Proposed specification for 224G C2M Compliance Test Board Insertion Loss

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Supporters:

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References:

- Considerations for CR Insertion Loss Budget Baseline: Cable Assemblies and Test Fixtures (diminico_3dj_01_2311)
- Considerations of Technical Feasibility for Mated Compliance Fixtures (kocsis_3dj_01_2311)
- Demonstrated implementation feasibility of suggested 224G C2M test fixture loss with measurement data (Ad hoc call 4 January 2024)

Intent

- Propose Normative specification for 224 G C2M HCB and MTF Insertion Loss specification
  (IL for C2M MCB has already been discussed and voted on by task force – 2.7 dB)

- Demonstrate feasibility to fabricate compliance test fixtures to recommended specifications and validate with measured data.

- Protypes developed agnostic to form factor. Both QSFP-DD and OSFP prototypes were fabricated and tested

Prototype Construction and Measurement

HCB and MCB loss reference boards were created and measured including all transmission lines up to, but excluding connector, connector pads, and vias in pads.

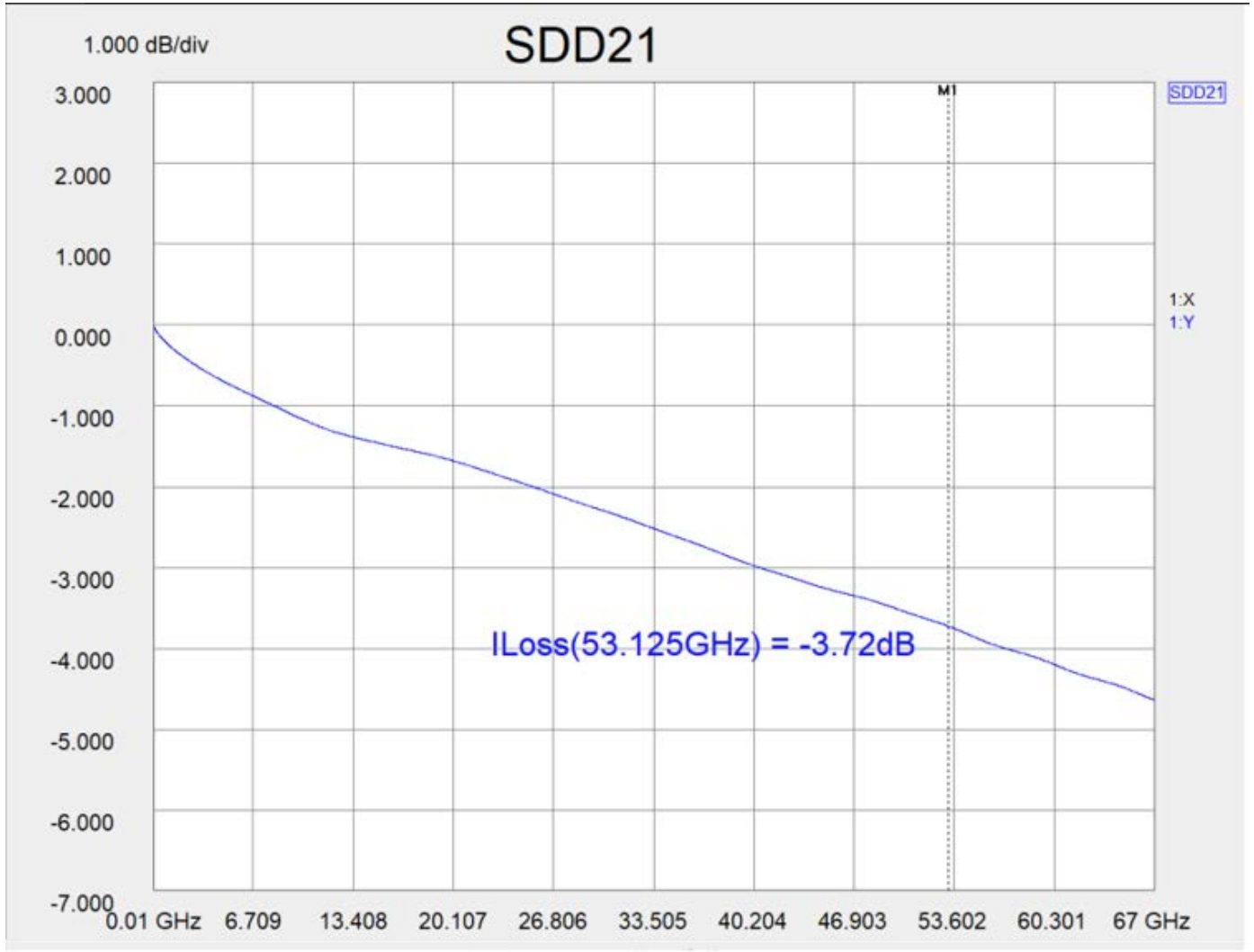
Proposed HCB, MCB and MTF IL @ 53.125 GHZ

Component	Insertion Loss (dB)
Module Compliance Board transmission line	2.7
Host Compliance Board transmission line	3.8 (proposed specification)
Mated Test Fixture	9.4 (proposed specification)
MTF connector + associated via's	2.9

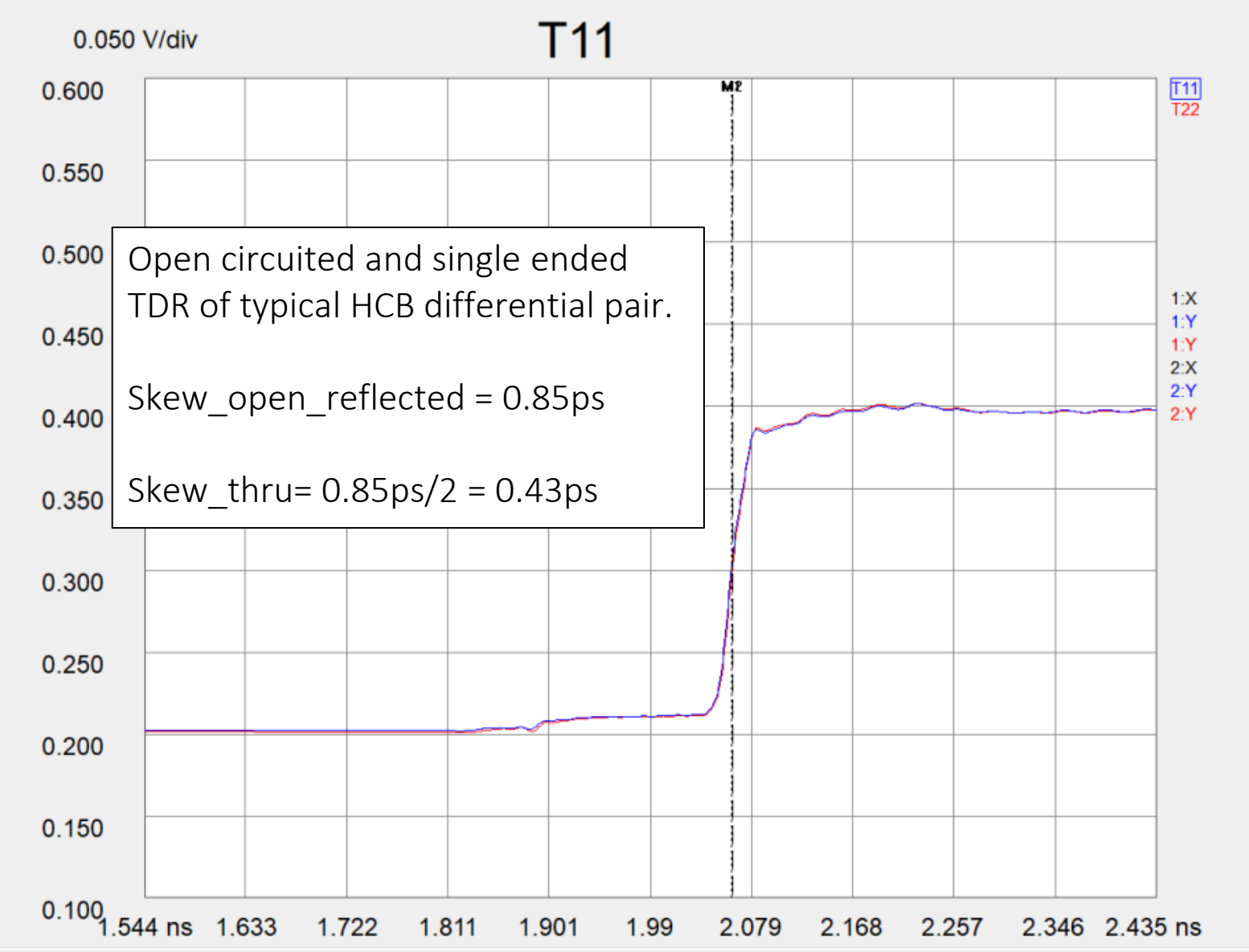
OSFP Prototype Construction

To minimize loss, HCB uses short paddle card PCB launched into coax cables

Prototype Measurement Results – OSFP HCB IL



Prototype Measurement Results – OSFP Skew



Open circuited and single ended TDR of typical HCB differential pair.

Skew_open_reflected = 0.85ps

Skew_thru= 0.85ps/2 = 0.43ps

Summary and Conclusion

- Measured data shows good correlation with proposed insertion loss for HCB, MCB, and MTF.

- Motion to set 224G C2M Host Compliance Board Normative specification to -3.8 dB @53.125 GHz and the Mated Test Fixture Normative specification to -9.4 dB