

ROHDE & SCHWARZ

FSU46

The Rohde & Schwarz FSU46 is a high-performance spectrum analyzer from the FSU series, designed for demanding measurements in the frequency range of 20 Hz to 46 GHz. It provides exceptional dynamic range, extremely low phase noise, and highly versatile resolution bandwidths, making it ideal for characterizing next-generation wireless communications systems and aerospace/defense applications.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE-488), LAN (10/100 BaseT), USB, VGA output, RS-232, PS/2
Display	8.4" color TFT LCD, SVGA (800 x 600 pixels)
Warm-up Time	20 min

Physical

Power Supply	100 V to 240 V AC, 50 Hz to 60 Hz / 400 Hz
Operating Temperature	+5 °C to +40 °C °C
Dimensions (W×H×D)	435 mm × 192 mm × 460 mm mm
Weight	17.8 kg

Frequency Specifications

Frequency Range	20 Hz to 46 GHz
Frequency Resolution	0.01 Hz
Internal Reference Frequency Aging Rate	1 x 10 ⁻⁷ per year (standard), 2 x 10 ⁻⁹ per year (with OCXO option)
Frequency Span Range	0 Hz (zero span), 10 Hz to 46 GHz

Amplitude and Dynamic Range Specifications

Third-Order Intercept Point (TOI)	+25 dBm (typical)
1 dB Gain Compression Point	+13 dBm (typical)
Maximum Safe RF Input Level (Power)	+30 dBm (1 W)
Maximum Safe DC Input Voltage	0 V (DC-coupled), 50 V (AC-coupled)
Input Attenuator Range	0 dB to 75 dB
Input Attenuator Steps	5 dB

Bandwidth (RBW / VBW)

Resolution Bandwidth (RBW) Range	1 Hz to 50 MHz
Resolution Bandwidth (RBW) Shape Factor (60dB/3dB)	< 4.6 (analog filters)
Video Bandwidth (VBW) Range	1 Hz to 10 MHz
Video Bandwidth (VBW) Steps	1, 2, 3, 5 sequence
Filter Types	Gaussian (standard), Flat-top, EMI, FFT, Channel, RRC

Sweep and Trigger

Sweep Time Range (Span > 0)	2.5 ms to 16000 s
Sweep Time Range (Zero Span)	1 μ s to 16000 s
Number of Sweep Points	up to 30001 (user-selectable)

Measurement and Detection Functions

Detector Types	Max Peak, Min Peak, Auto Peak, Sample, RMS, Average, Quasi-Peak (EMI)
Trace Functions	Clear/Write, Max Hold, Min Hold, Average, View, Blank
Number of Concurrent Traces	3
Standard Measurement Suites	TOI, MC ACP(R), OBW, CCDF, APD
Demodulation Analysis Modes	AM/FM (standard); GSM/EDGE, Bluetooth, WCDMA/HSDPA/TD-SCDMA, CDMA2000/1xEV-DV/1xEV-DO (with optional firmware)

RF Inputs and Outputs

RF Input Connector Type	2.4 mm (female), 50 Ω
External Reference Input Frequency	1 MHz to 20 MHz (in 1 MHz steps)
External Reference Output Frequency	10 MHz

Environmental and Standards Compliance

Storage Temperature Range	-40 °C to +70 °C
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IQ Demodulation

Standard IQ Demodulation Bandwidth	10 MHz
Standard IQ Memory Depth	2 x 100 000 samples

RF Input Options

Preamplifier Frequency Range	100 kHz to 46 GHz (option FSU-B24)
Preamplifier Gain	30 dB (nominal, option FSU-B24)

Inputs & Outputs

IF Output Frequency	20.4 MHz
Video Output Connector	BNC female
Noise Source Drive Voltage	28 V (switchable)
External Trigger Input Connector	BNC female
Sweep Output Voltage Range	0 V to 10 V
Monitor Interface Port	15-pin D-Sub (VGA)
Keyboard/Mouse Interface Ports	PS/2

Environmental

Sinusoidal Vibration Resistance	5 Hz to 55 Hz (0.15 mm amplitude, meets EN 60068-2-6)
Shock Resistance	40 g shock spectrum (meets MIL-T-28800D, class 5)

Amplitude

Reference Level Range	-130 dBm to +30 dBm
Total Measurement Uncertainty ($f < 3.6$ GHz)	0.3 dB

Phase Noise

SSB Phase Noise (100 Hz Offset)	<-98 dBc (1 Hz) (at 640 MHz carrier)
SSB Phase Noise (1 kHz Offset)	<-116 dBc (1 Hz) (at 640 MHz carrier)
SSB Phase Noise (10 MHz Offset)	<-155 dBc (1 Hz) (at 640 MHz carrier)

Bandwidth

FFT Filter Bandwidth Range	1 Hz to 30 kHz
Channel Filter Bandwidth Range	100 Hz to 5 MHz
EMI Filter Bandwidths	200 Hz, 9 kHz, 120 kHz, 1 MHz

RF Input

Input Impedance	50 Ω
Input VSWR ($f < 3.6$ GHz)	< 1.20 (attenuation ≥ 10 dB)
Input VSWR (3.6 GHz to 8 GHz)	< 1.50 (attenuation ≥ 10 dB)
Input VSWR (8 GHz to 18 GHz)	< 1.80 (attenuation ≥ 10 dB)
Input VSWR (18 GHz to 26.5 GHz)	< 2.00 (attenuation ≥ 10 dB)
Input VSWR (26.5 GHz to 40 GHz)	< 2.20 (attenuation ≥ 10 dB)
Input VSWR (40 GHz to 46 GHz)	< 2.50 (attenuation ≥ 10 dB)

Spurious Response

Image Rejection ($f < 3.6$ GHz)	> 80 dB
Image Rejection (3.6 GHz to 46 GHz)	> 70 dB
LO Emission at RF Input	<-90 dBm (attenuation ≥ 10 dB)

Reference Frequency

Internal Reference Frequency Temperature Stability	8 x 10 ⁻⁹ (0 °C to 50 °C)
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Demodulation

Max. IQ Demodulation Bandwidth (with Option FSU-B72)	28 MHz
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TECHNOLOGY

Superheterodyne Spectrum Analysis

APPLICATIONS

RF & Microwave Signal Analysis

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