee802.org/3/ck/public/19_07/tracy_3ck_01b_0719.pdf

100 Gbps Copper Cable Measurement
and S-Parameter File
8 Channel Cable Measurement

https://www.ieee802.org/3/ck/public/tools/cucable/matoglu_3ck_adhoc_01_030420_channels.zip

Cu Cable Channels
OSFP112G 2m Cable Assembly Measurements
Update
Measured OSFP 2m 25awg Cable
4-March-2020 Erdem Matoglu Amphenol ICC

162.11.5 Differential to common-mode conversion loss

The difference between the cable assembly differential to common-mode conversion loss and the cable assembly insertion loss shall meet Equation (162-12) illustrated in Figure 162-7.

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where

$Conversion_loss(f)$ is the cable assembly differential to common-mode conversion loss at frequency f in dB

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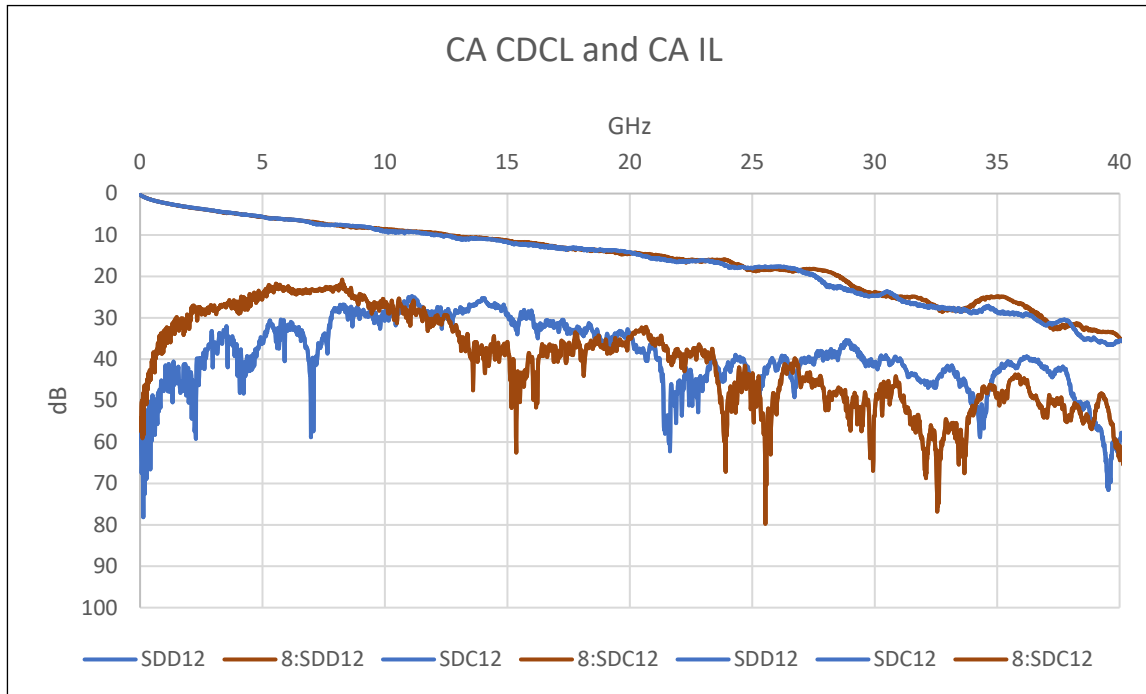
f is the frequency in GHz

Proposed resultant equation [(162-12)]

$CL(f)-IL(f) \geq 20$ dB [0.5 ≤ fGHz < 12.89]

$24 - 0.3108 \cdot (fGHz)$ dB [12.89 ≤ f ≤ 40]

162.11.5 Cable Assembly CDCL



https://www.ieee802.org/3/ck/public/19_07/tracy_3ck_01b_0719.pdf

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Cable Assembly- s-parameters

