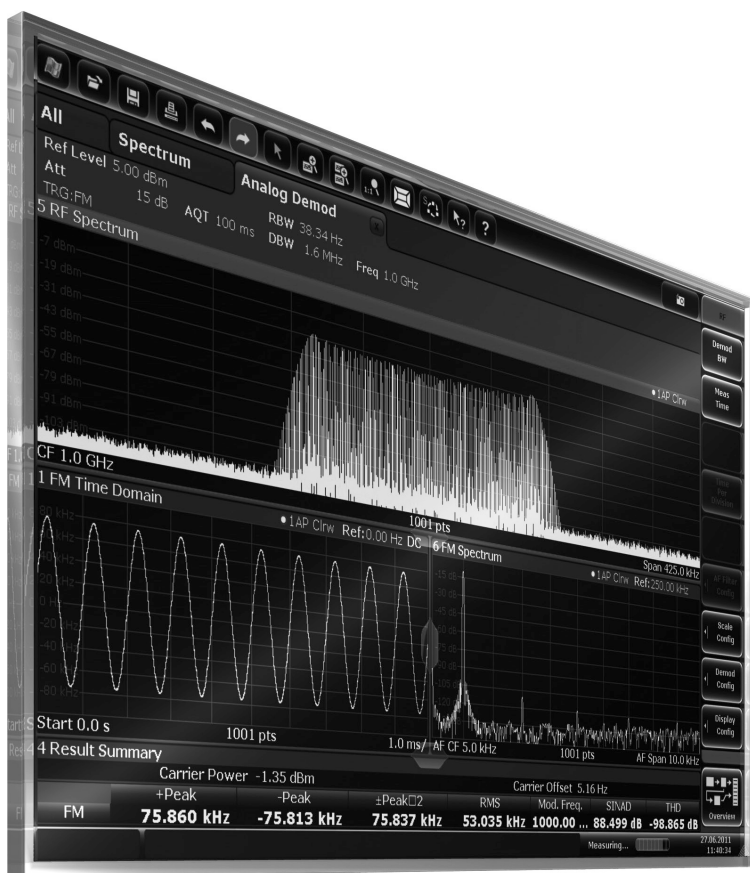


R&S®FSWP-K7CAL

Enhanced Specifications for AM/FM/φM Modulation Analysis Specifications



Definitions

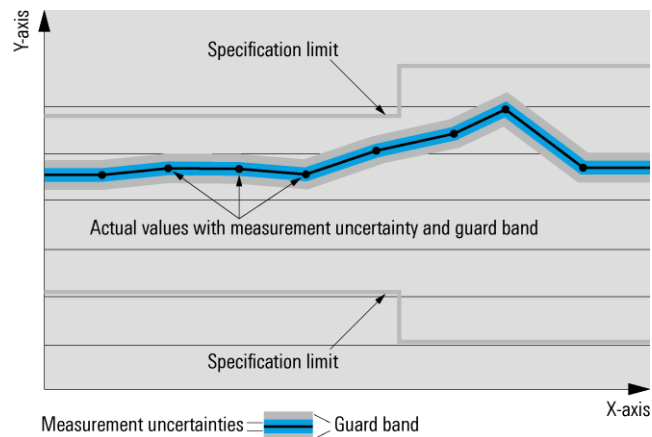
General

Product data applies under the following conditions:

- Operating temperature range +20 °C to +30 °C
- 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 $<$, \leq , $>$, \geq , \pm , 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

Amplitude modulation (AM)

Modulation depth range		0 % to 100 %
Modulation depth uncertainty	AF ≤ 1 MHz	< (0.2 % + 1% of reading)
	AF ≤ 100 kHz	< (0.2 % + 0.2% of reading)
Residual AM	demodulation bandwidth ≤ 200 kHz, RMS, RF ≤ 8 GHz, mixer level ≥ -10 dBm ¹ , measurement bandwidth 30 Hz to 23 kHz	< 0.005 %
Harmonic distortion	10 Hz ≤ AF ≤ 100 kHz	
	100 kHz ≤ RF < 8 GHz	< 0.1 %
	8 GHz ≤ RF ≤ 50 GHz	< 0.25 %
FM rejection (incidental AM)	RMS, modulation rate 400 Hz to 1 kHz, measurement bandwidth 3 kHz, demodulation bandwidth 200 kHz or 400 kHz, ADC pre-filter = WIDE ²	
	RF	FM deviation
	10 MHz to 8 GHz	< 50 kHz

Frequency modulation (FM)

Measurement range		
Modulation rate	100 kHz ≤ RF < 10 MHz	10 Hz to 10 kHz
	10 MHz ≤ RF ≤ 50 GHz	10 Hz to 5 MHz
Frequency deviation	100 kHz ≤ RF < 10 MHz	max. 50 kHz (peak)
	10 MHz ≤ RF ≤ 50 GHz	max. 5 MHz (peak)
Deviation uncertainty	AF ≤ 100 kHz, demodulation bandwidth ≥ 3.3 × (AF + deviation) and demodulation bandwidth ≤ 10 × (AF + deviation)	± (0.5% × (AF + deviation) + 5 Hz)
Residual FM	RMS, reading taken in phase noise analyzer mode	
	measurement bandwidth 300 Hz to 3 kHz	< (0.05 + 0.1 × RF/GHz) Hz
	measurement bandwidth 30 Hz to 23 kHz	< (1 + 1.5 × RF/GHz) Hz
Harmonic distortion	10 Hz ≤ AF ≤ 100 kHz, deviation ≤ 100 kHz	< 0.05 %
AM rejection	AF ≤ 1 kHz, highpass 300 Hz, lowpass 3 kHz, modulation depth < 50 %	< 20 Hz

Phase modulation (φM)

Phase deviation uncertainty	AF ≤ 100 kHz and AF × (phase deviation + 1) ≤ 0.3 × demodulation bandwidth	± (0.5 % of reading + 0.002 rad)
Harmonic distortion	deviation ≤ 10 rad	
	10 Hz ≤ AF ≤ 10 kHz	< 0.05 %
	10 Hz ≤ AF ≤ 100 kHz	< 0.25 %
AM rejection	AF ≤ 1 kHz, highpass 300 Hz, lowpass 3 kHz, modulation depth < 50 %	< 0.02 rad

Ordering information

Designation	Type	Order No.
Enhanced specifications for AM/FM/φM modulation analysis	R&S®FSWP-K7CAL	1331.6468.02

For R&S®FSWP product brochure, see PD 3607.2090.12 and www.rohde-schwarz.com

¹ Mixer level = signal level – RF attenuation + preamplifier gain.

² The ADC pre-filter setting is available to users starting from R&S®FSWP firmware release 1.50.

Service that adds value

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

About Rohde & Schwarz

The Rohde & Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, the independent company which is headquartered in Munich, Germany, has an extensive sales and service network with locations in more than 70 countries.

Sustainable product design

- | Environmental compatibility and eco-footprint
- | Energy efficiency and low emissions
- | Longevity and optimized total cost of ownership

Certified Quality Management

ISO 9001

Certified Environmental Management

ISO 14001

Rohde & Schwarz GmbH & Co. KG

www.rohde-schwarz.com

Rohde & Schwarz training

www.training.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 82 28 | +86 400 650 58 96
customersupport.china@rohde-schwarz.com

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Data without tolerance limits is not binding | Subject to change

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