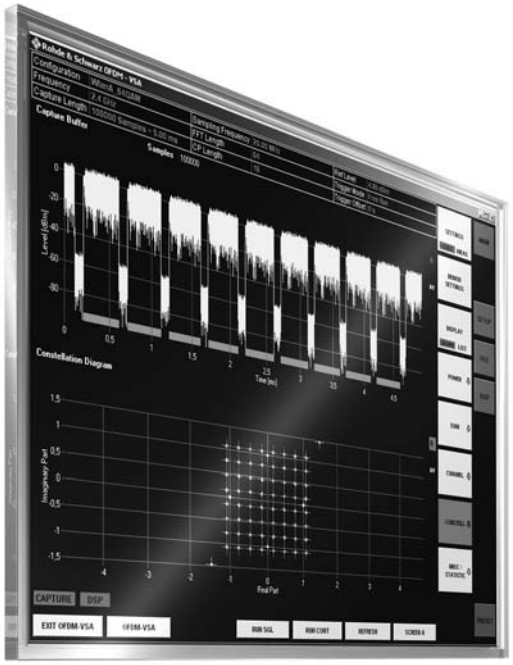
R&S®FSQ-K96
OFDM-VSA analysis
Specifications



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Test & Measurement

Data Sheet | 02.00

Specifications

The specifications of the R&S®FSQ-K96 OFDM VSA PC software are based on the data sheet of the R&S®FSQ signal 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. "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.

Minimum system requirements

Operating system	Windows®XP Professional + Service Pack 2
Free hard disk space	1 Gbyte
Free RAM	1 Gbyte
Graphics resolution	800 x 600 pixels
Measuring instrument connection	IEC/IEEE bus or LAN connection, VISA driver

OFDM VSA analysis

Frequency

Frequency range	RF input	
	R&S®FSQ3	50 MHz [1] to 3.6 GHz
	R&S®FSQ8	50 MHz [1] to 8 GHz
	R&S®FSQ26	50 MHz [1] to 26.5 GHz
	R&S®FSQ40	50 MHz [1] to 40 GHz

Bandwidth

Maximum channel bandwidth	RF input	28 MHz
	I/Q bandwidth extension (R&S®FSQ-B72)	120 MHz
	analog baseband inputs (R&S®FSQ-B71)	72 MHz
Channel filter		built-in as standard, adjustable
Sample rate		400 Hz to 81.6 MHz
	I/Q bandwidth extension (R&S®FSQ-B72)	400 Hz to 326.4 MHz
	The maximum sample rate is halved if the adjustable channel filter is selected.	

Level

Level range	RF input	–50 dBm to +30 dBm
	analog baseband inputs (R&S®FSQ-B71)	31.6 mV to 5.62 V
Level setting		auto range, manual

Signal acquisition

Instrument connection		LAN, IEC/IEEE bus
Input path		RF
	R&S®FSQ-B71	I/Q baseband inputs, balanced/unbalanced
	R&S®FSQ-B17	digital baseband interface
Record length		16 Msample
	The record length is halved if the adjustable channel filter is selected. The usable record length depends on the PC memory available for the application. [2]	
Trigger modes	RF input	free run, external, IF power
	analog baseband inputs (R&S®FSQ-B71)	free run, external

[1] 5 MHz to 50 MHz with restricted functionality depending on bandwidth (IF power trigger, auto level, IF overload).

[2] Example: approx. 600 Mbyte memory required for 4 Msample (FFT length 2048, CP length 64, 68 symbols per frame, 27 frames analyzed).

OFDM system configuration

Manual settings	FFT length	8 to 32768 (all integer numbers allowed)
	cyclic prefix length	4 to FFT length
Configuration file settings	cell types	zero, pilot, data, don't care
	pilot modulation	arbitrary complex numbers
	data modulation	each data cell individually assigned to a constellation
	constellations	arbitrary complex numbers, e.g. PSK or QAM

Result display

Result summary	min/mean/max	EVM all
		EVM data
		EVM pilot
		frequency error
		sample clock error
		I/Q offset
		I/Q gain imbalance
		I/Q quadrature error
		frame power
		crest factor
Power		power versus symbol × carrier
		power versus carrier
		power versus symbol
		capture buffer
		power spectrum
EVM		EVM versus symbol × carrier
		EVM versus carrier
		EVM versus symbol
		error frequency/phase
Channel		flatness
		group delay
		impulse response
Constellation		constellation diagram
		constellation versus carrier
		constellation versus symbol
Miscellaneous and statistics		CCDF
		signal flow
		demodulation report

Measurement parameters

Burst search		ON/OFF
Synchronization	time synchronization	cyclic prefix/repetitive preamble
	frequency synchronization and channel estimation	OFF/pilot aided/pilot and data aided
Modulation detection		defined by configuration file/ per symbol/per carrier
Compensation	phase tracking	ON/OFF
	timing tracking	ON/OFF
	level tracking	ON/OFF
	channel compensation	ON/OFF

EVM measurement specification (nominal)

Averaged EVM of pilots and data measured by using the following signals:

1. WLAN IEEE 802.11g OFDM, 64QAM, 100 symbols per frame
2. WiMAX IEEE 802.16 OFDM, 16QAM, 14 MHz bandwidth, 100 symbols per frame
3. DVB-T 2k mode, QPSK, 6 MHz bandwidth, 68 symbols per frame

EVM		**R&S®FSQ**
Residual EVM WLAN IEEE 802.11g OFDM	level –25 dBm to +10 dBm center frequency 2.4 GHz frequency sync.: pilot and data aided	<–45 dB
Residual EVM WiMAX IEEE 802.16 OFDM	level –25 dBm to +10 dBm center frequency 3.417 GHz frequency sync.: pilot and data aided	<–48 dB
Residual EVM DVB-T 2k mode	level –25 dBm to +10 dBm center frequency 800 MHz frequency sync.: pilot and data aided	<–51 dB

Ordering information

Designation	Type	Order No.
OFDM VSA PC Software	R&S®FSQ-K96	1308.9570.02
Signal Analyzer, 20 Hz to 3.6 GHz	R&S®FSQ3	1155.5001.03
Signal Analyzer, 20 Hz to 8 GHz	R&S®FSQ8	1155.5001.08
Signal Analyzer, 20 Hz to 26.5 GHz	R&S®FSQ26	1155.5001.26
Signal Analyzer, 20 Hz to 40 GHz	R&S®FSQ40	1155.5001.40
Recommended options and extras		
Digital Baseband Interface	R&S®FSQ-B17	1163.0063.02
Analog Baseband Inputs	R&S®FSQ-B71	1157.0113.03
I/Q Bandwidth Extension	R&S®FSQ-B72	1157.0336.12
Accessories supplied		
CD-ROM (with operating manual)		

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Rohde&Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde&Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

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Certified Quality System
ISO 9001
DQS REG. NO 1954 QM

Certified Environmental System
ISO 14001
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For product brochure,
see PD 5214.0282.12
and www.rohde-schwarz.com

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