R&S®FSV-K40
Phase Noise
Measurement Application
Specifications

Test & Measurement
Data Sheet | 02.00

ROHDE&SCHWARZ

CONTENTS

Specifications **3**

Ordering information **5**

Options 5

Related data sheet 5

Specifications

The specifications of R&S®FSV-K40 are based on the data sheet specifications of the R&S®FSV signal and spectrum analyzer. 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. Data designated "nominal" applies to design parameters and is not tested.
Data without tolerance limits is not binding.

The level measurement accuracy is mainly determined by the characteristic of the R&S®FSV signal and spectrum analyzer. For relevant specifications refer to the R&S®FSV data sheet. The measurement sensitivity is mainly determined by the analyzer's inherent phase noise. The diagram and the table below show the typical phase noise characteristics of the R&S®FSV signal and spectrum analyzers, which represent the minimum phase noise measurement sensitivity. The specified values do not take into account systematic errors due to reduced input level.

Frequency range[1]	R&S®FSV4	1 MHz to 4 GHz
	R&S®FSV7	1 MHz to 7 GHz
	R&S®FSV13	10 MHz to 13.6 GHz
	R&S®FSV30	10 MHz to 30 GHz
	R&S®FSV40	10 MHz to 40 GHz
Offset frequency range		1 Hz up to 1 GHz [2] (9 decades)
RF level input	RF attenuation ≥ 10 dB, RF preamplifier = off	> –20 dBm to 30 dBm
	RF attenuation = 0 dB, RF preamplifier = off	> –20 dBm to 20 dBm
Phase noise measurement uncertainty	input level > 0 dBm signal harmonics and spurs < –30 dBc signal to noise ratio ≥ 10 dB return loss of source > 14 dB (VSWR < 1.5:1)	
	100 Hz to 10 MHz offset	typ. < 2 dB
	1 Hz to 100 Hz or >10 MHz offset	typ. < 3 dB

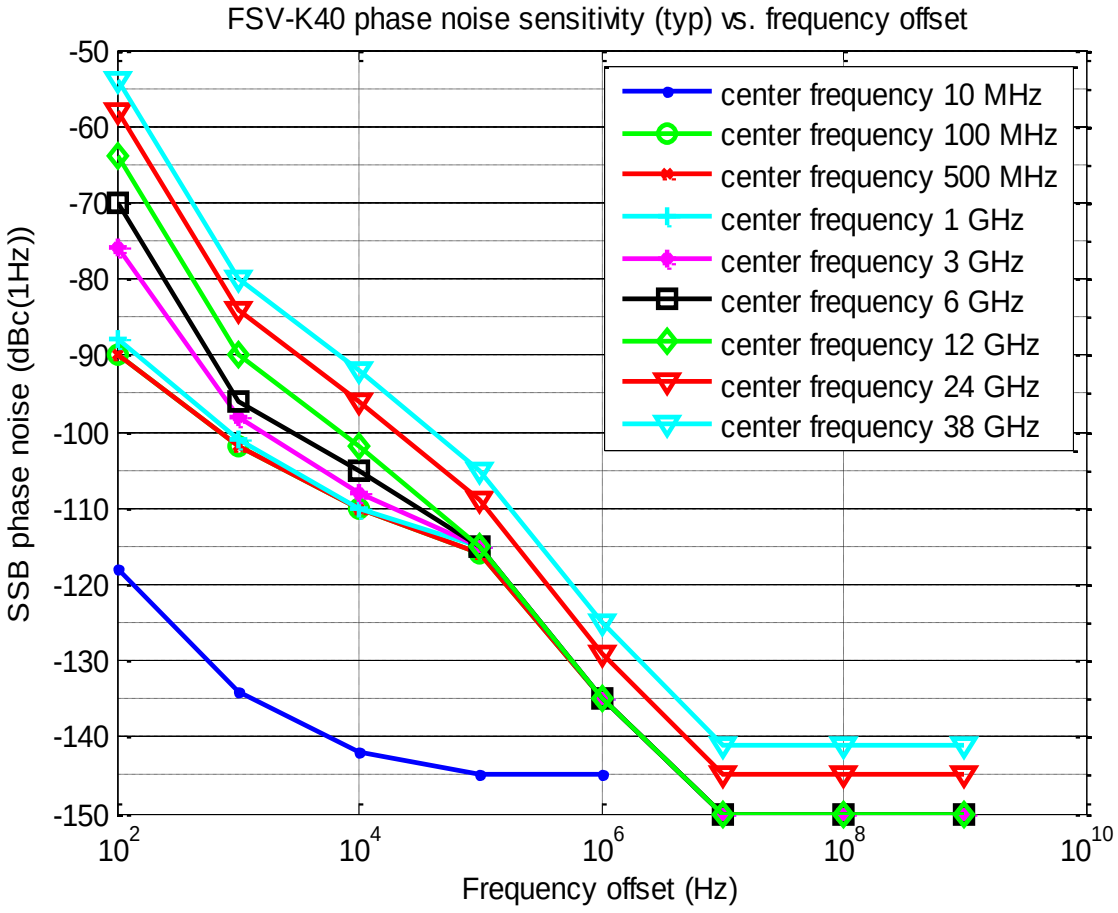
Phase noise measurement		
Sweep settings		measurement range
		resolution bandwidths
		filter types (sweep, FFT)
		averaging
		smoothing factors
Phase noise display		logarithmic plot
		up to three traces
		comprehensive marker functions
Integrated phase noise (settable frequency range)		residual frequency modulation
		residual phase modulation
		RMS jitter
Tracking and verifying functions		center frequency tracking
		verify frequency and level
Noise correction		subtracts the instrument's inherent noise
Checks		limit line
Remote control		GPIB LAN

[1] The R&S®FSV-K40 frequency range can be extended up to 9 kHz if the instrument is set to DC coupling.

[2] The upper offset frequency is limited by the center frequency.

Phase noise sensitivity (typical values)[3] without noise correction **Input level > 0 dBm, input signal harmonics and signal spurs < –30 dBc, operating mode "averaged", +20 °C to +30 °C.**									
Frequency offset	Input frequency, values in dBc (1 Hz) R&S®FSV3/7/13/30/40					R&S®FSV 7/13/30/40	R&S®FSV 13/30/40	R&S®FSV 30/40	R&S®FSV 40
	10 MHz	100 MHz	500 MHz	1 GHz	3 GHz	6 GHz	12 GHz	24 GHz	38 GHz
100 Hz	–118	–90	–90	–88	–76	–70	–64	–58	–54
1 kHz	–134	–102	–102	–101	–98	–96	–90	–84	–80
10 kHz	–142	–110	–110	–110	–108	–105	–102	–96	–92
100 kHz	–145	–116	–116	–115	–115	–115	–115	–109	–105
1 MHz	–145	–135	–135	–135	–135	–135	–135	–129	–125
10 MHz		–150	–150	–150	–150	–150	–150	–145	–141
100 MHz			–150	–150	–150	–150	–150	–145	–141
1 GHz					–150	–150	–150	–145	–141

By correcting the inherent phase noise of the analyzer, the measurement result may be improved by up to 6 dB (noise subtraction).



[3] The instrument selects the input attenuation automatically depending on the input signal level and the permissible attenuator settings. Due to the influence of the attenuator step size, the phase noise floor may increase. The R&S®FSV-B25 electronic attenuator option (attenuator step size = 1 dB) is recommended in order to get optimum performance for input frequencies up to 7 GHz.

Ordering information

Designation	Type	Order No.
Phase Noise Measurement Application for the R&S®FSV4/7/13/30/40 Signal Analyzer	R&S®FSV-K40	1310.8403.02
Signal Analyzer	R&S®FSV4	1321.3008.04
Signal Analyzer	R&S®FSV7	1321.3008.07
Signal Analyzer	R&S®FSV13	1321.3008.13
Signal Analyzer	R&S®FSV30	1321.3008.30
Signal Analyzer	R&S®FSV40	1321.3008.40

Options

Designation	Type	Order No.	Retrofittable	Remarks
OCXO Reference Frequency	R&S®FSV-B4	1310.9522.02	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

Related data sheet

R&S®FSV Signal and Spectrum Analyzer data sheet (PD 3606.7982.22).

Service that adds value

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

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The Rohde&Schwarz electronics group is a leading supplier of solutions in the fields of test and measurement, broadcasting, secure communications, and radiomonitoring and radiolocation. Founded more than 80 years ago, this independent global company has an extensive sales network and is present in more than 70 countries.
The company is headquartered in Munich, Germany.

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

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Data without tolerance limits is not binding | Subject to change

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