Zmetrix Calibrations – Part 1

Zmetrix TDRs are calibrated using NIST traceable precision coaxial airline standards. These standards are called out in the IPC Test Methods Manual, and are the internationally accepted impedance standards for TDRs. The example shown below is a 28 Ohm airline purchased by Zmetrix from Maury Microwave, located in Ontario California.

Precision Coaxial Airlines are considered primary standards. From these primary standards, Zmetrix creates secondary standards, known as semi-rigid standards for everyday use in calibrations. These secondary standards, and their use are also called out in the IPC Test Methods Manual.

Zmetrix calibrations use these semi-rigid standards as part of the normal calibration process. These semi-rigid standards are compared to the primary standards annually to determine if wear in the connectors indicates that a new set of secondary standards is necessary. Typical measurement deviation at year end that would indicate replacement of the secondary standards is less than 0.1 ohms.

Semi-rigid standards are created from cables sold by manufacturers in standard values of 25, 50, 75 and 100 ohms. Using a TDR that has been calibrated directly from the primary standards, these cable values can be measured exactly to create a set of 8 semi-rigids that will be used to do standard calibrations. Each set contains 2 semi-rigid standards of each of the 4 impedance values (25, 50, 75, 100). This allows calibrations of both single-ended, and differential TDR channels with one set of secondary standards.

Zmetrix calibrations characterize each TDR channel (either single-ended, or differential) to 4 calibrated points, using the semi-rigid standards. Single-ended channels are calibrated to 25, 50, 75, and 100 ohms, using an algorithm that creates an equation for the performance of the channel over all points between 25 and 100 ohms. Differential channels are calibrated to 50, 100, 150, and 200 ohms, and cover the range from 50 to 200 ohms.

Zmetrix calibration procedures comply with ANSI Z540-1 and MIL-STD-45662.

The accuracy of a Zmetrix TDR channel is +/- 1% over the range of the channel.

Zmetrix Calibrations – Part 2

As part of compliance with ANSI Z540-1 and MIL-STD-45662, those who calibrate Zmetrix TDR's must be certified by Zmetrix that they are trained to Zmetrix calibration procedures, use the approved primary and secondary calibration standards, and document all relevant calibration parameters, certificates, electronic files, environmental conditions, etc..

Zmetrix has a calibration training program in place to train, qualify and certify calibration lab personnel to meet the exacting standards necessary to ensure the accuracy of Zmetrix TDRs worldwide.