Proposal for New Internal and External High Density 10 X 10.3125 Gbps Connector System based on 10GBASE-KR

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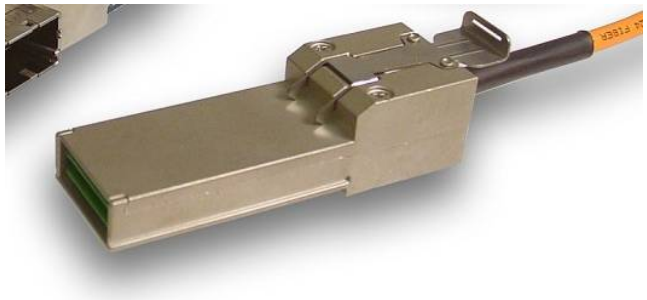
10X MDI Proposal

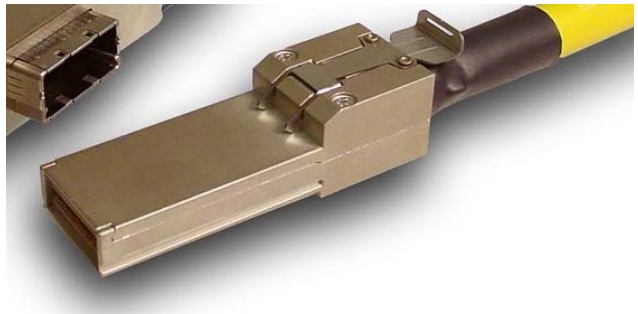
- Data shown is from the Tyco 12X External Connector as documented by the SFF-8092
- Proposal is meant as an extension to the 802.3ba copper cable assembly proposal (diminico_01_0508)

- Objective is meant to provide an interconnect that uses common electrical specifications to the backplane specification while supporting the following:
  - Passive Copper Assemblies
  - Active Copper Assemblies
  - Direct Attach Fiber Assemblies
  - Optional Modules for Fiber Assemblies
  - Internal Passive Copper Assemblies

External Embedded Fiber and Copper Plug Cable Description

26, 28 and 30 AWG Cable will be available





	Embedded Fiber	Copper
Cable Diameter	5mm	11mm(1 cable), 8.2mm(2 Cables)
Cable Construction	24 fiber	
Cable Bend Radius, min	TBD	6X Cable Dia
Industry Specification	TIA-492AAAC-XBAX ICEA S-83-596-2001	
Max Cable Length @ 10Gbps	100 Meters	TBD (Active)
Power (Watts)	2.0 – 2.5 max	1.5 max (Active)

Electrical Performance Update

- Product has been fully tested and various .s4p, .s8p, and .s16p files are available for simulation of the interface and/or cable assembly
- The following performance data is available:
  - Time domain (Characteristic Impedance, NEXT, FEXT)
    - *Interface (module usage)*
    - *Two piece connector version with cable attached to contacts*
    - *Card edge with cable attach to PCB*
  - Frequency domain (IL, RL, NEXT, FEXT)
    - *Interface (module usage)*
    - *Two piece connector version with cable attached to contacts*
    - *Card edge with cable attach to PCB*

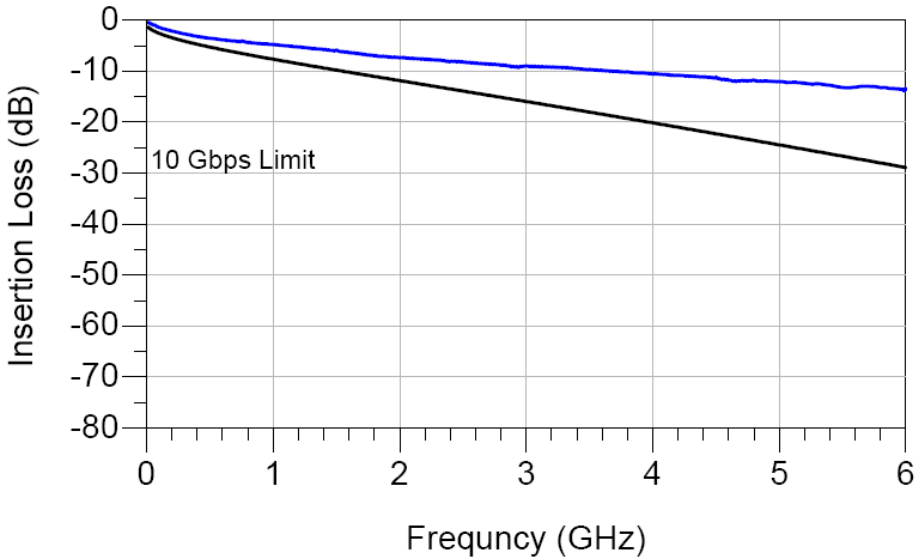
  - Cable Assemblies that have been characterized are at 0.5m, 4m, and 7m with 28AWG cable
  - 10m 24 AWG Cables are under test, and .s16p files will be available May 26th, 2008

Electrical Performance Update, Testing to IEEE802.3ap Backplane Requirements

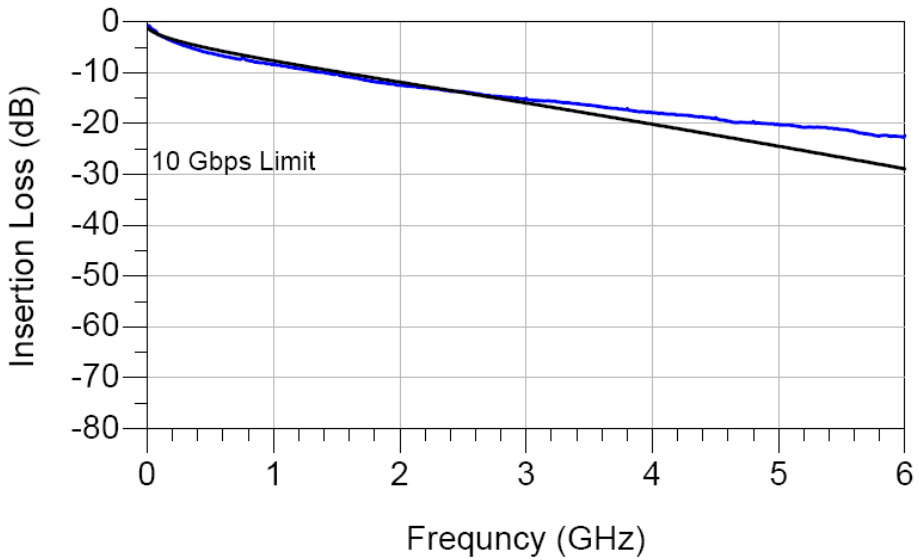
- The following data is taken in accordance with IEEE802.3ap, Annex 69B. The goal is to determine if a cable assembly can be held to the same requirements as a 10.3125 Gbps backplane implementation. All calculations assume the usage of TP1 and TP4 measurement points, with a maximum frequency of 6GHz.

Insertion Loss

- Measured insertion loss curves, including mated connector and through hole effects
  - Note: Loss characteristics of 26AWG should allow lengths to approach 10m. 25 or larger AWG cables, combined with low loss dielectrics may be required to meet 10m objective



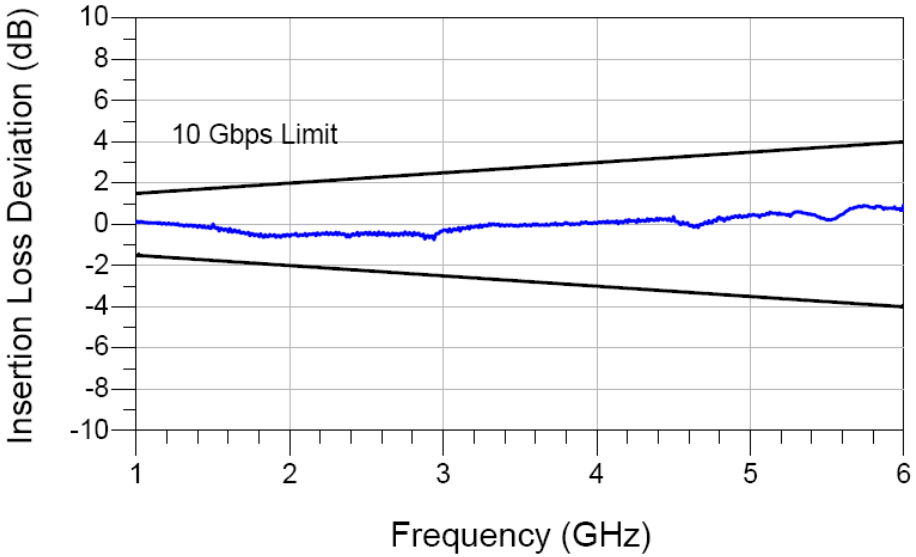
4.0 m, 28 AWG Cable Assembly



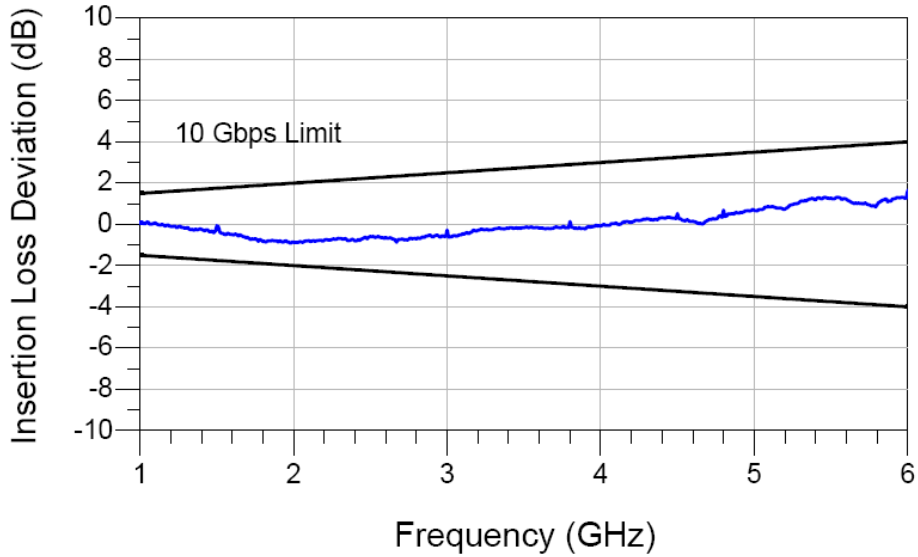
7.0 m, 28 AWG Cable Assembly

Insertion Loss Deviation

- Calculated cable assembly Insertion Loss Deviation, using measured cable performance



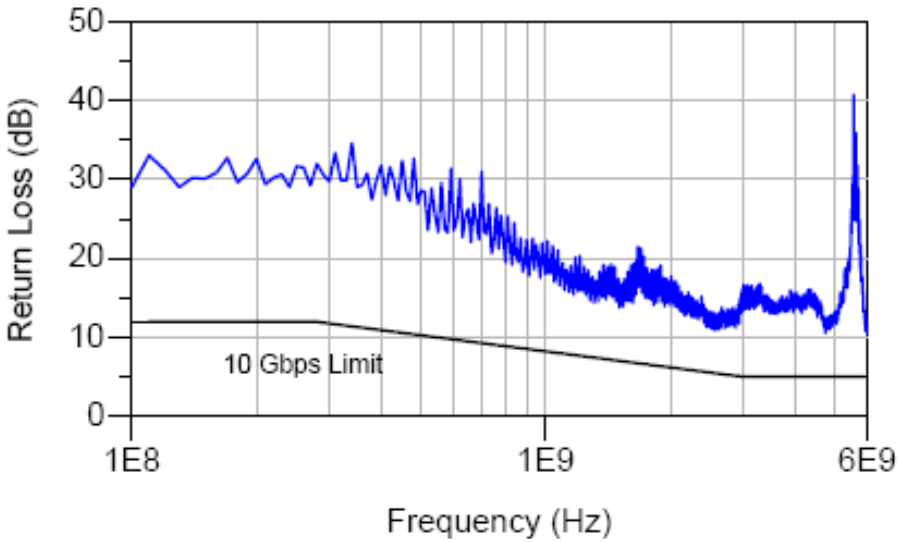
4.0 m, 28 AWG Cable Assembly



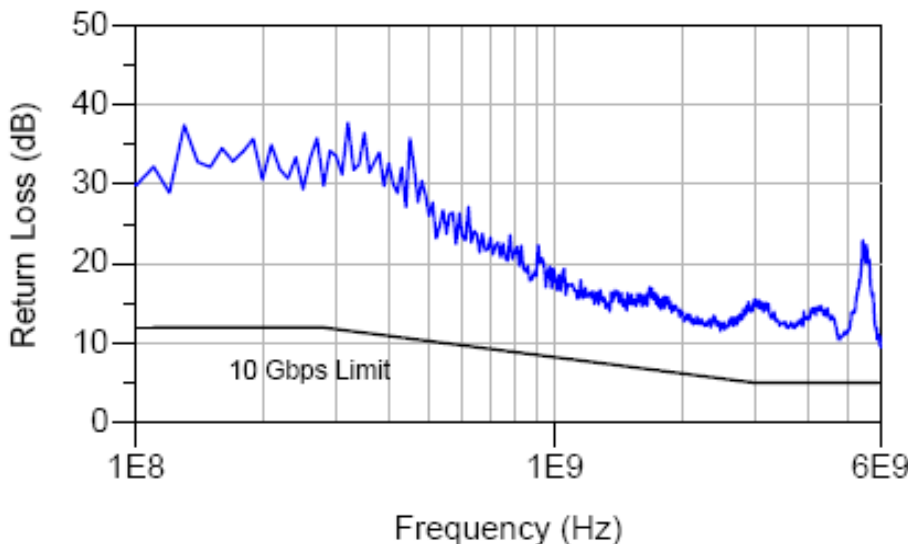
7.0 m, 28 AWG Cable Assembly

Return Loss

- Measured cable assembly return loss curves, including mated connector and through hole effects



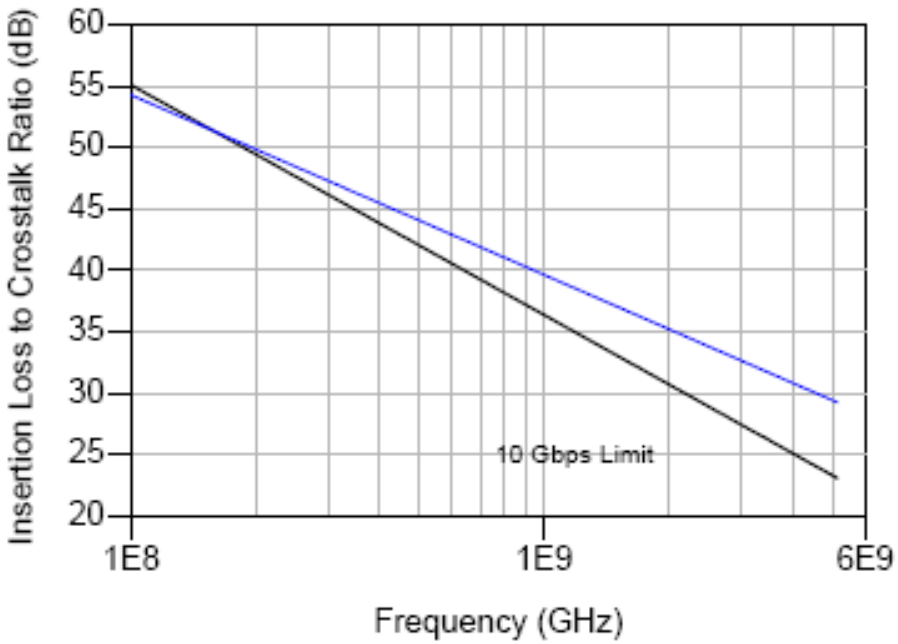
4.0 m, 28 AWG Cable Assembly



7.0 m, 28 AWG Cable Assembly

Insertion Loss to Crosstalk Ratio (dB)

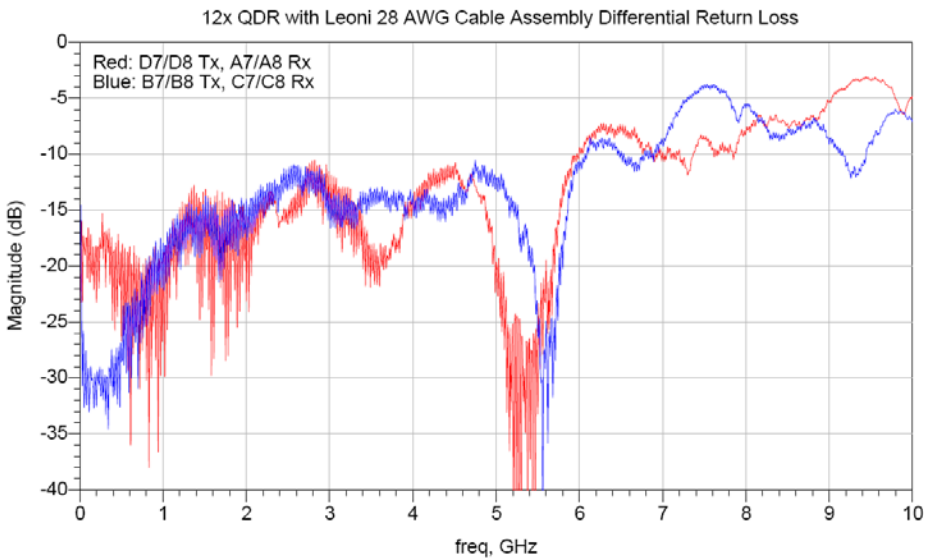
- Calculated cable assembly Insertion Loss to Crosstalk Ratio, using measured cable performance

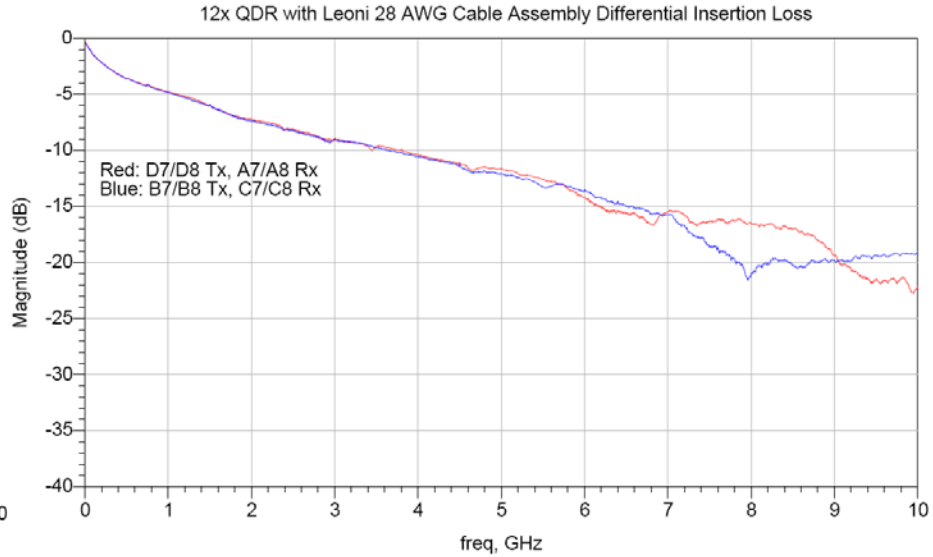


4.0 m, 28 AWG Cable Assembly

Insertion and Return Loss Performance (Leoni 28 AWG)

- 4m Cable Assembly (28 AWG, 100 Ohm)
- Data is de-embedded to include through-hole/connector/footprint
- Assembly is unequalized





Summary

- The measurements of the SFF-8092 cable assembly show the following compliance:
  - The measured return loss (S_{DD11}) meets the 802.3ap return loss limits.
  - The calculated insertion loss (S_{DD21}) meets the 802.3ap maximum attenuation limit. The fitted data will slightly exceed the maximum limit.
  - The insertion loss deviation falls within allowable limits
  - The connector specified in the SFF-8092 is an acceptable candidate for a 10X MDI assembly