CAUI-4 Ad hoc

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# Agenda

- Patent Policy: The meeting is an official IEEE ad hoc. Please review the patent policy at the following site prior to the meeting. http://www.ieee802.org/3/patent.html

- Presentation: rabinovich_01_042613_caui

- Measured CTLE results: latchman_01_042613_caui

- CAUI BER objective discussion

Example CTLE capability
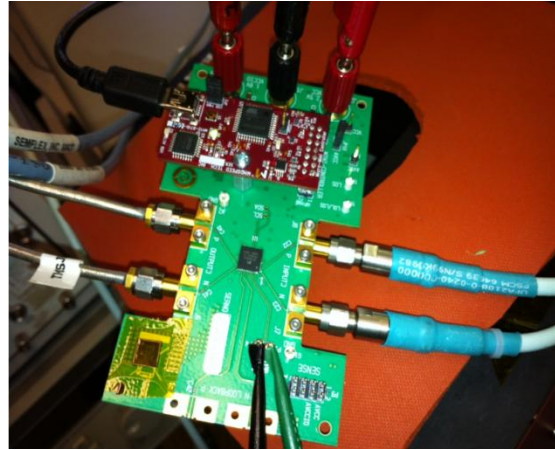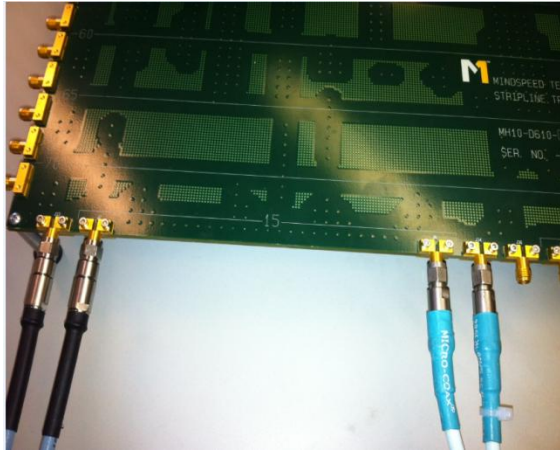
Error free performance with >25dB loss channel (not including evaluation board PCB/connector loss)
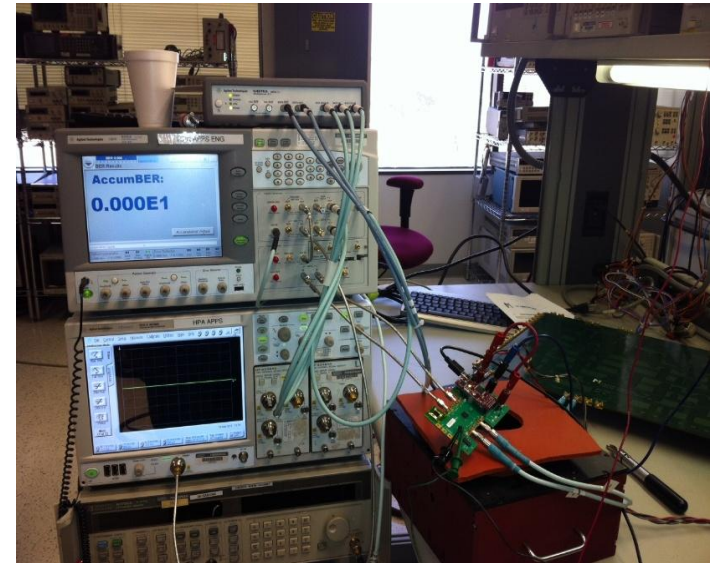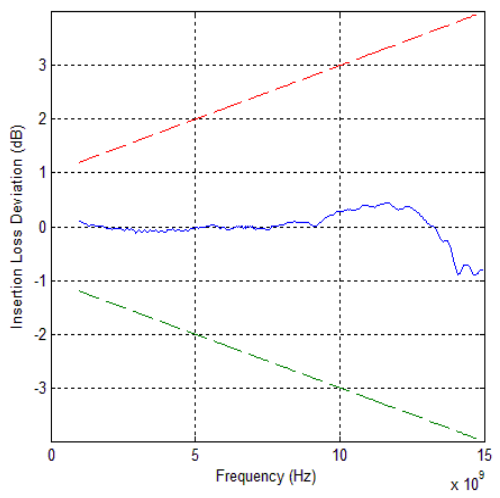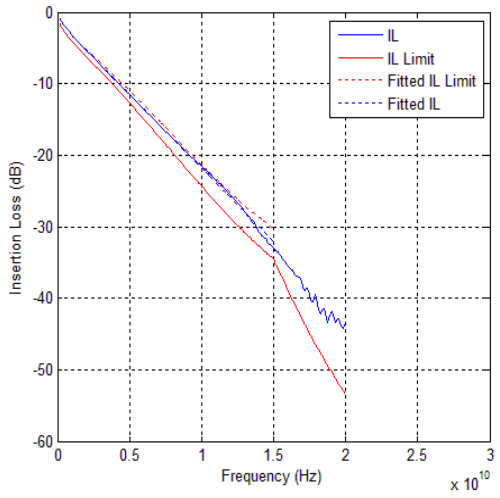
BER Discussion

OIF-28G-VSR	CR4
10^{-15} or better per lane	Transmit jitter: 10^{-12}

OIF VSR calculates eye width at 10-15 using the below equation:

"Eye width (EW15) at 10-15 probability is equal to (EW6-3.19*(RJL+RJR))"

San Antonio proposal modified extrapolation to 1E-12 (latchman_02_1112_optx)

Appendix: TJ Derivation for Host Tx (1/3)

Assumptions:
- DJ, RJ, and DN, RN are the same as CEI - 28G VSR
- BER for CEI - 28G VSR is at 1e -15, and for 802.3bm c2m is at 1e -12
- Dual - Dirac model for jitter and noise

Starting Eqs for TJs : namely $TJ_0(1e-15)$ and $TJ_1(1e-12)$

$$TJ_0 = DJ_0 + 2Q_0RJ_0 \quad (1)$$
$$TJ_1 = DJ_0 + 2Q_1RJ_0 \quad (2)$$

(2) - (1), and do re - arrangement, we will have

$$TJ_1 = TJ_0 + 2(Q_1 - Q_0)RJ_0 \quad (3)$$

Using $TJ_0 = 0.54\text{UI}, Q_0(1e-15) = 7.941, RJ_0 = (0.15/2Q_0)$ UI, from CEI – 28G VSR, and $Q_1(1e-12) = 7.035$, we get

$$TJ_1 = 0.5229 \approx 0.52 \text{ UI} \quad (4)$$

Appendix: EH Derivation for Host Tx (2/3)

Assumptions:
- DJ, RJ, and DN, RN are the same as CEI - 28G VSR
- BER for CEI - 28G VSR is at 1e -15, and for 802.3bm c2m is at 1e -12
- Dual - Dirac model for jitter and noise

Starting Eqs for EHs : namely $EH_0(1e-15)$ and $EH_1(1e-12)$

$$EH_0 = V_{pp} - TN_0 = V_{pp} - (DN_0 + 2Q_0RN_0) \quad (1)$$
$$EH_1 = V_{pp} - TN_1 = V_{pp} - (DN_0 + 2Q_1RN_0) \quad (2)$$

(2) - (1), and do re - arrangement, we will have

$$EH_1 = EH_0 - 2(Q_1 - Q_0)RN_0 \quad (3)$$

Using $EH_0 = 100$ mv, $Q_0(1e-15) = 7.941, RN_0 = 3$ mv, from CEI – 28G VSR, and $Q_1(1e-12) = 7.035$, we get

$$EH_1 = 105.436 \text{ mv} \approx 106 \text{ mv} \quad (4)$$

BER Path Forward

- Chip-module
  - BER 10-15 and eye opening values same as OIF 28G VSR (iterate)
  - BER 10-12 and eye opening values extrapolated from OIF 28G VSR (iterate)
  - BER 10-12 and eye opening values same as OIF 28G VSR (iterate)

- Chip-chip
  - BER 10-15, set eye opening / receiver interference tolerance / COM values accordingly
  - BER 10-12 set eye opening / receiver interference tolerance / COM values accordingly

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