Green is life tmg

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Test & Measurement

- sales
- rentals
- calibration
- repair
- disposal

Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

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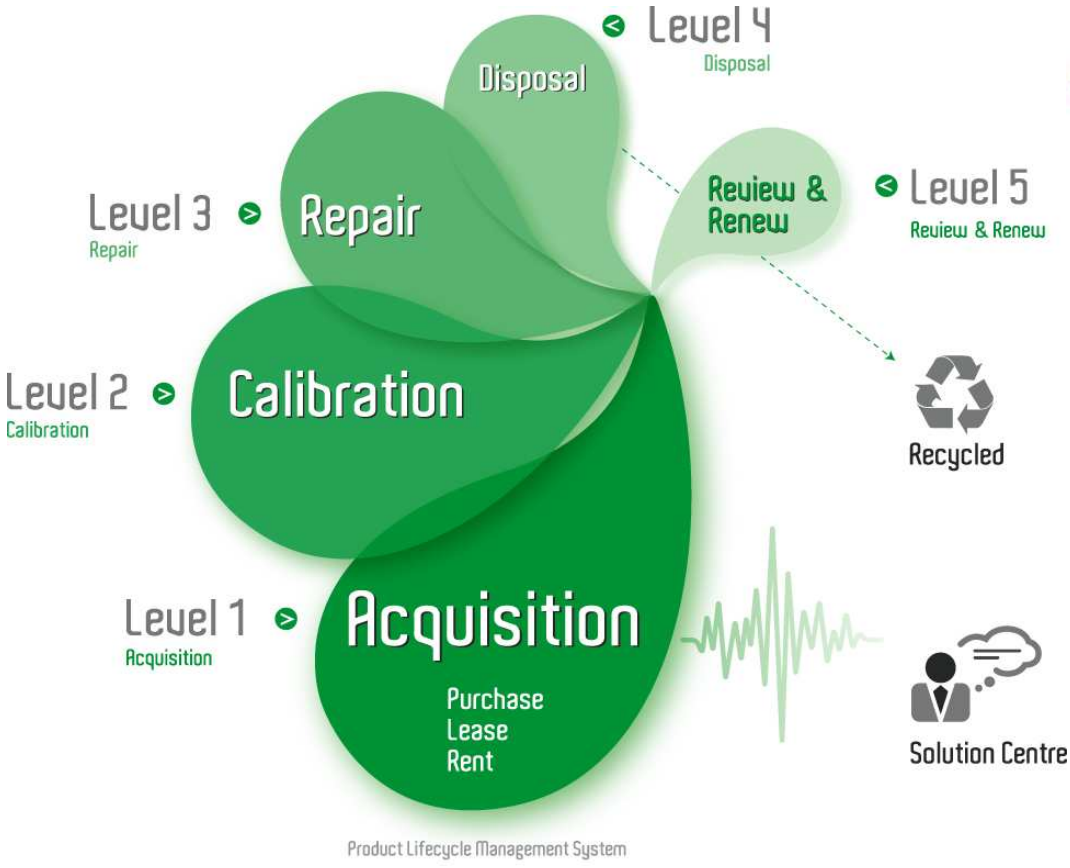
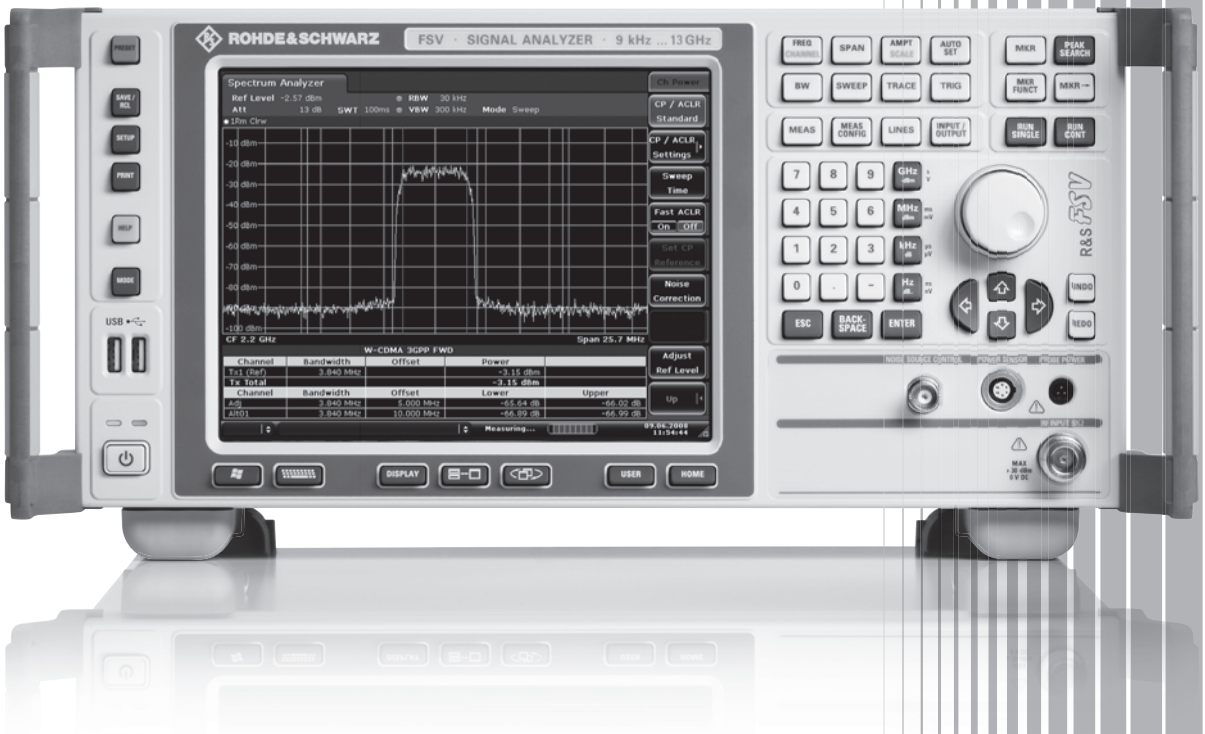


R&S®FSV
Signal and Spectrum Analyzer
Specifications



70 Years of Driving Innovation

ROHDE&SCHWARZ

CONTENTS

Specifications

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. Data without tolerances: typical values only. Data designated "nominal" applies to design parameters and is not tested.

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.

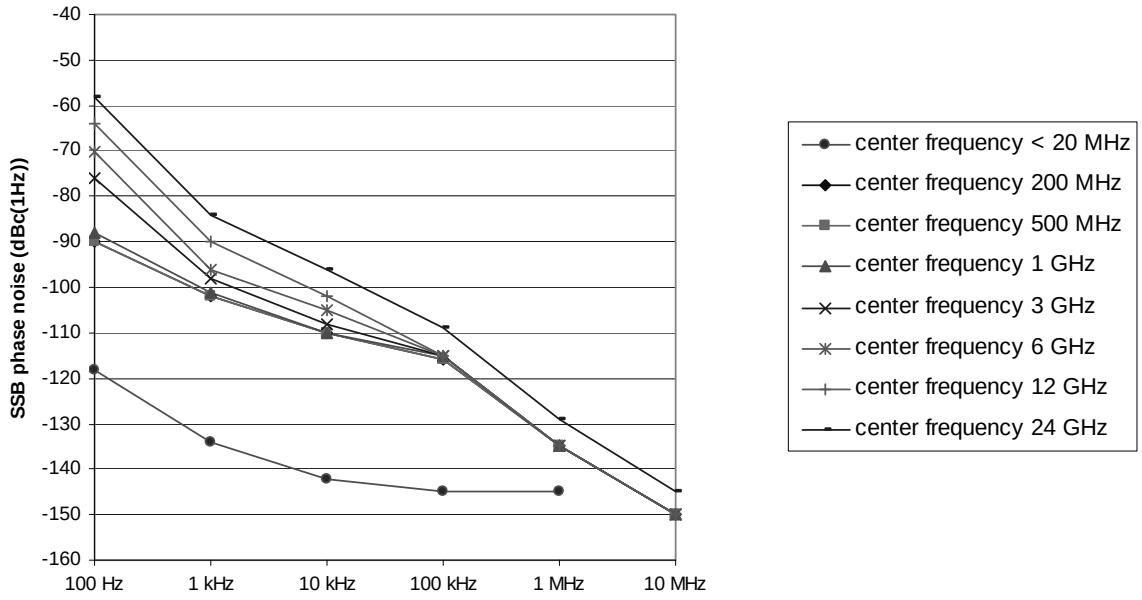
Frequency

Frequency range	R&S®FSV3	
	DC-coupled	9 kHz to 3.6 GHz
	AC-coupled	1 MHz to 3.6 GHz
	R&S®FSV7	
	DC-coupled	9 kHz to 7 GHz
	AC-coupled	1 MHz to 7 GHz
	R&S®FSV13	
	DC-coupled	9 kHz to 13.6 GHz
	AC-coupled	10 MHz to 13.6 GHz
	R&S®FSV30	
	DC-coupled	9 kHz to 30 GHz
	AC-coupled	10 MHz to 30 GHz
	with R&S®FSV-B29 option, DC-coupled	20 Hz to max. frequency
Frequency resolution		0.01 Hz

Reference frequency, internal		
Accuracy		(time since last adjustment × aging rate) + temperature drift + calibration accuracy
Aging per year	standard	1×10^{-6}
	with R&S®FSV-B4 OCXO reference frequency option	1×10^{-7}
Temperature drift (+5 °C to +45 °C)	standard	1×10^{-6}
	with R&S®FSV-B4 OCXO reference frequency option	1×10^{-7}
Max. initial calibration accuracy	standard	5×10^{-7}
	with R&S®FSV-B4 OCXO reference frequency option	5×10^{-8}

Frequency readout		
Marker resolution		1 Hz
Uncertainty		±(marker frequency × reference uncertainty + 10 % × resolution bandwidth + ½ (span / (sweep points –1)) + 1 Hz)
Number of sweep (trace) points	default value	691
	range	101 to 32001
Marker tuning frequency step size	marker step size = sweep points	span / (sweep points – 1)
	marker step size = standard	span / (default sweep points – 1)
Frequency counter resolution		0.001 Hz
Count accuracy		±(frequency × reference uncertainty + ½ (last digit))
Display range for frequency axis		0 Hz, 10 Hz to max. frequency
Resolution		0.1 Hz
Max. span deviation		0.1 %

Spectral purity		
SSB phase noise	frequency = 500 MHz, carrier offset	
	100 Hz	<–84 dBc (1 Hz)
	1 kHz	<–101 dBc (1 Hz)
	10 kHz	<–106 dBc (1 Hz)
	100 kHz	<–115 dBc (1 Hz)
	1 MHz	<–134 dBc (1 Hz)
	10 MHz	typ. –150 dBc (1 Hz)
Residual FM	frequency = 500 MHz, RBW = 1 kHz, sweep time = 100 ms	<3 Hz, nominal



Typical phase noise at different center frequencies

Sweep time

Range	span = 0 Hz	1 µs to 16000 s
	span ≥ 10 Hz, swept	1 ms to 16000 s [1]
	span ≥ 10 Hz, FFT	7 µs to 16000 s [2]
Sweep time accuracy	span = 0 Hz	0.1 %, nominal
	span ≥ 10 Hz, swept	3 %, nominal

Resolution bandwidths

Sweep filters and FFT filters		
Resolution bandwidths (–3 dB)	span ≥ 10 Hz, sweep filters	1 Hz to 10 MHz in 1/2/3/5 sequence
	span ≥ 10 Hz, FFT filters	1 Hz to 300 kHz in 1/2/3/5 sequence
	span = 0 Hz	20 MHz, 28 MHz additionally
	with R&S®FSV-B70 option, span = 0 Hz, f ≤ 7 GHz	40 MHz additionally
Bandwidth uncertainty		<3 %, nominal
Shape factor 60 dB:3 dB		<5, nominal

Channel filters		
Bandwidths (–3 dB)	standard (RRC = root raised cosine)	100 Hz, 200 Hz, 300 Hz, 500 Hz
		1, 1.5, 2, 2.4, 2.7, 3, 3.4, 4, 4.5, 5, 6, 8.5, 9, 10, 12.5, 14, 15, 16, 18 (RRC), 20, 21, 24.3 (RRC), 25, 30, 50, 100, 150, 192, 200, 300, 500 kHz
		1, 1.228, 1.28 (RRC), 1.5, 2, 3, 3.84 (RRC), 4.096 (RRC), 5, 10, 20, 28 MHz
	with R&S®FSV-B70 option, f ≤ 7 GHz	40 MHz additionally
Bandwidth accuracy		<2 %, nominal
Shape factor 60 dB:3 dB		<2, nominal

EMI filters		
Bandwidths (–6 dB)		200 Hz, 9 kHz, 120 kHz, 1 MHz
Bandwidth uncertainty		<3 %, nominal
Shape factor 60 dB:3 dB		<6, nominal

[1] Net sweep time without additional hardware settling time.

[2] Time for data acquisition for FFT calculation.

Video bandwidths		1 Hz to 10 MHz in 1/2/3/5 sequence, 20 MHz, 28 MHz
	with R&S®FSV-B70 option, f ≤ 7 GHz	40 MHz additionally

Signal analysis bandwidth	f ≤ 7 GHz	
	standard	28 MHz, nominal
	with R&S®FSV-B70 option	40 MHz, nominal

Level

Display range		displayed noise floor up to +30 dBm

Maximum input level		
DC voltage	AC-coupled	50 V
	DC-coupled	0 V
CW RF power	RF attenuation 0 dB	
	RF preamplifier = OFF	20 dBm (= 0.1 W)
	with R&S®FSV-B22 option, RF preamplifier = ON	13 dBm (= 0.02 W)
	RF attenuation ≥ 10 dB	
	RF preamplifier = OFF	30 dBm (= 1 W)
	with R&S®FSV-B22 option, RF preamplifier = ON	23 dBm (= 0.2 W)
Pulse spectral density	RF attenuation 0 dB, RF preamplifier = OFF	97 dB µV/MHz
Max. pulse voltage	RF attenuation ≥ 10 dB	150 V
Max. pulse energy	RF attenuation ≥ 10 dB, 10 µs	1 mWs

Intermodulation		
1 dB compression of input mixer	RF attenuation 0 dB, f ≤ 7 GHz	
	RF preamplifier = OFF	+3 dBm, nominal
	with R&S®FSV-B22 option, RF preamplifier = ON	–12 dBm, nominal
	RF attenuation 0 dB, f > 7 GHz	+5 dBm, nominal
Third-order intercept point (TOI)	RF attenuation 0 dB, level 2 × –15 dBm, $\Delta f > 5 \times$ RBW or 10 kHz, whichever is larger, RF preamplifier = OFF	
	10 MHz ≤ f_{in} < 100 MHz	>12 dBm, typ. 15 dBm
	100 MHz ≤ f_{in} < 3.6 GHz	>13 dBm, typ. 16 dBm
	3.6 GHz ≤ f_{in} ≤ 30 GHz	>15 dBm, typ. 18 dBm
	with R&S®FSV-B22 option, RF preamplifier = ON, RF attenuation 0 dB, level 2 × –35 dBm, $\Delta f > 5 \times$ RBW or 10 kHz, whichever is larger	
	10 MHz ≤ f_{in} < 100 MHz	–3 dBm, nominal
	100 MHz ≤ f_{in} < 3.6 GHz	–2 dBm, nominal
	3.6 GHz ≤ f_{in} ≤ 7 GHz	0 dBm, nominal
Second harmonic intercept (SHI)	RF attenuation 0 dB, level –10 dBm, RF preamplifier = OFF	
	100 MHz < f_{in} ≤ 3.5 GHz	typ. 45 dBm
	3.5 GHz < f_{in} ≤ 15 GHz	typ. 90 dBm
	with R&S®FSV-B22 option, RF preamplifier = ON, RF attenuation 0 dB, level –30 dBm	
	100 MHz < f_{in} ≤ 3.5 GHz	25 dBm, nominal

Displayed average noise level		
	0 dB RF attenuation, termination 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 3 kHz, zero span, sweep time 50 ms, sample detector, trace average, sweep count = 20, mean marker, RF preamplifier = OFF	
	R&S®FSV3, R&S®FSV7	
	9 kHz ≤ f < 100 kHz	<–130 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	<–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 1 GHz	<–152 dBm, typ. –155 dBm
	1 GHz ≤ f < 3.6 GHz	<–150 dBm, typ. –153 dBm
	3.6 GHz ≤ f < 6 GHz	<–148 dBm, typ. –151 dBm
	6 GHz ≤ f ≤ 7 GHz	<–146 dBm, typ. –149 dBm
	R&S®FSV13, R&S®FSV30	
	9 kHz ≤ f < 100 kHz	<–130 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	<–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 1 GHz	<–151 dBm, typ. –154 dBm
	1 GHz ≤ f < 3.6 GHz	<–149 dBm, typ. –152 dBm
	3.6 GHz ≤ f < 6 GHz	<–146 dBm, typ. –149 dBm
	6 GHz ≤ f < 7.4 GHz	<–144 dBm, typ. –147 dBm
	7.4 GHz ≤ f < 15 GHz	<–148 dBm, typ. –151 dBm
	15 GHz ≤ f ≤ 30 GHz	<–144 dBm, typ. –147 dBm
	with R&S®FSV-B22 option, RF preamplifier = ON 0 dB RF attenuation, termination 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 3 kHz, zero span, sweep time 50 ms, sample detector, trace average, sweep count = 20, mean marker	
	R&S®FSV3, R&S®FSV7	
	100 kHz ≤ f < 1 MHz	<–150 dBm, typ. –155 dBm
	1 MHz ≤ f < 1 GHz	<–162 dBm, typ. –165 dBm
	1 GHz ≤ f < 3.6 GHz	<–160 dBm, typ. –163 dBm
	3.6 GHz ≤ f < 6 GHz	<–158 dBm, typ. –161 dBm
	6 GHz ≤ f ≤ 7 GHz	<–156 dBm, typ. –159 dBm
	R&S®FSV13, R&S®FSV30	
	100 kHz ≤ f < 1 MHz	<–145 dBm, typ. –148 dBm
	1 MHz ≤ f < 20 MHz	<–155 dBm, typ. –158 dBm
	20 MHz ≤ f < 1 GHz	<–161 dBm, typ. –164 dBm
	1 GHz ≤ f < 3.6 GHz	<–159 dBm, typ. –162 dBm
	3.6 GHz ≤ f < 6 GHz	<–156 dBm, typ. –159 dBm
	6 GHz ≤ f ≤ 7 GHz	<–154 dBm, typ. –157 dBm
	with R&S®FSV-B29 option, RF preamplifier = OFF 0 dB RF attenuation, termination 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 5 Hz, VBW = 5 Hz, zero span, sweep time 500 ms, sample detector, trace average, sweep count = 20, mean marker	
	20 Hz	<–100 dBm, typ. –110 dBm
	100 Hz	<–110 dBm, typ. –120 dBm
	1 kHz	<–120 dBm, typ. –130 dBm

Spurious responses		
Image response	20 MHz ≤ f ≤ 7 GHz	
	f_{in} – 2 × 8409.9 MHz (1st IF)	typ.<–80 dBc
	f_{in} – 2 × 729.9 MHz (2nd IF)	<–80 dBc
	f_{in} – 2 × 89.9 MHz (3rd IF)	<–80 dBc
	7 GHz < f ≤ 30 GHz	
	f_{in} – 2 × 729.9 MHz (1st IF)	<–80 dBc
	f_{in} – 2 × 89.9 MHz (2nd IF)	<–80 dBc
Intermediate frequency response	20 MHz ≤ f ≤ 7 GHz	
	1st IF (8409.9 MHz)	typ.<–70 dBc
	2nd IF (729.9 MHz)	<–80 dBc
	3rd IF (89.9 MHz)	<–80 dBc
	7 GHz < f ≤ 30 GHz	
	1st IF (729.9 MHz)	<–80 dBc
	2nd IF (89.9 MHz)	<–80 dBc
Residual spurious response	0 dB RF attenuation	
	f ≤ 1 MHz	<–90 dBm
	f > 1 MHz	<–103 dBm
Local oscillator related spurious	f < 15 GHz	
	1 kHz ≤ offset from carrier ≤ 10 MHz	<–70 dBc
	offset from carrier > 10 MHz	<–80 dBc
	15 GHz ≤ f ≤ 30 GHz	
	1 kHz ≤ offset from carrier ≤ 10 MHz	<–64 dBc
	offset from carrier > 10 MHz	<–74 dBc
Other interfering signals		
Subharmonic of 1st LO	20 MHz ≤ f < 7 GHz, spurious at 8410 MHz – 2 × f_{in}	<–70 dBc
Harmonic of 1st LO	mixer level < –25 dBm, spurious at f_{in} –4205 MHz	<–70 dBc

Level display		
Logarithmic level axis		1 dB to 200 dB, in steps of 1/2/5
Linear level axis		10 % of reference level per level division, 10 divisions or logarithmic scaling
Number of traces		6
Trace detector		Max Peak, Min Peak, Auto Peak (Normal), Sample, RMS, Average
	EMI detectors	Quasi Peak
Trace functions		Clear/Write, Max Hold, Min Hold, Average, View
Setting range of reference level		–130 dBm to (–10 dBm + RF attenuation – RF preamplifier gain), in steps of 0.01 dB
Units of level axis	logarithmic level display	dBm, dBµV, dBmV, dBµA, dBpW
	linear level display	µV, mV, µA, mA, pW, nW

Level measurement uncertainty		
Absolute level uncertainty at 64 MHz	RBW = 10 kHz, level –10 dBm, reference level –10 dBm, RF attenuation 10 dB	
	+20 °C to +30 °C	<0.2 dB (σ = 0.07 dB)
	+5 °C to +40 °C	<0.35 dB (σ = 0.12 dB)
Frequency response referenced to 64 MHz	DC coupling, RF attenuation 10 dB, 20 dB, 30 dB, 40 dB, RF preamplifier = OFF, +20 °C to +30 °C	
	9 kHz ≤ f < 10 MHz	<0.5 dB (σ = 0.17 dB)
	10 MHz ≤ f < 3.6 GHz	<0.3 dB (σ = 0.1 dB)
	3.6 GHz ≤ f < 7 GHz	<0.5 dB (σ = 0.17 dB)
	7 GHz ≤ f < 13.6 GHz, span < 1 GHz	<1.5 dB (σ = 0.5 dB)
	13.6 GHz ≤ f ≤ 30 GHz, span < 1 GHz	<2 dB (σ = 0.66 dB)
	any setting of RF attenuation or RF preamplifier, +5 °C to +40 °C	
	9 kHz ≤ f < 3.6 GHz	<1 dB (σ = 0.33 dB)
	3.6 GHz ≤ f < 7 GHz	<1.5 dB (σ = 0.5 dB)
	7 GHz ≤ f < 13.6 GHz	<2.5 dB (σ = 0.83 dB)
	13.6 GHz ≤ f ≤ 30 GHz	<3 dB (σ = 1 dB)
	with R&S®FSV-B29 option, DC coupling, RF preamplifier = OFF, +5 °C to +40 °C	
	20 Hz ≤ f < 9 kHz	<1 dB (σ = 0.33 dB)
Attenuator switching uncertainty	f = 64 MHz, 0 dB to 70 dB, referenced to 10 dB attenuation	<0.2 dB (σ = 0.07 dB)
Uncertainty of reference level setting		0 dB [3]
Bandwidth switching uncertainty	referenced to RBW = 10 kHz	
	sweep filters	<0.1 dB (σ = 0.04 dB)
	FFT filters	<0.2 dB (σ = 0.07 dB)

Display nonlinearity		
Logarithmic level display	S/N > 16 dB, 0 dB to –70 dB	<0.1 dB (σ = 0.04 dB)
Linear level display	S/N > 16 dB, 0 dB to –70 dB	5 % of reference level

Total measurement uncertainty		
	signal level 0 dB to –70 dB below reference level, S/N >20 dB, sweep time auto, sweep type = sweep, RF attenuation 10 dB, 20 dB, 30 dB, 40 dB, RF preamplifier = OFF, span/RBW <100, 95 % confidence level, +20 °C to +30 °C	
	9 kHz ≤ f < 10 MHz	0.39 dB
	10 MHz ≤ f < 3.6 GHz	0.28 dB
	3.6 GHz ≤ f < 7 GHz	0.39 dB
	7 GHz ≤ f < 13.6 GHz	1 dB
	13.6 GHz ≤ f ≤ 30 GHz	1.32 dB

Measurement speed

Local measurement and display update rate		2 ms (500/s)
Remote measurement, 1000 sweep averages		1 ms (1000/s)
Remote measurement and LAN transfer		3 ms (333/s)
Marker peak search		1.5 ms
Center frequency tune and transfer	f ≤ 7 GHz	15 ms
	f > 7 GHz	28 ms

[3] The setting of the reference level affects only the graphical representation of the measurement result on the display, not the measurement itself. Therefore, the reference level setting causes no additional uncertainty in measurement results.

Trigger functions

Trigger		
Trigger source		free run, video, external, IF power
Trigger offset	span ≥ 10 Hz	31.25 ns to 30 s, min. resolution 31.25 ns (or 1 % of offset)
	span = 0 Hz	sweep time to 30 s, min. resolution 31.25 ns (or 1 % of offset)
Max. deviation of trigger offset		±(7.8125 ns + (0.1 % × trigger offset))
IF power trigger		
Sensitivity	minimum signal power	–60 dBm + RF attenuation – RF preamplifier gain
	maximum signal power	–10 dBm + RF attenuation – RF preamplifier gain
IF power trigger bandwidth	RBW > 500 kHz, swept	40 MHz, nominal
	RBW > 20 kHz, FFT	
	RBW ≤ 500 kHz, swept	6 MHz, nominal
	RBW ≤ 20 kHz, FFT	
Gated sweep		
Gate source		video, external, IF power
Gate delay		31.25 ns to 30 s, min. resolution 31.25 ns (or 1 % of delay)
Gate length		31.25 ns to 30 s, min. resolution 31.25 ns (or 1 % of gate length)
Max. deviation of gate length		±(7.8125 ns + (0.1 % × gate length))

I/Q data

Interface		GPIB or LAN interface
Memory length		max. 200 Msample I and Q
Word length of I/Q samples	sampling rate > 64 MHz or number of samples > 100 Msample	18 bit
	otherwise	24 bit
Sample rate	standard	100 Hz to 45 MHz
	with R&S®FSV-B70 option	100 Hz to 128 MHz
Max. signal bandwidth (equalized)	f ≤ 7 GHz	
	standard	28 MHz
	with R&S®FSV-B70 option	40 MHz
Amplitude flatness	f ≤ 7 GHz	0.3 dB, nominal
Deviation from linear phase	f ≤ 7 GHz	1°, nominal

Inputs and outputs

RF input		
Impedance		50 Ω
Connector	R&S®FSV3, R&S®FSV7, R&S®FSV13	N female
	R&S®FSV30	test port adapter APC 3.5 mm/N female
VSWR	RF attenuation ≥10 dB	
	10 MHz ≤ f < 3.6 GHz	<1.5, typ.1.3
	3.6 GHz ≤ f < 20 GHz	<2, typ. 1.8
	20 GHz ≤ f < 27 GHz	<2.2, typ. 2
	27 GHz ≤ f ≤ 30 GHz	
	DC-coupled	<2.2, typ. 2
	AC-coupled	typ. 2.5
	RF attenuation < 10 dB, DC-coupled	
	10 MHz ≤ f < 7 GHz	typ. 2
	7 GHz ≤ f ≤ 30 GHz	typ. 2.5
Setting range of attenuator	standard	0 dB to 75 dB, in 5 dB steps
	with R&S®FSV-B25 option	0 dB to 75 dB, in 1 dB steps
Setting range of electronic attenuator	with R&S®FSV-B25 option, f ≤ 7 GHz	0 dB to 25 dB, in 1 dB steps
	with R&S®FSV-B25 option, f > 7 GHz	0 dB to 9 dB, in 1 dB steps
RF preamplifier gain	with R&S®FSV-B22 option	20 dB, nominal

Probe power supply		
Supply voltages		+15 V DC, –12.6 V DC and ground, max. 150 mA, nominal

Noise source drive		
Connector		BNC female
Output voltage		0 V/28 V, max. 100 mA, switchable, nominal

Power sensor		
Connector		6-pin LEMOSA female for supported R&S®NRP-Zxx power sensors

USB interface		2 ports, type A plug, version 2.0

Reference output		
Connector		BNC female
Impedance		50 Ω
Output frequency	internal reference	10 MHz
	external reference	same as reference input signal
Level		>0 dBm, nominal

Reference input		
Connector		BNC female
Impedance		50 Ω
Input frequency range		1 MHz ≤ f_{in} ≤ 20 MHz, in 1 MHz steps
Required level		>0 dBm into 50 Ω

External trigger/gate input		
Connector		BNC female
Trigger voltage		0.5 V to 3.5 V
Input impedance		10 kΩ

IEC/IEEE bus control		interface in line with IEC 625-2 (IEEE 488.2)
Command set		SCPI 1997.0
Connector		24-pin Amphenol female
Interface functions		SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT1, C0

LAN interface		10/100/1000BaseT
Connector		RJ-45

External monitor		
Connector		VGA-compatible, 15-pin, mini D-Sub

General data

Data storage		
Internal		hard disk ≥ 40 Gbyte, nominal
External		supports USB-2.0-compatible memory devices

Temperature		
Temperature	operating temperature range	+5 °C to +40 °C
	permissible temperature range	0 °C to +50 °C
	storage temperature range	–40 °C to +70 °C
Climatic loading		+40 °C at 90 % rel. humidity, in line with EN 60068-2-30

Mechanical resistance		
Vibration	sinusoidal	5 Hz to 150 Hz, max. 2 g at 55 Hz; 0.5 g from 55 Hz to 150 Hz; in line with EN 60068-2-6
	random	10 Hz to 130 Hz, acceleration 1.2 g (rms), in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-T-28800F, classes 3 and 5

EMC		EMC Directive 2004/108/EC including: EN 61326 class B (emission), CISPR 11/EN 55011/ group 1 class A [4] (emission) EN 61326 table A.1 (immunity, industrial)

Recommended calibration interval		1 year

Power supply		
AC supply		100 V to 240 V, 3 A to 1.25 A; 50 Hz to 400 Hz, class of protection I in line with VDE 411
Power consumption		typ. 90 W, max. 175 W with all options
Safety		in line with EN 61010-1, UL 3111-1, CSA C22.2 No. 1010-1, IEC 1010-1
Test mark		VDE, GS, CSA, CSA-NRTL

Weight and dimensions		
Dimensions	W × H × D	412 mm × 197 mm × 417 mm 16.22 in × 7.76 in × 16.42 in
Net weight without options, nominal	R&S®FSV3, R&S®FSV7	9.5 kg 20.94 lb
	R&S®FSV13	10.3 kg 22.7 lb
	R&S®FSV30	10.7 kg 23.58 lb

[4] **Note regarding use of instrument:**
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. In line with EN 61000-6-4, operation in residential, commercial and business areas or in small-size companies is not covered. Thus, 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.

Options

R&S®FSV-B3 audio demodulator

Demodulation		
AF demodulation types		AM and FM
Audio output		loudspeaker and phone jack
Marker stop time in spectrum mode		100 ms to 60 s
AF output		
Connector		3.5 mm mini jack
Output impedance		10 Ω
Open-circuit voltage		up to 1.5 V, adjustable

R&S®FSV-B5 additional interfaces

User port		
Connector		9-pin D-Sub male
Output		TTL-compatible, 0 V/5 V, max. 15 mA
Input		TTL-compatible, max. 5 V

IF/video/demod out		
Connector		BNC female, 50 Ω
IF out		
Bandwidth		equal to RBW setting
IF frequency		32 MHz
Output level (gain versus RF input)	RF attenuation 0 dB, RF preamplifier OFF, span 0 Hz	0 dB, nominal
Video out		
Bandwidth		equal to VBW setting
Output scaling	log. display scale	logarithmic
	lin. display scale	linear
Output level	center frequency > 10 MHz, span 0 Hz, signal at reference level and center frequency	1 V, open circuit, nominal

Trigger out		
Connector		BNC female
Output		TTL-compatible, 0 V/5 V

USB interface		2 ports, type A plug, version 2.0

Ordering information

Designation	Type	Order No.
Signal Analyzer	R&S®FSV3	1307.9002.03
Signal Analyzer	R&S®FSV7	1307.9002.07
Signal Analyzer	R&S®FSV13	1307.9002.13
Signal Analyzer	R&S®FSV30	1307.9002.30
Accessories supplied		
Power cable, quick start guide and CD-ROM (with operating manual and service manual) R&S®FSV30: test port adapter with 3.5 mm female (1021.0512.00) and N female (1021.0535.00) connectors		

Options

Designation	Type	Order No.	Retrofittable	Remarks
Ruggedized Housing	R&S®FSV-B1	1310.9500.02	no	
Audio Demodulator	R&S®FSV-B3	1310.9516.02	yes	retrofit in service center
OCXO Reference Frequency	R&S®FSV-B4	1310.9522.02	yes	user-retrofittable
Additional Interfaces	R&S®FSV-B5	1310.9539.02	yes	IF out, video out, AUX port, trigger out, 2 × USB
Spare Hard Drive	R&S®FSV-B19	1310.9574.02	yes	user-retrofittable
RF Preamplifier (9 kHz to 7 GHz)	R&S®FSV-B22	1310.9600.02	yes	user-retrofittable
Electronic Attenuator, 1 dB steps	R&S®FSV-B25	1310.9622.02	yes	user-retrofittable
Frequency Range Extension 20 Hz	R&S®FSV-B29	1310.9639.02	yes	user-retrofittable
40 MHz Analysis Bandwidth	R&S®FSV-B70	1310.9645.02	yes	user-retrofittable, for frequencies ≤ 7 GHz
Firmware/software				
Analog Modulation Analysis (AM/FM/φM)	R&S®FSV-K7	1310.8103.02		
Power Sensor Support	R&S®FSV-K9	1310.8203.02		supports R&S®NRP-Zxx power sensors
GSM/EDGE Analysis	R&S®FSV-K10	1310.8055.02		
3GPP FDD BS Analysis	R&S®FSV-K72	1310.8503.02		
3GPP FDD UE Analysis	R&S®FSV-K73	1310.8555.02		
WLAN IEEE 802.11a/b/g/j Analysis	R&S®FSV-K91	1310.8903.02		
WLAN IEEE 802.11n Analysis	R&S®FSV-K91n	1310.9468.02		requires R&S®FSV-B70
WiMAX IEEE 802.16 OFDM/OFDMA Analysis	R&S®FSV-K93	1310.9416.02		
EUTRA/LTE BS Analysis	R&S®FSV-K100	1310.9051.02		
EUTRA/LTE UE Analysis	R&S®FSV-K101	1310.9100.02		

Recommended extras

Designation	Type	Order No.
Headphones		0708.9010.00
IEC/IEEE Bus Cable, 1 m	R&S®PCK	0292.2013.10
IEC/IEEE Bus Cable, 2 m	R&S®PCK	0292.2013.20
19" Rack Adapter (not for R&S®FSV-B1)	R&S®ZZA-478	1096.3248.00
Soft Carrying Case (grey)	R&S®ZZT-473	1109.5048.00
Matching pads, 50/75 Ω		
L Section, matching at both ends	R&S®RAM	0358.5414.02
Series Resistor, 25 Ω, matching at one end (taken into account in instrument function RF INPUT 75 Ω)	R&S®RAZ	0358.5714.02
SWR bridges, 50 Ω		
SWR Bridge, 5 MHz to 3 GHz	R&S®ZRB2	0373.9017.5X
SWR Bridge, 40 kHz to 4 GHz	R&S®ZRC	1039.9492.5X
High-power attenuators		
100 W, 3/6/10/20/30 dB, 1 GHz	R&S®RBU100	1073.8495.XX (XX = 03/06/10/20/30)
50 W, 3/6/10/20/30 dB, 2 GHz	R&S®RBU50	1073.8695.XX (XX = 03/06/10/20/30)
50 W, 20 dB, 6 GHz	R&S®RDL50	1035.1700.52
Connectors and cables		
Probe power connector, 3-pin		1065.9480.00
DC blocks		
DC Block, 10 kHz to 18 GHz (type N)	R&S®FSE-Z4	1084.7443.02
For R&S®FSV30 only:		
Test port adapter, N male		1021.0541.00
Test port adapter, 3.5 mm male		1021.0529.00
Microwave Measurement Cable with test port adapter set (N male and 3.5 mm male)	R&S®FSE-Z15	1046.2002.02

Power sensors supported by the R&S®FSV-K9 option [5]

Designation	Type	Order No.
Universal Power Sensor 10 MHz to 8 GHz, 200 mW	R&S®NRP-Z11	1138.3004.02
Universal Power Sensor 10 MHz to 18 GHz, 200 mW	R&S®NRP-Z21	1137.6000.02
Universal Power Sensor 10 MHz to 18 GHz, 2 W	R&S®NRP-Z22	1137.7506.02
Universal Power Sensor 10 MHz to 18 GHz, 15 W	R&S®NRP-Z23	1137.8002.02
Universal Power Sensor 10 MHz to 18 GHz, 30 W	R&S®NRP-Z24	1137.8502.02
Power Sensor Module with Power Splitter DC to 18 GHz, 500 mW	R&S®NRP-Z27	1169.4102.02
Power Sensor Module with Power Splitter DC to 26.5 GHz, 500 mW	R&S®NRP-Z37	1169.3206.02
Thermal Power Sensor 0 Hz to 18 GHz, 100 mW	R&S®NRP-Z51	1138.0005.02
Thermal Power Sensor 0 Hz to 40 GHz, 100 mW	R&S®NRP-Z55	1138.2008.02
Wideband Power Sensor 50 MHz to 18 GHz, 100 mW	R&S®NRP-Z81	1137.9009.02
Average Power Sensor 9 kHz to 6 GHz, 200 mW	R&S®NRP-Z91	1168.8004.02
Average Power Sensor 9 kHz to 6 GHz, 2 W	R&S®NRP-Z92	1171.7005.02

[5] For average power measurement only.

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*0.14 €/min within German wireline network; rates may vary in other networks (wireline and mobile) and countries.