

Micro Cable to Board Assembly with ERNI MicroSpeed[®] Connectors

Test 681 Rev. B
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Purpose

To determine the electrical performance of the Meritec micro cable to board assembly with ERNI MicroSpeed[®] connectors

Sample Tested

6 inch 38awg Meritec Micro Cable to Board Assembly with ERNI MicroSpeed[®] Connectors (5mm stack height) containing a total of 50 positions with 24 signals (12 differential pairs)

Results

The attenuation for the 6 inch cable assembly including the test boards (see Figure 1) is 2.5dB at 5GHz (see Figure 2).

A 12 inch cable assembly will output a well-defined eye at 10Gb/s (see Figure 3).

1st neighbor near-end crosstalk for the assembly is 0.64% (see Figure 4), measured with an incoming pulse risetime of 50ps (20-80%).

The impedance profile shows a maximum impedance mismatch of 7 ohms from the ideal 100 ohms differential impedance, with an incoming pulse risetime of 50ps (20-80%) (see Figure 5).

Test Equipment

Tektronix CSA8200 Digital Sampling Oscilloscope with 80E04 TDR sampling heads atSpeed's *Oculus*[™] for S-parameter extraction from TDR measurements

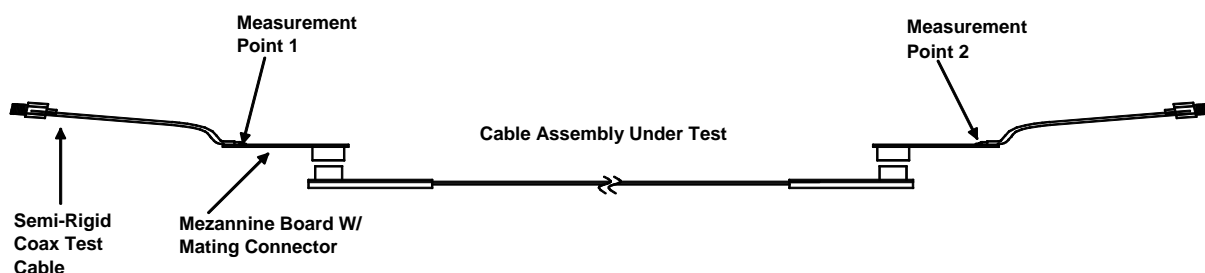


Figure 1) Test setup diagram

The mezzanine board with mating connector serves as the test board. It has microstrip traces that are 10 mils wide by approximately 0.3 inches long

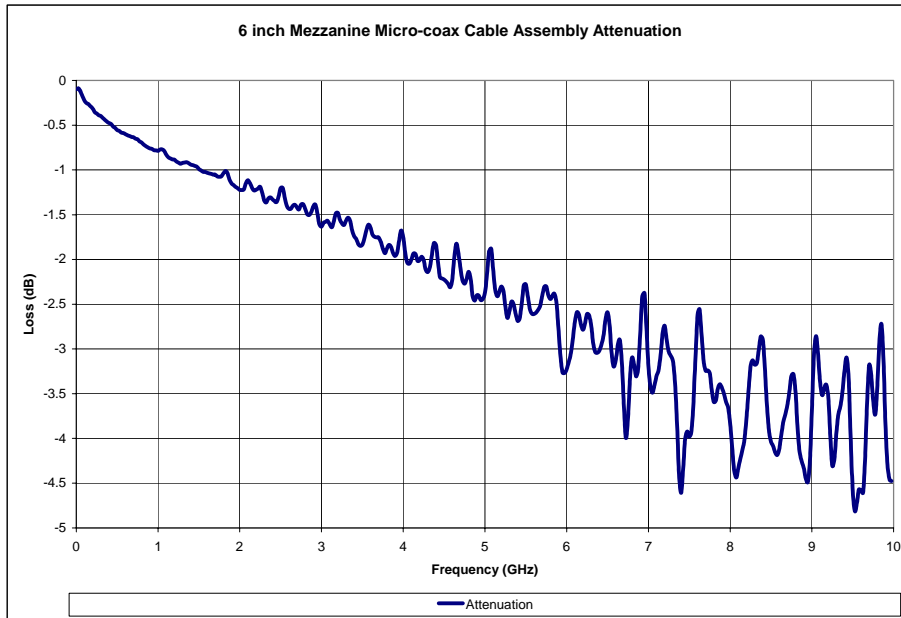


Figure 2) 6 inch cable assembly attenuation including the test boards at both ends (from measurement point 1 to measurement point 2 – see figure 1)

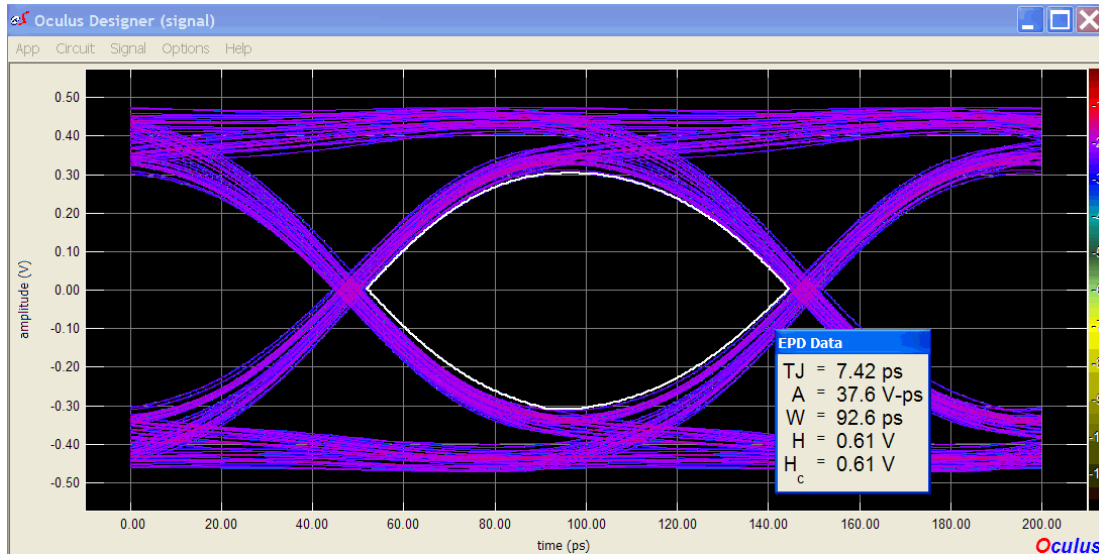


Figure 3) Simulated eye for a 12 inch cable assembly at 10Gb/s including the test boards at both ends (from measurement point 1 to measurement point 2 – see figure 1)

Input: 1000mv, 2⁷-1 PRBS, risetime 25% UI; Output: 610mv x 0.93 UI

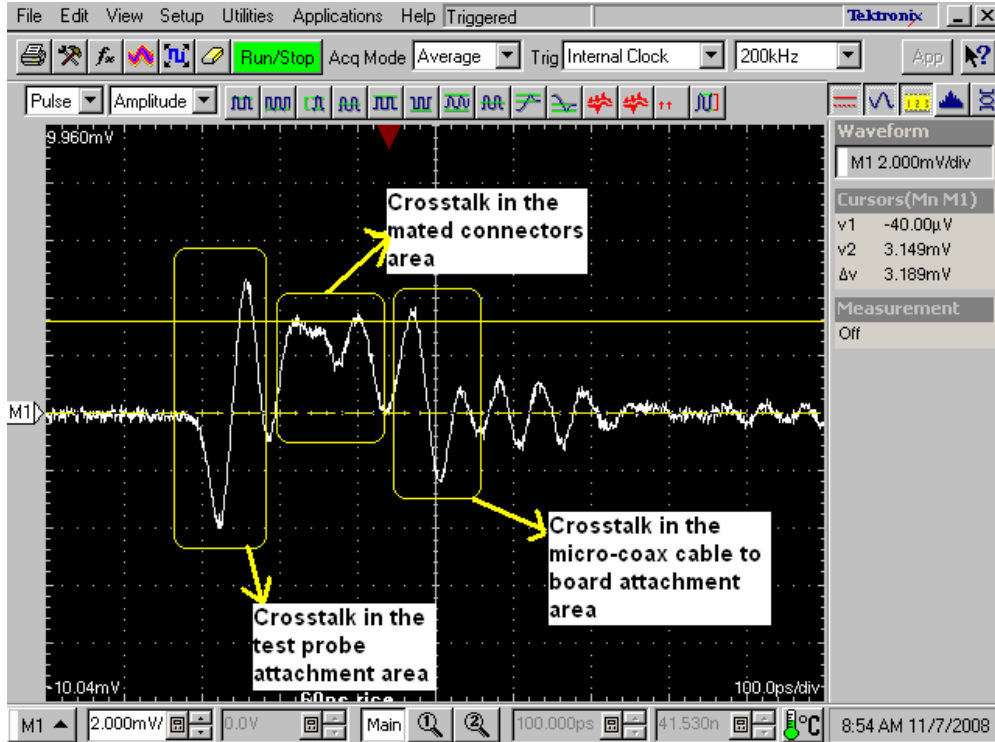


Figure 4) Cable assembly 1st neighbor near-end crosstalk in time domain with an incoming pulse risetime of 50ps (20-80%)
Worst case 1st neighbor near-end crosstalk for the assembly is 0.64%. The crosstalk at the test probe attachment area has been ignored.

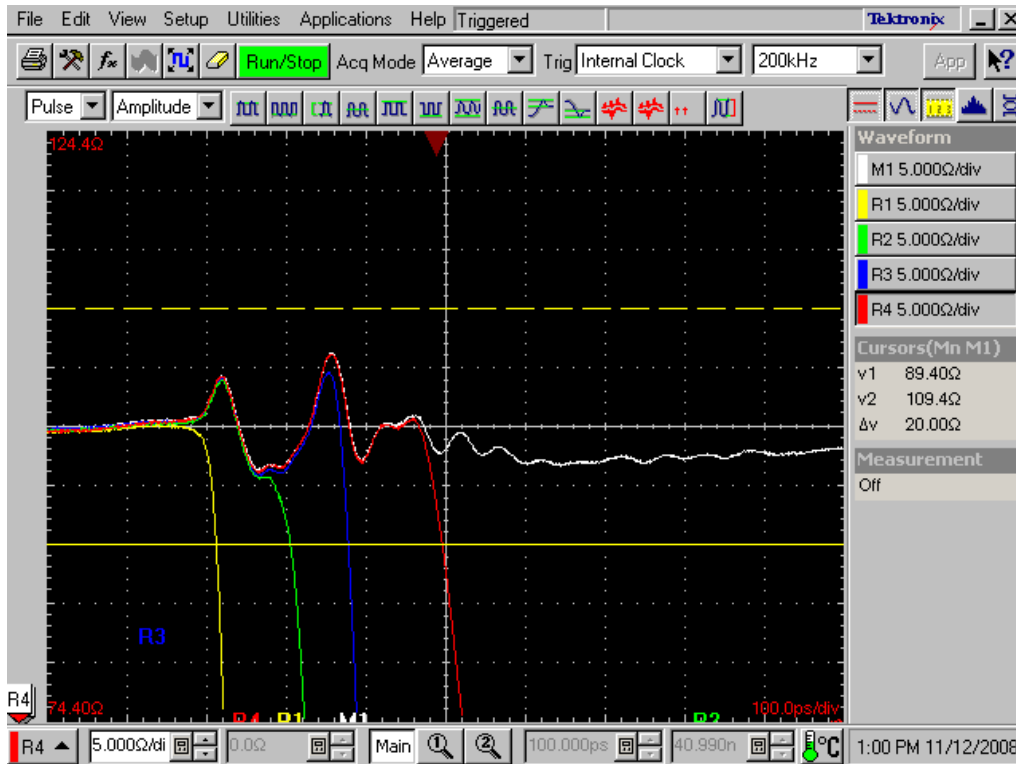


Figure 5) Differential impedance profile through the test board, the mated ERNI connectors, the paddle card and the beginning of the cable assembly
Yellow trace (R1) – short at the test semi-rigid probes to test board connection point (measurement point 1 – see figure 1)

Green trace (R2) – short at test board to the male ERNI receptacle attachment point
Blue trace (R3) – short at the female ERNI connector attachment to the paddle card
Red trace (R4) – short at the paddle card to the micro-coax cable attachment area
White trace (M1) – micro-coax cable impedance

The test board sits between the yellow and green traces. The two mated connectors sit between the green and blue lines. The cable assembly paddle card sits between the blue and red traces.

Horizontal yellow lines represent 100 +/- 10 ohms with the center of the screen being 100 ohms.