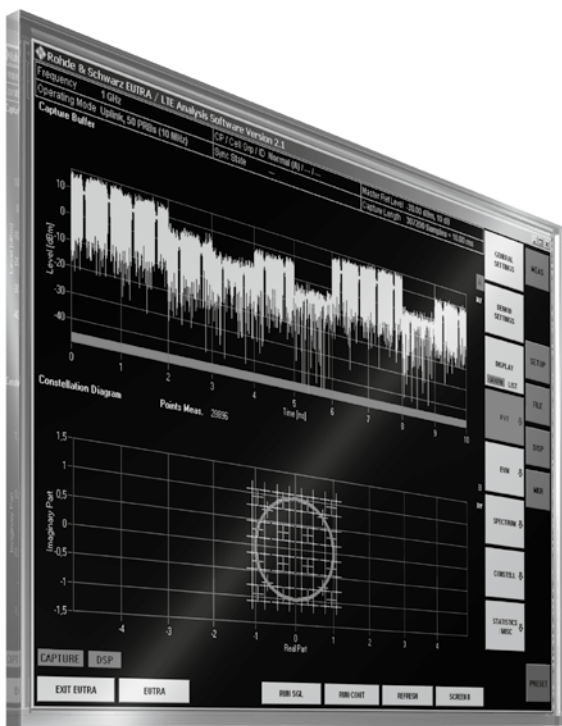


R&S® FSQ-K101 EUTRA/LTE Uplink PC Software Specifications



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Minimum system requirements

Operating system	Windows XP Professional + Service Pack 2
Free hard disk space	1 GB
Free RAM	≥512 Mbyte
Graphics resolution	≥800 × 600 pixels
Measuring instrument connection	IEEE bus or LAN connection, VISA driver

EUTRA/LTE uplink 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
	R&S®FSG8	50 MHz ¹ to 8 GHz
	R&S®FSG13	50 MHz ¹ to 13.6 GHz
	I/Q baseband inputs (R&S®FSQ-B71)	DC to 36 MHz
Nominal channel bandwidth		1.25 MHz to 20 MHz

Level

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

Signal acquisition

Supported standards		EUTRA/LTE uplink in line with preliminary standard in [1] and assumptions in [2] (see page 4)
Result length	power versus time, CCDF	10 ms (capture length)
	result summary, EVM versus symbol, EVM versus carrier, EVM versus subframe, inband emission, channel flatness, group delay, channel flatness difference, constellation diagram, DFT-precoded constellation diagram, allocation summary list, bit stream	depending on the number of analyzed subframes
Trigger modes	RF input	free run, external
	I/Q 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).

Result display

Result summary		EVM physical channel, EVM physical signal, center frequency error, clock error, I/Q offset, I/Q gain imbalance, I/Q quadrature error, frame power physical channel, frame power physical signal, crest factor
Power versus time		
EVM		EVM versus symbol, EVM versus carrier, EVM versus subframe
Spectrum		relative inband emission, channel flatness, channel group delay, channel flatness difference
Constellation		constellation diagram, DFT-precoded constellation diagram
Statistics		CCDF, allocation summary list, bit stream

Measurement parameters

Input		RF
	R&S®FSQ-B71	I/Q baseband, balanced-to-unbalanced switchover
	R&S®FSQ-B17	digital baseband interface
Channel bandwidth (BW)	Sampling rate (F_s) and N_{FFT} are set depending on the channel bandwidth	1.25 MHz, 2.5 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz and user-defined number of resource blocks (6 to 110)
Cyclic prefix modes		normal, extended, auto
Demodulation reference signal	DFT precoding	ON/OFF
	sequence	CAZAC, I/Q file
	relative power	-6 dB ≤ relative power ≤ 6 dB
	CAZAC mode	extension, truncation, auto, direct
	CAZAC parameters	alpha, u, q
Sounding reference signal		ON/OFF, symbol offset
Resource allocation		one frame can be allocated
	modulation	QPSK, 16QAM, 64QAM
	allocation settings	PRB offset, PRB size
Phase tracking		OFF, pilot only, pilot and payload
Timing tracking		ON/OFF
Channel estimation range		pilot only, pilot and payload
Auto demodulation		ON/OFF

EVM measurement specification (nominal)

Measured with the following signal: BW = 10 MHz, normal cyclic prefix, no DFT precoding for demodulation reference signal, CAZAC parameters: alpha = 0, u = 1, q = 0, no sounding reference signal present, all 50 PRBs are assigned to one allocation with 64QAM modulation.

EVM		R&S®FSQ	R&S®FSG
Residual EVM	level –30 dBm to +15 dBm input = RF (f = 2.4 GHz or 5 GHz) phase tracking: OFF channel estimation: pilot and payload timing tracking: enabled	<–41 dB	<–40 dB

References

- [1] 3GPP TS 36.211 V8.1.0 (2007-11), 3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation (Release 8).
- [2] Operating manual for R&S®FSQ-K101 EUTRA/LTE uplink PC software.

The specifications of the R&S®FSQ-K101 EUTRA/LTE uplink PC software are based on the data sheet specifications 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.

Ordering information

Designation	Type	Order No.
EUTRA/LTE Uplink PC Software	R&S®FSQ-K101	1308.9058.02
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
Signal Analyzer 9 kHz to 8 GHz	R&S®FSG8	1309.0002.08
Signal Analyzer 9 kHz to 13.6 GHz	R&S®FSG13	1309.0002.13
Recommended options and extras		
I/Q Baseband Inputs	R&S®FSQ-B71	1157.0113.03
Digital Baseband Interface	R&S®FSQ-B17	1163.0063.02
See also specifications for the R&S®FSQ signal analyzer (PD 0758.0945.22).		

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For product brochure,
see PD 5213.8521.12
and www.rohde-schwarz.com
(search terms: FSQ-K100/
FSQ-K101/FSQ-K102)

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