



Suggested MTF ILdd fitted reference line, limit lines and associated equations for Annex 179B

802.3dj D1p4 comments #139, 140, & 142

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Intent

- Suggest ILdd mask limit lines and fitted equations for Mated compliance Test Fixtures (MTF) to fill TBD in 179B.4.1
 - Based on updated S4P data
- Not suggesting change to MTF ILdd reference line at this time – will likely change during Working Group as data from improved MDI connectors become available

Figure 179A.1 correction (comment #140)

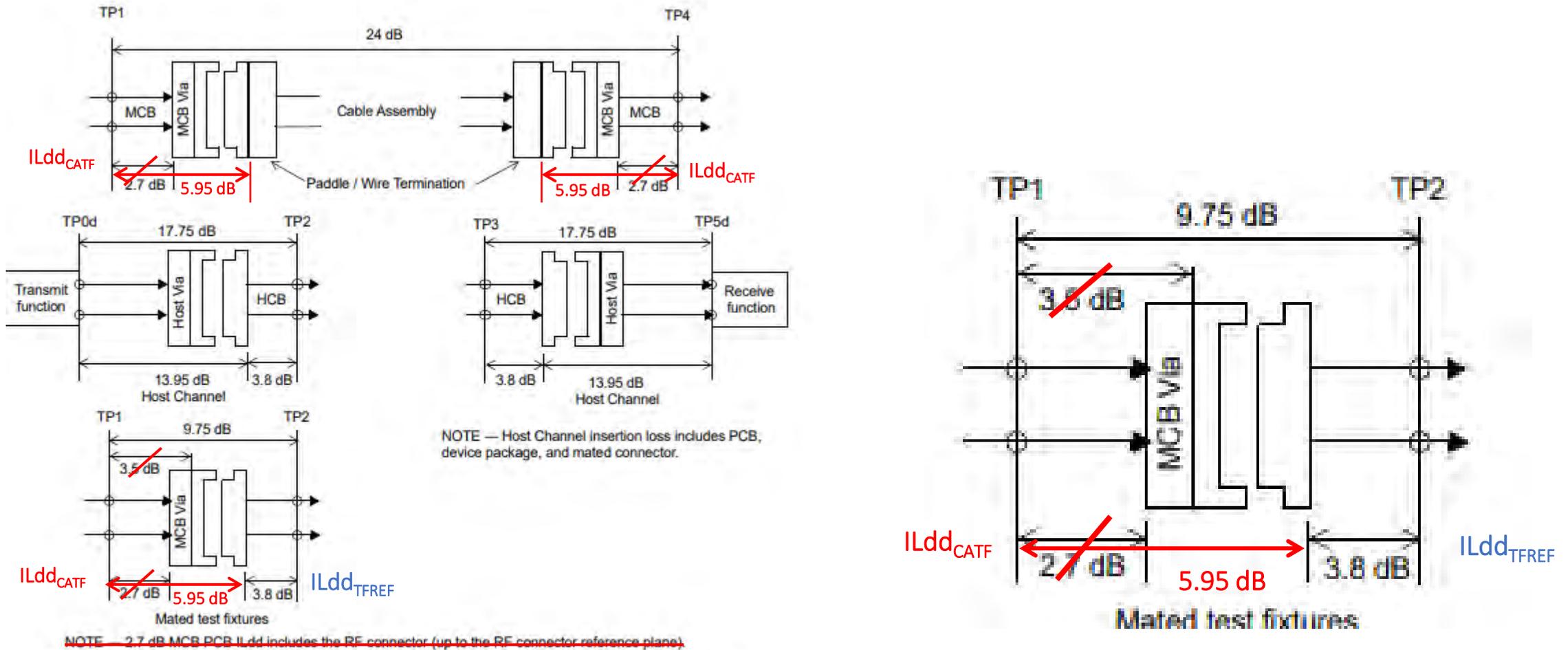


Figure 179A-1—Host-Nominal to Host-Nominal, Cable assembly, and test fixture insertion loss at 53.125 GHz

MTF Measurement Setup & Curve Fitting Notes

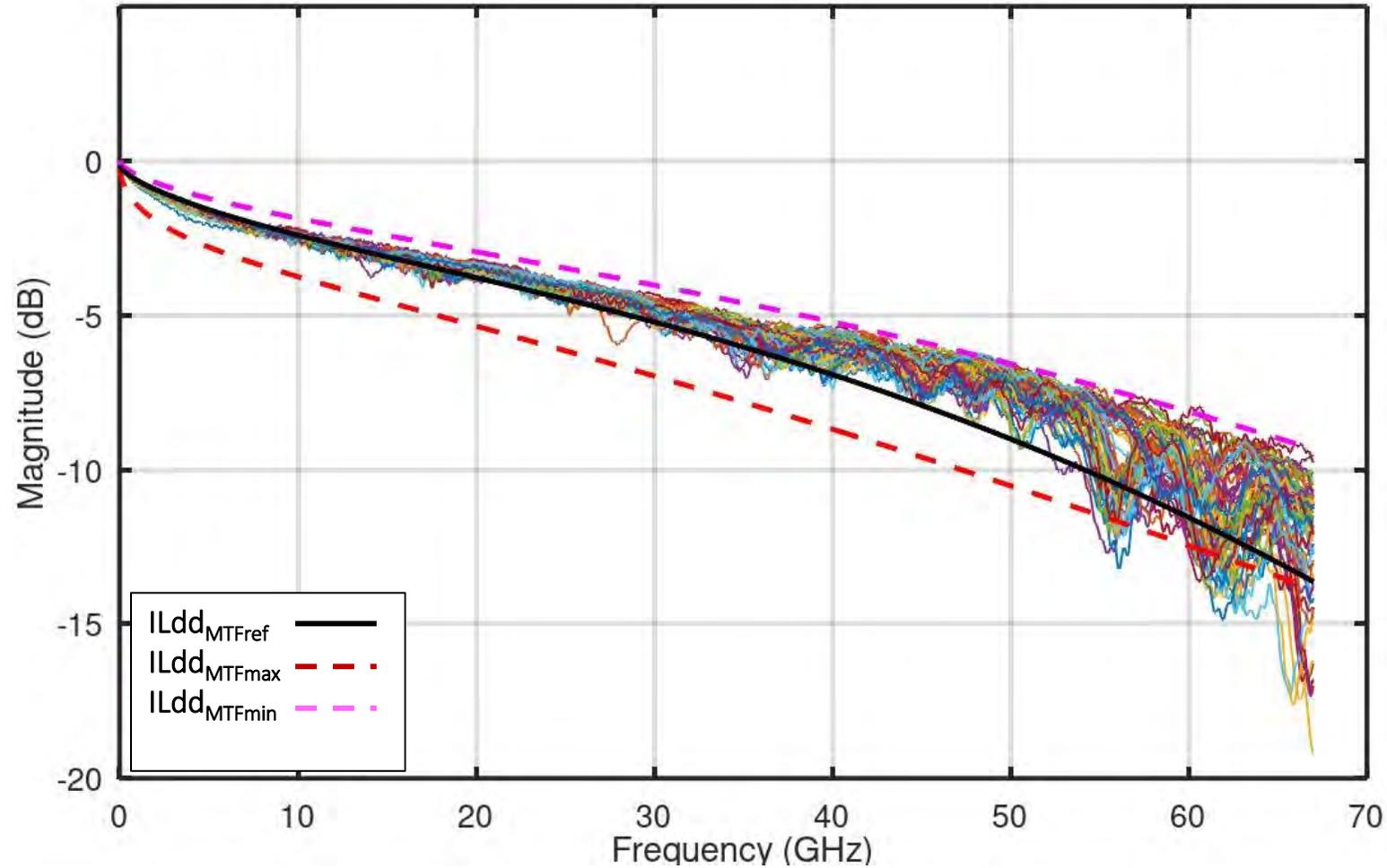
- Prototype HCB and MCB built with second generation module connector
- Based on data from 4 HCB + MCB sets
- 1.85 mm and 1.0 mm instrument connectors (2 each)
- S4P data measured to 110 GHz stop freq.; 10 MHz step size

- MCBs not tuned to target ILdd
 - Additional IL will be required
 - Current fixture sets not compliant – anticipate less spread between short and long legs to connect to PCB in future MDI connectors

ILdd mask generation methodology assumptions

- Sufficient mask margin to accommodate multi-sourcing of MDI connector
- Fitted reference MTF ILdd intersects with 9.75 dB @ Nyquist target already established by Task Force
- Low frequency MTF performance variance constrained by FOM_ILD and ERL specifications rather than solely ILdd mask
- Suggested limit lines allow MCB and HCB fabrication with practical yields.
 - Further tightening of limit lines may be possible with forthcoming module connector improvement

MTF ILdd Masks



MTF ILdd Mask Equations

179B.4.1 Mated test fixtures insertion loss

The insertion loss of the mated test fixtures shall meet Equation (179B-3) and Equation (179B-4).

$$ILdd(f) \leq ILdd_{MTFmax}(f) = \begin{cases} TBD & 0.01 \leq f < TBD \\ TBD & TBD \leq f \leq 67 \end{cases} \quad (179B-3)$$

$$ILdd(f) \geq ILdd_{MTFmin}(f) = TBD \quad (179B-4)$$

for $0.01 \leq f \leq 67$

where

$ILdd(f)$ is the measured insertion loss in dB at frequency f
 $ILdd_{MTFmax}(f)$ is the maximum mated test fixtures insertion loss in dB at frequency f
 $ILdd_{MTFmin}(f)$ is the minimum mated test fixtures insertion loss in dB at frequency f
 f is the frequency in GHz

$$0.03 + 1.6562\sqrt{f} - 0.286f + 0.0469f^{1.5} - 0.0014f^2$$

$$-0.0413 + 0.436\sqrt{f} + 0.0813f - 0.0153f^{1.5} + 0.00195f^2$$

* Note: $ILdd_{MTFmax}(f)$ is a continuous curve. Breakpoint knee as in 802.3ck is no longer present