

R&S®FS-K15

VOR/ILS Measurement

Demodulator for

R&S®FSMR/FSU/FSQ

Specifications



Specifications

Specifications apply under the following conditions: 30 minutes warm-up time at ambient temperature, specified environmental conditions met, calibration cycle adhered to, and all internal automatic adjustments performed.

Data without tolerances: typical values only. Accuracy does not include mismatch error and errors due to standard deviation of the measurement readings, which are influenced by the number of averages.

Frequency

Frequency range	ILS localizer, VOR, MB (Marker beacon)	
	specified frequency range	10 MHz to 12 MHz, 70 MHz to 120 MHz
	usable frequency range	same as instrument frequency range
	ILS glideslope	
	specified frequency range	10 MHz to 12 MHz, 319 MHz to 341 MHz
	usable frequency range	same as instrument frequency range

Frequency counter

Frequency counter resolution	RF frequency reading	1 Hz
	frequency offset reading	min. 4 digits
Count accuracy	S/N > 25 dB	$\pm(\text{frequency} \times \text{ref. accuracy} + 0.1 \text{ Hz})$

Level

Level range		-120 dBm to +30 dBm
Level resolution		0.01 dB
Level measurement uncertainty	0 dB to -70 dB below reference level, S/N > 20 dB, 95 % confidence level, +20 °C to +30 °C, mixer level < -10 dBm	0.3 dB

ILS signal analysis, Marker beacon signal analysis

Level		
Input level range	signal source	
	RF signal	-60 dBm to +30 dBm
	modulation signal at audio or baseband input	100 mV to 3 V (V_{RMS})
Modulation depth measurement		
Resolution		0.01 %
Accuracy 90/150 Hz \pm 1 %	RF signal	< 0.4 %
	R&S [®] FSMR: modulation signal at audio input	< 1 %
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 3.5 %
Accuracy 300 Hz to 4 kHz (voice/identifier)	RF signal	< 1 %
	R&S [®] FSMR: modulation signal at audio input	< 1 %
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 3.5 %
Accuracy 300 Hz to 4 kHz (MB)	RF signal (AM depth 80 to 100%)	< 0.5 %
Audio frequency counter		
Resolution of audio frequency counter		7 digits
Accuracy		< 0.002 %
DDM measurement, localizer mode		
Range		0 to ± 0.4 DDM
Resolution		0.00001 DDM
Accuracy	F_{mod} : 90/150 Hz \pm 1 %	
	DDM < 0.1, RF signal	< 0.0002 DDM \pm 0.1 % of reading
	DDM > 0.1, RF signal	< 0.0002 DDM \pm 0.2 % of reading
	R&S [®] FSMR: modulation signal at audio input	< 0.0002 DDM \pm 1 % of reading
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 0.0002 DDM \pm 3.5 % of reading

DDM measurement, glideslope mode		
Range		0 to ± 0.8 DDM
Resolution		0.00001 DDM
Accuracy	F_{mod} : 90/150 Hz $\pm 1\%$	
	DDM < 0.2, RF signal	< 0.0004 DDM $\pm 0.1\%$ of reading
	DDM > 0.2, RF signal	< 0.0004 DDM $\pm 0.2\%$ of reading
	R&S [®] FSMR: modulation signal at audio input	< 0.0004 DDM $\pm 1\%$ of reading
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 0.0004 DDM $\pm 3.5\%$ of reading
Phase measurement 90/150 Hz		
Measurement range		$\pm 60^\circ$
Resolution		0.01 $^\circ$
Accuracy	F_{mod} : 90/150 Hz $\pm 1\%$, RF signal	< 0.03 $^\circ$

VOR signal analysis

Level		
Input level range	signal source	
	RF signal	-60 dBm to +30 dBm
	modulation signal at audio or baseband input	100 mV to 3 V (V_{RMS})
AM modulation depth		
Resolution		0.01 %
Accuracy of reference and variable signal	30 Hz $\pm 1\%$, 9960 Hz $\pm 1\%$	
	RF signal	< 0.5 %
	R&S [®] FSMR: modulation signal at audio input	< 1 %
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 3.5 %
Accuracy 300 Hz to 4 kHz (voice/identifier)	RF signal	< 1 %
	R&S [®] FSMR: modulation signal at audio input	< 1 %
	R&S [®] FSQ: modulation signal at baseband input (R&S [®] FSQ-B71)	< 3.5 %
FM modulation deviation		
Max. deviation		700 Hz
Resolution		0.01 Hz
Accuracy	9960 Hz $\pm 1\%$	< 0.5 % ± 0.1 Hz
Audio frequency counter		
Resolution		7 digits
Accuracy		< 0.002 %
Azimuth phase measurement		
Measurement range		0 $^\circ$ to 360 $^\circ$
Resolution		0.001 $^\circ$
Accuracy	F_{mod} : 30 Hz $\pm 1\%$, 9960 Hz $\pm 1\%$	< 0.03 $^\circ$

Distortion analysis

Level		
Measurement range		-100 dB to 0 dB, 0.001 % to 100 %
Readout unit		dB, %
Resolution		0.01 %, 0.01 dB
Accuracy		0.5 dB
Inherent harmonic distortion	VOR: 30 Hz, 1020 Hz signal	< 0.1 %

Ordering information

Designation	Type	Order No.
VOR/ILS Measurement Demodulator, for R&S [®] FSMR/FSU/FSQ	R&S [®] FS-K15	1302.0936.02