ROHDE & SCHWARZ

# FSMR26

The Rohde & Schwarz FSMR26 is a high-precision measuring receiver designed for calibrating signal generators and attenuators. Combining the functionality of a high-accuracy level calibrator, a wide-range power meter, an analog modulation analyzer, and a high-performance spectrum analyzer, it operates over a frequency range from 20 Hz to 26.5 GHz. It is engineered to meet the demanding requirements of calibration laboratories and metrology environments.

## SPECIFICATIONS

### General

| | |
|---|---|
| Interfaces | GPIB (IEEE-488.2), LAN (10/100 Base-T), USB 2.0, RS-232, VGA, PS/2 |
| Display | 21 cm (8.4 in) TFT color LCD, SVGA (800 x 600 pixels) |
| Warm-Up Time | 20 min (for specified accuracy) |

### Physical

| | |
|---|---|
| Power Supply | 100 V to 240 V AC, 50 Hz to 400 Hz, typ. 150 W |
| Dimensions (W×H×D) | 435 mm × 192 mm × 460 mm mm |
| Weight | 24 kg kg |

### Frequency and Reference Characteristics

| | |
|---|---|
| Frequency Range | 20 Hz to 26.5 GHz |
| Frequency Resolution | 0.01 Hz |
| Internal Reference Frequency | 10 MHz |
| Reference Frequency Aging Rate | 1 × 10^-9 per day (after 30 days of operation) |
| Reference Frequency Year Aging Rate | 1 × 10^-7 per year |
| External Reference Input Frequency | 1 MHz to 20 MHz (in 1 Hz steps) |
| External Reference Input Level | –10 dBm to +13 dBm |
| Reference Output Frequency | 10 MHz |
| Reference Output Level | 0 dBm (nominal) |

### RF Input and Attenuation

| | |
|---|---|
| RF Input Connector Type | APC 3.5 mm female |
| RF Input Impedance | 50 Ω |
| RF Input VSWR (with 10 dB attenuation, < 3.6 GHz) | < 1.15 |
| RF Input VSWR (with 10 dB attenuation, 3.6 GHz to 26.5 GHz) | < 1.50 |
| Maximum Safe RF Input Power | 30 dBm (1 W) continuous |
| Maximum Safe DC Input Voltage | 0 V |
| Internal Attenuator Range | 0 dB to 75 dB |
| Internal Attenuator Step Size | 5 dB |

### Tuned RF Level (TRFL) Measurements

| | |
|---|---|
| TRFL Measurement Range | –130 dBm to +30 dBm |
| TRFL Resolution | 0.001 dB |
| Linearity Uncertainty | ±(0.01 dB + 0.005 dB per 10 dB step) |

### RF Power Meter Characteristics

| | |
|---|---|
| Compatible Power Sensors | R&S NRP-Z series (including NRP-Z11, NRP-Z21, NRP-Z51) |
| Power Sensor Connectors | 2 ports (front panel, dedicated R&S NRP sensor ports) |
| Internal Power Reference Frequency | 50 MHz |
| Internal Power Reference Level | 1.00 mW (0 dBm) |
| Internal Power Reference Accuracy | ±1.2% (1 year calibration interval) |
| Power Reference Connector Type | N female (front panel) |

### Analog Modulation Analysis

| | |
|---|---|
| AM Depth Range | 0% to 100% |
| FM Deviation Range | up to 3 MHz |
| FM Rate Range | 20 Hz to 200 kHz |
| FM Measurement Accuracy | ±1% of reading |
| Phase Modulation Deviation Range | up to 1000 rad |
| Phase Modulation Rate Range | 20 Hz to 100 kHz |
| Residual AM (0.3 kHz to 3 kHz BW) | < 0.05% |
| Residual FM (0.3 kHz to 3 kHz BW, 1 GHz carrier) | < 1 Hz |

### Audio and Distortion Analysis

| | |
|---|---|
| Audio Frequency Range | 20 Hz to 250 kHz |
| Audio Input Impedance | 1 MΩ |
| Audio Input Connector | BNC female (front panel) |
| Audio Distortion Measurement Range (THD) | 0.005% to 50% |
| SINAD Measurement Range | 10 dB to 80 dB |
| Demodulated Audio Low-Pass Filters | 3 kHz, 15 kHz, 23 kHz, 150 kHz |
| Demodulated Audio De-emphasis | 50 µs, 75 µs, 750 µs |

### Spectrum Analyzer Mode

| | |
|---|---|
| Spectrum Analyzer Frequency Range | 20 Hz to 26.5 GHz |
| Spectrum Analyzer Resolution Bandwidths | 10 Hz to 10 MHz (1-3-10 sequence) |
| Spectrum Analyzer Video Bandwidths | 1 Hz to 10 MHz (1-3-10 sequence) |
| FFT Filter Bandwidths | 1 Hz to 30 kHz |
| Displayed Average Noise Level (1 GHz, 10 Hz RBW) | –150 dBm (typical) |
| SSB Phase Noise (1 GHz carrier, 10 kHz offset) | –128 dBc (1 Hz) |
| SSB Phase Noise (10 GHz carrier, 10 kHz offset) | –114 dBc (1 Hz) |

### Connectivity and Remote Control

| | |
|---|---|
| GPIB Controller Interface | IEEE-488.2 (rear panel) |
| GPIB Device Interface | IEEE-488.2 (rear panel) |
| LAN Interface | 10/100 Base-T (RJ-45) |
| USB Ports | USB 2.0 (front and rear panels) |
| External Monitor Output | VGA (15-pin D-Sub) |
| External Trigger Input | BNC female (rear panel) |
| IF Output | BNC female (rear panel) |
| Video Output | BNC female (rear panel) |

### Physical and Electrical Specifications

| | |
|---|---|
| AC Input Voltage Range | 100 V to 240 V AC (nominal) |
| AC Input Frequency Range | 50 Hz to 400 Hz |
| Power Consumption | 150 W (typical), 250 W (maximum) |
| Form Factor / Height | 19-inch rackmount (4 HU) |

### Environmental and Compliance

| | |
|---|---|
| Storage Temperature Range | –40 °C to +70 °C |
| Safety Compliance Standards | EN 61010-1, UL 61010B-1, IEC 61010-1 |
| Electromagnetic Compatibility (EMC) | EN 55011 Class B, EN 61326-1 |
| Recommended Calibration Interval | 1 year |

### Spectrum Analyzer

| | |
|---|---|
| 1 dB Compression Point | +13 dBm (at 0 dB RF attenuation, f > 10 MHz) |
| Third-Order Intercept (TOI) | > 20 dBm (typ. +25 dBm, f > 100 MHz) |
| Sweep Time Range (Span >= 10 Hz) | 2.5 ms to 16000 s |
| Sweep Time Range (Zero Span) | 1 µs to 16000 s |
| Number of Sweep Points | 155 to 30001 |

### Modulation Analysis

| | |
|---|---|
| Analog Demodulation Modes | AM, FM, PM |

### Interfaces & Control

| | |
|---|---|
| HP 8902A Emulation | Supported (via GPIB command emulation) |

### Display & System

| | |
|---|---|
| Display Screen Size | 21 cm (8.4 in) |
| Display Resolution | 800 × 600 pixels (SVGA) |
| Operating System | Windows XP Embedded |

### Reference Frequency Options

| | |
|---|---|
| OCXO Daily Aging Rate (Option B4) | 1 × 10^-10 per day (after 30 days of continuous operation) |
| OCXO Temperature Stability (Option B4) | 1 × 10^-9 (0 °C to +50 °C) |

### Options & Accessories

| | |
|---|---|
| RF Preamplifier Gain (Option B23) | 20 dB (nominal, 100 kHz to 26.5 GHz) |
| Electronic Attenuator Range (Option B25) | 0 dB to 30 dB (in 5 dB steps) |
| Removable Hard Disk Option | Option FSMR-B18 |

### Performance - Spectrum Analyzer

| | |
|---|---|
| Resolution Bandwidth (RBW) Range (Standard) | 10 Hz to 50 MHz |
| Resolution Bandwidth (RBW) Range (FFT Filters) | 1 Hz to 30 kHz |
| Video Bandwidth (VBW) Range | 1 Hz to 10 MHz |

### Environmental & Physical

| | |
|---|---|
| Operating Humidity | 95% relative humidity (+25 °C / +40 °C, cyclic, IEC 60068-2-30) |
| Vibration Resistance (Sinusoidal) | 5 Hz to 55 Hz (0.15 mm amplitude), 55 Hz to 150 Hz (0.5 g acceleration, IEC 60068-2-6) |

## TECHNOLOGY

Superheterodyne Receiver

## APPLICATIONS

Metrology, Signal Generator and Attenuator Calibration