1.85mm TRL/LRL Calibration Kits

DATA SHEET / 2Z-056

Models:
7850CK30 – TRL Kit
7850CK31 – TRL Kit Plus Adapters
The Importance of VNA Calibration

Imperfections exist in even the finest test equipment. If un-corrected these systematic imperfections cause the equipment to yield less accurate measurements. The basis of network analyzer error correction is referred to as “calibration” of which multiple methods exist.

Calibration Method

TRL calibration, using Thru, Reflect and Line standards, relies on the characteristic impedance of the air lines (Line). TRL calibration is the most accurate method of measuring devices at low (typically better than 40 dB return loss) and high reflection coefficients.

TRL, LRL & TRM Calibration

TRL is typically used as a general term to represent any of these three specific types of calibration (TRM/TRL/LRL). Specifically, these three types of calibration are:

- TRM – Thru, Reflect, Match
- TRL – Thru, Reflect, Line
- LRL – Line, Reflect, Line

TRM is used for low frequencies where a very long air line would be required for the line standard. TRL is used for mid-frequencies where the appropriate line lengths are achievable to reach the 30°–150° phase delay over the frequency band. LRL is used for high frequencies where air line standards become too short to be practical, so the desired delay is achieved as the delta between a reference air line and a longer air line.

7850CK30/31 kits provide all of the calibration standards needed to perform TRL, TRM and LRL calibrations and are specifically configured for use under these three calibration methods. Source match can also be measured using the 3.00cm air line with the short circuit provided.

Recommended Accessories

A048A Digital Connector Gage Kit:
Contains two “thread-on” type, digital gages for measuring female and male contact pin location. They provide an easy and accurate way to measure critical linear interface dimensions of 1.85mm and 2.4mm coaxial connectors.

8799A1 5/16-inch Precision Torque Wrench (8.0 inch lbs):
For proper torquing of 1.85mm, 2.4mm, 2.92mm and 3.5mm connections. Factory preset to 8.0 inch lbs to ensure the precise torque needed for optimum repeatability. Employs a “break” design that makes it impossible to over-torque your connections. These torque wrenches are provided with 7850CK20/21 and 7850CK30/31 kits, and are highly recommended for use with 7850CK10/11 kits.

7821A/B/C 1.85mm in-series adapters (specifications on page 3)
Recommended for the 7850CK30 kits; included in the 7850CK31 kits.

7809A1 & 7809A2 1.85mm NMD test port adapters:
Precision 1.85mm to NMD1.85mm; DC–67.0 GHz. Saves unnecessary wear and tear on your VNA test port connectors.

Go to www.maurymw.com/Precision/Adapters.php to see all Maury 1.85mm in-series and between series adapters.
Kit Description

These precision 1.85mm TRL/LRL calibration kits are designed for use with a broad range of vector network analyzers (VNAs) and are used to make error-corrected measurements, from DC to 67 GHz, for devices supplied with 1.85mm connectors. Each kit includes a full complement of calibration standards (shorts, fixed loads and air lines). Three 1.85mm in-series, calibration-grade (metrology), adapters are included in the 7850CK31 kits but are not included in the 7850CK30 kits. All kit components are provided in an attractive foam-lined, wood instrument case.

Components Included in 7850CK30 Kits

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>MODEL</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1.85mm female fixed short circuit (0.5cm)</td>
<td>7846A</td>
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<tr>
<td>1</td>
<td>1.85mm male fixed short circuit (0.5cm)</td>
<td>7847A</td>
</tr>
<tr>
<td>1</td>
<td>1.85mm female fixed termination</td>
<td>7831A1</td>
</tr>
<tr>
<td>1</td>
<td>1.85mm male fixed termination</td>
<td>7831B1</td>
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<tr>
<td>1</td>
<td>1.85mm female to male air line (0.96cm)</td>
<td>7843S0.96</td>
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<tr>
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<td>1.85mm female to male air line (1.15cm)</td>
<td>7843S1.15</td>
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<tr>
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<td>1.85mm female to male air line (3.00)</td>
<td>7843S3.00</td>
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<tr>
<td>1</td>
<td>Torque wrench (8 in. lbs)</td>
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<tr>
<td>1</td>
<td>5/16-inch double end wrench</td>
<td>8770Z6</td>
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<td>1</td>
<td>3/16-inch double end wrench</td>
<td>7960Z1</td>
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<tr>
<td>1</td>
<td>Foam-lined wood instrument case</td>
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COMPONENT SPECIFICATIONS

Air Lines – Models 7843S0.96, 7843S1.15 & 7843S3.00
Frequency Range -- DC to 67.0 GHz
Electrical Length:
- 7843S0.96 -- 0.96cm
- 7843S1.15 -- 1.15cm
- 7843S3.00 -- 3.00cm
Electrical Length Accuracy -- 0.0005cm
Minimum Return Loss (excluding connector interface) -- 48 dB
Nominal Impedance -- 50 ohm

Fixed Terminations - Models 7831A1 & 7831B1
Frequency Range -- DC to 67.0 GHz
Maximum VSWR:
- DC to 1 GHz -- 1.02
- 1 to 10 GHz -- 1.07
- 10 to 26.5 GHz -- 1.10
- 26.5 to 67.0 GHz -- 1.20
Power Handling -- 0.5 watt CW, 0.25 kW peak
Nominal Impedance -- 50 ohm

Fixed Shorts - Models 7846A & 7847A
Frequency Range -- DC to 67.0 GHz
Minimum Reflection Coefficient -- 0.98
Nominal Impedance -- 50 ohm
Phase Accuracy -- ±2.0 degrees

Precision 1.85mm In-series Adapters
Models 7821A/B/C (1.85mm to 1.85mm)
Frequency Range -- DC to 67.0 GHz
Maximum VSWR:
- DC to 26.5 GHz -- 1.06
- 26.5 to 40.0 GHz -- 1.10
- 40.0 to 67.0 GHz -- 1.15
Nominal Impedance -- 50 ohm

NOTE: These adapters are included in the 7850CK31 kits, but are not included in the 7850CK30 kits

Connector Description
The precision 1.85mm connectors on the components in this kit are miniature, instrument grade, air-interface connectors that operate mode free up to 67 GHz, and comply with IEEE standard 287 general precision connector, instrument grade GPC1.85. For detailed interface specifications please refer to Maury data sheet 5E-089.

1.85mm Connector Interface

[Diagram of connector interface]
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OUR PRODUCTS

www.maurymw.com