

# Type N VNA Calibration Kits

DATA SHEET / 2Z-076

Models:

8850CK40 – Fixed Load SOLT Kit

8850CK41 – Fixed Load SOLT Kit with Adapters

8850CK50 – Characterized Device (CD) Fixed Load SOLT Kit

8850CK51 – Characterized Device (CD) Fixed Load SOLT Kit with Adapters



# Type N VNA Calibration Kits

8850CK40/41 SERIES AND  
8850CK50/51 SERIES

## Features

- > Type N Connectors
- > DC to 18 GHz
- > Compatible with Insight calibration SW and uncertainty analysis\*
- > Keysight, Rohde & Schwarz and Anritsu VNAs Supported

## Calibration Methods Supported

- > 8850CK40/41 – Fixed Load SOLT (DC–18.0 GHz)
- > 8850CK50/51 – haracterized Device (CD) SOLT (0.05–18.0 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 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-rage 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.

8850CK40/41/50/51 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).

8850CK41/51 kits include three Type N in-series adapters for applications that require female/female, male/male, or male/female connections. A wide range of between-series adapters in Type N to other types and special VNA test port adapters (NMD type) are also available by separate order.

A020K



## Recommended Accessories

### A020K 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 Type N coaxial connectors.

2698C2



### 2698C2 3/4-inch Precision Torque Wrench (12.0 inch lbs):

For proper torquing of 7mm, LPC7, Type N, NMD3.5, NMD2.92 NMD2.4 connections. Factory preset to 12.0 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.

7909D3 7909D4 8829A1 8829B1



### 8829A1 & 8829B1 Type N to 3.5mm NMD test port adapters:

Precision Type N to NMD3.5mm; DC–18.0 GHz. Saves unnecessary wear and tear on your VNA test ports.

### 7909D3 & 7909D4 Type N to 2.4mm NMD test port adapters:

Precision Type N to NMD2.4mm; DC–18.0 GHz. Saves unnecessary wear and tear on your VNA test ports.

Go to [www.maurymw.com/Precision/Adapters.php](http://www.maurymw.com/Precision/Adapters.php) to see all Maury Type N 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 Type N VNA Calibration Kits**

Maury precision Type N VNA calibration kits include each of the calibration standards and tools shown in the tables at the right. The 8850CK40/50 kits do not include adapters; the 8850CK41/51 kits include one each of the in-series adapters shown. Other in-series and between-series adapters are sold separately.

**Components Included in 8850CK40/41 Kits**

QUANTITY	DESCRIPTION	MODEL
1	Type N female fixed short circuit	8806G2
1	Type N male fixed short circuit	8807C2
1	Type N female open circuit termination	8809B2
1	Type N male open circuit termination	8810B2
1	Type N female fixed termination	2510E2
1	Type N male fixed termination	2510F2
1*	Type N female to Type N female adapter	8828A2
1*	Type N male to Type N male adapter	8828B2
1*	Type N female to Type N male adapter	8828C2
1	3/4-inch torque wrench — 12.0 in. lbs.	2698C2
1	Foam-lined wood Instrument case	—
1	1/2 - 9/16 inch end wrench	2517S3

\* These adapters are provided in the 8850CK41 kits, but are not included in the 8850CK40 kits.

**Components Included in 8850CK50/51 Kits**

QUANTITY	DESCRIPTION	MODEL
1	Type N female fixed short circuit	8806G2
1	Type N male fixed short circuit	8807C2
1	Type N female open circuit termination	8809B2
1	Type N male open circuit termination	8810B2
1	Type N female fixed termination	2510E2
1	Type N male fixed termination	2510F2
1*	Type N female to Type N female adapter	8828A2
1*	Type N male to Type N male adapter	8828B2
1*	Type N female to Type N male adapter	8828C2
1	3/4-inch torque wrench — 12.0 in. lbs.	2698C2
1	Foam-lined wood Instrument case	—
1	1/2 - 9/16 inch end wrench	2517S3

\* These adapters are provided in the 8850CK51 kits, but are not included in the 8850CK50 kits.

**8850CK40**



**8850CK41**



**8850CK50**



**8850CK51**



## COMPONENT SPECIFICATIONS



### Fixed Terminations – Model 2510E2 & 2510F2

Frequency Range -- DC to 18.0 GHz

Maximum VSWR:

DC to 2.0 GHz -- 1.025

2.0 to 4.0 GHz -- 1.04

4.0 to 18.0 GHz -- 1.065

Nominal Impedance -- 50 ohm

Power Handling -- 1 watt CW, 1 kW peak



### Open Circuits – Models 8809B2 & 8810B2

Frequency Range -- DC to 18.0 GHz

Minimum Reflection Coefficient -- 0.99

Phase Accuracy --  $\pm 2.0^\circ$

Nominal Impedance -- 50 ohm



### Fixed Shorts – Models 8806G2 & 8807C2

Frequency Range -- DC to 18.0 GHz

Minimum Reflection Coefficient -- 0.98

Nominal Impedance -- 50 ohm

Phase Accuracy --  $\pm 2.0^\circ$



### Precision Type N Adapters – Models 8828A2/B2/C2

Frequency Range -- DC to 18.0 GHz

Maximum VSWR:

DC to 4.0 GHz -- 1.03

4.0 to 10.0 GHz -- 1.05

10.0 to 18.0 GHz -- 1.09

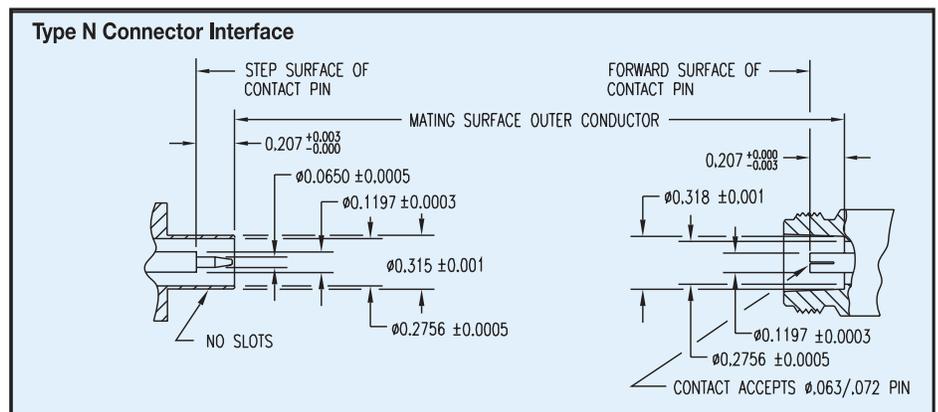
Nominal Impedance -- 50 ohm

*(Note: These adapters are included in the 8850CK40/50 kits, but are not included in the 8850CK40/50 kits.)*

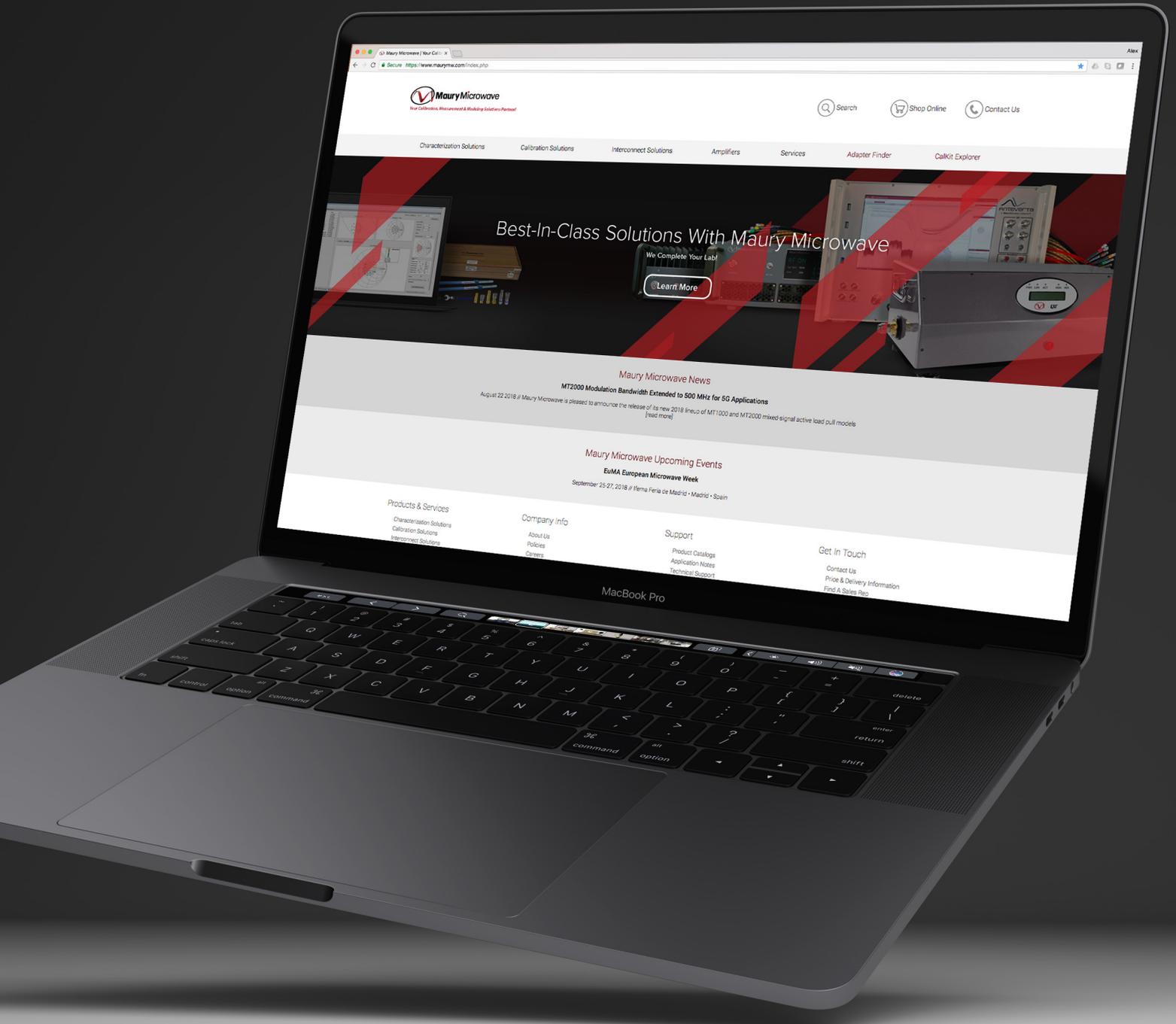
## Connector Description

The precision Type N connectors on the components in these kits are instrument grade, air-interface connectors that are rated for operation from DC to 18.0 GHz, and comply with IEEE standard 287 for instrument grade general precision connectors (GPC Type N).

The connectors are normally made with stainless steel bodies with heat-treated gold-plated beryllium copper contacts. For detailed interface specifications please refer to Maury data sheet 5E-049.



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OUR PRODUCTS



www.maurymw.com



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