R&S®Cable Rider ZPH
Cable and antenna analyzer
Expect fast, expect efficient

3 year warranty

ROHDE&SCHWARZ

Product Brochure | Version 01.02

R&S®Cable Rider ZPH cable and antenna analyzer

At a glance

The R&S®Cable Rider ZPH is a one-port analyzer that has all the essential basic measurement capabilities required for installing and maintaining antenna systems in the field. Its unique features ensure fast and efficient cable and antenna measurements. The easy-to-use analyzer features a touchscreen and large keypad.

There is no need to calibrate the analyzer before use. It is reliably and accurately calibrated before leaving the factory. Should calibration be needed to eliminate the effects of additional cables or adapters used to connect the analyzer to the device under test (DUT), the R&S®ZN-Z103 automatic calibration unit performs the calibration in just one step.

With its short boot and warm-up times and fast measurement speed, the R&S®Cable Rider ZPH gets down to analyzing without much time loss. Measurement setups can be predrawn and settings preconfigured. Thanks to the wizard function, fast and accurate measurements are performed in a single step. Generating measurement reports is easy with the R&S®InstrumentView software.

The battery lasts an entire work day on just one charge. The keypad is illuminated to facilitate working in dim environments. The leading-edge capacitive touchscreen of the R&S®Cable Rider ZPH is changing the way users interact with an analyzer – simply touch the screen to add markers and to change settings. These features and the ergonomic design make the R&S®Cable Rider ZPH ideal for fast and efficient on-site measurements.

Key facts

- Frequency range from 2 MHz to 3 GHz/4 GHz, upgrade via keycode
- DTF, return loss, VSWR and one-port cable loss measurements
- Ideal for field use: 9-hour battery life, 2.5 kg (5.5 lb), backlit keypad, fast boot time, non-reflective display, small form factor, ruggedized housing (IP51)
- Large color touchscreen
- Measurement wizard to speed up measurements and eliminate human errors
- Easy and cost-efficient upgrades of all options via software keycode

Backlit keypad for operation in dim environments.

R&S®Cable Rider ZPH cable and antenna analyzer

Benefits and key features

Fast
- Change settings quickly and easily
- Fastest measurement speed
- Fastest boot and warm-up times
- Fast measurements – no calibration required
- Fast deployment with the wizard function

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Efficient
- Single charge lasts entire work day
- Buy what you want when you need it
- One-step calibration
- Simplify measurements with the wizard function
- Remote control with Android or iOS apps

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Standard measurement modes
- Distance-to-fault measurement
- Distance-to-fault measurement and return loss: combined measurement
- Voltage standing wave ratio (VSWR) measurement
- One-port cable loss measurement
- Phase display
- Smith chart display

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Optional measurement modes
- Power measurements with power sensors
- Channel power meter
- Pulse measurements with power sensors

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Fast

Change settings quickly and easily

Thanks to its hybrid design, the analyzer can be operated as usual via the keys and rotary knob or alternatively via the touchscreen. The keys are large and widely spaced. This makes the analyzer ideal for operation with gloves and also minimizes the big finger problem.

The R&S®Cable Rider ZPH offers a new kind of user experience with its built-in sensitive capacitive touchscreen.

- Direct interaction with the elements on the screen
- Faster menu access
- Change frequency and span
- Add/move/delete markers
- Change other settings, etc.

Fastest measurement speed

The R&S®Cable Rider ZPH has extremely fast synthesizers that yield the shortest measurement time per data point (0.3 ms/point) for reflection measurements. The measurement speed is so fast that the measurement time is not compromised even when you set more data points to see details. With 2001 data points set, for example, the measurement time is only 0.6 s whereas other analyzers can take anywhere from 1.4 s to 30 s.

Fastest boot and warm-up times

Waiting a long time for an analyzer to boot and warm up can be frustrating. The R&S®Cable Rider ZPH boots up in less than 15 s and only needs 1 minute to warm up. This helps alleviate the frustration of waiting for the analyzer in order to start the first measurement.

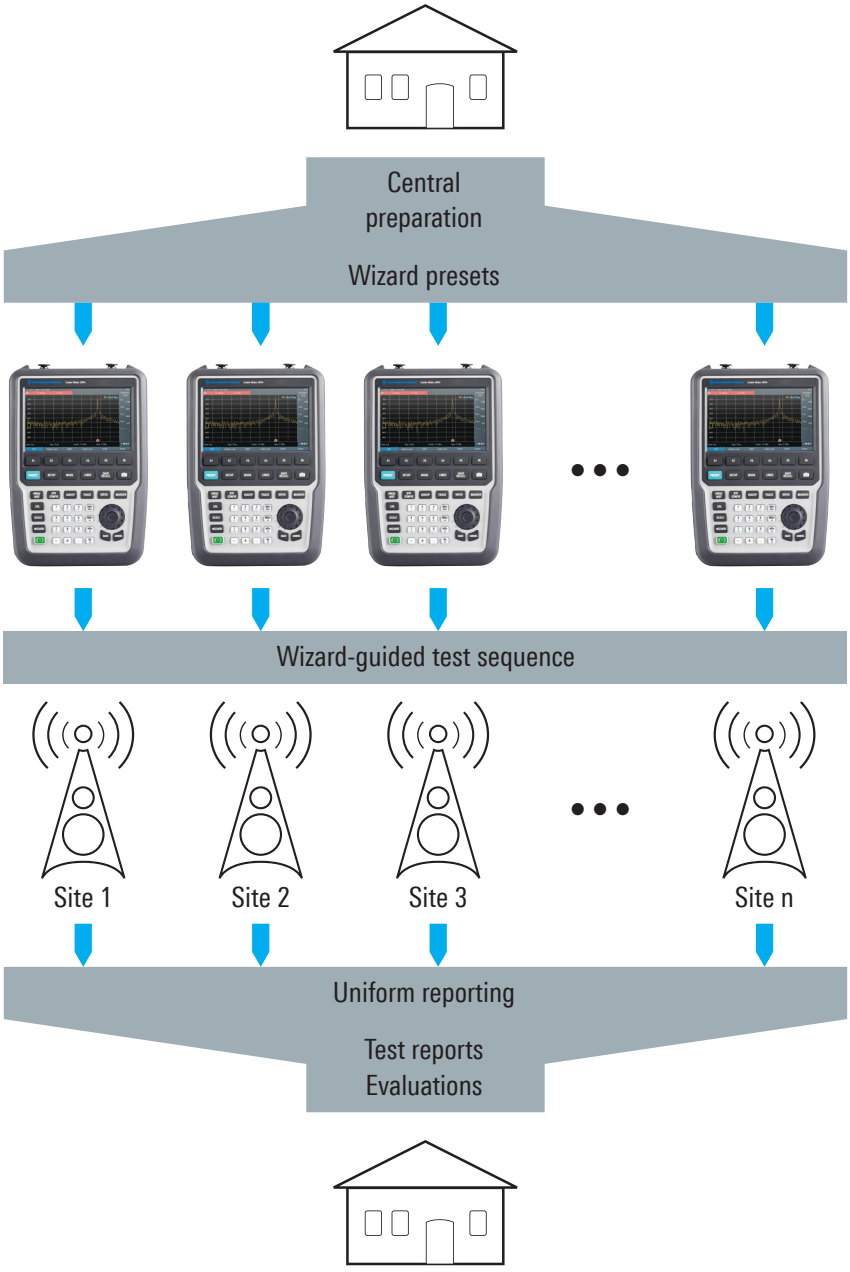
Fast measurements – no calibration required

Understanding the need to quickly perform measurements, the R&S®Cable Rider ZPH is factory-precalibrated over the supported frequency and temperature ranges. The factory calibration removes the drift error, which can be a hassle when you have to keep calibrating because the measured frequency and operating temperature change. No calibration reminder will pop up on the screen and interrupt measurements. The Rohde&Schwarz calibration lab performs stringent calibration during production to minimize measurement errors and provide reliable measurement results. A calibration certificate is included with the analyzer. When the calibration interval has lapsed, the analyzer can be sent back to Rohde&Schwarz for recalibration.

Fast deployment with the wizard function

For fast deployment, all settings and measurement steps can be preconfigured using the wizard function. The field technician only needs to execute the test sequences as shown on the display. The measurement instructions can be in pictorial form with short descriptions to provide clear step-by-step guidance for the field technician. The setting for each test sequence is preconfigured, eliminating the need to provide special dedicated operational training for the field technician. Since there is no need to change settings for different measurements, test time is reduced during installation and maintenance. For the same measurement at multiple sites, simply load the measurement set to all analyzers – fast deployment thanks to the wizard function.

Typical deployment setup with measurement preparation and postprocessing



Efficient

Single charge lasts the entire work day

With a single full charge, the R&S®Cable Rider ZPH will keep going an entire work day. Simply charge it for approximately 4 hours and the lithium-ion battery pack easily lasts 9 hours. The advantages of having a long lasting battery are obvious – no need to bring an extra battery with additional weight when climbing up a mast or tower, no frustration due to the battery power ending in the middle of the measurement.

Buy what you want when you need it

The basic unit supports frequencies from 2 MHz to 3 GHz. When you need frequencies up to 4 GHz, simply purchase the R&S®ZPH-B4 frequency upgrade option and enter the key code into the analyzer. The supported frequency range is instantly extended to 2 MHz to 4 GHz. It is not necessary to send the analyzer to the service lab for an upgrade or recalibration. No downtime and no need to buy a new analyzer just for frequency upgrading.

One-step calibration

Typically, calibration is not required if the DUT is connected directly to the analyzer. However, if there are additional cables or adapters connected in between the analyzer and the device under test (DUT), calibration is recommended to eliminate any influences.
During calibration, the analyzer calibrates with the OPEN, SHORT and LOAD standard. For convenient, one-step calibration, the R&S®ZN-Z103 calibration unit automatically switches internally between OPEN, SHORT and LOAD. This saves time and eliminates the hassle of physically changing the different calibration standards in the field.

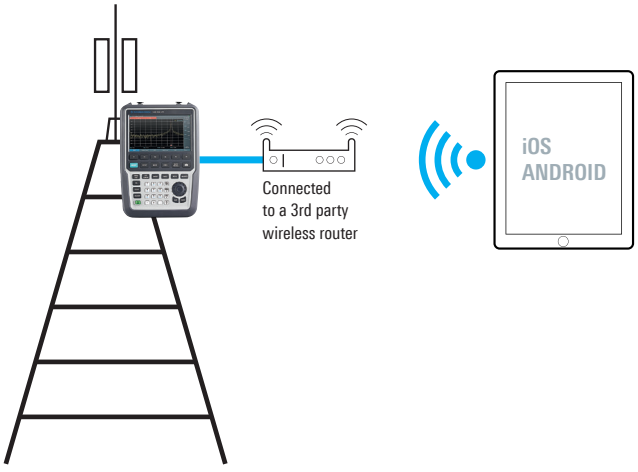
Simplify measurements with the wizard function

The measurement wizard simplifies measurements by automating, standardizing and optimizing test sequences. A sequence of standardized and recurring measurements can be performed quickly, easily and without mistakes. The proven wizard function helps eliminate human errors and helps the user make correct measurements from the beginning.

Remote control with Android or iOS apps

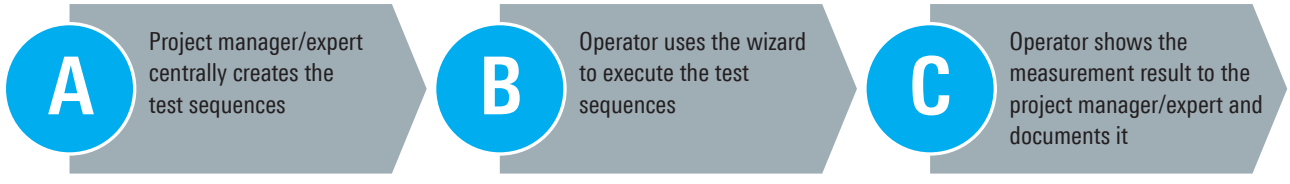
Not all qualified engineers are qualified climbers. An engineer on the ground might have to give the climber on the mast or tower instructions for every measurement step. Remote control of the R&S®Cable Rider ZPH solves this problem. Simply connect a commercially available wireless router [1] to the analyzer and use the apps on the phone or tablet to remote control the analyzer and fully control the measurements.

Application example of wireless remote operation via tablet



[1] The wireless router is not provided by Rohde&Schwarz.

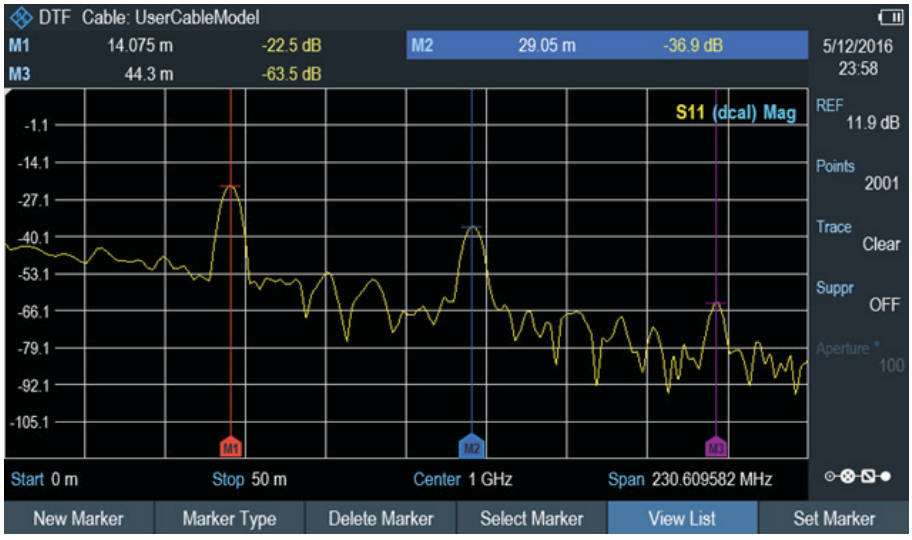
Three simple steps needed to work with the measurement wizard



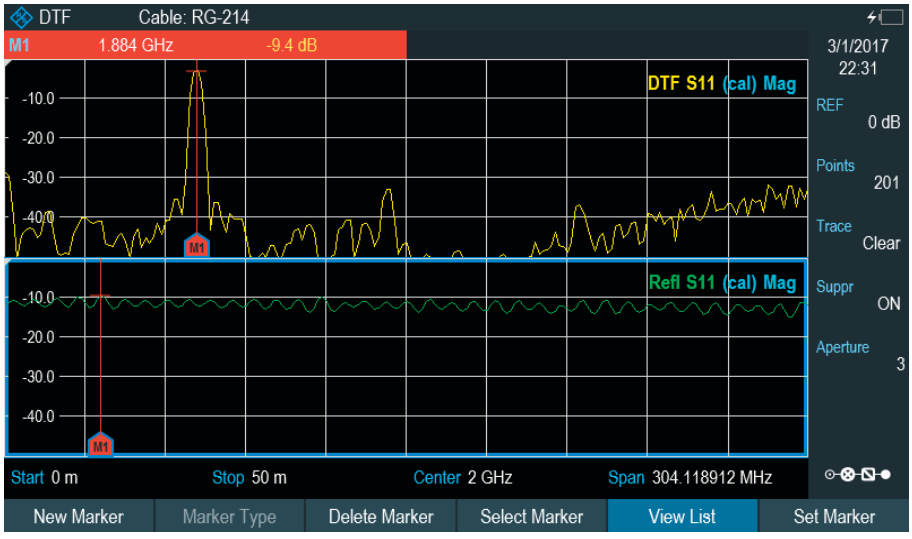
Front view


Power meter input
Two USB ports
RF out
Capacitive touchscreen with smartphone-like gestures
Softkey labels (on display)
Softkeys
System keys
DC connector (protected)
Built-in wizard
Screenshot key
LAN and mini USB ports (protected)
Power-On button (Fastest Boot-time)
Illuminated keypad
Large keys
Widely spaced
ROHDE&SCHWARZ
Cable Rider ZPH
Return Loss
SWR
Cable Loss
Smith
Phase
F1
F2
F3
F4
F5
F6
PRESET
SETUP
MODE
LINES
SAVE RECALL
FREQ/ DIST
DTF CONFIG
SWEEP
TRACE
MEAS
MARKER
CAL
SCALE
WIZARD
BACK
CANCEL

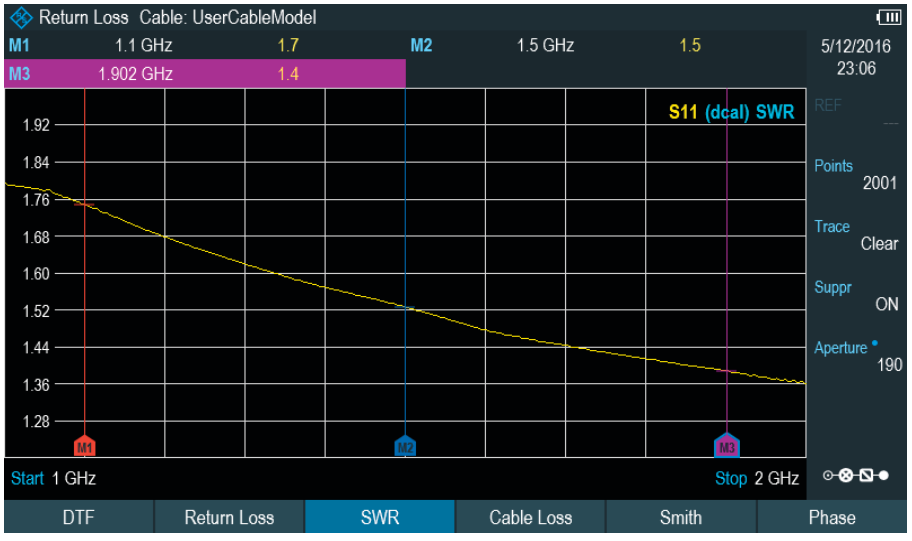
Standard measurement modes



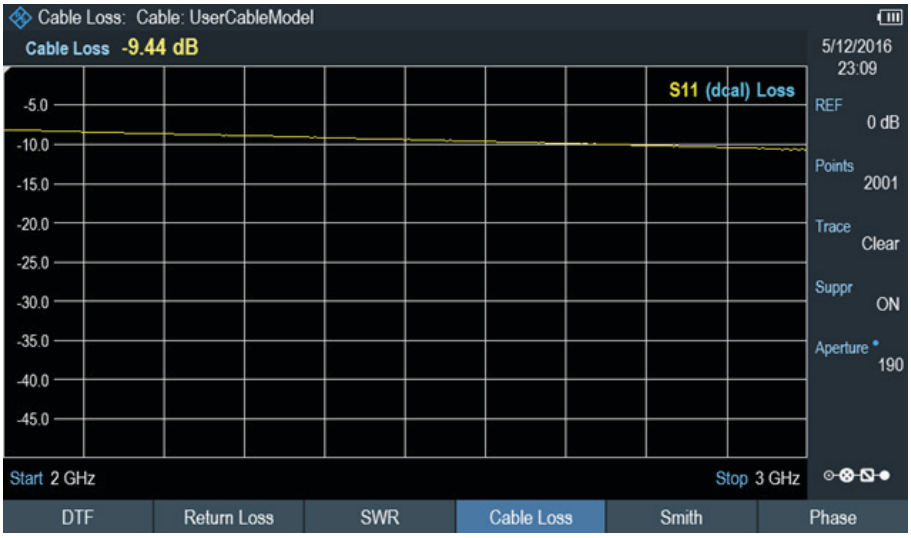
Distance-to-fault measurement.



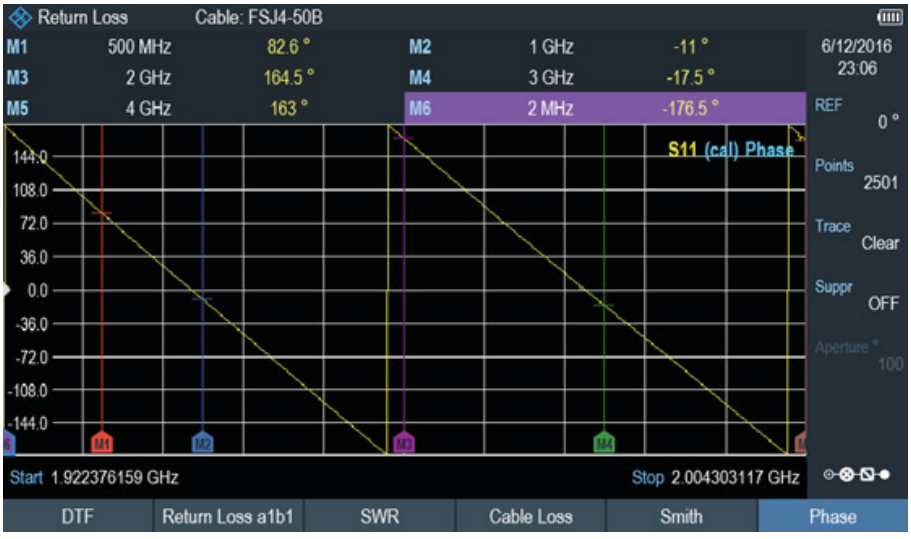
Distance-to-fault measurement and return loss: combined measurement.



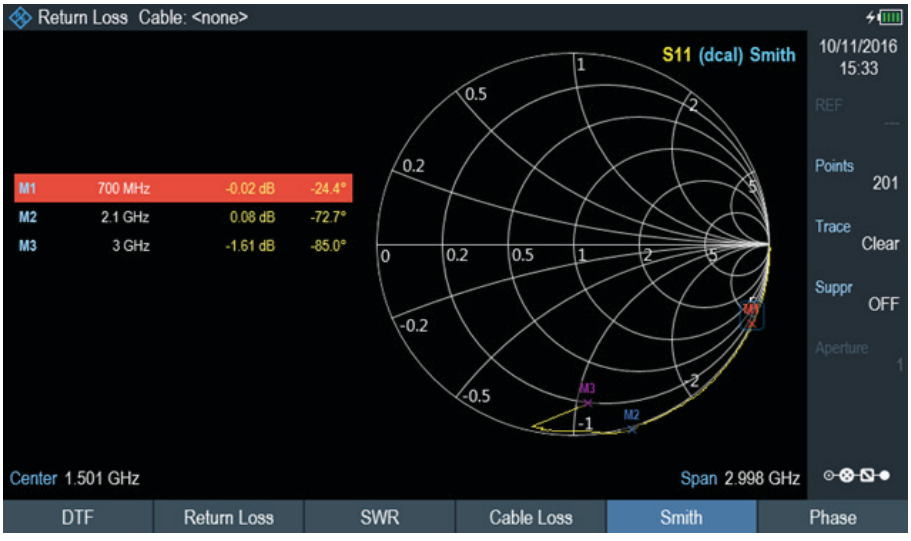
Voltage standing wave ratio (VSWR) measurement.



One-port cable loss measurement.



Phase display.

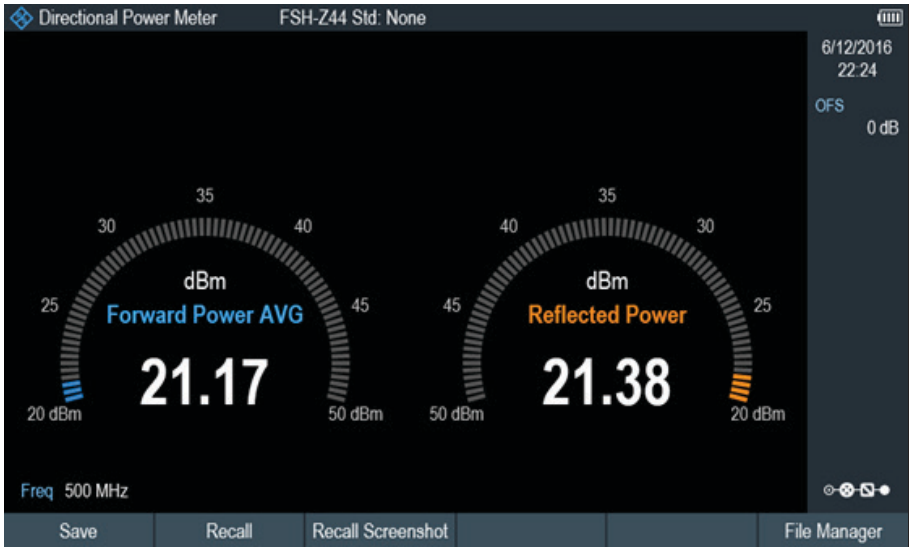


Smith chart display.

Optional measurement modes

Power measurements with power sensors

Some applications require very high accuracy to measure and align transmitter levels. The R&S®ZPH-K9 option allows the R&S®Cable Rider ZPH to perform 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.



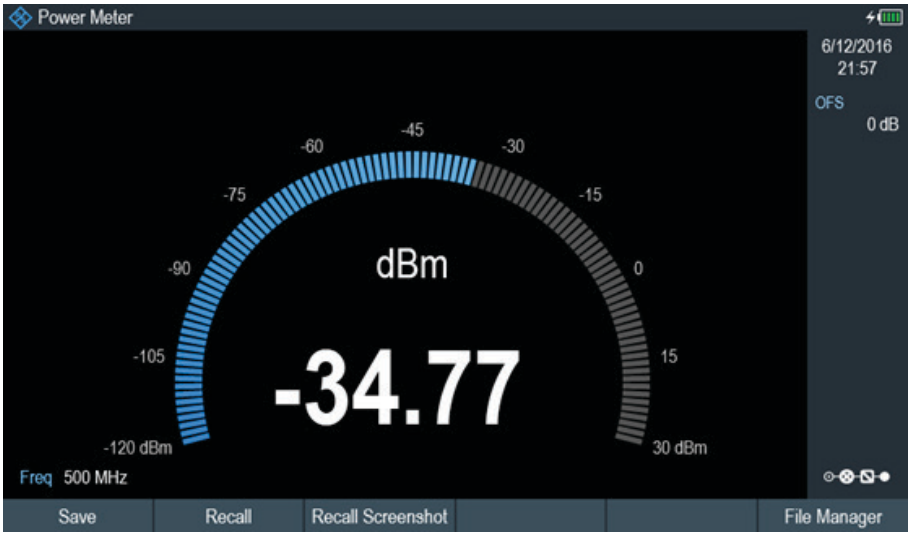
R&S®ZPH-K9 power sensor support.

Channel power meter

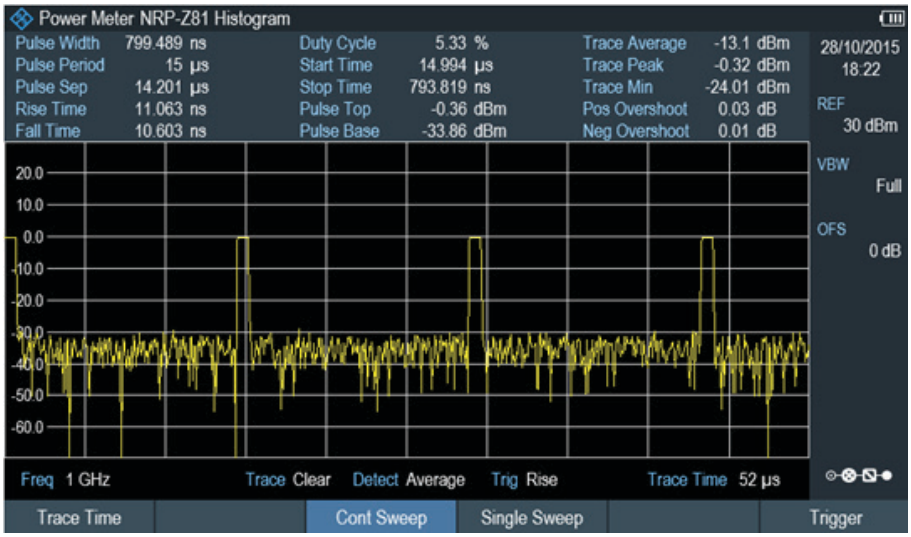
The R&S®ZPH-K19 channel power meter option converts the analyzer into a portable power meter with a level measurement accuracy of typically 0.5 dB. This option makes it possible to achieve power measurement results quickly and easily without a power sensor.

Pulse measurements with power sensors

The R&S®ZPH-K29 option enables precise pulse and peak power measurements using the R&S®Cable Rider ZPH together with a wideband power sensor from Rohde&Schwarz. The wideband power sensors measure pulses with a resolution of up to 50 ns and support frequencies up to 44 GHz. This option is useful when the R&S®Cable Rider ZPH is used to install and maintain radar transmitter systems.



R&S®ZPH-K19 channel power meter.



R&S®ZPH-K29 pulse measurement.

Specifications in brief

Specifications in brief		
Frequency range	R&S®Cable Rider ZPH	2 MHz to 3 GHz
	with R&S®ZPH-B4 option installed	2 MHz to 4 GHz
Frequency resolution		1 Hz
Individual measurements		reflection (S_{11})
		1-port cable loss
		distance-to-fault
Port output power	controlled via tracking generator attenuation	–10 dBm (nom.)
Maximum permissible spurious signal	measurement = reflection (S_{11})/one-port cable loss/distance-to-fault analysis	+17 dBm (nom.)
Data points	selectable	101 to 2501
Reflection measurement S_{11}		
Corrected directivity with R&S®ZN-Z103 option	2 MHz ≤ f ≤ 4 GHz (with R&S®ZPH-B4 option installed)	> 42 dB (nom.)
Measurement speed		0.3 ms/point
Result formats		magnitude, VSWR, magnitude and distance-to-fault, VSWR and distance-to-fault
1-port cable loss measurement		
Result format		magnitude
Range	selectable	1/2/5/10/20/50/100/120/150 dB
Distance-to-fault analysis		
Result formats		return loss (dB), VSWR
Fault resolution		(1.5 m × 108 m × velocity factor/span)
Maximum cable length	depending on cable loss	1500 m (nom.)
Maximum rated input levels		
DC voltage		50 V
CW RF power	port 1 (power meter input)	30 dBm
	port 2 (reflectometer input)	23 dBm
General data		
Display resolution	WVGA	800 × 480 pixel
Battery (R&S®HA-Z306 option)	capacity	72 Wh
	voltage	11.25 V (nom.)
	operating time with new, fully charged battery	9 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 3607.6638.22 and www.rohde-schwarz.com

Ordering information

Designation	Type	Order No.
Base unit (including accessories supplied such as power cable, manual)		
Handheld Cable and Antenna Analyzer, 2 MHz to 3 GHz	R&S®Cable Rider ZPH	1321.1211.02
Options		
Frequency Upgrade (3 GHz to 4 GHz)	R&S®ZPH-B4	1321.0380.02
GPS Support	R&S®ZPH-B10	1321.0396.02
Power Sensor Support	R&S®ZPH-K9	1321.0415.02
Channel Power Meter	R&S®ZPH-K19	1321.0409.02
Pulse Measurements with Power Sensor	R&S®ZPH-K29	1321.0421.02
External accessories (PC software, add-ons, peripherals, etc.)		
Calibration Unit	R&S®ZN-Z103	1321.1828.02
Combined Open/Short/50 Ω Load Calibration Standard, for calibrating the VSWR and DTF measurements, DC to 3.6 GHz	R&S®FSH-Z29	1300.7510.03
Soft Carrying Bag	R&S®HA-Z220	1309.6175.00
Hard Case	R&S®HA-Z321	1321.1357.02
Battery Charger for R&S®HA-Z306	R&S®HA-Z303	1321.1328.02
Lithium-Ion Battery Pack, 6.4 Ah	R&S®HA-Z306	1321.1334.02
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
USB Adapter Cable for R&S®FSH-Z14/R&S®FSH-Z44	R&S®FSH-Z144	1145.5909.02
Directional Power Sensor, 25 MHz to 1 GHz	R&S®FSH-Z14	1120.6001.02
Directional Power Sensor, 200 MHz to 4 GHz	R&S®FSH-Z44	1165.2305.02
Universal Power Sensor, 10 MHz to 8 GHz, 100 mW, two-path	R&S®NRP-Z211	1417.0409.02
Universal Power Sensor, 10 MHz to 18 GHz, 100 mW, two-path	R&S®NRP-Z221	1417.0309.02
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
Three-Path Diode Power Sensors, 100 pW to 200 mW, 10 MHz to 8 GHz	R&S®NRP8S	1419.0006.02
Three-Path Diode Power Sensors, 100 pW to 200 mW, 10 MHz to 18 GHz	R&S®NRP18S	1419.0029.02
Three-Path Diode Power Sensors, 100 pW to 200 mW, 10 MHz to 33 GHz	R&S®NRP33S	1419.0064.02
Three-Path Diode Power Sensors, 100 pW to 200 mW, 50 MHz to 40 GHz	R&S®NRP40S	1419.0041.02
Three-Path Diode Power Sensors, 100 pW to 200 mW, 50 MHz to 50 GHz	R&S®NRP50S	1419.0087.02
Thermal Power Sensors		
300 nW to 100 mW, DC to 18 GHz	R&S®NRP18T	1424.6115.02
300 nW to 100 mW, DC to 33 GHz	R&S®NRP33T	1424.6138.02
300 nW to 100 mW, DC to 40 GHz	R&S®NRP40T	1424.6150.02
300 nW to 100 mW, DC to 50 GHz	R&S®NRP50T	1424.6173.02
300 nW to 100 mW, DC to 67 GHz	R&S®NRP67T	1424.6196.02
300 nW to 100 mW, DC to 110 GHz	R&S®NRP110T	1424.6215.02
Average Power Sensors		
100 pW to 200 mW, 8 kHz to 6 GHz	R&S®NRP6A	1424.6796.02
100 pW to 200 mW, 8 kHz to 18 GHz	R&S®NRP18A	1424.6815.02
R&S®NRP-Zxx power sensors require the following adapter cable for operation on the R&S®Cable Rider ZPH		
USB Adapter Cable (passive), length: 2 m (78.7 in), to connect R&S®NRP-Zxx S/SN power sensors to the R&S®Cable Rider ZPH	R&S®NRP-Z4	1146.8001.02

Designation	Type	Order No.
R&S®NRP power sensors require the following adapter cable for operation on the R&S®Cable Rider ZPH		
USB Interface Cable, length: 1.5 m (59 in), to connect R&S®NRP sensors to the R&S®Cable Rider ZPH	R&S®NRP-ZKU	1419.0658.03
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

Warranty		
Base unit		3 years
All other items		1 year
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	

From pre-sale to service. At your doorstep.

The Rohde&Schwarz network in over 70 countries ensures optimum on-site support by highly qualified experts. User risks are reduced to a minimum at all stages of the project:

- Solution finding/purchase
- Technical startup/application development/integration
- Training
- Operation/calibration/repair

Service that adds value

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

Rohde&Schwarz

The Rohde&Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

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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Data without tolerance limits is not binding | Subject to change

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