

OD Backplane Channel Analysis



Tom Palkert (tpalkert1@gmail.com)
January 2020

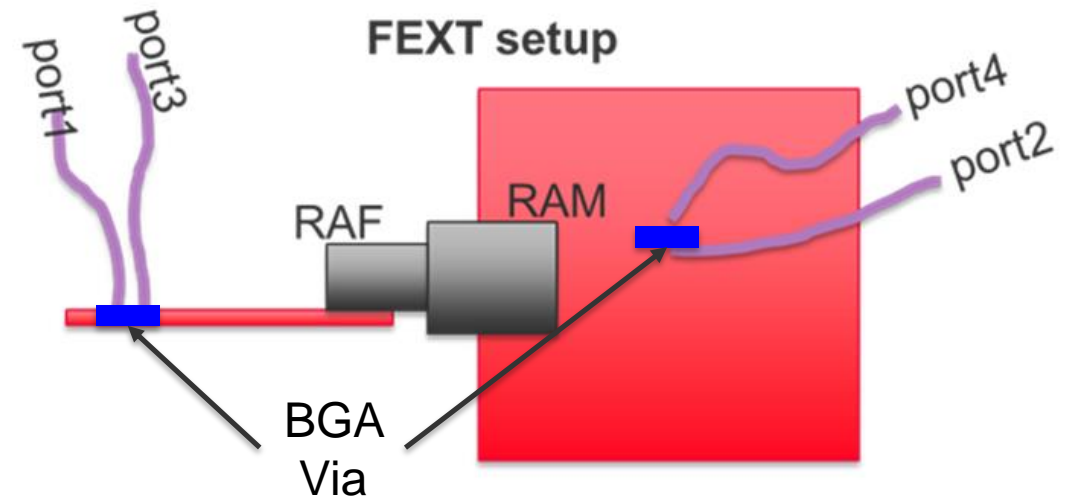
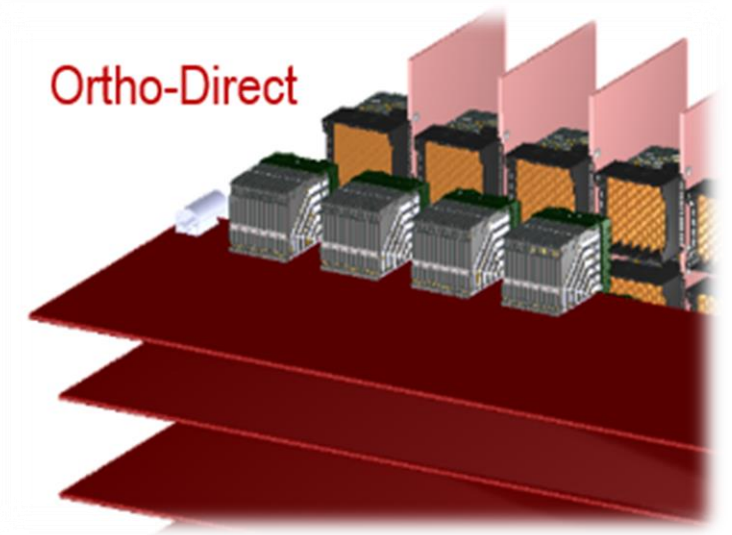
molex[®]
one company > a world of innovation

Overview:

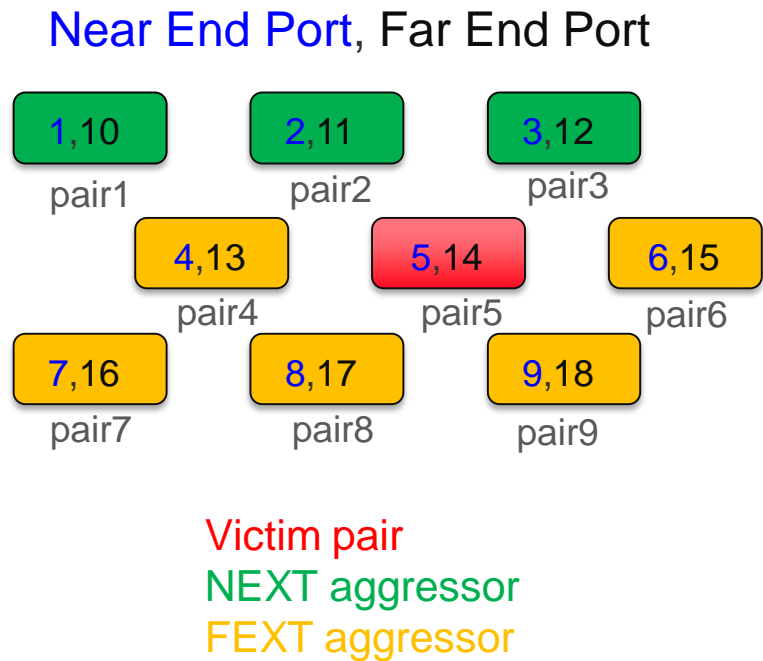
- Updated previously contributed OD channel
 - Includes BGA via model
 - Includes asymmetric traces lengths (see next slide)
- In these channels, only one pair of the BGA via was modeled
 - Therefore, channels do not include crosstalk contributions from the BGA via
 - Use of a larger via model is expected to degrade performance

OD Channel Details:

- IL target: [-28.9dB@26.5GHz](#)
- Impedance: 90 ohm
(Plots in this report are with respect to 100 ohm)
- Channel length:
BGA via +16inch + FP via + OD connector + FP via +16inch+ BGA via
BGA via + 8inch + FP via + OD connector + FP via +24inch+ BGA via
BGA via + 5inch + FP via + OD connector + FP via +27inch+ BGA via
BGA via + 4inch + FP via + OD connector + FP via +28inch+ BGA via
- Trace width/spacing – 5.5/6.5mil
- Dk- 3.4; Df- 0.004
- Via stub – 12mil (0.3048mm)

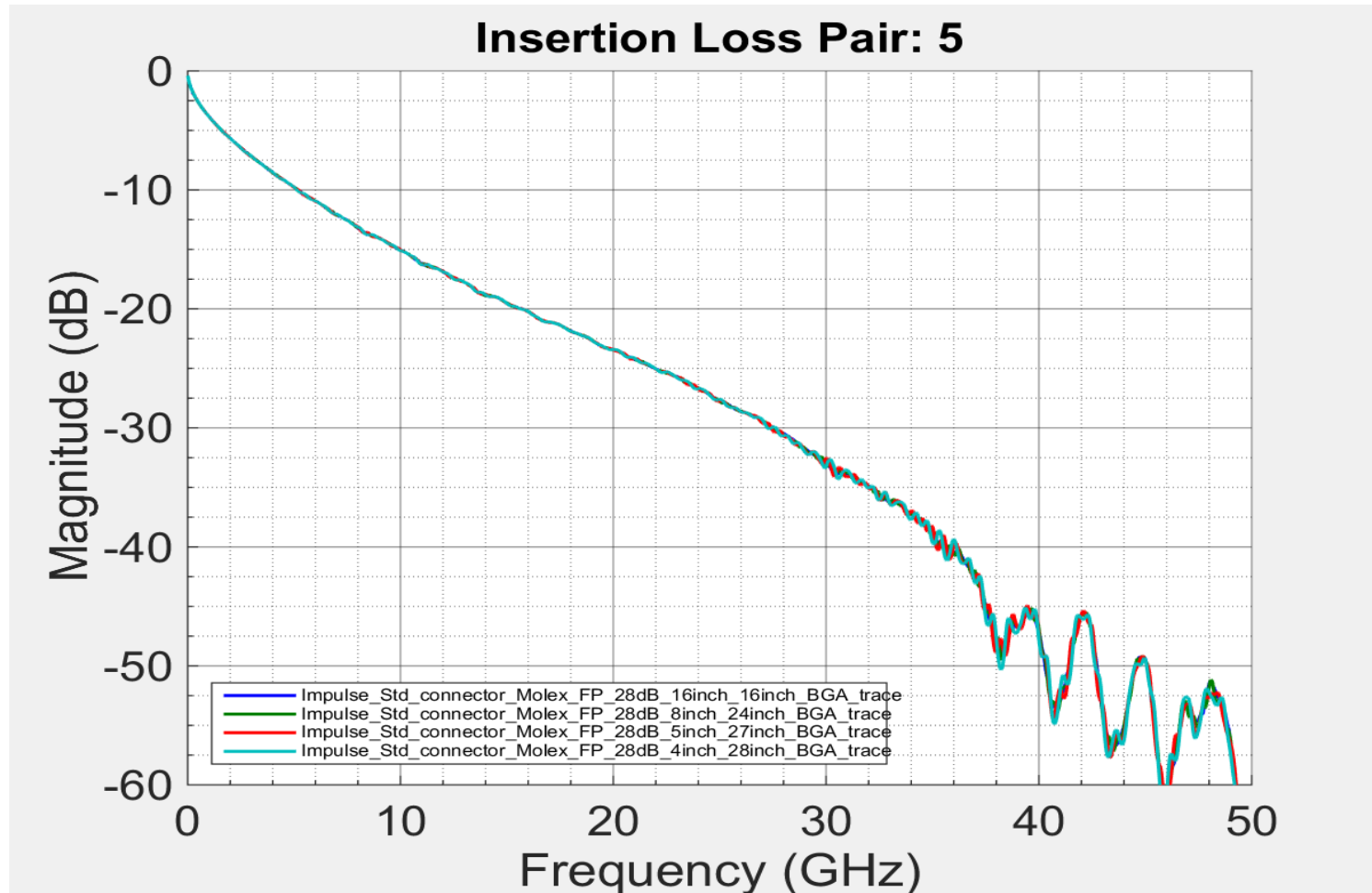


Pin mapping and file setup

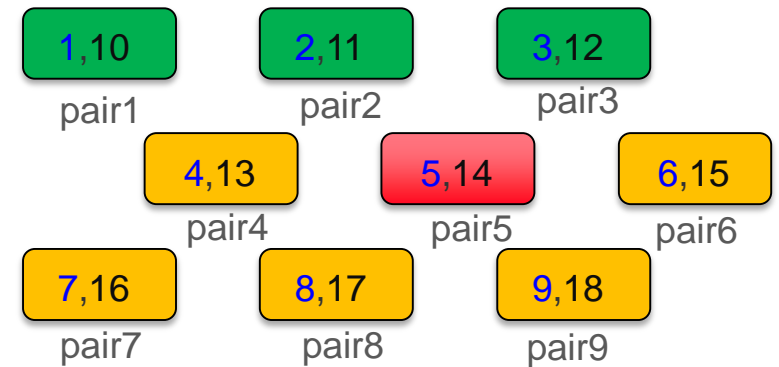


- Pair 5 is the victim pair
- Surround by 8Xtalk aggressor of 3NEXT and 5FEXT.
- From 0GHz to 50GHz with 0.01GHz steps
- The S parameter package includes separated .s4p files for Thru pairs and Xtalk pairs
- A# in s4p file name corresponds to near end diff port numbering

SDD21

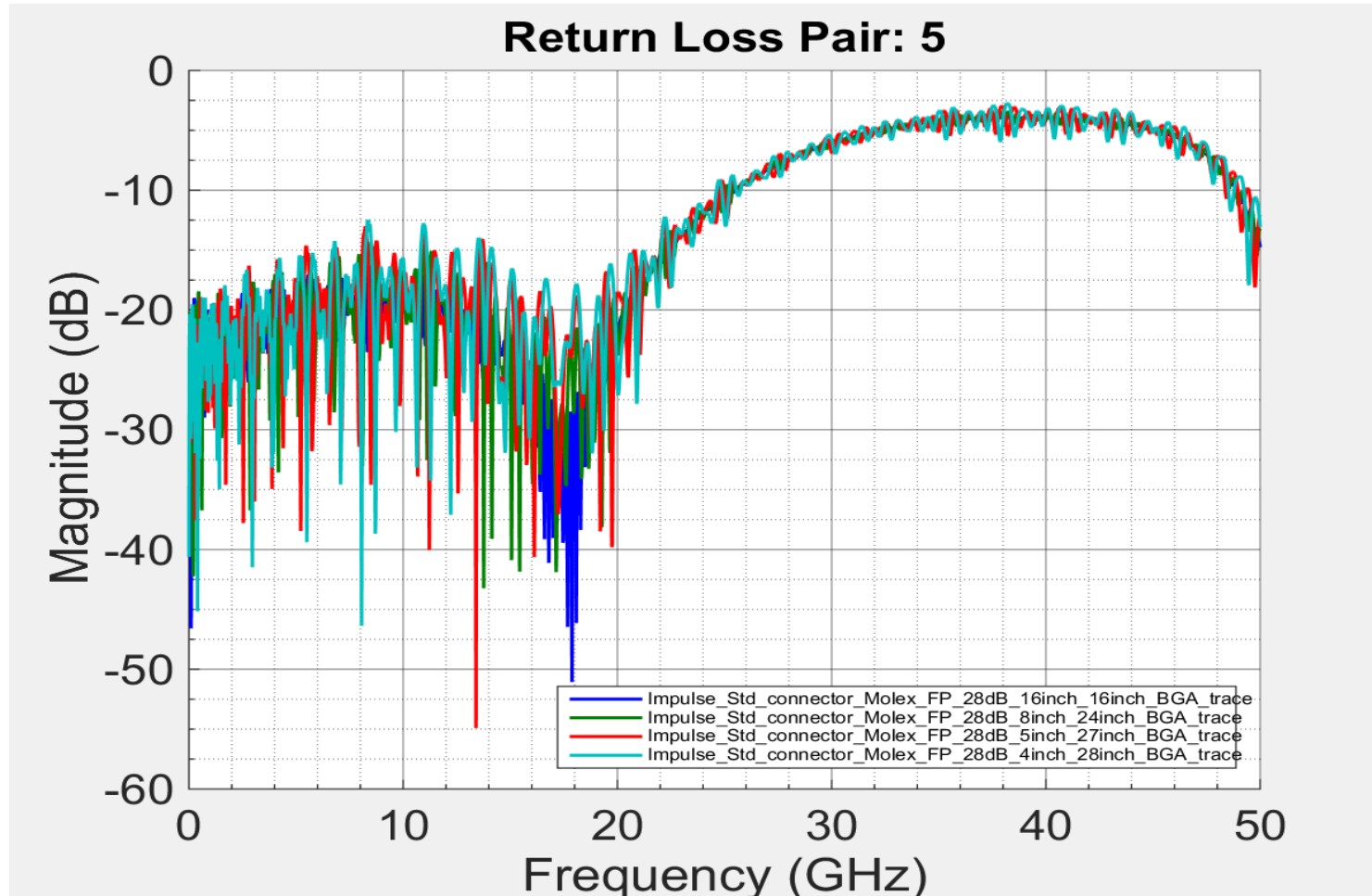


Near End Port, Far End Port

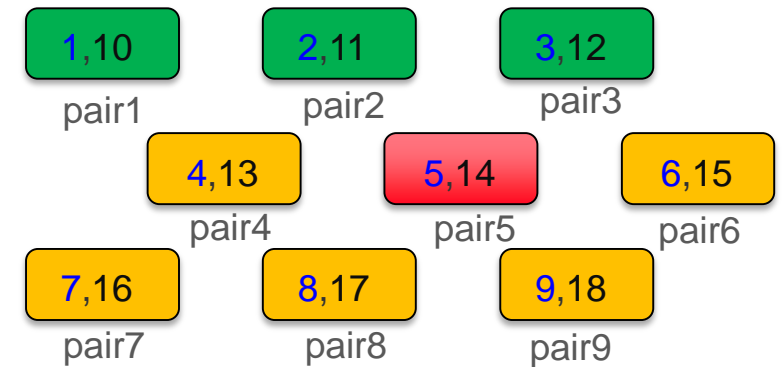


SDD11

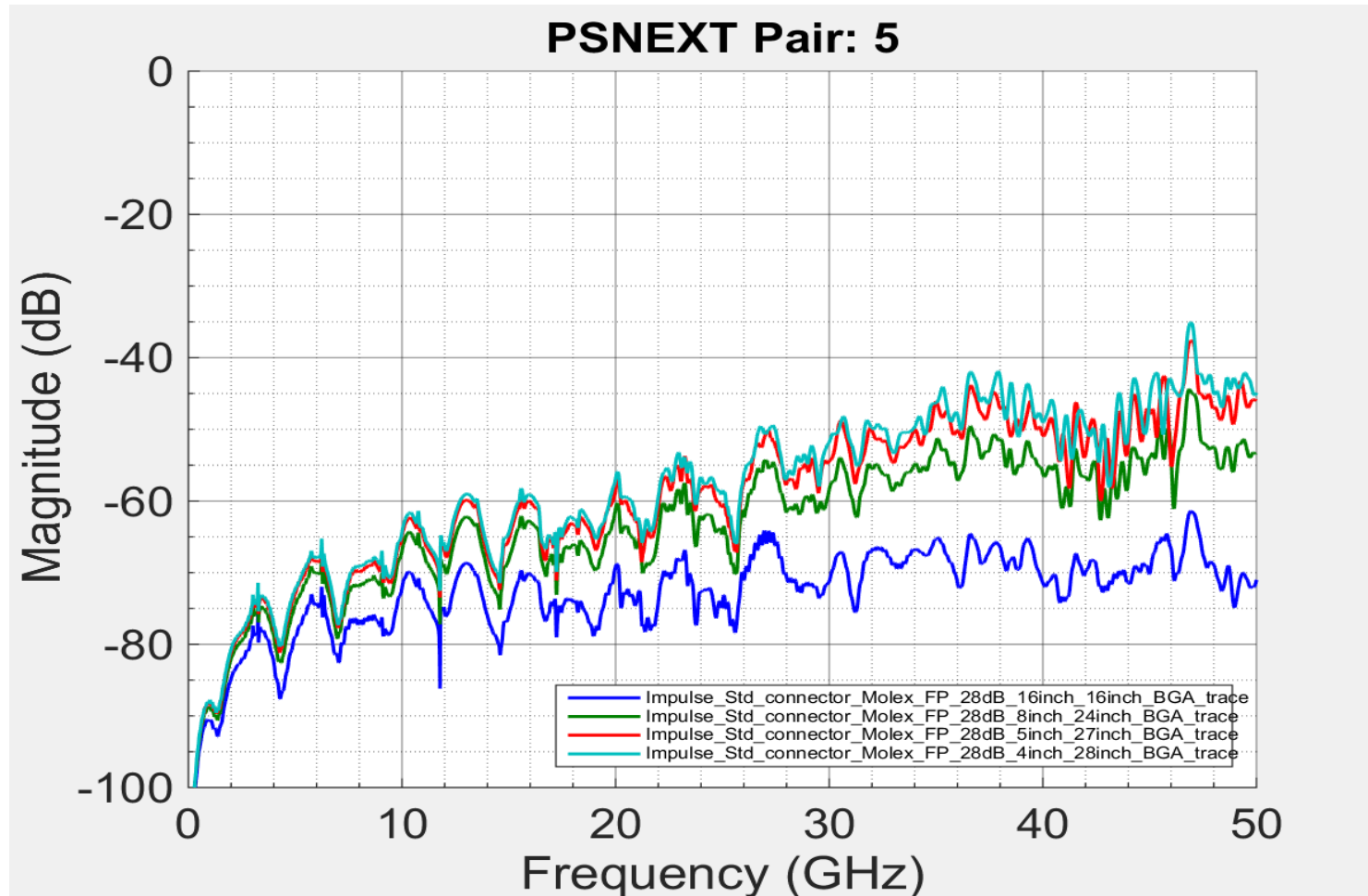
NOTE: Different RL profile compared to previous presentation is due to the addition of the BGA via to this channel



Near End Port, Far End Port

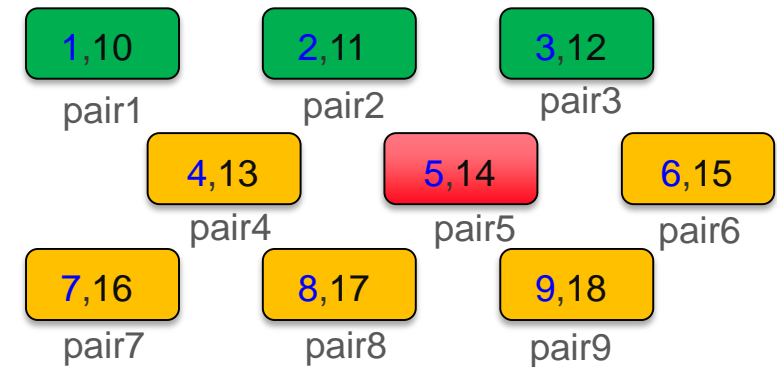


PSNEXT_DIFFERENTIAL_5

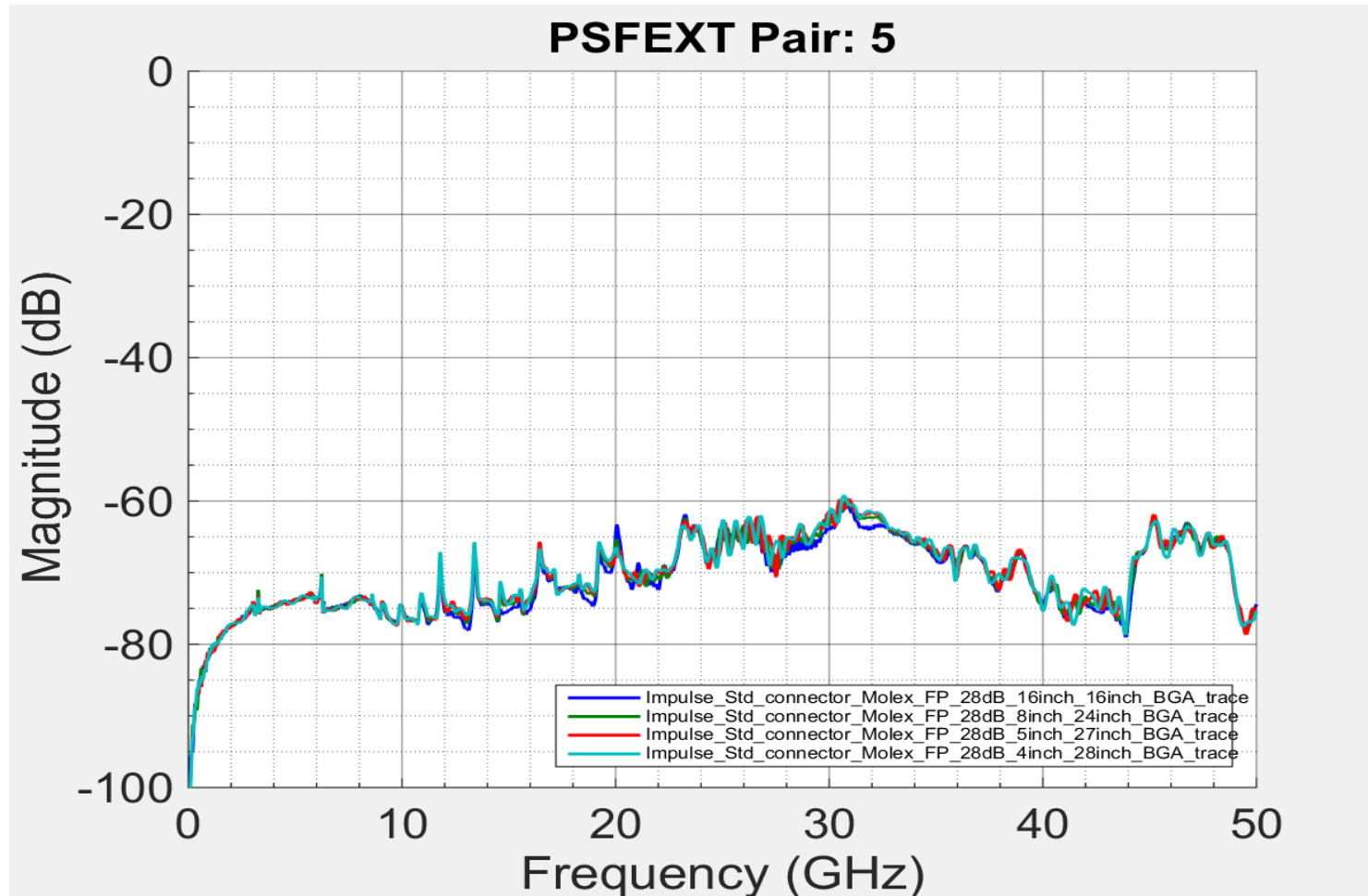


NOTE: Crosstalk performance is expected to degrade with the inclusion of a multi-pair BGA via model

Near End Port, Far End Port

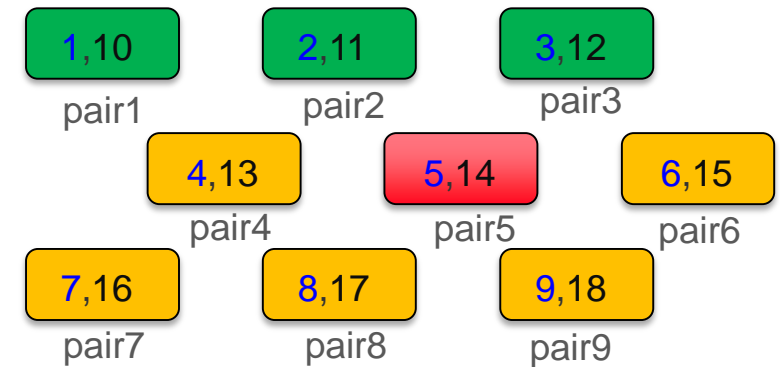


PSFEXT_DIFFERENTIAL_5

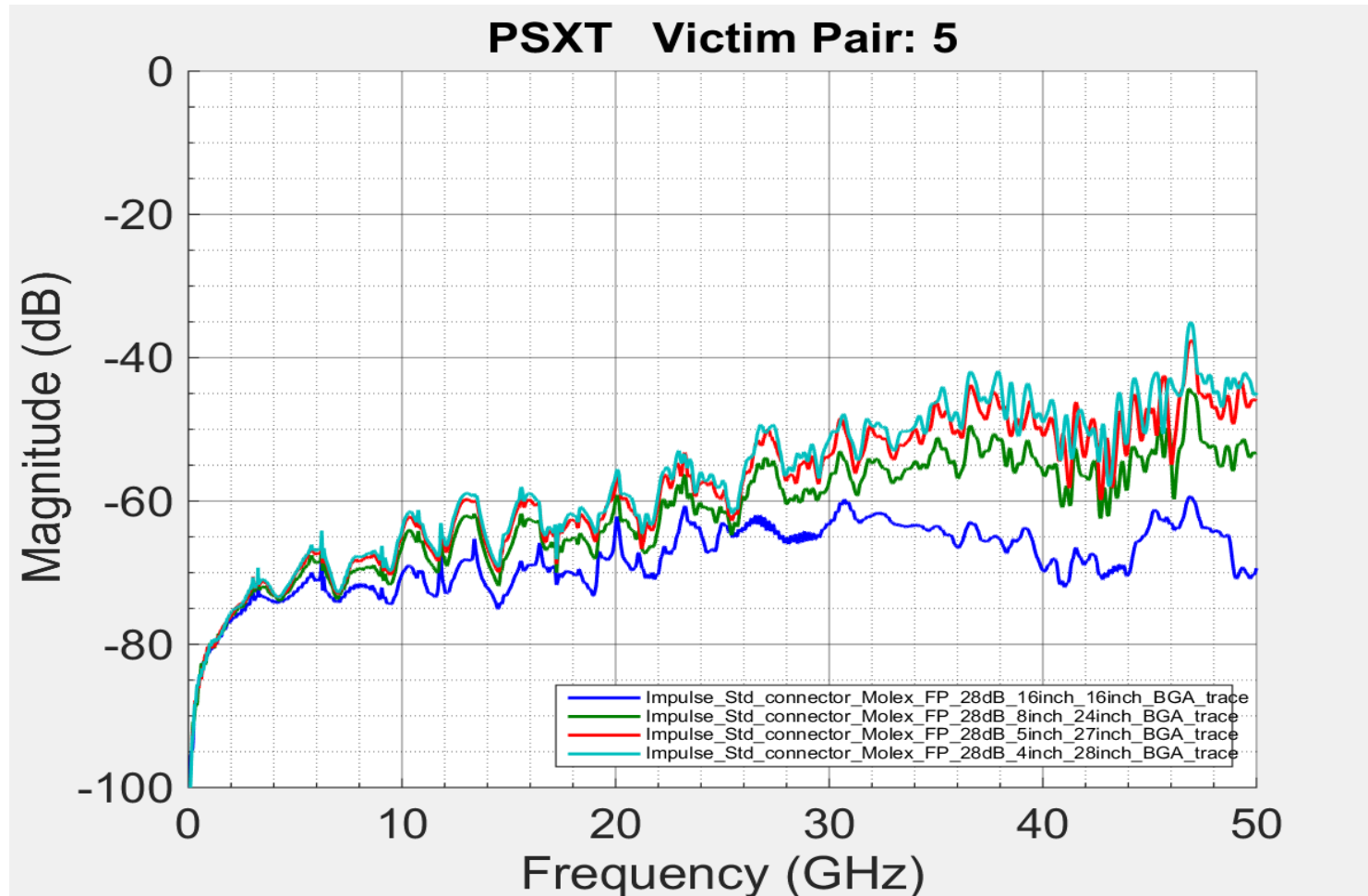


NOTE: Crosstalk performance is expected to degrade with the inclusion of a multi-pair BGA via model

Near End Port, Far End Port

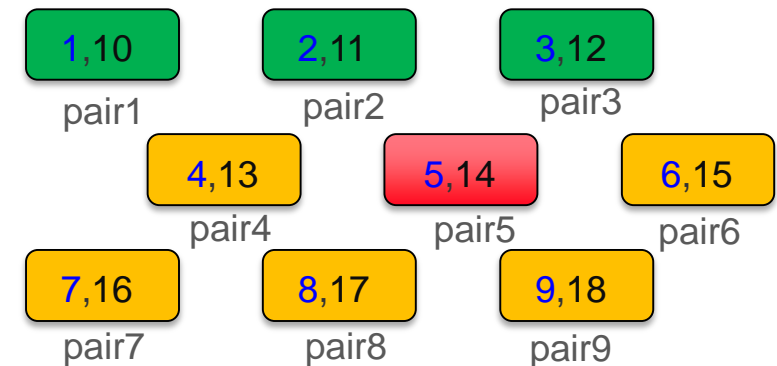


PSXTLK_DIFFERENTIAL_5



NOTE: Crosstalk performance is expected to degrade with the inclusion of a multi-pair BGA via model

Near End Port, Far End Port



COM calculation

COM version 2.75

Config file name:

config_com_ieee8023_93a=3ck_KR_mellitz_01_100219.xls

COM	16inch / 16inch	8inch / 24inch	5inch / 27inch	4inch / 28inch
Case 1	5.564 dB	5.401 dB	5.021 dB	4.944 dB
Case 2	4.166 dB	4.069 dB	3.863 dB	3.782 dB
ERL	23.702 dB	19.819 dB	17.536 dB	16.905 dB

molex[®]