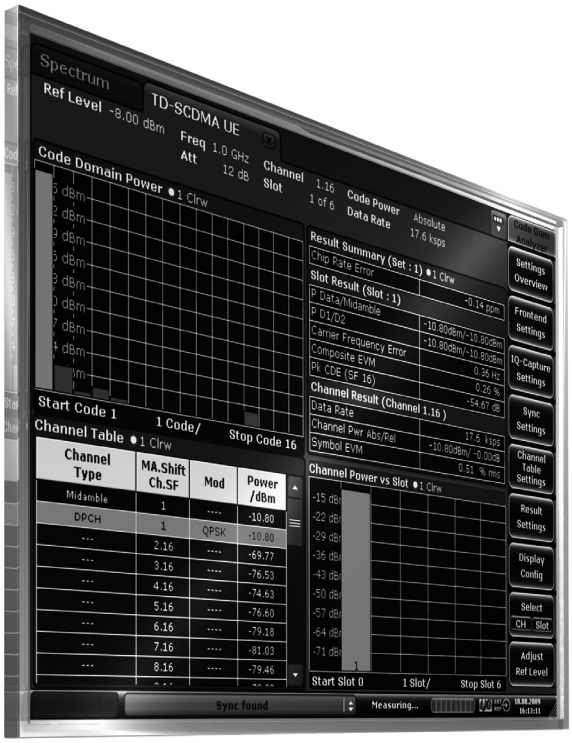
R&S®FSV-K77
TD-SCDMA UE (UL) Analysis
Specifications



ROHDE&SCHWARZ

Test & Measurement

Data Sheet | 01.01

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Specifications

The specifications of the R&S®FSV-K77 TD-SCDMA UE (UL) analysis are based on the data sheet specifications of the R&S®FSV signal and spectrum analyzer, have not been checked separately and are not verified during instrument calibration.

Specifications apply under the following conditions: 30 minutes warm-up time at ambient temperature, frequency lower than 3 GHz, 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.

Data without tolerance limits is not binding.

Frequency

Frequency range	R&S®FSV3	50 MHz [1] to 3.6 GHz
	R&S®FSV7	50 MHz [1] to 7 GHz
	R&S®FSV13	50 MHz [1] to 13.6 GHz
	R&S®FSV30	50 MHz [1] to 30 GHz
	R&S®FSV40	50 MHz [1] to 40 GHz

Level

Level range	RF input	–60 dBm to +30 dBm

Signal acquisition

Supported standards		3GPP TDD 1.28 Mcps option release 8
Supported data modulation		QPSK, 8PSK, 16QAM, 64QAM
Capture length		2 slots to 63 slots
Sweep time	spectrum mask	1 ms to 16000 s per offset range, auto
	adjacent channel leakage power ratio (ACLR)	696 µs to 16000 s
Sweep count		1 to 32767
Trigger modes	code domain analysis	free run, external [2], IF power
	RF measurements	external [2], IF power
Time synchronization	code domain analysis	based on first detected uplink slot

Measurement parameters

Link mode		uplink (UL)
Scrambling code		0 to 127
Maximum number of users (K_{cell})		2, 4, 6, 8, 10, 12, 14, 16
Phase synchronization		code channel of selected slot, midamble of selected slot
Channel table search mode		predefined
		auto search
Inactive channel power threshold	channel table auto search	–100 dB to 0 dB relative to total data power
Maximum data modulation	channel table auto search	QPSK, 8PSK, 16QAM, 64QAM
Predefined channel table		The predefined channel table allows to configure the complete channel setup for the code domain analyzer.
Normalize I/Q offset		ON/OFF
Spectrum emission mask	standard	in line with standard
	user	The spectrum emission mask is measured in line with either the manual user setting or a user-specified XML file.

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

[2] The external trigger must mark a subframe start with an accuracy of ±8 chips.

Result diagrams

Result summary	general results	chip rate error, trigger to frame
	results for selected slot	data power, midamble power, averaged relative code domain error, number of active channels, carrier frequency error, I/Q imbalance, I/Q offset, ρ, composite EVM, peak code domain error
	results for selected channel	absolute power, relative power, symbol EVM, data rate, modulation type
Code domain power	clear write, max. hold, min. hold, average, view	code domain power versus channel (relative to total power and absolute)
Code domain error power	clear write, max. hold, min. hold, average, view	code domain error power versus channel
Peak code domain error	clear write, max. hold, min. hold, average, view	peak code domain error power versus slot
Channel power versus slot	clear write, max. hold, min. hold, average, view	power versus slot for selected channel (relative to total power and absolute)
Channel table	clear write, max. hold, min. hold, average, view	numeric result table for all midambles and channels including the following readings: channel type, channel number, spreading factor, data rate, modulation type, absolute power, relative power, midamble shift, midamble to data power ratio
Composite EVM	clear write, max. hold, min. hold, average, view	EVM versus slot
EVM versus symbol	clear write, max. hold, min. hold, average, view	EVM versus symbol for selected channel and slot
Power versus symbol	clear write, max. hold, min. hold, average, view	power versus symbol for selected channel and slot
Channel bit stream	clear write, view	bit stream for selected channel and slot
Channel constellation	clear write, view	constellation diagram for selected channel and slot
Composite constellation	clear write, view	constellation diagram for composite signal
Output power	clear write, max. hold, min. hold, average, view, blank	integrated signal power over channel bandwidth
Adjacent channel power, multicarrier adjacent channel power	clear write, max. hold, min. hold, average, view, blank	absolute and relative adjacent channel power
Spectrum emission mask	clear write, max. hold, min. hold, average, view, blank	spectrum mask limit check, peak list evaluation
Occupied bandwidth	clear write, max. hold, min. hold, average, view, blank	occupied bandwidth measured in frequency domain
Power versus time	clear write, max. hold, min. hold, average, view, blank	transmit ON/OFF time mask limit check
CCDF	clear write, view, blank	complementary cumulative distribution function

Measurement specification (nominal)

Basic requirements unless otherwise noted:
30 min warm-up at ambient temperature, calibration performed, specific environmental conditions met, all internal automatic adjustments performed, 50 MHz ≤ center frequency < 3.6 MHz, +20 °C to +30 °C, –25 dBm < signal level < +15 dBm, external reference frequency applied, external subframe trigger, 1 active DPCH with spreading factor 16 in slot 1.

Code domain power		
Level uncertainty, total power		< 0.5 dB
Level uncertainty, channel power	relative	< 0.1 dB

Composite EVM		
Measurement range	AWGN channel	0.6 % to 20 %
Residual EVM		< 0.6 %

Frequency error measurement		
Lock range		±14 kHz
Measurement uncertainty		3 Hz + reference frequency uncertainty (see R&S®FSV frequency uncertainty)

Peak code domain error		
Measurement range	AWGN channel	–55 dB to –25 dB
Residual PCDE		< –55 dB

Occupied bandwidth		
Measurement uncertainty	99 % power bandwidth, span 4.8 MHz	< 14 kHz

Spectrum emission mask		
Dynamic range (P_{total} > –20 dBm) [3]		> 78 dB

Adjacent channel leakage ratio		
Dynamic range (P_{total} > –20 dBm) [4]		> 66 dB
Level uncertainty	sweep time > 0.1 s × span/1.28 MHz	< 0.8 dB

[3] The specified dynamic range is the ratio of the channel power to the power at an offset of 815 kHz, measured with 30 kHz integration bandwidth.

[4] The specified dynamic range is the ratio of the channel power to the power at an offset of 1.6 MHz, measured with 1.28 MHz integration bandwidth.

Ordering information

Designation	Type	Order No.
TD-SCDMA UE (UL) Analysis	R&S®FSV-K77	1310.8655.02
Signal and Spectrum Analyzer, 9 kHz to 3.6 GHz	R&S®FSV3	1307.9002.03
Signal and Spectrum Analyzer, 9 kHz to 7 GHz	R&S®FSV7	1307.9002.07
Signal and Spectrum Analyzer, 9 kHz to 13.6 GHz	R&S®FSV13	1307.9002.13
Signal and Spectrum Analyzer, 9 kHz to 30 GHz	R&S®FSV30	1307.9002.30
Signal and Spectrum Analyzer, 9 kHz to 40 GHz	R&S®FSV40	1307.9002.40
Recommended options and extras		
See also the specifications for the R&S®FSV signal and spectrum analyzer (PD 5214.0499.22)		
TD-SCDMA BS (DL) Analysis	R&S®FSV-K76	1310.8603.02

The product brochure containing further information is available under PD 5214.0499.12 and at www.rohde-schwarz.com.

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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.

Environmental commitment

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

Certified Quality System
ISO 9001

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Subject to change

*0.14 €/min within German wireline network; rates may vary in other networks (wireline and mobile) and countries.