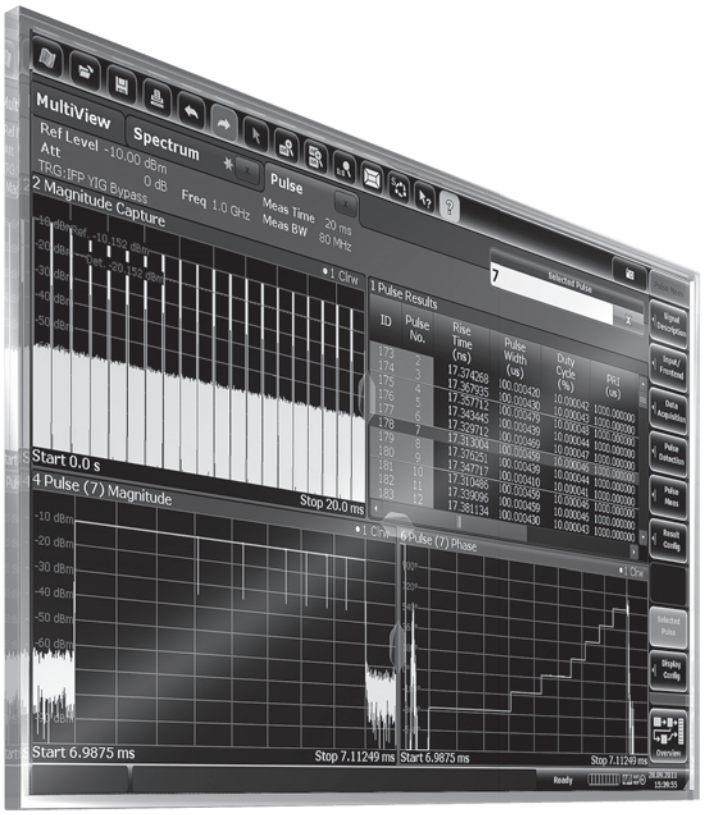
R&S®FSW-K6
Pulse Measurement Application
Specifications



ROHDE&SCHWARZ

Test & Measurement

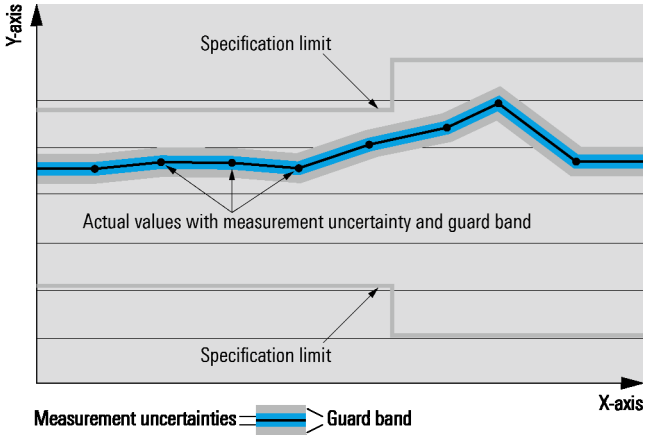
Data Sheet | 01.00

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

Measurement of pulsed RF signals		
Measurement bandwidth (flat)	standard	100 Hz to 10 MHz
	with R&S®FSW-B28 option	100 Hz to 28 MHz (nom.) [1]
	with R&S®FSW-B40 option	100 Hz to 40 MHz (nom.) [1]
	with R&S®FSW-B80 option	100 Hz to 80 MHz (nom.) [1]
Measurement bandwidth (Gaussian)	binary steps	100 Hz to 6.4 kHz, 12.5 kHz to 1.6 MHz
		3/5/8/10 MHz
		18/28 MHz (R&S®FSW-B28 option)
		18/28/40 MHz (R&S®FSW-B40 option)
Recording length	maximum	20000000 samples
Recording time	maximum for measurement bandwidth (flat)	
	10 MHz	1.6 s
	28 MHz (R&S®FSW-B28 option)	570 ms
	40 MHz (R&S®FSW-B40 option)	400 ms
	80 MHz (R&S®FSW-B80 option)	200 ms
	maximum for measurement bandwidth (Gaussian)	
	10 MHz	500 ms
	28 MHz (R&S®FSW-B28 option)	178 ms
	40 MHz (R&S®FSW-B40 option)	142 ms
Measurements	pulse traces: frequency versus time, magnitude versus time, phase versus time; table with numeric values per pulse, table with statistics (average, standard deviation, max., min.) and trend (value versus time) for: *timing parameters*: timestamp, settling time, rise time, fall time, pulse width, off time, duty ratio, duty cycle, pulse repetition interval, pulse repetition frequency *amplitude parameters*: top power, base power, average on power, average transmitted power, minimum power, peak power, peak-to-average on power ratio, peak-to-average transmitted power ratio, peak-to-min power ratio, droop, ripple, overshoot, power (at point), pulse-to-pulse power ratio (at point) *frequency/phase parameters*: frequency/phase (at point), pulse-to-pulse frequency/phase difference (at point), frequency/phase deviation, frequency/phase error [2] (peak, RMS), chirp rate [3]	
Number of pulses	1 to 100000	
Minimum pulse width for detection	standard	400 ns
	R&S®FSW-B28 option	150 ns
	R&S®FSW-B40 option	100 ns
	R&S®FSW-B80 option	50 ns
System rise time (nominal)	measurement bandwidth (flat)	
	10 MHz	< 110 ns
	28 MHz (R&S®FSW-B28 option)	< 40 ns
	40 MHz (R&S®FSW-B40 option)	< 28 ns
	80 MHz (R&S®FSW-B80 option)	< 14 ns
	measurement bandwidth (Gaussian)	
	10 MHz	< 73 ns
	28 MHz (R&S®FSW-B28 option)	< 26 ns
	40 MHz (R&S®FSW-B40 option)	< 23 ns

Amplitude and timing parameters (nominal) 95 % confidence [4]	
Pulse width	±2 %
Duty cycle	±2 %
Average on power	±0.2 dB + absolute amplitude accuracy
Average transmitted power	±0.2 dB + absolute amplitude accuracy
Peak power	±0.3 dB + absolute amplitude accuracy

[1] YIG preselector off for f ≥ 8 GHz.

[2] Pulse modulation: CW or linear FM.

[3] Pulse modulation: linear FM.

[4] Pulse width > 10/measurement bandwidth.

Frequency and phase parameters (nominal) 95 % confidence at stated center frequencies and bandwidths for pulse modulation: CW [5]				
	measurement bandwidth			
2 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS) [6]	±1.5 kHz	±4.5 kHz	±7 kHz	±22 kHz
Pulse-to-pulse frequency [7]	±2.5 kHz	±9 kHz	±15 kHz	±45 kHz
Pulse-to-pulse phase [7, 8]	±0.11°	±0.13°	±0.15°	±0.18°
8 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS)	±2 kHz	±5 kHz	±8 kHz	±25 kHz
Pulse-to-pulse frequency	±3 kHz	±10 kHz	±16 kHz	±50 kHz
Pulse-to-pulse phase	±0.15°	±0.18°	±0.18°	±0.2°
20 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS)	±3 kHz	±6 kHz	±10 kHz	±30 kHz
Pulse-to-pulse frequency	±6 kHz	±12 kHz	±20 kHz	±55 kHz
Pulse-to-pulse phase	±0.35°	±0.4°	±0.4°	±0.45°

Frequency and phase parameters (nominal) 95 % confidence at stated center frequencies and bandwidths for pulse modulation: linear FM [9]				
	measurement bandwidth			
2 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS) [10]	±2 kHz	±6 kHz	±8 kHz	±25 kHz
Pulse-to-pulse frequency [11]	±5 kHz	±18 kHz	±15 kHz	±50 kHz
8 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS)	±2.5 kHz	±6 kHz	±9 kHz	±30 kHz
Pulse-to-pulse frequency	±4 kHz	±15 kHz	±25 kHz	±55 kHz
20 GHz center frequency	10 MHz	28 MHz (R&S®FSW-B28)	40 MHz (R&S®FSW-B40)	80 MHz (R&S®FSW-B80)
Frequency error (RMS)	±3 kHz	±10 kHz	±12 kHz	±40 kHz
Pulse-to-pulse frequency	±8 kHz	±25 kHz	±30 kHz	±60 kHz

[5] Pulse on power ≥ –10 dBm, RF attenuator: auto.

[6] Measurement range: 50 % of pulse top, pulse width ≥ 100/measurement bandwidth.

[7] Pulse-to-pulse measurement point occurs at least 10/measurement bandwidth after the rising edge (i.e. 50 % level crossing) and 10/measurement bandwidth before the falling edge (i.e. 50 % level crossing), pulse-to-pulse measurement point time difference ≤ 10 ms.

[8] 100 MHz external reference with 300 Hz bandwidth, locked to sender.

[9] Chirp bandwidth ≤ 0.8 × measurement bandwidth, pulse on power ≥ –10 dBm, RF attenuator: auto, filter type: flat.

[10] Measurement range: 50 % of pulse top, pulse width ≥ 1000/measurement bandwidth.

[11] Pulse-to-pulse measurement point occurs at least 10/measurement bandwidth after the rising edge (i.e. 50 % level crossing) and 10/measurement bandwidth before the falling edge (i.e. 50 % level crossing), pulse-to-pulse measurement point time difference ≤ 10 ms.

Ordering information

Designation	Type	Order No.
Pulse Measurement Application	R&S®FSW-K6	5214.6097.22

For R&S®FSW product brochure, see PD 5214.5984.12 and www.rohde-schwarz.com.

Service you can rely on

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

About Rohde&Schwarz

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 more than 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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PD 5214.6097.22 | Version 01.00 | December 2011 | R&S®FSW-K6
Subject to change

5214609722