R&S®TSMA6
Autonomous Mobile Network Scanner
User Manual

4900805702
Version 07

ROHDE&SCHWARZ
Make ideas real

This manual describes the following R&S®TSMA6 models:

- R&S®TSMA6 (4900.8005.02)

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4900.8057.02 | Version 07 | R&S®TSMA6

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol , e.g. R&S®TSMA6 is indicated as R&S TSMA6.

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1 Preface

1.1 Documentation Overview

This section provides an overview of the R&S TSMA6 user documentation. Unless specified otherwise, you find the documents on the R&S TSMA6 product page at:

www.rohde-schwarz.com/manual/tsmx

1.1.1 Getting Started Manual

Introduces the R&S TSMA6 and describes how to set up and start working with the product. Includes basic operations, typical measurement examples, and general information, e.g. safety instructions, etc. A printed version is delivered with the instrument.

1.1.2 User Manuals and Help

Contains the description of all instrument modes and functions. Includes the contents of the getting started manual .

1.1.3 Basic Safety Instructions

Contains safety instructions, operating conditions and further important information. The printed document is delivered with the instrument.

1.1.4 Data Sheets and Brochures

The data sheet contains the technical specifications of the R&S TSMA6. It also lists the firmware applications and their order numbers, and optional accessories.

The brochure provides an overview of the instrument and deals with the specific characteristics.

See www.rohde-schwarz.com/brochure-datasheet/tsmx

1.1.5 Release Notes and Open Source Acknowledgment (OSA)

The release notes list new features, improvements and known issues of the current firmware version, and describe the firmware installation.

The open-source acknowledgment document provides verbatim license texts of the used open source software.

See www.rohde-schwarz.com/firmware/tsmx

1.2 Safety and Regulatory Information

The product documentation helps you use the R&S TSMA6 safely and efficiently. Follow the instructions provided here and in the printed "Basic Safety Instructions". Keep the product documentation nearby and offer it to other users.

Intended use

The R&S TSMA6 is intended for the development, production and verification of electronic components and devices in industrial, administrative, and laboratory environments. Use the R&S TSMA6 only for its designated purpose. Observe the operating conditions and performance limits stated in the data sheet.

Where do I find safety information?

Safety information is part of the product documentation. It warns you about the potential dangers and gives instructions how to prevent personal injuries or damage caused by dangerous situations. Safety information is provided as follows:

- The printed "Basic Safety Instructions" provide safety information in many languages and are delivered with the R&S TSMA6.
- Throughout the documentation, safety instructions are provided when you need to take care during setup or operation.

1.2.1 Korea Certification Class B

이 기기는 가정용(B급) 전자파 적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

2 Key Features

As in-building traffic in cellular networks grows, there is an increased need for indoor measurements. While traditional drive test systems consist of a laptop with test mobile phones and scanners, there are also walk-test solutions that use tablets and smartphones.

The R&S TSMA6 enhances such solutions, providing the user with accurate insight into the RF environment.

The R&S TSMA6 combines the technology of the R&S TSME6 ultra-compact drive test scanner with a high-performance Intel processor. The scanner can run PC-based drive test software, and smartphones can be connected via USB.

With its ultra-broadband front end, the integrated scanner measures all supported technologies 350 to 6000 MHz simultaneously. The future-proof architecture and the in-field upgradability for both, hardware and software, allow up to 4x4 MIMO measurements and pave the way for the upcoming 5G technology.

Key Features

- No limitation in 3GPP (LTE, WCDMA, GSM, NB-IoT…) frequency bands up to 6 GHz incl. a Multi-GNSS receiver for uninterrupted location tracking
- More than 10 technologies simultaneously in one system
- Future-proof for upcoming 5G related measurements
- Compact and lightweight design with customized mechanical concept for cascading multiple scanner hardware
- Maximum connectivity supporting additional scanner hardware, Windows-based PC, Android-based UEs or tablets using wireless and wired connections
- Integrated high-performance Intel i7 CPU-based PC

3 Instrument Tour

3.1 Front Panel View

The front panel of the R&S TSMA6 does not provide any connectors or control elements for operation.

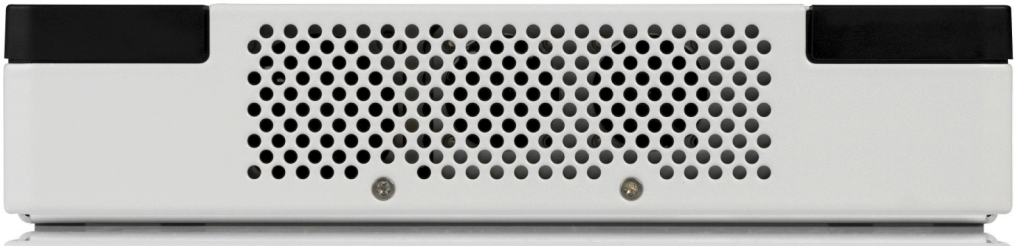


Figure 3-1: R&S TSMA6 - Front Panel

3.2 Rear Panel View

The following figure provides an overview of the control elements and the connectors on the rear panel of the instrument.

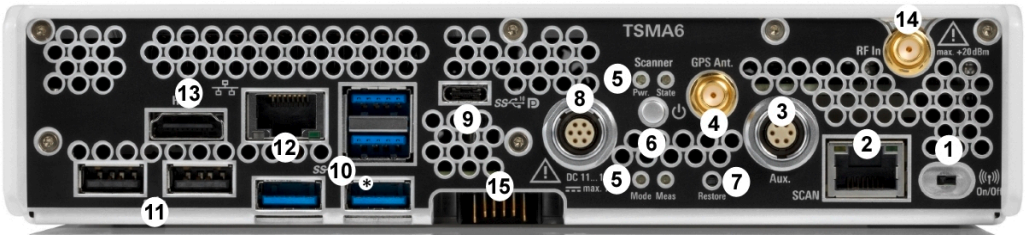


Figure 3-2: R&S TSMA6 - Rear Panel

1 = WLAN/Bluetooth ON/OFF
2 = SCAN Port - Gbit LAN IF- 2nd Scanner (TSME4/6)
3 = AUX Connector (SMA) - Synchronization
4 = GPS Ant. Connector (SMA) - GPS antenna input
5 = Scanner Pwr / State, Mode, Meas - Status LEDs
6 = POWER ON/OFF
7 = Restore button
8 = DC IN Connector
9 = USB-C (1x)
10 = USB 3.0 (4x)
11 = USB 2.0 (2x)
12 = LAN Port - Remote Control R&S TSMA6
13 = HDMI Connector
14 = RF In Connector
15 = Docking Connector R&S TSMA6-BP

WLAN/Bluetooth ON/OFF

Switches WLAN and Bluetooth on and off.

SCAN (LAN Connector (Gbit))

The LAN connector provides a high-speed 1 Gbit Ethernet interface with an RJ 45 connector. It is used to connect the R&S TSMA6 to a separate R&S TSME6 as a second scanner. It can be used for MIMO scenarios and for increasing bandwidth and measurement rate.

AUX Connector

The AUX connector has two functions.

- IN/OUT synchronization with up to 4 connected R&S TSME6 (requires sync cable R&S TSME6-ZC2, R&S no. 4900.1800.02 or R&S TSME6-ZC4, R&S no. 4900.1817.02)
- Synchronization of R&S TSMA6 with an external 10 MHz reference (requires dedicated sync cable)

GPS Ant.

An SMA connector is provided for the supplied external active GPS antenna (Antenna power: 3 V, max. 25 mA).

The integrated multi-GNSS (GPS / BeiDou / Galileo / GLONASS) receiver allows to use three satellite systems in parallel. This offers an accuracy improvement of 30 % to 50 % by using a second constellation of satellites.

Following combinations are allowed:

- GPS only
- GPS / GLONASS / Galileo
- GPS / BeiDou

The R&S TSMA6 can perform dead reckoning in tunnels to provide position information even if no satellites are available. The dead reckoning is performed in the device itself by built-in electronic gyroscopes.

For enabling untethered dead reckoning, see Chapter 5.8, "Enabling Untethered Dead Reckoning ", on page 29.

Depending on the intended use, the respective valid regulations regarding lightning protection of the antennas and regarding vehicle installation must be observed during installation.

Status LEDs

The four status LEDs, [Scanner State], [Scanner Pwr], [Mode], and [Meas] indicated different states of the R&S TSMA6. For a detailed description, see Chapter 3.3, "Status LEDs", on page 15.

Power ON/OFF

The POWER ON/OFF button turns on and off the device.

Press and hold the button results in a coldstart of the R&S TSMA6.

Restore

Press the RESTORE button (> 20 sec) to bring the system partition of the embedded Windows CPU back to factory default or to a user backup (if created).

NOTICE

Loss of user data after RESTORE

Executing restore brings the R&S TSMA6 irreversible back to the condition of delivery or any other later stored backup version.

All user data since last backup is lost.

DC IN Connector

The DC IN connector is used to supply the R&S TSMA6 with DC power. A wide DC input range 11 V to 18 V / max. 7 A is supported.

USB-C

The USB-C port (multiport for Thunderbolt, Display and standard USB-C 3.1) can be used for connecting external storage devices, tablets and test mobile phones.

Total power (USB-C): max. 3 A

Overall USB current (USB-C, USB 3.0 and USB 2.0): max. 3 A

USB 3.0 (4x)

The four USB 3.0 ports can be used for connecting external storage devices, data sticks and test mobile phones.

Power limit: max. 900 mA / port

Overall USB current (USB-C, USB 3.0 and USB 2.0): max. 3 A

USB 2.0 (2x)

The two USB 2.0 ports can be used for connecting external devices, e.g. keyboard, mouse or software dongle.

Power limit: max. 500 mA / port

Overall USB current (USB-C, USB 3.0 and USB 2.0): max. 3 A

LAN Port - Remote Control

The LAN port provides a high-speed 1 Gbit Ethernet interface with an RJ 45 connector. It is used to connect the R&S TSMA6 to a host PC.

The LAN interface can be used for Remote Control / Remote Desktop Connections. Alternatively, it can also be used for distributed applications of R&S NESTOR.

The LEDs on the LAN port indicate the status of the connection to the host PC. LED 1 (yellow, link status) is on the left side of the port, LED 2 (green, activity status) is on the right.

HDMI Port

The HDMI port can be used for connecting an external monitor. (max. resolution: 2560 x 1600 pixel)

RF IN Connector

The RF IN connector is the RF input of the R&S TSMA6. The multi-band RF paddle antenna (700 MHz to 2.6 GHz), which is included in the shipment of R&S TSMA6 or any custom RF source is connected to this SMA connector. The maximum input power is +20 dBm/10 V DC.

NOTICE

Risk of instrument damage

Do not overload the maximum allowed input of +20 dBm.

Non-compliance destroys the input mixer.

Battery Pack Connector

The battery pack connector is used to connect a battery pack unit (R&S TSMA6-BP, R&S No. 4900.9001.02) allowing mobile operation.

3.3 Status LEDs

The four LEDs on the rear panel display the following states.

- [Scanner State / Scanner Pwr]
  Indicates the state of the scanner component
- [Mode]
  Indicates the device status
- [Meas]
  Indicates the state of the SW application

Device		Scanner		
[Mode] LED	**[Meas] LED**	**[Pwr] LED**	**[State]LED**	**Comment**
Off	Off	Off	Off	Power Off
green (BLINKING, 1 Hz)	---	---	---	Power On Selftest / Power Down

Device		Scanner		
[Mode] LED	**[Meas] LED**	**[Pwr] LED**	**[State]LED**	**Comment**
green (CONT.)	---	---	---	Power On / WLAN Off
blue (CONT.)	---	---	---	Power On / WLAN On
---	---	green (BLINKING rapidly => ON)	red (Off-On < 5s => Off)	Scanner configuration ongoing
---	---	green (CONT.)	---	Scanner ready
---	yellow (CONT.)	green (CONT.)	green (BLINKING)	SW loading
---	green (CONT.)	green (CONT.)	green (CONT.)	SW ready
---	green (BLINKING, 0.5 Hz)	green (CONT.)	green (BLINKING)	SW measuring
---	green/blue (BLINKING rapidly)	green (CONT.)	green (BLINKING)	SW recording
---	yellow (BLINKING, 2 Hz)	---	---	SW warning
blue (BLINKING, 1 Hz)	---	---	---	Restore/ Backup/FW, SW installation (in progress)
green (BLINKING, 0.2 Hz, ton = 1 s)	---	---	---	Delayed start activated
Error States				
blue (BLINKING rapidly)	---	---	---	Selftest Failed/ Scanner Interface not accessible
---	---	---	red (BLINKING, 2 Hz)	Scanner Error Temperature Warning
---	---	---	red (CONT.)	Scanner Error Temperature Error
---	red (BLINKING rapidly)	---	---	SW error

4 Option Concept

The R&S TSMA6 scanner consists of the R&S TSMA6 hardware and a set of (specified) technology and band options when it comes from the factory.

4.1 Technology Options

Technology options allow the R&S TSMA6 to scan the input based on a specific technology, for example, LTE. All technology options can be installed on the same instrument; the R&S TSMA6 can measure various technologies simultaneously.

Following technology options are available:

Table 4-1: Available R&S TSMA6 technology options

Option	Order Number	Description
R&S TSMA6-K10	4901.0989.02	R&S TSMA6 Block IQ
R&S TSMA6-K21	4901.0789.02	R&S TSMA6 scanner option: WCDMA
R&S TSMA6-K22	4901.0766.02	R&S TSMA6 scanner option: CDMA2000
R&S TSMA6-K23	4901.0795.02	R&S TSMA6 scanner option: GSM
R&S TSMA6-K24	4901.0750.02	R&S TSMA6 scanner option: 1xEV-DO
R&S TSMA6-K25	4901.0814.02	R&S TSMA6 scanner option: CW
R&S TSMA6-K26	4901.0743.02	R&S TSMA6 scanner option: TETRA
R&S TSMA6-K27	4901.0720.02	R&S TSMA6 scanner option: RF Power Scan
R&S TSMA6-K28	4901.0737.02	R&S TSMA6 scanner option: WiMAX™
R&S TSMA6-K29	4901.0772.02	R&S TSMA6 scanner option: LTE
R&S TSMA6-K30	4901.0714.02	R&S TSMA6 scanner option: LTE-MIMO
R&S TSMA6-K32	4901.0643.02	R&S TSMA6 scanner option: LTE eMBMS
R&S TSMA6-K34	4901.0808.02	R&S TSMA6 scanner option: NB-IoT/Cat NB1-Scanning
R&S TSMA6-K35	4901.0208.02	R&S TSMA6 scanner option: LTE-M
R&S TSMA6-K40	4901.0614.02	R&S TSMA6 scanner option: Automatic Channel Detection (ViCom only, not for R&S ROMES4)
R&S TSMA6-K50	4901.0966.02	R&S TSMA6 scanner option: 5G NR
R&S TSMA6-K61	4901.0672.02	R&S TSMA6 scanner option: QualiPoc® Support
R&S TSMA6-K80	4901.0972.02	R&S TSMA6 scanner option: BTS PE

4.2 Band Options

The R&S TSMA6 hardware simultaneously measures in all wireless communications bands from 350 MHz to 6 GHz. Using band licenses, more cost-efficient configurations are available for applications where only a limited number of bands need to be measured simultaneously. These configurations limit the number of bands that can be measured in parallel. You can reconfigure the bands for each measurement as desired.

Upgrade options are available to increase the bandwidth of the R&S TSMA6 from a limited number of bands to full bandwidth.

Following band options are available:

Table 4-2: Available R&S TSMA6 band options

Option	Order Number	Description
R&S TSMA6-KAB	4901.0708.02	All bands measured simultaneously
R&S TSMA6-K1B	4901.0695.02	1 band measured simultaneously
R&S TSMA6-K2B	4901.0689.02	2 bands measured simultaneously
R&S TSMA6-K3B	4901.0672.02	3 bands measured simultaneously
R&S TSMA6-K4B	4901.0666.02	4 bands measured simultaneously
R&S TSMA6-K5B	4901.0650.02	5 bands measured simultaneously
R&S TSMA6-KUB	4901.0950.02	Upgrade: 1 additional band measured simultaneously

4.3 R&S NESTOR Options

The R&S NESTOR options are preinstalled on the R&S TSMA6, if the R&S NESTOR application is ordered within the TSMA6 KMAT.

A later installation of additional R&S NESTOR options can be done via the R&S TSMA6 web GUI (see "Install NESTOR Options" on page 127) or via the License Key Manager. In this case, you have to order option-specific NESTOR license keys. Therefore, the serial number of R&S NESTOR, which available on the product label, is required.

4.4 R&S ROMES Options

A later enhancement of the R&S TSMA6 with the R&S ROMES application requires a USB license dongle including the ROMES options.

R&S ROMES licenses are shipped with a USB dongle. Accompanied with the dongle, there is a license key file matching with the dongle.

This license key file has to be copied as a post process after software installation (see "Install ROMES Option" on page 127).

5 Preparing for Use

WARNING

Risk of injury and instrument damage

The instrument must be used in an appropriate manner to prevent electric shock, fire, personal injury, or damage.

- Do not open the instrument casing.
- Read and observe the "Basic Safety Instructions" delivered as a printed brochure with the instrument.
  In addition, read and observe the safety instructions in the following sections.
  Notice that the data sheet may specify additional operating conditions.

NOTICE

Risk of instrument damage during operation

An unsuitable operating site or test setup can cause damage to the instrument and to connected devices. Ensure the following operating conditions before you switch on the instrument:

- The instrument is dry and shows no sign of condensation.
- The instrument is positioned as described in the following sections.
- Signal levels at the input connectors are all within the specified ranges.

EMI Suppression

Electromagnetic interference (EMI) may affect the measurement results.

To suppress generated electromagnetic interference (EMI):

- Use only double shielded cables for RF and GPS connection when not using the standard accessory.
- Use only shielded LAN cable CAT6 / assembling accessory ferrit if using a LAN cable supplied by the customer.
- The length of the connected USB cables must not exceed 3 m.
- Always terminate open cable ends.
- DC-based lab networks are not allowed to be used for power supply.
- LAN cable length to the next PC or switch must be < 30m
- Note the EMC classification in the data sheet.

5.1 Unpacking the Instrument

The following section describes how to setup the instrument.

NOTICE

Risk of instrument damage due to inappropriate operating conditions

Specific operating conditions are required to ensure accurate measurements and to avoid damage to the instrument. Observe the information on appropriate operating conditions provided in the basic safety instructions and the instrument's data sheet.

Check the equipment for completeness using the delivery note and the accessory lists for the various items. Check the instrument for any damage. If there is damage, immediately contact the carrier who delivered the instrument. Make sure not to discard the box and packing material.

Packing material

Retain the original packing material. If the instrument needs to be transported or shipped later, you can use the material to protect the control elements and connectors.

Accessories

The following items are included with shipment of the R&S TSMA6:

- 12 V DC power supply cable with a cigarette lighter connector
- Wide range RF paddle antenna (700 MHz to 2600 MHz)
- Active GPS patch antenna
- LAN cable with ferrit
- Ferrit for LAN cable supplied by the customer

Optional Accessories

The following items are optionally available.

- TSMA6-ZCB2 (Carrying Bag)
- TSMA6-Z1 (AC Adapter)
- TSMA6-Z2 (19" Rack Adapter)
- TSMA6-Z5 (Carrying Box)

5.2 Connecting External Devices

The following external devices must be connected before connecting the power supply.

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.
- Do not stack adapters directly at the SMA connector. If you need to use adapters (e.g: SMA to N), then always use a specific adapter cable (R&S no. 4900.1700.00).

To select the correct connectors, refer to Chapter 3.2, "Rear Panel View", on page 12.

1. Connect the RF antenna to the RF IN connector (see Figure 3-2 - 14).
2. Connect the GPS antenna to the GPS ANT port (see Figure 3-2 - 4).
3. Connect mouse and keyboard to the USB 2.0 ports (see Figure 3-2 - 11) and a monitor to the appropriate monitor port (HDMI, USB-C)) (see Figure 3-2 - 13, 9) if you want to use local operation. (optional)
4. Connect a LAN cable to the LAN port if you want to use the R&S TSMA6 via Remote Desktop or as distributed system (optional). (See Figure 3-2 - 12.)
5. **OPTIONAL**: Connect external devices/storage devices and test mobile phones to USB 2.0 / USB 3.0 / USB-C ports (see Figure 3-2 - 9, 10, 11).

5.3 Connecting Power Supply

This section describes how to connect the R&S TSMA6 to a power supply unit.

5.3.1 Connecting to a Vehicle DC Power Supply

For 12V Vehicle DC Supply Only
The R&S TSMA6 is to be used with a 12 V vehicle power supply only.

Use the accessory DC cable with cigarette lighter adapter to power the R&S TSMA6 from the vehicle power supply. Connect the 7-pin connector to DC IN.

Connecting a proprietary power supply

► To use a proprietary DC supply with the R&S TSMA6 power cable, demount the cigarette lighter adapter from the supplied power cable and connect the open ends of the cable to the proprietary power supply. Be sure to respect the correct polarity (see Figure 5-1).

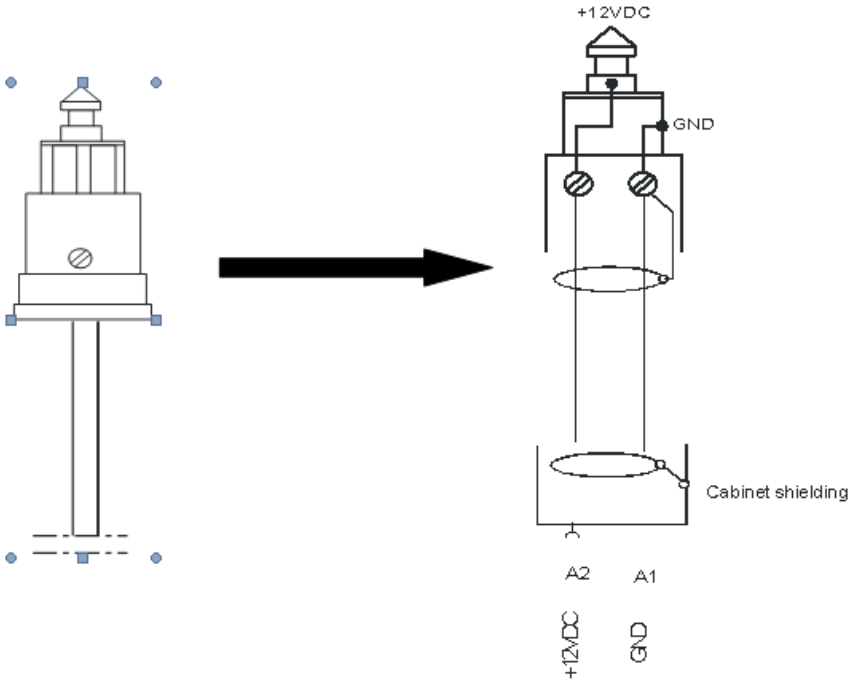


Figure 5-1: Supplied power cable with cigarette lighter adapter

5.3.2 Connecting an AC Power Supply

To operate the R&S TSMA6 with an AC power supply, connect the DC IN connector with the AC power supply (R&S TSMA6-Z1, R&S No. 4901.0550.02).

Use only the R&S TSMA6-Z1, R&S No. 4901.0550.02 as power supply.

Figure 5-2: R&S TSMA6-Z1 Power Supply

5.3.3 Connecting the R&S TSMA6-BP Battery Pack Unit

Alternatively, it is possible to power the R&S TSMA6 via the R&S TSMA6-BP Battery Pack Unit.

To use the R&S TSMA6 with the battery pack, the following steps must be performed.

1. Insert the batteries into the R&S TSMA6-BP.

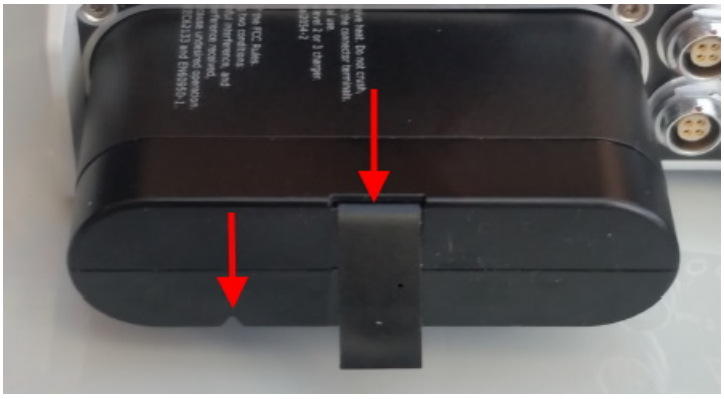
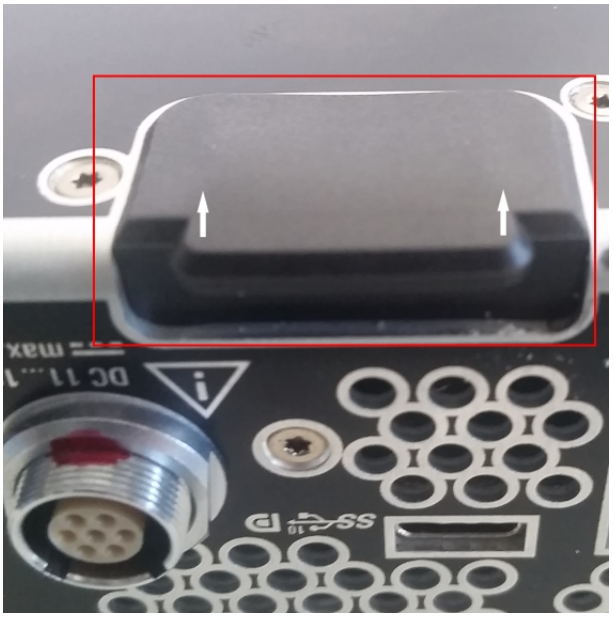


Figure 5-3: Battery orientation

Note: The R&S TSMA6 may be used only with closed battery cover.

2. Remove the cover cap from the docking connector of the R&S TSMA6.



3. Attach the R&S TSMA6 with the bottom side (see Figure 5-5) on top of the R&S TSMA6-BP (see Figure 5-4).

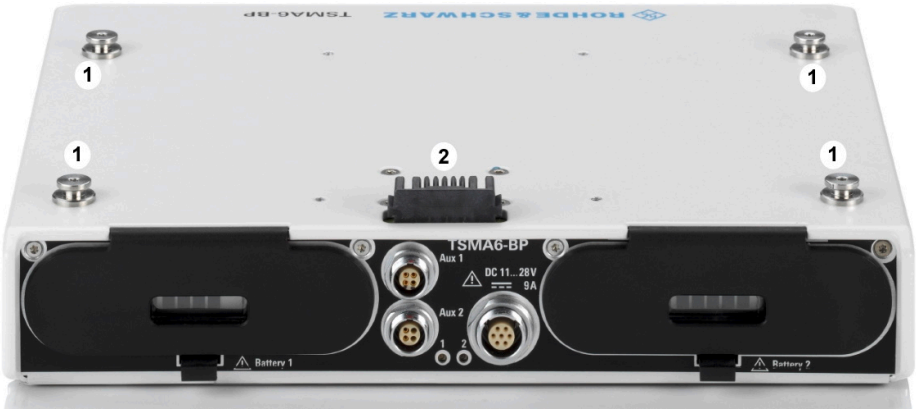


Figure 5-4: R&S TSMA6-BP

1 = Mechanical connectors for R&S TSMA6
2 = Power connector for R&S TSMA6

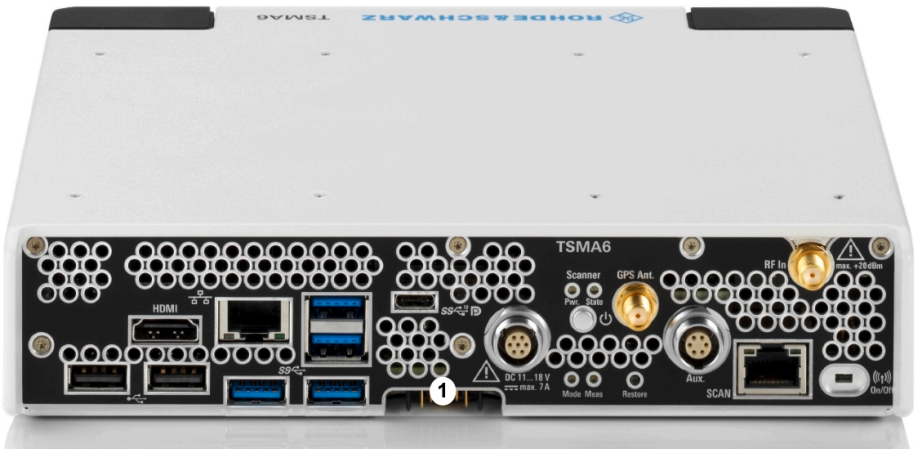


Figure 5-5: R&S TSMA6

1* = Power connector for R&S TSMA6-BP

*On delivery the power connector is protected by a cover cap.

4. Set the R&S TSMA6 vertically on top of the R&S TSMA6-BP (1).
5. Slide the R&S TSMA6 horizontally (2) until it engages in the mechanical connectors on top of the R&S TSMA6-BP. (Noticeable by a "click" sound.)

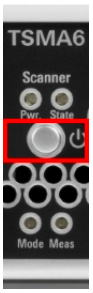
Figure 5-6: Connected R&S TSMA6 and R&S TSMA6-BP

1 = Move R&S TSMA6 vertically
2 = Move R&S TSMA6 horizontally
3 = Power Connection established

The power-up behavior after connecting the R&S TSMA6-BP Battery Pack Unit (including charged batteries or connected to an external DC power supply) with the R&S TSMA6 depends on the system settings on the R&S TSMA6 (see Chapter A.2.1.2, "Power", on page 120).

5.4 Switching On R&S TSMA6

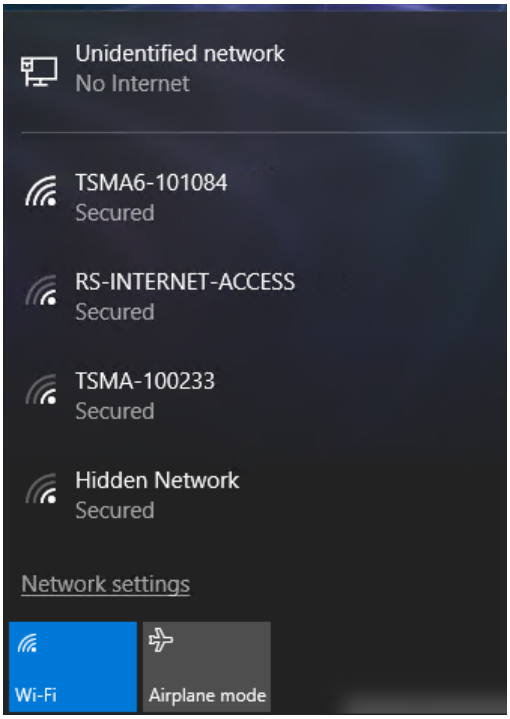
To switch on the device, press the POWER ON/OFF button.



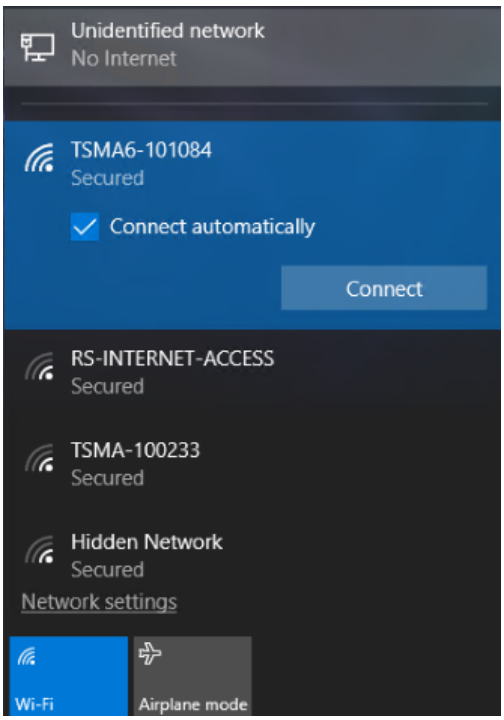
5.5 Connecting with R&S TSMA6 WLAN Access Point

1. Click the Network symbol in the task bar.

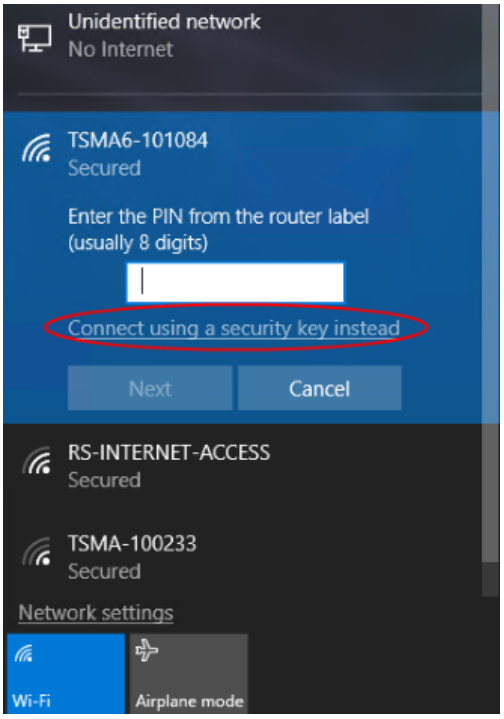
2. Select the correct WLAN (in this example: TSMA6-101084).



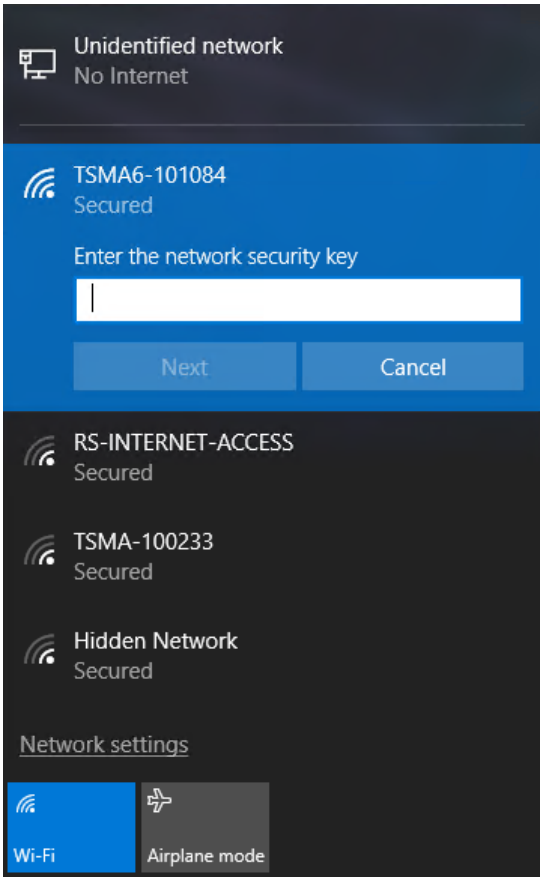
3. Select "Connect automatically" and click "Connect".



4. Select "Connect using a security key instead".



5. Enter the network security key and click "Next".
   Default security key: *instrument*



The connection to the WLAN access point is established.

5.6 Connecting USB to LAN Adapter TSPC-U2L2 / TSPC-USL

Currently following LAN adapters are available.

- Dual Gbit LAN port adapter TSPC-U2L2
- Single Gbit LAN port adapter TSPC-U2L

For information how to connect an additional adapter and required driver updates, see https://www.rohde-schwarz.com/driver/tsma6/..

5.7 Connecting Test Mobile Phones

Currently following driver is available.

- Samsung USB driver

For information how to connect Qualcomm based mobiles and required driver updates, see https://www.rohde-schwarz.com/driver/tsma6/..

To connect other test mobiles, refer to the R&S ROMES User Manual.

5.8 Enabling Untethered Dead Reckoning

The following steps are necessary to enable untethered dead reckoning with the integrated receiver (see "GPS Ant." on page 13) of the R&S TSMA6.

1. Mount the R&S TSMA6 device fixed to the frame of a car.
2. Power on the R&S TSMA6 device.
3. Activate "Dead Reckoning" in the used software (for details, refer to R&S ROMES, R&S NESTOR or R&S ViCom documentation).
4. Wait until the used software reports a "3D fix" (time may vary depending on the configured GNSS).
5. To calibrate the instrument, the following driving procedures have to be performed in a safe environment.
   a) 720 degrees right turn
   b) 720 degrees left turn
   c) Drive a straight line with a velocity exceeding 40 km/h.

   Note: Whenever the device is switched off, the calibration procedure must be repeated for the next usage of dead reckoning.

After finishing the calibration, the used software should report a fix state "GPS+DR" or "3D+DR", in case satellite reception is lost the fix state will change to "DR only".

If using "DR only", the accuracy of the reported position will decrease over time, if it falls below a certain threshold the receiver will report the state "No Fix".

6 Configuring the R&S TSMA6

Network environment

Before connecting the product to a local area network (LAN), consider the following:

- Install the latest firmware to reduce security risks.
- For internet or remote access, use secured connections if applicable.
- Ensure that the network settings comply with the security policies of your company. Contact your local system administrator or IT department before connecting your product to your company LAN.
- When connected to the LAN, the product may potentially be accessed from the internet, which may be a security risk. For example, attackers might misuse or damage the product.

6.1 Accessing the R&S TSMA6

There are different ways to control measurements on the R&S TSMA6.

- Local operation
  To use the R&S TSMA6 as an ordinary PC, an external monitor, mouse and keyboard have to be connected to the R&S TSMA6.
- Remote access
  The remote access to the R&S TSMA6 can be realized via the following options.
  – Using the web GUI of the R&S TSMA6 (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
  – Establish a remote desktop connection (via LAN/WLAN) (see Chapter 6.1.2, "Establish a Remote Desktop Connection", on page 31).

6.1.1 Start the R&S TSMA6 Web GUI

To start the R&S TSMA6 web GUI via a remote PC, three possible ways are available.

WLAN

1. Via a tablet or smartphone, you have to establish a WLAN connection to R&S TSMA6 WLAN access point.
   a) Search for a TSMA6 WLAN network. The WLAN access point on the R&S TSMA6 starts automatically by default during the boot process of the device.
   NOTE: You can switch off this behavior (see Chapter A.2.2.3, "WLAN AP", on page 123).

b) Connect your tablet or smartphone with the TSMA6 WLAN network. The required login information can be found on a label on the bottom side of the R&S TSMA6.
WLAN-Access point SSID: default *TSMA6-xxxxxx* (xxxxxx is the serial number of this specific R&S TSMA6)
Default key: *instrument*
Note:
The SSID and the key are configurable via the web GUI (see Chapter A.2.2.2, "WLAN", on page 122).

The WLAN connection between the tablet or smartphone and the R&S TSMA6 device is established.

2. On the tablet or smartphone, start a web browser and enter the following URL: *http://192.168.137.1/*

   The configuration web GUI of the R&S TSMA6 is started.

LAN

1. Connect the R&S TSMA6 LAN port with the host PC port.
2. Use the R&S TSMA6 default IP settings, that is, the DHCP client. The R&S TSMA6 and the remote host PC automatically negotiate the IP address.
   Alternatively, use the fixed address.
3. Start a web browser via the R&S TSMA6 web GUI and enter the following URL: *http://TSMA6-<xxxxxx>.local* (xxxxxx is the serial number of this specific R&S TSMA6.)

Local access from the R&S TSMA6 and Windows Explorer

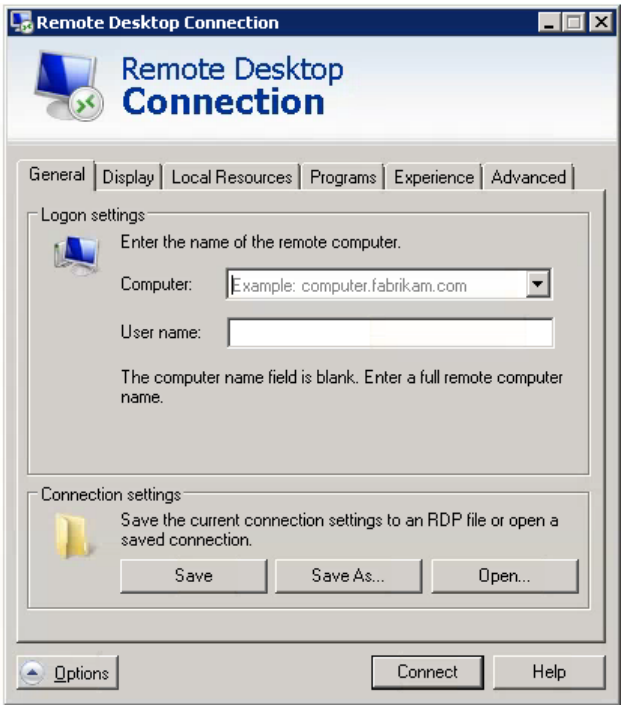
► Open Internet Explorer using mouse, keyboard and monitor. The R&S TSMA6 web GUI opens automatically. If not, type the following URL:
http://localhost

6.1.2 Establish a Remote Desktop Connection

To establish a remote desktop connection, the following steps must be performed:

1. Establish a WLAN/LAN connection between the R&S TSMA6 and the remote PC (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
2. On the external Windows PC, navigate to "Programs" > "Accessories" > "Remote Desktop Connection".
3. In the "Remote Desktop Connection" window, click "Options".
4. In the "General" tab, enter following parameters:
   - Computer: The input depends on selected connection type (see the Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30) and is as follows.

  - WLAN: *192.168.137.1*
  - LAN: IP address of the R&S TSMA6
    NOTE:
    If you connect the R&S TSMA6 LAN interface with a PC via LAN cable, the IP addresses are negotiated automatically by default. No fixed IP addresses are assigned. In this case, you can add the device name in the "LAN" field. This solution requires a working DNS service.
- User name: *instrument*



5. Click "Connect".
6. Enter the password *894129* and click "OK".

7. The remote desktop connection is established.

   The R&S TSMA6 can be controlled by a standard Windows PC.

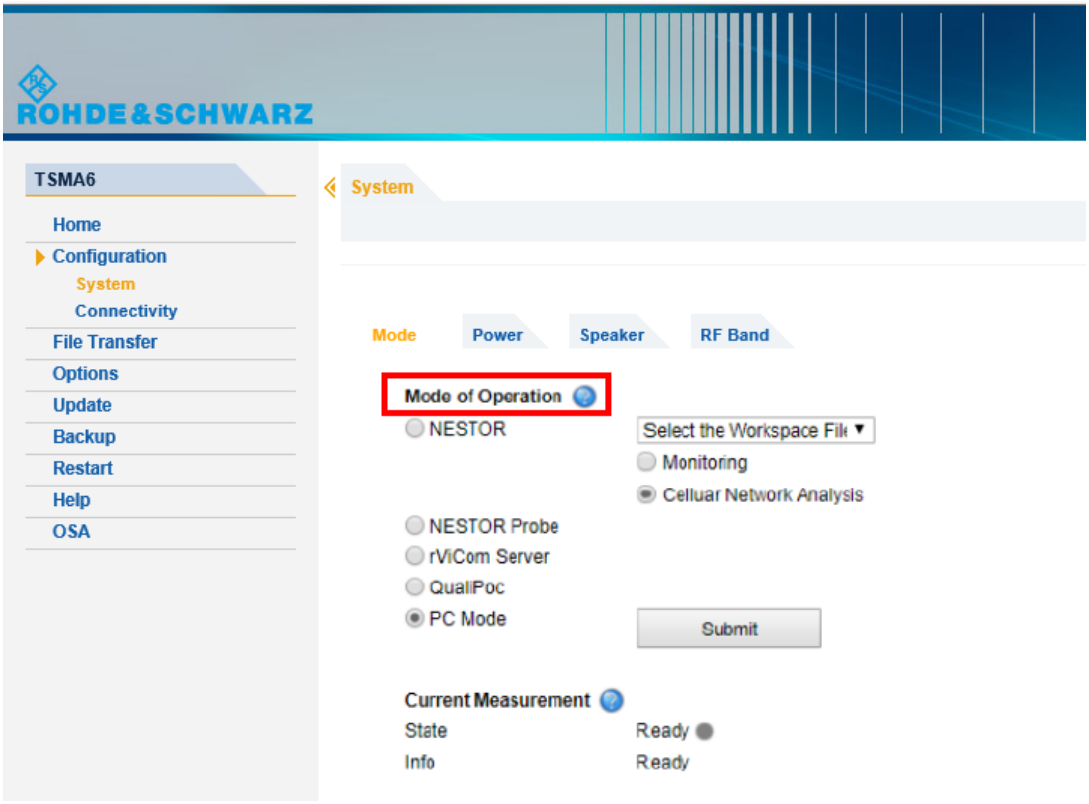
6.2 Selecting Measurement Mode

Select the measurement mode with the following steps.

1. Check the prerequisites of the desired measurement mode (see Chapter 6.3, "Measurement Modes", on page 33) and adjust your device according to these requirements.
2. Start the R&S TSMA6 web GUI (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
3. Select the measurement mode in the R&S TSMA6 web GUI, the modes are described in Chapter 6.3, "Measurement Modes", on page 33.

6.3 Measurement Modes

The measurement modes can be configured via the radio button from the web GUI under "Configuration" > "System" > "Mode".



The "rViCom" and"PC Mode" are selectable on all the R&S TSMA6s. The other modes (NESTOR, ROMES, QualiPoc) are only selectable if the appropriate SW applications are installed (see Chapter 7.2, "Software Installation", on page 61).

6.3.1 PC Mode

The "PC Mode" is the standard mode for installation of software and for the interactive operation of the R&S TSMA6. In this mode, no software application (NESTOR, ROMES, QualiPoc) is started in the background.

6.3.2 Remote ViCom Server Mode

This mode starts the Remote ViCom Server on the R&S TSMA6. Measurement configuration and data collection are controlled from a remote connected handheld device. A Remote ViCom client application needs to be installed on the handheld device for this purpose.

The connection between the Remote ViCom server on the R&S TSMA6 and the client application (Remote ViCom client) on the handheld device can be realized via Bluetooth® or WLAN.

The selection of the wireless interface type depends on the measurement task.

The WLAN connection allows a data throughput, which is about 10 times higher compared to Bluetooth®.

The Bluetooth® connection is less influenced by radio interference.

Prerequisites

- Bluetooth connection only
  See Chapter 6.5, "Bluetooth® Pairing", on page 43.
- WLAN connection only
  Connect the tablet/smartphone with the R&S TSMA6 WLAN AP. See Chapter 5.5, "Connecting with R&S TSMA6 WLAN Access Point", on page 25.

Measurement with the rViCom sample App

To run measurements, the requirements for operating the rViCom sample App have to be fulfilled, see Chapter B, "Introduction to Remote ViCom Sample App", on page 131.

1. Activate the rViCom server mode (see Chapter 6.2, "Selecting Measurement Mode", on page 33).
2. Start one of the following applications.
   a) Start the OEM rViCom client application on the mobile device.
   b) Start the rViCom sample App on the mobile device.
   For more details, see Chapter B.3, "Usage", on page 132.

6.3.3 QualiPoc Mode

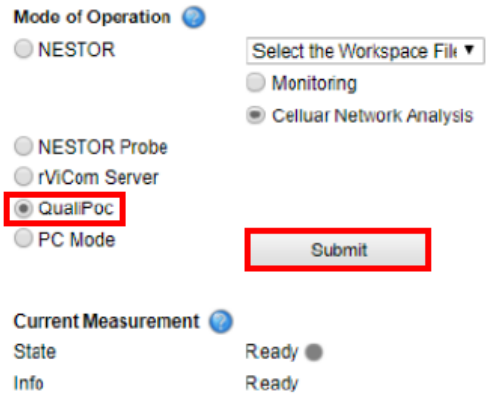
The QualiPoc mode is only displayed if the QualiPoc setup has been executed (see Chapter 7.2.4, "SwissQual DiversityProbe for QualiPoc Software", on page 71).

Prerequisites

- The appropriate scanner license must be installed on the QualiPoc® handheld device. If you do not have the correct license, contact the R&S service.
- On the R&S TSMA6, Bluetooth® must be activated and visible (see Figure 6-6).

To use the R&S TSMA6 with QualiPoc®, the following steps must be performed.

1. Turn on the R&S TSMA6 scanner.
2. In the web-GUI, set the "Mode of Operation" to "QualiPoc" and press "Submit".



3. On the handheld device, start the QualiPoc® application.
4. Touch the main menu , and then touch "Device manager"
5. Touch the plus sign (+) at the top of the screen and touch "NCM".

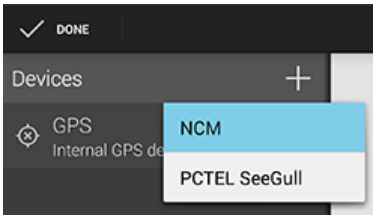


Figure 6-1: Add NCM

QualiPoc® displays "NCM" under "Devices".

Note: The NCM provides the Bluetooth® connection to the scanner.

6. Touch "Scan" at the top of the screen and wait until the scanning process stops.

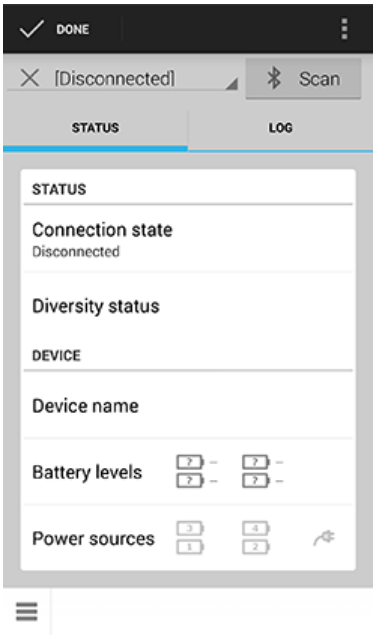


Figure 6-2: Scan for NCM

7. Touch "[Disconnected]", touch the TSMA6 scanner in the list, for example, "TSMA6-900012", and then touch "OK" to accept the pairing request.

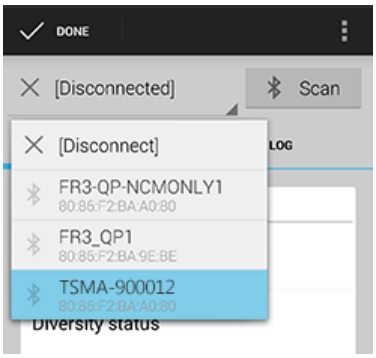


Figure 6-3: Pair NCM

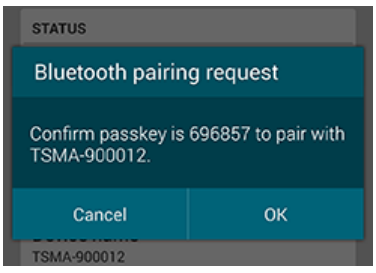


Figure 6-4: Bluetooth pairing request

8. The scanner appears in the "Devices" list upon successful detection.

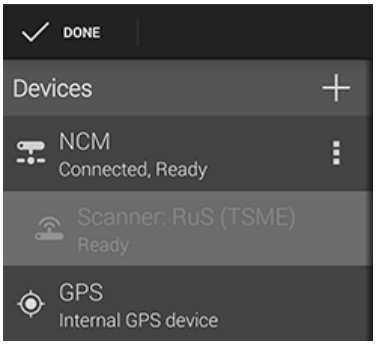


Figure 6-5: Scanner ready

For more details about the QualiPoc configuration and usage, refer to the user documentation for QualiPoc®.

6.3.4 NESTOR and NESTOR Probe Mode

The NESTOR mode is only displayed if the NESTOR setup has been executed (see Chapter 7.2.3, "R&S NESTOR Software", on page 68) .

General

- **NESTOR Mode**
  The NESTOR UI engine and the NESTOR measurement engine are hosted on the R&S TSMA6.
- **NESTOR Probe Mode**
  The R&S TSMA6 hosts only the NESTOR measurement engine. The NESTOR UI engine is hosted on a remote PC connected via LAN/WLAN with the R&S TSMA6.

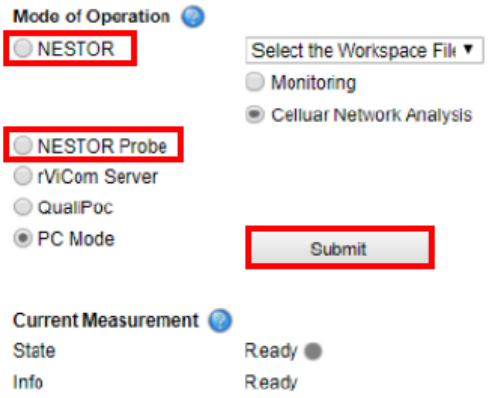
Prerequisites

- For NESTOR and NESTOR Probe mode:
  - NESTOR option licenses either installed on the internal SD card or connected as an external USB dongle
- For NESTOR mode only:
  - NESTOR workspace file imported (see "Import NESTOR workspace file" on page 42
- For NESTOR Probe mode only:
  - WLAN / LAN connection with the NESTOR host (see Chapter 6.1, "Accessing the R&S TSMA6", on page 30)
  - PC with NESTOR master installation to check the measurement on the R&S TSMA6

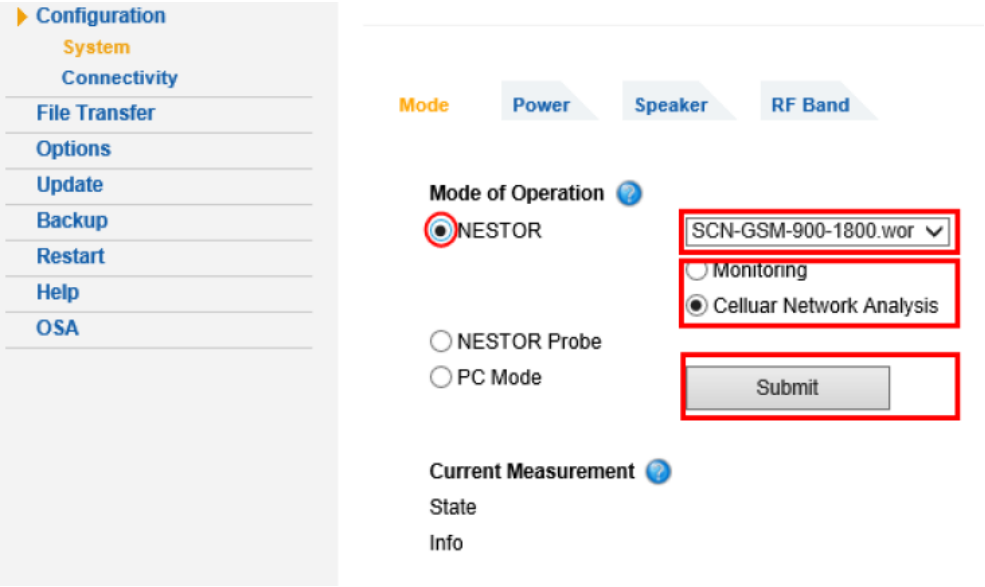
NESTOR Mode

To use the R&S TSMA6 in NESTOR mode, the following steps must be performed.

1. In the web-GUI, set the "Mode of Operation" to "NESTOR" and press "Submit".



2. Select a NESTOR workspace file (see "Import NESTOR workspace file" on page 42).
3. Select a scenario ("Monitoring" or "Cellular Network Analysis").



4. Press "Submit".

   The R&S TSMA6 is switched into "NESTOR" mode. In the status bar, the entry is "Changing mode of operation in progress...".
   The mode switch is finished when the status bar indicates "No error". The scanner state LED starts blinking rapidly.

NESTOR Probe mode

1. On the "Mode" tab, select "NESTOR Probe" mode.
2. Press "Submit".

   The R&S TSMA6 is switched into "NESTOR Probe" mode. In the status bar, the entry is "Changing mode of operation in progress...".
   The mode switch is finished when the status bar indicates "No error". The scanner state LED starts blinking rapidly.

   The NESTOR measurement is started and controlled from the host PC.

For more details about the R&S NESTOR configuration and usage, refer to the user documentation for R&S NESTOR.

6.3.5 ROMES Mode

The ROMES mode is only displayed if the ROMES setup has been executed (see Chapter 7.2.5, "R&S ROMES Setup", on page 74) .

General

In the **"ROMES"** mode, the ROMES software is hosted on the R&S TSMA6 and the selection of a valid workspace file is required.

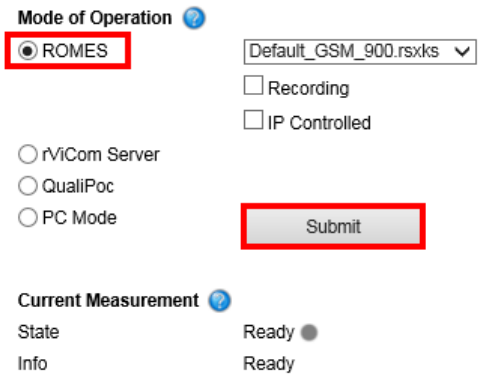
In this mode, ROMES software starts with the configured workspace file.

Prerequisites

- A ROMES license dongle must be connected to a USB port of the R&S TSMA6.
- To control a ROMES measurement via IP from an external host PC, the ROMES option ROMES4RCO is required.
- After the installation, R&S ROMES must be started first time manually via the program icon. Then the required directory structure is created on the R&S TSMA6 and the workspace file can be selected via web-GUI (see Chapter 6.4, "Import of Workspace Files (NESTOR, ROMES)", on page 42).

To use the R&S TSMA6 with R&S ROMES, the following steps must be performed.

1. In the web GUI, set the "Mode of Operation" to "ROMES" and press "Submit".



2. Configure the following settings.
   - Workspace File
     In the drop-down menu, select a ROMES workspace file (see "Import of ROMES workspace file" on page 43).
   - Recording
     Activating this checkbox, the ROMES measurement data are written to the TSMA6 hard disk.
   - IP Controlled
     Activating this checkbox, you can control the ROMES measurement via IP from an external host PC.
3. Click "Submit" to save your selection.

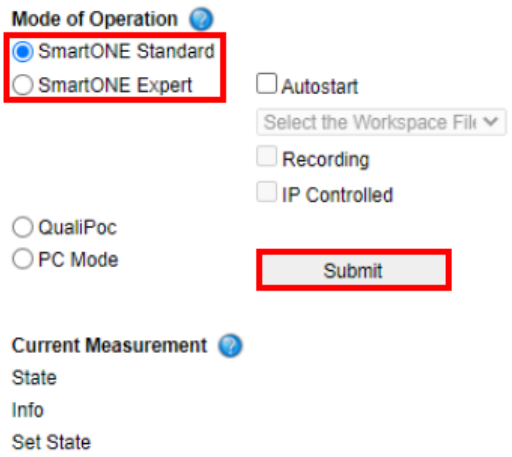
For more details about the R&S®ROMES configuration and usage, refer to the user documentation for R&S®ROMES.

6.3.6 SmartONE Mode

The SmartONE mode is only displayed if the SmartONE setup has been executed (seeChapter 7.2.6, "R&S SmartONE Setup", on page 77).

To use the R&S TSMA6 with R&S SmartONE, the following steps must be performed.

1. In the web GUI, set the "Mode of Operation" to one of the following SmartONE modes and press "Submit".
   - "SmartONE Standard"
   - "SmartONE Expert"



2. Configure the following settings.
   - Autostart
   - Workspace File
     In the drop-down menu, select a ROMES workspace file (see "Import of ROMES workspace file" on page 43).
   - Recording
     Activating this checkbox, the SmartONE measurement data are written to the TSMA6 hard disk.
   - IP Controlled
     Activating this checkbox, you can control the SmartONE measurement via IP from an external host PC.
3. Click "Submit" to save your selection.

For more details about the R&S SmartONE configuration and usage, refer to the user documentation for R&S SmartONE.

6.4 Import of Workspace Files (NESTOR, ROMES)

Import NESTOR workspace file

1. Start the R&S TSMA6 web GUI from the host PC (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
2. Navigate to "Configuration" > "System" > "Mode" and set measurement mode to "NESTOR Probe".
3. Press "Submit" and wait until the device is in "NESTOR Probe" mode. (In the status bar, the entry is "No error".)
4. Navigate to "File Transfer" and press the "Browse..." button in the "Upload" section.

5. Search on the host PC for the NESTOR workspace file to be imported and confirm the dialog with "Open".
6. Press "Upload".
   The file is copied to the NESTOR workspace directory (default: `D:\Users\Instrument\Documents\NESTOR\FavoriteWorkspaces`).
   This path can be configured in the "File Transfer" menu.
7. Navigate back to "Configuration" > "System" > "Mode".
8. The imported workspace file is selectable from the list box in the "Mode" tab.

Import of ROMES workspace file

Importing of the R&S ROMES workspace file is an additional requirement for operating in the "ROMES" mode.

1. Start the R&S TSMA6 web GUI (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
2. Navigate to "File Transfer" menu and go to section "Upload File to TSMA".
3. Press the "Browse" button, select the desired ROMES workspace file on the remote PC and click "Upload File".
4. The file is copied by default in the directory `C:\ProgramData\Rohde&Schwarz\My ROMES\Workspace`.
   Note: The target directory for file upload depends on the selected mode. The mentioned directory is only valid in ROMES mode.

6.5 Bluetooth® Pairing

To pair the R&S TSMA6 with a remote device, the following steps must be performed.

For Bluetooth® preparation, the device must be in the "PC Mode". Check it via the web GUI ("Home" > "Overview").
To change the operation mode, navigate to "Configuration" > "System" > "Mode" and select an operation mode.

1. In the web-GUI, verify the Bluetooth® settings on R&S TSMA6.

Figure 6-6: Bluetooth settings

2. Navigate to "Configuration" > "Connectivity" > "Bluetooth" and verify the settings:
   - STATUS = On
   - Visibility = Visible

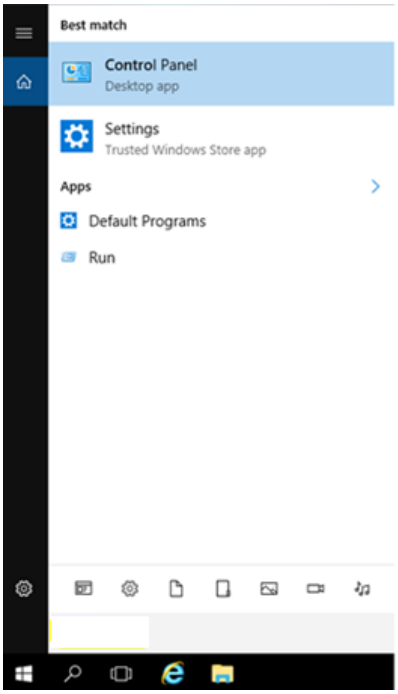
   If necessary, change the settings via the buttons on the right.
3. On the remote device, activate Bluetooth and enable visibility.

   Note: For devices with Android versions ≥ 5.0, there may be problems with visibility of the device.
   Refer to Chapter 8.13, "Bluetooth® device not detected by R&S TSMA6", on page 112.
4. In the R&S TSMA6 web GUI, click "Refresh Device List".
   The status text shows the following: "Refreshing device list in progress".
   Wait until "No Error" is shown.
5. Click the arrow next to the "Refresh Device List" button and open the Bluetooth adapter list box
6. Select the device to be paired and click "Connect".
7. On the remote device, confirm the Bluetooth pairing code.

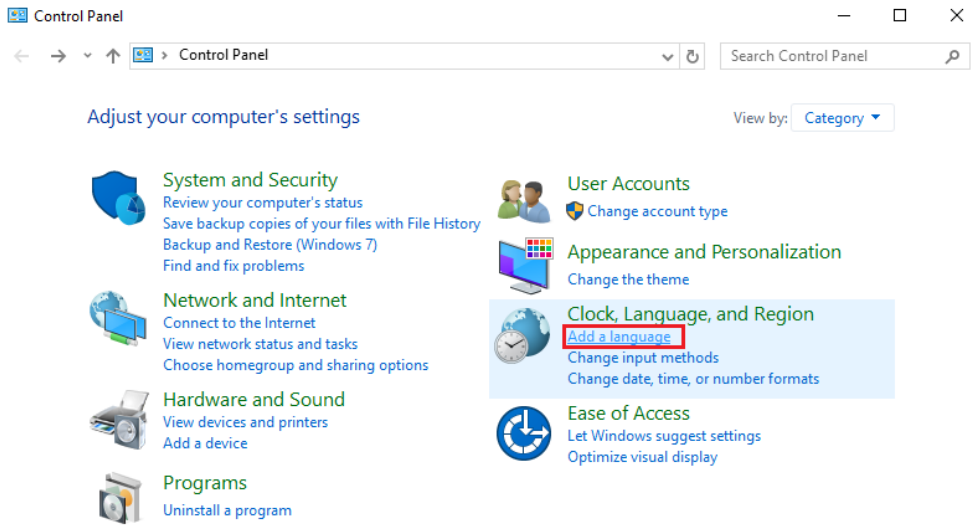
6.6 Changing Keyboard Language

By default, the R&S TSMA6 is delivered with the English version of Windows® 10 and it supports the English keyboard. To use the german keyboard (or any other one), proceed as follows.

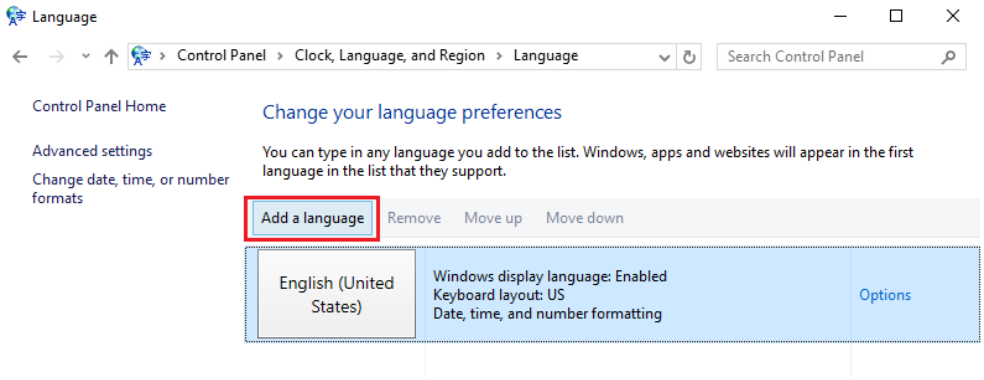
1. Open the "Control Panel".



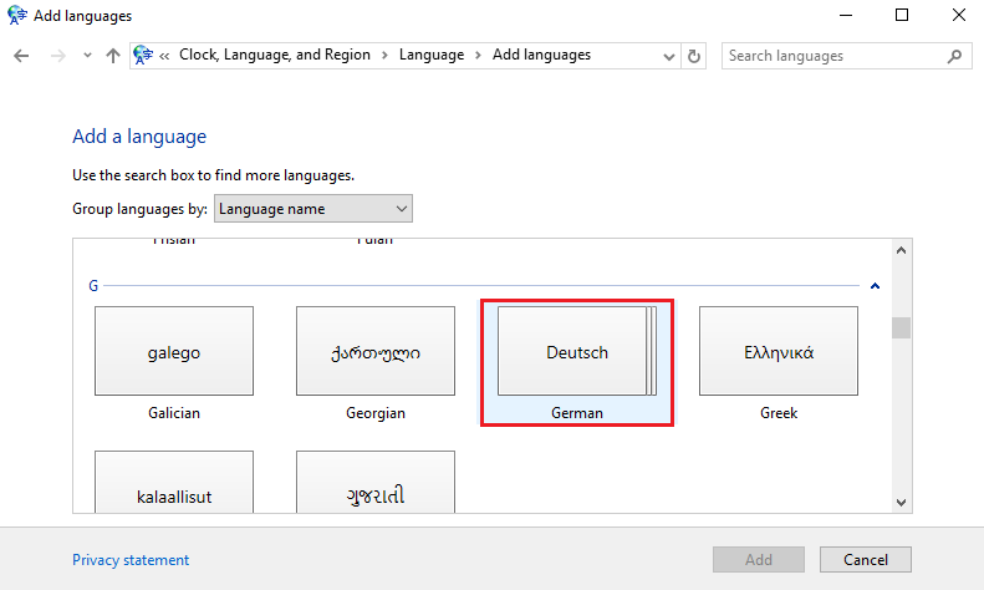
2. Select "Add a language" under "Clock, Language, and Region".



3. The "Language" settings window opens and by default only English is listed there. To add a new language, click the "Add a language" tile.



4. The selectable languages are listed. Select the desired language by double-clicking the language tile (in the example German is selected).

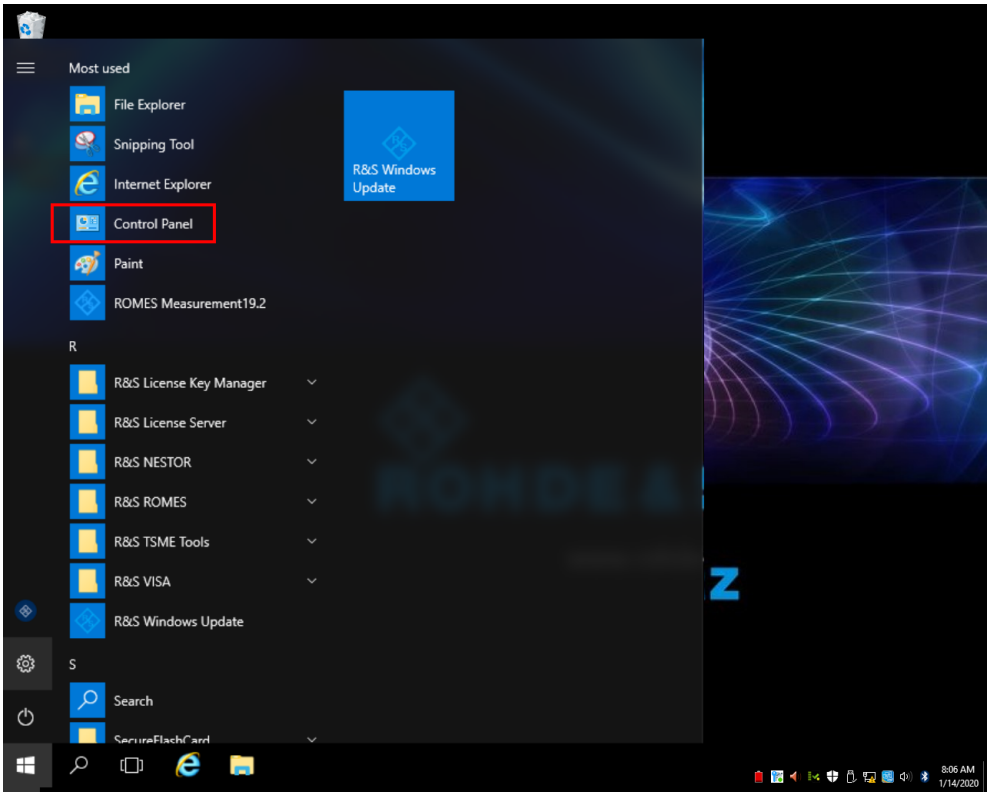


5. Next, select the version of the chosen language.
6. After successfully adding the language, it should be listed as selectable language.
7. Change the keyboard language via windows taskbar.

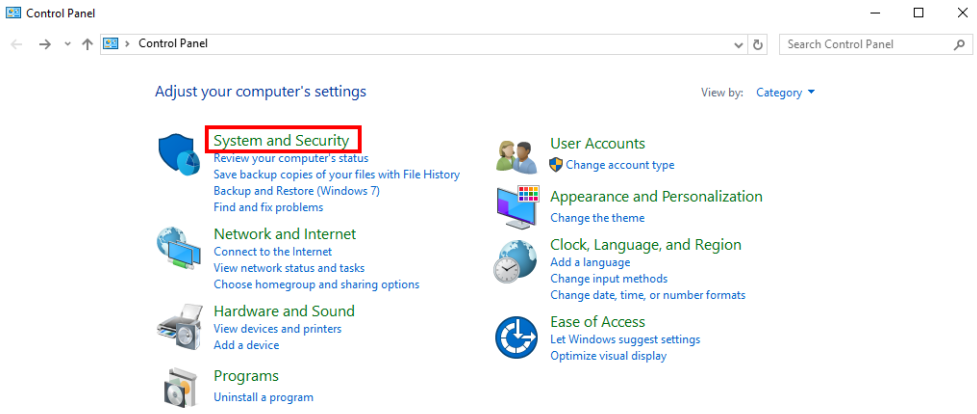
6.7 Enable Virtual Memory

To enable virtual memory on the R&S TSMA6, perform the following steps:

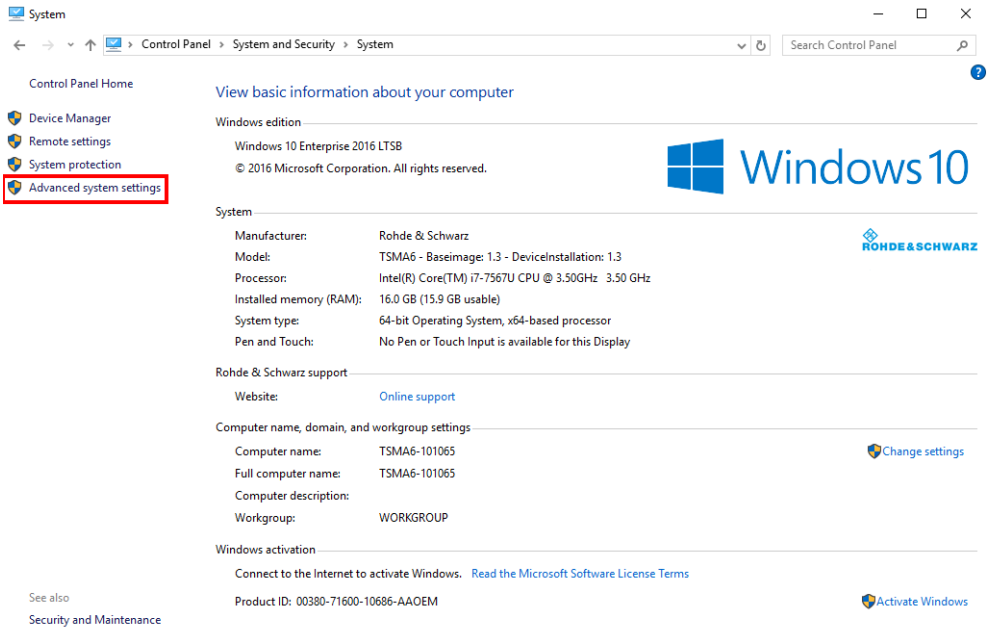
1. Start the Windows "Control Panel".



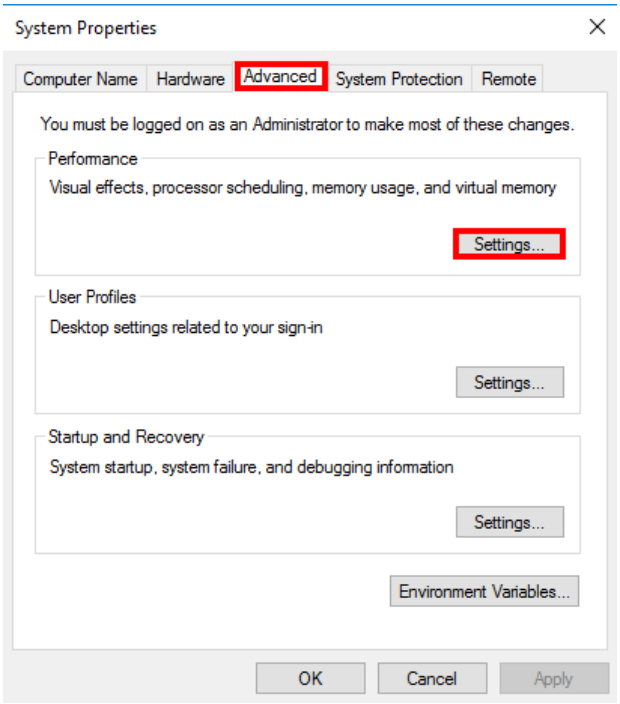
2. Select "System and Security".



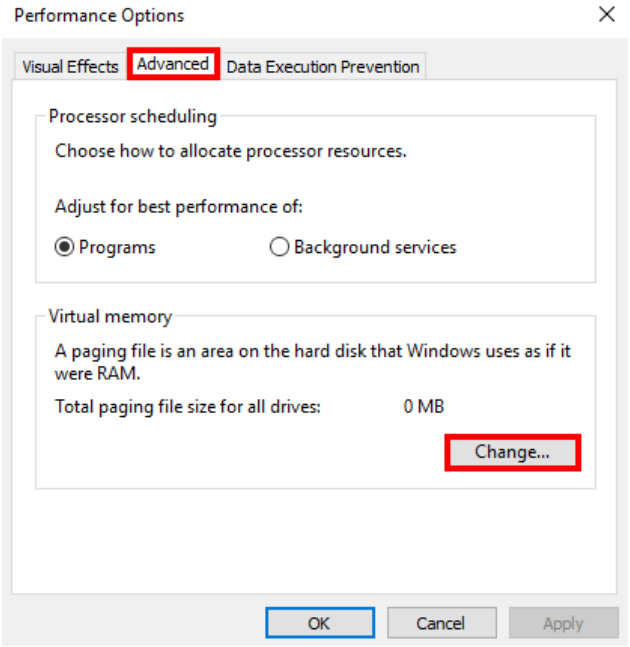
3. Select "Advanced System Settings".



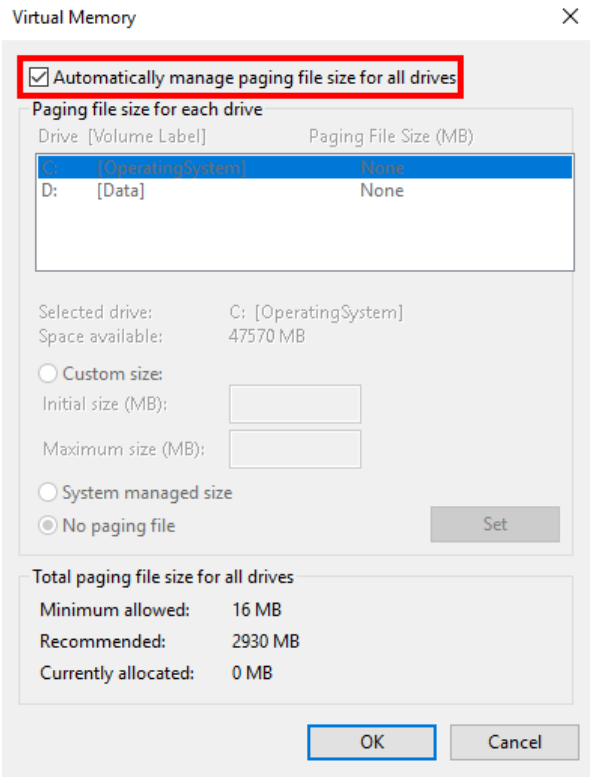
4. Select the tab "Advanced".



5. Select "Settings..." in the section "Performance".
6. Select the tab "Advanced".



7. Select "Change..." in the section "Virtual memory".
8. Enable "Automatically manage paging file size for all devices".



9. Click "OK" to close the dialog.
10. Reboot the device.

7 Update and Restore

7.1 Firmware Update

7.1.1 Preparing Installation

Firmware update packages for the R&S TSMA6 can be downloaded from the Rohde & Schwarz web page https://www.rohde-schwarz.com/us/firmware/tsmx/. The firmware setup file can be found under the title *R&S TSMAx Firmware V ww.xx.yy.zz*.

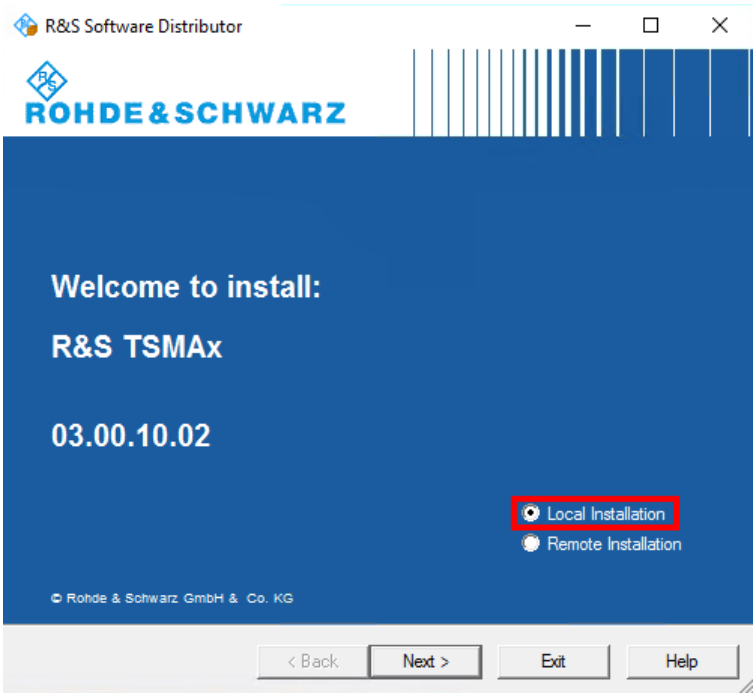
There are several ways how to install firmware and software components on the R&S TSMA6. Select your preferred way.

For software installations (NESTOR, ROMES, DiversityProbe for QualiPoc), use only the TSMA6-specific setup files (`TSMA6-<AppName>-|<version>-setup.exe`).

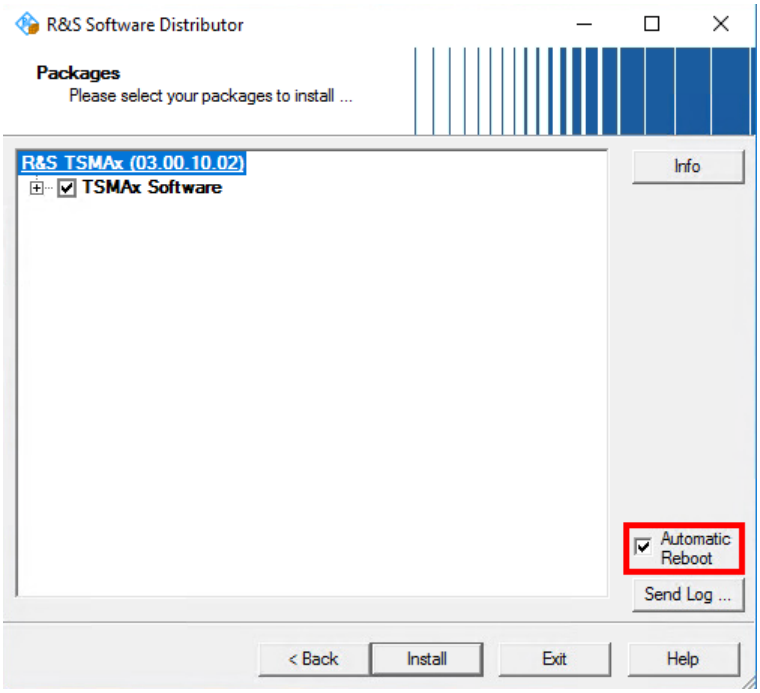
7.1.2 Executing Setup

7.1.2.1 Local Execution of the Setup File

1. Connect mouse and keyboard to USB ports and a monitor to the HDMI port. The setup file must be available on the R&S TSMA6 or on a USB stick.
2. Switch on the R&S TSMA6 via the power button.
3. Copy the setup file.
   a) For firmware installation:
   Copy the firmware setup file `TSMAx-Setup-<Version>.exe` into a temporary directory on the local disk of the R&S TSMA6.
   b) For software installation:
   Copy the corresponding setup file into a temporary directory on the local disk of the R&S TSMA6.
4. Check that R&S TSMA6 is in "PC Mode", see Chapter 7.1.4, "Checking Mode of Operation", on page 60.
5. Open the Windows Explorer and execute the setup file `TSMAx-Setup-<Version>.exe`.
6. The "R&S Software Distributor" comes up. Select "Local Installation" and press "Next >".



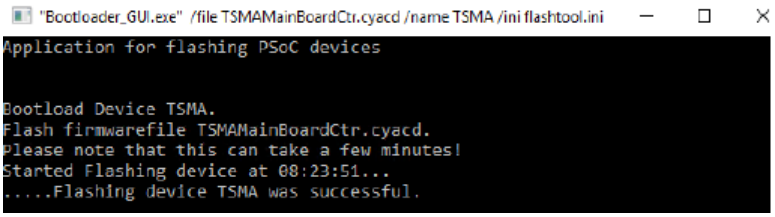
7. The package dialog lists all the available packages in the setup. Normally, you can skip this dialog without any changes.
   Select "Automatic Reboot".



8. Press "Install >".

   Note: Do not switch off or unplug from power while running firmware/software update.

9. Finally, when you have installed all firmware/software packages, restart the device.
10. When the R&S TSMAx firmware comes up again, the mainboard firmware is updated.
    Note: Step step 10 and step 11 are only performed during firmware update, if the firmware package contains a new mainboard firmware.
    The following dialog appears:



    The mainboard flash is indicated like following:

    - Meas LED = red
    - Mode LED = off
    - Fans are switched on

11. After the flash of the mainboard firmware, the device switches off hard and reboots.
12. The firmware/software installation has finished, when the LEDs display the following state.
    Mode LED = green resp. blue (depends on the state of the WLAN access point)
13. Reload the web GUI and verify the displayed firmware/software version in the "Overview" menu. The installed version needs to be indicated.

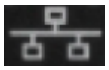
The R&S TSMA6 is ready for operation.

7.1.2.2 Remote Installation of the Setup File

1. Copy the setup file.
   a) For firmware installation:
      Copy the firmware setup file `TSMAx-Setup-<Version>.exe` into a temporary directory on the remote PC.
   b) For software installation:
      Copy the corresponding setup file into a temporary directory on the remote PC.
2. Establish a LAN respectively WLAN connection between the remote PC and the R&S TSMA6.

a) **Using LAN connection**

- Connect the LAN port of the R&S TSMA6 with the host PC LAN port.
  The LAN port is marked with the LAN symbol.

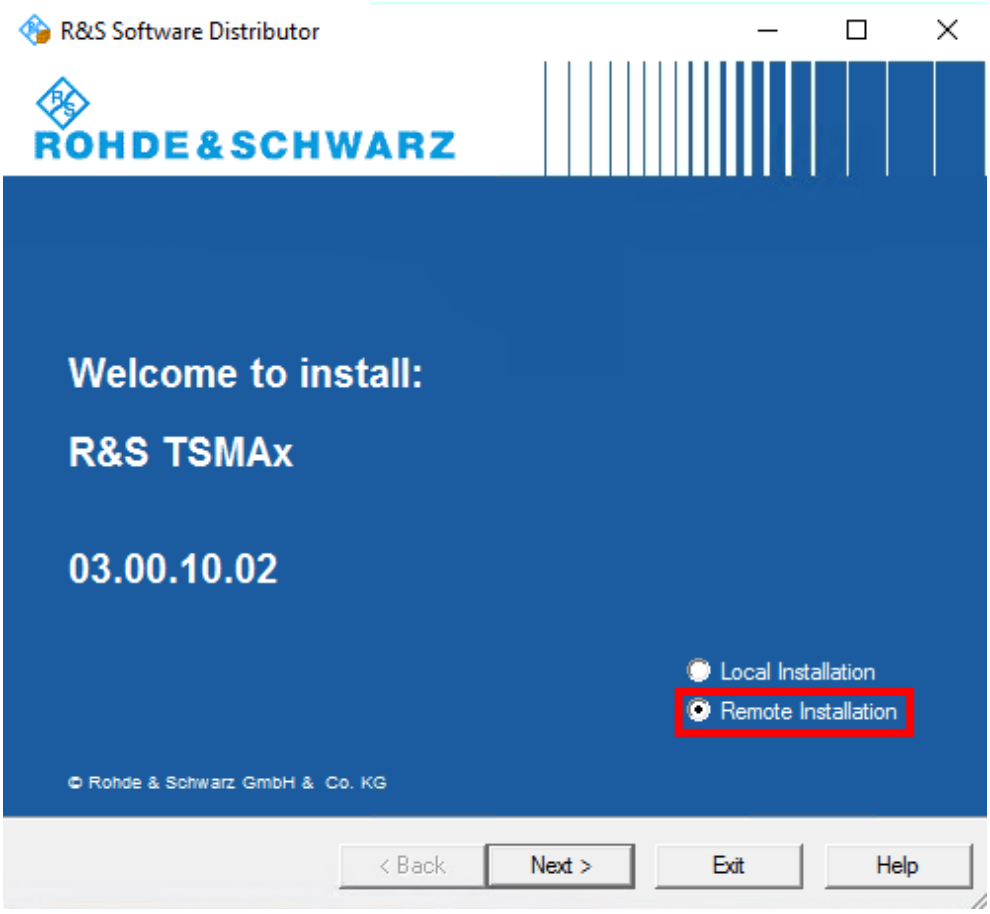
  

  The default IP setting of this port is "DHCP client". For details on how to configure the remote PC, contact your network administrator.
- Switch on the R&S TSMA6 via power button.

b) **Using WLAN connection**

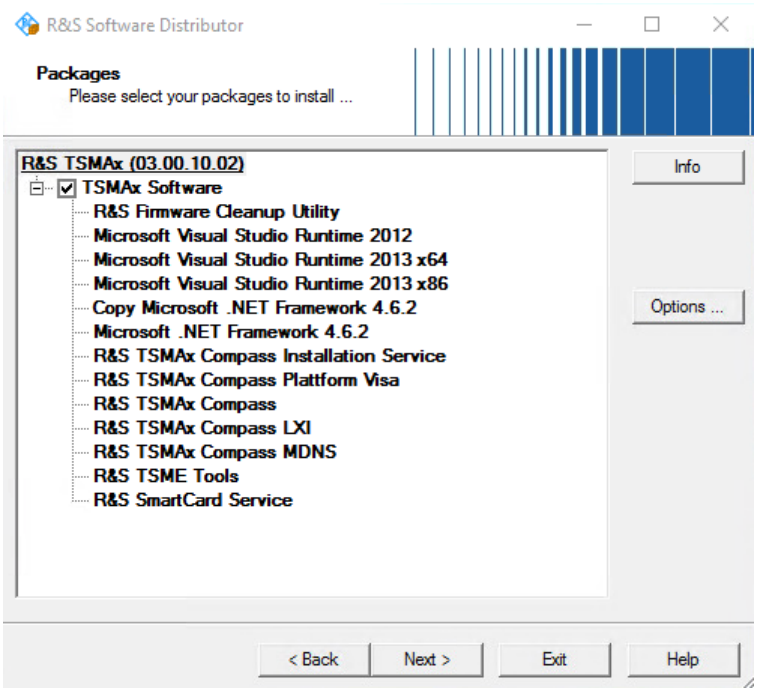
- Switch on the R&S TSMA6 via power button.
  The WLAN switch must be "On".
- On the remote PC, search for the R&S TSMA6 WLAN and connect to the network. You find the necessary access parameters on a label at the bottom of the device.
  WLAN SSID *TSMA6-<xxxxxx> xxxxxx*: individual serial number
  WLAN key: *instrument* (default)

3. Execute the firmware setup file on the connected remote PC. The "R&S Software Distributor" dialog box is coming up



4. Select "Remote Installation" and click "Next>".

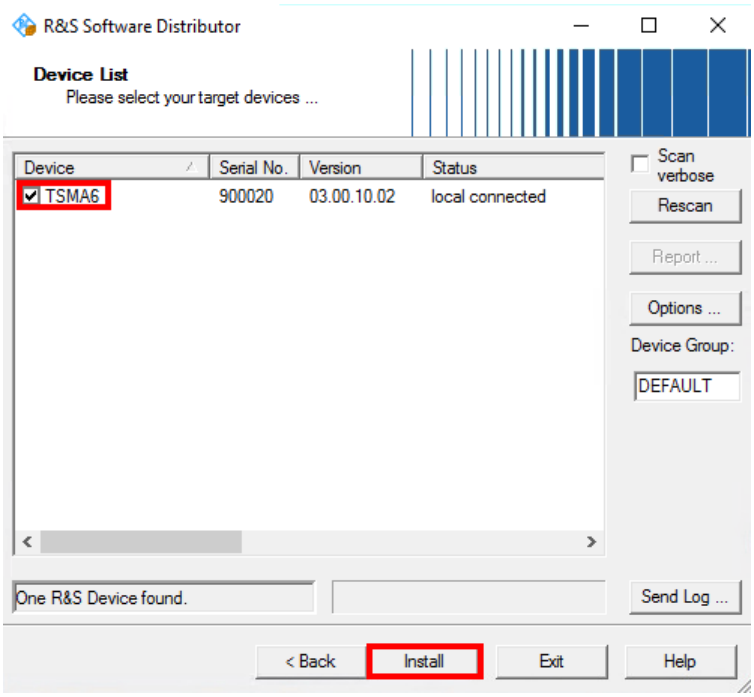
5. The package dialog list all the available packages to install.



   All packages, which you need to install are already pre-selected.

6. Click "Next>".

7. After a while, all R&S TSMA6 devices in the network are listed in the "Device List" dialog.
   Devices with a firmware version > 02.xx.yy.zz are only listed, if the device is in "PC Mode" (see Chapter 7.1.4, "Checking Mode of Operation", on page 60). Tick one or more devices to update. If the column "Serial No." is not filled, move the mouse pointer over the listed items to get related device information.



8. Click "Install".

   Note: Do not switch off or unplug from power while running firmware/software update.

9. The state of the installation process is displayed in the "Status" column. The process is finished when the status indicates "Ready…".

10. Press "Exit".

11. Reload the R&S TSMA6 web GUI (see Chapter 7.1.3, "Calling R&S TSMA6 Web GUI", on page 59) and verify the installed firmware /software version in the "Overview".

The R&S TSMA6 is ready for operation.

7.1.2.3 Installation Using a USB Stick

The setup will be initiated via the web GUI of the R&S TSMA6. In this case, the setup file must be available in the root directory of a USB stick, which is connected to the R&S TSMA6.

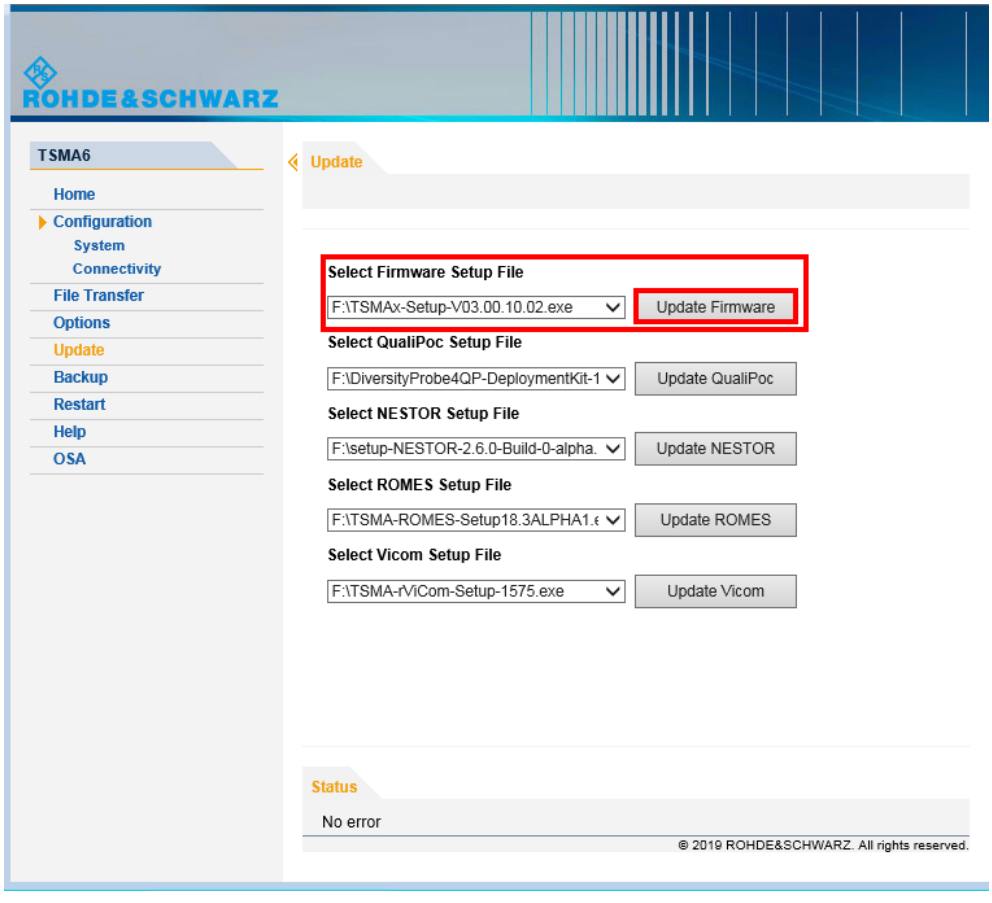
If a restart is performed during the setup, the message "System is Restarting" is displayed in the status bar. For a short time, the web GUI is not accessible.

Do not interrupt the browser session on the remote PC. After a successful update, the web GUI will be refreshed.

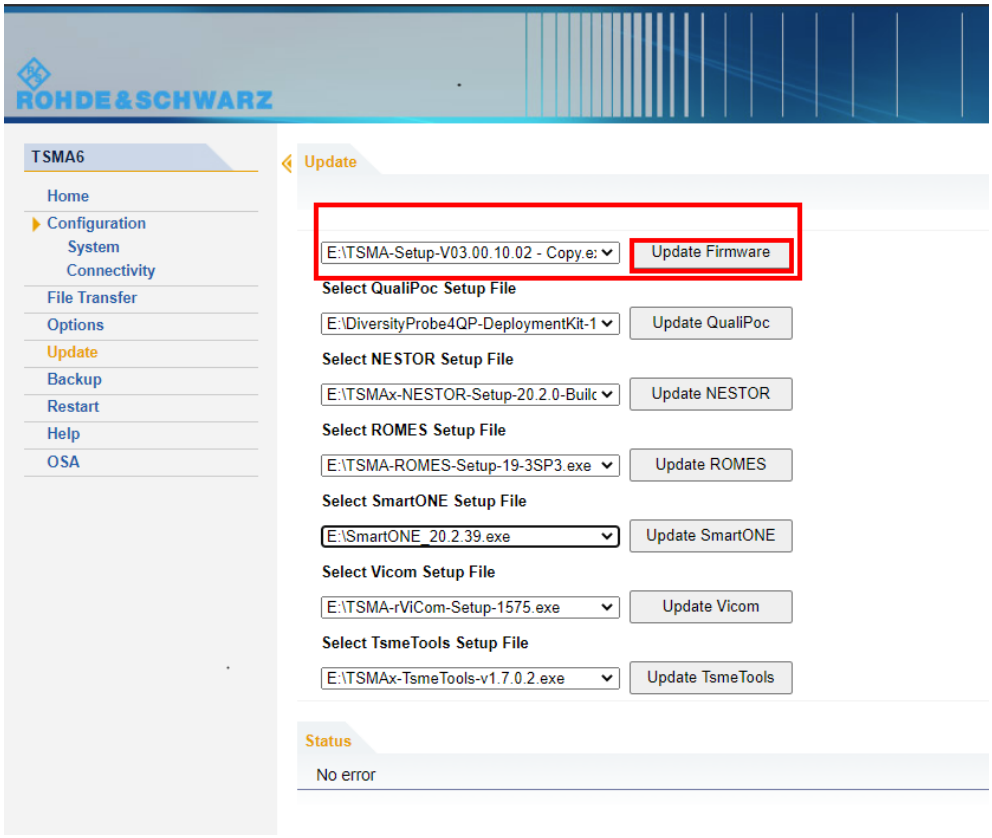
1. Connect mouse, keyboard to the USB ports and a monitor.

2. Switch on the R&S TSMA6 via power button.
3. Copy the setup file onto a USB memory stick.
   a) For firmware installation: Copy the firmware setup file `TSMAx-Setup-<Version>.exe` into the root directory of the stick.
   b) For software installation: Copy the corresponding setup file into the root directory of the stick.
4. Open the R&S TSMAx web GUI (see Chapter 7.1.3, "Calling R&S TSMA6 Web GUI", on page 59).
5. In the R&S TSMAx web GUI, navigate to the menu related to the FW version
   - "Update" (FW version ≥ 02.22.03.00) or
   - "File Transfer / Update" (FW version ≤ 01.32.00.04)

   Open the "Select Firmware Setup File" select box.
6. Select the appropriate firmware setup file `TSMAx-Setup-<Version>.exe` and press
   - "Update Firmware" (FW version ≥ 02.22.03.00)

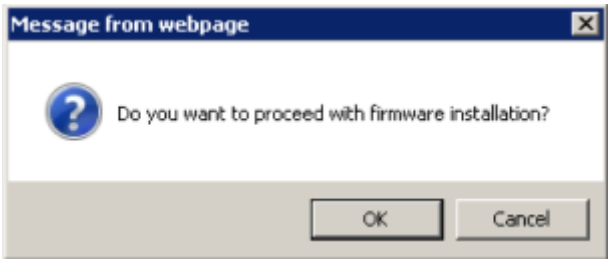


   - "Execute Setup" (FW version ≤ 01.32.00.04)

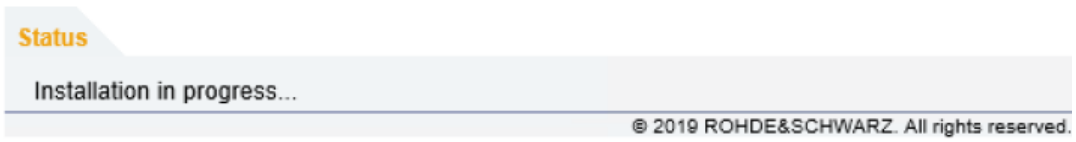


next to the select box.

7. A confirmation dialog appears. Confirm with "OK" to start the update.



8. The firmware/software installation starts. The status text in the web GUI displays "Installation in progress…".



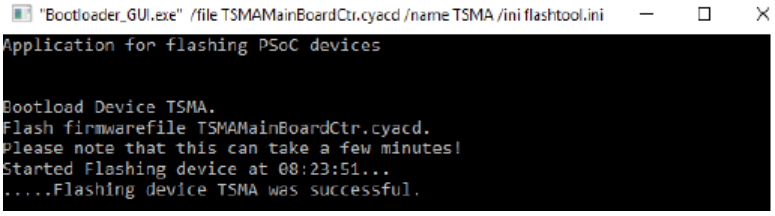
The mode LED starts blinking blue.

Note: Do not switch off or unplug from power while running firmware/software update.

9. After the installation of all firmware/software packages, the R&S TSMA6 reboots.

Starting with firmware version 03.00.10.02, the mode LED changes to blinking green (selftest).

10. After the reboot, call the R&S TSMA web GUI. The status text `Installation successful` is displayed.
11. About one minute after the operating system is up again, the flash of the mainboard firmware starts.



The microcontroller flash is indicated like following:
Meas LED = red, mode LED = off
Fans are switched to full speed.

Note: Step step 11 is only performed during firmware update, if the firmware package contains a new mainboard firmware.

12. After the reboot, call the web GUI. After a while, the status text in the web GUI changes to `No error`.
    The LED changes like following:
    Mode LED = green resp. blue (depends on the state of the WLAN access point)
13. The "Overview" page in the web GUI needs to display the installed firmware/software version.

7.1.3 Calling R&S TSMA6 Web GUI

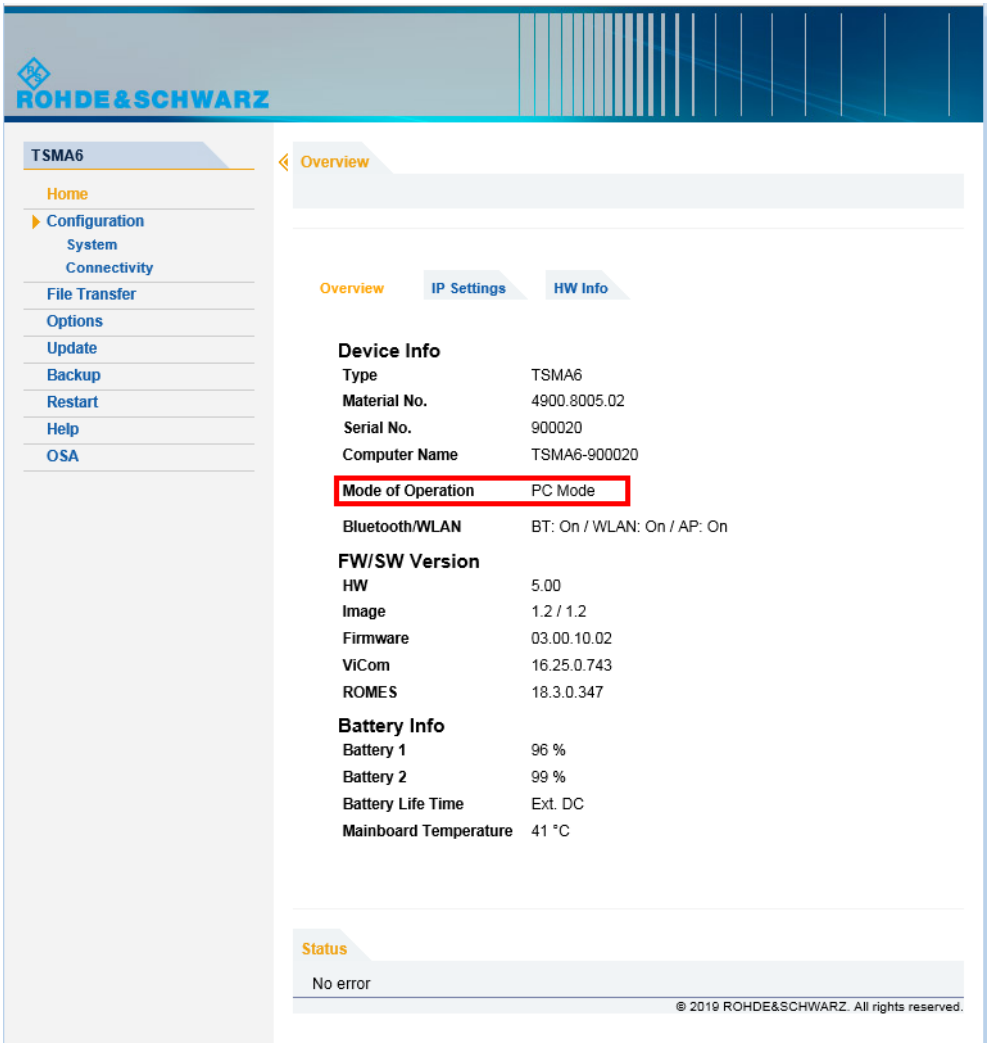
The R&S TSMA6 web GUI has to be loaded prior to executing firmware / software setup.

- Remote from a WLAN connected device
  Start the web browser and enter the following URL:
  http://192.168.137.1
- Remote from a LAN connected device
  Enter the URL `http://TSMAx-xxxxxx.local` into the browser.
  `TSMAx-xxxxxx` = R&S TSMA6 host name
  This information can be found on a label at the bottom.
- Local
  Open the Internet Explorer. The web GUI starts automatically. If not, enter the URL `http://localhost` into the browser.

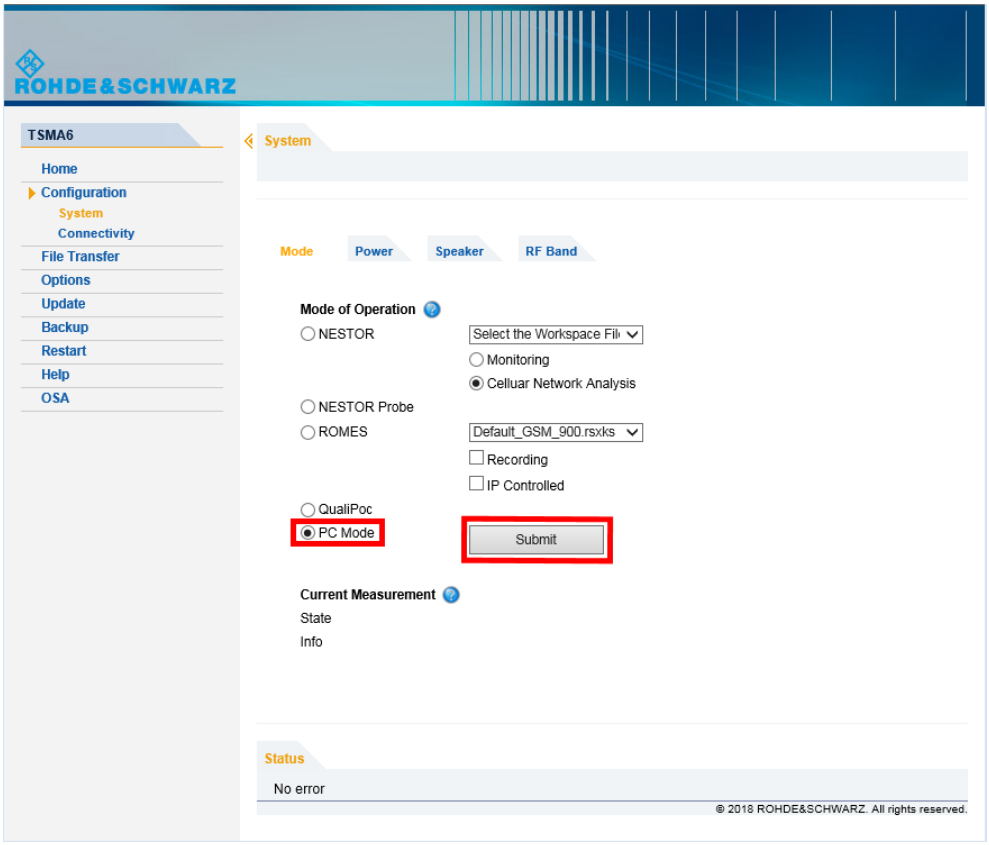
7.1.4 Checking Mode of Operation

To execute the setup on the R&S TSMA6, the mode of operation has to be "PC Mode".

1. Open the R&S TSMA6 web GUI. Use one of the following options.
   - Remote from a WLAN connected device
     Start the web browser and enter the following URL:
     http://192.168.137.1
   - Remote from a LAN connected device
     Enter the URL `http://TSMAx-xxxxxx.local` into the browser.
     `TSMAx-xxxxxx` = R&S TSMA6 host name
     This information can be found on a label at the bottom.
   - Local
     Open the Internet Explorer. The web GUI should be loaded automatically. If not, enter the URL `http://localhost` into the browser.
2. The mode of operation is displayed in the "Overview" page. If the mode is already "PC Mode", you can continue with Chapter 7.1.2, "Executing Setup", on page 50.



3. If a different mode is activated, navigate to "Configuration" > "System" > "Mode", select the "PC Mode" and press the "Submit" button.



4. Reload the web GUI after changing the mode, and ensure that the "Mode of Operation" is "PC Mode".

The R&S TSMA6 is ready for firmware update / software installation.

7.2 Software Installation

Following software components are available for installation on the R&S TSMA6.

- R&S TsmeTools
- Remote ViCom Server
- R&S NESTOR
- R&S ROMES
- SwissQual QualiPoc
- SmartONE

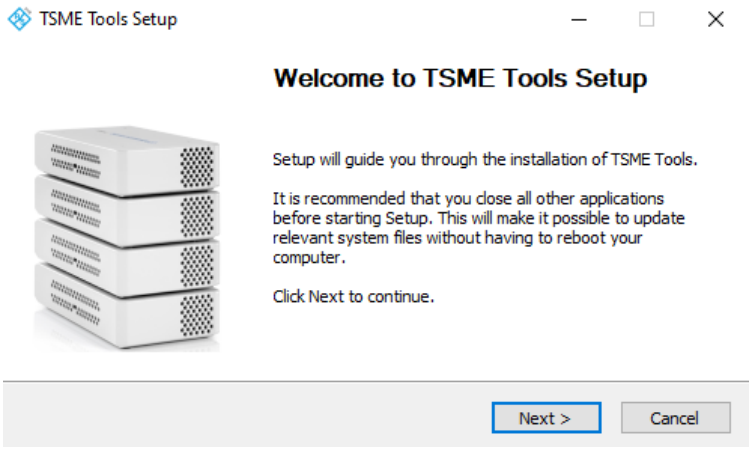
Before starting with software installation, check the latest TSMA6 firmware release notes under https://www.rohde-schwarz.com/firmware/tsmx/.

7.2.1 R&S TsmeTools

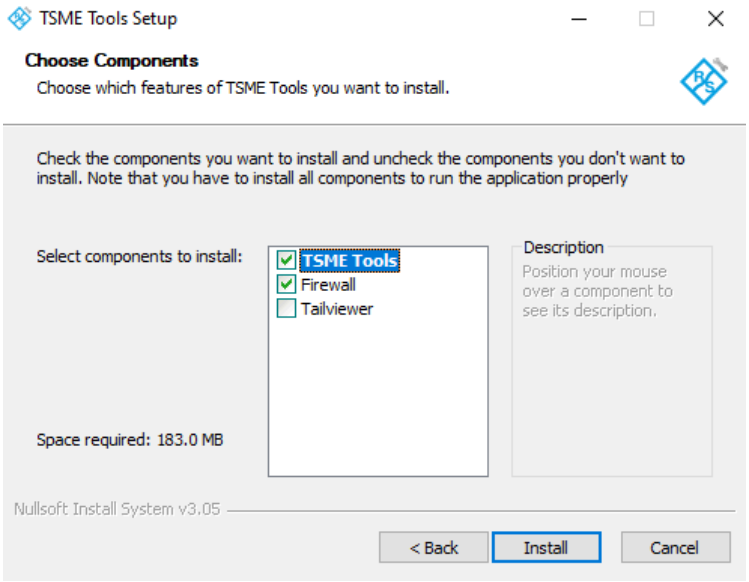
The setup file is named `TSMAx-TsmeTools-v<x.y.z.z1>.exe` (example: `TSMAx-TsmeTools-v1.7.0.2.exe`).

7.2.1.1 TsmeTools Local Installation

1. Download the TsmeTools setup file `TSMAx-TsmeTools-v<x.y.z.z1>.exe` from the Rohde & Schwarz FTP server respectively TSME CD-ROM.
2. Open the Windows Explorer and execute the TsmeTools setup file `TSMAx-TsmeTools-v<x.y.z.z1>.exe`.
3. In the "TSME Tools Setup" window, press "Next>".



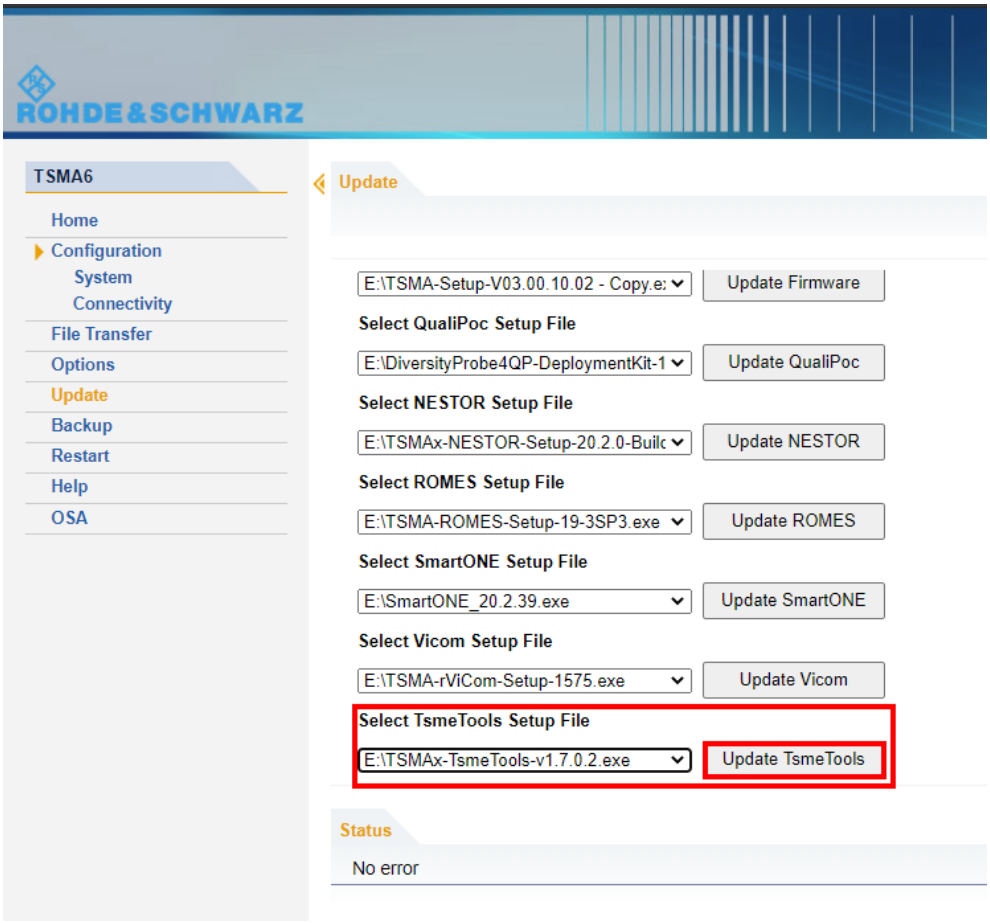
4. Choose all components to run the application properly and press "Install".



7.2.1.2 TsmeTools Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. Select the appropriate TsmeTools setup file `TSMAx-TsmeTools-v<x.y.z.z1>.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update TsmeTools"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.2.2 Remote ViCom Server Software

The Remote ViCom server (rViCom) is an additional software package for the R&S TSMA6. The latest version of this package is pre-installed on any shipped R&S TSMA6.

An upgrade of the Remote ViCom package is only recommended when operating the R&S TSMA6 in "rViCom Server" mode.

The update of the Remote ViCom package installation could be neglected for other modes of operation (NESTOR, ROMES, QualiPoc).

The installed version of the Remote ViCom server on the R&S TSMA6 needs to match with the applied version of rViCom client API on the remote Android device.

In cases of a client / server mismatch, there are the following possibilities:

- Downgrade the rViCom server version on the R&S TSMA6 to match with the applied rViCom client version on the Android device.
- Upgrade the rViCom client version on the connected tablet / smartphone to comply with the installed rViCom server version on the R&S TSMA6.

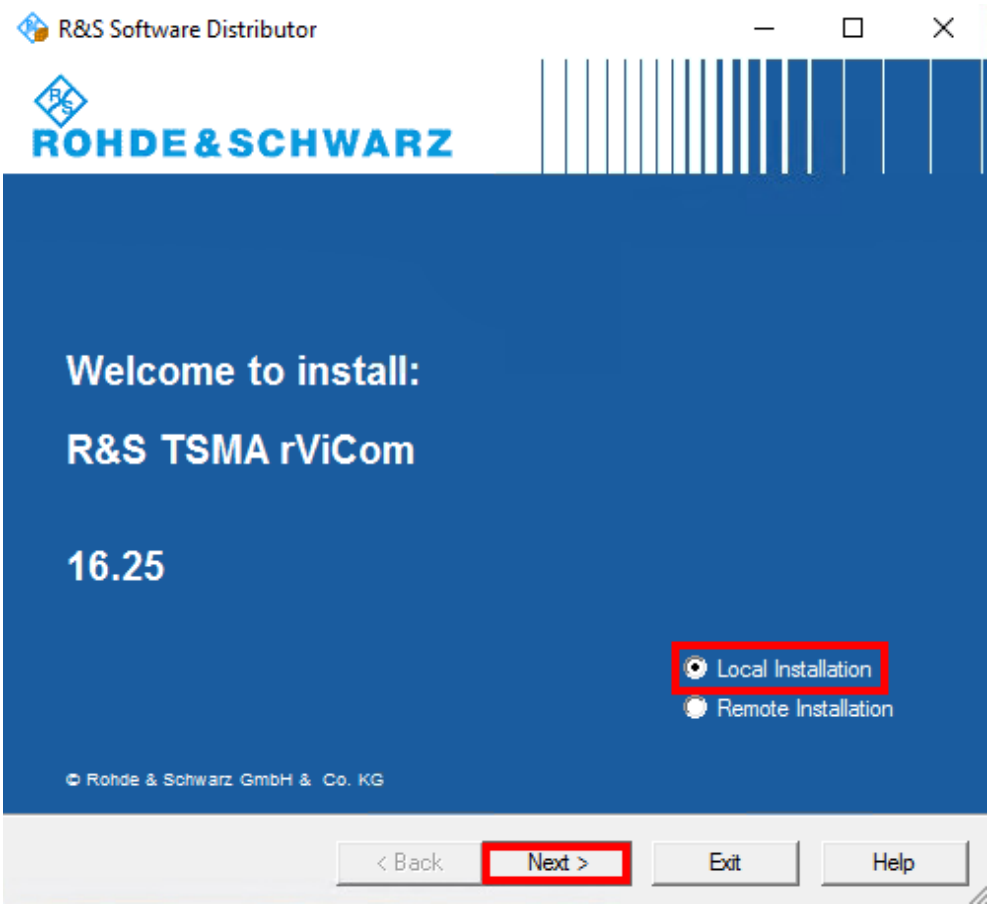
7.2.2.1 Preparation

1. To get the setup file `TSMAx-rViCom-Setup-<Version>.exe`, contact the R&S customer support.
2. Choose the way of installation and follow the instructions how to prepare.

7.2.2.2 ViCom Server Local Installation

Follow the general instructions in Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 1 to step 4.

1. Open the Windows Explorer and execute the setup file `TSMAx-rViCom-Setup-<Version>.exe`.
2. The "R&S Software Distributor" window comes up. Select "Local Installation" and press "Next".



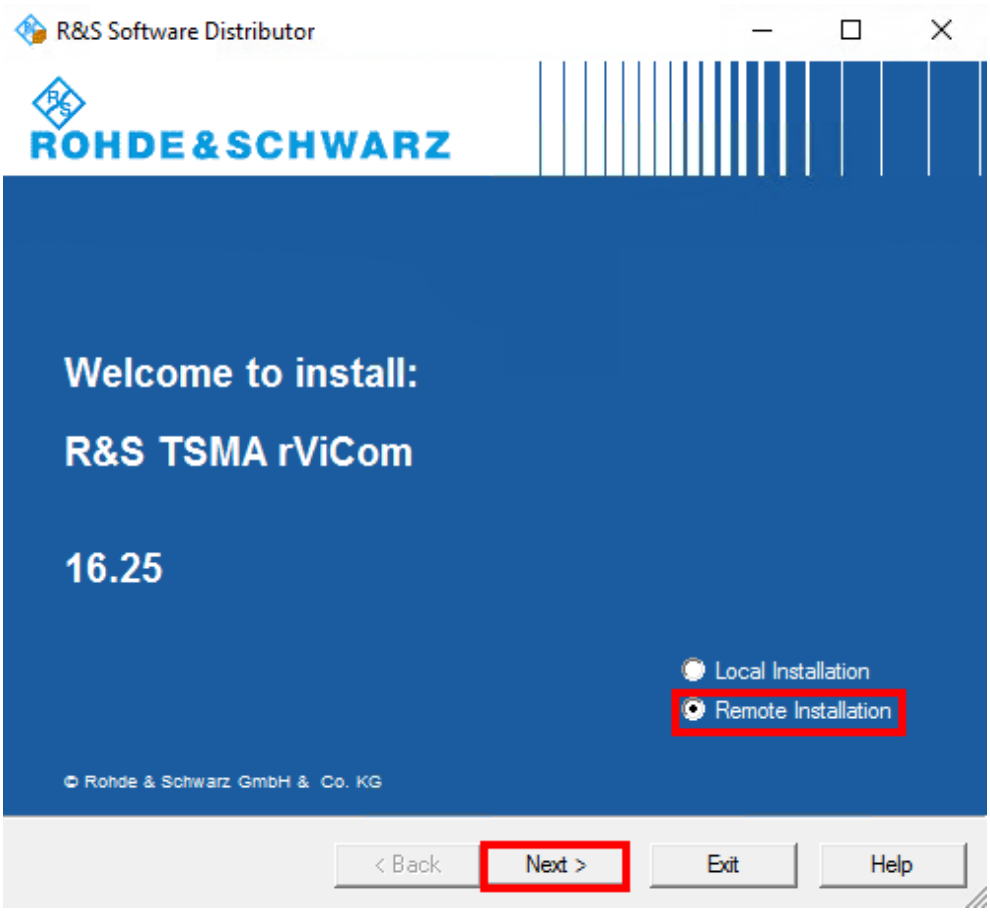
3. All subsequent steps are similar to local firmware installation, see Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 7 and following.

Do not switch off or unplug from power while running firmware/software update.

7.2.2.3 ViCom Server Remote Installation

Follow the general instructions in Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 1 to step 2.

1. Execute the setup file `TSMAx-rViCom-Setup-<Version>.exe` on the remote PC.
2. The "R&S Software Distributor" comes up. Select "Remote Installation" and press "Next >".

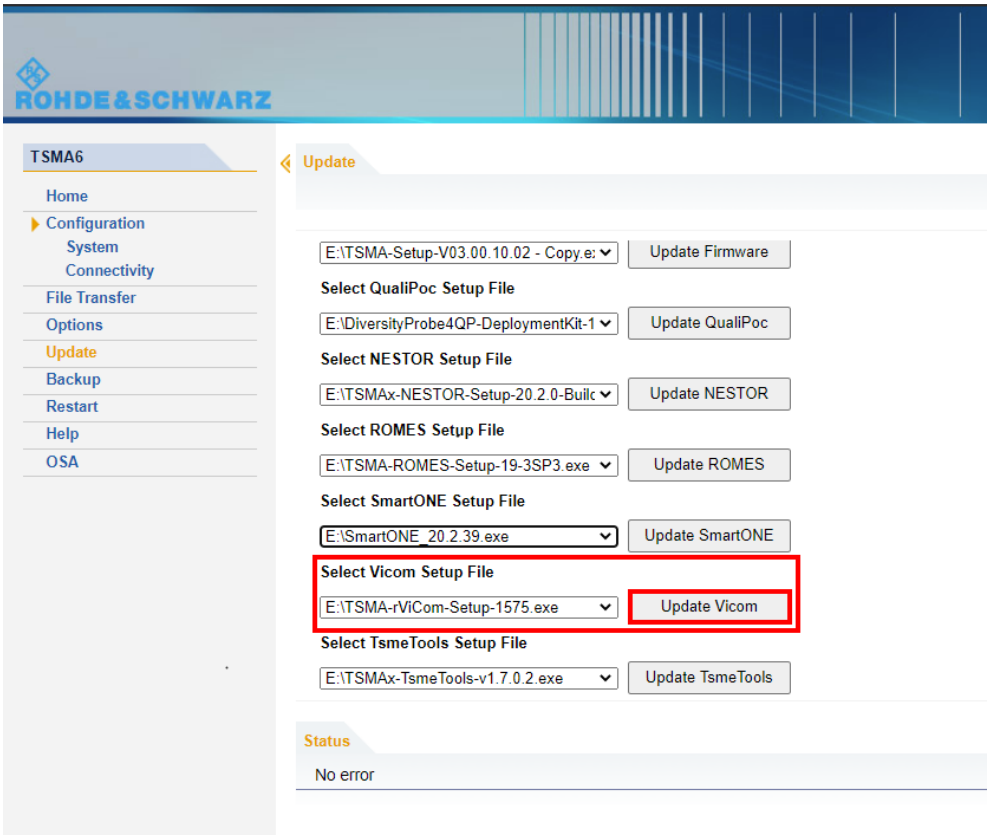


3. All subsequent steps are similar to remote firmware installation, see Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 4 and following.

7.2.2.4 ViCom Server Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. Select the appropriate firmware setup file `TSMAx-rViCom-Setup-<Version>.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update Vicom"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.2.3 R&S NESTOR Software

This software package is pre-installed at delivery when the R&S TSMA6 is ordered with NESTOR TSMA6 option (R&S No. 1522.8870.03).

Only execute the dedicated NESTOR setup for R&S TSMA6. The setup file is named `TSMAx_NESTOR_Setup-<Version>.exe`.

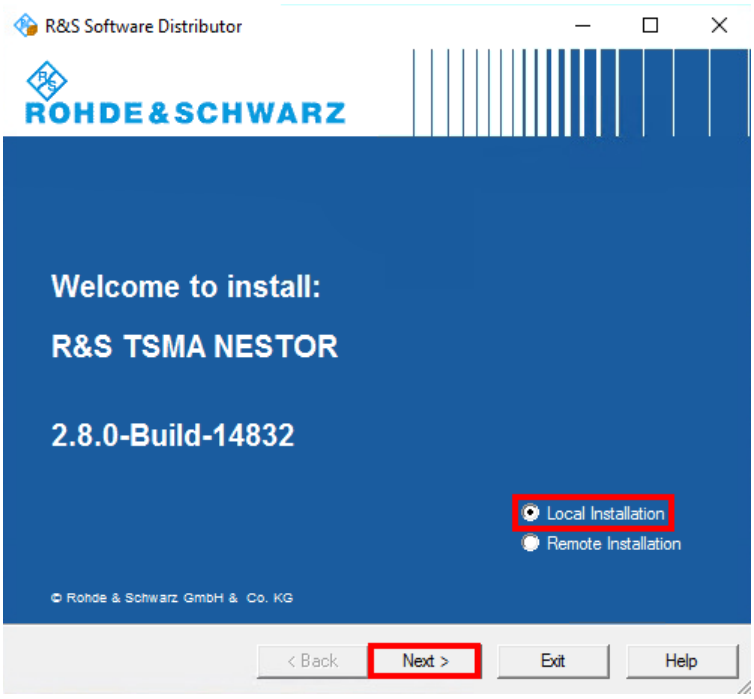
7.2.3.1 Preparation

1. Download the software setup file `TSMAx_NESTOR_Setup-<Version>.exe` from the Rohde & Schwarz FTP server respectively NESTOR CD-ROM.
2. Choose the way of installation and follow the instructions how to prepare.

7.2.3.2 NESTOR Local Installation

Follow the general instructions in Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 1 to step 4.

1. Open the Windows Explorer and execute the NESTOR setup file `TSMAx_NESTOR_Setup-<Version>.exe`.
2. The "R&S Software Distributor" comes up. Select "Local Installation" and press "Next".



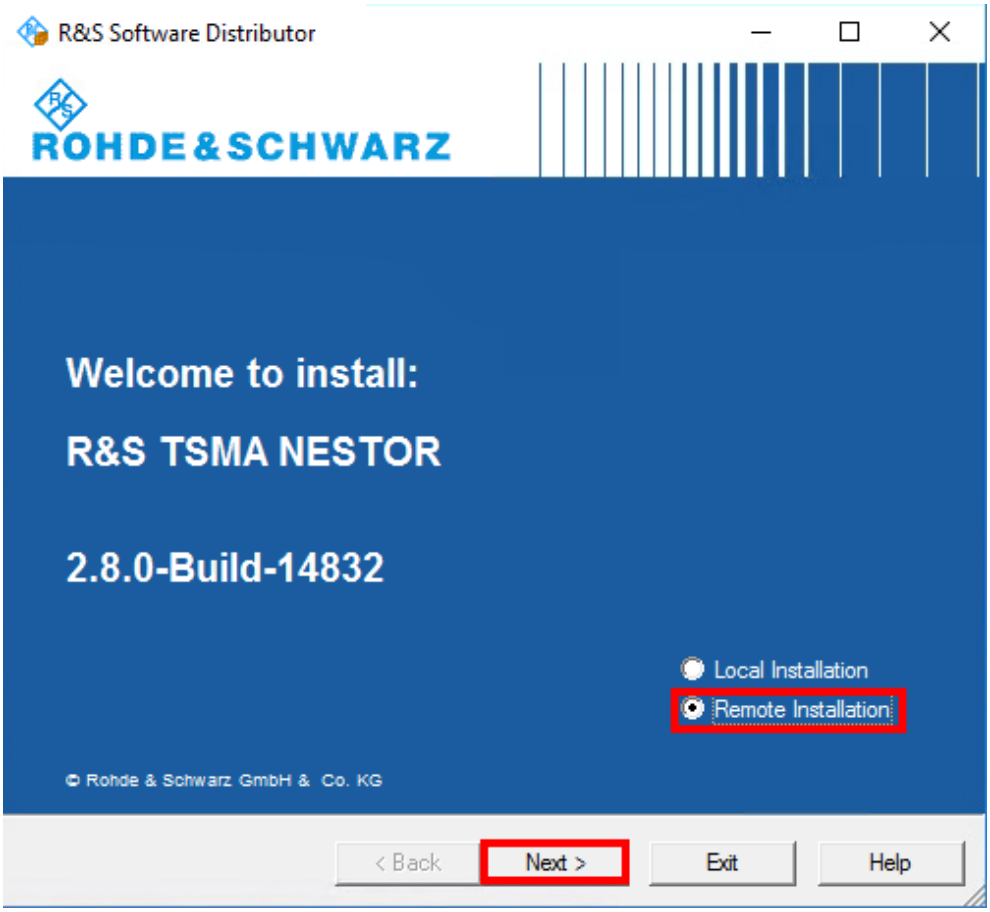
3. All subsequent steps are similar to local firmware installation, see Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 7 and following.

Do not switch off or unplug from power while running firmware/software update.

7.2.3.3 NESTOR Remote Installation

Follow the general instructions in Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 1 to step 2.

1. Execute the setup file `TSMAx_NESTOR_Setup-<Version>.exe` on the remote PC.
2. The "R&S Software Distributor" comes up. Select "Remote Installation" and press "Next >".

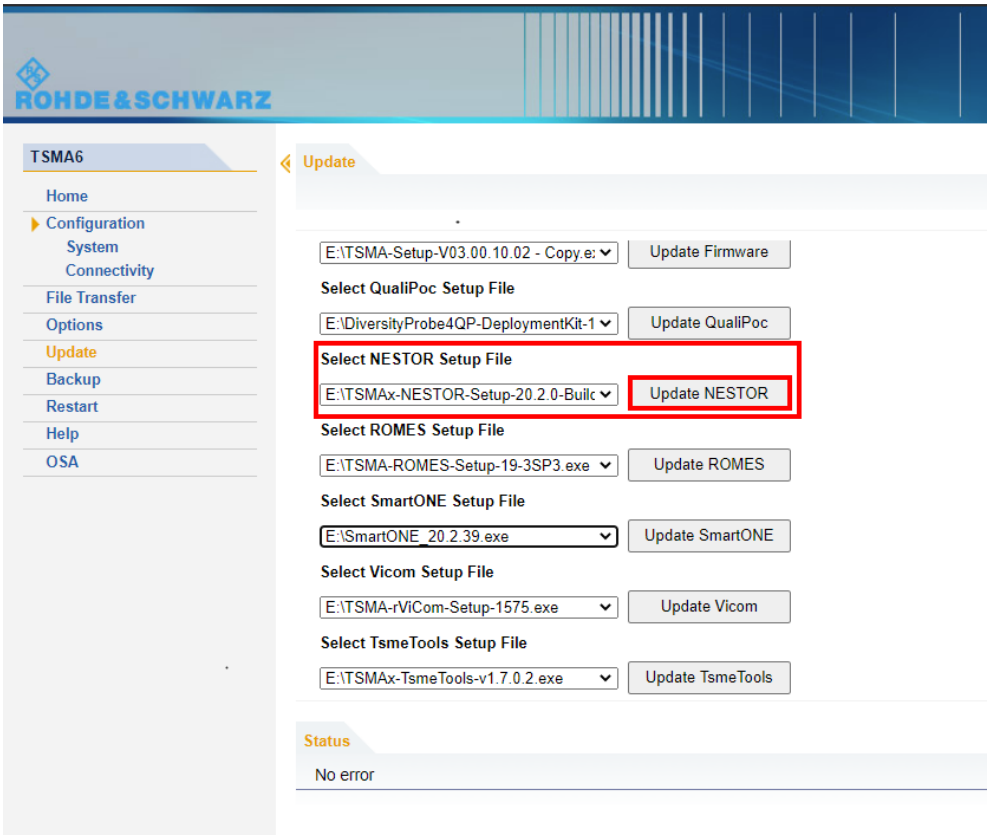


3. All subsequent steps are similar to remote firmware installation, see Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 4 and following.

7.2.3.4 NESTOR Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. 1. Select the appropriate NESTOR setup file `TSMAx_NESTOR_Setup-<Version>.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update NESTOR"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.2.4 SwissQual DiversityProbe for QualiPoc Software

Version 15.2.0.25 or greater must be installed on the R&S TSMA6.

Only execute the dedicated QualiPoc setup forR&S TSMA6. The setup file is named `DiversityProbe4QP-DeploymentKit-<Version>.exe`.

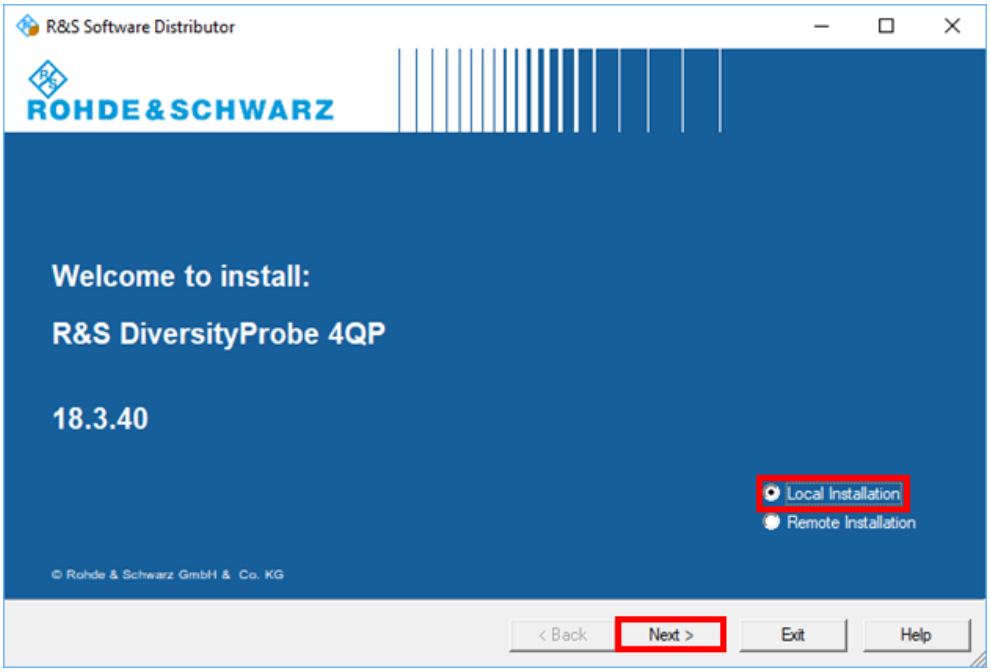
7.2.4.1 Preparation

1. Download the QualiPoc setup file `DiversityProbe4QP-DeploymentKit-<Version>.exe` from the Rohde & Schwarz FTP server respectively QualiPoc CD-ROM.
2. Choose the way of installation and follow the instructions how to prepare.

7.2.4.2 DiversityProbe for QualiPoc Local Installation

Follow the general instructions in Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 1 to step 4.

1. Open the Windows Explorer and execute the QualiPoc setup file `DiversityProbe4QP-DeploymentKit-<Version>.exe`.
2. The "R&S Software Distributor" window comes up. "Select Local Installation" and press "Next".

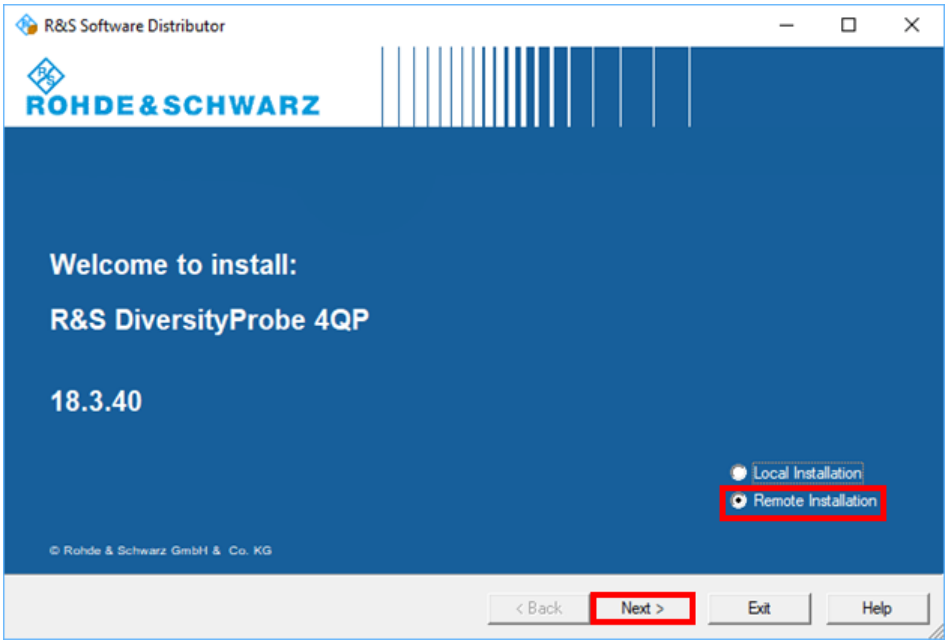


3. All subsequent steps are similar to local firmware installation, see Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 7 and following.

7.2.4.3 DiversityProbe for QualiPoc Remote Installation

Follow the general instructions in Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 1 to step 2.

1. Execute the QualiPoc setup file `DiversityProbe4QP-DeploymentKit-<Version>.exe` on the remote PC.
2. The "R&S Software Distributor" comes up. Select "Remote Installation" and press "Next >".

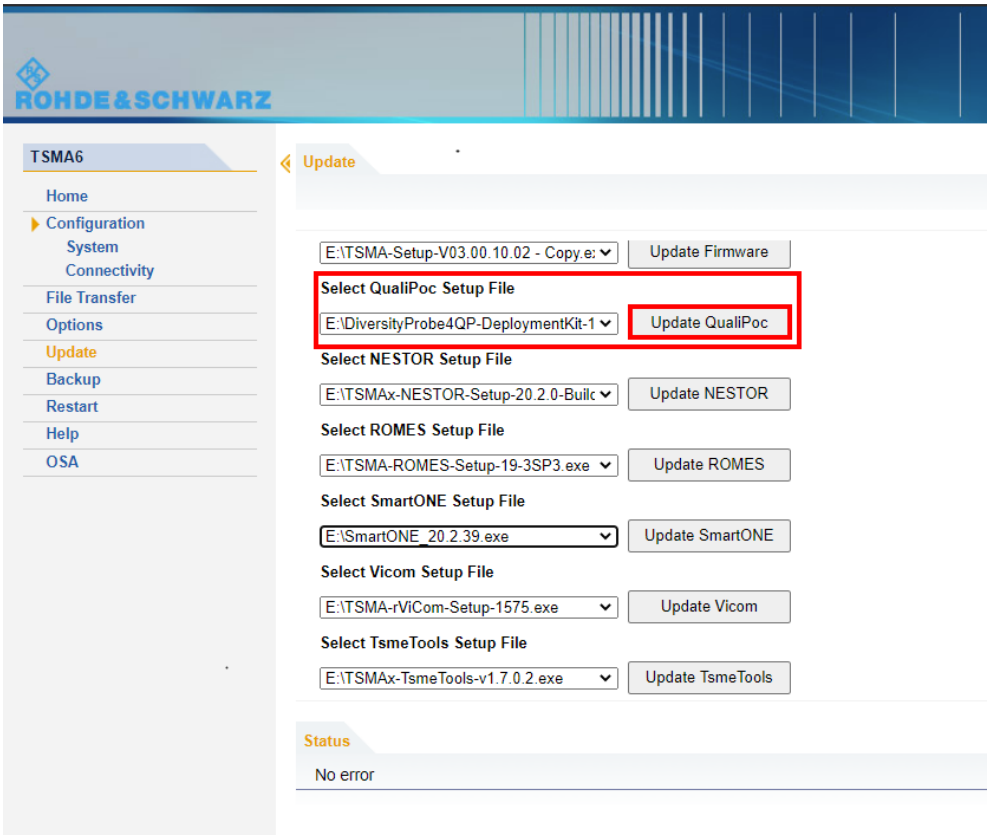


3. All subsequent steps are similar to remote firmware installation, see Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 4 and following.

7.2.4.4 DiversityProbe for QualiPoc Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. Select the appropriate QualiPoc setup file `DiversityProbe4QP-DeploymentKit-<Version>.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update QualiPoc"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.2.5 R&S ROMES Setup

Only execute the dedicated ROMES setup for R&S TSMA6. The setup file is named `TSMA6-Romes-Setupxyy.exe` (example: `TSMA6-ROMES-Setup490p1.exe`).

For the first time after installation, R&S ROMES has to be started from the Windows desktop icon on the R&S TSMA6. After closing R&S ROMES, now it is possible to start R&S ROMES via the R&S TSMA6 web GUI.

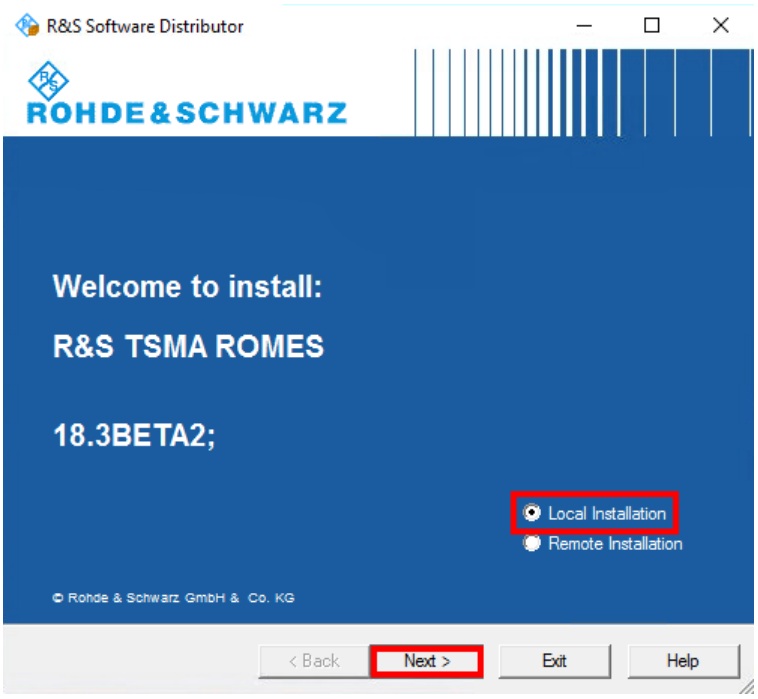
7.2.5.1 Preparation

1. Download the ROMES setup file `TSMAx_ROMES_Setup-<Version>.exe` from the Rohde & Schwarz FTP server respectively ROMES CD-ROM.
2. Choose the way of installation and follow the instructions how to prepare.

7.2.5.2 ROMES Local Installation

Follow the general instructions in Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 1 to step 4.

1. Open the Windows Explorer and execute the ROMES setup file `TSMAx_ROMES_Setup-<Version>.exe`.
2. The "R&S Software Distributor" window comes up. Select "Local Installation" and press "Next".

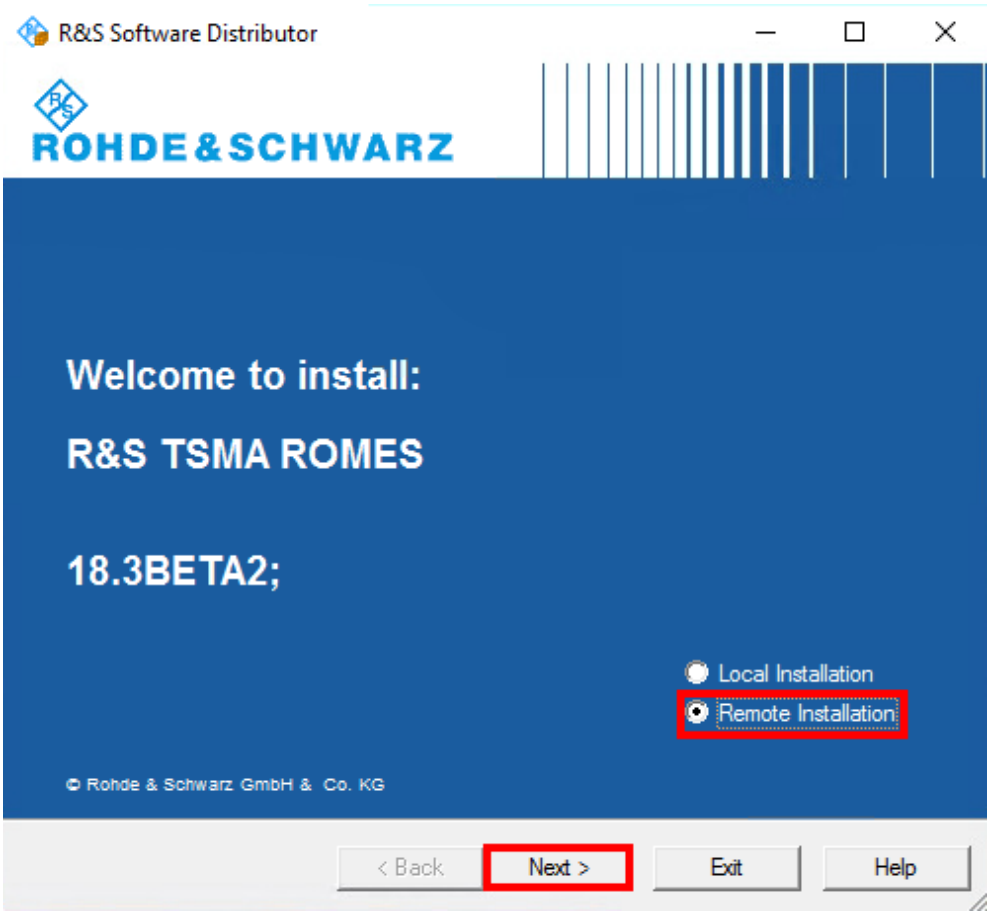


3. All subsequent steps are similar to local firmware installation, see Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 7 and following.

7.2.5.3 ROMES Remote Installation

Follow the general instructions in Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 1 to step 2.

1. Execute the ROMES setup file `TSMAx_ROMES_Setup-<Version>.exe` on the remote PC.
2. The "R&S Software Distributor" comes up. Select "Remote Installation" and press "Next >".

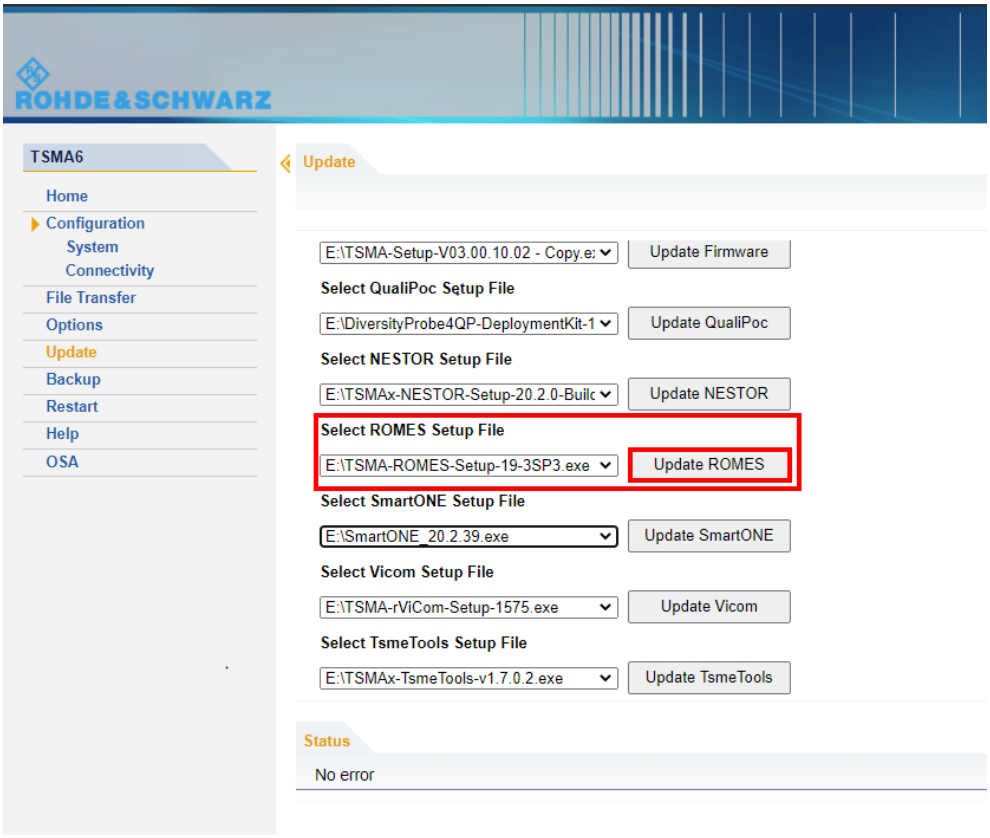


3. All subsequent steps are similar to remote firmware installation, see Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 4 and following.

7.2.5.4 ROMES Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. Select the appropriate ROMES setup file `TSMAx_ROMES_Setup-<Version>.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update ROMES"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.2.6 R&S SmartONE Setup

The setup file is named `SmartONE_x.y.z.exe` (example: `SmartONE_20.3.35.exe`).

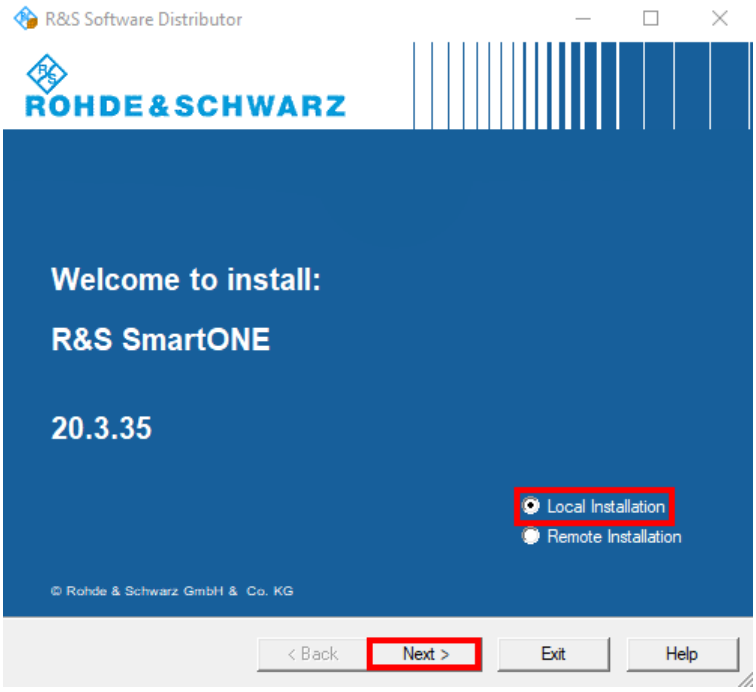
7.2.6.1 Preparation

1. Download the SmartONE setup file `SmartONE_x.y.z.exe` from the Rohde & Schwarz FTP server respectively SmartONE CD-ROM.
2. Choose the way of installation and follow the instructions how to prepare.

7.2.6.2 SmartONE Local Installation

Follow the general instructions in Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 1 to step 4.

1. Open the Windows Explorer and execute the SmartONE setup file `SmartONE_x.y.z.exe`.
2. The "R&S Software Distributor" comes up. Select "Local Installation" and press "Next".

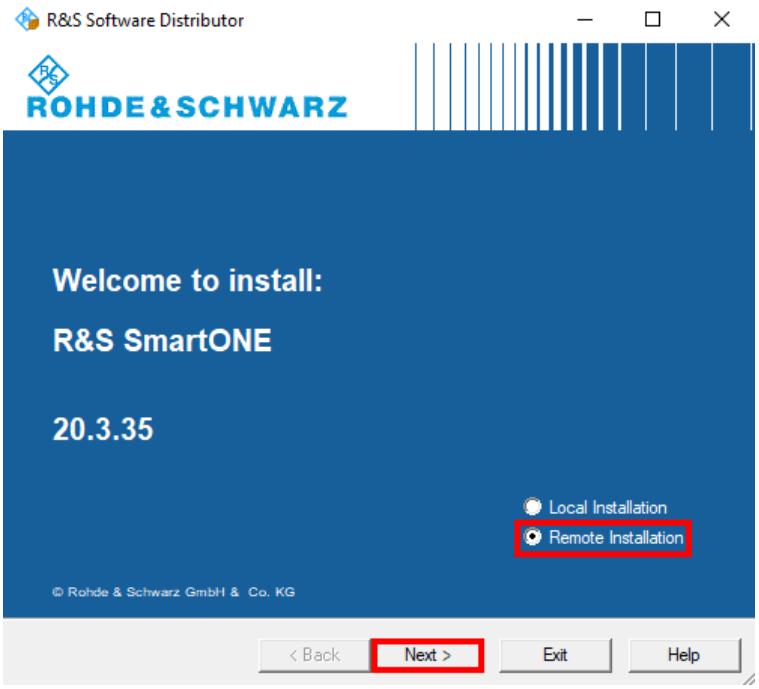


3. All subsequent steps are similar to local firmware installation, see Chapter 7.1.2.1, "Local Execution of the Setup File", on page 50, step 7 and following.

7.2.6.3 SmartONE Remote Installation

Follow the general instructions in Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 1 to step 2.

1. Execute the SmartONE setup file `SmartONE_x.y.z.exe` on the remote PC.
2. The "R&S Software Distributor" comes up. Select "Remote Installation" and press "Next >".

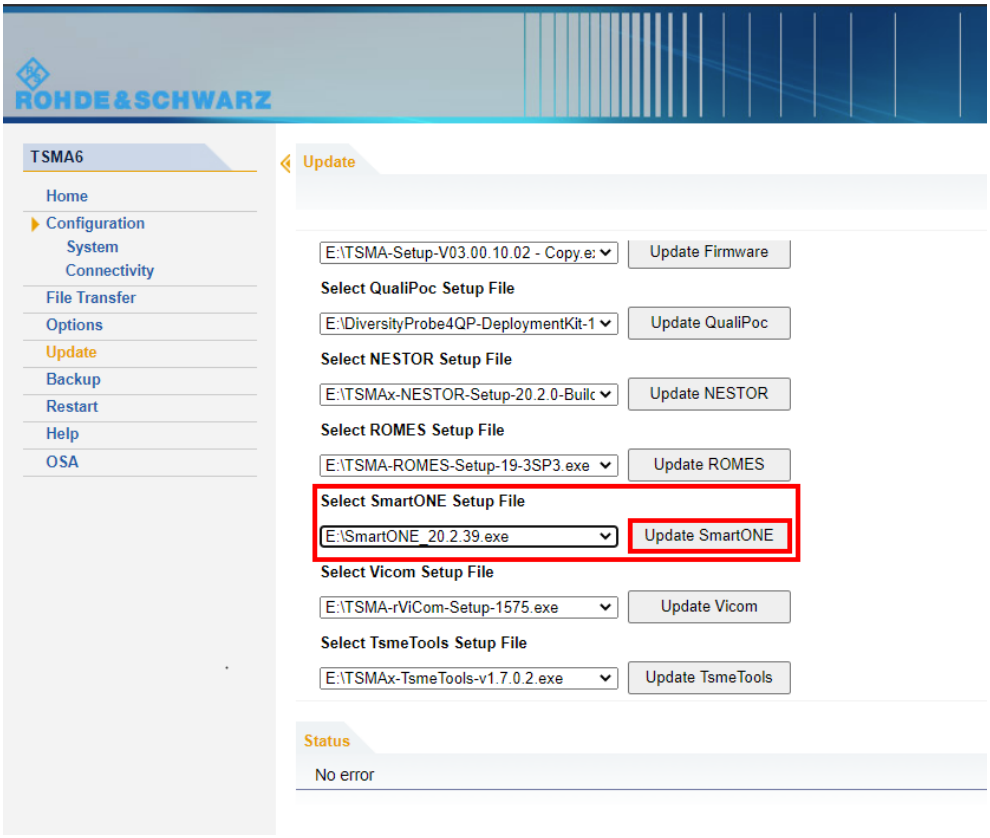


3. All subsequent steps are similar to remote firmware installation, see Chapter 7.1.2.2, "Remote Installation of the Setup File", on page 52, step 4 and following.

7.2.6.4 SmartONE Installation Using a USB Stick

Follow the general instructions in Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 1 to step 5.

1. Select the appropriate SmartONE setup file `SmartONE_x.y.z.exe` and press the button next to the select box.
   - Firmware version 01.xx.yy.zz: "Execute Setup"
   - Firmware version from 02.xx.yy.zz: "Update SmartONE"



2. The following steps are similar to the installation using a USB stick, see Chapter 7.1.2.3, "Installation Using a USB Stick", on page 55, step 7 to step 10.

7.3 Options (NESTOR, TSMA6, ROMES)

The device must be in the "PC Mode". Check it via the web GUI ("Overview" > "Mode of Operation").
To change the operation mode, see "Mode of Operation" on page 120).

7.3.1 Installation of NESTOR Options

To install R&S NESTOR options, perform the following steps.

1. Start the web GUI of the R&S TSMA6.
2. Navigate to "Options" > "Install" Tab (see "Install NESTOR Options" on page 127).
3. Add the license key code of a specific NESTOR option in the field "Install NESTOR Options" manually and click "Install".

7.3.2 Installation of TSMA6 Options

To install TSMA6 scanner options, perform the followings steps.

1. Start the web GUI of the R&S TSMA6.
2. Navigate to "Options" > "Install" Tab (see "Install Scanner Options" on page 127)
3. Add the license key code of a specific scanner option in the field "Install Scanner Options" manually and click "Install".
4. Alternatively, you can install a scanner option by selecting a license `.xml` file and clicking "Install XML file."

7.3.3 Installation of ROMES Options

To install an R&S ROMES option file, perform the following steps.

1. Start the web GUI of the R&S TSMA6.
2. Select the ROMES `option<serial number>.dat` file in the field "Install ROMES Options" and click "Install".

7.4 User Backup and Restore

7.4.1 Backup

To create a user backup, click the "User Backup" button in the web GUI "(System" > "Config" Tab), see "Backup TSMA6 System" on page 129. A backup of the system partition `C:\` is created.

If there is an already existing user backup, an acknowledgment dialog pops up. After confirmation this user backup will be overwritten.

The backup procedure takes up to 15 minutes.

During the backup the [Mode] LED is blinking red. In the web GUI, the following status message will be displayed.

"Backup is in progress..."

The backup procedure has finished, when the [Mode] LED displays the normal operating state. The color of the LED depends on the state of the WLAN AP.

During the backup, do not interrupt the procedure or disconnect the power supply.

7.4.2 Restore

With the RESTORE button, it is possible to restore the system partition R&S TSMA6 to the user backup (see Chapter 7.4.1, "Backup", on page 81) or to the factory backup, if no user backup exists.

If a user backup exists, but you want to restore the factory backup, proceed as described in Chapter 7.4.3, "Restore Factory Backup", on page 82.

To perform a restore, the RESTORE button must be pressed (more than 20 s) with a round, blunt pen (diameter 1 to 2 mm). During the recovery process, the [Mode] LED is blinking blue.

The RESTORE procedure takes up to 15 minutes!
During this time, do not interrupt the procedure or disconnect the power supply!

When the RESTORE procedure has been completed, the color of the [Mode] LED depends on the state of the WLAN AP.

[Mode] LED	WLAN AP status
green	WLAN AP off
blue	WLAN AP on

NOTICE

Loss of user settings after RESTORE

Executing restore brings the R&S TSMA6 irreversible back to the condition of delivery or any other subsequently stored backup version.

On the `c:\` drive, all user settings and installed programs since the last restore will be deleted.

7.4.3 Restore Factory Backup

To restore the factory backup, perform the following steps.

1. Connect mouse, keyboard and monitor to the R&S TSMA6.
2. Press the [Shift] key and reboot the operating system.
3. The R&S TSMA6 reboots in the R&S recovery environment.
4. Select "Factory Default Restore".
5. Select "Start Recovery".
   The R&S TSMA6 recovery starts and the "Mode" LED blinks green.
   NOTE: Do not interrupt the recovery process.
6. When the recovery has finished, press Exit/Reboot.

7. After the reboot, check if a microcontroller flash is performed (LED blue/green).

7.5 Usage of the R&S TSMA6 Image Stick

With the R&S TSMA6 image stick, you can capture images from and apply images to another R&S TSMA6.

- Create a R&S TSMA6 Image Stick 83
- Boot from the R&S TSMA6 Image Stick 84
- Capture an Image from a R&S TSMA6 84
- Apply an Image to a R&S TSMA6 86

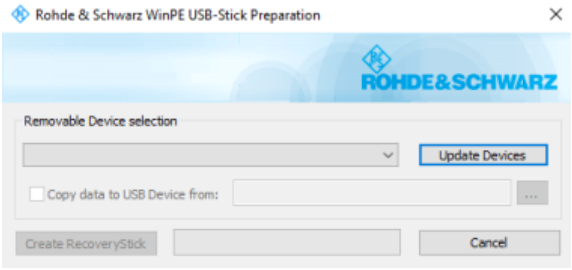
7.5.1 Create a R&S TSMA6 Image Stick

To create a R&S TSMA6 image stick, proceed as follows.

Prerequisites:

- A bootable USB stick (USB 3.1 Gen1) with a capacity of at least 64 GB. Make sure that the data on the USB stick is no longer needed as it will be formatted during process of R&S TSMA6 image stick creation.
- Download the "R&S TSMA6 Image Stick" (`TSMA6_ImageStick-v<x.y>.zip`) tool (www.rohde-schwarz.com/software/tsmx).
- On a PC, unzip the file `TSMA6_ImageStick-v<x.y>.zip` to a directory of your own choice. The extracted directory contains the `PrepareWinPEStick.exe` file.

1. Insert the USB stick into a free USB3.1 port of a PC.
2. Execute the `PrepareWinPEStick.exe` file in the directory, where you have saved the file.
3. Select the USB stick via the "Removable Device Selection" drop-down box.



4. Press "Create RecoveryStick".

In the main directory of the image stick, following directories and files are created automatically:

- `/Boot`
- `/Device`

- /EFI
- /sources
- bootmgr
- bootmgr.efi

When the creation of the image stick has finished, you can boot the R&S TSMA6 from this stick.

7.5.2 Boot from the R&S TSMA6 Image Stick

To boot from the R&S TSMA6 image stick, proceed as follows.

1. Connect mouse, keyboard and monitor to the R&S TSMA6.
2. Insert the created R&S TSMA6 image stick (see Chapter 7.5.1, "Create a R&S TSMA6 Image Stick", on page 83) into a free USB 3.0 port (Figure 3-2) on the R&S TSMA6.
3. Power on the R&S TSMA6.
4. During boot up, press [F10] to enter the boot menu.
5. Select the R&S TSMA6 image stick from the list of boot devices and press <Enter>.

   The Windows PE environment starts.

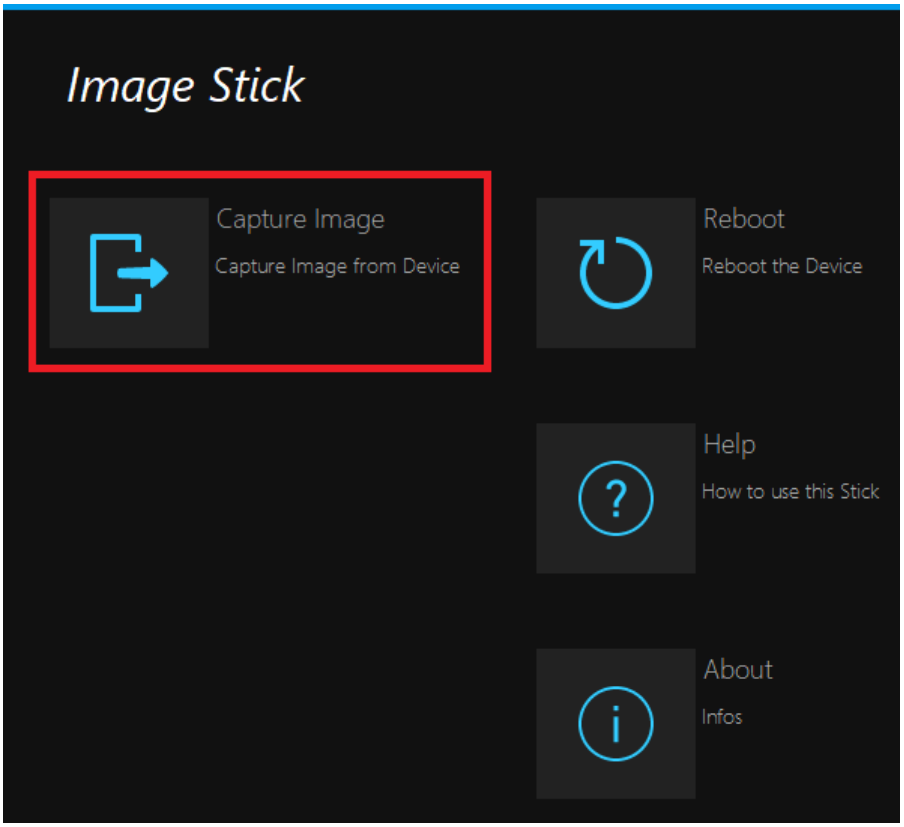
7.5.3 Capture an Image from a R&S TSMA6

To capture an image from a R&S TSMA6, proceed as follows:

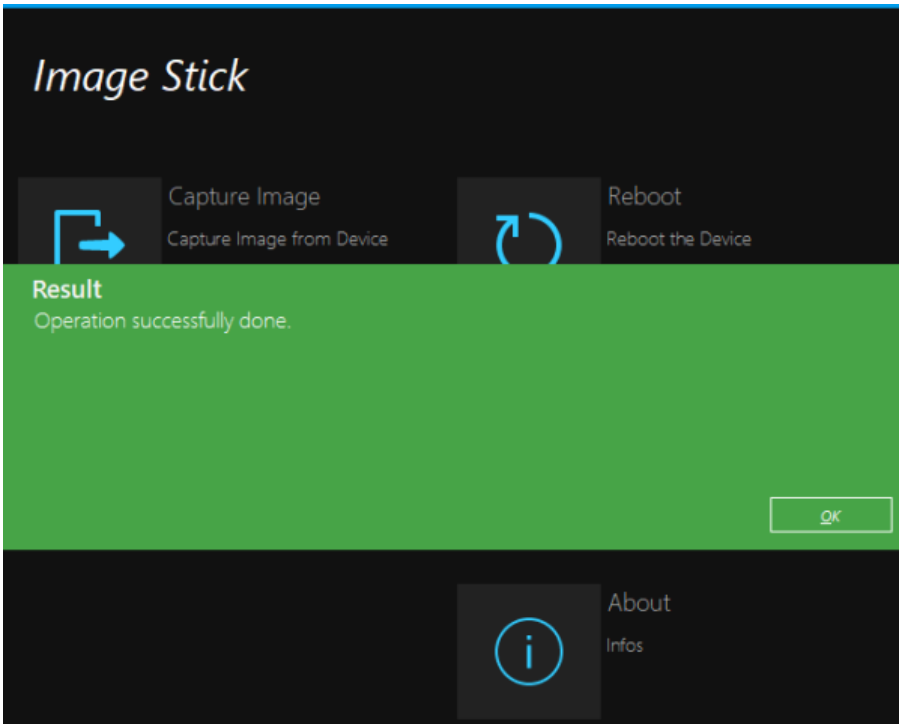
NOTE: No image files may be present on the R&S TSMA6 image stick in the directory Device/Images. Otherwise, capturing the image from a R&S TSMA6 master device is not possible.

1. Boot from the R&S TSMA6 master device (see Chapter 7.5.2, "Boot from the R&S TSMA6 Image Stick", on page 84).
2. In the main menu, press "Capture Image".

   The capture process starts automatically and the image files of the R&S TSMA6 master device are saved on the R&S TSMA6 image stick.



3. After the capture process has finished, the message "Operation successfully done." appears.



4. Press "OK".
5. Remove the R&S TSMA6 image stick.

   The R&S TSMA6 image stick now contains the image files (`/Device/Images`).
6. Press "Reboot".

   The R&S TSMA6 reboots normally in the previously selected mode of operation.

The image files, which are available on the R&S TSMA6 image stick in the directory (`/Device/Images` can be saved manually on a PC. So, the image files can be used to be applied on more than one device.

7.5.4 Apply an Image to a R&S TSMA6

To apply an image to a R&S TSMA6, the following files must be available in the directory `Device/Images` on the R&S TSMA6 image stick.

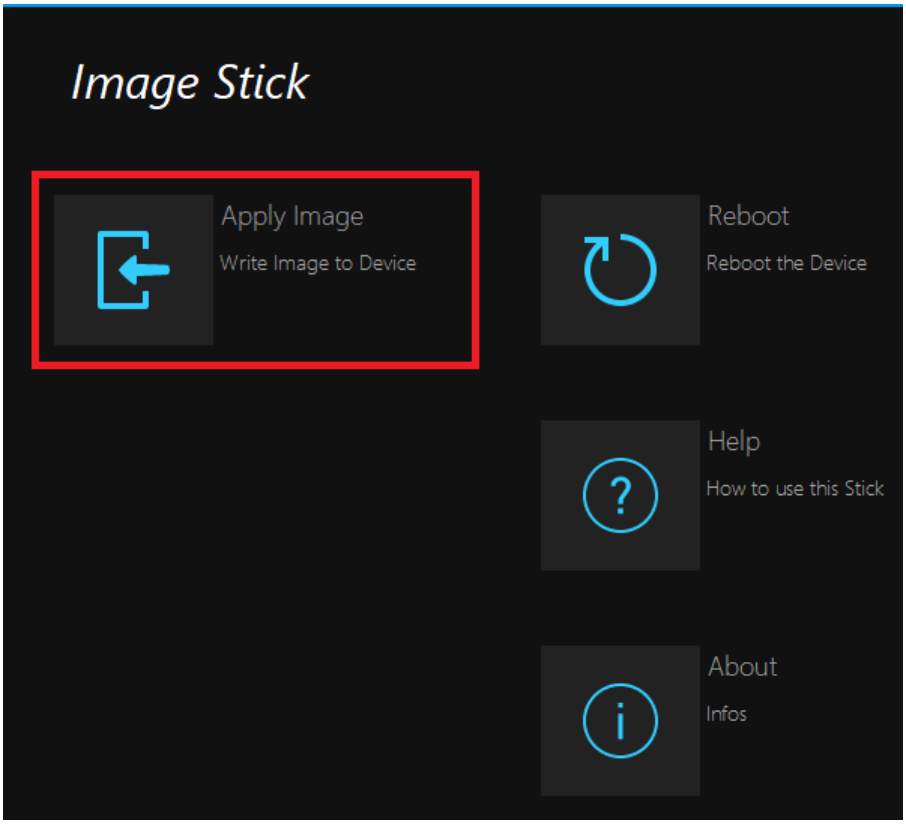
- `BACKUP.wim`
- `Data.wim`
- `RECOVERY.wim`
- `SYSTEM.wim`

These files can be copied manually from a PC to the image stick or are the result of capturing an image (see Chapter 7.5.3, "Capture an Image from a R&S TSMA6", on page 84).

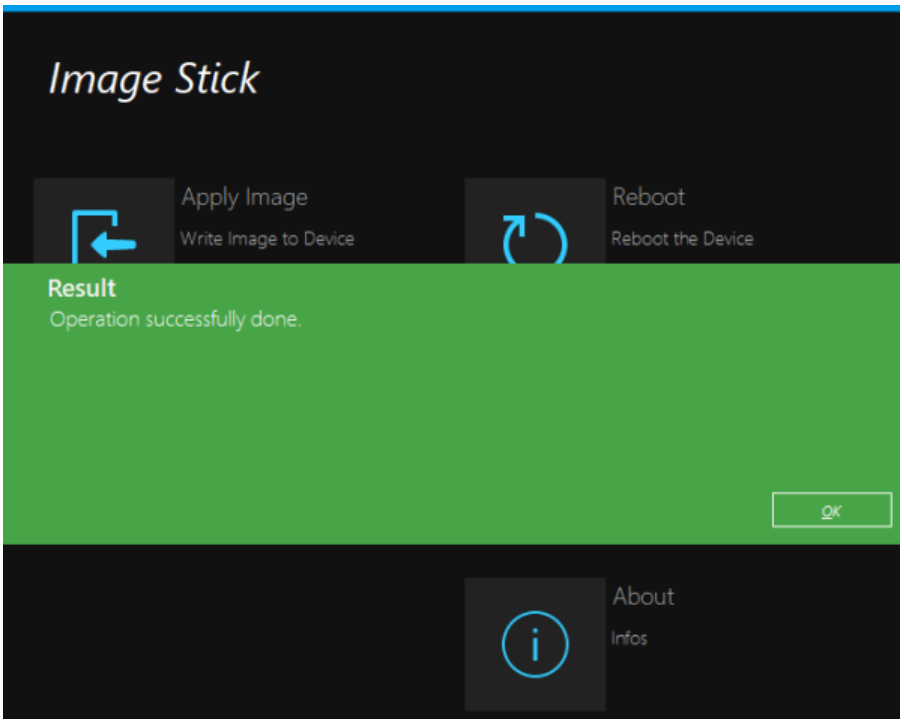
To apply an image to a R&S TSMA6, proceed as follows:

1. Boot the R&S TSMA6 image stick from the target device (see Chapter 7.5.2, "Boot from the R&S TSMA6 Image Stick", on page 84).
2. In the main menu, press "Apply Image".

   The apply process starts automatically. The image files from the R&S TSMA6 master device are transferred to the R&S TSMA6 target device and removed from the R&S TSMA6 image stick.



3. After the apply process has finished, the message "Operation successfully done." appears.



4. Press "OK".

5. Remove the R&S TSMA6 image stick.
6. Press "Reboot".

   The R&S TSMA6 reboots from the deployed image.

8 Troubleshooting

For all troubleshooting procedures, connect keyboard, mouse and a monitor to the R&S TSMA6.

- LED Indicated Errors....89
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- Slow/Instable WLAN Connection....110
- Bluetooth® device not detected by R&S TSMA6....112
- Contacting Customer Support....114

8.1 LED Indicated Errors

- "Mode" LED blue blinking fast − **Selftest Error**
  - Check the scanner connection (see Chapter 8.6, "Verify Scanner Connection LAN Settings", on page 98).
  - Evaluate the `Selftestresult.txt` (see Chapter 8.2, "Evaluate Selftest File", on page 90).
- "State" LED red blinking (2 Hz) − **Temperature Warning**
  - Check the ventilation openings and the operating temperature.
  - Switch off the device and let it cool down.
- "State" LED red continuous − **Overheated Unit**
  - Switch off the device and let it cool down.
  - Check the ventilation openings and switch on the device. If the problem occurs again, analyze the `Selftestresult.txt` (see Chapter 8.2, "Evaluate Self-test File", on page 90).
- "Meas" LED red blinking (2 Hz) −**Application Error**
  - Refer to the application note of the used software.
- "Pwr" LED off after startup − **Power Error**
  - Contact R&S support.

8.2 Evaluate Selftest File

- Path: `C:\ProgramData\Rohde-Schwarz\TSMA\Selftestresults`
- Filename: `Selftestresult.txt`

Entries in the `Selftestresult.txt` are created during the boot process of the device and every 5 minutes.

To open the `Selftestresult.txt`, proceed as follows.

1. Open a file explorer.
2. Enter the path to the directory where the selftest file is stored.
3. Open the selftest file.

Following device parameters and values are stored.

- Internal voltages (nominal values / actual values)
- Temperatures (scanner / mainboard)
- Battery status info
- Status of fans
- Status of scanner interface

8.3 Verify Scanner Link / Recall Device Info Using Tsme-DeviceManager

1. To start the R&S TSME Device Manager, double-click the desktop icon or select in Windows:
   "Start" > "All Programs" > "TsmeTools" > "TsmeDeviceManager"
2. Following error messages may occur.
   - **Tsme Device Manager Application has stopped**
     In the web GUI. check "Mode of Operation". If necessary, change to "PC Mode" and try again.
   - **No TSME connected**
     In the web GUI, verify "Scanner LAN Port Settings".
3. If the"Device Info" tab (see Figure 8-1) contains scanner data, the scanner connection has been established successfully.
4. Check the "Device Analysis Output" (see Chapter 8.3.2, "Device Analysis Output", on page 92) and the "Options" (see Chapter 8.3.3, "Verify Installed License Keys", on page 93) .

If a connection to a R&S TSMA6 is not possible (for example due to mismatch of subnetmask configuration), only limited information is displayed. For example, no information about installed options is available in this case.

8.3.1 Obtaining Device Information - "Device Info"

The most important configuration settings for each available R&S TSMA6 are displayed in the "Device Info" tab of the "R&S TSME Device Manager".

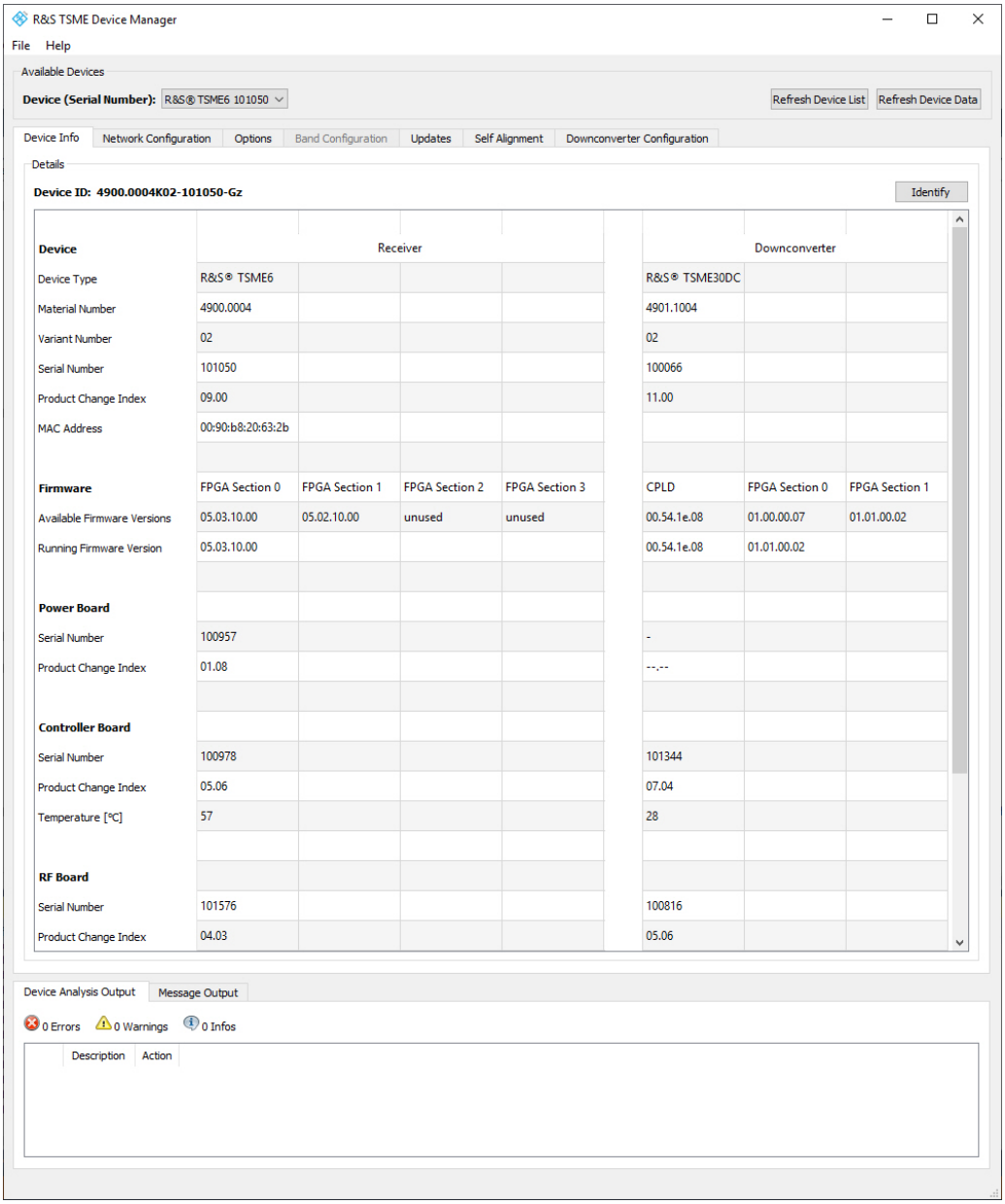


Figure 8-1: Tab "Device Info"

The table includes the following information:

Table 8-1: R&S TSMA6 device information

Label	Description
Device	
Device Type	Type of device (TSME family, TSMA family)
Material Number	Order number of the R&S TSMA6
Variant Number	Precise device type (variant)
Serial Number	Unique ID of the R&S TSMA6
Product Change Index	Version of the device
MAC Address	Network address of the R&S TSMA6
FPGA	
Available FPGA Bit File Versions	Previous firmware version backups stored on the device)
Current FPGA Bit File Version	Currently used firmware version
Power Board	
Serial Number	Unique ID of the power board
Product Change Index	Version of the power board
Controller Board	
Serial Number	Unique ID of the controller board
Product Change Index	Version of the controller board
Temperature	Current temperature of the hardware in [°]C
RF Board	
Serial Number	Unique ID of the RF board
Product Change Index	Version of the RF board
Temperature	Current temperature of the hardware in [°]C
Correction Data	
Version	Current version of the calibration data saved on the device
Type	• Factory The original factory calibration data are saved on the device. • Update An improved set of calibration data is available and saved on the device.
Date	Timestamp of creating and saving the calibration data on the device
TCXO Date	Date of correction data for the internal reference

8.3.2 Device Analysis Output

Furthermore, any warnings, errors or information concerning the device status that may be available are displayed in the "Device Analysis Output" table. This table is

available on all tabs, at the bottom of the "R&S TSME Device Manager" window (see Figure 8-1).

Depending on their relevance, the messages are assigned to the following categories:

- **info**: information for the user, no action required
- **warning**: warning on behalf of the instrument - should be solved
- **error**: error on behalf of the instrument - must be solved before further operation

In case measurement problems occur with the R&S TSMA6, check the "Device Analysis Output" table for any errors that may have been detected. If available, a repair function is provided.

8.3.3 Verify Installed License Keys

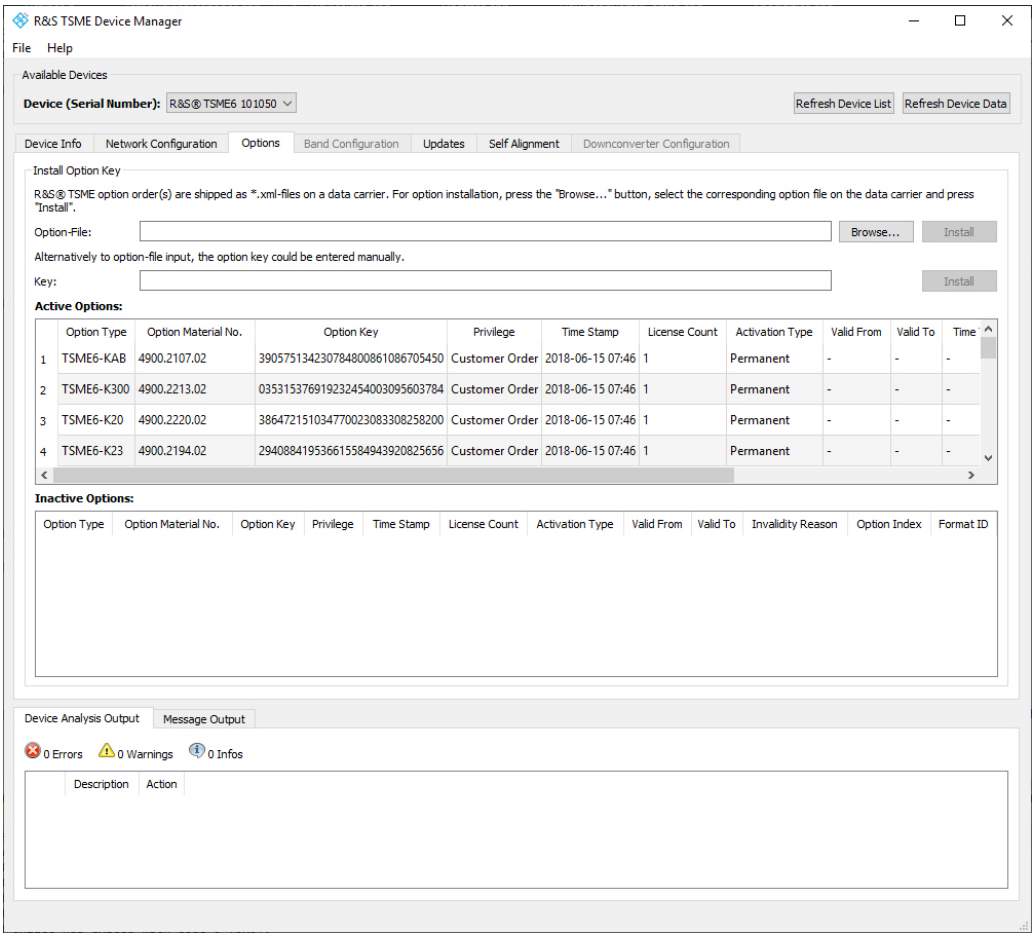


Figure 8-2: Tab "Options"

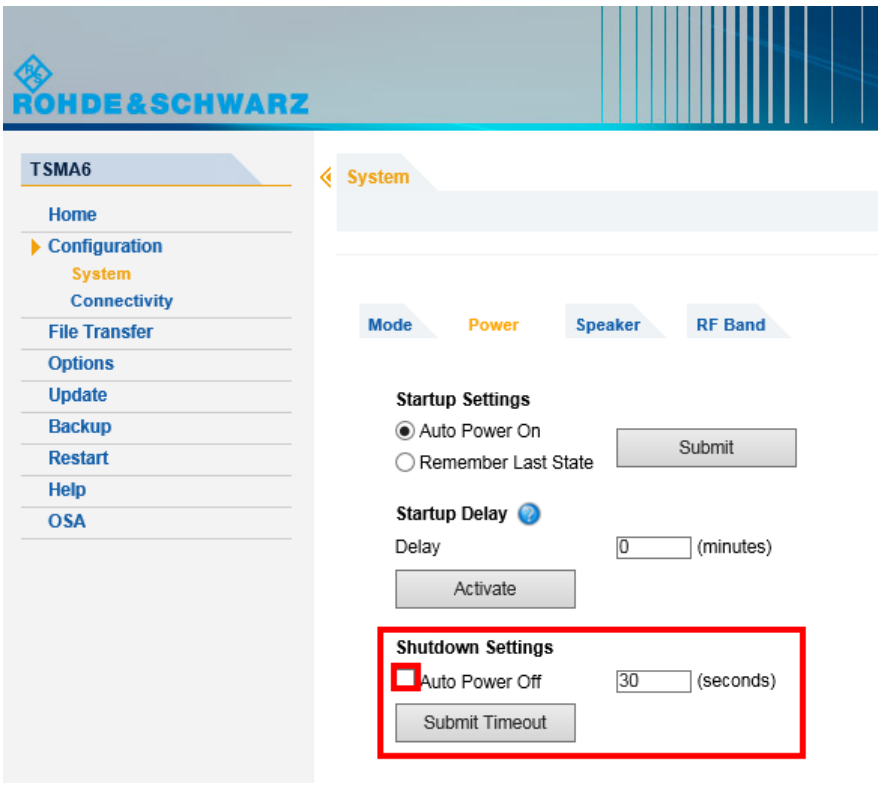
Table 8-2: Software license key information

Label	Description
Option Type	Band or technology option name
Option Material No.	Order number of the option
Option key	Software license key number
Privilege	Usage type (customer, services, demo)
Time Stamp	Time the software license key was installed
License Count	Number of times the (band upgrade) option is installed
Activation Type	Activation can be permanent or temporary
Valid From	Start of validity for temporary license
Valid To	End of validity for temporary license
Time to Expiration	Time left until license expires
Option Index	for internal use only
Format ID	for internal use only

8.4 R&S TSMA6 Automatically Switches Off After Power On

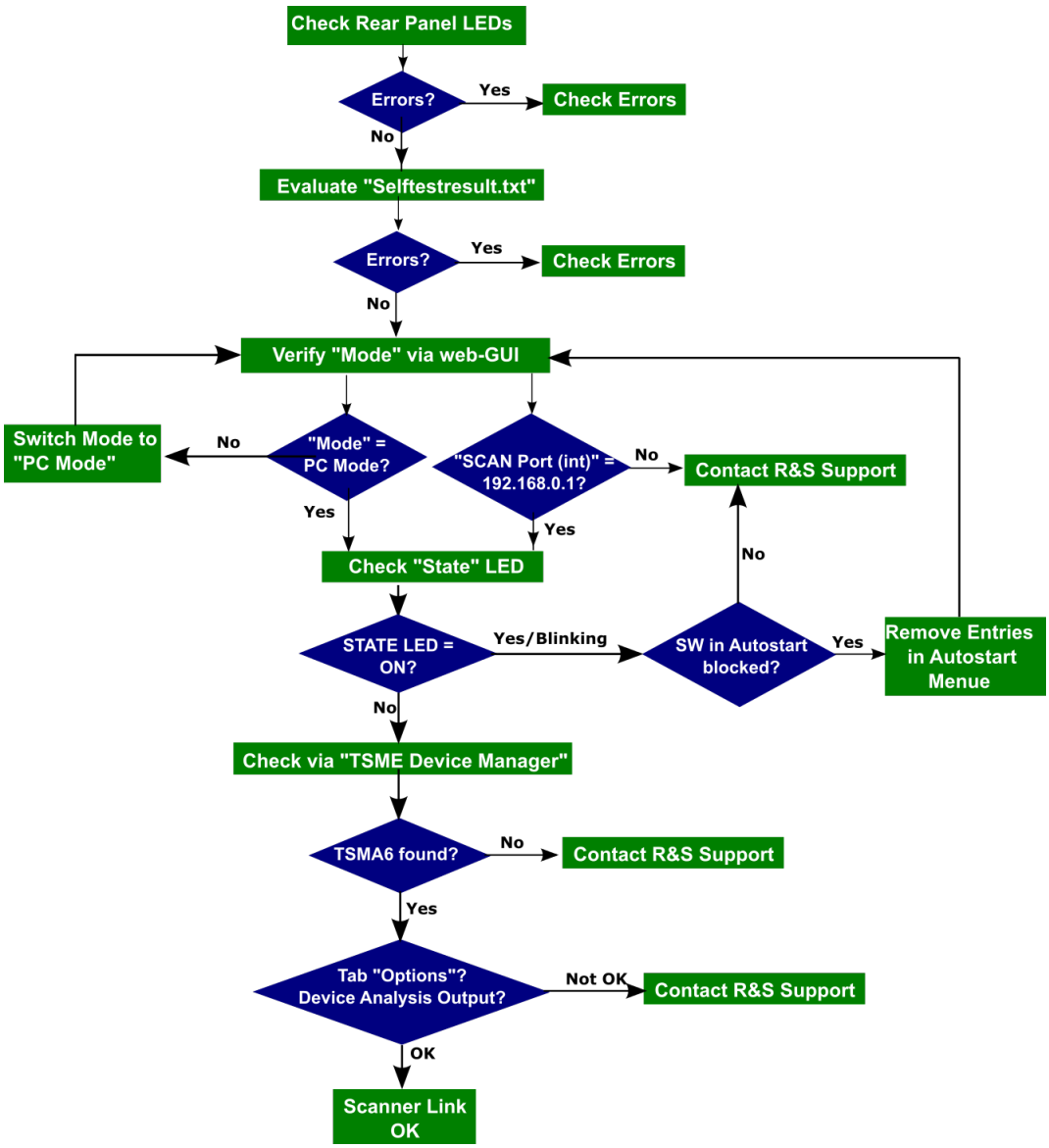
1. Check if there is a battery pack unit connected.
   - If yes, continue with step 2.
   - If no, contact R&S support.
2. Check the state of charge of the batteries.
   - If the charging state is > 20% (charging indicator displays one loading bar), continue with step 4.
   - If the charging state is < 20%, an auto power off of the device is performed due to insufficient remaining battery charge. Continue with step 3
3. Perform one of the following actions.
   a) Replace the batteries with fully charged ones and try again.
   b) Charge the batteries in an external charger and retry later.
   c) Connect DC supply to the R&S TSMA6 battery pack unit and charge the batteries inside the bay. Keep the R&S TSMA6 switched off.
4. Connect DC supply to the R&S TSMA6 battery pack unit and check in the web GUI the "Shutdown Settings".
   Navigate to "Configuration" > "System" > "Power" and check the state of "Auto Power Off".
   - If enabled, check the shutdown delay.

- If not enabled, contact R&S support.



8.5 Scanner Is Not Found from Software (R&S ROMES, R&S NESTOR)

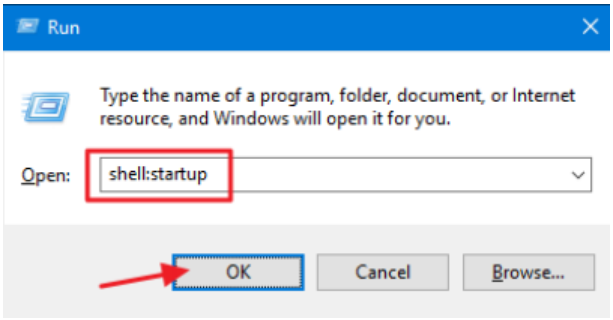
To check if the scanner unit is working properly, perform the following steps.



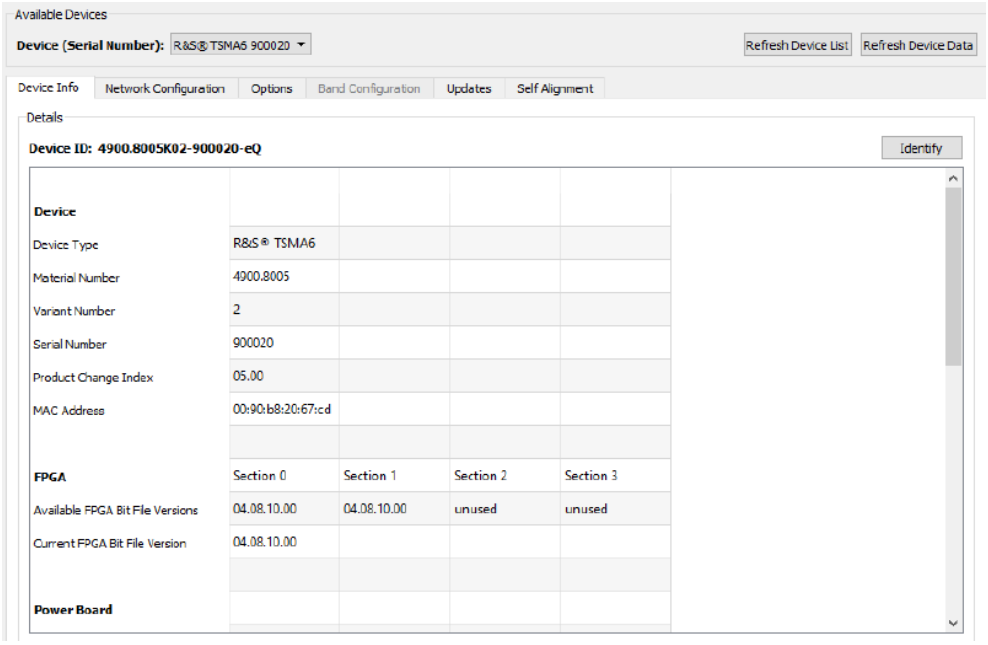
1. Check the LEDs of the device (see Chapter 8.1, "LED Indicated Errors", on page 89).
   - If an error is indicated, follow the instructions according to the indicated error.
   - If no error is indicated, continue with step 2.
2. Evaluate the results of the selftest (see Chapter 8.2, "Evaluate Selftest File", on page 90).
   - If an error is listed, check the error type.
   - If no error is listed, continue with step 3
3. Start the web GUI (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
   Check "Mode of Operation" and "IP Settings".
   - If the "Mode of Operation" = "PC Mode", continue with step 4.

- If the "Mode of Operation" != "PC Mode", switch mode to "PC Mode". Restart the R&S TSMA6 via web GUI and check the LEDs, see step 1.
- If the IP address of the "SCAN Port (int)" = "192.168.0.1", continue with step 4.
- If the IP address of the "SCAN Port (int)" != "192.168.0.1", contact R&S support.

4. Check the scanner [State] LED.
   - If it is off, continue with step 6.
   - If it is on, continue with step 5.
5. The scanner module may be blocked due to a program in Windows "Startup".
   To open the "Startup" folder, press *Windows* + *R* to open the "Run" dialog box, type in `shell:startup` and then press "OK".



   An explorer window right to the "Startup" folder opens.
   - Remove any program entry which could interface the scanner module, restart the R&S TSMA6 via the web GUI and repeat with step 3.
   - If there is no entry, contact R&S support.
6. Start the "TSME Device Manager" via the Windows "Start" menu.
   "Start > All Programs > TsmeTools > TsmeDeviceManager"



7. Check in the "Info" tab, if any device is available.
   - If the R&S TSMA6 device is found, check the "Device Analysis Output".
   - If the R&S TSMA6 device is not found, contact the R&S support.
8. Check the "Device Analysis Output" .
   - If there is an error, check if autofix is possible.
     If autofix is possible => continue with step 9.
     If autofix is not possible => contact R&S support.
   - If there is no error, continue with step 9
9. Check the "Options" tab (see Figure 8-2) .
   - If all required options are active, the scanner works correctly.
   - If necessary options are missing, contact R&S support.

8.6 Verify Scanner Connection LAN Settings

1. Check the IP setting of the TSMA6 scanner connection.
   Navigate to "Windows" > "Settings" > "Network & Internet" > "Network & Sharing Center" > "Change Adapter Options".
   The entry "TSMA6 Scanner Connection Int" must be available.

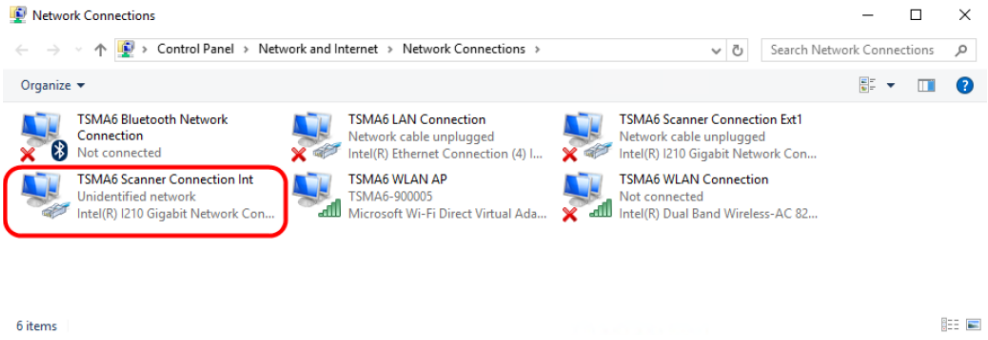
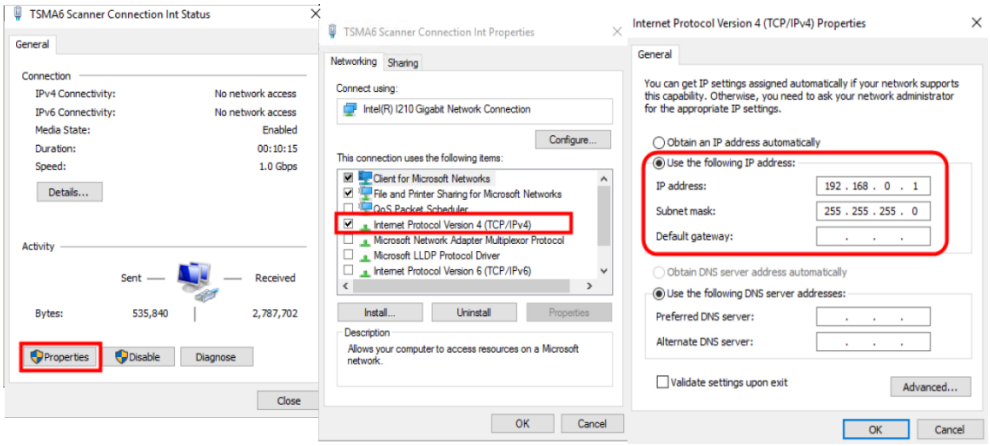


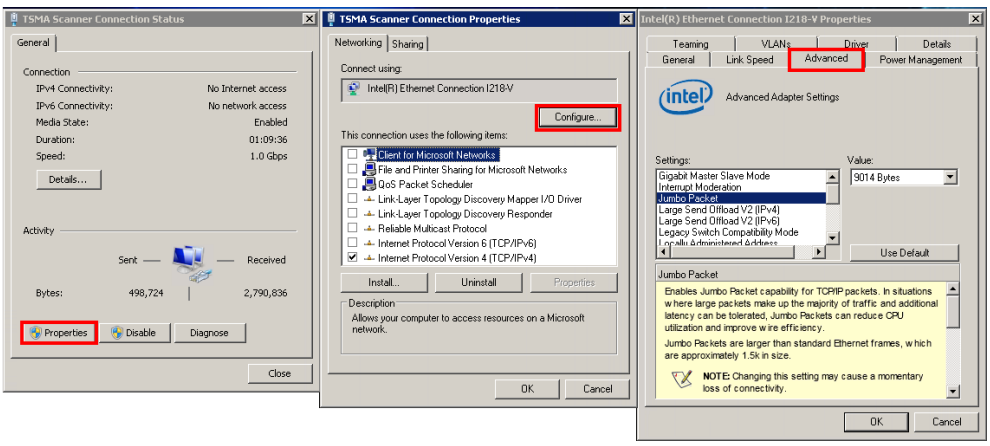
Figure 8-3: TSMA6Scanner Connection

2. Double-click the "TSMA6 Scanner Connection Int " entry and verify the following settings.

   - IP address: 192.168.0.1 (static IP address)



   - "Jumbo Packet": *9014 Bytes*



8.7 No RF / GPS Data

1. Check if the RF antenna is connected to the RF port.

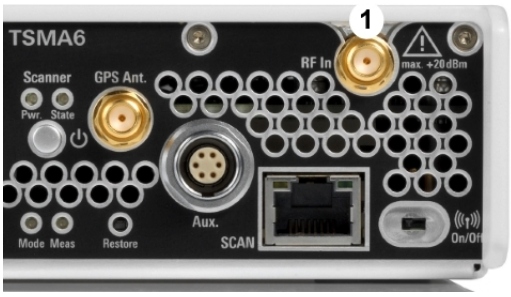


Figure 8-4: RF Antenna Connector

1 = RF port

2. Check if the GPS antenna is connected to GPS antenna input.

Figure 8-5: GPS Antenna Connector

1 = GPS antenna connector

Note: Only use the GPS antenna included in the scope of delivery.

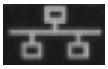
3. Check if the LEDs indicate an error (see Chapter 8.1, "LED Indicated Errors", on page 89).
4. Open the web GUI (Internet Explorer, URL: *http://localhost*) and change the "Mode of Operation" to "PC Mode".
5. Start the "TSME Device Manager" via the Windows "Start" menu.
   "Start > All Programs > TsmeTools > TsmeDeviceManager"
   Check if there are any error messages in the "TSME Device Manager".
   - If errors are reported in the "Device Analysis Output" window, follow the instructions.
   - If no errors are reported or if the repair actions via the "Device Analysis Output" window fail, contact the R&S support.

8.8 No Remote Access via LAN Port

If the R&S TSMA6 could not be accessed for remote control or remote desktop session via the LAN port, check following issues:

Optical Check

1. Check on the rear panel, if the LAN cable is connected to the remote control LAN port (see connector (12) in Figure 3-2.
   The LAN port is marked with the LAN symbol.

   The default setting for this port is "DHCP client". The R&S TSMA6 obtains the IP address automatically.
2. If the LAN cable was not connected to the correct LAN port, correct the cabling and try the remote access again. Otherwise, continue with Verify LAN Settings in the web GUI.
3. Check the LEDs at the LAN port.
   - LED on the left (Link)
     orange permanent
   - LED on the right (Activity)
     yellow blinking

Verify LAN Settings in the Web GUI

1. Open the web GUI (see Local access from the TSMA6 and Windows Explorer).
   The predefined start page is `http://localhost`.

   Note: If the web GUI cannot be started local, contact the R&S support.
2. Check if an IP address is displayed in the web GUI. Does this IP address match with the IP settings of the remote PC (IP subnet range)?
   See Figure 8-6.
   If no LAN Port address is displayed, continue with Check R&S TSMA6 Network Connections.

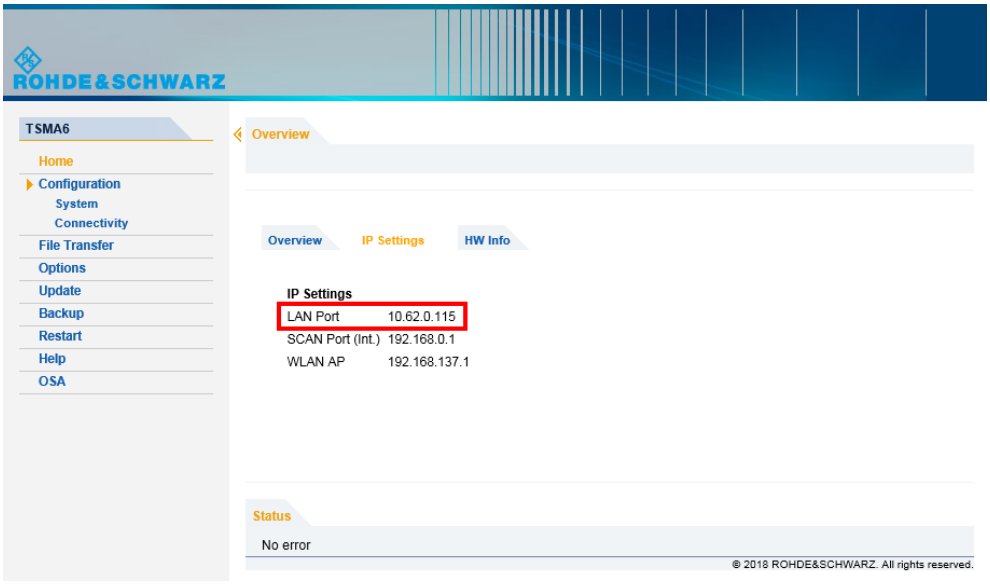


Figure 8-6: web GUI - Overview > IP Settings

3. Check the setting of the R&S TSMA6 LAN port (see Figure 8-7). The default setting is "DHCP".

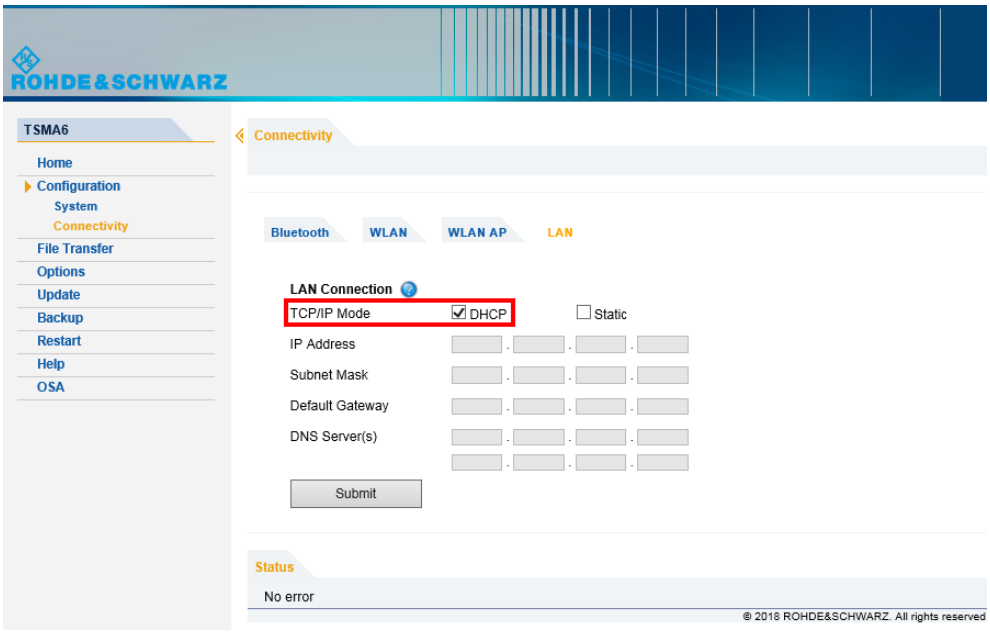


Figure 8-7: Web GUI - LAN Connection

Ping Command

The `ping` command must be executed from the Windows command prompt on the host PC.

1. Use the IP address displayed in the R&S TSMA6 web GUI (see Figure 8-6).

2. Start the ping command.
   Type in the command-line window `ping <IP address of the remote port of the R&S TSMA6 (LAN)>` and wait for the answer.

   If the R&S TSMA6 does not answer, contact the system administrator or the R&S support.

Example:

```
C:\>ping 192.167.0.10
Pinging 192.167.0.10 with 32 bytes of data:
Reply from 192.167.0.10: bytes=32 time<1ms TTL=128
Reply from 192.167.0.10: bytes=32 time<1ms TTL=128
Reply from 192.167.0.10: bytes=32 time<1ms TTL=128
Reply from 192.167.0.10: bytes=32 time<1ms TTL=128
Ping statistics for 192.167.0.10:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Check R&S TSMA6 Network Connections

Check if the "TSMA6 LAN Connection" is available in the Windows network connections.

1. Connect keyboard, mouse and a monitor to the R&S TSMA6.
2. Navigate to "Windows" > "Settings" > "Network & Internet" > "Network & Sharing Center" > "Change Adapter Settings".
3. The entry "TSMA6 LAN Connection" must be available.

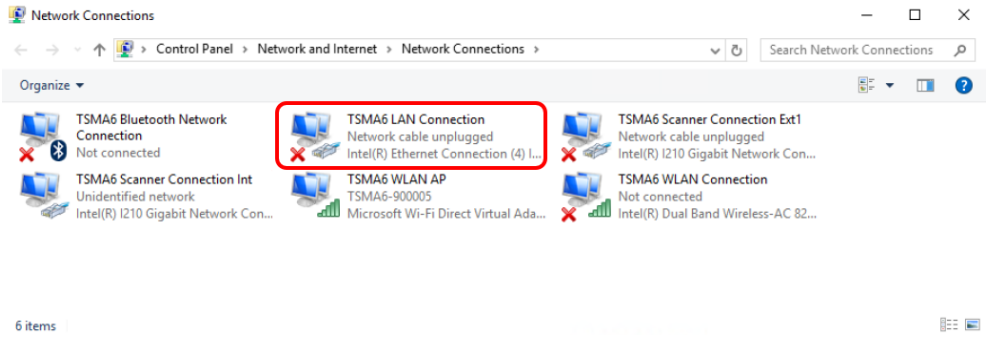


Figure 8-8: TSMA6 LAN Connection

4. If the "TSMA6 LAN Connection" is not listed in the "Network Connections", a recovery of the R&S TSMA6 is recommended (see Chapter 7.4.2, "Restore", on page 82).
   If the "TSMA6 LAN Connection" is listed in the "Network Connections" and the IP address of the LAN port is still not displayed in the web GUI, contact R&S support.

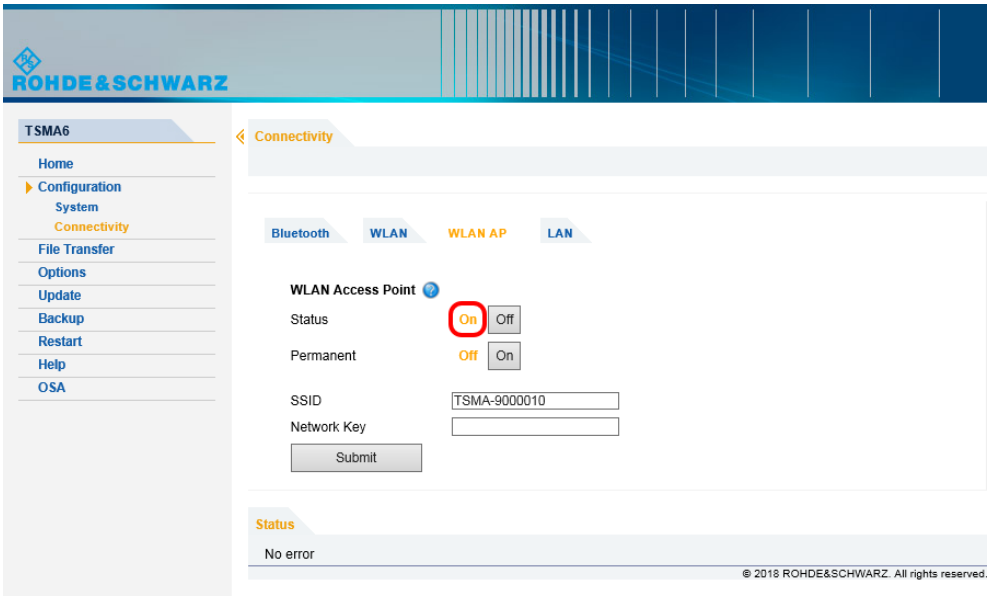
8.9 WLAN Access Point Not Detected By External PC, Mobile Or Tablet

With the first R&S TSMA6 devices shipped, the WLAN module is configured to use the 2.4 GHz and 5 GHz band.

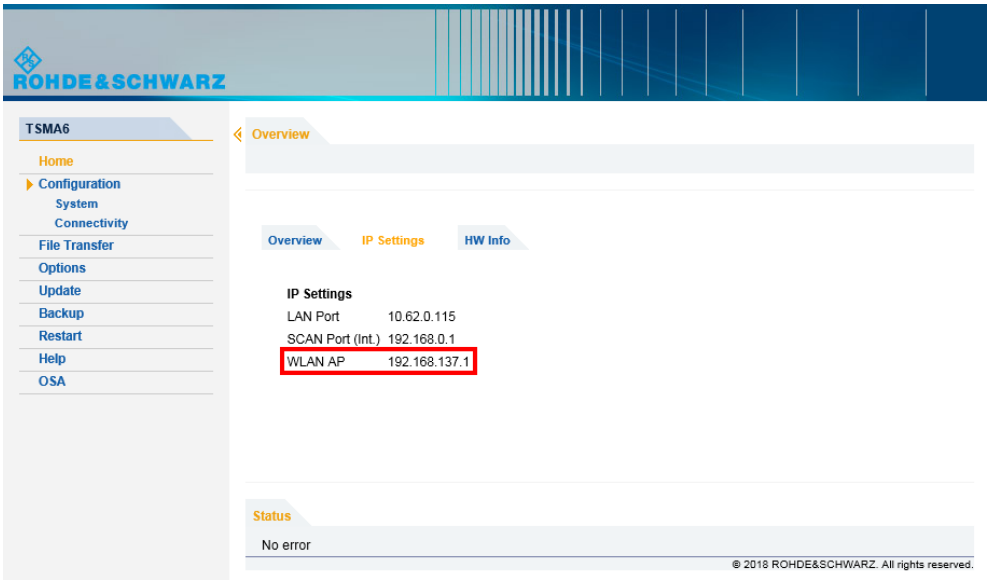
In environments with high traffic on the 2.4 GHz band, the R&S TSMA6 access point sometimes switches into the 5 GHz band after power-up. The effect is that notebooks / PCs / handheld devices with a 2.4 GHz limited WLAN module could no longer detect the TSMA6 WLAN access point. To overcome this error, the driver settings of the WLAN module of the TSMA6 need to be adapted.

1. Check the "Mode" LED.
   - "Mode" LED is permanently green => continue with step 2
   - "Mode" LED is permanently blue => continue with step 3
   - Other color => check error states (see Chapter 8.1, "LED Indicated Errors", on page 89)
2. Check the WLAN switch on the rear panel of the device. It must be "On".

3. Verify the WLAN AP settings via the web GUI.
   Navigate to "Configuration" > "Connectivity" > "WLAN AP".
   The "Status" must be "On".



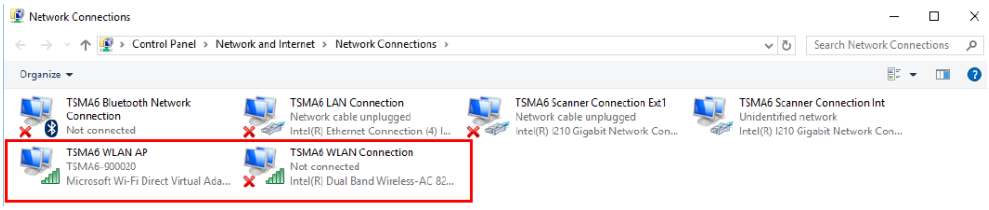
4. Verify the IP settings via the web GUI.
   Navigate to "Home" > "IP Settings".
   IP address of WLAN AP = 192.168.137.1



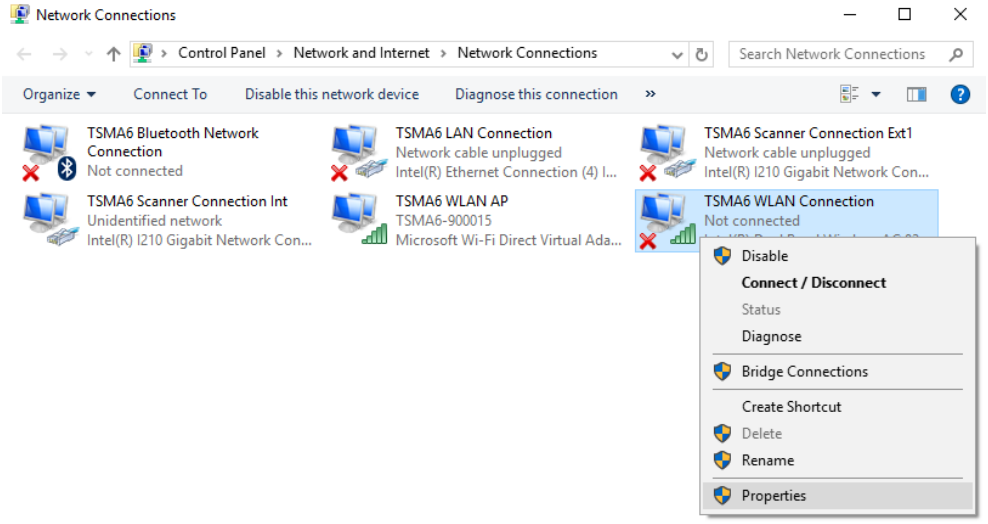
5. Verify LAN settings.
   Under Windows, navigate to "Settings" > "Network & Internet" > "Network & Sharing Center" > "Change Adapter Settings"
   Check for the following entries:

   - "TSMA6 WLAN AP"
   - "TSMA6 WLAN Connection"

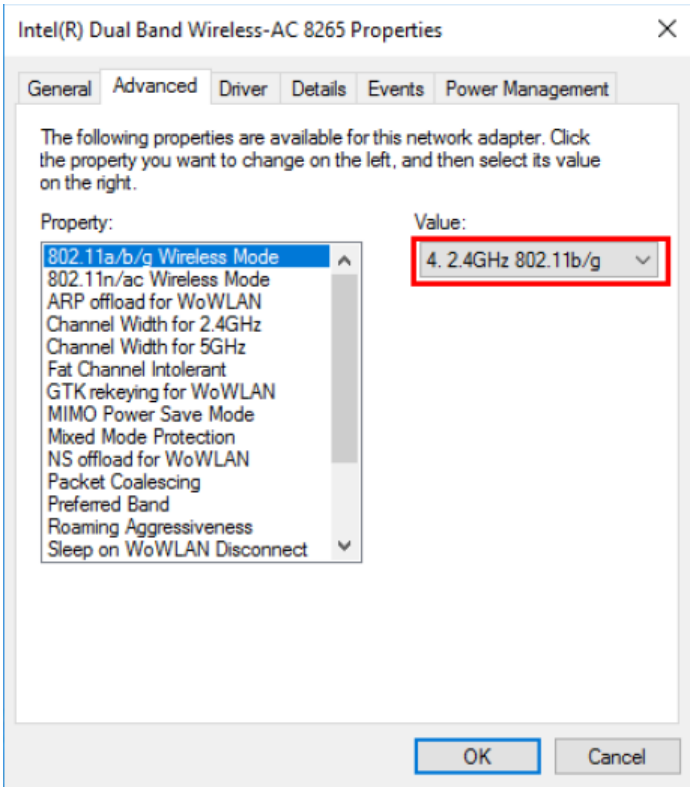
   If the entries are available, continue with step 6.
   If the entries are not available, reset a factory backup (see Chapter 7.4.3, "Restore Factory Backup", on page 82) or contact R&S support.



6. Verify driver settings.
   Right click on "TSMA6 WLAN Connection" and open "Properties".



   Click "Configure" and select tab "Advanced".
   Check for the following setting: **"802.11a/b/g" = "2.4GHz 802.11b/g"**
   If the setting is correct, contact R&S support.

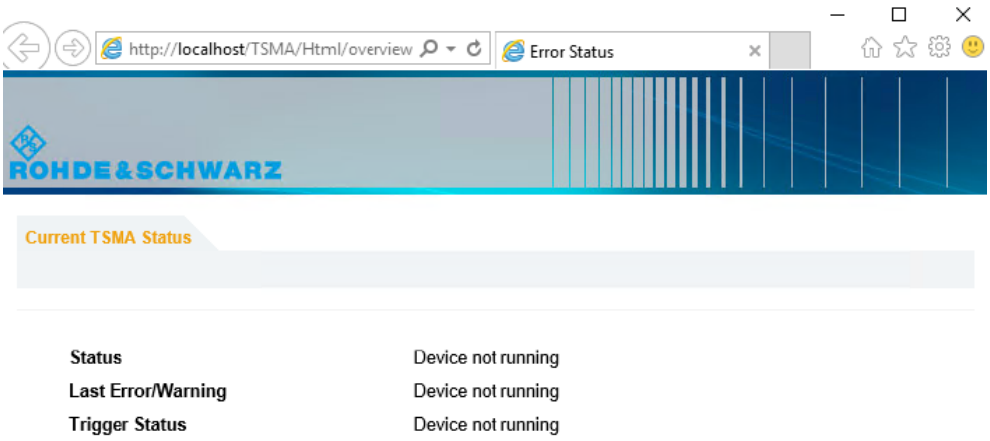


8.10 Web GUI not Accessible via WLAN

If the R&S TSMA6 web GUI is not accessible, perform the following steps to solve the problem.

1. Check if the WLAN AP is activated.
   - If "Mode" LED = blue, continue with step 2.
   - If Mode LED != blue, continue with Chapter 8.9, "WLAN Access Point Not Detected By External PC, Mobile Or Tablet", on page 104.
2. For remote connection via WLAN, check if the TSMA6 WLAN is visible via your smartphone/tablet.
   - If it is visible, continue with step 3.
   - If it is not visible, continue with Chapter 8.9, "WLAN Access Point Not Detected By External PC, Mobile Or Tablet", on page 104.
3. Check if your smartphone/tablet is connected to the TSMA6 WLAN AP.
   - If the connection is established, continue with step 4.
   - If the connection is not established, try to reconnect. If it fails again, contact R&S support.
4. Open the browser on the handheld device and enter the following URL: *http://192.168.137.1*.

If the web browser cannot load the web page, continue with step 5.



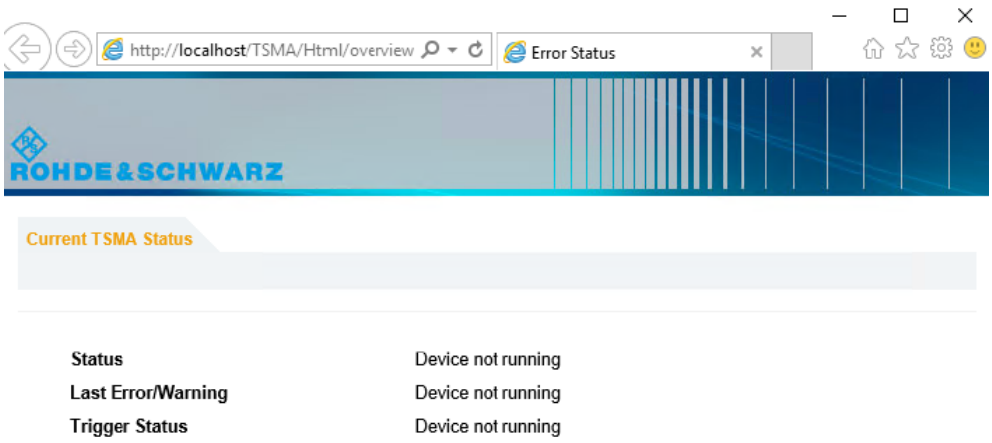
5. Check the IP address of the WLAN connection on your handheld device. It must be in the subnet *192.168.137.xxx*.
   - If the subnet is correct, continue with Chapter 8.11, "Web GUI Locally Not Accessible", on page 108.
   - If the subnet is not correct, try to reconnect. If it fails again, contact R&S support.

8.11 Web GUI Locally Not Accessible

Open the web GUI locally. Start the Internet Explorer and enter the following URL to open the R&S TSMA6 web GUI .

http://localhost

1. Check the URL in the browser dialog. Following URL must be displayed: *http://localhost/TSMA/Html/overview.php*
   - If the URL is not correct, enter the correct URL and reload the URL. If it fails again, reinstall the firmware Chapter 7.1, "Firmware Update", on page 50.
   - If the URL is correct and the following error status is displayed, continue with step 2.



2. In the Windows "Start" menu, enter "Services" and check the state of the following services.
   - `R&S TSMA6` running?
   - `R&S WebServer` running?

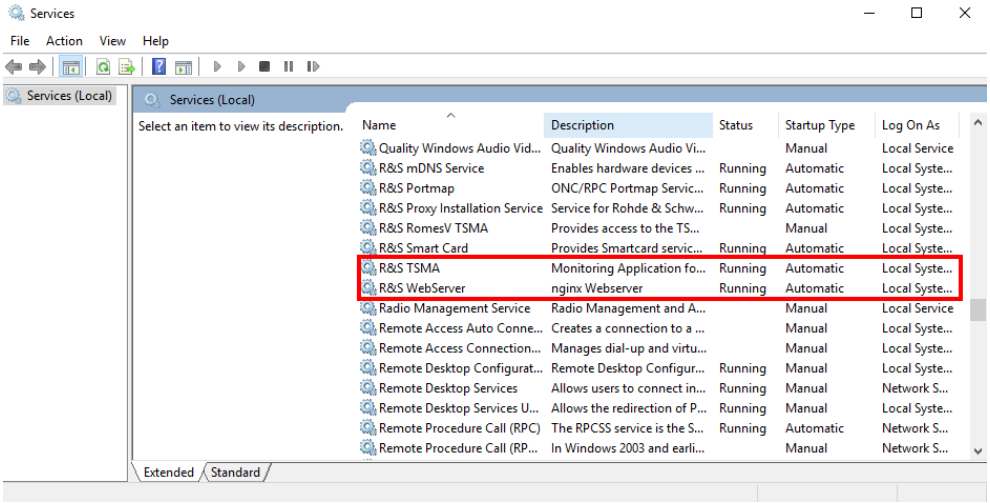


Figure 8-9: R&S TSMA6 Services

If both services are running, continue with step 4.

3. Start the services, that are not running.
   a) Select the service to be started.
   b) Open the context menu with a right-mouse click.
   c) Start the service.

   If the services could not be started, reinstall the firmware (see Chapter 7.1, "Firmware Update", on page 50).

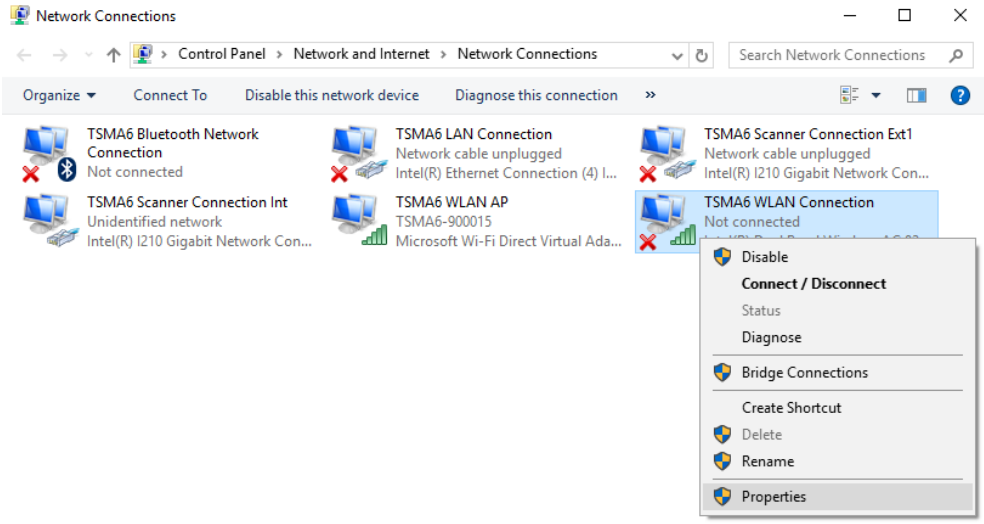
4. Try again to start the web GUI locally on the R&S TSMA6 via Internet Explorer.

If the web GUI cannot be started, a complete restore must be performed (see Chapter 7.4, "User Backup and Restore", on page 81).

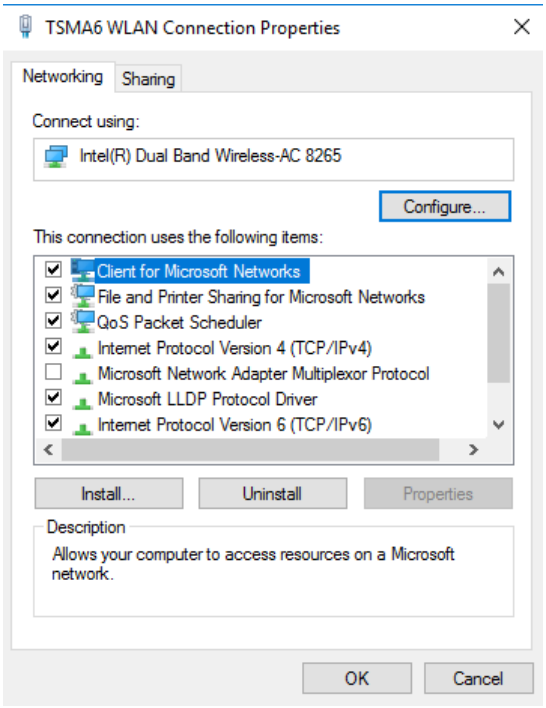
8.12 Slow/Instable WLAN Connection

If the WLAN connection is slow resp. sometimes interrupted the settings of the WLAN adapter settings need to be checked. Proceed as follows.

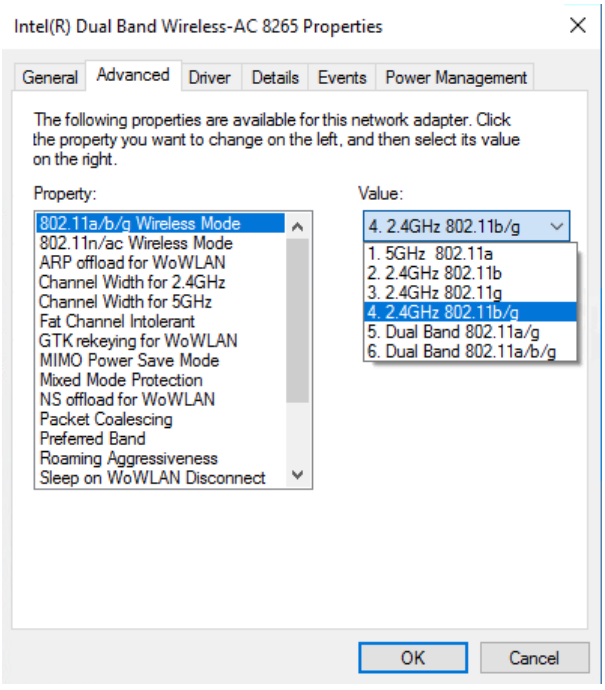
1. Navigate to "Control Panel" > "Network and Internet" > "Network Connections".
2. Right click on "TSMA6 WLAN Connection" and open "Properties".



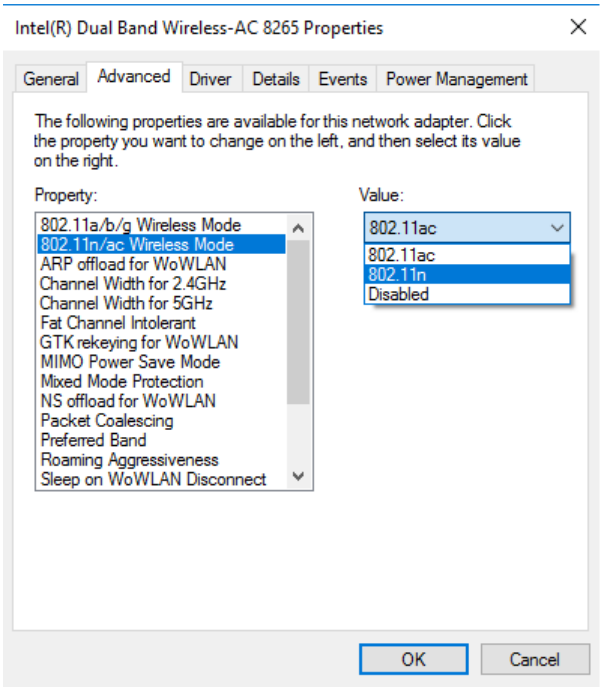
3. Click "Configure".



4. Select tab "Advanced".
5. Change the property "802.11a/b/g Wireless Mode" to "4. 2.4GHz 802.11 b/g".



6. Change the property "802.11n/ac Wireless Mode" to "802.11n".



8.13 Bluetooth® device not detected by R&S TSMA6

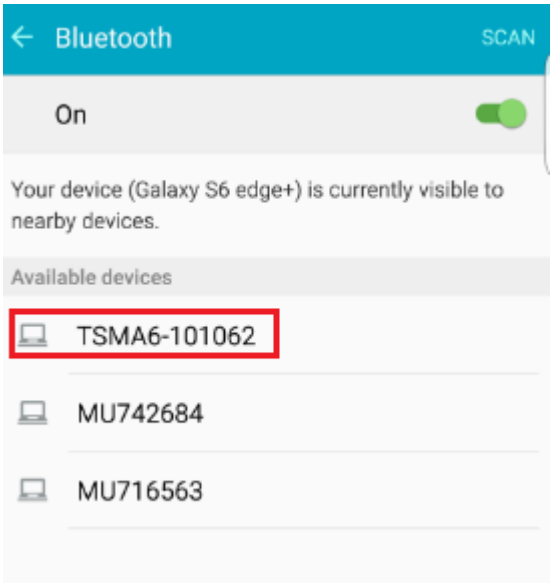
To detect/connect a Bluetooth® device with R&S TSMA6, click "Refresh Device List" in the web GUI.

If a mobile or tablet is not detected by the R&S TSMA6 as Bluetooth® device, the problem is probably the bluetooth visibility of the mobile (or tablet). This problem occurs when a new device is connected to the R&S TSMA6 for the first time.

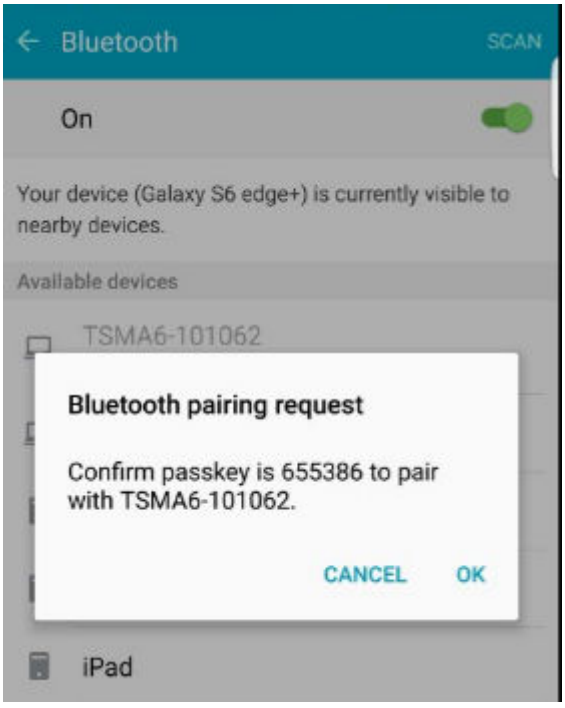
The visibility of an Android device with firmware version ≥5.0 cannot be changed. The mobile (tablet) is only visible to other devices when the "Bluetooth Properties" window is open.

If you are controlling the R&S TSMA6 web GUI with the mobile and also want to couple the devices via Bluetooth®, then you have to perform following steps.

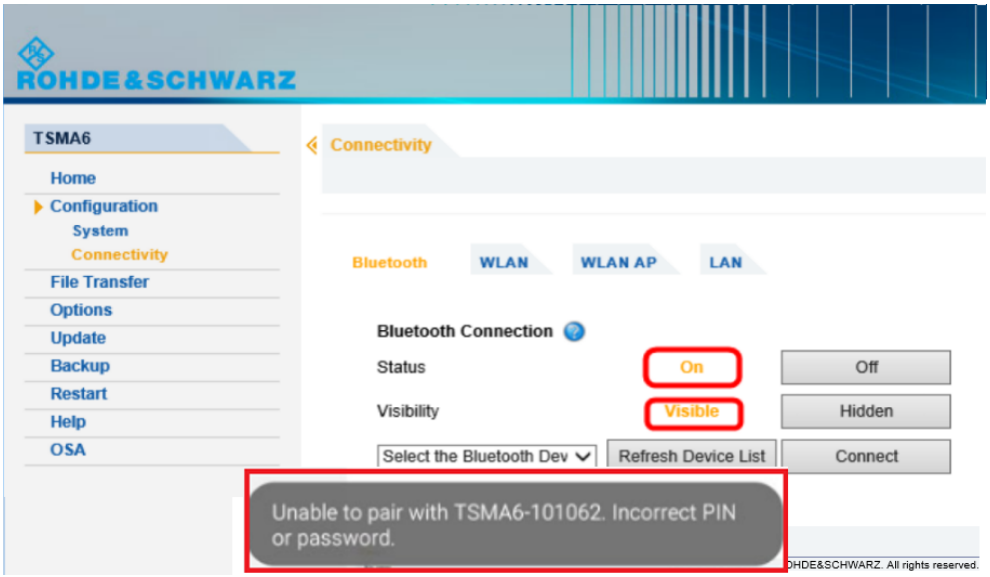
1. On the R&S TSMA6, enable Bluetooth® and make it visible (see step 1).
2. On the mobile device (mobile or tablet), open the Bluetooth properties. The R&S TSMA6 should be listed. Choose the entry for your R&S TSMA6.



3. After choosing the R&S TSMA6, you receive a "Bluetooth pairing request". Click "OK".



4. Open the R&S TSMA6 web GUI and navigate to "Configuration" > "Connectivity" > "Bluetooth".
5. Execute "Refresh Device List".
6. Wait until your mobile device is listed and the following message "Unable to pair with TSMA6-xxxxxx. Incorrect PIN or password".



7. Select the mobile device and press "Connect" for coupling the devices.

8.14 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 8-10: QR code to the Rohde & Schwarz support page

Annex

A Usage of the Web GUI

To start the web GUI for configuration tasks, open a browser on your PC, tablet PC or smartphone and enter the following URL:

http://192.168.137.1/

The web GUI offers the following pages for configuration tasks:

- "Home"
- "Configuration"
- "File Transfer"
- "Options"
- "Update"
- "Backup"
- "Restart"
- "Help"
- "OSA"

A.1 Home

The "System" window consists of the following tabs.

- Overview 115
- IP Settings 117
- HW Info 117

A.1.1 Overview

The "Overview" tab displays the following basic settings of the R&S TSMA6.

Device Info 116
- Type 116
- Material No 116
- Serial No 116
- Computer Name 116
- Mode of Operation (Overview) 116
- Bluetooth/WLAN 116

FW/SW Version 116
- HW 116
- Image 116
- Firmware 116

Battery Info 116

└ Battery 1 117
└ Battery 2 117
└ Battery Life Time 117
└ Mainboard Temperature 117

Device Info
Displays general information about the device.

Type ← Device Info
Type of instrument

Material No. ← Device Info
R&S order number of the device

Serial No. ← Device Info
Serial number of the device

Computer Name ← Device Info
Computer name of the R&S TSMA6 (read-only). The name consists of a fixed part (TSMA6) and a variable part (serial number).

Example: `R&S TSMA6-<Serial Number>`

NOTE: The serial number can be found on the bottom side of the device.

Mode of Operation (Overview) ← Device Info
Displays the mode how the device is used.

Bluetooth/WLAN ← Device Info
Displays the activity status of Bluetooth® and WLAN.

BT	Bluetooth® activity status ON/OFF
WLAN	WLAN activity status ON/OFF
AP	WLAN access point activity status ON/OFF

FW/SW Version
Displays information about firmware and software .

HW ← FW/SW Version
Current hardware version.

Image ← FW/SW Version
Current image version.

- 1st number is the version of the basic image
- 2nd number is the version of the device installation

Firmware ← FW/SW Version
Current firmware version.

Battery Info
Displays information about the battery status.

Battery 1 ← Battery Info
Charging state of battery 1.

Battery 2 ← Battery Info
Charging state of battery 2.

Battery Life Time ← Battery Info
Estimated remaining battery life time.

Mainboard Temperature ← Battery Info
Current temperature of the mainboard.

A.1.2 IP Settings

The "IP Settings" tab displays the IP addresses of the R&S TSMA6.

LAN....117
SCAN (Int.)....117
LAN EXT1....117
WLAN AP (Overview)....117

LAN
IP address of the remote LAN port of the R&S TSMA6.

SCAN (Int.)
IP address of the scanner port of the R&S TSMA6.

LAN EXT1
IP address of the LAN port for external connections.

WLAN AP (Overview)
IP address of the WLAN access point.

A.1.3 HW Info

The "HW Info" tab displays hardware info of the various hardware modules:

- the internal scanner component
- the battery pack unit (if connected)
- the RF downconverter (if connected)

Scanner Info....118
└ MAC Address....118
└ IP Address (Scanner)....118
└ Available Config....118
└ Used Config....118
Correction Data....118
└ Version....118
└ Date....118

└ TCXO Date....118
Module Info....118
└ Controller Board....118
└ RF Board....119
└ Mainboard....119
└ Batterypack....119
Down Converter Info....119
└ Available Config....119
└ Used Config....119
└ Used CLPD Version....119
Correction Data (Downconverter)....119
└ Version....119
└ Date....119
Module Info (Downconverter)....119
└ Controller Board....119
└ RF Board....119

Scanner Info
Displays IP and configuration settings of the internal scanner device.

MAC Address ← Scanner Info
MAC address of the internal scanner device.

IP Address (Scanner) ← Scanner Info
IP address of the internal scanner device.

Available Config. ← Scanner Info
All stored firmware versions on the internal scanner device.

Used Config. ← Scanner Info
Currently used firmware version on the internal scanner device.

Correction Data
Displays information about the calibration status of the scanner device.

Version ← Correction Data
Version of the scanner correction data.

Date ← Correction Data
Date of the scanner correction data.

TCXO Date ← Correction Data
Date of the TCXO correction data.

Module Info
Displays version info of the various scanner modules.

Controller Board ← Module Info
Serial number and product change index of the controller board.

RF Board ← Module Info
Serial number and product change index of the RF board.

Mainboard ← Module Info
Serial number and product change index of the main board.

Batterypack ← Module Info
Serial number and product change index of the battery pack module (TSMA6-BP).

Down Converter Info
Displays system information of the connected downconverter device.

Available Config. ← Down Converter Info
All stored firmware versions on the downconverter device.

Used Config. ← Down Converter Info
Currently used firmware version on the downconverter device.

Used CLPD Version ← Down Converter Info
Active CPLD version on the downconverter device.

Correction Data (Downconverter)
Displays information about the calibration status of the downconverter device.

Version ← Correction Data (Downconverter)
Version of the down converter correction data.

Date ← Correction Data (Downconverter)
Date of the down converter correction data.

Module Info (Downconverter)
Displays version info of the various downconverter modules.

Controller Board ← Module Info (Downconverter)
Serial number and product change index of the controller board.

RF Board ← Module Info (Downconverter)
Serial number and product change index of the RF board.

A.2 Configuration

A.2.1 System

The "System" window consists of the following tabs.

- Mode....120
- Power....120
- Speaker....121
- RF Band....121
- Password....121

A.2.1.1 Mode

The "Mode" tab displays information about the operation mode and the state of the current measurement.

Mode of Operation....120
Current Measurement....120

Mode of Operation
With the "Mode of Operation", the autostart sequence of the R&S TSMA6 can be adjusted to change the usage of the R&S TSMA6.

Current Measurement
Displays information about the state of the current measurement.

A.2.1.2 Power

The "Power" tab displays all settings related to the power on/power off scenarios.

Startup Settings....120
└ Auto Power ON....120
└ Remember Last State....120
Delayed System Start....120
Shutdown Settings....121
└ Auto Power Off....121

Startup Settings
Configures different startup sequences.

Auto Power ON ← Startup Settings
The R&S TSMA6 starts automatically when power is applied at the DC IN connector of the R&S TSMA6 or at the DC IN connector of a connected R&S TSMA6 Battery Pack.

Remember Last State ← Startup Settings
The R&S TSMA6 remembers the last state before the DC power was removed.

When DC power is applied again at the DC IN connector of the R&S TSMA6 or at the DC IN connector of a connected R&S TSMA6 battery pack, the power state before power removal is recovered.

Delayed System Start
Configure the power on delay (in min) and press "Activate".

The device goes in standby mode and starts automatically after the configured delay with the preconfigured measurement mode.

Shutdown Settings
Configures a shutdown sequence if the R&S TSMA6 is connected to a R&S TSMA6 Battery Pack.

Auto Power Off ← Shutdown Settings
When activated, the R&S TSMA6 is powered off automatically, if the DC IN power is removed from the connected R&S TSMA6 Battery Pack.

The time delay for powering off can be set manually (default 30s).

A.2.1.3 Speaker

The "Speaker" tab configures an acoustic warning signal.

Status (Speaker)..... 121
Volume..... 121

Status (Speaker)
Activates or deactivates an acoustic warning signal.

Volume
Specifies the volume of the acoustic warning signal.

A.2.1.4 RF Band

The "RF Band" tab allows to recall and switch the selected RF band.

Current Configuration..... 121
New Configuration..... 121

Current Configuration
Current valid band configuration

New Configuration
Selects a specific band.

A.2.1.5 Password

The "Password" tab allows to change the password of the R&S TSMA6.

Change Instrument Password..... 121

Change Instrument Password
Changes and confirms a new password for the R&S TSMA6.

A.2.2 Connectivity

The "Connectivity" window consists of the following tabs.

- Bluetooth....122
- WLAN....122
- WLAN AP....123
- LAN....124
- LAN EXT1....125

A.2.2.1 Bluetooth

The "Bluetooth" tab is used to configure the settings of the R&S TSMA6 Bluetooth adapter. As well this tab is used for pairing with an external BT device.

Bluetooth Connection....122
└ Status (Bluetooth)....122
Visibility....122

Bluetooth Connection
Specifies the configuration details of a Bluetooth adapter.

Status (Bluetooth) ← Bluetooth Connection
The Bluetooth adapter can be switched on or off.

Visibility
The Bluetooth adapter can be set to visible or hidden for external devices.

A.2.2.2 WLAN

In the "WLAN" tab, the WLAN adapter settings can be configured.

WLAN Adapter....122
└ Status (WLAN Adapter)....122
└ SSID....122
└ Network Key....122
└ TCP/IP Mode (WLAN Client)....123
└ IP Address (WLAN Client)....123
└ Subnet Mask (WLAN Client)....123
└ Default Gateway (WLAN Client)....123
└ DNS Servers(s) (WLAN Client)....123

WLAN Adapter
Specifies the configuration details for the WLAN adapter.

Status (WLAN Adapter) ← WLAN Adapter
The WLAN adapter can be switched on or off.

SSID ← WLAN Adapter
Click "Refresh" and select an existing WLAN network via the SSID.

Network Key ← WLAN Adapter
Enter the network key for the selected WLAN network.

TCP/IP Mode (WLAN Client) ← WLAN Adapter
The IP address can be assigned automatically via DHCP ("DHCP") or manually as fixed IP address ("Static").

IP Address (WLAN Client) ← WLAN Adapter
Specify the IP address of the R&S TSMA6

Subnet Mask (WLAN Client) ← WLAN Adapter
Specify the subnet mask for the R&S TSMA6

Default Gateway (WLAN Client) ← WLAN Adapter
Specify the default gateway.

DNS Servers(s) (WLAN Client) ← WLAN Adapter
Specify the DNS server. It is possible to specify a primary and a secondary DNS server.

A.2.2.3 WLAN AP

In the "WLAN AP" tab, the WLAN access point settings can be configured.

Changing SSID and network key is only possible with local access or LAN access to the web GUI.

WLAN Access Point 123
└ Status (WLAN AP) 123
└ SSID 123
└ Network Key 123

WLAN Access Point
Specify the configuration details for the WLAN access point.

Note: The configuration of the WLAN access point is only possible, if the WLAN switch of the device is "On" (see "WLAN/Bluetooth ON/OFF" on page 13).

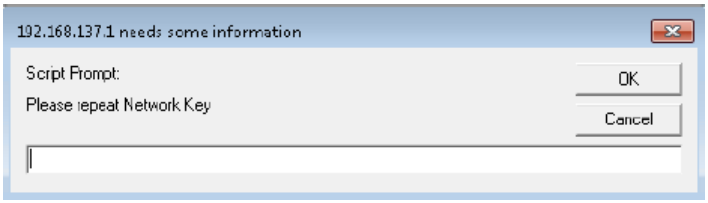
Status (WLAN AP) ← WLAN Access Point
The WLAN access point can be switched on or off. When WLAN is switched to "Off", it can be selected, if this setting is permanent (resists restart) or only for the current session (WLAN AP On after restart).

On	The WLAN AP remains switched off after a restart.
Off	The WLAN AP is switched on again after a power cycle. **Note:** The WLAN switch must be set to "On".

SSID ← WLAN Access Point
Enter the SSID.

Network Key ← WLAN Access Point
Enter the network key for the specified SSID and press "Submit".

Confirm the network key in the following prompt.



After confirmation, the SSID is changed. The following status information is displayed.

A.2.2.4 LAN

In the "LAN" tab, the LAN settings can be configured.

LAN Connection 124
└ State (LAN) 124
└ TCP/IP Mode (LAN) 124
└ IP Address (LAN) 124
└ Subnet Mask (LAN) 124
└ Default Gateway (LAN) 124
└ DNS Servers(s) (LAN) 124

LAN Connection
Specify the configuration details for the LAN connection.

State (LAN) ← LAN Connection
Displays the state of the LAN connection

connected | disconnected

TCP/IP Mode (LAN) ← LAN Connection
The IP address can be assigned automatically via DHCP ("DHCP") or manually as fixed IP address ("Static").

IP Address (LAN) ← LAN Connection
Specify the IP address of the R&S TSMA6.

Subnet Mask (LAN) ← LAN Connection
Specify the subnet mask for the R&S TSMA6.

Default Gateway (LAN) ← LAN Connection
Specify the default gateway.

DNS Servers(s) (LAN) ← LAN Connection
Specify the DNS server. It is possible to specify a primary and a secondary DNS server.

A.2.2.5 LAN EXT1

In the "LAN EXT1" tab, the LAN settings for the additional Gbit LAN interface can be configured.

LAN Connection (LAN EXT1)....125
└ State (LAN EXT1)....125
└ TCP/IP Mode (LAN EXT1)....125
└ IP Address (LAN EXT1)....125
└ Subnet Mask (LAN EXT1)....125
└ Default Gateway LAN EXT1)....125
└ DNS Servers(s) (LAN EXT1)....125

LAN Connection (LAN EXT1)
Specify the configuration details for the additional Gbit LAN connection.

State (LAN EXT1) ← LAN Connection (LAN EXT1)
Displays the state of the LAN Ext.1 connection

connected | disconnected

TCP/IP Mode (LAN EXT1) ← LAN Connection (LAN EXT1)
The IP address can be assigned automatically via DHCP ("DHCP") or manually as fixed IP address ("Static").

IP Address (LAN EXT1) ← LAN Connection (LAN EXT1)
Specify the IP address of the R&S TSMA6.

Subnet Mask (LAN EXT1) ← LAN Connection (LAN EXT1)
Specify the subnet mask for the R&S TSMA6.

Default Gateway LAN EXT1) ← LAN Connection (LAN EXT1)
Specify the default gateway.

DNS Servers(s) (LAN EXT1) ← LAN Connection (LAN EXT1)
Specify the DNS server. It is possible to specify a primary and a secondary DNS server.

A.3 File Transfer

The "File Transfer" window offers the following functions:

- Uploads and downloads of files to/from the R&S TSMA6.
- Download of the Vicom sample application to an Android device.

File Transfer....126
└ Upload....126
└ Download....126
└ User-defined Upload....126

└ User-defined Download 126
Sample App 126
└ Download rViCom SampleApp 126

File Transfer
Specifies the properties for upload and download files.

Upload ← File Transfer
Specifies the file (e.g. workspace file) to be transferred from a connected device to the R&S TSMA6 (`D:\Upload`).

Note: The maximum file size for the upload is 2048 MB.

Download ← File Transfer
Specifies the measurement data file to be transferred from the R&S TSMA6 (`D:\Download`) to a connected device.

User-defined Upload ← File Transfer
Specifies the file (e.g. workspace file) to be transferred from a connected device to a user-defined directory on the R&S TSMA6.

User-defined Download ← File Transfer
Specifies the measurement data file to be transferred from a user-defined directory on the R&S TSMA6 to a connected device.

Sample App
Specifies the download of the sample app.

Download rViCom SampleApp ← Sample App
Specifies the sample app file (`*.apk`) to be downloaded to the connected Android device.

A.4 Options

The "Options" window consists of the following tabs.

- Available 126
- Install 127

A.4.1 Available

The "Available" tab gives an overview of available active and inactive scanner and NESTOR (if installed) license keys

Option Type....127
Option Material No....127
Activation Type....127
Valid From / Valid To....127
Option Index....127

Option Type
Type of installed license key

Option Material No.
R&S order number of installed license key

Activation Type
Activation type of license key (temporary or permanent)

Valid From / Valid To
Start and expiration date of installed temporary license key

Option Index
Index number of the installed license key

A.4.2 Install

The "Install" tab is used to install various license key files on the R&S TSMA6.

Install NESTOR Options....127
Install Scanner Options....127
Install ROMES Option....127

Install NESTOR Options
This field allows to enter the R&S NESTOR license key code manually.

Press "Install" button to finish the installation.

Install Scanner Options
Allows to install a scanner option. Two different methods are supported.

- Manually by entering the license key code in the related field and clicking "Install".
- Via license key file ("*.xml"). Select the license key file using the "Browse" button and click "Install XML File".

Install ROMES Option
This field allows to install a Romes `option<serial number>.dat` file.

- Connect a data stick to a USB port.
  NOTE: The ROMES `option<serial number>.dat` file must be located in the root directory of the data stick.
- Click the "Refresh" button of the browser. The license key file must be listed in the file dialog.
- Click the "Install" button.

A.5 Update

The "Update" window allows to select and update the TSMA6 software and additional software components.

Prerequisites for a Firmware/Software Update

- The setup file must be located in the root directory of the data stick.
- Software and firmware updates are only possible, when the mode is "PC Mode".

Select Firmware Setup File 128
Select QualiPoc Setup File 128
Select NESTOR Setup File 128
Select ROMES Setup File 128
SmartONE Setup File 128
Select Vicom Setup File 128
Select TsmeTools Setup File 129

Select Firmware Setup File
Select a firmware setup file from the "Select Firmware Setup File" box and click "Update Firmware". The setup is started. The progress can be monitored in the status line of the web GUI.

Select QualiPoc Setup File
Select the setup file from the "Select QualiPoc Setup File" box and click "Update QualiPoc". The setup setup. The progress can be monitored in the status line of the web GUI.

Select NESTOR Setup File
Select the setup file from the "Select NESTOR Setup File" box and click "Update NESTOR". The setup is started. The progress can be monitored in the status line of the web GUI.

Select ROMES Setup File
Select the setup file from the "Select ROMES Setup File" box and click "Update ROMES". The setup is started. The progress can be monitored in the status line of the web GUI.

SmartONE Setup File
Select the setup file from the "Select SmartONE Setup File" box and click "Update SmartONE". The setup is started. The progress can be monitored in the status line of the web GUI.

Select Vicom Setup File
Select the setup file from the "Select Vicom Setup File" box and click "Update Vicom". The setup is started. The progress can be monitored in the status line of the web GUI.

Select TsmeTools Setup File
Select the setup file from the "Select TsmeTools Setup File" box and click "Update TsmeTools". The setup is started. The progress can be monitored in the status line of the web GUI.

A.6 Backup

The "Backup" window allows to create a backup of the R&S TSMA6 system.

Backup TSMA6 System 129

Backup TSMA6 System
Click "Backup" to create a backup of the system partition `C:\`.

- At first, it is checked, if there is enough memory available for the backup.
- Only one user backup can be created at time. An existing backup will be overwritten after an acknowledgment.
- If there is a system failure, the system can be restored by pressing the "RESTORE" button.

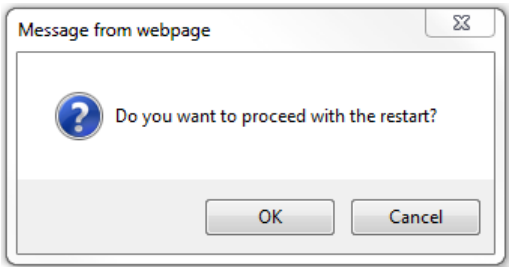
A.7 Restart

The "Restart" window allows to restart the complete R&S TSMA6 and the scanner unit separately.

System restart 129
PowerCycle 129

System restart
To restart the R&S TSMA6, click "Restart".

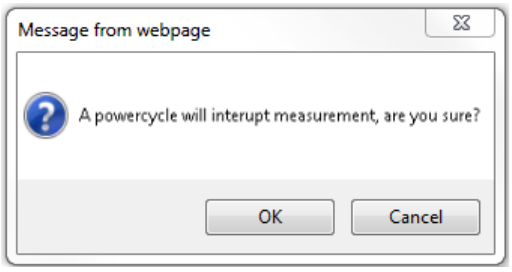
The following message appears.



Click "OK" to reboot the R&S TSMA6.

PowerCycle
To restart the scanner unit of the R&S TSMA6, click "PowerCycle".

The following message appears.



Click "OK" to reboot the scanner unit of the R&S TSMA6.

A.8 Help

The "Help" window displays the online help system of the R&S TSMA6.

B Introduction to Remote ViCom Sample App

B.1 Overview

The R&S TSMA6 provides an open remote ViCom interface that allows the integration into Windows and Android-based software tools. Via rViCom API, it is possible to configure and control TSMA6 scanner measurements from a remote PC / tablet.

The R&S TSMA6 is shipped with an rViCom sample application. The source code for this Android-based App is also available as subcomponent of the R&S ViCom scanner interface. This ready to use application gives the user a quick and easy impression about the capabilities of this API interface.

B.2 Requirements

B.2.1 General Requirements

The following requirements must be fulfilled to use this App successfully:

- An Android device with at least Android 4.4.2 (Android 4.4.4 is recommended)
- A WLAN respectively Bluetooth connection between the Android device and the R&S TSMA6
- Remote rViCom Server on the R&S TSMA6 (default)
- An installed Sample App on the Android device
  The version of the rViCom server on the R&S TSMA6 must match the version of the Sample App on the Android device.

B.2.2 Preparation

Before starting a scan or test, it is necessary to make sure that a connection can be established.

Download and Installation of rViCom Sample App

To install the rViCom Sample App on an Android device, the followings steps must be performed.

1. Start the web GUI via WLAN (see Chapter 6.1.1, "Start the R&S TSMA6 Web GUI", on page 30).
2. Navigate to "File Transfer" > "Sample App" > "Download TsmaSampleApp".

3. Select the Sample App and click "Download".
4. Install the Sample App on the Android device.

B.3 Usage

B.3.1 Connection Establishment

Start the Sample App on the Android device.

B.3.1.1 Connection Type Selection

To connect to the R&S TSMA6 Remote rViCom Server, it is either possible to use a WLAN connection or a Bluetooth connection.

The selection of the connection type depends on the measurement task (see Chapter B.3.1, "Connection Establishment", on page 132).

Figure B-1: Connection Type Selection

B.3.1.2 Server Discovery

1. Choose a connection type, as described in Chapter B.3.1.1, "Connection Type Selection", on page 132.
2. The server discovery starts and the following dialog appears.

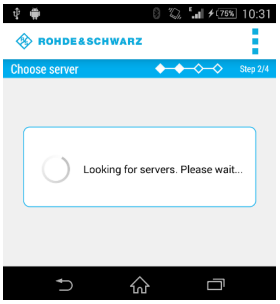


Figure B-2: Active Server Discovery

3. If a server is found, the server will be connected and the name of the server is displayed.

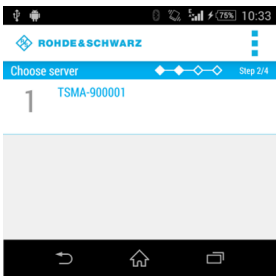


Figure B-3: Successful Server Discovery

4. Choose the server.

   If a Remote rViCom server connection could be established, the "Choose scan type" window appears. See Figure B-4.

Figure B-4: Choose scan type

If no server is found, it is possible to start a new scan by selecting "Rescan" in the menu inflator in the top right corner.

To stop the server discovery, the app has to be closed.

The following scan types are available:

- **GSM RSSI Scan**
  Provides a GSM scan by selecting a band and radio channels
- **WCDMA Top-N Pilot Scan**
  Provides an UMTS scan by selecting a frequency band and the UARFCN
- **LTE Top Signal Scan**
  Provides an LTE scan by selecting the frequency band and the EARFCN
- **Throughput Test**
  Provides a throughput test for the connection using configurable buffer size
- **RF Powerscan**
  Provides a spectrum analysis by selecting the frequency range

The RAN technology for which a scan should be performed has to be selected. The selection of the technologies is described in the following chapters.

B.3.2 GSM RSSI Scan

B.3.2.1 GSM Preferences

To start a GSM RSSI scan, the following steps must be performed.

1. Choose a frequency band.

   The channels are set automatically to the maximum range available for the selected band.

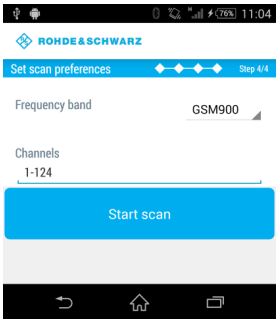


Figure B-5: Setting the GSM Preferences

2. If necessary, change the channels manually according to your needs. The input in the "Channels" field can be done like following.

   a) Add a single number for one specific channel.
   Example: 7
   b) Add a range of channels.
   Example: 1-124
   c) Add more than one single number separated by semicolon.
   Example: 2;4;7;76

3. Click "Start scan" to start the scan.

B.3.2.2 GSM Scan Results

The GSM scan result graph displays one column for each channel selected. The height of a column represents the RSSI value (in dBm).

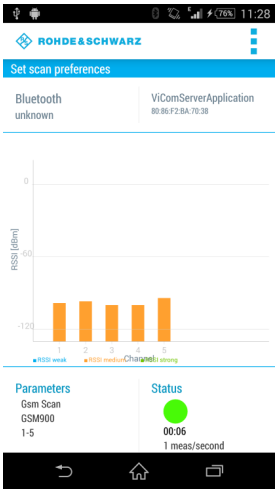


Figure B-6: GSM Scan Result View

Below the graph the measurement preferences and the status are displayed.

Parameters

Displays the configured preferences for the GSM RSSI scan.

Status

Displays the measurement duration and the measurement rate. The status button displays the following colored states.

- *Green*
  The measurement is running and measurement data are received.
- *Yellow*
  The measurement is running but no measurement data are received.
- *Red*
  The measurement was stopped

► To stop the scan, use "Stop scan" in the menu inflator in the top right corner.

B.3.3 WCDMA Top-N Pilot Scan

B.3.3.1 WCDMA Top-N Pilot Preferences

To start a WCDMA scan, the following steps must be performed.

1. Choose a frequency band.

   The minimum UARFCN of this band is set automatically.

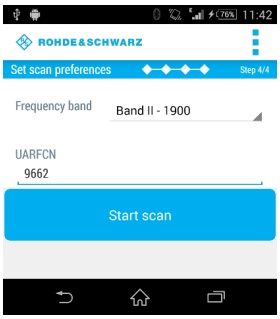


Figure B-7: Setting the WCDMA Preferences

2. If necessary, change the UARFCN according to your needs.

   Note: Due to processing issues, it is not possible to select more than one UARFCN.

3. Click "Start scan" to start the scan.

In the menu inflator on top of the right corner, templates for existing preferences (Munich and surrounding areas) can be selected.

B.3.3.2 WCDMA Top-N Pilot Scan Results

The WCDMA scan result graph displays one column for each SC found by the measurement. The height of a column represents the RSCP value (in dBm).

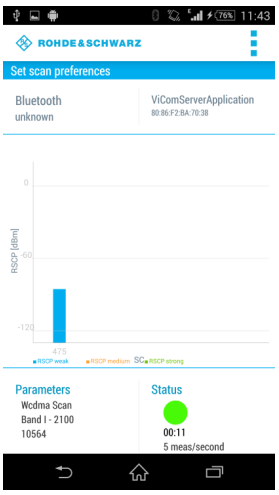


Figure B-8: WCDMA Scan Result View

Below the graph the measurement preferences and the status are displayed.

Parameters

Displays the configured preferences for the WCDMA scan.

Status

Displays the measurement duration and the measurement rate. The status button displays the following colored states.

- *Green*
  The measurement is running and measurement data are received.
- *Yellow*
  The measurement is running but no measurement data are received.
- *Red*
  The measurement was stopped.

► To stop the scan, use "Stop scan" in the menu inflator in the top right corner.

B.3.4 LTE Top Signal Scan

B.3.4.1 LTE Top Signal Preferences

To start an LTE scan, the following steps must be performed.

1. Choose a frequency band.
   The minimum EARFCN of this band is set automatically.

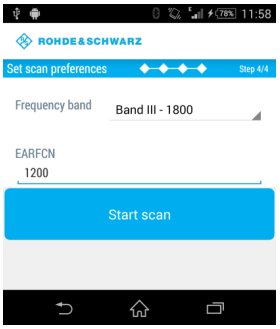


Figure B-9: Setting the LTE Preferences

2. If necessary, change the EARFCN according to your needs.

   Note: Due to processing issues, it is not possible to select more than one EARFCN.

3. Click "Start scan" to start the scan.

In the menu inflator on top of the right corner, templates for existing preferences (Munich and surrounding areas) can be selected.

B.3.4.2 LTE Top Signal Scan Results

The LTE scan result graph displays one column for each PCI found by the measurement. The height of a column represents the PBCH RSRP value (in dBm).

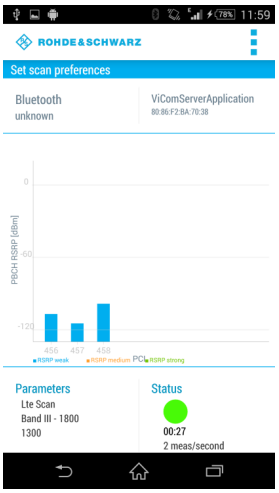


Figure B-10: LTE Scan Result View

Below the graph the measurement preferences and the status are displayed.

Parameters

Displays the configured preferences for the LTE scan.

Status

Displays the measurement duration and the measurement rate. The status button displays the following colored states.

- *Green*
  The measurement is running and measurement data are received.
- *Yellow*
  The measurement is running but no measurement data are received.
- *Red*
  The measurement was stopped.

► To stop the scan, use "Stop scan" in the menu inflator in the top right corner.

B.3.5 Throughput Test Case

The throughput test case is useful to find out the throughput speed of your connection. This allows to decide, which connection type (WLAN or Bluetooth) should be used.

B.3.5.1 Throughput Preferences

To start the throughput test, the following steps must be performed.

1. Specify the parameter "Buffer size (in Byte)".
   The default buffer size is 20480 bytes.

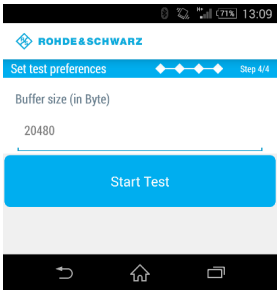


Figure B-11: Throughput Preferences

2. Click "Start Test" to start the throughput test.

For WLAN, the optimal buffer size varies between 950.000 byte and 1.000.000 byte.
For Bluetooth, the optimal buffer size varies between 81.000 byte and 165.000 byte.

B.3.5.2 Throughput Results

The result of the throughput test case is a line chart with the following axes:

- x-axis
  The x-axis displays the number of measurements

- y-axis
  The y-axis displays the corresponding throughput value (kB/s)

The blue line shows the measured values. The orange line represents the visualized average of all values.

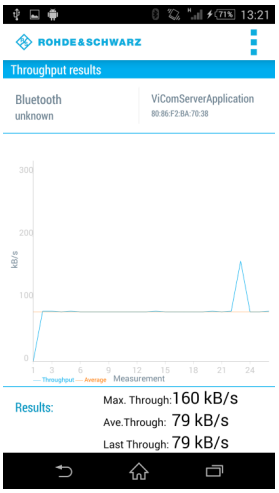


Figure B-12: Throughput Result View

Below the graph the following throughput results are displayed.

Results

- Max. Through
  Displays the maximum throughput
- Ave. Through
  Displays the average throughput
- Last Through
  Displays the current throughput

► To stop the scan, use "Stop scan" in the menu inflator in the top right corner.

B.3.6 RF Power Scan

B.3.6.1 RF Power Scan References

To start an RF power scan, the following steps must be performed.

1. Specify the parameters "Start Frequency (in Mhz)" and "End Frequency (in Mhz)" to define the frequency range of the RF power scan.
   The maximum range is from 350 MHz to 4.400 MHz.

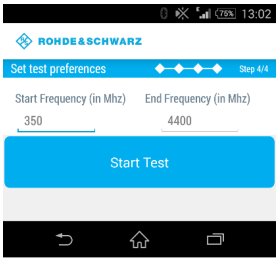


Figure B-13: RF Power Scan References

2. Click "Start Test" to start the scan.

B.3.6.2 RF Power Scan Results

The result of the RF power scan is a spectrum of the frequency range set before with the following axes:

- x-axis
  The x-axis displays the frequency
- y-axis
  The y-axis displays the power level for each frequency (dBm)

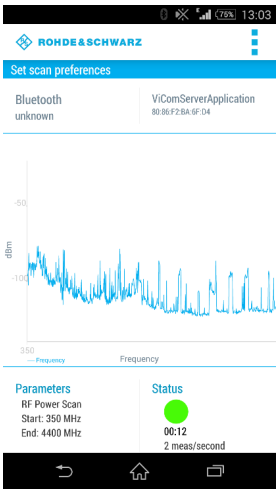


Figure B-14: RF Power Scan Results

Below the graph the measurement preferences and the status are displayed.

Parameters

- Start
  Displays the start frequency
- End
  Displays the end frequency

Status

Displays the measurement duration and the measurement rate. The status button displays the following colored states.

- *Green*
  The measurement is running and measurement data are received.
- *Yellow*
  The measurement is running but no measurement data are received.
- *Red*
  The measurement was stopped

► To stop the scan, use "Stop scan" in the menu inflator in the top right corner.

C Managing Scanner Device with R&S Tsme-DeviceManger

The "R&S TSME Device Manager" is a configuration software tool for scanners of the R&S TSME and R&S TSMA family. This utility is part of the R&S®TSME installation package. It can also be installed together with R&S ROMES, R&S NESTOR and R&S ViCom, and is available for download from the Rohde & Schwarz product website http://www.rohde-schwarz.com/product/TSMx.html.

C.1 Installing and Managing Software License Keys - "Options"

All new devices are preconfigured and specified technology and band options are already installed. Only if you obtain additional software options later, you have to enable the options with the corresponding software license keys.

License keys are shipped as a printed "License Keys List". Advance deliveries may consist of a PDF file. Unregistered software licenses can be downloaded from the Rohde & Schwarz website (https://extranet.rohde-schwarz.com/service). For details see the "Installation Instructions for Options".

(Note: previously, license keys were shipped as xml files.)

Prerequisites to install software license keys

To install a software license key, the following conditions must apply:

- PC/notebook is connected via Gbit LAN adapter, with Jumbo Frames (9 kB) enabled
- The (registered) software license key must be available

Software license keys are installed using the "R&S TSME Device Manager" ("Options" tab).

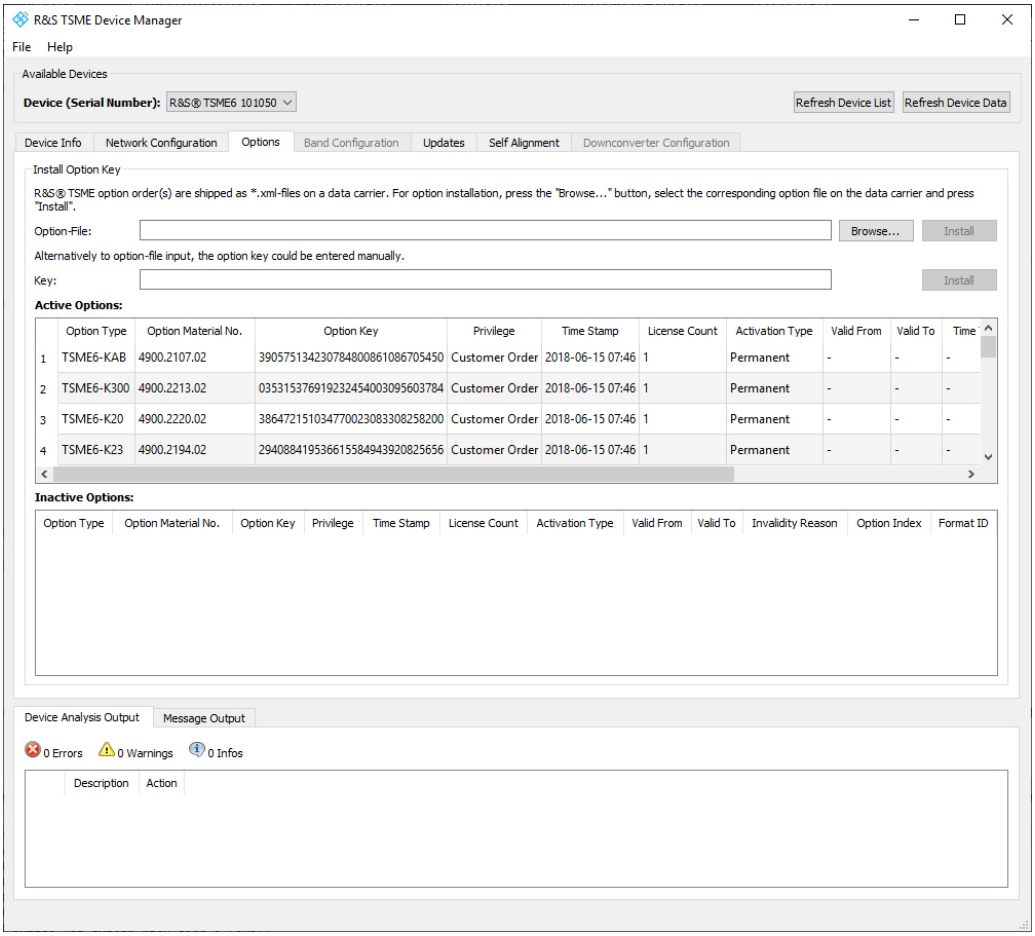


Figure C-1: Tab "Options"

For each option, the following information is displayed:

Information for options that are no longer valid because their expiry date has passed are listed as "Inactive Options".

To replace temporary by permanent software license keys, contact your Rohde & Schwarz sales representative.

Table C-1: Software license key information

Label	Description
Option Type	Band or technology option name
Option Material No.	Order number of the option
Option key	Software license key number
Privilege	Usage type (customer, services, demo)
Time Stamp	Time the software license key was installed
License Count	Number of times the (band upgrade) option is installed

Label	Description
Activation Type	Activation can be permanent or temporary
Valid From	Start of validity for temporary license
Valid To	End of validity for temporary license
Time to Expiration	Time left until license expires
Option Index	for internal use only
Format ID	for internal use only

Finding the software license key files
Previously, license keys were shipped as xml files. This function is only available for compatibility reasons.

If you do not know the precise path and file name of the required software license key, you can browse through the host PC's file system directly from the "R&S TSME Device Manager", by selecting the "Browse" button in the "Options" tab.

Entering key codes
Enter the 30-digit key code from the "License Keys List" in the "Key" field.

Alternatively, if available, copy the key code from the supplied PDF license key file and paste it in the "Key" field.

To install the software license key on the currently selected R&S TSMA6, select the "Install" button (see Figure C-1).

Installing a software license key
The software license key for which you have entered the key code in the R&S TSME Device Manager is installed on the currently selected R&S TSMA6 when you select the "Install" button. It then appears in the "Active Options" list with its validity dates and other information (see Figure C-1).

C.2 Configuring Measurement Bands - "Band Configuration"

Depending on which options are installed, various different bands and technologies can be scanned by the R&S TSMA6.

Before you can configure the measurement bands you must install all required software license keys, see Chapter C.1, "Installing and Managing Software License Keys - "Options"", on page 143).

The band configuration is stored permanently on the R&S TSMA6.

When using a R&S TSMA6 with a limited number of measurement bands, you must consider the band configuration of the scanner when planning a measurement task.

The scanner will only provide measurement results for those bands that are currently configured on the scanner.

The band configuration is defined in the "Band Configuration" tab of the "R&S TSME Device Manager".

Select the bands that are to be scanned by the R&S TSMA6 in the "Band Table". Which bands are available is independent of the installed *technology* options; all installed technologies can be scanned in all configured bands at the same time.

The *number* of bands available for selection depends on the installed band options.

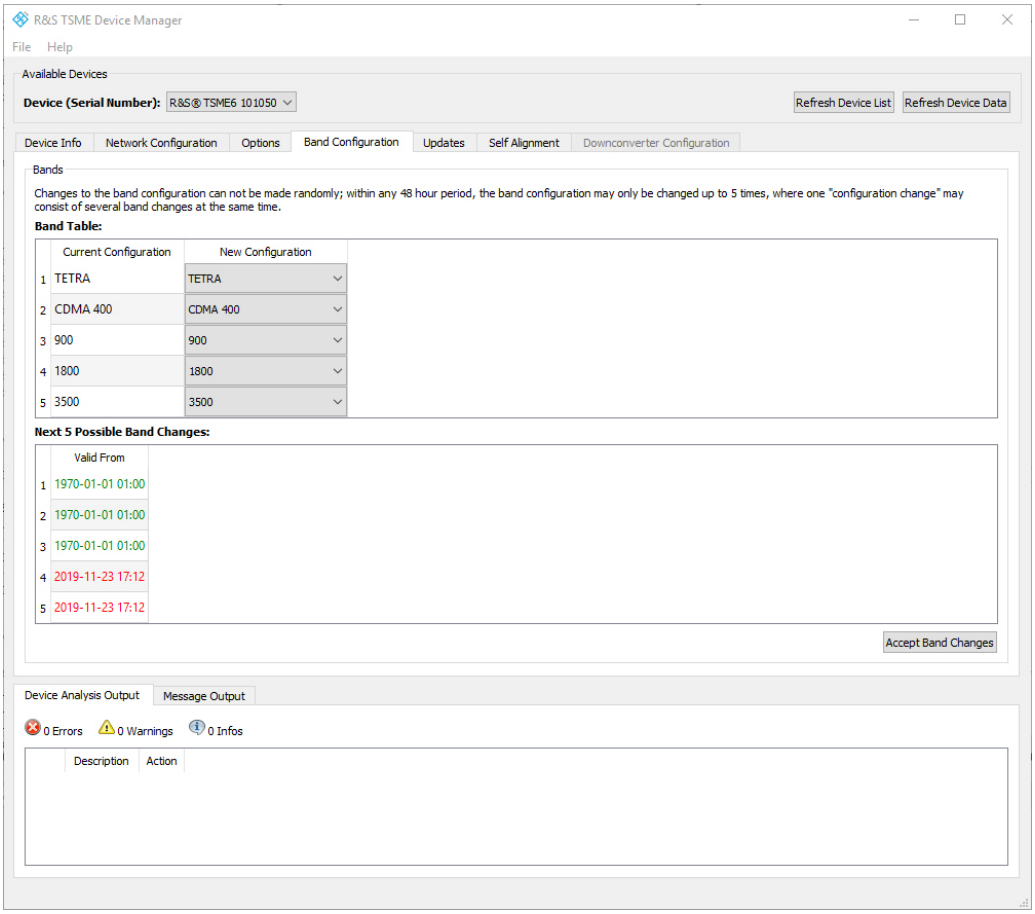


Figure C-2: Tab "Band Configuration"

The current band configuration for the selected R&S TSMA6 is displayed for reference. It remains active until you select the "Accept Band Changes" button.

Band configuration changes

Changes to the band configuration cannot be made randomly; within any 48-hour period, the band configuration may only be changed up to 5 times (where one "configuration change" may consist of several band changes at the same time, see "Applying band configuration changes" on page 147).

A counter is decremented after each (applied) change. How many changes have already been performed and how many are still possible within the current time frame is displayed at the bottom of the "Band Configuration" tab of the "R&S TSME Device Manager".

Red dates indicate the changes recently made, while green dates indicate possible changes left.

Applying band configuration changes

Changes to the band configuration are only applied to the R&S TSMA6 when you select the "Accept Band Changes" button in the "Band Configuration" tab of the "R&S TSME Device Manager".

Only then the counter for possible band changes (within 48 hours) is decremented.

C.3 Obtaining Firmware and Correction Data Updates - "Updates"

The "R&S TSME Device Manager" is always provided with the most recent basic FPGA (section 0). If a newer one becomes available due to security or functional issues, a message is indicated in the "Device Analysis Output" at the bottom of the "R&S TSME Device Manager" window. In this case, and only in this case, it is recommended that you install this update on your R&S TSMA6.

The correction data on your R&S TSMA6 should always be kept up-to-date. Available updates are also indicated in the "Device Analysis Output" and it is recommended that you install them.

If a R&S TSME30DC downconverter is correctly connected, the basic FPGA and correction data for the downconverter are additionally displayed in a second line.

NOTICE

Risk of inoperability of device due to FPGA update

Before performing an update, make sure you have a stable power supply and the LAN connection will not be interrupted. Both updates take a few minutes.

If the LAN connection is interrupted during an FPGA update, the device may become inoperable. Thus, only install such an update if it is explicitly recommended by a message in the "Device Analysis Output" of the "R&S TSME Device Manager" or by the Rohde & Schwarz support center.

You can update the basic FPGA or the correction data on your R&S TSMA6 directly from the "R&S TSME Device Manager", in the "Update" tab. The currently installed versions and the newest supported version (of the FPGA) or the minimum recommended version (of the correction data) are indicated.

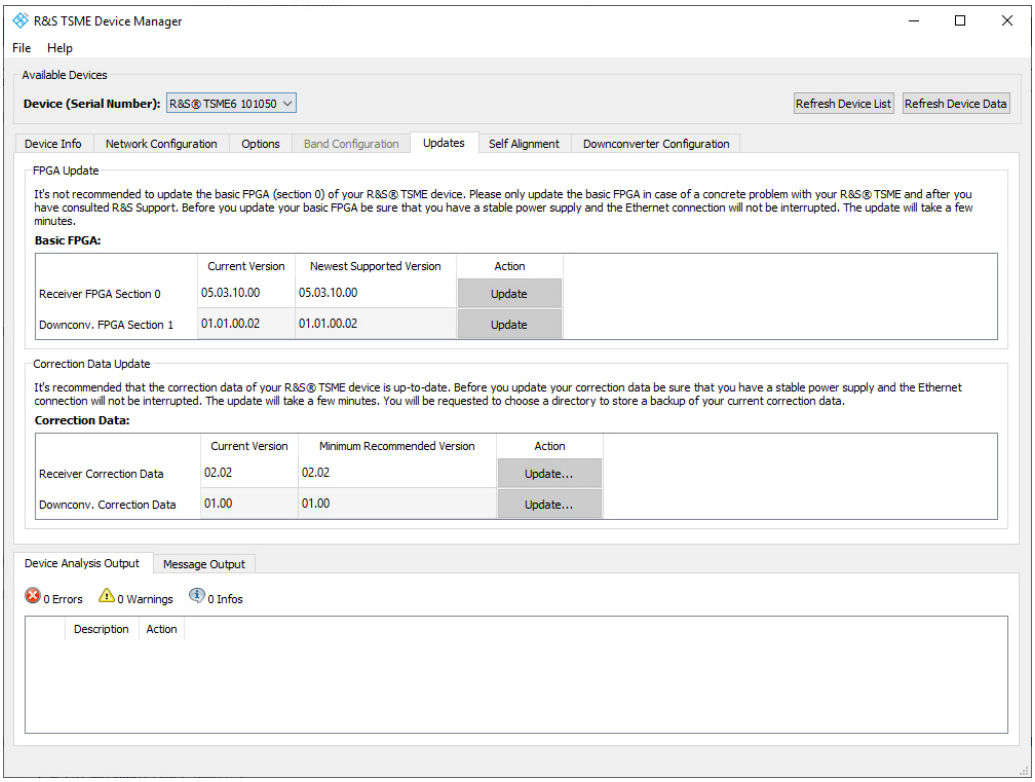


Figure C-3: Tab "Updates"

To perform an update

1. In the "R&S TSME Device Manager", select the serial number of the R&S TSMA6 to be updated.
2. In the "Updates" tab, select the "Update" button for either the "Basic FPGA" or the "Correction Data".

   When updating the correction data, you are asked to select a directory to store a backup of your current correction data.

C.4 Aligning R&S TSMA6 Manually - "Self Alignment"

During self-alignment, the R&S TSMA6 determines alignment values for the I/Q filter, ADC offset and the I/Q imbalance.

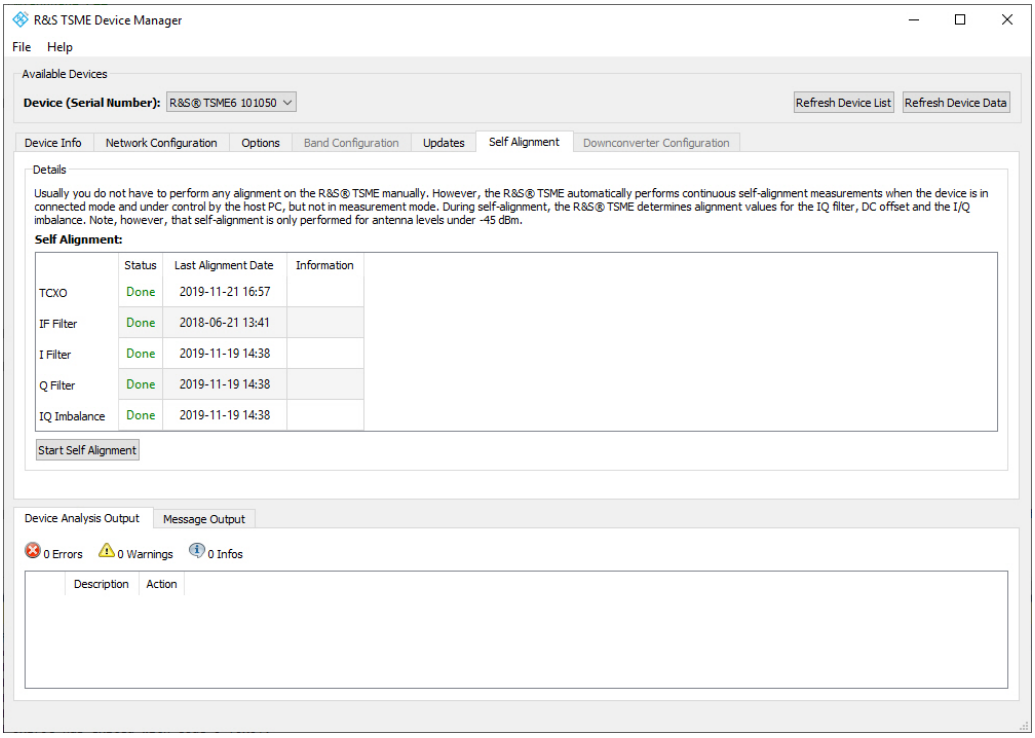


Figure C-4: Tab "Self Alignment"

Start Self Alignment
To start the self-alignment manually, select the "Start Self Alignment" button in the "Self Alignment" tab of the "R&S TSME Device Manager".

C.5 Configuring Downconverter R&S TSME30DC/ TSME44DC - "Downconverter Configuration"

Within this in tab, you can configure the IF output receiver and the RF input antenna of the R&S TSME30DC downconverter. For details, refer to the *R&S TSME30DC / R&S TSME44DCGetting Started*.

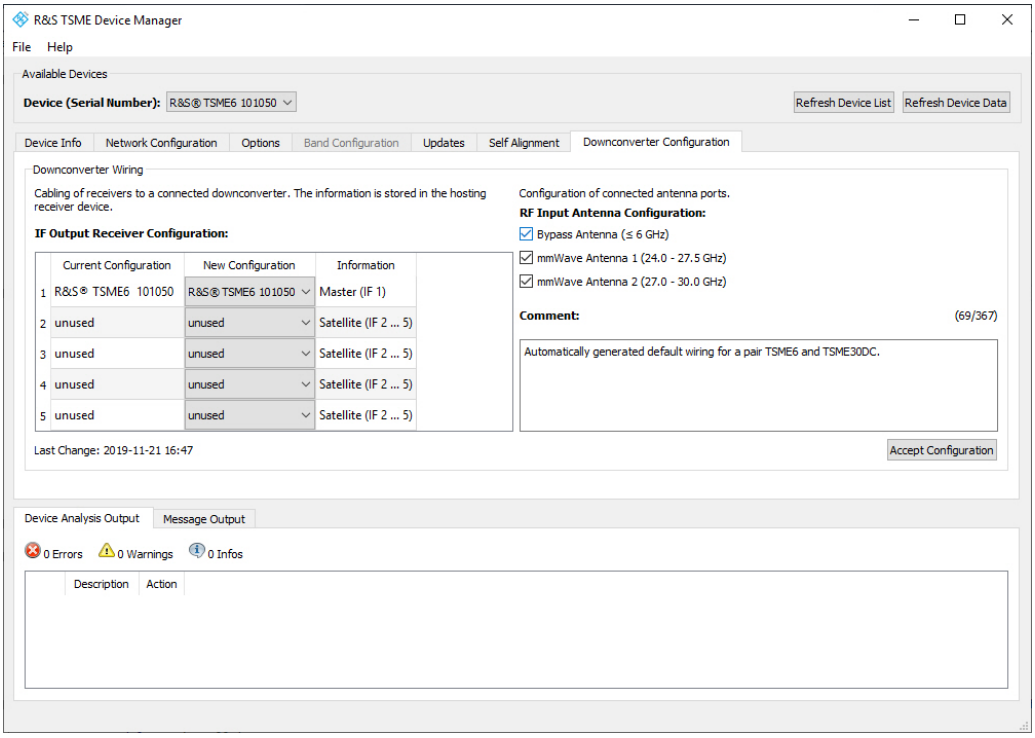


Figure C-5: Tab "Downconverter Configuration"

IF Output Receiver Configuration

Specify the configuration of the IF output connectors of the R&S TSME30DC/ TSME44DC.

RF Input Antenna Configuration

- Specify the configuration of the RF input antenna connectors of the R&S TSME30DC.
  - Bypass Antenna (< 6 GHz)
  - mmWave Antenna 1 (24-27.5 GHz)
  - mmWave Antenna 2 (27-30 GHz)

  For R&S ViCom and R&S ROMES, the API allows only the configuration of frequencies of activated antenna ports. For the overlapping frequency range 27-27.5 GHz, the "mmWAve Antenna 1" is used by default.
- Specify the configuration of the RF input antenna connectors of the R&S TSME44DC.
  - Bypass Antenna (< 6 GHz)
  - mmWave Antenna 1 (24-44 GHz)

  For R&S ViCom and R&S ROMES, the API allows only the configuration of frequencies of activated antenna ports.

Accept Configuration

To confirm the current configuration settings, select the "Accept Configuration" button.

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