

2.92mm (K) VNA Calibration Kits

8770C Standard Kits

Features

- ▶ 2.92mm (K) Connectors
- ▶ DC to 40 GHz
- ▶ High Performance Sliding Terminations
- ▶ Verified Kit Performance

Description

These precision calibration kits are used to calibrate network analyzers and to make error-corrected measurements of 2.92mm (K) devices from DC to 40 GHz. Each kit includes a full complement of calibration standards (listed at right) and can be configured for a number of VNA or test set/cable connector combinations. All kit components are housed in an attractive foam-lined wood instrument case. Each kit is tested for 100% compliance to the specifications listed below and ships with a performance verification report.

Specifications for 8770C Series Kits

Frequency Range DC to 40.0 GHz
 Minimum Directivity:
 DC to 20.0 GHz 42 dB
 20.0 to 40.0 GHz 40 dB
 Minimum Source Match:
 DC to 20.0 GHz 40 dB
 20.0 to 40.0 GHz 35 dB
 Nominal Impedance 50 ohm

2.92mm (K) Connector Description

These precision miniature 2.92mm air line interface connectors operate mode free to 40 GHz. They are fully compliant with IEEE 287 (GPC 2.92) and are fully mateable with SMA and 3.5mm connectors. Introduced by Maury in 1974 as the MPC3 connector, the design was reintroduced as the K connector by Wiltron in 1984. For interface specifications please refer to Maury data sheet 5E-063.



8770C

Components Included in 8770C Kits

| QUANTITY | DESCRIPTION | MODEL |
|----------|---------------------------------------|--------|
| 1 | 2.92mm (K) female fixed offset short | 8771F1 |
| 1 | 2.92mm (K) male fixed offset short | 8772F1 |
| 1 | 2.92mm (K) female open | 8773A1 |
| 1 | 2.92mm (K) male open | 8773B1 |
| 1 | 2.92mm (K) female fixed termination | 8775A2 |
| 1 | 2.92mm (K) male fixed termination | 8775B2 |
| 1 | 2.92mm (K) female sliding termination | 8777A1 |
| 1 | 2.92mm (K) male sliding termination | 8777B1 |
| 1 | 5/16-inch torque wrench (8 in. lbs) | 8799A1 |
| 1 | 5/16-inch double end wrench | — |
| 1 | 7/16-inch double end wrench | — |
| 1 | VNA software disk | — |
| 1 | Operating Instructions (manual) | — |
| 1 | Instrument case | — |

Note: Each kit also includes a set of adapters that is user specified per the Option Finder below. (See page 15 for details.)

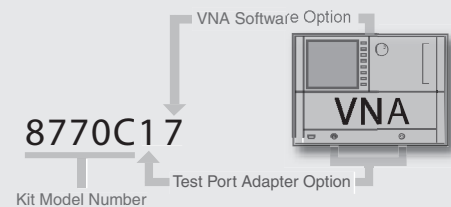
Recommended Accessories

A050A Digital connector gage kit (thread-on type) See page 92.

Ordering Options

To specify the test port adapter and VNA software options you need, simply add two digits to the end of the kit model number (as shown in the diagram at right). The first digit is the test port adapter option number, and the second is the VNA software option number (as found in the **Option Finder** below). The example in the diagram shows the combination of digits needed to order a 8770C kit configured with the adapters and software for use with an Agilent PNA that has 3.5mm or 2.92mm (K) test ports.

Option Finder



| VNA TEST PORT TYPE | TEST PORT ADAPTER OPTIONS (see page 15) | VNA SOFTWARE OPTIONS | | | | | |
|----------------------------------|-----------------------------------------|----------------------------|------------------------------------|------------------------|-----------------------------|-----------------------------|------------------------|
| | | KITS W/O SOFTWARE OPTION 0 | ROHDE & SCHWARZ ZV SERIES OPTION 1 | AGILENT 8510C OPTION 4 | AGILENT 8719/20/22 OPTION 5 | AGILENT PNA SERIES OPTION 7 | ANRITSU 37000 OPTION 9 |
| 3.5mm or 2.92mm (K) ¹ | 0 | — | 01 | 04 | 05 | 07 | 09 |
| 3.5mm or 2.92mm (K) ¹ | 1 | 10 | 11 | 14 | 15 | 17 | 19 |
| 7mm | 2 | 20 | 21 | 24 | 25 | 27 | 29 |
| 2.4mm or 1.85mm ¹ | 3 | 30 | 31 | 34 | 35 | 37 | 39 |

¹ 1.85mm and 2.4mm connectors are fully mateable, as are 2.92mm (K) and 3.5mm connectors. The resulting junction is calibrated out and is not critical.

Key Literature: Maury data sheet 2Z-034C.

2.92mm (K) VNA Calibration Kits

8770D Fixed Termination Kits

Features

- ▶ 2.92mm (K) Connectors
- ▶ DC to 40 GHz
- ▶ Broad VNA Coverage
- ▶ Fixed Load Calibration

Description

These 2.92mm (K) calibration kits are designed for use with a range of vector network analyzers (VNA). With these kits you can make error-corrected measurements of devices equipped with 2.92mm (K) connectors from DC to 40 GHz.

Each kit includes a full complement of calibration standards (shorts, opens and fixed loads) and can be configured for a number of VNA or test set/cable connector combinations. All kit components, including the VNA software and operating instructions, are housed in an attractive foam-lined wood instrument case.

2.92mm (K) Connector Description

These precision miniature 2.92mm air line interface connectors operate mode free to 40 GHz. They are fully compliant with IEEE 287 (GPC 2.92) and are fully mateable with SMA and 3.5mm connectors. Introduced by Maury in 1974 as the MPC3 connector, the design was reintroduced as the K connector by Wiltron in 1984. For interface specifications please refer to Maury data sheet 5E-063.

Recommended Accessories

- A050A Digital connector gage kit (thread-on type) See page 92.
- 8799A1 Torque wrench, 5/16-inch (8 in. lbs). See page 94.



8770D04

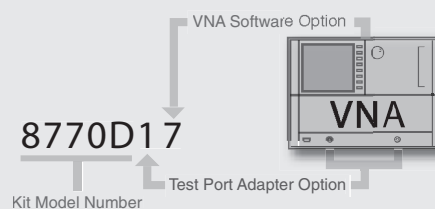
Components Included in 8770D Kits

| QUANTITY | DESCRIPTION | MODEL |
|----------|--------------------------------------|--------|
| 1 | 2.92mm (K) female fixed offset short | 8771F1 |
| 1 | 2.92mm (K) male fixed offset short | 8772F1 |
| 1 | 2.92mm (K) female open | 8773A1 |
| 1 | 2.92mm (K) male open | 8773B1 |
| 1 | 2.92mm (K) female fixed termination | 8775A2 |
| 1 | 2.92mm (K) male fixed termination | 8775B2 |
| 2 | 5/16-inch double end wrenches | — |
| 1 | VNA software disk | — |
| 1 | Operating Instructions (manual) | — |
| 1 | Instrument case | — |

Note: Each kit also includes a set of adapters that is user specified per the Option Finder below. (See page 15 for details.)

Ordering Options

To specify the test port adapter and VNA software options you need, simply add two digits to the end of the kit model number (as shown in the diagram at right). The first digit is the test port adapter option number, and the second is the VNA software option number (as found in the **Option Finder** below). The example in the diagram shows the combination of digits needed to order a 8770D kit configured with the adapters and software for use with an Agilent PNA that has 3.5mm or 2.92mm (K) test ports.



Option Finder

| VNA TEST PORT TYPE | TEST PORT ADAPTER OPTIONS (see page 15) | VNA SOFTWARE OPTIONS | | | | | |
|----------------------------------|-----------------------------------------|----------------------------|------------------------------------|------------------------|-----------------------------|-----------------------------|------------------------|
| | | KITS W/O SOFTWARE OPTION 0 | ROHDE & SCHWARZ ZV SERIES OPTION 1 | AGILENT 8510C OPTION 4 | AGILENT 8719/20/22 OPTION 5 | AGILENT PNA SERIES OPTION 7 | ANRITSU 37000 OPTION 9 |
| 2.92mm (K) ¹ | 0 | — | 01 | 04 | 05 | 07 | 09 |
| 3.5mm or 2.92mm (K) ¹ | 1 | 10 | 11 | 14 | 15 | 17 | 19 |
| 7mm | 2 | 20 | 21 | 24 | 25 | 27 | 29 |
| 2.4mm or 1.85mm ¹ | 3 | 30 | 31 | 34 | 35 | 37 | 39 |

¹ 1.85mm and 2.4mm connectors are fully mateable, as are 2.92mm (K) and 3.5mm connectors. The resulting junction is calibrated out and is not critical.

📄 Key Literature: Maury data sheet 2Z-034D.

2.92mm (K) TRL/LRL VNA Calibration Kits

8760A Series Tri-Kits

Features

- ▶ TRL/LRL Calibrations
- ▶ SOLT (Short-Open-Load-Thru)
- ▶ Gated Air Line
- ▶ DC to 40 GHz



8760A

Description

These 2.92mm (K) calibration kits are designed for use with a range of vector network analyzers (VNAs). With these kits you can make error-corrected measurements of devices equipped with 2.92mm (K) connectors from DC to 40 GHz.

TRM/TRL/LRL Calibration

Maury TRL/LRL calibration kits are tri-kits that contain the components needed to perform three types of calibrations (TRM/TRL/LRL, SOLT, and short-open-(air line + load)). Source match can also be measured using the 15cm air line and provided short. The following table shows the frequency ranges, calibration methods, and the standards used to perform a complete 2-port calibration to 40 GHz.

| FREQUENCY RANGE | CALIBRATION METHOD | CALIBRATION STANDARDS |
|--------------------|--------------------|------------------------|
| DC – 800 MHz | TRM | Fixed Termination |
| 160 – 800 MHz | TRL | 15cm air line |
| 800 MHz – 2.5 GHz | TRL | 5cm air line |
| 2.5 GHz – 12.5 GHz | TRL | 5cm & 6cm air lines |
| 12.5 GHz – 40 GHz | LRL | 5cm & 5.25cm air lines |

Components Included in 8760A Kits

| QUANTITY | DESCRIPTION | MODEL |
|----------|---------------------------------------------|-----------|
| 1 | 2.92mm (K) female to male air line (15cm) | 8774C15 |
| 1 | 2.92mm (K) female to male air line (5cm) | 8774C5 |
| 1 | 2.92mm (K) female to male air line (6cm) | 8774C6 |
| 1 | 2.92mm (K) female to male air line (5.25cm) | 8774C5.25 |
| 1 | 2.92mm (K) female fixed offset short | 8771F1 |
| 1 | 2.92mm (K) male fixed offset short | 8772F1 |
| 1 | 2.92mm (K) female open | 8773A1 |
| 1 | 2.92mm (K) male open | 8773B1 |
| 1 | 2.92mm (K) female fixed termination | 8775A2 |
| 1 | 2.92mm (K) male fixed termination | 8775B2 |
| 2 | 5/16-inch double end wrenches | — |
| 1 | VNA software disk | — |
| 1 | Operating Instructions (manual) | — |
| 1 | Instrument case | — |

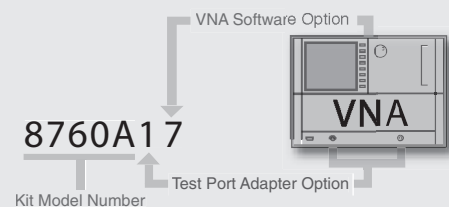
Note: Each kit also includes a set of adapters that is user specified per the Option Finder below. (See page 15 for details.)

Recommended Accessories

- A050A Digital connector gage kit (thread-on type). See page 92.
- 8799A1 Torque wrench, 5/16-inch (8 in. lbs). See page 94.

Ordering Options

To specify the test port adapter and VNA software options you need, simply add two digits to the end of the kit model number (as shown in the diagram at right). The first digit is the test port adapter option number, and the second is the VNA software option number (as found in the **Option Finder** below). The example in the diagram shows the combination of digits needed to order a 8760A kit configured with the adapters and software for use with an Agilent PNA that has 3.5mm or 2.92mm (K) test ports.



Option Finder

| VNA TEST PORT TYPE | TEST PORT ADAPTER OPTIONS (see page 15) | VNA SOFTWARE OPTIONS | | | | | |
|----------------------------------|-----------------------------------------|----------------------------|------------------------------------|------------------------|-----------------------------|-----------------------------|------------------------|
| | | KITS W/O SOFTWARE OPTION 0 | ROHDE & SCHWARZ ZV SERIES OPTION 1 | AGILENT 8510C OPTION 4 | AGILENT 8719/20/22 OPTION 5 | AGILENT PNA SERIES OPTION 7 | ANRITSU 37000 OPTION 9 |
| 3.5mm or 2.92mm (K) ¹ | 0 | — | 01 | 04 | 05 | 07 | 09 |
| 3.5mm or 2.92mm (K) ¹ | 1 | 10 | 11 | 14 | 15 | 17 | 19 |
| 7mm | 2 | 20 | 21 | 24 | 25 | 27 | 29 |
| 2.4mm or 1.85mm ¹ | 3 | 30 | 31 | 34 | 35 | 37 | 39 |

¹ 1.85mm and 2.4mm connectors are fully mateable, as are 2.92mm (K) and 3.5mm connectors. The resulting junction is calibrated out and is not critical.

Key Literature: Maury data sheet 2Z-052.

2.92mm (K) VNA Calibration Kit Adapter Options

8770Z1, 8770Z2, & 8770Z3 Sets

Features

- ▶ NMD2.92mm to 2.92mm (K), NMD2.4mm to 2.92mm (K), 2.92mm (K) In-Series, and 7mm to 2.92mm (K) Adapters
- ▶ DC to 40 GHz
- ▶ High Performance
- ▶ Phase Matched Within Model Series

Description

The NMD2.92mm test port adapters in these sets are specifically designed to mate with the special ruggedized connectors used on commercial VNA test sets. The precision 2.92mm adapters are feature low VSWR and low insertion loss and are of minimum length. The sets described on this page are configured to provide users with the ability to tailor their Maury calibration kit for use with specific VNAs. These adapters may be ordered in separately boxed sets, as options shipped with their corresponding VNA calibration kits, or as individual adapters (by model number) to serve as replacement parts or spares.

Adapters Included in 8770Z1 Sets

| TEST PORT ADAPTER OPTION | QUANTITY | DESCRIPTION | MODEL |
|--------------------------|----------|----------------------------------------|--------|
| 1 | 1 | NMD2.92mm female to 2.92mm (K) female | 8719A |
| | 1 | NMD2.92mm female to 2.92mm (K) male | 8719B |
| | 1 | 2.92mm (K) female to 2.92mm (K) female | 8714A2 |
| | 1 | 2.92mm (K) male to 2.92mm (K) male | 8714B2 |
| | 1 | 2.92mm (K) female to 2.92mm (K) male | 8714C2 |

Adapters Included in 8770Z2 (7mm) Sets

| TEST PORT ADAPTER OPTION | QUANTITY | DESCRIPTION | MODEL |
|--------------------------|----------|--------------------------|-------|
| 2 | 2 | 2.92mm (K) female to 7mm | 8725A |
| | 2 | 2.92mm (K) male to 7mm | 8725B |

Adapters Included in 8770Z3 Sets

| TEST PORT ADAPTER OPTION | QUANTITY | DESCRIPTION | MODEL |
|--------------------------|----------|--------------------------------------|--------|
| 3 | 1 | NMD2.4mm female to 2.92mm (K) female | 7909F1 |
| | 1 | NMD2.4mm female to 2.92mm (K) male | 7909F2 |
| | 1 | 2.4mm female to 2.92mm (K) female | 7926A |
| | 1 | 2.4mm male to 2.92mm (K) male | 7926B |
| | 1 | 2.4mm male to 2.92mm (K) female | 7926C |
| | 1 | 2.4mm male to 2.92mm (K) male | 7926D |

Adapter Specifications

The Maury precision 2.92mm in-series adapters and the NMD2.92mm test port adapters included in these sets have the following specifications:

Ruggedized Test Port Adapters

Models 8719A and 8719B (for more detail see page 105)

| | |
|-------------------|----------------|
| Frequency Range | DC to 40.0 GHz |
| Maximum VSWR: | |
| DC to 20.0 GHz | 1.10 |
| 20.0 to 40.0 GHz | 1.16 |
| Nominal Impedance | 50 ohm |

Models 7909F1 and 7909F2 (for more detail see page 102)

| | |
|-------------------|----------------|
| Frequency Range | DC to 40.0 GHz |
| Maximum VSWR: | |
| DC to 20.0 GHz | 1.10 |
| 20.0 to 40.0 GHz | 1.16 |
| Nominal Impedance | 50 ohm |

Precision 2.92mm (K) Adapters

Models 8714A2/B2/C2 (for more detail see page 106)

| | |
|-------------------|----------------|
| Frequency Range | DC to 40.0 GHz |
| Maximum VSWR: | |
| DC to 4.0 GHz | 1.05 |
| 4.0 to 20.0 GHz | 1.08 |
| 20.0 to 40.0 GHz | 1.12 |
| Nominal Impedance | 50 ohm |

Models 7926A/B/C/D (for more detail see page 104)

| | |
|-------------------|----------------|
| Frequency Range | DC to 40.0 GHz |
| Maximum VSWR: | |
| DC to 4.0 GHz | 1.05 |
| 4.0 to 20.0 GHz | 1.08 |
| 20.0 to 40.0 GHz | 1.12 |
| Nominal Impedance | 50 ohm |

Models 8725A/B (for more detail see page 107)

| | |
|-------------------|----------------|
| Frequency Range | DC to 18.0 GHz |
| Maximum VSWR: | |
| DC to 4.0 GHz | 1.05 |
| 4.0 to 12.0 GHz | 1.07 |
| 12.0 to 18.0 GHz | 1.10 |
| Nominal Impedance | 50 ohm |