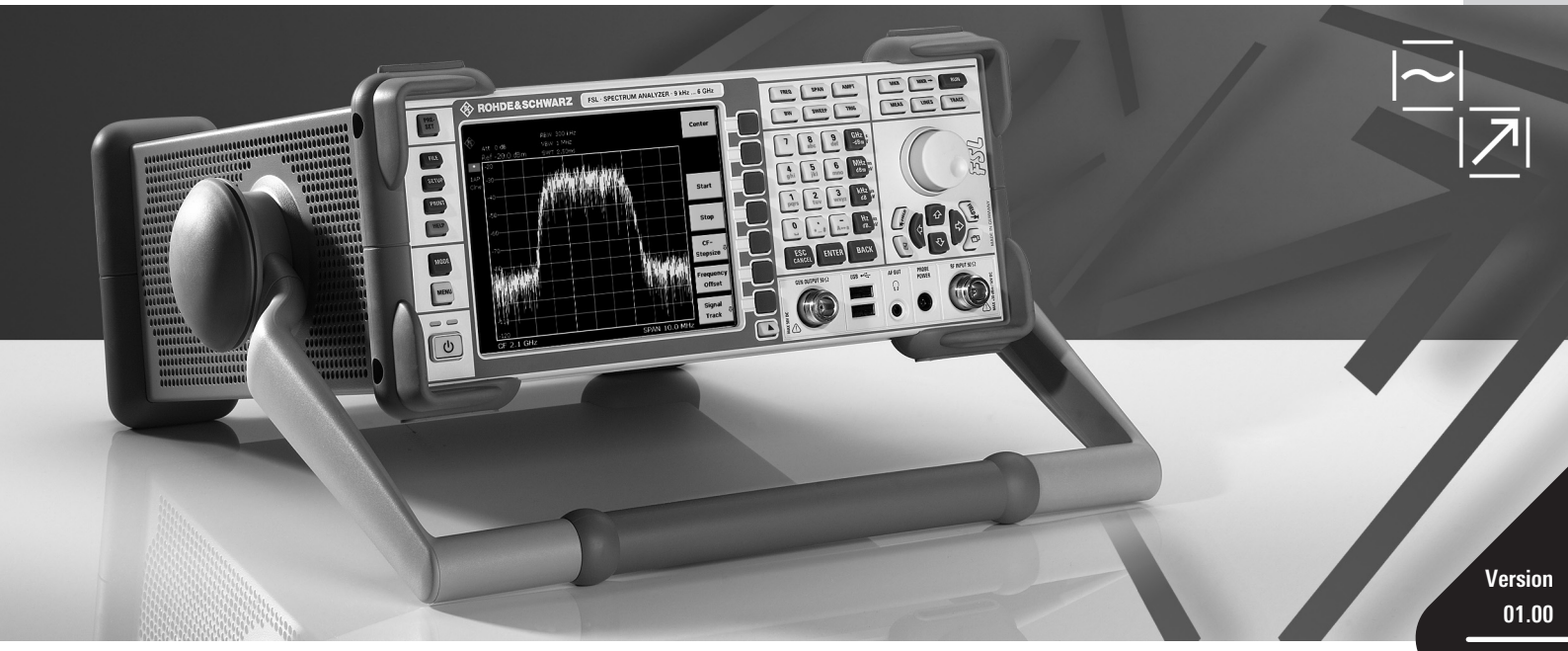
Specifications



Version 01.00

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WLAN 802.11a/b/g/j Application Firmware R&S®FSL-K91

Specifications

ROHDE&SCHWARZ

The specifications of R&S FSL-K91 are based on the data sheet specifications of the Spectrum Analyzer R&S FSL and have not been checked separately. They are valid under the following conditions:
15 minutes warm-up time at ambient temperature, specified environmental conditions met, calibration cycle adhered to and internal calibration performed. Data with tolerance limits: measurement uncertainties with a confidence level of 95%. Data without tolerance limits: typical values. The specified level measurement errors do not take into account systematic errors due to reduced S/N ratio.

OFDM analysis (802.11a, 802.11g OFDM, 802.11j)

Frequency

Frequency range	RF input	R&S FSL3 R&S FSL6	10 MHz to 3 GHz 10 MHz to 6 GHz
Frequency setting			frequency channel number

Level

Level range	RF input	–60 dBm to +30 dBm
Level setting		autorange manual

Signal acquisition

Supported standards		802.11a, 802.11g (OFDM), 802.11j (10 MHz), 802.11j (20 MHz)
Modulation format		BPSK, QPSK, 16QAM, 64QAM
Demodulator setting		auto, manual with/without test of signal field
Capture length	continuous 802.11a, j 802.11g	 24 µs to 15 ms 24 µs to 11.9 ms
Number of bursts that can be analyzed	manual	1 to 10922
Result length	PVT, spectrum FFT, CCDF EVM versus symbol and versus carrier, constellation versus symbol/versus carrier spectrum flatness, bit stream, signal field	capture length, 1 to 10922 bursts or gate length capture length, 1 to 10922 bursts
Burst length	automatic detection of number of data symbols manual	1 to 1366 data symbols
Triggering		free run, IF power, external

Result display

Result list	min/mean/max min/mean/max min/mean/max	EVM all carriers EVM pilots EVM payload I/Q offset GAIN imbalance quadrature error center frequency error symbol clock error mean burst power crest factor
Power versus time		full burst rising/falling edge
EVM		EVM versus symbol EVM versus carrier
Error versus preamble		frequency error versus preamble phase error versus preamble
Spectrum		spectrum mask (IEEE & ETSI), ACP (802.11j: abs/rel), spectrum FFT spectrum flatness

Constellation		constellation diagram constellation versus carrier
Statistics		bit stream signal field CCDF
Limit check	values according to standard	result list EVM spectrum mask ACP

Adjustable parameters

Pilot tracking		phase on/off timing on/off level on/off
Channel estimation		data preamble

Measurement uncertainty

Residual EVM	level –23 dBm to +30 dBm average of 20 bursts f = 2.4 GHz or 5 GHz channel estimation = data channel estimation = preamble	 –35 dB –38 dB
Frequency error Lock range Uncertainty		 40 ppm 1 Hz + reference frequency uncertainty
Level uncertainty	test of spectrum mask output power f < 3 GHz 3 GHz ≤ f ≤ 6 GHz ACPR	0.2 dB 0.5 dB 0.8 dB 0.5 dB
Spectrum flatness		0.5 dB

DSSS/CCK/PBCC analysis (802.11b, 802.11g CCK)

Frequency

Frequency range	RF input	R&S FSL3 R&S FSL6	20 MHz to 3 GHz 20 MHz to 6 GHz
Frequency setting			frequency channel number

Level

Level range	RF input	–60 dBm to +30 dBm
Level setting		autorange manual

Signal acquisition

Supported standards		802.11b, 802.11g (CCK)
Modulation format		DBPSK, DQPSK, CCK, short PLCP, long PLCP 5.5 Mbps, 11 Mbps PBCC
Demodulator setting		auto manual with/without test of signal field
Capture length	continuous	24 µs to 11.9 ms
Number of bursts that can be analyzed	manual	1 to 10922
Result length	PVT, spectrum FFT, CCDF EVM versus symbol and versus carrier, constellation versus symbol bit stream PLCP header	capture length, 1 to 10922 bursts or gate length capture length, 1 to 10922 bursts
Burst length	automatic detection of number of data symbols manual	1 to 4095 bytes
Triggering		free run, IF power, external

Result display

Result list	min/mean/max min/mean/max	peak vector error burst EVM I/Q offset gain imbalance quadrature error center frequency error chip clock error rise time fall time mean burst power peak burst power crest factor
Power versus time		up ramp/down ramp
EVM		EVM versus symbol
Error versus preamble		frequency error versus preamble phase error versus preamble
Spectrum		spectrum mask, ACPR, spectrum FFT
Constellation		constellation diagram
Statistics		bit stream PLCP header CCDF
Limit check	values according to standard	result list, power versus time, EVM, spectrum mask, ACP

Adjustable parameters

Tracking		phase on/off timing on/off level on/off

Measurement uncertainty

Residual EVM	level –23 dBm to +30 dBm average of 20 bursts, 11 Mbps CCK with short PLCP, burst EVM f = 2.442 GHz	 1.8%
Frequency error Lock range Uncertainty		 ±0.6 MHz 1 Hz + reference frequency uncertainty
Level uncertainty	test of spectrum mask output power f < 3 GHz 3 GHz ≤ f ≤ 6 GHz ACPR	0.2 dB 0.5 dB 0.8 dB 0.5 dB

Ordering information

Designation	Type	Order No.
WLAN 802.11a/b/g/j Application Firmware	R&S FSL-K91	1302.0094.02
Spectrum Analyzer 9 kHz to 3 GHz	R&S FSL3	1300.2502.03
Spectrum Analyzer 9 kHz to 3 GHz with tracking generator	R&S FSL3	1300.2502.13
Spectrum Analyzer 9 kHz to 6 GHz	R&S FSL6	1300.2502.06
Spectrum Analyzer 9 kHz to 6 GHz with tracking generator	R&S FSL6	1300.2502.16

For product brochure, see PD 0758.2790.12
and www.rohde-schwarz.com
(search term: FSL)

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