R&S®ZNBT
VECTOR NETWORK ANALYZER

Specifications

Specifications
Version 11.00

ROHDE&SCHWARZ
Make ideas real

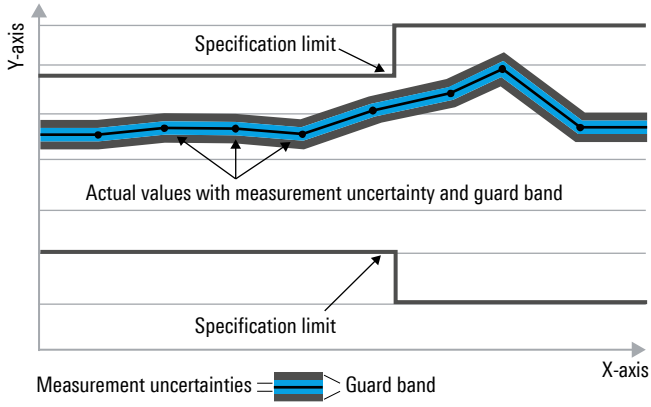
CONTENTS

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.



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.

Measurement range

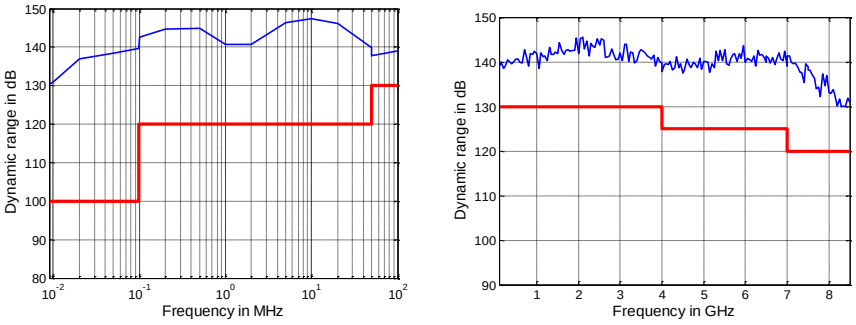
Impedance		50 Ω
Test port connector	R&S®ZNBT8	N, female
	R&S®ZNBT20	3.5 mm, male, ruggedized
	R&S®ZNBT26	2.92 mm, male, ruggedized
	R&S®ZNBT40	2.92 mm, male, ruggedized
Number of test ports (the R&S®ZNBT8 supports simultaneous data acquisition at all test ports)	R&S®ZNBT8 base unit	4
	R&S®ZNBT20 base unit	8
	R&S®ZNBT26 base unit	8
	R&S®ZNBT40 base unit	8
	with R&S®ZNBT8-B108 option	8 (additional ports 5 to 8)
	with R&S®ZNBT8-B112 or R&S®ZNBT20-B112 or R&S®ZNBT26-B112 or R&S®ZNBT40-B112 option	12 (additional ports 9 to 12)
	with R&S®ZNBT8-B116 or R&S®ZNBT20-B116 or R&S®ZNBT26-B116 or R&S®ZNBT40-B116 option	16 (additional ports 13 to 16)
	with R&S®ZNBT8-B120 or R&S®ZNBT20-B120 or R&S®ZNBT26-B120 or R&S®ZNBT40-B120 option	20 (additional ports 17 to 20)
	with R&S®ZNBT8-B124 or R&S®ZNBT20-B124 or R&S®ZNBT26-B124 or R&S®ZNBT40-B124 option	24 (additional ports 21 to 24)
Frequency range	R&S®ZNBT8	9 kHz to 8.5 GHz
	R&S®ZNBT20	100 kHz to 20 GHz
	R&S®ZNBT26	100 kHz to 26.5 GHz
	R&S®ZNBT40	100 kHz to 40 GHz

Static frequency accuracy		(time since last adjustment × aging rate) + temperature drift + calibration accuracy
Aging per year	standard	$\pm 1 \times 10^{-6}$
	with R&S®ZNBT-B4 precision frequency reference option	$\pm 1 \times 10^{-7}$
Temperature drift (+5 °C to +40 °C)	standard	$\pm 1 \times 10^{-6}$
	with R&S®ZNBT-B4 precision frequency reference option	$\pm 1 \times 10^{-8}$
Achievable initial calibration accuracy	standard	$\pm 5 \times 10^{-7}$
	with R&S®ZNBT-B4 precision frequency reference option	$\pm 5 \times 10^{-8}$

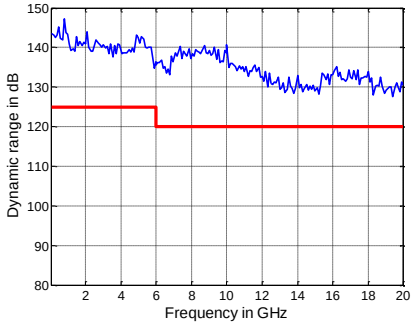
Frequency resolution		1 Hz
Number of measurement points [1]	per trace	2 to 100001
Measurement bandwidth	1/1.5/2/3/5/7 sequence	
	without optional increased bandwidth	1 Hz to 1 MHz
	with optional increased bandwidth	1 Hz to 10 MHz

[1] The maximum number of sweep points may vary depending on the number of ports involved in the measurement.

Dynamic range [2, 3] at all ports		**specified**	**typical**
R&S®ZNBT8 (without optional step attenuators)	9 kHz to 100 kHz	≥ 100 dB	122 dB
	100 kHz to 50 MHz	≥ 120 dB	138 dB
	50 MHz to 4 GHz	≥ 130 dB	140 dB
	4 GHz to 7 GHz	≥ 125 dB	138 dB
	7 GHz to 8.5 GHz	≥ 120 dB	130 dB
R&S®ZNBT20	100 kHz to 1 MHz	≥ 105 dB	120 dB
	1 MHz to 10 MHz	≥ 110 dB	130 dB
	10 MHz to 100 MHz	≥ 120 dB	140 dB
	100 MHz to 6 GHz	≥ 125 dB	140 dB
	6 GHz to 20 GHz	≥ 120 dB	130 dB
R&S®ZNBT26	100 kHz to 1 MHz	≥ 105 dB	120 dB
	1 MHz to 10 MHz	≥ 110 dB	130 dB
	10 MHz to 5 GHz	≥ 120 dB	135 dB
	5 GHz to 10 GHz	≥ 115 dB	125 dB
	10 GHz to 26.5 GHz	≥ 110 dB	120 dB
R&S®ZNBT40	100 kHz to 1 MHz	≥ 105 dB	120 dB
	1 MHz to 10 MHz	≥ 110 dB	130 dB
	10 MHz to 5 GHz	≥ 120 dB	135 dB
	5 GHz to 10 GHz	≥ 115 dB	125 dB
	10 GHz to 30 GHz	≥ 110 dB	120 dB
	30 GHz to 35 GHz	≥ 105 dB	115 dB
	35 GHz to 38 GHz	≥ 100 dB	105 dB
	38 GHz to 40 GHz	≥ 95 dB	100 dB



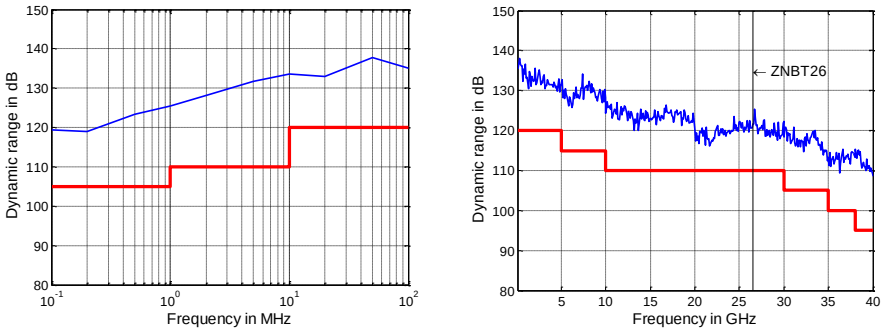
Measured dynamic range in dB versus frequency for the R&S®ZNBT8



Measured dynamic range in dB versus frequency for the R&S®ZNBT20

[2] 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.

[3] Below 100 MHz, dynamic range is typical between adjacent ports on the same horizontal level, e.g. between ports 1 and 2 or 5 and 6. Between 1.5 MHz and 2.5 MHz, dynamic range may be smaller than the specified value.

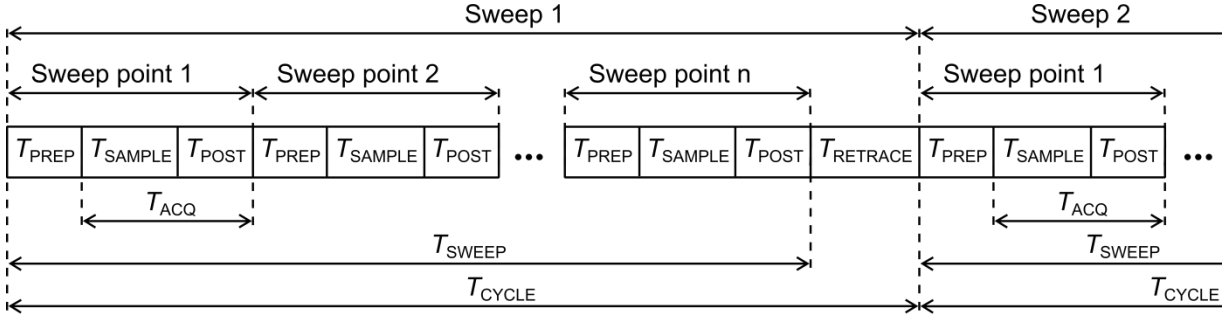


Measured dynamic range in dB versus frequency for the R&S®ZNBT26/R&S®ZNBT40

Measurement speed

Measured with firmware version 3.60 and Windows 10 (64 bit).

Measurement time	for 201 measurements points, with 200 MHz span, 1 MHz measurement bandwidth				
		T_{SWEEP}	T_{CYCLE}		
	R&S®ZNBT8 [4]				
	with 900 MHz center frequency	< 2.5 ms	< 5 ms		
	with 5.1 GHz center frequency	< 2.0 ms	< 5 ms		
	R&S®ZNBT20				
	with 900 MHz center frequency	< 3 ms	< 7.5 ms		
	with 5.1 GHz center frequency	< 3.5 ms	< 7.5 ms		
	R&S®ZNBT26				
	with 900 MHz center frequency	< 3.5 ms	< 11 ms		
	with 5.1 GHz center frequency	< 3.5 ms	< 7 ms		
	R&S®ZNBT40				
	with 900 MHz center frequency	< 3.5 ms	< 11 ms		
	with 5.1 GHz center frequency	< 3.5 ms	< 7 ms		
Acquisition time per point (T_{ACQ})	1 MHz measurement bandwidth, CW mode	7.5 µs			
Sampling time per point (T_{SAMPLE}), IF filter: normal	at 1 MHz measurement bandwidth	860 ns			
	at 10 MHz measurement bandwidth	312 ns			
Time for measurement and data transfer (nom.)	for 201 measurements points, with 800 MHz start frequency, 1 GHz stop frequency, 1 MHz measurement bandwidth [5]	VXI11	HiSLIP	IEC/ IEEE	USB 3.0
		over 1 Gbit/s LAN			
	R&S®ZNBT8 [4]	4.8 ms	4.3 ms	5.1 ms	4.5 ms
	R&S®ZNBT20	6.9 ms	7.3 ms	7.5 ms	6.3 ms
	R&S®ZNBT26	6.7 ms	6.1 ms	7.1 ms	6.3 ms
	R&S®ZNBT40	6.7 ms	6.1 ms	7.1 ms	6.3 ms
Data transfer time (nom.)	for 201 measurements points (magnitude)	0.9 ms	1 ms	1.3 ms	0.4 ms
Switching time between channels or preloaded instrument settings	with a maximum of 2001 points	< 8 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 data acquisition process

[4] Applies to instruments with serial number > 200000 or equipped with R&S®ZNBT-USY.

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

Measured sweep times in ms versus number of measurement points [6] of the R&S®ZNBT8 [4]					
Number of measurement points	**51**	**201**	**401**	**1601**	**5001**
Sweep mode[7]	**step**	**step**	**step**	**step**	**step**
800 MHz start frequency, 1 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth					
With correction switched off	1.7	2.5	3.6	9.2	25.4
With 4-port TOSM calibration	3.7	7.1	11.0	36.5	107
With 24-port TOSM calibration	21.7	67.0	131	484	1508
800 MHz start frequency, 1 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	47.7	174	345	1357	4228
With 4-port TOSM calibration	187	694	1376	5426	16901
With 24-port TOSM calibration	1121	4161	8257	32586	101634
1 MHz start frequency, 4.5 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth					
With correction switched off	2.3	3.5	4.7	11.8	31.6
With 4-port TOSM calibration	5.6	10.0	15.3	43.8	122
With 24-port TOSM calibration	35.1	75.2	129	479	1490
1 MHz start frequency, 4.5 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	47.3	176	347	1369	4262
With 4-port TOSM calibration	184	700	1383	5470	17037
With 24-port TOSM calibration	1108	4207	8307	32843	102446
1 MHz start frequency, 8.5 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth					
With correction switched off	2.9	4.2	5.5	12.9	32.3
With 4-port TOSM calibration	8.1	13.4	18.6	47.8	126
With 24-port TOSM calibration	50.0	95.4	146	479	1480
1 MHz start frequency, 8.5 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth					
With correction switched off	47.4	177	349	1374	4268
With 4-port TOSM calibration	187	704	1394	5496	17076
With 24-port TOSM calibration	1116	4228	8378	32999	102644

Measured sweep times in ms versus number of measurement points [6] of the R&S®ZNBT20										
Number of measurement points	**51**		**201**		**401**		**1601**		**5001**	
Sweep mode (stepped, swept)	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**
9 GHz start frequency, 10 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	2.9	3.0	3.5	4.7	4.6	6.9	9.6	16.6	24.3	38
With 4-port TOSM calibration	8.0	8.0	10.4	15.1	14.3	24.1	35	63	94	183
With 24-port TOSM calibration	47	48	79	104	131	177	474	585	1481	1827
9 GHz start frequency, 10 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	47	48	179	179	354	354	1403	1403	4327	4327
With 4-port TOSM calibration	185	185	709	710	1409	1409	5608	5608	17302	17301
With 24-port TOSM calibration	1101	1105	4253	4256	8454	8456	33683	33686	104106	104112
1 MHz start frequency, 20 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	10.2	10	13.6	13.5	16.6	16.4	30	30	39	68
With 4-port TOSM calibration	36	36	50	50	62	62	117	117	149	268
With 24-port TOSM calibration	222	223	324	323	411	416	902	913	1514	2532
1 MHz start frequency, 20 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	58	58	193	194	369	370	1420	1421	4394	4396
With 4-port TOSM calibration	227	227	766	769	1471	1475	5673	5679	17568	17574
With 24-port TOSM calibration	1359	1363	4604	4626	8839	8867	34104	34142	105871	105913

[6] Sweep time is to be understood as cycle time; static frequency accuracy of the instrument applies; measured with controller LPW11.

[7] For Instruments with serial number > 200000 or with R&S®ZNBT-USY installed, sweep mode “swept” is no longer supported.

Measured sweep times in ms versus number of measurement points [6] of the R&S®ZNBT26										
Number of measurement points	**51**		**201**		**401**		**1601**		**5001**	
Sweep mode (stepped, swept)	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**
9 GHz start frequency, 10 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	2.9	2.9	3.9	4.7	4.6	6.9	9.6	16.6	24.2	38
With 4-port TOSM calibration	8	8	11.2	15.1	14.3	24	35	63	95	182
With 24-port TOSM calibration	46	47	80	103	141	174	551	580	1474	1808
9 GHz start frequency, 10 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	49	48	179	179	354	354	1403	1403	4328	4327
With 4-port TOSM calibration	185	185	709	710	1409	1409	5608	5607	17301	17302
With 24-port TOSM calibration	1103	1104	4252	4257	8452	8457	33680	33685	104101	104104
1 MHz start frequency, 26.5 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	15.4	16.1	21.2	21.2	24.9	24.9	40	40	53	77
With 4-port TOSM calibration	58	58	81	81	96	96	154	154	205	305
With 24-port TOSM calibration	351	351	507	506	609	616	1118	1132	1698	2763
1 MHz start frequency, 26.5 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	59	60	195	196	372	373	1423	1425	4397	4400
With 4-port TOSM calibration	232	233	775	779	1481	1487	5688	5695	17581	17591
With 24-port TOSM calibration	1392	1396	4658	4682	8903	8939	34191	34243	105956	106012

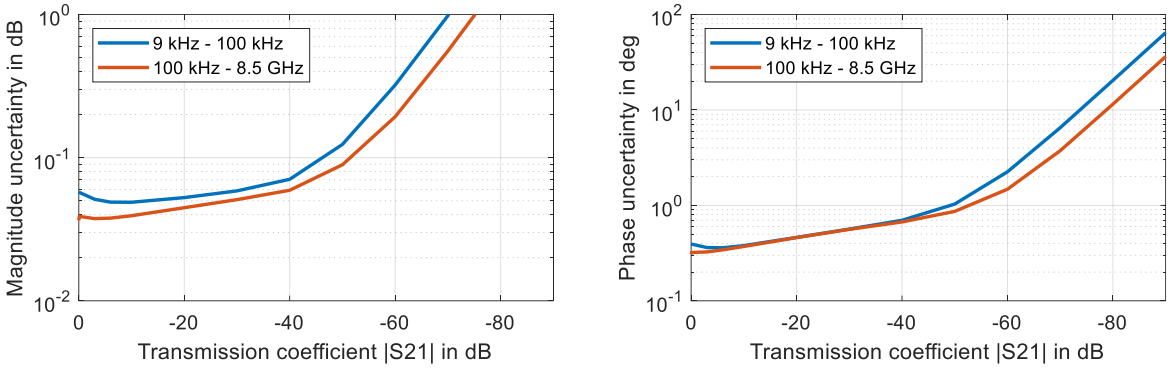
Measured sweep times in ms versus number of measurement points [6] of the R&S®ZNBT40										
Number of measurement points	**51**		**201**		**401**		**1601**		**5001**	
Sweep mode (stepped, swept)	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**	**swept**	**step**
9 GHz start frequency, 10 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	2.9	2.9	3.9	4.7	4.6	6.9	9.6	16.6	24.2	38
With 4-port TOSM calibration	8	8	11.2	15.1	14.3	24	35	63	95	182
With 24-port TOSM calibration	46	47	80	103	141	174	551	580	1474	1808
9 GHz start frequency, 10 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	49	48	179	179	354	354	1403	1403	4328	4327
With 4-port TOSM calibration	185	185	709	710	1409	1409	5608	5607	17301	17302
With 24-port TOSM calibration	1103	1104	4252	4257	8452	8457	33680	33685	104101	104104
1 MHz start frequency, 40 GHz stop frequency, AGC AUTO, 500 kHz measurement bandwidth										
With correction switched off	15.4	16.1	21.2	21.2	24.9	24.9	40	40	53	77
With 4-port TOSM calibration	58	58	81	81	96	96	154	154	205	305
With 24-port TOSM calibration	351	351	507	506	609	616	1118	1132	1698	2763
1 MHz start frequency, 40 GHz stop frequency, AGC LOW DIST, 1 kHz measurement bandwidth										
With correction switched off	59	60	195	196	372	373	1423	1425	4397	4400
With 4-port TOSM calibration	232	233	775	779	1481	1487	5688	5695	17581	17591
With 24-port TOSM calibration	1392	1396	4658	4682	8903	8939	34191	34243	105956	106012

Measurement accuracy

R&S®ZNBT8

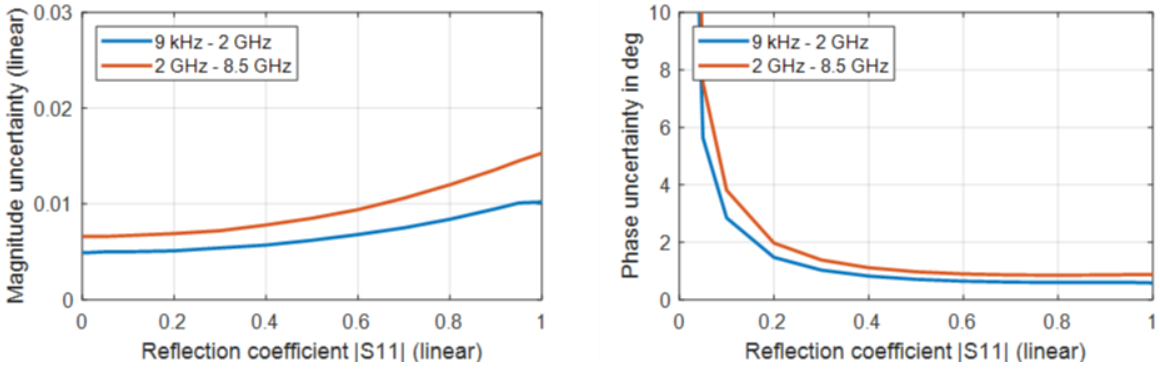
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZV-Z270 calibration kit. This calibration kit is used to achieve the effective system data specified below. Frequency points,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

Uncertainty of transmission measurements		Magnitude	Phase
> 9 kHz to 100 kHz	+0 dB to –35 dB	0.07 dB	0.6°
	–35 dB to –50 dB	0.12 dB	1.0°
	–50 dB to –60 dB	0.32 dB	2.3°
> 100 kHz to 8.5 GHz	+0 dB to –35 dB	0.06 dB	0.6°
	–35 dB to –50 dB	0.09 dB	0.9°
	–50 dB to –60 dB	0.19 dB	1.5°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.			



Uncertainty of transmission magnitude and transmission phase measurements for the R&S®ZNBT8 in the frequency range from 9 kHz to 8.5 GHz; analysis conditions: $S_{11} = S_{22} = 0$, calibrated power –10 dBm, measured power –10 dBm

Uncertainty of reflection measurements	Logarithmic			Linear	
	Reflection level	Magnitude	Phase	Reflection range	Magnitude
9 kHz to 2 GHz	0 dB	0.1 dB	0.6°	0 dB to –15 dB	0.010
	–15 dB	0.2 dB	1.5°	–15 dB to –25 dB	0.005
	–25 dB	0.7 dB	5.6°	–25 dB to –35 dB	0.005
> 2 GHz to 8.5 GHz	0 dB	0.1 dB	0.9°	0 dB to –15 dB	0.015
	–15 dB	0.3 dB	2.0°	–15 dB to –25 dB	0.007
	–25 dB	1.0 dB	7.5°	–25 dB	0.007
Specifications are based on an isolating DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.					

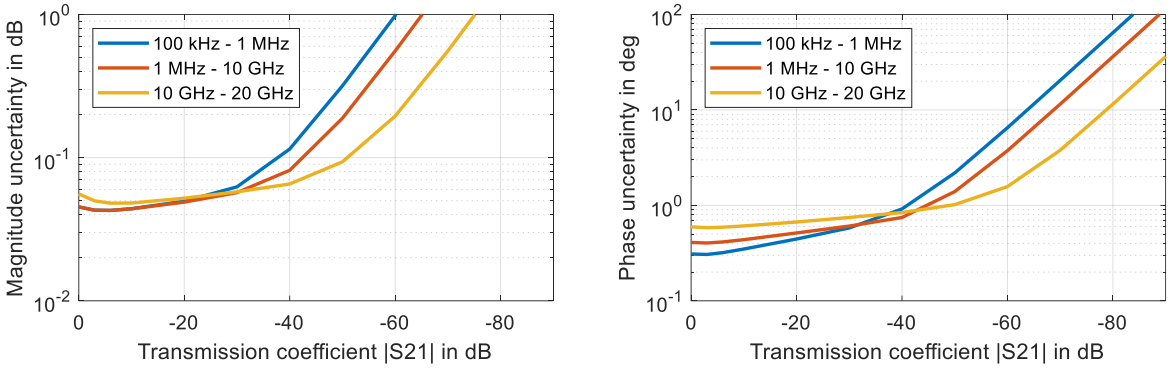


Uncertainty of reflection magnitude and reflection phase measurements for the R&S®ZNBT8 in the frequency range from 9 kHz to 8.5 GHz; analysis conditions: $S_{12} = S_{21} = 0$, calibrated power –10 dBm, measured power –10 dBm

R&S®ZNBT20

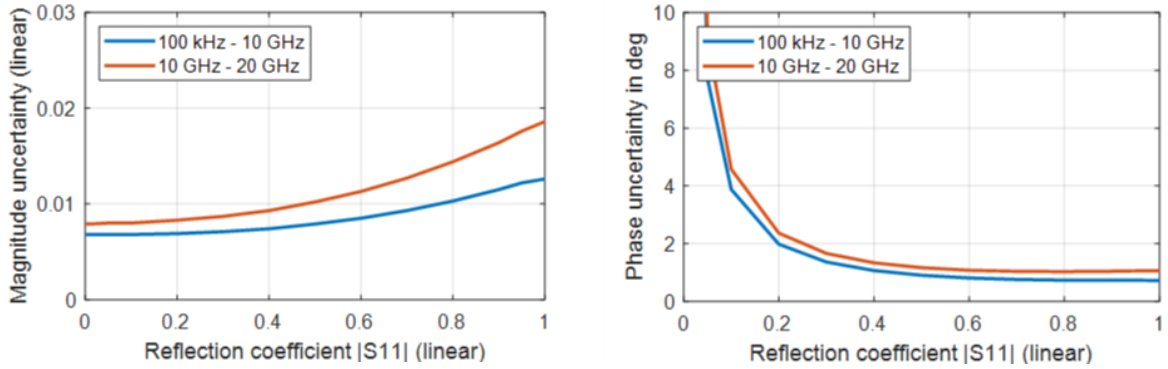
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZV-Z235 calibration kit. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).

Uncertainty of transmission measurements		Magnitude	Phase
100 kHz to 1 MHz	+0 dB to –35 dB	0.09 dB	0.7°
	–35 dB to –50 dB	0.32 dB	2.2°
	–50 dB to –60 dB	0.98 dB	6.5°
> 1 MHz to 10 GHz	+0 dB to –35 dB	0.07 dB	0.7°
	–35 dB to –50 dB	0.19 dB	1.4°
	–50 dB to –60 dB	0.56 dB	3.7°
> 10 GHz to 20 GHz	+0 dB to –35 dB	0.07 dB	0.8°
	–35 dB to –50 dB	0.09 dB	1.0°
	–50 dB to –60 dB	0.20 dB	1.6°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.			



Uncertainty of transmission magnitude and transmission phase measurements for the R&S®ZNBT20 in the frequency range from 100 kHz to 20 GHz; analysis conditions: $S_{11} = S_{22} = 0$, calibrated power –10 dBm, measured power –10 dBm

Uncertainty of reflection measurements	Logarithmic			Linear	
	Reflection level	Magnitude	Phase	Reflection range	Magnitude
100 kHz to 10 GHz	0 dB	0.10 dB	0.7°	0 dB to –15 dB	0.013
	–15 dB	0.30 dB	2.0°	–15 dB to –25 dB	0.007
	–25 dB	1.00 dB	7.7°	–25 dB to –35 dB	0.007
> 10 GHz to 20 GHz	0 dB	0.20 dB	1.1°	0 dB to –15 dB	0.019
	–15 dB	0.40 dB	2.4°	–15 dB to –25 dB	0.008
	–25 dB	1.20 dB	9.1°	–25 dB to –35 dB	0.008
Specifications are based on an isolating DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.					

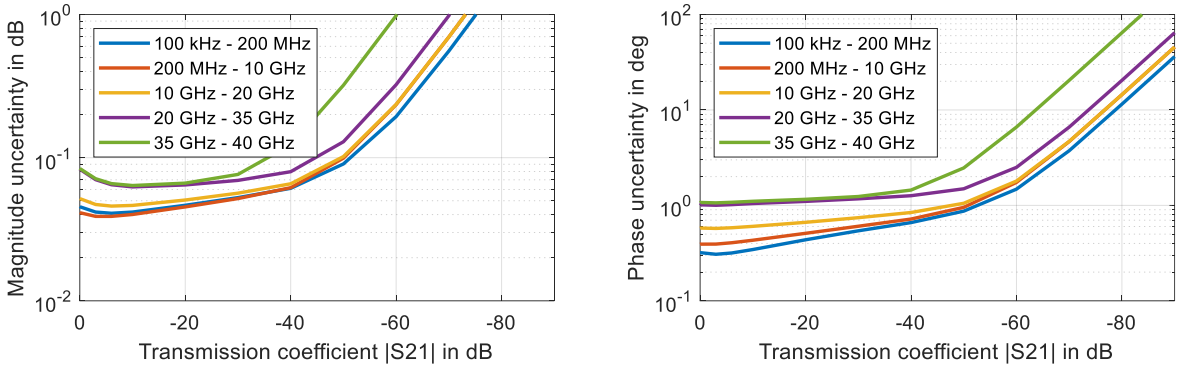


Uncertainty of reflection magnitude and reflection phase measurements for the R&S®ZNBT20 in the frequency range from 100 kHz to 20 GHz; analysis conditions: $S_{12} = S_{21} = 0$, calibrated power –10 dBm, measured power –10 dBm

R&S®ZNBT26 and R&S®ZNBT40

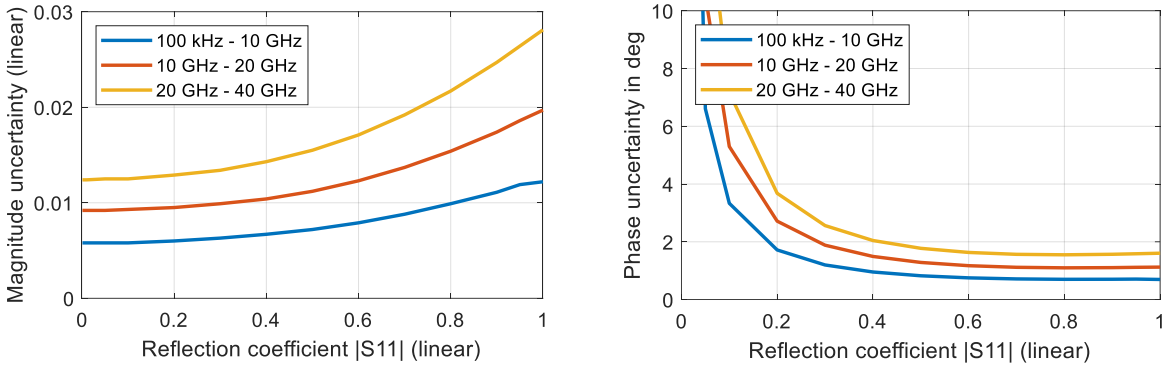
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 °C since calibration. Validity of the data is conditional on the use of an R&S®ZV-Z229 calibration kit. This calibration kit is used to achieve the effective system data specified below. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed).

Uncertainty of transmission measurements		**Magnitude**	**Phase**
100 kHz to 200 MHz	0 dB to –35 dB	0.06 dB	0.6°
	–35 dB to –50 dB	0.09 dB	0.9°
	–50 dB to –60 dB	0.19 dB	1.5°
> 200 MHz to 10 GHz	0 dB to –35 dB	0.06 dB	0.7°
	–35 dB to –50 dB	0.10 dB	1.0°
	–50 dB to –60 dB	0.23 dB	1.7°
> 10 GHz to 20 GHz	0 dB to –35 dB	0.06 dB	0.8°
	–35 dB to –50 dB	0.10 dB	1.1°
	–50 dB to –60 dB	0.24 dB	1.8°
> 20 GHz to 35 GHz	0 dB to –35 dB	0.07 dB	1.2°
	–35 dB to –50 dB	0.13 dB	1.5°
	–50 dB to –60 dB	0.32 dB	2.5°
> 35 GHz to 40 GHz	0 dB to –35 dB	0.10 dB	1.3°
	–35 dB to –50 dB	0.32 dB	2.5°
	–50 dB to –60 dB	0.98 dB	6.6°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.			



Uncertainty of transmission magnitude and transmission phase measurements for the R&S®ZNBT26 and R&S®ZNBT40 in the frequency range from 100 kHz to 40 GHz; analysis conditions: S_{11} = S_{22} = 0, calibrated power –10 dBm, measured power –10 dBm

Uncertainty of reflection measurements	Logarithmic			Linear	
	Reflection level	Magnitude	Phase	Reflection range	Magnitude (lin)
100 kHz to 10 GHz	0 dB	0.10 dB	0.7°	0 dB to –15 dB	0.012
	–15 dB	0.29 dB	1.7°	–15 dB to –25 dB	0.006
	–25 dB	0.88 dB	6.6°	–25 dB to –35 dB	0.006
> 10 GHz to 20 GHz	0 dB	0.17 dB	1.1°	0 dB to –15 dB	0.020
	–15 dB	0.48 dB	2.7°	–15 dB to –25 dB	0.010
	–25 dB	1.29 dB	11°	–25 dB to –35 dB	0.009
> 20 GHz to 40 GHz	0 dB	0.24 dB	1.6°	0 dB to –15 dB	0.028
	–15 dB	0.61 dB	3.7°	–15 dB to –25 dB	0.013
	–25 dB	1.81 dB	14°	–25 dB to –35 dB	0.013
Specifications are based on an isolating DUT, a measurement bandwidth of 10 Hz and a nominal source power of –10 dBm.					



Uncertainty of reflection magnitude and reflection phase measurements for the R&S®ZNBT26 and R&S®ZNBT40 in the frequency range from 100 kHz to 40 GHz; analysis conditions: $S_{11} = S_{22} = 0$, calibrated power –10 dBm, measured power –10 dBm

Effective system data

This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1° K since calibration. Frequency points, measurement bandwidth and sweep time have to be identical for measurement and calibration (no interpolation allowed). The data is based on a measurement bandwidth of 10 Hz and a source power of -10dBm

R&S®ZNBT8, calibrated using R&S®ZV-Z270	**9 kHz to 100 kHz**	**100 kHz to 4.5 GHz**	**4.5 GHz to 8.5 GHz**
Directivity	≥ 46 dB	≥ 45 dB	≥ 40 dB
Source match	≥ 41 dB	≥ 40 dB	≥ 36 dB
Load match	≥ 44 dB	≥ 45 dB	≥ 40 dB
Reflection tracking	≤ 0.02 dB	≤ 0.02 dB	≤ 0.05 dB
Transmission tracking	≤ 0.028 dB	≤ 0.018 dB	≤ 0.09 dB

R&S®ZNBT20, calibrated using R&S®ZV-Z235	**10 MHz to 700 MHz**	**700 MHz to 20 GHz**
Directivity	≥ 36 dB	≥ 40 dB
Source match	≥ 30 dB	≥ 36 dB
Load match	≥ 36 dB	≥ 40 dB
Reflection tracking	≤ 0.2 dB	≤ 0.1 dB
Transmission tracking	≤ 0.2 dB	≤ 0.1 dB

For an R&S®ZV-Z235 calibration kit that has been characterized with a DAkkS-accredited calibration, the following data is valid:			
	10 MHz to 10 GHz	**10 GHz to 18 GHz**	**18 GHz to 20 GHz**
Directivity	≥ 43 dB	≥ 41 dB	≥ 41 dB
Source match	≥ 40 dB	≥ 37 dB	≥ 36 dB
Load match	≥ 43 dB	≥ 41 dB	≥ 41 dB
Reflection tracking	≤ 0.056 dB	≤ 0.083 dB	≤ 0.11 dB
Transmission tracking	≤ 0.028 dB	≤ 0.038 dB	≤ 0.043 dB

R&S®ZNBT26, calibrated using R&S®ZV-Z229	**10 MHz to 700 MHz**	**700 MHz to 24 GHz**	**24 GHz to 26.5 GHz**
Directivity	≥ 33 dB	≥ 38 dB	≥ 33 dB
Source match	≥ 30 dB	≥ 36 dB	≥ 30 dB
Load match	≥ 33 dB	≥ 38 dB	≥ 33 dB
Reflection tracking	≤ 0.2 dB	≤ 0.1 dB	≤ 0.2 dB
Transmission tracking	≤ 0.2 dB	≤ 0.1 dB	≤ 0.2 dB
For an R&S®ZV-Z229 calibration kit that has been characterized with a DAkkS-accredited calibration, the following data is valid:			
R&S®ZNBT26, calibrated using R&S®ZV-Z229	**100 kHz to 4 GHz**	**4 GHz to 20 GHz**	**20 GHz to 26.5 GHz**
Directivity	≥ 42 dB	≥ 38 dB	≥ 36 dB
Source match	≥ 38 dB	≥ 35 dB	≥ 33 dB
Load match	≥ 42 dB	≥ 38 dB	≥ 36 dB
Reflection tracking	≤ 0.05 dB	≤ 0.05 dB	≤ 0.08 dB
Transmission tracking	≤ 0.02 dB	≤ 0.03 dB	≤ 0.06 dB

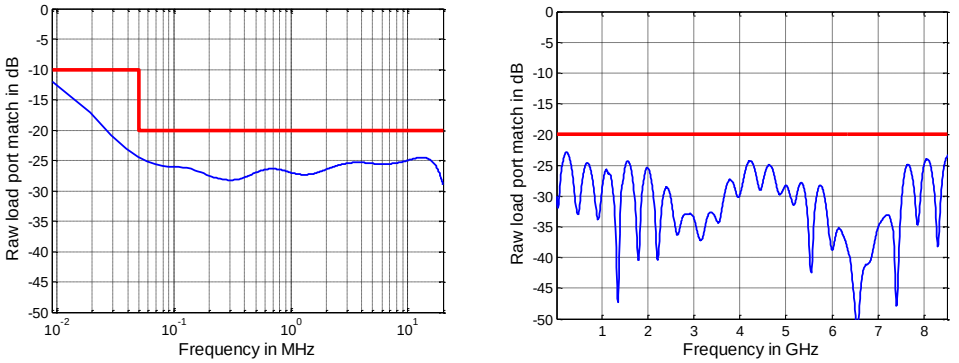
R&S®ZNBT40, calibrated using R&S®ZV-Z229	**10 MHz to 700 MHz**	**700 MHz to 24 GHz**	**24 GHz to 40 GHz**
Directivity	≥ 33 dB	≥ 38 dB	≥ 33 dB
Source match	≥ 30 dB	≥ 36 dB	≥ 30 dB
Load match	≥ 33 dB	≥ 38 dB	≥ 33 dB
Reflection tracking	≤ 0.2 dB	≤ 0.1 dB	≤ 0.2 dB
Transmission tracking	≤ 0.2 dB	≤ 0.1 dB	≤ 0.2 dB
For an R&S®ZV-Z229 calibration kit that has been characterized with a DAkkS-accredited calibration, the following data is valid:			
R&S®ZNBT40, calibrated using R&S®ZV-Z229	**100 kHz to 4 GHz**	**4 GHz to 20 GHz**	**20 GHz to 40 GHz**
Directivity	≥ 42 dB	≥ 38 dB	≥ 36 dB
Source match	≥ 38 dB	≥ 35 dB	≥ 33 dB
Load match	≥ 42 dB	≥ 38 dB	≥ 36 dB
Reflection tracking	≤ 0.05 dB	≤ 0.05 dB	≤ 0.08 dB
Transmission tracking	≤ 0.02 dB	≤ 0.03 dB	≤ 0.06 dB

Factory-calibrated system data

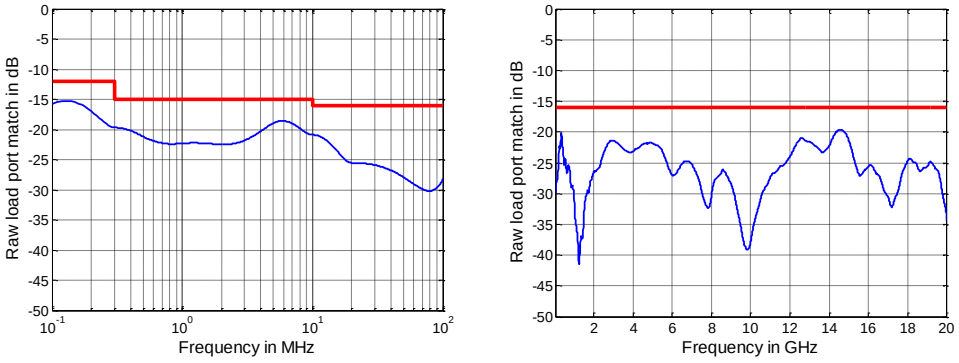
Data is valid between +18 °C and +28 °C. Data is based on a source power of –10 dBm and a measurement bandwidth of 1 kHz.

		specified	**typical**
Directivity	9 kHz to 50 kHz	≥ 20 dB	35 dB
	50 kHz to 10 GHz	≥ 30 dB	50 dB
	10 GHz to 20 GHz	≥ 25 dB	35 dB
	20 GHz to 35 GHz	≥ 20 dB	35 dB
	35 GHz to 40 GHz	≥ 15 dB	30 dB
Source match	9 kHz to 50 kHz	≥ 20 dB	35 dB
	50 kHz to 10 GHz	≥ 30 dB	50 dB
	10 GHz to 20 GHz	≥ 25 dB	35 dB
	20 GHz to 35 GHz	≥ 20 dB	35 dB
	35 GHz to 40 GHz	≥ 15 dB	30 dB
Reflection tracking	9 kHz to 40 GHz	≤ 0.5 dB	0.1 dB
Transmission tracking	9 kHz to 40 GHz	≤ 0.5 dB [8]	0.1 dB
Load match			
R&S®ZNBT8	9 kHz to 50 kHz	≥ 10 dB	15 dB
	50 kHz to 8.5 GHz	≥ 20 dB	25 dB
R&S®ZNBT20	100 kHz to 300 kHz	≥ 12 dB	15 dB
	300 kHz to 10 MHz	≥ 15 dB	18 dB
	10 MHz to 20 GHz	≥ 16 dB	20 dB
R&S®ZNBT26	100 kHz to 300 kHz	≥ 12 dB	15 dB
	300 kHz to 10 MHz	≥ 15 dB	18 dB
	10 MHz to 20 GHz	≥ 18 dB	22 dB
	20 GHz to 26.5 GHz	≥ 14 dB	18 dB
R&S®ZNBT40	100 kHz to 300 kHz	≥ 12 dB	15 dB
	300 kHz to 10 MHz	≥ 15 dB	18 dB
	10 MHz to 20 GHz	≥ 18 dB	22 dB
	20 GHz to 40 GHz	≥ 14 dB	18 dB

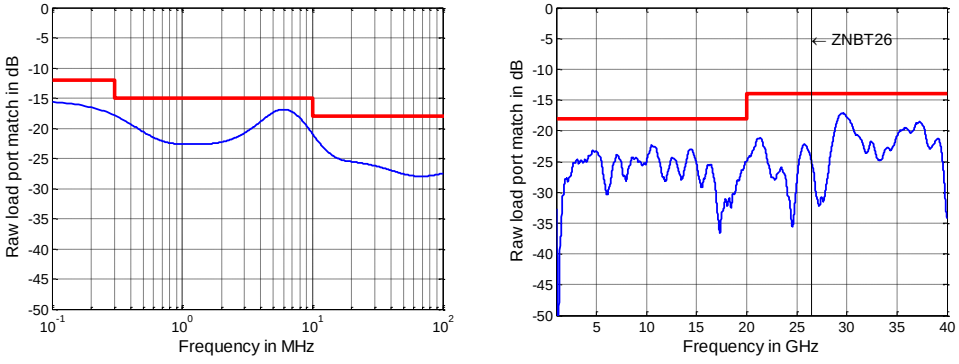
[8] Below 200 kHz, factory-calibrated transmission tracking of the R&S®ZNBT20, R&S®ZNBT26 and R&S®ZNBT40 is ≤ 0.7 dB.



Measured raw load port match versus frequency for the R&S®ZNBT8



Measured raw load port match versus frequency for the R&S®ZNBT20



Measured raw load port match versus frequency for the R&S®ZNBT26 and R&S®ZNBT40

Trace stability				
		IF bandwidth	**specified**	**typical**
Trace noise magnitude (RMS)				
R&S®ZNBT8	at 0 dBm source power, 0 dB reflection			
	100 kHz to 100 MHz	10 kHz	≤ 0.004 dB	0.001 dB
	100 MHz to 8.5 GHz	10 kHz	≤ 0.004 dB	0.002 dB
R&S®ZNBT20	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.008 dB	0.002 dB
	300 kHz to 20 GHz	10 kHz	≤ 0.004 dB [9]	0.001 dB
R&S®ZNBT26	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.008 dB	0.002 dB
	300 kHz to 20 GHz	10 kHz	≤ 0.004 dB	0.002 dB
	20 GHz to 26.5 GHz	10 kHz	≤ 0.006 dB	0.003 dB
R&S®ZNBT40	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.008 dB	0.002 dB
	300 kHz to 20 GHz	10 kHz	≤ 0.004 dB	0.002 dB
	20 GHz to 35 GHz	10 kHz	≤ 0.006 dB	0.003 dB
	35 GHz to 40 GHz	10 kHz	≤ 0.008 dB	0.005 dB
Trace noise phase (RMS)				
R&S®ZNBT8	at 0 dBm source power, 0 dB reflection			
	100 kHz to 100 MHz	10 kHz	≤ 0.035°	0.005°
	100 MHz to 8.5 GHz	10 kHz	≤ 0.035°	0.020°
R&S®ZNBT20	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.070°	0.02°
	300 kHz to 20 GHz	10 kHz	≤ 0.035°	0.01°
R&S®ZNBT26	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.07°	0.02°
	300 kHz to 20 GHz	10 kHz	≤ 0.035°	0.015°
	20 GHz to 26.5 GHz	10 kHz	≤ 0.05°	0.02°
R&S®ZNBT40	at 0 dBm source power, 0 dB reflection			
	100 kHz to 300 kHz	10 kHz	≤ 0.07°	0.02°
	300 kHz to 20 GHz	10 kHz	≤ 0.035°	0.015°
	20 GHz to 35 GHz	10 kHz	≤ 0.05°	0.02°
	35 GHz to 40 GHz	10 kHz	≤ 0.08°	0.04°
Temperature dependence	at 0 dB transmission or reflection			
	9 kHz to 4.5 GHz	magnitude		0.01 dB/K
		phase		0.15°/K
	4.5 GHz to 20 GHz	magnitude		0.04 dB/K
		phase		0.80°/K
	20 GHz to 40 GHz	magnitude		0.08 dB/K
		phase		1.60°/K

[9] Between 1.5 MHz and 2.5 MHz, trace noise magnitude may exceed the specified value.

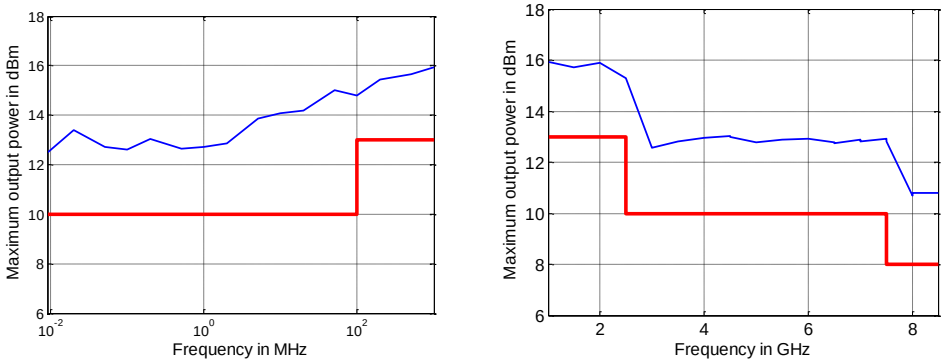
Test port output

Data is valid from +18 °C to +28 °C.

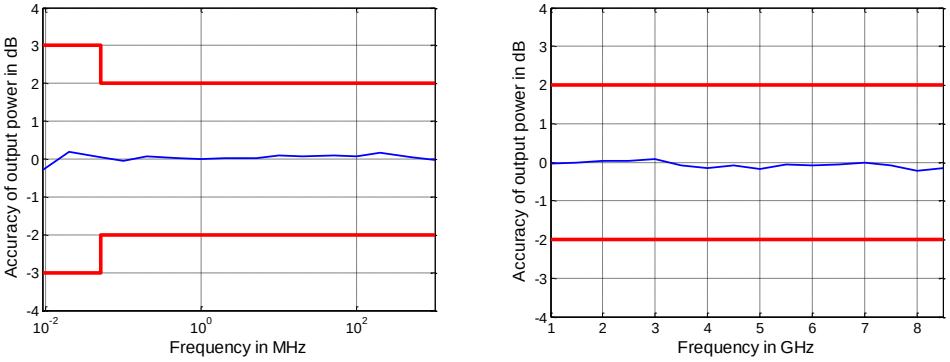
Power range		**specified**	**typical**
R&S®ZNBT8	without R&S®ZNBT8-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	9 kHz to 100 MHz	–55 dBm to +10 dBm	up to +12 dBm
	100 MHz to 2.5 GHz	–55 dBm to +13 dBm	up to +15 dBm
	2.5 GHz to 7.5 GHz	–55 dBm to +10 dBm	up to +13 dBm
	7.5 GHz to 8.5 GHz	–55 dBm to +8 dBm	up to +12 dBm
	with R&S®ZNBT8-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	9 kHz to 100 kHz	–75 dBm to +10 dBm	up to +12 dBm
	100 kHz to 100 MHz	–85 dBm to +10 dBm	up to +12 dBm
	100 MHz to 2.5 GHz	–85 dBm to +13 dBm	up to +15 dBm
	2.5 GHz to 7.5 GHz	–85 dBm to +10 dBm	up to +13 dBm
	7.5 GHz to 8.5 GHz	–85 dBm to +8 dBm	up to +12 dBm
R&S®ZNBT20	without R&S®ZNBT20-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 1 MHz	–30 dBm to +8 dBm	up to +13 dBm
	1 MHz to 10 MHz	–30 dBm to +10 dBm	up to +15 dBm
	10 MHz to 5 GHz	–30 dBm to +12 dBm	up to +14 dBm
	5 GHz to 10 GHz	–30 dBm to +10 dBm	up to +12 dBm
	10 GHz to 20 GHz	–30 dBm to +8 dBm	up to +10 dBm
	with R&S®ZNBT20-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 1 MHz	–60 dBm to +8 dBm	up to +13 dBm
	1 MHz to 10 MHz	–60 dBm to +10 dBm	up to +15 dBm
	10 MHz to 5 GHz	–60 dBm to +12 dBm	up to +14 dBm
	5 GHz to 10 GHz	–60 dBm to +10 dBm	up to +12 dBm
	10 GHz to 20 GHz	–60 dBm to +8 dBm	up to +10 dBm
R&S®ZNBT26	without R&S®ZNBT26-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 200 kHz	–30 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–30 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–30 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–30 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–30 dBm to +5 dBm	up to +7 dBm
	20 GHz to 26.5 GHz	–30 dBm to 0 dBm	up to +4 dBm
	with R&S®ZNBT26-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 200 kHz	–60 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–60 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–60 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–60 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–60 dBm to +5 dBm	up to +7 dBm
	20 GHz to 26.5 GHz	–60 dBm to 0 dBm	up to +4 dBm
R&S®ZNBT40	without R&S®ZNBT40-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 200 kHz	–30 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–30 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–30 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–30 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–30 dBm to +5 dBm	up to +7 dBm
	20 GHz to 30 GHz	–30 dBm to 0 dBm	up to +4 dBm
	30 GHz to 40 GHz	–30 dBm to –2 dBm	up to +2 dBm
	with R&S®ZNBT40-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	100 kHz to 200 kHz	–60 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–60 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–60 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–60 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–60 dBm to +5 dBm	up to +7 dBm
	20 GHz to 30 GHz	–60 dBm to 0 dBm	up to +4 dBm
	30 GHz to 40 GHz	–60 dBm to –2 dBm	up to +2 dBm

Power accuracy		
R&S®ZNBT8	source power –10 dBm	
	9 kHz to 50 kHz	≤ 3 dB
	50 kHz to 8.5 GHz	≤ 2 dB
R&S®ZNBT20	source power –10 dBm	
	100 kHz to 20 GHz	≤ 2 dB
R&S®ZNBT26	source power –10 dBm	
	100 kHz to 20 GHz	≤ 3 dB
	20 GHz to 26.5 GHz	≤ 5 dB
R&S®ZNBT40	source power –10 dBm	
	100 kHz to 20 GHz	≤ 3 dB
	20 GHz to 40 GHz	≤ 5 dB
Power linearity		
R&S®ZNBT8	referenced to –10 dBm	
	source power ≥ –55 dBm	
	100 kHz to 8.5 GHz	≤ 1 dB
	source power < –55 dBm	
	100 kHz to 8.5 GHz	≤ 2 dB
R&S®ZNBT20	referenced to –10 dBm	
	source power ≥ –60 dBm	
	10 MHz to 15 GHz	≤ 1 dB
	15 GHz to 20 GHz	≤ 1.5 dB
R&S®ZNBT26	referenced to –10 dBm	
	source power ≥ –60 dBm	
	10 MHz to 15 GHz	≤ 1 dB
	15 GHz to 26.5 GHz	≤ 1.5 dB
R&S®ZNBT40	referenced to –10 dBm	
	source power ≥ –60 dBm	
	10 MHz to 15 GHz	≤ 1 dB
	15 GHz to 40 GHz	≤ 1.5 dB
Power resolution		0.01 dB

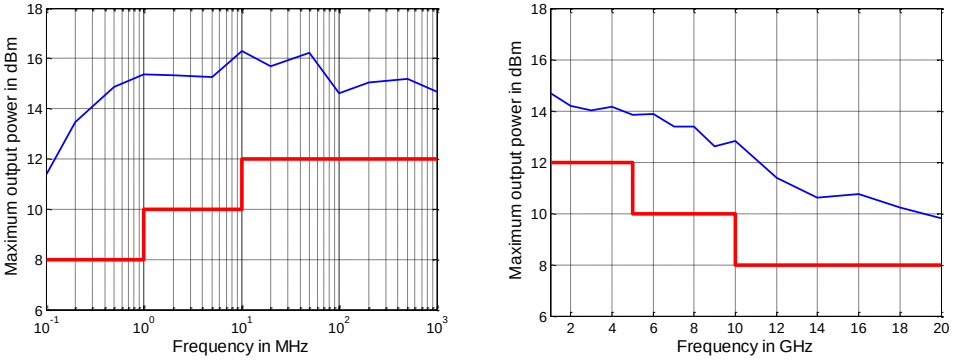
Harmonics		**specified**	**typical**
R&S®ZNBT8	at 0 dBm		
	20 kHz to 100 MHz	≤ –20 dBc	–30 dBc
	100 MHz to 8.5 GHz	≤ –25 dBc	–35 dBc
R&S®ZNBT20	at 0 dBm		
	100 kHz to 10 GHz	≤ –25 dBc	–40 dBc
	10 GHz to 15 GHz	≤ –20 dBc	–30 dBc
	at –5 dBm		
	15 GHz to 20 GHz	≤ –20 dBc	–30 dBc
R&S®ZNBT26	at 0 dBm		
	100 kHz to 10 MHz	≤ –15 dBc	–30 dBc
	10 MHz to 100 MHz	≤ –20 dBc	–35 dBc
	100 MHz to 10 GHz	≤ –25 dBc	–30 dBc
	10 GHz to 15 GHz	≤ –18 dBc	–25 dBc
	at –5 dBm		
	15 GHz to 18 GHz	≤ –18 dBc	–25 dBc
	18 GHz to 26.5 GHz	≤ –14 dBc	–20 dBc
R&S®ZNBT40	at 0 dBm		
	100 kHz to 10 MHz	≤ –15 dBc	–30 dBc
	10 MHz to 100 MHz	≤ –20 dBc	–35 dBc
	100 MHz to 10 GHz	≤ –25 dBc	–30 dBc
	10 GHz to 15 GHz	≤ –18 dBc	–25 dBc
	at –5 dBm		
	15 GHz to 18 GHz	≤ –18 dBc	–25 dBc
	18 GHz to 40 GHz	≤ –14 dBc	–20 dBc



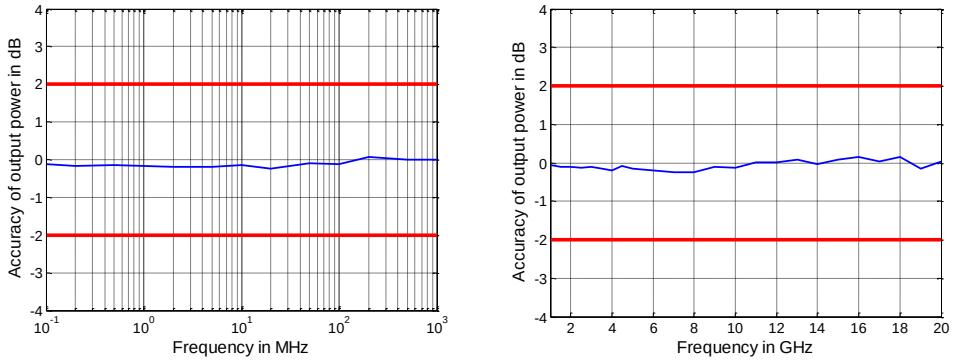
Measured maximum output power in dBm versus frequency for the R&S®ZNBT8



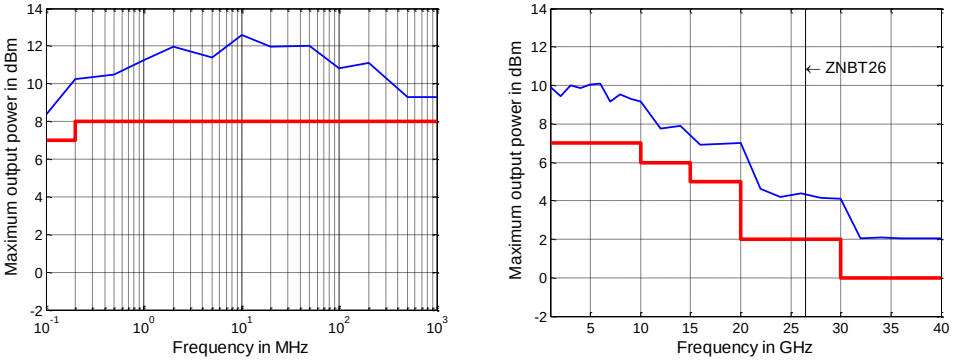
Measured output power accuracy in dB versus frequency for the R&S®ZNBT8



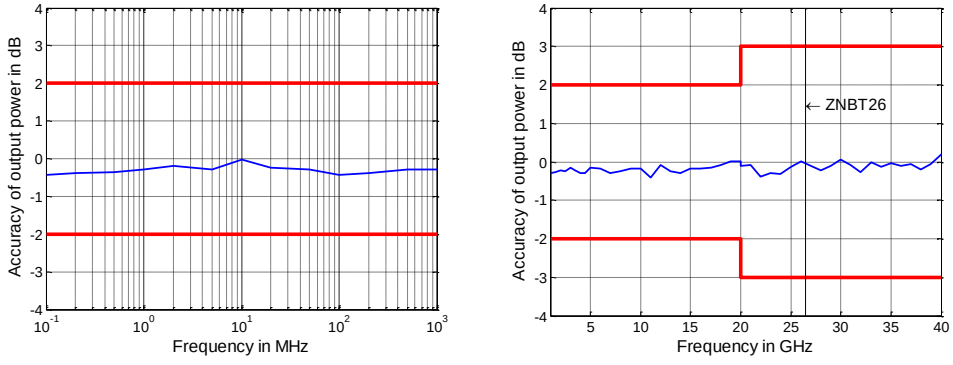
Measured maximum output power in dBm versus frequency for the R&S®ZNBT20



Measured output power accuracy in dB versus frequency for the R&S®ZNBT20



Measured maximum output power in dBm versus frequency for the R&S®ZNBT26 and R&S®ZNBT40



Measured output power accuracy in dB versus frequency for the R&S®ZNBT26 and R&S®ZNBT40

Test port input

Match	without system error correction	
	R&S®ZNBT8	
	9 kHz to 50 kHz	> 10 dB
	50 kHz to 8.5 GHz	> 20 dB
	R&S®ZNBT20	
	100 kHz to 300 kHz	> 12 dB
	300 kHz to 10 MHz	> 15 dB
	10 MHz to 20 GHz	> 16 dB
	R&S®ZNBT26	
	100 kHz to 300 kHz	> 12 dB
	300 kHz to 10 MHz	> 15 dB
	10 MHz to 20 GHz	> 18 dB
	20 GHz to 26.5 GHz	> 15 dB
	R&S®ZNBT40	
	100 kHz to 300 kHz	> 12 dB
	300 kHz to 10 MHz	> 15 dB
	10 MHz to 20 GHz	> 18 dB
	20 GHz to 40 GHz	> 15 dB
Maximum nominal input level		+13 dBm (nom.)
Power measurement accuracy at –10 dBm without power calibration	R&S®ZNBT8	
	9 kHz to 100 kHz	< 2 dB
	100 kHz to 8.5 GHz	< 1 dB
	R&S®ZNBT20	
	100 kHz to 20 GHz	< 1 dB [10]
	R&S®ZNBT26	
	100 kHz to 20 GHz	< 1 dB [10]
	20 GHz to 26.5 GHz	< 1.5 dB
	R&S®ZNBT40	
	100 kHz to 20 GHz	< 1 dB [10]
	20 GHz to 40 GHz	< 1.5 dB
Receiver linearity referenced to –10 dBm	R&S®ZNBT8	
	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
	R&S®ZNBT20	
	for +18 dB to +10 dB	
	100 kHz to 500 MHz	< 0.3 dB
	for +20 dB to +10 dB	
	500 MHz to 10 GHz	< 0.3 dB
	for +18 dB to +10 dB	
	10 GHz to 20 GHz	< 0.3 dB
	for +10 dB to –40 dB	
	100 kHz to 20 GHz	< 0.1 dB
	R&S®ZNBT26	
	for +15 dB to +10 dB	
	100 kHz to 20 GHz	< 0.2 dB
	for +10 dB to –40 dB	
	100 kHz to 26.5 GHz	< 0.1 dB
	R&S®ZNBT40	
	for +15 dB to +10 dB	
	100 kHz to 20 GHz	< 0.2 dB
	for +10 dB to –40 dB	
	100 kHz to 40 GHz	< 0.1 dB
Damage level		+27 dBm
Damage DC voltage		30 V

[10] Below 200 kHz, power measurement accuracy is <1.5 dB.

Noise level [11] at 1 kHz measurement bandwidth, normalized to 1 Hz	R&S®ZNBT8	
	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)
	R&S®ZNBT20	
	100 kHz to 300 kHz	< –110 dBm (1 Hz)
	300 kHz to 1 MHz	< –115 dBm (1 Hz)
	1 MHz to 10 MHz	< –120 dBm (1 Hz)
	10 MHz to 2 GHz	< –125 dBm (1 Hz)
	2 GHz to 20 GHz	< –120 dBm (1 Hz)
	R&S®ZNBT26	
	100 kHz to 300 kHz	< –110 dBm (1 Hz)
	300 kHz to 1 MHz	< –115 dBm (1 Hz)
	1 MHz to 5 GHz	< –120 dBm (1 Hz)
	5 GHz to 20 GHz	< –118 dBm (1 Hz)
	20 GHz to 26.5 GHz	< –115 dBm (1 Hz)
	R&S®ZNBT40	
	100 kHz to 300 kHz	< –110 dBm (1 Hz)
	300 kHz to 1 MHz	< –115 dBm (1 Hz)
	1 MHz to 5 GHz	< –120 dBm (1 Hz)
	5 GHz to 20 GHz	< –118 dBm (1 Hz)
	20 GHz to 35 GHz	< –115 dBm (1 Hz)
	35 GHz to 40 GHz	< –105 dBm (1 Hz)

Additional front panel connectors

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

Display

Screen	4.83 cm (1.9") diagonal electronic paper display
Resolution	144 × 128 pixel

[11] The noise level is defined as the RMS value of the specified noise floor. Below 700 kHz, the R&S®ZNBT20, R&S®ZNBT26 and R&S®ZNBT40 may exhibit spurious signals that exceed the specified noise level.

Rear panel connectors

LAN	local area network connector, 8-pin, RJ-45, 1 Gbit/s

USB host	(two) universal serial bus host connectors for connecting USB devices (USB 3.0); two additional USB connectors on front panel
USB device	universal serial bus client connector for remote control of VNA (USB 3.0)

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-D)	DVI-D connector (for external monitor, single link)
MONITOR (Display Port)	Display port connector (for external monitor, version 1.1a)

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		3.3 V (nom.)

Options

R&S®ZNBT-B4

Precision reference frequency		
Static frequency accuracy		(time since last adjustment × aging rate) + temperature drift + calibration accuracy
Aging per year	with R&S®ZNBT-B4 precision frequency reference option	±1 × 10^{-7}
Temperature drift (+5 °C to +40 °C)	with R&S®ZNBT-B4 precision frequency reference option	±1 × 10^{-8}
Achievable initial calibration accuracy	with R&S®ZNBT-B4 precision frequency reference option	±5 × 10^{-8}

R&S®ZNBT-B10

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

R&S®ZNBT-B12

Device control	
DIRECT CTRL interface	direct control bus output

R&S®ZNBT8/ZNBT20/ZNBT26/ZNBT40-B21/-B22/-B23/-B24/-B25/-B26

Data is valid from +18 °C to +28 °C.

		specified	**typical**
Extended power range			
Frequency range	R&S®ZNBT8-B21/-B22/-B23/-B24/-B25/-B26	9 kHz to 8.5 GHz	
	R&S®ZNBT20-B21/-B22/-B23/-B24/-B25/-B26	100 kHz to 20 GHz	
	R&S®ZNBT26-B21/-B22/-B23/-B24/-B25/-B26	100 kHz to 26.5 GHz	
	R&S®ZNBT40-B21/-B22/-B23/-B24/-B25/-B26	100 kHz to 40 GHz	
Power range			
R&S®ZNBT8	9 kHz to 100 kHz	–75 dBm to +10 dBm	up to +12 dBm
	100 kHz to 100 MHz	–85 dBm to +10 dBm	up to +12 dBm
	100 MHz to 2.5 GHz	–85 dBm to +13 dBm	up to +15 dBm
	2.5 GHz to 7.5 GHz	–85 dBm to +10 dBm	up to +13 dBm
	7.5 GHz to 8.5 GHz	–85 dBm to +8 dBm	up to +12 dBm
R&S®ZNBT20	100 kHz to 1 MHz	–60 dBm to +8 dBm	up to +13 dBm
	1 MHz to 10 MHz	–60 dBm to +10 dBm	up to +15 dBm
	10 MHz to 5 GHz	–60 dBm to +12 dBm	up to +14 dBm
	5 GHz to 10 GHz	–60 dBm to +10 dBm	up to +12 dBm
	10 GHz to 20 GHz	–60 dBm to +8 dBm	up to +10 dBm
R&S®ZNBT26	100 kHz to 200 kHz	–60 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–60 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–60 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–60 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–60 dBm to +5 dBm	up to +7 dBm
	20 GHz to 26.5 GHz	–60 dBm to +2 dBm	up to +5 dBm
R&S®ZNBT40	100 kHz to 200 kHz	–60 dBm to +7 dBm	up to +10 dBm
	200 kHz to 1 GHz	–60 dBm to +8 dBm	up to +11 dBm
	1 GHz to 10 GHz	–60 dBm to +7 dBm	up to +10 dBm
	10 GHz to 15 GHz	–60 dBm to +6 dBm	up to +8 dBm
	15 GHz to 20 GHz	–60 dBm to +5 dBm	up to +7 dBm
	20 GHz to 30 GHz	–60 dBm to +2 dBm	up to +5 dBm
	30 GHz to 40 GHz	–60 dBm to 0 dBm	up to +4 dBm

R&S®ZNBT-B81

Data is valid from +18 °C to +28 °C and at a maximum measurement bandwidth of 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

R&S®ZNBT8-B108 to R&S®ZNBT8-B124, R&S®ZNBT20/ZNBT26/ZNBT40-B112 to R&S®ZNBT20/ZNBT26/ZNBT40-B124

For additional ports, the specifications of paragraphs Measurement range, Measurement speed, Measurement accuracy, Effective system data, Factory-calibrated system data, Test port output and Test port input are valid in an analogous way.

R&S®ZNBT8-B361 to R&S®ZNBT8-B366

Receiver step attenuators		
Frequency range	R&S®ZNBT8-B361, R&S®ZNBT8-B362, R&S®ZNBT8-B363, R&S®ZNBT8-B364, R&S®ZNBT8-B365, R&S®ZNBT8-B366	9 kHz to 8.5 GHz
Attenuation		0 dB to 30 dB, in 10 dB steps

R&S®ZNBT8-B504/-B508/-B512/-B516/-B520/-B524

Data is valid from +18 °C to +28 °C.

Extended dynamic range		**specified**	**typical**
Power range	without R&S®ZNBT8-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	9 kHz to 2 MHz	–55 dBm to +8 dBm	
	2 MHz to 6.5 GHz	–55 dBm to +10 dBm	
	6.5 GHz to 7.5 GHz	–55 dBm to +8 dBm	
	7.5 GHz to 8.5 GHz	–55 dBm to +4 dBm	
	with R&S®ZNBT8-B21/-B22/-B23/-B24/-B25/-B26 extended power range option		
	9 kHz to 100 kHz	–75 dBm to +8 dBm	
	100 kHz to 2 MHz	–85 dBm to +8 dBm	
	2 MHz to 6.5 GHz	–85 dBm to +10 dBm	
	6.5 GHz to 7.5 GHz	–85 dBm to +8 dBm	
	7.5 GHz to 8.5 GHz	–85 dBm to +4 dBm	
Dynamic range [12]	9 kHz to 100 kHz	≥ 100 dB	110 dB
	100 kHz to 50 MHz	≥ 125 dB	135 dB
	50 MHz to 7 GHz	≥ 135 dB	145 dB
	7 GHz to 8.5 GHz	≥ 130 dB	140 dB

[12] 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 for test port pairs where the receiving port is fitted with R&S®ZNBT8-B5xx option. If the source port is fitted with R&S®ZNBT8-B5xx option and the receiving port is not, the values reduce by up to 10 dB.

Test port input		
Match	without system error correction	
	9 kHz to 50 kHz	≥ 10 dB
	50 kHz to 8.5 GHz	≥ 18 dB
Maximum nominal input level		+10 dBm
Receiver linearity referenced to –10 dBm	for +18 dB to +10 dB	
	9 kHz to 7.5 GHz	≤ 0.2 dB
	for +14 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
Noise level [13] at 1 kHz measurement bandwidth, normalized to 1 Hz	9 kHz to 50 kHz	≤ –125 dBm (1 Hz)
	50 kHz to 50 MHz	≤ –130 dBm (1 Hz)
	50 MHz to 7 GHz	≤ –140 dBm (1 Hz)
	7 GHz to 8.5 GHz	≤ –130 dBm (1 Hz)

Trace stability			**specified**	**typical**
Trace noise magnitude (RMS)	at 0 dBm source power, 0 dB reflection	IF bandwidth		
	100 kHz to 100 MHz	10 kHz	≤ 0.005 dB	0.001 dB
	100 MHz to 8.5 GHz	10 kHz	≤ 0.005 dB	0.002 dB

R&S®ZNBT-K980 [14, 15]

Health and utilization monitoring service (HUMS)		
Interfaces	protocols and interfaces supported for data readout and display	• SNMP (v1, v2c, v3) • REST (JSON) • SCPI • device web
Services	information provided	• device information (model, serial number, BIOS, date, time, system, HUMS and software information) • user-defined information tags (e.g. for asset management) • equipment information (hardware, options, software, licenses) • system operating status • instrument security information • service related information (due dates etc.) • mass storage related information • instrument utilization data • device history (event log)

R&S®ZNBT-Z14

Handler I/O (external)	several control and trigger signals, 36-pin Centronics connector, 3.3 V TTL, for controlling external devices, limit checks, sweep signals, etc.	
Keysight 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		
Write strobe signal	pin 32	1 µs
External trigger signal	pin 18	> 1 µs

[13] The noise level is defined as the RMS value of the specified noise floor.

[14] For details see application note under: www.rohde-schwarz.com/appnote/GFM336

[15] For use with common available asset management tools.

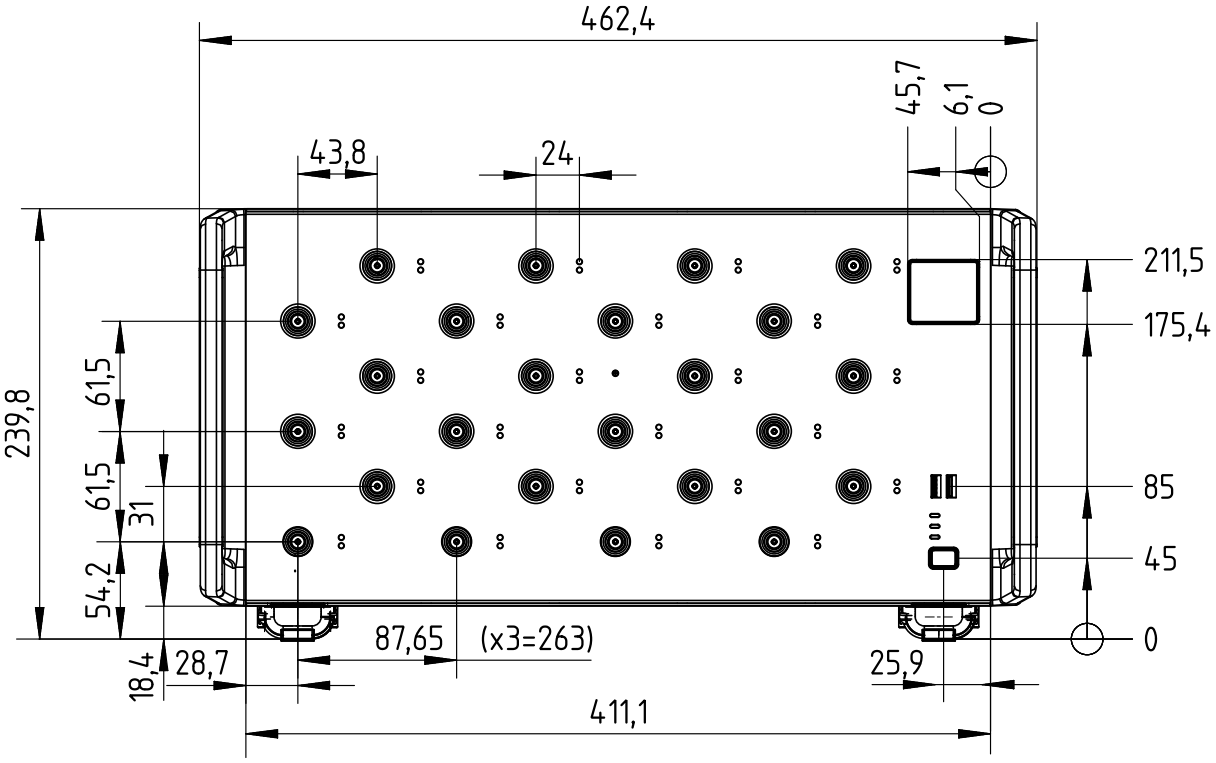
Sweep end signal	pin 34	> 10 µs

General data

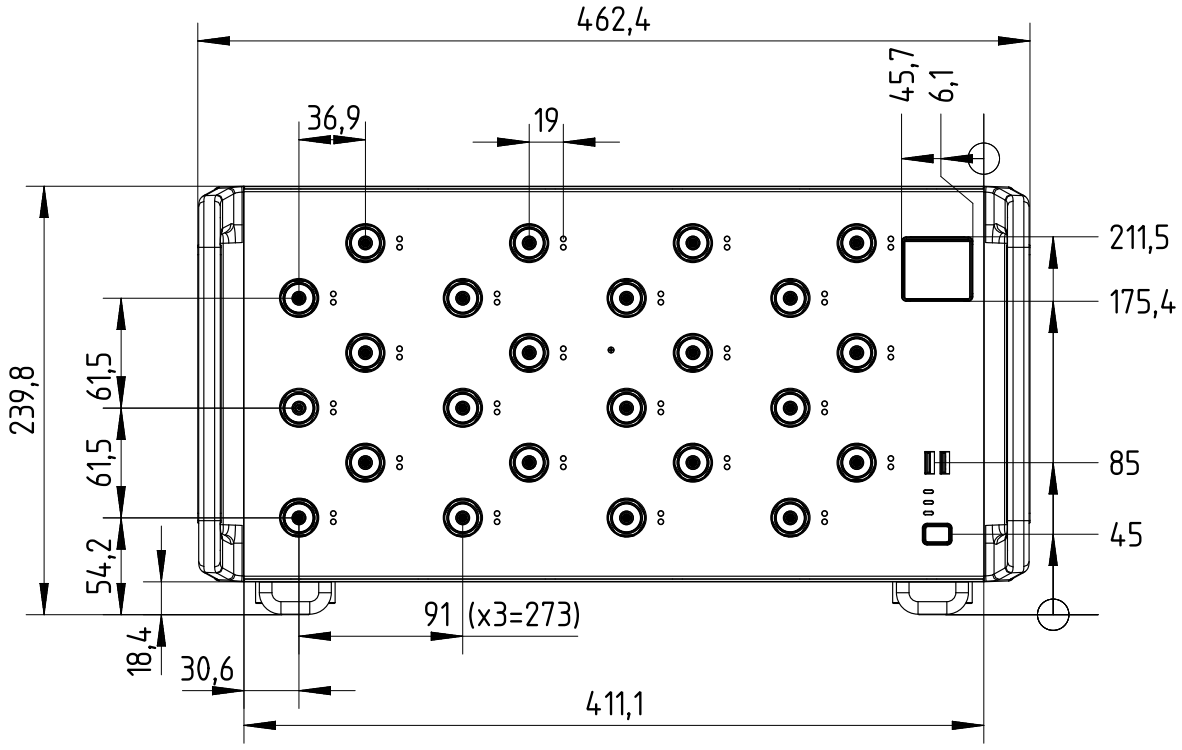
Temperature loading		in line with IEC 60068-2-1 and IEC 60068-2-2
	operating temperature range	+5 °C to +40 °C
	storage temperature range	–20 °C to +60 °C
Damp heat		+40 °C at 85 % rel. humidity, in line with IEC 60068-2-30
Altitude	operating environment	max. 2000 m
	storage environment	max. 4500 m
Mechanical 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	5 Hz to 800 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 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 2014/30/EU, including: IEC/EN 61326-1 (immunity test requirement for industrial environment IEC/EN 61326-1 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, CAN/CSA-C22.2 No. 61010-1
Power supply		100 V to 240 V at 50 Hz to 60 Hz and 400 Hz, max. 10 A to 4.2 A (respectively)
Power consumption	R&S®ZNBT8	
	with 4 ports	max. 1000 W, 199 W (nom.)
	with 8 ports	max. 1000 W, 267 W (nom.)
	with 12 ports	max. 1000 W, 357 W (nom.)
	with 16 ports	max. 1000 W, 432 W (nom.)
	with 20 ports	max. 1000 W, 522 W (nom.)
	with 24 ports	max. 1000 W, 586 W (nom.)
	R&S®ZNBT20	
	with 8 ports	max. 1000 W, 310 W (nom.)
	with 12 ports	max. 1000 W, 390 W (nom.)
	with 16 ports	max. 1000 W, 450 W (nom.)
	with 20 ports	max. 1000 W, 530 W (nom.)
	with 24 ports	max. 1000 W, 590 W (nom.)
	R&S®ZNBT26/R&S®ZNBT40	
	with 8 ports	max. 1000 W, 335 W (nom.)
	with 12 ports	max. 1000 W, 426 W (nom.)
	with 16 ports	max. 1000 W, 521 W (nom.)
	with 20 ports	max. 1000 W, 637 W (nom.)
	with 24 ports	max. 1000 W, 732 W (nom.)
Test marks		VDE, $_{C}$CSA$_{US}$, CE conformity mark

Dimensions	W × H × D	463 mm × 240 mm × 612 mm (18.2 in × 9.4 in × 24.1 in)
Weight	R&S®ZNBT8	
	with 4 ports	22 kg (48.5 lb) (nom.)
	with 8 ports	24 kg (52.9 lb) (nom.)
	with 12 ports	29 kg (63.9 lb) (nom.)
	with 16 ports	31 kg (68.3 lb) (nom.)
	with 20 ports	36 kg (79.4 lb) (nom.)
	with 24 ports	38 kg (83.8 lb) (nom.)
	R&S®ZNBT20/R&S®ZNBT26/R&S®ZNBT40	
	with 8 ports	27 kg (59.5 lb) (nom.)
	with 12 ports	34 kg (75 lb) (nom.)
	with 16 ports	36 kg (79.4 lb) (nom.)
	with 20 ports	43 kg (94.8 lb) (nom.)
	with 24 ports	45 kg (99.2 lb) (nom.)
Shipping weight	R&S®ZNBT8	
	with 4 ports	28 kg (61.7 lb) (nom.)
	with 8 ports	30 kg (66.1 lb) (nom.)
	with 12 ports	35 kg (77.2 lb) (nom.)
	with 16 ports	37 kg (81.6 lb) (nom.)
	with 20 ports	42 kg (92.6 lb) (nom.)
	with 24 ports	44 kg (97.0 lb) (nom.)
	R&S®ZNBT20/R&S®ZNBT26/R&S®ZNBT40	
	with 8 ports	33 kg (72.8 lb) (nom.)
	with 12 ports	40 kg (88.2 lb) (nom.)
	with 16 ports	42 kg (92.6 lb) (nom.)
	with 20 ports	49 kg (108.0 lb) (nom.)
	with 24 ports	51 kg (112.4 lb) (nom.)

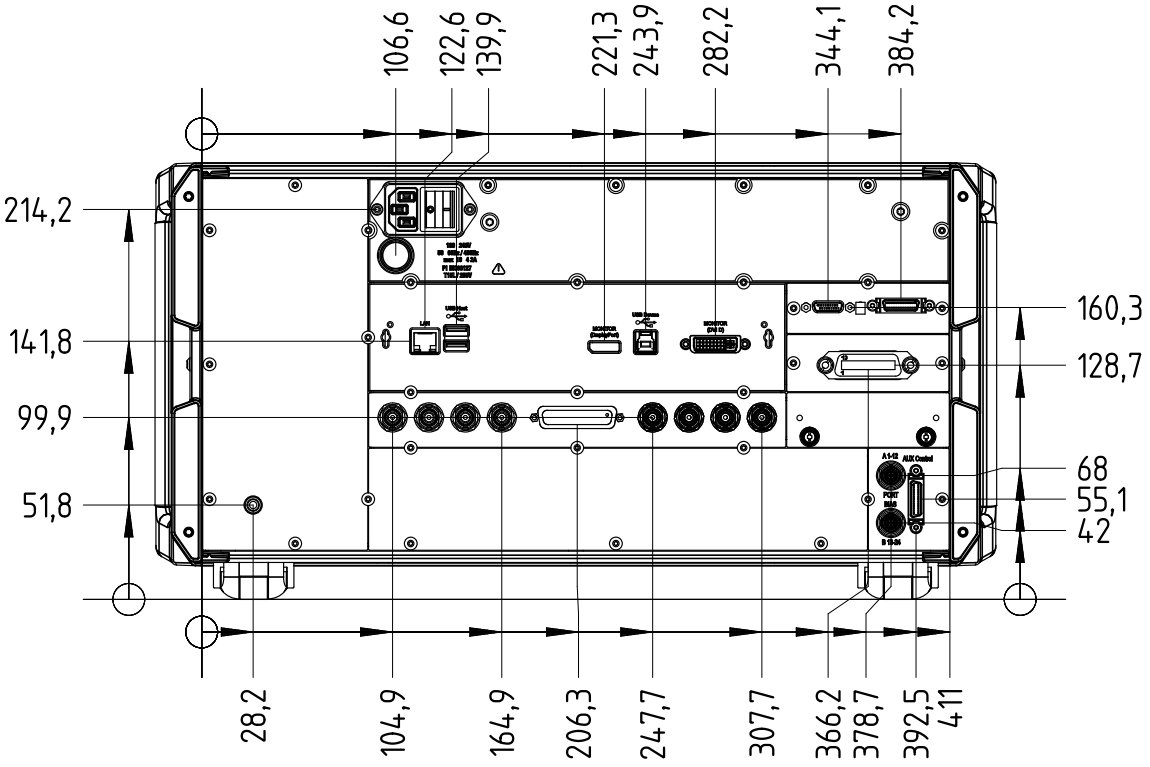
Dimensions (in mm)



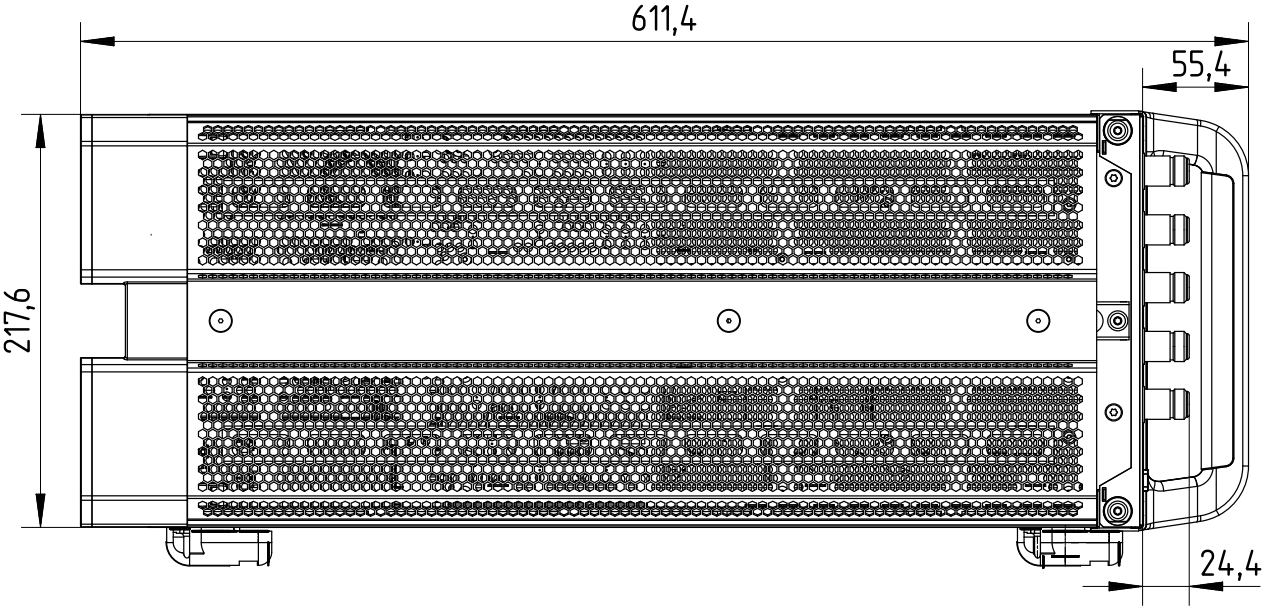
Front view of the R&S®ZNBT8



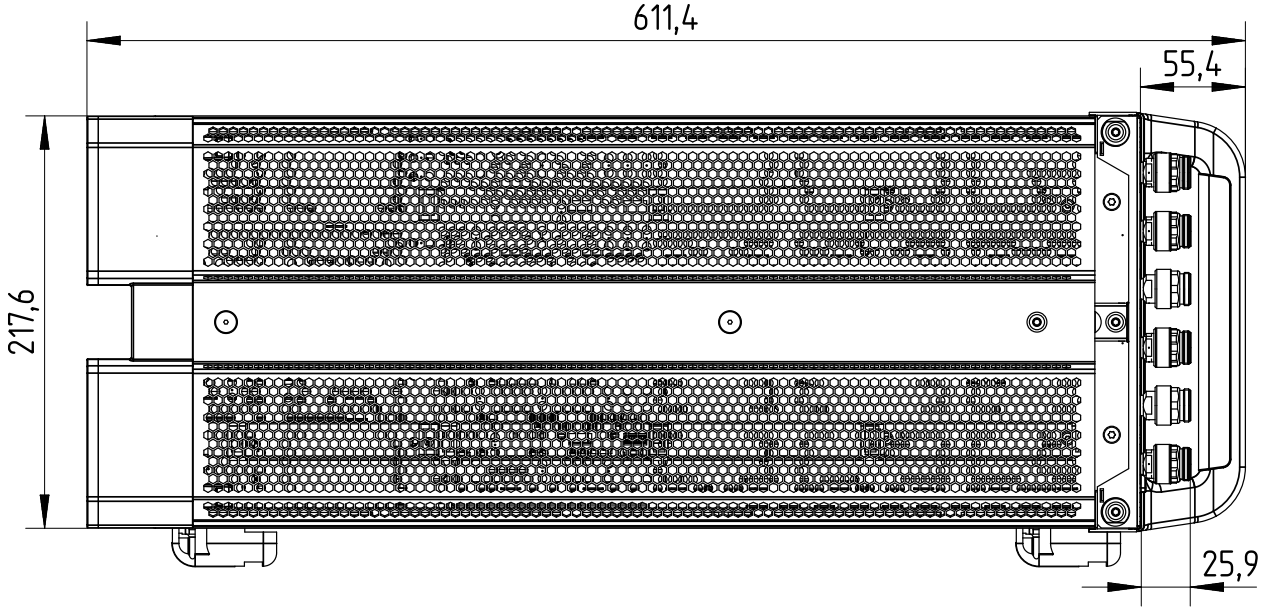
Front view of the R&S®ZNBT20, R&S®ZNBT26 and R&S®ZNBT40



Rear view of the R&S®ZNBT8, R&S®ZNBT20, R&S®ZNBT26 and R&S®ZNBT40



Side view of the R&S®ZNBT8



Side view of the R&S®ZNBT20, R&S®ZNBT26 and R&S®ZNBT40

Ordering information

Designation	Type	Retrofit [16]	On site [17]	Order No.
Base unit				
Vector network analyzer, 4 ports, 8.5 GHz, N [18]	R&S®ZNBT8			1318.7006.24
Vector network analyzer, 8 ports, 20 GHz, 3.5 mm [18]	R&S®ZNBT20			1332.9002.24
Vector network analyzer, 8 ports, 26.5 GHz, 2.92 mm [18]	R&S®ZNBT26			1332.9002.34
Vector network analyzer, 8 ports, 40 GHz, 2.92 mm [18]	R&S®ZNBT40			1332.9002.44
Options				
Additional ports				
R&S®ZNBT8				
Additional ports 5 to 8	R&S®ZNBT8-B108	●		1319.4200.02
Additional ports 9 to 12	R&S®ZNBT8-B112	●		1319.4217.02
Additional ports 13 to 16	R&S®ZNBT8-B116	●		1319.4223.02
Additional ports 17 to 20	R&S®ZNBT8-B120	●		1319.4230.02
Additional ports 21 to 24	R&S®ZNBT8-B124	●		1319.4246.02
R&S®ZNBT20				
Additional ports 9 to 12	R&S®ZNBT20B112	●		1332.9454.02
Additional ports 13 to 16	R&S®ZNBT20B116	●		1332.9460.02
Additional ports 17 to 20	R&S®ZNBT20B120	●		1332.9302.02
Additional ports 21 to 24	R&S®ZNBT20B124	●		1332.9319.02
R&S®ZNBT26				
Additional ports 9 to 12	R&S®ZNBT26B112	●		1332.9454.34
Additional ports 13 to 16	R&S®ZNBT26B116	●		1332.9460.34
Additional ports 17 to 20	R&S®ZNBT26B120	●		1332.9302.34
Additional ports 21 to 24	R&S®ZNBT26B124	●		1332.9319.34
R&S®ZNBT40				
Additional ports 9 to 12	R&S®ZNBT40B112	●		1332.9454.44
Additional ports 13 to 16	R&S®ZNBT40B116	●		1332.9460.44
Additional ports 17 to 20	R&S®ZNBT40B120	●		1332.9302.44
Additional ports 21 to 24	R&S®ZNBT40B124	●		1332.9319.44
Extended power range				
R&S®ZNBT8				
Ports 1 to 4	R&S®ZNBT8-B21	●		1319.4252.02
Ports 5 to 8	R&S®ZNBT8-B22	●		1319.4269.02
Ports 9 to 12	R&S®ZNBT8-B23	●		1319.4275.02
Ports 13 to 16	R&S®ZNBT8-B24	●		1319.4281.02
Ports 17 to 20	R&S®ZNBT8-B25	●		1319.4298.02
Ports 21 to 24	R&S®ZNBT8-B26	●		1319.4300.02
R&S®ZNBT20				
Ports 1 to 4	R&S®ZNBT20-B21	●		1332.9348.02
Ports 5 to 8	R&S®ZNBT20-B22	●		1332.9354.02
Ports 9 to 12	R&S®ZNBT20-B23	●		1332.9360.02
Ports 13 to 16	R&S®ZNBT20-B24	●		1332.9377.02
Ports 17 to 20	R&S®ZNBT20-B25	●		1332.9383.02
Ports 21 to 24	R&S®ZNBT20-B26	●		1332.9390.02
R&S®ZNBT26				
Ports 1 to 4	R&S®ZNBT26-B21	●		1332.9348.34
Ports 5 to 8	R&S®ZNBT26-B22	●		1332.9354.34
Ports 9 to 12	R&S®ZNBT26-B23	●		1332.9360.34
Ports 13 to 16	R&S®ZNBT26-B24	●		1332.9377.34
Ports 17 to 20	R&S®ZNBT26-B25	●		1332.9383.34
Ports 21 to 24	R&S®ZNBT26-B26	●		1332.9390.34
R&S®ZNBT40				
Ports 1 to 4	R&S®ZNBT40-B21	●		1332.9348.44
Ports 5 to 8	R&S®ZNBT40-B22	●		1332.9354.44
Ports 9 to 12	R&S®ZNBT40-B23	●		1332.9360.44
Ports 13 to 16	R&S®ZNBT40-B24	●		1332.9377.44
Ports 17 to 20	R&S®ZNBT40-B25	●		1332.9383.44
Ports 21 to 24	R&S®ZNBT40-B26	●		1332.9390.44

[16] Option may also be ordered at a later stage, upgrade in service.

[17] Option may be installed by the user on site.

[18] External monitor, mouse and keyboard or external touchscreen required for manual operation.

Designation	Type	Retrofit [16]	On site [17]	Order No.
Receiver step attenuators for R&S®ZNBT8				
Ports 1 to 4	R&S®ZNBT8-B361	●		1319.4317.02
Ports 5 to 8	R&S®ZNBT8-B362	●		1319.4323.02
Ports 9 to 12	R&S®ZNBT8-B363	●		1319.4330.02
Ports 13 to 16	R&S®ZNBT8-B364	●		1319.4346.02
Ports 17 to 20	R&S®ZNBT8-B365	●		1319.4352.02
Ports 21 to 24	R&S®ZNBT8-B366	●		1319.4369.02
Extended dynamic range [19] for R&S®ZNBT8				
Ports 1 to 4	R&S®ZNBT8-B504			1332.8335.02
Ports 5 to 8	R&S®ZNBT8-B508	●		1332.8341.02
Ports 9 to 12	R&S®ZNBT8-B512	●		1332.8358.02
Ports 13 to 16	R&S®ZNBT8-B516	●		1332.8364.02
Ports 17 to 20	R&S®ZNBT8-B520	●		1332.8370.02
Ports 21 to 24	R&S®ZNBT8-B524	●		1332.8387.02
Precision frequency reference (OCXO)	R&S®ZNBT-B4	●		1332.9477.02
GPIB interface	R&S®ZNBT-B10	●	●	1332.9483.02
Device control	R&S®ZNBT-B12	●	●	1332.9490.02
Additional removable HDDs and SSDs				
Additional removable hard disk, Windows Embedded Standard 7 (32 bit), for R&S®ZNBT8 with LPW10	R&S®ZNBT-B19	●	●	1332.9283.10
Additional removable hard disk, Windows Embedded Standard 7 (64 bit), for R&S®ZNBT8/R&S®ZNBT20 with LPW11	R&S®ZNBT-B19	●	●	1332.9283.11
Additional removable SSD, Windows 10 IoT Enterprise 2016 LTSB (64 bit), for R&S®ZNBT8/R&S®ZNBT20/R&S®ZNBT26/R&S®ZNBT40	R&S®ZNBT-B19	●	●	1332.9283.12
Additional removable SSD, Windows 10 IoT Enterprise 2021 LTSC (64 bit), For R&S®ZNBT8/R&S®ZNBT20/R&S®ZNBT26/R&S®ZNBT40	R&S®ZNBT-B19	●	●	1332.9283.13
DC inputs	R&S®ZNBT-B81	●		1332.9502.02
Time domain analysis	R&S®ZNBT-K2	●	●	1318.8425.02
Distance-to-fault (DTF) measurement	R&S®ZNBT-K3	●	●	1350.5063.02
Extended time domain analysis	R&S®ZNBT-K20	●	●	1319.4400.02
Frequency conversion [20]	R&S®ZNBT-K4	●	●	1318.8431.02
Intermodulation measurements [21]	R&S®ZNBT-K14	●	●	1318.8448.02
10 MHz receiver bandwidth	R&S®ZNBT-K17	●	●	1318.8454.02
1 mHz frequency resolution	R&S®ZNBT-K19	●	●	1319.4000.02
Easy deembedding	R&S®ZNBT-K210	●	●	1328.8634.02
In-situ deembedding	R&S®ZNBT-K220	●		1328.8640.02
Smart fixture deembedding	R&S®ZNBT-K230	●		1328.8657.02
Delta-L PCB characterization	R&S®ZNBT-K231	●		1328.8663.02
Health and utilization monitoring service	R&S®ZNBT-K980	●	●	1338.8989.02
Handler I/O (external) for R&S®ZNBT	R&S®ZNBT-Z14	●	●	1326.6640.05
External RFFE GPIO interface	R&S®ZN-Z15	●	●	1325.5905.02
External RFFE GPIO interface incl. voltage/current measurement	R&S®ZN-Z15	●	●	1325.5905.03
Rackmount kit	R&S®ZZA-KN5	●	●	1175.3040.00
Direct control cable	R&S®ZN-B121	●	●	1323.9290.00
Upgrade kit				
Synthesizer upgrade kit for R&S®ZNBT8 [22]	R&S®ZNBT-USY	●		1328.8857.02

[19] The R&S®ZNBT8-B504/-B508/-B512/-B516/-B520/-B524 options cannot be combined with the R&S®ZNBT8-B361/-B362/-B363/-B364/-B365/-B366 options.

[20] Second internal source is included with R&S®ZNBTxx-B112 options.

[21] Requires R&S®ZNBT-K4 option.

[22] The R&S®ZNBT-USY requires firmware version 3.60 or higher and Windows 10. For upgrade kits contact your local Rohde & Schwarz sales office.

Warranty		
Base unit		1 year
All other items [23]		1 year
Options		
Extended warranty, one year	R&S®WE1	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 accredited calibration coverage, one year	R&S®AW1	
Extended warranty with accredited calibration coverage, two years	R&S®AW2	

Extended warranty with a term of one and two years (WE1 and WE2)
Repairs carried out during the contract term are free of charge [24]. 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 [24] and calibration at the recommended intervals as well as any calibration carried out during repairs or option upgrades.

Extended warranty with accredited calibration (AW1 and AW2)
Enhance your extended warranty by adding accredited calibration coverage at a package price. This package ensures that your Rohde & Schwarz product is regularly calibrated under accreditation, inspected and maintained during the term of the contract. It includes all repairs [24] and accredited calibration at the recommended intervals as well as any accredited calibration carried out during repairs or option upgrades.

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

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