OD Backplane Channel Analysis

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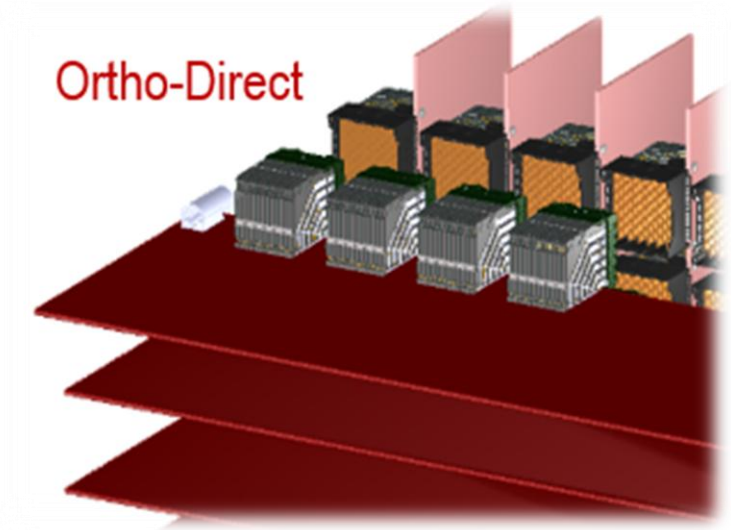
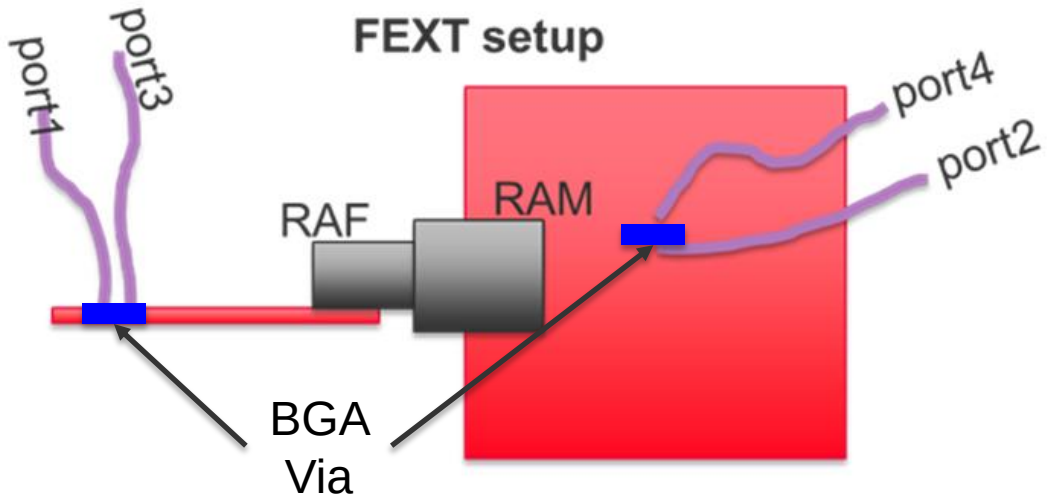
Overview:

- Updated previously contributed OD channel
  - Includes asymmetric traces lengths (see next slide)
  - Includes BGA via model
    - 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
- Backplane connector enhancements to 112G

OD Channel Details:

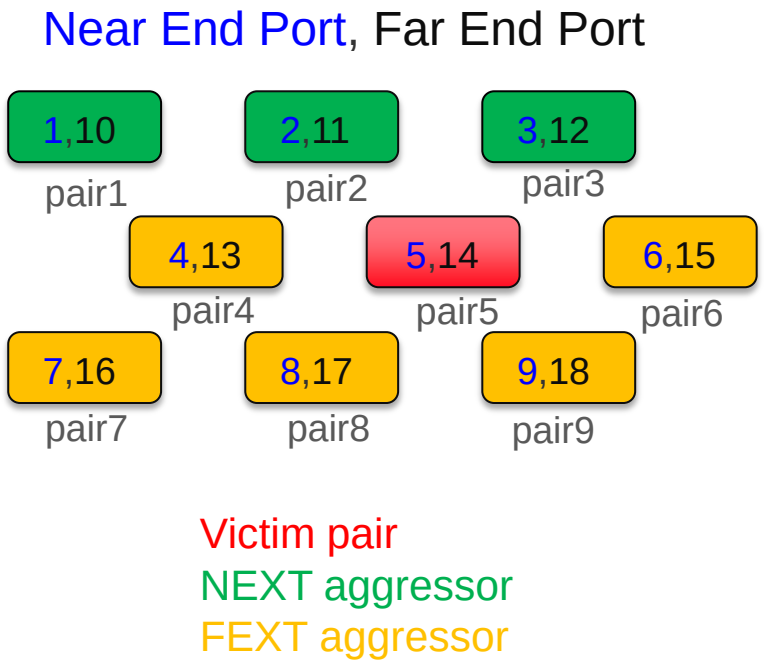
- IL target: -28.9 dB @ 26.5 GHz
- Impedance: 90 ohm
  (Plots in this report are with respect to 100 ohm)
- Channel topology:
  BGA via – Trace – FP via – OD connector –
  FP via – Trace – BGA via
- Channel lengths:
  - Channel 1: 16 inches / 16 inches
  - Channel 2: 8 inches / 24 inches
  - Channel 3: 5 inches / 27 inches
  - Channel 4: 4 inches / 28 inches
- Trace width/spacing – 5.5/6.5mil
- Dk- 3.4; Df- 0.004
- Via stub – 12mil (0.3048mm)





OD Channel Update

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

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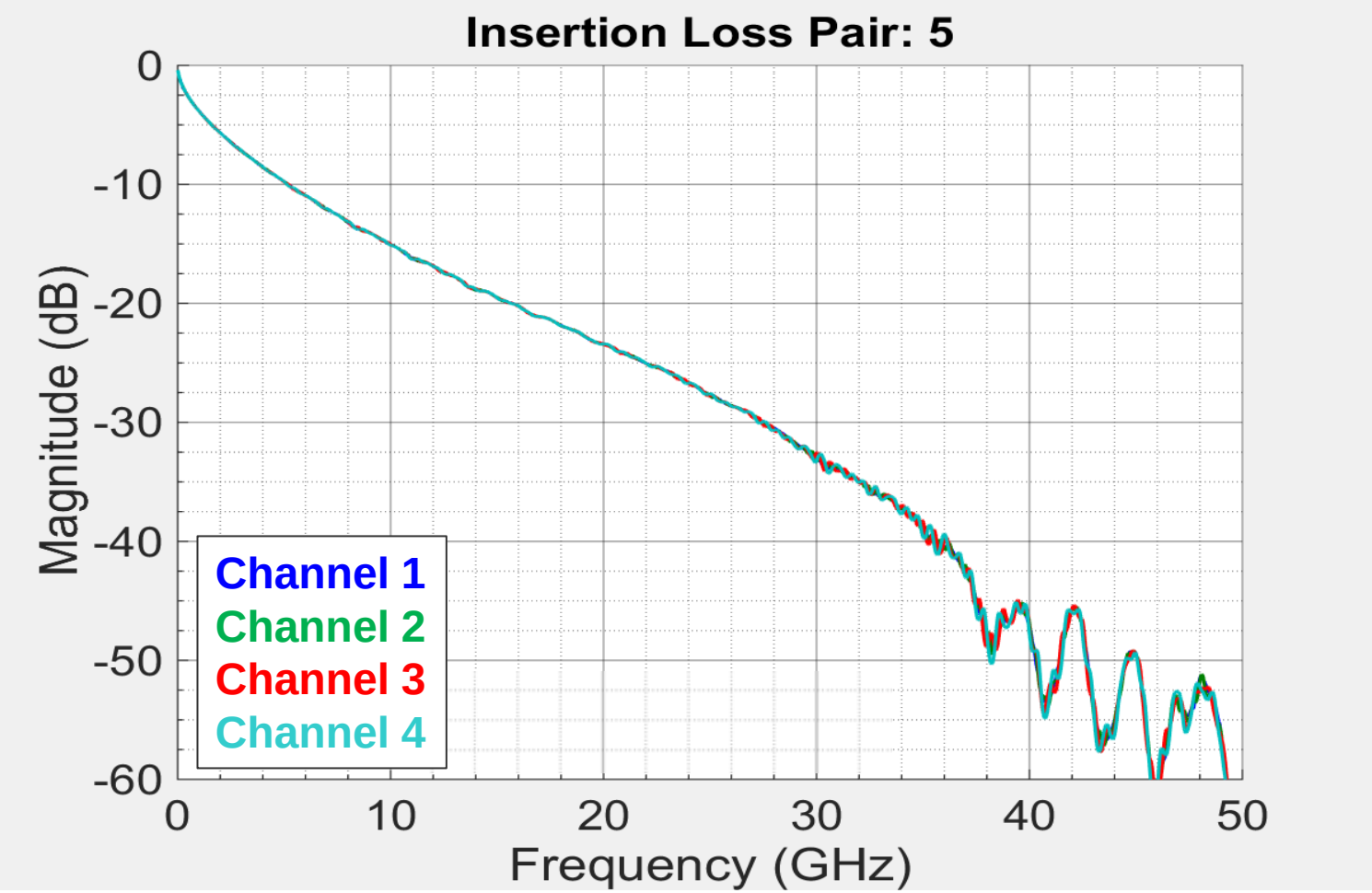
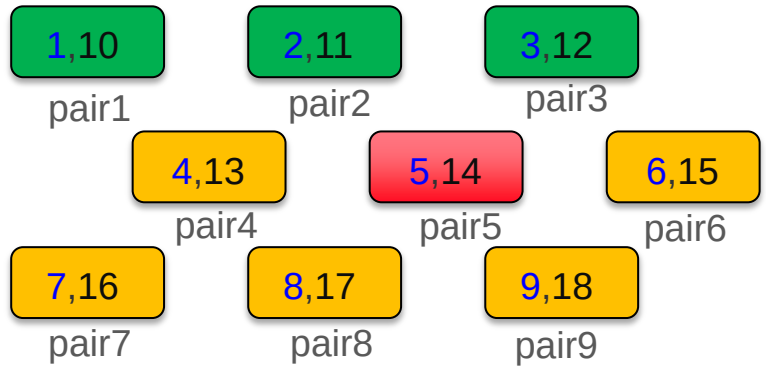
SDD21:



Near End Port, Far End Port



Trace lengths:

Channel 1: 16 / 16 inches
Channel 2: 8 / 24 inches
Channel 3: 5 / 27 inches
Channel 4: 4 / 28 inches

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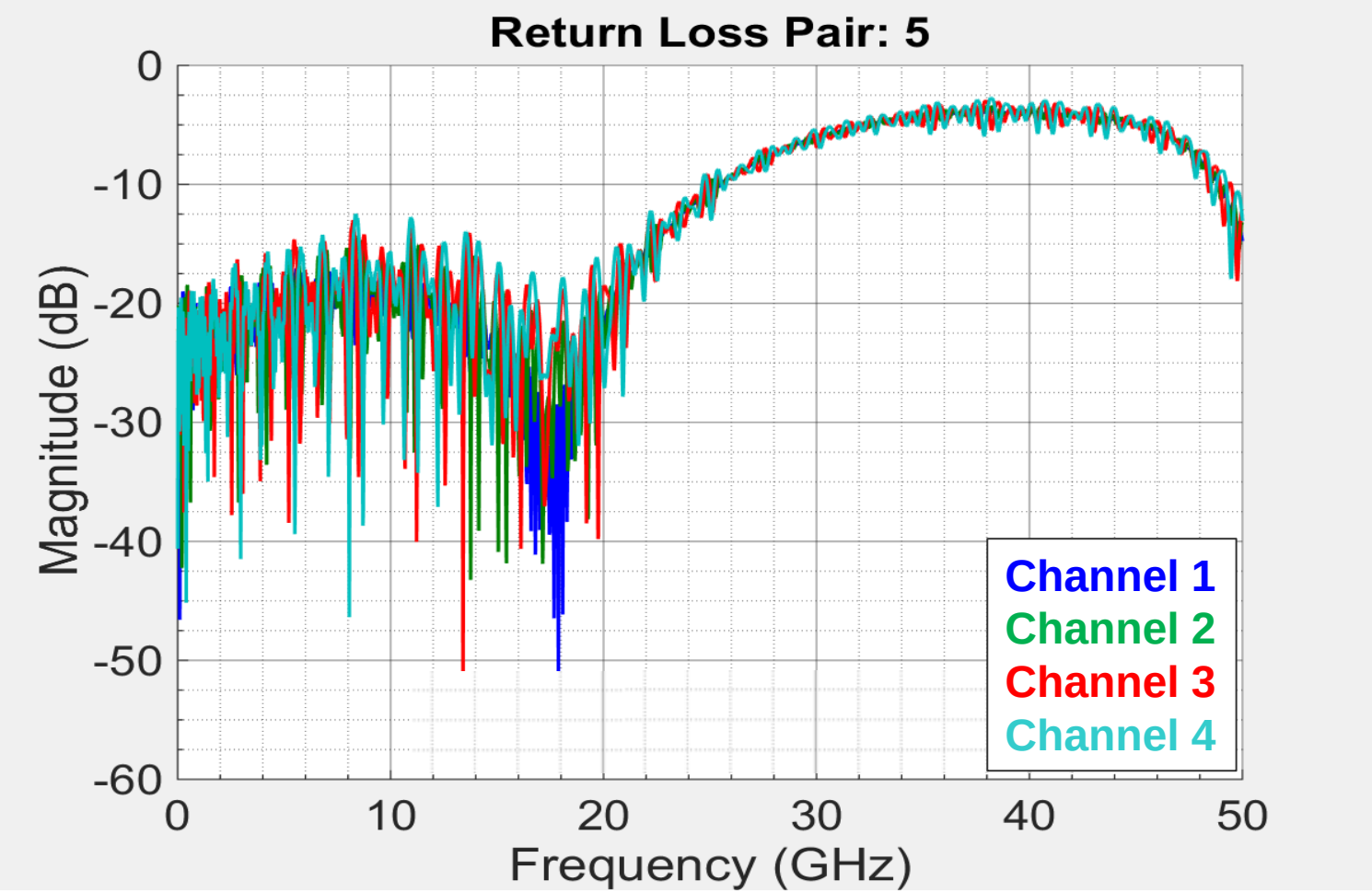
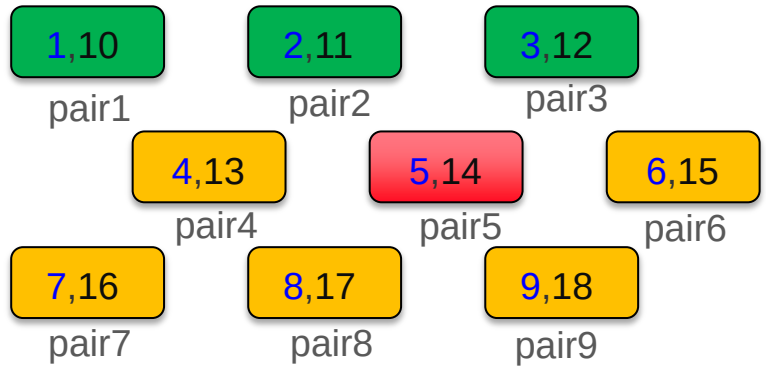
SDD11:

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



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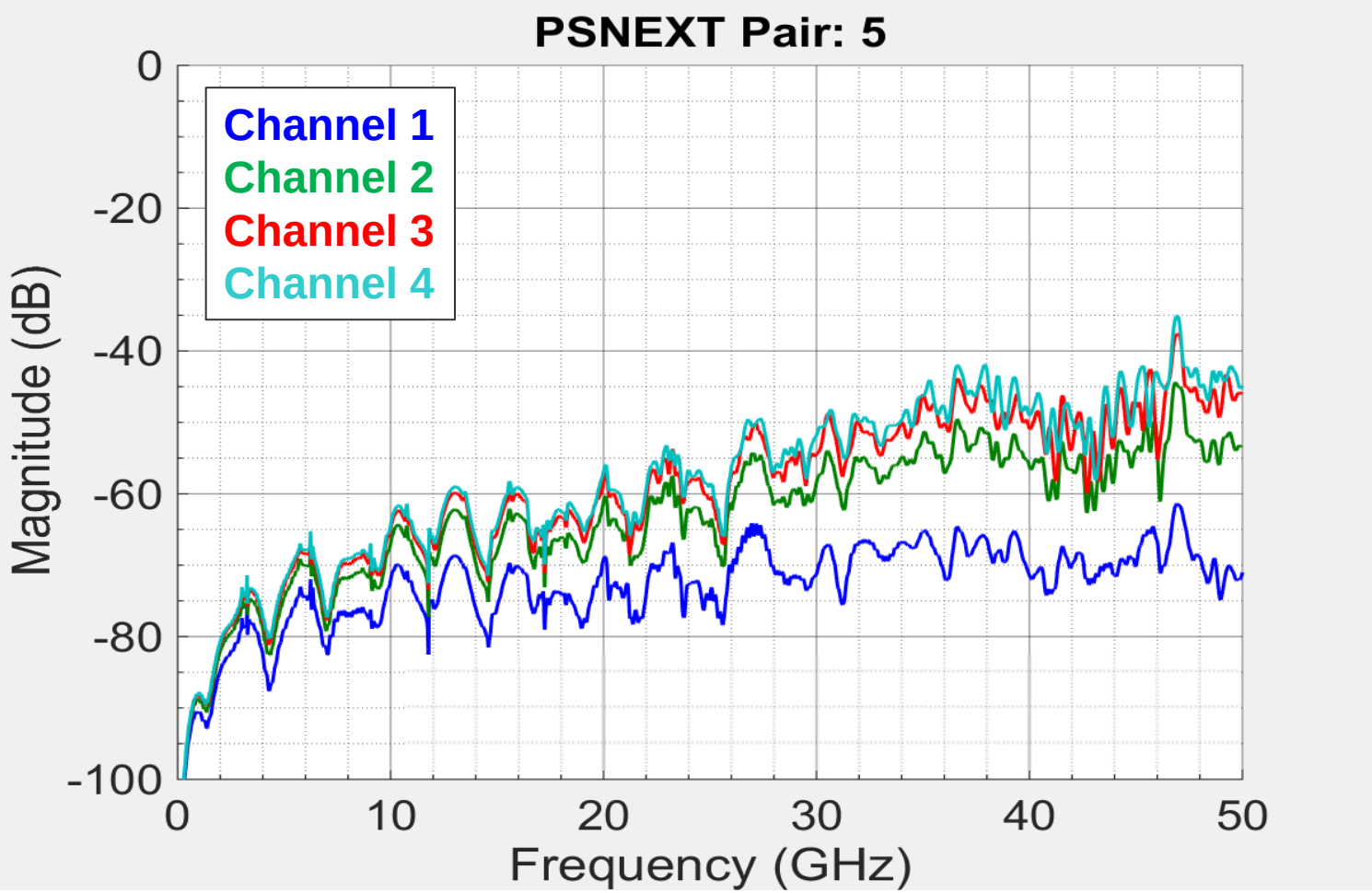
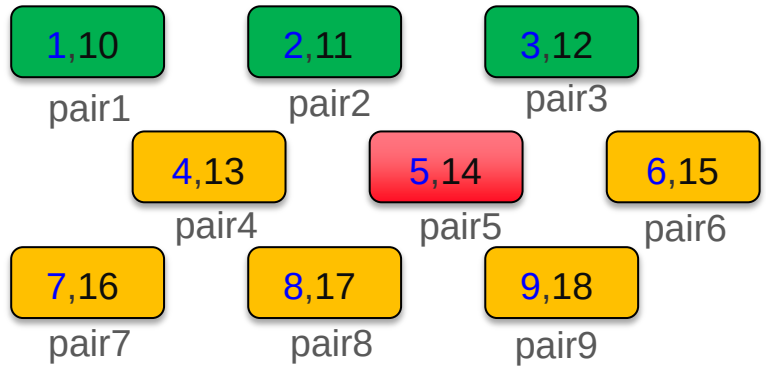
PSNEXT:



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

Near End Port, Far End Port



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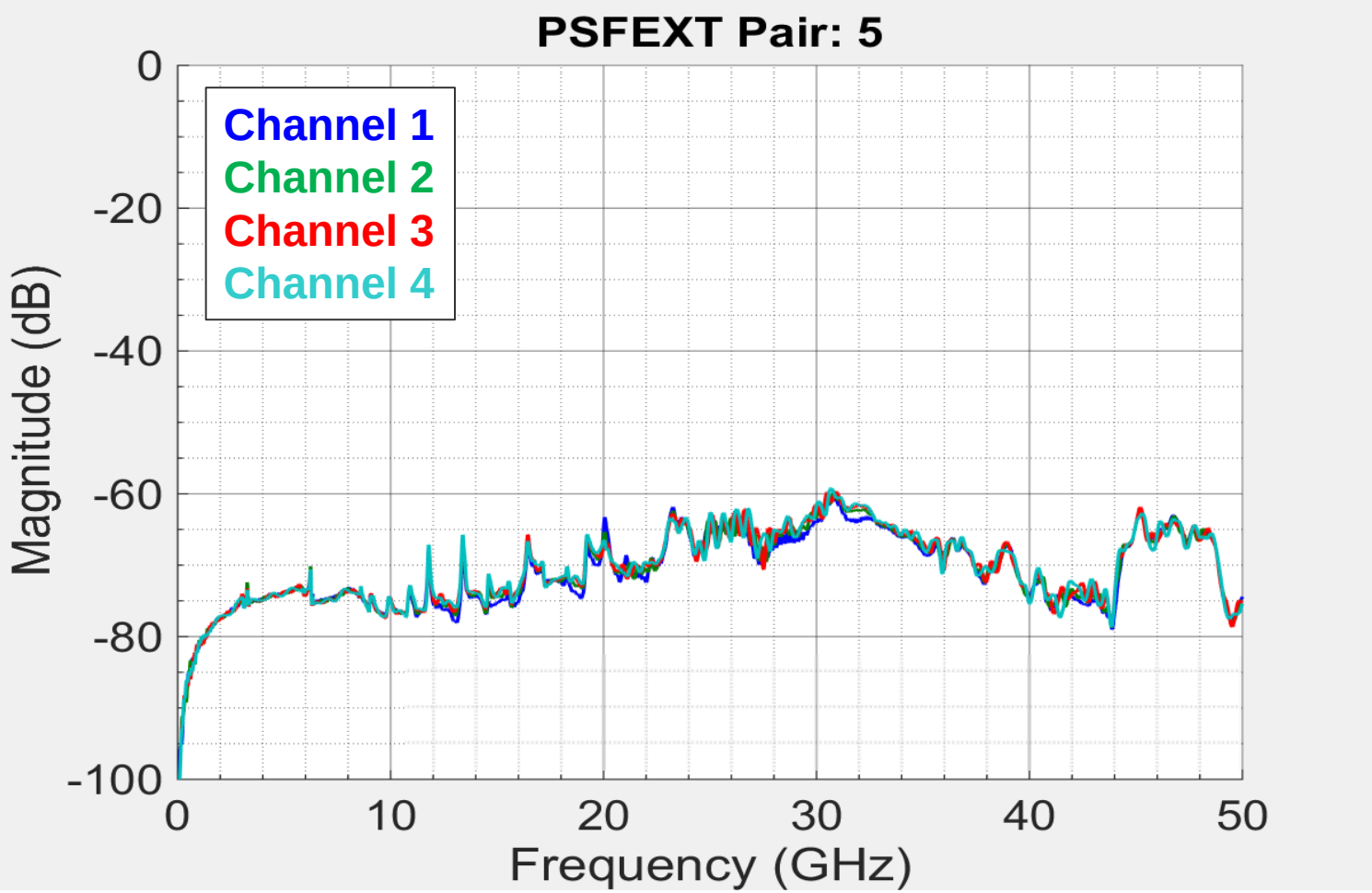
PSFEXT:



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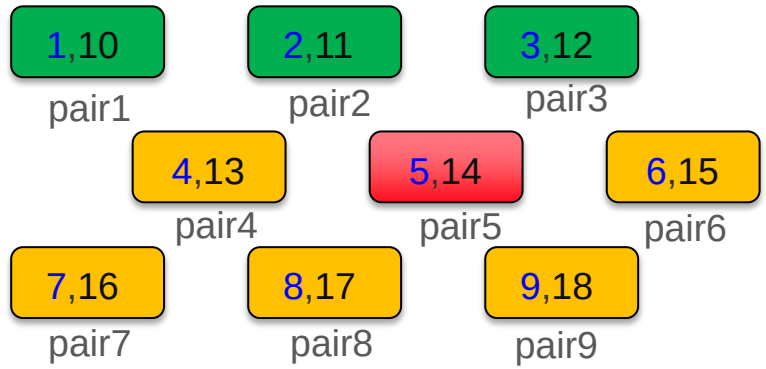
Near End Port, Far End Port



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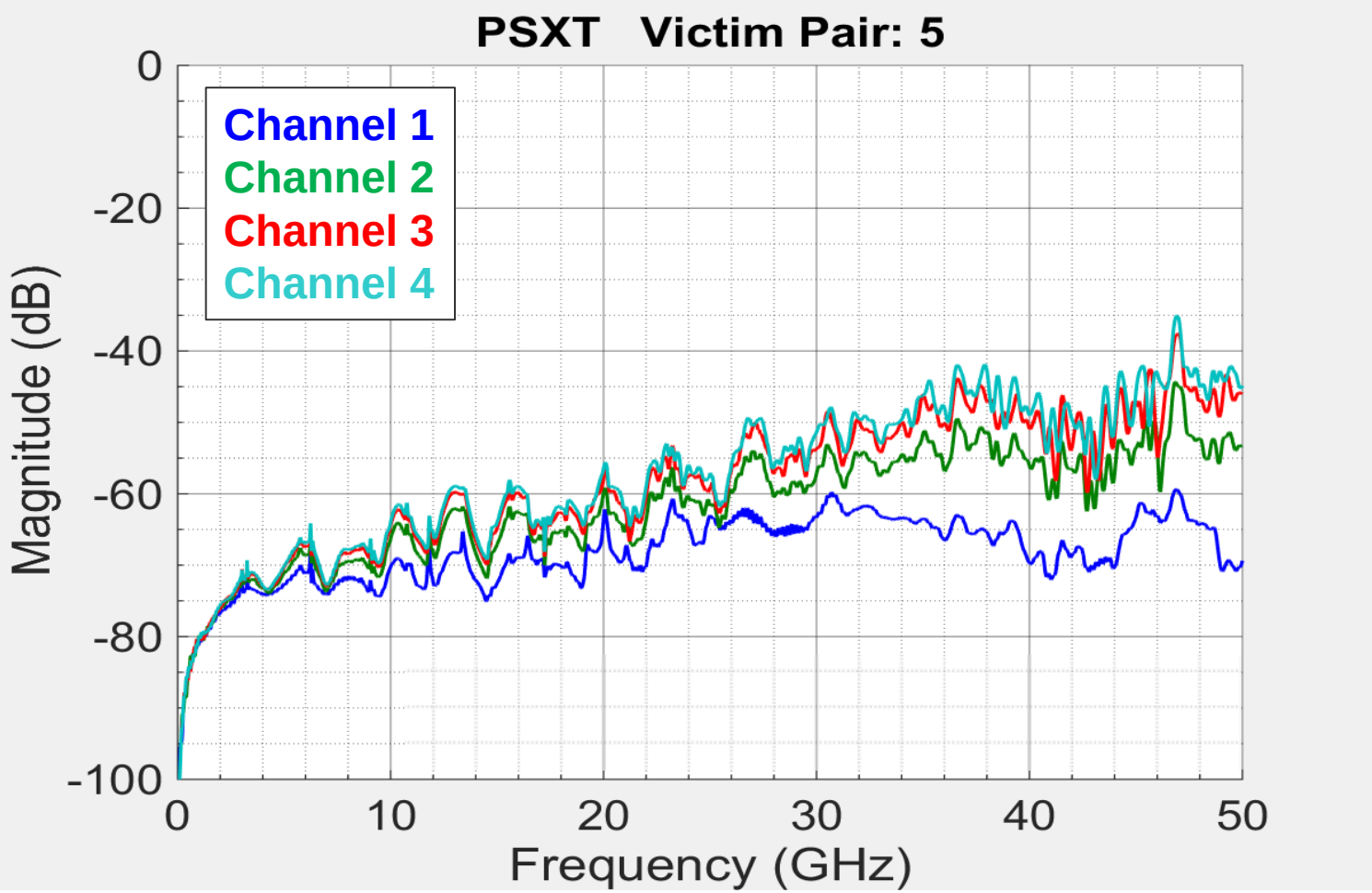
PSXTLK:



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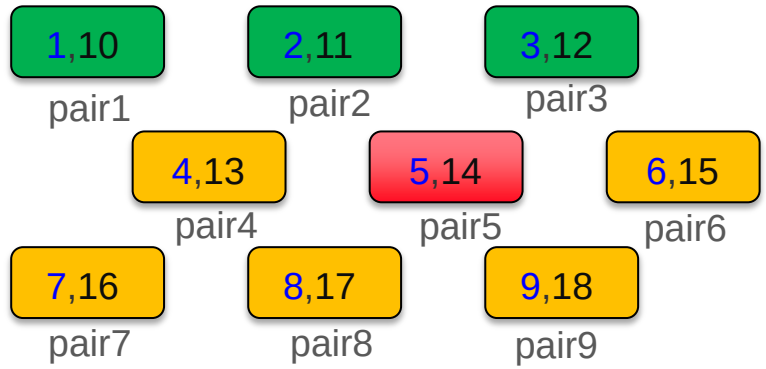
Near End Port, Far End Port



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COM Calculation:

Trace lengths:
Channel 1: 16 / 16 inches
Channel 2: 8 / 24 inches
Channel 3: 5 / 27 inches
Channel 4: 4 / 28 inches

COM version 2.75

Config file name:
config_com_ieee8023_93a=3ck_KR_mellitz_01_100219.xls

COM	Channel 1	Channel 2	Channel 3	Channel 4
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

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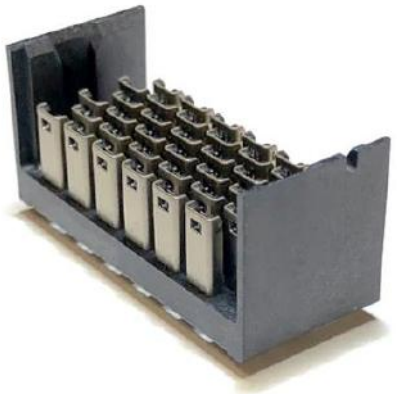
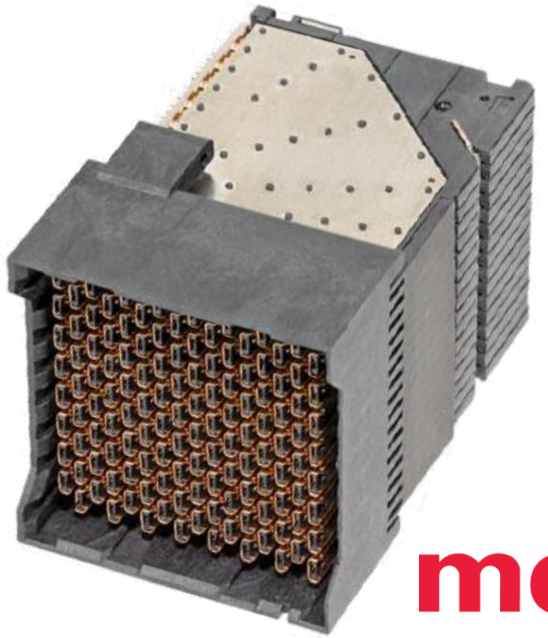
Backplane Connector Enhancements

BP Connector Enhancements to 112G:

- How were backplane connectors designed to achieve 112G performance?
  - Introduction of stubless signal structure at mating interface
  - Increased shielding at the mating interface
  - Commoning the connector ground structs adjacent to board structure
  - Increased differential pair isolation through connector body
  - Optimized board launch footprint





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