R&S®WCA
Waveguide Coax Adapter
Installation Instructions

1700398302
Version 05

ROHDE&SCHWARZ
Make ideas real

This document describes the following R&S WCA waveguide coax adapter models:

- R&S WCA12-135 (1700.3977K02)

Muehldorfstr. 15, 81671 Muenchen, Germany
Phone: +49 89 41 29 - 0
Email: info@rohde-schwarz.com
Internet: www.rohde-schwarz.com

1700.3983.02 | Version 05 | R&S®WCA

Throughout this manual, R&S® is indicated as R&S.

Contents

1 About the R&S WCA

A waveguide coax adapter connects a sensor with a coax RF connector to a device with a waveguide flange. If mounted, the brackets stabilize the connection and thus help to avoid damage to the coax connector. Each adapter is delivered with its individual S-parameter set. This S-parameter set is loaded to the sensor using the S2P-Wizard. So in the end, this package provides a calibrated adapter.

Intended use

The waveguide coax adapter is designed for NRP power sensors from Rohde & Schwarz. For information on which R&S WCA model is suitable for which sensor type, refer to the R&S WCA specifications document.

Use the waveguide coax adapter in an environment that is suitable for both the waveguide coax adapter and the sensor. Look up the environmental conditions in the specifications documents.

Target audience

The target audience is the same as for NRP power sensors from Rohde & Schwarz. For details, refer to the user manual of the sensor.

Safety information in the documentation

Safety information warns you of potential dangers and gives instructions on how to prevent personal injury or damage caused by dangerous situations. Throughout the documentation, safety instructions are provided when you need to take care during setup or operation.

The documentation helps you use the R&S WCA safely and efficiently. Keep the documentation nearby and offer it to other users.

Related manuals

This manual describes the installation of the R&S WCA. For information on all other topics, refer to the following manuals:

- User manual of the R&S NRPxxS(N) three-path diode power sensors
- User manual of the R&S NRPxxT(N) thermal power sensors

2 Checking out the R&S WCA

The R&S WCA components are delivered in a box.

Overview of the R&S WCA components

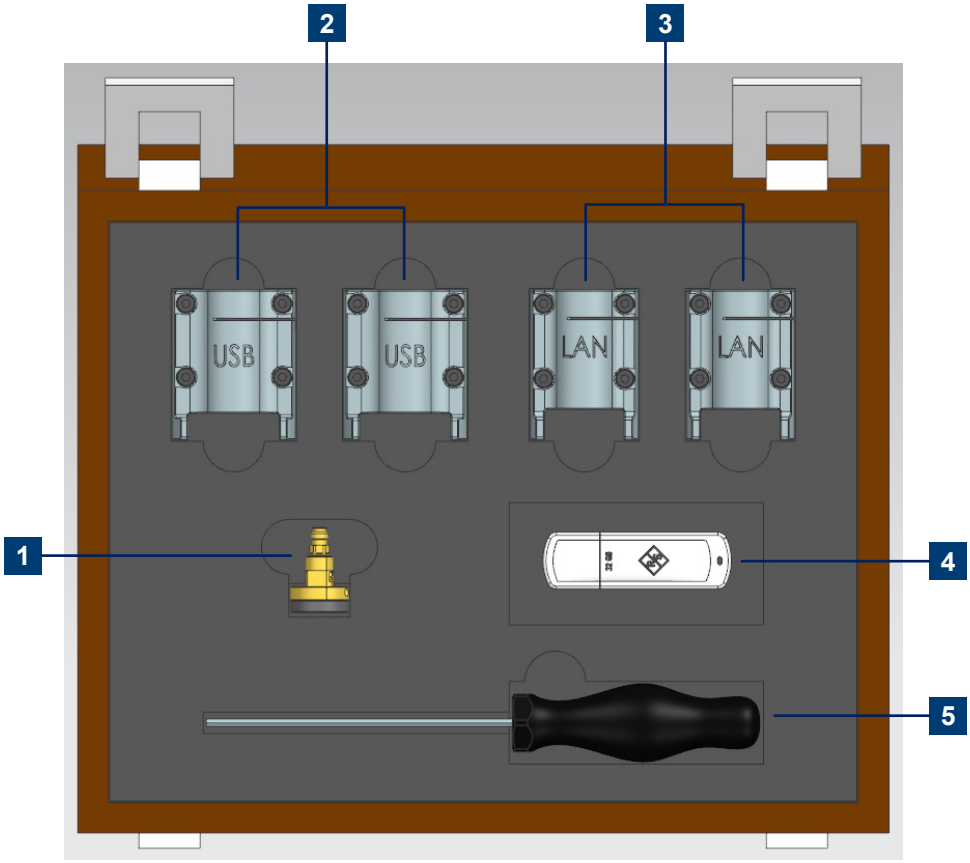


Figure 2-1: Contents of the R&S WCA box

1 = R&S WCA waveguide coax adapter
2 = Pair of brackets for USB sensors
3 = Pair of brackets for LAN sensors
4 = USB stick
5 = Screw driver

The box contains two pairs of brackets. One pair is for USB sensors, the other pair is for LAN sensors. The more widely pair is for USB sensors. All brackets are labeled to distinguish them quickly.

Information delivered on the USB stick:

- S-parameter set designated for this waveguide coax adapter
- R&S NRP Toolkit software package, version 4.23 and later
  The R&S NRP Toolkit contains the S-parameter software to download the S-parameter set to the sensor, see Chapter 4, "Importing S-parameters", on page 11.

- Datasheet of the waveguide coax adapter
- PDF of these installation instructions

Naming conventions

The model name consists of the three parts: WCA<2-digit number>-<3-digit number>

- WCA for waveguide coax adapter
- <2-digit number> = size of waveguide flange
- <3-digit number> = size of the female coax connector that matches the male connector of the designated sensor type

Example:

WCA12-135

12 means WR-12 waveguide flange.

135 means 1.35 mm female coax connector.

Identifying the components

The components are labeled so that you can match them easily.

- Waveguide coax adapter, labeled on the side
  <adapter type> Ser.<adapter serial number>
  Example: 1701.0242.00 Ser. 123456
- USB stick
  <adapter type> Ser. <serial number>
  Example: 1701.0242.00 Ser. 123456
- Name of S-parameter set
  <adapter type>_Ser.<serial number><.s2p>
  Example: 1701.0242.00_Ser.123456.s2p

3 Mounting the R&S WCA

If there is enough space at the side of the device under test (DUT) to screw on the waveguide flange, we recommend the following sequence:

1. "Preparations" on page 8
2. "To connect to the sensor" on page 8
3. "To mount the brackets" on page 8
4. "To connect to the DUT" on page 10

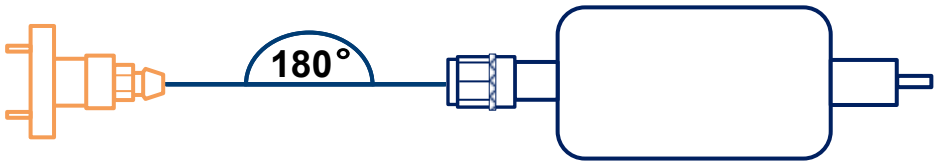
Preparations

1. Ensure that the RF connectors are compatible. See Table 3-1 and Table 3-2.
2. Remove the protective covers, if mounted.
3. Inspect all RF connectors carefully. Look for metal particles, contaminants and defects.

   If either RF connector is damaged, do not proceed, because the risk of damaging the mating connector is too high. For details, see also the user manuals of the sensor.

To connect to the sensor

1. Insert the coax connector of the adapter straight into the RF output of your sensor. Take care not to tilt it.



2. **NOTICE!** Risk of damaging the center pin of the coax connector. Only rotate the hex nut of the coax connector. Never rotate the power sensor itself.

   Tighten the coax connector manually.
3. Tighten the coax connector using a torque wrench with the nominal torque recommended in Table 3-1 to ensure maximum measurement accuracy.

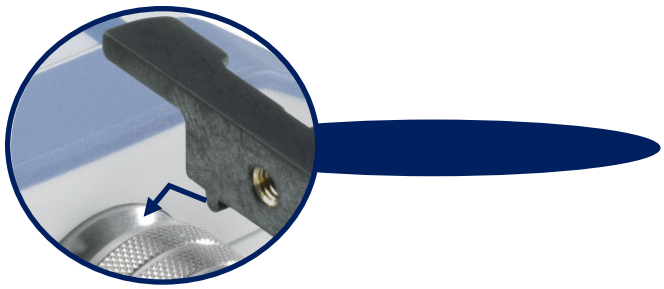
Table 3-1: RF coax connector characteristics (adapter -> sensor)

Female adapter connector	Matching male sensor connector	Tightening torque
1.35 mm	1.35 mm	0.90 Nm (8" lbs)

To mount the brackets

1. Select the pair of brackets fitting your sensor, LAN or USB.
2. Mount the first bracket on the sensor:

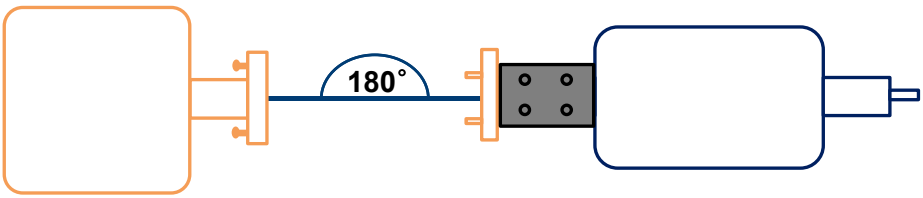
a) Push the bracket onto the casing of the sensor.
b) Push the bracket as close to the coax connector as possible without using force. The nose of the bracket must fit between union nut and casing.



3. Mount the second bracket in the same way.
4. Fix the brackets with the screws:
   a) Screw tight the two screws close to the sensor casing.
   b) Screw tight the two screws close to the waveguide flange.

To connect to the DUT

1. Align the alignment pins and the holes receiving the alignment pins of adapter and DUT carefully, see also Figure 3-1. Avoid scratching the contact surfaces of the waveguide flanges.
2. Insert the pins of the waveguide adapter flange straight into the holes of RF DUT output. Take care not to tilt it.



3. Tighten the screws of the waveguide flange manually.
4. Tighten the screws of the waveguide flange using a torque wrench with the nominal torque recommended in Table 3-2 to ensure maximum measurement accuracy.

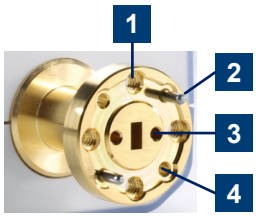


Figure 3-1: Waveguide flange

1 = Hole for screw
2 = Alignment pin
3 = Hole for additional pin
4 = Hole for DUT pin

Table 3-2: RF waveguide flange characteristics (adapter -> DUT)

Waveguide size	Tightening torque
WR-12	0.58 Nm (5" lbs)

4 Importing S-parameters

The R&S S2P-Wizard is part of the R&S NRP Toolkit that is delivered on the USB stick. For information on the R&S NRP Toolkit and its components, see the user manual of the sensor.

Use the R&S S2P-Wizard to download the designated S-parameter set to the sensor, onto which you have mounted the waveguide coax adapter. The R&S S2P-Wizard guides you through all steps necessary.

You can also use the R&S S2P-Wizard to delete an S-parameter set from the sensor or to fall back on a backup you have created earlier.

Each waveguide coax adapter comes with an individual S-parameter set. If you own more than one waveguide coax adapter, make sure that you use the S-parameter set that matches. The naming and labeling help you to identify matching components, see "Identifying the components" on page 7.

5 Contacting customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support, or follow this QR code:

Figure 5-1: QR code to the Rohde & Schwarz support page