R&S®FSV3000 SIGNAL AND SPECTRUM ANALYZER

Specifications

3 year warranty

Data Sheet
Version 03.00

ROHDE&SCHWARZ
Make ideas real

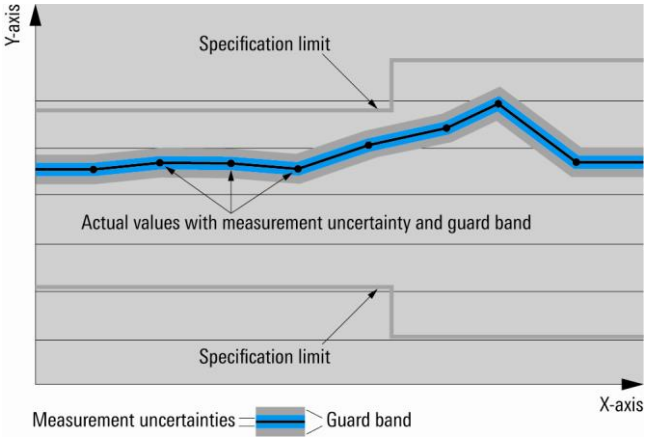
CONTENTS

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.



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 indicated as follows: “parameter: value”.

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

Specifications

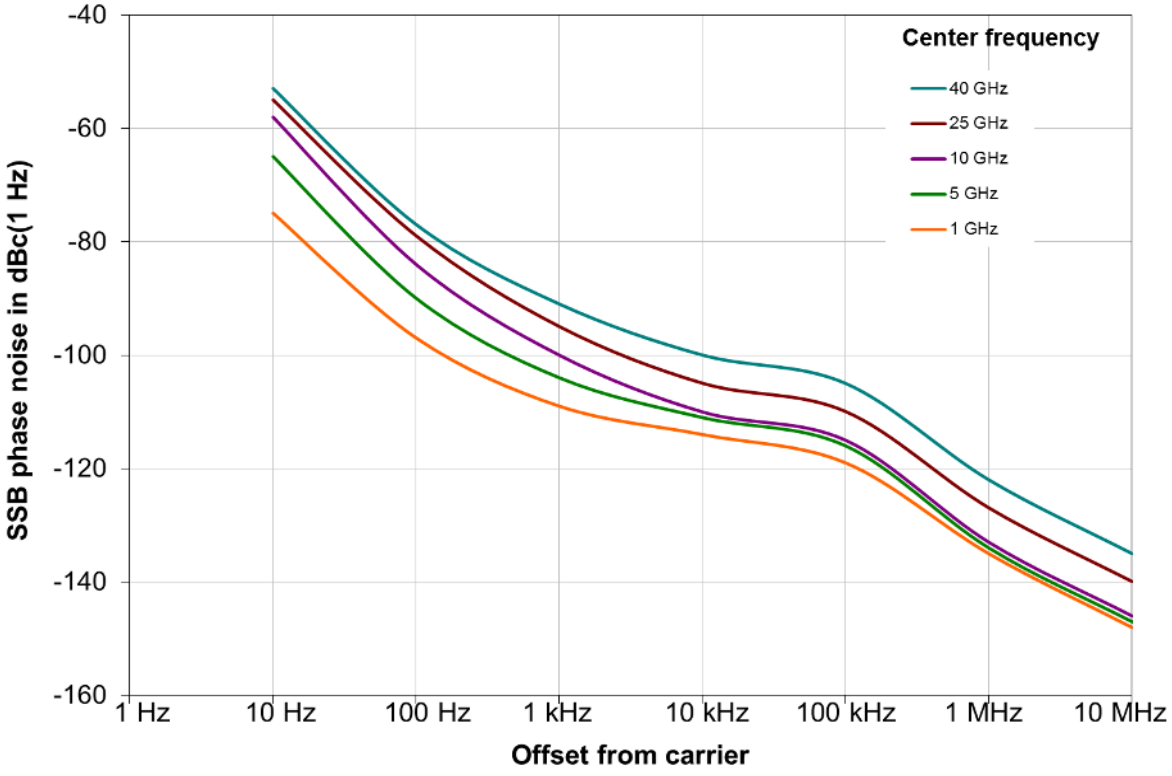
Frequency

Frequency range	R&S®FSV3004	
	DC coupled	10 Hz to 4 GHz
	AC coupled	10 MHz to 4 GHz
	R&S®FSV3007	
	DC coupled	10 Hz to 7.5 GHz
	AC coupled	10 MHz to 7.5 GHz
	R&S®FSV3013	
	DC coupled	10 Hz to 13.6 GHz
	AC coupled	10 MHz to 13.6 GHz
	R&S®FSV3030	
	DC coupled	10 Hz to 30 GHz
	AC coupled	10 MHz to 30 GHz
	R&S®FSV3044	
	DC coupled	10 Hz to 44 GHz
	AC coupled	10 MHz to 44 GHz
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®FSV3-B4 OCXO reference frequency option	1×10^{-7}
Temperature drift (0 °C to +50 °C)	standard	1×10^{-6}
	with R&S®FSV3-B4 OCXO reference frequency option	1×10^{-8}
Achievable initial calibration accuracy	standard	5×10^{-7}
	with R&S®FSV3-B4 OCXO reference frequency option	5×10^{-8}

Frequency readout		
Marker resolution		1 Hz
Uncertainty		±(marker frequency × reference accuracy + 10 % × resolution bandwidth + ½ (span / (sweep points –1)) + 1 Hz)
Number of sweep (trace) points	default value	1001
	range	101 to 100001
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 accuracy + ½ (last digit))
Display range for frequency axis		0 Hz to max. frequency
Resolution		0.1 Hz

Spectral purity		
SSB phase noise (1 Hz)	frequency = 1 GHz, carrier offset	
	100 Hz	< –91 dBc
	1 kHz	< –101 dBc
	10 kHz	< –107 dBc
	100 kHz	< –115 dBc
	1 MHz	< –135 dBc
	10 MHz	–150 dBc (nom.)
Residual FM	frequency = 1000 MHz, demodulation bandwidth = 25 kHz, AF highpass filter 50 Hz, AF lowpass filter 3 kHz	< 0.5 Hz (RMS) (nom.)



Typical phase noise at different center frequencies

Sweep time

Sweep time range	span = 0 Hz	1 µs to 16000 s
	span ≥ 10 Hz, swept	1.01 ms to 16000 s [1]
	span ≥ 10 Hz, FFT	0.7 µs to 16000 s [2]
Sweep time accuracy	span = 0 Hz	±0.1 % (nom.)
	span ≥ 10 Hz, swept	±3 % (nom.)

Resolution bandwidths

Sweep filters and FFT filters		
Resolution bandwidths (–3 dB)		1 Hz to 10 MHz in 1/2/3/5 sequence
Bandwidth uncertainty		< 3 % (nom.)
Shape factor 60 dB:3 dB		< 5 (nom.)

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 MHz
Bandwidth uncertainty		< 2 % (nom.)
Shape factor 60 dB:3 dB		< 2 (nom.)

Video bandwidths		1 Hz to 10 MHz in 1/2/3/5 sequence

Signal analysis bandwidths

Max. signal analysis bandwidth	f ≤ 7.5 GHz	
	standard	28 MHz (nom.)
	with R&S®FSV3-B40 option	40 MHz (nom.)
	with R&S®FSV3-B200 option	200 MHz (nom.)
	f > 7.5 GHz, with R&S®FSV3-B11 option and YIG preselector off	
	standard	28 MHz (nom.)
	with R&S®FSV3-B40 option	40 MHz (nom.)
	with R&S®FSV3-B200 option	200 MHz (nom.)

[1] The selected sweep time is the net data acquisition time (without the extra time needed for hardware settling or FFT processing).

[2] Time for data acquisition for FFT calculation.

Level

Level display		
Display range		displayed noise floor up to +30 dBm
Logarithmic level axis		1 dB to 200 dB
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
Trace functions		clear/write, max. hold, min. hold, average, view, spectrogram
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

Max. 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®FSV3-B24 option, RF preamplifier = on	13 dBm (= 0.02 W)
	RF attenuation ≥ 10 dB	
	RF preamplifier = off	30 dBm (= 1 W)
	with R&S®FSV3-B24 option, RF preamplifier = on	23 dBm (= 0.2 W)
Max. pulse power, pulse duration τ = 3 µs	RF attenuation ≥ 10 dB	100 W
Max. pulse voltage	RF attenuation ≥ 10 dB	50 V

Intermodulation		
1 dB compression of input mixer	RF attenuation = 0 dB, RF preamplifier = off	
	f ≤ 7.5 GHz	+10 dBm (nom.)
	f > 7.5 GHz	+5 dBm (nom.)
	with R&S®FSV3-B24 option, RF preamplifier = 30 dB, RF attenuation = 0 dB	
	f ≤ 7.5 GHz	–20 dBm (nom.)
	f > 7.5 GHz	–23 dBm (nom.)
Third-order intercept point (TOI)	RF attenuation = 0 dB, RF preamplifier = off, YIG preselector on for f ≥ 7.5 GHz, level 2 × –15 dBm, Δf > 5 × RBW or 10 kHz, whichever is larger	
	R&S®FSV3004, R&S®FSV3007	
	10 MHz ≤ f_{in} < 100 MHz	> 12 dBm, typ. 15 dBm
	100 MHz ≤ f_{in} ≤ 7.5 GHz	> 15 dBm, typ. 18 dBm
	R&S®FSV3013, R&S®FSV3030, R&S®FSV3044, YIG preselector on for f ≥ 7.5 GHz	
	10 MHz ≤ f_{in} ≤ 30 GHz	> 15 dBm, typ. 18 dBm
	30 GHz < f_{in} ≤ 44 GHz	> 12 dBm, typ. 15 dBm
	with R&S®FSV3-B24 option, RF attenuation = 0 dB, RF preamplifier = 30 dB, YIG preselector on for f ≥ 7.5 GHz, level 2 × –45 dBm, Δf > 5 × RBW or 10 kHz, whichever is larger	
	10 MHz ≤ f_{in} ≤ 44 GHz	–18 dBm (nom.)
Second-harmonic intercept (SHI)	RF attenuation = 0 dB, RF preamplifier = off, YIG preselector on for f_{in} ≥ 3.75 GHz, level –10 dBm	
	100 MHz < f_{in} ≤ 1.75 GHz	45 dBm (nom.)
	1.75 GHz < f_{in} ≤ 22 GHz	80 dBm (nom.)
	with R&S®FSV3-B24 option, RF preamplifier = 30 dB, RF attenuation = 0 dB, YIG preselector on for f_{in} ≥ 3.75 GHz, level –40 dBm	
	100 MHz < f_{in} ≤ 22 GHz	10 dBm (nom.)

Sensitivity

All noise level data in this section not marked as typical (typ.) or nominal (nom.) are specified values whose compliance is ensured by testing.

Displayed average noise level without R&S®FSV3-B24 preamplifier option		
	RF attenuation = 0 dB, termination = 50 Ω, normalized to 1 Hz RBW, trace average, average mode = log, sample detector, +20 °C to +30 °C	
	10 Hz	–90 dBm (nom.)
	20 Hz	–100 dBm, typ. –110 dBm
	100 Hz	–110 dBm, typ. –120 dBm
	1 kHz	–120 dBm, typ. –130 dBm
	RF attenuation = 0 dB, termination = 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 1 Hz, +20 °C to +30 °C	
	R&S®FSV3004, R&S®FSV3007	
	9 kHz ≤ f < 100 kHz	–135 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	–145 dBm, typ. –150 dBm
	1 MHz ≤ f ≤ 7.5 GHz	–148 dBm, typ. –151 dBm
	R&S®FSV3013	
	9 kHz ≤ f < 100 kHz	–135 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 6 GHz	–148 dBm, typ. –151 dBm
	6 GHz ≤ f ≤ 13.6 GHz	–145 dBm, typ. –147 dBm
	R&S®FSV3030, R&S®FSV3044	
	9 kHz ≤ f < 100 kHz	–135 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 GHz	–149 dBm, typ. –152 dBm
	3 GHz ≤ f < 6 GHz	–147 dBm, typ. –150 dBm
	6 GHz ≤ f ≤ 7.5 GHz	–145 dBm, typ. –147 dBm
	7.5 GHz < f ≤ 15 GHz	–148 dBm, typ. –151 dBm
	15 GHz < f ≤ 26.5 GHz	–145 dBm, typ. –148 dBm
	26.5 GHz < f ≤ 34 GHz	–143 dBm, typ. –146 dBm
	34 GHz < f ≤ 44 GHz	–136 dBm, typ. –139 dBm
Improvement with noise cancellation	for noise-like signals	
	10 MHz < f ≤ 43.5 GHz	13 dB (nom.)
	f > 43.5 GHz	0 dB (nom.)

Displayed average noise level with R&S®FSV3-B24 preamplifier option		
RF preamplifier = off	RF attenuation = 0 dB, termination = 50 Ω, normalized to 1 Hz RBW, trace average, average mode = log, sample detector, +20 °C to +30 °C	
	10 Hz	–90 dBm (nom.)
	20 Hz	–100 dBm, typ. –110 dBm
	100 Hz	–110 dBm, typ. –120 dBm
	1 kHz	–120 dBm, typ. –130 dBm
	RF attenuation = 0 dB, termination = 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 1 Hz, +20 °C to +30 °C	
	R&S®FSV3004, R&S®FSV3007	
	9 kHz ≤ f < 100 kHz	–135 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 3 GHz	–148 dBm, typ. –154 dBm
	3 GHz ≤ f < 6 GHz	–147 dBm, typ. –150 dBm
	6 GHz ≤ f ≤ 7.5 GHz	–146 dBm, typ. –148 dBm
	R&S®FSV3013	
	9 kHz ≤ f < 100 kHz	–135 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 3 GHz	–148 dBm, typ. –154 dBm
	3 GHz ≤ f < 6 GHz	–145 dBm, typ. –148 dBm
	6 GHz ≤ f ≤ 7.5 GHz	–142 dBm, typ. –144 dBm
	7.5 GHz < f ≤ 13.6 GHz	–145 dBm, typ. –148 dBm
	R&S®FSV3030, R&S®FSV3044	
	9 kHz ≤ f < 100 kHz	–135 dBm, typ. –140 dBm
	100 kHz ≤ f < 1 MHz	–145 dBm, typ. –150 dBm
	1 MHz ≤ f < 1 GHz	–150 dBm, typ. –153 dBm
	1 GHz ≤ f < 3 GHz	–148 dBm, typ. –151 dBm
	3 GHz ≤ f < 6 GHz	–145 dBm, typ. –148 dBm
	6 GHz ≤ f ≤ 7.5 GHz	–142 dBm, typ. –144 dBm
	R&S®FSV3030	
	7.5 GHz < f ≤ 15 GHz	–145 dBm, typ. –148 dBm
	15 GHz < f ≤ 26.5 GHz	–142 dBm, typ. –145 dBm
	26.5 GHz < f ≤ 30 GHz	–141 dBm, typ. –144 dBm
	R&S®FSV3044	
	7.5 GHz < f ≤ 15 GHz	–146 dBm, typ. –149 dBm
	15 GHz < f ≤ 26.5 GHz	–144 dBm, typ. –147 dBm
	26.5 GHz < f ≤ 34 GHz	–143 dBm, typ. –146 dBm
	34 GHz < f ≤ 40 GHz	–136 dBm, typ. –139 dBm
	40 GHz < f ≤ 44 GHz	–133 dBm, typ. –136 dBm
RF preamplifier = 30 dB	RF attenuation = 0 dB, termination = 50 Ω, log. scaling, normalized to 1 Hz RBW, RBW = 1 kHz, VBW = 1 Hz, +20 °C to +30 °C	
	R&S®FSV3004, R&S®FSV3007, R&S®FSV3013, R&S®FSV3030	
	10 MHz ≤ f < 50 MHz	–158 dBm, typ. –162 dBm
	50 MHz ≤ f < 3 GHz	–162 dBm, typ. –165 dBm
	3 GHz ≤ f ≤ 13.6 GHz	–161 dBm, typ. –164 dBm
	13.6 GHz < f ≤ 22 GHz	–160 dBm, typ. –163 dBm
	22 GHz < f ≤ 26.5 GHz	–157 dBm, typ. –160 dBm
	26.5 GHz < f ≤ 30 GHz	–155 dBm, typ. –158 dBm
	R&S®FSV3044 [3]	
	10 MHz ≤ f < 3 GHz	–164 dBm
	3 GHz ≤ f ≤ 7.5 GHz	–161 dBm
	7.5 GHz < f ≤ 26.5 GHz	–160 dBm
	26.5 GHz < f ≤ 34 GHz	–157 dBm
	34 GHz < f ≤ 40 GHz	–155 dBm
	40 GHz < f ≤ 43.5 GHz	–149 dBm
Improvement with noise cancellation	for noise-like signals	
	10 MHz < f ≤ 43.5 GHz	13 dB (nom.)
	f > 43.5 GHz	0 dB (nom.)

[3] The frequency range of the RF preamplifier for the R&S®FSV3044 is limited to 43.5 GHz.

Spurious responses

Image response	YIG preselector on for f ≥ 7.5 GHz, mixer level ≤ –10 dBm [4], sweep optimization: auto or dynamic	
	20 MHz ≤ f ≤ 7.5 GHz	
	f_{in} – 2 × 8796 MHz (1st IF)	< –80 dBc (nom.)
	f_{in} – 2 × 732 MHz (2nd IF)	< –80 dBc
	f_{in} – 2 × 92 MHz (3rd IF)	< –80 dBc
	7.5 GHz < f ≤ 30 GHz	
	f_{in} ± 2 × 732 MHz (1st IF)	< –80 dBc
	f_{in} – 2 × 92 MHz (2nd IF)	< –80 dBc
	30 GHz < f ≤ 44 GHz	
	f_{in} ± 2 × 732 MHz (1st IF)	< –70 dBc
	f_{in} – 2 × 92 MHz (2nd IF)	< –80 dBc
Intermediate frequency response	1st IF (8796 MHz)	< –80 dBc
	2nd IF (732 MHz)	< –80 dBc
	3rd IF (92 MHz)	< –80 dBc
Residual spurious response	RF attenuation = 0 dB	
	f ≤ 1 MHz	< –90 dBm
	1 MHz < f ≤ 7.5 GHz	< –103 dBm
	7.5 GHz < f ≤ 44 GHz	< –100 dBm
Local oscillator related spurious	f < 15 GHz	
	1 kHz ≤ carrier offset ≤ 10 MHz	< –70 dBc
	carrier offset > 10 MHz	< –80 dBc
	15 GHz ≤ f ≤ 30 GHz	
	1 kHz ≤ carrier offset ≤ 10 MHz	< –64 dBc
	carrier offset > 10 MHz	< –74 dBc
	30 GHz < f ≤ 44 GHz	
	1 kHz ≤ carrier offset ≤ 10 MHz	< –58 dBc
	carrier offset > 10 MHz	< –68 dBc
Vibrational environmental stimuli	max. 0.21 g (RMS)	< –60 dBc + 20 log (f_{in}/GHz) (nom.)

[4] Mixer level = signal level – RF attenuation + preamplifier gain.

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)
	0 °C to +50 °C	< 0.35 dB (σ = 0.12 dB)
Frequency response referenced to 64 MHz	RF attenuation = 10 dB, 20 dB, 30 dB, 40 dB, RF preamplifier = off, electronic attenuator 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 = 0.10 dB)
	3.6 GHz ≤ f ≤ 7.5 GHz	< 0.5 dB (σ = 0.17 dB)
	7.5 GHz < f ≤ 13.6 GHz, span < 1 GHz	< 1.5 dB (σ = 0.5 dB)
	13.6 GHz < f ≤ 30 GHz, span < 1 GHz	< 2.0 dB (σ = 0.66 dB)
	30 GHz < f ≤ 43.5 GHz, span < 1 GHz	< 2.5 dB (σ = 0.83 dB)
	43.5 GHz < f ≤ 44 GHz, span < 1 GHz	< 3 dB (nom.)
	any setting of RF attenuation, RF preamplifier = off, 0 °C to +50 °C	
	9 kHz ≤ f < 3.6 GHz	< 1.0 dB (σ = 0.33 dB)
	3.6 GHz ≤ f ≤ 7.5 GHz	< 1.5 dB (σ = 0.5 dB)
	7.5 GHz < f ≤ 13.6 GHz	< 2.5 dB (σ = 0.83 dB)
	13.6 GHz < f ≤ 30 GHz	< 3.0 dB (σ = 1.0 dB)
	30 GHz < f ≤ 43.5 GHz	< 3.5 dB (σ = 1.17 dB)
	43.5 GHz < f ≤ 44 GHz	< 4 dB (nom.)
	RF attenuation ≤ 10 dB, RF preamplifier = on [3], 0 °C to +50 °C	
	10 MHz ≤ f < 3.6 GHz	< 1.0 dB (σ = 0.33 dB)
	3.6 GHz ≤ f ≤ 7.5 GHz	< 1.5 dB (σ = 0.5 dB)
	7.5 GHz < f ≤ 13.6 GHz	< 3.0 dB (σ = 1.0 dB)
	13.6 GHz < f ≤ 30 GHz	< 3.5 dB (σ = 1.17 dB)
	30 GHz < f ≤ 43.5 GHz	< 4.0 dB (σ = 1.17 dB)
	DC coupling, RF preamplifier = off, 0 °C to +50 °C	
	10 Hz ≤ f < 20 Hz	< 1.5 dB (nom.)
	20 Hz ≤ f < 9 kHz	< 1.0 dB (σ = 0.33 dB)
Attenuator switching uncertainty	f = 64 MHz, 0 dB to 70 dB, referenced to RF attenuation = 10 dB	< 0.2 dB (σ = 0.07 dB)
Uncertainty of reference level setting		0 dB [5]
Bandwidth switching uncertainty at center frequency	referenced to RBW = 10 kHz	< 0.1 dB (σ = 0.04 dB)

Nonlinearity of displayed level		
Logarithmic level display	S/N > 16 dB, 0 dB ≤ level ≤ –70 dB	< 0.12 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	0.29 dB
	3.6 GHz ≤ f ≤ 7.5 GHz	0.39 dB
	7.5 GHz < f ≤ 13.6 GHz	1.00 dB
	13.6 GHz < f ≤ 30 GHz	1.32 dB
	30 GHz < f ≤ 43.5 GHz	1.65 dB
	43.5 GHz < f ≤ 44 GHz	1.97 dB

[5] 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	spectrum analysis	free run, external, IF power, video
	I/Q analysis or modulation analysis	free run, external, IF power, I/Q power
Trigger offset	spectrum analysis	
	span ≥ 10 Hz	0 s to 30 s
	span = 0 Hz	(–sweep time) to 30 s
	I/Q analysis or modulation analysis	–16 s to 16 s, limited by maximum number of pre-trigger samples
Trigger resolution	spectrum analysis, trigger source external or IF power	
	span ≥ 10 Hz	7.81 ns (nom.)
	span = 0 Hz, trigger offset ≥ 0	7.81 ns (nom.)
	span = 0 Hz, trigger offset < 0	sweep time / number of sweep points
	I/Q analysis or modulation analysis: see section I/Q data	
Max. deviation of trigger offset		7.81 ns (nom.)
IF power trigger		
Sensitivity	min. signal power	–60 dBm + RF attenuation – RF preamplifier gain (nom.)
	max. signal power	0 dBm + RF attenuation – RF preamplifier gain (nom.)
IF power trigger bandwidth	spectrum analysis	
	RBW > 1 kHz	40 MHz (nom.)
	RBW ≤ 1 kHz	6 MHz (nom.)
	I/Q analysis or modulation analysis: see section I/Q data	
Gated sweep		
Gate source		external, IF power, video
Gate delay		7.81 ns to 30 s (nom.)
Gate length		7.81 ns to 30 s (nom.)
Max. deviation of gate length		7.81 ns (nom.)

I/Q data

Record length	standard	max. 100 Msample I and Q
	with R&S®FSV3-B114 option	max. 800 Msample I and Q
Max. number of pre-trigger samples	standard	100 Msample I and Q
	with R&S®FSV3-B114 option	200 Msample I and Q
Word length of I/Q samples		32 bit for I and 32 bit for Q
Sampling rate	standard	100 Hz to 128 MHz
	with R&S®FSV3-B40 option	100 Hz to 128 MHz
	with R&S®FSV3-B200 option	100 Hz to 512 MHz
Max. signal analysis bandwidth (equalized)	standard	28 MHz [6]
	with R&S®FSV3-B40 option	40 MHz [6]
	with R&S®FSV3-B200 option	200 MHz [6]

Signal analysis bandwidth ≤ 40 MHz [6]		
Amplitude flatness	(1.25 × signal analysis bandwidth) ≤ f_{center} ≤ 7.5 GHz	±0.3 dB (nom.)
	f_{center} > 7.5 GHz, YIG preselector off	±0.5 dB (nom.)
Deviation from linear phase	(1.25 × signal analysis bandwidth) ≤ f_{center} ≤ 7.5 GHz	±1° (nom.)
	f_{center} > 7.5 GHz, YIG preselector off	±2° (nom.)
Nonlinearity of displayed level		see section Nonlinearity of displayed level
Level measurement uncertainty at center frequency		see section Total measurement uncertainty
Displayed average noise level at center frequency		see section Displayed average noise level
ADC related third-order intermodulation distortion	f_{center} ≥ 100 MHz, two –30 dBm tones at input mixer within analysis bandwidth	–80 dBc (nom.)
Residual spurious response	RF attenuation = 0 dB, f_{center} ≥ 100 MHz	–90 dBm (nom.)
Other spurious responses		see section Spurious responses
IF power trigger bandwidth		40 MHz (nom.)
Trigger resolution	trigger source extern or IF power	7.81 ns (nom.)

[6] For f > 7.5 GHz, R&S®FSV3-B11 option is required and YIG preselector = off must be set.

Signal analysis bandwidth 40 MHz to 200 MHz [6, 7, 8]		
Amplitude flatness	RF attenuation ≥ 10 dB, RF preamplifier = off, YIG preselector off for f > 7.5 GHz	
	150 MHz ≤ f_{center} < 4 GHz	±0.5 dB (nom.) [9]
	4 GHz ≤ f_{center} ≤ 7.5 GHz	±0.7 dB (nom.) [9]
	7.5 GHz < f_{center} ≤ 26.5 GHz	±1.0 dB (nom.) [9]
	26.5 GHz < f_{center} ≤ 44 GHz	±2.0 dB (nom.) [9]
Deviation from linear phase	RF attenuation ≥ 10 dB, RF preamplifier = off, YIG preselector off for f > 7.5 GHz	
	150 MHz ≤ f_{center} < 4 GHz	±2° (nom.) [10]
	4 GHz ≤ f_{center} ≤ 7.5 GHz	±2.5° (nom.) [10]
	7.5 GHz < f_{center} ≤ 26.5 GHz	±3° (nom.) [10]
	26.5 GHz < f_{center} ≤ 44 GHz	±4° (nom.) [10]
Nonlinearity of displayed level	0 dB to –70 dB	< 0.15 dB (nom.)
Level measurement uncertainty at center frequency		add 0.2 dB (nom.) to the values in section Total measurement uncertainty
Displayed average noise level at center frequency		add 5 dB (nom.) to the values in section Displayed average noise level
ADC related third-order intermodulation distortion	f_{center} ≥ 150 MHz two –25 dBm tones at input mixer within analysis bandwidth	–75 dBc (nom.)
Residual spurious response	RF attenuation = 0 dB, f_{center} ≥ 150 MHz	–90 dBm (nom.)
ADC related spurious response	single tone within analysis bandwidth mixer level = –10 dBm [4] reference level = signal level f_{center} ≥ 150 MHz	–75 dBc (nom.)
Other spurious responses		see section Spurious responses
IF power trigger bandwidth		200 MHz (nom.)
Trigger resolution	trigger source extern	3.91 ns (nom.)
	trigger source IF power	0.997 ns (nom.)

[7] The specifications in this section apply for the temperature range from +20 °C to +30 °C.

[8] To obtain the set analysis bandwidth, (f_{center} + ½ analysis bandwidth) ≤ f_{max} must be met; f_{max}: maximum frequency of the instrument.

[9] With R&S®FSV3-B24 option installed, add 0.2 dB to the specifications.

[10] With R&S®FSV3-B24 option installed, add 1° to the specifications.

Inputs and outputs

RF input		
Impedance		50 Ω
Connector	R&S®FSV3004, R&S®FSV3007, R&S®FSV3013	N female
	R&S®FSV3030	APC 3.5 mm male (compatible with SMA)
	R&S®FSV3044	2.92 mm male (compatible with SMA)
VSWR of R&S®FSV3004, R&S®FSV3007	RF attenuation ≥ 10 dB	
	10 MHz ≤ f < 1 GHz	< 1.2, typ. 1.09 [11]
	1 GHz ≤ f < 3.6 GHz	< 1.5, typ. 1.19 [11]
	3.6 GHz ≤ f ≤ 7.5 GHz	< 2.0, typ. 1.42 [11]
	5 dB ≤ RF attenuation ≤ 9 dB	
	10 MHz ≤ f < 3.6 GHz	< 1.5, typ. 1.31 [11]
	3.6 GHz ≤ f ≤ 7.5 GHz	< 2.0, typ. 1.51 [11]
	RF attenuation ≤ 4 dB, DC coupled	
	10 MHz ≤ f < 7.5 GHz	typ. 1.87
VSWR of R&S®FSV3013, R&S®FSV3030, R&S®FSV3044	RF attenuation ≥ 5 dB	
	10 MHz ≤ f ≤ 3.5 GHz	< 1.5, typ. 1.3 [11]
	3.5 GHz ≤ f ≤ 18 GHz	< 2.0, typ. 1.8 [11]
	18 GHz < f ≤ 26.5 GHz	< 2.2, typ. 2.0 [11]
	26.5 GHz < f ≤ 40 GHz	< 2.5, typ. 2.2 [11]
	40 GHz < f ≤ 44 GHz	2.5 (nom.)
	RF attenuation ≤ 4 dB, DC coupled	
	10 MHz ≤ f ≤ 7.5 GHz	typ. 2.0 [11]
	7.5 GHz < f ≤ 26.5 GHz	typ. 2.5 [11]
	26.5 GHz < f ≤ 40 GHz	typ. 3.0 [11]
	40 GHz < f ≤ 44 GHz	3.0 (nom.)
Setting range of RF attenuator		0 dB to 75 dB, in 5 dB steps [12]
	with R&S®FSV3-B25 option	0 dB to 75 dB, in 1 dB steps [12]
Setting range of electronic RF attenuator	with R&S®FSV3-B25 option, f ≤ 7.5 GHz	0 dB to 25 dB, in 1 dB steps

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

Noise source control and power sensor		
Connector		7-pin LEMOSA female for R&S®FS-SNSxx smart noise sources and R&S®NRP-Zxx power sensors
	with R&S®FSV3-B28V option	BNC female for noise source control additionally
Noise source control output voltage		0 V/28 V, switchable, max. 100 mA (nom.)

USB interface	standard CPU board	5 ports, type A plug, version 2.0, 2 ports, type A plug, version 3.0
	with R&S®FSV3-B114 option	5 ports, type A plug, version 2.0, 2 ports, type A plug, version 3.0, 1 port, type B plug, version 3.0
	output current	0.5 A (nom.) version 2.0, 0.9 A (nom.) version 3.0
	max. sum of output current via USB ports	2 A (nom.)

[11] Typical VSWR performance: performance expected to be met in 95 % of the cases with a confidence level of 95 %, temperature range from +20 °C to +30 °C, input set to “DC coupling”. These values are not warranted and are subject to modification if a significant change in the statistical behavior of production instruments is observed.

[12] With option R&S®FSV3-B25: mechanical RF attenuator with 5 dB steps and electronic attenuator with 1 dB steps. The electronic attenuator is located in the signal path behind the mechanical attenuator and the RF preamplifier (R&S®FSV3-B24 option) on the RF for f ≤ 7.5 GHz, on the IF for f > 7.5 GHz.

Reference input 1		
Connector		BNC female
Impedance		50 Ω
Input frequency range		1 MHz ≤ f_{in} ≤ 100 MHz, in 1 ppm steps
Required level		> 0 dBm, < 15 dBm into 50 Ω

Reference input 2		
Connector		SMA
Impedance		50 Ω
Input frequencies	with R&S®FSV3-K703 option	10 MHz, 100 MHz, 128 MHz, 640 MHz, 1000 MHz, 1280 MHz
Required level		> 3 dBm, < 13 dBm into 50 Ω

Reference output 1		
Connector		BNC female
Impedance		50 Ω
Output frequency	internal reference	10 MHz
	external reference	same as reference input 1 / 2 signal
Level		> 0 dBm (nom.)

Reference output 2		
Connector		SMA female
Impedance		50 Ω
Output frequency	with R&S®FSV3-K703 option	640 MHz
Level		10 dBm (nom.)

External trigger/gate input		
Number of ports		2 × input/output, selectable
	with R&S®FSV3-B5 option	1 × output additionally
Connector		BNC female
Trigger input voltage		0.5 V to 3.5 V (nom.)
Trigger output voltage		TTL-compatible, 0 V/5 V (nom.)
Input impedance		10 kΩ (nom.)

IEC/IEEE bus control		interface in line with IEC 625-2 (IEEE 488.2)
Command set		SCPI 1997.0
Connector	with R&S®FSV3-B5 option	24-pin Amphenol female (GPIB)
Interface functions		SH1, AH1, T6, L4, SR1, RL1, PP1, DC1, DT1, C0

LAN interface	standard	10/100/1000BASE-T
	with R&S®FSV3-B6 option	10GBASE-T
Connector		RJ-45

External monitor		
Connector	standard	DVI-D
	with R&S®FSV3-B114 option	DVI-D, display port rev 1.1

General data

Display		LCD TFT color display (10.1")
Resolution		1280 × 800 pixel (WXGA resolution)
Pixel failure rate		< 1 × 10^{-5}

Data storage		
Internal		solid state drive ≥ 50 Gbyte (nom.)
External		support of USB 2.0 and USB 3.0 compatible memory devices

Environmental conditions		
Temperature	operating temperature range	+0 °C to +50 °C
	storage temperature range	–40 °C to +70 °C
Climatic loading		+40 °C at 90 % rel. humidity, without condensation, in line with EN 60068-2-30

Altitude		
Max. operating altitude	above sea level	4600 m (approx. 15100 ft)

Mechanical resistance		
Vibration	sinusoidal	5 Hz to 55 Hz 0.15 mm constant amplitude (1.8 g at 55 Hz); 55 Hz to 150 Hz acceleration: 0.5 g constant; in line with EN 60068-2-6
	random	10 Hz to 300 Hz, acceleration 1.2 g (RMS), in line with EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810E method No. 516.4 procedure I, MIL-PRF-28800F, class 3

EMC		in line with EMC Directive 2004/108/EC including: IEC/EN 61326-1 [13, 14], CISPR 11/EN 55011 [14]

Recommended calibration interval		1 year

Warranty	instrument and hardware options	3 years
	accessories	1 year

Power supply		
AC supply		100 V to 240 V, 3 A to 1.25 A; 50 Hz to 400 Hz, protection class I in line with VDE 411
Power consumption	R&S®FSV3004, R&S®FSV3007	120 W (nom.), max. 250 W with all options
	R&S®FSV3013, R&S®FSV3030, R&S®FSV3044	170 W (nom.), max. 300 W with all options
Safety		in line with EN 61010-1, IEC 61010-1, UL 61010-1, CAN/CSA-C22.2 No. 61010-1
Test mark		VDE, $_{C}$CSA$_{US}$, KC

Dimensions and weight		
Dimensions (nom.)	W × H × D	462 mm × 197 mm × 417 mm (18.15 in × 7.76 in × 16.42 in)
Net weight without options (nom.)	R&S®FSV3004, R&S®FSV3007	12.2 kg (26.9 lb)
	R&S®FSV3013	13.6 kg (30 lb)
	R&S®FSV3030	13.8 kg (30.04 lb)
	R&S®FSV3044	14.6 kg (32.2 lb)

[13] Immunity test requirement for industrial environment (EN 61326 table 2).

[14] Emission limits for class A equipment apply.

Options

R&S®FSV3-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		32 Ω
Open-circuit voltage		up to 1.5 V, adjustable

R&S®FSV3-B5 additional interfaces

IF output		
Connector		BNC female, 50 Ω
Bandwidth		equal to bandwidth setting
IF frequency		(50 kHz + ½ RBW) to (53 MHz – ½ RBW), selectable
Output level (gain versus RF input)	RF attenuation = 0 dB, RF preamplifier = off, span = 0 Hz	0 dB (nom.)

Video output		
Connector		BNC female, 50 Ω
Bandwidth		equal to bandwidth 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 at 50 Ω load (nom.)
Trigger out		
Connector		BNC female
Output		TTL-compatible, 0 V/5 V

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

Aux control (for external generator control)		
Aux control		9-pin D-Sub female

GPIB interface		
IEC/IEEE bus control		24-pin Amphenol female

R&S®FSV3-B10 external generator control

Supported signal generators		R&S®SGS100A, R&S®SGT100A, R&S®SMA100A, R&S®SMA100B, R&S®SMB100A, R&S®SMB100B, R&S®SMBV100A, R&S®SMBV100B, R&S®SMC100A, R&S®SMC100B, R&S®SME, R&S®SMF100A, R&S®SMG, R&S®SMGL, R&S®SMGU, R&S®SMH, R&S®SMHU, R&S®SMIQ, R&S®SMJ100A, R&S®SML, R&S®SMP, R&S®SMR, R&S®SMT, R&S®SMU200A, R&S®SMV03, R&S®SMW200A, R&S®SMX, R&S®SMY
Synchronization handshake interface	standard	LAN
	with R&S®FSV3-B5 option	LAN, TTL

R&S®FSV3-B24 RF preamplifier

Frequency		
Frequency range	R&S®FSV3004	10 MHz to 4 GHz
	R&S®FSV3007	10 MHz to 7.5 GHz
	R&S®FSV3013	10 MHz to 13.6 GHz
	R&S®FSV3030	10 MHz to 30 GHz
	R&S®FSV3044	10 MHz to 43.5 GHz

Setting range		
RF preamplifier gain	R&S®FSV3004, R&S®FSV3007, R&S®FSV3013, R&S®FSV3030	15 dB/30 dB (nom.) (selectable)
	R&S®FSV3044	30 dB (nom.)

Other specifications		
Level measurement uncertainty		see base unit specification
Displayed average noise level		
Intermodulation		
Measurement uncertainty		

R&S®FSV3-B25 electronic attenuator

Frequency range		10 Hz to 7.5 GHz
Setting range		0 dB to 25 dB, in 1 dB steps
Level measurement uncertainty		see base unit specification
Displayed average noise level		see base unit specification

Intermodulation		
Third-order intercept point (TOI)	electronic attenuator off or electronic attenuator on and RF attenuation = 0 dB	see base unit specification
	electronic attenuator on, RF attenuation = 30 dB	
	10 MHz to 7.5 GHz	40 dBm (nom.)

Ordering information

Designation	Type	Order No.
Signal and spectrum analyzer, 10 Hz to 4 GHz	R&S®FSV3004	1330.5000.04
Signal and spectrum analyzer, 10 Hz to 7.5 GHz	R&S®FSV3007	1330.5000.07
Signal and spectrum analyzer, 10 Hz to 13.6 GHz	R&S®FSV3013	1330.5000.13
Signal and spectrum analyzer, 10 Hz to 30 GHz	R&S®FSV3030	1330.5000.30
Signal and spectrum analyzer, 10 Hz to 44 GHz	R&S®FSV3044	1330.5000.43
Accessories supplied		
Power cable, quick start guide R&S®FSV3030: adapter 3.5 mm (APC3.5-compatible) female/female R&S®FSV3044: adapter 2.92 mm female/female		

Options

Hardware [15]

Designation	Type	Order No.	Remarks
Side carry handles	R&S®FSV3-B1	1330.5700.02	user-retrofittable
Audio demodulator	R&S®FSV3-B3	1330.3765.02	
OCXO frequency reference	R&S®FSV3-B4	1330.3794.02	
Additional interfaces	R&S®FSV3-B5	1330.3820.02	IF out, video out (2 × BNC), trigger out, aux port, aux control, GPIB
10 Gbit/s LAN interface	R&S®FSV3-B6	1330.3913.02	for fast remote control and fast I/Q data transfer
External generator control	R&S®FSV3-B10	1330.3859.02	LAN based, user-retrofittable (license key), R&S®FSV3-B5 is recommended for high sweep speed
YIG preselector bypass	R&S®FSV3-B11	1330.3865.02	for R&S®FSV3013, R&S®FSV3030 and R&S®FSV3044, user-retrofittable (license key)
40 MHz analysis bandwidth	R&S®FSV3-B40	1330.4103.02	user-retrofittable (license key)
200 MHz analysis bandwidth	R&S®FSV3-B200	1330.4132.02	for frequencies > 7.5 GHz, R&S®FSV3-B11 is required
Spare hard drive	R&S®FSV3-B18	1330.4003.02	requires R&S®FSV3-B20, user-retrofittable
Removable hard drive	R&S®FSV3-B20	1330.3971.02	at front panel
RF preamplifier for R&S®FSV3004 and R&S®FSV3007	R&S®FSV3-B24	1330.4049.07	
RF preamplifier for R&S®FSV3013	R&S®FSV3-B24	1330.4049.13	
RF preamplifier for R&S®FSV3030	R&S®FSV3-B24	1330.4049.30	
RF preamplifier for R&S®FSV3044	R&S®FSV3-B24	1330.4049.44	
Electronic attenuator, 1 dB steps	R&S®FSV3-B25	1330.4078.02	user-retrofittable (license key)
USB mass memory write protection	R&S®FSV3-B33	1330.4861.02	pre-installation ex-factory, for later retrofit see instrument security manuals
Enhanced computing power	R&S®FSV3-B114	1330.4910.02	
Noise source control via BNC	R&S®FSV3-B28V	1330.6664.02	
1 GHz reference	R&S®FSV3-K703	1330.7502.02	user-retrofittable (license key)

[15] The hardware options can be retrofitted in service center unless otherwise noted.

Firmware [16]

Designation	Type	Order No.	Remarks
Pulse measurements	R&S®FSV3-K6	1346.3330.02	
Analog modulation analysis for AM/FM/φM	R&S®FSV3-K7	1330.5022.02	
Power sensor support	R&S®FSV3-K9	1346.3676.02	
GSM/EDGE/EDGE Evolution/ VAMOS measurements	R&S®FSV3-K10	1330.5039.02	
Amplifier measurements	R&S®FSV3-K18	1346.3347.02	
Direct DPD measurements	R&S®FSV3-K18D	1346.3353.02	R&S®FSV3-K18 option required
Frequency response and group delay measurements	R&S®FSV3-K18F	1346.4408.02	R&S®FSV3-K18 option required
Noise figure measurements	R&S®FSV3-K30	1330.5045.02	for legacy noise sources R&S®FSV3-B28V option is required
Security write protection of solid state drive	R&S®FSV3-K33	1346.3360.02	
Phase noise measurements	R&S®FSV3-K40	1330.5051.02	
Vector signal analysis	R&S®FSV3-K70	1330.5074.02	
Multi-modulation analysis	R&S®FSV3-K70M	1346.3376.02	R&S®FSV3-K70 option required
BER PRBS measurements	R&S®FSV3-K70P	1346.3382.02	R&S®FSV3-K70 option required
3GPP FDD (WCDMA) BS measurements (incl. HSDPA and HSDPA+)	R&S®FSV3-K72	1330.5080.02	
3GPP FDD (WCDMA) MS measurements (incl. HSUPA and HSUPA+)	R&S®FSV3-K73	1330.5097.02	
WLAN 802.11a/b/g measurements	R&S®FSV3-K91	1330.5100.02	
WLAN 802.11n measurements	R&S®FSV3-K91N	1330.5139.02	R&S®FSV3-K91 option required
WLAN 802.11ac measurements	R&S®FSV3-K91AC	1330.5116.02	
WLAN 802.11ax measurements	R&S®FSV3-K91AX	1346.3399.02	
WLAN 802.11p measurements	R&S®FSV3-K91P	1330.5122.02	
EUTRA/LTE FDD BS measurements	R&S®FSV3-K100	1330.5145.02	
EUTRA/LTE FDD UE measurements	R&S®FSV3-K101	1330.5151.02	
EUTRA/LTE BS MIMO measurements	R&S®FSV3-K102	1330.5168.02	R&S®FSV3-K100 or R&S®FSV3-K104 option required
EUTRA/LTE UL advanced UL measurements	R&S®FSV3-K103	1330.7231.02	R&S®FSV3-K101 or R&S®FSV3-K105 option required
EUTRA/LTE TDD BS measurements	R&S®FSV3-K104	1330.5174.02	
EUTRA/LTE TDD uplink measurements	R&S®FSV3-K105	1330.5180.02	
EUTRA/LTE NB-IoT downlink measurements	R&S®FSV3-K106	1346.3418.02	
3GPP 5G-NR DL measurements	R&S®FSV3-K144	1330.7219.02	
3GPP 5G-NR UL measurements	R&S®FSV3-K145	1330.7225.02	
User defined frequency correction by SnP file	R&S®FSV3-K544	1346.3630.02	corrects frequency response (amplitude and phase) of measurement setup

PC software

Designation	Type	Order No
R&S®VSE basic edition [17, 18]	R&S®VSE	1345.1011.06 [19]
R&S®VSE enterprise edition [20]	R&S®VSE	1345.1105.06 [19]
License dongle		
License dongle	R&S®FSPC	1310.0002.03
Floating license dongle	R&S®FSPC-FL	1310.0002.04
Service option		
R&S®VSE software maintenance	R&S®VSE-SWM	1320.7622.81

For further information on the R&S®VSE vector signal explorer software, please refer to document PD 3607.1371.22 (specifications) and PD 3607.1371.12 (product brochure).

[16] For measurements with analysis bandwidths > 28 MHz an appropriate bandwidth option is required.

[17] Requires R&S®FSPC.

[18] Not available for R&S®FSPC-FL.

[19] To obtain the floating license of the product, R&S®FSPC-FL is needed and order number xxxx.xxxx.51 must be used instead of xxxx.xxxx.06.

[20] Requires R&S®FSPC or R&S®FSPC-FL.

Recommended extras

Designation	Type	Order No.
Headphones		0708.9010.00
IEC/IEEE bus cable, length: 1 m	R&S®PCK	0292.2013.10
IEC/IEEE bus cable, length: 2 m	R&S®PCK	0292.2013.20
19" rack adapter, 4 HU 1/1	R&S®ZZA-KN4	1175.3033.00
Noise sources		
Smart noise sources for noise figure and gain measurements up to 55 GHz (requires R&S®FSV3-K30)	R&S®FS-SNS26/40/55	1338.8008.xx (xx = 26/40/55)
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
High-power attenuators		
1000 W, 40 dB, 400 (1000) MHz	R&S®RBS1000	0207.4010.55
100 W, 3/6/10/20/30 dB, 2 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
RF adapters and cables		
Coaxial adapter 2.92 mm (f) - 2.92 mm (f)		3588.8664.00
Coaxial adapter 3.5 mm (f) - 3.5 mm (f), APC3.5-compatible		3587.7793.00
Coaxial adapter 3.5 mm (m) - 3.5 mm (m), APC3.5-compatible		3587.7770.00
Coaxial adapter N (f) - 3.5 mm (m), APC3.5-compatible		3587.7806.00
Coaxial adapter N (f) - 3.5 mm (f), APC3.5-compatible		3587.7829.00
Coaxial cable SMA (m) - SMA (m), length: 1 m		3586.9970.00
Connectors and cables		
Probe power connector, 3-pin		1065.9480.00
N-type adapter for R&S®RT-Zxx oscilloscope probes	R&S®RT-ZA9	1417.0909.02
Cable for connecting high speed digital baseband interfaces of Rohde & Schwarz instruments	R&S®DIGIQ-HS	3641.2948.03
DC block		
DC block, 10 kHz to 18 GHz (N type)	R&S®FSE-Z4	1084.7443.02
Tools		
Torque wrench for type N connectors, 1.5 Nm coupling torque (for R&S®FSV3004/3007/3013)	R&S®ZN-ZTW	1328.8534.71
Torque wrench for 3.5/2.92/2.4/1.85 mm connectors, 0.9 Nm coupling torque (for R&S®FSV3030/3044)	R&S®ZN-ZTW	1328.8534.35

Power sensors supported by the R&S®FSV3-K9 option [21]

Designation	Type	Order No.
Universal power sensors		
10 MHz to 8 GHz, 100 mW, two-path	R&S®NRP-Z211	1417.0409.02
10 MHz to 8 GHz, 200 mW [22]	R&S®NRP-Z11	1138.3004.02
10 MHz to 18 GHz, 100 mW, two-path [22]	R&S®NRP-Z221	1417.0309.02
10 MHz to 18 GHz, 200 mW [22]	R&S®NRP-Z21	1137.6000.02
10 MHz to 18 GHz, 2 W [22]	R&S®NRP-Z22	1137.7506.02
10 MHz to 18 GHz, 15 W [22]	R&S®NRP-Z23	1137.8002.02
10 MHz to 18 GHz, 30 W [22]	R&S®NRP-Z24	1137.8502.02
Power sensor modules with power splitter		
DC to 18 GHz, 500 mW	R&S®NRP-Z27	1169.4102.02
DC to 26.5 GHz, 500 mW	R&S®NRP-Z37	1169.3206.02
Thermal power sensors [23]		
0 Hz to 18 GHz, 100 mW	R&S®NRP18T	1424.6115.02
0 Hz to 18 GHz, 100 mW	R&S®NRP18TN	1424.6121.02
0 Hz to 33 GHz, 100 mW	R&S®NRP33T	1424.6138.02
0 Hz to 33 GHz, 100 mW	R&S®NRP33TN	1424.6144.02
0 Hz to 40 GHz, 100 mW	R&S®NRP40T	1424.6150.02
0 Hz to 40 GHz, 100 mW	R&S®NRP40TN	1424.6167.02
0 Hz to 50 GHz, 100 mW	R&S®NRP50T	1424.6173.02
0 Hz to 50 GHz, 100 mW	R&S®NRP50TN	1424.6180.02
0 Hz to 67 GHz, 100 mW	R&S®NRP67T	1424.6196.02
0 Hz to 67 GHz, 100 mW	R&S®NRP67TN	1424.6209.02
0 Hz to 110 GHz, 100 mW	R&S®NRP110T	1424.6215.02
Thermal waveguide power sensors		
50 GHz to 75 GHz, 100 mW	R&S®NRP75TWG	1700.2529.02
60 GHz to 90 GHz, 100 mW	R&S®NRP90TWG	1700.2312.02
75 GHz to 110 GHz, 100 mW	R&S®NRP110TWG	1173.8709.02
Average power sensors [23]		
8 kHz to 6 GHz, 200 mW	R&S®NRP6A	1424.6796.02
8 kHz to 6 GHz, 200 mW	R&S®NRP6AN	1424.6809.02
9 kHz to 6 GHz, 200 mW [22]	R&S®NRP-Z91	1168.8004.02
8 kHz to 18 GHz, 200 mW	R&S®NRP18A	1424.6815.02
8 kHz to 18 GHz, 200 mW	R&S®NRP18AN	1424.6821.02
Three path diode power sensors [23]		
100 pW to 200 mW, 10 MHz to 8 GHz	R&S®NRP8S	1419.0006.02
100 pW to 200 mW, 10 MHz to 8 GHz, LAN version	R&S®NRP8SN	1419.0012.02
100 pW to 200 mW, 10 MHz to 18 GHz	R&S®NRP18S	1419.0029.02
100 pW to 200 mW, 10 MHz to 18 GHz, LAN version	R&S®NRP18SN	1419.0035.02
1 nW to 2 W, 10 MHz to 18 GHz	R&S®NRP18S-10	1424.6721.02
10 nW to 15 W, 10 MHz to 18 GHz	R&S®NRP18S-20	1424.6738.02
30 nW to 30 W, 10 MHz to 18 GHz	R&S®NRP18S-25	1424.6744.02
100 pW to 200 mW, 10 MHz to 33 GHz	R&S®NRP33S	1419.0064.02
100 pW to 200 mW, 10 MHz to 33 GHz, LAN version	R&S®NRP33SN	1419.0070.02
100 pW to 200 mW, 10 MHz to 33 GHz, LAN version, TVAC-compliant	R&S®NRP33SN-V	1419.0129.02
100 pW to 100 mW, 50 MHz to 40 GHz	R&S®NRP40S	1419.0041.02
100 pW to 100 mW, 50 MHz to 40 GHz, LAN version	R&S®NRP40SN	1419.0058.02
100 pW to 100 mW, 50 MHz to 50 GHz	R&S®NRP50S	1419.0087.02
100 pW to 100 mW, 50 MHz to 50 GHz, LAN version	R&S®NRP50SN	1419.0093.02
Wideband power sensors [23]		
50 MHz to 18 GHz, 100 mW	R&S®NRP-Z81	1137.9009.02
50 MHz to 40 GHz, 100 mW (2.92 mm)	R&S®NRP-Z85	1411.7501.02
50 MHz to 40 GHz, 100 mW (2.40 mm)	R&S®NRP-Z86	1417.0109.40
50 MHz to 44 GHz, 100 mW (2.40 mm)	R&S®NRP-Z86	1417.0109.44

[21] For average power measurement only.

[22] Product discontinued.

[23] In addition to RF power measurements the R&S®NRP-Z8x, R&S®NRPxxT/TN, R&S®NRPxxA/AN and R&S®NRPxxS/SN power sensors can be used as wideband RF power trigger sources.

Service options

Warranty		
Standard		3 years [24]
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	
DAkkS calibration (ISO 17025, ISO 9000)	R&S®FSV3000ACA	

Extended warranty with a term of one and two years (WE1 and WE2)
Repairs carried out during the contract term are free of charge [25]. 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 [25] 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 [25] and accredited calibration at the recommended intervals as well as any accredited calibration carried out during repairs or option upgrades.

[24] For instrument and hardware options. For accessories 1 year applies.

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

Service that adds value

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

Rohde&Schwarz

The Rohde&Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, monitoring and network testing. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

www.rohde-schwarz.com

Sustainable product design

- Environmental compatibility and eco-footprint
- Energy efficiency and low emissions
- Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Rohde&Schwarz training

www.training.rohde-schwarz.com

Regional contact

- Europe, Africa, Middle East | +49 89 4129 12345
  customersupport@rohde-schwarz.com
- North America | 1 888 TEST RSA (1 888 837 87 72)
  customer.support@rsa.rohde-schwarz.com
- Latin America | +1 410 910 79 88
  customersupport.la@rohde-schwarz.com
- Asia Pacific | +65 65 13 04 88
  customersupport.asia@rohde-schwarz.com
- China | +86 800 810 82 28 | +86 400 650 58 96
  customersupport.china@rohde-schwarz.com

PD 5216.1334.22 | Version 03.00 | December 2019 (jr)
R&S®FSV3000 Signal and Spectrum Analyzer
Data without tolerance limits is not binding | Subject to change

5216133422
5216.1334.22 03.00 PDP 1 en