Channel Simulations for 112G Backplane Analysis

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January 18, 2018

Objective

- To support 112G backplane channel analysis, the following two backplane channel configurations are being provided:

    1. Orthogonal Channel with 9 inch (0.23m) Trace on both Line Cards with Megtron-7N material (S-Parameter files: tracy_100GEL_04_0118.zip)

    2. Cabled Backplane Channel w/ 6"(0.15m) Trace per Card with Megtron-7N material (S-Parameter files: tracy_100GEL_05_0118.zip)

- All Channels include Next-Gen STRADA Whisper* backplane connectors

* Trademark. Other product names, logos, or company names might be trademarks of their respective owners
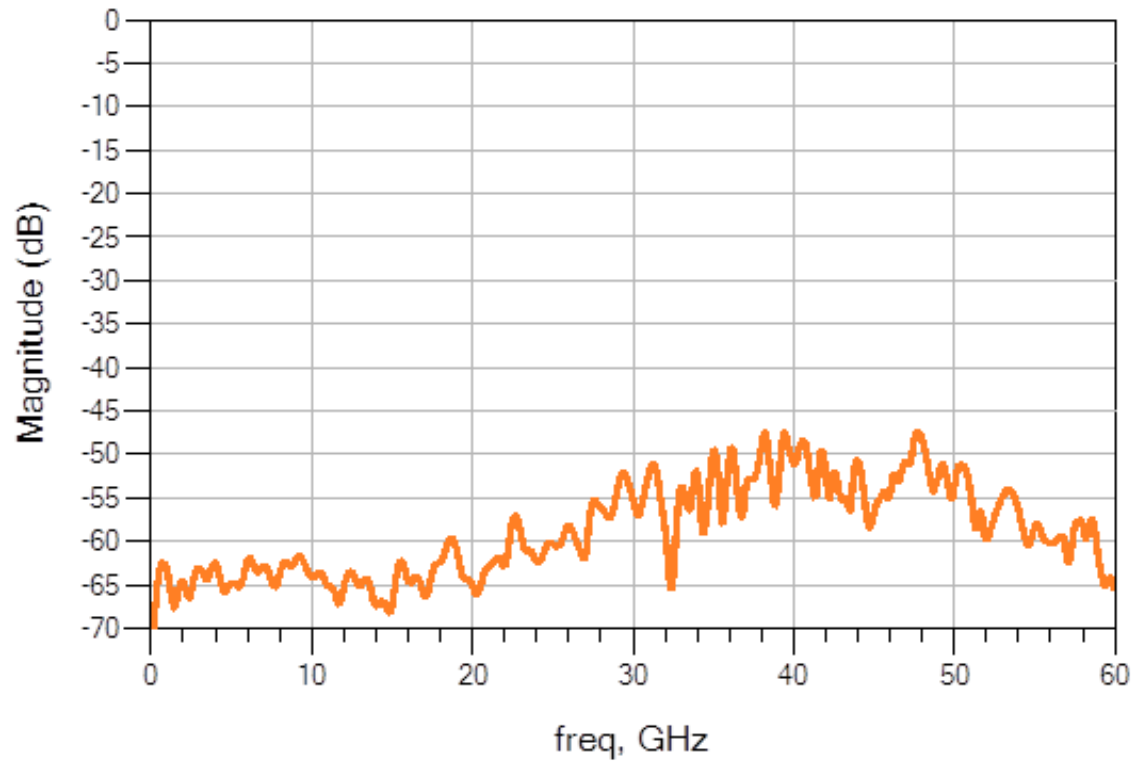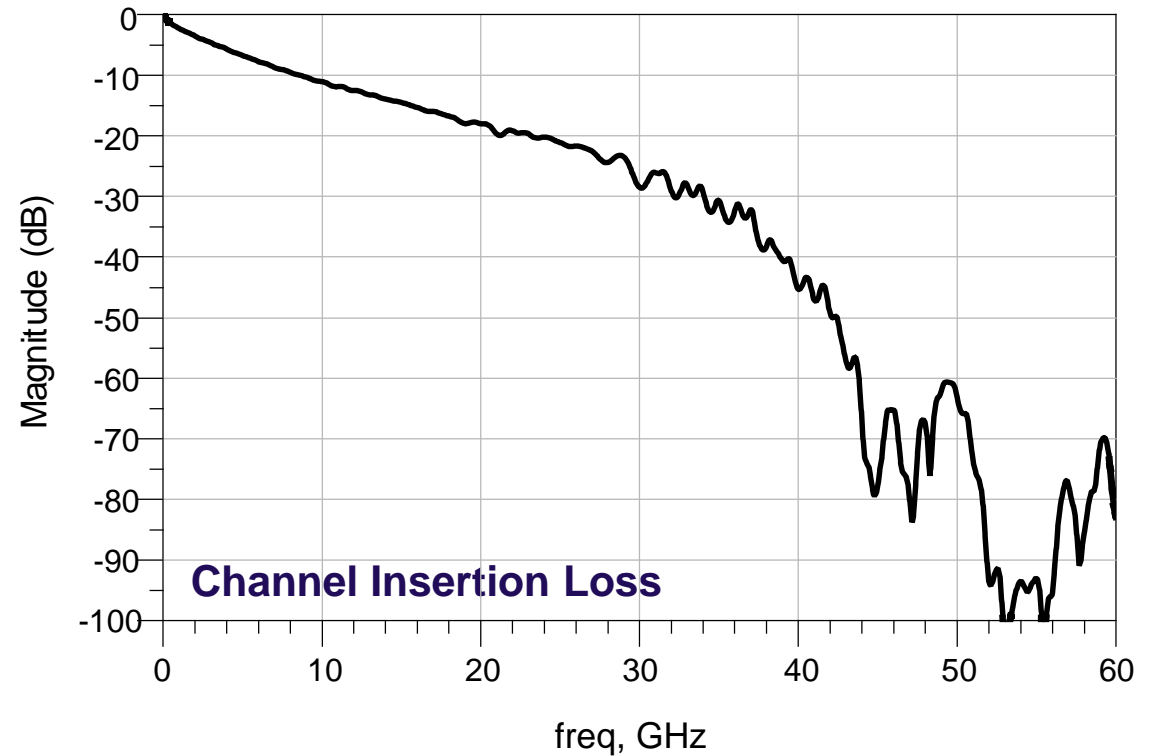
Orthogonal Backplane Channel
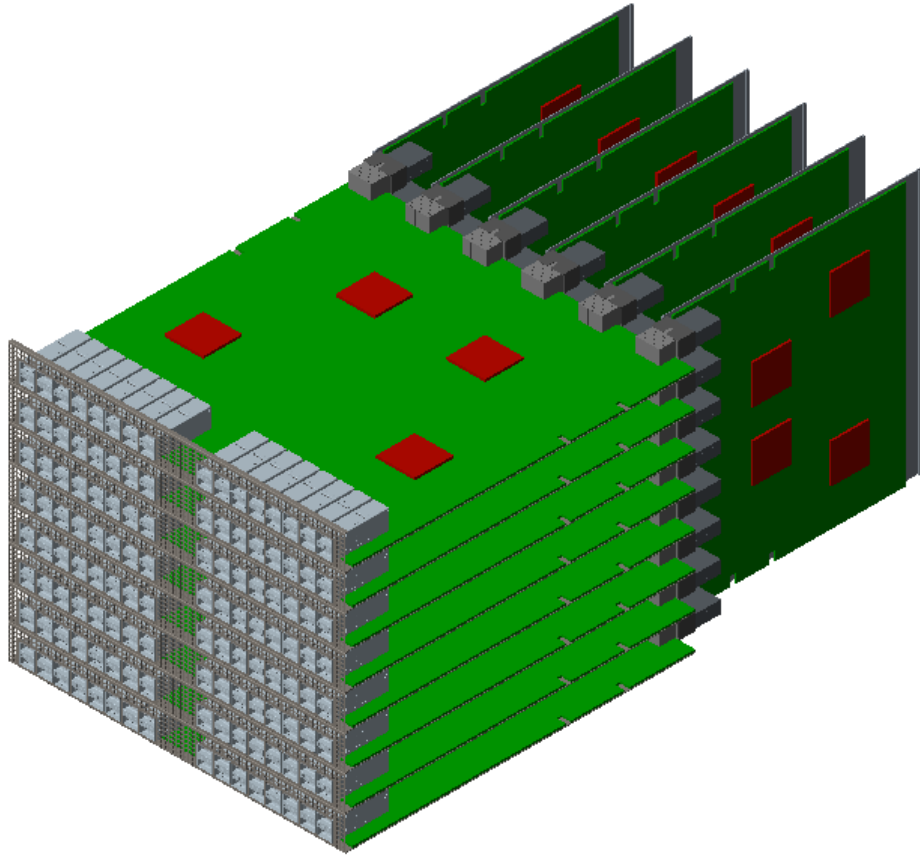
- 18" PCB Trace Total
  - 9" Trace per board
  - 6/6/6 trace geometry
  - Meg7N Laminates
  - HVLP Foils

- 140mil (3.56mm) Thick PCBs
  - Victim pair uses layer 2 routing
  - Victim pair: 15mil Stub w/ Shallow EON Technology
  - Aggressor Pairs are thru board to bottom layer

- Next-Gen STRADA Whisper Connector Model
  - Direct-Plug Orthogonal
  - Stub resonance has been addressed
  - Additional noise control features

- S-Parameter files: tracy_100GEL_04_0118.zip

Orthogonal Backplane Channel Results
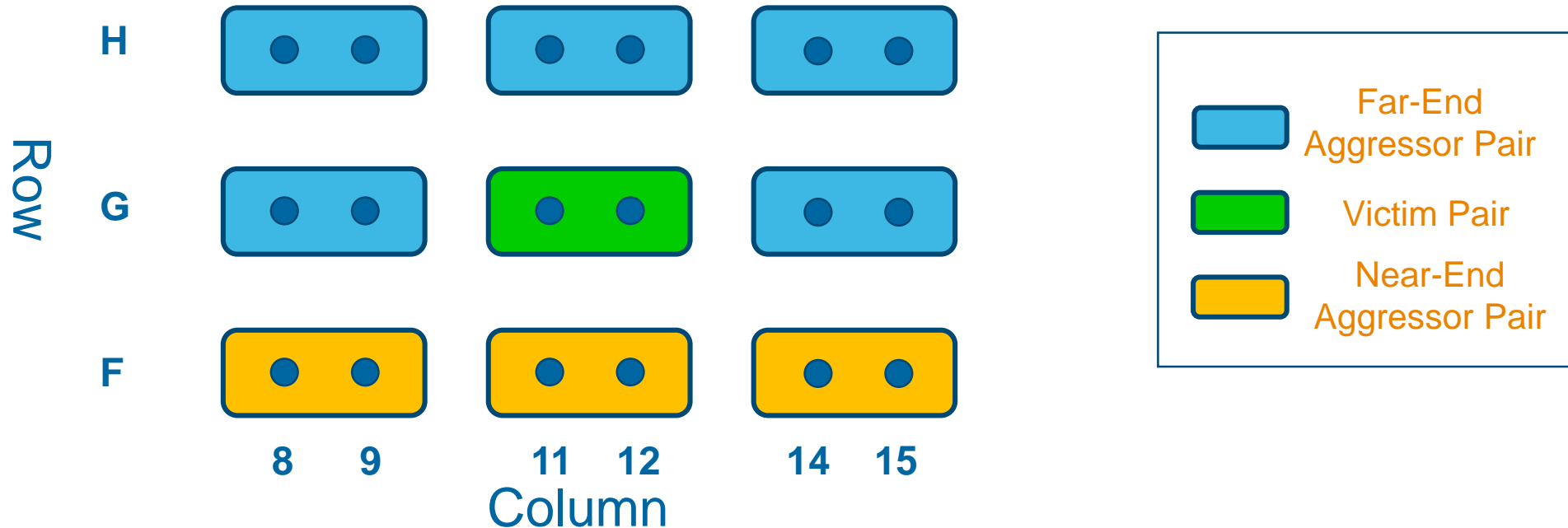
TX/RX 8-Aggressor PowerSum Crosstalk

Differential Insertion Loss

Channel Insertion Loss

Orthogonal Backplane Channel Crosstalk

Pin Configuration and File Format

- The S-Parameter package includes separate .s4p files for THRU pair and crosstalk pairs
- Pair G11/12 is the central victim pair. Crosstalk files aggress upon this pair
- Near-End and Far-End Crosstalk available in a typical TX/RX Pattern
- 0-60GHz in 10MHz steps
- S-Parameter files: tracy_100GEL_04_0118.zip
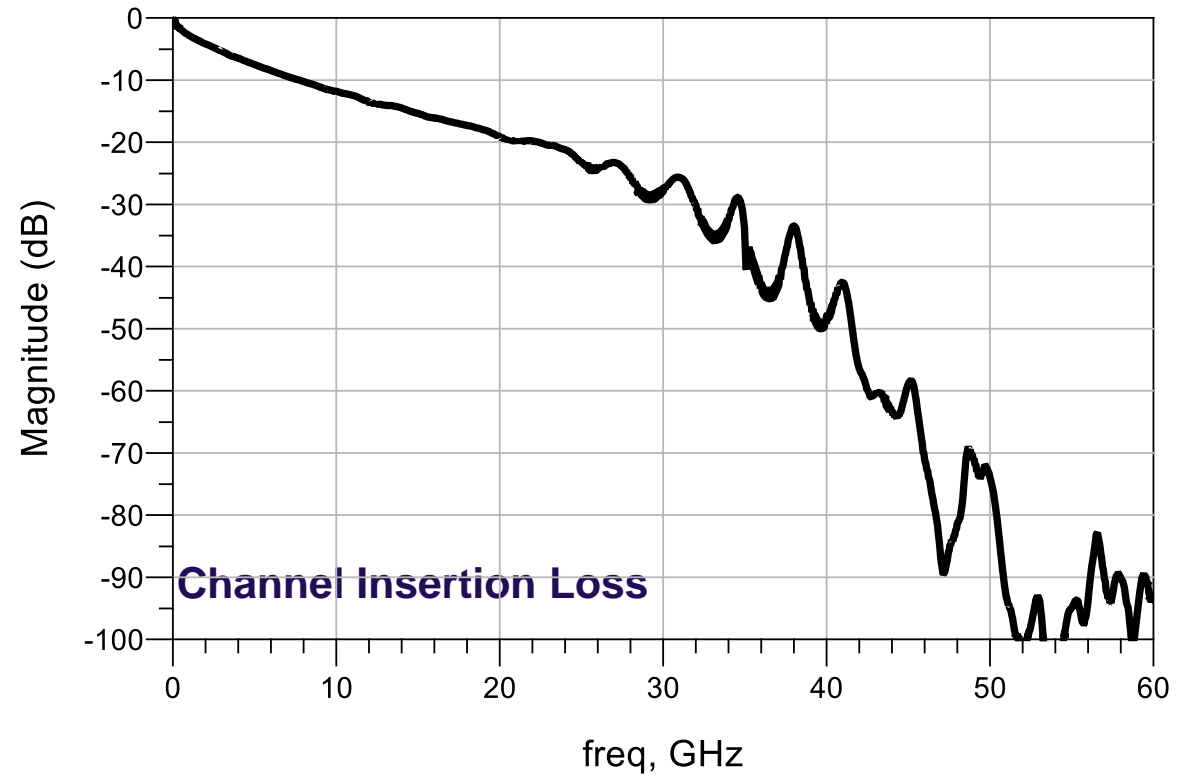
Cabled Backplane Channel
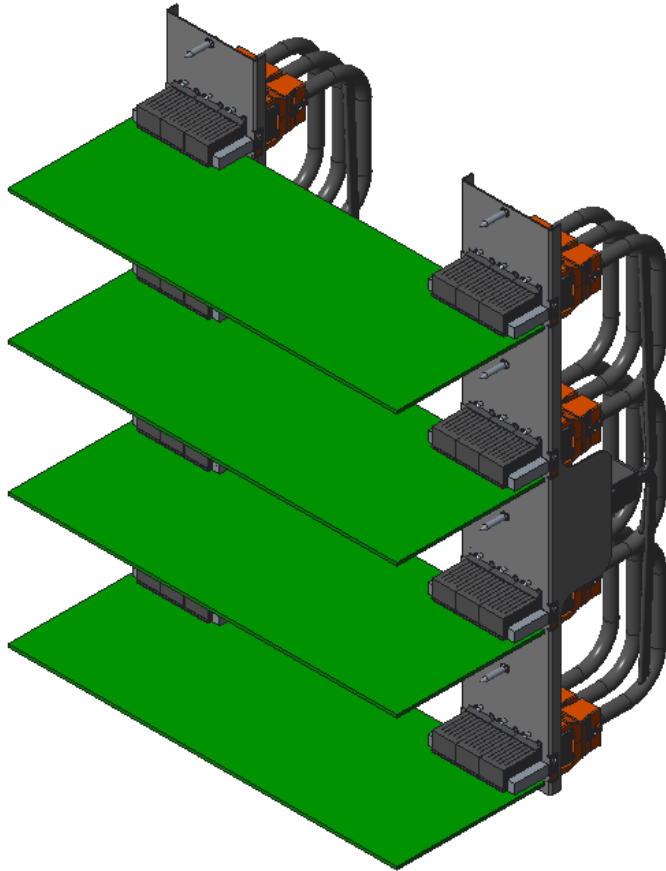
- 12" PCB Trace Total
  - 6" Trace per Board
  - 6/6/6 Geometry
  - Meg7N Laminates
  - HVLP Foils

- 140mil (3.56mm) Thick Footprints
  - Victim pair uses layer 2 routing
  - Victim pair: 15mil stub w/ shallow EON technology
  - Aggressor Pairs are thru board to bottom layer

- Next-Gen STRADA Whisper Connector Model
  - Cabled header to R/A receptacle
  - Additional noise control features
  - Stub resonance addressed

- 1m Cable Length
  - 30AWG TurboTwin twinax cable

- S-Parameter files: tracy_100GEL_05_0118.zip

Cabled Backplane Channel Results

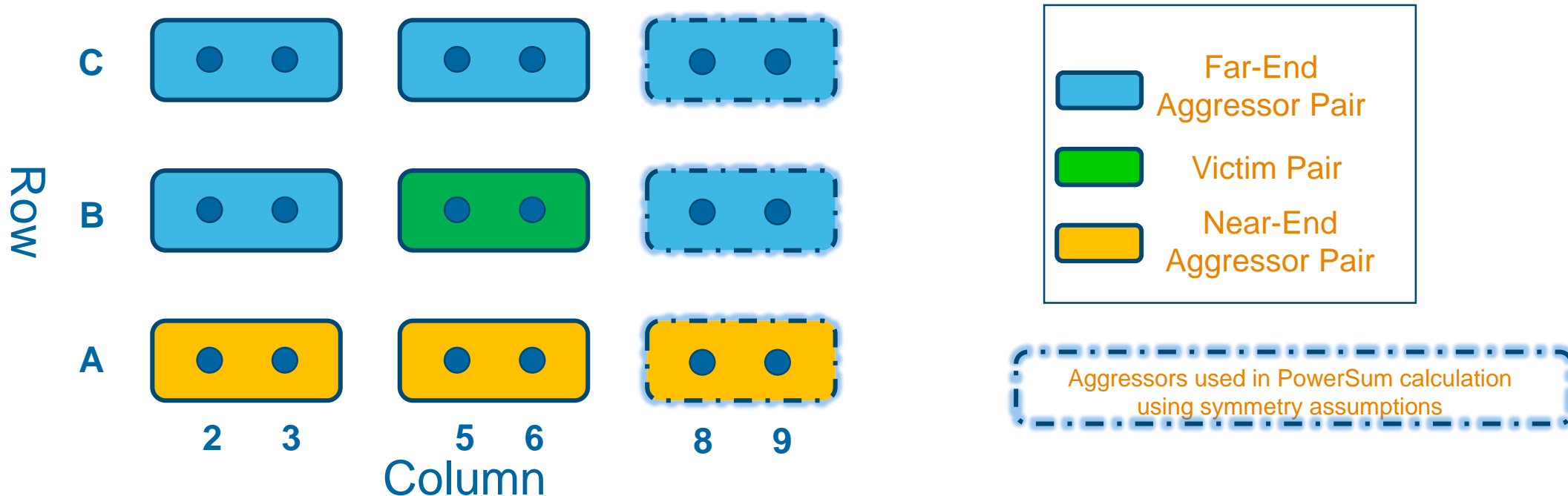### TX/RX 8-Aggressor PowerSum Crosstalk

Differential Insertion Loss
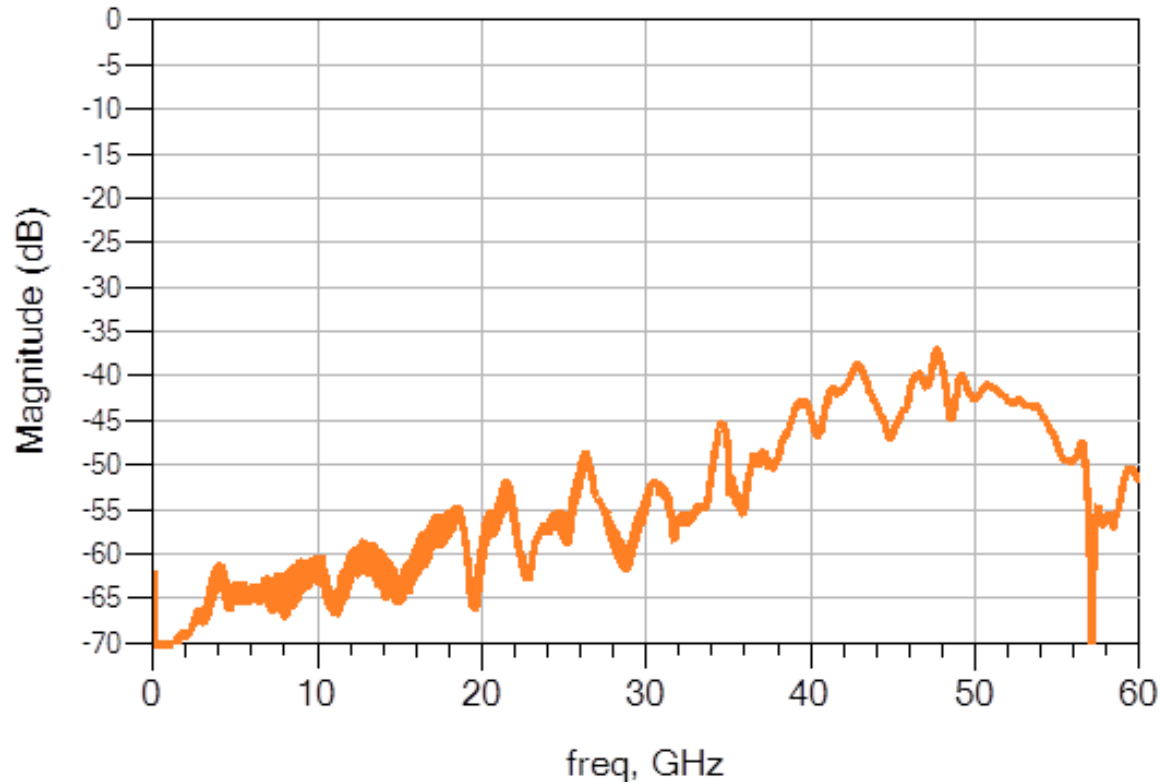
Channel Insertion Loss

Cabled Backplane Channel Crosstalk

Pin Configuration and File Format

- The S-Parameter package includes separate .s4p files for THRU pair and crosstalk pairs
- Pair B5/6 is the central victim pair. Crosstalk files aggress upon this pair
- Near-End and Far-End Crosstalk available in a typical TX/RX Pattern
- Test vehicle has 6 pairs, 3 more aggressors are added by symmetry
- 0-60GHz in 10MHz steps
- S-Parameter files: tracy_100GEL_05_0118.zip

Summary

- Two channel models have been contributed for study group analysis as 112Gbps backplane channels

  - Orthogonal backplane channel S-Parameter files: tracy_100GEL_04_0118.zip
  - Cabled backplane channel S-Parameter files: tracy_100GEL_05_0118.zip

- Connector/channel power sum noise suggest these are good candidates for 112Gbps backplane analysis

- Solutions provide high density and enable 112G backplanes reaches

- An improved backplane connector is included in the channel