R&S®ZNH
FULL TWO-PORT HANDHELD VECTOR NETWORK ANALYZER

Specifications

Specifications
Version 05.00

ROHDE&SCHWARZ
Make ideas real

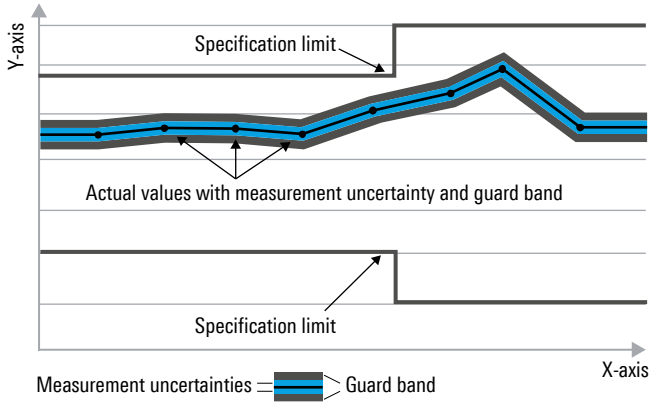
CONTENTS

Definitions

General
Product data applies under the following conditions:

- Three hours of storage at ambient temperature followed by 30 minutes of warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable

Specifications with limits
Represent warranted product performance by means of a range of values for the specified parameter. These specifications are marked with limiting symbols such as <, ≤, >, ≥, ±, or descriptions such as maximum, limit of, minimum. Compliance is ensured by testing or is derived from the design. Test limits are narrowed by guard bands to take into account measurement uncertainties, drift and aging, if applicable.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

Specifications without limits
Represent warranted product performance for the specified parameter. These specifications are not specially marked and represent values with no or negligible deviations from the given value (e.g. dimensions or resolution of a setting parameter). Compliance is ensured by design.

Typical data (typ.)
Characterizes product performance by means of representative information for the given parameter. When marked with <, > or as a range, it represents the performance met by approximately 80 % of the instruments at production time. Otherwise, it represents the mean value.

Nominal values (nom.)
Characterize product performance by means of a representative value for the given parameter (e.g. nominal impedance). In contrast to typical data, a statistical evaluation does not take place and the parameter is not tested during production.

Measured values (meas.)
Characterize expected product performance by means of measurement results gained from individual samples.

Uncertainties
Represent limits of measurement uncertainty for a given measurand. Uncertainty is defined with a coverage factor of 2 and has been calculated in line with the rules of the Guide to the Expression of Uncertainty in Measurement (GUM), taking into account environmental conditions, aging, wear and tear.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s).
Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications

Frequency

Impedance		50 Ω
Test port connector	R&S®ZNH4	type N, female
	R&S®ZNH8	type N, female
	R&S®ZNH18	type N, female
	R&S®ZNH26	3.5 mm, male
Number of test ports		2
Frequency range [1]	R&S®ZNH4	30 kHz to 4 GHz
	R&S®ZNH8	30 kHz to 8 GHz
	R&S®ZNH18	30 kHz to 18 GHz
	R&S®ZNH26	30 kHz to 26.5 GHz

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

Frequency resolution		1 Hz
Number of measurement points	per trace	3 to 16001
Measurement bandwidth	1/3/10 steps	10 Hz to 100 kHz
Measurement speed	preset mode, TransNorm P1/P2, number of points: 201, IF bandwidth: 100 kHz	761 µs per point

Measurements

Individual measurements		• reflection (S_{11}, S_{22}) • transmission (S_{21}, S_{12}) • one-port cable loss • distance-to-fault
Measurement wizard		
Guides the user through a sequence of individual measurements. Uses the R&S®InstrumentView PC software to configure the measurement sequence including hints displayed on the screen. R&S®InstrumentView is also used to combine the measurement results into user-configurable reports.		

Test port output		
Maximum port output power	30 kHz ≤ f ≤ 300 kHz	–10 dBm (meas.)
	300 kHz ≤ f ≤ 24 GHz	0 dBm (meas.)
	24 GHz ≤ f ≤ 26.5 GHz	–5 dBm (meas.)
Leveled port output power [2]	30 kHz ≤ f ≤ 300 kHz	–10 dBm to –25 dBm (nom.), in 1 dB steps
	300 kHz ≤ f ≤ 26.5 GHz	–5 dBm to –25 dBm (nom.), in 1 dB steps
Leveled port power accuracy	source power –10 dBm	
	10 MHz ≤ f < 13 GHz	1.0 dB (typ.)
	13 GHz ≤ f < 26.5 GHz	2.0 dB (typ.)
Leveled port power linearity	source power –10 dBm	
	10 MHz ≤ f < 8 GHz	0.3 dB (meas.)
	8 GHz ≤ f < 26.5 GHz	0.7 dB (meas.)

[1] Specified and typical data given in this data sheet apply to the R&S®ZNH4/R&S®ZNH8/R&S®ZNH18/R&S®ZNH26; note their respective frequency ranges.

[2] For S-parameter measurements, leveled port power range is recommended.

Test port input		
Measurement receiver linearity	referenced to –10 dBm, +10 dB	
	10 MHz ≤ f < 26.5 GHz	0.05 dB (meas.)
Measurement receiver power Measurement accuracy	at –10 dBm, RF attenuation 0 dB	
	10 MHz ≤ f < 26.5 GHz	0.5 dB (meas.)
Measurement receiver noise level	10 MHz ≤ f < 8 GHz	–125 dBm (1 Hz) (meas.)
	8 GHz ≤ f < 24 GHz	–118 dBm (1 Hz) (meas.)
	24 GHz ≤ f < 26.5 GHz	–115 dBm (1 Hz) (meas.)
Measurement receiver RF attenuation		0 dB to 15 dB, in 5 dB steps
Measurement receiver maximum linear input level	RF attenuation 0 dB	+10 dBm (nom.)

Dynamic range [3]	30 kHz ≤ f < 10 MHz	> 73 dB, 87 dB (typ.)
	10 MHz ≤ f < 8 GHz	> 90 dB, 100 dB (typ.)
	8 GHz ≤ f < 18 GHz	> 80 dB, 88 dB (typ.)
	18 GHz ≤ f < 20 GHz	> 75 dB, 90 dB (typ.)
	20 GHz ≤ f < 26 GHz	> 70 dB, 81 dB (typ.)
	26 GHz ≤ f < 26.5 GHz	> 68 dB, 83 dB (typ.)
Trace stability		
Trace noise magnitude (RMS)	maximum port output power, IF bandwidth = 1 kHz, 0 dB reflection, port terminated with short standard	
	30 kHz ≤ f < 8 GHz	< 0.003 dB, 0.0015 dB (typ.)
	8 GHz ≤ f < 15 GHz	< 0.004 dB, 0.0020 dB (typ.)
	15 GHz ≤ f < 26.5 GHz	< 0.006 dB, 0.0040 dB (typ.)
Trace noise phase (RMS)	maximum port output power, IF bandwidth = 1 kHz, 0 dB reflection, port terminated with short standard	
	30 kHz ≤ f < 8 GHz	< 0.05°, 0.015° (typ.)
	8 GHz ≤ f < 26.5 GHz	< 0.06°, 0.025° (typ.)
Temperature dependence	at 0 dB reflection	
	30 kHz ≤ f < 26.5 GHz	
	magnitude	0.04 dB/K (meas.)
	phase	0.2°/K (meas.)

Reflection and transmission measurements		
Trace modes		clear/write, average, interference suppression
Result format		dB magnitude, phase, unwrapped phase, Smith, linear magnitude, real, imaginary, SWR, polar, group delay
Measurement range		–120 dB to +30 dB
dB magnitude		
Range	selectable	1/2/3/5/10/20/30/50/100/120/130/150 dB
Resolution		0.01 dB
Linear magnitude		
Range	selectable	0 to 0.2/0.5/1/2/5/10/20/50/100/200
Resolution		0.01
SWR		
Range	selectable	1 to 1.1/1.5/2/3/6/11/21 or 71
Resolution		0.01
Phase		
Range	selectable	90/180/360/1000° to 100000°, in 1/2/5 steps
Resolution		0.01°
Smith, polar		
Range		1
Resolution		0.01

[3] The dynamic range is defined as the difference between maximum source power and the RMS value of the data trace of the transmission magnitude, which is produced by noise and crosstalk with the test ports short-circuited. The specification applies at 300 Hz IF bandwidth, without system error correction.

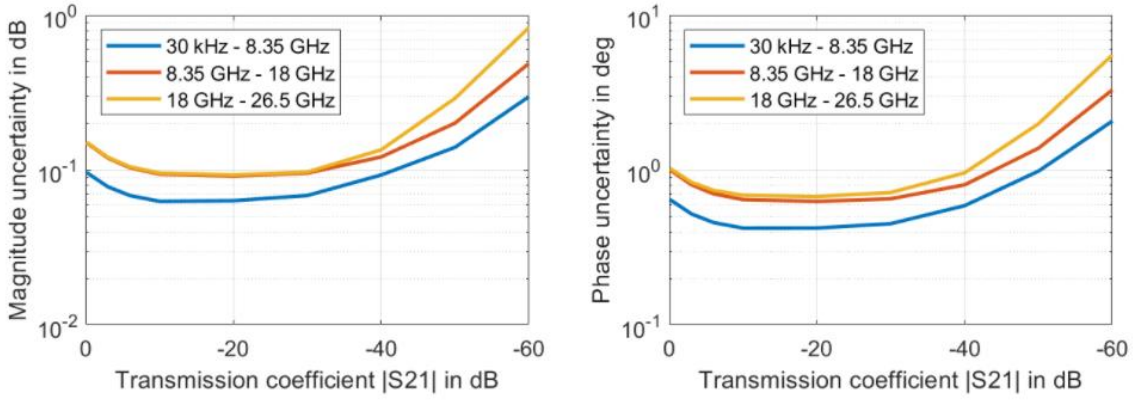
One-port cable loss measurement		
Result format		magnitude
Range	selectable	1/2/5/10/20/50/100 dB
Resolution		0.01 dB

Distance-to-fault and time domain reflectometry analysis		
Result formats		DTF, TDR, split screen DTF and return loss, split screen DTF and TDR
Return loss		
Range		1/2/3/5/10/20/30/50/100/120/130/150 dB
Resolution		0.01 dB
VSWR		
Range	selectable	1 to 1.1/1.5/2/3/6/11/21 or 71
Fault resolution		(1.5 m × 10^8 × velocity factor / span)
Maximum cable length	depending on cable loss	1500 m (nom.)
DTF transform type		bandpass impulse
TDR transform type		low pass step
Windowing		normal (Hann)

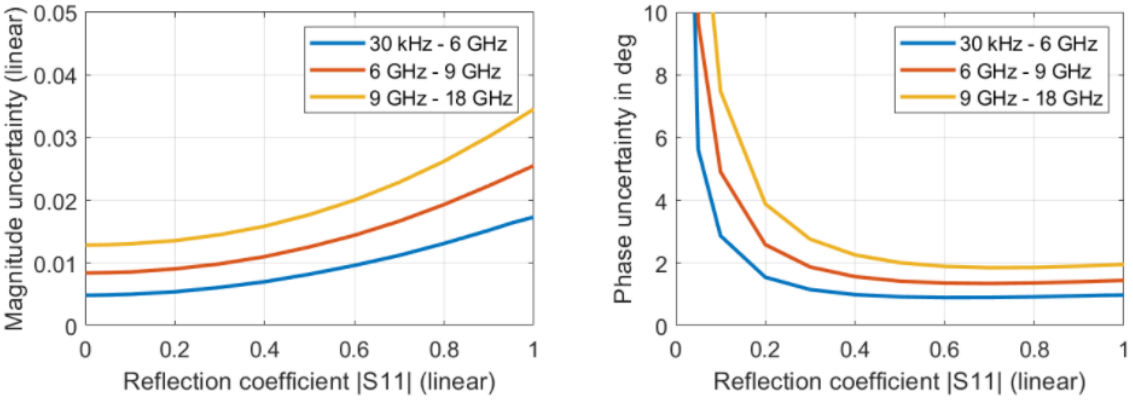
Trigger		
Trigger source		free run, external
Input port		BNC
External trigger level threshold	low → high transition	2.4 V
	high → low transition	0.7 V
	maximum	3.0 V

Measurement accuracy of the R&S®ZNH4, R&S®ZNH8, R&S®ZNH18

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZN-Z170 calibration kit and TOSM/SOLT calibration. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).



Transmission uncertainty, measurement bandwidth of 100 Hz, nominal source power of –10 dBm and a coverage factor of k = 1 (67 % confidence interval)



Reflection uncertainty, measurement bandwidth of 10 Hz, nominal source power of –10 dBm and a coverage factor of k = 1 (67 % confidence interval)

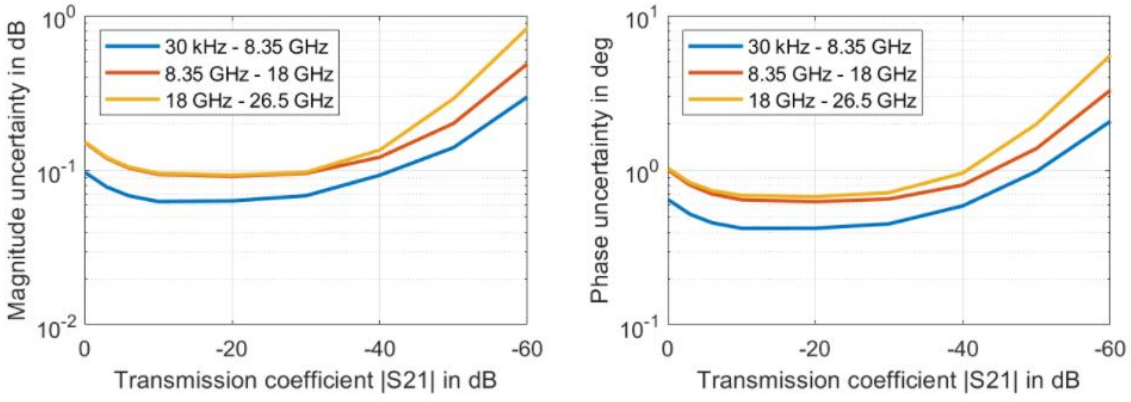
Effective system data of the R&S®ZNH4, R&S®ZNH8, R&S®ZNH18

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZN-Z170 calibration kit and TOSM/SOLT calibration. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed). This data is valid for a coverage factor of k = 1 (67% confidence interval).

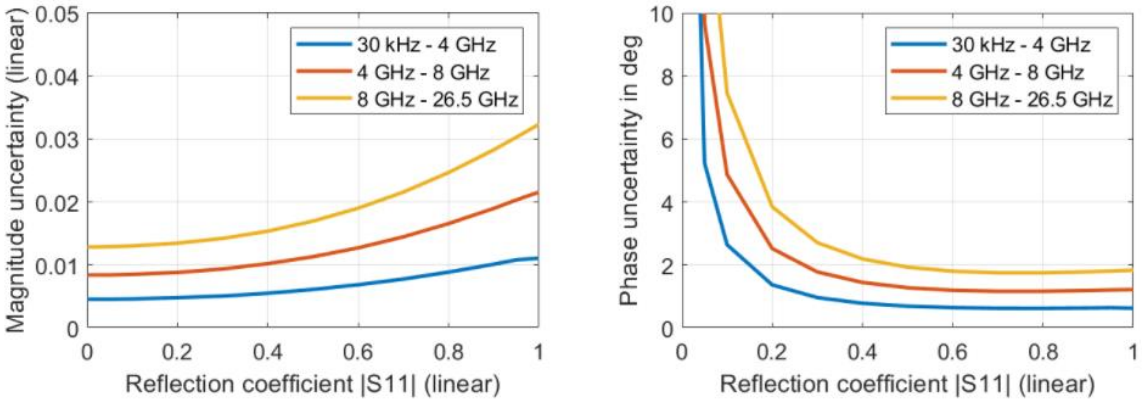
Effective system data in dB using R&S®ZN-Z170	**to 6 GHz**	**to 9 GHz**	**to 18 GHz**
Directivity	48	45	41
Source match	38	35	32
Reflection tracking	0.1	0.15	0.2
Load match	47	41	38
Transmission tracking	0.02	0.02	0.04

Measurement accuracy of the R&S®ZNH26

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZN-Z135 calibration kit and TOSM/SOLT calibration. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).



Transmission uncertainty, measurement bandwidth of 100 Hz, nominal source power of –10 dBm and a coverage factor of k = 1 (67 % confidence interval)



Reflection uncertainty, measurement bandwidth of 10 Hz, nominal source power of –10 dBm and a coverage factor of k = 1 (67 % confidence interval)

Effective system data of the R&S®ZNH26

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZN-Z135 calibration kit and TOSM/SOLT calibration. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed). This data is valid for a coverage factor of k = 1 (67 % confidence interval).

Effective system data (dB) using R&S®ZN-Z135	**to 4 GHz**	**to 8 GHz**	**to 26.5 GHz**
Directivity	48	44	41
Source match	42	36	33
Reflection tracking	0.05	0.11	0.16
Load match	48	42	38
Transmission tracking	0.01	0.015	0.035

Maximum rated input levels

DC voltage		50 V
CW RF power	port 1	23 dBm (= 0.2 W)
	port 2	23 dBm (= 0.2 W)

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, external headphone supported
USB interface		2 × type A plug, version 2.0
Mass memory		USB flash drive/microSD card (not supplied); size ≤ 32 Gbyte, USB version 1.1 or 2.0
Data storage	internal	> 160 instrument settings and traces
	on USB flash drive or microSD card, ≥ 1 Gbyte	> 10000 instrument settings and traces
Temperature range	operating temperature	–10 °C to +55 °C
	storage temperature	–20 °C to +50 °C
	battery charging mode	0 °C to +40 °C
Climatic loading	relative humidity	+25 °C/+55 °C at 95 % relative humidity, in line with EN 60068-2-30
	protection class	IP51
Altitude	operating with battery	15000 m (49210 ft)
	operating with AC to DC adapter	3000 m (9840 ft)
Mechanical resistance		
Vibration	sinusoidal	in line with EN 60068-2-6, MIL-PRF-28800F class 2
	random	in line with EN 60068-2-64, MIL-PRF-28800F class 2
Shock		40 g shock spectrum, in line with MIL-STD-810G, method 516.6, procedure I, MIL-PRF-28800F
Power supply		
R&S®HA-Z301 AC power supply	primary	100 V to 240 V AC ± 10 %, 50 Hz to 60 Hz, 1.0 A to 0.5 A
	secondary	15 V, 2.67 A, max. 40 W
	test marks	CE, UL, PSE, TUV
External DC voltage		14.65 V to 15.45 V
Battery		lithium-ion battery
Capacity	R&S®HA-Z306, version E	72 Wh
	R&S®HA-Z306, version F and above	74.5 Wh
Voltage	R&S®HA-Z306, version E	11.25 V (nom.)
	R&S®HA-Z306, version F and above	10.8 V (nom.)
Operating time with new, fully charged battery	R&S®HA-Z306	4 h
Charging time	instrument switched off for charge with R&S®HA-Z303 battery charger	3 h
	instrument switched on	5 h
Life time	charging cycles	> 75 % or more of its initial capacity after 300 charge/discharge cycles
Power consumption		18.5 W (meas.)
Safety		IEC 61010-1, EN 61010-1, UL 61010-1 (third edition), CAN/CSA-C22.2 No. 61010-1-12
Test marks		VDE, cCSAus, KC
EMC	in line with EMC Directive 2014/30/EU including	• EN 61326-1 • EN 61326-1 table 2 (immunity, industrial) • CISPR 11/EN 55011/Group 1 Class B (emission)
Recommended calibration interval		1 year
Dimensions	W × H × D	202 mm × 294 mm × 76 mm (8.0 in × 11.6 in × 3 in)
Weight		3.1 kg (6.8 lb)

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

- The specifications for part number 1321.1611.04 are equivalent to part number 1321.1611.54 and 1321.1111P01.
- The specifications for part number 1321.1611.08 are equivalent to part number 1321.1611.58 and 1321.1111P04.
- The specifications for part number 1321.1611.18 are equivalent to part number 1321.1611.68 and 1321.1111P06.
- The specifications for part number 1321.1611.26 are equivalent to part number 1321.1611.76 and 1321.1111P08.

Options

R&S®ZNH-K10 DC bias option

DC bias		
Output port		BNC
Output voltage	mode: internal	+2 V to +32 V in 0.1 V steps (nom.)
Accuracy	< +3 V	< 1 V (nom.)
	≥ +3 V	< 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

R&S®ZNH-K29 pulse measurements with power sensor

In combination with one of the R&S®NRP-Z81, R&S®NRP-Z85 or R&S®NRP-Z86 power sensors, the R&S®ZNH4/R&S®ZNH8/ R&S®ZNH18/R&S®ZNH26 support measurements on pulsed signals [4]. The achievable RF performance is documented in the specifications of the R&S®NRP-Z81/-Z85/-Z86 power sensors. The list below shows which measurements are supported by the R&S®ZNH-K29.

Measurements		• pulse power parameters
		  − peak power
		  − pulse top power
		  − average power
		  − base power
		  − minimum power
		  − positive overshoot
		  − negative overshoot
		• pulse timing parameters
		  − pulse duration
		  − pulse period
		  − pulse start/stop time
		  − rise/fall time
		  − duty cycle

R&S®ZNH-K45 vector voltmeter option

Reflection measurement		
Result formats	mode: vector voltmeter	magnitude + phase
Display range		approx. 1 dB to 150 dB
Transmission measurement		
Result formats	mode: vector voltmeter	magnitude + phase
Display range		approx. 1 dB to 150 dB

R&S®ZNH-K47 mixed mode S-parameters

Measurements	selectable	• differential mode to differential mode (S_{dd11}) • common mode to differential mode (S_{cd11}) • differential mode to common mode (S_{dc11}) • common mode to common mode (S_{cc11})

[4] The R&S®NRP-Z8x power sensors are supported by instruments with serial number ≥ 105000.
For instruments with serial number < 121000, the R&S®FSH-Z129 adapter cable is required in addition.

R&S®ZNH-K66 wave ratios and wave quantities option

Wave ratio measurements	selectable	• complex ratio of any transmitted or received wave quantities • any ratio combination possible
Wave quantity measurements	selectable	• transmitted wave measurement at port 1 (a_1) • received wave measurement at port 1 (b_1) • transmitted wave measurement at port 2 (a_2) • received wave measurement at port 2 (b_2)
Source port	selectable	• port 1 • port 2 • source off

R&S®ZNH-K68 time domain analysis

Time domain [5]		
Transform type	selectable	• bandpass impulse • low pass impulse • low pass step
Windowing	selectable	• no profiling (rectangle) • low first sidelobe • normal profile • steep falloff
Time gate [5]		
Gate filter type	selectable	• bandpass • notch
Gate shape	selectable	• steepest edges • steep edges • normal gate • max flatness • arb gate shape

R&S®ZNH-K69 USB power measurement versus frequency

In combination with one of the R&S®NRP-Z211, R&S®NRP-Z221, R&S®NRP8S, R&S®NRP18S, R&S®NRP33S, R&S®NRP40S, R&S®NRP50S, R&S®NRP18T, R&S®NRP33T, R&S®NRP40T, R&S®NRP50T, R&S®NRP67T, R&S®NRP110T, R&S®NRP6A, R&S®NRP18A power sensors.

Result format	selectable	• gain (dB) • absolute power (dBm, W)
Number of measurement points	selectable	• 2 to 711
Frequency conversion	selectable	• downconversion, upper side band (IF = RF – LO) [6] • downconversion, lower side band (IF= LO – RF) [6] • upconversion, upper side band (IF = RF + LO) [6]

[5] Time domain analysis and gating is only applicable to trace 1.

[6] LO is external.

Ordering information

Designation	Type	Frequency range	Order No.
Base unit			
Handheld vector network analyzer, two ports, 4 GHz, type N	R&S®ZNH4	30 kHz to 4 GHz	1321.1611.04
Handheld vector network analyzer, two ports, 8 GHz, type N	R&S®ZNH8	30 kHz to 8 GHz	1321.1611.08
Handheld vector network analyzer, two ports, 18 GHz, type N	R&S®ZNH18	30 kHz to 18 GHz	1321.1611.18
Handheld vector network analyzer, two ports, 26 GHz, PC 3.5 mm	R&S®ZNH26	30 kHz to 26.5 GHz	1321.1611.26
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			
Software options			
Power sensor support	R&S®ZNH-K9		1334.6800.02
DC bias variable voltage source	R&S®ZNH-K10		1334.6846.02
Pulse measurements with power sensor	R&S®ZNH-K29		1334.6823.02
Vector voltmeter	R&S®ZNH-K45		1334.6852.02
Mixed mode S-parameters	R&S®ZNH-K47		1334.6875.02
Wave ratios and wave quantities	R&S®ZNH-K66		1334.6869.02
Time domain analysis	R&S®ZNH-K68		1334.6881.02
Power sensor measurement versus frequency	R&S®ZNH-K69		1334.6830.02
Calibration and verification			
Calibration kit, 50 Ω	R&S®ZCAN	0 Hz to 3 GHz	0800.8515.52
Calibration kit, 75 Ω	R&S®ZCAN	0 Hz to 3 GHz	0800.8515.72
Calibration kit, 50 Ω (combined open/short)	R&S®FSH-Z28	0 Hz to 8 GHz	1300.7810.03
Calibration kit, 50 Ω (combined open/short)	R&S®FSH-Z29	0 Hz to 3.6 GHz	1300.7510.03
Calibration kit, 3.5 mm (open/short/match/through male and female each)	R&S®ZN-Z235	0 Hz to 26.5 GHz	1336.8500.02
Calibration kit	R&S®ZN-Z103	2 MHz to 4 GHz	1321.1828.02
Calibration kit	R&S®ZN-Z103	1 MHz to 6 GHz	1321.1828.12
Calibration unit, 2-port	R&S®ZN-ZE104	5 kHz to 4.5 GHz	1350.8040.04
Calibration unit, 2-port	R&S®ZN-ZE109	5 kHz to 9 GHz	1350.8040.09
Calibration unit, 2-port	R&S®ZN-ZE118	5 kHz to 18 GHz	1350.8040.18
Calibration unit, 2-port	R&S®ZN-ZE126	5 kHz to 26.5 GHz	1350.8040.26
Calibration kit, 3.5 mm (m)	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.02
including DCV data on CD	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.12
including accredited calibration	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.22
Calibration kit, 3.5 mm (f)	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.03
including DCV data on CD	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.13
including accredited calibration	R&S®ZN-Z135	0 Hz to 26.5 GHz	1328.8157.23
Calibration kit, type N (m)	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.02
including DCV data on CD	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.12
including accredited calibration	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.22
Calibration kit, type N (f)	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.03
including DCV data on CD	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.13
including accredited calibration	R&S®ZN-Z170	0 Hz to 18 GHz	1328.8163.23
Test port cable, 3.5 mm (f) to 3.5 mm (m), length: 635 mm	R&S®ZV-Z93	0 Hz to 26.5 GHz	1301.7595.25
Test port cable, 3.5 mm (f) to 3.5 mm (m), length: 965 mm	R&S®ZV-Z93	0 Hz to 26.5 GHz	1301.7595.38
Test port cable, type N (m) to type N (m), length: 610 mm	R&S®ZV-Z191	0 Hz to 18 GHz	1306.4507.24
Test port cable, type N (m) to type N (m), length: 914 mm	R&S®ZV-Z191	0 Hz to 18 GHz	1306.4507.36
Test port cable, type N (m) to 3.5 mm (m), length: 610 mm	R&S®ZV-Z192	0 Hz to 18 GHz	1306.4513.24
Test port cable, type N (m) to 3.5 mm (m), length: 914 mm	R&S®ZV-Z192	0 Hz to 18 GHz	1306.4513.36
Test port cable, 3.5 mm (f) to 3.5 mm (m), length: 610 mm	R&S®ZV-Z193	0 Hz to 26.5 GHz	1306.4520.24
Test port cable, 3.5 mm (f) to 3.5 mm (m), length: 914 mm	R&S®ZV-Z193	0 Hz to 26.5 GHz	1306.4520.36
Test port cable, 3.5 mm (f) to 3.5 mm (m), length: 1524 mm	R&S®ZV-Z193	0 Hz to 26.5 GHz	1306.4520.60
Test port cable, 2.92 mm (f) to 2.92 mm (m), length: 635 mm	R&S®ZV-Z95	0 Hz to 40 GHz	1301.7608.25
Test port cable, 2.92 mm (f) to 2.92 mm (m), length: 965 mm	R&S®ZV-Z95	0 Hz to 40 GHz	1301.7608.38
Test port cable, 2.92 mm (f) to 2.92 mm (m), length: 610 mm	R&S®ZV-Z195	0 Hz to 40 GHz	1306.4536.24
Test port cable, 2.92 mm (f) to 2.92 mm (m), length: 914 mm	R&S®ZV-Z195	0 Hz to 40 GHz	1306.4536.36

Designation	Type	Frequency range	Order No.
Power sensors supported by R&S®ZNH-K9 (for average power measurement) and wideband power sensors supported by R&S®ZNH-K29 (for pulse measurement)			
Directional power sensor	R&S®FSH-Z14	25 MHz to 1 GHz	1120.6001.02
Directional power sensor	R&S®FSH-Z44	200 MHz to 4 GHz	1165.2305.02
Universal power sensor, 100 mW, two-path	R&S®NRP-Z211	10 MHz to 8 GHz	1417.0409.02
Universal power sensor, 100 mW, two-path	R&S®NRP-Z221	10 MHz to 18 GHz	1417.0309.02
Wideband power sensor, 100 mW [7]	R&S®NRP-Z81	50 MHz to 18 GHz	1137.9009.02
Wideband power sensor, 100 mW (2.92 mm) [7]	R&S®NRP-Z85	50 MHz to 40 GHz	1411.7501.02
Wideband power sensor, 100 mW (2.40 mm) [7]	R&S®NRP-Z86	50 MHz to 40 GHz	1417.0109.40
Wideband power sensor, 100 mW (2.40 mm) [7]	R&S®NRP-Z86	50 MHz to 44 GHz	1417.0109.44
Three-path diode power sensors, 100 pW to 200 mW	R&S®NRP8S	10 MHz to 8 GHz	1419.0006.02
Three-path diode power sensors, 100 pW to 200 mW	R&S®NRP18S	10 MHz to 18 GHz	1419.0029.02
Three-path diode power sensors, 100 pW to 200 mW	R&S®NRP33S	10 MHz to 33 GHz	1419.0064.02
Three-path diode power sensors, 100 pW to 200 mW	R&S®NRP40S	50 MHz to 40 GHz	1419.0041.02
Three-path diode power sensors, 100 pW to 200 mW	R&S®NRP50S	50 MHz to 50 GHz	1419.0087.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP18T	0 Hz to 18 GHz	1424.6115.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP33T	0 Hz to 33 GHz	1424.6138.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP40T	0 Hz to 40 GHz	1424.6150.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP50T	0 Hz to 50 GHz	1424.6173.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP67T	0 Hz to 67 GHz	1424.6196.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP90T	0 Hz to 90 GHz	1424.6473.02
Thermal power sensor, 300 nW to 100 mW	R&S®NRP110T	0 Hz to 110 GHz	1424.6215.02
Average power sensors, 100 pW to 200 mW	R&S®NRP6A	8 kHz to 6 GHz	1424.6796.02
Average power sensors, 100 pW to 200 mW	R&S®NRP18A	8 kHz to 18 GHz	1424.6815.02
R&S®FSH-Zxx power sensors require the following adapter cable for operation on the R&S®ZNH			
USB adapter cable to connect R&S®FSH-Z14/R&S®FSH-Z44 to the R&S®ZNH, length: 1.8 m	R&S®FSH-Z144		1145.5909.02
R&S®NRP-Zxx power sensors require the following adapter cable for operation on the R&S®ZNH			
USB adapter cable (passive), to connect R&S®NRP-Zxx to the R&S®ZNH, length: 2 m	R&S®NRP-Z4		1146.8001.02
R&S®NRP power sensors require the following adapter cable for operation on the R&S®ZNH			
USB interface cable, to connect R&S®NRP to the R&S®ZNH, length: 1.5 m	R&S®NRP-ZKU		1419.0658.03
Optical power sensors and accessories			
RF cable, armored, type N (m) to type N (f) connectors, length: 1 m	R&S®FSH-Z320	0 Hz to 8 GHz	1309.6600.00
RF cable, armored, type N (m) to type N (f) connectors, length: 3 m	R&S®FSH-Z321	0 Hz to 8 GHz	1309.6617.00
Attenuator, 50 W, 20 dB, 50 Ω, type N (f) to type N (m)	R&S®RDL50	0 Hz to 6 GHz	1035.1700.52
Attenuator, 100 W, 20 dB, 50 Ω, type N (f) to type N (m)	R&S®RBU100	0 Hz to 2 GHz	1073.8495.20
Attenuator, 100 W, 30 dB, 50 Ω, type N (f) to type N (m)	R&S®RBU100	0 Hz to 2 GHz	1073.8495.30
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

[7] Product discontinued.

Designation	Type	Frequency range	Order No.
Recommended extras			
Battery charger for R&S®HA-Z306 [8]	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
Carrying holster	R&S®HA-Z322		1321.1370.02
Rainproof carrying holster	R&S®HA-Z322		1321.1370.03
Soft carrying bag	R&S®HA-Z220		1309.6175.00
Hardcase	R&S®HA-Z321		1321.1357.02
Hard shell protective carrying case	R&S®RTH-Z4		1326.2774.02
Spare USB cable	R&S®HA-Z211		1309.6169.00
Spare Ethernet cable	R&S®HA-Z210		1309.6152.00
GPS receiver	R&S®HA-Z340		1321.1392.02
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, type N to BNC	R&S®FSH-Z38		1300.7740.02
Adapter type N (m) to BNC (f)			0118.2812.00
Adapter type N (m) to type N (m)			0092.6581.00
Adapter type N (m) to SMA (f)			4012.5837.00
Adapter type N (m) to 7/16 (f)			3530.6646.00
Adapter type N (m) to 7/16 (m)			3530.6630.00
Adapter type N (m) to FME (f)			4048.9790.00
Adapter BNC (m) to banana plug (f)			0017.6742.00

Warranty and service

Warranty		
Base unit		3 years
All other items		1 year
Service options		
	Service plans	**On demand**
Calibration	up to five years [9]	pay per calibration
Warranty and repair	up to five years [9]	standard price repair
Find out more about our service portfolio under: www.rohde-schwarz.com/service-support/service/overview/service-overview_229461.html		

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

[9] For extended periods, contact your Rohde & Schwarz sales office.

Service at Rohde&Schwarz
You're in great hands

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

Rohde&Schwarz

The Rohde&Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test&measurement, technology systems and networks&cybersecurity. Founded 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

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

Rohde&Schwarz training
www.training.rohde-schwarz.com

Rohde&Schwarz customer support
www.rohde-schwarz.com/support

PD 3608.7673.22 | Version 05.00 | February 2024 (fi)
R&S®ZNH Full Two-Port Handheld Vector Network Analyzer
Data without tolerance limits is not binding | Subject to change

3608767322
3608.7673.22 05.00 PDP/PDW 1 en