
802.3bj and CAUI-4 Test Fixtures

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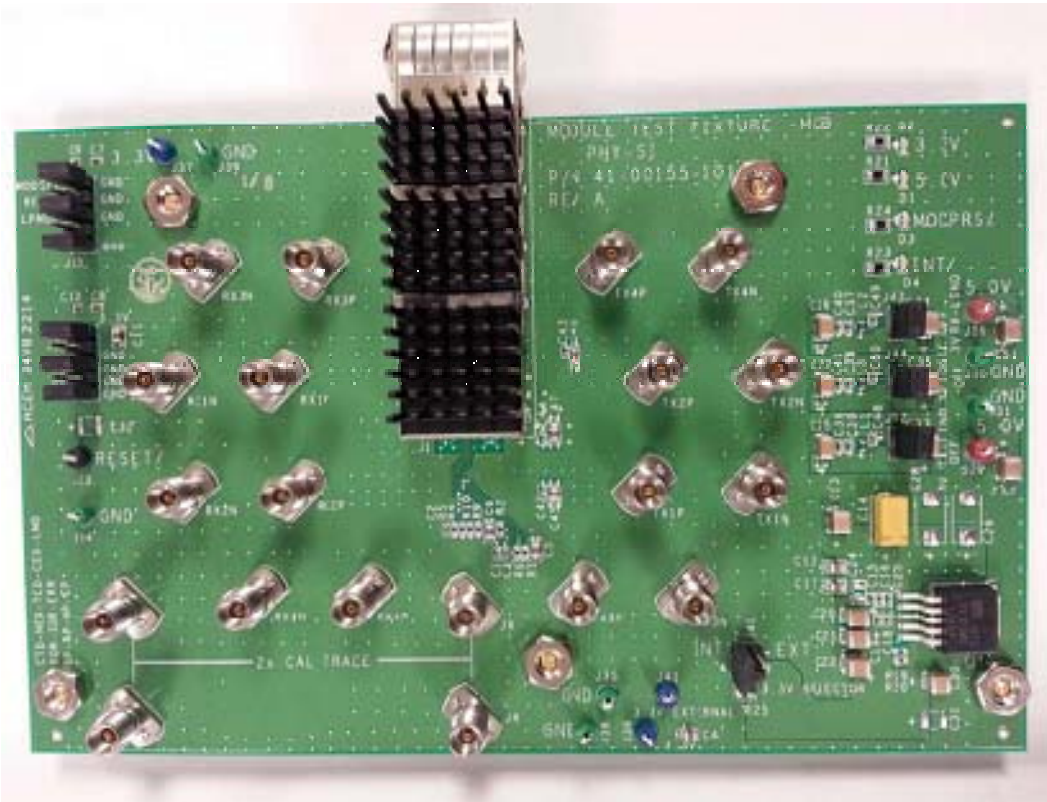
Purpose

- **Demonstration of achievability of 802.3bj mated test fixture specifications.**

Contributors

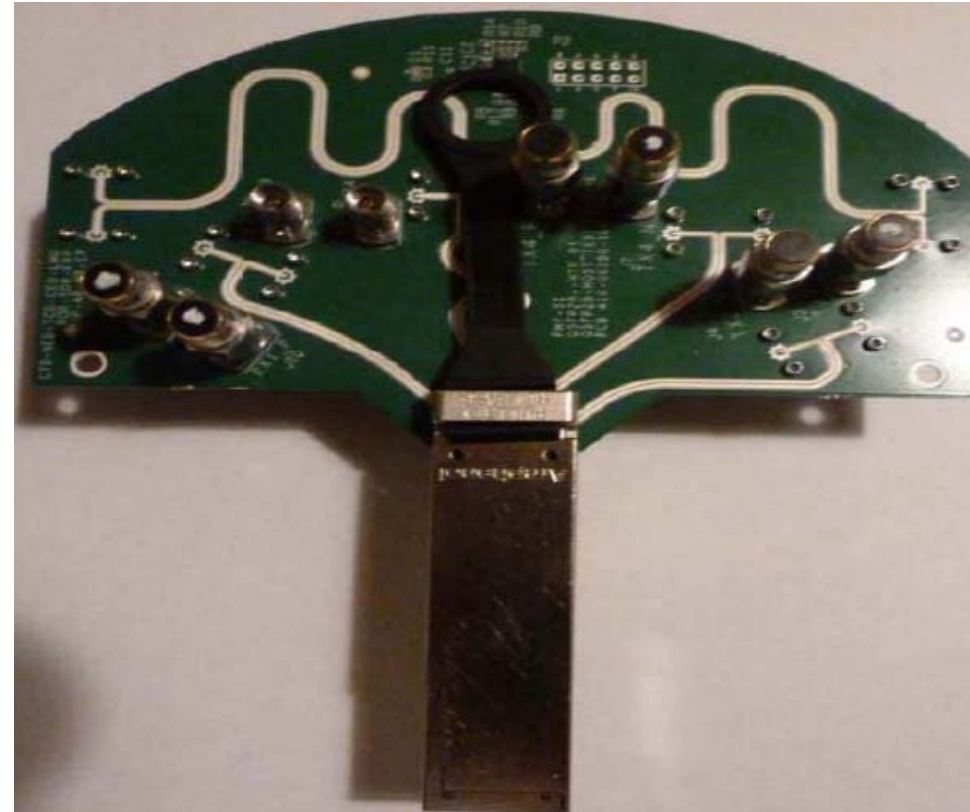
- **Curtis Donahue, Jeff Lapak - UNH-IOL**
- **Nathan Tracy - TE**
- **Tom Palkert, Joe Dambach - Molex**
- **Greg McSorley - Amphenol**

PHY-SI - Test Fixtures



Module compliance board (MCB)

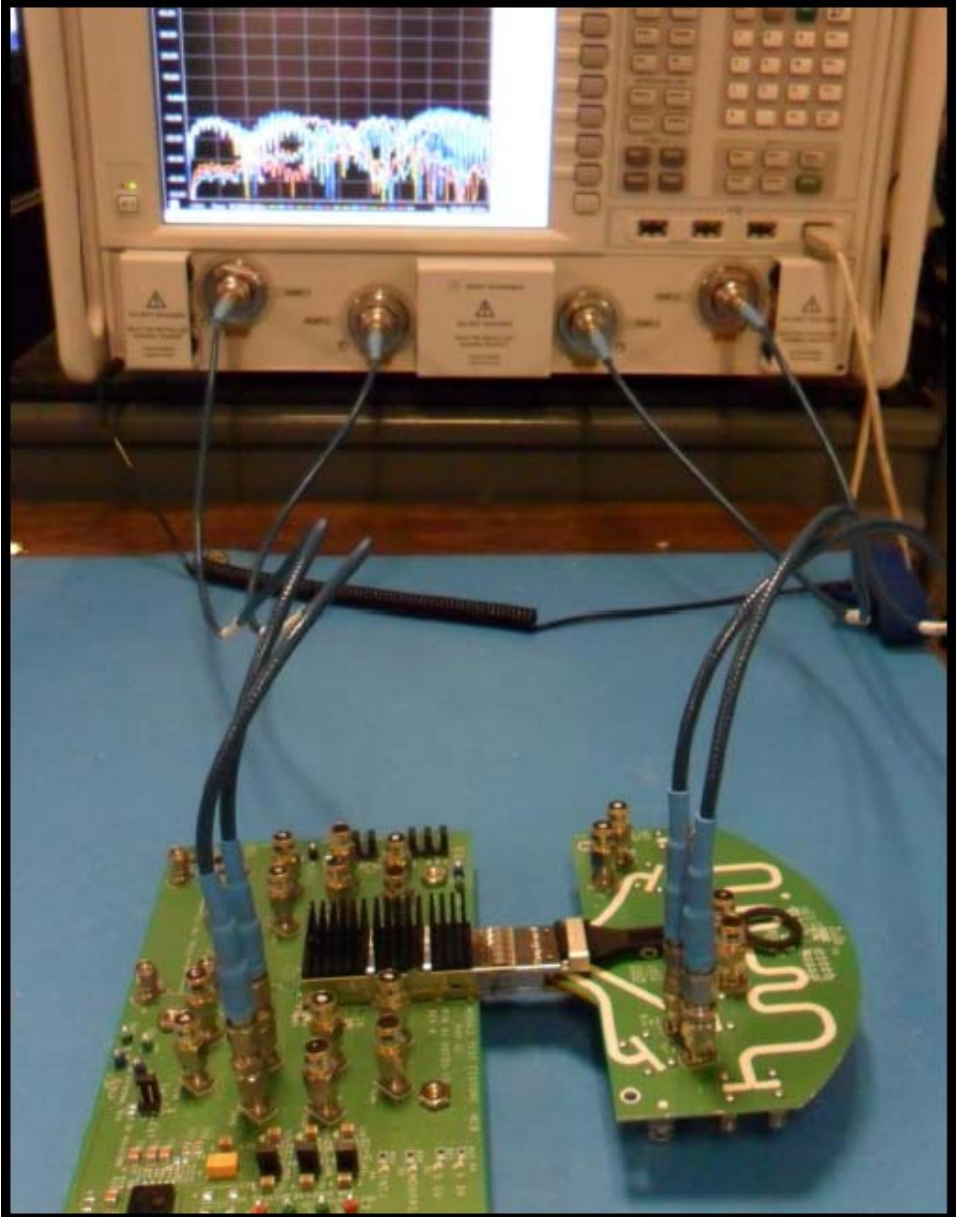
- Cable assembly test fixture
- Module test fixture
- TP1 to TP4 test fixture



Host compliance board (HCB)

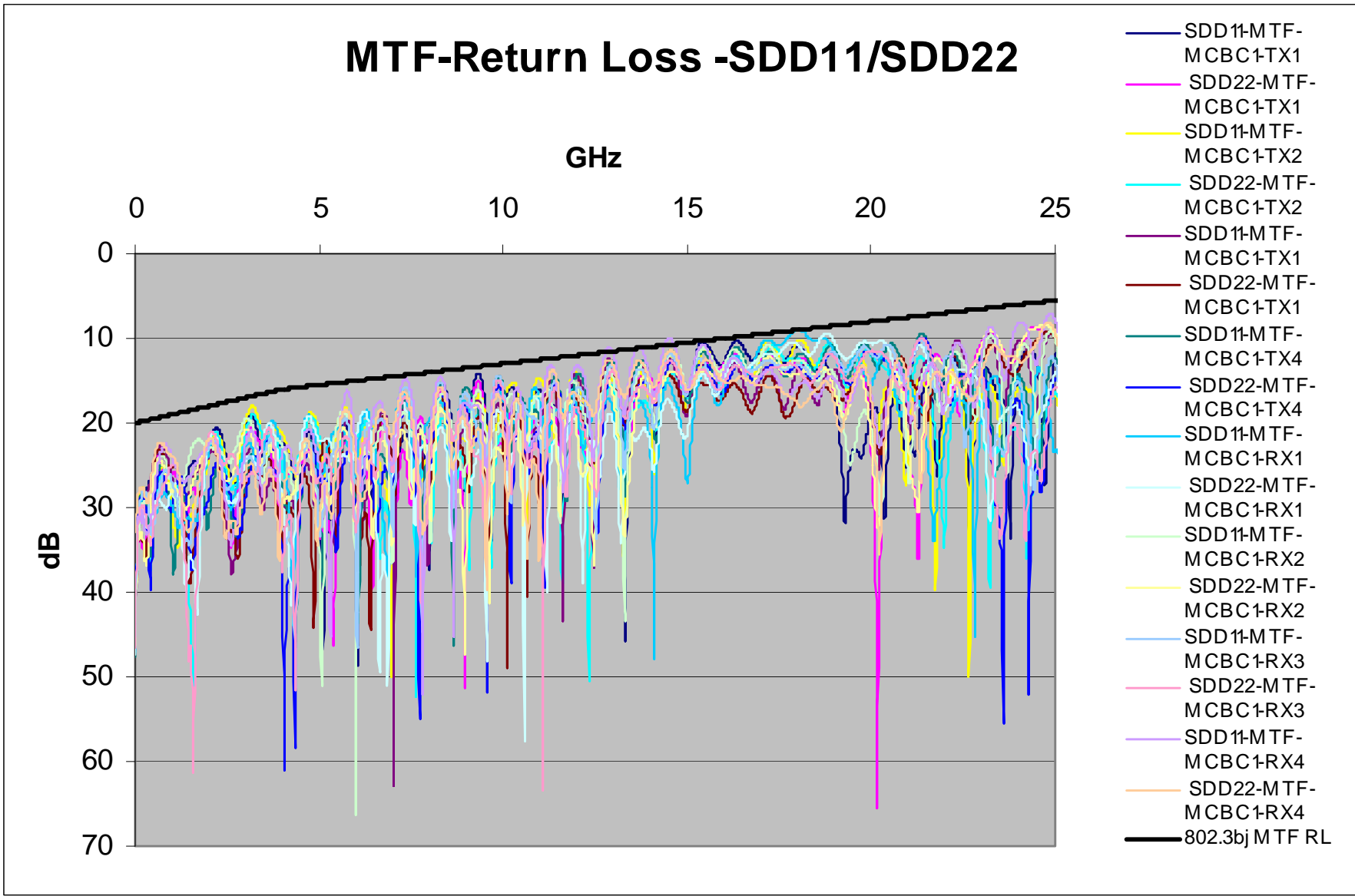
- TP2 or TP3 test fixture

MTF - UNH-IOL measurements

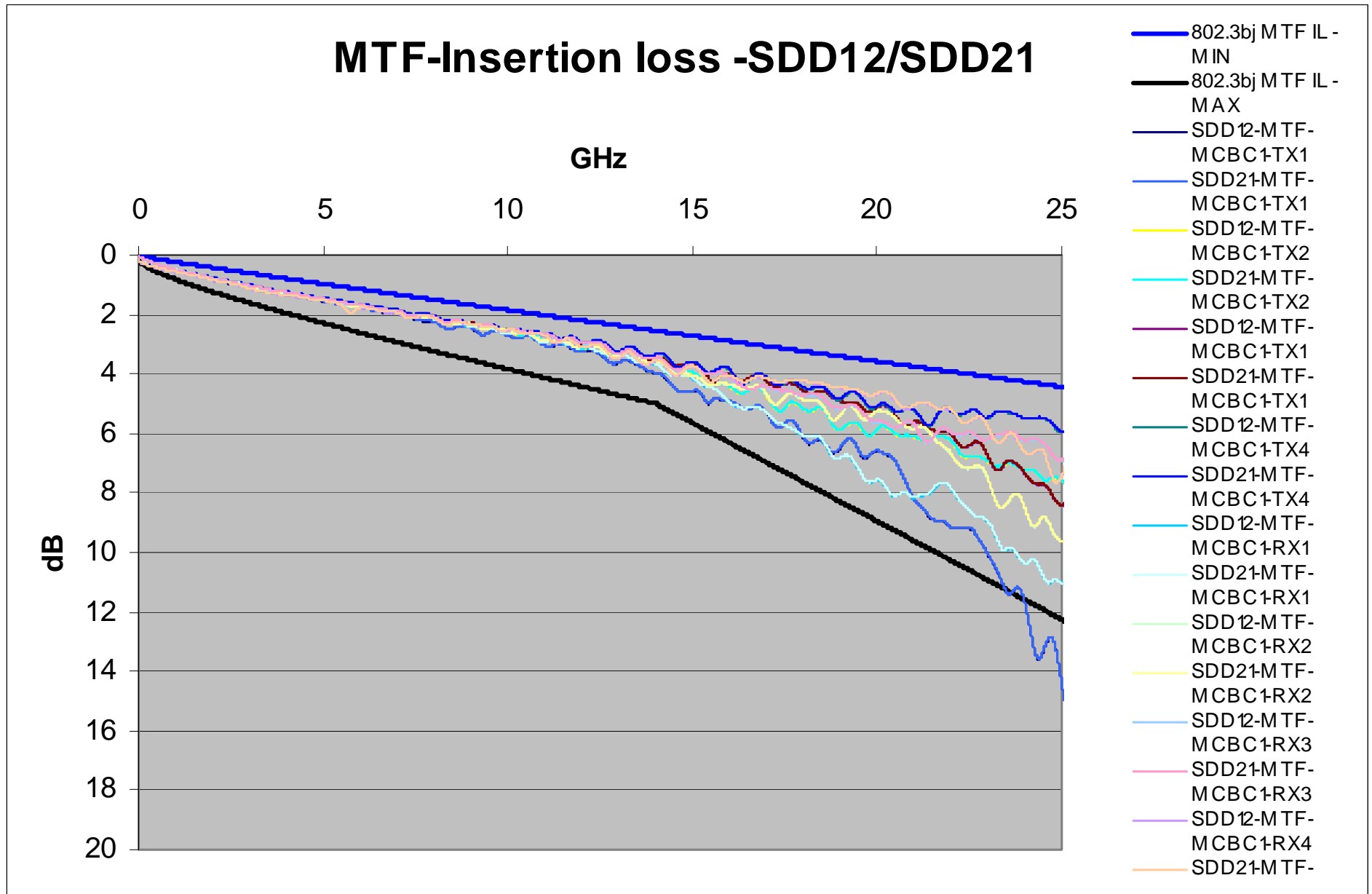


802.3bj and CAUI-4 Test Fixture Specifications

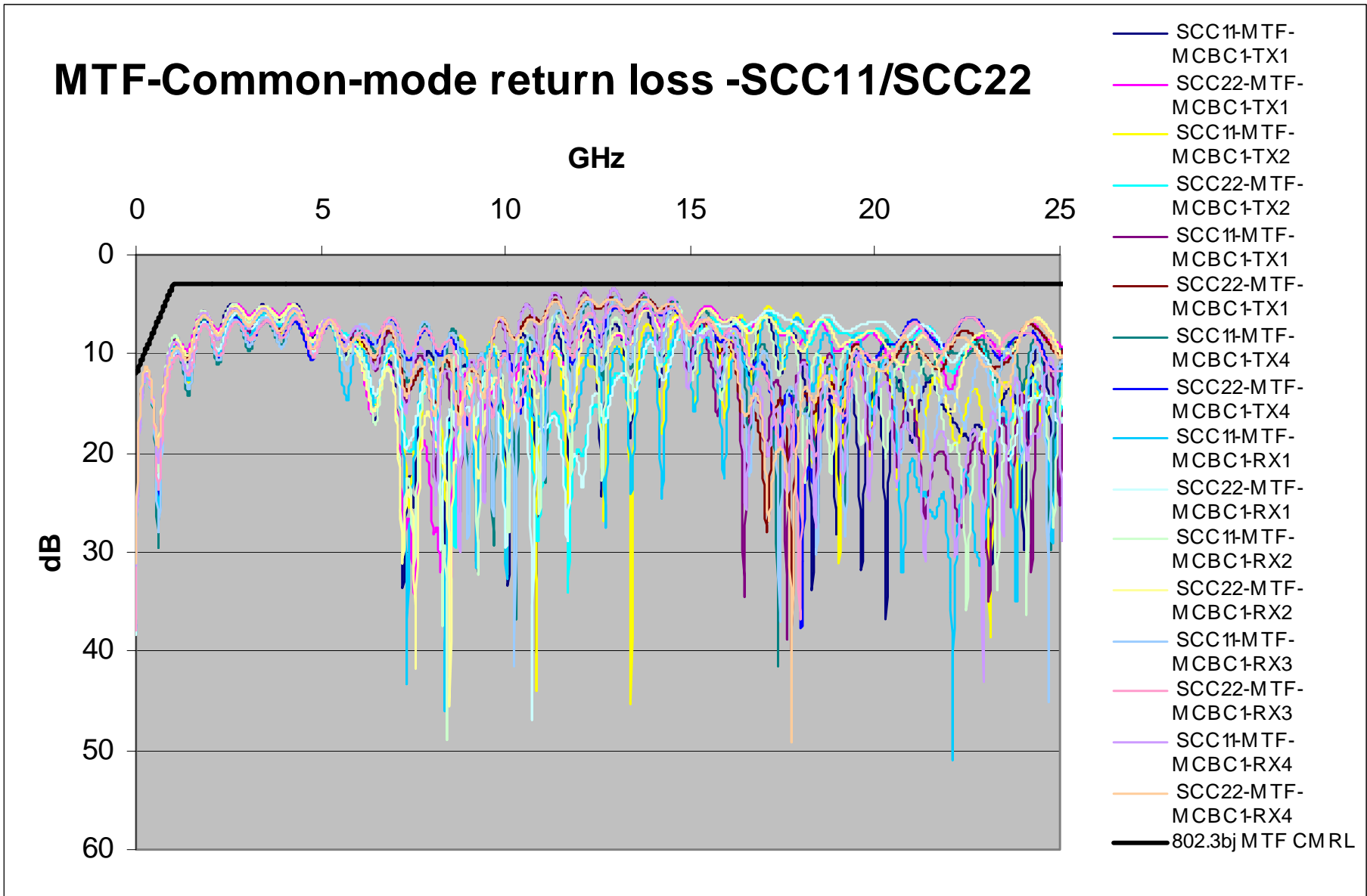
MTF – Return loss



MTF – Insertion loss



MTF – Common-mode return loss

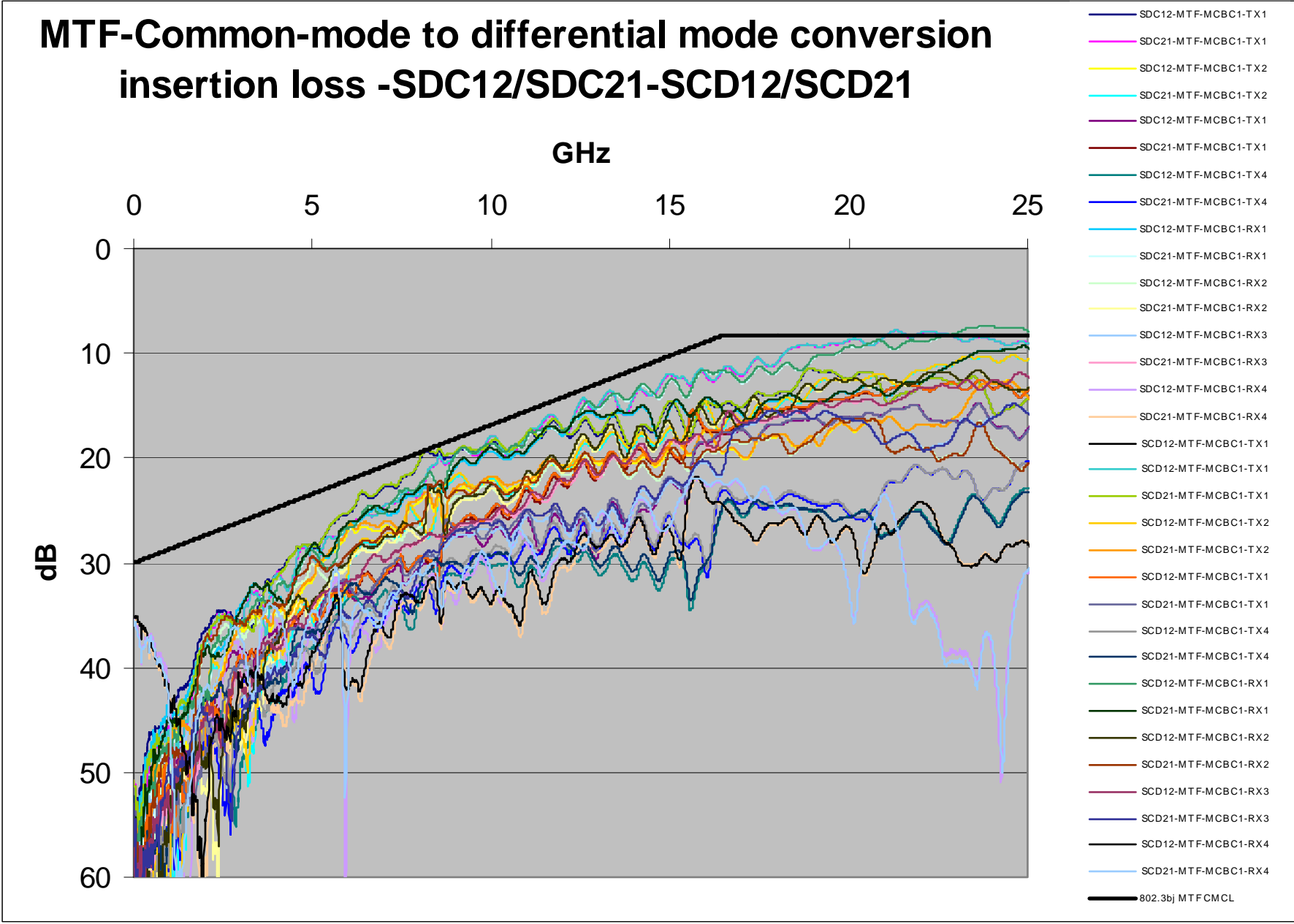


MTF – Figure of merit – insertion loss deviation

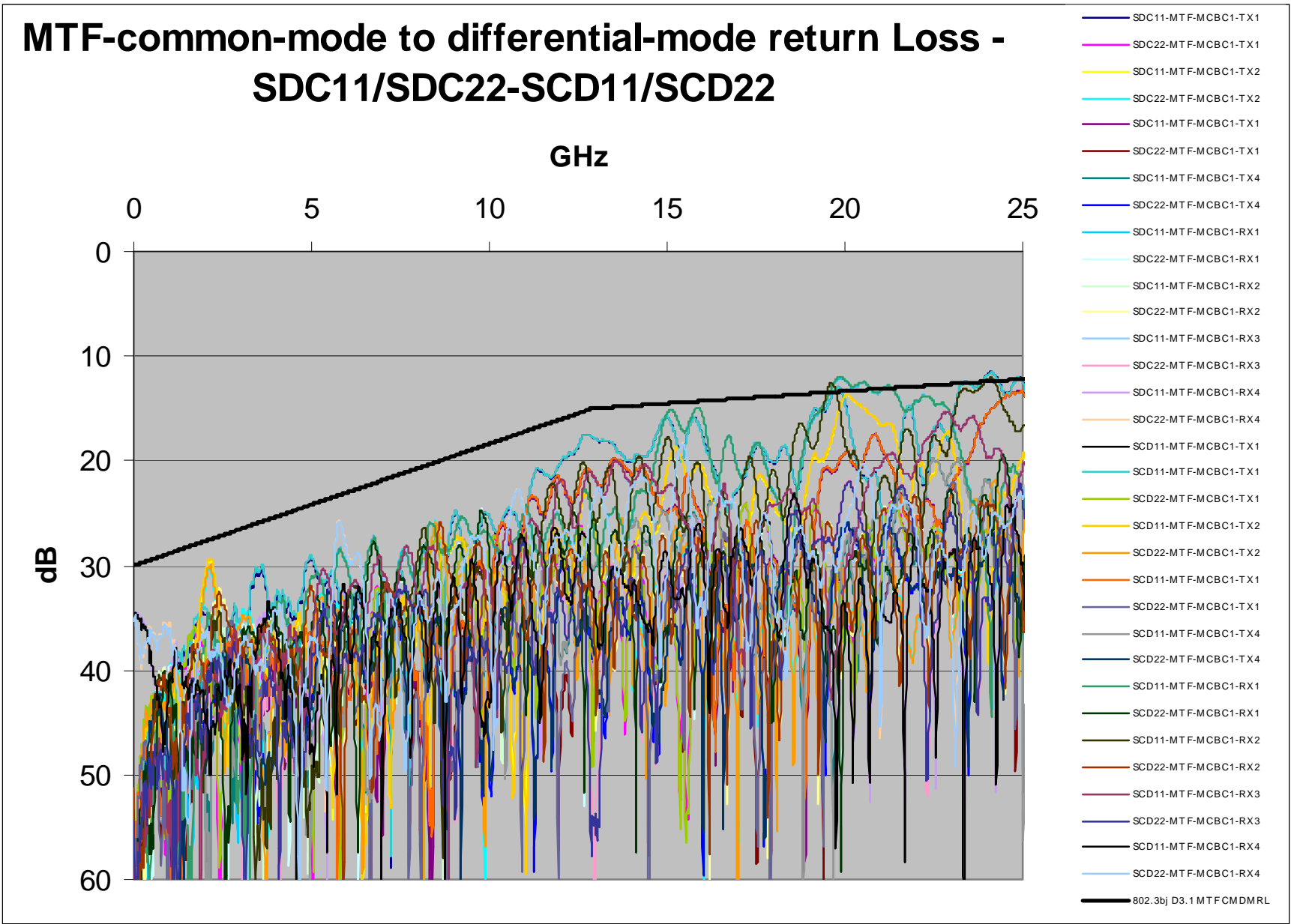
FOM_{ILD} is calculated according to 93A.4 with $f_b=25.78125$ GHz, $T_t=9.6$ ps, and $f_r=0.75 \times f_b$. The fitted insertion loss and insertion loss deviation are computed over the range $f_{min}=0.01$ GHz to $f_{max}=25$ GHz. FOM_{ILD} shall be less than 0.13 dB.

Lane	FOM _{ILD} (dB)
TX1	0.075
TX2	0.045
TX3	0.039
TX4	0.044
RX1	0.067
RX2	0.046
RX3	0.042
RX4	0.053

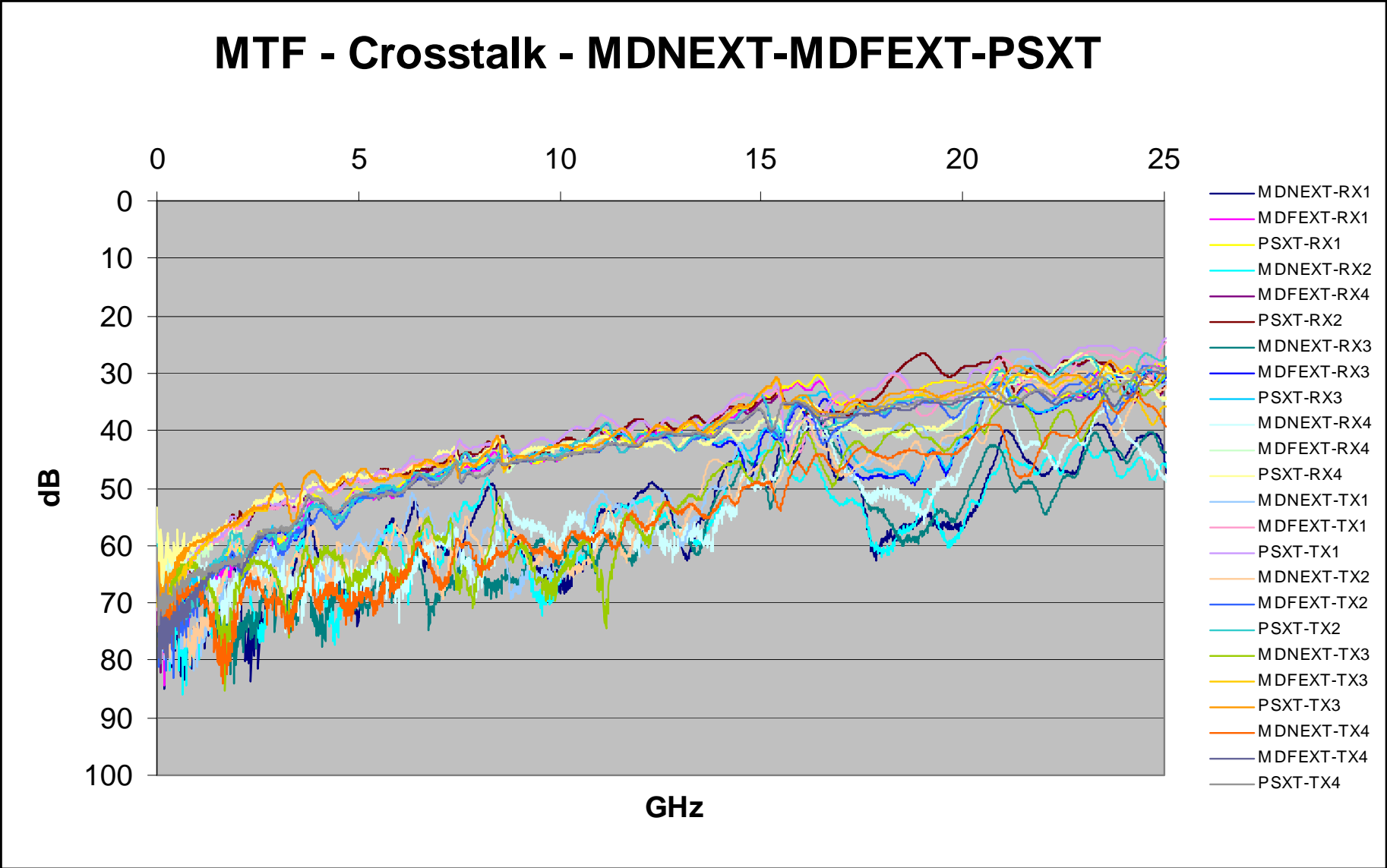
MTF – Common-mode to differential-mode conversion insertion loss



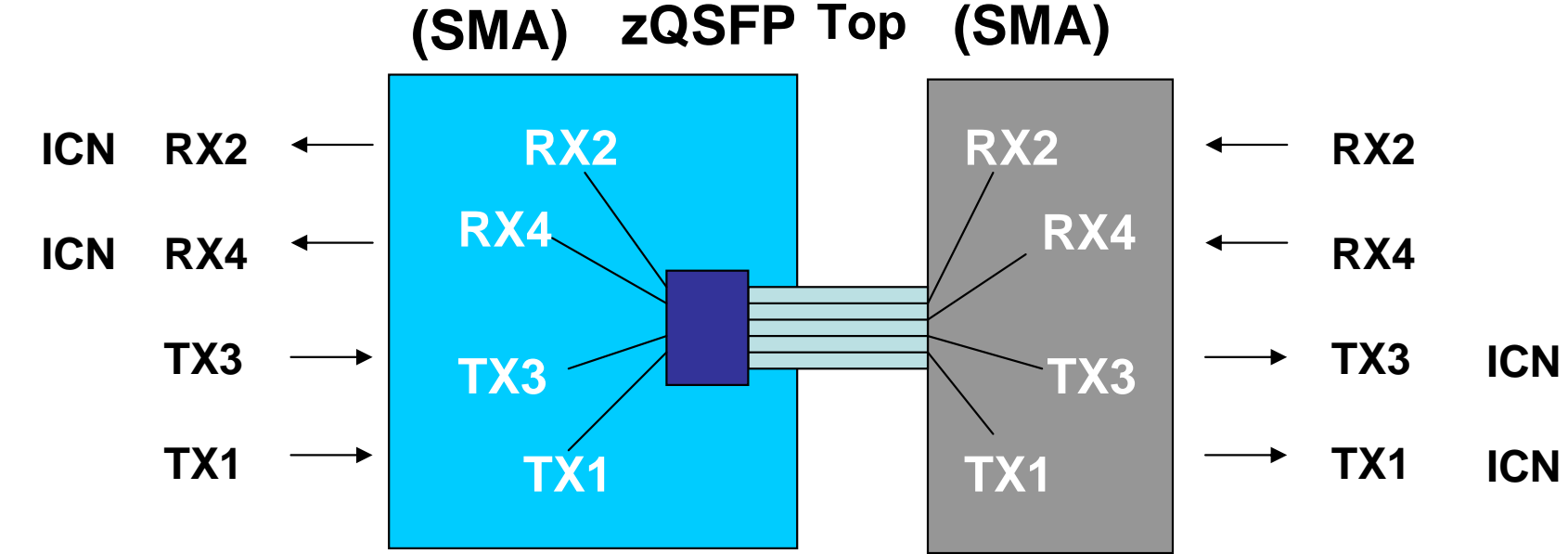
MTF-Common-mode to differential-mode return Loss



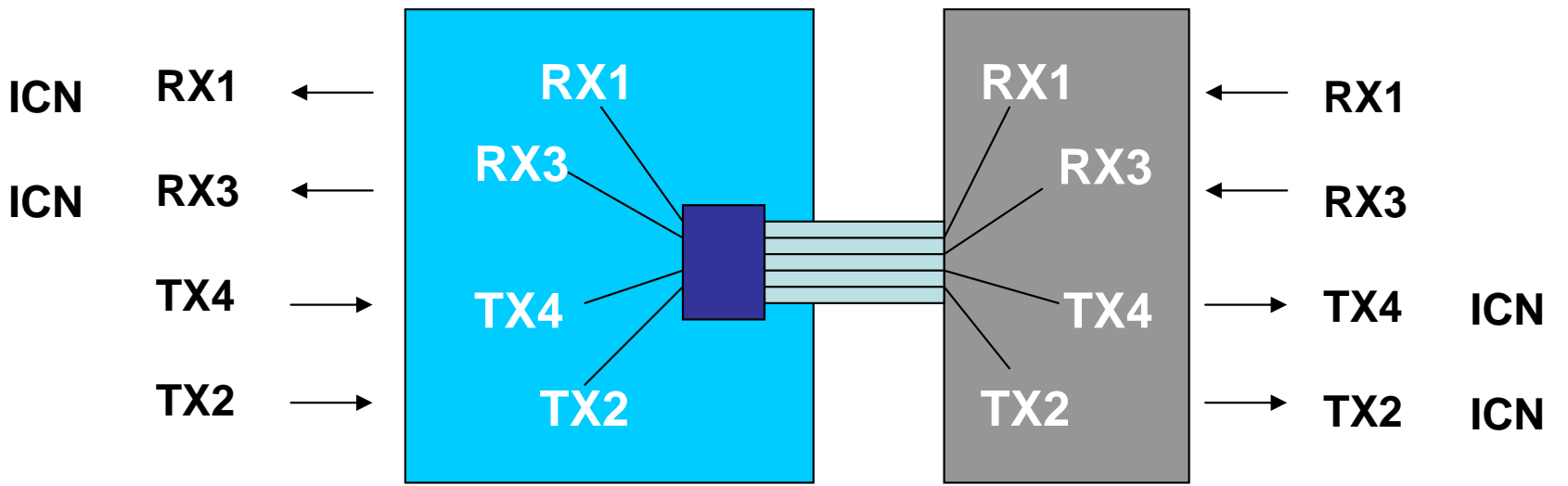
MTF – MDNEXT-MDFEXT-PSXT



MTF – Port mapping



Bottom



Mated test fixture specifications - ICN

Table 92–14—Mated test fixture integrated crosstalk noise parameters

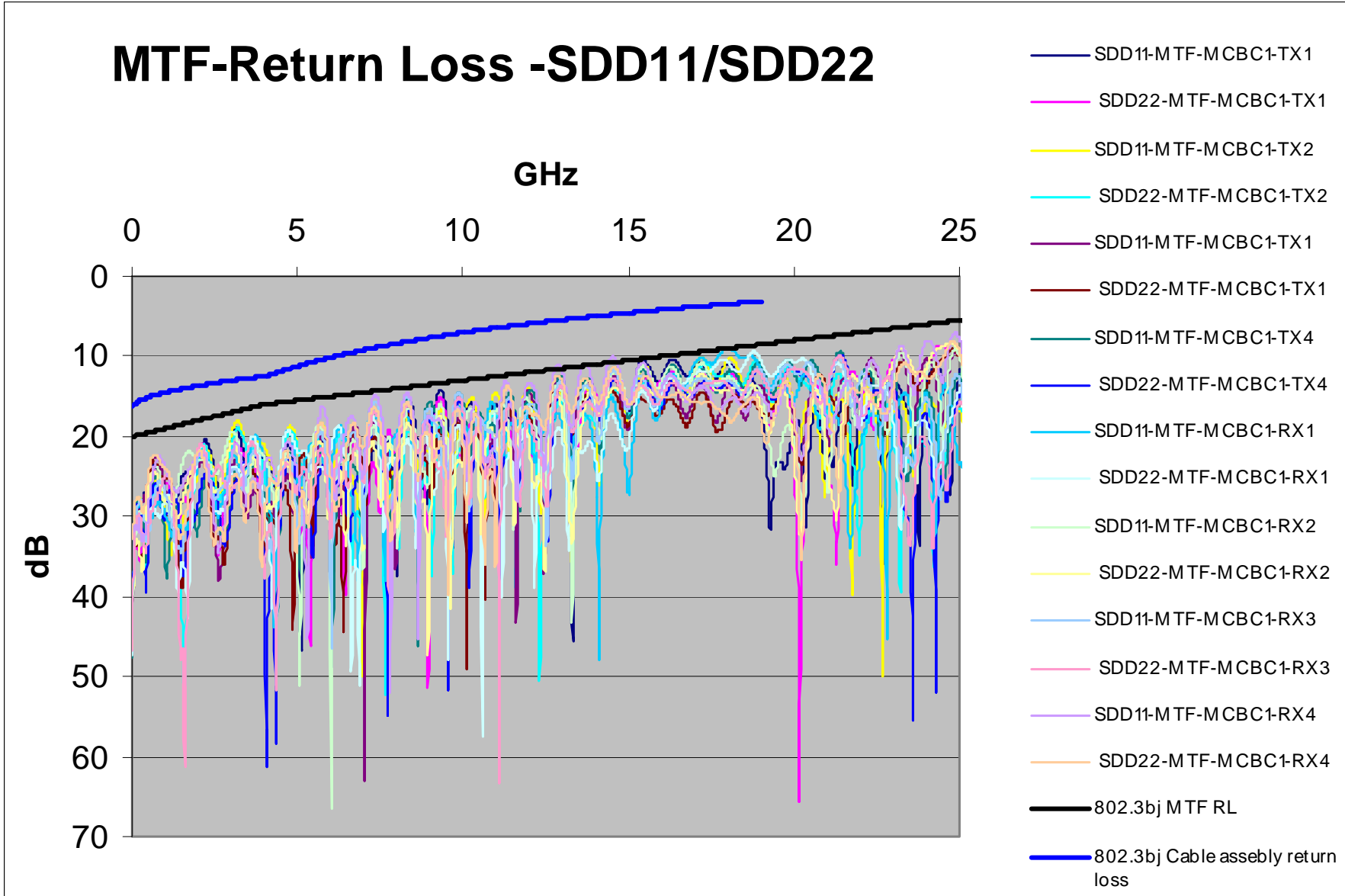
Description	Symbol	Value	Units
Symbol rate	f_b	25.78125	GBd
Near-end disturber peak differential output amplitude	A_{nr}	600	mV
Far-end disturber peak differential output amplitude	A_{fr}	600	mV
Near-end disturber 20% to 80% rise and fall times	T_{nr}	9.6	ps
Far-end disturber 20% to 80% rise and fall times	T_{fr}	9.6	ps

Table 92–13—Mated test fixtures integrated crosstalk noise

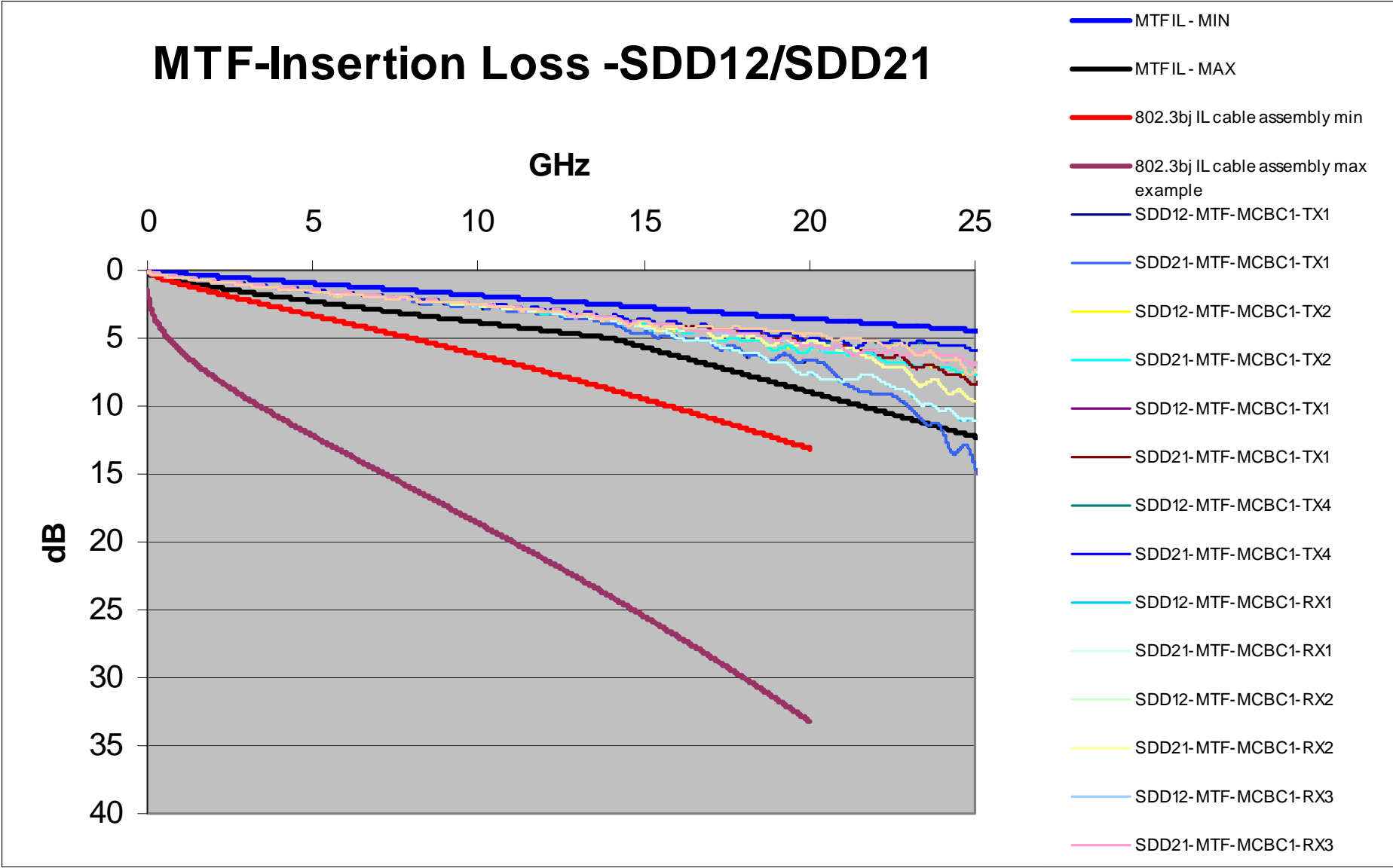
Parameter	100GBASE-CR4	Units
MDNEXT integrated crosstalk noise voltage	less than 1.8	mV
MDFEXT integrated crosstalk noise voltage	less than 4.8	mV

	RX1	RX2	RX3	RX4
MDNEXT ICN (mV)	1.08	0.95	1.00	0.95
MDFEXT ICN (mV)	3.72	4.09	2.77	3.01
	TX1	TX2	TX3	TX4
MDNEXT ICN (mV)	1.39	1.13	1.11	0.81
MDFEXT ICN (mV)	4.17	3.19	3.74	3.00

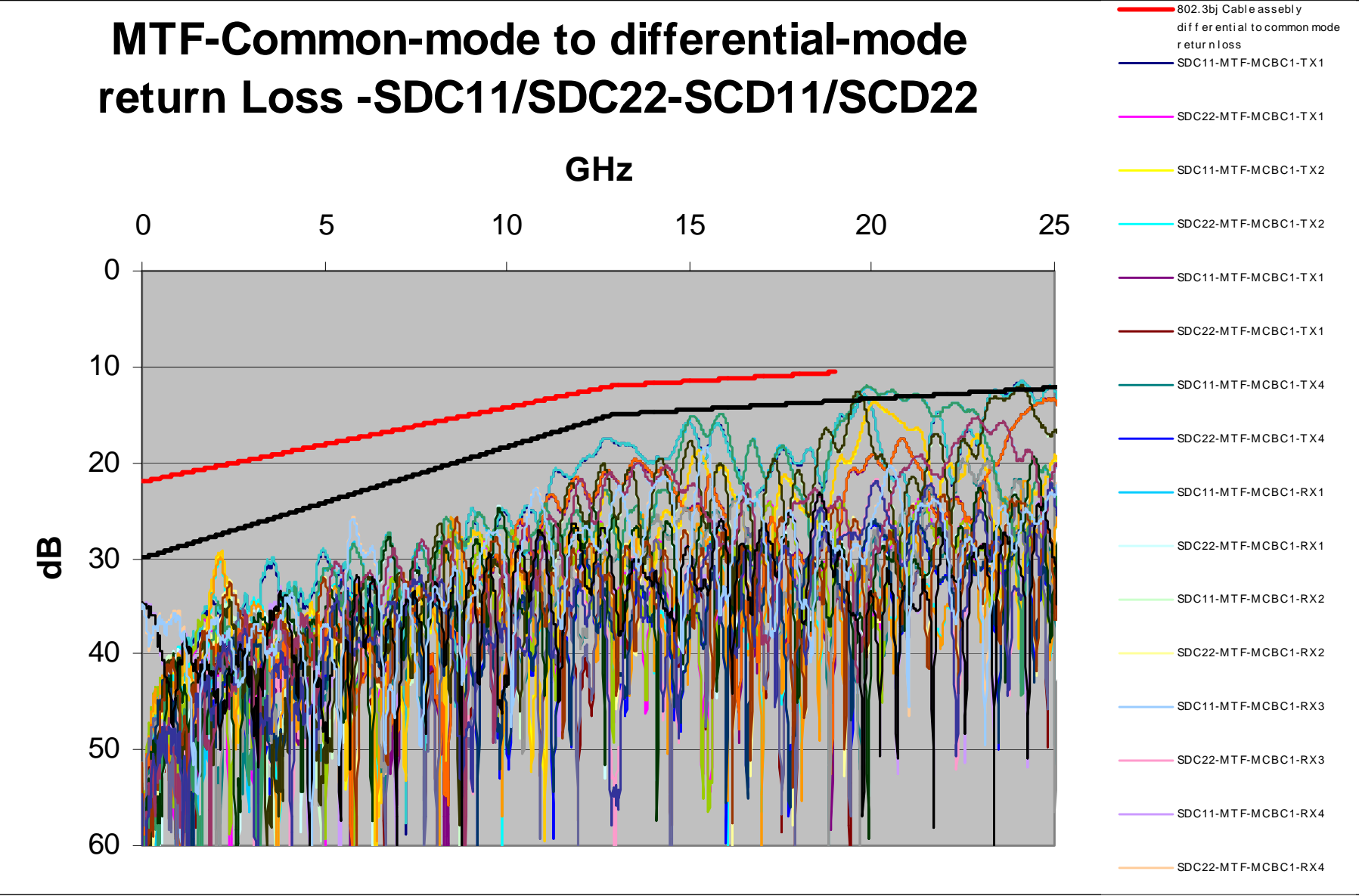
Cable assembly RL limit



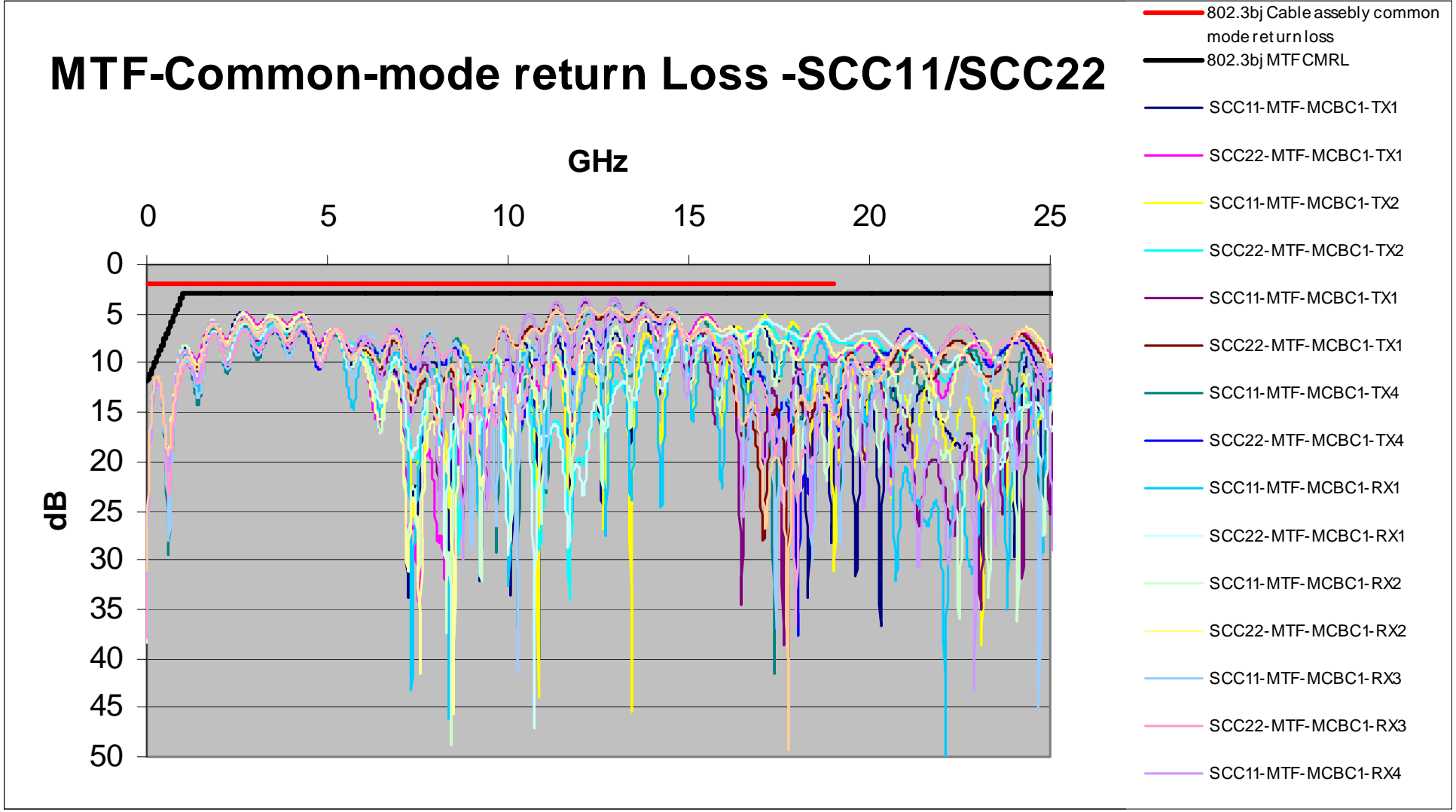
Cable assembly IL limit



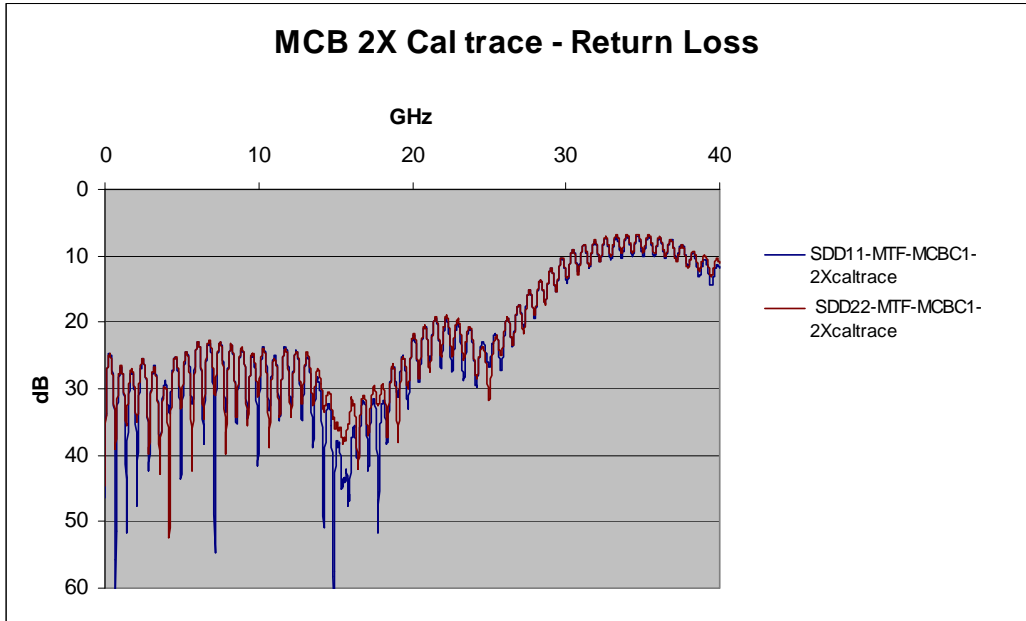
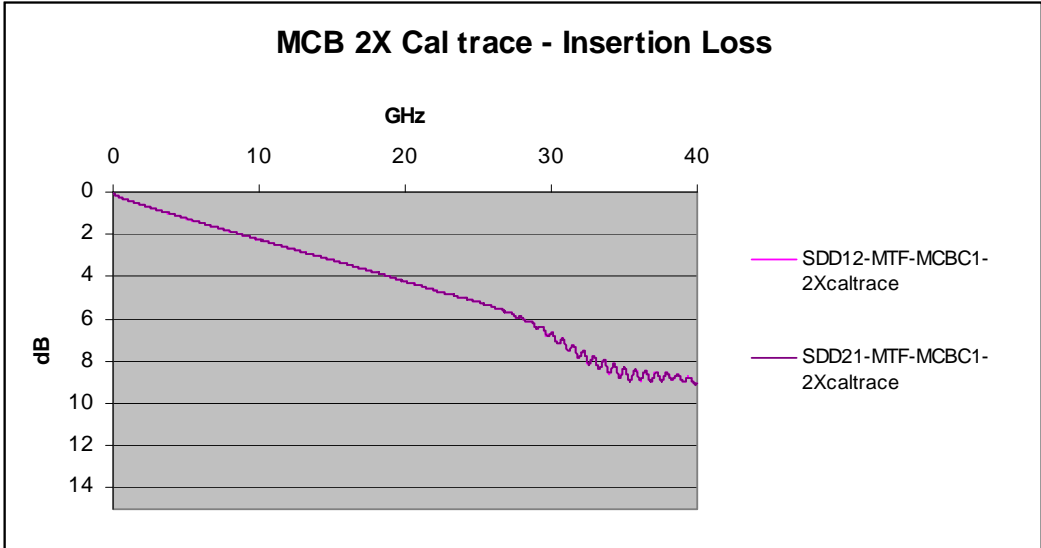
Cable assembly differential mode to common mode RL limit



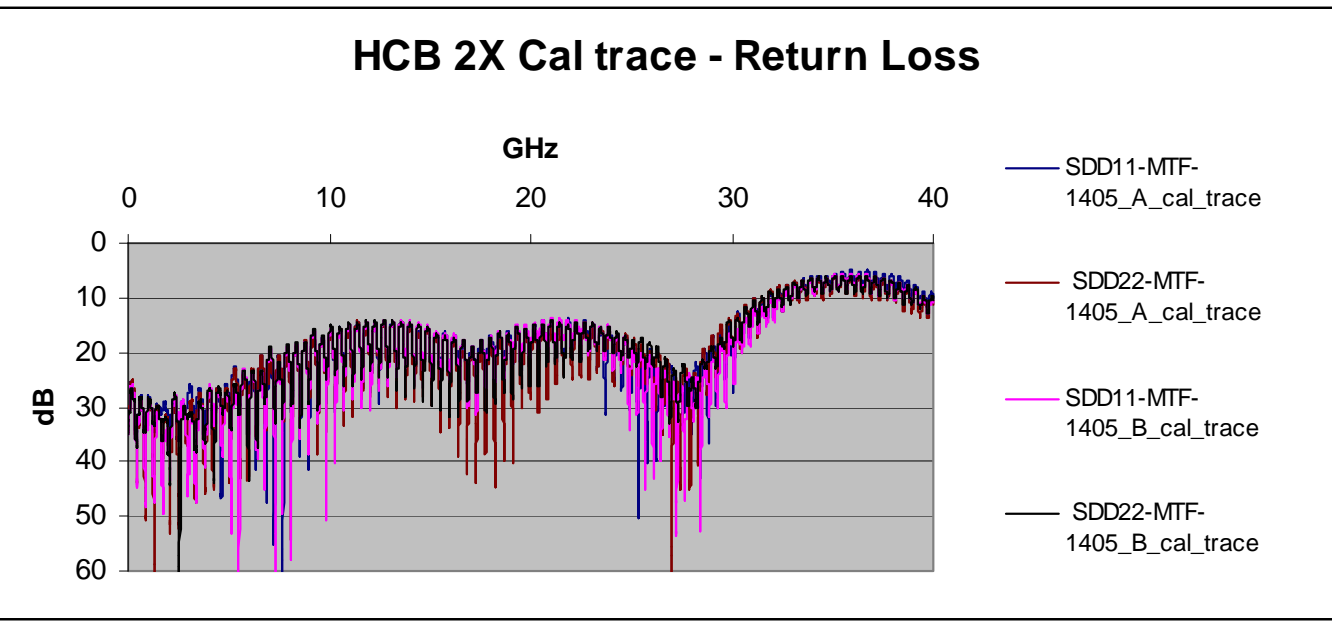
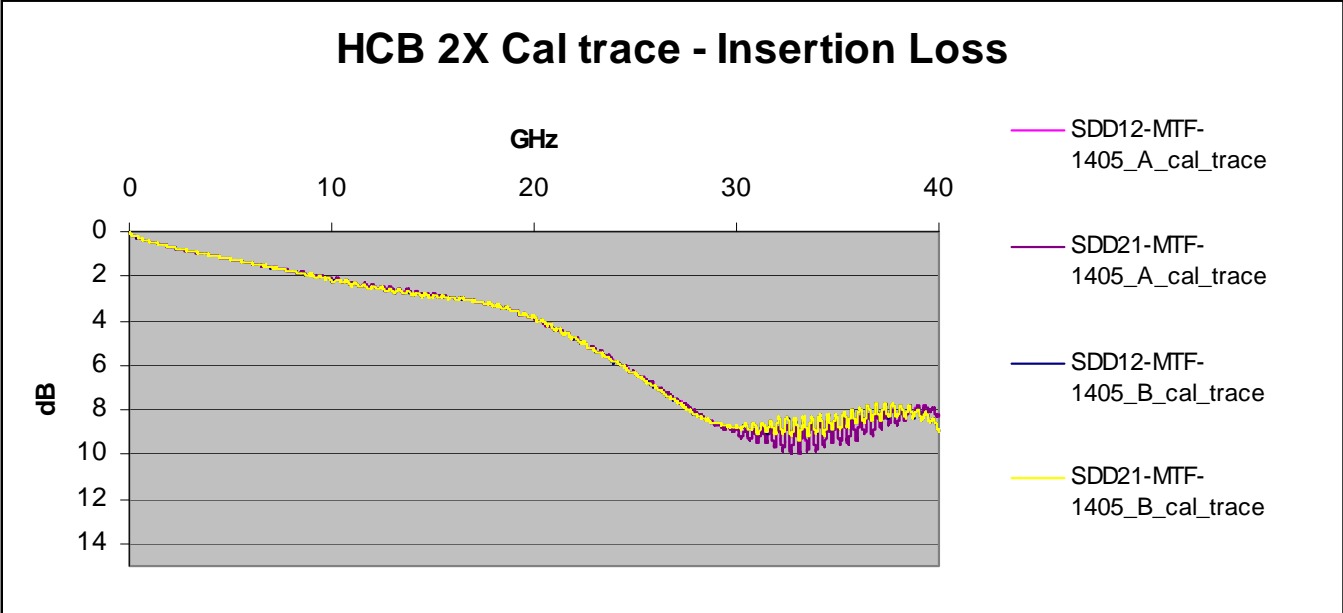
Cable assembly common mode RL limit



MCB – 2X Calibration trace to 40 GHz



HCB – 2X Calibration trace to 40 GHz



Conclusions

- **Achievability of 802.3bj mated test fixture specifications demonstrated.**