R&S®Spectrum Rider FPH
Handheld Spectrum Analyzer
Small form factor
to handle big tasks

ROHDE & SCHWARZ

R&S®Spectrum Rider Handheld Spectrum Analyzer
At a glance

The R&S®Spectrum Rider is a versatile, user-friendly instrument in a rugged and appealing design. The frequency range of the basic analyzer is 5 kHz to 2 GHz. The upper frequency limit can easily be extended to 3 GHz or 4 GHz via keycode.

The R&S®Spectrum Rider is designed to suit both field and lab applications in indoor as well as outdoor environment. Large buttons and a multifunction rotary control allow operation even with gloves. Its backlit keypad makes the analyzer also usable in the dark, and the bright nonreflecting display makes it readable in the sunshine. The battery lasts an entire working day. The light weight, its small form factor and its ruggedness make the analyzer easy to carry. It is a reliable companion even in harsh and difficult-to-reach environments.

The small form factor does not limit the performance and capabilities of the R&S®Spectrum Rider. Thanks to its solid RF performance, its short boot time and its ease of use, the R&S®Spectrum Rider is the perfect instrument for spectrum measurements in the lab or in service applications.

The state-of-the-art touchscreen allows operation using smartphone-like touch gestures. An on-screen keyboard and many other functions make the life of the user easier.

Key facts
▪ Frequency ranges from 5 kHz to 2/3/4 GHz; upgrade via keycode
▪ Solid RF performance
▪ Ideal for field use: 8 hour battery life, 2.5 kg (5.5 lb) weight, backlit keypad, fast boot time, nonreflective display, small footprint, ruggedized housing
▪ Large color display with touch and gesture operation
▪ Measurement wizard that supports measurement campaigns, speeds up measurements and avoids errors
▪ Features and options for various industries such as aerospace and defense, wireless communications, broadcasting, spectrum regulators and education
▪ Easy and cost-efficient upgrades of all options via software keycode
▪ Three-year warranty as standard (battery one year)

R&S®Spectrum Rider Handheld Spectrum Analyzer
Benefits and key features

Excellent in the field
❙ Lightweight, small and long battery life
❙ Wide range of accessories
❙ Nonreflective display and backlit keypad designed for outdoor use
❙ Ruggedized in line with MIL-PRF-28800F class 2
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Excellent for lab diagnostics
❙ Solid RF performance for diagnostics in the lab
❙ EMI debugging with optional near-field probes
▷ page 5

User-friendly
❙ Easy to use with smartphone-like gestures on the touchscreen
❙ Configuration overview menu
❙ Setting frequencies with channel tables
▷ page 6

Future-ready
❙ Software-upgradeable frequency ranges
❙ Multipurpose use in various industries, R&D and education
❙ Easy upgrade of all options via software keycode
❙ Optional software applications
  ▪ Power measurements with power sensors
  ▪ Internal channel power meter
  ▪ Pulse measurements with power sensors
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Increasing productivity through measurement wizard
❙ Simplified measurements
❙ Reproducible and fast measurements
▷ page 10

Postprocessing and remote control
❙ R&S®InstrumentView software for measurement postprocessing and documentation
❙ Remote control via LAN or USB
▷ page 12

Excellent in the field

Lightweight, small and long battery life

The unique combination of low weight, small footprint, short bootime and the longest battery life on the market make the R&S®Spectrum Rider ideal for work in the field, even in remote, difficult-to-reach locations.

The R&S®Spectrum Rider can operate an entire working day (more than 8 hours) without recharging or changing the battery. It weighs only 2.5 kg (5.5 lb) including battery.

Wide range of accessories

A soft carrying bag, battery charger, spare batteries and other accessories for work in the field are available.

Nonreflective display and backlit keypad designed for outdoor use

The 18 cm diameter (7") display is nonreflective, i.e. it shows the measurement result and not a mirror image of the operator. The black-and-white mode makes it readable in bright sunlight. The keypad can be illuminated for convenient work in dim environments. Large buttons and a rotary knob with enter function make it easy to operate the instrument even when wearing gloves.

Ruggedized in line with MIL-PRF-28800F class 2

The R&S®Spectrum Rider has no vents or fans that could suck in dirt or water. All interfaces and connectors are protected. The instrument is tested in line with the MIL-PRF-28800F class 2 mechanical test specification for work in rough environments. It is protected against dust and drip water in line with the IP51 specification.

Protected connectors and interfaces.

Excellent for lab diagnostics

Solid RF performance for diagnostics in the lab

With a phase noise of –105 dBc (1 Hz) at 100 kHz offset from the carrier, a total measurement uncertainty of 0.5 dB and its high sensitivity (displayed average noise level (DANL) of typ. < –163 dBm up to 3 GHz), the R&S®Spectrum Rider is a powerful and easy-to-use spectrum analyzer for RF diagnostics in service and development labs.

Examples of measurements in the lab:
∎ Frequency and amplitude of any RF device
∎ Accurate frequency readings with the frequency counter, e.g. for alignment of frequency references
∎ Measurement of spurious emissions
∎ Measurement of harmonics and intermodulation products
∎ Measurement of pulsed signals in the time domain

EMI debugging with optional near-field probes

The R&S®HZ-15 near-field probes are used as diagnostic tools for EMI debugging, e.g. on circuit boards, integrated circuits, cables and shielding. The R&S®HZ-15 near-field probe set is ideal for emission measurements from 30 MHz to 3 GHz. The R&S®HZ-16 preamplifier improves measurement sensitivity up to 3 GHz, with approx. 20 dB gain and a noise figure of 4.5 dB. In combination with the R&S®Spectrum Rider, the preamplifier and near-field probe set are a cost-effective means of analyzing and locating disturbance sources during development.

The R&S®Spectrum Rider with near-field probes and DUT.

User-friendly

Easy to use with smartphone-like gestures on the touchscreen

The R&S®Spectrum Rider offers flexible and straightforward operation. Depending on the application, it can be operated either via its 18 cm capacitive touchscreen or with keys.

The analyzer´s unique capacitive touchscreen enables users to adjust the most common settings, such as center frequency, span and reference level, and manage markers with intuitive gestures as with a smartphone.

Thanks to the large keys and the rotary knob with enter function the R&S®Spectrum Rider can be easily operated in outdoor environments and even with gloves in winter. There are dedicated softkeys and hardkeys for the most important settings such as frequency, span, amplitude, markers and limit lines.

For documentation purposes, the screenshot button makes it possible to save a graphics file with a single keystroke. A USB flash drive or a microSD card can be used to collect large amounts of data.

The user interface is available in eleven languages: English, German, Korean, Japanese, Chinese, Russian, Italian, Spanish, Portuguese, French and Hungarian. All these languages are also supported by the convenient on-screen keyboard.

Configuration overview menu

The configuration overview menu makes it easy for the user to get an overview of the main measurement settings. It shows the flow of spectrum measurements at different receiver stages, along with the relevant parameters that impact the measurements at each stage.

A click on the configuration overview icon provides quick access to the menu for checking and changing frequency, amplitude, bandwidth, etc.

Setting frequencies with channel tables

Users who prefer to work with channel numbers instead of frequencies can easily do this using the predefined channel tables. The most common channel tables for wireless and broadcast systems are included as standard; users can also add their own channel tables.

Configuration overview menu.

RF input
(N connector) BNC connector Headphones USB ports

Touch-sensitive
display area

Softkey labels
(on display)

Softkeys

System keys

Screenshot key

DC connector
(protected)

Function keys

Rotary knob
with enter
function

Kensington lock

LAN and mini USB
ports (protected)

Function keys

Power key

microSD card slot
(behind battery)

Back key Cancel key

Alphanumeric
keypad

Unit keys

Future-ready

Software-upgradeable frequency ranges

The R&S®Spectrum Rider is the first handheld analyzer with software-upgradeable frequency ranges. The base unit handles frequencies between 5 kHz and 2 GHz. The end frequency of 2 GHz is required for most common lab applications such as EMI precompliance or troubleshooting during RF development. Users who need an instrument that supports frequencies above 2 GHz can easily upgrade their instrument to 3 GHz or 4 GHz via software keycode.

Multipurpose use in various industries, R&D and education

The excellent price/performance ratio of the R&S®Spectrum Rider makes it attractive for field engineering companies, repair centers and development labs. The analyzer will also find its place in any RF teaching lab in schools and universities. The R&S®Spectrum Rider includes a wide range of standard features, such as two spectrum traces, AM/FM audio demodulation, remote control and frequency counter, which are used in everyday spectrum analysis tasks.

Field engineers and repair labs in various industries will find optional measurement applications for their daily work, as for example peak and average power measurements.

Easy upgrade of all options via software keycode

All options can be easily added using a software keycode. This eliminates extra installation costs and turnaround times because there is no need to send the instrument to a service center for calibration or alignment.

The R&S®Spectrum Rider with an R&S®NRP-Zxx USB power sensor.

Optional software applications

Power measurements with power sensors

For applications requiring very high accuracy to measure and align transmitter levels, the R&S®FPH-K9 option allows the R&S®Spectrum Rider to be used for power measurements together with the R&S®NRP-Zxx power sensor series, with a measurement range of –67 dBm to +45 dBm and covering frequencies up to 110 GHz.

Internal channel power meter

The R&S®FPH-K19 channel power meter option converts the R&S®Spectrum Rider into a portable power meter with a level measurement accuracy of typ. 0.5 dB. This option makes it possible to achieve power measurement results fast and easily without needing a power sensor or the spectrum analyzer mode.

Pulse measurements with power sensors

The R&S®FPH-K29 option enables precise pulse and peak power measurements using the R&S®Spectrum Rider together with the R&S®NRP-Z8x wideband power sensor family.

The R&S®NRP-Z8x wideband power sensors measure pulses with a resolution of up to 50 ns and support frequencies up to 44 GHz.

The main pulse parameters such as pulse width, rise/fall time and duty cycle. will be displayed automatically. It is also possible to use the trigger function and markers and to zoom in on pulses by reducing the trace time. This is convenient for installation and maintenance measurements of radar systems.

| Standard features |
|---|
| Two spectrum traces |
| Six markers, absolute or relative |
| Noise marker |
| Frequency counter with 0.1 Hz resolution |
| AM/FM audio demodulator (audio via built-in loudspeaker or headphones) |
| Limit line monitoring (pass/fail function) |
| Remote control via USB/LAN interface |
| Predefined channel tables |
| Measurement wizard [1] |

Optional software applications
Spectrum analyzer frequency upgrade from 2 GHz to 3 GHz (R&S®FPH-B3)
Spectrum analyzer frequency upgrade from 2 GHz to 4 GHz (R&S®FPH-B4 and R&S®FPH-B3 required)
Preamplifier (R&S®FPH-B22)
Power sensor support (R&S®FPH-K9)
Channel power meter (R&S®FPH-K19)
Pulse measurements with power sensors (R&S®FPH-K29)

[1] The measurement wizard is planned for Q1 2016.

Internal channel power meter screen (R&S®FPH-K19).
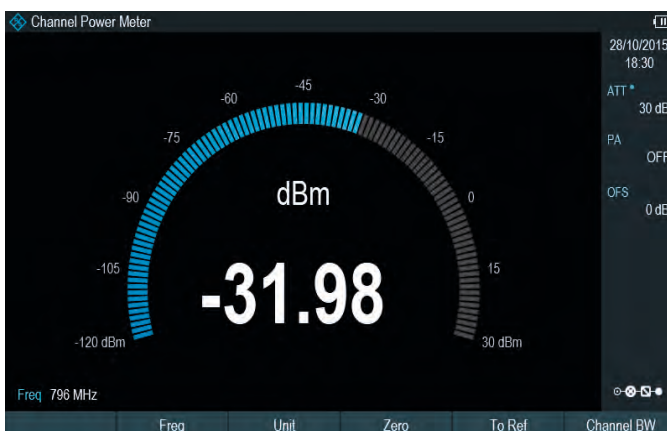
Pulse analysis with the R&S®FPH-K29 option and R&S®NRP-Z8x wideband power sensors.
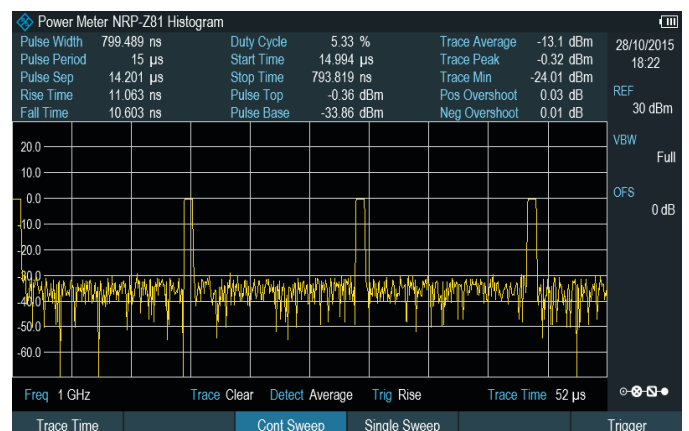
Increasing productivity through measurement wizard

Site surveys or the installation and maintenance of transmitter stations often require a standard set of spectrum measurements. These measurements must be performed correctly to avoid additional costs and time on site.

Simplified measurements

The measurement wizard [1] simplifies measurements by automating, standardizing and optimizing test sequences. A sequence of standardized and recurring measurements can be performed quickly, easily and without mistakes.

First, a measurement expert centrally creates the test sequences, using the R&S®Spectrum Rider and the R&S®InstrumentView software running on a PC. Pictures and written instructions can be added to each measurement step.

[1] Planned for Q1 2016.

After the measurement sequence has been configured it can be transferred to the instruments in the field. The operator in the field only needs to start the wizard, select the measurement sequence and follow the predefined on-screen instructions. The instrument is correctly configured for each test step, so that the operator does not need to spend time on configuring the measurement instrument on site.

The results are saved automatically as soon as all measurements are completed, and can be transferred to a tablet or a PC. A complete measurement report in PDF, RTF or HTML format can be generated using the report generator in the R&S®InstrumentView software.
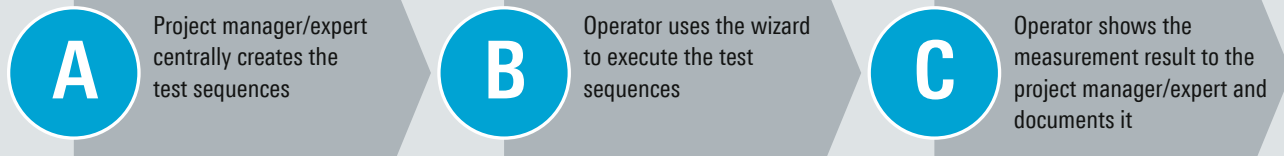
Reproducible and fast measurements

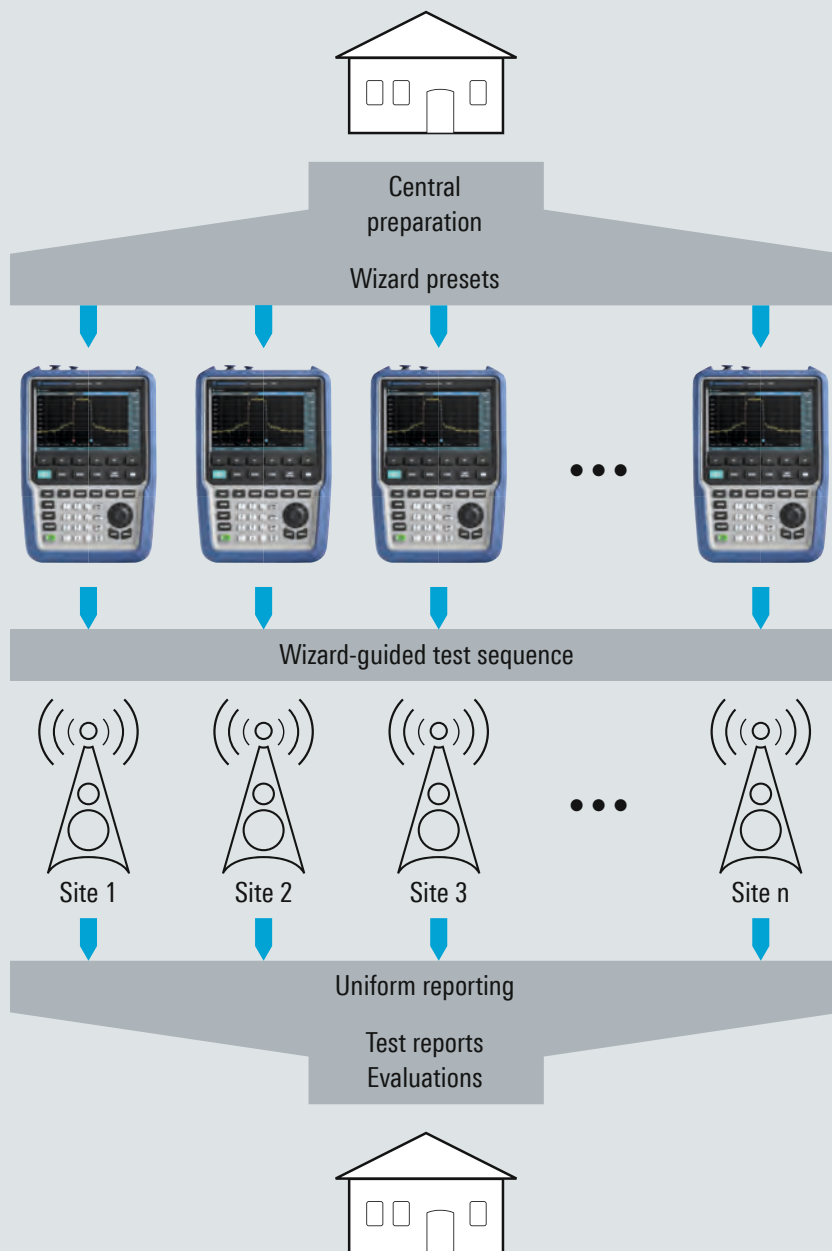The measurement wizard and the report generator ensure the following:
❙ The results are correct and reproducible; all measurements are performed correctly with the right settings and in the right order; no need to come back to the site due to incorrect measurement settings or setup
❙ Measurement time is drastically reduced thanks to predefined instrument settings; there is no need to set up the instrument on site
❙ No training is required for novice users; less experienced operators can reliably conduct measurements thanks to on-screen instructions and preset measurement settings
❙ All measurement results are documented in a complete, customizable measurement report, which can include additional data such as operator or site name, company name, location and instrument serial number.

A Project manager/expert centrally creates the test sequences

B Operator uses the wizard to execute the test sequences

C Operator shows the measurement result to the project manager/expert and documents it

Typical deployment setup with measurement preparations and postprocessing

Central preparation

Wizard presets

Wizard-guided test sequence

Site 1   Site 2   Site 3   Site n

Uniform reporting

Test reports
Evaluations

Postprocessing and remote control

R&S®InstrumentView software for measurement postprocessing and documentation

The R&S®InstrumentView Windows software comes with the instrument, it makes it easy to postprocess and document measurement results and manage instrument settings.

Features

❙ Fast data exchange between the R&S®Spectrum Rider and a PC via USB or LAN connection
❙ Easy processing of measurement results
❙ Easy creation of test reports in PDF, HTML and RTF format
❙ Printout of all relevant data via Windows tablet or PC
❙ Editing of measurement results by displaying/hiding and shifting markers or limit lines, etc.
❙ Editor for generating limit lines, antenna factors and transducer factors for external attenuators and amplifiers as well as channel lists
❙ Compatible with Windows XP, Windows Vista (32/64 bit), Windows 7 (32/64 bit), Windows 8 (32/64 bit) and Windows 10

Remote control via LAN or USB

The R&S®Spectrum Rider can be remotely controlled via the USB or LAN interface and integrated into user-specific programs. SCPI-compatible remote control commands are available as standard.

Specifications in brief

Specifications in brief		
Frequency range	base unit	5 kHz to 2 GHz
	with R&S®FPH-B3 option	5 kHz to 3 GHz
	with R&S®FPH-B3 and R&S®FPH-B4 options installed	5 kHz to 4 GHz
Frequency resolution		1 Hz
Resolution bandwidth		1 Hz to 3 MHz in 1/3 sequence
Spectral purity SSB phase noise		f = 500 MHz
	30 kHz	< –88 dBc (1 Hz), typ. –95 dBc (1 Hz)
	100 kHz	< –98 dBc (1 Hz), typ.–105 dBc (1 Hz)
	1 MHz	< –118 dBc (1 Hz), typ. –125 dBc (1 Hz)
Displayed average noise level	0 dB RF attenuation, 50 Ω termination, RBW = 100 Hz, VBW = 10 Hz, sample detector, log scaling, tracking generator off, normalized to 1 Hz	
	frequency	preamplifier = off
	1 MHz to 10 MHz	< –135 dBm, typ. –142 dBm
	10 MHz to 1 GHz	< –142 dBm, typ. –146 dBm
	1 GHz to 4 GHz	< –140 dBm, typ. –144 dBm
	frequency	preamplifier = on
	1 MHz to 10 MHz	< –150 dBm, typ. –160 dBm
	10 MHz to 3 GHz	< –158 dBm, typ. –163 dBm
	3 GHz to 4 GHz	< –156 dBm, typ. –161 dBm
Third-order intercept (IP3)	intermodulation-free dynamic range, signal level 2 × –20 dBm, RF attenuation = 0 dB, RF preamplifier = off	
	f = 1 GHz	+7 dBm (meas.)
	f = 2.4 GHz	+10 dBm (meas.)
Total measurement uncertainty	95 % confidence level, +20 °C to +30 °C, SNR > 16 dB, 0 dB to –50 dB below reference level, RF attenuation auto	
	10 MHz ≤ f ≤ 4 GHz	< 1.25 dB, typ. 0.5 dB
Display		
Resolution		WVGA, 800 × 480 pixel
Battery		Ilithium ion battery
Capacity	R&S®HA-Z306	72 Wh
Voltage		11.25 V
Operating time with new, fully charged battery	R&S®HA-Z306	8 h
Dimensions	W × H × D	202 mm × 294 mm × 76 mm (8.0 in × 11.6 in × 3 in)
Weight		2.5 kg (5.5 lb)

For data sheet, see PD 3607.2149.22 and www.rohde-schwarz.com

Ordering information

Designation	Type	Order No.
R&S®Spectrum Rider FPH Handheld Spectrum Analyzer, 5 kHz to 2 GHz	R&S®FPH	1321.1111.02
Accessories supplied		
Lithium ion battery pack, USB cable, AC power supply with country-specific adapters for EU, GB, US, AUS, CH, CD-ROM with R&S®InstrumentView software and documentation, quick start guide, side strap		
Options		
Spectrum Analyzer Frequency Upgrade, 2 GHz to 3 GHz	R&S®FPH-B3	1321.0667.02
Spectrum Analyzer Frequency Upgrade, 3 GHz to 4 GHz (requires R&S®FPH-B3)	R&S®FPH-B4	1321.0673.02
Spectrum Analyzer Preamplifier	R&S®FPH-B22	1321.0680.02
Power Sensor Support	R&S®FPH-K9	1321.0709.02
Channel Power Meter	R&S®FPH-K19	1321.0721.02
Pulse Measurements with Power Sensor	R&S®FPH-K29	1321.0738.02
Accessories		
Battery Charger for R&S®HA-Z306 [1]	R&S®HA-Z303	1321.1328.02
Lithium Ion Battery Pack, 6.4 Ah	R&S®HA-Z306	1321.1334.02
Soft Carrying Bag	R&S®HA-Z220	1309.6175.00
Headphones	R&S®FSH-Z36	1145.5838.02
Logarithmic Periodic OEM Antenna, 700 MHz to 4 GHz	R&S®HA-Z350	1321.1405.02
RF Cable (length: 1 m), DC to 8 GHz, armored, N male/N female connectors	R&S®FSH-Z320	1309.6600.00
RF Cable (length: 3 m), DC to 8 GHz, armored, N male/N female connectors	R&S®FSH-Z321	1309.6617.00
Matching Pad, 50/75 Ω, L section	R&S®RAM	0358.5414.02
Matching Pad, 50/75 Ω, series resistor 25 Ω	R&S®RAZ	0358.5714.02
Matching Pad, 50/75 Ω, L section, N to BNC	R&S®FSH-Z38	1300.7740.02
Adapter N (m) – BNC (f)		0118.2812.00
Adapter N (m) – N (m)		0092.6581.00
Adapter N (m) – SMA (f)		4012.5837.00
Adapter N (m) – 7/16 (f)		3530.6646.00
Adapter N (m) – 7/16 (m)		3530.6630.00
Adapter N (m) – FME (f)		4048.9790.00
Adapter BNC (m) – Banana (f)		0017.6742.00
Attenuator, 50 W, 20 dB, 50 Ω, DC to 6 GHz, N(f) – N(m)	R&S®RDL50	1035.1700.52
Attenuator, 100 W, 20 dB, 50 Ω, DC to 2 GHz, N(f) – N(m)	R&S®RBU100	1073.8495.20
Attenuator, 100 W, 30 dB, 50 Ω, DC to 2 GHz, N(f) – N(m)	R&S®RBU100	1073.8495.30
Compact Probe Set for E and H Near-Field Measurements, 30 MHz to 3 GHz	R&S®HZ-15	1147.2736.02
Preamplifier 3 GHz, 20 dB, Power Adapter (100 V to 230 V), for R&S®HZ-15	R&S®HZ-16	1147.2720.02
Spare USB Cable	R&S®HA-Z211	1309.6169.00
Spare Ethernet Cable	R&S®HA-Z210	1309.6152.00
Spare Power Supply, incl. mains plug for EU, GB, US, AUS, CH	R&S®HA-Z301	1321.1386.02

Designation	Type	Order No.
R&S®NRP-Zxx power sensors supported by the R&S®Spectrum Rider [2]		
Universal Power Sensor, 10 MHz to 8 GHz, 100 mW, 2-path	R&S®NRP-Z211	1417.0409.02
Universal Power Sensor, 10 MHz to 8 GHz, 200 mW	R&S®NRP-Z11	1138.3004.02
Universal Power Sensor, 10 MHz to 18 GHz, 100 mW, 2-path	R&S®NRP-Z221	1417.0309.02
Universal Power Sensor, 10 MHz to 18 GHz, 200 mW	R&S®NRP-Z21	1137.6000.02
Universal Power Sensor, 10 MHz to 18 GHz, 2 W	R&S®NRP-Z22	1137.7506.02
Universal Power Sensor, 10 MHz to 18 GHz, 15 W	R&S®NRP-Z23	1137.8002.02
Universal Power Sensor, 10 MHz to 18 GHz, 30 W	R&S®NRP-Z24	1137.8502.02
Universal Power Sensor, 10 MHz to 33 GHz, 200 mW	R&S®NRP-Z31	1169.2400.02
Universal Power Sensor, 10 MHz to 40 GHz, 100 mW	R&S®NRP-Z41	1171.8801.02
Thermal Power Sensor, 0 Hz to 18 GHz, 100 mW	R&S®NRP-Z51	1138.0005.02
Thermal Power Sensor, 0 Hz to 33 GHz, 100 mW	R&S®NRP-Z52	1138.0505.02
Thermal Power Sensor, 0 Hz to 40 GHz, 100 mW	R&S®NRP-Z55	1138.2008.02
Thermal Power Sensor, 0 Hz to 50 GHz, 100 mW	R&S®NRP-Z56	1171.8201.02
Thermal Power Sensor, 0 Hz to 67 GHz, 100 mW	R&S®NRP-Z57	1171.8401.02
Thermal Power Sensor, 0 Hz to 110 GHz, 100 mW	R&S®NRP-Z58	1173.7031.02
Universal Power Sensor, 10 MHz to 40 GHz, 100 mW	R&S®NRP-Z61	1171.7505.02
Wideband Power Sensor, 50 MHz to 18 GHz, 100 mW	R&S®NRP-Z81	1137.9009.02
Wideband Power Sensor, 50 MHz to 40 GHz, 100 mW (2.92 mm)	R&S®NRP-Z85	1411.7501.02
Wideband Power Sensor, 50 MHz to 40 GHz, 100 mW (2.40 mm)	R&S®NRP-Z86	1417.0109.40
Wideband Power Sensor, 50 MHz to 44 GHz, 100 mW (2.40 mm)	R&S®NRP-Z86	1417.0109.44
Average Power Sensor, 9 kHz to 6 GHz, 200 mW	R&S®NRP-Z91	1168.8004.02
Average Power Sensor, 9 kHz to 6 GHz, 2 W	R&S®NRP-Z92	1171.7005.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 8 GHz	R&S®NRP8S	1419.0006.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 8 GHz, LAN version	R&S®NRP8SN	1419.0012.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 18 GHz	R&S®NRP18S	1419.0029.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 18 GHz, LAN version	R&S®NRP18SN	1419.0035.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 33 GHz	R&S®NRP33S	1419.0064.02
Three-Path Diode Power Sensor, 100 pW to 200 mW, 10 MHz to 33 GHz, LAN version	R&S®NRP33SN	1419.0070.02
R&S®NRP-Zxx power sensors require the following adapter cable for operation with the R&S®Spectrum Rider		
USB Adapter Cable (passive), length: 2 m, to connect R&S®NRP-ZxxS/SN power sensors to the R&S®Spectrum Rider	R&S®NRP-Z4	1146.8001.02
R&S®NRP power sensors require the following adapter cable for operation with the R&S®Spectrum Rider		
USB Interface Cable, length: 1.5 m (59 in), to connect R&S®NRP sensors to the R&S®Spectrum Rider	R&S®NRP-ZKU	1419.0658.03

[1] The battery charger is to be used for charging an additional battery outside the instrument. The internal battery is charged by the instrument itself.

[2] For average power measurements only.

Service options		
Extended Warranty, one year	R&S®WE1	Please contact your local Rohde & Schwarz sales office.
Extended Warranty, two years	R&S®WE2	
Extended Warranty with Calibration Coverage, one year	R&S®CW1	
Extended Warranty with Calibration Coverage, two years	R&S®CW2	

Service that adds value
- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

About Rohde & Schwarz
The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

Sustainable product design
- Environmental compatibility and eco-footprint
- Energy efficiency and low emissions
- Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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