

# R&S®FS-K15 VOR/ILS Measurement Demodulator for R&S®FSMR/FSU/FSQ Specifications



**75** Years of  
Driving  
Innovation



**ROHDE & SCHWARZ**

# 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

<b>Frequency range</b>	ILS localizer, VOR	
	specified frequency range	10 MHz to 12 MHz, 107 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

<b>Maximum frequency counter resolution</b>		0.001 Hz
<b>Count accuracy</b>	S/N > 25 dB	±(frequency × ref. accuracy + 0.1 Hz)

## Level

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

## ILS signal analysis

<b>Level</b>		
Input level range	signal source	
	RF signal	-60 dBm to +30 dBm
	modulation signal at audio or baseband input	100 mV to 4 V
<b>Modulation depth measurement</b>		
Resolution		0.01 %
Accuracy 90/150 Hz ± 1 %	RF signal	<0.4 %
	R&S <sup>®</sup> FSMR: modulation signal at audio input	<1 %
	R&S <sup>®</sup> FSQ: modulation signal at baseband input (R&S <sup>®</sup> FSQ-B71)	<3.5 %
Accuracy 300 Hz to 4 kHz (voice/identifier)	RF signal	<1 %
	R&S <sup>®</sup> FSMR: modulation signal at audio input	<1 %
	R&S <sup>®</sup> FSQ: modulation signal at baseband input (R&S <sup>®</sup> FSQ-B71)	<3.5 %
<b>Audio frequency counter</b>		
Resolution of audio frequency counter		0.01 Hz
Accuracy		<0.005 %
<b>DDM measurement, localizer mode</b>		
Range		0 to ± 0.4 DDM
Resolution		0.00001 DDM
Accuracy	F <sub>mod</sub> : 90/150 Hz ± 1 %	
	DDM < 0.1, RF signal	<0.0002 DDM ± 0.1 % of reading
	DDM > 0.1, RF signal	<0.0002 DDM ± 0.2 % of reading
	R&S <sup>®</sup> FSMR: modulation signal at audio input	<0.0002 DDM ± 1 % of reading
	R&S <sup>®</sup> FSQ: modulation signal at baseband input (R&S <sup>®</sup> FSQ-B71)	<0.0002 DDM ± 3.5 % of reading

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

## VOR signal analysis

<b>Level</b>		
Input level range	signal source	
	RF signal	-60 dBm to +30 dBm
	modulation signal at audio or baseband input	100 mV to 4 V
<b>AM modulation depth</b>		
Resolution		0.01 %
Accuracy of reference and variable signal	30 Hz $\pm 1$ %, 9960 Hz $\pm 1$ %	
	RF signal	<0.5 %
	R&S <sup>®</sup> FSMR: modulation signal at audio input	<1 %
	R&S <sup>®</sup> FSQ: modulation signal at baseband input (R&S <sup>®</sup> FSQ-B71)	<3.5 %
Accuracy 300 Hz to 4 kHz (voice/identifier)	RF signal	<1 %
	R&S <sup>®</sup> FSMR: modulation signal at audio input	<1 %
	R&S <sup>®</sup> FSQ: modulation signal at baseband input (R&S <sup>®</sup> FSQ-B71)	<3.5 %
<b>FM modulation deviation</b>		
Max. deviation		700 Hz
Resolution		0.01 Hz
Accuracy	30 Hz $\pm 1$ %, 9960 Hz $\pm 1$ %	<0.5 % $\pm 0.1$ Hz
<b>Audio frequency counter</b>		
Resolution		0.01 Hz
Accuracy		<0.005 %
<b>Azimuth phase measurement</b>		
Measurement range		0 $^\circ$ to 360 $^\circ$
Resolution		0.01 $^\circ$
Accuracy	$F_{\text{mod}}$ : 90/150 Hz $\pm 1$ %, RF signal	<0.03 $^\circ$

## Distortion analysis

<b>Level</b>		
Measurement range		-80 dB to 0 dB/0.01 % to 100 %
Readout unit		dB, %
Resolution		0.01 %/0.01 dB
Accuracy		0.5 dB

## Ordering information

Designation	Type	Order No.
VOR/ILS Measurement Demodulator	R&S <sup>®</sup> FS-K15	1302.0936.02

## Service you can rely on

- | In 70 countries
- | Person-to-person
- | Customized and flexible
- | Quality with a warranty
- | No hidden terms

## About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

## Regional contact

Europe, Africa, Middle East

+49 1805 12 42 42\* or +49 89 4129 137 74

customersupport@rohde-schwarz.com

North America

1-888-TEST-RSA (1-888-837-8772)

customer.support@rsa.rohde-schwarz.com

Latin America

+1-410-910-7988

customersupport.la@rohde-schwarz.com

Asia/Pacific

+65 65 13 04 88

customersupport.asia@rohde-schwarz.com

Certified Quality System  
**ISO 9001**  
DQS REG. NO 1954 QM

Certified Environmental System  
**ISO 14001**  
DQS REG. NO 1954 UM

For product brochure,  
see PD 5214.0182.12  
and [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Rohde & Schwarz GmbH & Co. KG

Mühldorfstraße 15 | 81671 München

Phone +49 89 41 290 | Fax +49 89 41 29 121 64

[www.rohde-schwarz.com](http://www.rohde-schwarz.com)

R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG  
Trade names are trademarks of the owners | Printed in Germany (as)  
PD 5214.0182.22 | Version 02.00 | July 2008 | R&S®FS-K15  
Data without tolerance limits is not binding | Subject to change

\*0.14 €/min within German wireline network; rates may vary in other networks (wireline and mobile) and countries.