R&S®FPC
SPECTRUM ANALYZER

Specifications



Specifications
Version 07.00

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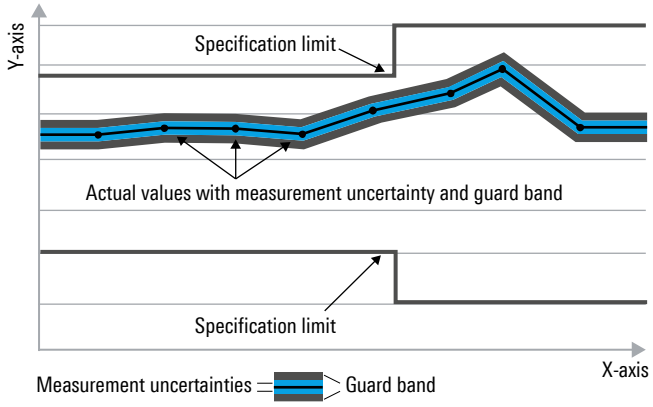
Warranty and service **13**

Definitions

General
Product data applies under the following conditions:

- Three hours of storage at ambient temperature followed by 30 minutes of 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.



Non-traceable specifications with limits (n. trc.)
Represent product performance that is specified and tested as described under “Specifications with limits” above. However, product performance in this case cannot be warranted due to the lack of measuring equipment traceable to national metrology standards. In this case, measurements are referenced to standards used in the Rohde & Schwarz laboratories.

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.

Device settings and GUI parameters are designated with the format “parameter: value”.

Non-traceable specifications with limits, typical data as well as nominal and measured values are not warranted by Rohde & Schwarz.

In line with the 3GPP standard, chip rates are specified in million chips per second (Mcps), whereas bit rates and symbol rates are specified in billion bit per second (Gbps), million bit per second (Mbps), thousand bit per second (kbps), million symbols per second (Msps) or thousand symbols per second (ksps), and sample rates are specified in million samples per second (Msample/s). Gbps, Mcps, Mbps, Msps, kbps, ksps and Msample/s are not SI units.

Specifications

Frequency

Frequency range	R&S®FPC1000/R&S®FPC1500	5 kHz to 1 GHz
	with R&S®FPC-B2 option installed	5 kHz to 2 GHz
	with R&S®FPC-B2 and R&S®FPC-B3 options installed	5 kHz to 3 GHz
Frequency resolution		1 Hz

Reference frequency, internal		
Aging per year		1×10^{-6}
Temperature drift	0 °C to +30 °C	1×10^{-6}
	+30 °C to +50 °C	3×10^{-6}
Achievable initial calibration accuracy		5×10^{-7}
Total reference uncertainty		(time since last adjustment × aging rate) + temperature drift + calibration accuracy

Frequency readout		
Marker resolution		0.1 Hz
Uncertainty		±(marker frequency × reference uncertainty + 10 % × resolution bandwidth + ½ (span / (sweep points – 1)) + 1 Hz)
Number of sweep (trace) points		1183
Marker tuning frequency step size		span / 1182
Frequency counter resolution		0.1 Hz
Count uncertainty	SNR > 25 dB	±(frequency × reference uncertainty + ½ (last digit))
Frequency span		0 Hz, 10 Hz to 1 GHz
	with R&S®FPC-B2 option installed	0 Hz, 10 Hz to 2 GHz
	with R&S®FPC-B2 and R&S®FPC-B3 options installed	0 Hz, 10 Hz to 3 GHz
Span uncertainty		1 % (nom.)

Spectral purity SSB phase noise		f = 500 MHz
Carrier offset	30 kHz	< –88 dBc (1 Hz), –92 dBc (1 Hz) (typ.)
	100 kHz	< –98 dBc (1 Hz), –103 dBc (1 Hz) (typ.)
	1 MHz	< –120 dBc (1 Hz), –125 dBc (1 Hz) (typ.)

Sweep time

Sweep time	span = 0 Hz	100 µs to 100 s
	10 Hz ≤ span ≤ 600 MHz	20 ms to 1000 s
	span > 600 MHz	(20 ms × span / 600 MHz) to 1000 s
Uncertainty	span = 0 Hz	1 % (nom.)
	span ≥ 10 Hz	3 % (nom.)

Bandwidth

Resolution bandwidths		
Range	–3 dB bandwidth	1 Hz to 3 MHz in 1/3 sequence
Bandwidth accuracy	1 Hz ≤ RBW ≤ 300 kHz	< 5 % (nom.)
	300 kHz < RBW ≤ 1 MHz	< 10 % (nom.)
Selectivity 60 dB:3 dB	Gaussian type filters	< 5 (nom.)
Video filters		
Range	–3 dB bandwidth	1 Hz to 3 MHz in 1/3 sequence

Level

Display range		displayed noise floor to +30 dBm
Maximum rated input level		
DC voltage		50 V
CW RF power	RF input	33 dBm (= 2 W)
	RF output (R&S®FPC1500 only)	23 dBm (= 0.2 W)
Peak RF power	RF input, duration < 3 s	36 dBm (= 4 W)
	RF output, duration < 3 s (R&S®FPC1500 only)	26 dBm (= 0.4 W)
Maximum pulse voltage		150 V
Maximum pulse energy	pulse width 10 µs	10 mWs
Intermodulation		
Third order intercept (TOI)	intermodulation-free dynamic range, signal level 2 × –20 dBm, RF attenuation = 0 dB, RF preamplifier: off	
	f_{in} = 1 GHz	+7 dBm (meas.)
	f_{in} = 2.4 GHz	+10 dBm (meas.)
	intermodulation-free dynamic range, signal level 2 × –20 dBm, RF attenuation = 10 dB, RF preamplifier: off	
	f_{in} = 1 GHz	+17 dBm (meas.)
	f_{in} = 2.4 GHz	+20 dBm (meas.)
Second harmonic intercept (SHI)	RF attenuation = 0 dB, RF preamplifier: off, signal level = –40 dBm	
	f_{in} = 20 MHz to 1.5 GHz	–60 dBc (nom.)
Displayed average noise level	0 dB RF attenuation, termination 50 Ω, RBW = 100 Hz, VBW = 10 Hz, sample detector, log scaling, normalized to 1 Hz	
	R&S®FPC1000/R&S®FPC1500 preamplifier: off	
	1 MHz to 10 MHz	< –127 dBm, –135 dBm (typ.)
	10 MHz to 2 GHz	< –142 dBm, –150 dBm (typ.)
	2 GHz to 3 GHz	< –138 dBm, –147 dBm (typ.)
	R&S®FPC1000/R&S®FPC1500 preamplifier: on (requires R&S®FPC-B22 option)	
	1 MHz to 10 MHz	< –147 dBm, –157 dBm (typ.)
	10 MHz to 2 GHz	< –158 dBm, –165 dBm (typ.)
	2 GHz to 3 GHz	< –155 dBm, –163 dBm (typ.)

Immunity to interference, nominal values		
Image frequencies	f_{in} – 2 × 30.15 MHz	< –70 dBc (nom.)
	f_{in} – 2 × 830.15 MHz	< –65 dBc (nom.)
	f_{in} – 2 × 4042.65 MHz	–60 dBc (nom.)
Intermediate frequencies	30.25 MHz, 830.25 MHz, 4042.65 MHz	< –70 dBc (nom.)
Other interfering signals, signal level – RF attenuation < –30 dBm	spurious at f_{in} – 2021.325 MHz	< –60 dBc (nom.)
Other interfering signals, related to local oscillators	$\Delta f \geq 300$ kHz (f: receive frequency)	< –60 dBc (nom.)
Residual spurious response	input matched with 50 Ω, without input signal, RBW ≤ 30 kHz, f ≥ 3 MHz, RF attenuation = 0 dB, Wi-Fi function disabled	< –90 dBm (nom.)
Level display		
Logarithmic level axis		1/2/5/10/20/50/100 dB, 10 divisions
Linear level axis		0 % to 100 %, 10 divisions
Number of traces		2
Trace detectors		max. peak, min. peak, auto peak, sample, RMS
Trace functions		clear/write, max. hold, min. hold, average, view
Setting range of reference level		–130 dBm to +30 dBm
Units of level axis		dBm, dBmV, dBµV, V, W

Level measurement uncertainty		
Absolute level uncertainty at 100 MHz	+20 °C to +30 °C	< 0.3 dB
Frequency response (+20 °C to +30 °C)	100 kHz ≤ f < 10 MHz	< 1.5 dB (nom.)
	10 MHz ≤ f ≤ 3 GHz	< 1 dB
Attenuator uncertainty		< 0.3 dB
Uncertainty of reference level setting		< 0.1 dB (nom.)
Display nonlinearity	SNR > 16 dB, 0 dB to –50 dB, logarithmic level display	< 0.3 dB
Bandwidth switching uncertainty	reference: RBW = 10 kHz	< 0.1 dB (nom.)
Total measurement uncertainty	95 % confidence level, +20 °C to +30 °C, SNR > 16 dB, 0 dB to –50 dB below reference level, RF attenuation: auto	
	10 MHz ≤ f ≤ 3 GHz	< 1.25 dB, 0.5 dB (typ.)

Trigger functions

Trigger		
Trigger source		free run, video, external, I/Q power (R&S®FPC-K7 ASK/FSK only)
External trigger level threshold	low → high transition	2.4 V
	high → low transition	0.7 V
	maximum	3.0 V

Tracking generator and independent source generator functions (R&S®FPC1500 only)

Frequency range	R&S®FPC1500	5 kHz to 1 GHz
	with R&S®FPC-B2 option installed	5 kHz to 2 GHz
	with R&S®FPC-B2 and R&S®FPC-B3 options installed	5 kHz to 3 GHz
Measurements	tracking generator mode	generator is coupled to swept frequency of spectrum analyzer to perform transmission measurements; a frequency offset can be set
	independent source mode	generator is coupled to center frequency of spectrum analyzer or independent settable
Output power	2 MHz to 3 GHz	0 dBm to –30 dBm (nom.)
Frequency response	2 MHz to 3 GHz	±3 dB (nom.)
Absolute level uncertainty at 100 MHz	+20 °C to +30 °C, at –10 dBm output power	±1 dB (nom.)

Inputs and outputs

RF input		
Impedance		50 Ω (nom.)
Connector		N female
VSWR	5 kHz ≤ f ≤ 1 GHz	< 1.5 (nom.)
	1 GHz < f ≤ 3 GHz	< 2 (nom.)
Input attenuator	RF input only	0 dB to 40 dB in 5 dB steps
RF output (R&S®FPC1500 only)		
Impedance		50 Ω (nom.)
Connector		N female
VSWR	5 kHz ≤ f ≤ 1 GHz	< 1.5 (nom.)
	1 GHz < f ≤ 3 GHz	< 2 (nom.)
AF output		
AF demodulation types		AM and FM
Connector		3.5 mm mini jack
Output impedance		32 Ω (nom.)
Voltage (open circuit)		V (RMS) adjustable from 0 V to > 100 mV
External reference, external trigger		
Connector		BNC, 50 Ω
Mode		external reference, external trigger
External reference	required level	0 dBm
	frequency	10 MHz
External trigger threshold	low → high transition	2.4 V
	high → low transition	0.7 V

General data

Power supply		
AC supply	input specifications	100 V to 240 V AC, 50 Hz to 60 Hz, 0.6 A to 0.4 A
Power consumption	R&S®FPC1000	14 W (nom.)
	R&S®FPC1500	19 W (nom.)
Safety		IEC 61010-1, EN 61010-1, UL 61010-1, CAN/CSA-C22.2 No. 61010.1
Test marks		VDE, CSA, KC
Manual operation		
Languages		Chinese, English, French, German, Italian, Hungarian, Japanese, Korean, Portuguese, Russian, Spanish
Remote control		
Command set		SCPI 1997.0
LAN interface		10/100BASE-T, RJ-45
USB		type B plug, version 2.0
Display		
Size		10.1"
Resolution		1366 × 768 pixel
Pixel errors		< 2 pixel
Audio		
Speaker		internal
USB interface		type A plug, version 2.0
	number of interfaces	2
Mass memory		
Mass memory		USB flash drive (not supplied), size ≤ 4 Gbyte, USB version 1.1 or 2.0
Data storage	internal	> 256 instrument settings and traces
	on USB flash drive, ≥ 1 Gbyte	> 5000 instrument settings and traces
Environmental conditions		
Temperature	operating temperature range	+10 °C to +40 °C
	storage temperature range	–20 °C to +70 °C
Climatic loading	relative humidity	+25 °C/+40 °C at 85 % relative humidity, in line with EN 60068-2-30
Mechanical resistance		
Vibration	sinusoidal	EN 60068-2-6
	random	EN 60068-2-64
Shock		40 g shock spectrum, in line with MIL-STD-810F, method 516.4 procedure 1, EN 60068-2-27
EMC		in line with European EMC Directive 2014/30/EU including • CISPR 11/EN 55011/group 1 class A (emission), • EN 61326 table 2 (immunity, industrial)
EU legislation	EU: in line with Data Act – Regulation (EU) 2023/2854	for details, see user documentation
Recommended calibration interval		1 year
Dimensions (W × H × D)	without feet	396 mm × 178 mm × 147 mm (15.6 in × 7.0 in × 5.8 in)
	including feet	396 mm × 185 mm × 156 mm (15.6 in × 7.3 in × 6.1 in)
Weight		3 kg (6.6 lb)

Options

R&S®FPC-K7 modulation analysis

The specifications below apply to the R&S®FPC1000 and the R&S®FPC1500. They are based on the specifications of the R&S®FPC1000 and R&S®FPC1500, have not been checked separately and are not verified during instrument calibration.

Measurement of analog modulation signals		
Center frequency		10 MHz to 3 GHz
Demodulation bandwidth		2 MHz, 1 MHz, 500 kHz, 300 kHz, 200 kHz, 100 kHz, 50 kHz, 30 kHz, 20 kHz, 10 kHz (nom.)
Bandwidth accuracy		< ±5 % (nom.)
Display	AM	carrier power, carrier frequency offset, AM modulation depth, modulation frequency, THD, SINAD
	FM	carrier power, carrier frequency offset, FM deviation, modulation frequency, THD, SINAD

Carrier power		
Carrier power measurement accuracy		add 0.2 dB, see section “Level measurement uncertainty”
Display resolution		0.1 dB

AF (modulation frequency) [1]		
Range	AM	20 Hz to 100 kHz (nom.)
	FM	20 Hz to 200 kHz (nom.)
Resolution		1 Hz
Measurement uncertainty	1 kHz ≤ AF ≤ 200 kHz	±1 % of measured value (nom.)
	20 Hz ≤ AF < 1 kHz	±1 Hz (nom.)
AF filters		
Lowpass	audio decimation	bypass, 1/10, 1/30, 1/100 (nom.)
Deemphasis	FM demodulation, demodulation bandwidth: 200 kHz and 300 kHz	off, 50 µs, 75 µs (nom.)

AM demodulation [2]		
Measurement range	modulation depth	5 % to 95 % (nom.)
Modulation depth uncertainty		±4 % (nom.)

FM demodulation [3]		
Measurement range	frequency deviation	10 kHz to 400 kHz (nom.), max. 0.4 × demodulation bandwidth
Deviation uncertainty		±(0.04 × (AF + deviation)) (nom.)

Modulation distortion [1, 2, 3]		
Measurement functions		THD, SINAD
Measurement range	THD	–50 dB to 0 dB
	SINAD, AM	0 dB to 50 dB
	SINAD, FM	0 dB to 40 dB
Display resolution		0.1 dB
Measurement uncertainty		1 dB (nom.)
AF frequency range		20 Hz to 100 kHz (nom.)

[1] Minimum and maximum detectable audio frequency and harmonics depend on the demodulation bandwidth and audio filter settings.

[2] Modulation frequency: 1 kHz sine, AM modulation depth: 50 %, carrier level: 0 dBm, center frequency = 499 MHz, reference level: 6 dBm, demodulation bandwidth = 20 kHz, SNR > 60 dB, audio filter: bypass.

[3] Modulation frequency: 1 kHz sine, FM deviation = 75 kHz, carrier level: 0 dBm, center frequency = 499 MHz, reference level: 6 dBm, demodulation bandwidth = 300 kHz, SNR > 60 dB, audio filter = 1/10, deemphasis: off.

Measurement of digital modulation signals (ASK, FSK)		
Center frequency		10 MHz to 3 GHz
Demodulation bandwidth		400 Hz to 2 MHz, auto-set corresponding to signal and demodulation bandwidth requirements
Display	ASK diagram	eye diagram, symbols, modulation depth, modulation error
	ASK numerical results	carrier power, carrier frequency error, modulation depth and index, modulation error
	FSK diagram	eye diagram, symbols, modulation deviation, modulation error
	FSK numerical results	carrier power, carrier frequency error, frequency deviation, modulation error, magnitude error

Demodulation parameters		
Modulation and demodulation filters	transmit filter	• root raised cosine (RRC) • raised cosine (RC) • Gaussian (GAUSS) • unfiltered [4] measurement and reference filters internally adapted to signal parameters
Points/symbol		4, 8, 16; internally adapted to signal parameters
Filter length		internally adapted to signal parameters
Demodulation length		20 symbols to max. 1000 symbols (at 4 points/symbol)
Data processing		burst on/off

Carrier power		
Carrier power measurement accuracy		add 0.2 dB, see section “Level measurement uncertainty”
Carrier power range		–30 dBm to +20 dBm (nom.)
Display resolution		0.1 dB

ASK demodulation [5]		
Measurement range	symbol rate	1 kHz to 100 kHz (nom.)
	modulation depth	5 % to 95 % (nom.)
Modulation depth uncertainty		±4 % (nom.)
Display resolution		0.1 %

FSK demodulation [6]		
Measurement range	symbol rate	1 kHz to 100 kHz (nom.)
	frequency deviation	1 kHz to 400 kHz (nom.)
	symbol rate	
	1 kHz to 20 kHz	1 ≤ beta [7] ≤ 20
	> 20 kHz to 50 kHz	1 ≤ beta ≤ 8
	> 50 kHz to 100 kHz	1 ≤ beta ≤ 4
Accuracy		±4 % (nom.)
Display resolution		0.1 Hz

[4] Reference signal is generated with a Gaussian filter, BT = 3.

[5] ASK modulation index: 50 %, symbol rate = 100 kHz, Gaussian filter BT = 1.0, modulation signal: PSBS.

[6] FSK modulation deviation: 100 kHz, symbol rate = 100 kHz, Gaussian filter BT = 1.0, modulation signal: PRBS.

[7] Beta is the ratio of frequency deviation to symbol rate.

R&S®FPC-K43 receiver mode

The specifications below apply to the R&S®FPC1000 and the R&S®FPC1500. They are based on the specifications of the R&S®FPC1000 and R&S®FPC1500, have not been checked separately and are not verified during instrument calibration.

Measurements		• fixed frequency
		• channel scan
		• channel scan
		  − user-defined channel list
		• EMI precompliance
		  − CISPR bandwidths
		  − CISPR detectors

Frequency range		see base unit
Measurement modes		fixed frequency, frequency scan, channel scan
Frequency scan step size		
Scan step size		100 Hz to maximum frequency
Maximum number of steps		10000
Channel scan		
Channel spacing		user-definable
Maximum number of channels		10000
Resolution bandwidths		
Range	–3 dB bandwidth	1 Hz to 3 MHz in 1/3 sequence
Detectors	CISPR bandwidths (–6 dB)	200 Hz, 9 kHz, 120 kHz, 1 MHz
		max. peak, average, RMS, quasi-peak
Level		see base unit

R&S®FPC-K55 advanced measurements

Measurements		• spectrogram • channel power • occupied bandwidth • third order intercept • harmonic distortion • TDMA power • AM modulation depth

R&S®FPC-B200 Wi-Fi connection support

Features		support for external Wi-Fi hardware via USB port; external Wi-Fi hardware available as R&S®FPC-Z2 option
Operating modes		client mode

R&S®FPC-K42 vector network analyzer measurements (with R&S®FPC1500 only)

Individual measurements		• reflection (S_{11}), transmission (S_{21}) • one-port cable loss • distance-to-fault

Measurement setup		
Frequency range	R&S®FPC1500	2 MHz to 1 GHz
	with R&S®FPC-B2 option installed	2 MHz to 2 GHz
	with R&S®FPC-B2 and R&S®FPC-B3 options installed	2 MHz to 3 GHz
Port output power		–10 dBm (nom.)
Measurement bandwidth		100 Hz to 100 kHz in 1/3 sequence
Trace modes		clear/write, average

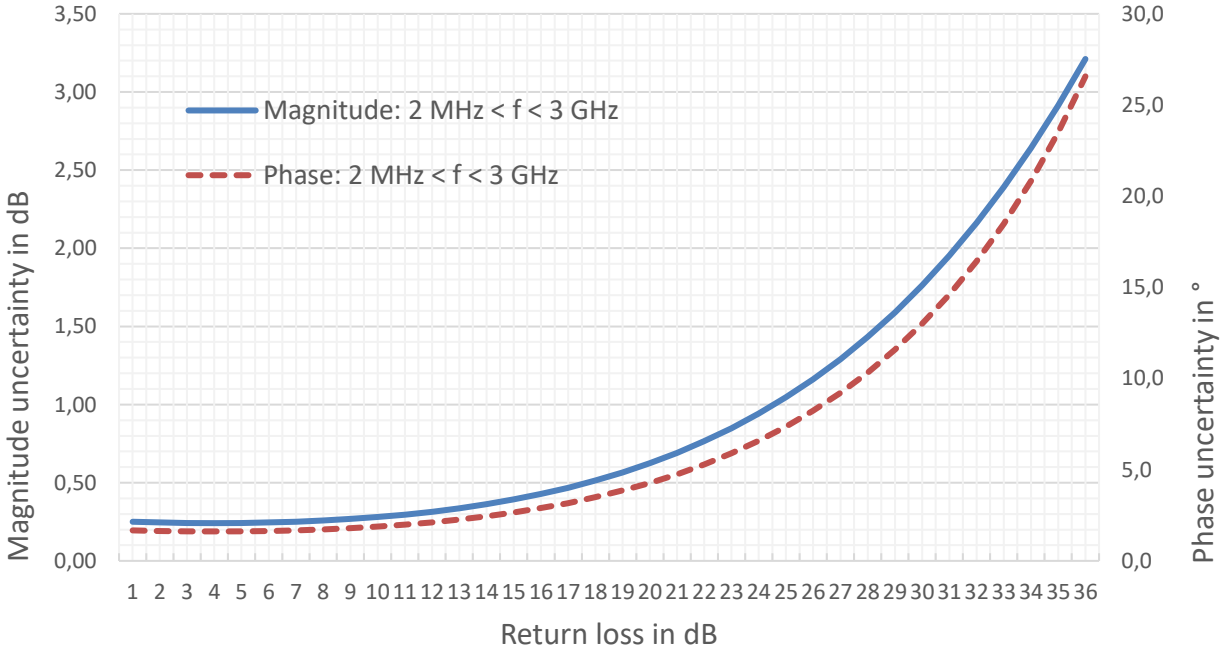
Transmission measurement S_{21}		
Result formats		magnitude
Data points	selectable	101 to 1201
Magnitude		
Range		1/2/5/10/20/50/100/120/150 dB, linear 100 %
Resolution		0.1 dB
Dynamic range		80 dB (nom.)

Reflection measurement S_{11}		
Result formats		magnitude, VSWR, distance-to-fault, Smith chart, phase
Data points	selectable	101 to 2501
Magnitude		
Range		1/2/5/10/20/50/100/120/150 dB, linear 100 %
Resolution		0.1 dB
VSWR		
Range	selectable	1 to 1.5, 2, 6, 11, 21 or 71
Measurement speed		0.3 ms per point
Corrected directivity with R&S®ZN-Z103	2 MHz ≤ f ≤ 3 GHz	> 42 dB (nom.)
Corrected test port match with R&S®ZN-Z103	2 MHz ≤ f ≤ 3 GHz	> 36 dB (nom.)
Measurement uncertainty with R&S®ZN-Z103		see figure “Uncertainty of reflection measurement”

One-port cable loss measurement		
Result format		magnitude
Data points	selectable	101 to 2501
Range	selectable	1/2/5/10/20/50/100 dB
Resolution		0.1 dB

Distance-to-fault analysis		
Result formats		return loss, VSWR with average and maximum indication
Data points	selectable	101 to 2501
Return loss		
Range		1/2/5/10/20/50/100/120/150 dB, linear 100 %
Resolution		0.1 dB
VSWR		
Range	selectable	1 to 1.5, 2, 6, 11, 21 or 71
Fault resolution in meters		(1.5 × 10^8 × velocity factor/span)
Maximum cable length	depending on cable loss	1500 m (nom.)

Immunity to interference		
Maximum permissible spurious signal	measurement = reflection (S_{11}) / 1 – port cable loss / distance-to-fault analysis	
		+17 dBm (nom.)



Uncertainty of reflection measurements with the R&S®ZN-Z103 calibration unit; temperature range: +18 °C to +25 °C, RBW: 10 Hz, power: –10 dBm.

Ordering information

Designation	Type	Order No.
Spectrum analyzer, 5 kHz to 1 GHz	R&S®FPC1000	1328.6660.02
Spectrum analyzer, with tracking generator, 5 kHz to 1 GHz	R&S®FPC1500	1328.6660.03
Accessories supplied: power cable, USB cable for connection to PC		
Options		
Frequency upgrade to 2 GHz	R&S®FPC-B2	1328.6677.02
Frequency upgrade to 3 GHz (requires R&S®FPC-B2)	R&S®FPC-B3	1328.6683.02
Preamplifier	R&S®FPC-B22	1328.6690.02
Modulation analysis for AM, FM, ASK, FSK	R&S®FPC-K7	1328.6748.02
Receiver mode	R&S®FPC-K43	1328.6754.02
Advanced measurements	R&S®FPC-K55	1328.6760.02
Wi-Fi support [8]	R&S®FPC-B200	1328.6990.02
Vector network analyzer measurements (only for R&S®FPC1500)	R&S®FPC-K42	1328.7396.02
Accessories		
19" rackmount kit	R&S®ZZA-FPC1	1328.7080.02
Soft carrying bag	R&S®RTM-Z3	1305.0289.02
Carrying case	R&S®RTB-Z3	1333.1734.02
Combined Open/Short/50 Ω Load calibration standard, DC to 4 GHz	R&S®FSH-Z29	1300.7510.03
One-port calibration unit (male)	R&S®ZN-Z103	1321.1828.02
Calibration unit, 5 kHz to 4.5 GHz	R&S®ZN-ZE104	1350.8040.04
Teaching kit	R&S®FPC-Z10	1328.7338.02
Wi-Fi USB nano adapter	R&S®FPC-Z2	1328.6260.02

Warranty and service

Warranty		
Base unit		3 years
All other items [9]		1 year
Service options		
	Service plans	**On demand**
Calibration	up to five years [10]	pay per calibration
Warranty and repair	up to five years [10]	standard price repair
Contact your Rohde & Schwarz sales office for further details.		

[8] Instruments with a serial number above 200 000 do not contain internal Wi-Fi hardware support. Requires R&S®FPC-Z2 Wi-Fi USB nano adapter.

[9] For options installed, the remaining base unit warranty applies if longer than 1 year. Exception: all batteries have a 1 year warranty.

[10] For extended periods, contact your Rohde & Schwarz sales office.

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