

R&S®FPS-K18

Amplifier Measurements

Specifications



Specifications

The specifications of the R&S®FPS-K18 amplifier measurements are based on the data sheet of the R&S®FPS signal and spectrum analyzer, have not been checked separately and are not verified during instrument calibration. Measurement uncertainties are given as 95 % confidence intervals and apply at a center frequency of 1 GHz. The specified level measurement errors do not take into account systematic errors due to reduced signal to noise ratio (S/N).

Frequency

Frequency range	RF input	same as R&S®FPS ¹
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Level

Level range	RF input	-50 dBm to +30 dBm ¹
Level setting		manual

Signal acquisition

Capture length		up to 5 000 000 sample
Trigger modes		free run, external, IF power ¹ , RF power ¹
Capture bandwidth		same as R&S®FPS
Input		RF
I/Q averaging	enable I/Q averaging	on/off
	I/Q average count	1 to 10000

Reference signal

Supported numerical signal sources	file-based	binary WV (*.wv) and iq-tar (*.iq.tar) file format
	running on ARB	R&S®SGT100A ARB-based standard
	built-in waveform generator	generates a waveform file with configurable parameters (inside R&S®FPS-K18)
Parameters for built-in waveform generator		clock rate, signal bandwidth, signal length, target crest factor, duty cycle for pulsed signals, ramp length for ramped signals, notch width, notch position filename of the generated waveform

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

R&S®SGT100A generator control

Supported generator		R&S®SGT100A
Generator settings available directly in the R&S®FPS-K18 user interface	RMS level	same as connected Rohde & Schwarz generator
	generator level offset	same as connected Rohde & Schwarz generator
	attach to analyzer frequency	on or off
	center frequency range	same as connected Rohde & Schwarz generator
	reference frequency	internal or external
	paths	A or B if available on connected generator
	segment	range depends on the number of segments available in the used waveform file
	digital attenuation	same as connected Rohde & Schwarz generator
	generator RF output	on/off

Amplifier modeling and digital predistortion

Modeling settings for polynomial DPD	polynomial order for AM/AM-based model	0 to 18 (individually configurable)
	polynomial order for AM/PM-based model	0 to 18 (individually configurable)
	level range used for modeling	0 dB to 99 dB
	number of modeling points	1 to 1000
Digital predistortion settings for polynomial DPD	shaping type	based on a numerical table or on a polynomial
	modeling order	AM/AM first and then AM/PM or AM/PM first and then AM/AM
	AM/AM and AM/PM states	can be switched on/off separately
	DPD power/linearity tradeoff	0 % to 100 %
	DPD file name on generator	string value
	DPD sequence	AM/AM first or AM/PM first (only available for table-based shaping)
	AM/AM	on/off
AM/PM	on/off	
Digital predistortion settings for direct DPD (R&S®FPS-K18D required)	number of iterations	1 to 1000
	DPD power/linearity tradeoff	0 % to 100 %
	DPD file name on generator	string value
	apply direct DPD	on/off

Synchronization

Signal synchronization	synchronization	on/off
	synchronization mode	I/Q direct, I/Q phase difference, I/Q magnitude, trigger
	synchronization confidence	0 % to 100 %
	estimation range (relative to reference signal)	0 seconds to length of current reference signal
Signal evaluation	evaluation range (relative to reference signal)	0 seconds to length of current reference signal

Error compensation

Signal estimation	I/Q imbalance	on/off
	amplitude droop	on/off
	sample rate error	on/off
Signal compensation	I/Q imbalance	on/off
	amplitude droop	on/off
	sample rate error	on/off

Equalizer

Equalizer filter settings	equalizer filter length for training	1 sample to 300 sample
	load equalizer filter coefficients	ASCII text file
	save equalizer filter coefficients	ASCII text file
Apply equalizer filter		on/off

2D/3D parameter sweep measurement

X- and Y-axis setting parameters (when using 2D mode only the X-axis is available)	center frequency	same range as connected R&S®SGT100A and R&S®FPS
	generator power	same range as connected R&S®SGT100A
Step size for X- and Y-parameters		0.1 × parameter range to 0.95 × parameter range
Enable Y-axis		on/off

Measurement specification (nominal)

Nominal measurement accuracy has been determined using a center frequency of 1 GHz and a generator level of 0 dBm. The different waveforms used for the measurements have been generated using an R&S®SMW200A.

Raw EVM (without standard-specific optimizations, channel compensation, normalization)	LTE downlink (E-TM 1.10, bandwidth 10 MHz)	0.6 %
	LTE uplink (50 RBs occupied, bandwidth 10 MHz)	0.6 %
	IEEE 802.11ac (bandwidth 80 MHz)	1.8 %
	WCDMA (3GPP FDD, 3.84 Mcps)	0.85 %

Ordering information

Designation	Type	Order No.
Amplifier Measurements	R&S®FPS-K18	1321.4662.02
Direct DPD Measurements	R&S®FPS-K18D	1321.4956.02
Signal Analyzer, 9 kHz to 4 GHz	R&S®FPS4	1319.2008.04
Signal Analyzer, 9 kHz to 7 GHz	R&S®FPS7	1319.2008.07
Signal Analyzer, 9 kHz to 13.6 GHz	R&S®FPS13	1319.2008.13
Signal Analyzer, 9 kHz to 30 GHz	R&S®FPS30	1319.2008.30
Signal Analyzer, 9 kHz to 40 GHz	R&S®FPS40	1319.2008.40
Recommended options and extras		
RF Preamplifier, 9 kHz to 7 GHz	R&S®FPS-B22	1321.4027.02
Electronic Attenuator, 1 dB steps	R&S®FPS-B25	1321.4033.02
40 MHz Analysis Bandwidth	R&S®FPS-B40	1321.4040.02

For R&S®FPS product brochure, see PD 3606.9433.12.

For R&S®FPS data sheet, see PD 3606.9433.22.

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R&S®FPS-K18 Amplifier Measurements

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