
Simulation Methodology and Data to Verify RX Interference Tolerance

Response to comment # 629

Xiao Ming Gao, Prakash K Radhakrishnan, Richard Mellitz

Intel Corporation

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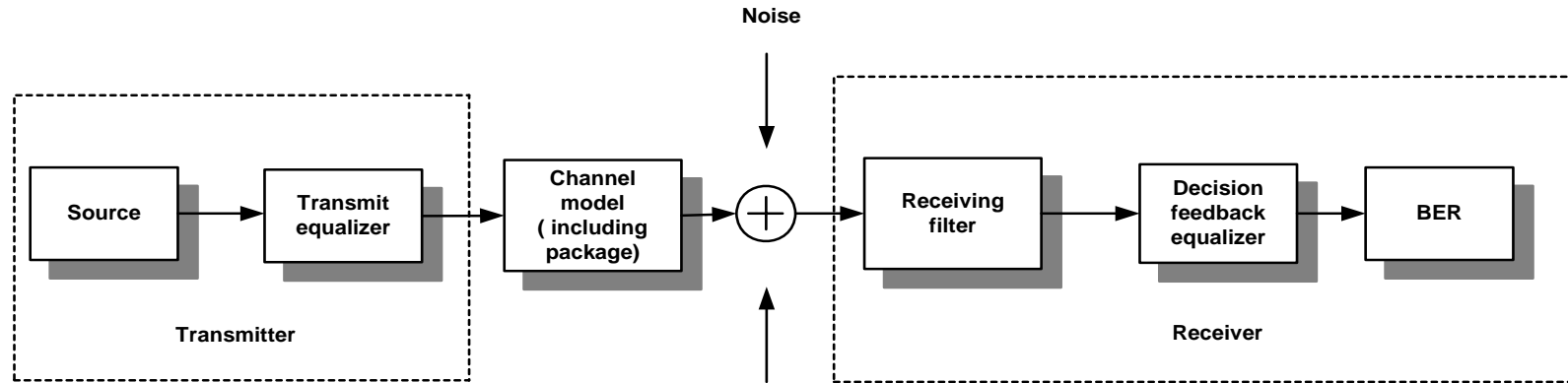
Objective

- **Propose a Rx interference tolerance simulation methodology as specified in IEEE 802.3ap Draft 2.0 Annex 69A**
- **Provide interference tolerance simulation data for Intel and EIT channels**

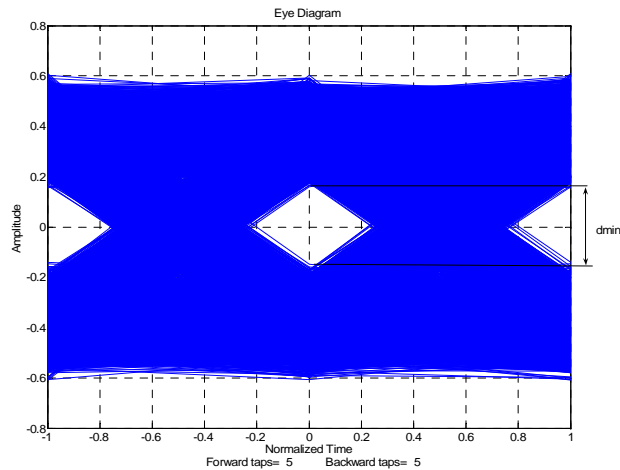
Simulation configuration

| | |
|---------------------------|--|
| Simulator setup | NRZ FFE3/DFE5, FFE5/DFE5 |
| Tx amplitude | 800 mVpp |
| Jitter | 0 |
| DCD | 0 |
| Background noise | 1.46 mV rms |
| Interference level | Variable |
| Interference | Sweep sine wave |
| Data pattern | PRBS15 |
| Coupling | DC coupling |
| Package | With and without package models |
| Data rate | 10.3 Gbps |
| Simulation time | 32K bits |

Simulation methodology



Sine wave interference

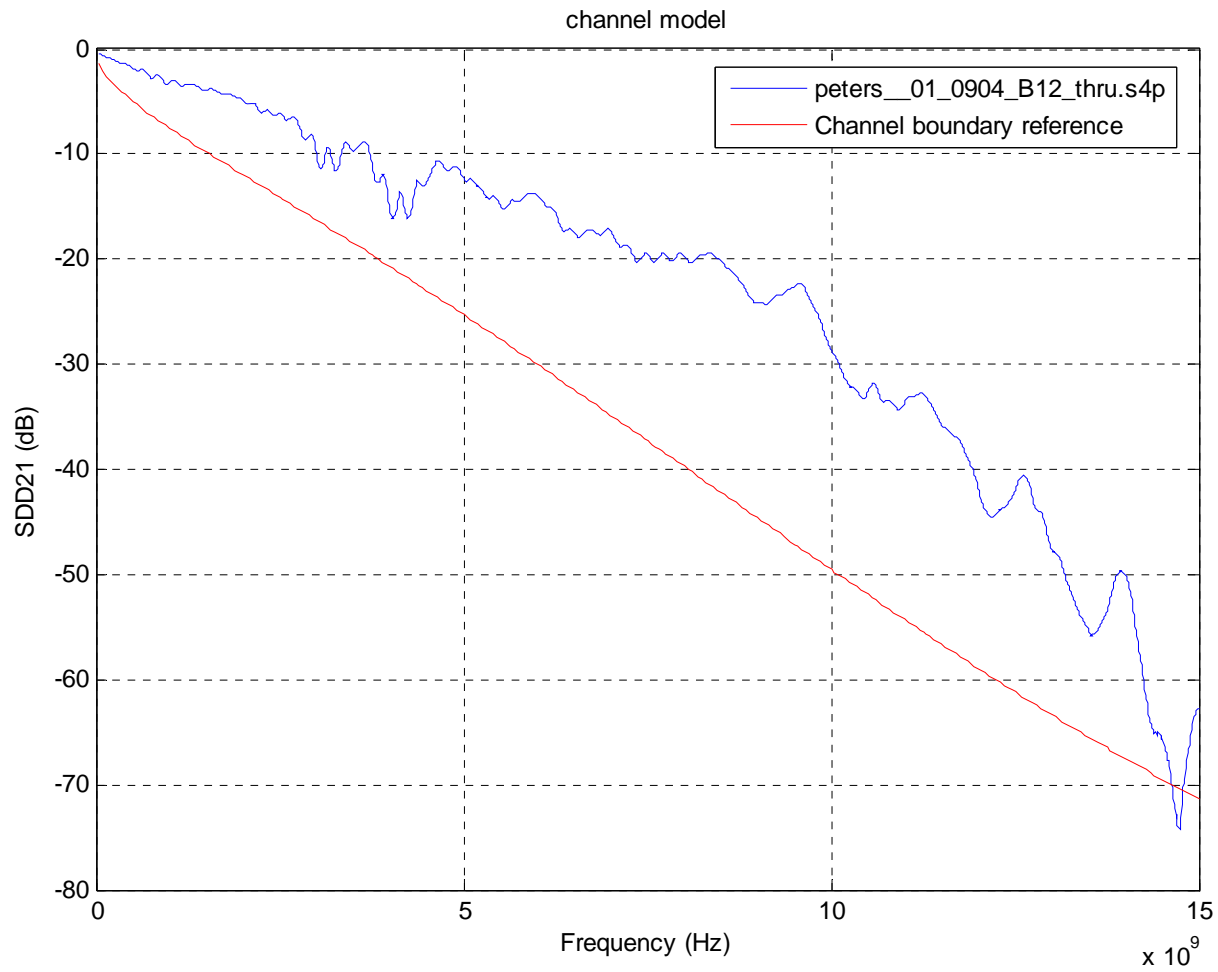


$$BER = Q\left(\frac{d_{min}}{2\sigma_n}\right)$$

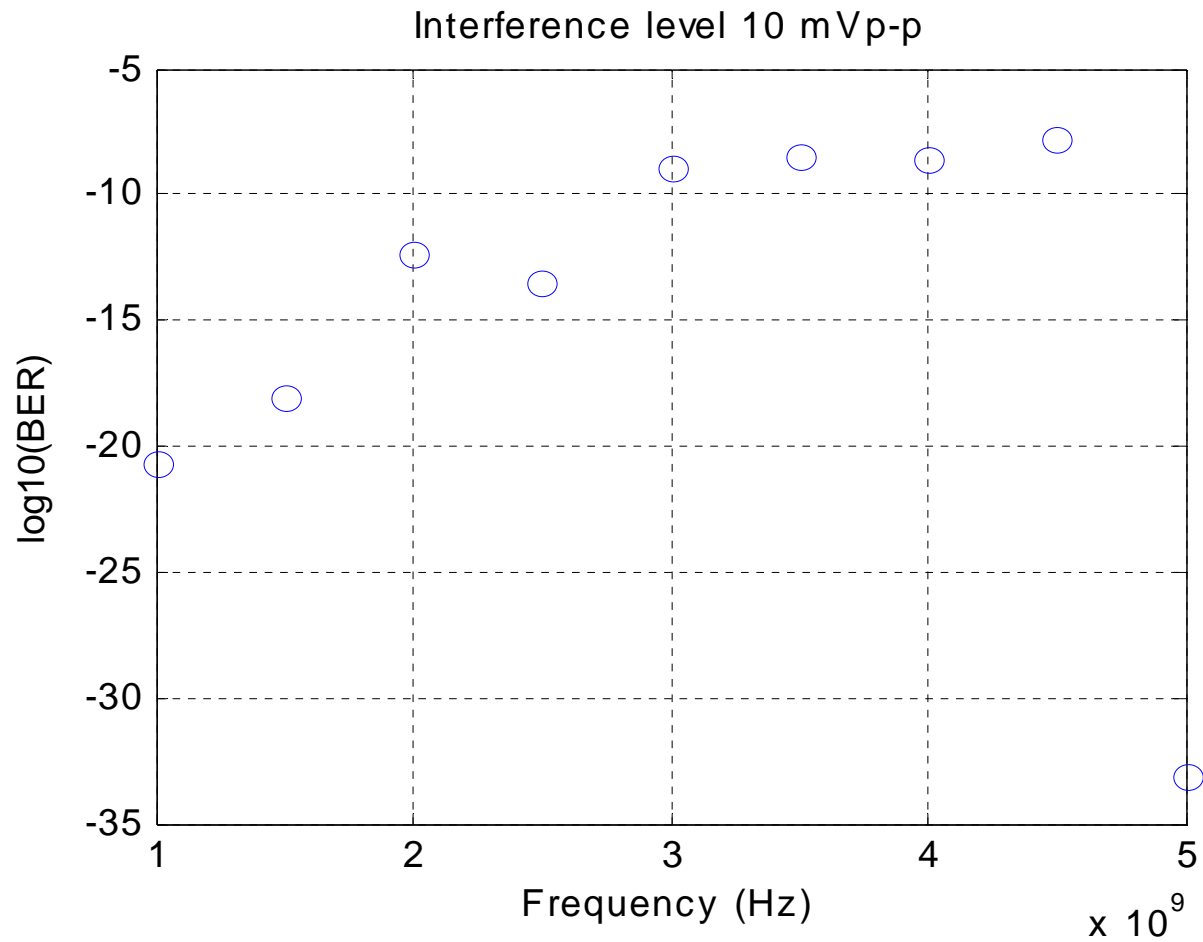
$$SNR = \frac{d_{min}}{\sigma_n}$$

d_{min} = minimum distance of eye

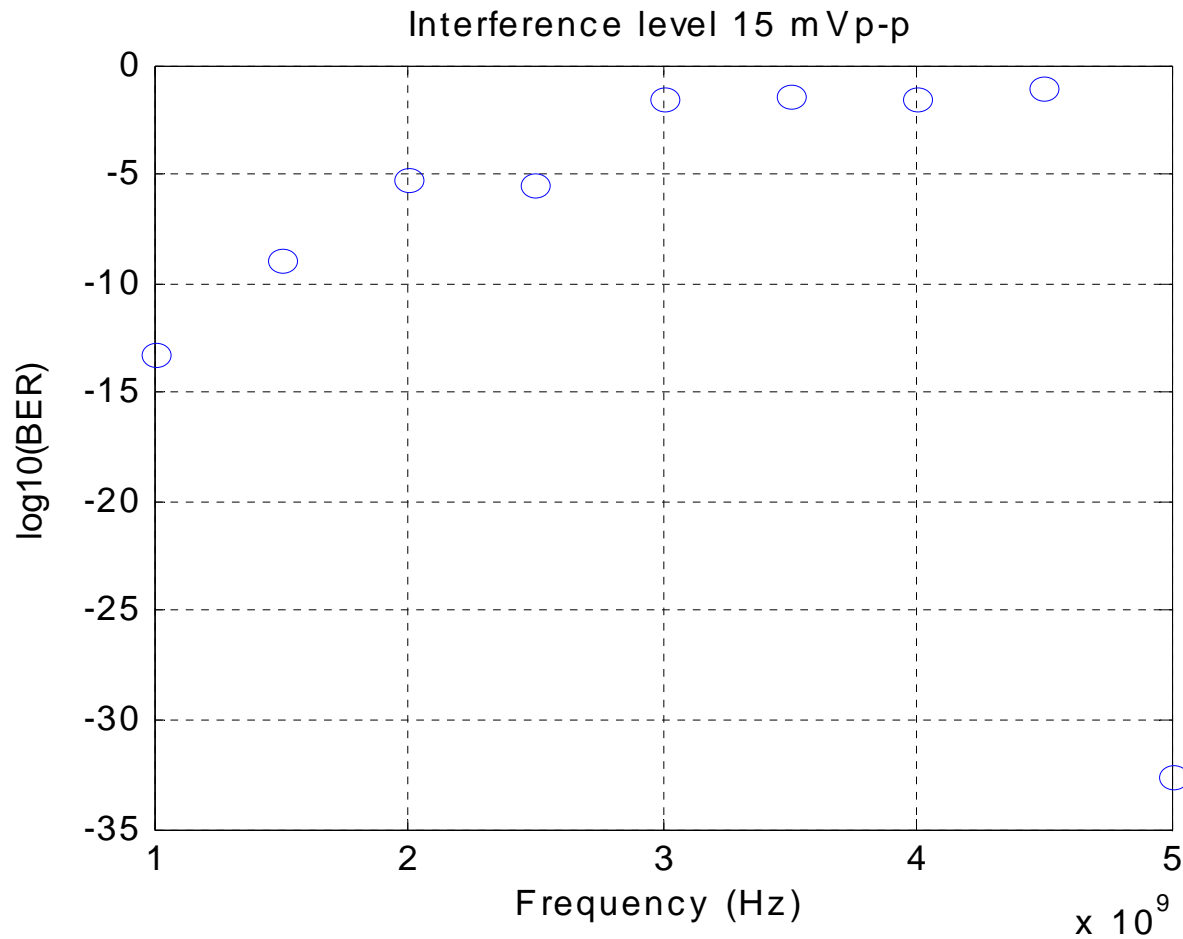
σ_n = noise standard deviation before slicer



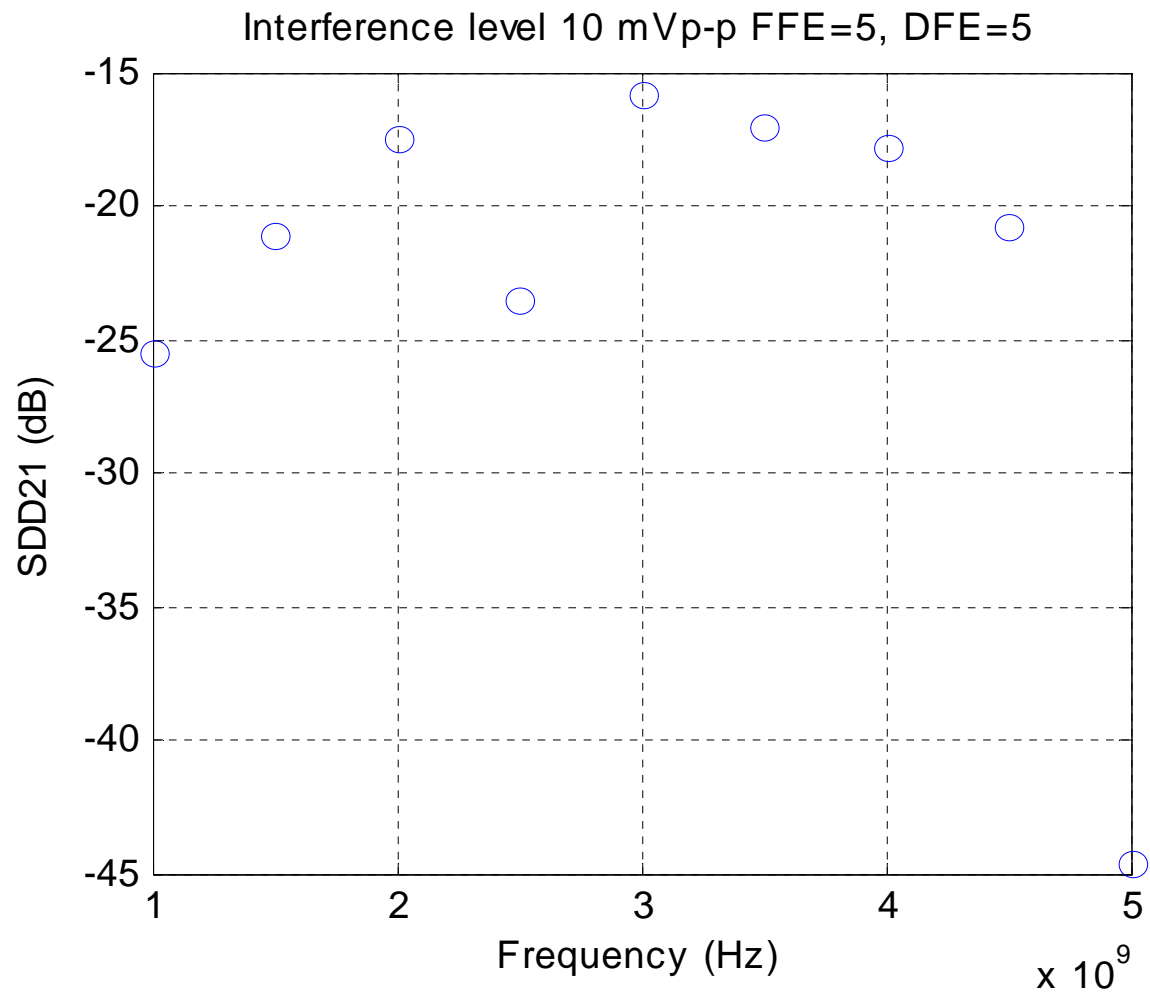
Insertion loss of Intel bottom layer channel



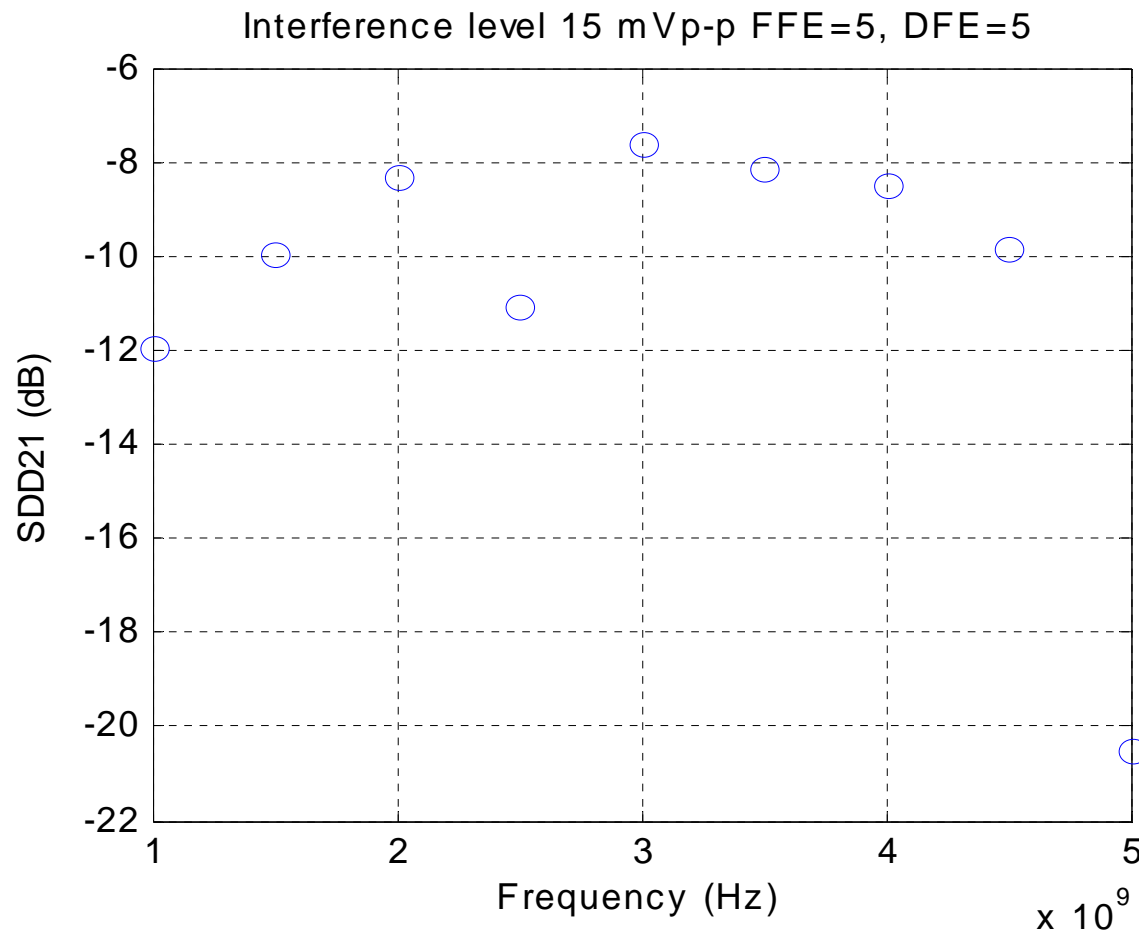
BER with interference of 10 mVp-p at different frequencies, FFE=3, DFE=5



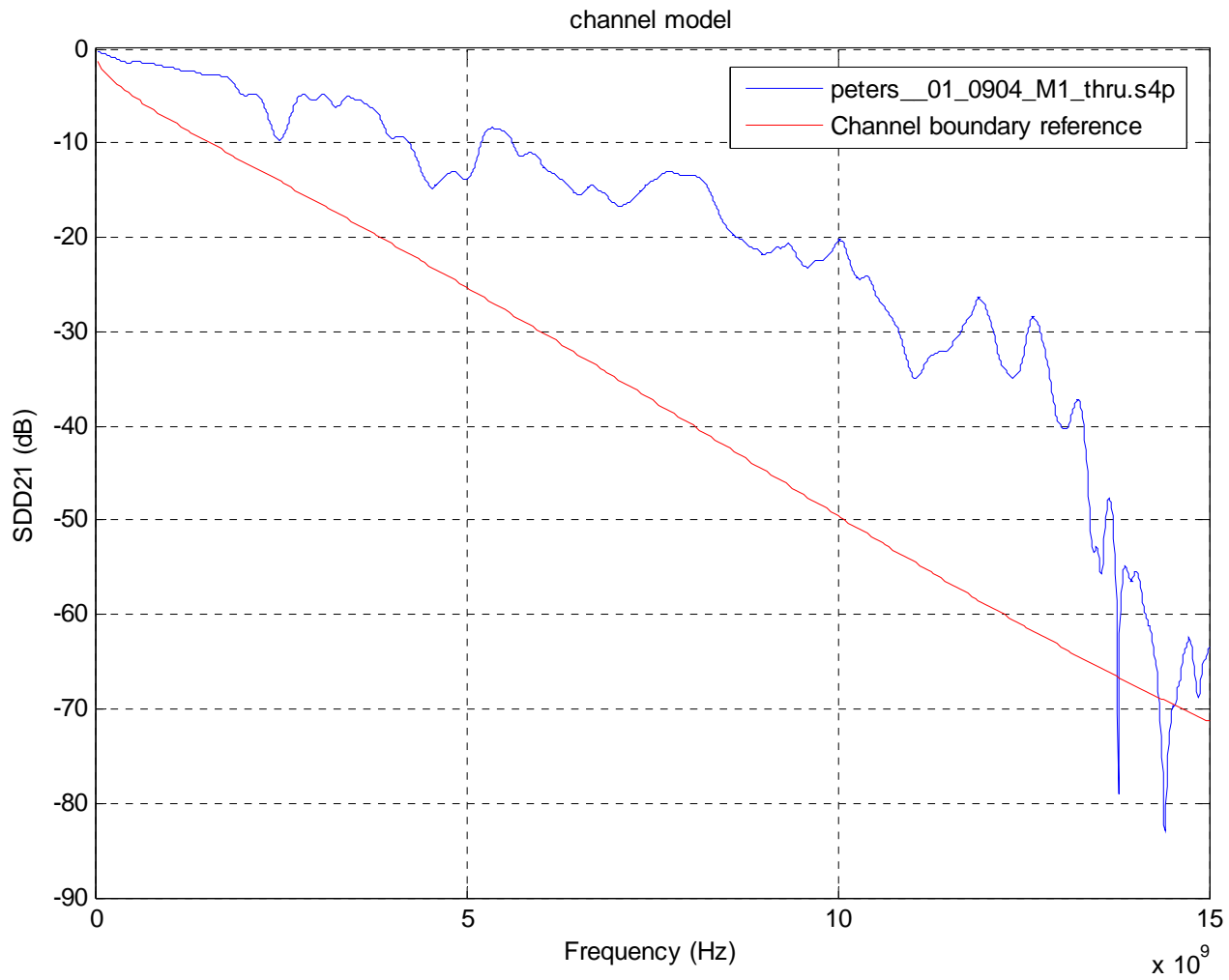
BER with interference of 15 mVp-p at different frequencies, FFE=3, DFE=5



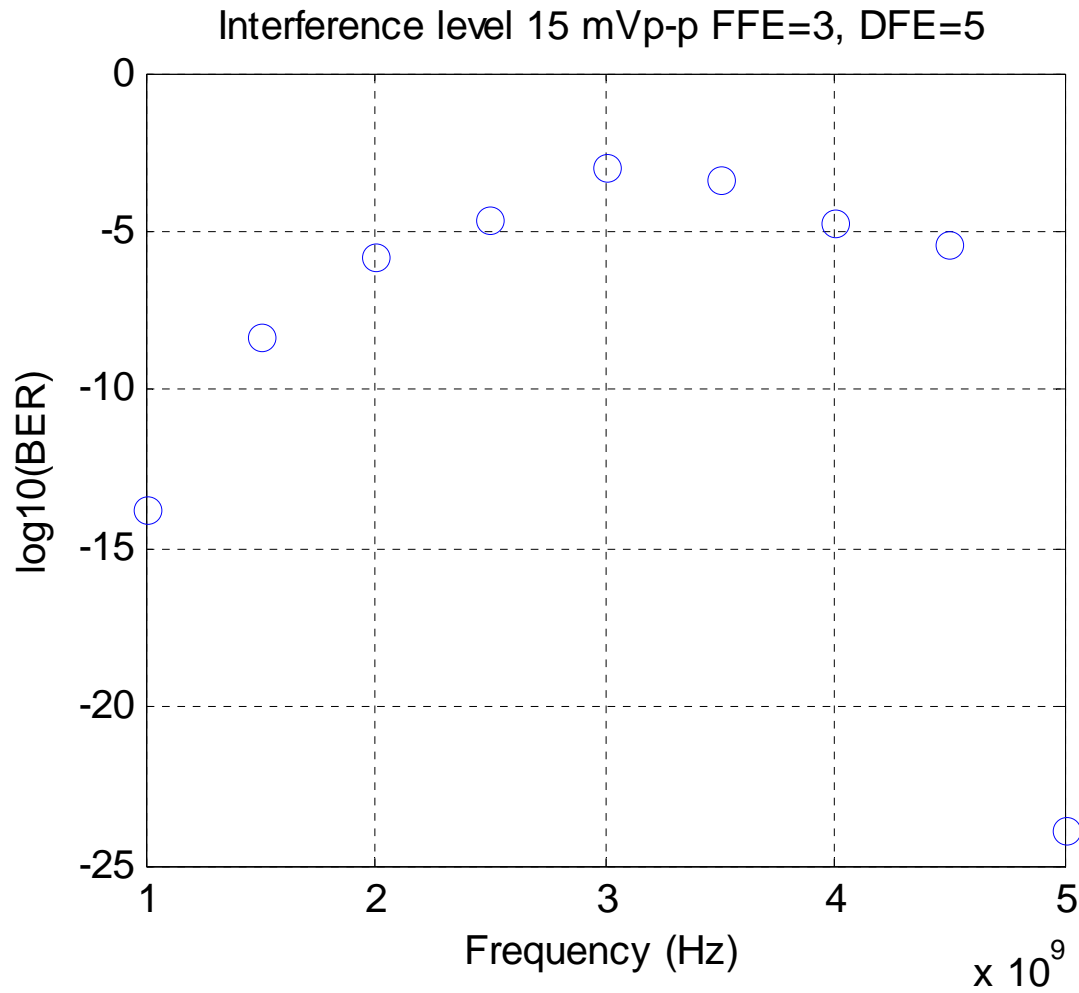
BER with interference of 10 mVp-p at different frequencies, FFE=5, DFE=5



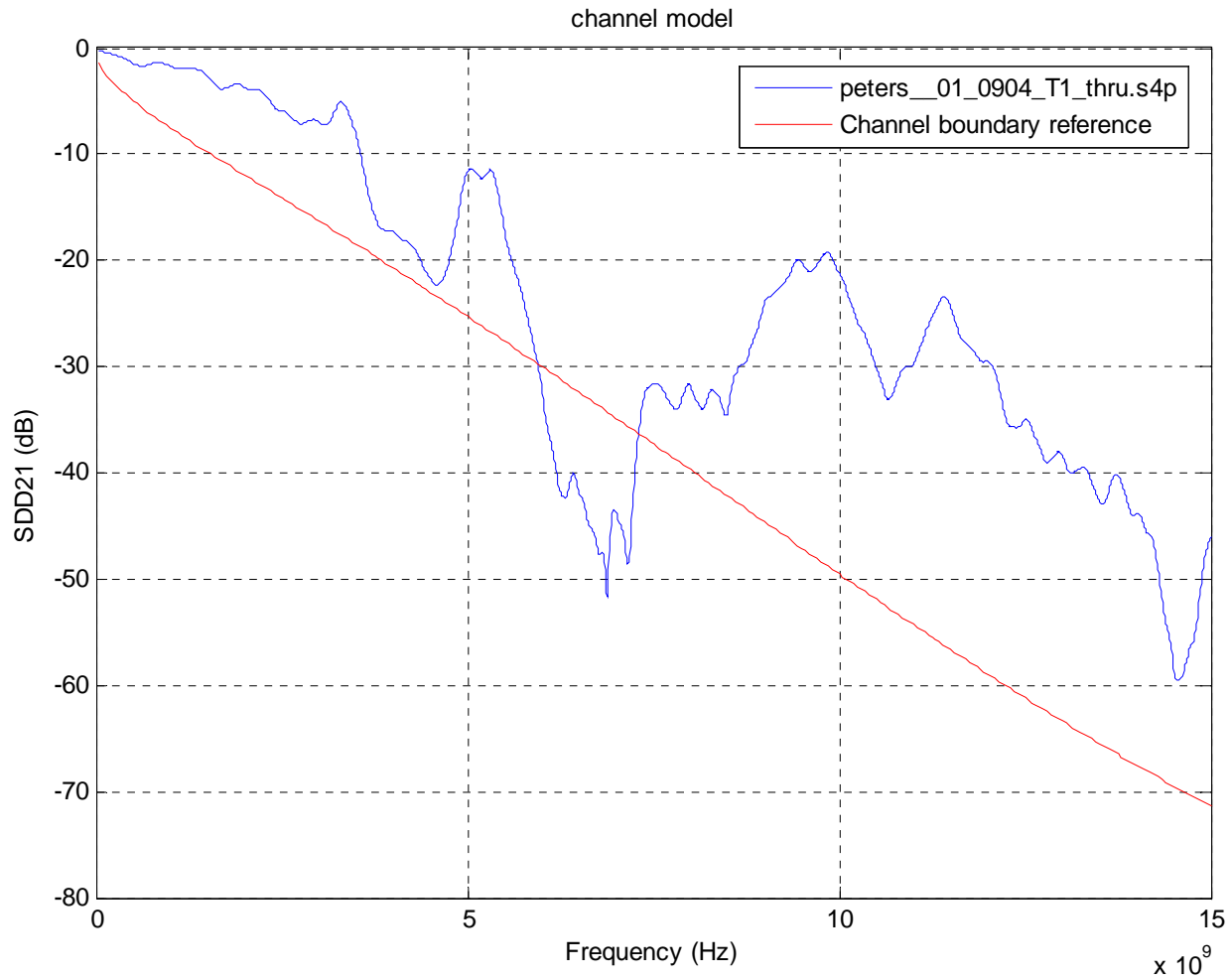
BER with interference of 15 mVp-p at different frequencies, FFE=5, DFE=5



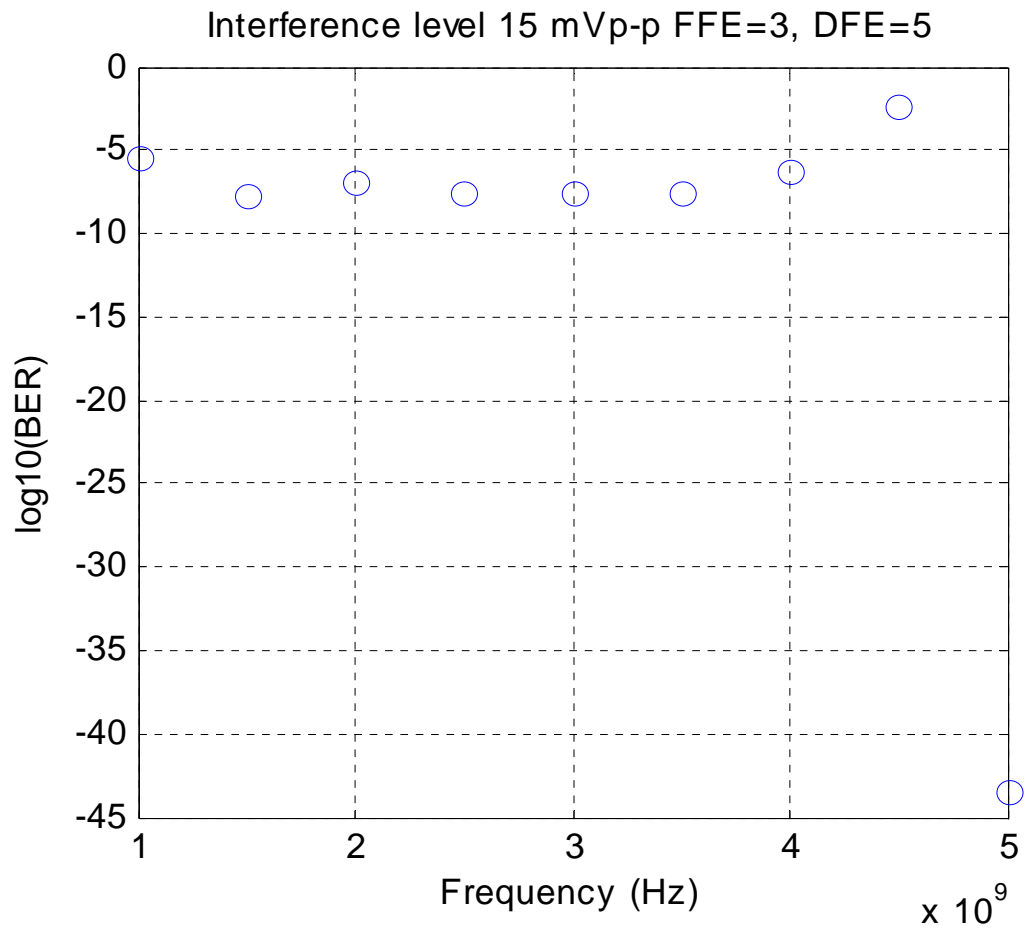
Insertion loss of Intel middle layer channel



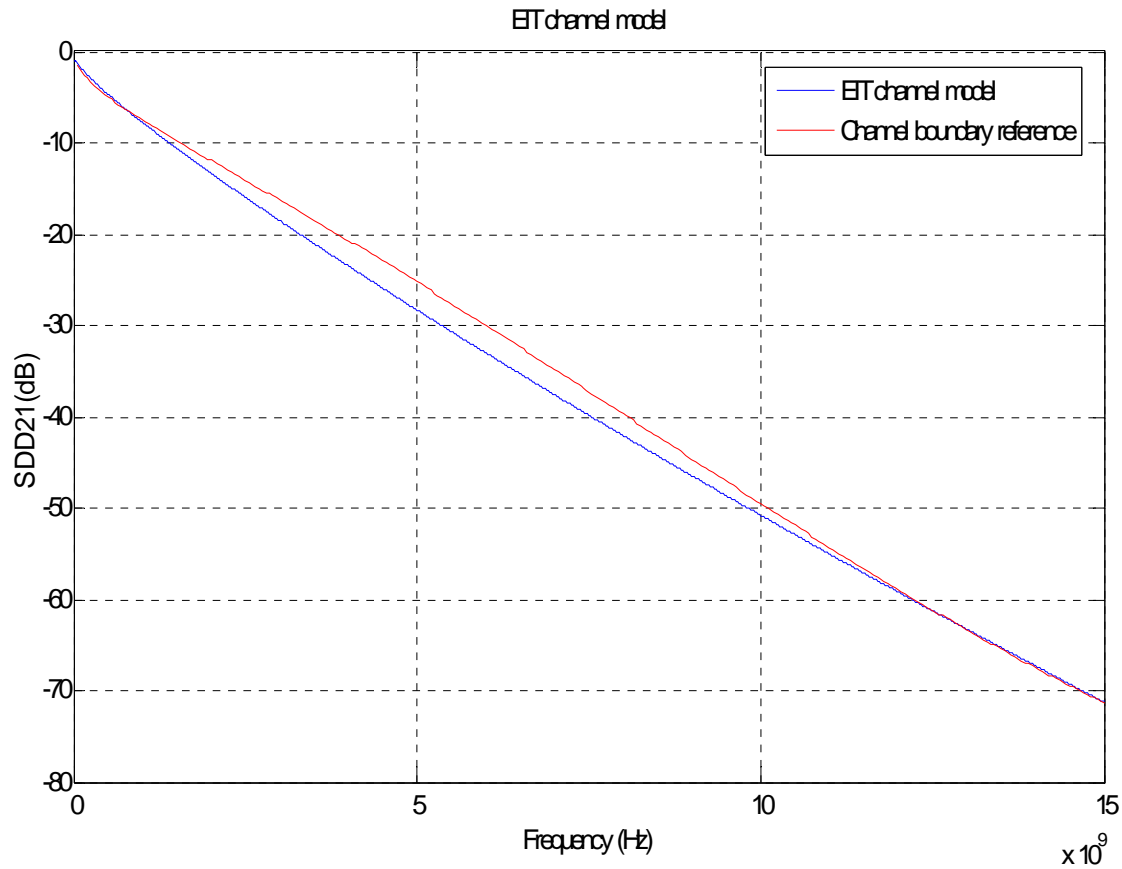
BER with interference of 15 mVp-p at different frequencies, FFE=3, DFE=5



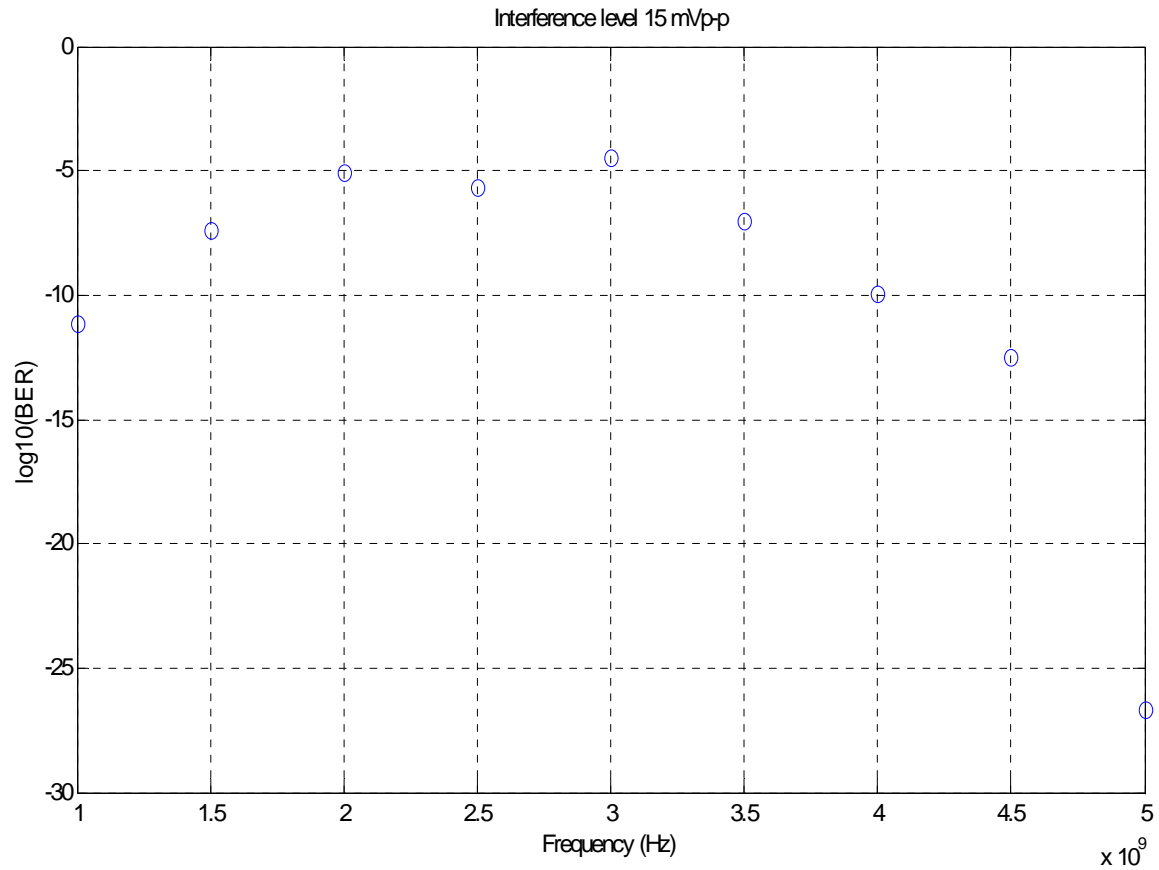
Insertion loss of Intel top layer channel



BER with interference of 15 mVp-p at different frequencies, FFE=3, DFE=5



Channel from Rich based on Charles Moore's current EIT measurement proposal not validated yet



BER with interference of 15 mVp-p at different frequencies, FFE=3, DFE=5

Summary

- Present an interference tolerance simulation methodology to address the issue whether or not 15 mVp-p level is tolerable for BER of 10^{-12} .
- EIT measurement data are inconclusive and more work is needed before getting into the spec.