Shielded RF Test Fixture R&S TS7110

Reliable test results for wireless devices under test

- Suitable for production, service, repair and quality assurance
- Testing of mobile phones, *Bluetooth*™- compatible terminals and WLAN, for example
- Combination of RF and audio testing
- Low-reflection inside the fixture owing to an absorber
- Suppression of external sources of interference
- Pneumatically supported one-hand operation
- Test results displayed via status messages
- Software tools for control via USB

ROHDE&SCHWARZ

R&S TS7110 – indispensable for production tests

Overview

The R&S TS7110 is a shielded RF test fixture for wireless DUTs (e.g. mobile phones, PDAs, radio keys and much more). It is primarily used in production, service, repair and quality assurance.

The R&S TS7110 is especially suitable for the Production Test Systems R&S TS7100 and R&S TS7180, but also for other existing test systems. There are no interfering components such as boards or the like in the RF-shielded area, thus ensuring good measurement conditions.

RF and audio absorbers can also be installed to prevent interference due to reflections in the test fixture.

Operation

The R&S TS7110 is a semi-automatic test fixture. Opening and closing the test fixture, as well as inserting the DUT, are all done manually. In contrast, pneumatic operation is used to press the RF shielding together, lock the test fixture and make contact with the DUT (RF connector, auxiliary connector and other test points, if required). The effort required is thus reduced to a minimum.

Owing to the status messages (PASSED/FAILED/RUNNING), the user does not have to operate the controller.

Service and support

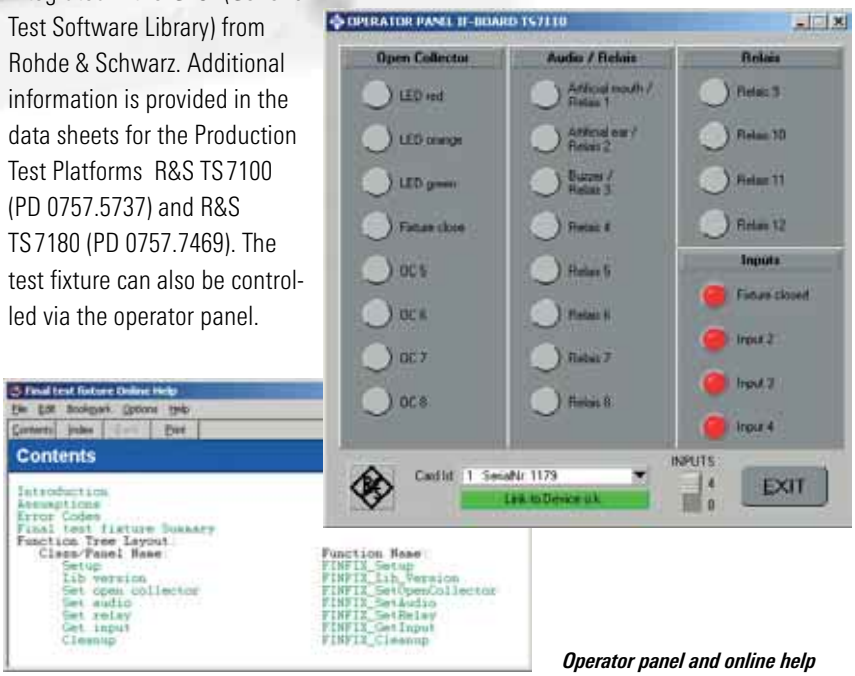
DUT-specific adaptations of the test fixture are performed by the international R&S service and support centers.

The test fixture can be entirely controlled and operated manually by means of service and debug software tools, which is important during troubleshooting and maintenance. Only a few components have to be replaced during regular maintenance; the specific components are determined by the DUT connectors to be used (e.g. mobile phone auxiliary connector).

The mechanical design is based on a well-proven concept and is being successfully used in a large number of test fixtures.

Control

The test fixture control is completely integrated in the GTSL (Generic Test Software Library) from Rohde & Schwarz. Additional information is provided in the data sheets for the Production Test Platforms R&S TS7100 (PD 0757.5737) and R&S TS7180 (PD 0757.7469). The test fixture can also be controlled via the operator panel.



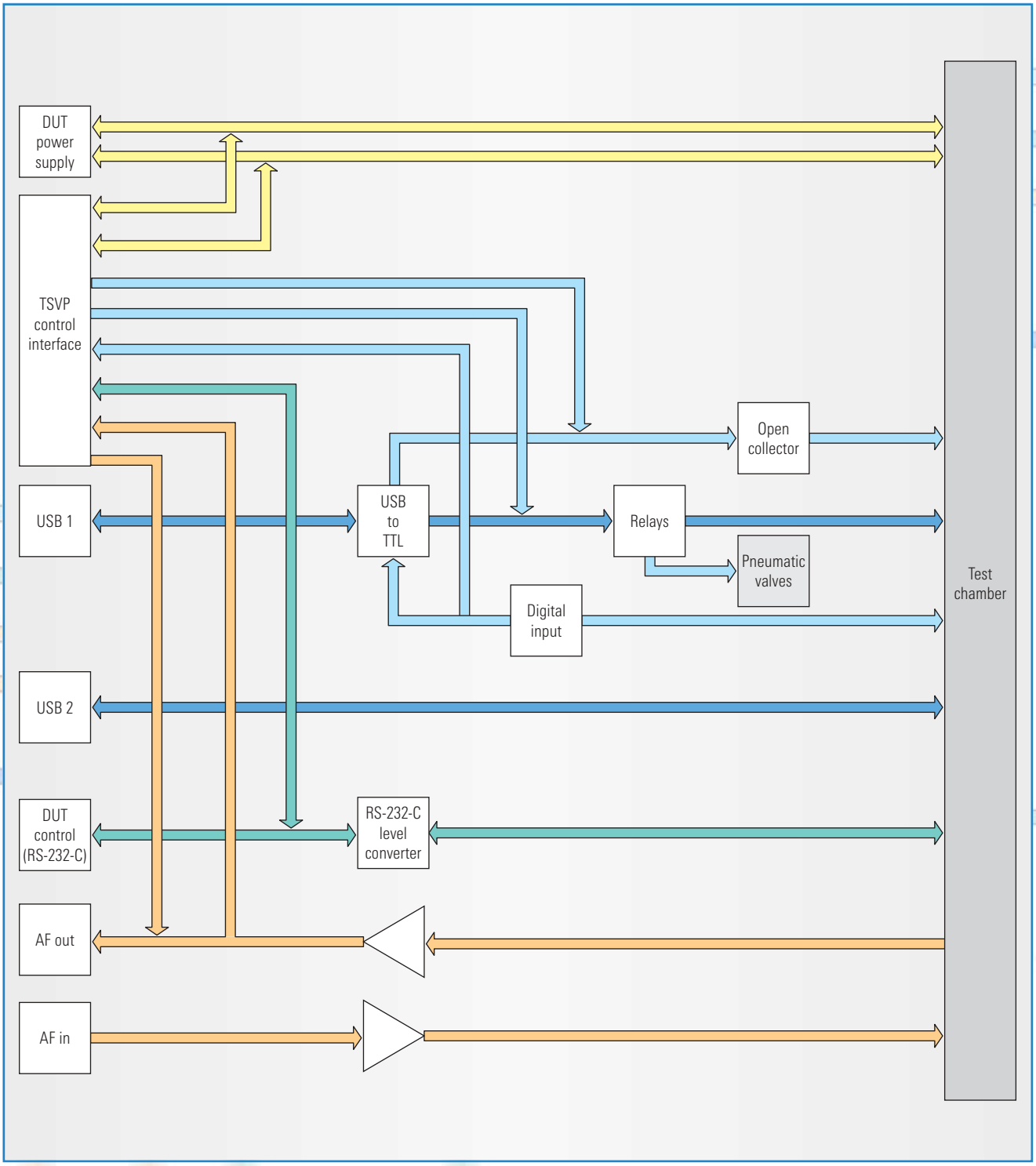
Operator panel and online help

Space requirements

Because of its small dimensions, the test fixture requires little production area. Since no connectors are provided on the sides, several test fixtures can be used adjacent to each other (important with dual and multichannel systems).

Adaptations

A universal DUT-independent antenna coupler is available for the frequency ranges 890 MHz to 960 MHz and 1710 MHz to 1990 MHz (performance is slightly poorer outside these bands). The test fixture can easily be adapted to new DUTs. Only DUT-specific components (connection cable, mount, audio) have to be adapted or replaced.



Signal characteristic of the fixture interface for USB and TS-PRL1

R&S TS7110 – Specifications

Basic unit

Dimensions	
Test fixture	
(W x D)	41 cm x 60 cm
H (closed)	36 cm
H (open)	60 cm
DUT max.	
(W x D)	13 cm x 22 cm
H (with acoustic installation kit)	5 cm
H (without acoustic installation kit)	14 cm
Weight	
Without options	14 kg
With typical options (absorber, IF board, acoustic installation kit, antenna)	19 kg
Temperature ranges	
Operating temperature range	+10 °C to +40 °C
Storage temperature range	–20 °C to +60 °C
Relative humidity	
In operation	90 % r.h. non-cond. at +10 °C to +30 °C 75 % r.h. non-cond. at +30 °C to +40 °C
Storage	90 % r.h. non-cond. at +60 °C
Required resources	only compressed-air connection with USB control, AC supply voltage for external power supply unit required in addition
Power supply	
DUT Interface card	2 x 4-wire, passive feedthrough from external power supply unit via low power connector, V_{out} = 24 V DC/3 A V_{in} = 100 V AC to 240 V AC/1.5 A / 50 Hz to 60 Hz

Connectors	
In the test fixture housing	
Pneumatics: hose diameter	6 mm
Compressed air	0.4 Mpa to 0.7 Mpa filtered 5 µm, oiled/non-oiled
Pneumatics block	for max. 6 valves
Line feedthrough (W x H)	4.5 cm x 3 cm
Connection board (W x H)	25 cm x 10.5 cm (usable)
Ground connection	thread bolt M5 x 15 and pushbutton connection
Connection board in the RF housing	
RF	2 x SMA – SMA connector
Pneumatics	8 x Schott screw connection for hose connector (3 mm internal diameter)
Audio	9-contact, D-Sub, filtered
Data	15-contact, D-Sub, filtered
Power + reserve	25-contact, D-Sub, filtered
RF shielding	
Without absorber	
450 MHz to 600 MHz	>65 dB
800 MHz to 1000 MHz	>60 dB
1700 MHz to 2000 MHz	>55 dB
2000 MHz to 2500 MHz	>45 dB
With absorber (optional)	
450 MHz to 600 MHz	>75 dB
800 MHz to 1000 MHz	>75 dB
1700 MHz to 2000 MHz	>65 dB
2000 MHz to 2500 MHz	>65 dB
AF shielding	
200 Hz to 400 Hz	>12 dB
400 Hz to 1000 Hz	>16 dB
1000 Hz to 4000 Hz	>23 dB

Fixture interface (optional)

Control interface	
Hardware	2 x USB or TS-PRL1 (R&S TS7100) interface board on exterior housing 2 x BNC for audio 1 x D-Sub each for DUT power supply and control (RS-232-C)
Software	GTSL (R&S TS7100, R&S TS7180)
Digital inputs/outputs	
Inputs	4 or 8 high active, max. 24 V DC, V >4 V high
Outputs	8 x open collector, max. 300 mA, 30 V
Audio input/output	
Input	1:2 multiplexer
Amplifier to artificial mouth	–70 dB to +5 dB V_{in} max. 5 V (rms), P_{out} max. 2 W into 8 Ω
Amplifier to DUT	–34 dB to 0 dB V_{in} max. 5 V (rms), V_{out} max. 5 V (rms)
Output	3:1 multiplexer
2 microphone amplifiers from artificial ear or buzzer	0 dB to +40 dB, 5 V bias
Amplifier from DUT	differential input –12 dB to +28 dB, V_{in} max. 5 V (rms), V_{out} max. 5 V (rms)
Relays	8 or 12 SPST, max. 500 mA, 30 V, connectible with DMM from DUT power supply
DUT control	RS-232-C via level converter RxD, TxD, RTS, CTS, GND voltage adjustable between 3.0 V and 3.6 V max. 250 kbps

Antenna coupler (optional)

Type 1	
Frequency ranges	770 MHz to 1000 MHz 1700 MHz to 2200 MHz
Coupling factors	8 dB to 25 dB, depending on frequency and DUT
Connector	SMA
Type 2	
Frequency ranges	2400 MHz to 2550 MHz 1700 MHz to 2200 MHz
Coupling factors	20 dB to 30 dB, depending on frequency and DUT
Connector	SMA

Acoustic installation kit (optional)

Components	
Artificial mouth	
Frequency range	250 Hz to 4 kHz
Artificial ear	
Frequency range	200 Hz to 4 kHz

Certified Environmental System
ISO 14001
REG. NO 1954

Certified Quality System
ISO 9001
DQS REG. NO 1954

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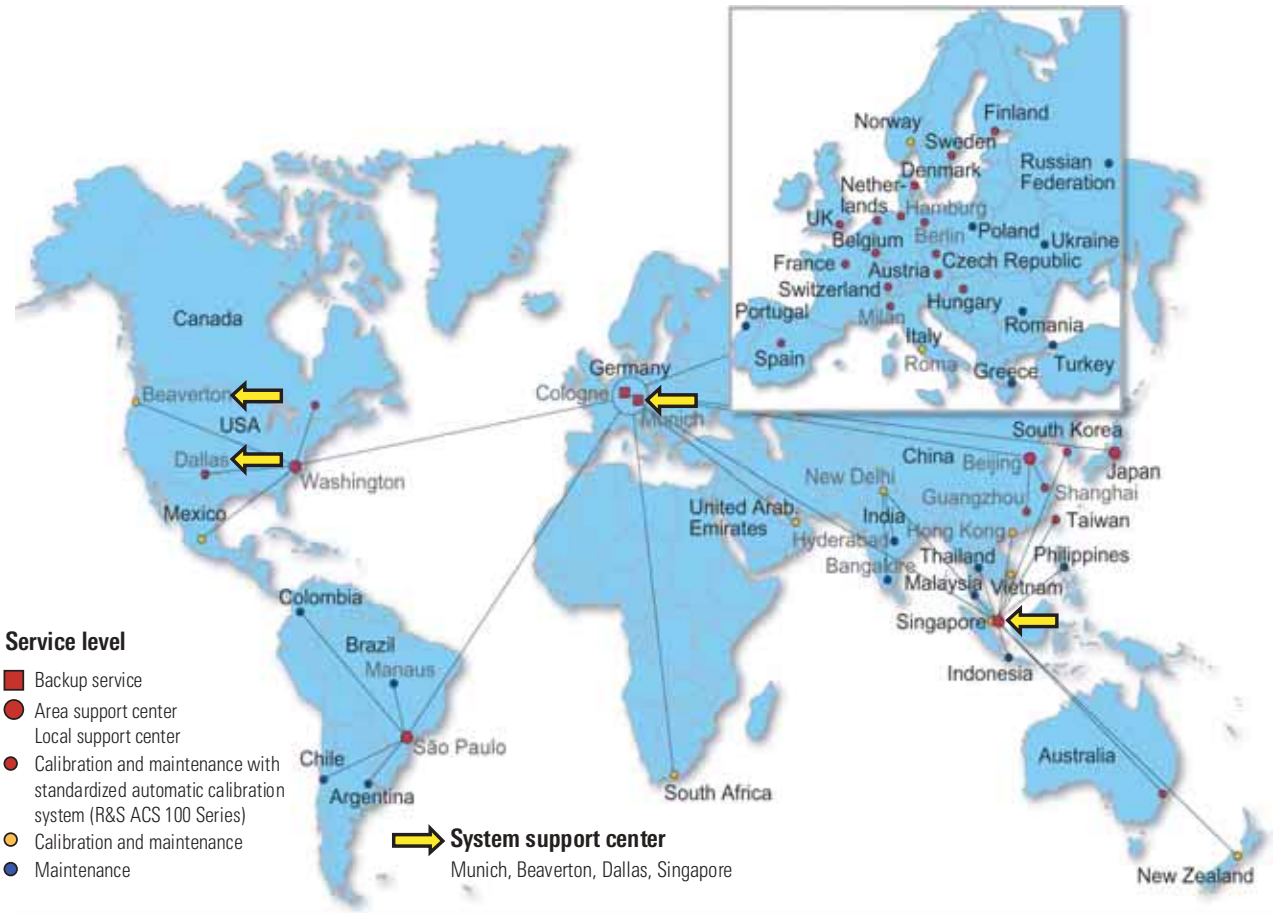

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