ROHDE & SCHWARZ

FSWP26

The Rohde & Schwarz FSWP26 is a high-performance Phase Noise Analyzer and VCO Tester, operating in the frequency range from 1 MHz to 26.5 GHz. Highly regarded for its exceptional sensitivity and fast measurement speed, it integrates phase noise and VCO testing capabilities with an optional high-end signal and spectrum analyzer, making it a versatile tool for radar, aerospace, defense, and high-performance synthesizer design applications.

SPECIFICATIONS

General

Display	12.1-inch WXGA color TFT touchscreen (1280 × 800 pixels)

Physical

Power Supply	100 V to 240 V AC (±10%), 50 Hz to 60 Hz / 400 Hz (±5%), typical 120 W (up to 400 W with options)
Dimensions (W×H×D)	444 mm × 240 mm × 517 mm (without handles) mm
Weight	21.0 kg

Frequency

Frequency Range	1 MHz to 26.5 GHz
Frequency Resolution	0.01 Hz
External Reference Input Frequency	1 MHz to 20 MHz (in 1 Hz steps)
External Reference Output Frequency	10 MHz

Phase Noise Measurement

Phase Noise Offset Frequency Range	1 mHz to 1 GHz
Maximum Number of Cross-Correlations	1,000,000

VCO Tester DC Sources

Tuning Voltage Range	-10 V to +28 V
Tuning Voltage Resolution	0.1 mV
Tuning Voltage Maximum Current	20 mA
Supply Voltage Range 1	0 V to 16 V
Supply Voltage Range 2	0 V to 16 V

RF Input

RF Input Impedance	50 Ω
RF Input Connector Type	3.5 mm female
Maximum RF Input Level (with attenuation)	+30 dBm (1 W)
Maximum DC Input Voltage	0 V (DC coupled)
Input VSWR (f < 3 GHz)	< 1.2
Input VSWR (3 GHz to 8 GHz)	< 1.3
Input VSWR (8 GHz to 26.5 GHz)	< 1.8

Noise Source Drive & Calibration

Noise Source Drive Voltage	28 V DC (switchable)
Noise Source Connector	BNC female (rear panel)
Smart Noise Source Support	Yes (with R&S FS-SNS support)

Spectrum Analyzer (Option R&S FSWP-B1)

Option B1 Frequency Range	10 Hz to 26.5 GHz
Option B1 Resolution Bandwidths (RBW)	1 Hz to 10 MHz
Option B1 Displayed Average Noise Level (DANL, 1 GHz, 1 Hz RBW)	<-152 dBm (typ. -156 dBm)
Option B1 Third-Order Intercept (TOI, 1 GHz)	> +20 dBm (typ. +25 dBm)

General & Environmental

Operating System	Windows 10 IoT Enterprise
Internal Storage	Removable Solid State Drive (SSD)
Storage Temperature Range	-40 °C to +70 °C
Operating Humidity Limits	95% relative humidity (non-condensing)
Recommended Calibration Interval	1 year

Connectivity

USB 2.0 Ports	2 (front)
USB 3.0 Ports	2 (rear)
LAN Port	1 × RJ-45 (10/100/1000Base-T)
External Display Ports	1 × DVI-D, 1 × DisplayPort
Reference Input Connector	BNC female
Reference Output Connector	BNC female
Trigger Input/Output Connectors	BNC female

Power & Physical

AC Input Voltage Range	100 V to 240 V AC (±10%)
AC Input Frequency Range	50 Hz to 60 Hz / 400 Hz
Maximum Power Consumption	250 W
Base Power Consumption (typical)	120 W
Weight (Base Instrument)	21.0 kg (46.3 lb)
Rackmount Height Units	5 U

VCO Measurements

Tuning Voltage Accuracy	±(0.05% + 2 mV)
Supply Voltage Accuracy	±(0.1% + 10 mV)

Reference Frequency

OCXO Aging per Year	±3 × 10^{-8} (with Option B4)
OCXO Temperature Stability (0 °C to +50 °C)	±1 × 10^{-9} (with Option B4)
Standard Reference Frequency Aging per Year	1 × 10^-6
Standard Reference Temperature Stability (0 °C to +50 °C)	1 × 10^-6
Option B4 OCXO Aging per Day	1 × 10^-10

Spectrum Analyzer

Signal Analysis Bandwidth (Standard)	10 MHz (with Option B1)
Signal Analysis Bandwidth (Maximum)	up to 80 MHz (Option B80) / 320 MHz (Option B320)

AM Noise Measurements

AM Noise Carrier Frequency Range	1 MHz to 26.5 GHz
AM Noise Offset Frequency Range	1 Hz to 30 MHz

Additive Phase Noise

Internal Test Source Frequency Range	10 MHz to 26.5 GHz (with Option B21 and Option B64)

Pulsed Phase Noise Measurements

Pulsed Phase Noise Carrier Frequency Range	10 MHz to 26.5 GHz (with Option K4)

Noise Figure Measurements

Noise Figure Measurement Frequency Range	10 MHz to 26.5 GHz (with Option K30 and Option B1)

Environmental

Maximum Operating Altitude	3000 m
Maximum Storage Altitude	4600 m
Vibration (Random)	1.2 g RMS (10 Hz to 300 Hz)

VCO Parameter Measurements

Tuning Voltage Noise Density	0.5 nV/√Hz (typical, at 10 kHz offset)
Supply Voltage Noise Density	0.5 nV/√Hz (typical, at 10 kHz offset)

Noise Figure Measurements (Option K30)

Noise Figure Measurement Range	0 dB to 35 dB (option dependent)
Noise Figure Gain Measurement Range	-10 dB to +50 dB (option dependent)

Spectrum Analyzer (Option B1)

Option B1 FFT Filter Bandwidth Range	1 Hz to 3 MHz

Transient Measurements (Option K60)

Transient Analysis Bandwidth	Transient Analysis Bandwidth = 80 MHz (standard), up to 8 GHz (with option R&S®FSWP-B8000)

Interfaces

LXI Compliance	LXI Version 1.4 Core Device

TECHNOLOGY

Phase Noise Analysis & VCO Testing

APPLICATIONS

Aerospace, Defense, Radar, Wireless Communications, Synthesizer Design