

R&S® Cable Rider ZPH

Cable and Antenna Analyzer

Expect fast, expect efficient



R&S® Cable Rider ZPH Cable and Antenna Analyzer At a glance

The R&S® Cable Rider ZPH 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 and spectrum analysis. The easy-to-use analyzer features a touchscreen and large keypad designed for field use.

With its short boot and warm-up times and fast measurement speed, the R&S® Cable Rider ZPH gets down to analyzing extremely fast. 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.

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.

The battery lasts up to 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 change settings. These features and the ergonomic design make the R&S® Cable Rider ZPH ideal for fast and efficient on-site measurements.

Two different R&S® ZPH models are available to suit different needs, a pure one-port cable and antenna analyzer and a two-port model with additional spectrum analysis and tracking generator features.

Key facts

- Frequency range in cable and antenna analyzer mode from 2 MHz to 3 GHz or 4 GHz, upgrade via keycode
- Frequency range in spectrum analyzer mode from 5 kHz to 3 GHz or 4 GHz, upgrade via keycode
- One-port model features: DTF, return loss, VSWR and cable loss measurements
- Two-port model additionally features:
 - Two-port transmission measurement
 - Spectrum analysis
 - Interference analysis
 - Signal strength mapping
 - Modulation analysis
- Ideal for field use: up to 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 need 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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Model-specific measurement modes

- Spectrum analysis
- Tracking generator measurements
- Bias tee
- Signal generator
- Modulation analysis
- Interference analysis and signal strength mapping

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| Model selection guide | | |
|---|--------------------|--------------------|
| Feature | One-port model .02 | Two-port model .12 |
| Frequency upgrade to 4 GHz | • | • |
| Measurement wizard | • | • |
| R&S®InstrumentView support | • | • |
| R&S®MobileView support | • | • |
| DTF | • | • |
| Return loss and VSWR | • | • |
| Cable loss | • | • |
| Transmission (S_{21}) | – | • |
| Spectrum analysis, 5 kHz to 3 GHz or 4 GHz | – | • |
| Tracking generator capability | – | • |
| Signal generator capability | – | • |
| Internal bias tee | – | • |
| Ideal for cable and antenna measurement and troubleshooting | • | • |
| Ideal for verifying signal transmission | – | • |
| Ideal for interference hunting | – | • |

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®CableRider ZPH offers a new kind of user experience with its built-in sensitive capacitive touchscreen:

- Directly interact with the elements on the screen
- Access menus faster
- Change frequency and span
- Add/move/delete markers
- Change other settings, etc.

Fastest measurement speed

The R&S®CableRider 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®CableRider 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.



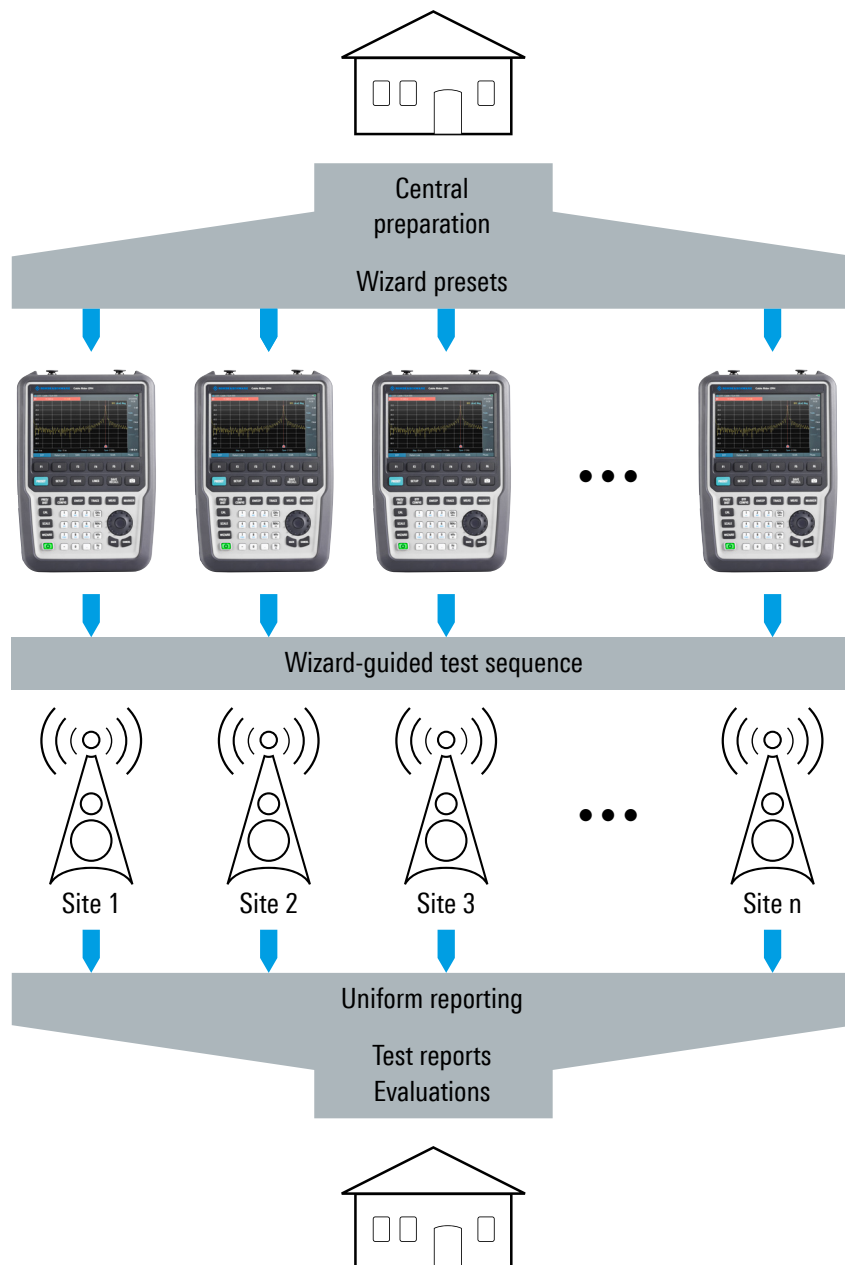
Fast measurements – no calibration required

Understanding the need to perform measurements quickly, the R&S®CableRider 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 settings for each test sequence are 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®CableRider ZPH will keep going an entire work day. Simply charge it for approximately 4 hours and the lithium-ion battery pack lasts up to 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 need when you need it

The base unit supports frequencies from 2 MHz to 3 GHz in cable and antenna analyzer mode and 5 kHz to 3 GHz in spectrum analyzer mode. When you need frequencies up to 4 GHz, simply purchase the R&S®ZPH-B4 frequency upgrade option and enter the keycode into the analyzer. The supported frequency range is instantly extended 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 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

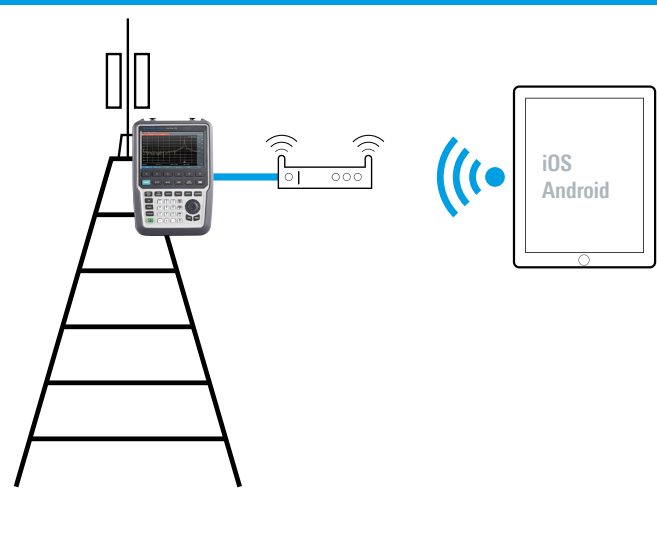
The measurement wizard simplifies measurements by automating, standardizing and optimizing test sequences. A sequence of standardized and recurring measurements can be performed quickly and easily without mistakes. The proven wizard function helps eliminate human errors and helps the user make correct 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®CableRider ZPH solves this problem. Simply connect a commercially available wireless router¹⁾ to the analyzer and use the apps on the phone or tablet to remote control the analyzer and fully control the measurements.

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

Application example of wireless remote operation via tablet



Three simple steps to work with the measurement wizard

A

Project manager/expert creates the test sequences

B

Operator uses the wizard to execute the test sequences

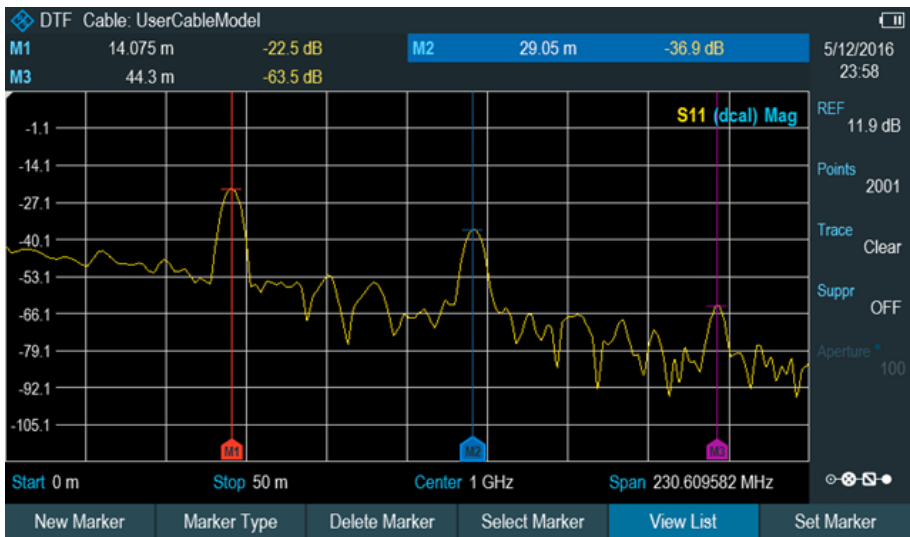
C

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

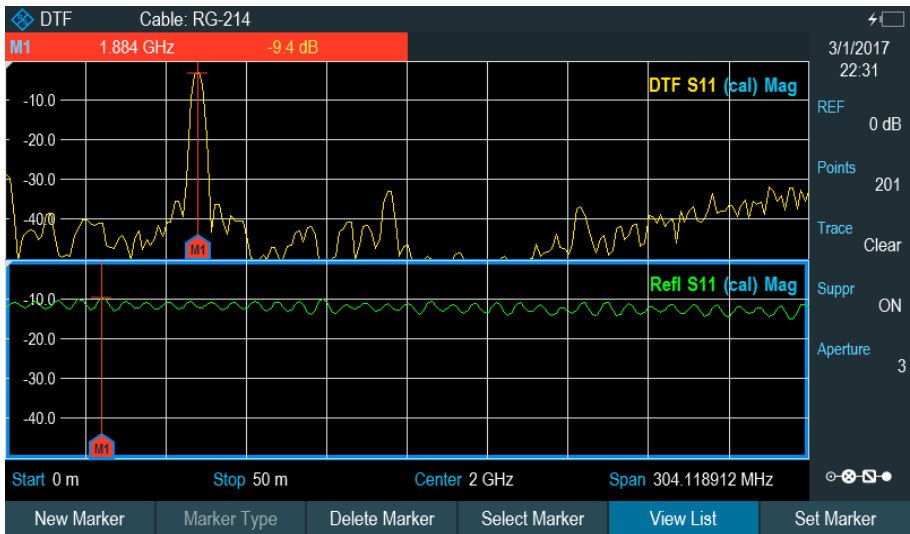
Front view



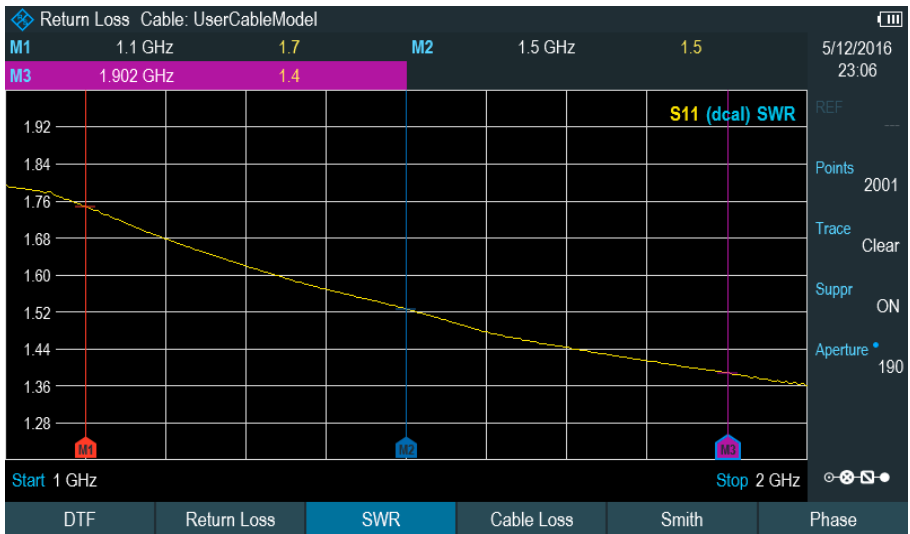
Standard measurement modes



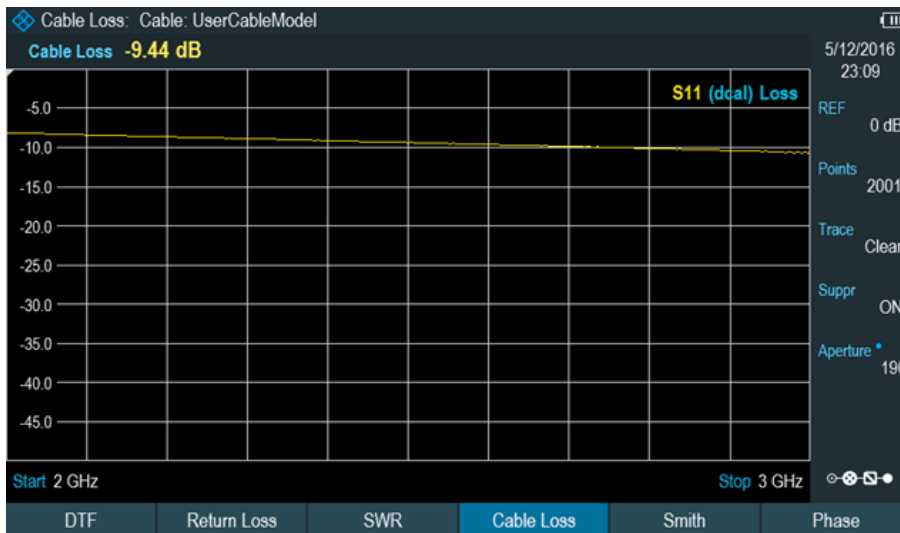
Distance-to-fault measurement



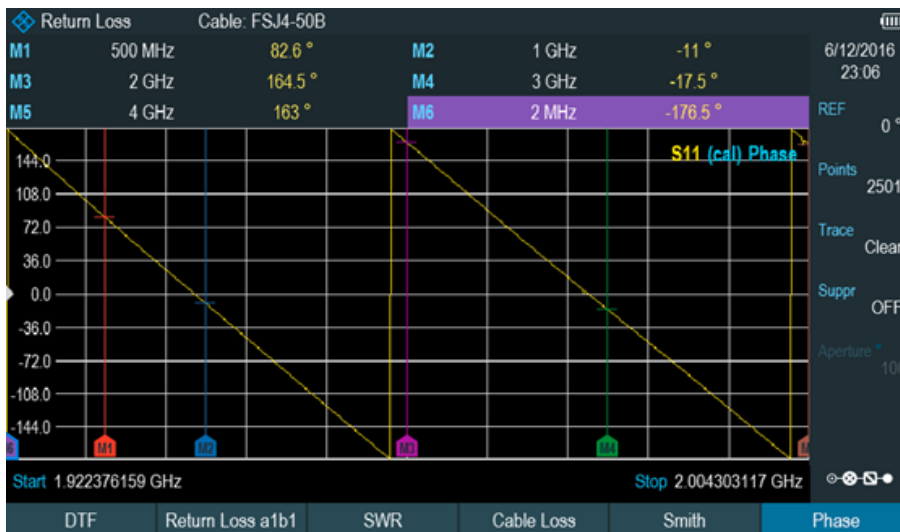
Distance-to-fault measurement and return loss:
combined measurement



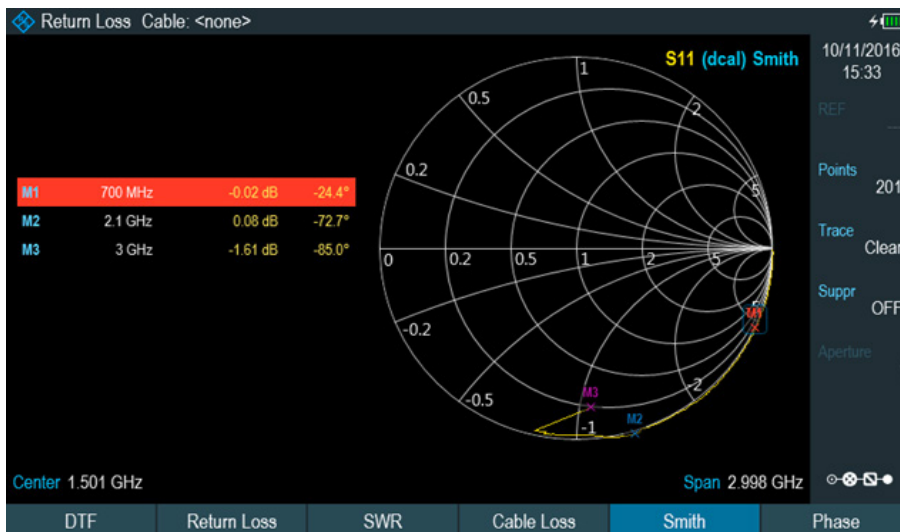
VSWR measurement



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 transmitting power. The R&S®ZPH-K9 option allows the R&S®CableRider 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.

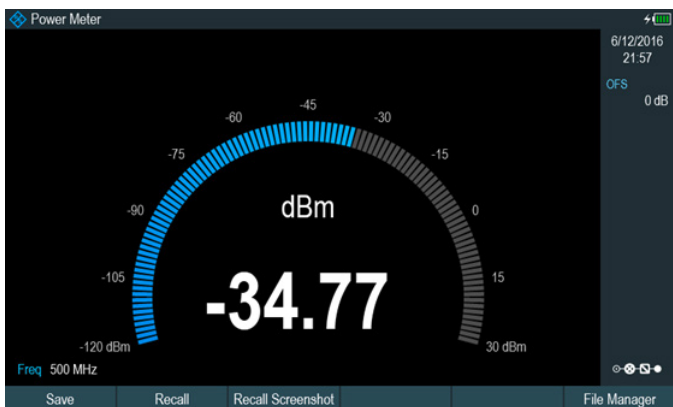
Channel power meter

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 needing a power sensor or the spectrum analyzer mode. This can help in applications such as checking power levels along the signal path of a field transmitter or verifying the power level of a design in the lab.

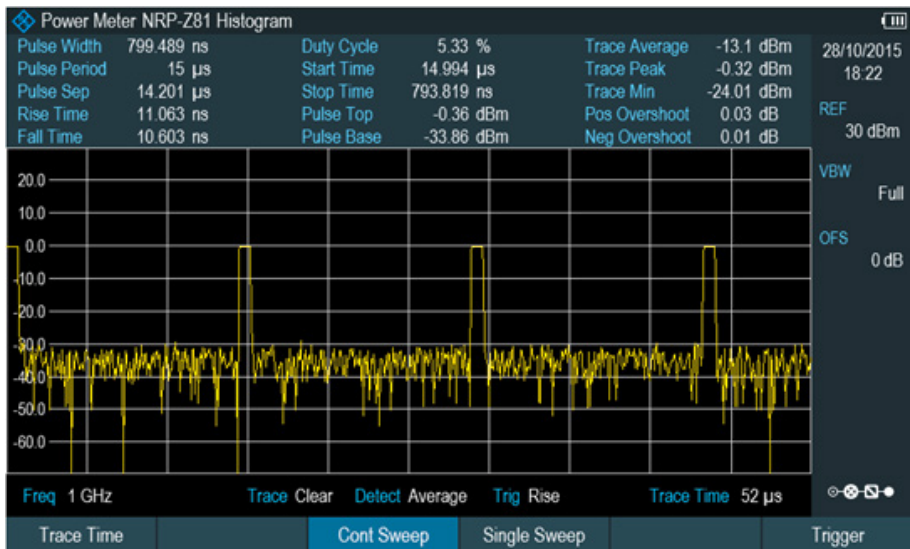
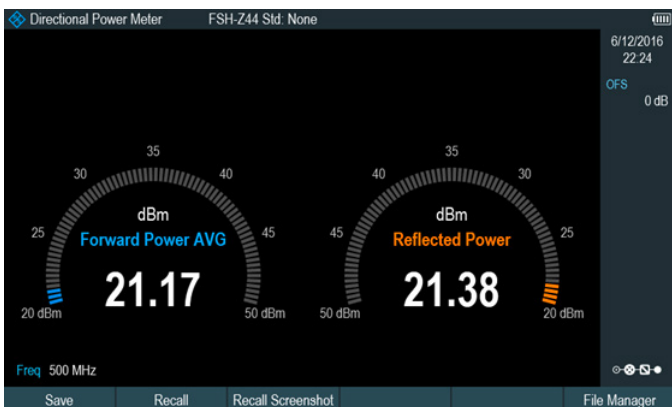
Pulse measurements with power sensors

The R&S®ZPH-K29 option enables precise pulse and peak power measurements using the R&S®ZPH CableRider together with a Rohde&Schwarz wideband power sensor. 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®CableRider ZPH is used to install and maintain radar transmitter systems.

R&S®ZPH-K19 channel power meter



R&S®ZPH-K9 power sensor support



R&S®ZPH-K29 pulse measurement

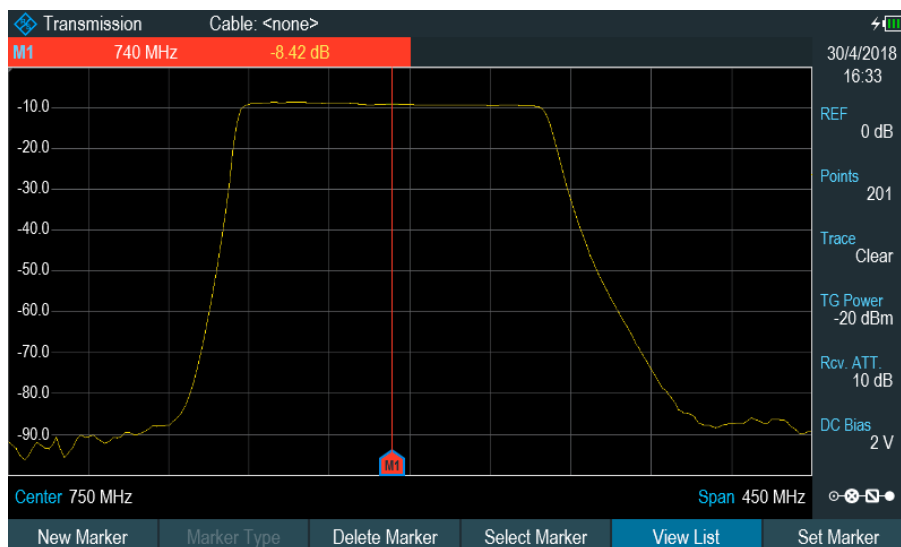
Model-specific measurement modes (two-port combi model)

In many cases, field engineers need multiple instruments to complete their tasks: a cable and antenna analyzer, a spectrum analyzer, a signal generator and a bias source. The two-port combi model R&S®CableRider ZPH now combines all of these instruments into one powerful box.

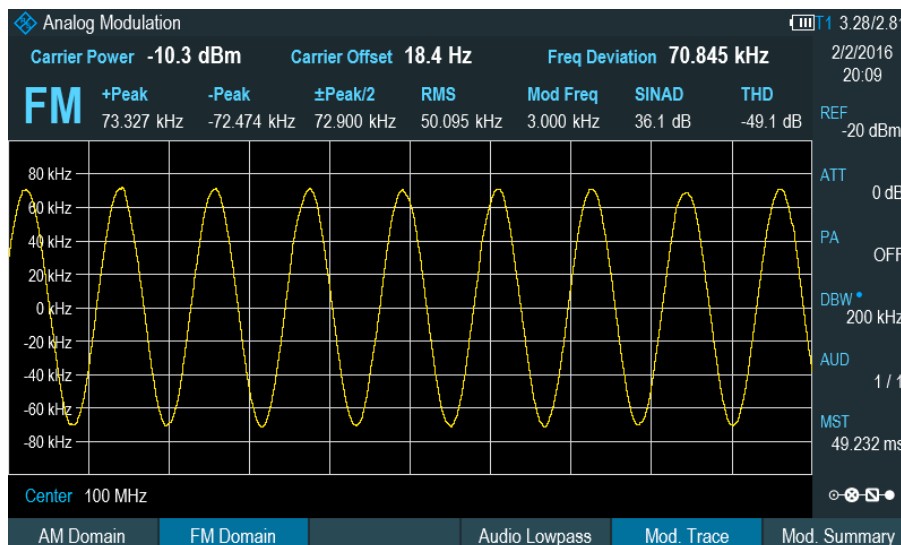
Spectrum analysis performance including tracking generator

With its high sensitivity (DANL of typ. < -146 dBm up to 3 GHz), the R&S®CableRider ZPH is a powerful and easy-to-use spectrum analyzer for RF diagnostics in the field, e.g. on antenna RF feed signals. The DANL can be further improved to typ. -163 dBm with the optional R&S®ZPH-B22 preamplifier. The R&S®ZPH features tracking generator functionality, which makes scalar transmission measurements possible, e.g. frequency response measurements on RF filters. Bias tees broaden the functionality even further, e.g. for measuring tower mounted amplifiers (TMA).

The R&S®ZPH can even utilize its unique independent signal source to operate as a continuous wave (CW) signal generator or as an independent tracking source for frequency conversion measurements.



Filter transmission measurement with the R&S®ZPH-K1 option



Analysis of a frequency-modulated signal with the R&S®ZPH-K7 modulation analysis option

Modulation analysis

The R&S®ZPH-K7 option converts the R&S®CableRider ZPH into a modulation analyzer to measure the quality of amplitude or frequency modulated signals. The analog modulation display shows the waveform as well as measurement parameters such as carrier power, carrier offset, modulation index (depth) for AM signals, frequency deviation for FM signals, SINAD and THD. The modulation summary display provides user-definable limits for each measurement. This feature is especially useful for installation and maintenance of AM/FM radio stations.

Basic digital modulation formats are used in many applications, e.g. near-field communications. The R&S®ZPH supports both ASK and FSK analysis. The digital modulation displays include trace, eye diagram, modulation error and symbol analysis. Specialized configuration presets for Bluetooth® Low Energy (Bluetooth® LE) and tire pressure monitoring systems (TPMS) are available, too. The R&S®ZPH-K7 option lets

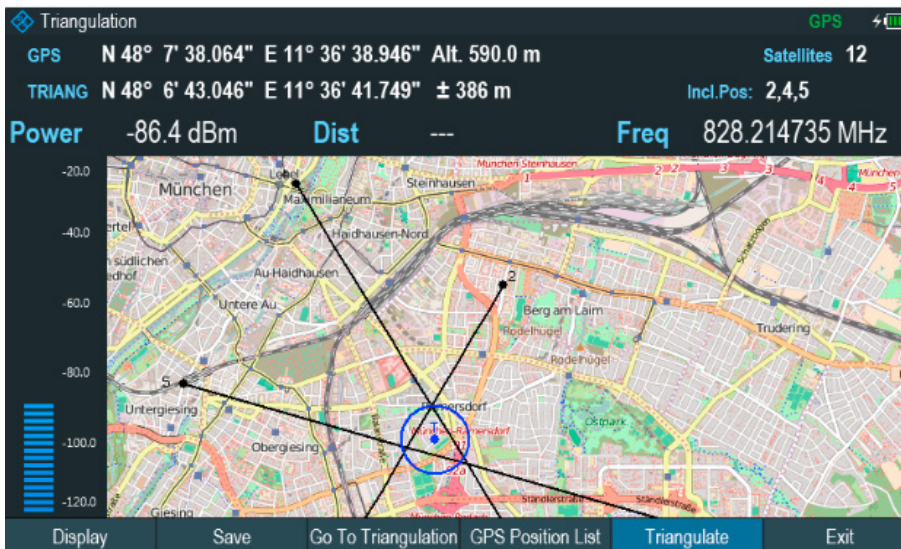
users easily verify the quality of the basic modulated signals

Interference analysis and signal strength mapping

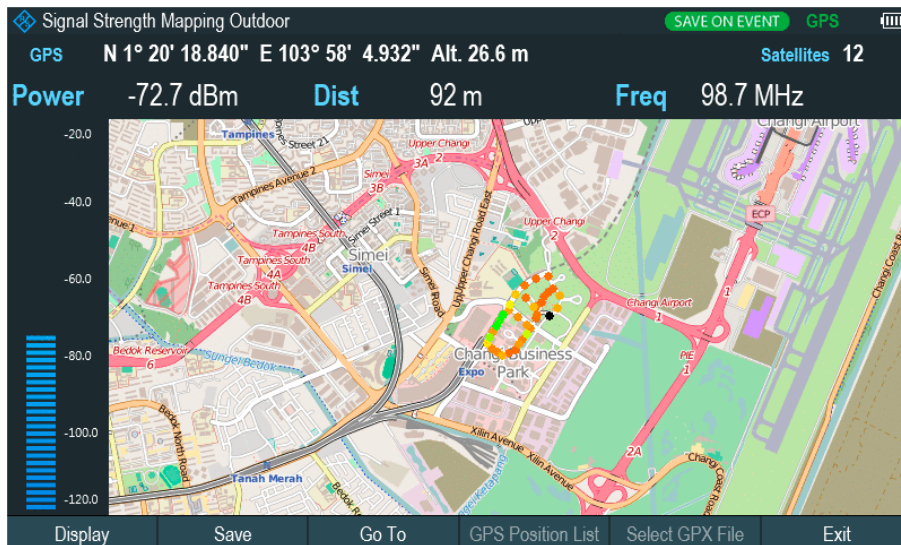
The R&S®ZPH-K15 interference analysis and R&S®ZPH-K16 signal strength mapping options are great tools for analyzing and locating ambiguous signals or interferers.

Long-term spectrogram recording allows up to 999 hours of on-air activity to be captured; the recording duration depends on the recording interval setting. The recorded data can be analyzed on the R&S®ZPH or with the R&S®InstrumentView software.

Signal strength mapping displays a pictorial view of the signal power level on an indoor or outdoor map. The color indicator provides a good estimation of the signal coverage in a particular area or where the interferer or intended signal is most likely located.



Locating a signal with the R&S®ZPH-K15 interference analysis option and the R&S®HE400 series directional antenna



Display of the interferer signal strength on the map with the R&S®ZPH-K16 signal strength mapping option

Specifications

Frequency

| | | |
|----------------------|----------------------------------|----------------|
| 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 |

| | | |
|---|------------------|---|
| Reference frequency, internal | | |
| Total reference accuracy | | $\pm(\text{time since last adjustment} \times \text{aging rate})$ + temperature drift + calibration accuracy |
| Aging per year | | $\pm 1 \times 10^{-6}$ |
| Temperature drift | 0 °C to +30 °C | $\pm 1 \times 10^{-6}$ |
| | +30 °C to +50 °C | $\pm 3 \times 10^{-6}$ |
| Achievable initial calibration accuracy | | $\pm 5 \times 10^{-7}$ |

Measurements

| | | |
|-------------------|-----------|---------------------------|
| Individual | | reflection (S_{11}) |
| | | 1-port cable loss |
| | | distance-to-fault |
| | model .12 | transmission (S_{21}) |

Measurement wizard

Guides the user through a sequence of individual measurements. Uses the R&S®Instrument View PC software to configure the measurement sequence including hints displayed on the screen. R&S®Instrument View is also used to combine the measurement results into user-configurable reports.

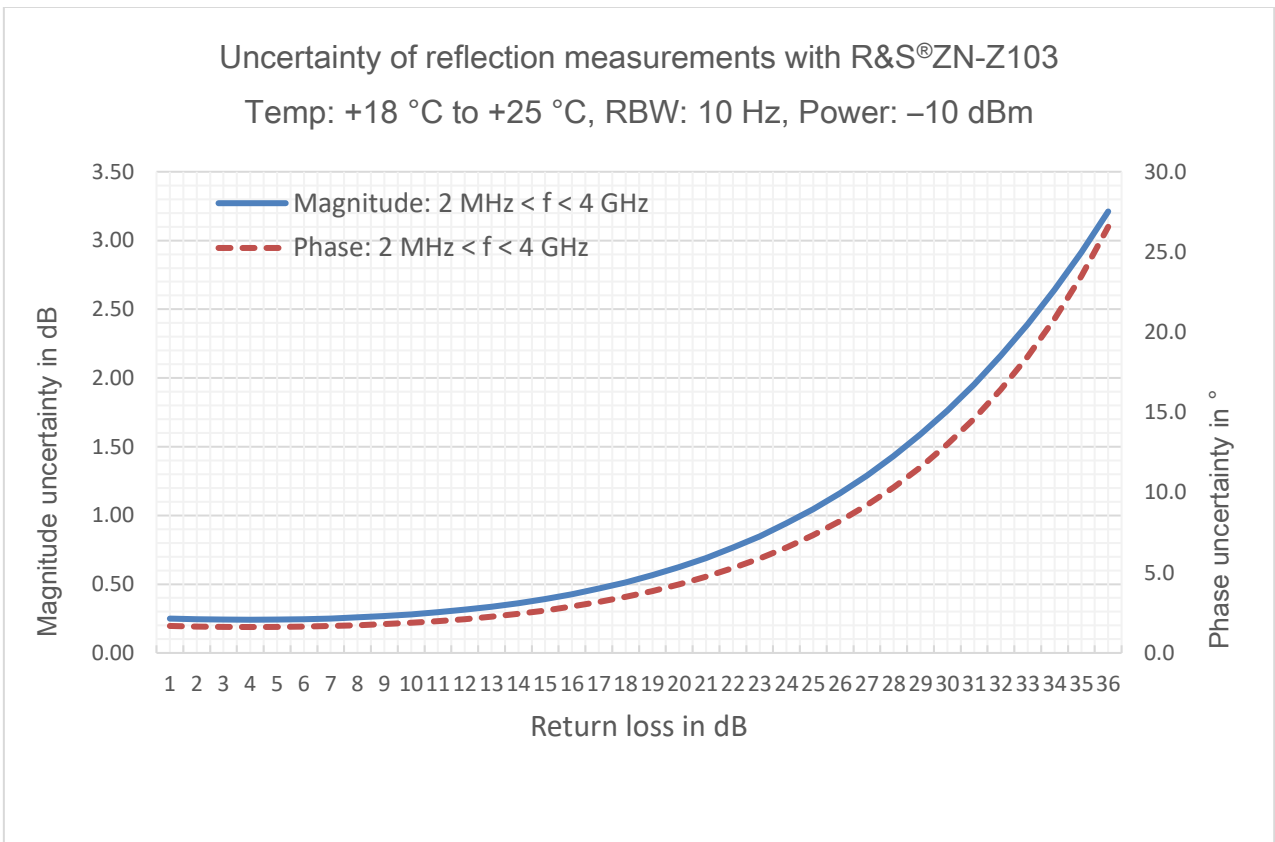
| | | |
|--------------------------|---------------------------------------|--|
| Measurement setup | | |
| Port output power | model .02 | –10 dBm (nom.) |
| | model .12 | –3 dBm to –30 dBm step 1 dB (nom.) |
| Data points | selectable | 101 to 2501 |
| Measurement bandwidth | reflection measurement (S_{11}) | 10 kHz |
| | transmission measurement (S_{21}) | 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, 1 MHz |
| Trace modes | | clear/write, average |

| | | |
|---|---------------------------|--|
| Reflection measurement S_{11} | | |
| Result formats | | magnitude, SWR, magnitude and distance-to-fault, SWR and distance-to-fault, smith chart, phase |
| Magnitude | | |
| Range | | 1/2/3/5/10/20/30/50/100/120/130/150 dB, linear 100 % |
| Resolution | | 0.1 dB |
| SWR | | |
| Range | selectable | 1 to 1.1/1.5/2/3/6/11/21/71 |
| Measurement speed | | 0.3 ms per point |
| Corrected directivity with R&S®ZN-Z103 | 2 MHz $\leq f \leq$ 4 GHz | > 42 dB (nom.) |
| Corrected test port match with R&S®ZN-Z103 | 2 MHz $\leq f \leq$ 4 GHz | > 36 dB (nom.) |
| Measurement uncertainty with R&S®ZN-Z103 | | see figure Uncertainty of reflection measurement |

| | | |
|--------------------------------------|------------|-----------------------|
| 1-port cable loss measurement | | |
| Result format | | magnitude |
| Range | selectable | 1/2/5/10/20/50/100 dB |
| Resolution | | 0.1 dB |

| Distance-to-fault analysis | | |
|----------------------------|-------------------------|--|
| Result formats | | return loss, SWR, split screen DTF and SWR, split screen DTF and return loss |
| Return loss | | |
| Range | | 1/2/3/5/10/20/30/50/100/120/130/150 dB, linear 100 % |
| Resolution | | 0.01 dB |
| SWR | | |
| Range | selectable | 1 to 1.1/1.5/2/3/6/11/21/71 |
| Fault resolution | | $(1.5 \times 10^8 \times \text{velocity factor}/\text{span})$ m |
| Maximum cable length | depending on cable loss | 1500 m (nom.) |

| Immunity to interference | | |
|-------------------------------------|--|----------------|
| Maximum permissible spurious signal | measurement = reflection (S_{11})/1-port cable loss/distance-to-fault analysis | |
| | | +17 dBm (nom.) |



Uncertainty of reflection measurement with R&S®ZN-Z103 calibration unit.

| Accuracy of reflection measurements | | |
|-------------------------------------|------------------|--------------------|
| 2 MHz to 4 GHz | 0 dB to –15 dB | < 0.3 dB or < 2.1° |
| | –15 dB to –25 dB | < 1.0 dB or < 7.5° |
| | –25 dB to –35 dB | < 3.1 dB or < 26° |

| Dynamic of transmission measurements (model .12 only) | | |
|---|-----------------------|----------------|
| RF Attenuation = 5 dB, tracking generator level = –3 dBm, RBW = 10k kHz | 100 kHz ≤ f < 20 MHz | > 60 dB (nom.) |
| | 20 MHz ≤ f < 1.5 GHz | > 90 dB (nom.) |
| | 1.5 GHz ≤ f < 2.5 GHz | > 70 dB (nom.) |
| | 2.5 GHz ≤ f < 4 GHz | > 60 dB (nom.) |
| | | |

Spectrum Analyzer (R&S®ZPH-K1 option, only model .12)

| | | |
|----------------------|---------------------------|----------------|
| Frequency range | R&S®Spectrum Rider | 5 kHz to 3 GHz |
| | with R&S®ZPH-B4 installed | 5 kHz to 4 GHz |
| Frequency resolution | | 1 Hz |

| | | |
|---|----------------|---|
| Reference frequency, internal | | |
| Aging per year | | 1×10^{-6} |
| Temperature drift | 0 °C to +50 °C | 1×10^{-6} |
| Achievable initial calibration accuracy | | 5×10^{-7} |
| Total reference uncertainty | | (time since last adjustment \times aging rate) + temperature drift + calibration accuracy |

| | | |
|-----------------------------------|----------------------------------|--|
| Frequency readout | | |
| Marker resolution | | 1 Hz |
| Uncertainty | | $\pm(\text{marker frequency} \times \text{reference uncertainty} + 10 \% \times \text{resolution bandwidth} + \frac{1}{2} (\text{span}/(\text{sweep points} - 1) + 1 \text{ Hz}))$ |
| Number of sweep (trace) points | | 711 |
| Marker tuning frequency step size | | span/710 |
| Frequency counter resolution | | 0.1 Hz |
| Count uncertainty | SNR > 25 dB | $\pm(\text{frequency} \times \text{reference uncertainty} + \frac{1}{2} (\text{last digit}))$ |
| Frequency span | | 0 Hz, 10 Hz to 3 GHz |
| | with R&S®ZPH-B4 option installed | 0 Hz, 10 Hz to 4 GHz |
| Span uncertainty | | 1 % (nom.) |

| | | |
|--|---------|---|
| Spectral purity SSB phase noise | | |
| Carrier offset | 30 kHz | $f = 500 \text{ MHz}$ |
| | 100 kHz | < -88 dBc (1 Hz), -95 dBc (1 Hz) (typ.) |
| | 1 MHz | < -98 dBc (1 Hz), -105 dBc (1 Hz) (typ.) |
| | | < -118 dBc (1 Hz), -125 dBc (1 Hz) (typ.) |

Sweep time

| | | |
|-------------|---|---|
| Sweep time | span = 0 Hz | 1 ms to 1000 s |
| | $10 \text{ Hz} \leq \text{span} \leq 600 \text{ MHz}$ | 20 ms to 1000 s |
| | span > 600 MHz | $20 \text{ ms} \times \text{span} / 1600 \text{ MHz}$ to 1000 s |
| Uncertainty | span = 0 Hz | 1 % (nom.) |
| | span $\geq 10 \text{ Hz}$ | 3 % (nom.) |

Bandwidths

| | | |
|------------------------------|---|-------------------------------------|
| Resolution bandwidths | | |
| Range | -3 dB bandwidth | 1 Hz to 3 MHz in 1/3 sequence |
| Bandwidth accuracy | $1 \text{ Hz} \leq \text{RBW} \leq 300 \text{ kHz}$ | < 5 % (nom.) |
| | $300 \text{ kHz} < \text{RBW} \leq 1 \text{ MHz}$ | < 10 % (nom.) |
| Selectivity 60 dB:3 dB | | < 5 (nom.), (Gaussian type filters) |
| Video filters | | |
| Range | -3 dB bandwidth | 1 Hz to 3 MHz in 1/3 sequence |

Level

| | | |
|--------------------------------------|---|----------------------------------|
| Display range | | displayed noise floor to +30 dBm |
| Maximum rated input level | | |
| DC voltage | | 50 V |
| CW RF power | | 33 dBm (= 2 W) |
| Peak RF power | duration < 3 s | 36 dBm (= 4 W) |
| Max. pulse voltage | | 150 V |
| Max. pulse energy | pulse width 10 µs | 10 mWs |
| Intermodulation | | |
| Third-order intercept (TOI) | 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.) |
| Second-harmonic intercept (SHI) | RF attenuation = 0 dB, RF preamplifier = off, signal level = –40 dBm | |
| | f _{in} = 20 MHz to 1.5 GHz | –60 dBc (nom.) |
| | f _{in} = 1.5 GHz to 2 GHz | –80 dBc (nom.) |
| Displayed average noise level | | |
| | 0 dB RF attenuation, termination 50 Ω, RBW = 1 kHz, VBW = 10 Hz, sample detector, log scaling, normalized to 1 Hz | |
| | frequency | preamplifier = off |
| | 1 MHz to 10 MHz | < –130 dBm, –135 dBm (typ.) |
| | 10 MHz to 1 GHz | < –142 dBm, –146 dBm (typ.) |
| | 1 GHz to 4 GHz | < –140 dBm, –144 dBm (typ.) |
| | frequency | preamplifier = on |
| | 1 MHz to 10 MHz | < –150 dBm, –160 dBm (typ.) |
| | 10 MHz to 3 GHz | < –158 dBm, –163 dBm (typ.) |
| | 3 GHz to 4 GHz | < –156 dBm, –161 dBm (typ.) |

| | | |
|--|--|--|
| Immunity to interference, nominal values | | |
| Image frequencies | f _{in} – 2 × 30.15 MHz | < –70 dBc (nom.) |
| | f _{in} – 2 × 830.15 MHz | < –70 dBc (nom.) |
| | f < 3 GHz, f _{in} – 2 × 830.15 MHz | < –70 dBc (nom.) |
| | f < 3 GHz, f _{in} – 2 × 4042.65 MHz | –60 dBc (nom.) |
| | f ≥ 3 GHz, f _{in} + 2 × 830.15 MHz | –60 dBc (nom.) |
| Intermediate frequencies | 30.15 MHz, 830.15 MHz, 4042.65 MHz | < –60 dBc (nom.) |
| Other interfering signals, signal level – RF attenuation < –30 dBm | f ≤ 3 GHz, spurious at f _{in} – 2021.325 MHz | < –60 dBc (nom.) |
| Other interfering signals, related to local oscillators | Δf ≥ 300 kHz | < –60 dBc (nom.) |
| Residual spurious response | f = receive frequency input matched with 50 Ω, without input signal, RBW ≤ 30 kHz, f ≥ 3 MHz, RF attenuation = 0 dB | < –90 dBm (nom.) |
| Level display | | |
| Logarithmic level axis | | 1/2/3/5/10/20/30/50/100/120/150 dB, 10 divisions |
| Linear level axis | | 0 % to 100 %, 10 divisions |
| Number of traces | | 2 |
| Trace detectors | | max. peak, min. peak, auto peak, sample, RMS |
| Trace functions | | clear/write, max. hold, min. hold, average, view |
| Setting range of reference level | | –130 dBm to +30 dBm |
| Units of level axis | | dBm, dBmV, dBµV, V, W |

| | | |
|--|--|------------------------|
| Level measurement uncertainty | | |
| Absolute level uncertainty at 100 MHz | +20 °C to +30 °C | < 0.3 dB |
| Frequency response (+20 °C to +30 °C) | 5 kHz ≤ f < 10 MHz | < 1.5 dB (nom.) |
| | 10 MHz ≤ f ≤ 4 GHz | < 1 dB |
| Attenuator uncertainty | | < 0.3 dB |
| Uncertainty of reference level setting | | < 0.1 dB (nom.) |
| Display nonlinearity | SNR > 16 dB, 0 dB to –50 dB, logarithmic level display | < 0.3 dB |
| Bandwidth switching uncertainty | reference: RBW = 10 kHz | < 0.1 dB (nom.) |
| 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 |

Trigger functions

| | | |
|----------------------------------|-----------------------|---------------------------|
| Trigger | | |
| Trigger source | | free run, video, external |
| External trigger level threshold | low → high transition | 2.4 V |
| | high → low transition | 0.7 V |
| | maximum | 3.0 V |

R&S® ZPH-K7 analog modulation analysis AM/FM (model .12 only)

| Measurement of analog modulation signals | | |
|--|----|--|
| Center frequency | | 10 MHz to 4 GHz |
| Demodulation bandwidth | | 2 MHz, 1 MHz, 500 kHz, 300 kHz, 200 kHz, 100 kHz, 50 kHz, 30 kHz, 20 kHz, 10 kHz (nom.) |
| Bandwidth accuracy | | < +/- 5% (nom.) |
| Display | AM | carrier power, carrier frequency offset, AM modulation depth, modulation frequency, THD, SINAD |
| | FM | carrier power, carrier frequency offset, FM deviation, modulation frequency, THD, SINAD |

| Carrier power | | |
|------------------------------------|--|--|
| Carrier power measurement accuracy | | add 0.2 dB, see section Level measurement uncertainty, |
| Display resolution | | 0.1 dB |

| AF (modulation frequency) ¹ | | |
|--|--|----------------------------------|
| Range | AM | 20 Hz to 100 kHz (nom) |
| | FM | 20 Hz to 200 kHz (nom) |
| Resolution | | 1 Hz |
| Measurement uncertainty | 1 kHz ≤ AF ≤ 200 kHz | ±(1 % of measured value) (nom.) |
| | 20 Hz ≤ AF < 1 kHz | ± 1 Hz (nom.) |
| AF filters | | |
| Lowpass | audio decimation | bypass, 1/10, 1/30, 1/100 (nom.) |
| De-emphasis | FM demodulation and demodulation bandwidth 200 kHz and 300 kHz | off, 50 µs, 75 µs (nom.) |

| AM demodulation ² | | |
|------------------------------|------------------|-------------------|
| Measurement range | modulation depth | 5% to 95 % (nom.) |
| Modulation depth uncertainty | | ±(4 %) (nom.) |

| FM demodulation ³ | | |
|------------------------------|---------------------|---|
| Measurement range | frequency deviation | 10 kHz to 400 kHz (nom.), max. 0.4 × demodulation bandwidth |
| Deviation uncertainty | | ±(0.04 × (AF + deviation)) (nom.) |

| Modulation distortion ^{1, 2, 3} | | |
|--|--|--|
| Measurement functions | | THD, SINAD |
| Measurement range | | -50 dB to 0 dB (THD) 0 dB to 50 dB (SINAD, AM) 0 dB to 40 dB (SINAD, FM) |
| Display resolution | | 0.1 dB |
| Measurement uncertainty | | 1 dB (nom.) |
| AF frequency range | | 20 Hz to 100 kHz (nom.) |

¹ Min. and max. detectable audio frequency and harmonics depend on the demodulation bandwidth and audio filter settings.

² Modulation frequency 1 kHz sine, AM modulation depth 50 %, carrier level 0 dBm, center frequency = 499 MHz, reference level 6 dBm, demodulation bandwidth = 20 kHz, SNR > 60 dB, audio filter = bypass.

³ Modulation frequency 1 kHz sine, FM-deviation = 75 kHz, carrier level 0 dBm, center frequency = 499 MHz, reference level 6 dBm, demodulation BW = 300 kHz, SNR > 60 dB, audio filter = 1/10, de-emphasis = off.

Channel power meter (R&S®ZPH-K19 option, model .02 only)

| | | |
|----------------------|--------------------------------------|--------------------|
| Frequency range | | 2 MHz to 3 GHz |
| | with R&S®ZPH-B4 option installed | 2 MHz to 4 GHz |
| Measurement range | | –20 dBm to +30 dBm |
| Measurement accuracy | +20 °C to +30 °C, 2 MHz ≤ f < 10 MHz | < 2 dB (nom.) |
| | +20 °C to +30 °C, 10 MHz ≤ f ≤ 4 GHz | < 0.8 dB |
| | –20 °C to +50 °C, 10 MHz ≤ f ≤ 4 GHz | < 1.2 dB |

Channel power meter (R&S®ZPH-K19 option, model .12 only)

| | | |
|---------------------------------------|----------------------------------|--|
| Frequency range | | 2 MHz to 3 GHz |
| | with R&S®ZPH-B4 option installed | 2 MHz to 4 GHz |
| Channel bandwidth | | 100 kHz to 1 GHz |
| Amplitude | | offset, dB relative, zeroing |
| Unit | | dBm, W |
| Limits | | on/off, upper limit, lower limit, beep on fail |
| Measurement range | | –120 dBm to +30 dBm |
| Level measurement uncertainty | | |
| Absolute level uncertainty at 100 MHz | +20 °C to +30 °C | < 0.3 dB |
| Frequency response (+20 °C to +30 °C) | 100 kHz ≤ f < 10 MHz | < 1.5 dB (nom.) |
| | 10 MHz ≤ f ≤ 4 GHz | < 1.25 dB |

Maximum rated input levels

| | | |
|----------------------------------|------------------------------|------------------|
| Maximum rated input level | | |
| DC voltage | | 50 V |
| CW RF power | port 1 (power meter input) | 30 dBm (= 1 W) |
| | port 2 (reflectometer input) | 23 dBm (= 0.2 W) |
| Peak RF power | < 3 s duration, port 1 | 33 dBm (= 2 W) |
| | < 3 s duration, port 2 | 26 dBm (= 0.4 W) |
| Max. pulse voltage | | 150 V |
| Max. pulse energy | pulse width 10 µs | 10 mWs |

Inputs and outputs

| | | |
|-----------------------------------|---------------------------------|-------------------------------------|
| Port 1: | | |
| Impedance | | 50 Ω |
| Connector | | N female |
| VSWR | 2 MHz ≤ f ≤ 4 GHz (model .02) | < 1.2 (nom.) |
| | 100 kHz ≤ f ≤ 1 GHz (model .12) | < 1.5 (nom.) |
| | 1 GHz < f ≤ 4 GHz (model .12) | < 2 (nom.) |
| Port 2: Reflectometer | | |
| Impedance | | 50 Ω |
| Connector | | N female |
| VSWR | 2 MHz ≤ f ≤ 4 GHz (model .02) | < 1.5 (nom.) |
| | 2 MHz ≤ f < 100 MHz (model .12) | < 2.0 (nom.) |
| | 100 MHz ≤ f ≤ 4 GHz (model .12) | < 1.5 (nom.) |
| DC bias (model .12 only) | | |
| Mode | | N- type or BNC |
| Output port | | port 2 |
| Output voltage | mode: internal | +2 V to +32 V in 0.1 V steps (nom.) |
| Accuracy | < +3V | < 1 V (nom) |
| | ≥ +3V | < 0.5 V (nom) |
| Maximum output power | mode: internal | |
| | operated with battery | 7 W |
| | operated with AC mains | 7 W |
| Maximum continuous output current | mode: internal | 650 mA |

Built-in GPS receiver (R&S®ZPH-B10 option, model .02 only)

| | | |
|-------------------------|--|-----------------------------|
| GPS location indication | | latitude, longitude, height |
|-------------------------|--|-----------------------------|

General data

| | | |
|-------------------------|---|---|
| Manual operation | | |
| Languages | | Chinese, Chinese Traditional, English, French, German, Italian, Hungarian, Japanese, Korean, Portuguese, Russian, Spanish |
| Remote control | | |
| Command set | | SCPI 1997.0 |
| LAN interface | | 10/100BASE-T, RJ-45 |
| USB | | mini B plug, version 2.0 |
| Display | | |
| Resolution | | WVGA, 800 × 480 pixel |
| Audio | | |
| Speaker | | internal |
| USB interface | | type A plug, version 2.0 |
| | number of interfaces | 2 |
| Mass memory | | |
| Mass memory | | USB stick/microSD card (not supplied) size ≤ 32 Gbyte, USB version 1.1 or 2.0 |
| Data storage | internal | > 160 instrument settings and traces |
| | on USB stick or microSD Card, ≥ 1 Gbyte | > 10000 instrument settings and traces |
| Temperature | operating temperature range | –20 °C to +50 °C |
| | storage temperature range | –40 °C to +70 °C |
| | battery charging mode | 0 °C to +40 °C |
| Climatic loading | relative humidity | +25 °/+55 °C at 95 % relative humidity (EN 60068-2-30) |
| | class of protection | IP51 |

| | | |
|------------------------------|------------|--|
| Mechanical resistance | | |
| Vibration | sinusoidal | EN 60068-2-6, MIL-PRF-28800F class 2 |
| | random | EN 60068-2-64, MIL-PRF-28800F class 2 |
| Shock | | 40 g shock spectrum, in line with MIL-STD-810F, method 516.4 procedure 1, MIL-PRF-28800F |

| | | |
|---|---|---|
| Power supply | | |
| R&S®HA-Z301 AC power supply | input specifications | 100 V to 240 V AC, 50 Hz to 60 Hz, 1.0 A to 0.5 A |
| | output specifications | 15 V, 2.67 A, max. 40 W |
| | operating temperature range | –30 °C to +60 °C |
| | storage temperature range | –40 °C to +85 °C |
| | test mark | CE, UL, PSE, TUV |
| External DC voltage | | 14.65 V to 15.45 V |
| Battery | R&S®HA-Z306 | lithium-ion battery |
| Capacity | | 72 Wh |
| Voltage | | 11.25 V (nom.) |
| Operating time with new, fully charged battery | model .02 | 9 h |
| | model .12 (default mode) | 6.5 h |
| | model .12 (spectrum analyzer mode) | 9 h |
| | instrument switched off or charge with R&S®HA-Z203 battery charger | 3.5 h |
| | instrument switched on | 4.5 h |
| Life time | charging cycles | > 80 % of more of its initial capacity after 300 charge/discharge cycles |
| Power consumption | | 8 W (meas.) (R&S®Cable Rider ZPH model .02) |
| | | 11 W (meas.) (R&S®Cable Rider ZPH model .12 – default mode) |
| | | 8 W (meas.) (R&S®Cable Rider ZPH model .12 – spectrum analyzer mode) |
| Safety | | IEC 61010-1, EN 61010-1, UL 61010-1 (Third Edition), CAN/CSA-C22.2 No. 61010.1-12 |
| Test mark | | VDE, CSA, CSA-NRTL |

| | | |
|---|-----------|--|
| EMC | | in line with European EMC Directive 2014/30/EU including |
| | | EN 61326-1 class B (emission) CISPR 11/EN 55011/group 1 class B (emission) EN 61326-1 table 2 (immunity, industrial) |
| Dimensions | W x H x D | 202 mm x 294 mm x 76 mm (8.0 in x 11.6 in x 3 in) |
| Weight | | 2.5 kg (5.5 lb) |
| Recommended calibration interval | | 1 year |

Equivalence of specifications for different R&S® ZPH part numbers

The specifications for part number 1321.1211.02 are equivalent to part number 1321.1211.52 and 1321.1211P01.

Ordering information

| Designation | Type | Order No. |
|---|---------------------|--------------|
| Handheld cable and antenna analyzer, 2 MHz to 3 GHz | R&S®Cable Rider ZPH | 1321.1211.02 |
| Handheld cable and antenna analyzer, 2 MHz to 3 GHz | R&S®Cable Rider ZPH | 1321.1211.12 |
| Accessories supplied | | |
| Lithium-ion battery pack, USB cable, AC power supply with country specific adapters for EU, GB, US, AUS, CH, getting started manual, side strap | | |

Options

| Designation | Type | Order No. |
|--|--------------------------|--------------|
| Cable and antenna analyzer frequency upgrade from 3 GHz to 4 GHz | R&S®ZPH-B4 | 1321.0380.02 |
| Spectrum analyzer (model .12 only) | R&S®ZPH-K1 | 1334.5604.02 |
| GPS support (model .02 only) | R&S®ZPH-B10 | 1321.0396.02 |
| Spectrum analyzer preamplifier (model .12 only) | R&S®ZPH-B22 ⁴ | 1334.5627.02 |
| Analog modulation analysis AM/FM (model .12 only) | R&S®ZPH-K7 ⁴ | 1334.5633.02 |
| Power sensor support | R&S®ZPH-K9 | 1321.0415.02 |
| Interference analysis (model .12 only) | R&S®ZPH-K15 ⁴ | 1334.5640.02 |
| Signal strength mapping (model .12 only) | R&S®ZPH-K16 ⁴ | 1334.5656.02 |
| Channel power meter | R&S®ZPH-K19 | 1321.0409.02 |
| Pulse measurements with power sensor | R&S®ZPH-K29 | 1321.0421.02 |

Accessories

| Designation | Type | Order No. |
|--|-------------|--------------|
| 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 |
| Battery charger for R&S®HA-Z306 ⁵ | R&S®HA-Z303 | 1321.1328.02 |
| Lithium-Ion battery pack, 6.4 Ah | R&S®HA-Z306 | 1321.1334.02 |
| Spare power supply, incl. mains plug for EU, GB,US, AUS, CH | R&S®HA-Z301 | 1321.1386.02 |
| Car adapter | R&S®HA-Z302 | 1321.1340.02 |
| Headphones | R&S®FSH-Z36 | 1145.5838.02 |
| Spare USB cable | R&S®HA-Z211 | 1309.6169.00 |
| Spare Ethernet cable | R&S®HA-Z210 | 1309.6152.00 |
| Soft carrying bag | R&S®HA-Z211 | R&S®HA-Z211 |
| Hard Case | R&S®HA-Z321 | 1321.1357.02 |
| Hard shell protective carrying case | R&S®RTH-Z4 | 1326.2774.02 |
| Carrying holster | R&S®HA-Z322 | 1321.1370.02 |
| Rainproof carrying holster | R&S®HA-Z322 | 1321.1370.03 |

Antennas and antenna accessories

| Designation | Type | Order No. |
|---|--------------|--------------|
| Handheld directional antenna (with antenna handle) | R&S®HE400BC | 4104.6000.04 |
| Cable set for R&S®HE400BC (R&S®HE300USB required) | R&S®HE400-KB | 4104.7770.04 |
| Handheld directional antenna (with antenna handle) | R&S®HE400 | 4104.6000.02 |
| Cable set for R&S®HE400 (R&S®HE300USB required) | R&S®HE400-K | 4104.7770.02 |
| HF antenna module, 8.3 kHz to 30 MHz | R&S®HE400HF | 4104.8002.02 |
| VHF antenna module, 20 MHz to 200 MHz | R&S®HE400VHF | 4104.8202.02 |
| UWB antenna module, 30 MHz to 6 GHz | R&S®HE400UWB | 4104.6900.02 |
| Log-periodic antenna module, 450 MHz to 8 GHz | R&S®HE400LP | 4104.8402.02 |
| Cellular antenna module, 700 MHz to 2500 MHz | R&S®HE400CEL | 4104.7306.02 |
| USB adapter | R&S®HE300USB | 4080.9440.02 |
| Log-periodic OEM antenna, 700 MHz to 4 GHz | R&S®HA-Z350 | 1321.1405.02 |
| Yagi antenna, 1710 MHz to 1990 MHz | R&S®HA-Z1900 | 1328.6825.02 |
| Yagi antenna, 824 MHz to 960 MHz | R&S®HA-Z900 | 1328.6283.02 |
| Portable EMF measurement system, hardcase | R&S®TS-EMF | 1158.9295.05 |
| Isotropic antenna, 30 MHz to 3 GHz, for R&S®TS-EMF | R&S®TSEMF-B1 | 1074.5719.02 |
| Isotropic antenna, 700 MHz to 6 GHz, for R&S®TS-EMF | R&S®TSEMF-B2 | 1074.5702.02 |
| Isotropic antenna, 9 kHz to 200 MHz, for R&S®TS-EMF | R&S®TSEMF-B3 | 1074.5690.02 |

⁴ Additional ZPH-K1 option is required to activate this option.

⁵ The battery charger is dedicated for charging an additional battery outside the instrument. The battery can be charged via the instrument as well.

| Designation | Type | Order No. |
|--|--------------|--------------|
| Converter cable | R&S®TSEMF-CV | 1158.9250.02 |
| RF cable (length: 1 m), DC to 6 GHz, N male/N male connectors | R&S®HA-Z901 | 3626.2757.02 |
| Carrying bag, for R&S®HA-Z900 or R&S®HA-Z1900 Yagi antenna | R&S®HA-Z902 | 1328.6883.02 |
| Compact probe set for E and H near-field measurements, 30 MHz to 3 GHz | R&S®HZ-15 | 1147.2736.02 |
| Near-field probe set H field | R&S®HZ-17 | 1339.4141.02 |
| Preamplifier (3 GHz, 20 dB), power adapter (100 V to 230 V), for R&S®HZ-15 | R&S®HZ-16 | 1147.2720.02 |
| 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 |

Power sensors supported by the R&S®Cable Rider ZPH ⁶

| Designation | Type | Order No. |
|---|--------------|--------------|
| 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, 2-path | R&S®NRP-Z211 | 1417.0409.02 |
| Universal power sensor, 10 MHz to 18 GHz, 100 mW, 2-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 sensor, 300 nW to 100 mW, DC to 18 GHz | R&S®NRP18T | 1424.6115.02 |
| Thermal power sensor, 300 nW to 100 mW, DC to 33 GHz | R&S®NRP33T | 1424.6138.02 |
| Thermal power sensor, 300 nW to 100 mW, DC to 40 GHz | R&S®NRP40T | 1424.6150.02 |
| Thermal power sensor, 300 nW to 100 mW, DC to 50 GHz | R&S®NRP50T | 1424.6173.02 |
| Thermal power sensor, 300 nW to 100 mW, DC to 67 GHz | R&S®NRP67T | 1424.6196.02 |
| Thermal power sensor, 300 nW to 100 mW, DC to 110 GHz | R&S®NRP110T | 1424.6215.02 |
| Average power sensor, 100 pW to 200 mW, 8 kHz to 6 GHz | R&S®NRP6A | 1424.6796.02 |
| Average power sensor, 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 for R&S®FSH-Z14/R&S®FSH-Z44 power sensors | R&S®FSH-Z144 | 1145.5909.02 |
| USB adapter cable (passive), length: 2 m, to connect R&S®NRP-Zxx S/SN power sensors to the R&S®Spectrum Rider FPH | R&S®NRP-Z4 | 1146.8001.02 |
| R&S®FSH-Z14 and R&S®FSH-Z44 power sensors require the following adapter cable for operation on the R&S®Cable Rider ZPH | | |
| USB interface cable, length: 1.5 m, to connect R&S®NRP sensors to the R&S®Spectrum Rider FPH | R&S®NRP-ZKU | 1419.0658.03 |

⁶ For average power measurements only.

Optical power sensors and accessories

| Designation | Type | Order No. |
|---|-------------|--------------|
| OEM USB optical power meter (Germanium) | R&S®HA-Z360 | 1334.5162.00 |
| OEM USB optical power meter (filtered InGaAs) | R&S®HA-Z361 | 1334.5179.00 |
| SC adapter for optical power meter | R&S®HA-Z362 | 1334.5185.00 |
| LC Adapter for optical power meter | R&S®HA-Z363 | 1334.5191.00 |
| 2.5 mm universal adapter for optical power meter | R&S®HA-Z364 | 1334.5204.00 |
| 1.25 mm universal adapter for optical power meter | R&S®HA-Z365 | 1334.5210.00 |
| Patch cord SC-LC SM, SX, length: 1 m | R&S®HA-Z366 | 1334.5227.00 |
| Patch cord SC-SC SM, SX, length: 1 m | R&S®HA-Z367 | 1334.5233.00 |

Service options

| | | |
|--|---------|---|
| Warranty | | |
| Base unit | | 3 years |
| All other items ⁷ | | 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 | |

Extended warranty with a term of one and two years (WE1 and WE2)

Repairs carried out during the contract term are free of charge ⁸. Necessary calibration and adjustments carried out during repairs are also covered.

Extended warranty with calibration coverage (CW1 and CW2)

Enhance your extended warranty by adding calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated, inspected and maintained during the term of the contract. It includes all repairs ⁸ and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

⁷ For options that are installed, the remaining base unit warranty applies if longer than 1 year. Exception: all batteries have a 1 year warranty.

⁸ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

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.

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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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R&S® Cable Rider ZPH Cable and Antenna Analyzer

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