

IEEE 802.3CY – BEYOND 10G ELECTRICAL AUTOMOTIVE ETHERNET PHY TF Link Segment IL Measurement



Harsh Patel
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Purpose

- Measure and show the IL of one of the available cables with connectors up to 10GHz
 - Plug to Plug 11m without Inlines

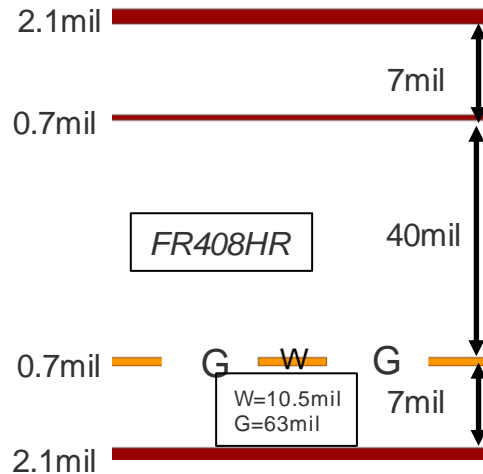


VNA Setup

Parameter	Value
Fstart	1MHz
Fstop	10GHz
Sweep Type	Linear
Step Size	1MHz
Output Power	-10dBm
IFBW (IF Bandwidth)	10KHz
Port reference impedance (Differential Mode)	100 Ω
Port reference impedance (Common Mode)	25 Ω
Calibration	E-CAL
Averaging Function	Deactivated
Smoothing Function	Deactivated
Logical Differential Port 1 (Tx)	Ports 1 & 3
Logical Differential Port 2 (Rx)	Ports 2 & 4
Touchstone File	Version 1
Data Format	Real + Imaginary

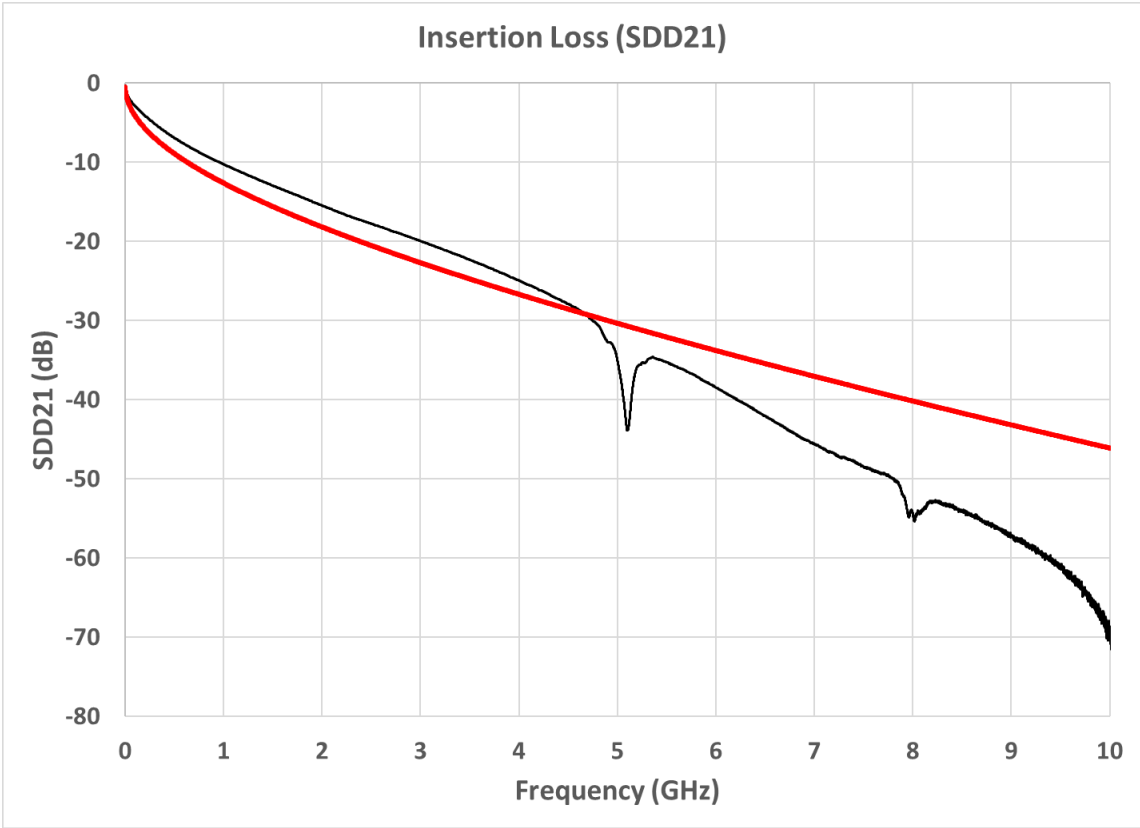
Fixture Information & De-embedding

- PCB Trace Length: 25mm
- PCB Stack up:

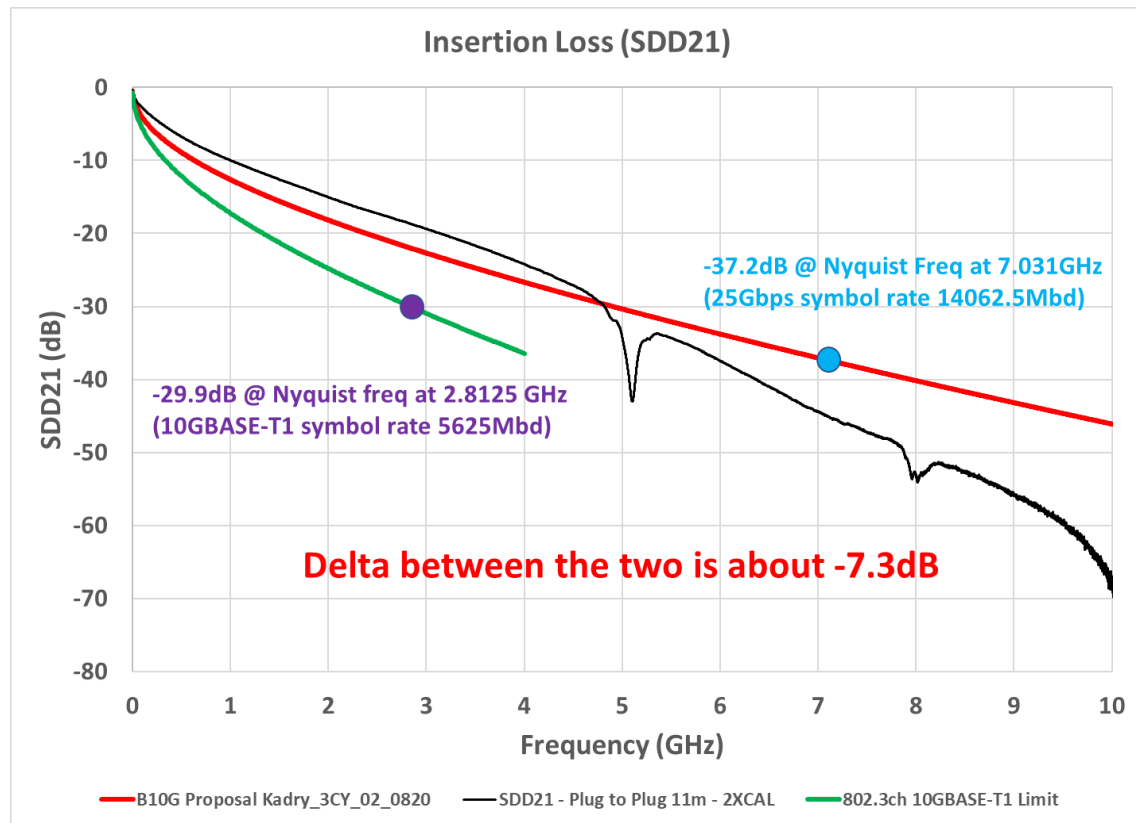


De-embedding involves removing the PCB Trace length from the IL measurement by using a 2XCAL fixture (which has 2x the trace length to consider for both ends).

Insertion Loss (SDD21) – Fixture Not Removed



Insertion Loss (SDD21) – Fixture Removed



Conclusion

- Using existing 26AWG cables will give us about -7.3dB worse IL compared the 10GBASE-T1 budget
- Can achieve higher freq with different cable constructions to move the suck-out point to higher frequencies (beyond point of interest)
- Question for the group:
 - Is this type of loss budget from channel acceptable or do we have to reconsider the length requirements of 11m & 2 inlines like we have discussed in past meetings?

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