Method of Modeling a Full Channel

Mark Bugg
Project Engineer

High Performance Cable Group

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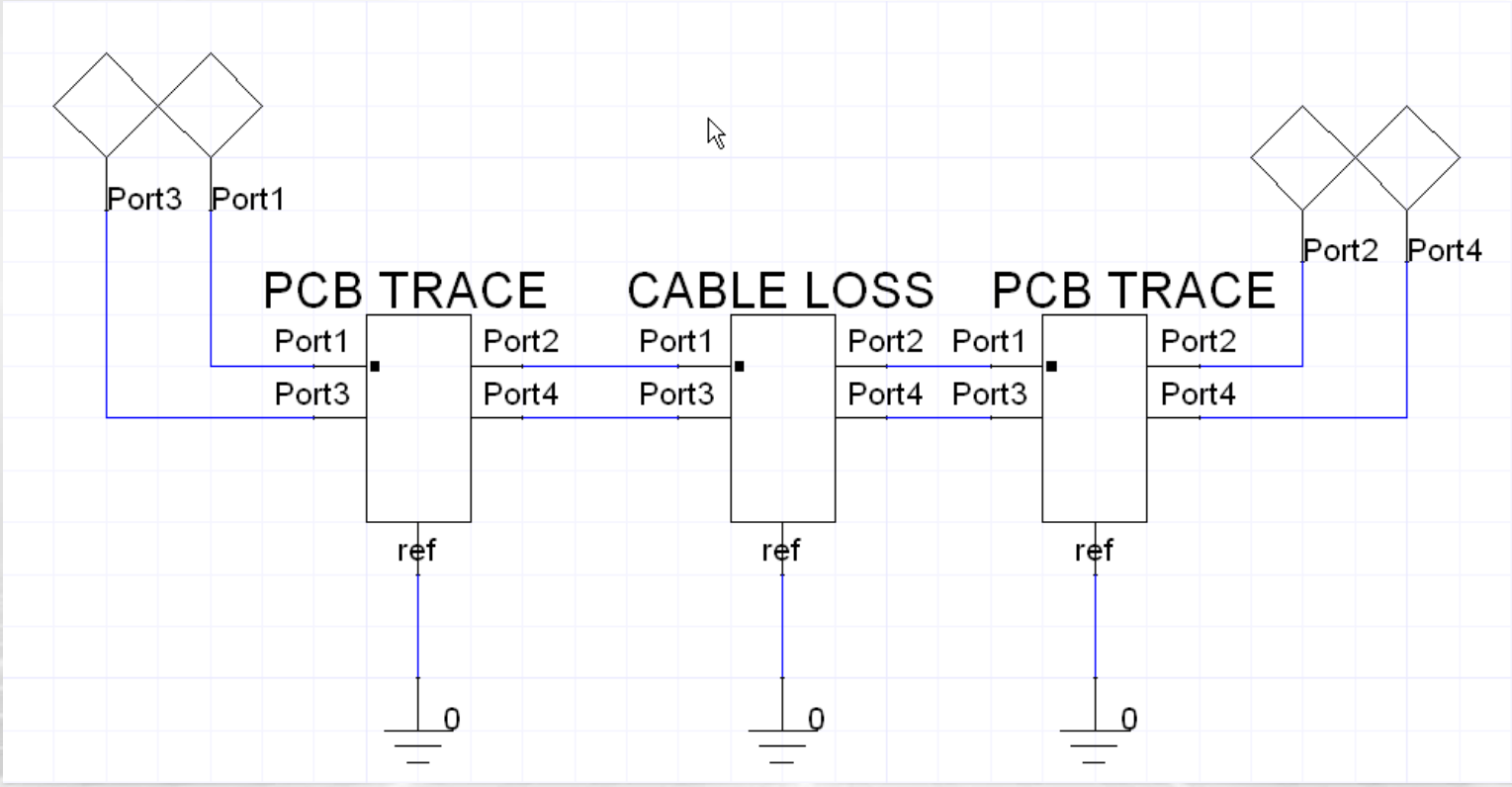
Model

Ansoft Designer Model

- **Simple Model for adding losses associated with PCB traces**



Model Parameters

- Model run from 50MHz to 40GHz with 10 MHz step size
- Output file is .s4p for each test case
- Output structure the same as previous cable models

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Model Pros/Cons

- Allows for addition of measured or simulated PCB trace
- Easy to import different trace lengths, geometries, materials etc.
- Can be modified to account for different connectors, cables, configurations
- Time intensive because of number of files (64 per cable!)

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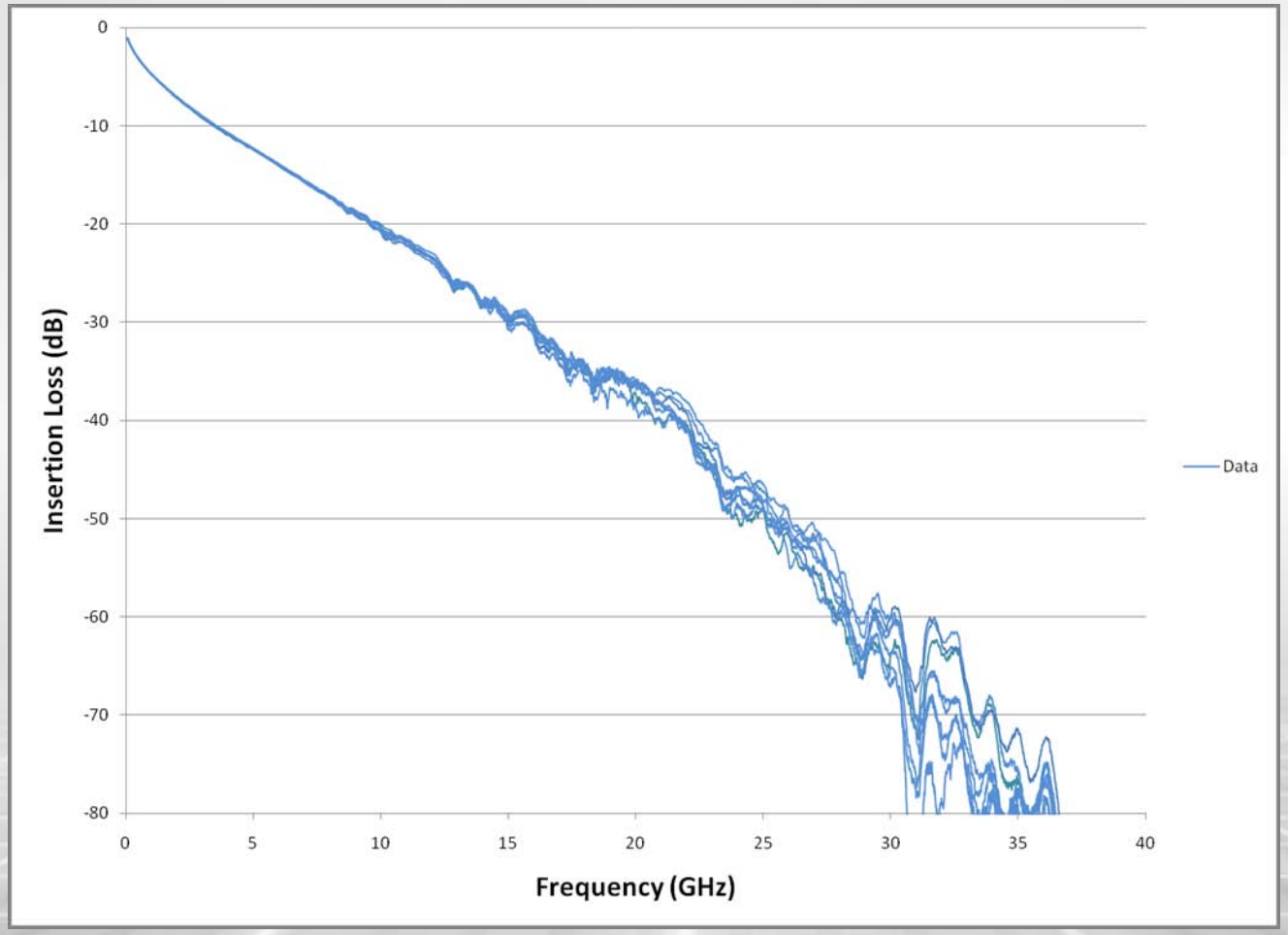
Results

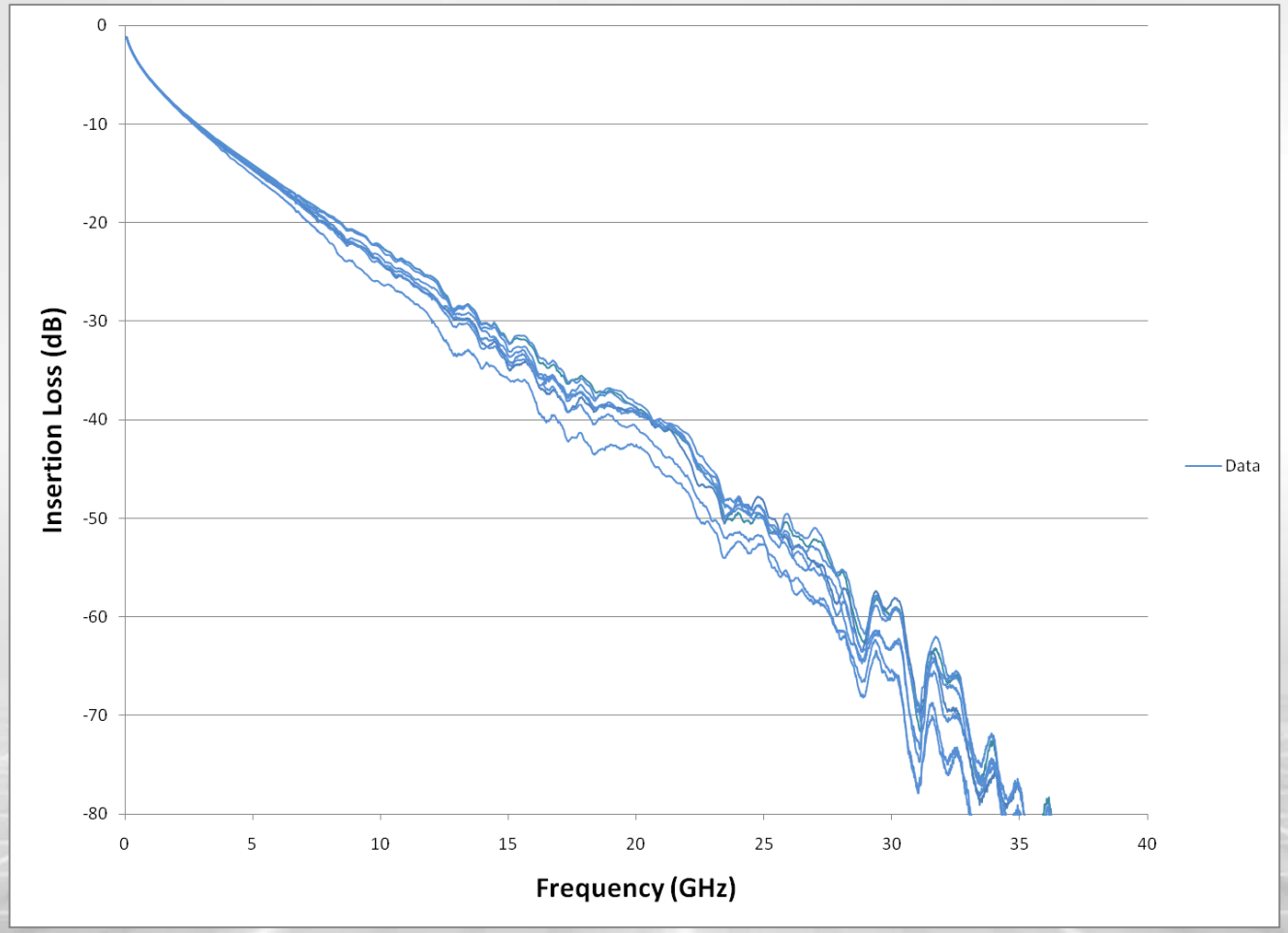
3m 26AWG with 225 mm total PCB trace (Nelco 4000-13 SI)

Loss at 12.9 GHz – 26.9 dB



3m 30AWG with 225 mm total PCB trace (Nelco 4000-13 SI)

Loss at 12.9 GHz – 33.3 dB – exc. flier 30.5 dB



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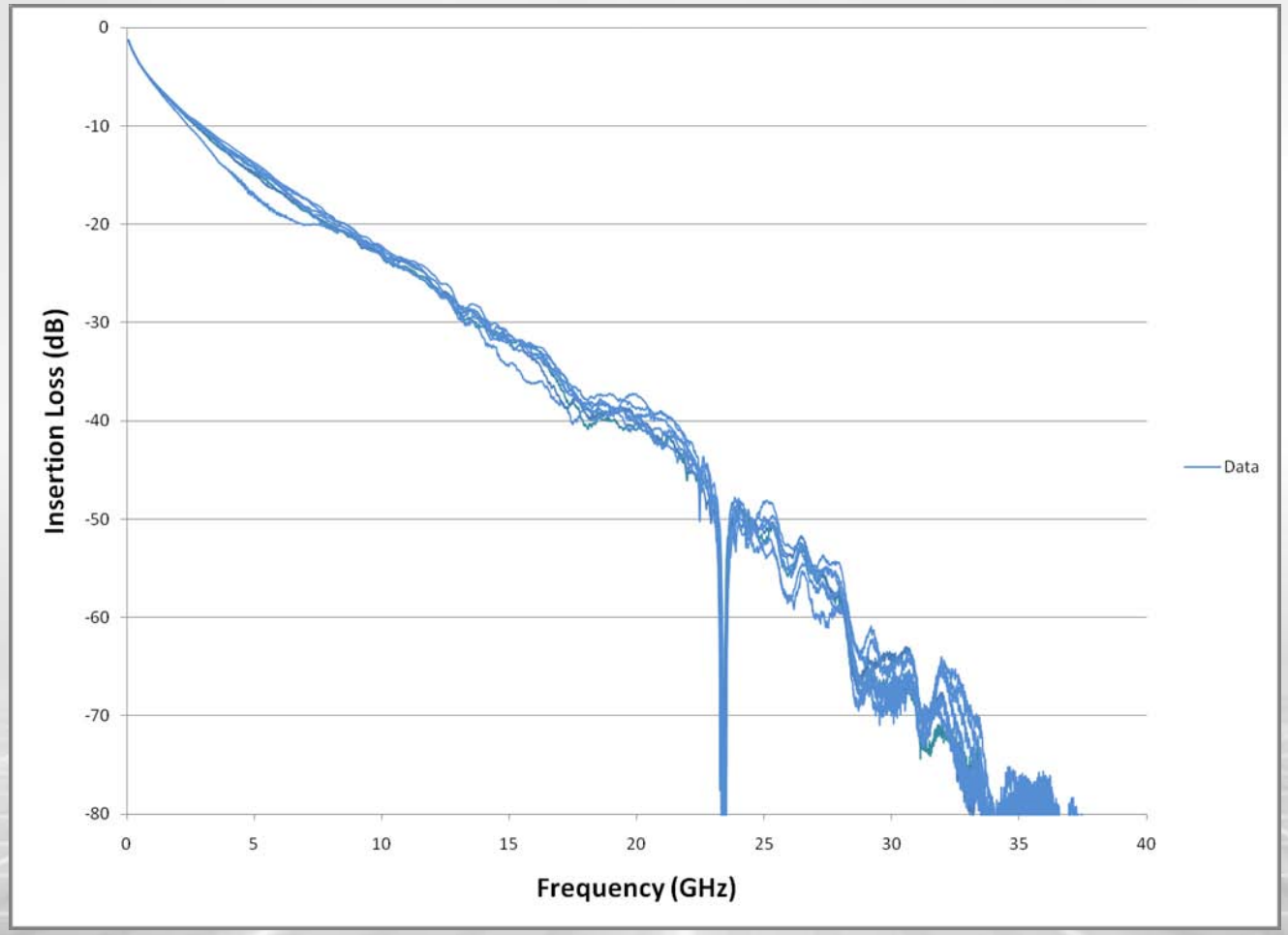
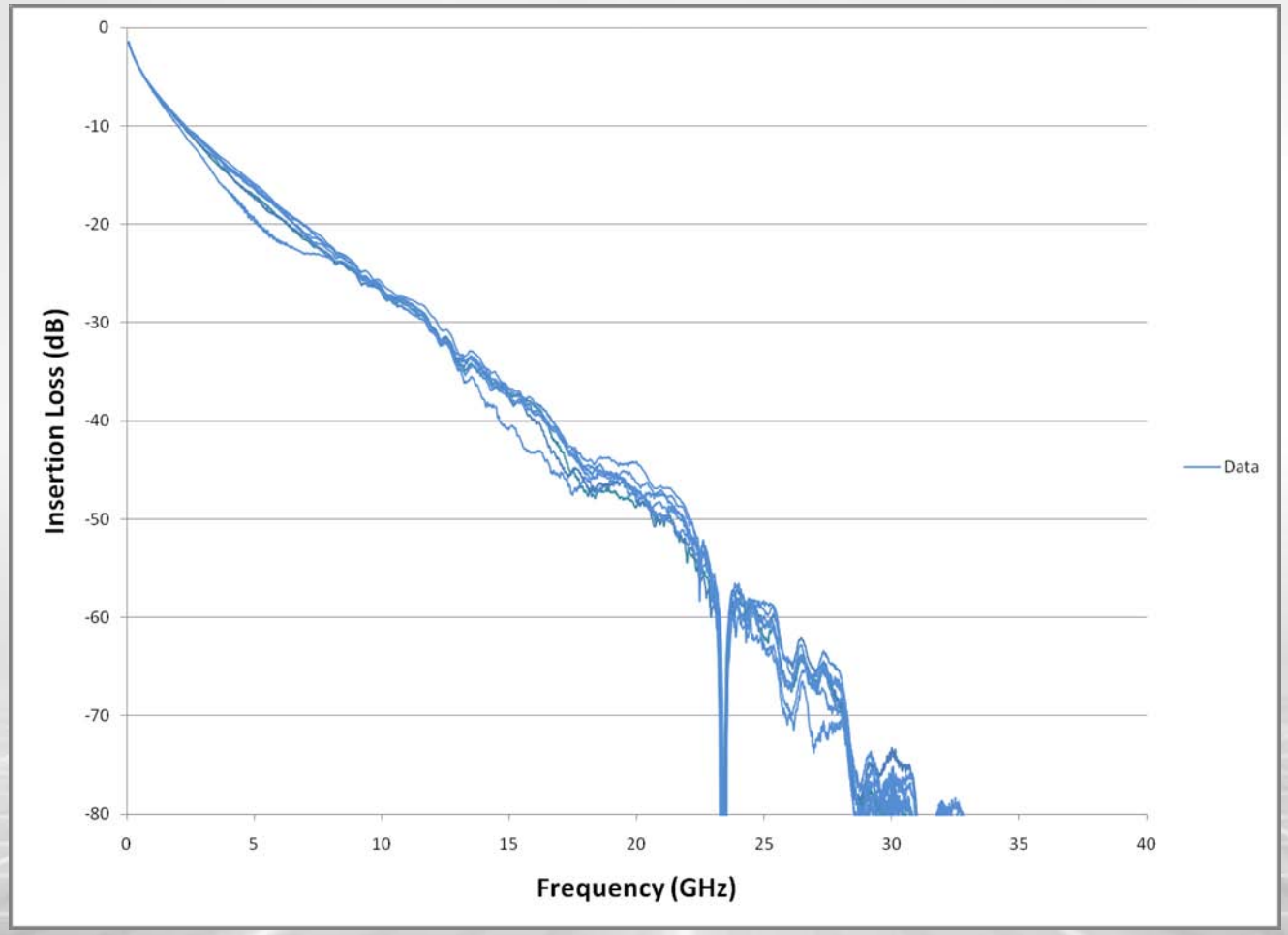
5m 24AWG with 195 mm total PCB trace (Nelco 4000-13 SI)

Loss at 12.9 GHz – 29.1 dB



5m 24AWG with 270 mm total PCB trace (Nelco 4000-13 SI)

Loss at 12.9 GHz – 34.2 dB



Proposal

- **Propose that ~30dB be used as achievable target for total channel budget**
- **Supports objective:**
  - "Define a 4-lane 100Gb/s PHY for operation over links consistent with copper twin-axial cables with lengths up to at least 5m."
- **3m 30AWG may also be supported for lighter more flexible applications**
- **Allows for up to 300mm "improved FR-4" PCB trace for 3m 26AWG and up to 195mm "improved FR-4" PCB trace for 5m 24AWG**

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Thank You

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