IEEE P802.3dg 100 Mb/s Long-Reach Single Pair Ethernet Task Force

Mixed Crosstalk Measurements in Near-Far Test Case

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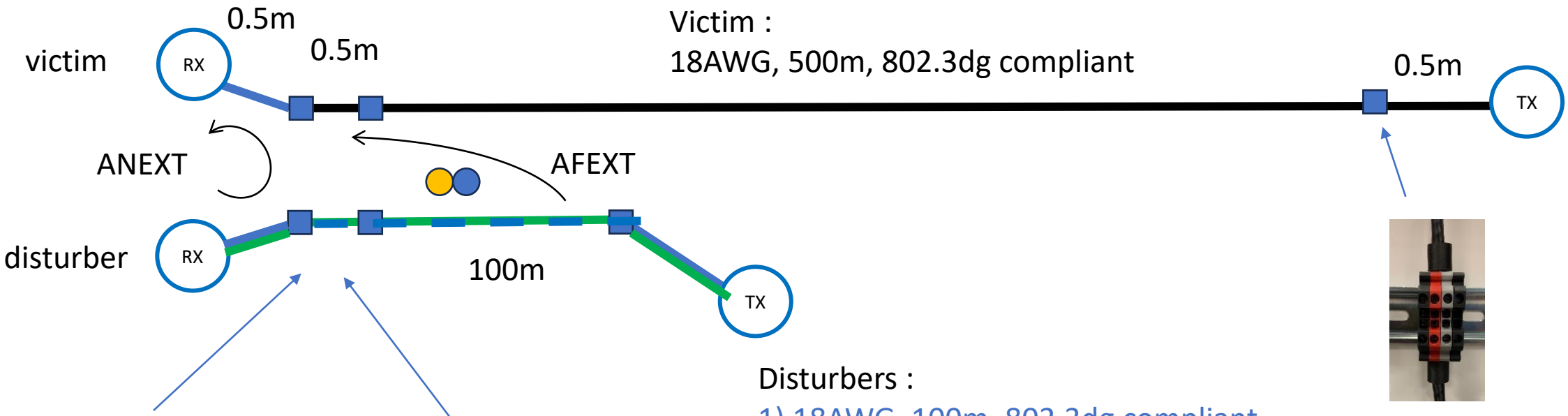
BELDEN

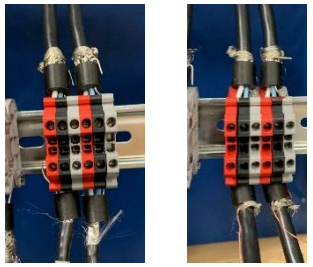
Near-Far Alien Crosstalk



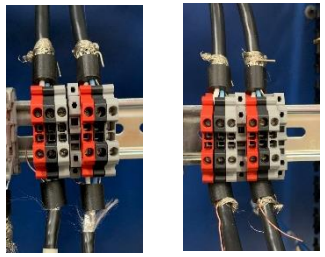
Disturbers :

1) 18AWG, 100m, 802.3dg compliant

2) 18AWG, 100m, 802.3cg compliant



No mitigation



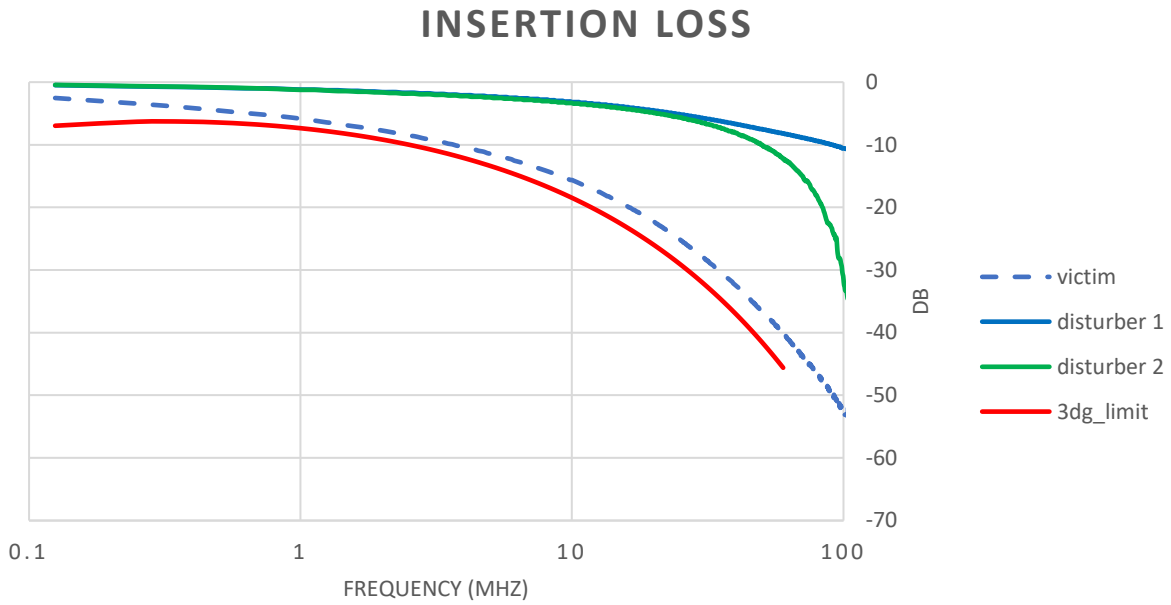
mitigated

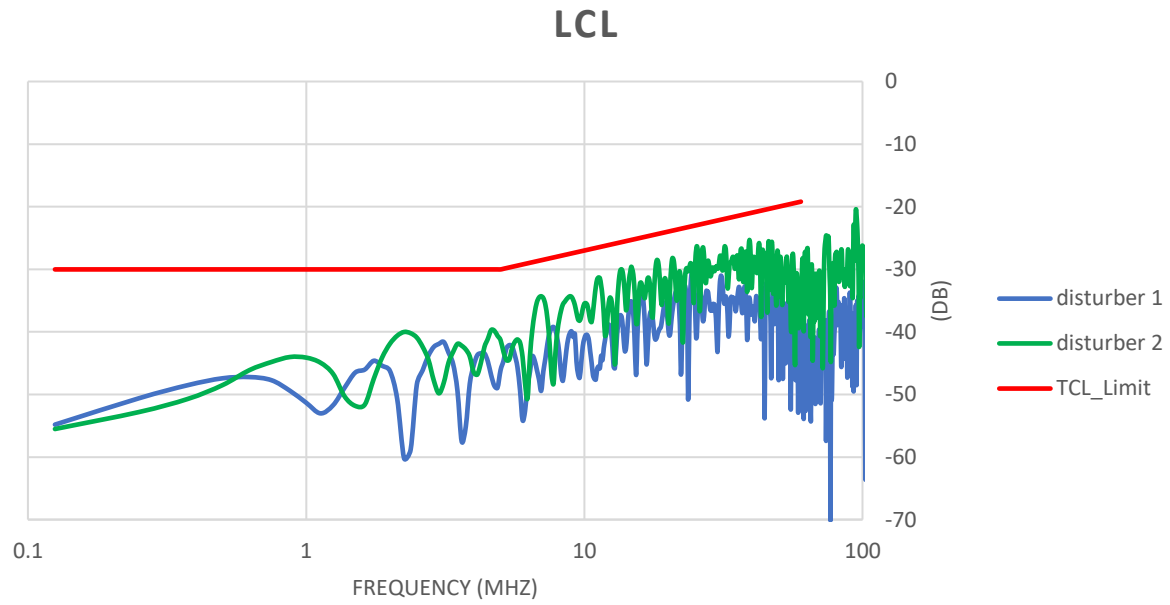
Connectivity (2 configurations)

1) Mitigated : space is added between connectors

2) No Mitigation : connectors are settled side by side

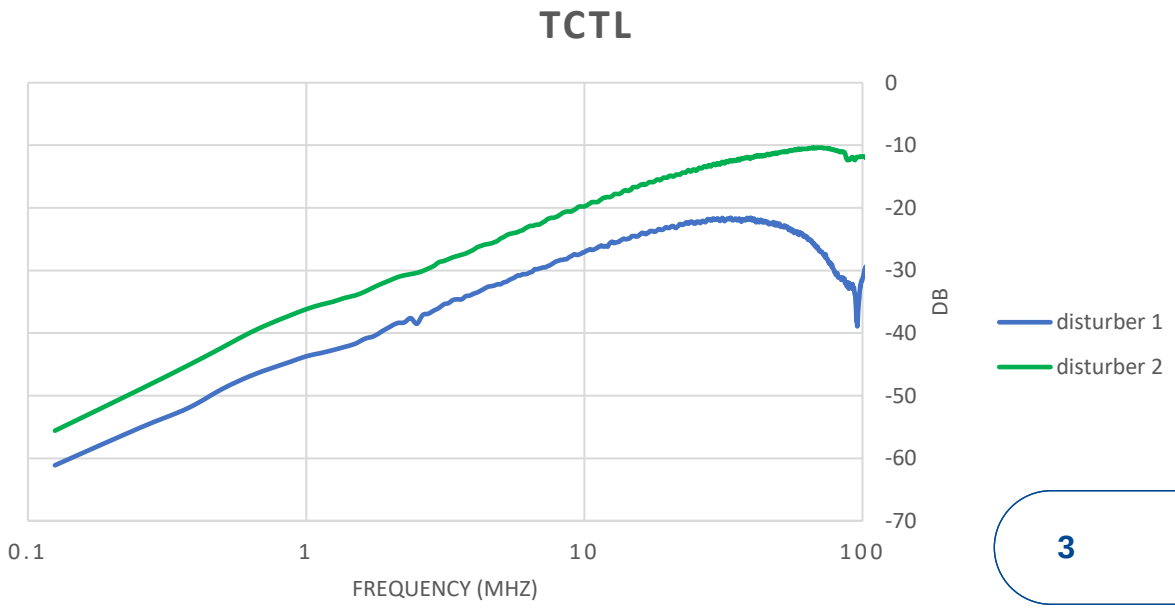
Victim and Disturber Cables characteristics



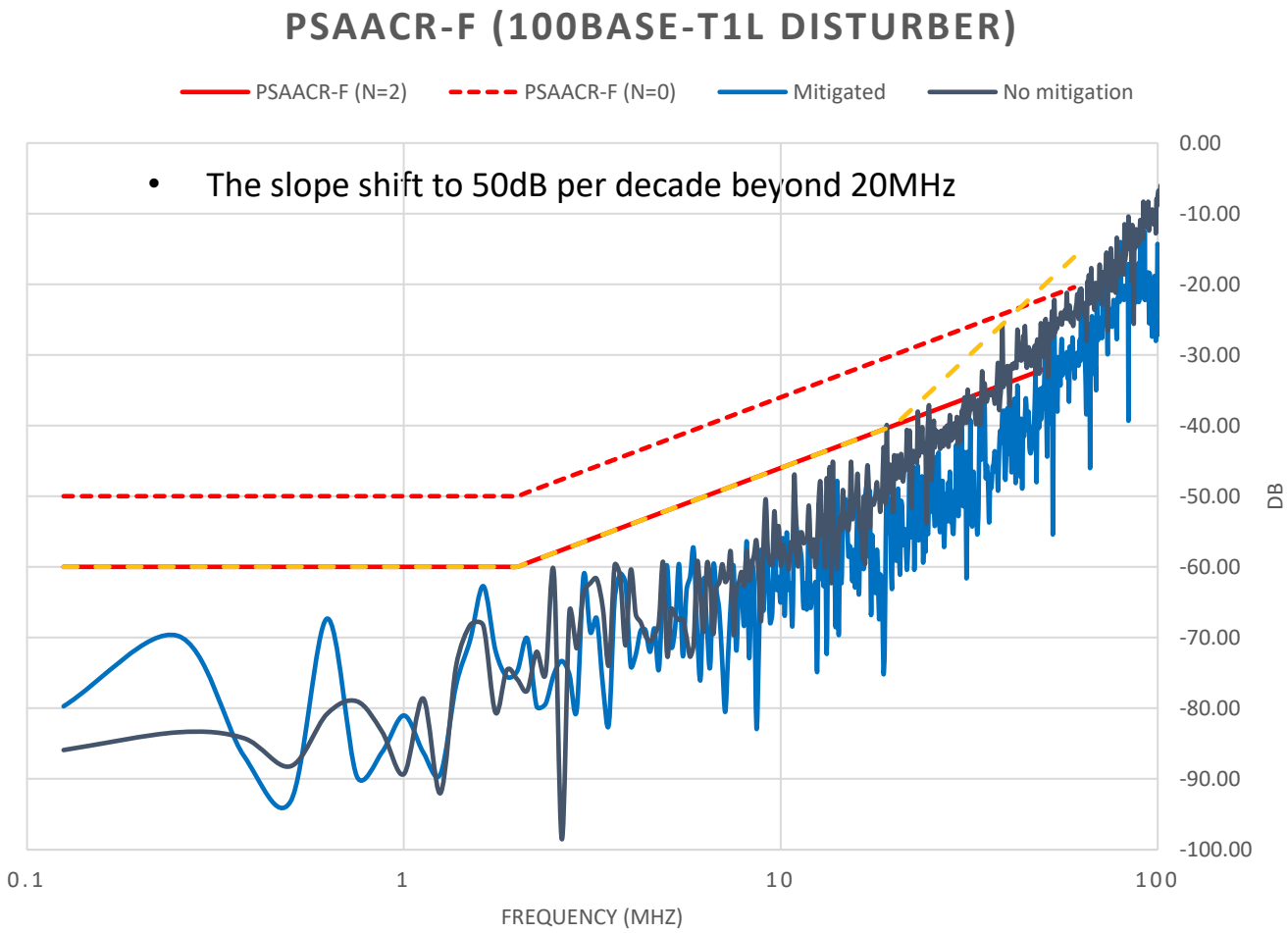


Victim :
18AWG, 500m, 802.3dg compliant

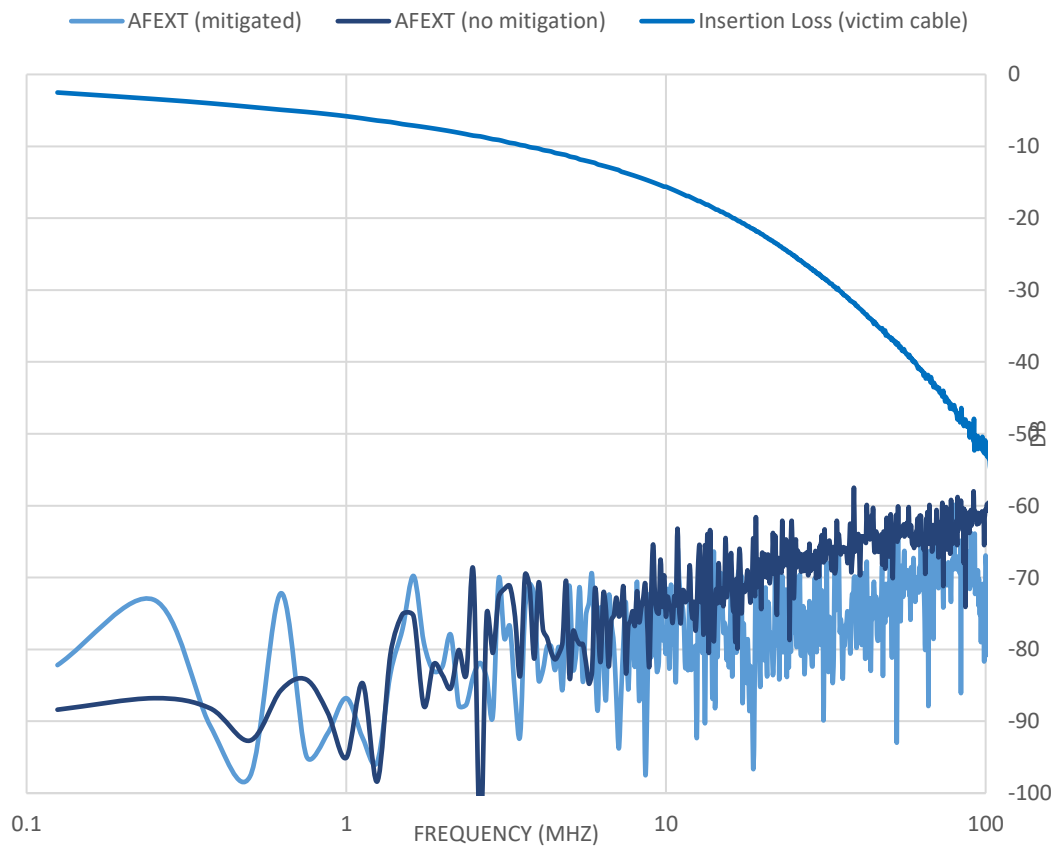
Disturbers :
1) 18AWG, 100m, 802.3dg compliant
2) 18AWG, 100m, 802.3cg compliant



PSAACR-F 500m (100BASE-T1L) + 100m (100BASE-T1L) disturber 1

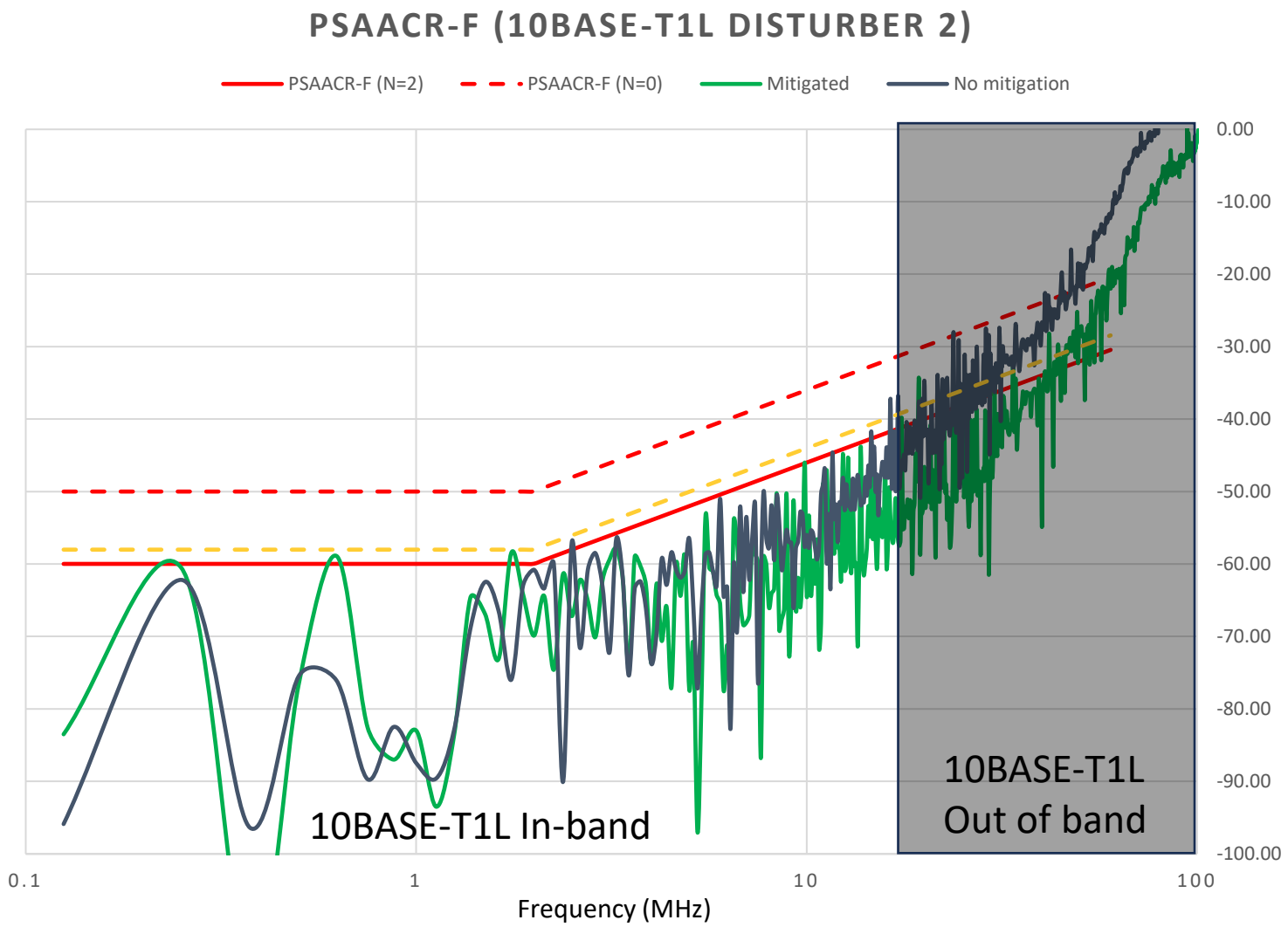


- The slope shift to 50dB per decade beyond 20MHz



- Based on these observations, should the calculation of the injected noise AWGN be re-evaluated for 50 dB PSAACR-F baseline (instead of 60dB)?

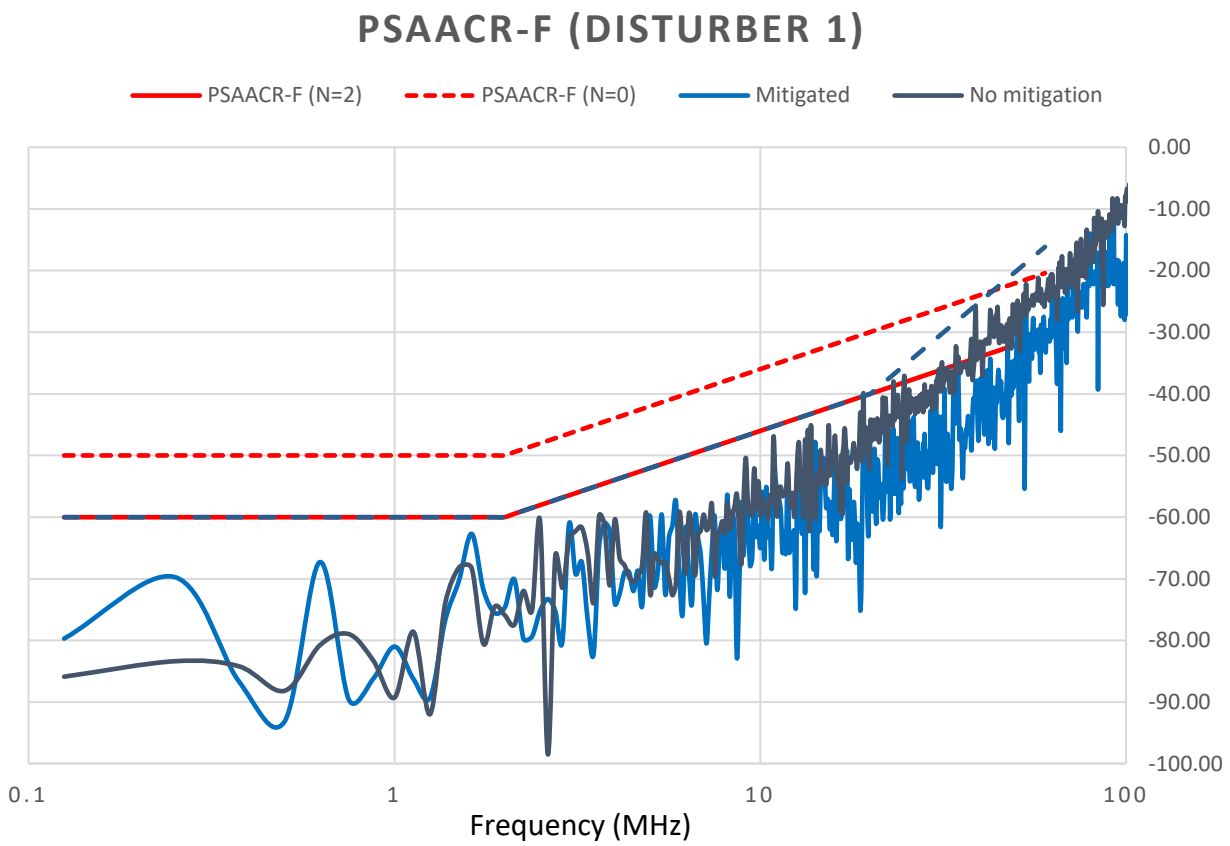
PSAACR-F 500m (100BASE-T1L) + 100m (10BASE-T1L) disturber 2

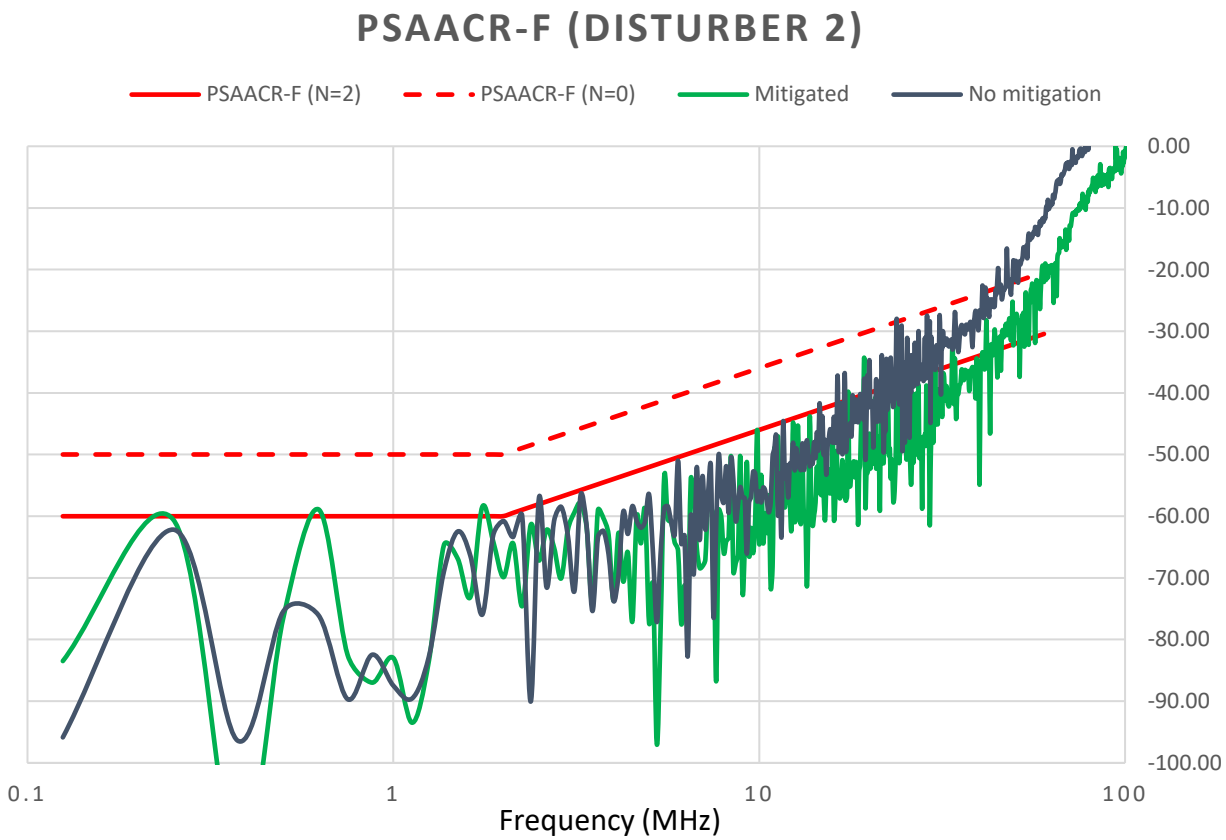


- AFEXT contribution for the 10BASE-T1L Near-Far case is slightly larger than expected (yellow dotted line) with only 1 disturber (2-3 dB higher than 3dg limit). We may expect higher level with more disturber.
- Based on these observations, should the calculation of the injected noise AWGN be re-evaluated for 50 dB PSAACR-F baseline (instead of 60dB)?

100kHz to 20 MHz : 10BASE-T1L In-Band
Above 20MHz : results are out of band

PSAACR-F (Summary)





Discussions

- Use test results (S-Parameters) for simulation validation purpose.
- should we review the calculation of the AWGN noise for Near-Far case based on these results? (ref. zimmerman_3dgah_01b_01292024)
  - Use 50 dB baseline instead of 60 dB baseline (ref. 3dg PSAACR-F)

Thank you