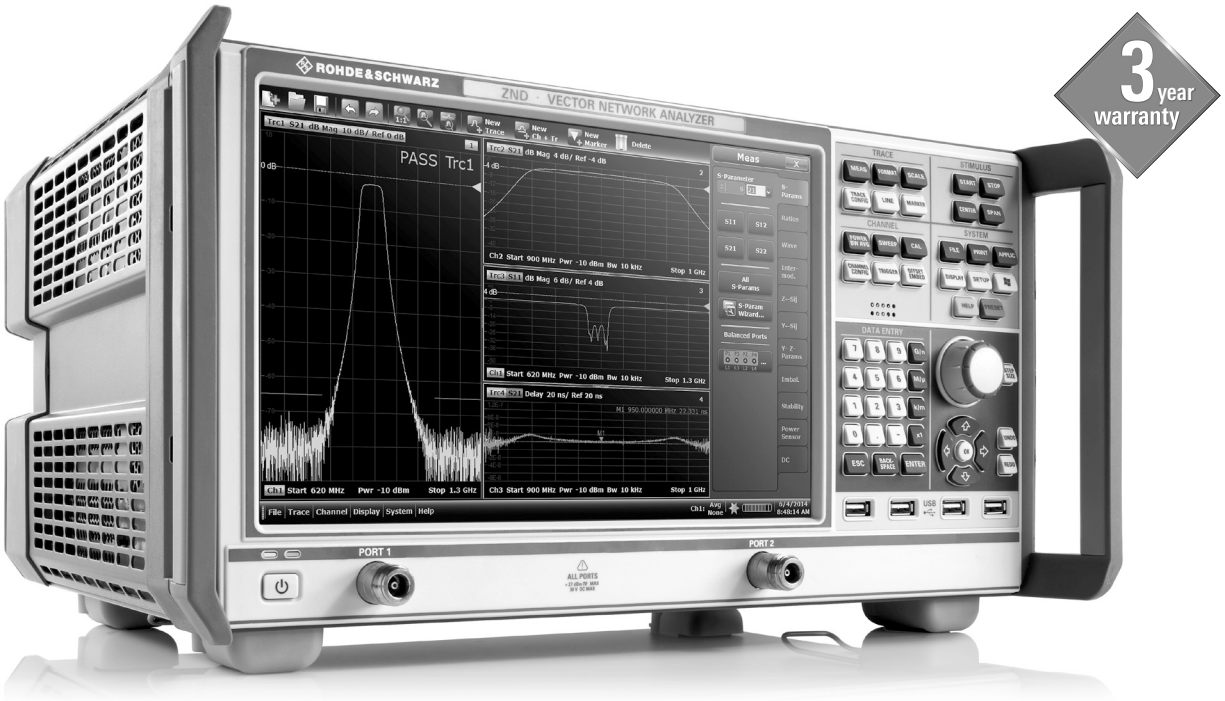
R&S®ZND
Vector Network Analyzer
Specifications



ROHDE&SCHWARZ

Test & Measurement

Data Sheet | 02.01

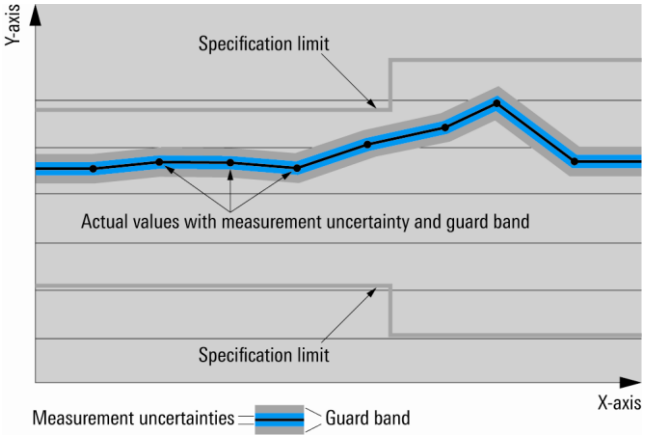
CONTENTS

Definitions

General
Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 30 minutes 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.



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 indicated as follows: “parameter: value”.

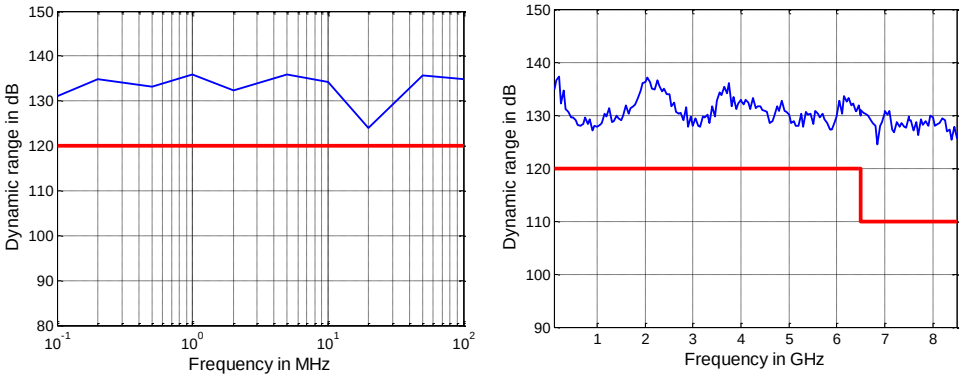
Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

Measurement range

Impedance		50 Ω
Test port connector		N female
Number of test ports		2
Test set configuration	base unit	unidirectional
	R&S®ZND with optional R&S®ZND-K5 or R&S®ZND-K6	bidirectional
Frequency range [1]	base unit	100 kHz to 4.5 GHz
	R&S®ZND with optional R&S®ZND-K1 or R&S®ZND-K8	100 kHz to 8.5 GHz

Static frequency accuracy		(time since last adjustment × aging rate) + temperature drift + calibration accuracy
Aging per year		$\pm 1 \times 10^{-6}$
Temperature drift (0 °C to +40 °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	2 to 5001
Measurement bandwidth	1/1.5/2/3/5/7 steps	1 Hz to 300 kHz
Dynamic range [2] of the R&S®ZND	100 kHz to 6.5 GHz	> 120 dB, typ. 130 dB
	6.5 GHz to 8.5 GHz	> 110 dB, typ. 125 dB



Dynamic range in dB versus frequency for the R&S®ZND base unit.

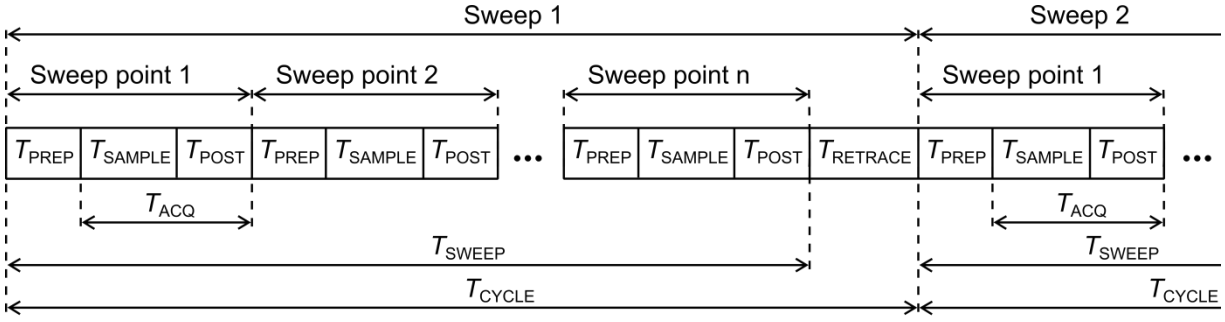
[1] Specified and typical data given in this data sheet applies to any model of the R&S®ZND; please note its respective frequency and power range as well as the test set configuration.

[2] The dynamic range is defined as the difference between the actual 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 10 Hz measurement bandwidth, without system error correction. The dynamic range can be increased by using a measurement bandwidth of 1 Hz. Crosstalk does not limit the dynamic range.

Measurement speed

Measured with firmware version 2.30 and Windows 7, 64-bit.

Measurement time	for 201 measurements points, with 200 MHz span, 300 kHz measurement bandwidth			
		T_{SWEEP}		T_{CYCLE}
	with 900 MHz center frequency	< 4.0 ms		< 5.0 ms
	with 5.1 GHz center frequency	< 3.0 ms		< 5.0 ms
Acquisition time per point (T_{ACQ})	300 kHz measurement bandwidth, CW mode	< 10.0 µs		
Sampling time per point (T_{SAMPLE}) IF filter: normal	at 300 kHz measurement bandwidth	2.91 µs		
Time for measurement and data transfer	for 201 measurements points, with 800 MHz start frequency, 1 GHz stop frequency, 1 MHz measurement bandwidth [3]	IEC/IEEE	VXI11	RSIB
			over 1 Gbit/s LAN	
		typ. 5.7 ms	typ. 6.0 ms	typ. 6.0 ms
Data transfer time	for 201 measurements points (magnitude)	typ. 1.5 ms	typ. 1.4 ms	typ. 1.0 ms
Switching time between channels	with a maximum of 2001 points	< 5 ms		
Switching time between two preloaded instrument settings	with a maximum of 2001 points	< 5 ms		



T_{PREP}	Preparation time required to set up the internal hardware components
T_{SAMPLE}	Sampling time (approximately equal to the settling time of the digital filters)
T_{POST}	Time required for hardware postprocessing
T_{ACQ}	Aquisition time (T_{SAMPLE} + T_{POST})
T_{SWEEP}	Time required for one sweep
$T_{RETRACE}$	Time between two sweeps
T_{CYCLE}	Sweep cycle time (T_{SWEEP} + $T_{RETRACE}$)

Measurement sequence.

[3] In continuous mode, no additional time for data transfer is needed as this occurs simultaneously during the measurement.

Typical sweep times versus number of measurement points [4] of the R&S®ZND					
Number of measurement points	**51**	**201**	**401**	**1601**	**5001**
800 MHz start frequency, 1 GHz stop frequency, 1 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction [5]	58 ms	222 ms	442 ms	1702 ms	5313 ms
With 2-port TOSM calibration	114 ms	444 ms	882 ms	3403 ms	10624 ms
800 MHz start frequency, 1 GHz stop frequency, 100 kHz measurement bandwidth					
With correction switched off or 1-path, p-port correction	3 ms	7 ms	10 ms	29 ms	88 ms
With 2-port TOSM calibration	5 ms	12 ms	19 ms	58 ms	174 ms
800 MHz start frequency, 1 GHz stop frequency, 300 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	2 ms	5 ms	7 ms	17 ms	49 ms
With 2-port TOSM calibration	4 ms	9 ms	13 ms	33 ms	96 ms
100 kHz start frequency, 4.5 GHz stop frequency, 1 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	61 ms	225 ms	442 ms	1744 ms	5432 ms
With 2-port TOSM calibration	121 ms	447 ms	882 ms	3487 ms	10862 ms
100 kHz start frequency, 4.5 GHz stop frequency, 100 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	5 ms	9 ms	15 ms	45 ms	135 ms
With 2-port TOSM calibration	9 ms	18 ms	28 ms	88 ms	266 ms
100 kHz start frequency, 4.5 GHz stop frequency, 300 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	5 ms	8 ms	11 ms	32 ms	102 ms
With 2-port TOSM calibration	8 ms	14 ms	21 ms	63 ms	201 ms
100 kHz start frequency, 8.5 GHz stop frequency, 1 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	63 ms	226 ms	443 ms	1744 ms	5425 ms
With 2-port TOSM calibration	124 ms	451 ms	885 ms	3487 ms	10849 ms
100 kHz start frequency, 8.5 GHz stop frequency, 100 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	6 ms	11 ms	16 ms	45 ms	124 ms
With 2-port TOSM calibration	11 ms	21 ms	32 ms	89 ms	248 ms
100 kHz start frequency, 8.5 GHz stop frequency, 300 kHz measurement bandwidth					
With correction switched off or 1-path, 2-port correction	5 ms	9 ms	12 ms	32 ms	92 ms
With 2-port TOSM calibration	10 ms	16 ms	24 ms	62 ms	182 ms

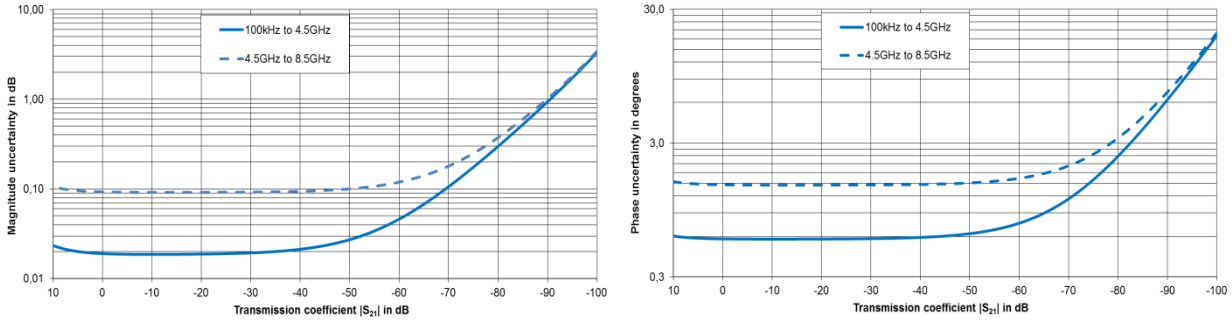
[4] Sweep time is to be understood as cycle time; static frequency accuracy of the instrument applies; measured with firmware version 2.30, Windows 7, 64 bit.

[5] Enhanced response calibration.

Measurement accuracy

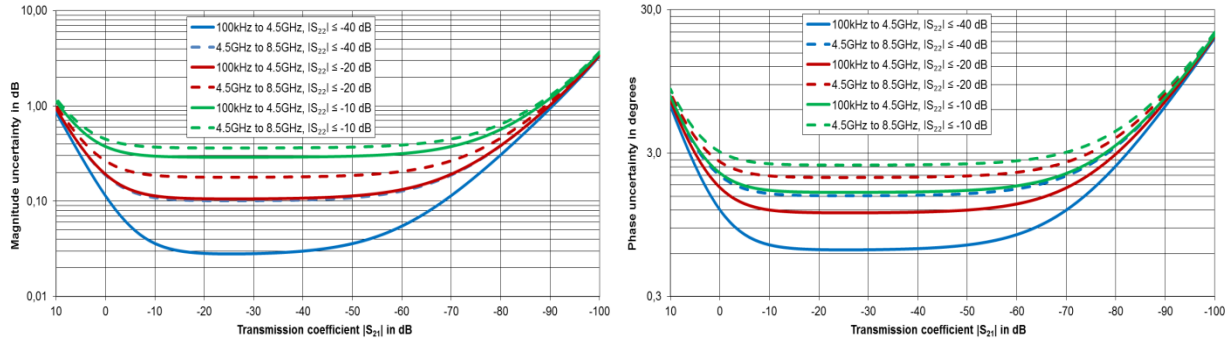
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C after calibration. Validity of the data is conditional on the use of an R&S®ZV-Z270 calibration kit. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).

Accuracy of transmission measurements			
Above 100 kHz		Base unit and R&S®ZND-K1	R&S®ZND-K5, -K6 or -K8
	+5 dB to –35 dB	< 0.65 dB or < 6°	< 0.095 dB or < 1.5°
	–35 dB to –50 dB	< 0.40 dB or < 3°	< 0.1 dB or < 2°
	–50 dB to –65 dB	< 0.45 dB or < 3°	< 0.2 dB or < 2°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.			



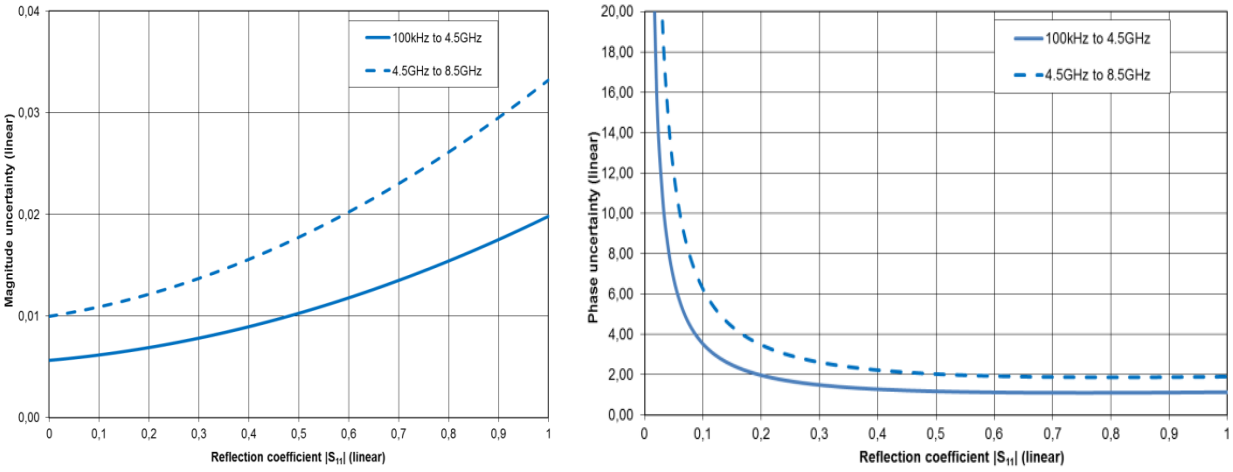
Typical accuracy of transmission magnitude and transmission phase measurements for the R&S®ZND
Analysis conditions: $S_{11} = S_{22} = 0$, cal. power –10 dBm, meas. power –10 dBm,
R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8 installed.

The accuracy of transmission measurements is reduced for DUTs with non-zero output reflection, i.e. $|S_{22}| > 0$ using a uni-directional testset.



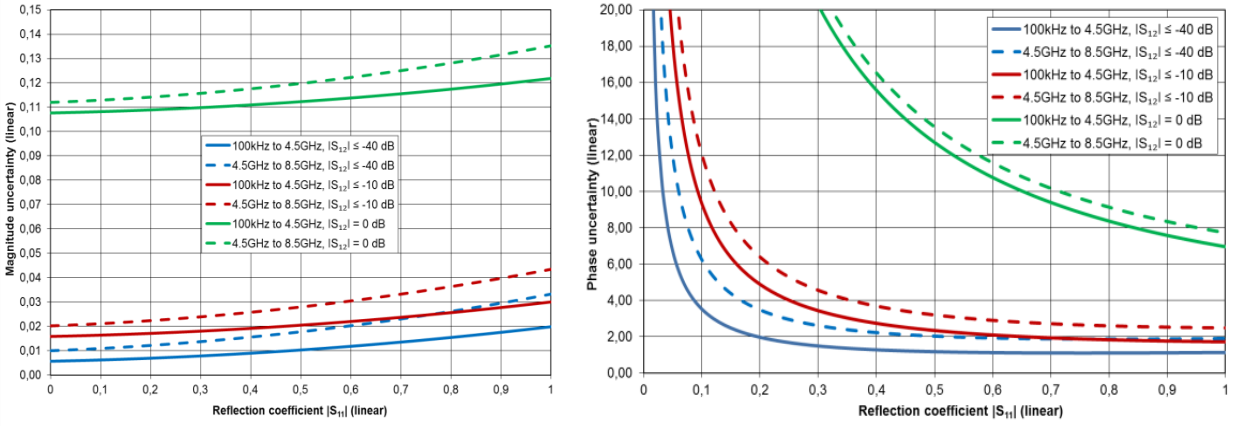
Typical accuracy of transmission magnitude and transmission phase measurements for the R&S®ZND
Analysis conditions: $S_{11} = 0$, cal. power –10 dBm, meas. power –10 dBm, Base unit or R&S®ZND-K1 installed.

Accuracy of reflection measurements				
Configuration		**Base unit and R&S®ZND-K1**		**R&S®ZND-K5, R&S®ZND-K6 and R&S®ZND-K8**
Type of DUT		**1-port DUT**	**2-port DUT**	**1 or 2-port DUT**
100 kHz to 50 MHz	0 dB to –15 dB	< 0.3 dB or < 2.5°	typ. < 1.0 dB or typ. < 8°	< 0.3 dB or < 2.5°
	–15 dB to –25 dB	< 0.9 dB or < 6°	typ. < 1.0 dB or typ. < 12°	< 0.9 dB or < 6°
	–25 dB to –35 dB	< 3.0 dB or < 30°	typ. < 3.0 dB or typ. < 30°	< 3.0 dB or < 30°
50 MHz to 4 GHz	0 dB to –15 dB	< 0.2 dB or < 1.5°	typ. < 1.0 dB or typ. < 8°	< 0.2 dB or < 1.5°
	–15 dB to –25 dB	< 0.5 dB or < 3.5°	typ. < 1.0 dB or typ. < 12°	< 0.5 dB or < 3.5°
	–25 dB to –35 dB	< 2.0 dB or < 16°	typ. < 2.0 dB or typ. < 30°	< 2.0 dB or < 16°
4 GHz to 8.5 GHz	0 dB to –15 dB	< 0.6 dB or < 4.5°	typ. < 0.6 dB or typ. < 5°	< 0.6 dB or < 4.5°
	–15 dB to –25 dB	< 1.4 dB or < 10°	typ. < 1.5 dB or typ. < 12°	< 1.4 dB or < 10°
	–25 dB to –35 dB	< 4.0 dB or < 30°	typ. < 4.0 dB or typ. < 30°	< 4.0 dB or < 30°
Specifications are based on an isolating DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.				



Typical accuracy of reflection magnitude and reflection phase measurements for the R&S®ZND
Analysis conditions: S_{12} = S_{21} = 0, cal. power –10 dBm, meas. power –10 dBm,
R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8 installed.

The accuracy of reflection measurements is reduced for non-isolating DUTs, i.e. $|S_{12}| > 0$ using a uni-directional testset.



Typical accuracy of reflection magnitude and reflection phase measurements for the R&S®ZND
Analysis conditions: S_{21} = 0, cal. power –10 dBm, meas. power –10 dBm, Base unit or K1 installed.

Effective system data

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C after calibration. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed). For unidirectional test set applicable specified values are related to port 1, only.

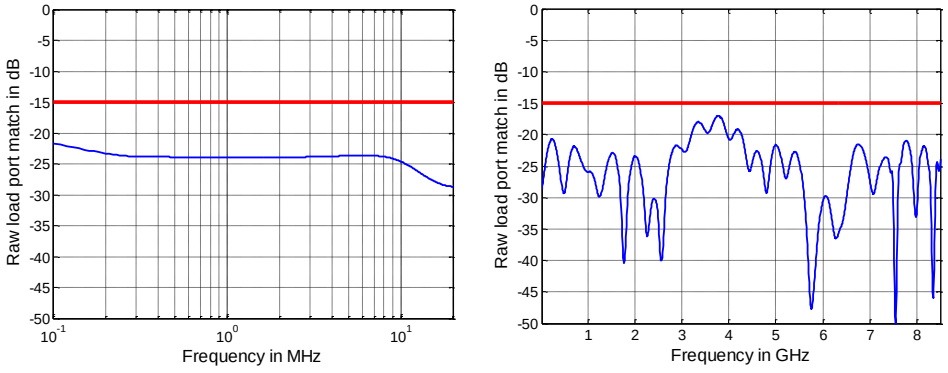
The data is based on a measurement bandwidth of 10 Hz and system error calibration with an R&S®ZV-Z270 calibration kit.

R&S®ZND	100 kHz to 4.5 GHz	4.5 GHz to 8.5 GHz
Directivity	≥ 45 dB	≥ 40 dB
Source match	≥ 40 dB	≥ 36 dB
Load match	≥ 45 dB	≥ 40 dB
Reflection tracking	≤ 0.02 dB	≤ 0.05 dB
Transmission tracking	≤ 0.018 dB	≤ 0.09 dB

Factory-calibrated system data

This data is valid between +18 °C and +28 °C. The data is based on a source power of –10 dBm and a measurement bandwidth of 1 kHz. For unidirectional test set, applicable specified values are related to port 1 only.

Directivity	100 kHz to 8.5 GHz	none or R&S®ZND-K1	> 30 dB, typ. 50 dB
		R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8	
Source match	100 kHz to 8.5 GHz	none or R&S®ZND-K1	> 30 dB, typ. 50 dB
		R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8	
Reflection tracking	100 kHz to 8.5 GHz	none or R&S®ZND-K1	< 0.5 dB, typ. 0.1 dB
		R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8	
Transmission tracking	100 kHz to 8.5 GHz	none or R&S®ZND-K1	typ. 0.2 dB
		R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8	< 0.5 dB, typ. 0.1 dB
Load match	100 kHz to 8.5 GHz	none or K1	typ. 20 dB
		R&S®ZND-K5, R&S®ZND-K6 or R&S®ZND-K8	> 15 dB, typ. 20 dB



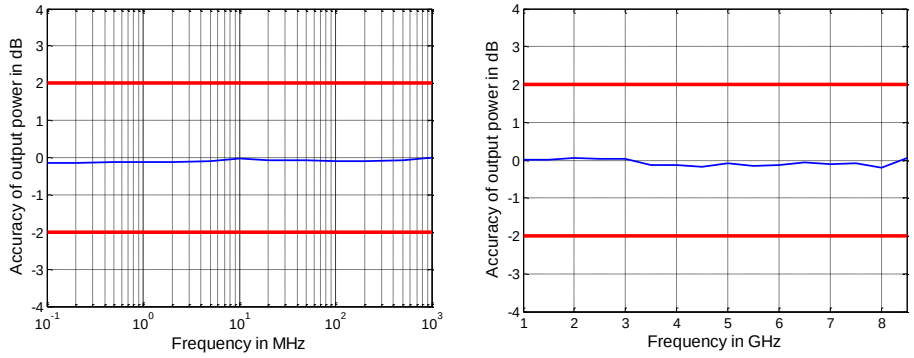
Raw load port match versus frequency for the R&S®ZND.

Trace stability			
Trace noise magnitude (RMS)	at 0 dBm source power, 0 dB reflection	IF bandwidth	
	100 kHz to 100 MHz	10 kHz	< 0.005 dB, typ. 0.001 dB
	100 MHz to 8.5 GHz	10 kHz	< 0.005 dB, typ. 0.002 dB
Trace noise phase (RMS)	at 0 dBm source power, 0 dB reflection	IF bandwidth	
	100 kHz to 100 MHz	10 kHz	< 0.035°, typ. 0.005°
	100 MHz to 8.5 GHz	10 kHz	< 0.035°, typ. 0.02°
Temperature dependence	at 0 dB transmission or reflection		
	100 kHz to 4.5 GHz	magnitude	typ. 0.01 dB/K
		phase	typ. 0.15°/K
	4.5 GHz to 8.5 GHz	magnitude	typ. 0.04 dB/K
		phase	typ. 0.8°/K

Test port output

This data is valid from +18 °C to +28 °C.

Power range	without R&S®ZND-K7 extended power range option	–20 dBm to +3 dBm
	with R&S®ZND-K7 extended power range option	–45 dBm to +3 dBm
Power accuracy	source power –10 dBm	< 2 dB, typ. 0.5 dB
Power linearity	referenced to –10 dBm	< 1 dB
Power resolution		0.01 dB
Harmonics	at 0 dBm	
	100 kHz to 100 MHz	typ. –30 dBc
	100 MHz to 8.5 GHz	< –25 dBc, typ. –35 dBc



Output power accuracy in dB versus frequency for the R&S®ZND base unit.

Test port input

Match	without system error correction	> 15 dB
Maximum nominal input level		+3 dBm
Power measurement accuracy	at –10 dBm without power calibration	< 1 dB
Receiver linearity referenced to –10 dBm	+13 dB to –35 dB	< 0.2 dB
Damage level		+27 dBm
Damage DC voltage		30 V
Noise level at 1 kHz measurement bandwidth, normalized to 1 Hz	100 kHz to 50 MHz	< –118 dBm, typ. –125 dBm
	50 MHz to 6.5 GHz	< –120 dBm, typ. –125 dBm
	6.5 GHz to 8.5 GHz	< –110 dBm, typ. –120 dBm
The noise level is defined as the RMS value of the specified noise floor.		

Additional front panel connectors

USB	(four) universal serial bus connectors for connecting USB devices (USB 2.0); two additional USB 3.0 connectors on rear panel

Display

Screen	30.7 cm (12.1") diagonal WXGA color LCD with touchscreen
Resolution	1280 × 800 × 262144 (high color, 125 dpi)
Pixel failure rate	$< 1 \times 10^{-5}$

Rear panel connectors

LAN	local area network connector, 8-pin, RJ-45

USB	(two) universal serial bus connectors for connecting USB devices (USB 3.0); four additional USB 2.0 connectors on front panel

REF IN	input for external frequency reference signal	
Connector type		BNC, female
Input frequency range		1 MHz to 20 MHz in steps of 1 MHz
Maximum permissible deviation		1 kHz
Input power		–10 dBm to +15 dBm
Input impedance		50 Ω

REF OUT	output for external frequency reference signal	
Connector type		BNC, female
Output frequency		10 MHz
Output power		+9 dBm ± 4 dB at 50 Ω

MONITOR	DVI connector (for external monitor)

USER CONTROL	several control and trigger signals, 25-pin D-Sub, 3.3 V TTL, for controlling external generators, for limit checks, sweep signals, etc.	
CHANNEL BIT 0 to CHANNEL BIT 3	pin 8 to pin 11 (outputs)	channel-specific, user-configurable bits
CHANNEL BIT 4 to CHANNEL BIT 7	pin 16 to pin 19 (outputs)	channel-specific, user-configurable bits
DRIVE PORT 1 to DRIVE PORT 4	pin 16 to pin 19 (outputs)	indicates drive ports (can alternatively be used for channel bits 4 to 7)
PASS 1 and PASS 2	pin 13 and pin 14 (outputs)	pass/fail results of limit checks
BUSY	pin 4 (output)	measurements running
READY FOR TRIGGER	pin 6 (output)	ready for trigger
EXT GEN TRIGGER	pin 21 (output)	control signal for external generator
EXT GEN BLANK	pin 22 (input)	handshake signal from external generator
EXTERNAL TRIGGER	pin 2 (input)	first trigger input for analyzer, 5 V tolerant
EXTERNAL TRIGGER 2	pin 25 (input)	second trigger input for analyzer, 5 V tolerant

EXT TRIG IN	trigger input for analyzer	
Connector type		BNC, female
TTL signal (edge-triggered or level-triggered)		3 V, 5 V tolerant
Polarity (selectable)		positive or negative
Minimum pulse width		1 µs
Input impedance		> 10 kΩ

EXT TRIG OUT	trigger output of analyzer	
Connector type		BNC, female
Logic high		typ. 3.3 V

Options

For subsequently activated options, all data sheet parameters are typical values until a calibration is performed.

R&S®ZND-K1

Extended frequency range, 8.5 GHz	frequency range extension for unidirectional units
Frequency range	100 kHz to 8.5 GHz
Bidirectional measurements	R&S®ZND-K6 option required
Prerequisites	R&S®ZND base unit

R&S®ZND-K5

Full test set, base unit, 4.5 GHz	bidirectional measurement capabilities for units with a frequency range of 4.5 GHz
Frequency range	100 kHz to 4.5 GHz
Bidirectional measurements	yes
Prerequisites	R&S®ZND base unit

R&S®ZND-K6

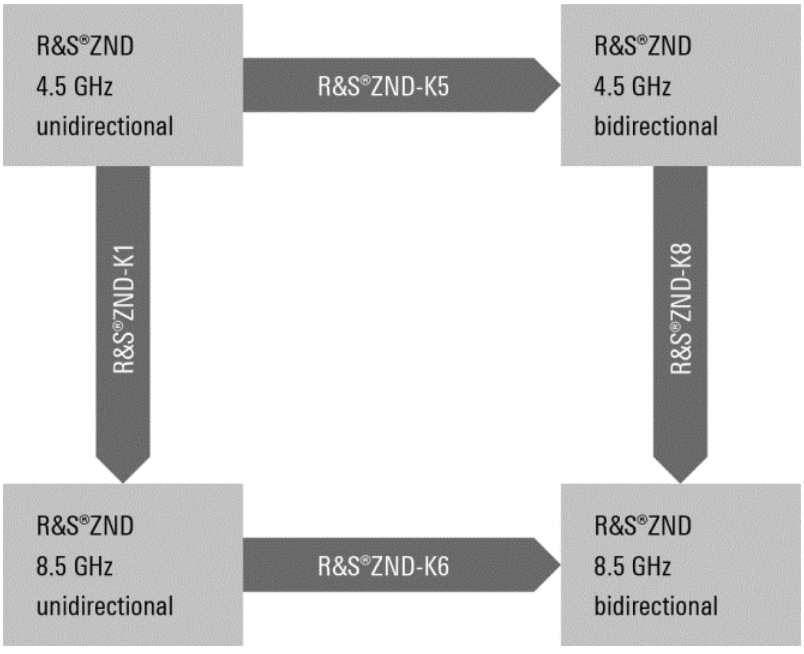
Full test set, 8.5 GHz	bidirectional measurement capabilities for units with a frequency range of 8.5 GHz
Frequency range	100 kHz to 8.5 GHz
Bidirectional measurements	yes
Prerequisites	R&S®ZND base unit with R&S®ZND-K1

R&S®ZND-K7

Extended power range		
Power range	100 kHz to 8.5 GHz	–45 dBm to +3 dBm

R&S®ZND-K8

Extended frequency range, 8.5 GHz, full test set	frequency range extension for bidirectional units
Frequency range	100 kHz to 8.5 GHz
Bidirectional measurements	yes
Prerequisites	R&S®ZND base unit with R&S®ZND-K5



Upgrade options for R&S®ZND base unit.

R&S®ZND-B10

GPIB interface	remote control interface in line with IEEE 488, IEC 60625; 24-pin

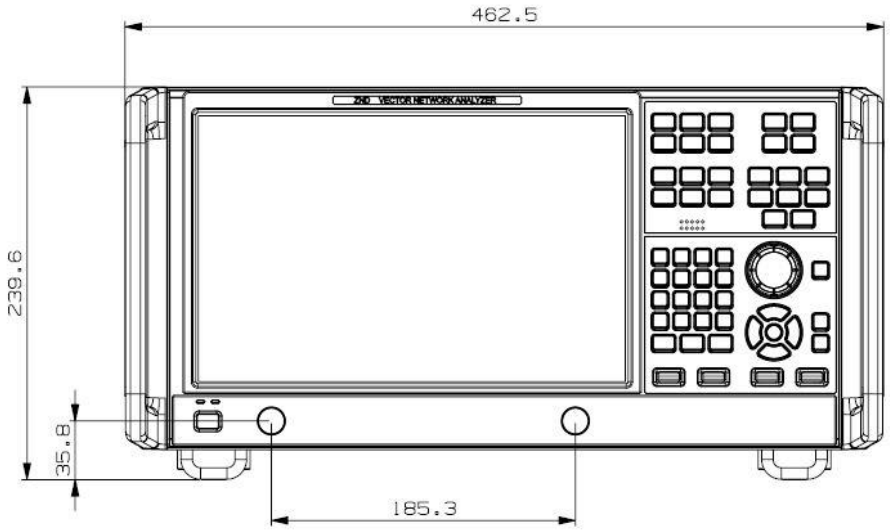
R&S®ZN-B14

Handler I/O	several control and trigger signals, 36-pin Centronics connector, 3.3 V TTL, for controlling external devices, limit checks, sweep signals, etc.	
Agilent handler interface compatibility	type 3	
Input signals	pin 2, pin 18	3.3 V TTL, 5 V tolerant
Output signals	pin 3 to pin 17, pin 19 to pin 21, pin 30 to pin 34, pin 36	3.3 V TTL, 5 V tolerant
Input/output signals	pin 22 to pin 29	3.3 V TTL, 5 V tolerant
+5 V output	pin 35	+5 V, max. 100 mA
Response time of write strobe signal	pin 32	1 µs
Pulse width of write strobe signal	pin 32	1 µs
Pulse width of external trigger signal	pin 18	> 1 µs
Pulse width of sweep end signal	pin 34	> 10 µs

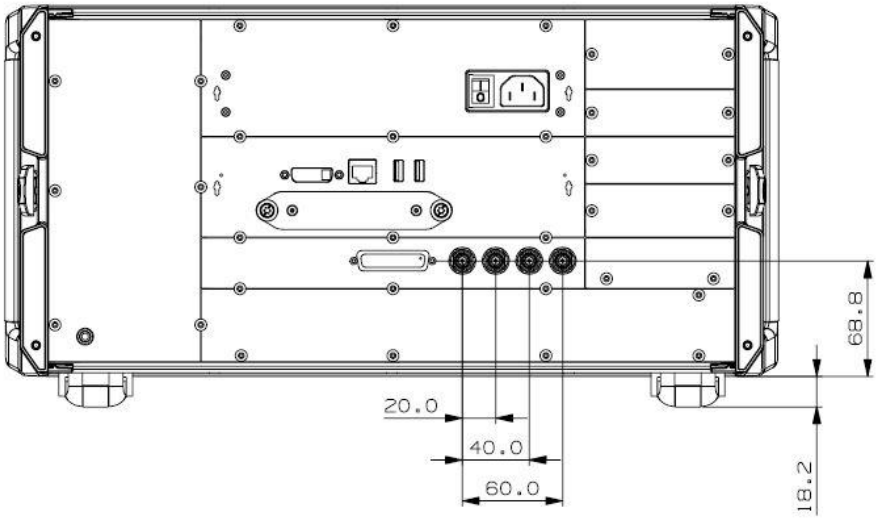
General data

Temperature loading		in line with IEC 60068-2-1 and IEC 60068-2-2
	operating temperature range	+5 °C to +40 °C
	storage temperature range	–20 °C to +60 °C
Damp heat		+40 °C at 85 % rel. humidity, in line with IEC 60068-2-30
Altitude	operating environment	max. 2000 m
	storage environment	max. 4500 m
Mechanical resistance	vibration, sinusoidal	5 Hz to 55 Hz, 0.15 mm amplitude constant, 55 Hz to 150 Hz, 0.5 g constant, in line with IEC 60068-2-6
	vibration, random	10 Hz to 300 Hz, acceleration 1.2 g (RMS), in line with IEC 60068-2-64
	shock	40 g shock spectrum, in line with MIL-STD-810E method no. 516.4 procedure I
Calibration interval		1 year
EMC	RF emission	in line with CISPR 11/EN 55011 group 1 class A (for a shielded test setup); instrument complies with the emission requirements stipulated by EN 55011 and EN 61326-1 class A; this means that the instrument is suitable for use in industrial environments
	immunity	in line with EMC Directive 2004/108/EC including: IEC/EN 61326-1 (immunity test requirement for industrial environment, EN 61326 table 2), IEC/EN 61326-2-1, IEC/EN 61000-3-2, IEC/EN 61000-3-3
Safety		in line with IEC 61010-1, EN 61010-1 and UL 61010-1
Power supply		100 V to 240 V at 50 Hz to 60 Hz and 400 Hz, max. 3 A to 1.25 A respectively
Power consumption		max. 300 W, typ. 120 W
Test mark		VDE, GS, $_{C}$CSA$_{US}$, CE conformity mark
Dimensions	W × H × D	462.5 mm × 239.6 mm × 361.5 mm (18.2 in × 9.4 in × 14.23 in)
Weight		14 kg (30.9 lb)
Shipping weight		19 kg (41.9 lb)

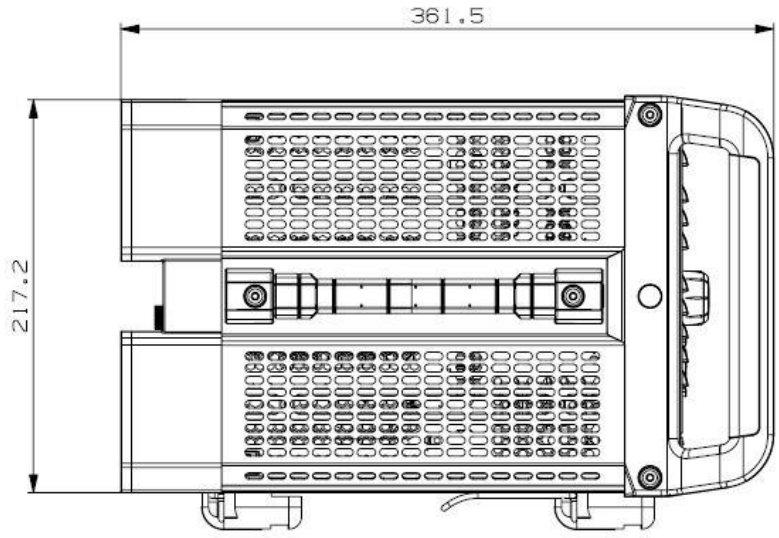
Dimensions (in mm)



Front view of the R&S®ZND.



Rear view of the R&S®ZND.



Side view of the R&S®ZND.

Ordering information

Designation	Type	Retrofit [6]	On Site [7]	Order No.
Base unit				
Vector Network Analyzer, Two Ports, 4.5 GHz, N	R&S®ZND			1328.5170.92
Options				
Extended Frequency Range, unidirectional, 8.5 GHz	R&S®ZND-K1		●	1328.5306.02
Time Domain Analysis (TDR)	R&S®ZND-K2		●	1328.5393.02
Full Test Set, base unit, bidirectional, 4.5 GHz	R&S®ZND-K5		●	1328.5312.02
Full Test Set, bidirectional, 8.5 GHz	R&S®ZND-K6		●	1328.5329.02
Extended Power Range for R&S®ZND	R&S®ZND-K7		●	1328.5335.02
Extended Frequency Range, Full Test Set, bidirectional, 8.5 GHz	R&S®ZND-K8		●	1328.5412.02
1 mHz Frequency Resolution	R&S®ZND-K19		●	1326.8089.02
GPIB Interface	R&S®ZND-B10	●	●	1328.5358.02
Additional Removable Harddisk	R&S®ZND-B19	●	●	1326.7760.02
Handler I/O	R&S®ZN-B14	●	●	1316.2459.02
19" Rackmount Kit	R&S®ZZA-KN5	●	●	1175.3040.00

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	

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.

For product brochure, see PD 3607.0381.12 and www.rohde-schwarz.com

[6] Option may also be ordered at a later stage.

[7] Option may be installed by the customer on site.

[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

About Rohde&Schwarz

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

Sustainable product design

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

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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PD 3607.0381.22 | Version 02.01 | June 2016 (ch)
R&S®ZND Vector Network Analyzer
Data without tolerance limits is not binding | Subject to change

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