

2.4mm VNA Calibration Kits

DATA SHEET / 2Z-072

Models:

7950CK40 – Fixed Load SOLT Kit

7950CK41 – Fixed Load SOLT Kit with Adapters

7950CK50 – Characterized Device (CD) Fixed Load SOLT Kit

7950CK51 – Characterized Device (CD) Fixed Load SOLT Kit with Adapters



2.4mm VNA Calibration Kits

7950CK40/41 SERIES AND
7950CK50/51 SERIES

Features

- > 2.4mm Connectors
- > DC to 50 GHz
- > Compatible with Insight calibration SW and uncertainty analysis*
- > Keysight, Rohde & Schwarz and Anritsu VNAs Supported

Calibration Methods Supported

- > 7950CK40/41 – Fixed Load SOLT (0.05-50 GHz)
- > 7950CK50/51 – Characterized Device (CD) SOLT (0.5–50 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 Methods

SOLT calibration is performed using Short, Open and Load standards, which are described by a polynomial equation. The equation is developed using the average performance of a large sample of identical standards, and is then shared by all calibration kits of the same series. In addition, the fixed-load SOLT methodology uses a fixed termination to define the 50ohm reference, where the lowest measurable return loss is determined by the return loss of the fixed termination, typically better than 20dB. This makes fixed-load SOLT with polynomial definitions ideal for measuring devices with mid-range reflection coefficients.

SOLT calibration can also be performed using individually characterized standards, referred to as Characterized Device (CD) fixed-load SOLT calibration. In this case,

each standard is individually measured and its S-parameters are used as an integral part of the calibration, and the polynomial equation is no longer used. The advantage of this technique is that the calibration accuracy is increased due to the elimination of average performance in the polynomial definition, and the lowest measurable return loss is improved.

Characterized Device (CD) kits also allow for uncertainty evaluation of a device under test. Each CD kit is shipped with a set of factory uncertainty data compatible with MT940-series Insight VNA calibration and measurement software.

7950CK40/41/50/51 kits are configured for use in performing one-port SOL (Short-Open-Load) response calibrations (a method used for measuring VSWR/ Return Loss), and full two-port SOLT (Short-Open-Load-Thru) calibration (for performing forward and reverse transmission and reflections measurement).

7950CK41/51 kits include three 2.4mm in-series adapters for applications that require female/female, male/male, or male/female connections. A wide range of between-series adapters in 2.4mm to other types and special VNA test port adapters (NMD type) are also available by separate order.

A048A



8799A1



7909A3

7909A4



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 all kits.

7909A3 & 7909A4 2.4mm NMD test port adapters:

Precision 2.4mm to NMD2.4mm; DC–50.0 GHz. Saves unnecessary wear and tear on your VNA test ports.

Go to www.maurymw.com/Precision/Adapters.php to see all Maury 2.4mm in-series and between series adapters.

** Cal kit factory uncertainty only available in conjunction with Insight MT940B option.*

Verification Kits:

Have confidence in your S-parameter measurements by validating your VNA calibration. Maury verification kits are designed for 1-port and 2-port VNA calibration validation for well-matched and mismatched DUTs by comparing the S-parameters of user-characterized and factory- characterized verification standards, with or without measured

uncertainty boundaries. More information regarding Verification Kits can be found in data sheet [2Z-077](#).

Insight Calibration and Measurement Software:

Insight is the industry’s first commercial software suite designed to empower VNA users and help them make better decisions by quantifying measurement

uncertainty. Insight is an agnostic software tool compatible with most commercial VNAs and represents a paradigm shift in the way users approach VNA calibration, validation, measurement, visualization and analysis. More information regarding Insight can be found in data sheet [4T-023](#).

Maury 2.4mm VNA Calibration Kits

Maury precision 2.4mm VNA calibration kits include each of the calibration standards and tools shown in the tables at the right. The 7950CK40/50 kits do not include adapters; the 7950CK41/51 kits include one each of the in-series adapters shown. Other in-series and between series adapters are sold separately.

Components Included in 7950CK40/41 Kits

QUANTITY	DESCRIPTION	MODEL
1	2.4mm female fixed short circuit	7946A2
1	2.4mm male fixed short circuit	7946B2
1	2.4mm female open circuit termination	7948A2
1	2.4mm male open circuit termination	7948B2
1	2.4mm female fixed termination	7931A2
1	2.4mm male fixed termination	7931B2
1*	2.4mm female to 2.4mm female adapter	7921A1
1*	2.4mm male to 2.4mm male adapter	7921B1
1*	2.4mm female to 2.4mm male adapter	7921C1
1	Foam-lined wood Instrument case	—
1	5/16-inch torque wrench — 8 in. lbs.	8799A1
1	5/16-inch double end wrench	8770Z6

* These adapters are provided in the 7950CK41 kits, but are not included in the 7950CK40 kits.

Components Included in 7950CK50/51 Kits

QUANTITY	DESCRIPTION	MODEL
1	2.4mm female fixed short circuit	7946A2
1	2.4mm male fixed short circuit	7946B2
1	2.4mm female open circuit termination	7948A2
1	2.4mm male open circuit termination	7948B2
1	2.4mm female fixed termination	7931A2
1	2.4mm male fixed termination	7931B2
1*	2.4mm female to 2.4mm female adapter	7921A1
1*	2.4mm male to 2.4mm male adapter	7921B1
1*	2.4mm female to 2.4mm male adapter	7921C1
1	Foam-lined wood Instrument case	—
1	5/16-inch torque wrench — 8 in. lbs.	8799A1
1	5/16-inch double end wrench	8770Z6

* These adapters are provided in the 7950CK51 kits, but are not included in the 7950CK50 kits.

7950CK40



7950CK41



7950CK50



7950CK51



COMPONENT SPECIFICATIONS



Fixed Terminations – Models 7931A2 & 7931B2

Frequency Range -- DC to 50.0 GHz

Maximum VSWR:

DC to 4.0 GHz -- 1.02

4.0 to 50.0 GHz -- 1.16

Power Handling -- 0.5 watt CW, 0.25 kW peak

Nominal Impedance -- 50 ohm



Open Circuits – Models 7948A2 & 7948B2

Frequency Range -- DC to 50.0 GHz

Minimum Reflection Coefficient -- 0.98

Phase Accuracy -- ± 2.0 degrees

Nominal Impedance -- 50 ohm



Fixed Shorts – Models 7946A2 & 7946B2

Frequency Range -- DC to 50.0 GHz

Minimum Reflection Coefficient -- 0.98

Phase Accuracy -- ± 2.0 degrees

Nominal Impedance -- 50 ohm



Precision 2.4mm Adapters – Models 7921A1/B1/C1

Frequency Range -- DC to 50.0 GHz

Maximum VSWR:

DC to 26.5 GHz -- 1.06

26.5 to 40.0 GHz -- 1.10

40.0 to 50.0 GHz -- 1.15

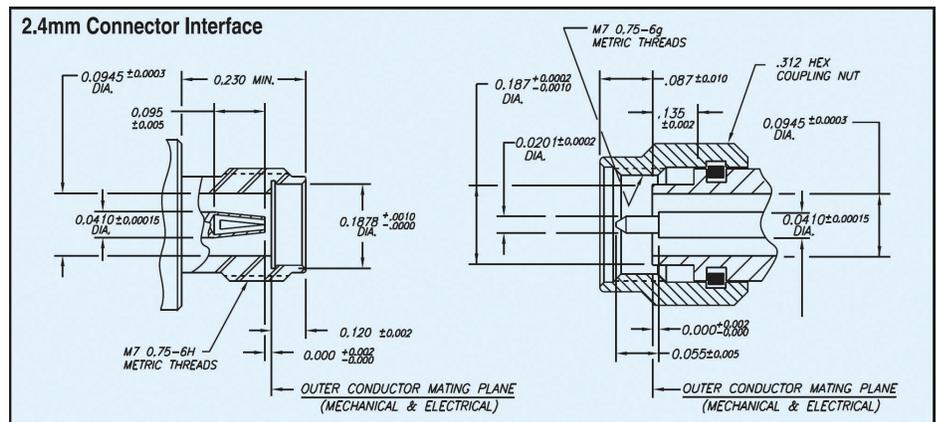
Nominal Impedance -- 50 ohm

(Note: These adapters are included in the 7950CK41/51 kits, but are not included in the 7950CK40/50 kits.)

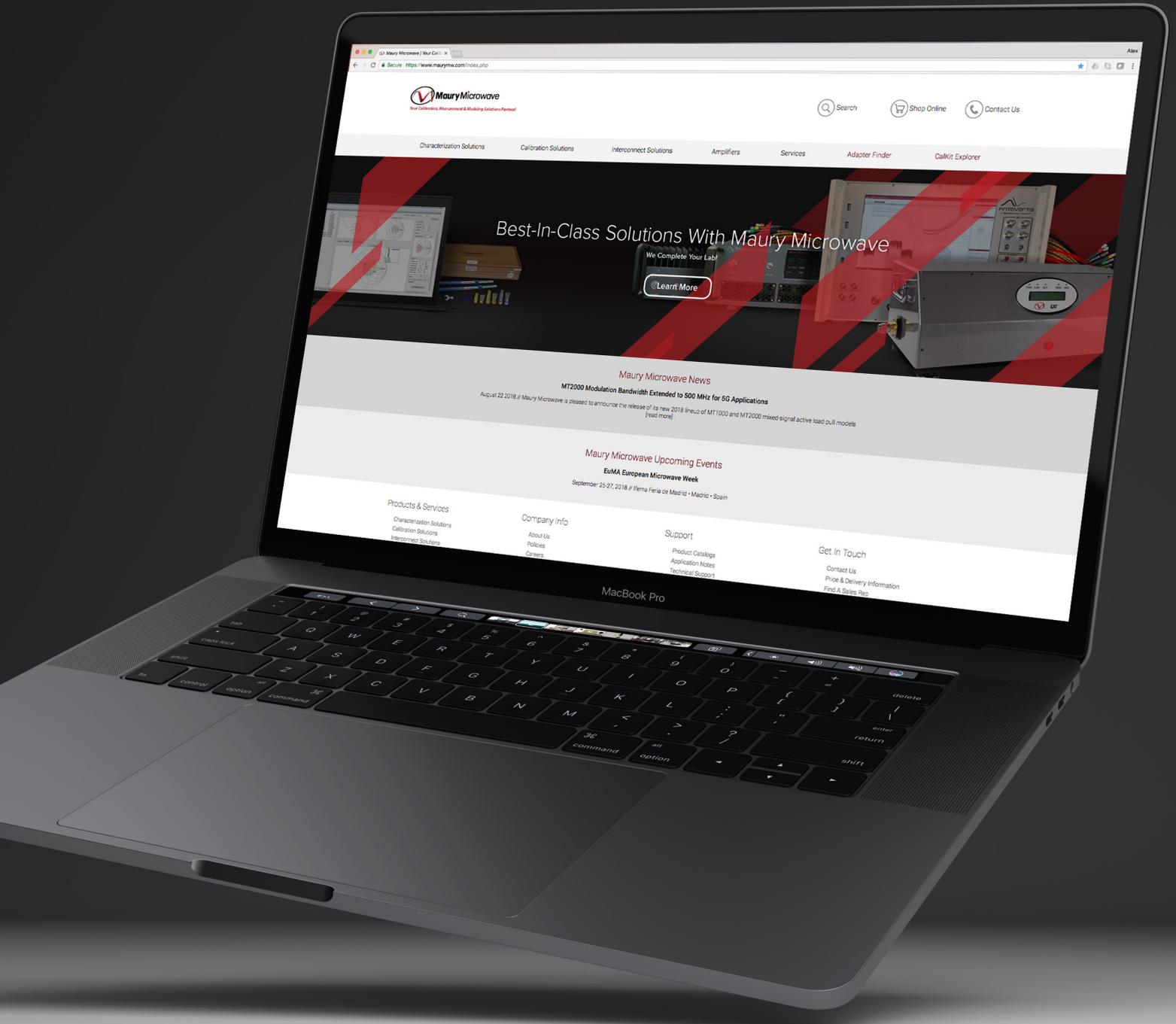
Connector Description

The precision 2.4mm connectors on the components in these kits are miniature, instrument grade, air-interface connectors that operate mode free up to 50 GHz, and comply with IEEE standard 287 general precision connector, instrument grade GPC2.4.

For detailed interface specifications please refer to Maury data sheet 5E-064.



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