

Specifications

Specifications apply under the following conditions: 15 minutes warm-up time at ambient temperature, specified environmental conditions met, and calibration cycle adhered to. Data without tolerances: typical values.

Data designated as "nominal": design parameters, i. e. not tested.

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Frequency				
Frequency range		100 kHz to 3 GHz	100 kHz to 6 GHz	10 MHz to 18 GHz
Reference frequency				
Aging		1 ppm/year		
Temperature drift	0 °C to +30 °C +30 °C to +50 °C	2 ppm in addition 2 ppm/10 °C		
Frequency counter				
Resolution		1 Hz		
Counter accuracy	S/N > 25 dB	± (frequency × reference frequency error)		
Frequency span	model .03/.23, model .06/.26 model .13 model .18	0 Hz, 100 Hz to 3 GHz –	– 0 Hz, 100 Hz to 6 GHz –	– – 0 Hz, 100 Hz to 18 GHz
Spectral purity				
SSB phase noise	f = 500 MHz, +20 °C to +30 °C			
30 kHz from carrier		<–85 dBc (1 Hz)		<–85 dBc (1 Hz)
100 kHz from carrier		<–100 dBc (1 Hz)		<–90 dBc (1 Hz)
1 MHz from carrier		<–120 dBc (1 Hz)		<–98 dBc (1 Hz)
Sweep time				
	span = 0 Hz	1 ms to 100 s		
	span > 0 Hz	20 ms to 1000 s, min. 20 ms/600 MHz		
Bandwidths				
Resolution bandwidths (–3 dB)	model .13	1, 3, 10, 30, 100, 200, 300 kHz, 1 MHz		
	model .03/.23, model .06/.26/.18	in addition 100 Hz, 300 Hz		
Tolerance	≤300 kHz	±5 %, nominal		
	1 MHz	±10 %, nominal		
Resolution bandwidths (–6 dB)	with R&S®FSH-K3 option installed	in addition 200 Hz, 9 kHz, 120 kHz, 1 MHz		
Video bandwidths		10 Hz to 1 MHz in 1, 3 steps		

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Amplitude				
Display range		average noise level displayed to +20 dBm		
Maximum permissible DC voltage at RF input		50 V/80 V ¹⁾		50 V
Maximum power		20 dBm, 30 dBm (1 W) for max. 3 minutes		20 dBm
Intermodulation-free dynamic range	third-order IM products, 2 × -20 dBm, reference level = -10 dBm at signal offset ≤2 MHz at signal offset >2 MHz	typ. 66 dB (typ. +13 dBm third-order intercept, TOI)		typ. 54 dBc (typ. +7 dBm TOI)
		60 dB (nominal, +10 dBm TOI) 66 dB (nominal, typ. +13 dBm TOI)		50 dB (nominal, +5 dBm TOI) 50 dB (nominal, +5 dBm TOI)
Displayed average noise level 10 MHz to 50 MHz 50 MHz to 3 GHz 3 GHz to 5 GHz 5 GHz to 6 GHz 6 GHz to 8 GHz 8 GHz to 12 GHz 12 GHz to 16 GHz 16 GHz to 18 GHz	resolution bandwidth 1 kHz, video bandwidth 10 Hz, reference level ≤-30 dBm	<-105 dBm, typ. -114 dBm	<-105 dBm, typ. -112 dBm	<-90 dBm, typ. -98 dBm
		<-105 dBm, typ. -114 dBm	<-105 dBm, typ. -112 dBm	<-110 dBm, typ. -118 dBm
		-	<-103 dBm, typ. -108 dBm	<-110 dBm, typ. -118 dBm
		-	<-96 dBm, typ. -102 dBm	<-110 dBm, typ. -118 dBm
		-	-	<-108 dBm, typ. -113 dBm
		-	-	<-105 dBm, typ. -113 dBm
		-	-	<-100 dBm, typ. -108 dBm
		-	-	<-90 dBm, typ. -102 dBm
With preamplifier 10 MHz to 2.5 GHz 2.5 GHz to 3 GHz 3 GHz to 5 GHz 5 GHz to 6 GHz	only models .03 ²⁾ , .23, .06 and .26	<-120 dBm, typ. -125 dBm	<-120 dBm, typ. -125 dBm	-
		<-115 dBm, typ. -120 dBm	<-115 dBm, typ. -120 dBm	-
		-	<-115 dBm, typ. -120 dBm	-
		-	<-105 dBm, typ. -110 dBm	-
Inherent spurious	reference level ≤-20 dBm, f > 30 MHz, RBW ≤ 100 kHz	<-80 dBm		
Input related spurious Up to 3 GHz 3 GHz to 6 GHz Receive frequency = signal frequency - 2.0156 GHz	R&S®FSH3/6: mixer level ≤-40 dBm, carrier offset >1 MHz for signal frequencies 2 GHz to 3.2 GHz	-70 dBc (nominal)	-70 dBc (nominal)	-
		-	-64 dBc (nominal)	-
Input related spurious 10 MHz to 14 GHz 14 GHz to 18 GHz Receive frequency = signal frequency - 3.9 GHz signal frequency + 0.6 GHz to + 1 GHz signal frequency - 0.6 GHz to - 1 GHz	R&S®FSH18: mixer level ≤-20 dBm carrier offset >1 MHz 10 MHz to 7.6 GHz 7.6 GHz to 18 GHz 10 MHz to 2.8 GHz 2.8 GHz to 7.6 GHz 7.6 GHz to 18 GHz for signal frequencies 3.9 GHz to 18 GHz 7.4 GHz to 7.7 GHz 7.8 GHz to 8.5 GHz	-	-	-60 dBc (nominal)
		-	-	-50 dBc (nominal)
		-	-	-50 dBc (nominal)
		-	-	-30 dBc (nominal)
		-	-	-50 dBc (nominal)
		-	-	-40 dBc (nominal)
		-	-	-45 dBc (nominal)
		-	-	-45 dBc (nominal)
2nd harmonic, receive frequency: Up to 6 GHz 6 GHz to 9 GHz	mixer level -40 dBm	-60 dBc (nominal)	-60 dBc (nominal)	-60 dBc (nominal)
		-	-	-50 dBc (nominal)
Level display				
Reference level		-80 dBm to +20 dBm in steps of 1 dB		
Display range		100 dB, 50 dB, 20 dB, 10 dB, linear		
Display units Logarithmic Linear		dBm, dBμV, dBmV, with transducer also dBμV/m and dBμA/m		
		μV, mV, V, nW, μW, mW, W, with transducer also V/m, mV/m, μV/m and W/m ²		
Traces		1 trace and 1 memory trace		
Trace mathematics		A-B and B-A (trace - memory trace and memory trace - trace)		
Detectors		auto peak, maximum peak, minimum peak, sample, RMS		
	with option R&S®FSH-K3 installed	in addition average and quasi-peak		

¹⁾ 80 V valid as of serial number 100900 (model.03) or 101600 (model.13); model.23, .06, and .26 all serial numbers.

²⁾ As of serial number 101362.

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Level measurement error	reference level to reference level	-50 dB, +20 °C to +30 °C		
	1 MHz to 10 MHz	<1.5 dB, typ. 0.5 dB		-
	10 MHz to 20 MHz	<1.5 dB, typ. 0.5 dB		2 dB
	20 MHz to 6 GHz	<1.5 dB, typ. 0.5 dB		<1.5 dB
	6 GHz to 14 GHz	-		<2.5 dB
	14 GHz to 18 GHz	-		<3 dB
Markers				
Number of markers or delta markers		max. 6		
Marker functions		peak, next peak, minimum, center = marker frequency, reference level = marker level, all markers to peak		
Marker displays		normal (level), noise marker, frequency counter (count)		
Trigger		free-running, video, external		
Audio demodulation		AM (video voltage without AGC) and FM		
Inputs				
RF input		N female		
Input impedance		50 Ω		
VSWR	10 MHz to 3 GHz	<1.5 (nominal)	<1.5 (nominal)	<1.5 (nominal)
	3 GHz to 6 GHz	-	<1.5 (nominal)	<1.5 (nominal)
	6 GHz to 10 GHz	-	-	<2 (nominal)
	10 GHz to 18 GHz	-	-	<3 (nominal)
Trigger/external reference input		BNC female, selectable		
Trigger voltage		TTL		
Reference frequency		10 MHz		
Required level	from 50 Ω	10 dBm		
Outputs				
AF output		3.5 mm mini jack		
Output impedance		100 Ω		
Open-circuit voltage		adjustable up to 1.5 V		
Tracking generator	only models .13, .23, .26	-		
Frequency range		5 MHz to 3 GHz	5 MHz to 6 GHz	-
Output level	model .13	-20 dBm (nominal)		-
	model .23 model .26 f < 3 GHz f > 3 GHz	0 dBm/-20 dBm, selectable		-
Step attenuator	model .26 ³⁾	20 dB step attenuator adjustable in 1 dB steps		-
	model .23 ⁴⁾			-
Output impedance		50 Ω, nominal		
Interfaces				
RS-232-C optical interface ⁵⁾				
Baud rate		1200, 2400, 9600, 19200, 38400, 57600, 115200 baud		
Power sensor		7-contact female connector (type Binder 712)		

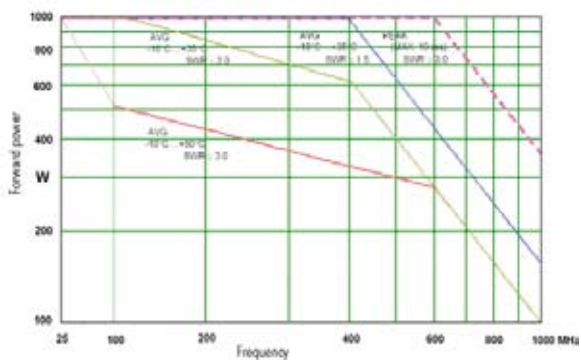
³⁾ As of serial no. 100500.

⁴⁾ As of serial no. 102314.

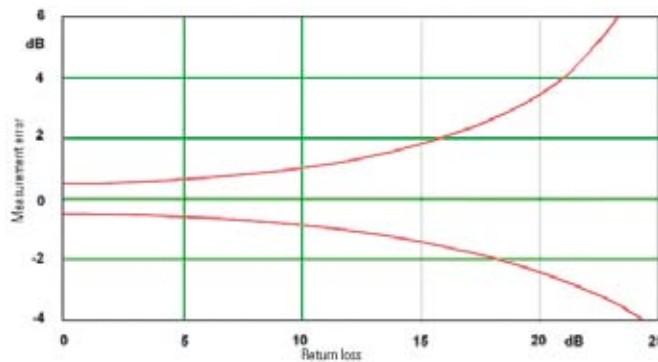
⁵⁾ Standard accessory: optical USB cable.

	R&S®FSH3	R&S®FSH6	R&S®FSH18
Accessories			
R&S®FSH-Z1 and R&S®FSH-Z18 power sensors			
Frequency range			
R&S®FSH-Z1	10 MHz to 8 GHz		
R&S®FSH-Z18	10 MHz to 18 GHz		
VSWR			
10 MHz to 30 MHz	<1.15		
30 MHz to 2.4 GHz	<1.13		
2.4 GHz to 8 GHz	<1.20		
8 GHz to 18 GHz	<1.25		
Maximum input power		average power peak power (<10 μs, 1% duty cycle)	400 mW (+26 dBm) 1 W (+30 dBm)
Measurement range		200 pW to 200 mW (-67 dBm to +23 dBm)	
Signal weighting		average power	
Effect of harmonics Effect of modulation		<0.5% (0.02 dB) at harmonic ratio of 20 dBc <1.5% (0.07 dB) for continuous digital modulation	
Absolute measurement uncertainty		sine signals, no zero offset	
10 MHz to 8 GHz	+15 °C to +35 °C 0 °C to +50 °C	<2.5% (0.11 dB) <4.5% (0.19 dB)	
8 GHz to 18 GHz	+15 °C to +35 °C 0 °C to +50 °C	<3.5% (0.15 dB) <5.2% (0.22 dB)	
Zero offset after zeroing		<150 pW	
Dimensions (W × H × D)		48 mm × 31 mm × 170 mm (1.89 in × 1.22 in × 6.69 in), connecting cable 1.5 m (59.05 in)	
Weight		<0.3 kg	
R&S®FSH-Z14 directional power sensor			
Frequency range		25 MHz to 1 GHz	
Power measurement range		30 mW to 300 W	
VSWR referenced to 50 Ω		<1.06	
Power-handling capacity		depending on temperature and matching (see diagram on page 15)	100 W to 1000 W
Insertion loss		<0.06 dB	
Directivity		>30 dB	
Average power			
Power measurement range CW, FM, PM, FSK, GMSK Modulated signals		CF: ratio of peak envelope power to average power	30 mW to 300 W 30 mW to 300 W/CF
Measurement uncertainty 25 MHz to 40 MHz 40 MHz to 1 GHz		sine signal, +18 °C to +28 °C, no zero offset	4.0% (0.17 dB) of measured value 3.2% (0.14 dB) of measured value
Zero offset		after zeroing	±4 mW
Range of typical measurement error with modulation FM, PM, FSK, GMSK AM (80%) two equal-power CW carriers EDGE, TETRA		if standard is selected on the R&S®FSH	0% of measured value (0 dB) ±3% of measured value (±0.13 dB) ±2% of measured value (±0.09 dB) ±0.5% of measured value (±0.02 dB)

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Temperature coefficient 25 MHz to 40 MHz 40 MHz to 1 GHz		0.40 %/K (0.017 dB/K) 0.25 %/K (0.011 dB/K)		
Peak envelope power				
Power measurement range for video bandwidth 4 kHz 200 kHz 600 kHz		0.4 W to 300 W 1 W to 300 W 2 W to 300 W		
Measurement uncertainty	+18 °C to +28 °C	same as for average power, plus effect of peak hold circuit		
Accuracy of peak hold circuit for burst signals Duty cycle ≤ 0.1 and repetition rate ≥ 100/s 20/s ≤ repetition rate < 100/s 0.001 ≤ duty cycle < 0.1	video bandwidth 4 kHz 200 kHz 600 kHz	±(3 % of measured value + 0.05 W) at burst width > 200 μs ±(3 % of measured value + 0.20 W) at burst width > 4 μs ±(7 % of measured value + 0.40 W) at burst width > 2 μs in addition ±(1.6 % of measured value + 0.15 W) in addition ±0.10 W		
Temperature coefficient 25 MHz to 40 MHz 40 MHz to 1 GHz		0.50 %/K (0.022 dB/K) 0.35 %/K (0.015 dB/K)		
Load matching				
Matching measurement range Return loss VSWR		0 dB to 23 dB >1.15		
Minimum forward power	specs met at ≥ 0.4 W	0.06 W		



Power-handling capacity

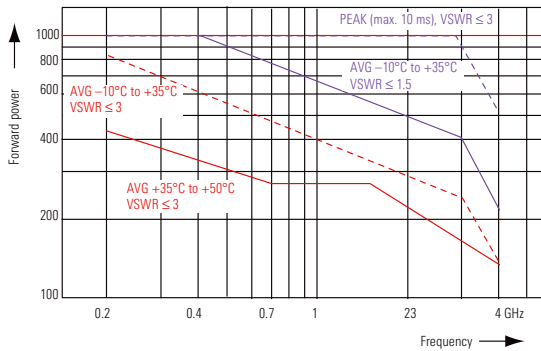


Limits of measurement uncertainty for matching measurements

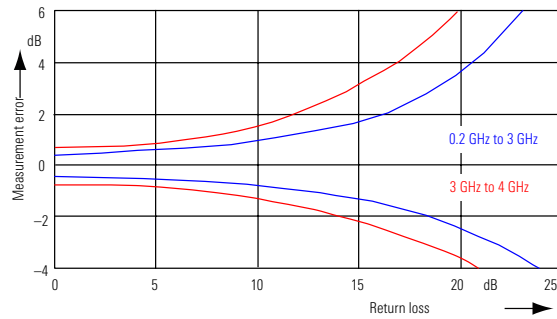
Dimensions (W × H × D)		120 mm × 95 mm × 39 mm (4.72 in × 3.74 in × 1.53 in) connecting cable 1.5 m (59.05 in)
Weight		0.65 kg (1.43 lb)

		R&S®FSH3	R&S®FSH6	R&S®FSH18
R&S®FSH-Z44 directional power sensor				
Frequency range		200 MHz to 4 GHz		
Power measurement range		30 mW to 120 W (300 W with unmodulated envelope)		
VSWR referenced to 50 Ω		200 MHz to 3 GHz <1.07 3 GHz to 4 GHz <1.12		
Power-handling capacity	depending on temperature and matching (see diagram on page 17)	120 W to 1000 W		
Insertion loss		200 MHz to 1.5 GHz <0.06 dB 1.5 GHz to 4 GHz <0.09 dB		
Directivity		200 MHz to 3 GHz >30 dB 3 GHz to 4 GHz >26 dB		
Signal weighting		average power		
Measurement uncertainty	sine signals, +18 °C to +28 °C, no zero offset	200 MHz to 300 MHz 4 % of measured value (0.17 dB) 300 MHz to 4 GHz 3.2 % of measured value (0.14 dB)		
Zero offset	after zeroing	±4 mW		
Range of typical measurement error with modulation	if standard is selected on the R&S®FSH	0 % of measured value (0 dB) ±3 % of measured value (±0.13 dB) ±1 % of measured value (±0.04 dB) ±2 % of measured value (±0.09 dB) ±2 % of measured value (±0.09 dB) ±2 % of measured value (±0.09 dB)		
Temperature coefficient		200 MHz to 300 MHz 0.40 %/K (0.017 dB/K) 300 MHz to 4 GHz 0.25 %/K (0.011 dB/K)		
Peak envelope power				
Power measurement range	DAB, DVB-T, cdmaOne, CDMA2000®, 3GPP WCDMA other signals at video bandwidth	4 kHz 4 W to 300 W 200 kHz 0.4 W to 300 W 4 MHz 1 W to 300 W 4 MHz 2 W to 300 W		
Measurement uncertainty	+18 °C to +28 °C	same as for average power plus effect of peak hold circuit		
Accuracy of peak hold circuit for burst signals	video bandwidth	4 kHz ±(3 % of measured value + 0.05 W) at burst width ≥100 μs 200 kHz ±(3 % of measured value + 0.20 W) at burst width ≥4 μs 4 MHz ±(7 % of measured value + 0.40 W) at burst width ≥1 μs in addition ±(1.6 % of measured value + 0.15 W) in addition ±0.10 W in addition ±5 % of measured value in addition ±10 % of measured value		
Range of typical measurement error of peak hold circuit for cdmaOne, DAB DVB-T, CDMA2000® 1xRTT, 3GPP WCDMA	4 MHz video bandwidth and standard selected on the R&S®FSH	±(5 % of measured value + 0.4 W) ±(15 % of measured value + 0.4 W)		
Temperature coefficient		200 MHz to 300 MHz 0.50 %/K (0.022 dB/K) 300 MHz to 4 GHz 0.35 %/K (0.015 dB/K)		

	R&S®FSH3	R&S®FSH6	R&S®FSH18
Load matching			
Return loss		0 dB to 23 dB	0 dB to 20 dB
200 MHz to 3 GHz			
3 GHz to 4 GHz			
VSWR		>1.15	>1.22
200 MHz to 3 GHz			
3 GHz to 4 GHz			
Minimum forward power	specs met ≥ 0.2 W	0.03 W	



Power-handling capacity

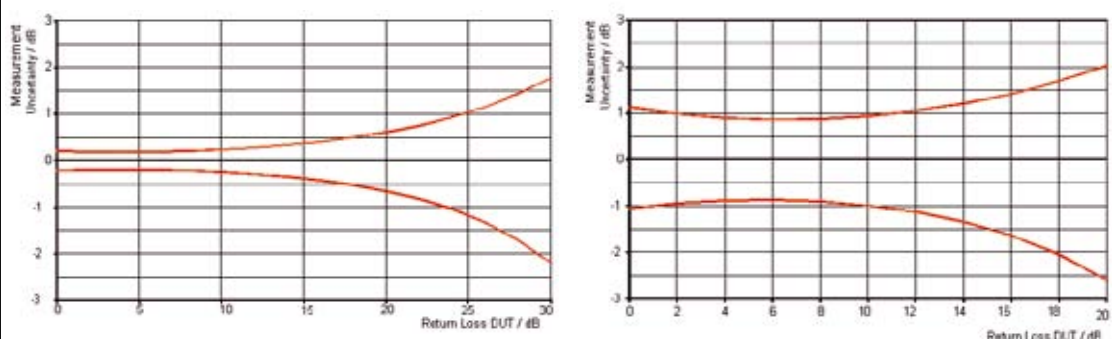


Limits of measurement uncertainty for matching measurements

Dimensions (W × H × D)	120 mm × 95 mm × 39 mm (4.72 in × 3.74 in × 1.53 in) connecting cable 1.5 m (59.05 in)
Weight	0.65 kg (1.43 lb)

		R&S®FSH-Z2	R&S®FSH-Z3
R&S®FSH-Z2/R&S®FSH-Z3 VSWR bridge			
Frequency range		10 MHz to 3 GHz	10 MHz to 6 GHz
Impedance		50 Ω	
VSWR bridge			
Directivity		typ. 30 dB	typ. 16 dB
10 MHz to 30 MHz		typ. 30 dB	>20 dB, typ. 28 dB
30 MHz to 1 GHz		typ. 25 dB	>20 dB, typ. 28 dB
1 GHz to 3 GHz		–	>16 dB, typ. 25 dB
3 GHz to 6 GHz			
Directivity, corrected	R&S®FSH-K2 option	typ. 40 dB	typ. 40 dB
2 MHz to 10 MHz		typ. 43 dB	typ. 40 dB
10 MHz to 3 GHz		–	typ. 37 dB
3 GHz to 6 GHz			
Return loss at test port		typ. 20 dB	>12 dB, typ. 18 dB
10 MHz to 50 MHz		typ. 20 dB	>16 dB, typ. 22 dB
50 MHz to 3 GHz		–	>16 dB, typ. 22 dB
3 GHz to 6 GHz			
Return loss at test port, corrected	R&S®FSH-K2 option	typ. 35 dB	typ. 40 dB
2 MHz to 3 GHz		–	typ. 37 dB
3 GHz to 6 GHz			
Insertion loss		typ. 9 dB	typ. 9 dB
Test port		–	typ. 4 dB
Bypass			
DC bias			
Max. input voltage		–	50 V
Max. input current		–	300 mA, 600 mA ⁶⁾
Type of connector		–	BNC female
Connectors			
Generator input/RF output		N male	
Test port		N female	
Control interface		7-contact connector (type Binder)	
Calibration standards			
Short/open		N male	R&S®FSH-Z28
50 Ω load		N male	
Impedance		50 Ω	
Return loss		>43 dB	>40 dB, typ. 46 dB
DC to 3 GHz		–	>37 dB, typ. 43 dB
3 GHz to 6 GHz			
Power-handling capacity		1 W	1 W
General data			
Power consumption		–	3 mW (nominal)
Dimensions (W × H × D)		169 mm × 116 mm × 30 mm 6.65 in × 4.57 in × 1.18 in	149 mm × 144 mm × 45 mm 5.87 in × 5.67 in × 1.77 in
Weight		485 g (1.07 lb)	620 g (1.37 lb)
Distance-to-fault measurement			
Display		301 pixel	
Maximum resolution, distance to fault	maximum zoom	cable length/1023 pixel	
Display range		10, 5, 2, 1, 0.1 dB/DIV, linear	
Return loss		1 to 2 and 1 to 6, 1 to 10, 1 to 20	
VSWR		with R&S®FSH-K2 option in addition 1 to 1.2 und 1 to 1.5	
Reflection factor (ρ)		0 to 1, 0 to 0.1, 0 to 0.01, 0 to 0.001	
milliRHO (mp)		0 to 1000, 0 to 100, 0 to 10, 0 to 1	
Cable length	depending on cable loss	3 m to max. 1000 m	
Maximum permissible spurious signal		1 dB compression point of 1st mixer typ. +10 dBm IF overload at reference level typ. +8 dB	

⁶⁾ As of serial no. 100500.

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Transmission measurements (only with R&S®FSH3 models .13, .23 and R&S®FSH6 model .26)				
Frequency range		5 MHz to 3 GHz	5 MHz to 6 GHz	–
Dynamic range				–
10 MHz to 2.2 GHz	scalar mode	typ. 60 dB	typ. 80 dB	
	vector mode, with R&S®FSH-K2 option	typ. 80 dB	typ. 90 dB	
2.2 GHz to 3 GHz	scalar mode	typ. 50 dB	typ. 70 dB	
	vector mode, with R&S®FSH-K2 option	typ. 65 dB	typ. 85 dB	
3 GHz to 5 GHz	scalar mode	–	typ. 40 dB	
	vector mode, with R&S®FSH-K2 option	–	typ. 55 dB	
5 GHz to 6 GHz	scalar mode	–	typ. 35 dB	
	vector mode, with R&S®FSH-K2 option	–	typ. 50 dB	
Reflection measurements (only with R&S®FSH3 models .13, or .23, R&S®FSH6 model .26, and R&S®FSH-Z2)				
Frequency range		10 MHz to 3 GHz	10 MHz to 6 GHz	–
Display range of return loss		10, 20, 50, 100 dB, selectable		–
VSWR display range		1 to 2, 1 to 6, 1 to 10, 1 to 20, selectable with R&S®FSH-K2 option also 1 to 1.2 and 1 to 1.5		–
Reflection factor (ρ) display range		0 to 1, 0 to 0.1, 0 to 0.01, 0 to 0.001		–
milliRHO (mp) display range		0 to 1000, 0 to 100, 0 to 10, 0 to 1		
Measurement uncertainty		see diagrams		
Smith chart	only with R&S®FSH-K2 option			–
Marker format:				
Reflection		dB mag and phase, lin mag and phase, real and imag		–
Impedance		$R+jX, (R+jX)/Z_0$		
Admittance		$G+jB, (G+jB)/Z_0$		
Reference impedance Z_0		10 m Ω to 10 k Ω		–
Zoom function		expansion factor 2, 4, 8		–
 <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Measurement uncertainty with vector measurements (R&S®FSH-K2 option)</p> </div> <div style="text-align: center;"> <p>Measurement uncertainty with scalar measurements</p> </div> </div>				

		R&S®FSH3	R&S®FSH6	R&S®FSH18
Phase measurements (transmission, reflection) (only with R&S®FSH3 models .13, or .23, R&S®FSH6 model .26, and R&S®FSH-K2)				
Frequency range	with R&S®FSH-Z2/-Z3	10 MHz to 3 GHz	10 MHz to 6 GHz	–
Reflection		5 MHz to 3 GHz	5 MHz to 6 GHz	–
Transmission				–
Display range		± 180° (wrap) 0° to 54360° (unwrap)		–
Group delay measurements (only with R&S®FSH3 models .13 or .23, R&S®FSH6 model .26, and R&S®FSH-K2)				
Frequency range	with R&S®FSH-Z2/-Z3	10 MHz to 3 GHz	10 MHz to 6 GHz	–
Reflection		5 MHz to 3 GHz	5 MHz to 6 GHz	–
Transmission				–
Aperture increments		1 to 300		
Display range		10 ns, 20 ns, 50 ns, 100 ns, 200 ns, 500 ns, 1000 ns, selectable		
3GPP FDD code domain power BTS/Node B measurement (only with R&S®FSH-K4 1300.7633.02 and R&S®FSH3 model .23)⁷⁾				
Frequency range		10 MHz to 3 GHz	–	–
Carrier frequency uncertainty		(test case 6.3 in line with 3GPP 25.141)	–	–
Measurement range		±1 kHz	–	–
Measurement uncertainty	SNR > 30 dB	< 50 Hz + $\Delta f_{ref}^{8)}$ ($\sigma = 20$ Hz)	–	–
Total power	SNR > 30 dB	(test case 6.2.1 in line with 3GPP 25.141)		
Measurement range	frequency > 1 MHz +20 °C to +30 °C	–60 dBm < P_{total} < 20 dBm	–	–
Measurement uncertainty	–40 dBm < P_{total} < 20 dBm $P_{REF_LEV} - 30$ dB < P_{total} < $P_{REF_LEV} + 3$ dB	±1.5 dB, typ. 0.5 dB	–	–
CPICH power	SNR > 30 dB	(test case 6.2.2 in line with 3GPP 25.141)	–	–
Measurement range	–40 dBm < P_{total} < 20 dBm	$P_{total} - 20$ dB < P_{CPICH} < P_{total}	–	–
Measurement uncertainty	– P_{total} –20 dBm < P_{CPICH} < P_{total}	±1.5 dB, typ. 0.5 dB	–	–
P-CCPCH power	SNR > 30 dB			
Measurement range	–40 dBm < P_{total} < 20 dBm	$P_{total} - 40$ dB < P_{PCCPCH} < P_{total}	–	–
Measurement uncertainty	$P_{total} - 20$ dBm < P_{PCCPCH} < P_{total}	±1.5 dB, typ. 0.5 dB	–	–
PSCH/SSCH power	SNR > 30 dB			
Measurement range	–40 dBm < P_{total} < 20 dBm	$P_{total} - 30$ dB < P_{SCH} < P_{total}	–	–
Measurement uncertainty	$P_{total} - 20$ dBm < P_{PSCH} < P_{total}	±2.5 dB, typ. 1.5 dB	–	–
Symbol EVM				
Measurement range		3% < EVM_{symbol} < 25%	–	–
Measurement uncertainty	3% < EVM_{symbol} < 10%	typ. ±2.5%	–	–
	10% < EVM_{symbol} < 20%	typ. ±3%	–	–
Residual EVM _{symbol}		typ. 3%	–	–
3GPP FDD scrambling code detection				
Frequency range	±1 kHz	10 MHz to 30 MHz	–	–
Single scrambling code detection				
Calculation time		24 s	–	–
CPICH E_c/I_0		> –18 dB ⁹⁾	–	–
Multiple scrambling code detection				
Max. number of scrambling codes		8	–	–
Calculation time		57 s	–	–
CPICH E_c/I_0		> –21 dB ⁹⁾	–	–
CPICH power measurement uncertainty	–40 dBm < P_{total} < 20 dBm	±2,5 dB	–	–

⁷⁾ As of serial no. 103500.

⁸⁾ Δf_{ref} = uncertainty of reference frequency.

⁹⁾ Probability of detection >50% with test model 1.16 in line with 3GPP TS 25.141 test specifications.

	R&S®FSH3	R&S®FSH6	R&S®FSH18
General data			
Display	transflective 14 cm (5.7") LC color display		
Resolution	320 × 240 pixel		
Memory Settings and traces	CMOS RAM up to 256		
Environmental conditions			
Temperature			
Operating temperature range R&S®FSH powered from internal battery R&S®FSH powered from AC power supply	0 °C to +50 °C 0 °C to +40 °C		
Storage temperature range	-20 °C to +60 °C		
Battery charging mode	0 °C to +40 °C		
Climatic conditions			
Relative humidity	95 % at +40 °C (IEC 60068)		
IP class of protection	51		
Mechanical resistance			
Vibration, sinusoidal	in line with EN 60068-2-1, EN 61010-1 5 Hz to 55 Hz: max 2 g, 55 Hz to 150 Hz: 0.5 g constant, 12 minutes per axis		
Vibration, random	in line with EN 60068-2-64, 10 Hz to 500 Hz, 1.9 g, 30 minutes per axis		
Shock	in line with EN 60068-2-27, 40 g shock spectrum		
RFI suppression	in line with EMC directive of EU (89/336/EEC) and German EMC legislation		
Immunity to radiated interference Level display at 10 V/m (reference level ≤-10 dBm) Input frequency IF Other frequencies	10 V/m <-75 dBm (nominal) <-85 dBm (nominal) < displayed noise level		
Power supply			
AC supply	plug-in AC power supply (R&S®FSH-Z33) 100 V AC to 240 V AC, 50 Hz to 60 Hz, 400 mA		
External DC voltage	15 V to 20 V		
Internal battery	NiMH battery, type Fluke BP190 (R&S®FSH-Z32)		
Battery voltage	6 V to 9 V		
Operating time with fullycharged battery	typ. 4 h with tracking generator off, typ. 3 h with tracking generator on		typ. 3 h
Power consumption	typ. 7 W		
Safety	in line with EN 61010-1:2001 (ed.2) EN 61010-1:2001 (second edition) CAN C22.2 No. 61010-1-04 UL 61010-1 No. 1010-1 (second edition) in line with EN 61010-1, UL 3111-1, CSA C22.2 No. 1010-1		
Test mark	VDE, GS, CSA, CSA-NRTL		
Dimensions (W × H × D)	170 mm × 120 mm × 270 mm 6.69 in × 4.72 in × 10.63 in		
Weight	2.5 kg 5.51 lb		