

200G AUI C2M System Application and Channel Model Contribution

Upen Reddy Kareti, Cisco

Yi Tang, Cisco

Darja Padilla, Cisco

IEEE P802.3dj Electrical Ad Hoc

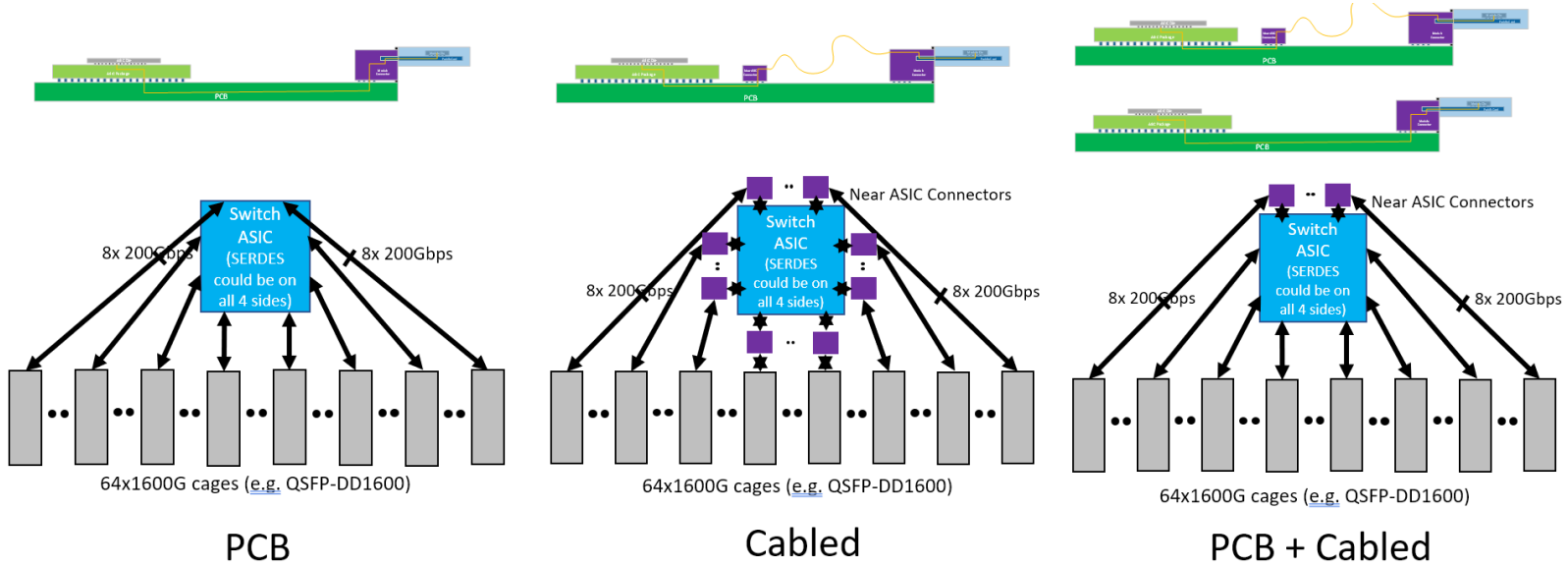
Contributor

- David Nozadze, Cisco
- Mike Sapozhnikov, Cisco

Background and Introduction:

- Presented in [kareti_3df_01a_2207.pdf](#): Large Scale Switch - high bandwidth (102.4T), high radix (e.g. 512x200G)
 - SERDES on all sides of pkg
 - Large Package (>16x the area)
 - Wider ball size & pitch (solderability reasons)
 - 64 optics on one side (“pizza box” font panel)

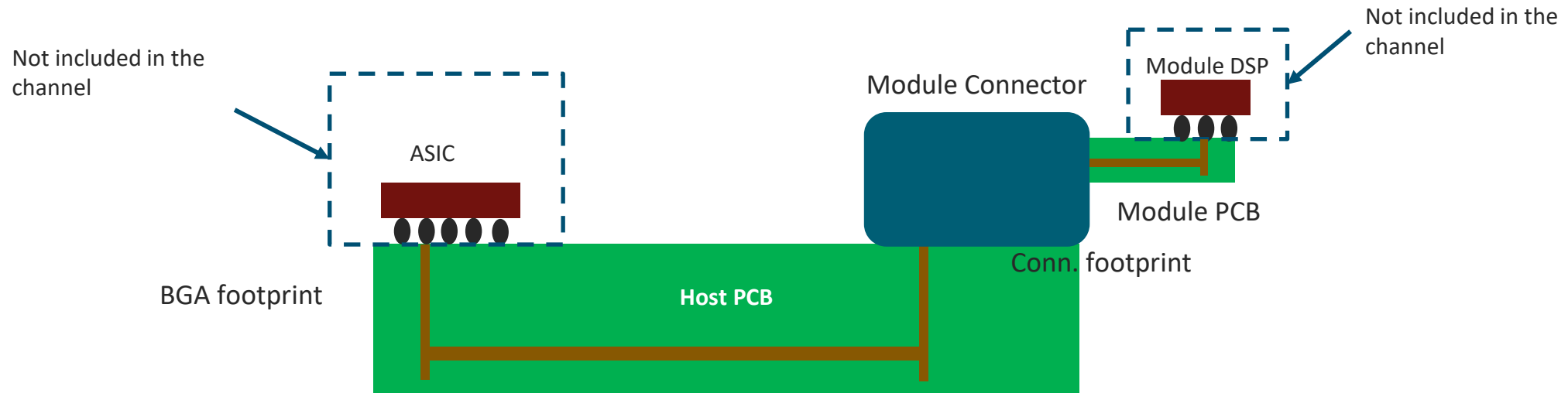
	200G PAM4 w RS544 FEC Highest Bump-to-bump Loss
Cabled host	36.26dB
PCB host	43.51dB



Updated Channel Loss Estimate

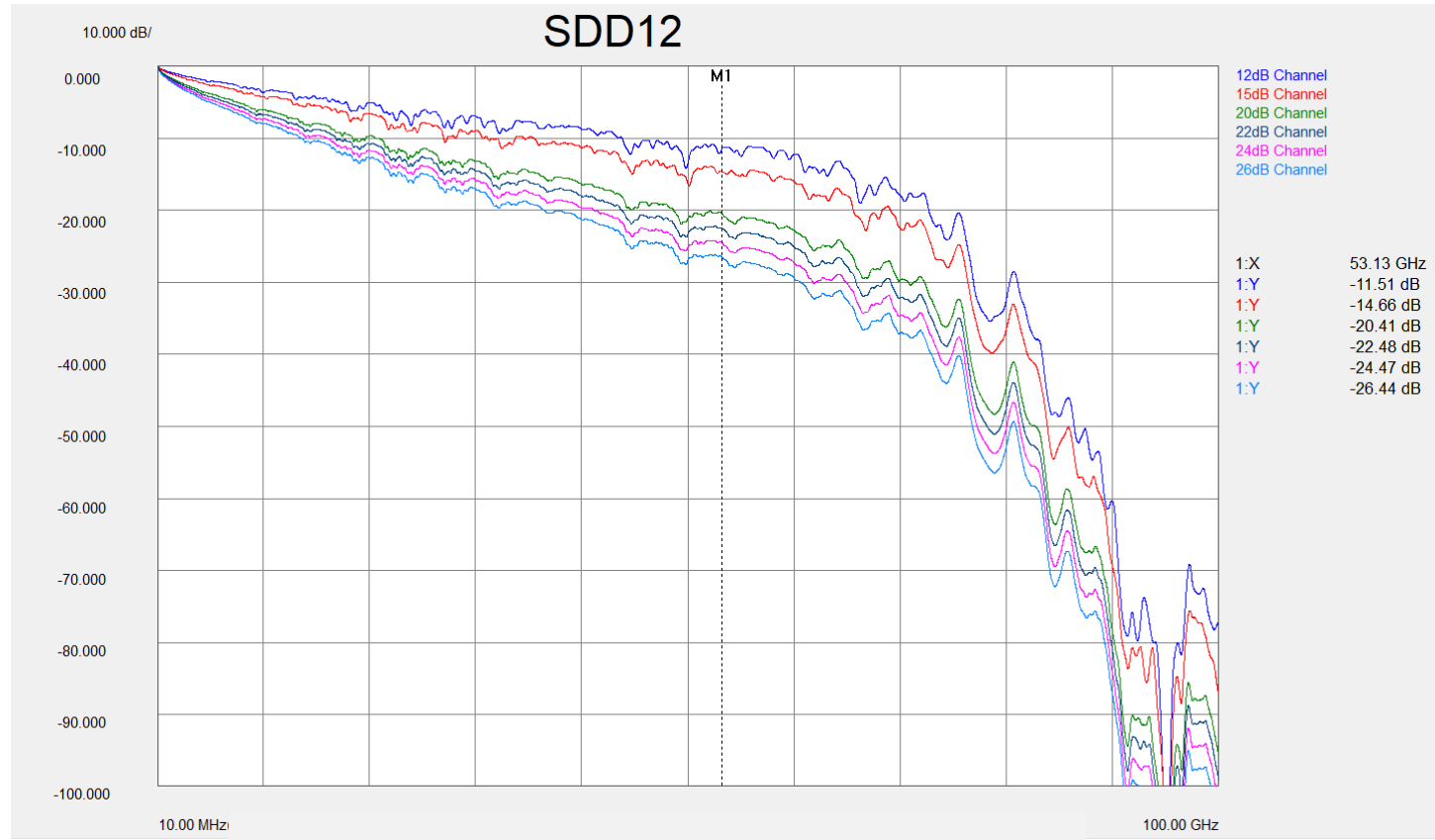
- Channel optimization was conducted on a fully routed 512-radix system with both PCB host and cabled host implementations
 - Co-optimization of host package routing and PCB routing.
 - New loss target provided by PCB material suppliers – performance across temperatures needs to be investigated further.
 - New loss target provided by connector vendors.
- PCB host: worst-case bump-to-bump channel loss improved from 43dB (kareti_3df_01a_2207) to a little over 36dB, and about 2/3 of channels have an insertion loss of less than 32dB.
- Cabled host: worst-case bump-to-bump channel loss improved from 36dB (kareti_3df_01a_2207) to a little over 34dB.

PCB Host AUI C2M Channel Model Overview

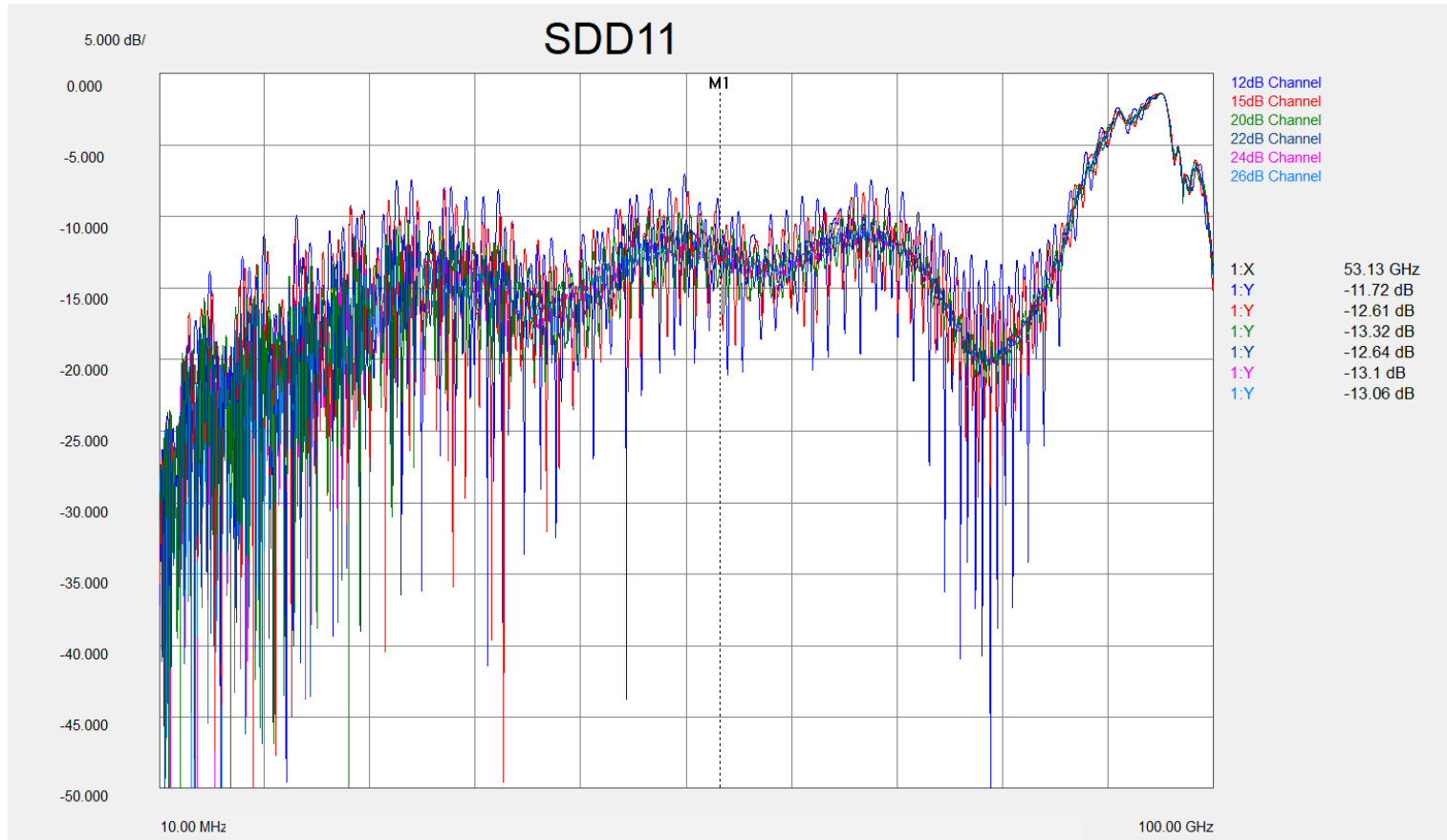


- 6 PCB host channels were built and uploaded: 12dB, 15dB, 20dB, 22dB, 24dB, 26dB
- The C2M channels include host PCB via, host PCB, connector, module PCB, module PCB via.

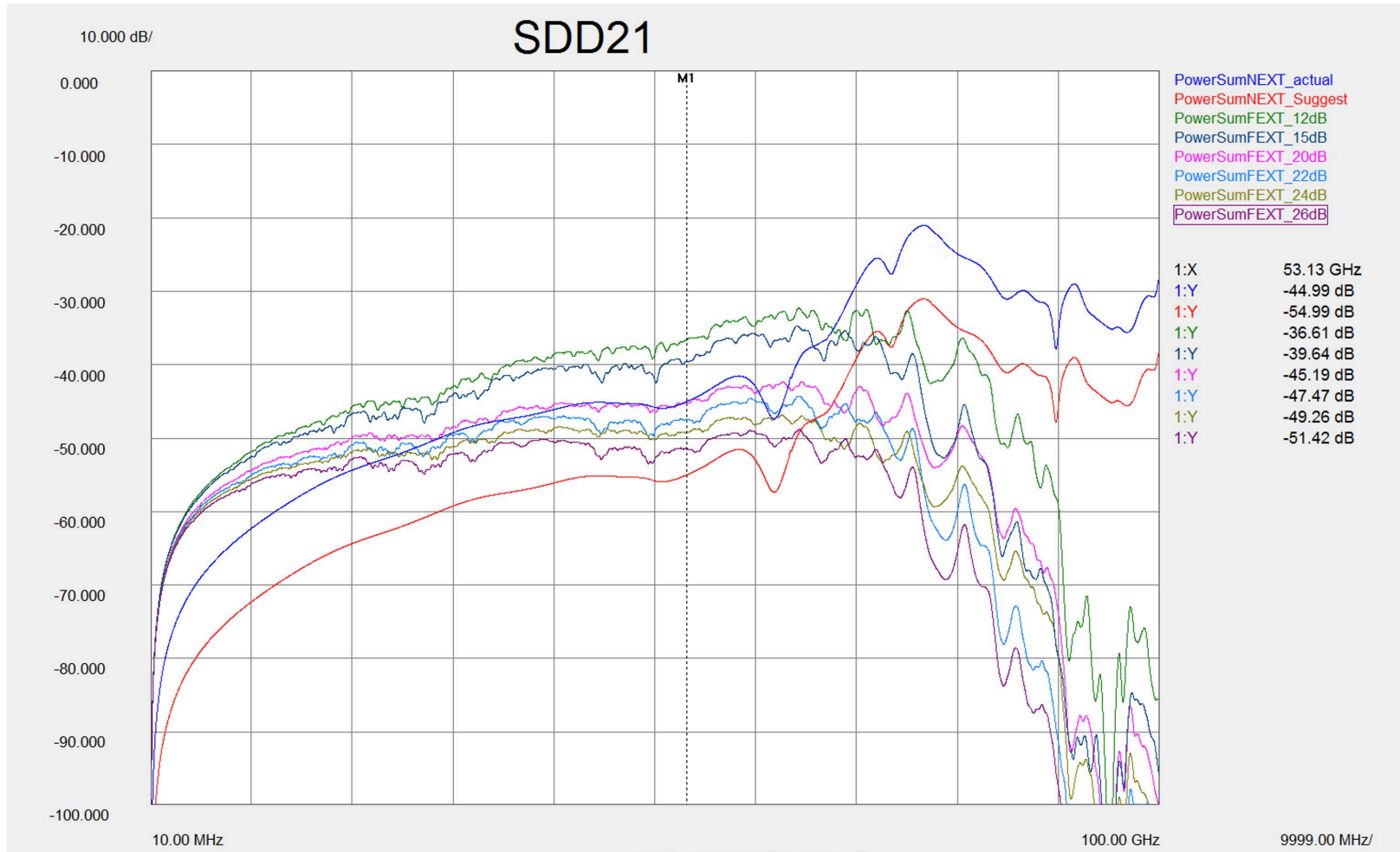
Differential Insertion Loss – PCB Host



Differential Return Loss – PCB Host

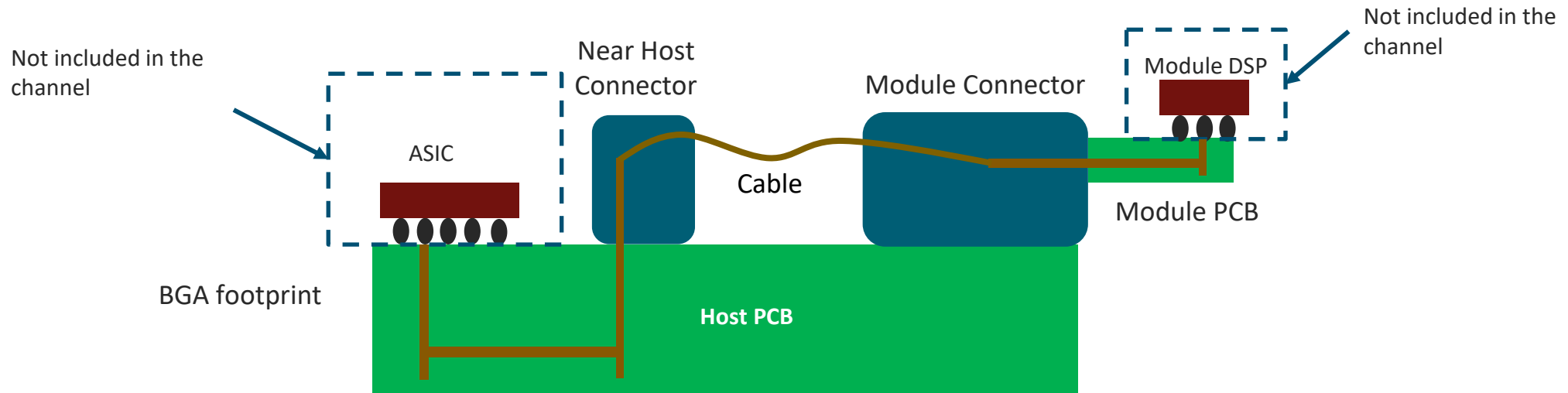


Far-end & Near-end Crosstalk – PCB Host



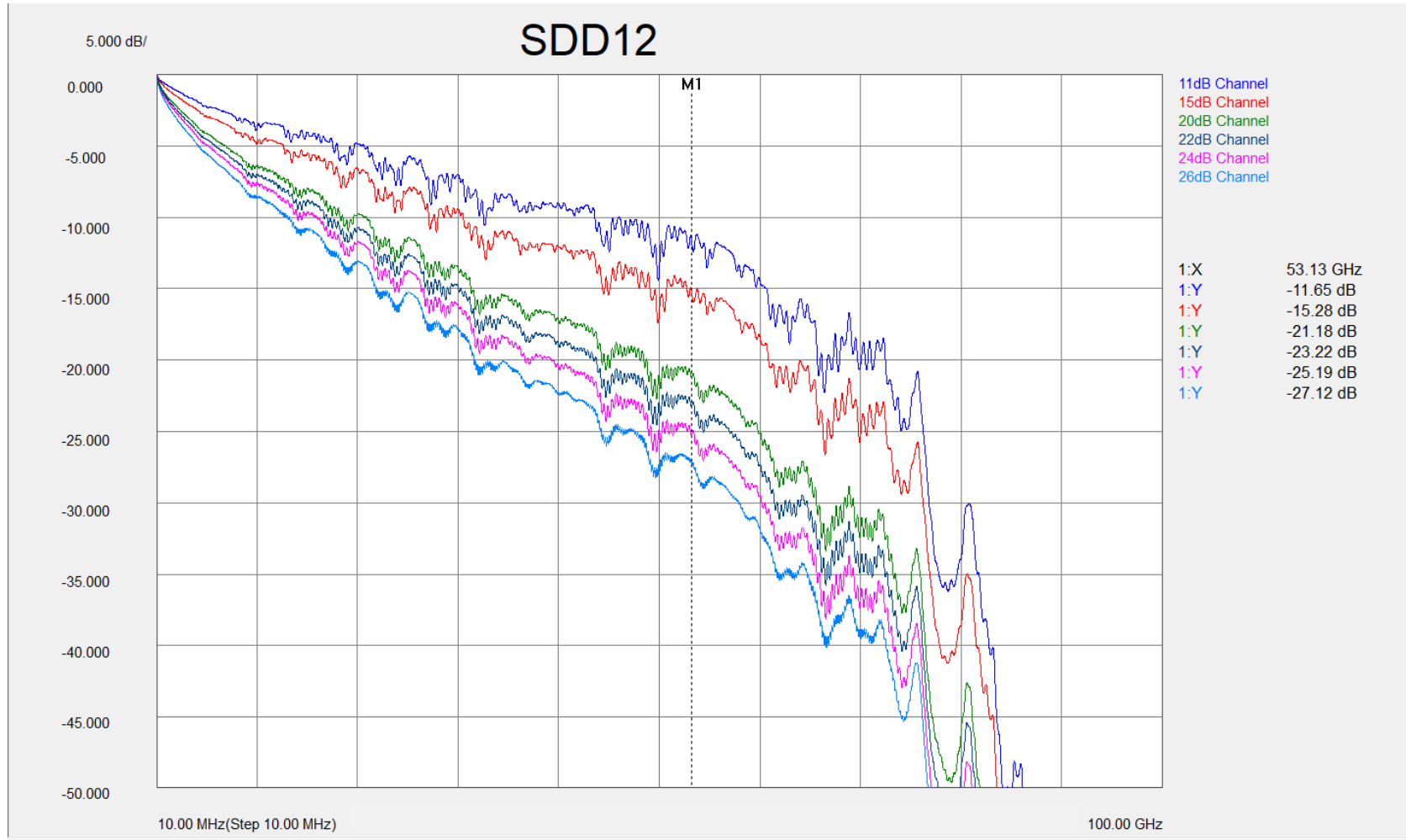
PowerSUM NEXT is based on the case when IO connector is closest to the RX – i.e., at Module RX

Cabled Host AUI C2M Channel Model Overview

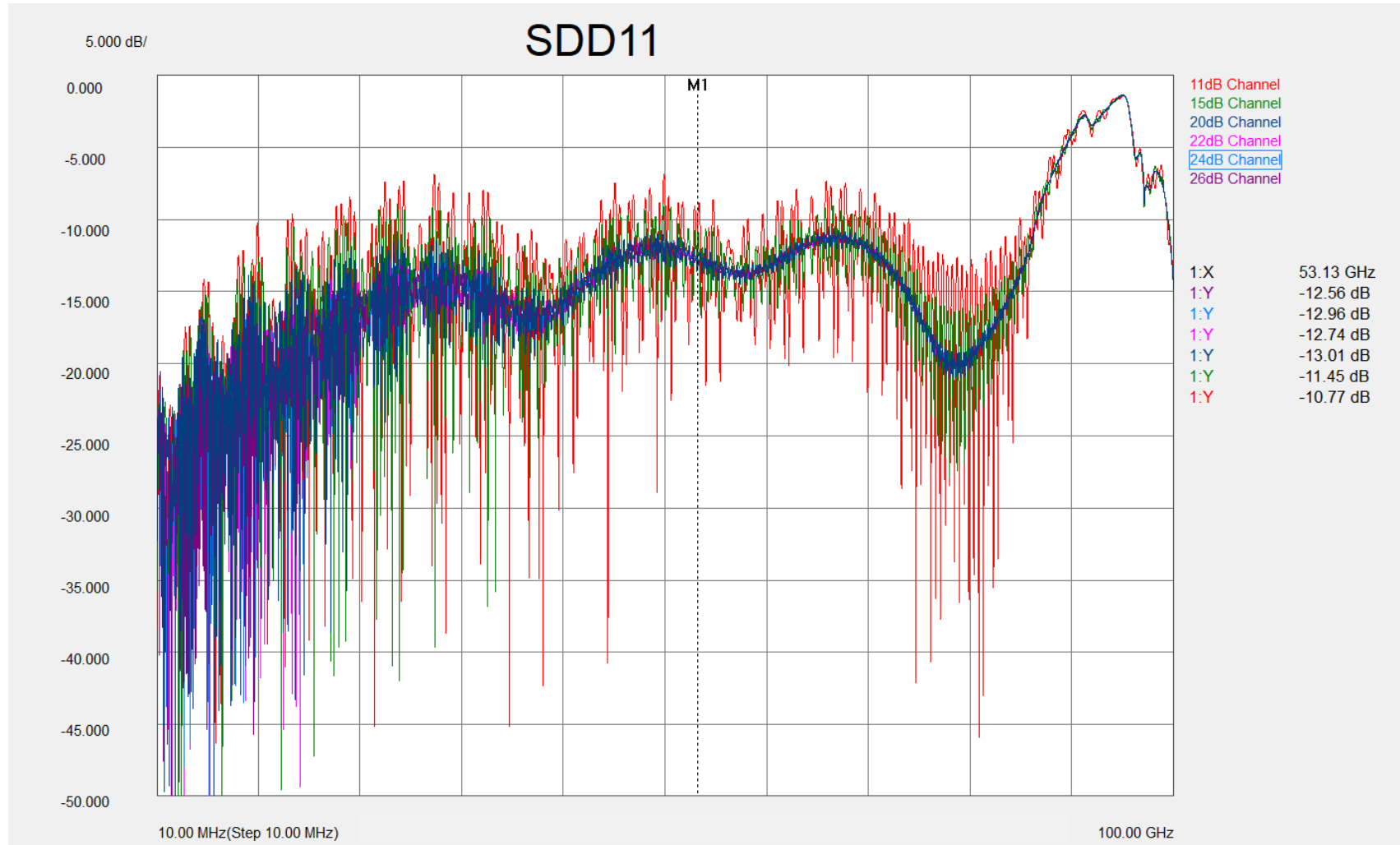


- 6 cabled host channels were built and uploaded: 11dB, 15dB, 20dB, 22dB, 24dB, 26dB
- The C2M channels include host PCB via, host PCB to near host connector, near host connector, cable, module connector, module PCB via.

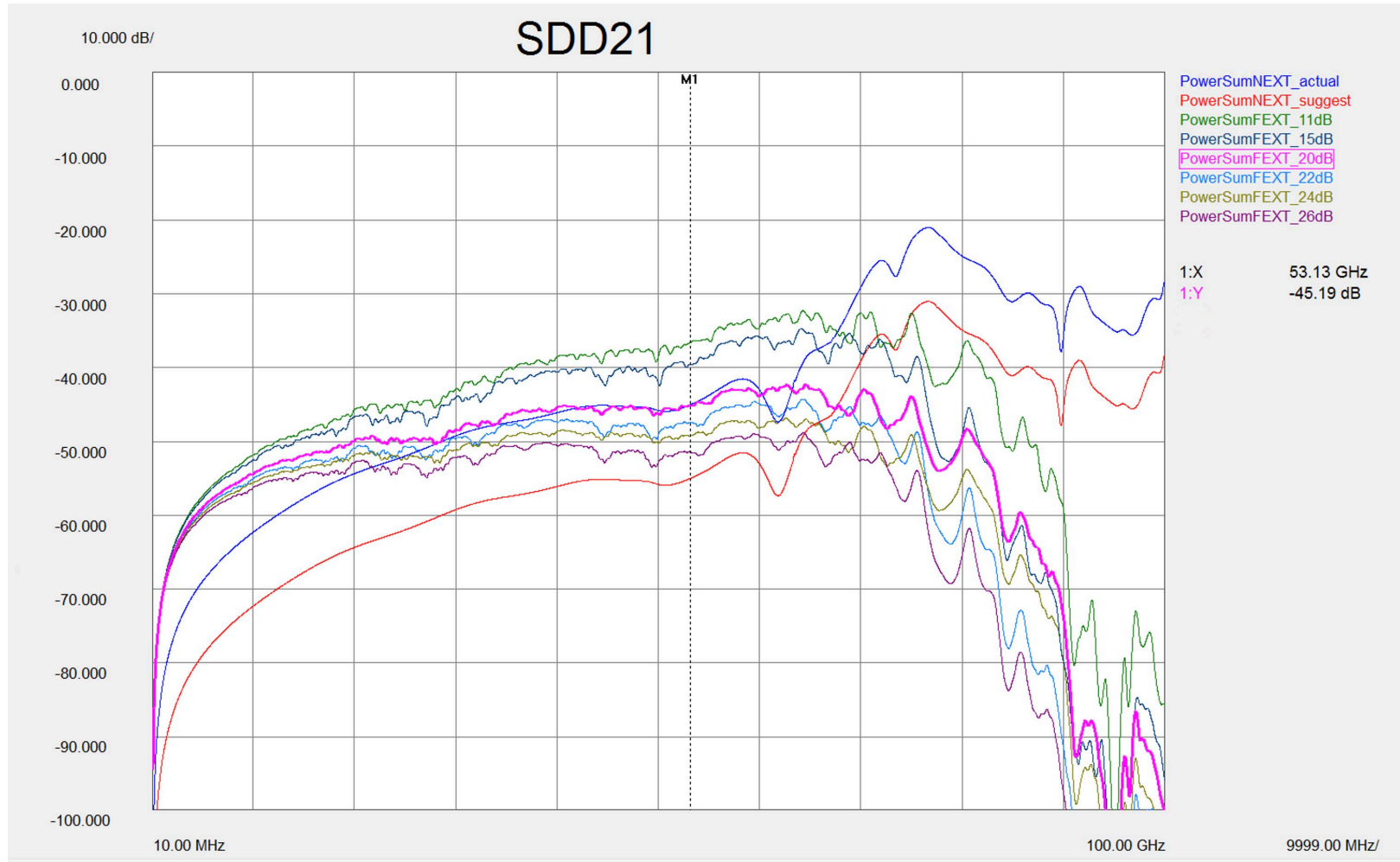
Differential Insertion Loss – Cabled Host



Differential Return Loss – Cabled Host



Far-end & Near-end Crosstalk – Cabled Host



PowerSUM NEXT is based on the case when IO connector is closest to the RX – i.e., at Module RX