

ROHDE & SCHWARZ

FSU3

The Rohde & Schwarz FSU3 is a high-performance spectrum analyzer from the R&S FSU series, covering a frequency range from 20 Hz to 3.6 GHz. Designed for exceptional dynamic range, outstanding phase noise, high level accuracy, and extremely wide resolution bandwidths, the FSU3 is optimized for demanding measurements in development, quality assurance, and production of next-generation wireless communication systems.

SPECIFICATIONS

General

Interfaces	GPIB (IEEE 488.2), LAN (10/100 Base-T), USB, RS-232-C, VGA, PS/2, LPT
Display	8.4" color TFT LCD, SVGA (800 × 600 pixels)

Physical

Power Supply	100 V to 240 V AC, 50 Hz to 60 Hz / 400 Hz
Dimensions (W×H×D)	435 mm × 192 mm × 460 mm mm
Weight	18 kg kg

Frequency and Amplitude Performance

Frequency Range	20 Hz to 3.6 GHz
Displayed Average Noise Level (DANL)	-158 dBm (normalized to 1 Hz)
Phase Noise at 10 kHz Offset	-123 dBc (1 Hz)
Phase Noise at 1 MHz Offset	-145 dBc (1 Hz)
Third-Order Intercept (TOI)	typ. +25 dBm
Tuning Resolution	0.01 Hz
Maximum Safe RF Input Level	+30 dBm (1 W)
RF Attenuation Range	0 dB to 75 dB
RF Attenuator Step Size	5 dB
Frequency Response Flatness	< 0.3 dB (up to 3.6 GHz)
Frequency Reference Aging	1 × 10 ⁻⁷ per year

Bandwidth and Sweep Characteristics

Resolution Bandwidth (RBW) Range	1 Hz to 50 MHz
Digital Filter Range	10 Hz to 100 kHz (1, 2, 3, 5 steps)
Analog Filter Range	300 kHz to 10 MHz (1, 2, 3, 5 steps)
Channel Filters	39 filters, 100 Hz to 5 MHz
FFT Filter Range	1 Hz to 30 kHz
EMI Filters	200 Hz, 9 kHz, 120 kHz
RRC Filter Formats	NADC, TETRA, 3GPP
Video Bandwidth (VBW) Range	1 Hz to 10 MHz
Sweep Time Range (Span > 0 Hz)	2.5 ms to 16000 s
Sweep Time Range (Zero Span)	1 μ s to 16000 s
Measurement Rate	Up to 70 measurements/s (including GPIB trace transfer)

Measurement Capabilities and Signal Processing

Standard Measurement Routines	TOI, MC ACP(R), OBW, CCDF, APD
Fast Adjacent Channel Power (ACP)	Available in time domain
Supported Wireless Standard Firmware Options	GSM/EDGE, Bluetooth, WCDMA/HSDPA/TD-SCDMA, CDMA2000/1xEV-DV/1xEV-DO
Trace Detectors	Max Peak, Min Peak, Auto Peak, Sample, RMS, Average, Quasi-Peak
Noise Figure Measurement Option	Supported via optional software R&S FS-K30
Phase Noise Measurement Option	Supported via optional software R&S FS-K40
Vector Signal Analysis (VSA) Option	Supported via optional software R&S FS-K70

Inputs, Outputs and Interfaces

RF Input Connector	N-type female
RF Input Impedance	50 Ω
RF Input VSWR	< 1.15 (with 10 dB RF attenuation, f < 3.6 GHz)
External Reference Input	BNC female, 1 MHz to 20 MHz in 1 Hz steps
Internal Reference Output	BNC female, 10 MHz
Trigger Input	BNC female
Trigger Output	BNC female
Analog IF Output	BNC female, 21.4 MHz
Video Output	BNC female, 0 V to 1 V

Power and Electrical Specifications

AC Input Voltage Range	100 V to 240 V AC
AC Input Frequency Range	50 Hz to 60 Hz / 400 Hz
Power Consumption (Typical)	130 W (without options)
Power Consumption (Maximum)	230 W

Physical and Environmental Specifications

Operating Temperature Range	+5 °C to +40 °C
Storage Temperature Range	-40 °C to +70 °C
Operating Altitude	Up to 4600 m

Standards, Compliance and Calibration

Safety Standards	IEC 61010-1, EN 61010-1
EMC Standards	EN 55011, EN 61326-1
Recommended Calibration Cycle	1 year
Standard Warranty	1 year

Frequency Reference

Reference Frequency Temperature Stability	1 x 10 ⁻⁶ (standard); 1 x 10 ⁻⁹ (with option R&S FSU-B4)
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Amplitude

1 dB Compression Point	+13 dBm (typical, 0 dB RF attenuation, > 200 MHz)
Second Harmonic Intercept (SHI)	+40 dBm (typical, > 10 MHz)
Total Measurement Uncertainty	0.3 dB (up to 3.6 GHz)

Spurious Responses

LO Emission at RF Input	<-90 dBm (0 dB RF attenuation)
Image Rejection	> 80 dB (typical > 100 dB)
IF Rejection	> 80 dB (typical > 100 dB)

Signal Processing

A/D Converter Resolution	14-bit
A/D Converter Sampling Rate	32 MHz

Options & Upgrades

Electronic Attenuator Option	R&S FSU-B25 (0 dB to 30 dB in 5 dB steps)
Preamplifier Option	R&S FSU-B23 (20 dB gain, 100 kHz to 3.6 GHz)
External Generator Control Option	R&S FSU-B10
IQ Digital Interface Option	R&S FSU-B17

General Technical Data

Operating System	Windows XP Embedded
Vibration (Sinusoidal)	5 Hz to 55 Hz, 0.15 mm amplitude (meets EN 60068-2-6)
Vibration (Random)	10 Hz to 300 Hz, 1.2 g rms (meets EN 60068-2-64)
Relative Humidity	95% at +40 °C (non-condensing, meets EN 60068-2-30)

Display

Display Type	8.4" color TFT LCD
Display Resolution	800 × 600 pixels (SVGA)
Simultaneous Traces	3

Inputs & Outputs

External Reference Input Frequency Range	1 MHz to 20 MHz (1 Hz steps)
External Reference Input Level Range	-10 dBm to +15 dBm
Internal Reference Output Frequency	10 MHz
Internal Reference Output Level	0 dBm (nominal)

Interfaces

Ethernet Interface	10/100 Base-T (RJ-45)
Serial Interface	9-pin D-Sub (RS-232-C)
Parallel Interface	25-pin D-Sub (LPT, Centronics)
Keyboard Connector	PS/2
Mouse Connector	PS/2
GPIO Interface	IEEE 488.2

Software & Control

Emulation Modes	HP 8560E family, HP 8566B, HP 8568B
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TECHNOLOGY

Spectrum Analysis

APPLICATIONS

RF and microwave signal characterization, wireless standard testing, and high-dynamic-range measurements

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