R&S®FSW-K73
3GPP FDD (WCDMA)
MS Measurements
Specifications

ROHDE&SCHWARZ

Test & Measurement

Data Sheet | 01.00

CONTENTS

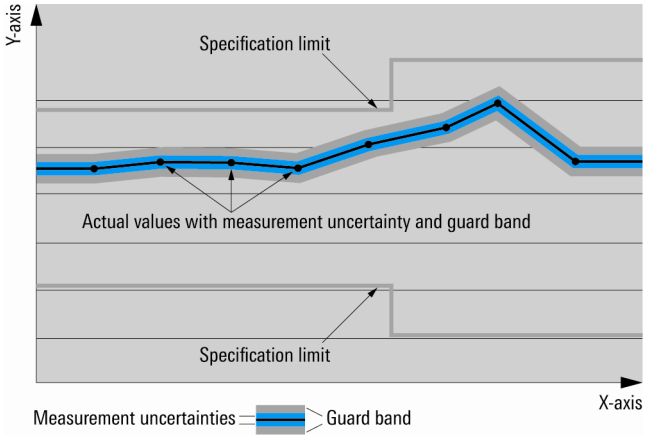
The specifications of the R&S®FSW-K73 3GPP FDD (WCDMA) MS measurements are based on the data sheet of the R&S®FSW signal and spectrum analyzer, have not been checked separately and are not verified during instrument calibration. Measurement uncertainties are given as 95 % confidence intervals. The specified level measurement errors do not take into account systematic errors due to reduced signal to noise ratio (S/N).

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.

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

Specifications

Frequency

Frequency range	RF input	same as R&S®FSW [1]

Level

Level range	RF input	–40 dBm to +30 dBm [1]

Signal acquisition

Supported standards		3GPP TS 34.121, support of HSDPA/HSUPA
Capture length	slot mode	one slot
	frame mode	1 frame to 2400 frames
Sweep time	spectrum mask, ACLR (adjacent channel leakage power ratio)	max. 16000 s, auto
Sweep count		1 to 32767
Trigger modes	code domain analysis	free run, external
	RF measurements	free run, external, IF power [1], RF power [1], time, power sensor

Measurement parameters

Link mode		uplink (UL)
Modulation detection		automatic detection of BPSK and 4PAM
Predefined channel table	code domain analyzer	The predefined channel table allows the complete channel setup of the user signal for the code domain analyzer.
Spectrum emission mask	standard	in line with 3GPP
	user	Spectrum emission mask measurement is performed according to either manual user setting or user-specified XML file.

[1] Restricted IF overload, IF power trigger and auto level functionality depending on carrier frequency and bandwidth at carrier frequencies < 50 MHz.

Result diagrams

Result summary	global results	total power, carrier frequency error, chip rate error, trigger to frame, I/Q imbalance, I/Q offset, composite error vector magnitude, rho, average power of inactive channels, peak code domain error, number of active channels
	results for selected channel	symbol rate, channel code, number of pilot bits, channel power relative, channel power absolute, modulation type, symbol error vector magnitude, channel mapping
Code domain power		code domain power versus channel, code domain error power versus channel
Code domain error power		code domain error power versus slot
Channel table	numeric result table for all channels including the following readings per channel	channel type, channel number, spreading factor, symbol rate, state, absolute power, relative power, number of pilot bits, mapping, channel power absolute, channel power relative
Composite EVM (RMS)		averaged (RMS) EVM of selected frame versus slot
EVM versus chip		EVM of selected slot versus chip
Magnitude error versus chip		magnitude error of selected slot versus chip
Phase error versus chip		phase error of selected slot versus chip
Composite constellation		constellation diagram for composite signal
Power versus slot		power versus slots of selected frame
Power versus symbol		power of selected channel and slot versus symbol
Symbol constellation		constellation diagram for selected channel and slot
Symbol EVM		symbol EVM for selected channel and slot
Symbol magnitude error		magnitude error for selected channel and slot versus symbol
Symbol phase error		phase error of selected channel and slot versus symbol
Frequency error versus slot		frequency error of selected frame versus slot
Output power		integrated signal power over channel bandwidth
Adjacent channel power, multicarrier adjacent channel power		absolute and relative adjacent channel power
Spectrum emission mask		spectrum mask limit check
		peak list evaluation
Occupied bandwidth		occupied bandwidth measured in frequency domain
CCDF		CCDF

Measurement specification (nominal)

Valid for 700 MHz < center frequency < 2.7 GHz and external reference frequency applied

Frequency error (test case 5.3)		
Measurement range	CPICH synchronous	±5 kHz
	SCH synchronous	±1.2 kHz
Measurement uncertainty		< 5 Hz + Δf_{ref}

Spectrum emission mask (test case 5.9)		
Dynamic range	P_{total} > –20 dBm	74 dB

Adjacent channel leakage ratio (test case 5.10)
See the R&S®FSW signal and spectrum analyzer data sheet (PD 5214.5984.22).

Composite EVM (test case 5.13.1)		
Measurement range		0.5 % to 25 %
Inherent EVM		< 0.7 %
Measurement uncertainty	P_{total} > –40 dBm	< 0.4 %

Peak code domain error power (PkCDEP, test case 5.13.2)		
Measurement range		0 dB to –60 dB
Inherent PkCDEP		< –60 dB
Measurement uncertainty	–30 dB ≤ PkCDEP	< 0.15 dB
	–40 dB ≤ PkCDEP < –30 dB	< 0.4 dB
	–50 dB ≤ PkCDEP < –40 dB	< 0.8 dB
	–60 dB ≤ PkCDEP < –50 dB	< 2.5 dB

Ordering information

Designation	Type	Order No.
3GPP FDD (WCDMA) MS Measurements	R&S®FSW-K73	1313.1439.02
Signal and Spectrum Analyzer	R&S®FSW8	1312.8000.08
Signal and Spectrum Analyzer	R&S®FSW26	1312.8000.26
Recommended options and extras	see the R&S®FSW signal and spectrum analyzer data sheet (PD 5214.5984.22)	

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Environmental commitment

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

Rohde&Schwarz GmbH&Co. KG
www.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 8228/+86 400 650 5896
  customersupport.china@rohde-schwarz.com

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