

56Gbps/ch Electrical Signal Capability on CFP2 Connector

Rev A

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400Gb/s Ethernet Study Group

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Introduction

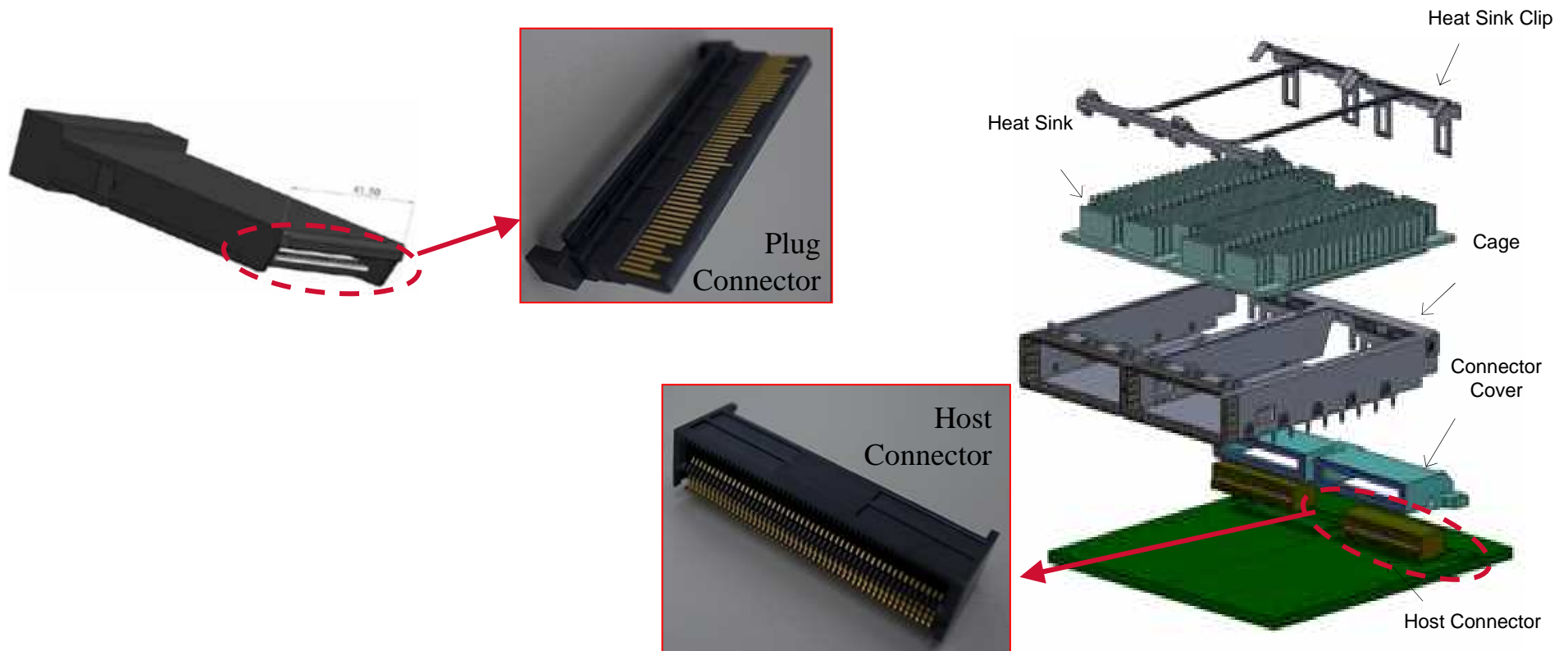
This presentation attempts to show technical feasibility of 56Gbps x 8ch electrical signaling on CFP2 connector for 400Gb/s Ethernet MDI

Back Ground

- At May 2013 Victoria Interim meeting, Yamaichi Electronics presented electrical signal performance of existing CFP2/CFP4 connector, and explained its good capability specially at 28Gbps x 16ch solution. However, performance enhancement have been still expected at 56Gbps x 8ch usage.
- Yamaichi Electronics has been making performance enhancement on CFP2 connector design, and made new prototype. This presentation shows performance of the new prototype connector

CFP2/CFP4 Connector Overview

- CFP2/CFP4 are standardized by CFP MSA
- CFP2 and CFP4 have common signal pass design within connector
- CFP2 supports 8 channels and CFP4 supports 4 channels of high speed signals
- **New prototype connector made at this performance enhancement is still fully compatible with CFP MSA standard and existing CFP2 connector**

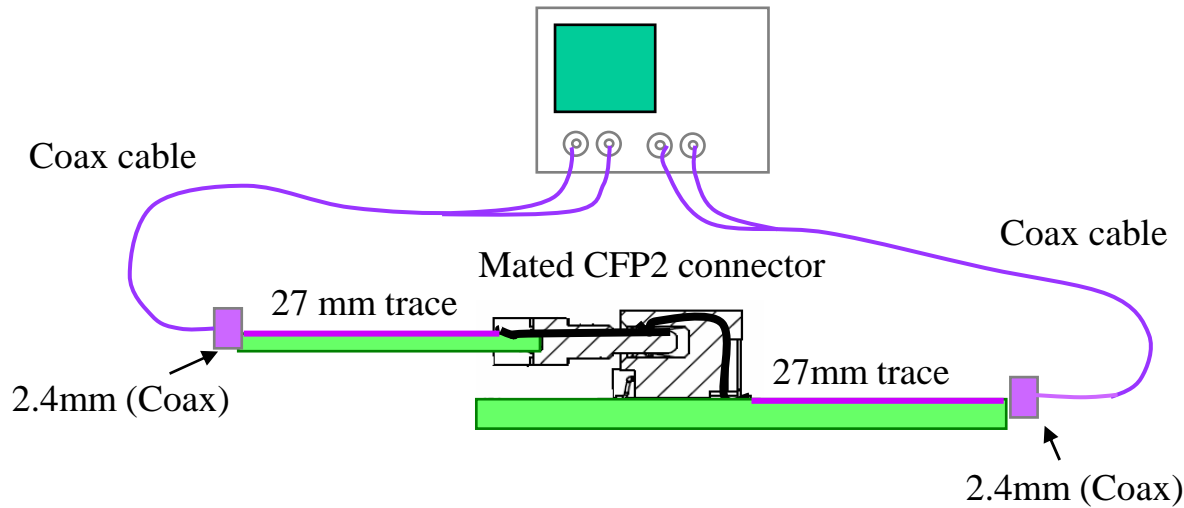


**CFP2 Connector
Performance Enhancement Version
Prototype SI Measurement Data**

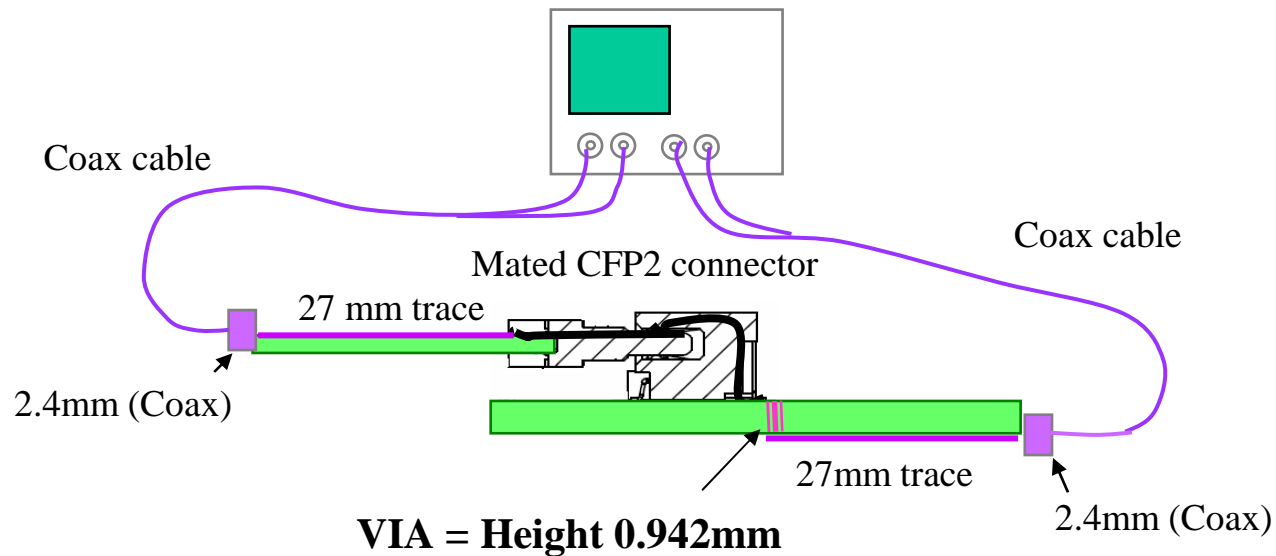
SI Performance Measurement Condition

- Measurement Instrument (Network Analyzer): Agilent N5230A

Test Board = Without VIA

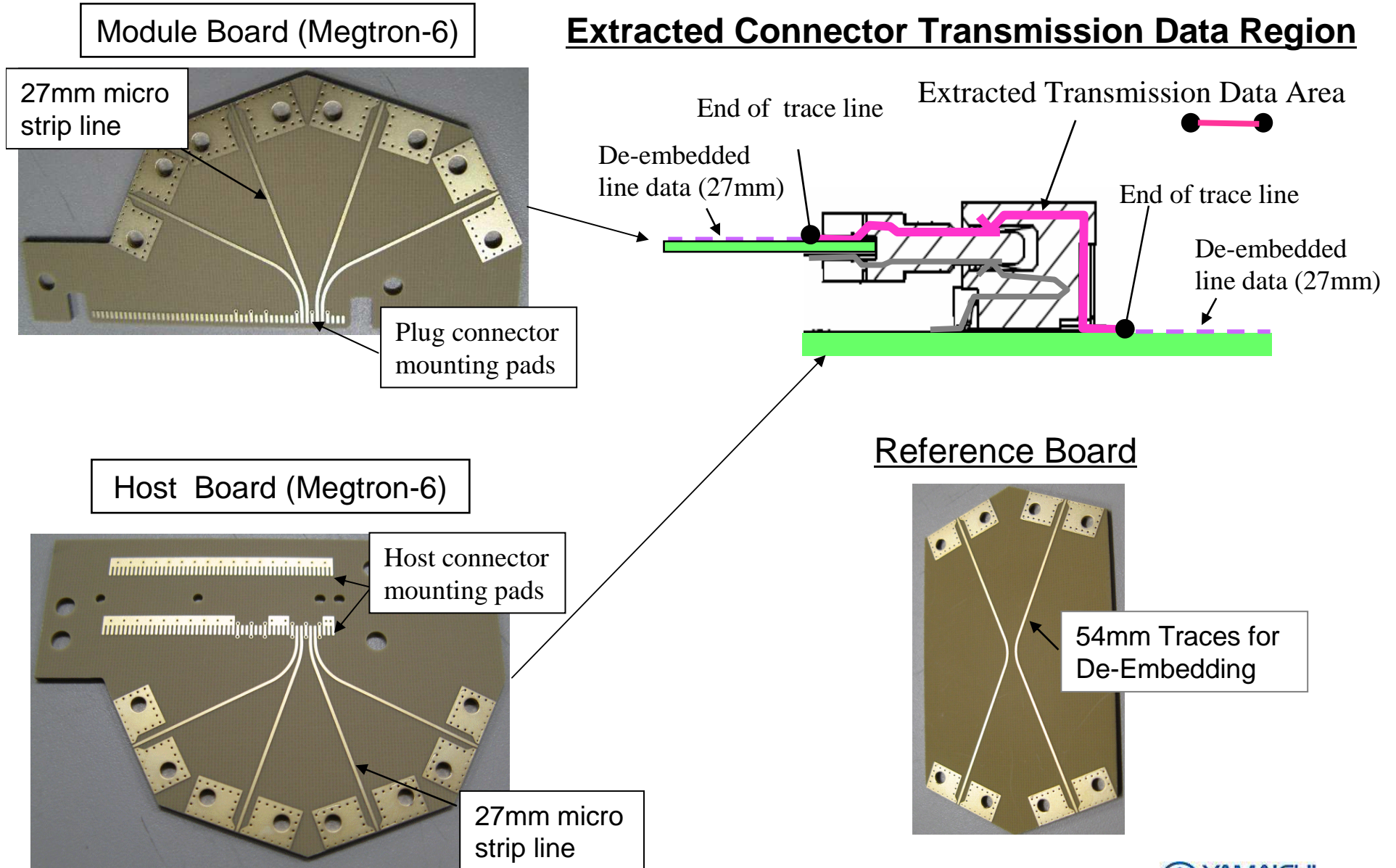


Test Board = With VIA



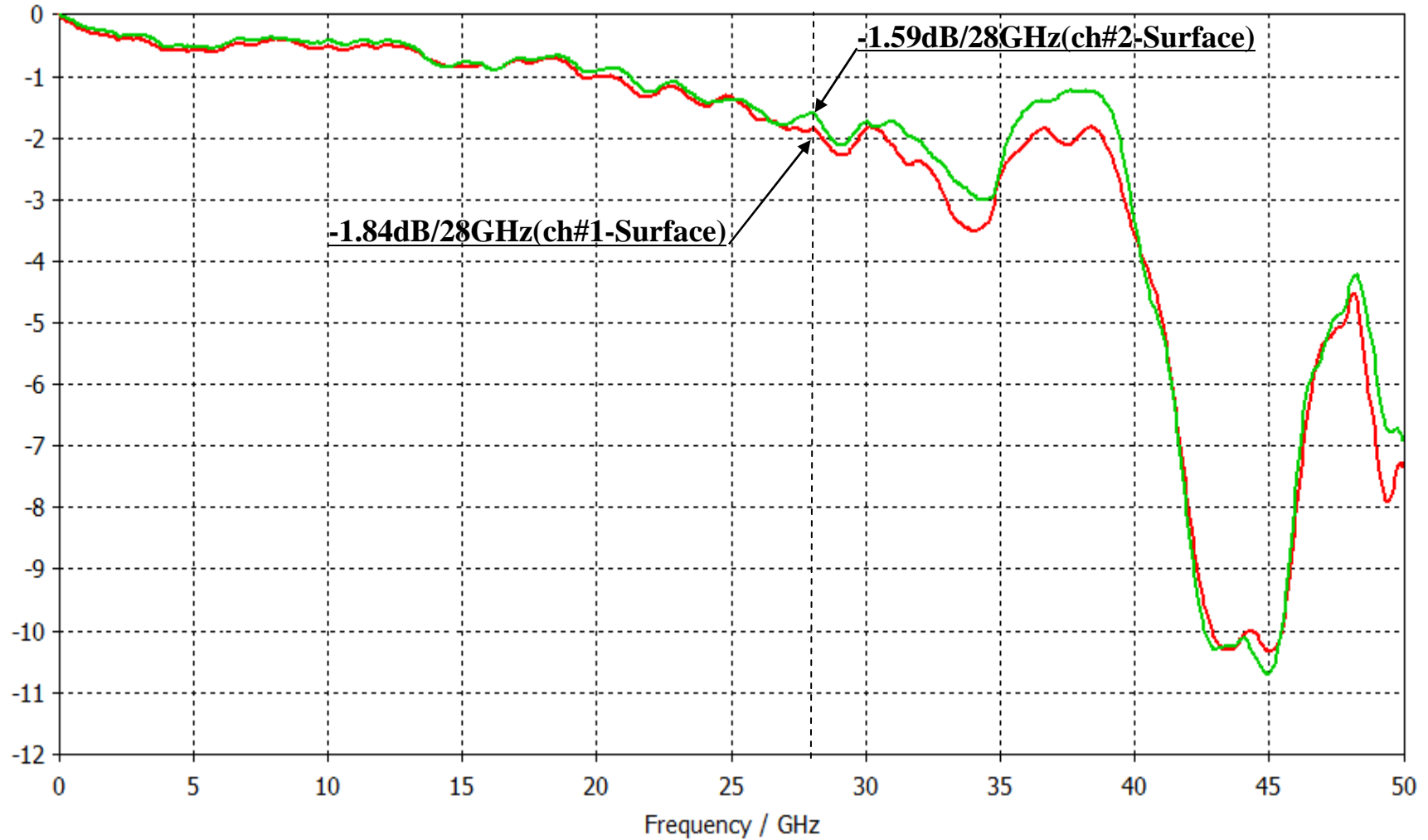
Test Board = Without VIA

Extracted Connector Transmission Data Region



Differential Insertion Loss(Sdd21)

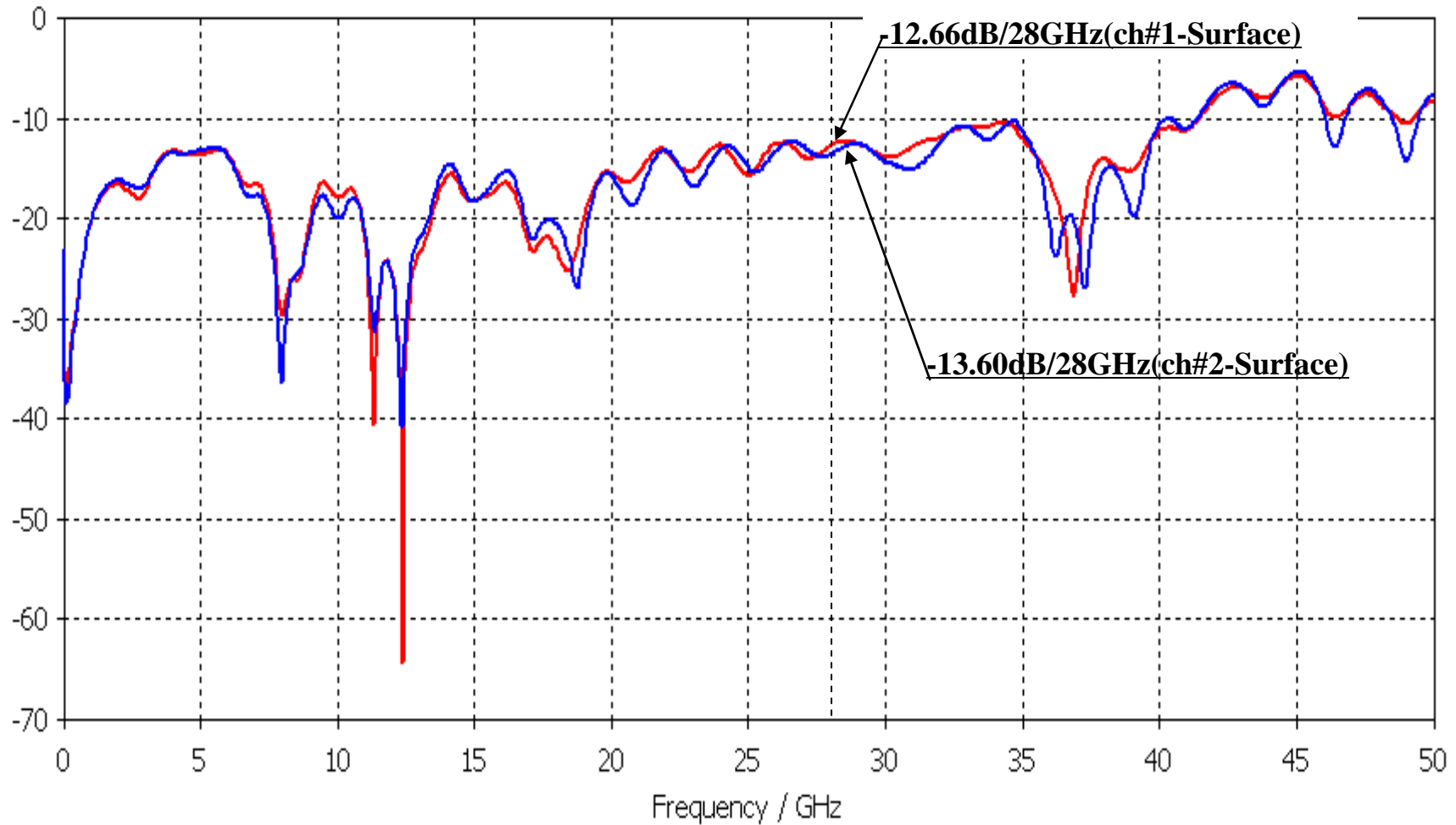
New Prototype Sample Measurement Result (Test Board = Without VIA)



Differential Return Loss(Sdd11/Sdd22)

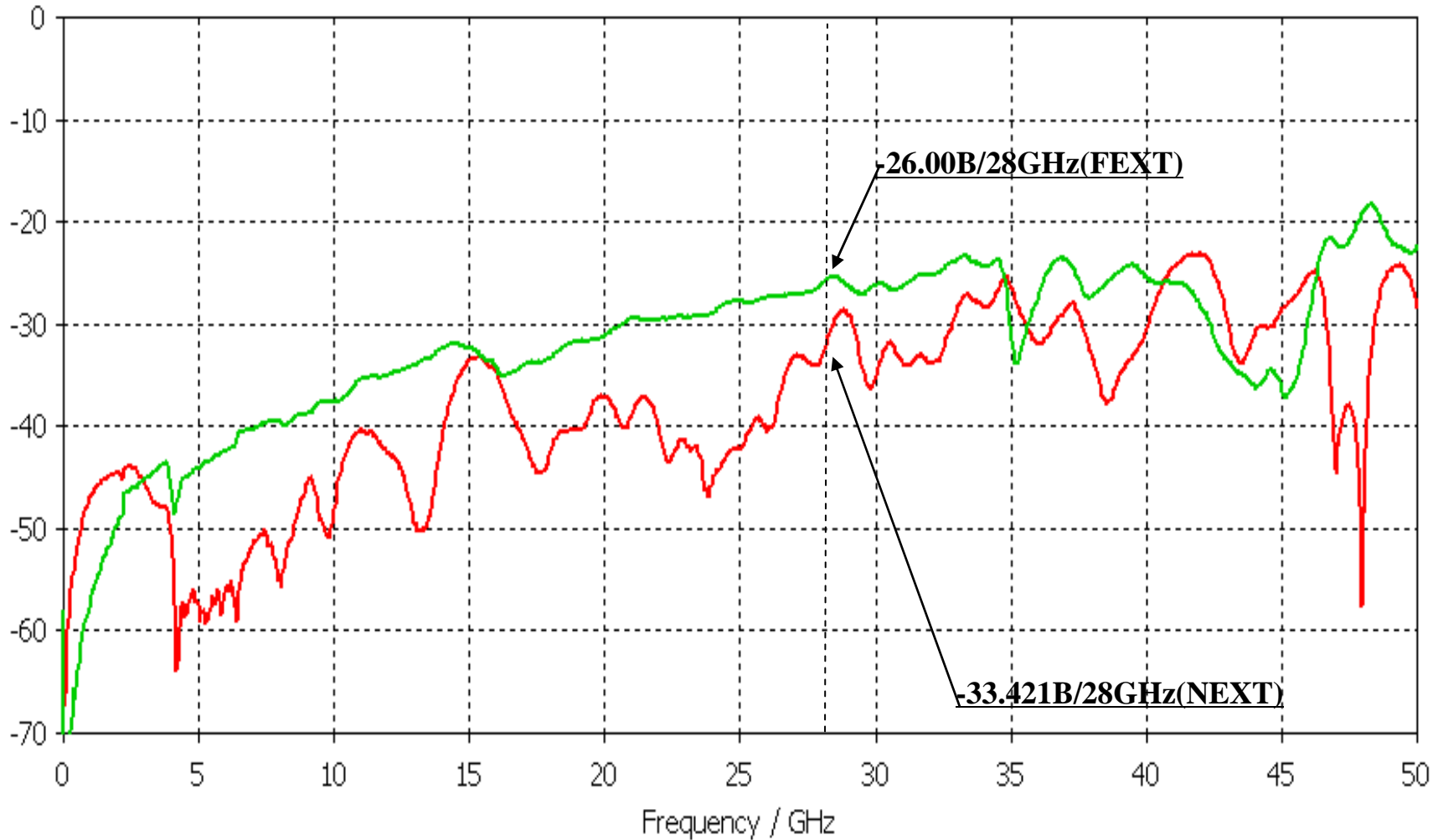
New Prototype Sample Measurement Result

(Test Board = Without VIA)



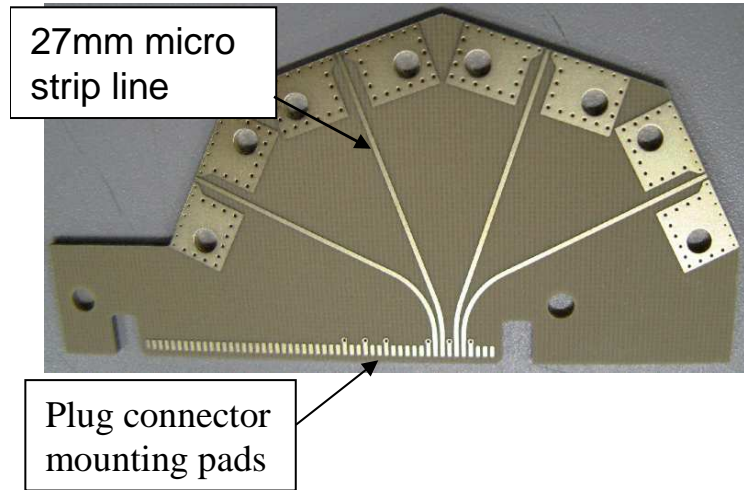
Differential Cross talk

New Prototype Sample Measurement Result (Test Board = Without VIA)

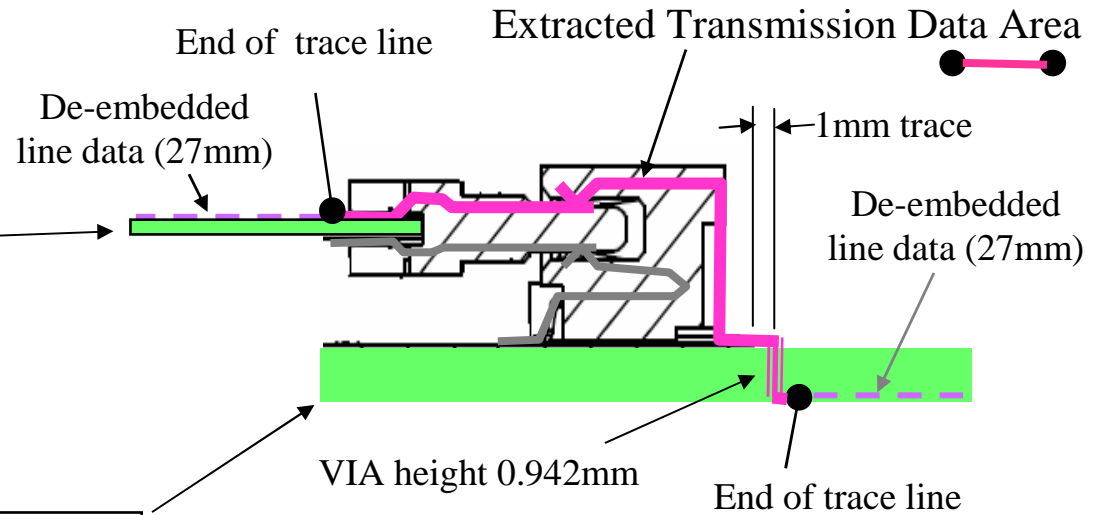


Test Board = With VIA

Module Board (Megtron-6)



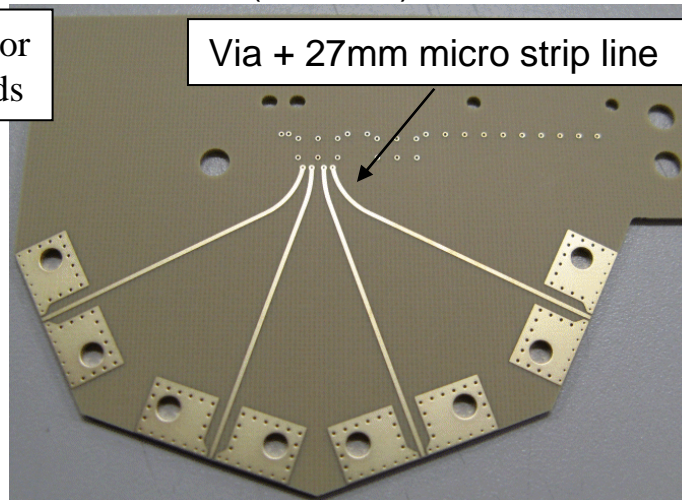
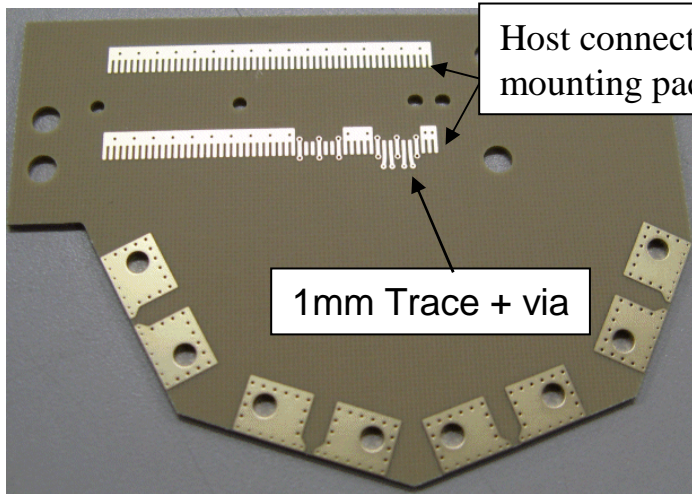
Extracted Connector Transmission Data Region



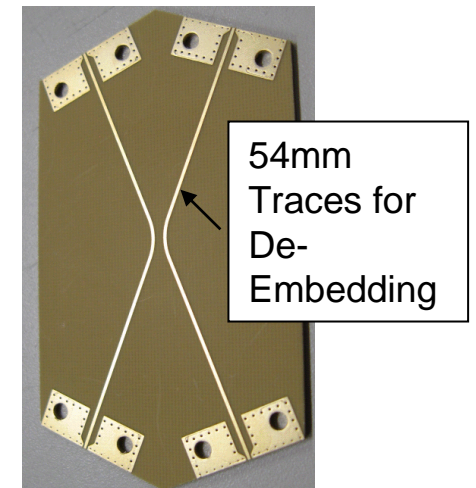
Host Board (Megtron-6)

(Top)

(Bottom)



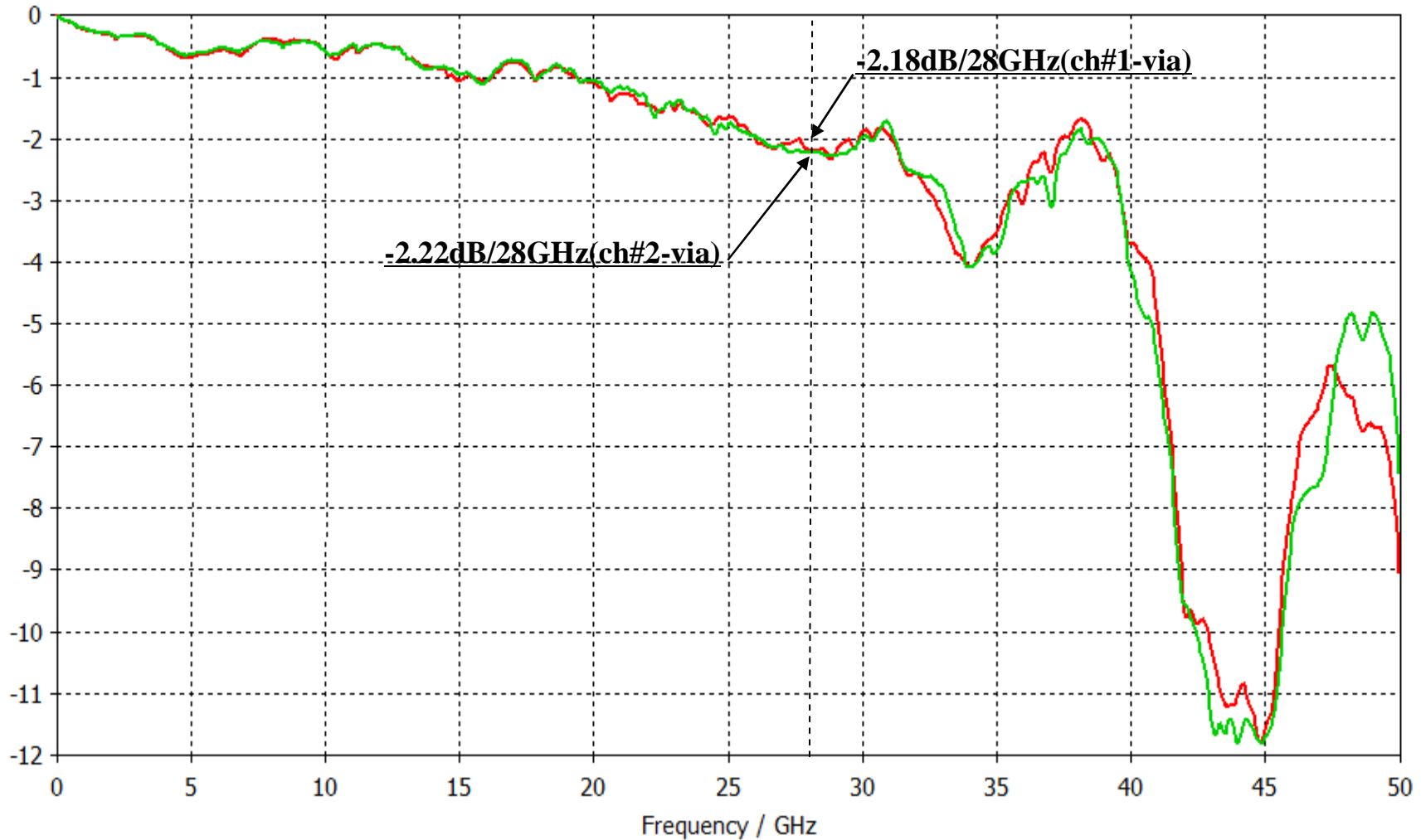
Reference Board



Differential Insertion Loss(Sdd21)

New Prototype Sample Measurement Result

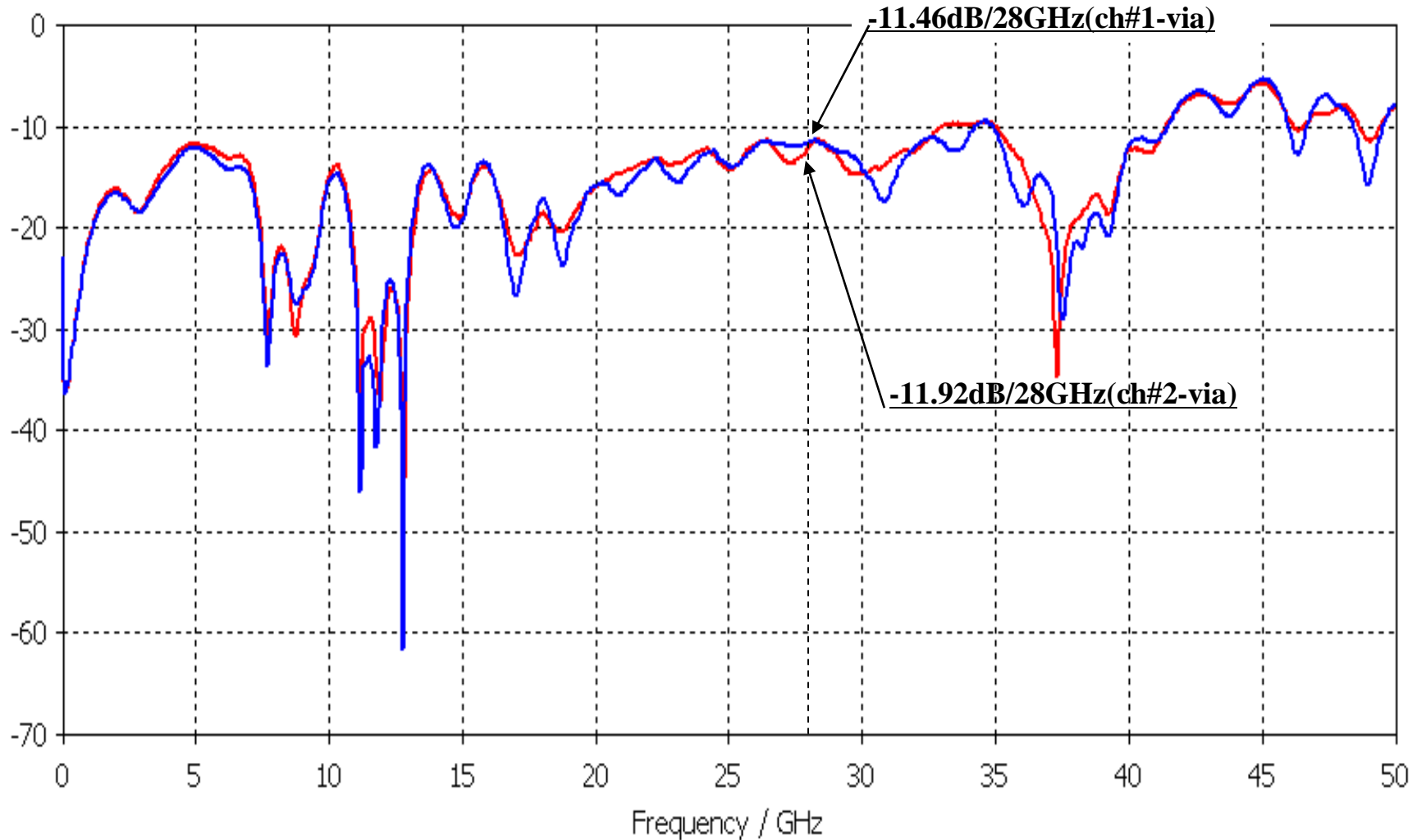
(Test Board = With VIA)



Differential Return Loss(Sdd11/Sdd22)

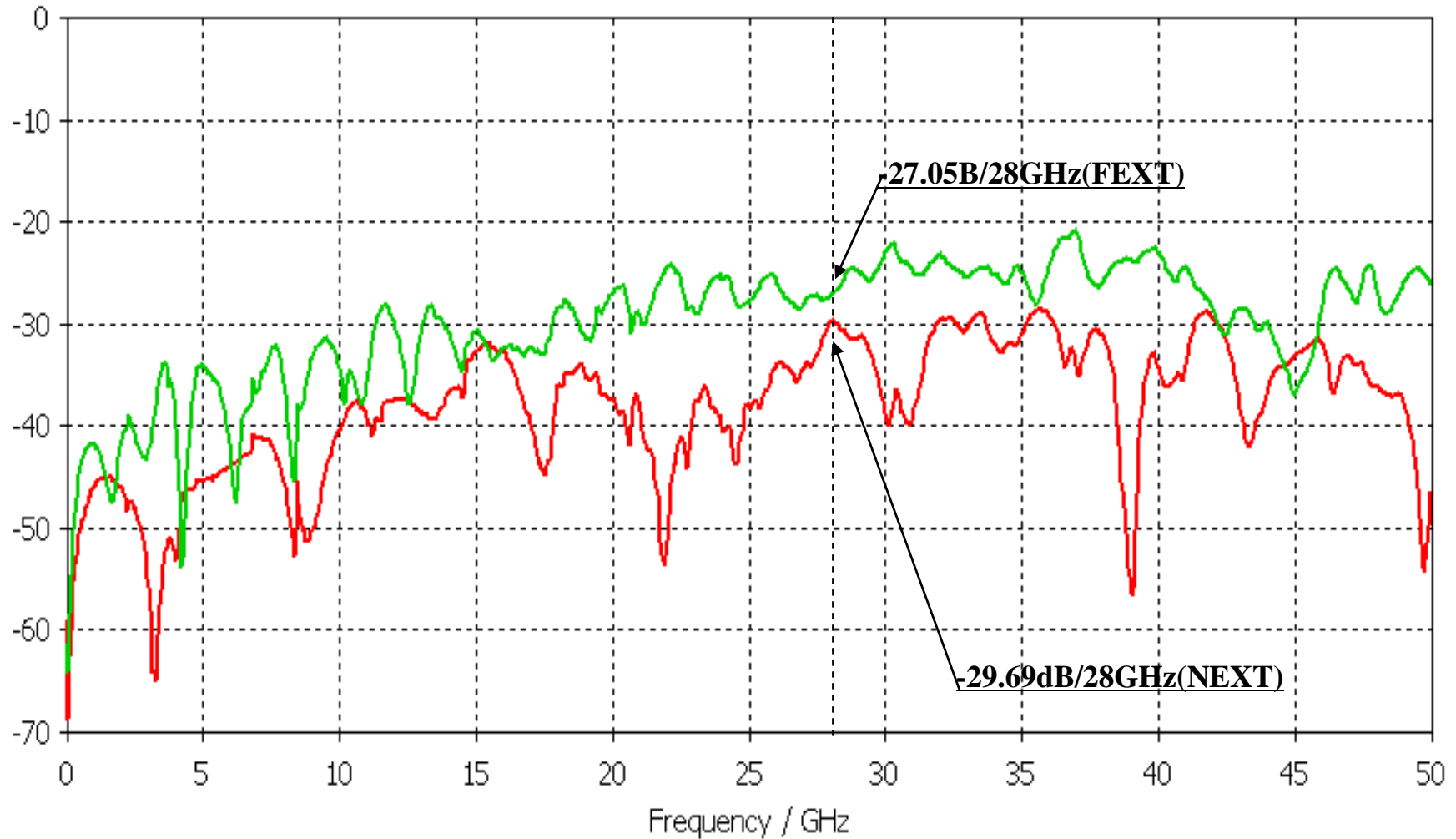
New Prototype Sample Measurement Result

(Test Board = With VIA)



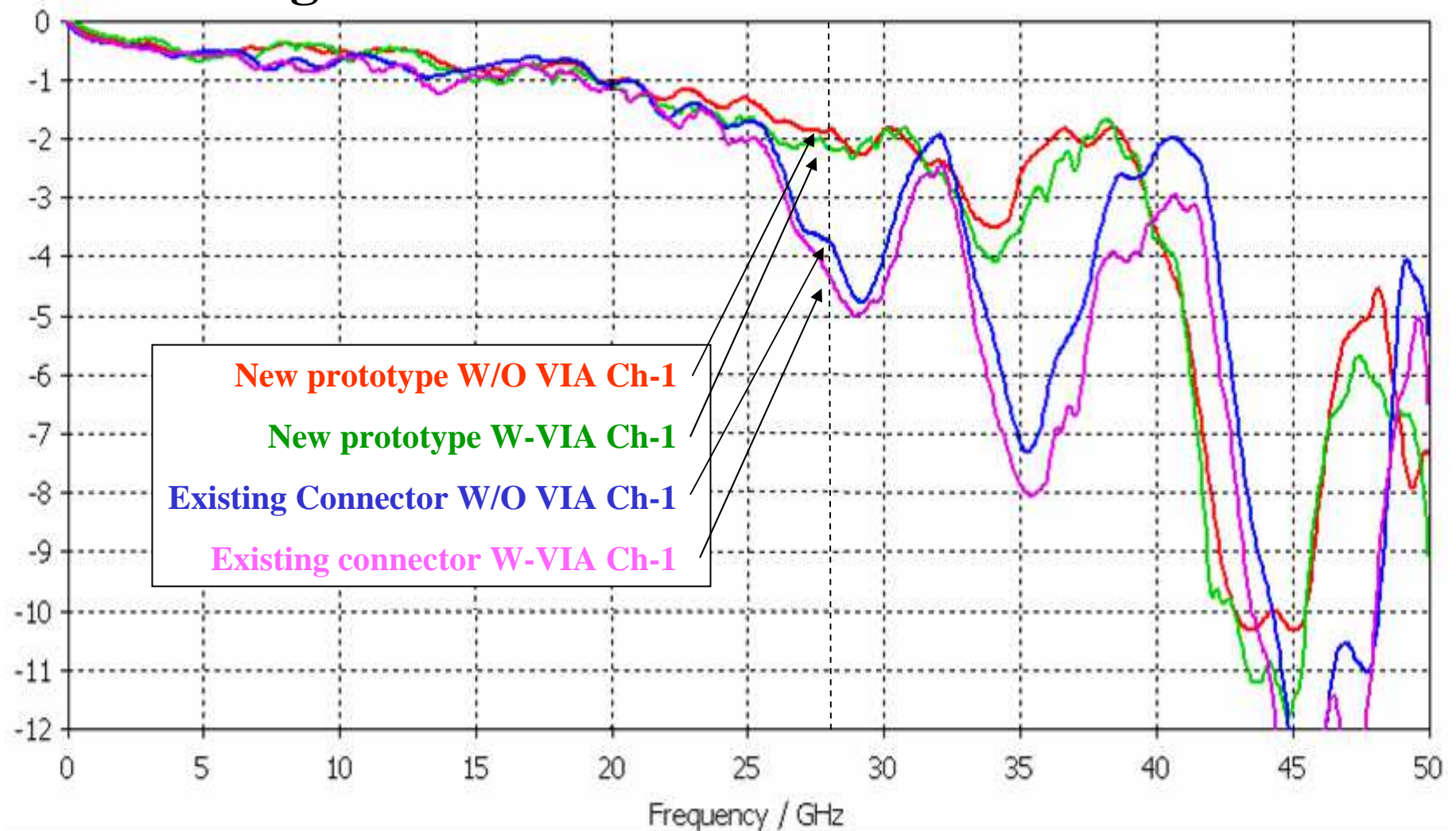
Differential Cross talk

New Prototype Sample Measurement Result (Test Board = With VIA)



Differential Insertion Loss(Sdd21)

Comparison Between “New Prototype Connector” and “Existing Connector” measured at same test board



Summary

- CFP2/CFP4 connector has capability to meet signal loss performance better than -3dB at 28GHz
- This performance will contribute to achieve goal of CEI-56G-VSR channel loss budget
- With this electrical signal performance and 8 channel capability, CFP2 can be a MDI for 56Gbps x 8ch of 400Gb Ethernet

Thank You