

ROHDE & SCHWARZ

FSWP8

The Rohde & Schwarz FSWP8 is a high-performance Phase Noise Analyzer and VCO Tester designed for extremely fast and highly sensitive phase noise measurements in the 1 MHz to 8 GHz frequency range. Combining phase noise and signal source analysis in one instrument, it supports cross-correlation to achieve unparalleled sensitivity and offers an optional full-featured signal and spectrum analyzer mode to cover diverse test and measurement needs.

SPECIFICATIONS

General

Interfaces	LAN (10/100/1000Base-T), USB 2.0 (Host & Device), USB 3.0, DVI-D, DisplayPort, GPIB (optional)
Display	12.1-inch WXGA color TFT touchscreen (1280 × 800 pixels)
Standard Measurement Modes	Phase Noise, AM Noise, VCO Characterization
Optional Measurement Modes	Signal and Spectrum Analyzer (R&S FSWP-B3), Pulsed Phase Noise (R&S FSWP-K4), Transient Analysis (R&S FSWP-K60)
Command Set	SCPI

Physical

Power Supply	100 V to 240 V AC, 50 Hz to 60 Hz / 400 Hz, 120 W typical power consumption
Dimensions (W×H×D)	462 mm × 240 mm × 504 mm mm
Weight	18.6 kg

RF Input & Frequency Characteristics

RF Input Frequency Range	1 MHz to 8 GHz
Input Impedance	50 Ω
Maximum Safe RF Input Power	+30 dBm
Maximum Input DC Voltage	0 V
RF Input Connector	N female
Internal Local Oscillator Frequency Range	1 MHz to 8 GHz

Phase Noise Measurement

Offset Frequency Range	10 mHz to 30 MHz
Phase Noise Measurement Accuracy	±1.5 dB (nominal)
AM Noise Measurement Offset Range	10 mHz to 30 MHz

Internal Reference

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

DC Bias and Signal Sources

Tuning Voltage Range (VPTC)	-10 V to +28 V (with R&S FSWP-B60/B61 option)
Tuning Voltage Resolution	0.1 mV (with R&S FSWP-B60/B61 option)
Tuning Voltage Maximum Current	20 mA (with R&S FSWP-B60/B61 option)
Auxiliary Voltage Range (VAUX)	-10 V to +15 V (with R&S FSWP-B60/B61 option)
Auxiliary Voltage Resolution	0.1 mV (with R&S FSWP-B60/B61 option)
Auxiliary Voltage Maximum Current	250 mA (with R&S FSWP-B60/B61 option)
Internal RF Stimulus Source Frequency Range	1 MHz to 8 GHz (with R&S FSWP-B64 option)

Display & UI

Measurement Screen Formats	MultiView (simultaneous display of multiple measurement tasks)
Built-In Operating System	Windows

Connectivity & Interfaces

LAN Port Speed	10/100/1000Base-T (RJ-45)
USB Host Ports (Front)	4 × USB 2.0
USB Host Ports (Rear)	2 × USB 3.0, 2 × USB 2.0
USB Device Port	1 × USB 2.0 Type B
External Monitor Outputs	1 × DVI-D, 1 × DisplayPort
External Trigger Input	BNC female
GPIB Interface Port	Option R&S FSW-B10 (IEEE 488)
Noise Source Control Port	BNC female, 28 V DC

Power Requirements

Input Voltage Range	100 V to 240 V AC
Input AC Frequency	50 Hz to 60 Hz / 400 Hz
Maximum Power Consumption	220 W (with all options)
Typical Power Consumption	120 W

Physical and Environmental Specifications

Rack Unit Height	5 RU
Storage Temperature Range	-40 °C to +70 °C
Operating Humidity Range	95% relative humidity (non-condensing)
Maximum Operating Altitude	4600 m (15,000 feet)

Compliance and Standards

Calibration Interval	1 year
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Display

Display Size	12.1 in
Display Resolution	1280 × 800 pixels

Reference Frequency

Standard Reference Frequency Aging	1×10^{-6} per year
Standard Reference Frequency Temperature Stability	1×10^{-6} (0 °C to +50 °C)
Precision Reference Frequency Option Aging	3×10^{-8} per year (with R&S FSWP-B4 option)
Precision Reference Frequency Option Temperature Stability	5×10^{-10} (0 °C to +50 °C, with R&S FSWP-B4 option)

Spectrum Analyzer Option

Spectrum Analyzer Option Frequency Range	10 Hz to 8 GHz (with R&S FSWP-B1 option)
Spectrum Analyzer Option Resolution Bandwidth (RBW)	1 Hz to 10 MHz (with R&S FSWP-B1 option)
Spectrum Analyzer Preamplifier Option Frequency Range	100 kHz to 8 GHz (with R&S FSWP-B24 option)
Spectrum Analyzer Option DANL (1 GHz)	<-152 dBm (1 Hz RBW, preamplifier off, typical)
Spectrum Analyzer Option TOI (1 GHz)	> 20 dBm (typical +25 dBm)

VCO Tester Source & Measurement

Tuning Voltage (VPTC) Setting Uncertainty	$\pm(0.05\% \text{ of setting} + 1.5 \text{ mV})$
Auxiliary Voltage (VAUX) Setting Uncertainty	$\pm(0.05\% \text{ of setting} + 1.5 \text{ mV})$

RF Input

RF Input VSWR	< 1.2 (10 MHz to 3 GHz, RF attenuation ≥ 10 dB), < 1.5 (3 GHz to 8 GHz, RF attenuation ≥ 10 dB)
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AM Noise Measurement

AM Noise Measurement Carrier Frequency Range	1 MHz to 8 GHz
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Internal RF Stimulus Source Option

Internal RF Stimulus Source Output Power Range	-50 dBm to +10 dBm (range is -110 dBm to +10 dB with optional step attenuator)
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Reference Signals

External Reference Input Impedance	50 Ω
External Reference Output Impedance	50 Ω

TECHNOLOGY

Digital Cross-Correlation Signal Analysis

APPLICATIONS

Phase noise measurement, VCO characterization, AM noise analysis, and additive phase noise testing.

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