

Accessories

R&S®FSH-Z1 and R&S®FSH-Z18 power sensors

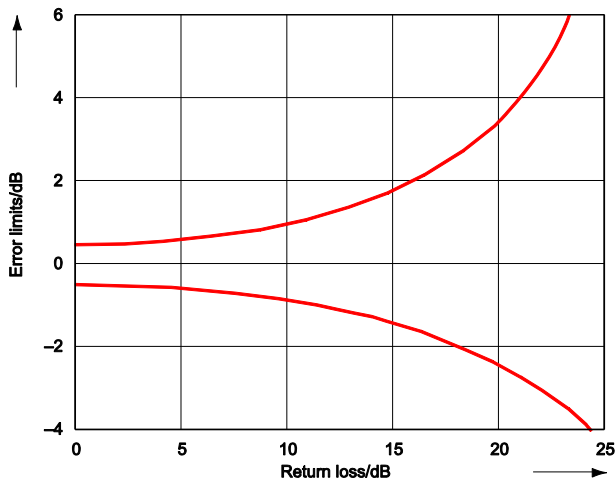
Frequency range	R&S®FSH-Z1	10 MHz to 8 GHz
	R&S®FSH-Z18	10 MHz to 18 GHz
VSWR	10 MHz to 30 MHz	< 1.15
	30 MHz to 2.4 GHz	< 1.13
	2.4 GHz to 8 GHz	< 1.20
	8 GHz to 18 GHz	< 1.25
Maximum input power	average power	400 mW (+26 dBm)
	peak power (< 10 μ s, 1 % duty cycle)	1 W (+30 dBm)
Measurement range		200 pW to 200 mW (-67 dBm to +23 dBm)
Signal weighting		average power
Effect of harmonics		< 0.5 % (0.02 dB) at harmonic ratio of 20 dB
Effect of modulation		< 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
8 GHz to 18 GHz	+15 °C to +35 °C	< 3.5 % (0.15 dB)
	0 °C to +50 °C	< 5.0 % (0.21 dB)
Zero offset after zeroing		< 110 pW
Dimensions (W x H x D)		48 mm x 31 mm x 170 mm (1.9 in x 1.22 in x 6.7 in)
	connecting cable	1.5 m (59 in)
Weight		< 0.3 kg (0.66 lb)

R&S®FSH-Z14 directional power sensor

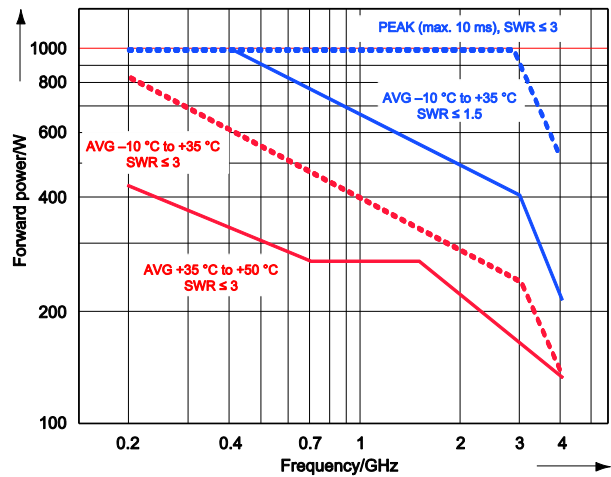
Frequency range		25 MHz to 1 GHz
Power measurement range		30 mW to 300 W
VSWR referenced to 50 Ω		< 1.06
Power-handling capacity	depending on temperature and matching (see diagram on page 27)	100 W to 1000 W
Insertion loss		< 0.06 dB
Directivity		> 30 dB
Average power		
Power measurement range		
CW, FM, PM, FSK, GMSK	CF: ratio of peak envelope	30 mW to 300 W
Modulated signals	power to average power	30 mW to 300 W/CF
Measurement uncertainty		
25 MHz to 40 MHz	sine signal	4.0 % of measured value (0.17 dB)
40 MHz to 1 GHz	+18 °C to +28 °C, no zero offset	3.2 % of measured value (0.14 dB)
Zero offset	after zeroing	\pm 4 mW
Range of typical measurement error with modulation	FM, PM, FSK, GMSK	0 % of measured value (0 dB)
	AM (80 %)	\pm 3 % of measured value (\pm 0.13 dB)
	two CW carriers with identical power	\pm 2 % of measured value (\pm 0.09 dB)
	EDGE, TETRA	\pm 0.5 % of measured value (\pm 0.02 dB) ⁸
Temperature coefficient	25 MHz to 40 MHz	0.40 %/K (0.017 dB/K)
	40 MHz to 1 GHz	0.25 %/K (0.011 dB/K)

⁸ If standard is selected on the R&S®FSH4/R&S®FSH8.

Max. peak envelope power		
Power measurement range		
Video bandwidth	4 kHz	0.4 W to 300 W
	200 kHz	1 W to 300 W
	600 kHz	2 W to 300 W
Measurement uncertainty	same as for average power plus effect of peak hold circuit	+18 °C to +28 °C
Error limits of peak hold circuit for burst signals		
Duty cycle ≥ 0.1 and repetition rate $\geq 100/s$	video bandwidth 4 kHz	$\pm(3\%$ of measured value + 0.05 W) starting from a burst width of 200 μs
	video bandwidth 200 kHz	$\pm(3\%$ of measured value + 0.20 W) starting from a burst width of 4 μs
	video bandwidth 600 kHz	$\pm(7\%$ of measured value + 0.40 W) starting from a burst width of 2 μs
20/s \leq repetition rate < 100/s		plus $\pm(1.6\%$ of measured value + 0.15 W)
0.001 \leq duty cycle < 0.1		plus ± 0.10 W
Temperature coefficient	25 MHz to 40 MHz	0.50 %/K (0.022 dB/K)
	40 MHz to 1 GHz	0.35 %/K (0.015 dB/K)
Load matching		
Matching measurement range		
Return loss		0 dB to 23 dB
VSWR		> 1.15
Minimum forward power	specifications complied with ≥ 0.4 W	0.06 W
Dimensions (W x H x D)		120 mm x 95 mm x 39 mm (4.72 in x 3.74 in x 1.53 in)
	connecting cable	1.5 m (59 in)
Weight		0.65 kg (1.43 lb)



Error limits for matching measurements.



Power-handling capacity.