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Subject : IEEE 802.3ap Backplane Ethernet

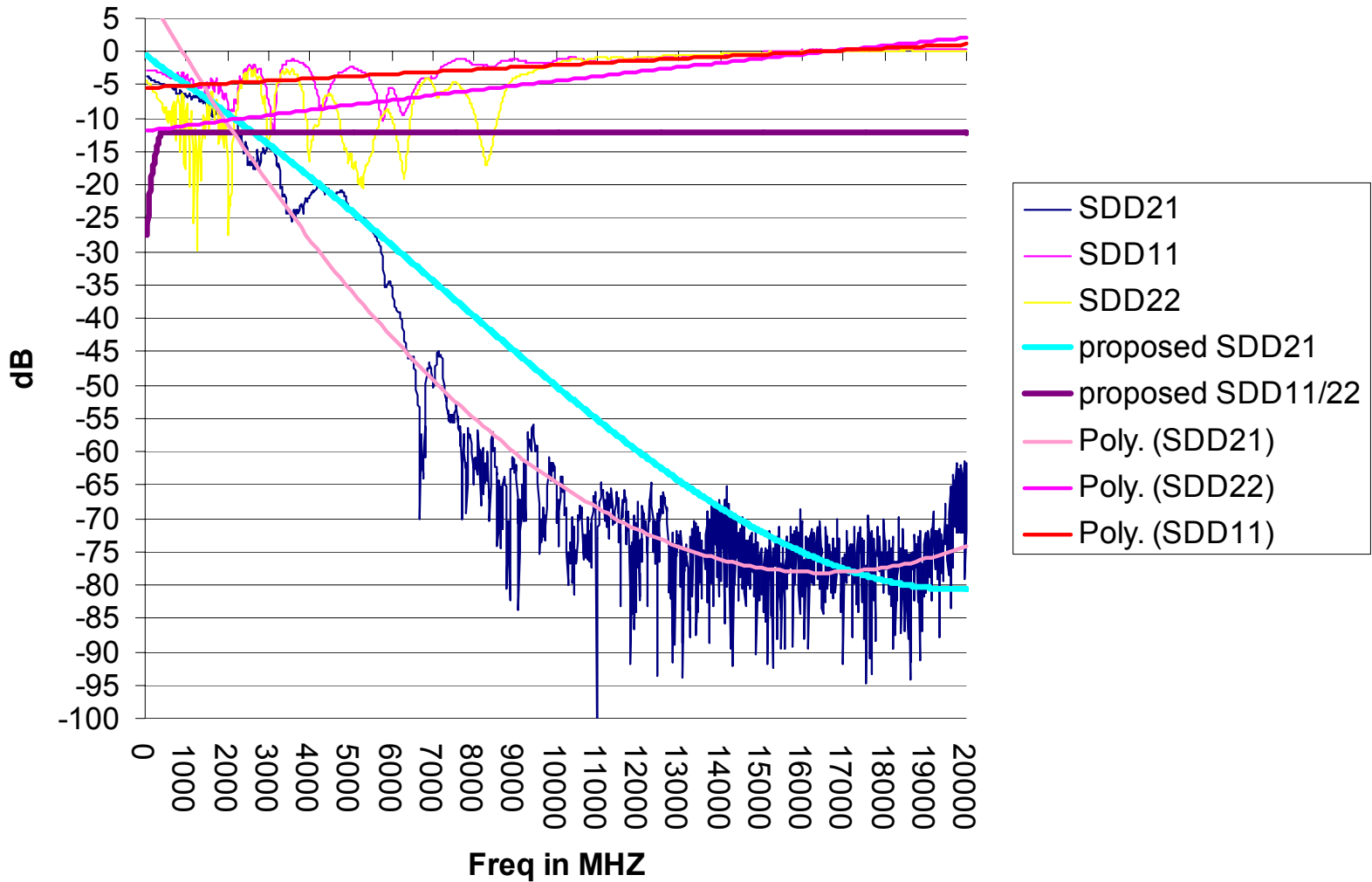
Abstract : This presentation is a comparison check on the validity of the proposed Ad-Hoc channel masks, as well as my thoughts on continuing work in the channel ad-hoc.

- Compare channel using N6000-21.
- Compare channel using FR-406.
- Discuss Group Delay measurements

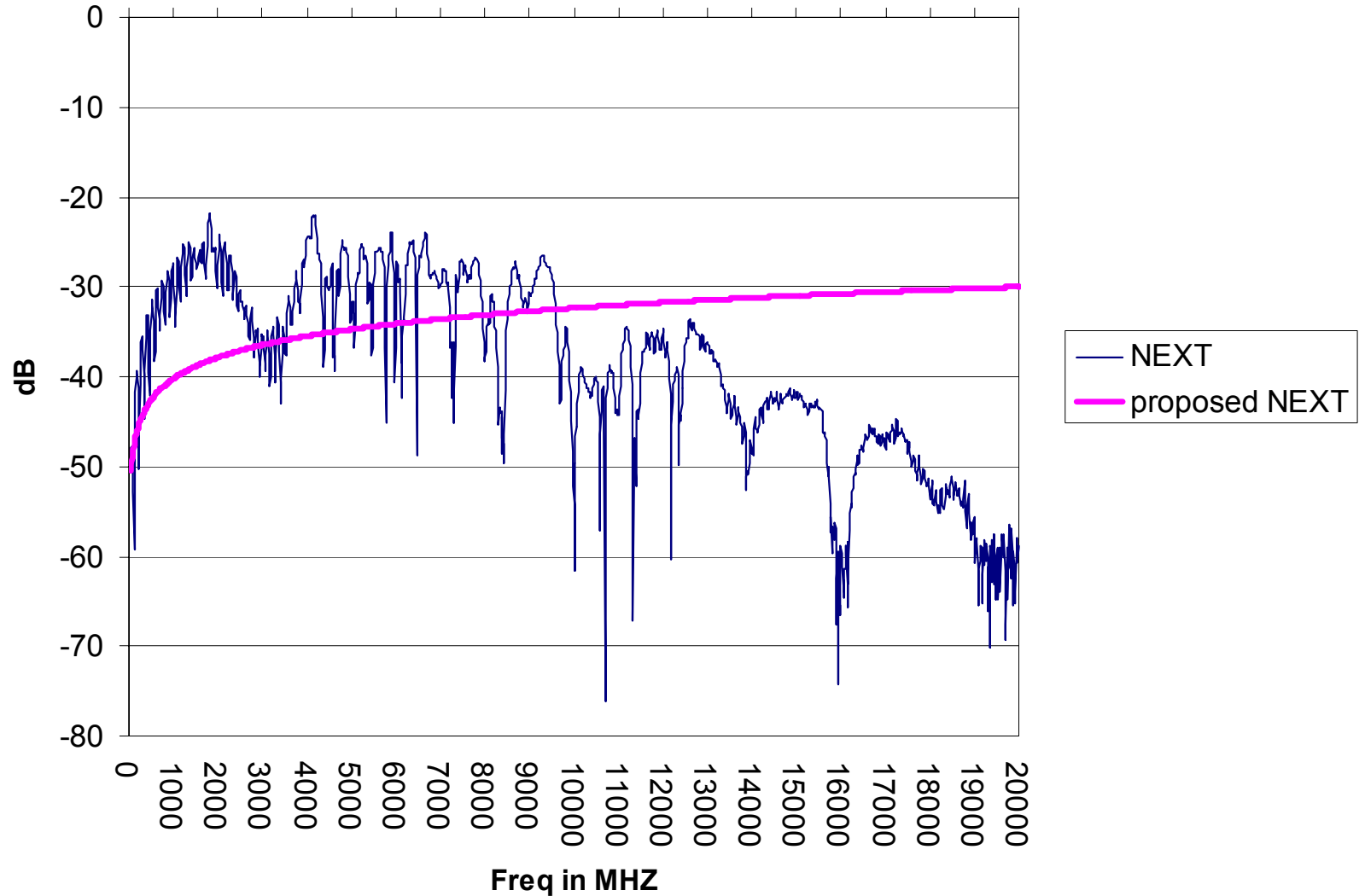
- This channel is 39 plus inches with cross talk designed in for evaluation of 3.125gps serdes devices and is four years old.
- N6000-21 based back plane with N4000-13 daughter cards, SMA source and destination points back to back, traces loosely coupled.
- N6000-21 length 22inches, N4000-13 length 10inches and 7inches. Stub portion of thru-hole is 180mils.
- No Back Drill ... no fancy anything.

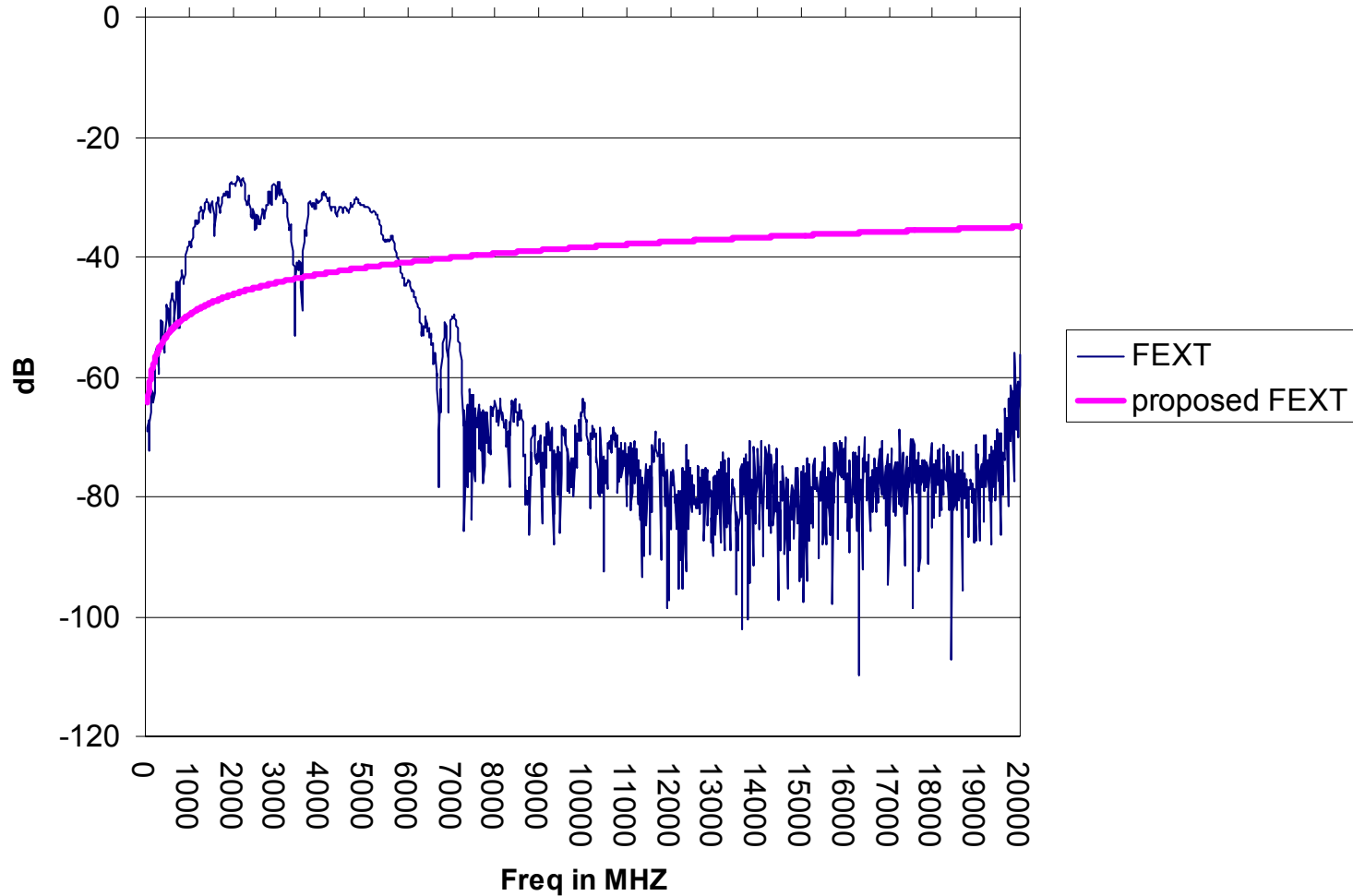
N6000-21 Test Channel

SDD21 SDD11 SDD22 with Trend Lines 39in N6000-21



N6000-21 Test Channel - NEXT

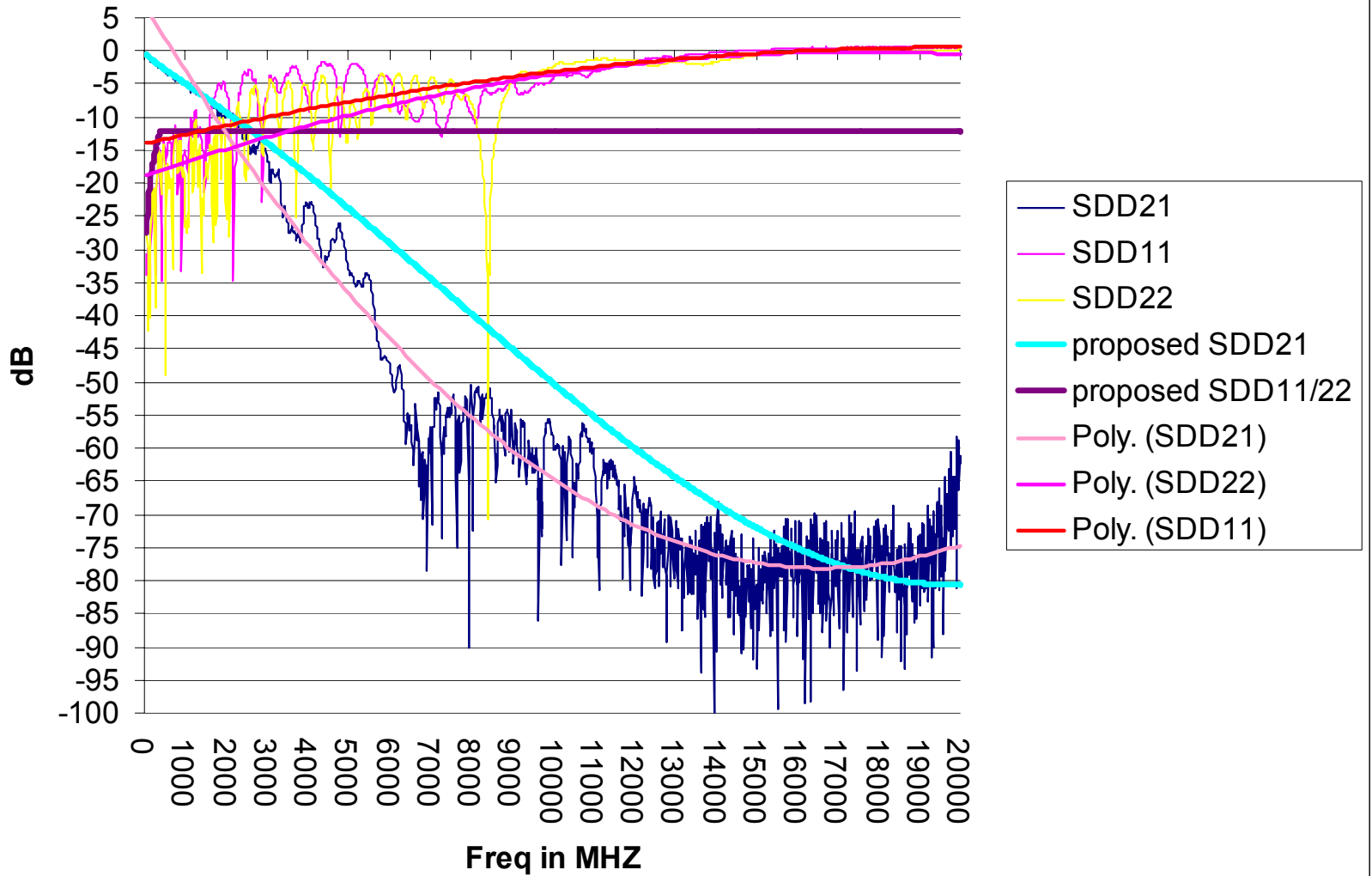




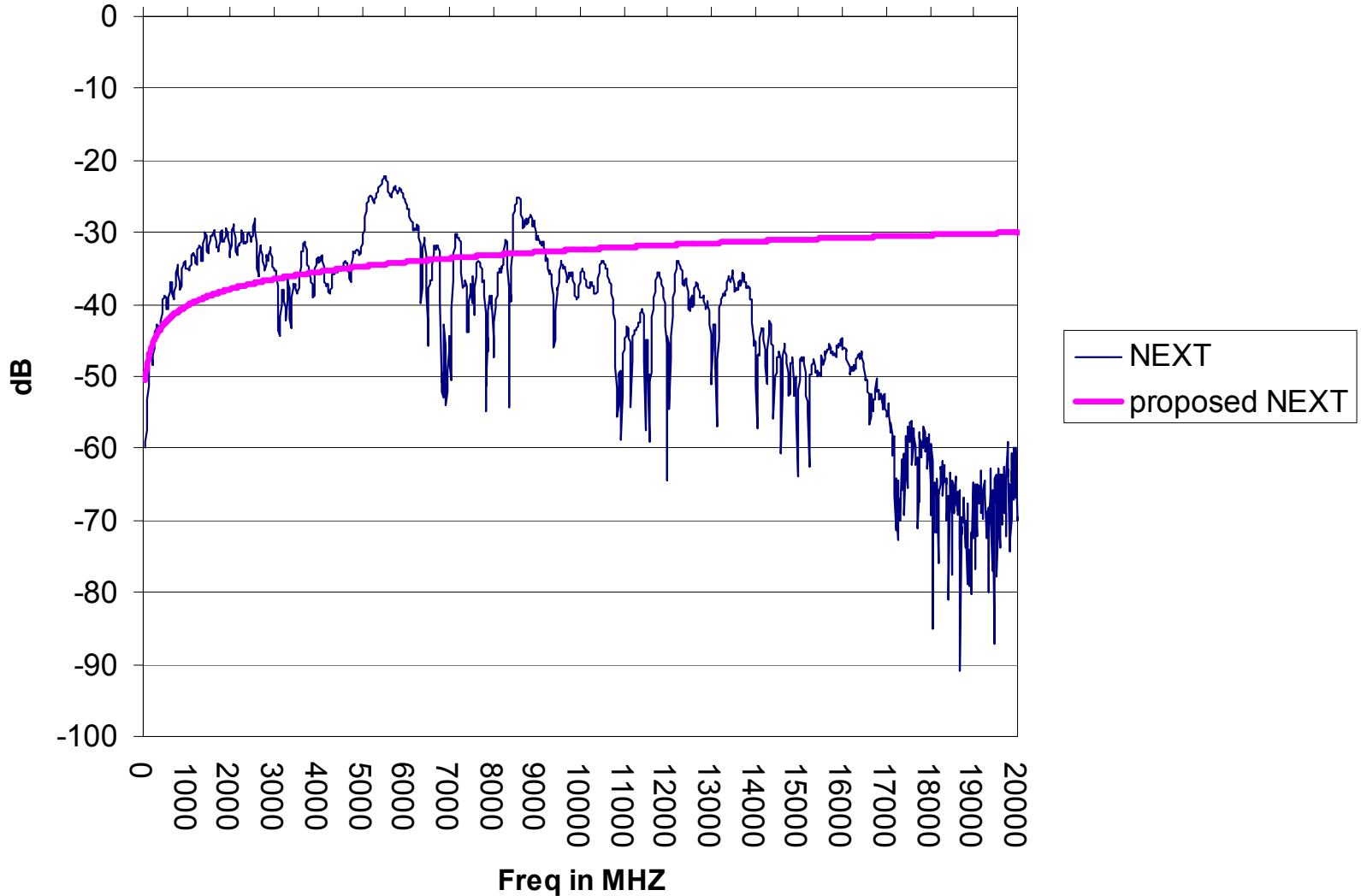
- This channel is 35 plus inches with cross talk designed in for evaluation of 3.125gps serdes devices and is two years old.
- FR-406 based back plane with N4000-13 daughter cards, SMA source and destination points back to back, traces loosely coupled.
- FR-406 length 18inches, N4000-13 length 10inches and 7inches. Stub portion of thru-hole is 90mils.
- No Back Drill ... no fancy anything.

FR-406 Test Channel

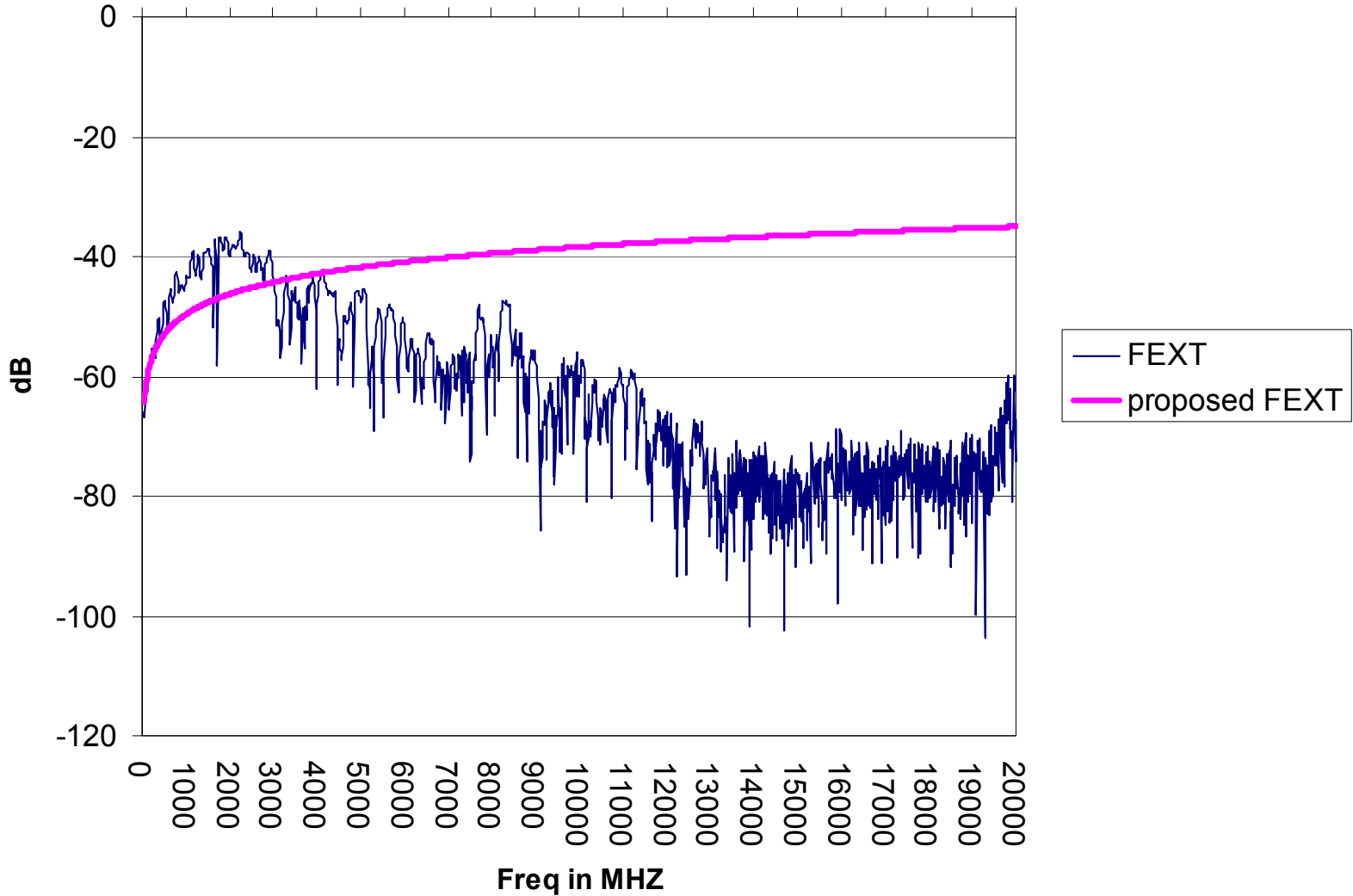
SDD21 SDD11 SDD22 with Trend Lines 35in FR-406



FR-406 Test Channel - NEXT

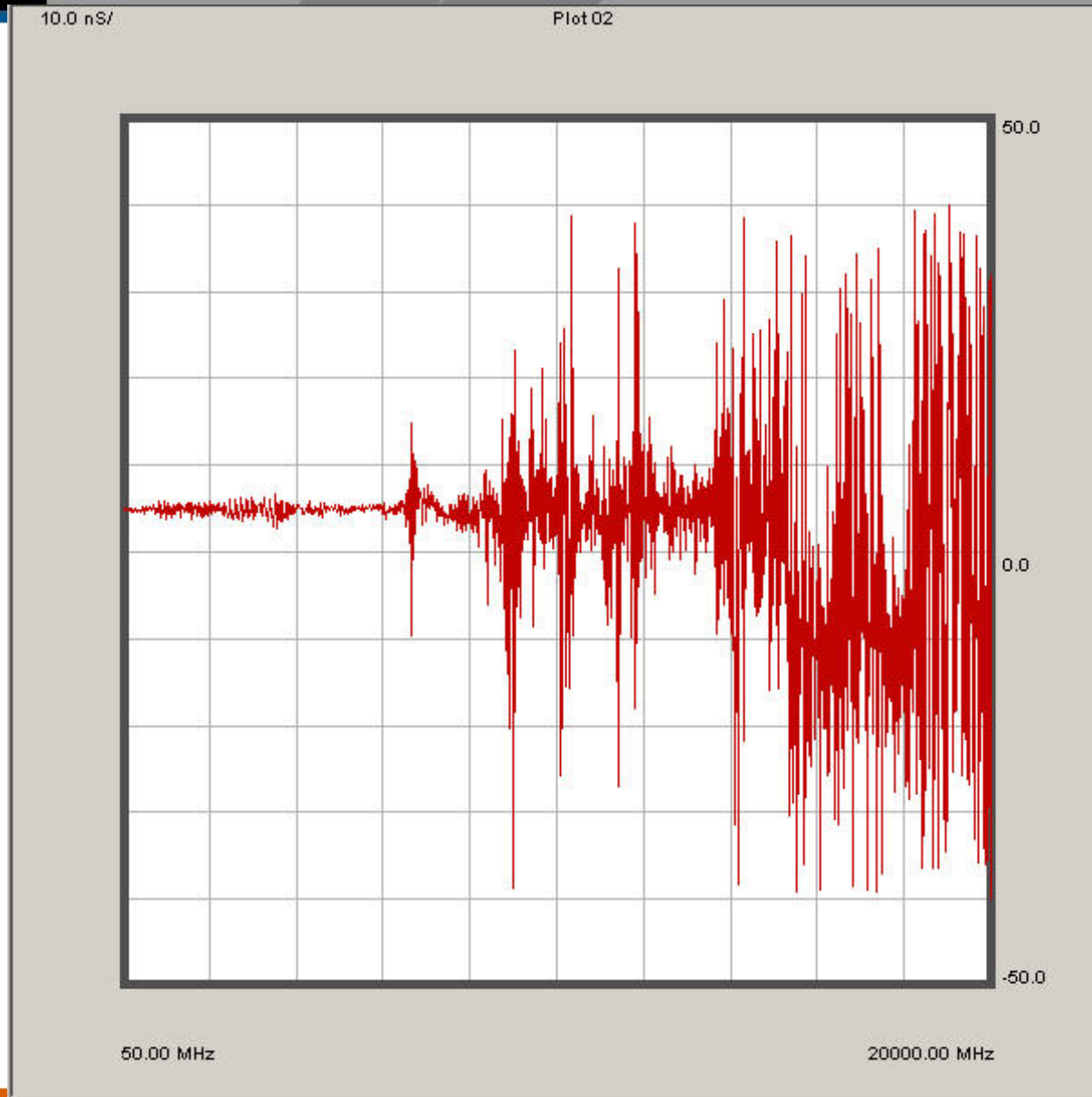


FR-406 Test Channel - FEXT

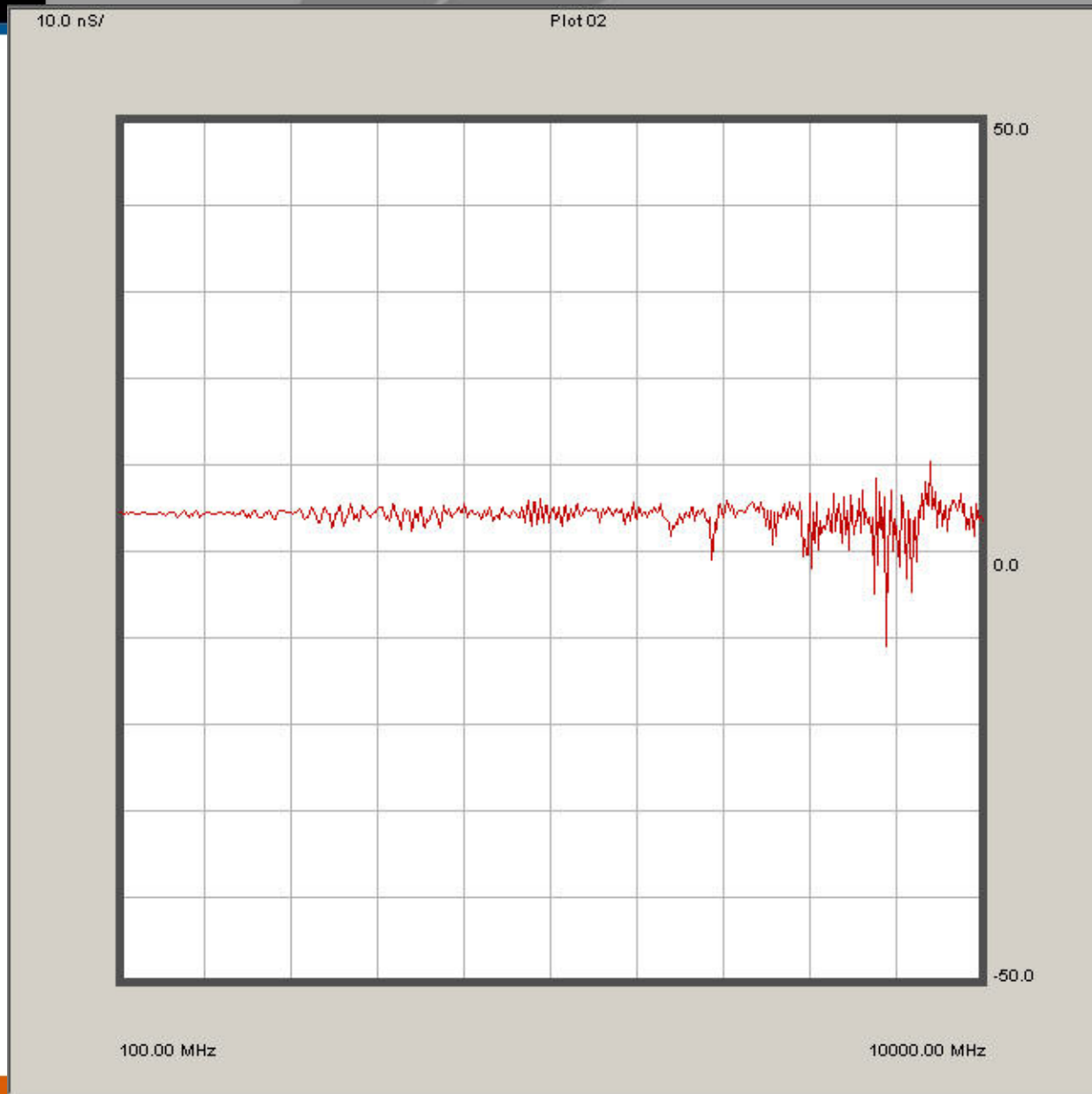


- Group Delay SDD21/SDD12
- VNA Settings and de-embedding will be an issue.
- Show that beyond 10Ghz, the measurements are inconsistent and there is more investigation.

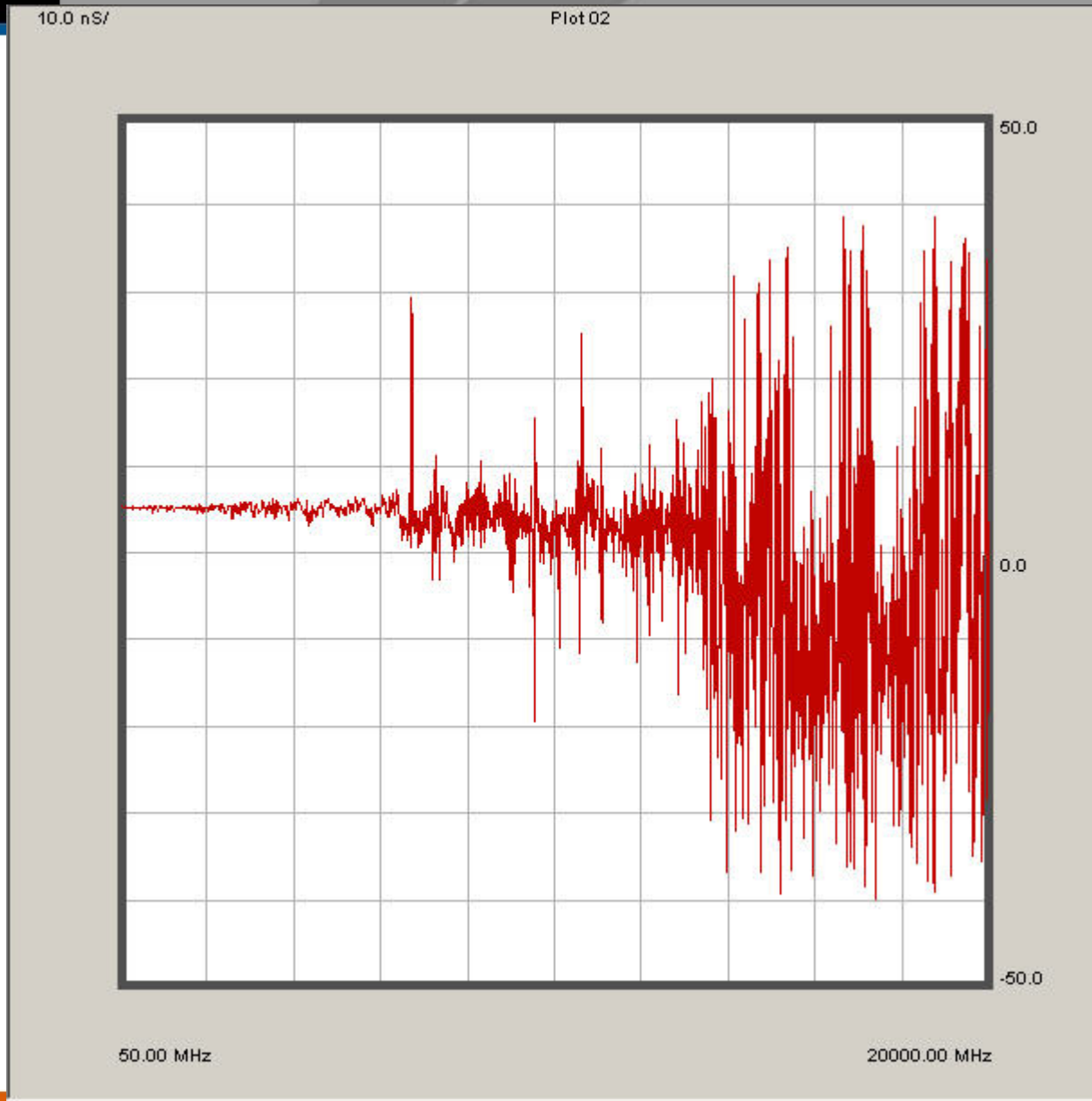
N6000-21 Test Channel 20Ghz GD



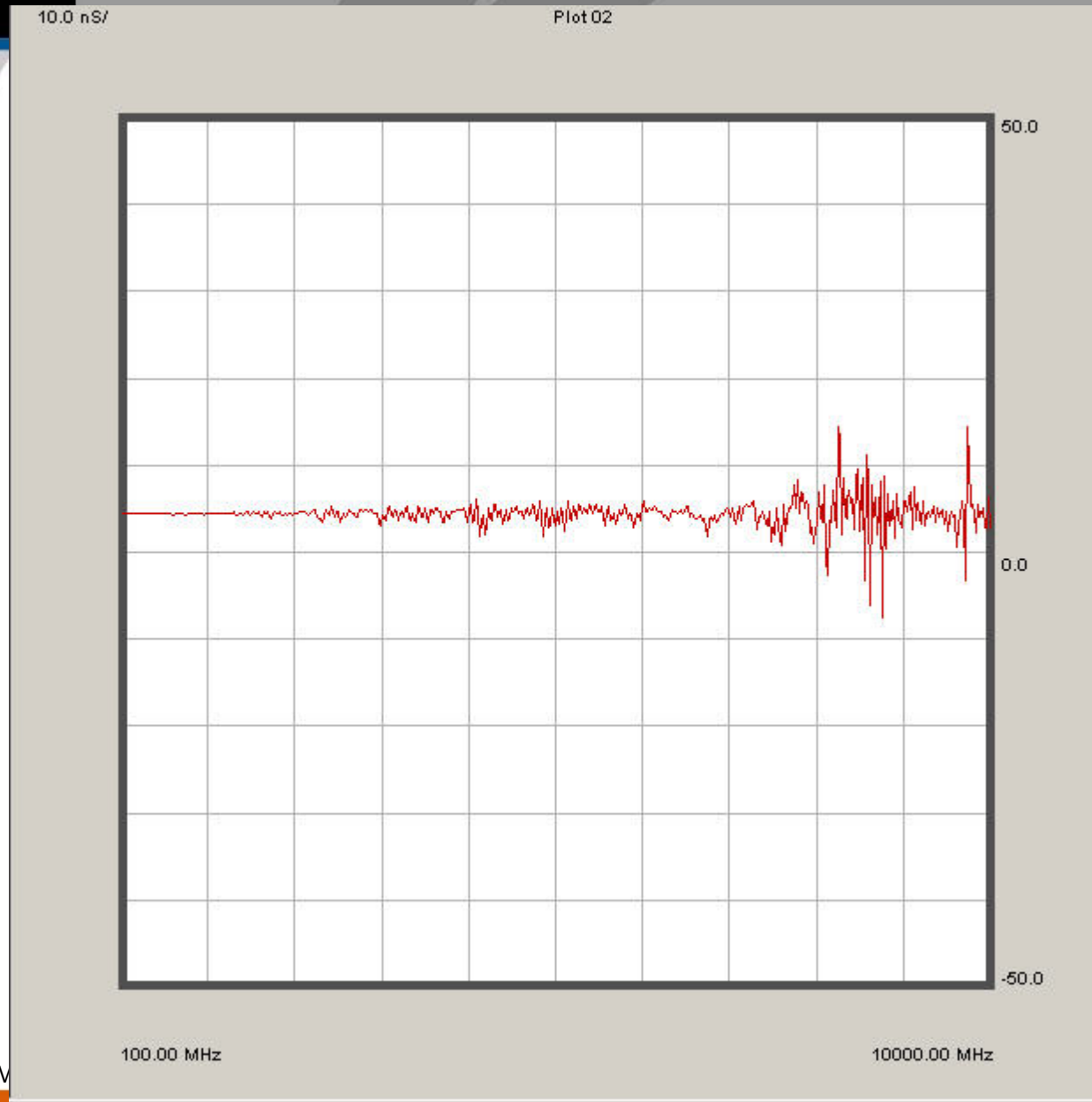
N6000-21 Test Channel 10Ghz GD



FR-406 Test Channel 20Ghz GD



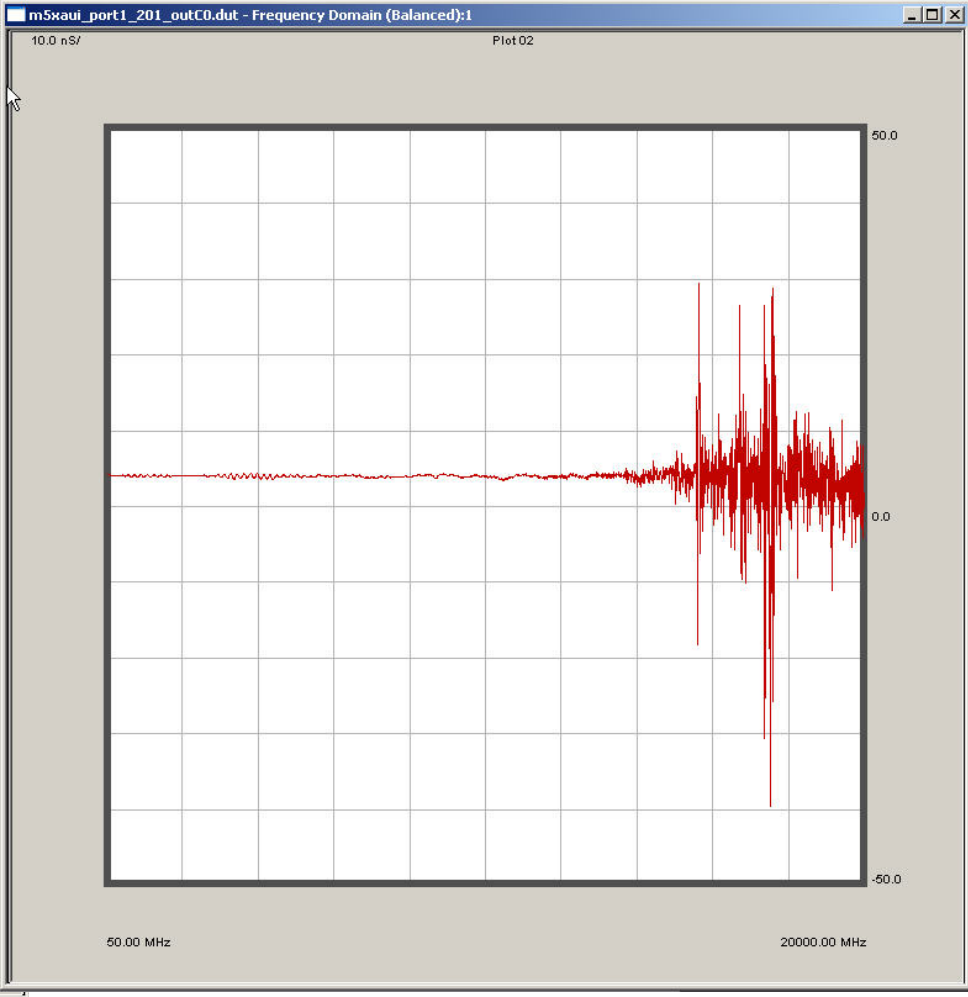
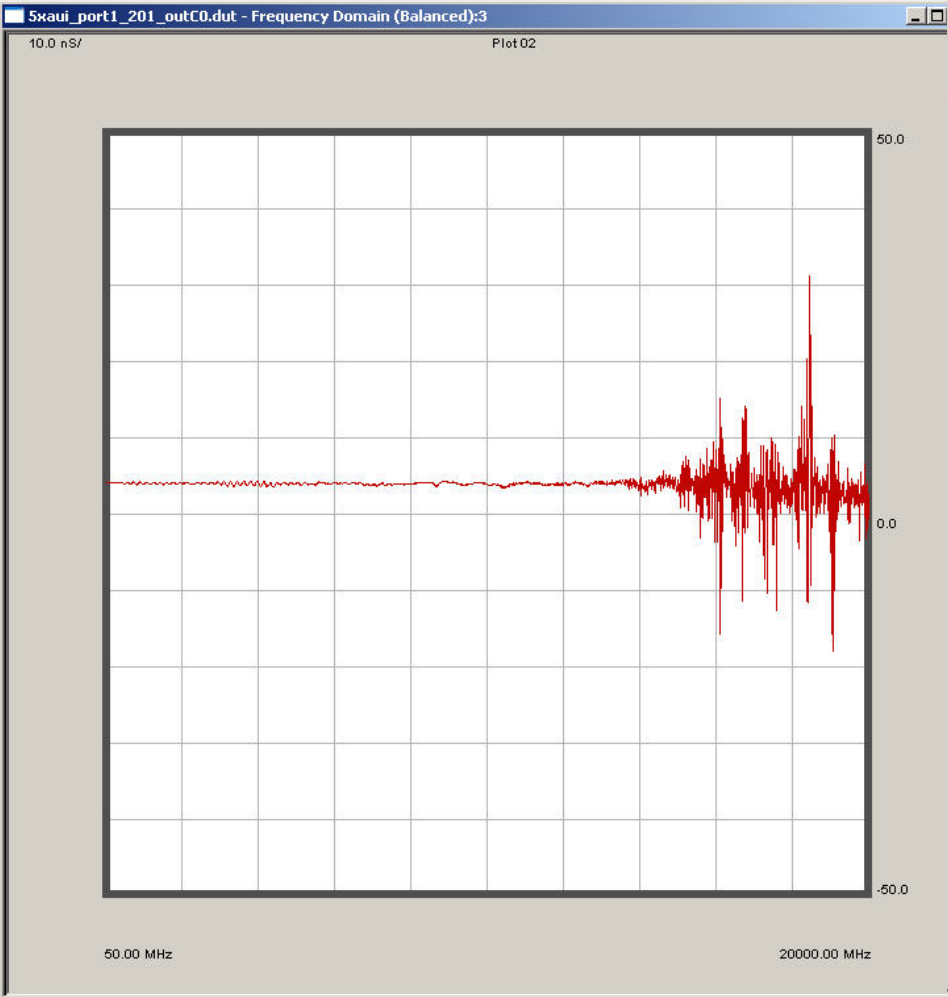
FR-406 Test Channel 10Ghz GD



Group Delay Tyco QuadRoute

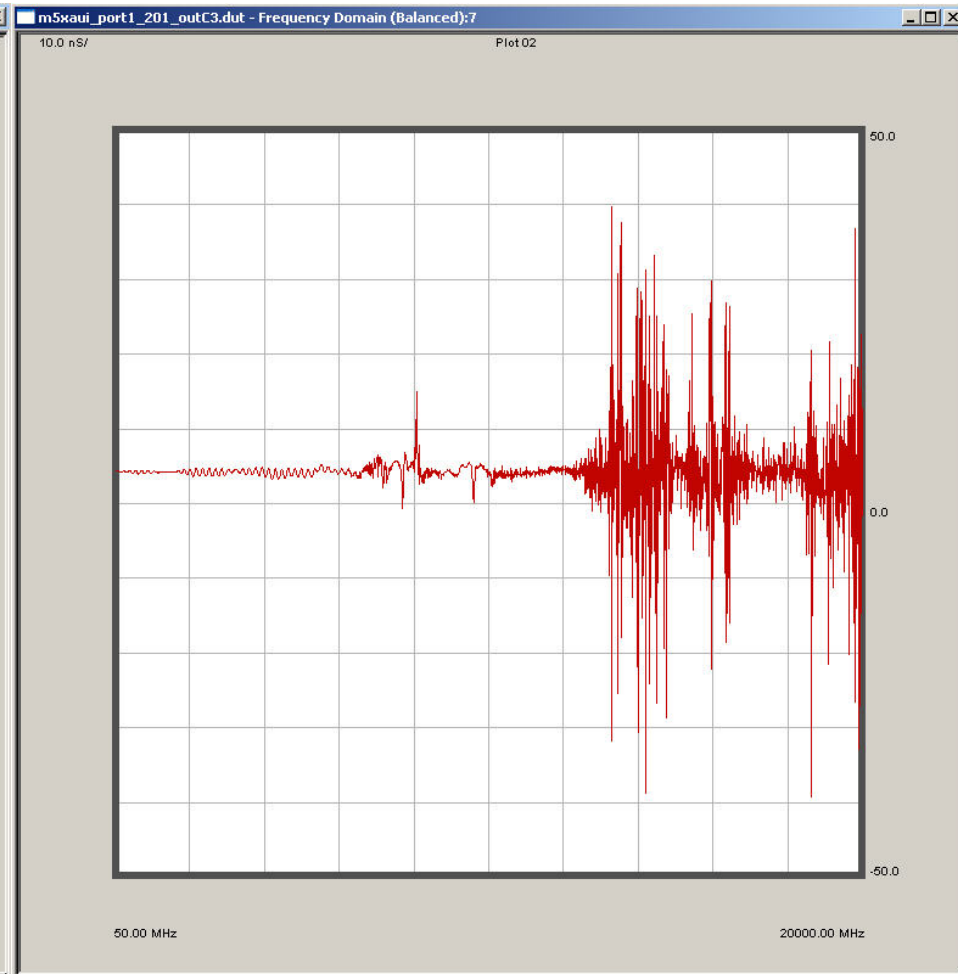
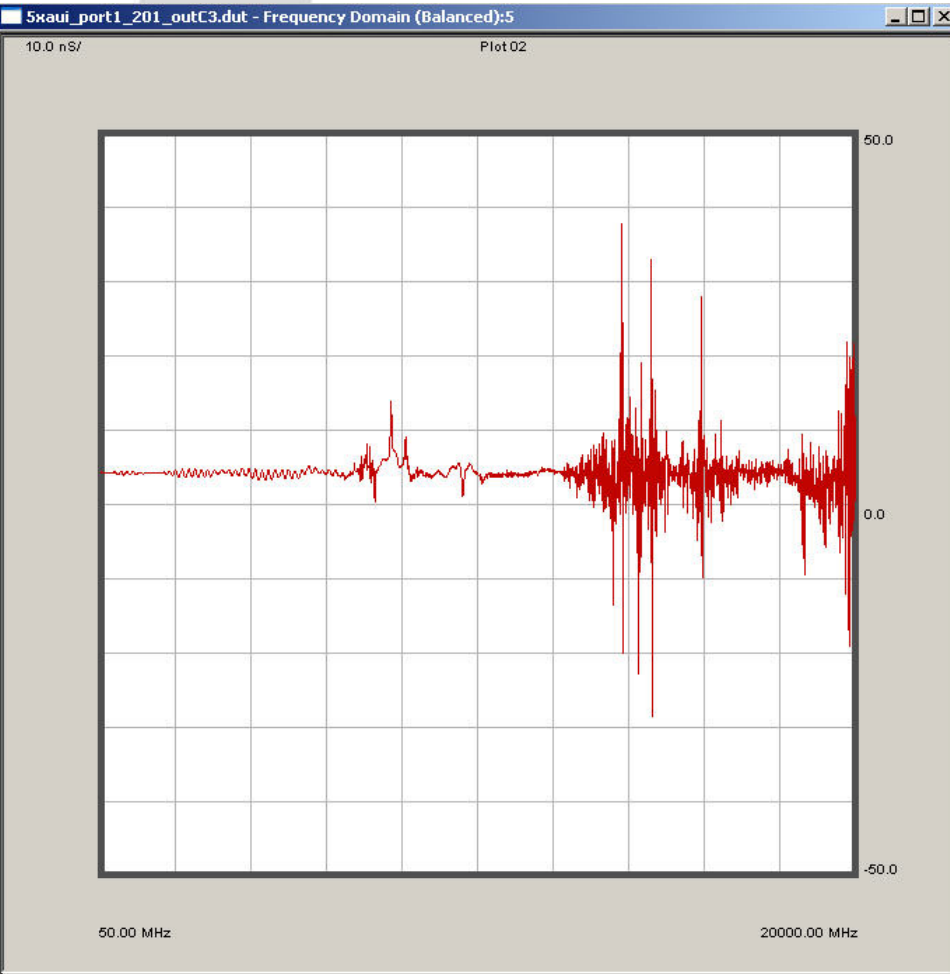
IF BW 100hz, 5dB Launch

IF BW 100hz, -5dB Launch



IF BW 100hz, 5dB Launch

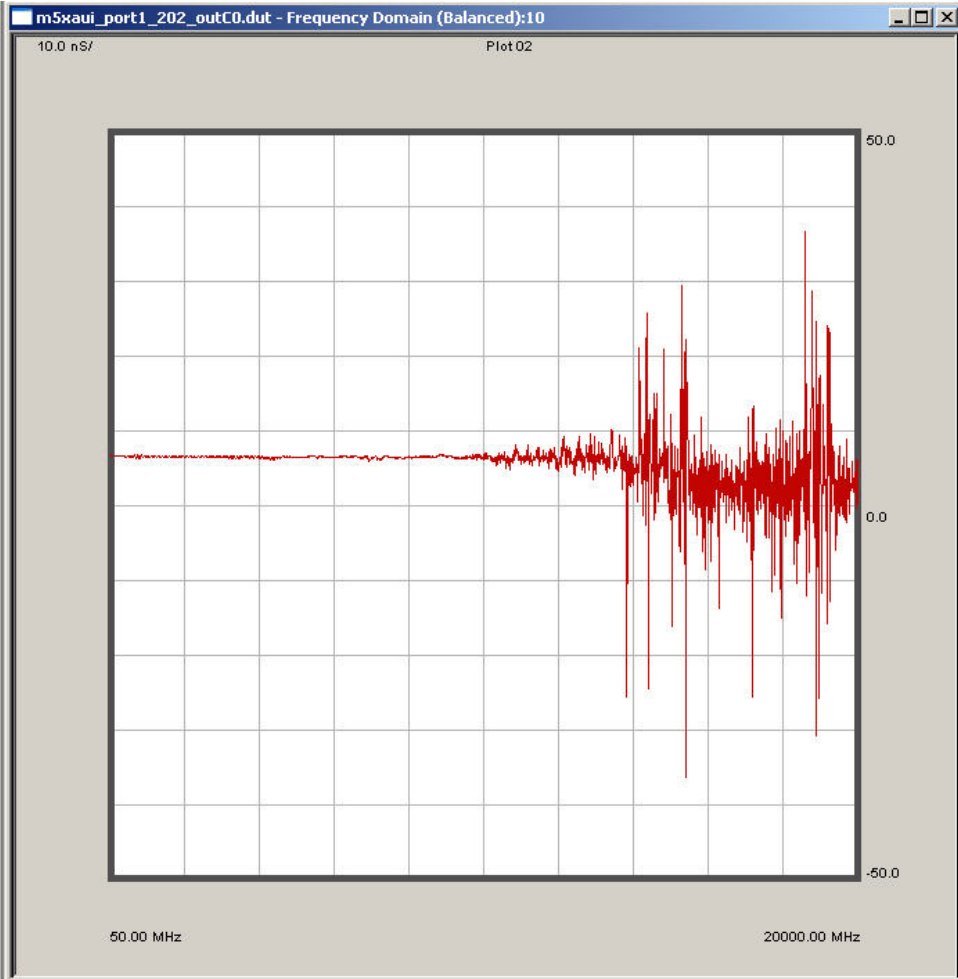
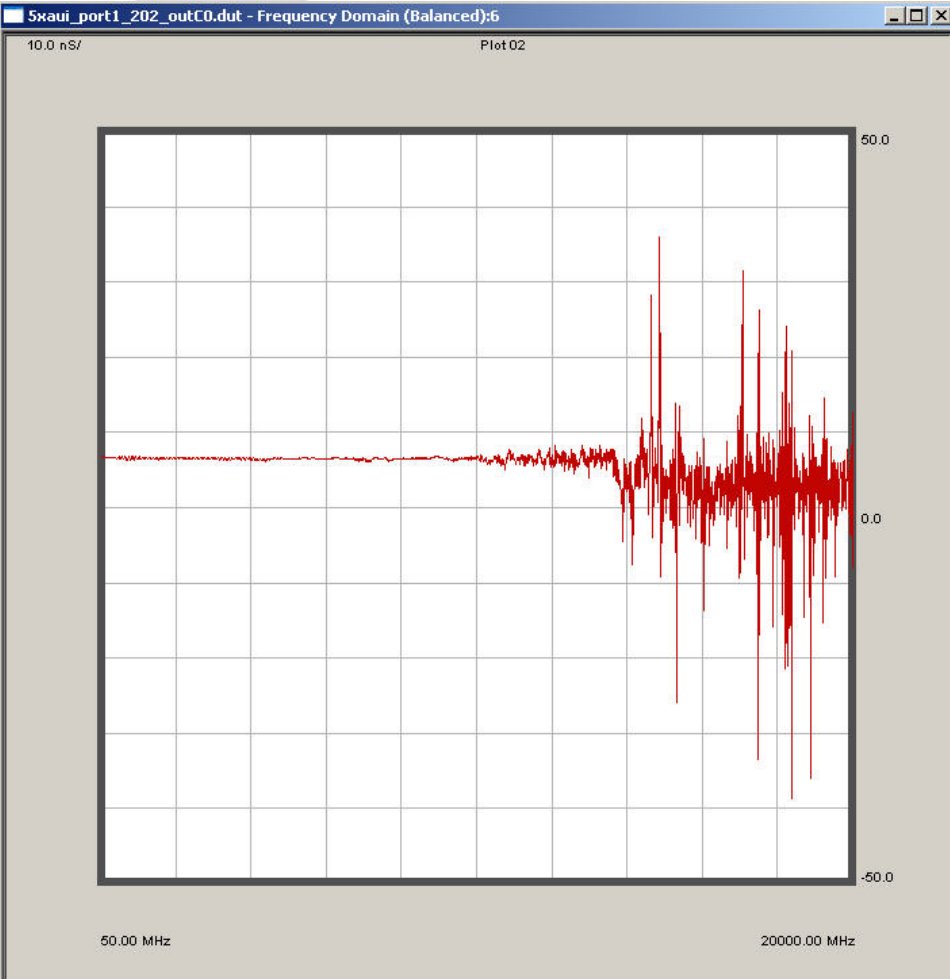
IF BW 100hz, -5dB Launch



Group Delay Tyco QuadRoute

IF BW 100hz, 5dB Launch

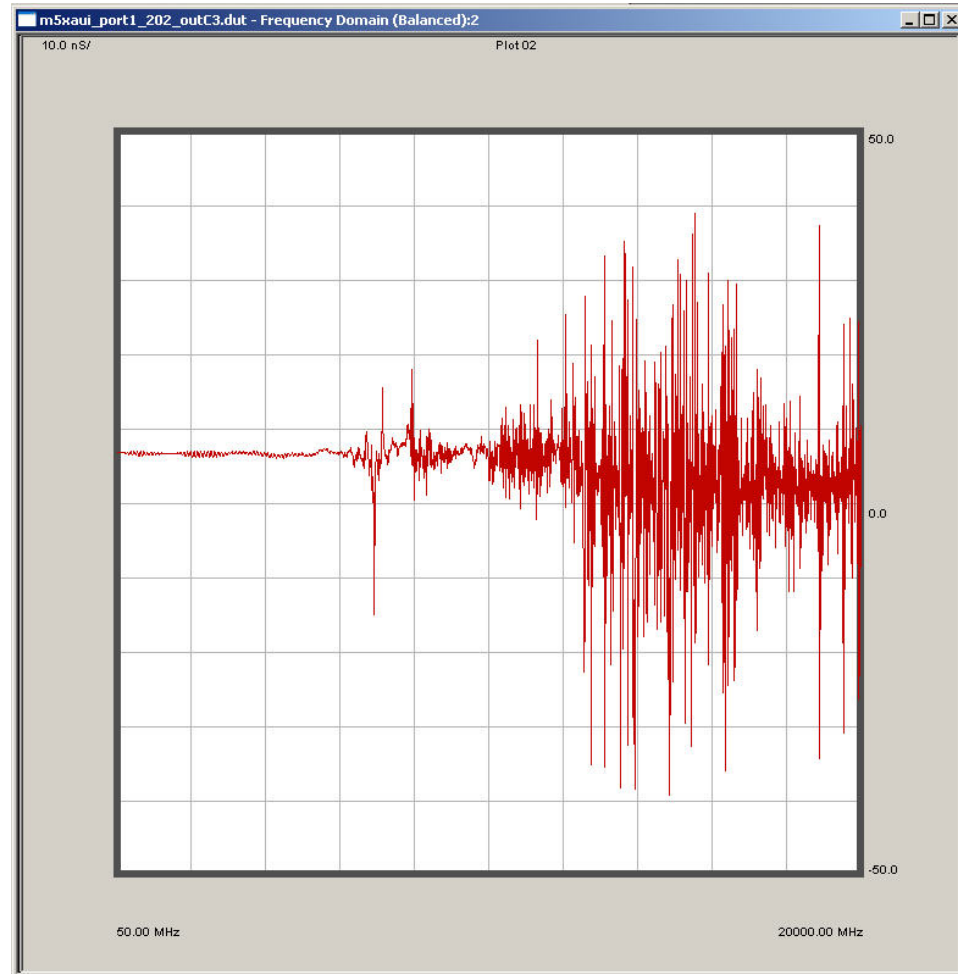
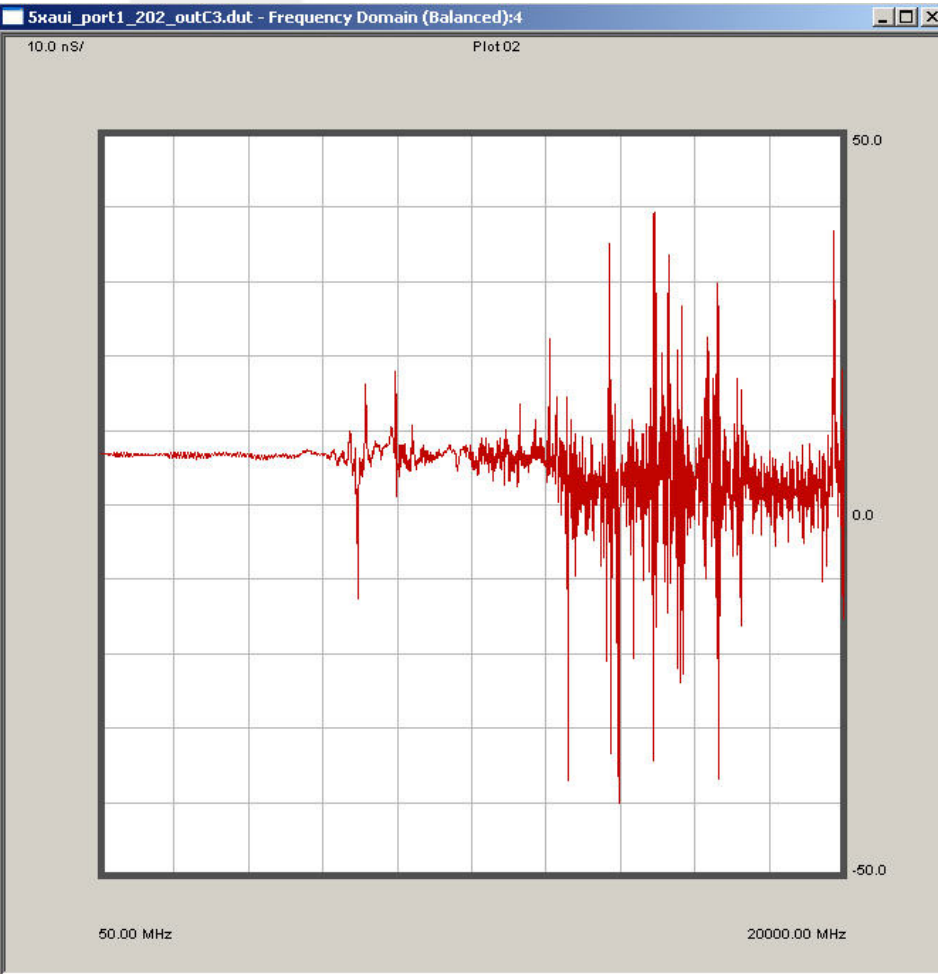
IF BW 100hz, -5dB Launch



Group Delay Tyco QuadRoute

IF BW 100hz, 5dB Launch

IF BW 100hz, -5dB Launch



- SDD21 Mask is in the right direction.
- SDD11/SDD22 is in the right direction.
- NEXT/FEXT is in the right direction, but difficult to measure out to 20Ghz.
- Group Delay is in the right direction, but difficult to measure out to 20Ghz.
- I propose we discuss measurement and measurement error on one of the next ad-hoc calls. This is the correct path to take before making changes
- I propose IF BW 100hz with minimum launch power TBD, but $> 0\text{dB}$ for now, for all VNA measurements.
- I propose continuing forward with the Ad-Hoc recommended six mask informative channel model.