

R&S®ZNB

Vector Network Analyzer

Specifications

Test & Measurement

Data Sheet | 02.00



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Definitions

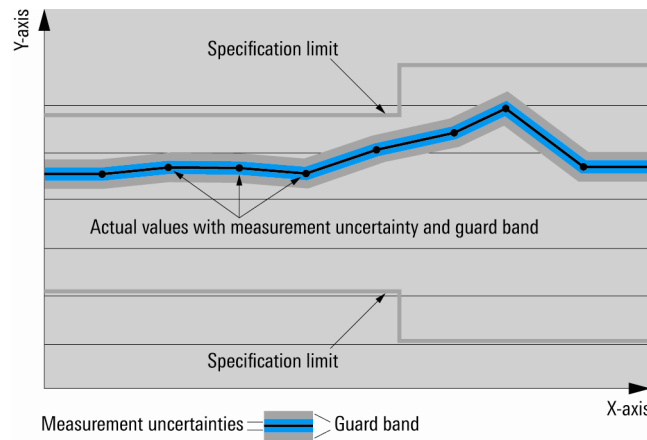
General

Product data applies under the following conditions:

- Three hours storage at ambient temperature followed by 60 minutes warm-up operation
- Specified environmental conditions met
- Recommended calibration interval adhered to
- All internal automatic adjustments performed, if applicable
- Unless stated otherwise, specifications apply to test ports and a nominal source power of -10 dBm

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 $<$, \leq , $>$, \geq , \pm , 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.

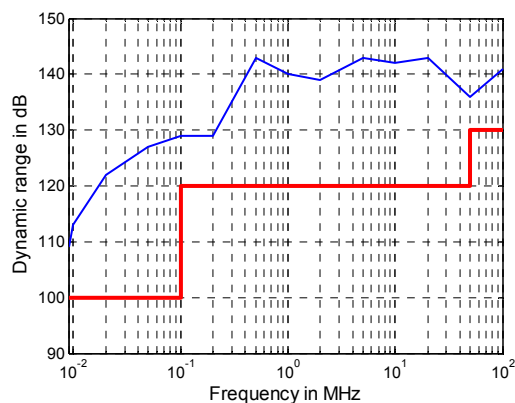
Uncertainties

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.

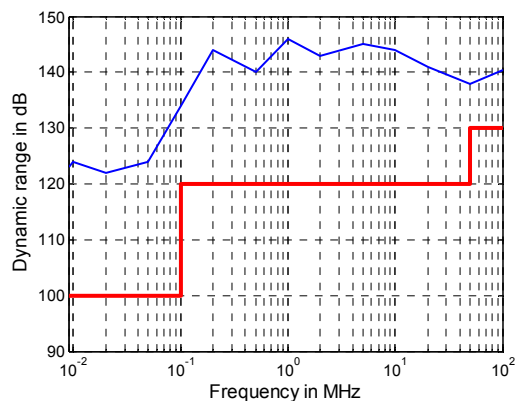
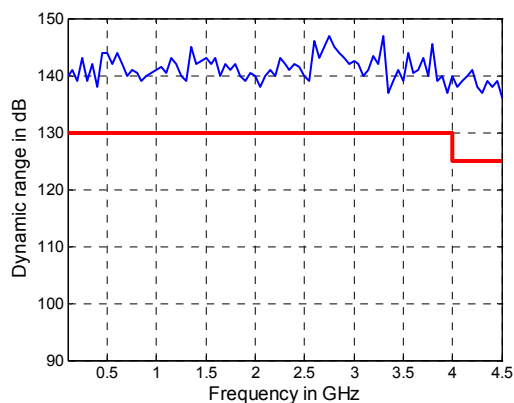
Typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

Measurement range

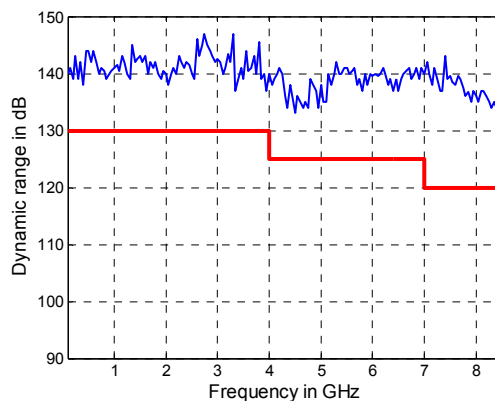
Impedance		50 Ω
Test port connector		N female
Number of test ports		2 or 4
Frequency range ¹	R&S®ZNB4	9 kHz to 4.5 GHz
	R&S®ZNB8	9 kHz to 8.5 GHz
Static frequency accuracy	without precision frequency reference	5 ppm
	with optional precision frequency reference	0.5 ppm
Frequency resolution		1 Hz
Number of measurement points	per trace	2 to 100001
Measurement bandwidth	1/1.5/2/3/5/7 steps	
	without optional increased bandwidth	1 Hz to 1 MHz
	with optional increased bandwidth	1 Hz to 10 MHz
Dynamic range ² (without optional step attenuators)	9 kHz to 100 kHz	> 100 dB, typ. 122 dB
	100 kHz to 50 MHz	> 120 dB, typ. 138 dB
	50 MHz to 4 GHz	> 130 dB, typ. 140 dB
	4 GHz to 7 GHz	> 125 dB, typ. 138 dB
	7 GHz to 8.5 GHz	> 120 dB, typ. 130 dB



Dynamic range in dB versus frequency for the R&S®ZNB4.



Dynamic range in dB versus frequency for the R&S®ZNB8.



¹ Specified and typical data given in this data sheet applies to the R&S®ZNB4 and the R&S®ZNB8; please note their respective frequency ranges.

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. Dynamic range between port 1 and port 2 and between port 3 and port 4 (4-port model). Otherwise the dynamic range performance is typical.

Measurement speed

Measurement time	for 201 measurements points, with 200 MHz span, 500 kHz measurement bandwidth	
	with 900 MHz center frequency	< 5 ms
	with 5.1 GHz center frequency	< 4 ms
Measurement time per point	500 kHz measurement bandwidth, CW mode	2.5 μ s
Sampling time per point	at 1 MHz measurement bandwidth	860 ns
	at 10 MHz measurement bandwidth	312 ns
Data transfer time	for 201 measurements points	
	via IEC/IEEE bus	typ. 2.5 ms
	via VX11 over 1 Gbit/s LAN	typ. 1.6 ms
	via RSIB over 1 Gbit/s LAN	typ. 1.0 ms
Time for measurement and data transfer	for 201 measurements points, with 800 MHz start frequency, 1 GHz stop frequency, 1 MHz measurement bandwidth (no additional time for data transfer is needed, as this occurs simultaneously during the measurement)	typ. 3 ms
Switching time between channels	with no more than 2001 points	< 5 ms
Switching time between two preloaded instrument settings	with no more than 2001 points	< 5 ms

Typical sweep times versus number of measurement points (two-port model) ³					
Number of measurement points	51	201	401	1601	5001
800 MHz start frequency, 1 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	49 ms	191 ms	381 ms	1440 ms	4480 ms
With 2-port TOSM calibration	98 ms	382 ms	758 ms	2880 ms	8950 ms
800 MHz start frequency, 1 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	2.0 ms	6 ms	8 ms	22 ms	58 ms
With 2-port TOSM calibration	4.0 ms	12 ms	16 ms	43 ms	113 ms
800 MHz start frequency, 1 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	1.5 ms	3 ms	4 ms	10 ms	29 ms
With 2-port TOSM calibration	3.0 ms	6 ms	8 ms	20 ms	58 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	52 ms	191 ms	377 ms	1490 ms	4630 ms
With 2-port TOSM calibration	103 ms	382 ms	758 ms	2980 ms	9250 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	4.0 ms	8 ms	13 ms	40 ms	117 ms
With 2-port TOSM calibration	7.5 ms	16 ms	27 ms	80 ms	228 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	3.5 ms	6.5 ms	10 ms	30 ms	59 ms
With 2-port TOSM calibration	7.0 ms	12.5 ms	19 ms	57 ms	118 ms
100 kHz start frequency, 8.5 GHz stop frequency Hz, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	53 ms	193 ms	377 ms	1490 ms	4630 ms
With 2-port TOSM calibration	106 ms	385 ms	758 ms	2980 ms	9250 ms
100 kHz start frequency, 8.5 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	4.5 ms	9 ms	16 ms	40 ms	121 ms
With 2-port TOSM calibration	8.5 ms	19 ms	31 ms	80 ms	241 ms
100 kHz start frequency, 8.5 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	4.5 ms	8 ms	12 ms	30 ms	77 ms
With 2-port TOSM calibration	8.0 ms	16 ms	23 ms	59 ms	153 ms

³ Sweep time is to be understood as cycle time; static frequency accuracy of the instrument applies; measured with firmware version 1.40, Windows 7.

Typical sweep times versus number of measurement points (four-port model) ³

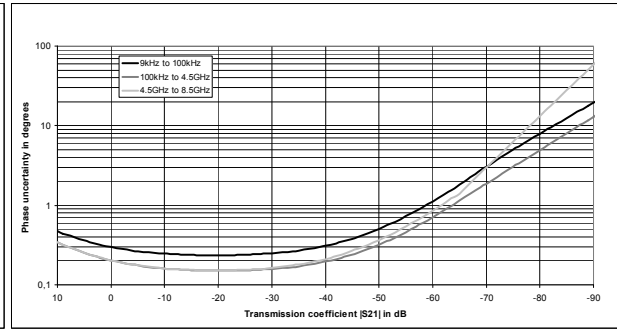
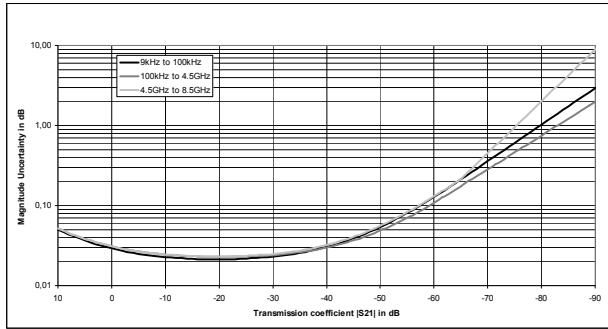
Number of measurement points	51	201	401	1601	5001
800 MHz start frequency, 1 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	49 ms	191 ms	381 ms	1440 ms	4480 ms
With 4-port TOSM calibration	195 ms	762 ms	1520 ms	5750 ms	18000 ms
800 MHz start frequency, 1 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	2.0 ms	5 ms	8 ms	22 ms	63 ms
With 4-port TOSM calibration	7.0 ms	19 ms	28 ms	81 ms	260 ms
800 MHz start frequency, 1 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	1.5 ms	3 ms	4 ms	10 ms	29 ms
With 4-port TOSM calibration	5.0 ms	11 ms	17 ms	51 ms	150 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	52 ms	191 ms	377 ms	1490 ms	4630 ms
With 4-port TOSM calibration	206 ms	762 ms	1520 ms	5950 ms	18700 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	4.0 ms	8 ms	12 ms	33 ms	90 ms
With 4-port TOSM calibration	14 ms	28 ms	43 ms	130 ms	360 ms
100 kHz start frequency, 4.5 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	3.5 ms	6.5 ms	8 ms	21 ms	47 ms
With 4-port TOSM calibration	13 ms	23 ms	31 ms	86 ms	208 ms
100 kHz start frequency, 8.5 GHz stop frequency Hz, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	53 ms	193 ms	377 ms	1490 ms	4630 ms
With 4-port TOSM calibration	212 ms	767 ms	1520 ms	5950 ms	18700 ms
100 kHz start frequency, 8.5 GHz stop frequency, AGC AUTO, 100 kHz measurement bandwidth					
With correction switched off	4.5 ms	9 ms	13 ms	33 ms	92 ms
With 4-port TOSM calibration	18 ms	34 ms	49 ms	133 ms	361 ms
100 kHz start frequency, 8.5 GHz stop frequency, AGC AUTO, 1 MHz measurement bandwidth					
With correction switched off	4.5 ms	8 ms	10 ms	22 ms	55 ms
With 4-port TOSM calibration	16 ms	27 ms	37 ms	89 ms	227 ms

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

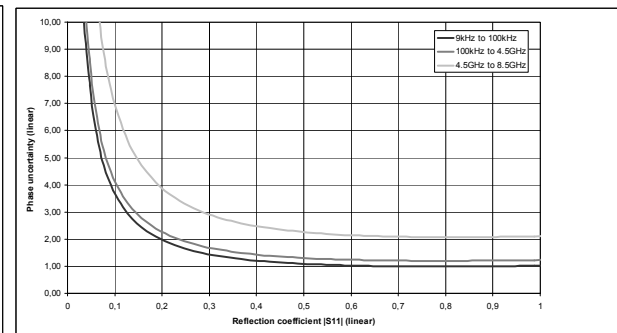
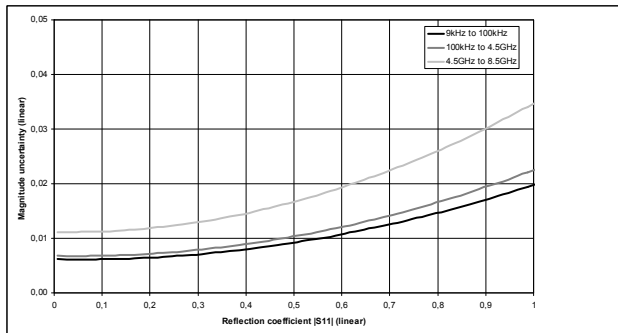
Above 9 kHz	+5 dB to –35 dB	< 0.05 dB or < 0.5°
	–35 dB to –50 dB	< 0.1 dB or < 1°
	–50 dB to –65 dB	< 0.2 dB or < 2°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.		



Typical accuracy of transmission magnitude and transmission phase measurements for the R&S®ZNB4 in the frequency range from 9 kHz to 4.5 GHz, for the R&S®ZNB8 in the frequency range from 9 kHz to 8.5 GHz.
Analysis conditions: $S_{11} = S_{22} = 0$, cal. power –10 dBm, meas. power –10 dBm.

Accuracy of reflection measurements

9 kHz to 50 MHz	0 dB to –15 dB	< 0.3 dB or < 2°
	–15 dB to –25 dB	< 0.8 dB or < 6°
	–25 dB to –35 dB	< 3.0 dB or < 17°
50 MHz to 4 GHz	0 dB to –15 dB	< 0.2 dB or < 2°
	–15 dB to –25 dB	< 0.6 dB or < 4°
	–25 dB to –35 dB	< 2.0 dB or < 12°
4 GHz to 8.5 GHz	0 dB to –15 dB	< 0.3 dB or < 2°
	–15 dB to –25 dB	< 0.8 dB or < 6°
	–25 dB to –35 dB	< 3.0 dB or < 17°
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®ZNB4 in the frequency range from 9 kHz to 4.5 GHz, for the R&S®ZNB8 in the frequency range from 9 kHz to 8.5 GHz.
Analysis conditions: $S_{12} = S_{21} = 0$, cal. power –10 dBm, meas. power –10 dBm.

Trace stability

Trace noise magnitude (RMS)	at 0 dBm source power, 0 dB reflection	IF bandwidth	
	9 kHz to 20 kHz	1 kHz	< 0.008 dB RMS, typ. 0.004 dB
	20 kHz to 100 kHz	1 kHz	< 0.004 dB RMS, typ. 0.001 dB
	100 kHz to 100 MHz	10 kHz	< 0.002 dB RMS, typ. 0.001 dB
	100 MHz to 8.5 GHz	10 kHz	< 0.004 dB RMS, typ. 0.002 dB
Trace noise phase (RMS)	at 0 dBm source power, 0 dB reflection	IF bandwidth	
	9 kHz to 20 kHz	1 kHz	< 0.07° RMS, typ. 0.04° RMS
	20 kHz to 100 kHz	1 kHz	< 0.035° RMS, typ. 0.01° RMS
	100 kHz to 100 MHz	10 kHz	< 0.015° RMS, typ. 0.005° RMS
	100 MHz to 8.5 GHz	10 kHz	< 0.035° RMS, typ. 0.02° RMS
Temperature dependence	at 0 dB transmission or reflection		
	9 kHz to 4.5 GHz	magnitude	typ. 0.01 dB/°C
		phase	typ. 0.15°/°C
	4.5 GHz to 8.5 GHz	magnitude	typ. 0.04 dB/°C
		phase	typ. 0.8°/°C

Effective system data

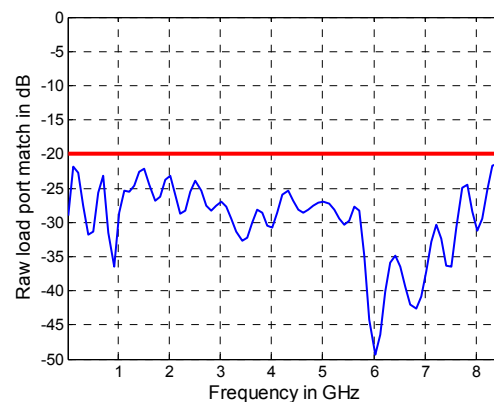
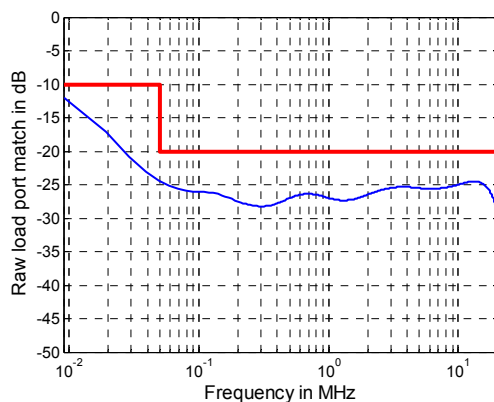
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C after calibration. The data is based on a measurement bandwidth of 10 Hz and system error calibration with an R&S® ZV-Z270 calibration kit. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).

	9 kHz to 100 kHz	100 kHz to 4.5 GHz	4.5 GHz to 8.5 GHz
Directivity	46	45	40
Source match	41	40	36
Load match	44	45	40
Reflection tracking	0.02	0.02	0.05
Transmission tracking	0.028	0.018	0.09

Factory-calibrated 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. The data is based on a source power of -10 dBm and a measurement bandwidth of 1 kHz.

Directivity	9 kHz to 50 kHz	> 20 dB, typ. 35 dB
	50 kHz to 4.5 GHz	> 30 dB, typ. 50 dB
	4.5 GHz to 8.5 GHz	> 30 dB, typ. 50 dB
Source match	9 kHz to 50 kHz	> 20 dB, typ. 35 dB
	50 kHz to 4.5 GHz	> 30 dB, typ. 50 dB
	4.5 GHz to 8.5 GHz	> 30 dB, typ. 50 dB
Reflection tracking	9 kHz to 8.5 GHz	< 0.5 dB, typ. 0.1 dB
Load match	9 kHz to 50 kHz	> 10 dB, typ. 15 dB
	50 kHz to 8.5 GHz	> 20 dB, typ. 25 dB
Transmission tracking	9 kHz to 8.5 GHz	< 0.5 dB, typ. 0.1 dB

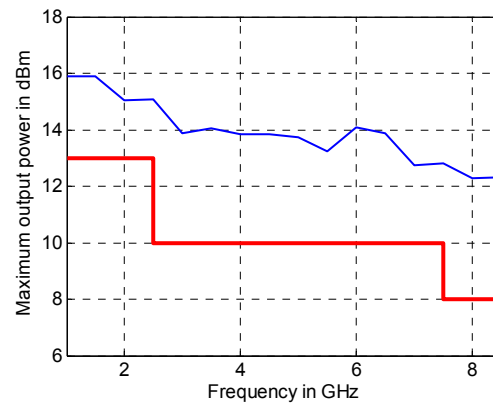
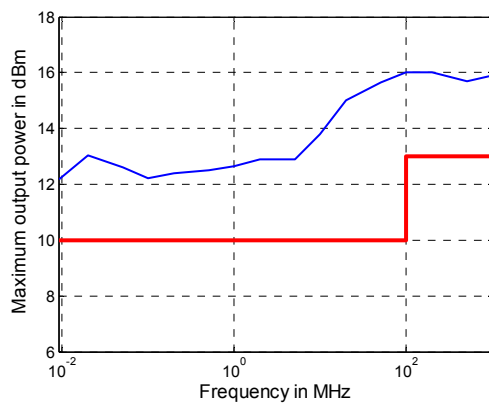


Raw load port match versus frequency for the R&S® ZNB8.

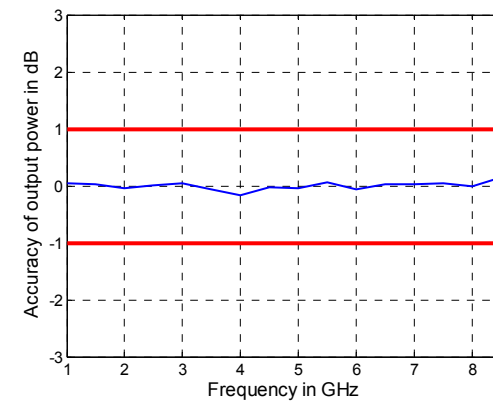
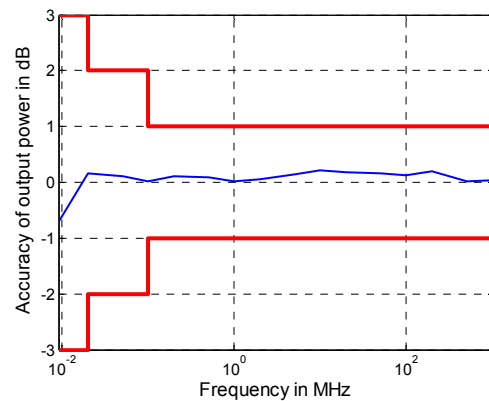
Test port output

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

Power range	without R&S®ZNB-B22/-B24 extended power range option	
	9 kHz to 100 MHz	–55 dBm to +10 dBm, typ. +12 dBm
	100 MHz to 2.5 GHz	–55 dBm to +13 dBm, typ. +15 dBm
	2.5 GHz to 7.5 GHz	–55 dBm to +10 dBm, typ. +13 dBm
	7.5 GHz to 8.5 GHz	–55 dBm to +8 dBm, typ. +12 dBm
	with R&S®ZNB-B22/-B24 extended power range option	
	9 kHz to 100 MHz	–85 dBm to +10 dBm, typ. +12 dBm
	100 MHz to 2.5 GHz	–85 dBm to +13 dBm, typ. +15 dBm
	2.5 GHz to 7.5 GHz	–85 dBm to +10 dBm, typ. +13 dBm
	7.5 GHz to 8.5 GHz	–85 dBm to +8 dBm, typ. +12 dBm
Power accuracy	source power –10 dBm	
	9 kHz to 50 kHz	< 3 dB
	50 kHz to 8.5 GHz	< 2 dB, typ. 0.5 dB
Power linearity	referenced to –10 dBm	
	source power ≥ –55 dBm	< 1 dB
	source power < –55 dBm	< 2 dB
Power resolution	0.01 dB	
Harmonics	at 0 dBm	
	20 kHz to 100 MHz	< –20 dBc, typ. < –30 dBc
	100 MHz to 8.5 GHz	< –25 dBc, typ. < –35 dBc



Maximum output power in dBm versus frequency for the R&S®ZNB8.



Output power accuracy in dB versus frequency for the R&S®ZNB8.

Test port input

Match	without system error correction	
	R&S® ZNB4	
	9 kHz to 20 kHz	> 10 dB
	20 kHz to 4.5 GHz	> 20 dB
	R&S® ZNB8	
	9 kHz to 20 kHz	> 10 dB
	20 kHz to 8.5 GHz	> 20 dB
Maximum nominal input level		+13 dBm
Power measurement accuracy	at –10 dBm without power calibration	
	9 kHz to 100 kHz	< 2 dB
	100 kHz to 8.5 GHz	< 1 dB
Receiver linearity	referenced to –10 dBm	
	for +20 dB to +10 dB	
	9 kHz to 7.5 GHz	< 0.2 dB
	for +18 dB to +10 dB	
	7.5 GHz to 8.5 GHz	< 0.2 dB
	for +10 dB to –40 dB	
	9 kHz to 8.5 GHz	< 0.1 dB
Damage level		+27 dBm
Damage DC voltage		30 V
Noise level	at 1 kHz measurement bandwidth, normalized to 1 Hz	
	9 kHz to 50 kHz	< –115 dBm (1 Hz)
	50 kHz to 50 MHz	< –120 dBm (1 Hz)
	50 MHz to 4 GHz	< –130 dBm (1 Hz)
	4 GHz to 6.5 GHz	< –125 dBm (1 Hz)
	6.5 GHz to 8.5 GHz	< –120 dBm (1 Hz)
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 connectors on rear panel
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Display

Screen	30.7 cm (12.1") diagonal WXGA color LCD with touchscreen
Resolution	1280 × 800 × 262144 (high color, 125 dpi)

Rear panel connectors

GPIO	optional remote control in line with IEEE 488, IEC 60625; 24-pin
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LAN	local area network connector, 8-pin, RJ-45
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USB	(two) universal serial bus connectors for connecting USB devices (USB 2.0); four additional USB connectors on front panel
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10 MHz REF	either input or output 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
Output frequency		10 MHz
Output frequency accuracy		80 Hz
Output power		+9 dBm ± 4 dB at 50 Ω

MONITOR	DVI connector (for external monitor)
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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)	indicated drive ports (alternatively user-selectable to 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 TRIGGER	trigger input for analyzer	
Connector type		BNC, female
TTL signal (edge- or level-triggered)		3 V, 5 V tolerant
Polarity (selectable)		positive or negative
Minimum pulse width		1 μ s
Input impedance		> 10 k Ω

Options

R&S® ZNB-B1

Bias-tee		
Connector type		BNC, female
Maximum nominal input voltage		30 V
Maximum nominal input current		400 mA
Damage voltage		30 V
Damage current		420 mA
Frequency range	R&S® ZNB4 with R&S® ZNB-B1	100 kHz to 4.5 GHz
	R&S® ZNB8 with R&S® ZNB-B1	100 kHz to 8.5 GHz
Frequency response data		typical and specified data is valid for the limited frequency range given above

Factory-calibrated 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. The data is based on a source power of –10 dBm and a measurement bandwidth of 1 kHz.

Directivity	100 kHz to 4.5 GHz	> 30 dB, typ. 50 dB
	4.5 GHz to 8.5 GHz	> 30 dB, typ. 50 dB
Source match	100 kHz to 500 kHz	> 20 dB, typ. 30 dB
	500 kHz to 4.5 GHz	> 30 dB, typ. 50 dB
	4.5 GHz to 8.5 GHz	> 30 dB, typ. 50 dB
Reflection tracking	100 kHz to 8.5 GHz	< 0.5 dB, typ. 0.1 dB
Load match	100 kHz to 500 kHz	> 10 dB, typ. 15 dB
	500 kHz to 8.5 GHz	> 20 dB, typ. 25 dB
Transmission tracking	100 kHz to 8.5 GHz	< 0.5 dB, typ. 0.1 dB

R&S® ZNB-B4

Precision frequency reference (OCXO)		
Static frequency accuracy		0.5 ppm

R&S® ZNB4-B22/-B24 and R&S® ZNB8-B22/-B24

Extended power range		
Frequency range	R&S® ZNB4-B22 and R&S® ZNB4-B24	9 kHz to 4.5 GHz
	R&S® ZNB8-B22 and R&S® ZNB8-B24	9 kHz to 8.5 GHz
Power range	9 kHz to 100 MHz	–85 dBm to +10 dBm, typ. +12 dBm
	100 MHz to 2.5 GHz	–85 dBm to +13 dBm, typ. +15 dBm
	2.5 GHz to 7.5 GHz	–85 dBm to +10 dBm, typ. +13 dBm
	7.5 GHz to 8.5 GHz	–85 dBm to +8 dBm, typ. +12 dBm

R&S® ZNB4-B31/-B32/-B33/-B34 and R&S® ZNB8-B31/-B32/-B33/-B34

Receiver step attenuators		
Frequency range	R&S® ZNB4-B31/-B32/-B33/-B34	9 kHz to 4.5 GHz
	R&S® ZNB8-B31/-B32/-B33/-B34	9 kHz to 8.5 GHz
Attenuation		0 dB to 30 dB in 10 dB steps

R&S® ZNB-B81

This data is valid from +18 °C to +28 °C and a measurement bandwidth at maximum 10 kHz.

DC inputs		
Number of ports		4
Connector type		BNC, female
Voltage range		±20 V, ±3 V, ±0.3 V
Measurement accuracy	±20 V	1 % of reading + 0.01 V
	±3 V	1 % of reading + 0.001 V
	±0.3 V	1 % of reading ± 0.001 V
Input impedance		≥ 1 MΩ
Damage voltage		30 V

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-810 E 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
EMC, 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. 5.5 A to 2.3 A respectively
Power consumption	R&S®ZNB4 and R&S®ZNB8 with two ports	max. 450 W, typ. 120 W
	R&S®ZNB4 and R&S®ZNB8 with four ports	max. 450 W, typ. 170 W
Test mark		VDE, GS, cCSA _{US} , CE conformity mark
Dimensions (W × H × D)	R&S®ZNB4 and R&S®ZNB8 with two ports or four ports	461.1 mm × 239.9 mm × 351.0 mm (18.2 in × 9.6 in × 13.9 in)
Weight	R&S®ZNB4 and R&S®ZNB8 with two ports	14 kg (30.9 lbs)
	R&S®ZNB4 and R&S®ZNB8 with four ports	16 kg (35.3 lbs)
Shipping weight	R&S®ZNB4 and R&S®ZNB8 with two ports	19 kg (41.9 lbs)
	R&S®ZNB4 and R&S®ZNB8 with four ports	21 kg (46.3 lbs)

Ordering information

Designation	Type	Order No.
Base unit		
Vector Network Analyzer, Two Ports, 4.5 GHz, N	R&S®ZNB4	1311.6010K22
Vector Network Analyzer, Four Ports 4.5 GHz, N	R&S®ZNB4	1311.6010K24
Vector Network Analyzer, Two Ports, 8.5 GHz, N	R&S®ZNB8	1311.6010K42
Vector Network Analyzer, Four Ports 8.5 GHz, N	R&S®ZNB8	1311.6010K44
Options		
Extended Power Range		
Extended Power Range for Two-Port R&S®ZNB4	R&S®ZNB4-B22	1316.0210.02
Extended Power Range for Four-Port R&S®ZNB4	R&S®ZNB4-B24	1316.0233.02
Extended Power Range for Two-Port R&S®ZNB8	R&S®ZNB8-B22	1316.0227.02
Extended Power Range for Four-Port R&S®ZNB8	R&S®ZNB8-B24	1316.0240.02
Receiver step attenuators		
Receiver Step Attenuator, Port 1, for R&S®ZNB4	R&S®ZNB4-B31	1316.0185.02
Receiver Step Attenuator, Port 2, for R&S®ZNB4	R&S®ZNB4-B32	1316.0179.02
Receiver Step Attenuator, Port 3, for R&S®ZNB4	R&S®ZNB4-B33	1316.0262.02
Receiver Step Attenuator, Port 4, for R&S®ZNB4	R&S®ZNB4-B34	1316.0433.02
Receiver Step Attenuator, Port 1, for R&S®ZNB8	R&S®ZNB8-B31	1316.0191.02
Receiver Step Attenuator, Port 2, for R&S®ZNB8	R&S®ZNB8-B32	1316.0204.02
Receiver Step Attenuator, Port 3, for R&S®ZNB8	R&S®ZNB8-B33	1316.0162.02
Receiver Step Attenuator, Port 4, for R&S®ZNB8	R&S®ZNB8-B34	1316.0440.02
Bias-Tees	R&S®ZNB-B1	1316.1700.02
Second Internal Source	R&S®ZNB-B2	1317.7954.02
Precision Frequency Reference (OCXO)	R&S®ZNB-B4	1316.1769.02
GPIO Interface	R&S®ZNB-B10	1311.5995.02
DC Inputs	R&S®ZNB-B81	1316.0004.02
Time Domain Analysis	R&S®ZNB-K2	1316.0156.02
10 MHz Receiver Bandwidth	R&S®ZNB-K17	1316.1881.02
19" Rackmount Kit	R&S®ZZA-KN5	1175.3040.00

Service options		
Extended warranty, one year	R&S®WE1ZNB	Please contact your local Rohde & Schwarz sales office.
Extended warranty, two years	R&S®WE2ZNB	
Extended warranty, three years	R&S®WE3ZNB	
Extended warranty, four years	R&S®WE4ZNB	
Extended warranty with calibration, one year	R&S®CW1ZNB	
Extended warranty with calibration, two years	R&S®CW2ZNB	
Extended warranty with calibration, three years	R&S®CW3ZNB	
Extended warranty with calibration, four years	R&S®CW4ZNB	

Extended warranty with a term of one to four years (WE1 to WE4)

Repairs carried out during the contract term are free of charge⁴. Necessary calibration and adjustments carried out during repairs are also covered. Simply contact the forwarding agent we name; your product will be picked up free of charge and returned to you in top condition a couple of days later.

Extended warranty with calibration (CW1 to CW4)

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 repairs⁴ and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

For product brochure, see PD 5214.5384.12 and www.rohde-schwarz.com

⁴ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

Service you can rely on

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

About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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