

R&S® ZVT VECTOR NETWORK ANALYZER

Specifications



Data Sheet
Version 13.00

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Definitions

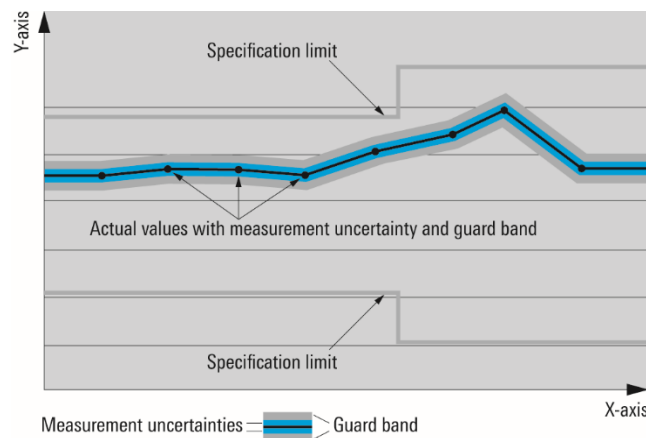
General

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



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/3GPP2 standard, chip rates are specified in Mcps (million chips per second), whereas bit rates and symbol rates are specified in Gbps (billion bits per second), Mbps (million bits per second), kbps (thousand bits per second), Msps (million symbols per second) or ksp/s (thousand symbols per second), and sample rates are specified in Msample/s (million samples per second). Gbps, Mcps, Mbps, Msps, kbps, ksp/s and Msample/s are not SI units.

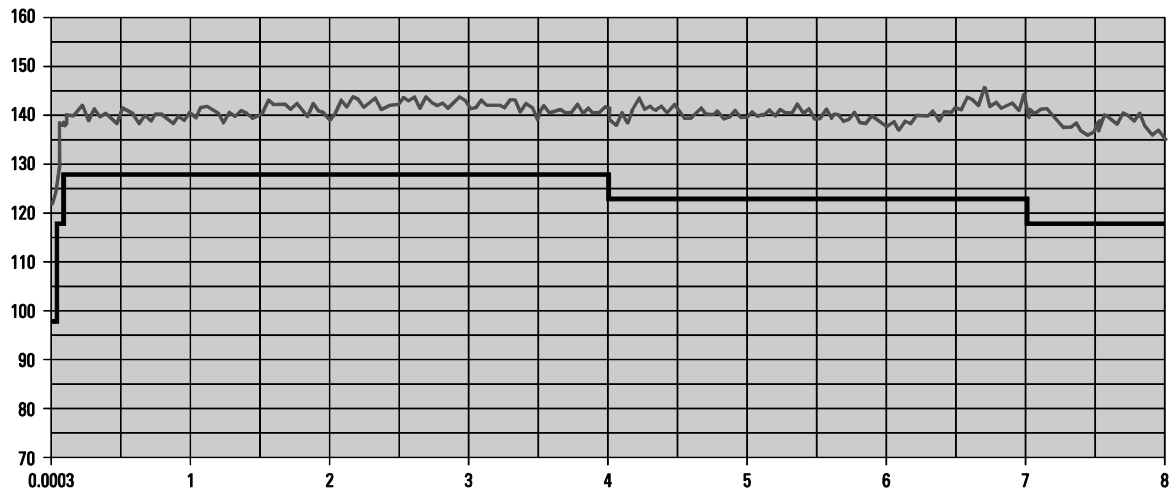
Specifications

Measurement range

Impedance		50 Ω
Test port connector	R&S®ZVT8	type N, female
	R&S®ZVT20	3.5 mm, male
Number of test ports	without additional PORT option	2
	R&S®ZVT8 with additional PORT options	3, 4, 5, 6, 7, or 8
	R&S®ZVT20 with additional PORT options	3, 4, 5, or 6
Frequency range	R&S®ZVT8	300 kHz to 8 GHz
	R&S®ZVT20	10 MHz to 20 GHz
Static frequency accuracy	without optional oven quartz	8×10^{-6}
	with optional oven quartz	1×10^{-7}
Frequency resolution		1 Hz
Number of measurement points	per trace	2 to 60001
Measurement bandwidths	1/2/5 steps	1 Hz to 1 MHz
Dynamic range of the R&S®ZVT8	from PORT 1 to any other PORT	
	300 kHz to 50 MHz	> 98 dB, typ. 108 dB
	50 MHz to 100 MHz	> 118 dB, typ. 128 dB
	100 MHz to 4 GHz	> 128 dB, typ. 138 dB
	4 GHz to 7 GHz	> 123 dB, typ. 133 dB
	7 GHz to 8 GHz	> 118 dB, typ. 128 dB
Dynamic range of the R&S®ZVT20	from PORT 1 to any other PORT	
	10 MHz to 100 MHz	> 80 dB, typ. 110 dB
	100 MHz to 700 MHz	> 100 dB, typ. 130 dB
	700 MHz to 8 GHz	> 120 dB, typ. 133 dB
	8 GHz to 16 GHz	> 110 dB, typ. 122 dB
	16 GHz to 20 GHz	> 105 dB, typ. 117 dB

The dynamic range is defined as the difference between the actually available 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 and without system error correction. The dynamic range can be increased by using a measurement bandwidth of 1 Hz.

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Dynamic range in dB versus frequency in GHz of the R&S®ZVT8

Measurement speed

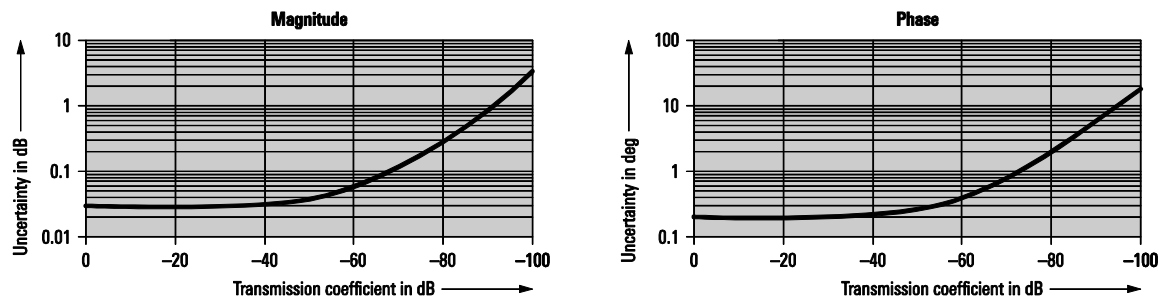
Measurement time	for 201 measurements points, with span 100 MHz, 500 kHz measurement bandwidth, ALC and display switched off	
	with center frequency 1.1 GHz	< 6 ms
	with center frequency 5.1 GHz	< 4.5 ms
Measurement time per point	CW mode, 1 MHz measurement bandwidth	< 3.5 μ s
Data transfer time	for 201 measurements points	
	via IEC/IEEE bus	< 2.9 ms
	via VX11 over 100 Mbit/s LAN	< 1.3 ms
	via RSIB over 100 Mbit/s LAN	< 0.7 ms
Time for measurement and data transfer	for 201 measurements points, with start frequency 1 GHz, stop frequency 1.1 GHz, 500 kHz measurement bandwidth and display switched off (No additional time for data transfer is needed, as this occurs simultaneously during the measurement.)	< 6 ms
Switching time between channels	with no more than 2001 points	< 1 ms
Switching time between two preloaded instrument settings	with no more than 2001 points	< 10 ms

Typical sweep times versus number of measurement points						
Number of measurement points	51	101	201	401	801	1601
Start frequency 5 GHz, stop frequency 5.2 GHz, ALC off, and a measurement bandwidth of 100 kHz						
With full one-port calibration or with correction switched off	2.4 ms	3.9 ms	6.3 ms	11 ms	20.4 ms	40.2 ms
With TOSM calibration	4.7 ms	8.6 ms	16.4 ms	32.4 ms	65 ms	170 ms
Start frequency 6 GHz, stop frequency 8 GHz, ALC off, and a measurement bandwidth of 100 kHz						
With full one-port calibration or with correction switched off	3.4 ms	6.2 ms	11 ms	17.3 ms	28.2 ms	49 ms
With TOSM calibration	5.3 ms	9.8 ms	18 ms	33 ms	63 ms	160 ms
Start frequency 10 MHz, stop frequency 8 GHz (R&S®ZVT8) or 20 GHz (R&S®ZVT20), ALC off, and a measurement bandwidth of 100 kHz						
With full one-port calibration or with correction switched off	8.4 ms	12.6 ms	19.5 ms	30.5 ms	53.2 ms	88.2 ms
With TOSM calibration	10.3 ms	16.6 ms	28 ms	47 ms	81 ms	190 ms

Measurement accuracy

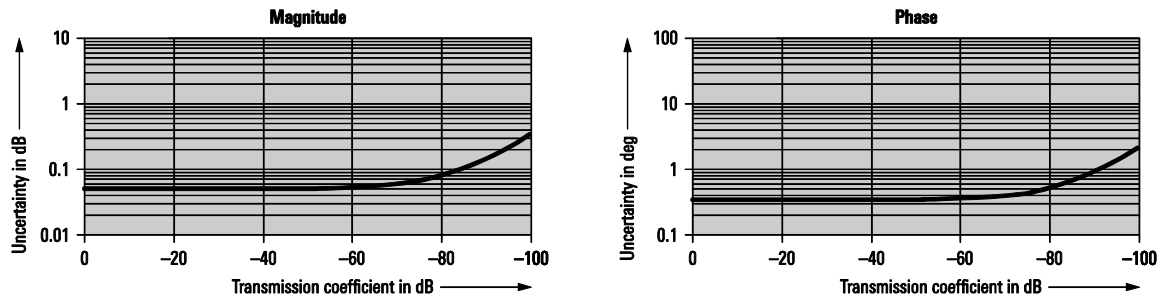
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 K after calibration. Validity of the data is conditional on the use of a suitable calibration kit. This calibration kit is used to achieve the effective system data specified below. Frequency points,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

Accuracy of transmission measurements		
R&S®ZVT8		
300 kHz to 1 MHz	+15 dB to –45 dB	< 1 dB or < 6°
1 MHz to 50 MHz	+15 dB to –30 dB	< 0.2 dB or < 2°
	–30 dB to –45 dB	< 1 dB or < 6°
50 MHz to 8 GHz	+15 dB to +5 dB	< 0.2 dB or < 2°
	+5 dB to –55 dB	< 0.1 dB or < 1°
	–55 dB to –70 dB	< 0.2 dB or < 2°
	–70 dB to –85 dB	< 1 dB or < 6°
R&S®ZVT20		
10 MHz to 50 MHz	+15 dB to –30 dB	< 1 dB or < 6°
50 MHz to 400 MHz	+15 dB to –30 dB	< 0.2 dB or < 2°
	–30 dB to –45 dB	< 1 dB or < 6°
400 MHz to 700 MHz	+15 dB to –50 dB	< 0.2 dB or < 2°
	–50 dB to –65 dB	< 1 dB or < 6°
700 MHz to 8 GHz	+15 dB to +5 dB	< 0.2 dB or < 2°
	+5 dB to –55 dB	< 0.1 dB or < 1°
	–55 dB to –70 dB	< 0.2 dB or < 2°
	–70 dB to –85 dB	< 1 dB or < 6°
8 GHz to 20 GHz	+15 dB to +5 dB	< 0.2 dB or < 2°
	+5 dB to –35 dB	< 0.1 dB or < 1°
	–35 dB to –50 dB	< 0.2 dB or < 2°
	–50 dB to –65 dB	< 1 dB or < 6°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz, and a nominal source power of –10 dBm.		

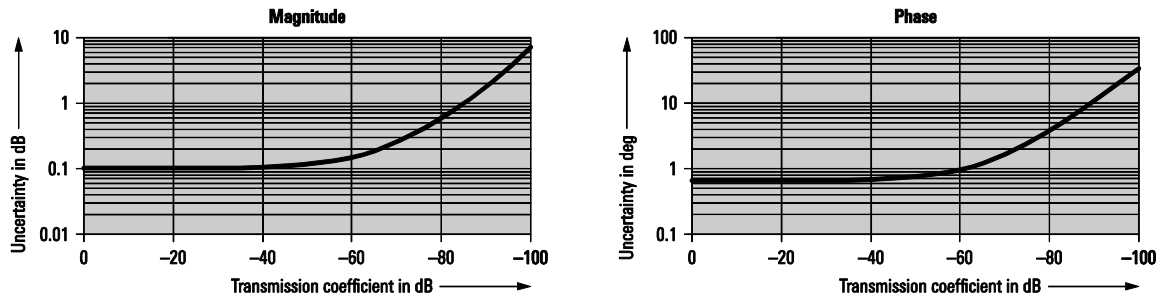


Typical accuracy of transmission magnitude and transmission phase measurements of the R&S®ZVT8 in the frequency range from 300 kHz to 4 GHz

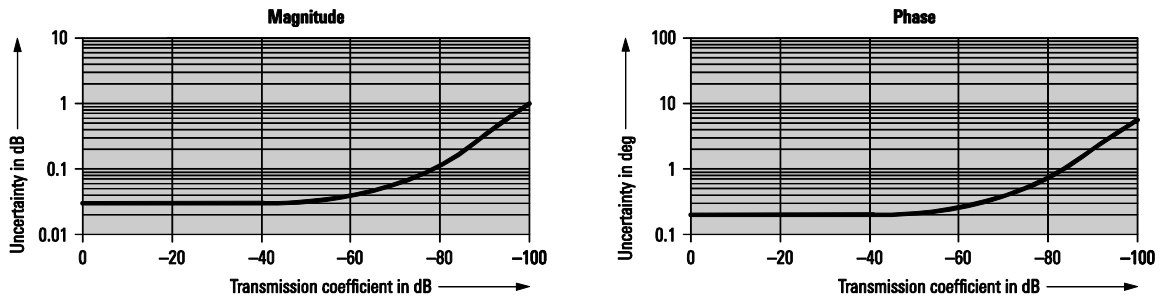
Typical accuracy of transmission magnitude and transmission phase measurements



of the R&S®ZVT8 in the frequency range from 4 GHz to 8 GHz

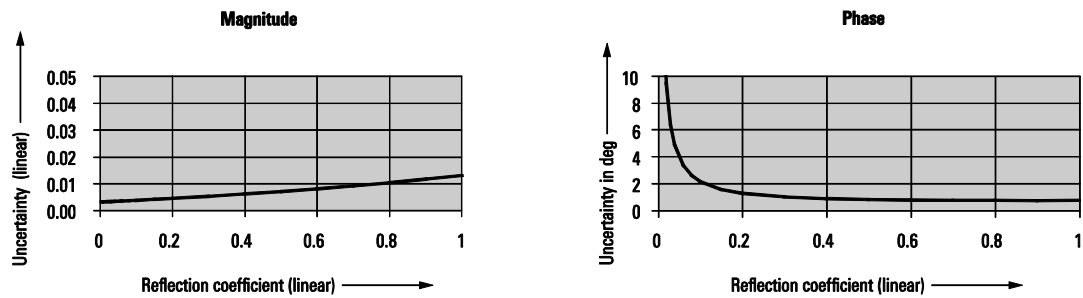


Typical accuracy of transmission magnitude and transmission phase measurements of the R&S®ZVT20 in the frequency range from 10 MHz to 700 MHz



Typical accuracy of transmission magnitude and transmission phase measurements of the R&S®ZVT20 in the frequency range from 700 MHz to 20 GHz

Accuracy of reflection measurements		
R&S®ZVT8		
300 kHz to 1 MHz	for +10 dB to –25 dB	< 1 dB or < 6°
	for –25 dB to –35 dB	< 3 dB or < 20°
1 MHz to 8 GHz	+10 dB to +3 dB	< 0.6 dB or < 4°
	+3 dB to –15 dB	< 0.4 dB or < 3°
	–15 dB to –25 dB	< 1 dB or < 6°
	–25 dB to –35 dB	< 3 dB or < 20°
R&S®ZVT20		
10 MHz to 50 MHz	+3 dB to –15 dB	< 1 dB or < 6°
	–15 dB to –25 dB	< 3 dB or < 20°
50 MHz to 20 GHz	+10 dB to +3 dB	< 0.6 dB or < 4°
	+3 dB to –15 dB	< 0.4 dB or < 3°
	–15 dB to –25 dB	< 1 dB or < 6°
	–25 dB to –35 dB	< 3 dB or < 20°
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
of the R&S®ZVT8 in the frequency range from 300 kHz to 8 GHz
and of the R&S®ZVT20 in the frequency range from 50 MHz to 20 GHz

Trace stability		
Trace noise of S_{11} (RMS)	at 0 dBm source power, 0 dB reflection and 1 kHz measurement bandwidth	
	R&S®ZVT8	
	above 300 kHz	< 0.004 dB, typ. 0.001 dB
	R&S®ZVT20	
	700 MHz to 8 GHz	< 0.004 dB, typ. 0.001 dB
	8 GHz to 20 GHz	< 0.015 dB, typ. 0.004 dB
Temperature dependence	at 0 dB transmission or reflection	< 0.05 dB/K or < 0.4°/K

Effective system data

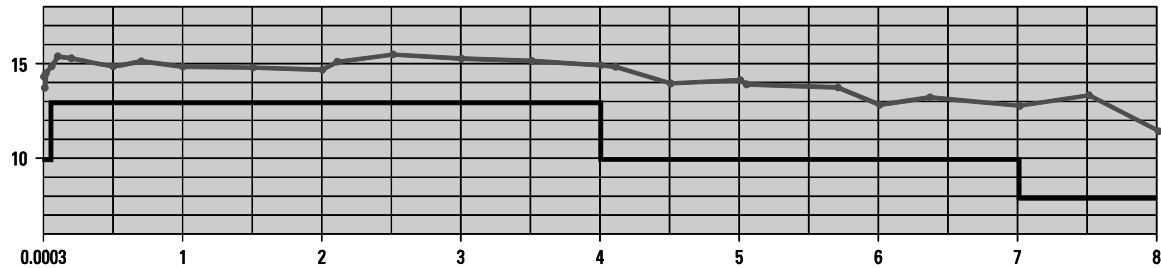
This data is valid between +18 °C and +28 °C, provided the temperature has not varied by more than 1 K after calibration. The data is based on a measurement bandwidth of 10 Hz and system error calibration by means of a suitable calibration kit. Frequency points, measurement bandwidth, and sweep time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

R&S®ZVT8		
Directivity	1 MHz to 4 GHz	> 46 dB, typ. 50 dB
	4 GHz to 8 GHz	> 40 dB, typ. 50 dB
Source match	1 MHz to 4 GHz	> 40 dB, typ. 46 dB
	4 GHz to 8 GHz	> 36 dB, typ. 40 dB
Reflection tracking	1 MHz to 4 GHz	< 0.04 dB, typ. 0.01 dB
	4 GHz to 8 GHz	< 0.1 dB, typ. 0.01 dB
Load match	1 MHz to 4 GHz	> 46 dB, typ. 50 dB
	4 GHz to 8 GHz	> 40 dB, typ. 46 dB
Transmission tracking	1 MHz to 4 GHz	< 0.06 dB, typ. 0.01 dB
	4 GHz to 8 GHz	< 0.1 dB, typ. 0.05 dB
R&S®ZVT20		
Directivity	10 MHz to 700 MHz	> 36 dB, typ. 40 dB
	700 MHz to 20 GHz	> 40 dB, typ. 50 dB
Source match	10 MHz to 700 MHz	> 30 dB, typ. 48 dB
	700 MHz to 20 GHz	> 30 dB, typ. 48 dB
Reflection tracking	10 MHz to 700 MHz	< 0.3 dB, typ. 0.05 dB
	700 MHz to 20 GHz	< 0.3 dB, typ. 0.05 dB
Load match	10 MHz to 700 MHz	> 36 dB, typ. 40 dB
	700 MHz to 20 GHz	> 40 dB, typ. 50 dB
Transmission tracking	10 MHz to 700 MHz	< 0.2 dB, typ. 0.1 dB
	700 MHz to 20 GHz	< 0.1 dB, typ. 0.05 dB

Test port output

Power range	R&S®ZVT8	
	300 kHz to 50 MHz	–40 dBm to +10 dBm, typ. –45 dBm to +14 dBm
	50 MHz to 4 GHz	–40 dBm to +13 dBm, typ. –45 dBm to +15 dBm
	4 GHz to 7 GHz	–40 dBm to +10 dBm, typ. –45 dBm to +13 dBm
	7 GHz to 8 GHz	–40 dBm to +8 dBm, typ. –45 dBm to +12 dBm
	R&S®ZVT20	
	10 MHz to 13 GHz	–30 dBm to +10 dBm, typ. –40 dBm to +15 dBm
	13 GHz to 20 GHz	–30 dBm to +6 dBm, typ. –40 dBm to +10 dBm
Power accuracy (with ALC on and without power calibration)	R&S®ZVT8	
	at –10 dBm	< 2 dB
	in temperature range +18 °C to +28 °C above 50 MHz	< 0.8 dB, typ. 0.3 dB
	R&S®ZVT20	
	at –10 dBm	< 3 dB
	in temperature range +18 °C to +28 °C 500 MHz to 20 GHz	< 0.8 dB, typ. 0.3 dB
Power linearity	referenced to –10 dBm	< 2 dB
	in temperature range +18 °C to +28 °C above 500 MHz	< 0.8 dB, typ. 0.2 dB
Power resolution		0.01 dB

Harmonics (output power referenced to maximum specified output power)	R&S®ZVT8	
	300 kHz to 50 MHz at –3 dB	typ. < –30 dBc
	50 MHz to 4 GHz at –5 dB	< –20 dBc, typ. < –30 dBc
	4 GHz to 7 GHz at –2 dB	< –20 dBc, typ. < –30 dBc
	7 GHz to 8 GHz at 0 dB	< –20 dBc, typ. < –30 dBc
	R&S®ZVT20	
	10 MHz to 50 MHz at –3 dB	typ. < –30 dBc
	50 MHz to 20 GHz at 0 dB	< –20 dBc, typ. < –30 dBc



Maximum output power in dBm versus frequency in GHz of the R&S®ZVT8

Test port input

Match	without system error correction	
	R&S®ZVT8	
	300 kHz to 7 GHz	> 16 dB
	7 GHz to 8 GHz	> 14 dB
	R&S®ZVT20	
	10 MHz to 50 MHz	> 10 dB
	50 MHz to 2 GHz	> 12 dB
	2 GHz to 20 GHz	> 8 dB
Maximum nominal input level	R&S®ZVT8	
	+13 dBm	
	R&S®ZVT20	
	10 MHz to 8 GHz	+10 dBm
Power measurement accuracy	8 GHz to 20 GHz	
	0 dBm	
	at –10 dBm without power calibration, in temperature range +18 °C to +28 °C	
	10 MHz to 8 GHz	< 1 dB
Receiver linearity	8 GHz to 20 GHz	
	< 2 dB	
	referenced to –10 dBm, in temperature range +18 °C to +28 °C	
	R&S®ZVT8	
	for +20 dB to –60 dB	
	50 MHz to 4 GHz	< 0.1 dB
	4 GHz to 6 GHz	< 0.1 dB
	6 GHz to 8 GHz	< 0.2 dB
	R&S®ZVT20	
	for +20 dB to –30 dB	
	50 MHz to 700 MHz	< 0.1 dB
	for +20 dB to +10 dB	
	700 MHz to 8 GHz	< 0.3 dB
Damage level	for +15 dB to +10 dB	
	8 GHz to 20 GHz	< 0.3 dB
	for +10 dB to –45 dB	
	700 MHz to 20 GHz	< 0.1 dB
Damage DC voltage	+27 dBm	
	30 V	

Noise level	at 10 Hz measurement bandwidth	
	R&S®ZVT8	
	300 kHz to 100 MHz	< -70 dBm
	100 MHz to 4 GHz	< -110 dBm
	4 GHz to 8 GHz	< -105 dBm
	R&S®ZVT20	
	100 MHz to 700 MHz	< -70 dBm
	700 MHz to 8 GHz	< -105 dBm
	8 GHz to 16 GHz	< -100 dBm
	16 GHz to 20 GHz	< -98 dBm
The noise level is defined as the RMS value of the indicated noise floor.		

Rear panel connectors

IEC BUS	remote control in line with IEEE 488, IEC 60625; 24 pins
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LAN 1	first local area network connector, 8 pins, RJ-45
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LAN 2	second local area network connector, 8 pins, RJ-45
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USB	(two) universal serial bus connectors for USB devices (USB 2.0); two additional USB connectors on the front panel
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10 MHz REF	alternatively input or output for external frequency reference signal	
Connector type		BNC, female
Input frequency		10 MHz
Maximum permissible deviation		1 kHz
Input power		-5 dBm to +10 dBm
Input impedance		50 Ω
Output frequency		10 MHz
Output frequency accuracy		80 Hz
Output power		-5 dBm to +10 dBm at 50 Ω

DC MEAS 1 V	DC measurement input	
Connector type		4-pin mini DIN, female
Voltage range		-1 V to +1 V
Measurement accuracy		2.5 % of reading + 2.5 mV
Resolution		12 bit
Bandwidth		< 100 kHz
Input impedance		> 10 k Ω
Damage voltage		30 V

DC MEAS 10 V	DC measurement input	
Connector type		4-pin mini DIN, female
Voltage range		-10 V to +10 V
Measurement accuracy		2.5 % of reading + 25 mV
Resolution		12 bit
Bandwidth		< 100 kHz
Input impedance		> 10 k Ω
Damage voltage		30 V

PORT BIAS 1 to PORT BIAS 8	DC bias input for PORT 1 to PORT 8	
Connector type		BNC, female
Maximum nominal input voltage		30 V
Maximum nominal input current		200 mA
Damage voltage		30 V
Damage current		500 mA

MONITOR	IBM-PC-compatible VGA monitor connector, 15-pin D-Sub (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.	
FOOT SWITCH 1 and FOOT SWITCH 2	pin 24 and pin 25 (inputs)	control inputs
DRIVE PORT 1 to DRIVE PORT 4	pin 16 to pin 19 (outputs)	indicate driving port
CHANNEL BIT 0 to CHANNEL BIT 3	pin 8 to pin 11 (outputs)	channel-specific user-configurable bits
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)	trigger input for analyzer

EXT TRIGGER	trigger input for analyzer	
Connector type		BNC, female
TTL signal (edge-triggered)		3 V
Polarity (selectable)		positive or negative
Minimum pulse width		1 μ s
Input impedance		> 10 k Ω

Options

Generator step attenuators (for the R&S®ZVT20 only)	extend the lower limit of the output power range by 70 dB	
Frequency range		10 MHz to 20 GHz
Power range	10 MHz to 13 GHz	upper limit is reduced by 1 dB
	13 GHz to 20 GHz	upper limit is reduced by 2 dB
	10 MHz to 20 GHz	lower limit is extended by 70 dB
Power linearity (with ALC off)	above –70 dBm	< 2 dB
	from –70 dBm to –100 dBm	< 3 dB
Dynamic range	10 MHz to 13 GHz	is reduced by 1 dB
	13 GHz to 20 GHz	is reduced by 2 dB

Receiver step attenuators (for the R&S®ZVT20 only)	permit the level of the input signal to be attenuated in 5 dB steps up to 35 dB	
Frequency range		10 MHz to 20 GHz
Attenuation		0 dB to 35 dB
Attenuation steps		5 dB
Attenuation accuracy		< 2 dB
Dynamic range	10 MHz to 13 GHz	is reduced by 1 dB
	13 GHz to 20 GHz	is reduced by 2 dB
Noise level	10 MHz to 13 GHz	is reduced by 1 dB
	13 GHz to 20 GHz	is reduced by 2 dB

Direct generator/receiver access	These options permit direct access to the internal source output as well as to the internal reference and measurement receiver inputs via front panel connectors. Dynamic range with direct access utilizing these inputs is stated in the "Measurement range" section. If all the front panel jumper cables are directly connected between the outputs and inputs, the following specifications for the vector network analyzer apply.	
Front panel connectors		SMA, female
Frequency range	R&S®ZVT8	300 kHz to 8 GHz
	R&S®ZVT20	10 MHz to 20 GHz
Match	R&S®ZVT20 16 GHz to 20 GHz	is reduced by 1 dB

Combiner (for the R&S®ZVT20 only)	This option permits two-tone intermodulation measurement.	
Frequency range		10 MHz to 20 GHz
Dynamic range	from PORT 1 to PORT 3	
	100 MHz to 20 GHz	is reduced to 90 dB
Power range	10 MHz to 20 GHz	is shifted by –5 dB
Power accuracy for PORT 1 and PORT 3 (with combiner in signal path, ALC off and without power calibration)	at –10 dBm	< 2.5 dB
	in temperature range +18 °C to +28 °C	< 1.5 dB, typ. 0.8 dB
Third-order intermodulation	500 MHz to 20 GHz	
	for 1 MHz spacing	
	10 MHz to 100 MHz at 0 dBm	< –70 dBc
	100 MHz to 11 GHz at 0 dBm	< –80 dBc
	11 GHz to 20 GHz at –2 dBm	< –70 dBc

General data

Temperature loading	operating temperature range	+5 °C to +40 °C
	permissible temperature range	+5 °C to +40 °C
	storage temperature range	–40 °C to +70 °C
		in line with IEC 60068-2-1 and IEC 60068-2-2
Damp heat		40 °C at 95 % rel. humidity, in line with IEC 60068-2-30
Mechanical resistance	vibration, sinusoidal	5 Hz to 150 Hz, in line with IEC 60068-2-6
	vibration, random	10 Hz to 300 Hz, in line with IEC 60068-2-64
	shock	40 g shock spectrum, in line with IEC 60068-2-27, MIL-STD-810
Calibration interval		1 year
EMC, RF emission	According to EN 61000-6-4, operation is not covered in residential, commercial, and business areas nor in small-size companies. Thus, the instrument must not be operated in residential, commercial, and business areas nor in small-size companies unless additional measures are taken to ensure that EN 61000-6-3 is met.	in line with CISPR 11/EN 55011 group 1 class A (for a shielded test set-up) The instrument complies with the emission requirements stipulated by EN 55011 class A. This means that the instrument is suitable for use in industrial environments.
EMC, other emissions and immunity		in line with IEC/EN 61326; emission: class B; immunity: industrial environment (excluding operating frequency)
Safety		in line with IEC 61010-1, EN61010-1, and UL 61010B-1, CSA C22.2 No. 1010.1
Power supply		100 V to 240 V (AC) $\pm 10\%$, 50 Hz to 60 Hz $\pm 5\%$, protection class I to VDE 411
Power consumption		650 W, typ. 420 W (standby: typ. 15 W)
Certification mark		VDE, cCSAus
Dimensions (W × H × D)	R&S®ZVT8	465.1 mm × 286.2 mm × 495.0 mm (18.31 in × 11.26 in × 19.50 in)
	R&S®ZVT20 (two ports, no options)	465.1 mm × 286.2 mm × 495.0 mm (18.31 in × 11.26 in × 19.50 in)
	R&S®ZVT20 (six ports, all options)	465.1 mm × 286.2 mm × 495.0 mm (18.31 in × 11.26 in × 19.50 in)
Weight	R&S®ZVT8	26 kg (57 lb)
	R&S®ZVT20 (two ports, no options)	19 kg (42 lb)
	R&S®ZVT20 (six ports, all options)	29 kg (64 lb)
Shipping weight	R&S®ZVT8	38 kg (84 lb)
	R&S®ZVT20 (two ports, no options)	31 kg (68 lb)
	R&S®ZVT20 (six ports, all options)	41 kg (90 lb)

Ordering information

Designation	Type	Order No.
Vector network analyzer, 8 GHz, 2 ports	R&S®ZVT8	1300.0000.08
Vector network analyzer, 20 GHz, 2 ports	R&S®ZVT20	1300.0000.20
Options		
Oven quartz (OCXO)	R&S®ZVAB-B4	1164.1757.02
Time domain	R&S®ZVAB-K2	1164.1657.02
Frequency conversion	R&S®ZVA-K4	1164.1863.02
Mixer phase measurement	R&S®ZVA-K5	1311.3128.02
True differential mode (for the R&S®ZVT8 only)	R&S®ZVA-K6	1164.1540.02
Pulsed measurements	R&S®ZVA-K7	1164.1511.02
Mixer delay without LO access	R&S®ZVA-K9	1311.3128.02
5 MHz receiver bandwidth	R&S®ZVA-K17	1164.1070.02
Internal pulse generators	R&S®ZVA-K27	1164.1892.02
Upgrade CPU board to R&S®FMR11 including upgrade to Windows Embedded Standard 7		
For R&S®FMR6	R&S®ZVA-U116	1312.7733.04
For R&S®FMR7/3, R&S®FMR7/6	R&S®ZVA-U116	1312.7733.02
For R&S®FMR9	R&S®ZVA-U116	1312.7733.06
Specific options for the R&S®ZVT8 only		
Direct gen/rec access for PORT 1	R&S®ZVT8-B16	1300.1706.11
Direct gen/rec access for PORT 2	R&S®ZVT8-B16	1300.1706.12
Direct gen/rec access for PORT 3 ¹	R&S®ZVT8-B16	1300.1706.13
Direct gen/rec access for PORT 4 ¹	R&S®ZVT8-B16	1300.1706.14
Direct gen/rec access for PORT 5 ¹	R&S®ZVT8-B16	1300.1706.15
Direct gen/rec access for PORT 6 ¹	R&S®ZVT8-B16	1300.1706.16
Direct gen/rec access for PORT 7 ¹	R&S®ZVT8-B16	1300.1706.17
Direct gen/rec access for PORT 8 ¹	R&S®ZVT8-B16	1300.1706.18
Additional PORT 3	R&S®ZVT8-B63	1300.1506.13
Additional PORT 4 ²	R&S®ZVT8-B64	1300.1506.14
Additional PORT 5 ²	R&S®ZVT8-B65	1300.1506.15
Additional PORT 6 ²	R&S®ZVT8-B66	1300.1506.16
Additional PORT 7 ²	R&S®ZVT8-B67	1300.1506.17
Additional PORT 8 ²	R&S®ZVT8-B68	1300.1506.18
Specific options for the R&S®ZVT20 only		
Combiner ³	R&S®ZVT20-B11	1300.1658.02
Direct gen/rec access for PORT 1	R&S®ZVT20-B16	1300.1635.11
Direct gen/rec access for PORT 2	R&S®ZVT20-B16	1300.1635.12
Direct gen/rec access for PORT 3 ¹	R&S®ZVT20-B16	1300.1635.13
Direct gen/rec access for PORT 4 ¹	R&S®ZVT20-B16	1300.1635.14
Direct gen/rec access for PORT 5 ¹	R&S®ZVT20-B16	1300.1635.15
Direct gen/rec access for PORT 6 ¹	R&S®ZVT20-B16	1300.1635.16
Generator step attenuator for PORT 1	R&S®ZVT20-B21	1300.1558.02
Generator step attenuator for PORT 3 ¹	R&S®ZVT20-B23	1300.1564.02
Receiver step attenuator for PORT 2	R&S®ZVT20-B32	1300.1570.02
Receiver step attenuator for PORT 4 ¹	R&S®ZVT20-B34	1300.1587.02
Additional PORT 3	R&S®ZVT20-B63	1300.1606.03
Additional PORT 4 ²	R&S®ZVT20-B64	1300.1606.04
Additional PORT 5 ²	R&S®ZVT20-B65	1300.1606.05
Additional PORT 6 ²	R&S®ZVT20-B66	1300.1606.06

¹ Requires additional PORT option.

² Requires all additional PORT options with lower port numbers.

³ Requires generator step attenuators for PORT 1 and PORT 3.

Warranty		
Base unit		3 years
All other items ⁴		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 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 ⁵. 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 ⁷ 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 ⁷ and accredited calibration at the recommended intervals as well as any accredited calibration carried out during repairs or option upgrades.

⁴ For options that are installed, the remaining base unit warranty applies if longer than 1 year. Exception: all batteries have a 1 year warranty.

⁵ Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.