Maury Microwave

User Guide

BNC (75 Ohm) Coaxial Calibration Kit

Model: 8580CK10

8580-511 (A) 3/15

User Guide

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Model: 8580CK10

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Warranty

Maury Microwave hardware products are warranted against defects in materials and workmanship for a period of one year from date of shipment. During the warranty period, Maury Microwave will, at its option, either repair or replace products which prove to be defective.

Maury Microwave software products are warranted against defects in material and workmanship of the media on which the product is supplied for a period of ninety (90) days from date of shipment. Maury also warrants that the product shall operate substantially in accordance with published specifications during the same warranty period. During the warranty period, Maury Microwave will, at its option, either repair or replace products which prove to be defective. Maury does not warrant that the operation of the product shall be uninterrupted or error-free.

For warranty service or repair, all products must be returned to Maury Microwave and must be issued a return authorization number by Maury prior to shipment. Buyer shall prepay shipping charges to Maury. Obligation is limited to the original Buyer.

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The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Buyer, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or wear resulting from normal use. No other warranty is expressed or implied. Maury Microwave specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

The remedies provided herein are the Buyer's sole and exclusive remedies. Maury Microwave shall not be liable for any direct, indirect, special, incidental, or consequential damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information, or any other financial loss) arising out of the Buyer's use of or inability to use the product, even if Maury or an authorized Maury dealer has been advised of the possibility of such damages.

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General Information

Calibration Kit Description

The 8580CK10 series of BNC 75 ohm coaxial calibration kits is designed to provide accurate calibrations of network analyzers in the DC to 12 GHz range. Each of these kits includes all the necessary calibration standards for the accurate calibration of most network analyzers.

See the following *Calibration Kit Contents* section for information on included components and available kit options:

Refer to Maury Microwave data sheet 2Z-069, available on our website, for further specifications on the Maury Microwave 8580CK10 series of coaxial calibration kits.

NOTE: This document, calibration constants software, and data sheet can be downloaded from our website: ***maurymw.com***

NOTE: Legacy analyzer software is not on our website but is available for purchase.

Maintenance

This calibration kit is relatively maintenance free if the components are handled with the same care that is appropriate to all precision equipment. As with any precision component, proper care should be taken to assure clean mating surfaces, correct alignment when mating, and proper torquing of connectors or waveguide coupling screws. To help maintain the integrity of the components in this kit, routine visual inspection and cleaning of mating surfaces is recommended. Failure to do so may result in degraded repeatability and accuracy, as well as damage any mated devices.

Calibration

To maintain verification that a calibration kit is performing to traceable specifications, we recommend that all kits be periodically returned to Maury Microwave for calibration. The typical calibration cycle is one year, although actual need may vary depending on usage.

Supporting Test Port Adapters

When configuring a test setup, be sure that damaging stresses are not applied to the connectors on the test set. This is particularly critical when the attached components are heavy or long. Always properly support the test port adapters being used.

Electrostatic Discharge Precautions

Protection against electrostatic discharge (ESD) is essential while inspecting, cleaning, or making connections to connectors attached to a static-sensitive circuit, such as those found inside test sets.

When handling the connectors on the test set, be aware that you are coming in contact with exposed center conductors that are connected directly to the static-sensitive internal circuits of the network analyzer. Make sure that you and your equipment are well-grounded before inspecting, cleaning, or making connections to test set ports. Standard ESD precautions, such as the use of grounded wrist straps and grounded antistatic mats, are recommended.

Connector Description

All calibration standards and adapters in the 8580CK10 series kits utilize the Maury Microwave Precision BNC 75 Ohm Connector, which is compliant with MIL-C-39012 specifications.

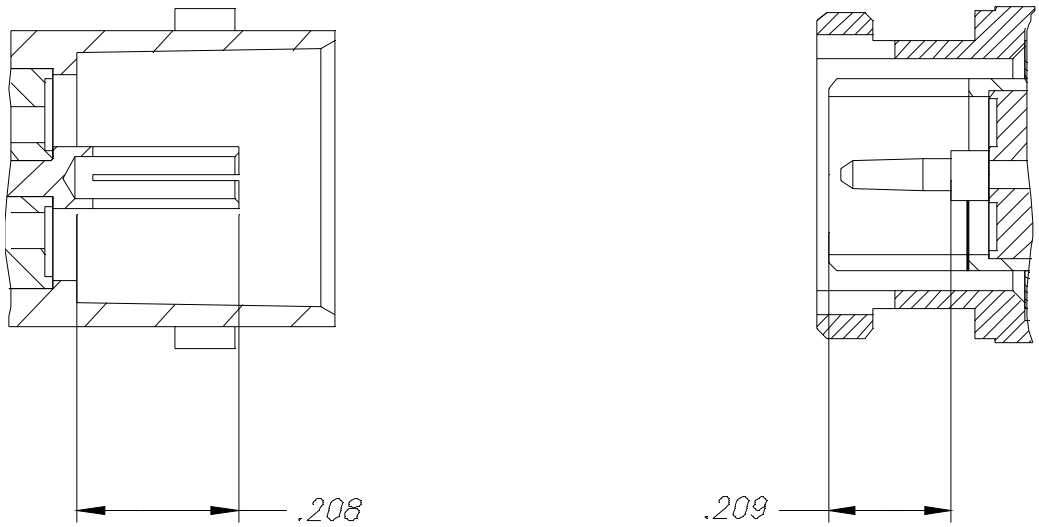

Figure 1. BNC Connector Interfaces

Connector Care

Precision connectors must be handled carefully if accurate calibrations and measurements are to be obtained. All connectors should be inspected prior to each use. For optimum measurement results, all interfaces should be visually inspected under magnification and cleaned on a regular basis. Proper connector contact pin depths should also be verified through regular inspections using a connector gage, such as the Maury Microwave A012A connector gage kit, to insure that the connectors on both calibration devices and devices under test (DUTs) have contact pin depths within recommended tolerances. See Figure 1 above for proper pin and dielectric depth specifications for the BNC connector.

Care should be used whenever aligning connectors. Tighten connector coupling nuts using an appropriate torque wrench while holding the opposing connector with an open-end wrench.

When disconnecting devices, take care not to rock or bend any of the connections. Disconnect devices by disengaging the coupling nuts and gently pulling the connectors apart in a straight line.

Always use protective covers on all connectors when devices are not in use.

Should a connector become damaged, it should be repaired before it is used any further or replaced immediately. A damaged connector can damage other mated connectors.

CAUTION: Do not mate BNC 75 ohm connectors to BNC 50 ohm connectors. Mating a BNC 75 ohm female connector to a BNC 50 ohm male connector will destroy the contact on the BNC 75 ohm female connector. Mating a BNC 75 ohm male connector to a BNC 50 ohm female connector will not provide proper electrical contact for the center conductors.

Calibration Kit Contents

Standard Components – 8580CK10

1 ea	Short, female	8584A1
1 ea	Short, male	8584B1
1 ea	Open, female	8585A1
1 ea	Open, male	8585B1
1 ea	Fixed Termination, female	8583A1
1 ea	Fixed Termination, male	8583B1
1 ea	Case Assembly	

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Anritsu Network Analyzers

Table 1. Male Standard Definitions for Anritsu

BNC Male Open Device	
C0	46.5 e-15
C1	0
C2	88.0 e-36
C3	0
Offset Length	2.716 cm
Serial Number	00000

BNC Male Short Device	
Offset Length	2.802 cm
Serial Number	00000

Table 2. Female Standard Definitions for Anritsu

BNC Female Open Device	
C0	61.5 e-15
C1	-3000 e-27
C2	100 e-36
C3	-5.9 e-45
Offset Length	2.122 cm
Serial Number	00000

BNC Female Short Device	
Offset Length	2.200 cm
Serial Number	00000

For specific loading instructions, see ***Anritsu loading instructions,*** which can be downloaded from our website: ***maurymw.com***.

Keysight Network Analyzers

Table 3. Standard Definitions for Keysight

Standard (1)			C0 x10^{-15} F	C1 x10^{-27} F/Hz	C2 x10^{-36} F/Hz^2	C3 x10^{-45} F/Hz^3	Fixed or Sliding (2)	Offset			Frequency GHz		Coax or W/G	Standard Label
	Type	Description	L0 x10^{-12} H	L1 x10^{-24} H/Hz	L2 x10^{-33} H/Hz^2	L3 x10^{-42} H/Hz^3		Delay ps	Z_0 (3) Ω	Loss (4) GΩ/s	Min	Max		
	Short	Female Short						73.383	75	1.4	0	999	Coax	8584A1
	Open	Female Open	61.5	-3000.0	100	-5.9		70.782	75	1.4	0	999	Coax	8585A1
	Load	Female Fixed					Fixed	0	75	0	0	999	Coax	8583A1
	Thru	Thru (0 cm)						0	75	0	0	999	Coax	THRU (5)
	Short	Male Short						93.463	75	1.4	0	999	Coax	8584B1
	Open	Female Open	46.5	0	88.0	0		90.595	75	1.4	0	999	Coax	8585B1
	Load	Male Fixed					Fixed	0	75	0	0	999	Coax	8583B1

(1) Open, short, load, delay/thru, or arbitrary impedance.
(2) Load or arbitrary impedance only.
(3) Z_0 normalized.
(4) Skin loss factor, normalized at 1 GHz.
(5) Test ports connected directly.

For specific loading instructions, see ***Keysight loading instructions***, which can be downloaded from our website: ***maurymw.com***

Rohde & Schwarz Network Analyzers

Table 4. Standard Definitions for Rohde & Schwarz

Short (M) Label(1) = 8584B1 Min Freq = 0 Hz Max Freq = 12 GHz Length = 28.019 mm Loss = 0.015154 dB/$\sqrt{GHz}$	Through (MF) Label(1) = 0 cm Thru Min Freq = 0 Hz Max Freq = 12 GHz Length = 0 mm Loss = 0 dB/$\sqrt{GHz}$
Short (F) Label(1) = 8584A1 Min Freq = 0 Hz Max Freq = 12 GHz Length = 21.999 mm Loss = 0.011898 dB/$\sqrt{GHz}$	Match (M) Label(1) = 8583B1 Min Freq = 0 Hz Max Freq = 12 GHz
Open (M) Label(1) = 8585B1 Min Freq = 0 Hz Max Freq = 12 GHz Length = 27.159 mm Loss = 0.014689 dB/$\sqrt{GHz}$ C0 = 46.5 fF C1 = 0 fF/GHz C2 = 0.088 fF/GHz^2 C3 = 0 fF/GHz^3	Match (F) Label(1) = 8583A1 Min Freq = 0 Hz Max Freq = 12 GHz
Open (F) Label(1) = 8585A1 Min Freq = 0 Hz Max Freq = 12 GHz Length = 21.220 mm Loss = 0.011476 dB/$\sqrt{GHz}$ C0 = 61.5 Ff C1 = -3 fF/GHz C2 = 0.100 fF/GHz^2 C3 = -0.006 fF/GHz^3	

For specific loading instructions, see ***Rohde & Schwarz loading instructions***, which can be downloaded from our website: ***maurymw.com***.

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Appendix

Data Sheet Resources

2Z-069 – Precision Calibration Kits – BNC Coaxial Connectors Vector Network Analyzers
http://maurymw.com/pdf/datasheets/2Z-069.pdf

2Y-009 – Connector Gage Kit – Precision TNC / BNC Connectors
http://maurymw.com/pdf/datasheets/2Y-009.pdf

2Z-001 – Test Port Cable Assemblies and Test Port Adapters
http://maurymw.com/pdf/datasheets/2Z-001.pdf

Contacts

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Web Resources

Maury Calibration Kits
http://maurymw.com/Precision/VNA_Cal_Kits.php

Maury Precision Coaxial and Waveguide-to-Coaxial Adapters
http://maurymw.com/Finder/Adapter_Finder.php

Maury Applications Notes Library & Technical Articles Archive
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