PRECISION CALIBRATION KITS

COAXIAL - PRECISION 3.5mm CONNECTORS
VECTOR NETWORK ANALYZERS (VNA)

Model 8050J

Description

Maury 3.5mm calibration kits described in this data sheet are designed for use with Vector Network Analyzers (VNAs) supplied with 3.5mm or 2.92mm test set connectors and cables. With these kits, you can make error-corrected measurements of devices supplied with either 3.5mm or SMA connectors from 45 MHz to 26.5 GHz.

These kits are supplied with a full complement of calibration standards; shorts, opens, sliding and fixed loads. Rugged test port adapters and 3.5mm in-series phased matched adapters are also provided. A connector gage for checking contact pin locations prior to making measurements and a torque wrench for accurately tightening connector junctions are also included. All required calibration standards, adapters, and accessories along with the applicable software medium (cartridge or 3-1/2" disk as applicable) containing the calibration constants, and operating instructions are supplied in an attractive foam lined wooden instrument case.

The following table shows the calibration kits that are available. A 15cm reference air line is also available for time domain operation (see option 01).

Accessories and Complementary Equipment Available (not provided)

a) Reference Plane Fixed Shorts, models 360B (male) and 360D (female); can be used as verification standards; see Maury data sheet 2C-306.

b) Offset Shorts, series 8046 and 8047; can be used as verification or calibration standards; see Maury data sheet 2C-310.

Calibration Kit Model	Network Analyzer	Software Medium[1]	Test Set and Cable Connectors
8050H	Agilent 8510A/B	Cartridge	3.5mm
8050J	Agilent 8510C	3-1/2" Disk	
8050M	Agilent 8720A/B	3-1/2" Disk[2]	
8050W	Anritsu 360	3-1/2" Disk	2.92mm (K)[3]
8050X	Anritsu 37000		

For footnotes, please see page 3.

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Equipment Provided

The following items are provided in these kits.

1 each — Fixed short, 3.5mm female, model 8046F.
1 each — Fixed short, 3.5mm male, model 8047F.
1 each — Open circuit, 3.5mm female, model 8048A1[4].
1 each — Open circuit, 3.5mm male, model 8048B1[4].
1 each — Fixed termination, 3.5mm female, model 8031A4.
1 each — Fixed termination, 3.5mm male, model 8031B4.
1 each — Sliding termination, model 8035H[5], consisting of the following items:
  1 each — Outer conductor assembly with movable center conductor and centering cap.
  1 each — 3.5mm female connector body.
  1 each — 3.5mm female center contact.
  1 each — 3.5mm male connector body.
  1 each — 3.5mm male center contact.
1 each — Adapter, 3.5mm female to female, model 8021A2[6].
1 each — Adapter, 3.5mm male to male, model 8021B2[6].
1 each — Adapter, 3.5mm female to male, model 8021C2[6].
1 each — Test port adapters, NMD3.5mm female[7] to 3.5mm female, model 8009A.
1 each — Test port adapters, NMD3.5mm female[7] to 3.5mm male, model 8009B.
1 each — 3.5mm Connector gage, model A034D.
1 each — Torque wrench (.312 hex - 8in/lb), model 8799A1.
2 each — Wrench, double ended (5/16)[8].
1 each — Configuration medium (contains circuit constants).
1 each — Instrument case.
1 each — Operating instructions.

For footnotes, please see page 3.

Options

Option 01. Adds model 8043S15, 15cm reference air line for time domain operations.

Option 05. Configured for use with 7mm test sets and cables only with the following changes (direct replacement for model 8050F):

a) Deletes test port adapters:
  1 each — NMD3.5mm female[7] to 3.5mm female, model 8009A
  1 each — NMD3.5mm female[7] to 3.5mm male, model 8009B.

b) Adds the following adapters:
  2 each — Adapter, 7mm to 3.5mm female, model 8022A1[9].
  2 each — Adapter, 7mm to 3.5mm male, model 8022B1[9].

Option 25. Combines option 01 and 05 above (direct replacement for model 8050F01).

Connector Description

3.5mm connectors are air interface connectors that are mating compatible with SMA and K connectors. They have an air line size of 0.0598 inner diameter and 0.1378 outer diameter. For interface specifications on these connectors, please refer to Maury data sheet 5E-062.

Specifications

Fixed Shorts:

Model 8046F, 3.5mm female
Model 8047F, 3.5mm male
Frequency Range ..... DC to 26.5 GHz
Offset Length 0.50cm
Reflection Coefficient ..... 0.98 minimum
Impedance ..... 50 ohms nominal

Open Circuits[4]:

Model 8048A1, 3.5mm female
Model 8048B1, 3.5mm male
Frequency Range ..... 45 MHz to 26.5 GHz
Reflection Coefficient ..... 0.98 minimum
Phase Accuracy ..... ±1.4 degrees
(equivalent 32 dB source match)
Impedance ..... 50 ohms nominal

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Fixed Terminations[10]:

Model 8031A4, 3.5mm female
Model 8031B4, 3.5mm male
Frequency Range ..... DC to 26.5 GHz
VSWR ..... 1.02 maximum, DC to 2 GHz
1.04 maximum, 2 to 4 GHz
1.10 maximum, 4 to 18 GHz
1.15 maximum, 18 to 26.5 GHz
Impedance ..... 50 ohms nominal
Power Handling ..... 1/2 watt CW

Sliding Termination[5]:

Model 8035H
Frequency Range ..... 2.0 to 26.5 GHz
Air Line Accuracy ..... 54 dB minimum return loss
VSWR — Terminating Element ..... 1.090 maximum,
2 to 4 GHz (<1.06 typical)
1.05 maximum, 4 to 34 GHz (<1.03 typical)
VSWR — Connector ..... <1.02 + 0.002 f GHz female,
1.01 + 0.001 f GHz male
Nominal Impedance ..... 50 ohms
Air Line Accuracy ..... 44 dB minimum return loss
Power Handling ..... 1.0 watts CW, 1.0 kW peak
Travel ..... Greater than 1/2 wavelength at 2.0 GHz
Connectors ..... 3.5mm female and male

Adapters[6]:

Model 8021A2, 3.5mm female to female
Model 8021B2, 3.5mm male to male
Model 8021C2, 3.5mm female to male
Frequency Range ..... DC to 34 GHz
VSWR ..... 1.05 maximum, DC to 18 GHz
1.08 maximum, 18 to 26.5 GHz
1.12 maximum, 26.5 to 34 GHz
Impedance ..... 50 ohms nominal

Reference Air Line:

Model 8043S15, 3.5mm male to female
Frequency Range ..... DC to 26.5 GHz
Air Line Accuracy ..... 48 dB minimum
(excluding connectors)
Impedance ..... 50 ohms nominal
Connectors ..... 3.5mm female and male

Adapters[9]:

Model 8022A1, 7mm to 3.5mm female
Model 8022B1, 7mm to 3.5mm male
Frequency Range ..... DC to 18 GHz
VSWR ..... 1.04 maximum, DC to 4 GHz
1.08 maximum, 4 to 18 GHz
Impedance ..... 50 ohms nominal

Footnotes

1 Software medial model numbers:
a) Model number 8050S1 (Agilent 8510A/B)
b) Model number 8050S2 (Agilent 8510C)
c) Model number 8050L1 (Agilent 8720A/B)
d) Model number 8050V1 (Anritsu 360)

2 The 3-1/2 disk supplied contains the calibration constants for the Agilent 8720B only and an external, single or dual, disk drive (Agilent 9122C) is required. When using an Agilent 8720A, the constants (supplied in the operating instructions) must be keyed in from the front panel.

3 3.5mm connectors mate directly to 2.92mm (K) connectors and the resulting junction is calibrated out and is not critical.

4 These are improved captivated contact open circuits; please refer to Maury data sheet 2C-311A for additional information.

5 The models 8035H and 8035A are essentially the same unit; the only difference is that the model 8035H is supplied as part of a calibration kit and the model 8035A is supplied as a separate unit in its own instrument case.

6 The models 8021A2, 8021B2 and 8021C2 are phase matched and can be readily interchanged.

7 The ruggedized 3.5mm female (NMD3.5mm female) connector provided on the models 8009A and 8009B mate directly with the ruggedized male 3.5mm connectors (NMD3.5mm male) on the Agilent 8513A, 8514B, and 8515A test sets and also with the ruggedized K connector supplied on Anritsu 360 test sets.

8 The wrench is used for securing the interchangeable connectors to the sliding termination outer conductor assembly.

9 The models 8022A1 and 8022B1 adapters are phase matched so they can be readily interchanged.

10 The fixed loads are used for low frequency Zo calibration up to 2 GHz and for broadband isolation calibration DC to 26.5 GHz.

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