

1.85mm TRL/LRL Calibration Kits

DATA SHEET / 2Z-056

Models:

7850CK30 – TRL Kit

7850CK31 – TRL Kit Plus Adapters



1.85mm VNA Calibration Kits

7850CK30/31 SERIES

Features

- > 1.85mm Connectors
- > DC to 67 GHz (Operates to 70 GHz)
- > Keysight, Rhode & Schwarz and Anritsu VNAs Supported

Calibration Methods Supported

- > TRM – Thru-Reflect-Match (DC to 800 MHz)
- > TRL – Thru-Reflect-Line (800 MHz to 13.0 GHz)
- > LRL – Line-Reflect-Line (13.0 to 67.0 GHz)

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.

A048A



8799A1



7821A

7821B

7821C



7809A1

7809A2



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

QUANTITY	DESCRIPTION	MODEL
1	1.85mm female fixed short circuit (0.5cm)	7846A
1	1.85mm male fixed short circuit (0.5cm)	7847A
1	1.85mm female fixed termination	7831A1
1	1.85mm male fixed termination	7831B1
1	1.85mm female to male air line (0.96cm)	7843S0.96
1	1.85mm female to male air line (1.15cm)	7843S1.15
1	1.85mm female to male air line (3.00)	7843S3.00
1	Torque wrench (8 in. lbs)	8799A1
1	5/16-inch double end wrench	8770Z6
1	3/16-inch double end wrench	7960Z1
1	Foam-lined wood instrument case	—

7850CK30



Components Included in 7850CK31 Kits

QUANTITY	DESCRIPTION	MODEL
1	1.85mm female fixed short circuit (0.5cm)	7846A
1	1.85mm male fixed short circuit (0.5cm)	7847A
1	1.85mm female fixed termination	7831A1
1	1.85mm male fixed termination	7831B1
1	1.85mm female to male air line (0.96cm)	7843S0.96
1	1.85mm female to male air line (1.15cm)	7843S1.15
1	1.85mm female to male air line (3.00)	7843S3.00
1	1.85mm female to 1.85mm female	7821A
1	1.85mm male to 1.85mm male	7821B
1	1.85mm female to 1.85mm male	7821C
1	Torque wrench (8 in. lbs)	8799A1
1	5/16-inch double end wrench	8770Z6
1	3/16-inch double end wrench	7960Z1
1	Foam-lined wood instrument case	—

7850CK31



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 50.0 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 50 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

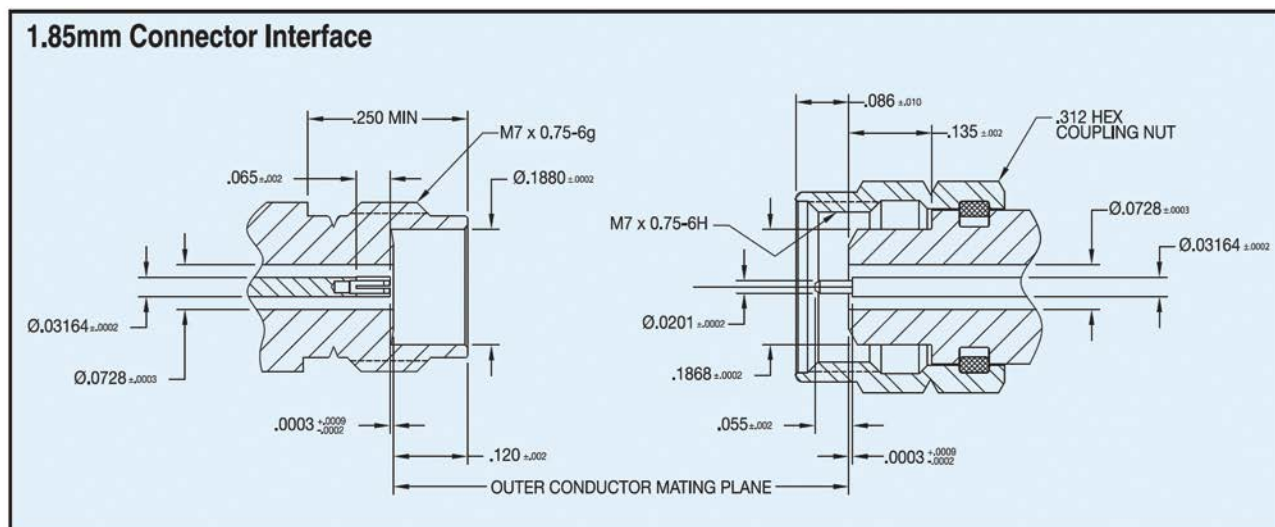
40.0 to 67.0 GHz -- 1.15

Nominal Impedance -- 50 ohm

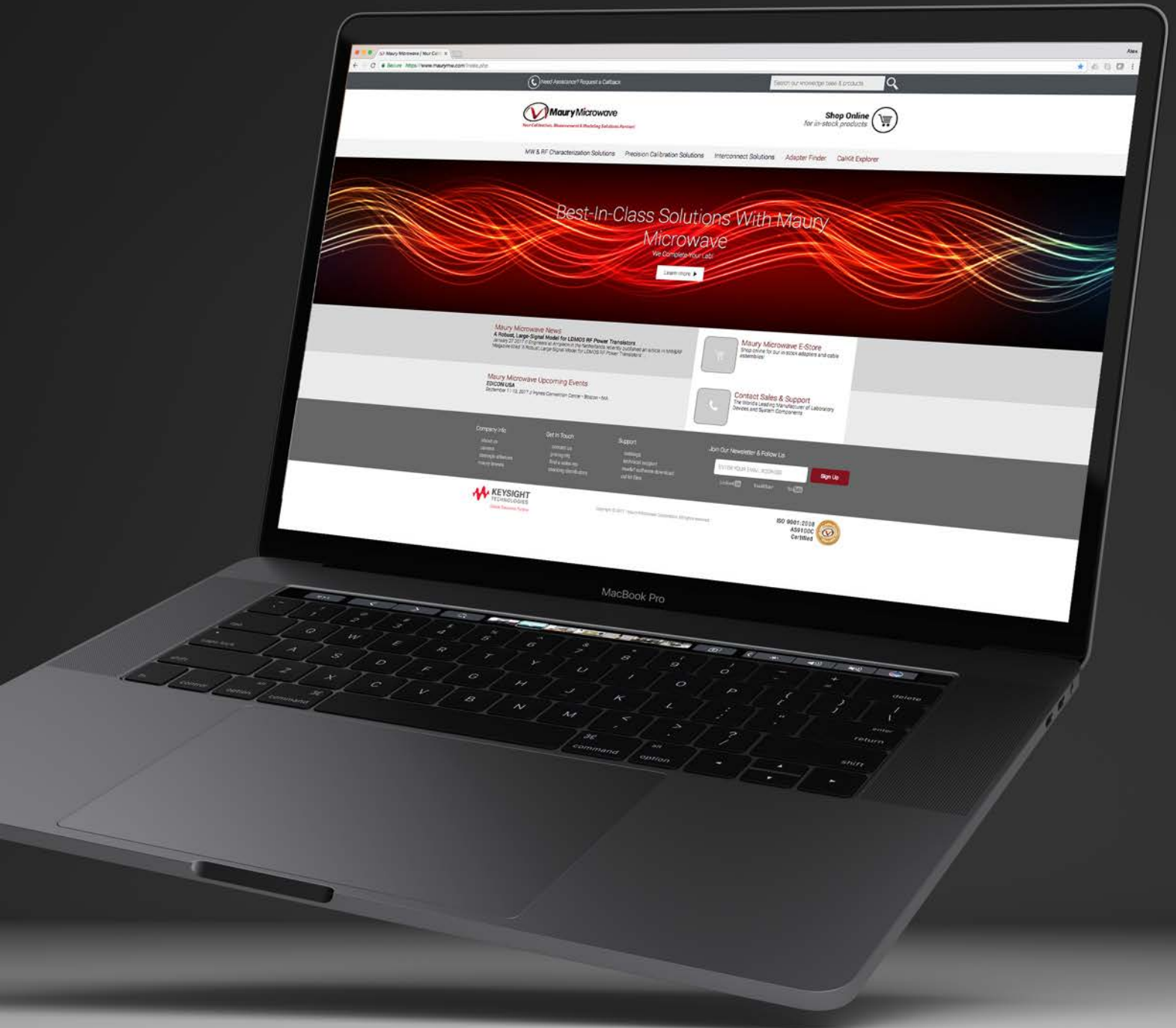
NOTE: These adapters are included in the 7850CK31 kits, but are not included in the 7850CK30 kits)

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.



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