IEEE802.3ap

Measured RX Interference Tolerance Results

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Objective

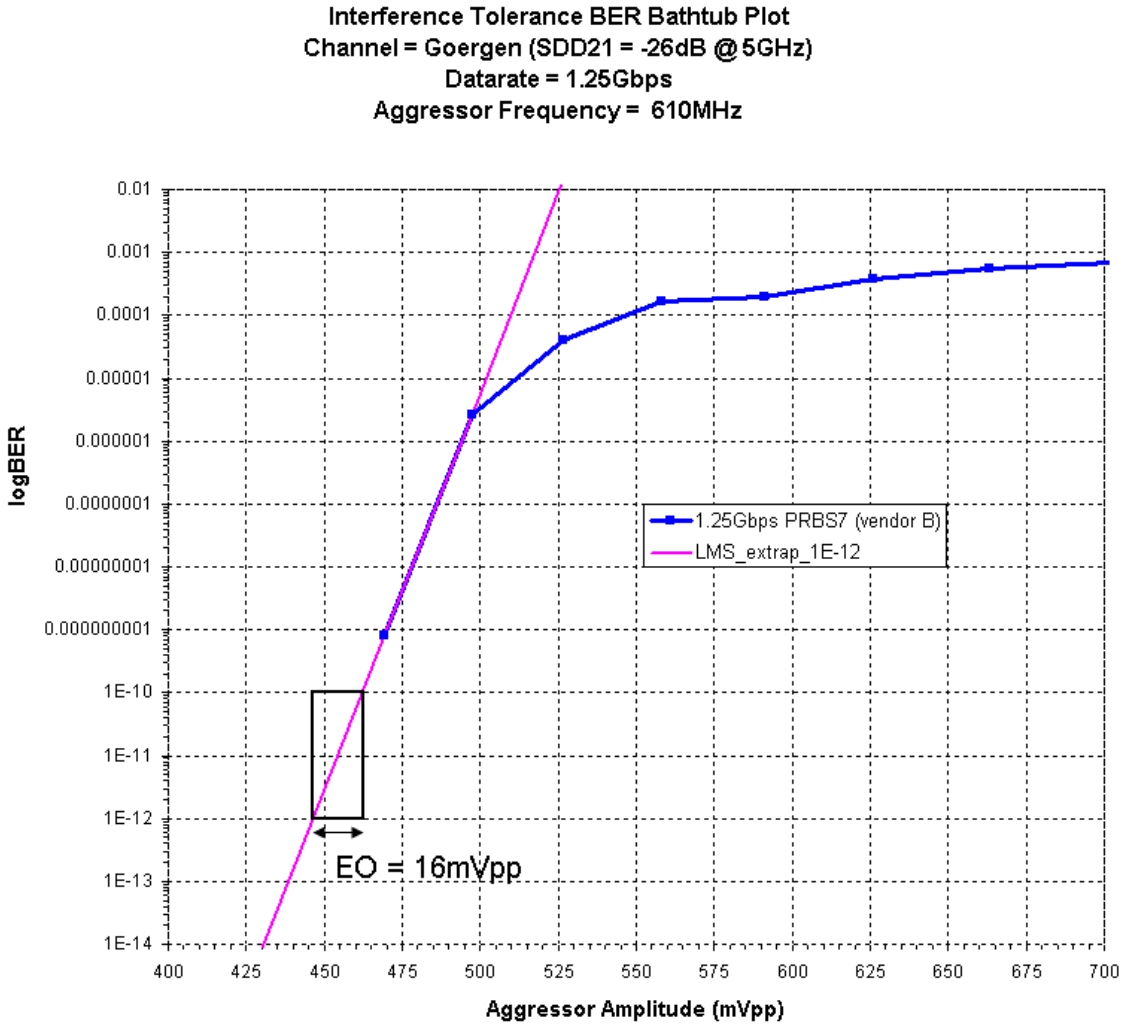
- Perform RX Interference Tolerance testing as specified in IEEE802.3ap Draft 2.0 Annex 69A
- Show improved performance after test setup enhancements
- Evaluate two vendor's DUTs against normative clause 70,71,72 specs

Background and Improvements

- Detailed descriptions of test setup and instructions in “sawyer_02_0605”
- Switched from “pick-off tees” to directional couplers for clause 71, 72 tests, and power splitter for clause 70 due to large reflections caused by mismatch between the pickoff tee and the aggressor source.
- Found ~68ps mismatch in cable lengths with June test setup. Replaced cables with matched length semi-rigid coax.

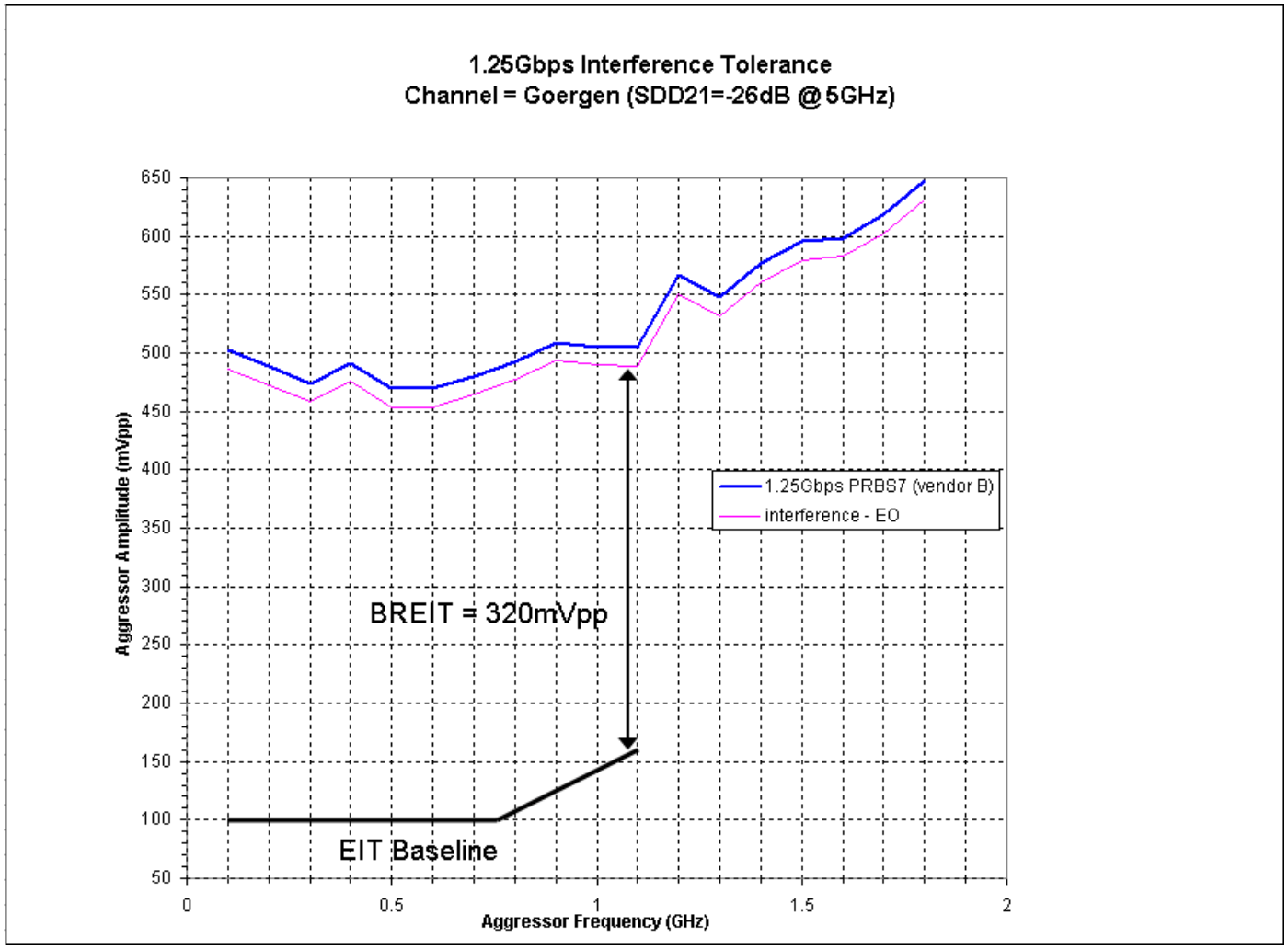
Interference Tolerance Results

Clause 70 (1.25Gbps) Extrapolation Offset



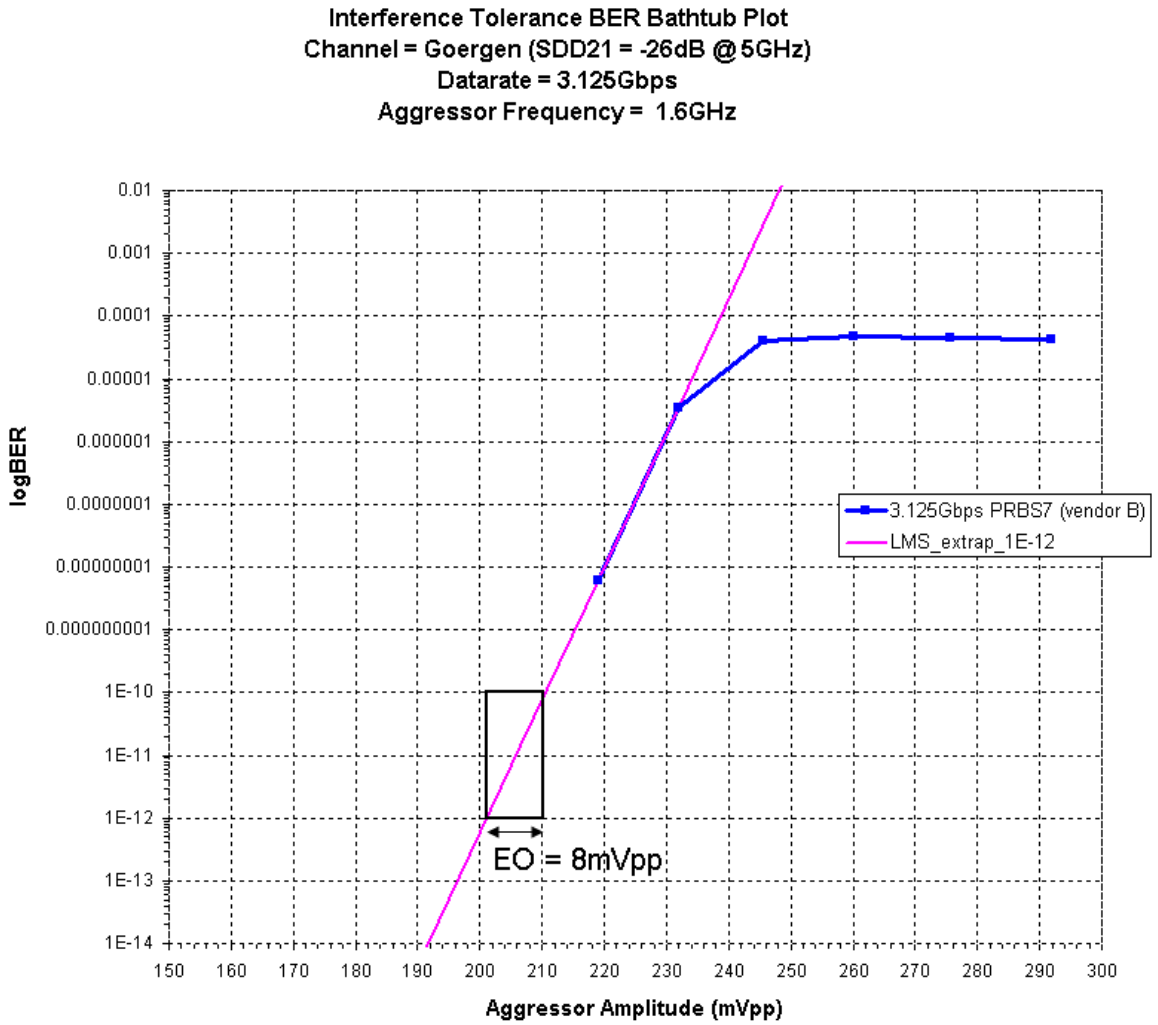
Interference Tolerance Results

Clause 70 (1.25Gbps) BREIT



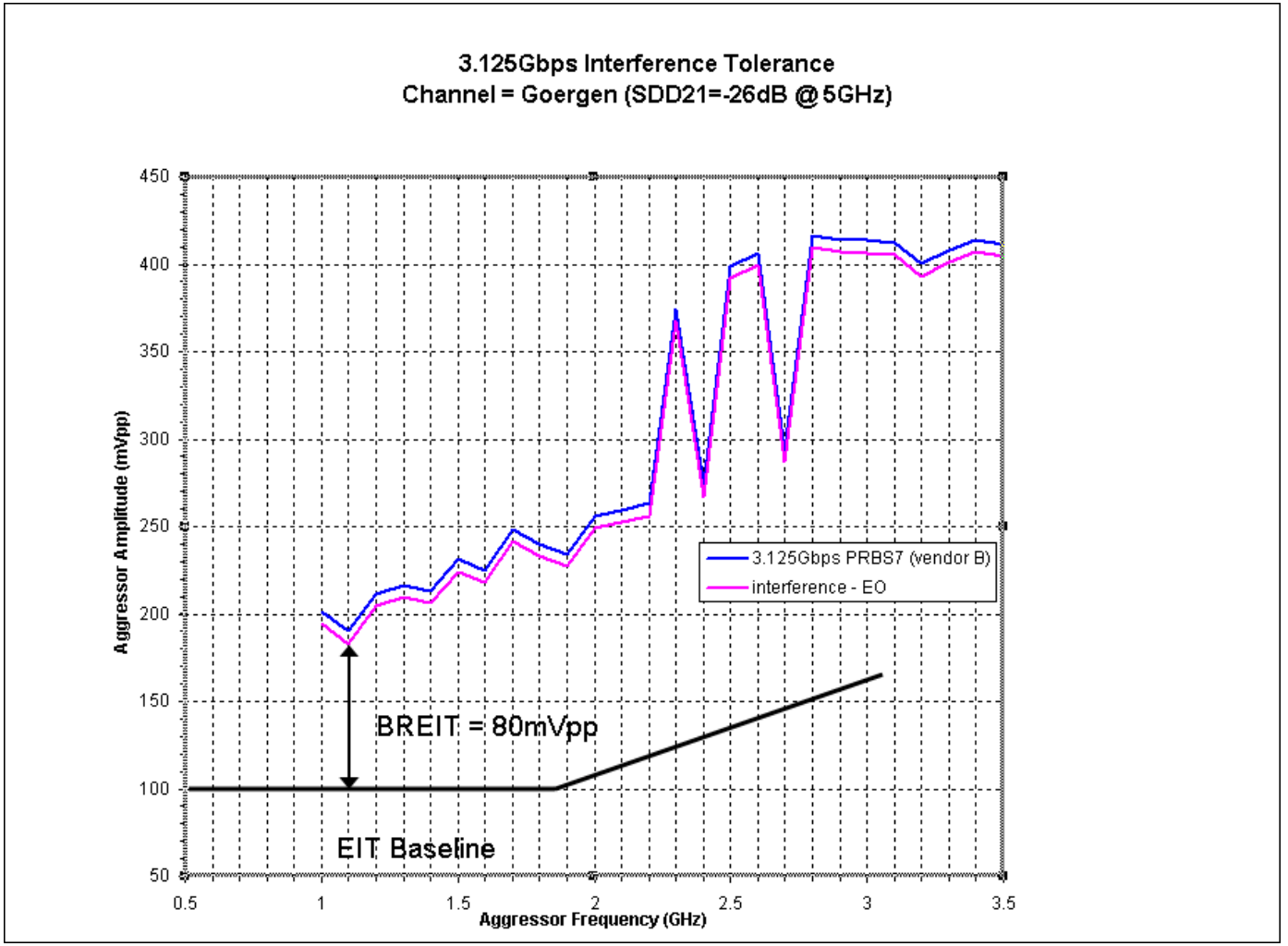
Interference Tolerance Results

Clause 71 (3.125Gbps) Extrapolation Offset



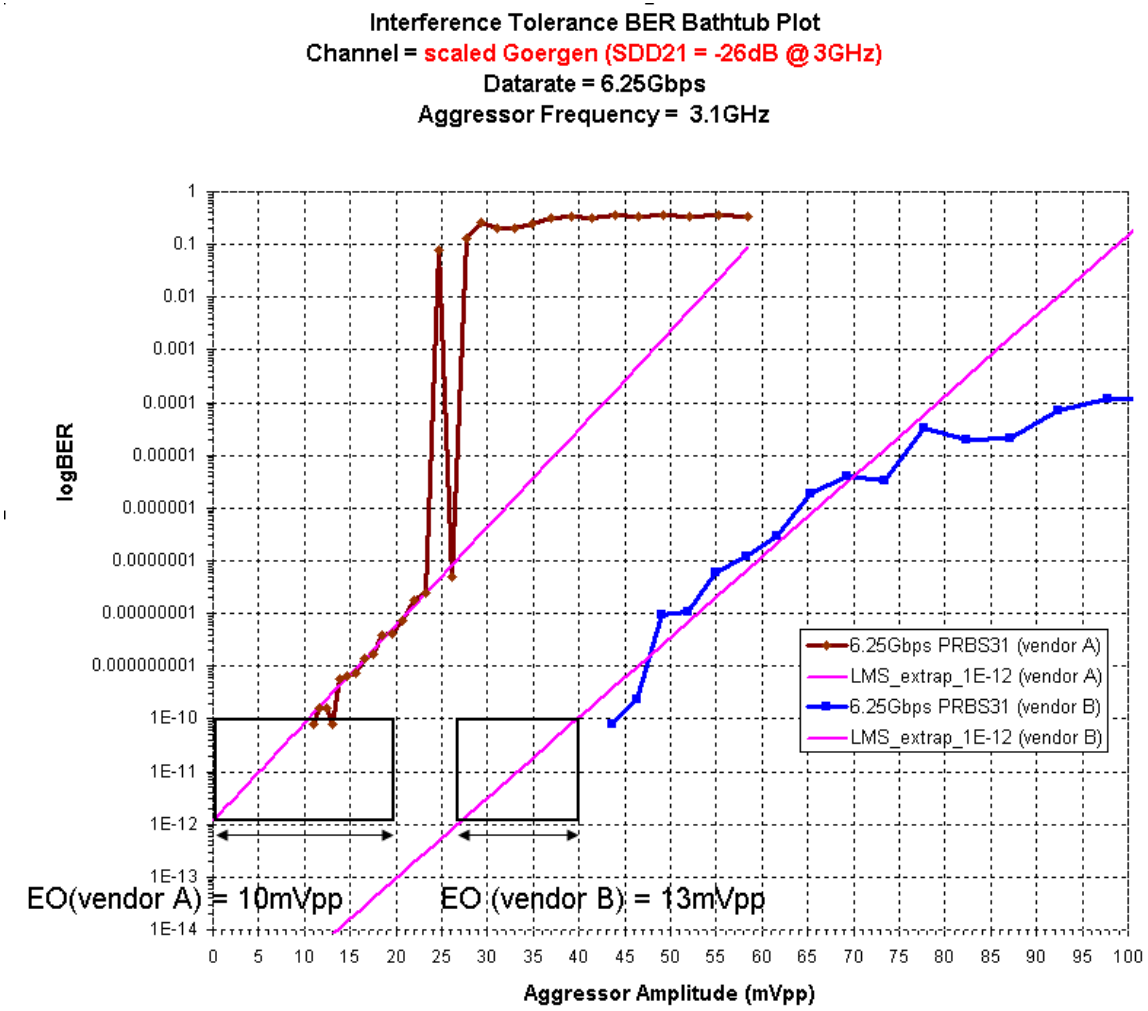
Interference Tolerance Results

Clause 71 (3.125Gbps) BREIT



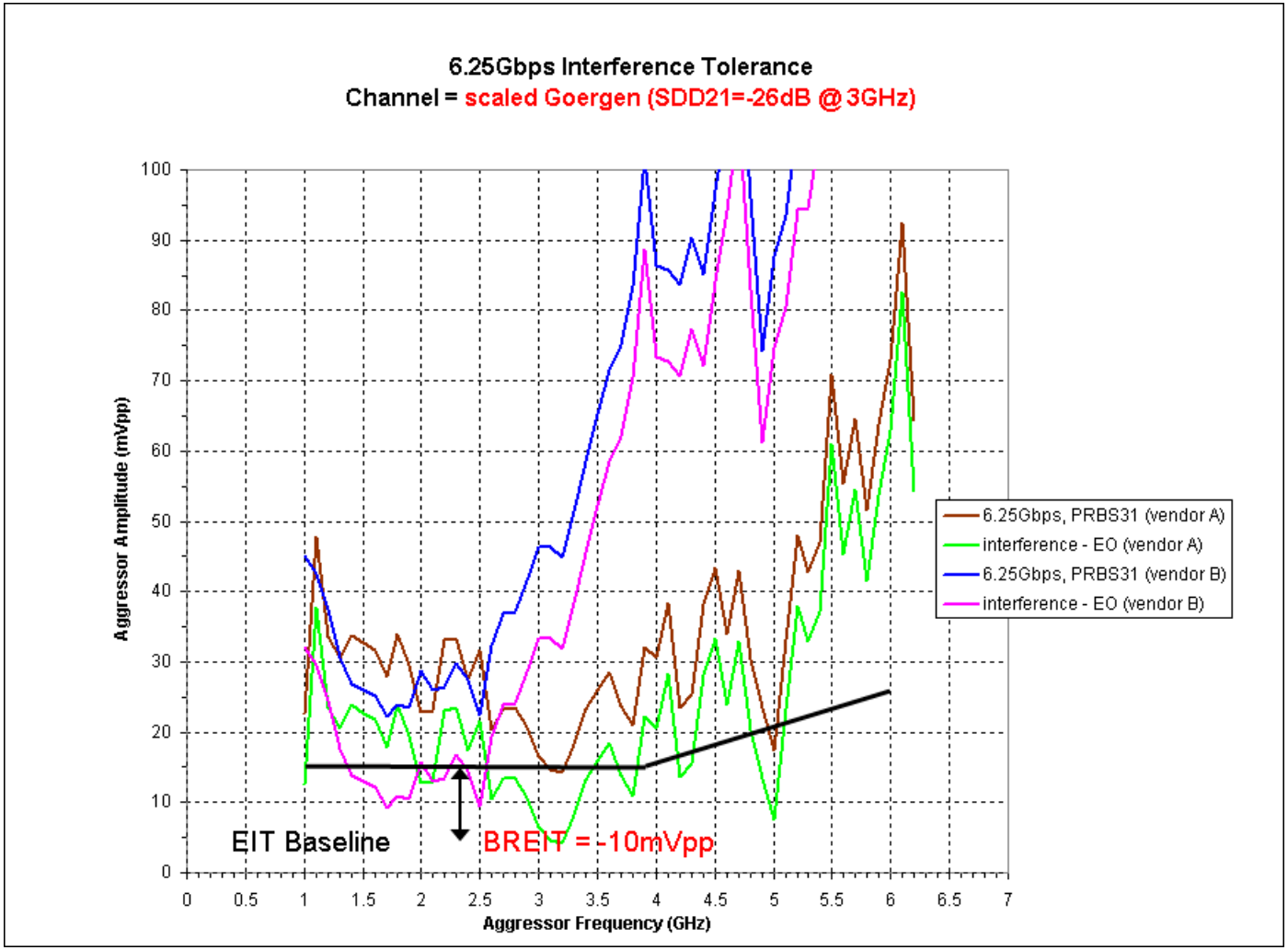
Interference Tolerance Results

(representative) Clause 72 (6.25Gbps) Extrapolation Offset



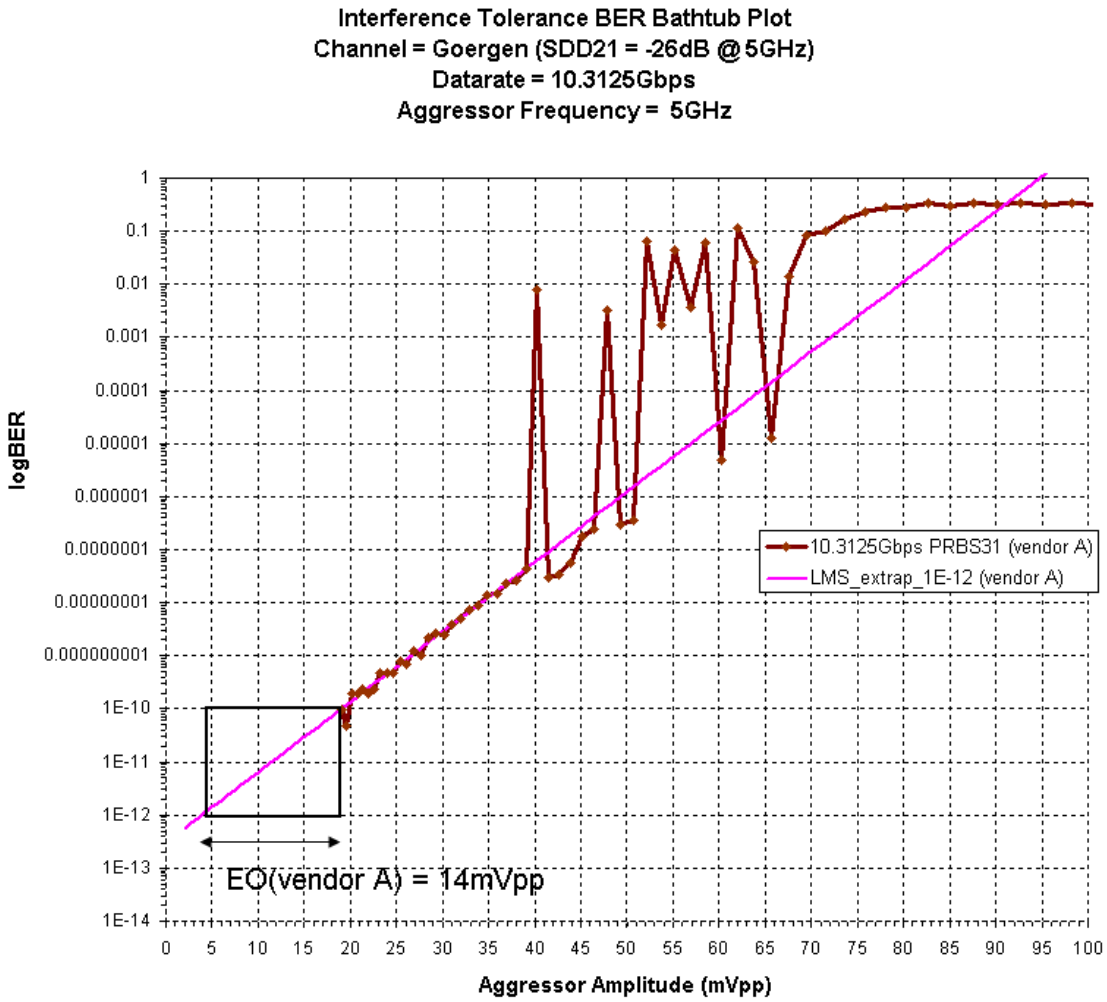
Interference Tolerance Results

(representative) Clause 72 (6.25Gbps) BREIT



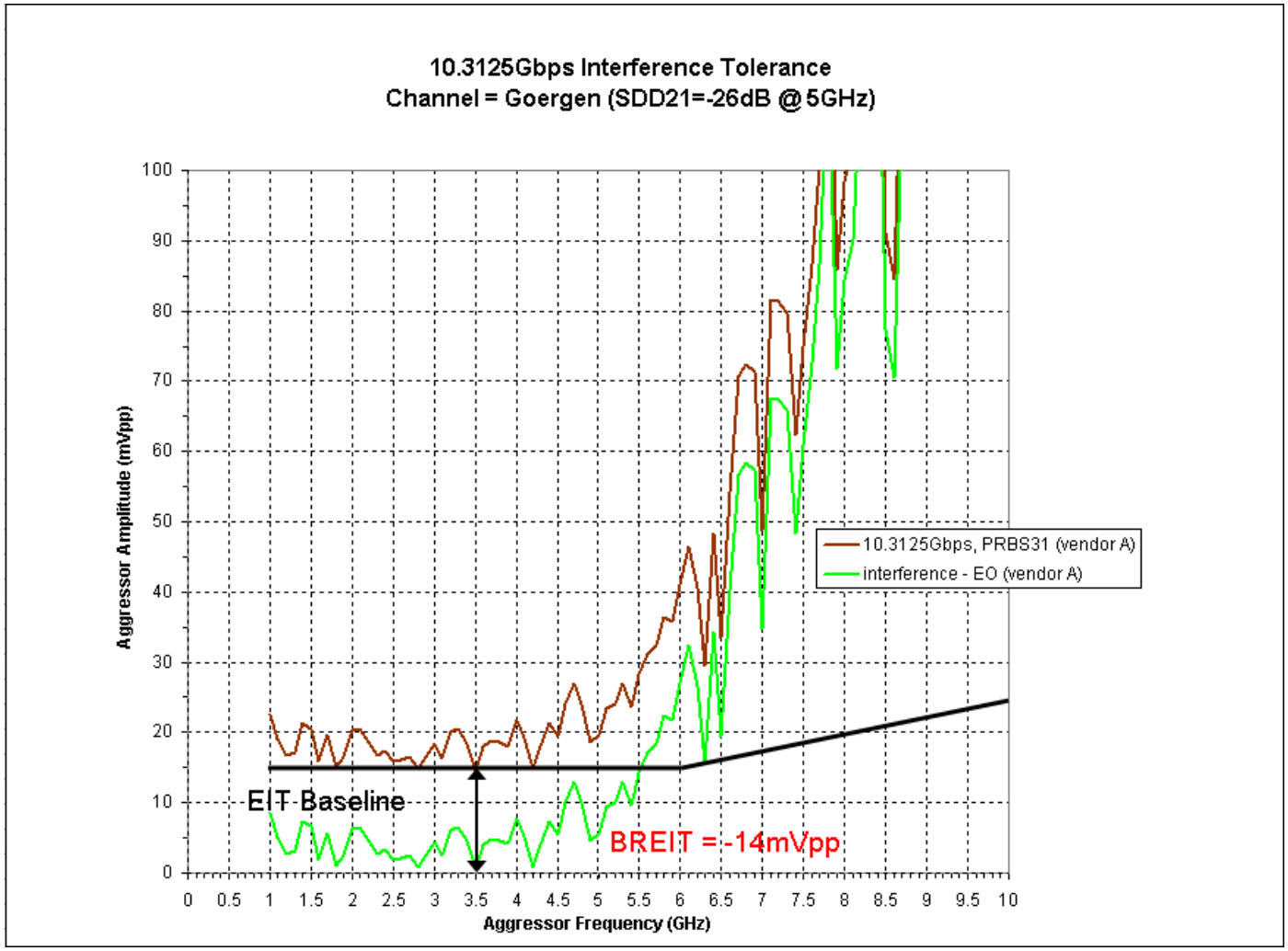
Interference Tolerance Results

Clause 72 (10.3125Gbps) Extrapolation Offset



Interference Tolerance Results

Clause 72 (10.3125Gbps) BREIT



Results Summary Table

Port Type	Vendor	EO (mVpp)	BREIT	Pass/Fail
1.25Gbps	A	N/A	N/A	N/A
1.25Gbps	B	16	320	Pass
3.125Gbps	A	N/A	N/A	N/A
3.125Gbps	B	8	80	Pass
6.25Gbps	A	10	-10	Fail
6.25Gbps	B	13	-5	Fail
10.3125Gbps	A	14	-14	Fail
10.3125Gbps	B	N/A	N/A	N/A

Conclusions

- Improvements in test setup provided ~100mVpp of additional interference tolerance with retested DUTs
- Int Tol performance degrades with longer PRBS patterns. Plan on evaluating larger value coupling capacitors to mitigate low frequency losses of longer PRBS patterns.
- Vendor B passes clause 70 Int Tol spec.
- Both vendors pass clause 71 Int Tol spec. (didn't capture Vendor A data, but witnessed passing condition)
- Neither vendor passes clause 72 Int Tol spec at 10.3125Gbps, or even with representative channel at 6.25Gbps. Possibly evaluate easier channel and / or polynomial line fit for extrapolation of BER bathtub curves.