DOC. NO.: X3T9.2/92-150

TO: Bill Spence
ANSI X3T9.2 SPI Working Group Committee Chairman

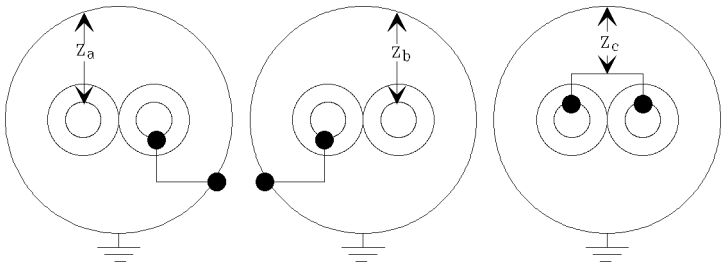
From: Tom Debiec
Berk-Tek, Inc.

Date: August 10, 2000

Subject: Proposal for SPI Cable Test Procedures

1) Differential Impedance

On a 20 ft. cable sample length, select the pair to be measured. Tie all other wires and the shield together. Using a time domain reflectometer with a 500 picosecond maximum rise time, make the three measurements indicted in the figure below. The values for each measurement are to be averaged between 2 and 4 nanoseconds from the test fixture/cable interface.



Calculate the differential impedance of the cable using the following equation:

$$\frac{4Z_c(Z_a+Z_b)}{8Z_c-(Z_a+Z_b)}$$

Differential impedance measurements may also be performed using single and dual step differential time domain reflectometers.

2) Single End Mode Impedance

Using a time domain reflectometer with a 500 picosecond maximum rise time, on a 20 ft. cable sample length, measure the cable impedance between the signal wire of a particular pair and the ground wire of all pairs connected to the shield. The impedance will be averaged between 2 and 4 nanoseconds from the test fixture/cable interface.

3) Propagation Delay

Propagation delay is the time it takes a signal to traverse a length of cable. Using a pulse generator with a 1 nanosecond maximum rise time and an oscilloscope or a time domain reflectometer, on a 20 ft. cable sample length, select the pair to be evaluated. The shield and other pairs are unterminated. Measure the difference between the input and output signal corresponding to the 50% level.

4) Propagation Delay Skew

Propagation delay skew is the difference between the maximum and minimum measured propagation delay.

5) Attenuation

Measured in accordance with ASTM D-4566 at a test frequency of 5 Mhz.

6) D. C. Resistance

Measured in accordance with ASTM D-4566.