

Data Showing Impact of FEC Decisions on COM for 25G Cable Configurations

Richard Mellitz
Intel Corporation
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Channel Models

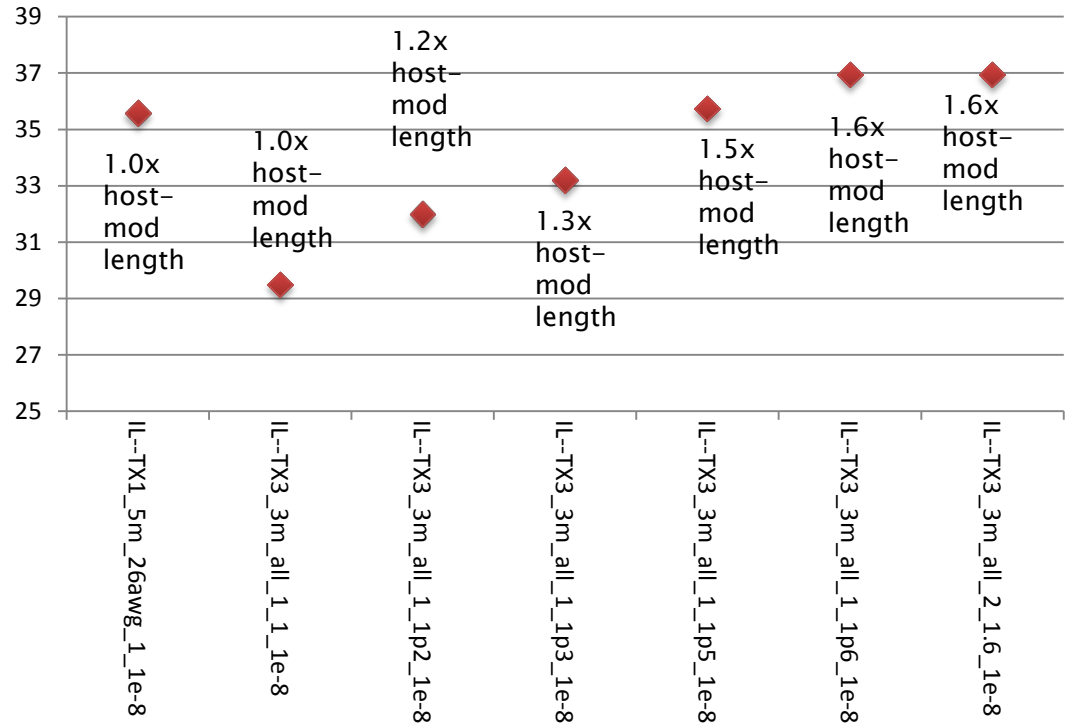
- ▶ 2 cables used for evaluation
 - 5 m
 - http://www.ieee802.org/3/100GCU/public/jan11/bugg_01_0111.pdf
 - ieee802p3bj\bugg_02_0511\5m_26awg\5m 26AWG Leoni\P1 RX1\IL\TX1.s4p
 - 3 m
 - http://www.ieee802.org/3/100GCU/public/ChannelData/CD_11_0415/3m_QSFP_30AWG.zip
 - 3m_all\P1_RX3\P1 RX3\IL\TX3.s4p
- ▶ It could be useful look channel models for 2m or 2.5 m cables.
- ▶ Evaluate COM for the cables with various FEC options with a corresponding DER (Detector Error Ratio)

5m cable just at 35 dB
objective

3m cable just at 30 dB no-
FEC tests case limit
However...

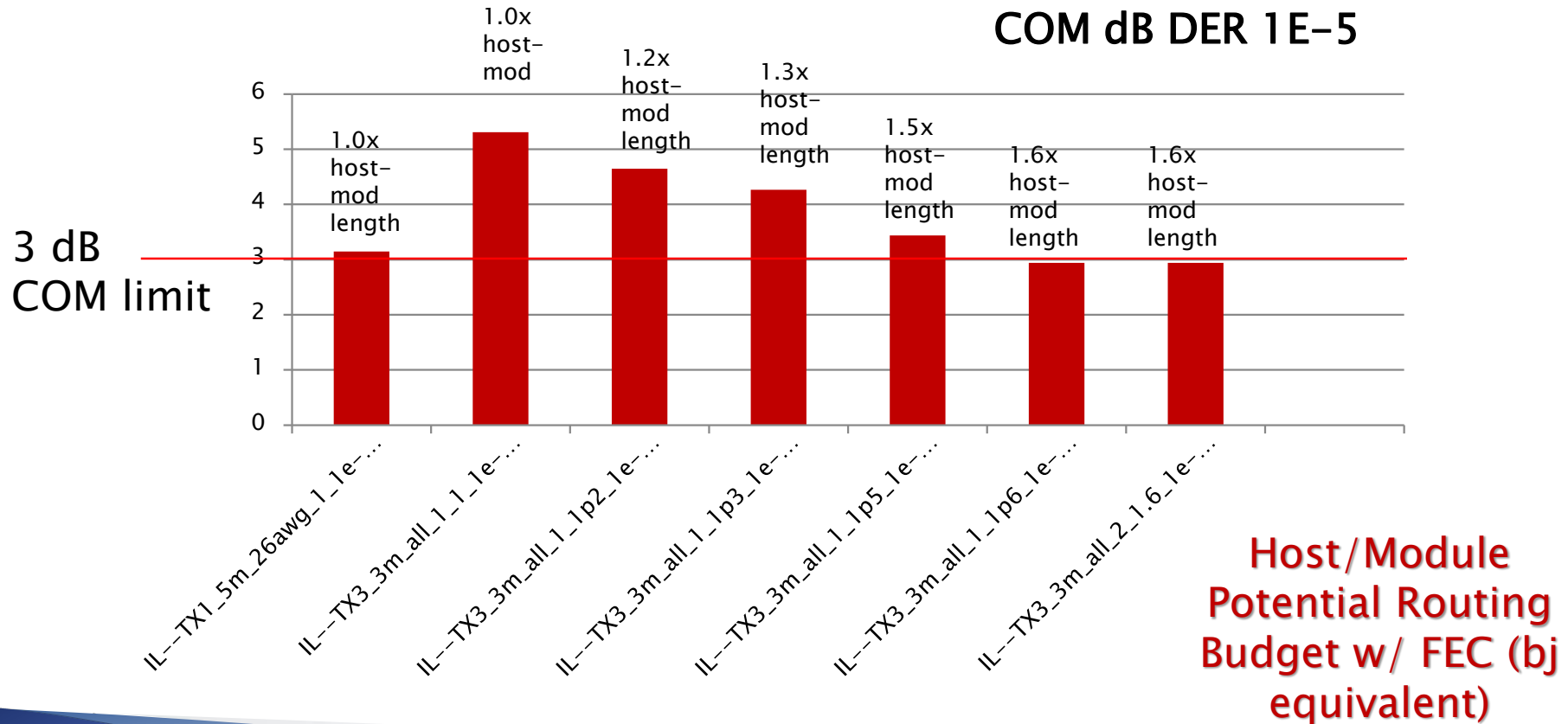
1.0x host-mod length = 6.25 dB added
to cable measurement. 1.2 dB is on
cable test fixture

TP0-TP5 Insertion Loss (dB) including added
host/module trace

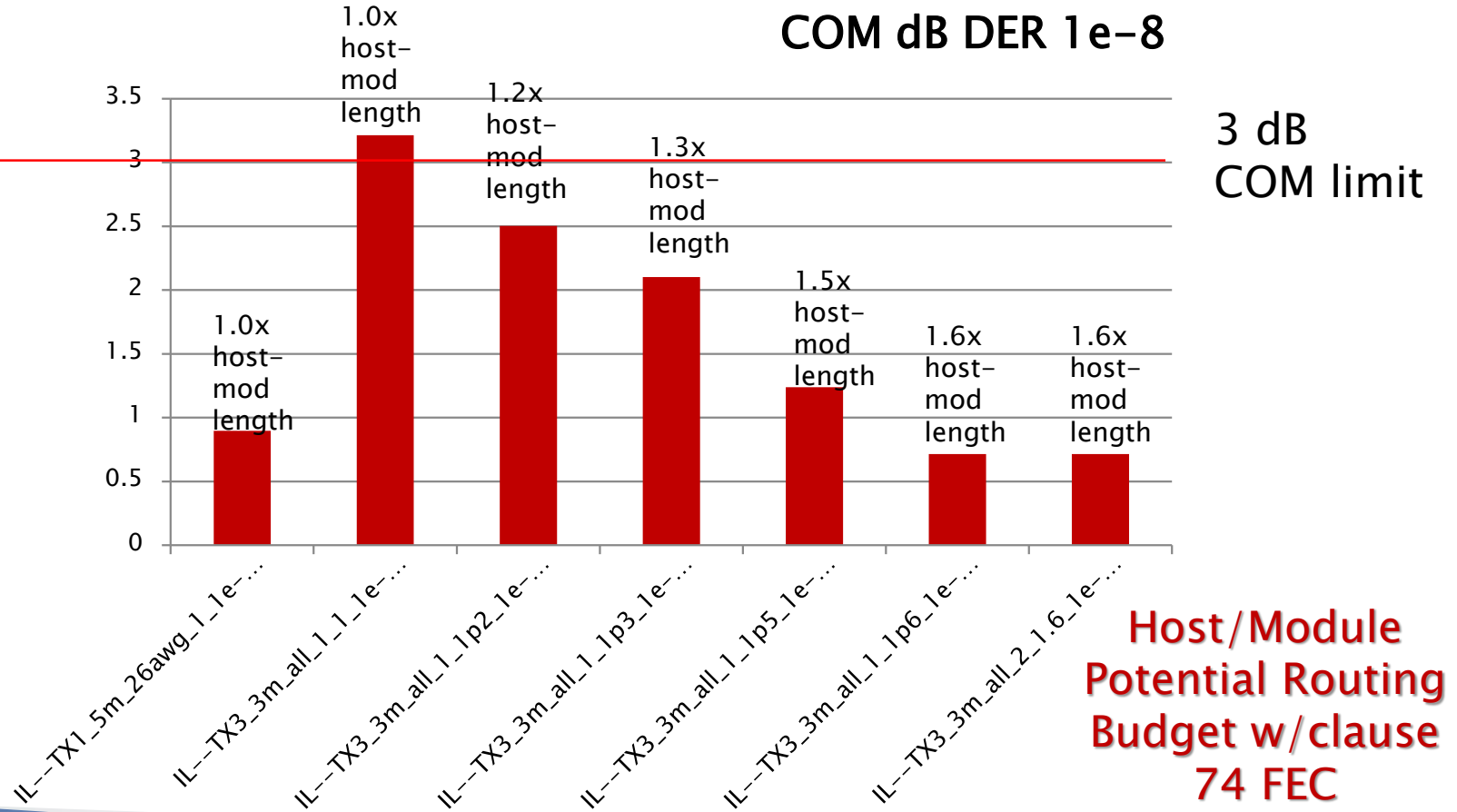


5 meter cable exceeds COM limit

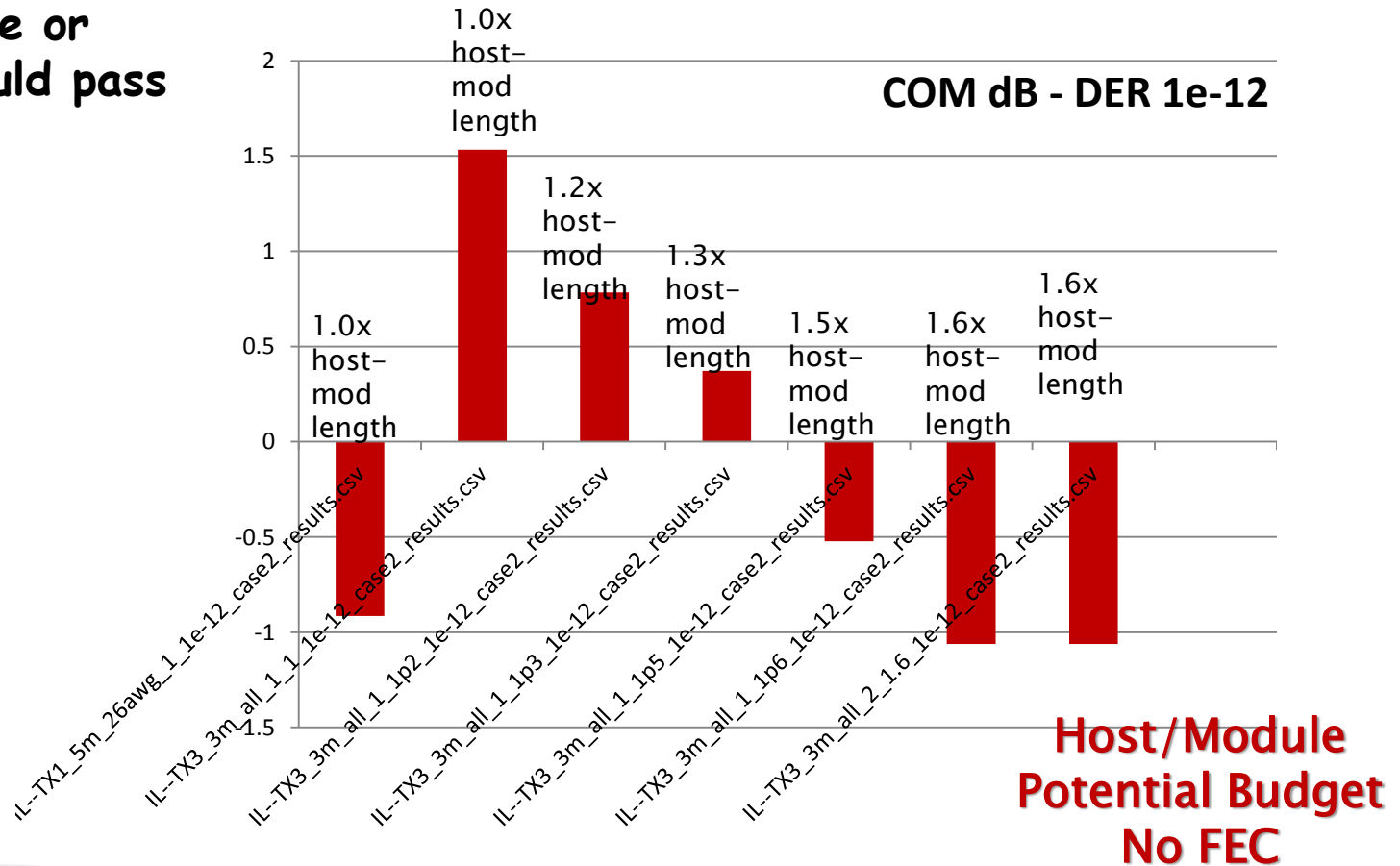
3 meter cable with 1.6x added trace is just at COM limit



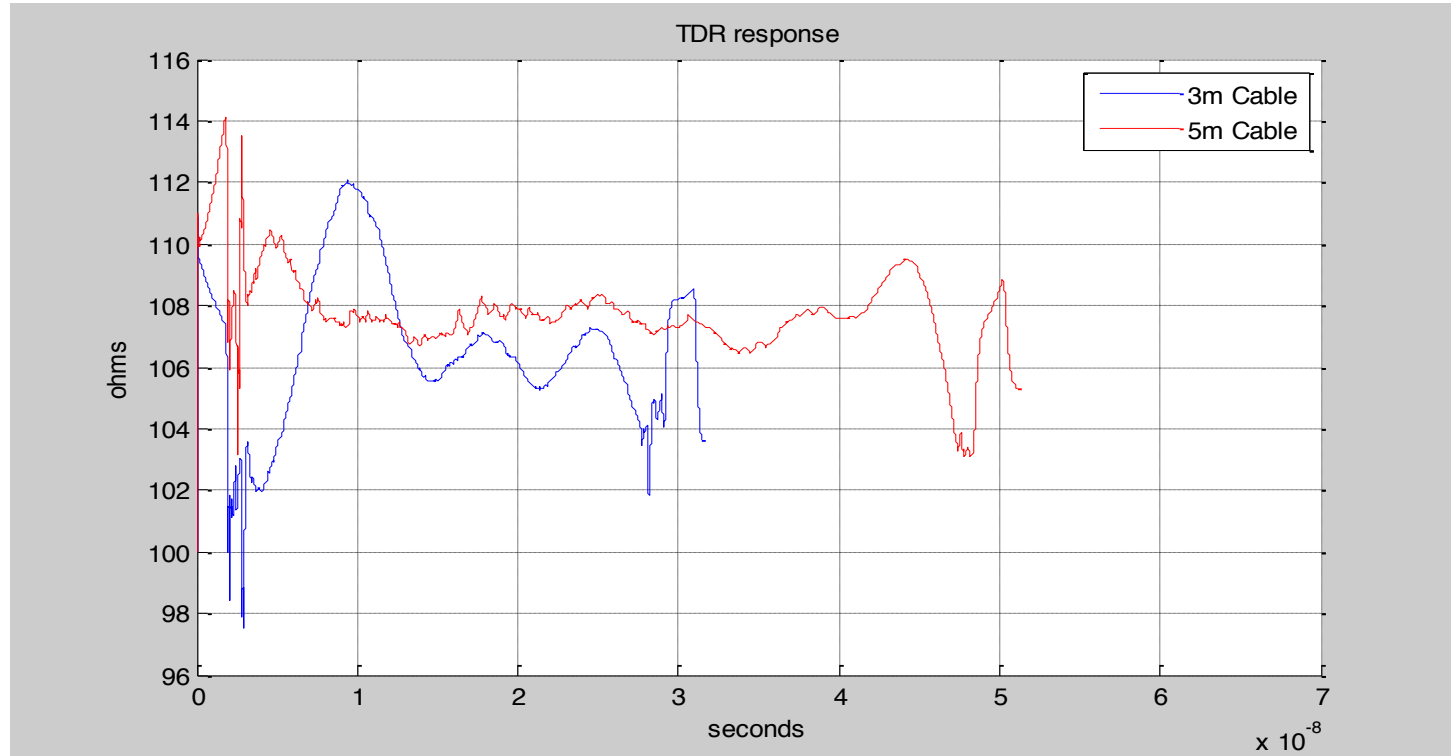
5m far below COM limit
3m cable just at COM limit



5m and 3m below COM
Perhaps a better
cable/test fixture or
shorted cable could pass



TDR suggest that fixtures and connectors may play a significant role



Summary:

Potential Host/Module Trace Routing Budgets (per card) including the 1.2 dB allocated to cable test fixture

Cable Length	Host/Module Potential Routing Budget w/ FEC (bj equivalent)	Host/Module Potential Routing Budget w/ clause 74 FEC	Host/Module Potential Budget No FEC	Compatibility
5m 26 gage	7.45dB*	< 3dB com	< 3dB com	CAUI-4 C2M boards
3m 26 gage	11.1dB	7.45dB	< 3dB com	CAUI-4 C2M If same Host/mod reach
2m 30 gage	No data	No data	No data	NA

Objective Thoughts

- ▶ FEC decisions have channel consequences
- ▶ Objectives should comprehend this as well as silicon consequences (area and power)
- ▶ Perhaps provide pathway to comprehend
 - Cable length
 - Host/module trace routing
 - FEC