

# R&S® TSMS-OMN70

## OMNI Antenna

### Installation Instructions



1179729102  
Version 01

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This document describes the following R&S®TSMS-OMN70 models:

- R&S®TSMS-OMN70 omnidirectional antenna 17 GHz to 70 GHz (4902.6000.02)

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Muehldorfstr. 15, 81671 Muenchen, Germany  
Phone: +49 89 41 29 - 0  
Email: [info@rohde-schwarz.com](mailto:info@rohde-schwarz.com)  
Internet: [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

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Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol, e.g. R&S®TSMS-OMN70 is indicated as R&S TSMS-OMN70.

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# 1 About the R&S TSMS-OMN70

The R&S TSMS-OMN70 is a super wideband omnidirectional antenna for mm-wave frequency range that fits for all use-cases of the R&S TSMS53DC super wideband ultra compact downconverter. The frequency range of the R&S TSMS-OMN70 is wide.

The antenna can be used:

- Between 4.5 GHz and 70 GHz with medium RF parameters (out of band)
- Between 17 GHz and 53 GHz with optimal RF parameters (in band).

The antenna pattern is optimized for drive- and walk-testing with transmitters on a typical base station height over ground. When looking at the vertical pattern, the gain maximum is about 30 degrees to 60 degrees above the horizon, while the horizontal pattern remains omnidirectional. For details, see the data sheet.

## Intended use

The R&S TSMS-OMN70 antenna is designed for connection to the R&S TSMS53DC downconverter. The antenna is optimized for drive and walking testing for 5G FR2 bands and possible future 6G bands. It can be carried in a bag or mounted on a holder.

Observe the operating conditions and performance limits listed in the data sheet.

## Target audience

This document targets technicians, operators and maintenance personnel from network operators, testing service providers, infrastructure vendors. The required skills and experience depend on the application of the product.

## 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 TSMS-OMN70 safely and efficiently. Keep the documentation nearby and offer it to other users.

## Related manuals

This manual describes the installation of the R&S TSMS-OMN70. For information on all other topics, refer to the following manuals:

- User manual of the R&S TSMS53DC

For information on maintenance, transport and disposal, refer to the R&S TSMS53DC user manual.

## 2 Checking out the R&S TSMS-OMN70

### To unpack and check

1. Unpack the R&S TSMS-OMN70 carefully.
2. Retain the original packing material. Use it when transporting or shipping the R&S TSMS-OMN70 later.
3. Using the delivery notes, check the equipment for completeness.
4. Check the equipment for damage.

If the delivery is incomplete or equipment is damaged, contact Rohde & Schwarz.

### Parts list incl. accessories

Accessory parts are provided for all use cases:

- Omnidirectional antenna R&S TSMS-OMN70, order number 4902.6000.02.
- 1.35m RF cable (2.4mm connector) R&S TSME-ZQC, order number 3712.0912.02.
- An antenna stick with holder R&S FR4-5G-A3 for the FR4 backpack and the R&S TSMA6-ZCB2 carrying bag, order number 1900.6403.42.

### Overview of the R&S TSMS-OMN70



- 1 = Radome  
2 = Clamping ring  
3 = Ground plate  
4 = Waveguide port: an RPC 1.85 connector, DC to 70 GHz, 50 Ω; mechanical compatible with an RPC 2.40

## 3 Connecting the R&S TSMS-OMN70

### 3.1 Connecting to the R&S TSMS53DC

The R&S TSMS-OMN70 antenna is designed for connection to the R&S TSMS53DC downconverter. You can connect the antenna to one of the RF In connectors of the R&S TSMS53DC, depending on the frequency range.

Figure 3-1 shows the connection to R&S TSMS53DC. You can connect the R&S TSMS-OMN70 to R&S TSME6 or R&S TSMA6B in the same manner.



Figure 3-1: R&S TSMS-OMN70 connected to R&S TSMS53DC

- 1 = R&S TSMS53DC
- 2 = R&S TSMS-OMN70
- 3 = R&S TSME-ZQC

#### Prerequisites

- R&S TSME-ZQC is available.

#### RF in sub 6 or sub 17 GHz range: connect the R&S TSMS-OMN70 to the RF In (RF Bypass) connector of the R&S TSMS53DC

1. Use an RF cable with an SMA plug adapter (2.4mm/1.85mm to SMA).
  - Note:** The SMA connector is sensitive to mechanical stress. Use the following handling precautions.
    - Always use a torque wrench and mount the cable end with 60 Ncm to 90 Ncm.
    - Do not stack adapters directly at the SMA connector. If you need to use adapters, then always use a specific adapter cable (order no. 4900.1700.00).
2. **NOTICE!** Excessive tightening can damage the connectors.
 

To connect to the "RF In ≤ 17 GHz" (RF bypass) connector of the R&S TSMS53DC, proceed as follows:

  - a) Carefully align the connector of the cable along a common axis.

- b) Mate the connectors along the common axis until the male pin of the inner connector engages with the female socket of the outer connector.
  - c) Turn the nut of the outer connector until the connectors are coupled.
  - d) Torque the nut to the specified limit using a calibrated torque wrench.
3. Connect the cable to the RPC 1.85 mm connector of the R&S TSMS-OMN70.

#### **RF in the 17 GHz to 53 GHz range: connect to 1.85 mm (V) connector**

1. Use an RF cable with an 1.85 mm (V) plug connector.

**Note:** The V connector is sensitive to mechanical stress. Use the following handling precautions:

- Always use a torque wrench and mount the cable end with 90 Ncm.

2. **NOTICE!** Risk of cable damage.

- Use only cables with V plugs for the connection to the V connector.
- Use the port saver (V-Adapter Male-Female, order no. 5009.5859.00) for the V connector.

Connect the RF cable with V plug to the "RF In 17-53 GHz" connector of the R&S TSMS53DC.

Follow the instructions as described in ["RF in sub 6 or sub 17 GHz range: connect the R&S TSMS-OMN70 to the RF In \(RF Bypass\) connector of the R&S TSMS53DC"](#) on page 7.

3. Connect the cable to the RPC 1.85 connector of the R&S TSMS-OMN70.

## **3.2 Connecting to the holder R&S FR4-5G-A3**

### **Prerequisites**

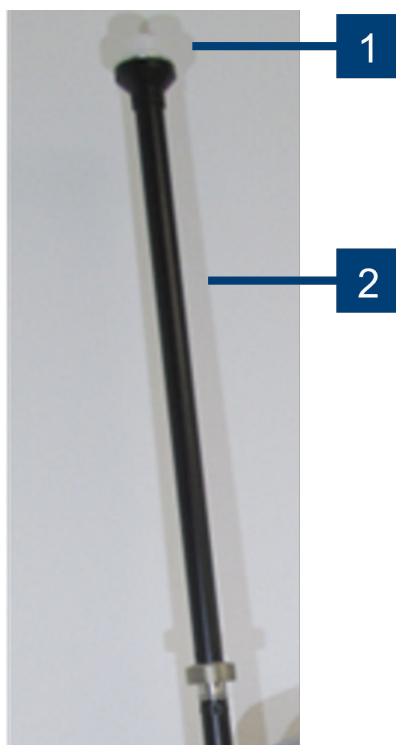
- The antenna stick with holder R&S FR4-5G-A3 (1900.6403.42) is available.

1. **NOTICE!** Excessive tightening can damage the connectors.

Connect the stick holder to the RPC 1.85 mm connector of the R&S TSMS-OMN70:

- a) Carefully align the connector of the cable along a common axis.
- b) Mate the connectors along the common axis until the male pin of the inner connector engages with the female socket of the outer connector.
- c) Turn the nut of the outer connector until the connectors are coupled.
- d) Torque the nut to the specified limit using a calibrated torque wrench.





1 = R&S TSMS-OMN70  
2 = R&S FR4-5G-A3

2. For details on how to attach the antenna stick holder to the FR4 backpack, see the Freerider 4 user manual.

## 4 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](http://www.rohde-schwarz.com/support), or follow this QR code:



*Figure 4-1: QR code to the Rohde & Schwarz support page*