Keysight 11878A
50 Ohm 3.5 mm Adapter Kit

KEYSIGHT TECHNOLOGIES

Operating and
Service Manual

Notices

Manual Part Number

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Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

11878A Adapter Kit

General Information

To obtain optimum performance from this adapter kit, observe these simple precautions:

- Keep the protective plastic end-caps on the adapters when not in use.
- Make connections carefully to avoid misalignment and connector damage, which will result in inaccurate measurements.
- Keep the connectors free of dirt and any particles.
- When you clean the connectors, try using compressed air first. Do not use abrasives. If further cleaning is required, refer to the *Connector Care for RF and Microwave Coaxial Connectors* document. It can be viewed online by searching for part number 08510-90064 at www.keysight.com.
- Periodically gage the adapter connectors using the instructions provided in the *Connector Care for RF and Microwave Coaxial Connectors* document. The mechanical tolerance for 3.5 mm center connector recession (male and female) is 0.0 to 0.003 inch.
- Read and follow the directions provided later in this document when mating these adapters with SMA connectors.

Description

The 11878A 50 ohm 3.5 mm adapter kit contains four type-N to precision 3.5 mm adapters. The kit is useful for testing 3.5 mm devices on a network analyzer equipped with type-N test port connectors.

Contents

The 11878A kit contains the following:

- Test port adapter, 3.5 mm (m) to type-N (m) (Keysight part number 1250-1743)
- Test port adapter, 3.5 mm (f) to type-N (m) (Keysight part number 1250-1744)
- Test port adapter, 3.5 mm (f) to type-N (f) (Keysight part number 1250-1745)
- Test port adapter, 3.5 mm (m) to type-N (f) (Keysight part number 1250-1750)
- Storage box, (Keysight part number 9211-1582)
- Storage box foam pad, (Keysight part number 11878-80003)
- Operating and Service Manual (Keysight part number 11878-90001)

General Characteristics

Weight

Net: 0.8 kg (1 lb. 12 oz.)

Shipping: 1.3 kg (2 lb. 12 oz.)

Replaceable Parts

There are no replaceable components for the adapters. A worn or damaged adapter must be replaced in whole.

Equipment and Supplies

The following equipment and supplies are required for the maintenance and use of, but are not supplied with, your 11878A adapter kit.

Item	Part Number	Recommended Use
3.5 mm gage sets (part of the 85052B calibration kits)	11752-60105 (f) 11752-60106 (m)	Periodic gaging of connectors. Gage *every* SMA connector before use.
Torque wrench, 5/16", 96 N-cm (8 in-lb) (part of the 85052B calibration kit)	8710-1765	Mating two precision 3.5 mm connectors.
Torque wrench, open-end, 5/16", 60 N-cm (5 in-lb)	8710-1582	Mating a precision 3.5 mm connector to an SMA. connector.
Document: *Connector Care for RF and Microwave Coaxial Connectors*	08510-90064	Following instructions on using and maintaining coaxial connectors.

Mating 11878A Adapters with Precision 3.5 mm Devices

The adapters in this kit are precision 3.5 mm connectors, and are best used with other precision 3.5 mm devices. When mating connectors, observe the following precautions:

- Push them straight together.
- Make sure the male contact pin is precisely aligned with the female.
- Do not overtighten the connectors.
- NEVER rotate either center conductor (by turning the device body).
- Only turn the outer nut of the male connector.
- Torque to 8 in-lb (96 N-cm) for the final connection.

An 8 in-lb torque wrench is available from Keysight Technologies. Refer to "Equipment and Supplies" on page 2 for the part number.

Mating 11878A Adapters with SMA Devices

CAUTION SMA connectors are not precision devices, and are often out of mechanical tolerances even when new. Out of tolerance SMA connectors will likely ruin a precision 3.5 mm connector on the first mating. Gage SMA connectors before use.

Each adapter in this kit has a type-N connector on one end and a *precision* 3.5 mm connector on the other. SMA connectors will mate with precision 3.5 mm connectors. However, caution is necessary to prevent accidental damage due to worn or out-of-tolerance SMA connectors. Such connectors can destroy a precision 3.5 mm connector *even on the first connection*. Keysight Technologies recommends that you remember the following important information:

- SMA connectors are not precision mechanical devices.
- They are not designed for repeated connections.
- They are very susceptible to mechanical wear.
- SMA connectors are often out of mechanical tolerances when new.

Before mating an SMA connector (even a new one) to a precision 3.5 mm connector, inspect the SMA connector carefully both visually and mechanically. To measure the mechanical tolerances, use a precision connector gage. A male SMA connector pin which is too long can smash or break the delicate fingers on the precision 3.5 mm female connector, damaging it beyond possibility of repair. Gaging SMA connectors is the most important step in preventing damage to your equipment, and it takes very little time. Gaging instructions and gage part numbers are provided in the *Connector Care for RF and Microwave Coaxial Connectors* document. It can be viewed online by searching for part number 08510-90064 at www.keysight.com.

Use the following precautions when mating SMA and precision 3.5 mm connectors:

- Push them straight together.
- Make sure the male contact pin is precisely aligned with the female.
- Do not overtighten the connectors.
- NEVER rotate either center conductor (by turning the device body).
- Only turn the outer nut of the male connector.
- Torque to 5 in-lb (50 N-cm) for the final connection.

Note that the torque listed above is less than when mating two precision 3.5 mm connectors. A 5 in-lb torque wrench is available from Keysight. For the part number, refer to "Equipment and Supplies" on page 2.

Significant structural and dimensional differences exist between these two type of connectors. Precision 3.5 mm connectors use an air dielectric. Only air exists between the center and outer conductors. The male or female center conductor is supported by a plastic bead, deep within the body of the connector. In SMA connectors, a plastic dielectric supports the entire length of the center conductor. In addition, the diameters of both the inner and outer conductors differ between SMA and precision 3.5 connectors.

Using only precision 3.5 mm connectors will provide superior SWR and insertion loss. It will also extend the life of your adapters (and other test equipment connectors) by reducing mechanical wear.

Cleaning Connectors

For information on cleaning connectors, refer to the *Connector Care for RF and Microwave Coaxial Connectors* document. It can be viewed online by searching for part number 08510-90064 at www.keysight.com.

Contacting Keysight

Assistance with test and measurement needs and information on finding a local Keysight office are available on the Web at:
www.keysight.com/find/assist

NOTE In any correspondence or telephone conversation, refer to the Keysight product by its model number and full serial number. With this information, the Keysight representative can determine whether your product is still within its warranty period.

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