

# 7mm VNA Calibration Kits

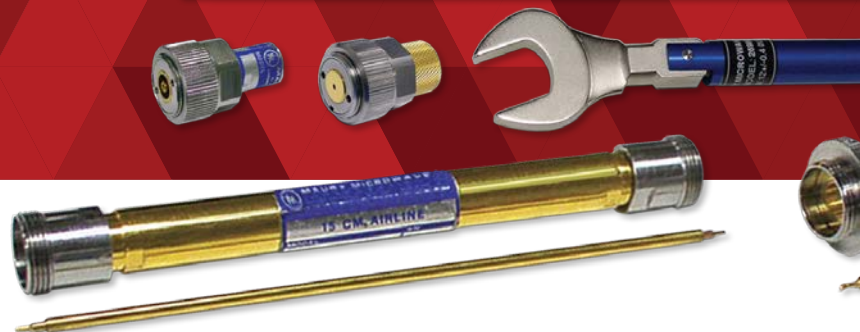
DATA SHEET / 2Z-060

Models:

2650CK10 – Fixed Load Kit

2650CK20 – Sliding Load Kit

2650CK30 – TRL Kit



# 7mm VNA Calibration Kits

MODELS 2650CK10, 2650CK20 AND 2650CK30

## Features

- > 7mm Connectors
- > DC to 18 GHz
- > Keysight, Rhode & Schwarz and Anritsu VNAs Supported

## Calibration Methods Supported

- > 2650CK10 – Fixed Load SOLT (DC–18.0 GHz)
- > 2650CK20 – Sliding/Fixed Load SOLT (DC–18.0 GHz)
- > 2650CK30 (TRL Kit) – TRM/TRL/LRL (DC–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, which uses Short, Open and Load standards, requires precise models of the standards’ electrical performance. Fixed load SOLT uses fixed terminations and is adequate for measuring devices with mid-range reflection coefficients. The lowest return loss is limited by the reflection coefficient of the fixed load standard (typically better than 20 dB return loss\*).

The sliding load SOLT kit can accurately measure lower reflection coefficients due to the improved termination performance provided by the sliding load (typically better than 30 dB return loss).

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. \*Refer to specifications on page 3.

8650CK10/20 kits are configured for performing one-port SOL (Short-Open-Load) response calibrations (for measuring VSWR/ Return Loss), and full two-port SOLT (Short-Open-Load-Thru) calibration (for performing forward and reverse transmission and reflections measurement).

2650CK30 TRL/LRL calibration kits contain the components needed to perform TRM, TRL and LRL calibrations. Source match can also be measured using the 15cm air line with the short circuit provided.

2650CK10/20/30 kits do not include adapters. Maury offers a wide range of between-series adapters in 7mm to other types that can be ordered separately.

A028D



2698C2



8009A



7909B2



## Recommended Accessories

### A028D Connector Gage Kit:

Contains one metrology-grade “Thread-on” type, dial indicator style gage for measuring the planar contact location. This provides an easy and accurate way to measure critical linear interface dimensions of 7mm coaxial connectors.

### 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 2650CK20/30 kits, and are highly recommended for use with 2650CK10 kits.

### Ruggedized Test Port Adapters (Available Models):

Model 2633C – NMD3.5mm female to 7mm

Model 7909C – NMD2.4mm female to 7mm

These adapters save 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 7mm in-series and between series adapters.

## Maury 7mm VNA Calibration Kits

Maury precision 7mm VNA calibration kits include each of the calibration standards and tools shown in the tables at the right. The 2650CK10/20/30 kits do not include adapters; in-series and between-series adapters are sold separately. (See Maury's Precision Calibration & Interconnect Solutions catalog for adapter specifications. This catalog is available online at [maurymw.com](http://maurymw.com).)

### Components Included in 2650CK10 Kits

QUANTITY	DESCRIPTION	MODEL
1	7mm fixed short circuit	2615D3
1	7mm open circuit termination	2616D3
1	7mm fixed termination	2610F
1	Foam-lined wood Instrument case	—

2650CK10



### Components Included in 2650CK20 Kits

QUANTITY	DESCRIPTION	MODEL
1	7mm fixed short circuit	2615D3
1	7mm open circuit termination	2616D3
1	7mm fixed termination	2610F
1	7mm sliding termination	2608C
1	3/4-inch torque wrench — 12 in. lbs.	2698C2
1	Foam-lined wood Instrument case	—

2650CK20



### Components Included in 2650CK30 Kits

QUANTITY	DESCRIPTION	MODEL
1	7mm fixed short circuit	2615D3
1	7mm fixed termination	2610F
1	7mm air line (0.6cm)	2653L
1	7mm air line (3.12cm)	2653S3.12
1	7mm air line (15cm)	2653S15
1	3/4-inch torque wrench — 12 in. lbs.	2698C2
1	Foam-lined wood Instrument case	—

2650CK30



## COMPONENT SPECIFICATIONS



### Air Lines – Models 2653S3.12, 2653L & 2653S15

Frequency Range -- DC to 18.0 GHz

Electrical Length:

2653S3.12 -- 3.12cm

2653L -- 0.69cm

2653S15 -- 14.983cm

Electrical Length Accuracy --  $\pm 0.006$ cm

Return Loss (Min.) – excluding connector interface -- 52 dB

Nominal Impedance -- 50 ohm



### Fixed Termination – Model 2610F

Frequency Range -- DC to 18.0 GHz

Maximum VSWR:

DC – 1.0 GHz -- 1.005

1.0 – 2.0 GHz -- 1.01

2.0 – 8.0 GHz -- 1.03

8.0 – 18.0 GHz -- 1.06

Nominal Impedance -- 50 ohm

Power Handling -- 1 watt CW 1 kW peak



### Open Circuit – Model 2616D3

Frequency Range -- DC to 18.0 GHz

Minimum Reflection Coefficient -- 0.995

Phase Accuracy --  $\pm 0.3$  degrees

Nominal Impedance -- 50 ohm



### Sliding Termination – Model 2608C

Frequency Range -- 2.0 to 18.0 GHz

Maximum VSWR of Terminating Element -- 1.04

Air Line Accuracy -- 62 dB min return loss (equivalent return loss of air line impedance)

Nominal Impedance -- 50 ohm

Power Handling -- 1.0 watt CW, 5.0 kW peak

Travel -- Greater than 1/2 wavelength at 2.0 GHz



### Fixed Short – Model 2615D3

Frequency Range -- DC to 18.0 GHz

Minimum Reflection Coefficient -- 0.995

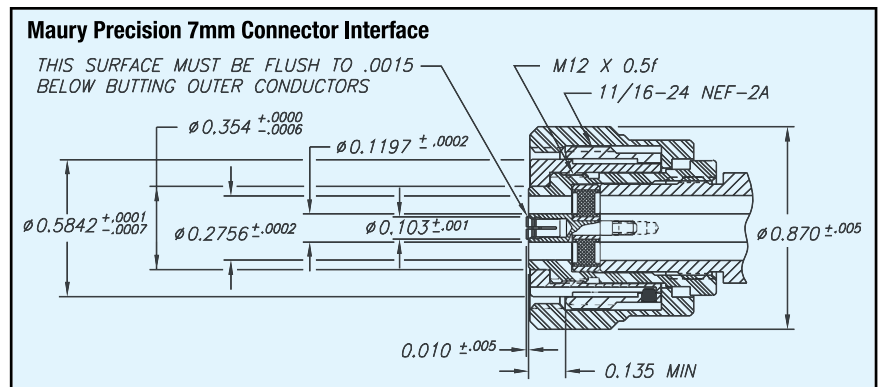
Phase Accuracy --  $\pm 0.3$  degrees

Nominal Impedance -- 50 ohm

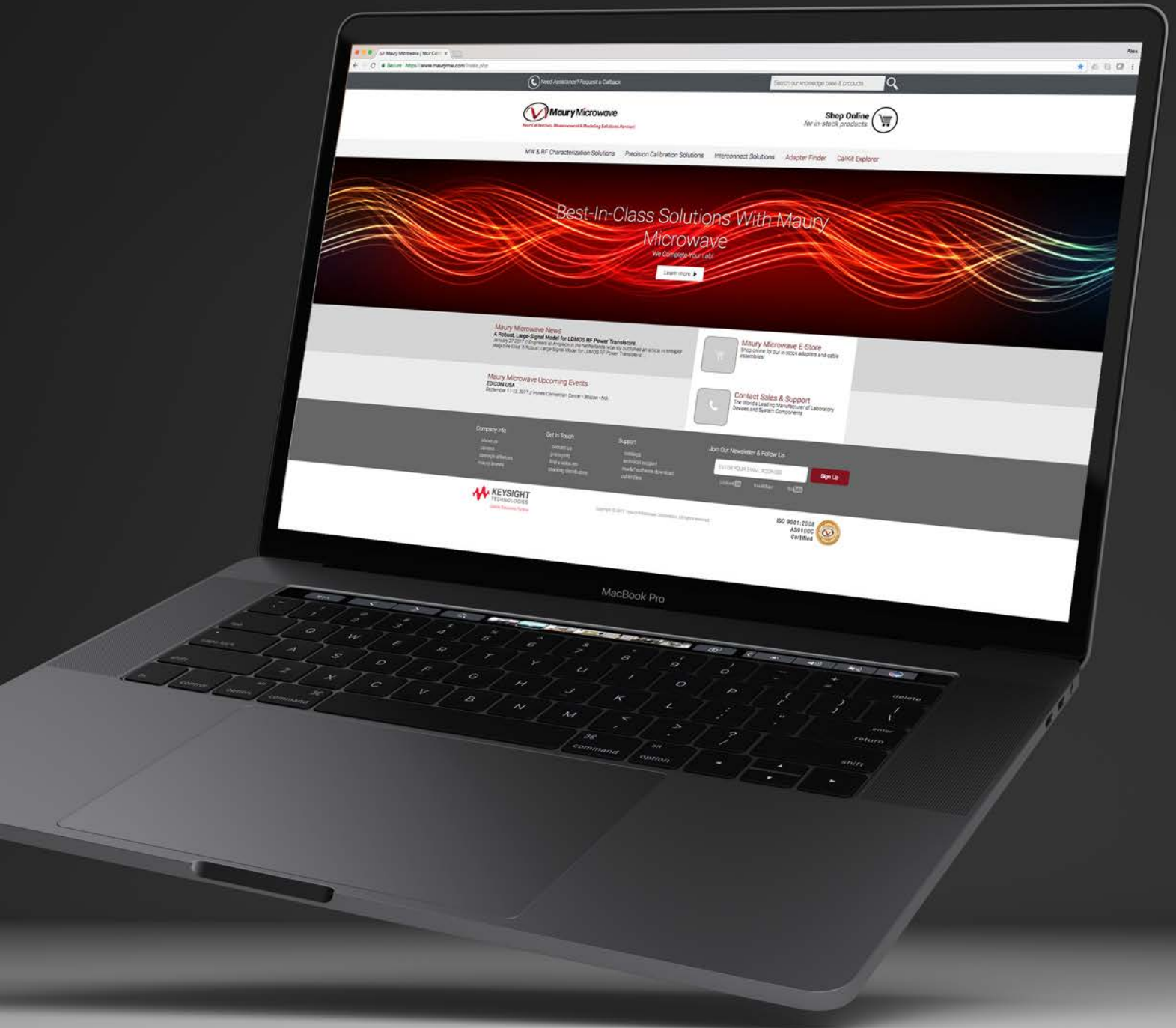
## Connector Description

7mm connectors are precision air interface hermaphroditic connectors that are rated from DC to 18 GHz. They have an air line size of 0.1197 inner conductor diameter and a 0.2756 outer conductor diameter. There are basically two configurations;

1) GPC7 (commonly referred to as APC7), which incorporates a bead support and, 2) LPC7A, which is a beadless connector. They comply with IEEE standard 287 for instrument grade general precision connectors (GPC7). See Maury data sheet 5E-060 for complete interface dimensions.



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

