R&S®ZVL
Vector Network Analyzer
Specifications

75 Years of Driving Innovation

ROHDE&SCHWARZ

CONTENTS

Specifications apply under the following conditions: 30 minutes warm-up time at ambient temperature, specified environmental conditions met, calibration cycle adhered to, and all internal automatic adjustments performed. Unless stated otherwise, specifications apply to the two test ports and a nominal source power of –10 dBm.

"Typical values" are designated with the abbreviation "typ.". These values are verified during the final test but are not assured by Rohde & Schwarz. "Nominal values" are design parameters that are not assured by Rohde & Schwarz. These values are verified during product development but are not specifically tested during production.

Rohde & Schwarz equipment is designed for reliable operation up to an altitude of 3000 m above sea level, and for transport up to an altitude of 4500 m above sea level.

Data without tolerance limits is not binding.

Measurement range

Frequency range	R&S®ZVL3 and R&S®ZVL3-75	9 kHz to 3 GHz
	R&S®ZVL6	9 kHz to 6 GHz
	R&S®ZVL13	9 kHz to 13.6 GHz (overrange 5 kHz to 15 GHz)
Reference frequency, internal, nominal	aging per year	1×10^{-6}
	temperature drift 0 °C to +50 °C	1×10^{-6}
	with optional R&S®FSL-B4 OCXO reference frequency	
	aging per year	1×10^{-7}
	temperature drift 0 °C to +50 °C	1×10^{-7}
Frequency resolution		1 Hz
Number of measurement points	default value	201
	user-selectable	2 to 4001
Measurement bandwidths	1/2/5 steps	10 Hz to 500 kHz
Dynamic range of the R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	9 kHz to 1 MHz	> 75 dB, typ. 85 dB
	1 MHz to 7 MHz	> 85 dB, typ. 100 dB
	7 MHz to 20 MHz	> 105 dB, typ. 120 dB
	20 MHz to 3 GHz (R&S®ZVL3 and R&S®ZVL6)	> 115 dB, typ. 123 dB
	20 MHz to 3 GHz (R&S®ZVL3-75 only)	> 110 dB, typ. 120 dB
	3 GHz to 5 GHz (R&S®ZVL6 only)	> 115 dB, typ. 123 dB
	5 GHz to 6 GHz (R&S®ZVL6 only)	> 110 dB, typ. 120 dB
Dynamic range of the R&S®ZVL13	9 kHz to 300 kHz	> 80 dB, typ. 90 dB
	300 kHz to 20 MHz	> 90 dB, typ. 100 dB
	20 MHz to 10 GHz	> 100 dB, typ. 105 dB
	10 GHz to 13.6 GHz	> 95 dB, typ. 100 dB
The dynamic range is measured as the difference between the –10 dBm source power and the rms value of the data trace of the transmission magnitude. This magnitude is produced by noise and crosstalk with the test ports short-circuited and the step attenuators set to 0 dB. This specification applies without system error correction and at 10 Hz measurement bandwidth (filter type: normal) in the temperature range from +18 °C to +28 °C. The dynamic range is also affected by receiver inherent spurious at particular frequencies.		

Measurement speed

Measurement time	for S21 with 1.1 GHz center frequency, 200 MHz span, 201 measurements points, and display switched on	
R&S®ZVL3 and R&S®ZVL6	with normalization calibration	
	and 100 kHz measurement bandwidth	< 50 ms
	and 10 kHz measurement bandwidth	< 70 ms
R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	with normalization calibration	
	and 100 kHz measurement bandwidth	< 60 ms
	and 10 kHz measurement bandwidth	< 90 ms
R&S®ZVL13	with normalization calibration	
	and 100 kHz measurement bandwidth	< 100 ms
	and 10 kHz measurement bandwidth	< 130 ms
Data transfer time	for 201 measurements points	
	via VX11 over 100 Mbit/s LAN	< 2.1 ms
	via RSIB over 100 Mbit/s LAN	< 1.5 ms
	via optional R&S®FSL-B10 GPIB interface	< 4.7 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	9 kHz to 50 MHz	
	for 0 dB to –40 dB	< 0.2 dB or < 2°
	50 MHz to 3 GHz	
	for 0 dB to –50 dB	< 0.2 dB or < 2°
	for –50 dB to –70 dB	< 0.3 dB or < 3°
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	
	for 0 dB to –50 dB	< 0.2 dB or < 2°
	for –50 dB to –70 dB	< 0.3 dB or < 3°
	6 GHz to 13.6 GHz (R&S®ZVL13 only)	
	for 0 dB to –50 dB	< 0.3 dB or < 3°
	for –50 dB to –70 dB	< 0.5 dB or < 5°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz (filter type: normal), a step attenuation of 10 dB (default value), and a nominal source power of 0 dBm.		

Accuracy of reflection measurements	9 kHz to 3 GHz	
	for 0 dB to –15 dB	< 0.4 dB or < 3°
	for –15 dB to –25 dB	< 1 dB or < 6°
	for –25 dB to –35 dB	< 3 dB or < 20°
	9 kHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	
	for 0 dB to –15 dB	< 0.4 dB or < 3°
	for –15 dB to –25 dB	< 1 dB or < 6°
	for –25 dB to –35 dB	< 3 dB or < 20°
	6 GHz to 13.6 GHz (R&S®ZVL13 only)	
	for 0 dB to –15 dB	< 0.4 dB or < 3°
	for –15 dB to –25 dB	< 1 dB or < 6°
	for –25 dB to –35 dB	< 3 dB or < 20°
Specifications are based on a matched DUT, a measurement bandwidth of 10 Hz (filter type: normal), a step attenuation of 10 dB, and a nominal source power of 0 dBm.		

Trace stability		
Trace noise of S21 (rms) above 10 MHz	at –10 dBm source power, 0 dB transmission, 0 dB step attenuation, and 2 kHz measurement bandwidth (filter type: normal)	
	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	< 0.005 dB
	R&S®ZVL13	< 0.005 dB < 0.09°, typ. 0.05°

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 (filter type: normal) 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).

Directivity	9 kHz to 3 GHz	> 46 dB, typ. 50 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	> 40 dB, typ. 50 dB
	6 GHz to 13.6 GHz (R&S®ZVL13)	> 40 dB, typ. 50 dB
Source match	9 kHz to 3 GHz	> 40 dB, typ. 46 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	> 36 dB, typ. 40 dB
	6 GHz to 13.6 GHz (R&S®ZVL13)	> 36 dB, typ. 40 dB
Reflection tracking	9 kHz to 3 GHz	< 0.04 dB, typ. 0.01 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	< 0.1 dB, typ. 0.01 dB
	6 GHz to 13.6 GHz (R&S®ZVL13)	< 0.1 dB, typ. 0.01 dB
Load match	9 kHz to 3 GHz	> 46 dB, typ. 50 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	> 40 dB, typ. 46 dB
	6 GHz to 13.6 GHz (R&S®ZVL13)	> 40 dB, typ. 46 dB
Transmission tracking	9 kHz to 3 GHz	< 0.06 dB, typ. 0.01 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	< 0.1 dB, typ. 0.05 dB
	6 GHz to 13.6 GHz (R&S®ZVL13 only)	< 0.12 dB, typ. 0.05 dB

Test port

Specifications apply to the two test ports, i.e. PORT 1 and PORT 2.

Impedance	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL13	50 Ω
	R&S®ZVL3-75	75 Ω
Connector		N, female

Test port output

Specifications apply to the two test ports, i.e. PORT 1 and PORT 2.

Source match	9 kHz to 3 GHz	typ. > 14 dB
	3 GHz to 6 GHz (R&S®ZVL6 only)	typ. > 14 dB
	9 kHz to 13.6 GHz (R&S®ZVL13 only)	typ. > 10 dB
Power range	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	–50 dBm to 0 dBm typ. –60 dBm to +10 dBm
	R&S®ZVL13	–35 dBm to –5 dBm typ. –40 dBm to 0 dBm
Power accuracy of the R&S®ZVL3 and R&S®ZVL6	at –10 dBm source power above 10 MHz	< 2 dB
	in temperature range +18 °C to +28 °C	< 1 dB, typ. 0.3 dB
Power accuracy of the R&S®ZVL3-75	at –10 dBm source power above 10 MHz	< 2.2 dB
	in temperature range +18 °C to +28 °C	< 1.2 dB, typ. 0.5 dB
Power accuracy of the R&S®ZVL13	at –10 dBm source power above 10 MHz	< 3 dB
	in temperature range +18 °C to +28 °C	< 1.3 dB, typ. 0.5 dB
Power linearity	referenced to –10 dBm and above 10 MHz	< 2 dB
	in temperature range +18 °C to +28 °C	< 0.8 dB, typ. 0.3 dB
Power resolution		0.01 dB
Harmonics	at –10 dBm source power	typ. –35 dBc
Spurious	at –10 dBm source power	typ. –40 dBc

Test port input

Specifications apply to the two test ports, i.e. PORT 1 and PORT 2.

Load match	9 kHz to 3 GHz	typ. > 14 dB
	3 GHz to 6 GHz (R&S®ZVL6 only)	typ. > 14 dB
	9 kHz to 13.6 GHz (R&S®ZVL13 only)	typ. > 10 dB
Attenuation	user-selectable	0 dB to 30 dB
Attenuation steps		5 dB
Attenuation uncertainty	9 kHz to 3 GHz	< 0.3 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	< 0.3 dB
	6 GHz to 13.6 GHz (R&S®ZVL13 only)	< 0.7 dB
Maximum nominal input level	with attenuation set to 0 dB	–10 dBm
	with attenuation set to 30 dB	+20 dBm
1 dB compression point	above 200 MHz, with attenuation set to 0 dB	0 dBm, nominal
Inherent spurious response	without input signal and with attenuation set to 0 dB	< –90 dBm, nominal
Damage DC voltage		30 V
Damage CW RF power		+27 dBm
Damage pulse voltage	10 µs pulse length	150 V
Damage pulse energy	10 µs pulse length	10 mWs

Additional front panel connectors

AUX OUT		
Connector		3.5 mm mini jack (mono)
Output impedance		< 100 Ω
Open-circuit voltage	adjustable	0 V to 1.5 V

PROBE POWER		
DC voltages		+15 V, –12.6 V, and ground
DC current		max. 150 mA

Rear panel connectors

LAN	local area network connector	RJ-45, 8 pins

DVI	connector for external monitor	DVI-D

EXT TRIGGER/GATE IN		
Connector		BNC, female, 50 Ω
Input signal		TTL-compatible

EXT REF	input for external frequency reference signal and, with optional R&S®FSL-B4 OCXO reference frequency, alternatively input or output for external frequency reference signal	
Connector		BNC, female, 50 Ω
Input frequency		10 MHz
Maximum allowed deviation		1 kHz
Input power		0 dBm to +10 dBm
Input impedance		50 Ω
Output frequency	requires optional R&S®FSL-B4 OCXO reference frequency	10 MHz
Output frequency accuracy		50 Hz
Output power		0 dBm, nominal

Spectrum analysis option

The specifications of the R&S®ZVL-K1 spectrum analysis option apply to the RF INPUT connector (combined with PORT 2).

Frequency		
Frequency range	R&S®ZVL3 and R&S®ZVL3-75	9 kHz to 3 GHz
	R&S®ZVL6	9 kHz to 6 GHz
	R&S®ZVL13	9 kHz to 13.6 GHz (overrange 5 kHz to 15 GHz)
Static reference frequency uncertainty	aging per year	$< 1 \times 10^{-6}$
	temperature drift 0 °C to +50 °C	$< 1 \times 10^{-6}$
	with optional R&S®FSL-B4 OCXO reference frequency	
	aging per year	$< 1 \times 10^{-7}$
	temperature drift 0 °C to +50 °C	$< 1 \times 10^{-7}$
Attenuation	user-selectable	0 dB to 30 dB
Attenuation steps		5 dB

R&S®FSL-B22 RF preamplifier option		
Gain	switchable	0 dB or 20 dB, nominal

Frequency readout	with marker or frequency counter	
Marker resolution		span/501
Uncertainty		< marker frequency × reference uncertainty + 2 % × span + 10 % × resolution bandwidth + ½ × last digit
Frequency counter resolution		1 Hz
Counter uncertainty	S/N > 25 dB	< frequency × reference uncertainty + ½ × last digit
Frequency span	R&S®ZVL3 and R&S®ZVL3-75	0 Hz (zero span) and 10 Hz to 3 GHz
	R&S®ZVL6	0 Hz (zero span) and 10 Hz to 6 GHz
	R&S®ZVL13	0 Hz (zero span) and 10 Hz to 13.6 GHz (overrange 15 GHz)
Frequency span uncertainty		3 %

Spectral purity		
Single sideband (SSB) phase noise at 500 MHz	at a carrier offset of 1 kHz	typ. –95 dBc (1 Hz)
	at a carrier offset of 10 kHz	< –96 dBc (1 Hz), typ. –100 dBc (1 Hz)
	at a carrier offset of 100 kHz	< –96 dBc (1 Hz), typ. –100 dBc (1 Hz)
	at a carrier offset of 1 MHz	< –113 dBc (1 Hz), typ. –116 dBc (1 Hz)

Sweep time		
Sweep times	10 Hz ≤ span ≤ 3.2 kHz	2.5 ms to 5 × span
	3.2 kHz < span ≤ 1.5 GHz	2.5 ms to 16000 s
	1.5 GHz < span ≤ 3 GHz	5 ms to 16000 s
	3 GHz < span ≤ 6 GHz	10 ms to 16000 s
	6 GHz < span ≤ 13.6 GHz	25 ms to 16000 s
Sweep times for zero span		1 µs to 5 µs in steps of 125 ns
		5 µs to 16000 s in steps of 5 %
Sweep time uncertainty	for finite span	< 3 %, nominal
	for zero span	< 0.1 %, nominal

Sweep filters		
Resolution bandwidths (RBW)		300 Hz to 10 MHz (–3 dB) in 1/3/10 steps
	with optional R&S®FSL-B7 narrow resolution filters	10 Hz to 10 MHz (–3 dB) in 1/3/10 steps
	zero span	additionally 20 MHz (–3 dB)
Resolution bandwidth uncertainty	RBW ≤ 3 MHz	< 3 %, nominal
Resolution filter shape factor 60 dB : 3 dB		< 5, nominal (Gaussian filters)

EMI filters		
6 dB bandwidths		9 kHz, 120 kHz, and 1 MHz
	with optional R&S®FSL-B7 narrow resolution filters	200 Hz, 9 kHz, 120 kHz, and 1 MHz
Bandwidth uncertainty		< 3 %, nominal
Shape factor 60 dB : 3 dB		< 6, nominal

Channel filters		
Bandwidths	300 Hz, 500 Hz, 1 kHz, 1.5 kHz, 2 kHz, 2.4 kHz, 2.7 kHz, 3 kHz, 3.4 kHz, 4 kHz, 4.5 kHz, 5 kHz, 6 kHz, 8.5 kHz, 9 kHz, 10 kHz, 12.5 kHz, 14 kHz, 15 kHz, 16 kHz, 18 kHz (RRC), 20 kHz, 21 kHz, 24.3 kHz (RRC), 25 kHz, 30 kHz, 50 kHz, 100 kHz, 150 kHz, 192 kHz, 200 kHz, 300 kHz, 500 kHz, 1 MHz, 1.228 MHz, 1.28 MHz (RRC), 1.5 MHz, 2 MHz, 3 MHz, 3.84 MHz (RRC), 4.096 MHz (RRC), and 5 MHz (RRC = root raised cosine)	
	with optional R&S®FSL-B7 narrow resolution filters	100 Hz, additionally 200 Hz
Video bandwidths	one-pole lowpass filters	1 Hz to 10 MHz in 1/3/10 steps
Demodulation bandwidth		20 MHz, nominal

Level		
Display range		displayed noise floor to +20 dBm
1 dB compression point	above 200 MHz and at 0 dB attenuation	0 dBm, nominal

Intermodulation of the R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75		
Third-order intermodulation (TOI)	intermodulation-free dynamic range, above 10 MHz, level 2 × –20 dBm, reference level –10 dBm	> 50 dBc (TOI +5 dBm, typ. +12 dBm)
Second harmonic intercept (SHI)	above 20 MHz	+30 dBm, nominal

Intermodulation of the R&S®ZVL13		
Third-order intermodulation (TOI)	intermodulation-free dynamic range, 10 MHz to 6 GHz, level 2 × –20 dBm, reference level –10 dBm	> 50 dBc (TOI +5 dBm, typ. +12 dBm)
	6 GHz to 13.6 GHz	50 dBc (TOI +5 dBm), nominal
Second harmonic intercept (SHI)	20 MHz to 6.8 GHz	+30 dBm, nominal

Displayed average noise level of the R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	at 0 dB attenuation, with resolution bandwidth (RBW) 1 kHz, and video bandwidth (VBW) 10 Hz, normalized to 1 Hz	
	with preamplifier OFF	
	9 kHz to 1 MHz	< –100 dBm (1 Hz)
	1 MHz to 10 MHz	< –110 dBm (1 Hz)
	10 MHz to 50 MHz	< –130 dBm (1 Hz)
	50 MHz to 6 GHz	< –140 dBm (1 Hz)
	with preamplifier ON (requires optional R&S®FSL-B22 RF preamplifier)	
	9 kHz to 1 MHz	< –115 dBm (1 Hz)
	1 MHz to 10 MHz	< –125 dBm (1 Hz)
	10 MHz to 50 MHz	< –150 dBm (1 Hz)
	50 MHz to 6 GHz	< –156 dBm (1 Hz)
	500 MHz	typ. –163 dBm (1 Hz)
	1 GHz	typ. –163 dBm (1 Hz)
	3 GHz	typ. –162 dBm (1 Hz)
	6 GHz	typ. –161 dBm (1 Hz)

Displayed average noise level of the R&S®ZVL13	at 0 dB attenuation, with resolution bandwidth (RBW) 1 kHz, and video bandwidth (VBW) 10 Hz, normalized to 1 Hz	
	with preamplifier OFF	
	9 kHz to 2 MHz	< –105 dBm (1 Hz)
	2 MHz to 10 GHz	< –125 dBm (1 Hz)
	10 GHz to 13.6 MHz	< –120 dBm (1 Hz)
	with preamplifier ON (requires optional R&S®FSL-B22 RF preamplifier)	
	9 kHz to 2 MHz	< –105 dBm (1 Hz)
	2 MHz to 20 MHz	< –125 dBm (1 Hz)
	20 MHz to 6 GHz	< –140 dBm (1 Hz)
	500 MHz	typ. –151 dBm (1 Hz)
	1 GHz	typ. –151 dBm (1 Hz)
	2 GHz	typ. –149 dBm (1 Hz)
	3 GHz	typ. –146 dBm (1 Hz)
	6 GHz	typ. –146 dBm (1 Hz)

Immunity to interference		
Image frequency response	f + 2 × 48.375 MHz	< –60 dBc, typ. –80 dBc
	f + 2 × 838.375 MHz	< –60 dB, typ. –80 dBc
	f + 2 × 7158.375 MHz	typ. –60 dBc
Intermediate frequency response	at 48.375 MHz, 838.375 MHz, and 7158.375 MHz	< –60 dBc, typ. –80 dBc
Inherent spurious response	above 30 MHz, without input signal, at 0 dB attenuation and RBW < 1 MHz	< –90 dBm
Spurious response	at 7158.375 MHz – 2 × f_{in}	typ. –60 dBc
Spurious response	at f_{in} – 3579.1875 MHz	typ. –60 dBc
Spurious response, mixer level < –10 dBm	f ≤ 6 GHz	< –50 dBc, typ. –60 dBc
	f > 6 GHz	< –38 dBc, typ. –48 dBc

Level display		
Logarithmic level axis		10 dB to 100 dB
Linear axis		0 % to 100 % with 10 divisions
Number of traces		4
Trace detectors		max peak, min peak, auto peak, sample, rms, quasi peak, and average
Number of measurement points	default value	501
	user-selectable	125 to 32001
Trace functions		clear/write, max hold, average, min hold, or view
Setting range of reference level	logarithmic display	–80 dBm to +20 dBm in steps of 2 dB, 5 dB, or 10 dB
	linear display	–80 dBm to +20 dBm or 0 % to 100 %
Units of axis	logarithmic display	dBm, dBmV, dBµV, dBµA, or dBpW
	linear display	V, mV, µV, A, mA, µA, W, mW, µW, nW, or pW

Level measurement uncertainty	95 % confidence level, +20 °C to +30 °C, S/N > 16 dB, 0 dB to –50 dB from reference level	
	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL13	
	10 MHz to 3 GHz	< 0.5 dB
	R&S®ZVL6 and R&S®ZVL13	
	3 GHz to 6 GHz	< 0.8 dB
	R&S®ZVL13	
	6 GHz to 13.6 GHz	< 1.2 dB
	R&S®ZVL3-75	
	10 MHz to 3 GHz	< 0.7 dB
Absolute uncertainty	at internal calibration frequency of 65.833 MHz	
	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL13	< 0.3 dB
	R&S®ZVL3-75	< 0.5 dB
Frequency response	+20 °C to +30 °C, at –10 dBm input level and 10 dB attenuation	
	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL13	
	up to 10 MHz	< 0.8 dB, nominal
	10 MHz to 3 GHz	< 0.5 dB, typ. 0.3 dB
	R&S®ZVL6 and R&S®ZVL13	
	3 GHz to 6 GHz	< 0.8 dB, typ. 0.3 dB
	R&S®ZVL13	
	6 GHz to 13.6 GHz	< 1.2 dB, typ. 0.5 dB
	R&S®ZVL3-75	
	up to 10 MHz	< 1 dB, nominal
	10 MHz to 3 GHz	< 0.7 dB
Attenuation uncertainty	9 kHz to 3 GHz	< 0.3 dB
	3 GHz to 6 GHz (R&S®ZVL6 and R&S®ZVL13)	< 0.3 dB
	6 GHz to 13.6 GHz (R&S®ZVL13 only)	< 0.7 dB
Uncertainty of reference level setting		< 0.1 dB, nominal

Display nonlinearity		
Logarithmic level display	S/N > 16 dB 0 dB to –50 dB	< 0.2 dB
Bandwidth switching uncertainty	reference: RBW = 10 kHz	< 0.1 dB, nominal

Trigger functions		
Trigger source		free run, video, external, IF power
External trigger signal		TTL

I/Q data		
Interface		LAN
	with optional R&S®FSL-B10 GPIB interface	LAN or IEC/IEEE bus (GPIB)
Memory length		max. 512 ksample I and Q
Sample rate		10 kHz to 65.8 MHz
Signal bandwidth	sample rate 65.8 MHz	20 MHz

General data

Remote control		
LAN interface		10/100BaseT
IEC/IEEE bus (GPIB)	with optional R&S®FSL-B10 GPIB interface	SCPI 1997.0

Display		
Type		color TFT
Resolution		640 × 480 pixels

Temperature	operating temperature range	0 °C to +50 °C
	permissible temperature range	0 °C to +55 °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 85 % rel. humidity, in line with IEC 60068-2-30

Mechanical resistance	sinusoidal vibration	5 Hz to 150 Hz, in line with IEC 60068-2-6
	random vibration	10 Hz to 300 Hz, in line with IEC 60068-2-64
	shock	40 g shock response spectrum, in line with IEC/EN 60068-2-27, MIL-STD-810

EMC, RF emission	In line with EN 61000-6-4; operation in residential, commercial, and business areas or in small-size companies is not covered. The instrument may not be operated in residential, commercial, and business areas or in small-size companies unless additional measures are taken to ensure that EN 61000-6-3 is complied with.	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 (residential environment), immunity: industrial environment (excluding operating frequency)

Safety		IEC 61010-1, EN 61010-1, UL 61010B-1, CSA C22.2 No. 1010-1

Power supply		
AC input voltage		100 V to 240 V (AC) with tolerance ±10 %, safety class I in line with VDE 411
AC supply frequency	for AC input voltages	
	100 V to 120 V	50 Hz to 400 Hz with tolerance ±5 %
	120 V to 240 V	50 Hz to 60 Hz with tolerance ±5 %
AC input current		0.4 A to 1.2 A
DC power supply	requires R&S®FSL-B30 DC power supply option	10 V to 28 V (DC)
DC input current	requires R&S®FSL-B30 DC power supply option	2.2 A to 8 A
Power consumption	R&S®ZVL3, R&S®ZVL6, and R&S®ZVL3-75	80 W, typ. 60 W, max. 80 W with all options
	R&S®ZVL13	110 W, typ. 85 W, max. 110 W with all options

Weight and dimensions		
Dimensions (W × H × D)	with handle	408.8 mm × 158.1 mm × 465.3 mm (16.1 in × 6.2 in × 18.3 in)
	without handle	342.3 mm × 158.1 mm × 367.0 mm (13.5 in × 6.2 in × 14.5 in)
Weight	without options	7 kg (16 lb)
	with battery pack and all other options	8.4 kg (18.5 lb)
Shipping weight		14 kg (31 lb)

Recommended calibration interval		12 months

Ordering information

Designation	Type	Order No.
Vector Network Analyzer 3 GHz, 2 ports, 50 Ω	R&S®ZVL3	1303.6509.03
Vector Network Analyzer 6 GHz, 2 ports, 50 Ω	R&S®ZVL6	1303.6509.06
Vector Network Analyzer 13.6 GHz, 2 ports, 50 Ω	R&S®ZVL13	1303.6509.13
Vector Network Analyzer 3 GHz, 2 ports, 75 Ω	R&S®ZVL3-75	1303.6509.75
Options		
OCXO Reference Frequency	R&S®FSL-B4	1300.6008.02
Additional Interfaces [1]	R&S®FSL-B5	1300.6108.02
TV Trigger [1]	R&S®FSL-B6	1300.5901.02
Narrow Resolution Filters [1]	R&S®FSL-B7	1300.5601.02
Gated Sweep [1]	R&S®FSL-B8	1300.5701.02
GPIB Interface	R&S®FSL-B10	1300.6208.02
RF Preamplifier (3/6 GHz) [1]	R&S®FSL-B22	1300.5953.02
DC Power Supply	R&S®FSL-B30	1300.6308.02
NiMH Battery Pack [2]	R&S®FSL-B31	1300.6408.02
Power Sensor Support [1, 3]	R&S®FSL-K9	1301.9530.02
Spectrum Analysis	R&S®ZVL-K1	1306.0301.02
Distance-to-Fault Measurement	R&S®ZVL-K2	1306.0101.02
Time Domain	R&S®ZVL-K3	1306.0201.02
Spectrogram Measurements [1]	R&S®FSL-K14	1302.0913.02
Cable TV and TV Measurements [1]	R&S®FSL-K20	1301.9675.02
Options for the R&S®ZVL3 and R&S®ZVL6 only		
AM/FM/φM Measurement Demodulator [1]	R&S®FSL-K7	1301.9246.02
Bluetooth® TX Measurements [1] (1.1 and 2.0+EDR)	R&S®FSL-K8	1301.9398.02
Application Firmware for Noise Figure and Gain Measurements [1, 4]	R&S®FSL-K30	1301.9817.02
3GPP FDD BTS Application Firmware [1]	R&S®FSL-K72	1302.0620.02
WLAN IEEE 802.11a/b/g/j Application Firmware [1]	R&S®FSL-K91	1302.0094.02
WiMAX™ IEEE 802.16 OFDM/OFDMA Application Firmware [1]	R&S®FSL-K93	1302.0736.02

[1] Requires the R&S®ZVL-K1 spectrum analysis option.

[2] Requires the R&S®FSL-B30 DC power supply option.

[3] Requires the R&S®NRP-Z3/4 or R&S®FSL-B5 additional interfaces option.

[4] Requires the R&S®FSL-B5 additional interfaces option and a preamplifier.

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