



Advanced Test Equipment Corp.  
www.atecorp.com 800-404-ATEC (2832)

# 3.5mm VNA Calibration Kits

DATA SHEET / 2Z-074

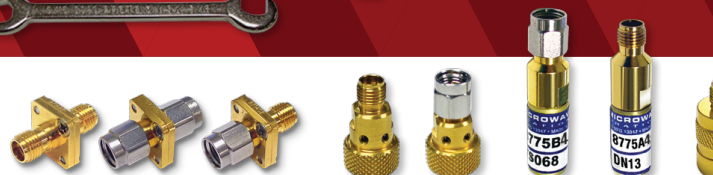
Models:

8050CK40 – Fixed Load SOLT Kit

8050CK41 – Fixed Load SOLT Kit with Adapters

8050CK50 – Characterized Device (CD) Fixed Load SOLT Kit

8050CK51 – Characterized Device (CD) Fixed Load SOLT Kit with Adapters



# 3.5mm VNA Calibration Kits

8050CK40/41 SERIES, AND  
8050CK50/51 SERIES

## Features

- > 3.5mm Connectors
- > DC to 26.5 GHz
- > Compatible with Insight calibration SW and uncertainty analysis\*
- > Keysight, Rohde & Schwarz and Anritsu VNAs Supported

## Calibration Methods Supported

- > 8050CK40/41 – Fixed Load SOLT (DC–26.5 GHz)
- > 8050CK50/51 – Characterized Device (CD) SOLT (0.05–26.5 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.

8050CK40/41/50/51 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).

8050CK41/51 kits include three 3.5mm in-series adapters for applications that require female/female, male/male, or male/female connections. A wide range of between-series adapters in 3.5mm to other types and special VNA test port adapters (NMD type) are also available by separate order.

A050A



8799A1



8009A1 8009B1 7909B3 7909B4



Go to [www.maurymw.com/Precision/Adapters.php](http://www.maurymw.com/Precision/Adapters.php) to see all Maury 3.5mm in-series and between series adapters.

## Recommended Accessories

### A050A 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 2.92mm and 3.5mm coaxial connectors.

### 8799A1 5/16-inch Precision Torque Wrench (8.0 inch lbs):

For proper torquing of 1.85mm, 3.5mm, 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.

### 8009A1 & 8009B1 3.5mm NMD test port adapters:

Precision 3.5mm to NMD3.5mm; DC–26.5 GHz. Saves unnecessary wear and tear on your VNA test ports.

### 7909B3 & 7909B4 2.4mm NMD test port adapters:

Precision NMD2.4mm to 3.5mm; DC–34.0 GHz. Saves unnecessary wear and tear on your VNA test port connectors.

\* 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 3.5mm VNA Calibration Kits

Maury precision 3.5mm VNA calibration kits include each of the calibration standards and tools shown in the tables at the right. The 8050CK40/50 kits do not include adapters; the 8050CK41/51 kits include one each of the in-series adapters shown. Other in-series and between-series adapters are sold separately.

### Components Included in 8050CK40/41 Kits

| QUANTITY | DESCRIPTION                           | MODEL  |
|----------|---------------------------------------|--------|
| 1        | 3.5mm female fixed short circuit      | 8046F6 |
| 1        | 3.5mm male fixed short circuit        | 8047F6 |
| 1        | 3.5mm female open circuit termination | 8048A6 |
| 1        | 3.5mm male open circuit termination   | 8048B6 |
| 1        | 3.5mm female fixed termination        | 8031A6 |
| 1        | 3.5mm male fixed termination          | 8031B6 |
| 1*       | 3.5mm female to 3.5mm female adapter  | 8021A3 |
| 1*       | 3.5mm male to 3.5mm male adapter      | 8021B3 |
| 1*       | 3.5mm female to 3.5mm male adapter    | 8021C3 |
| 1        | 5/16-inch torque wrench — 8 in. lbs.  | 8799A1 |
| 1        | 7/16-inch double end wrench           | 8770Z7 |
| 1        | 5/16-inch double end wrench           | 8770Z6 |
| 1        | Foam-lined wood Instrument case       | —      |

\* These adapters are provided in the 8050CK41 kits, but are not included in the 8050CK40 kits.

### Components Included in 8050CK50/51 Kits

| QUANTITY | DESCRIPTION                           | MODEL  |
|----------|---------------------------------------|--------|
| 1        | 3.5mm female fixed short circuit      | 8046F6 |
| 1        | 3.5mm male fixed short circuit        | 8047F6 |
| 1        | 3.5mm female open circuit termination | 8048A6 |
| 1        | 3.5mm male open circuit termination   | 8048B6 |
| 1        | 3.5mm female fixed termination        | 8031A6 |
| 1        | 3.5mm male fixed termination          | 8031B6 |
| 1*       | 3.5mm female to 3.5mm female adapter  | 8021A3 |
| 1*       | 3.5mm male to 3.5mm male adapter      | 8021B3 |
| 1*       | 3.5mm female to 3.5mm male adapter    | 8021C3 |
| 1        | 5/16-inch torque wrench — 8 in. lbs.  | 8799A1 |
| 1        | 7/16-inch double end wrench           | 8770Z7 |
| 1        | 5/16-inch double end wrench           | 8770Z6 |
| 1        | Foam-lined wood Instrument case       | —      |

\* These adapters are provided in the 8050CK51 kits, but are not included in the 8050CK50 kits.

### 8050CK40



### 8050CK41



### 8050CK50



### 8050CK51



## COMPONENT SPECIFICATIONS



### Fixed Terminations – Models 8031A6 & 8031B6

Frequency Range -- DC to 26.5 GHz

Maximum VSWR:

DC to 2.0 GHz -- 1.025

2.0 to 18.0 GHz -- 1.045

18.0 to 26.5 GHz -- 1.085

Power Handling -- 0.25 watt CW, 0.5 kW peak

Nominal Impedance -- 50 ohm



### Open Circuits – Models 8048A6 & 8048B6

Frequency Range -- DC to 26.5 GHz

Minimum Reflection Coefficient -- 0.98

Phase Accuracy --  $\pm 1.4$  degrees

Nominal Impedance -- 50 ohm



### Fixed Shorts – Models 8046F6 & 8047F6

Frequency Range -- DC to 26.5 GHz

Minimum Reflection Coefficient -- 0.98

Phase Accuracy --  $\pm 2.0$  degrees

Nominal Impedance -- 50 ohm



### Precision 3.5mm Adapters – Models 8021A3/B3/C3

Frequency Range -- DC to 34.0 GHz

Maximum VSWR:

DC to 18.0 GHz -- 1.05

18.0 to 26.5 GHz -- 1.08

26.5 to 34.0 GHz -- 1.12

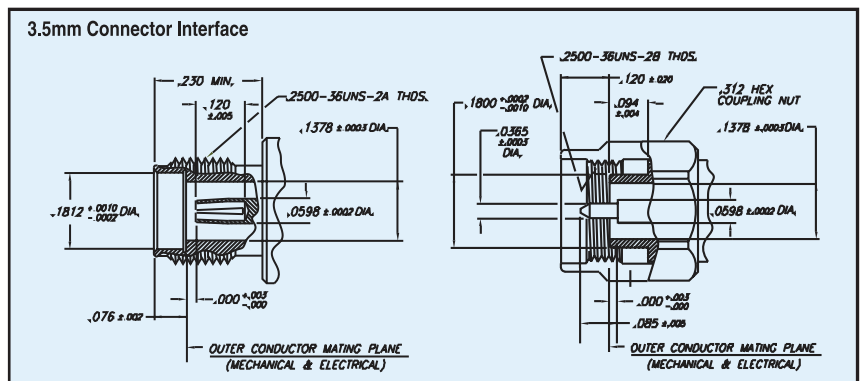
Nominal Impedance -- 50 ohm

*(Note: These adapters are included in the 8050CK11/21/31 kits, but are not included in the 8050CK10/20/30 kits.)*

## Connector Description

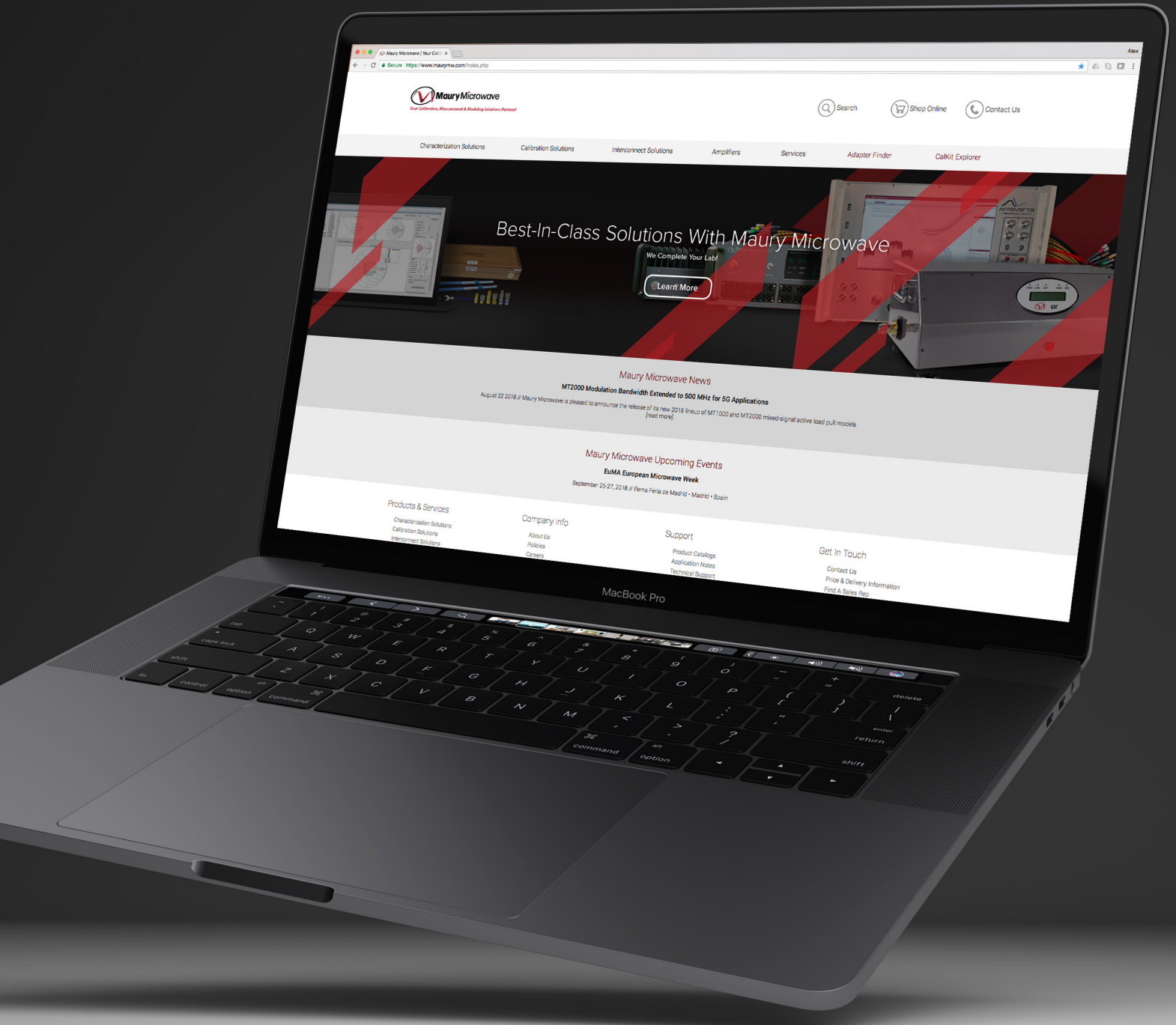
The precision 3.5mm connectors on the components in these kits are miniature, instrument grade, air-interface connectors that operate mode free up to 34 GHz, and comply with IEEE standard 287 general precision connector, instrument grade GPC3.5.

For detailed interface specifications please refer to Maury data sheet 5E-062.





VISIT OUR WEB STORE  
TO LEARN MORE ABOUT  
OUR PRODUCTS



www.maurymw.com



**CONTACT US:**

W / [maurymw.com](http://maurymw.com)  
E / [maury@maurymw.com](mailto:maury@maurymw.com)  
P / +1-909-987-4715  
F / +1-909-987-1112  
2900 Inland Empire Blvd  
Ontario, CA 91764

