

The Road to Make CR4/CR10 Plug and Play

IEEE 802.3ba

Dallas

Nov 11 2008

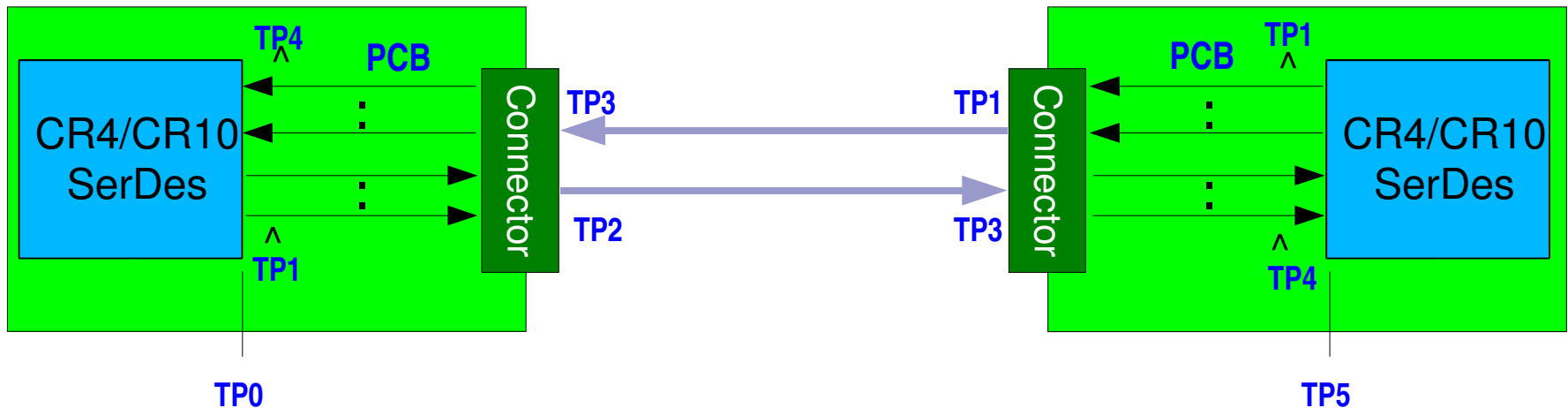
Ali Ghiasi
Broadcom Corporation
aghiasi@broadcom.com

Key Items Require Further Work

- **TP0 to TP1, TP4 to TP5, TP1 to TP2, and TP3 to TP4 loss**
- **How to test transmitter for compliance**
- **KR channel is not sufficient to support 10 m cable and practical host PCB traces**
- **Channel missing group delay or pulse response**
- **How to test receiver for compliance**
- **Jitter Methodology**

CR4/CR10 Link Block Diagram and Issues

- D1.0 Specifications is defined from TP0 to TP5, this kind of approach might have worked for KR which is not a traditional Ethernet front port requiring plug and play.
- For full interoperability following must be defined
 - Host output TP2
 - Host input stress TP3
 - PCB loss for TP0 to TP2 and TP3 to TP5



What Must be Defined for TP2

- **SFF-8431 approach can be utilized see Appendix E.2**
 - <ftp://ftp.seagate.com/sff/SFF-8431.PDF>
 - Other approach are acceptable as long as the method can be applied to real hardware.
- **TP2 parameters required for compliance are missing**
 - Output VMA suggest start with 360 mV p-p
 - Transmitter Qsq suggest start with 56 linear
 - Transmitter waveform penalty based on TWDP with value TBD
 - TWDP code convolves output waveform with cable impulse response to
 - determine the penalty.
 - Output AC common mode suggest start with 12 mV

What Must be Defined for TP3

- **SFF-8431 approach can be utilized see Appendix E.3**
 - <ftp://ftp.seagate.com/sff/SFF-8431.PDF>
 - Other approach are acceptable as long as the method can be applied to real hardware.
- **TP3 parameters required for compliance are missing**
 - Input VMA suggest start with 360 mV p-p
 - Input RN with value of TBD
 - Waveform Distortion Penalty for the ISI generator with WDP value of TBD
 - WDP is based on the pulse response of the 10 m reference cable.
 - Test equipment recreate the 10 m cable pulse response with appropriate RN value for noise and crosstalk loading.
 - Output AC common mode suggest start with 12 mV

Transmitter and Receiver PCB Loss

- KR reference channel does not allow practical implementation of host and 10 m cable reach.
 - 10 m cable result were based on 3" N4000-13 board with expected PCB loss of only 2.5 dB per end which will be equal to 2" of FR4-6!
 - KR loss limit need to increase to from 23.2 dB to 27.2 dB at Nyquist to allow practical PCB implementation and 10 m cable.

