

KEYSIGHT TECHNOLOGIES (AGILENT HP)

N9938A

The Keysight N9938A FieldFox is a rugged, handheld microwave spectrum analyzer operating from 5 kHz up to 26.5 GHz. Designed for tough field environments, it provides ± 0.5 dB amplitude accuracy at power-up with no warm-up required, and is compliant with MIL-PRF-28800F Class 2 standards.

SPECIFICATIONS

General

Interfaces	LAN, USB 2.0 Host (2 ports), USB 2.0 Device (Mini-B), SD Card slot
Display	6.5-inch color transfective VGA LCD (640 × 480)
Storage Capacity	Internal memory (~4 GB), supports external SD card and USB flash drives
Warm-up Time	5 minutes

Physical

Power Supply	100 to 240 VAC, 50 to 60 Hz (via external AC/DC adapter); 15 VDC external input
Operating Temperature	-10 to 55 °C °C
Dimensions (W×H×D)	188 mm × 292 mm × 72 mm mm
Weight	3.0 kg kg

Frequency

Frequency Range	100 kHz to 26.5 GHz (usable to 5 kHz; tunable to 0 Hz or DC)
Frequency Span Range	0 Hz (zero span), 10 Hz to 26.5 GHz
Frequency Resolution	1 Hz
Phase Noise at 10 kHz Offset	-111 dBc/Hz
Frequency Reference Aging Rate	± 1.0 ppm/year
Frequency Reference Temperature Stability	± 0.5 ppm (-10 to 55 °C)
Frequency Reference GPS Accuracy	± 0.010 ppm (with Option 307 GPS lock)

Bandwidth

Resolution Bandwidth (RBW) Range	10 Hz to 5 MHz (-3 dB bandwidth)
RBW Steps	1, 1.5, 2, 3, 5, 7.5, 10 sequence (Non-zero span)
Video Bandwidth (VBW) Range	1 Hz to 5 MHz (1-3-10 sequence)

Amplitude

Absolute Amplitude Accuracy	±0.5 dB (at power-up, no warm-up required)
Input Attenuator Range	0 to 30 dB, in 5 dB steps
Maximum Safe Input Level (AC)	+27 dBm (0.5 W) average CW power
Maximum Safe Input Level (DC)	±50 VDC
DANL (Preamp Off) 2 MHz to 4.5 GHz	-137 dBm
DANL (Preamp Off) >4.5 to 7 GHz	-133 dBm
DANL (Preamp Off) >7 to 13 GHz	-129 dBm
DANL (Preamp Off) >13 to 17 GHz	-124 dBm
DANL (Preamp Off) >17 to 22 GHz	-119 dBm
DANL (Preamp Off) >22 to 25 GHz	-114 dBm
DANL (Preamp Off) >22 to 26.5 GHz	DANL (Preamp Off) >25 to 26.5 GHz = -110 dBm
Spur-Free Dynamic Range	≥105 dB (nominal at 2.4 GHz)
Display Range (Log scale)	10 divisions, 0.01 to 100 dB/division in 0.01 dB steps
Amplitude Scale Units	dBm, dBmV, dBμV, W, V, A, dBmA, dBμA
Trace Detectors	Normal, positive peak, negative peak, sample, average (RMS)
Trace States	Clear/write, max hold, min hold, average, view, blank
Number of Traces	4
Number of Averages	1 to 10,000

Sweep and Trigger

Sweep Acquisition Range (Span > 0 Hz)	Sweep Acquisition Range (Span = 0 Hz) = 1 to 5000 (number of data acquisitions per measurement)
Sweep Acquisition Resolution	1

Inputs and Outputs

RF Input VSWR (10 MHz to 2.7 GHz)	1.7 : 1 (nominal, 10 dB attenuation)
RF Input VSWR (>2.7 to 7.5 GHz)	1.5 : 1 (nominal, 10 dB attenuation)
RF Input VSWR (>7.5 GHz)	2.2 : 1 (nominal, 10 dB attenuation)

Measurement Modes and Suites

Standard Measurement Functions	Channel power, occupied bandwidth, adjacent channel power ratio
Built-in Power Meter Range	9 kHz to 26.5 GHz

Physical and Power

Battery Life	4 hours
Enclosure Durability	Completely sealed, compliant with U.S. MIL-PRF-28800F Class 2
Form Factor	Vertical (portrait) orientation with large buttons (glove friendly)

Inputs & Outputs

RF Input Connector	3.5 mm female, 50 Ω nominal
External Reference Input	BNC female, 10 MHz

Environmental & Durability

IP Rating	IP53 (dust and water resistant)
Military Compliance	MIL-PRF-28800F Class 2
Maximum Operating Altitude	4,572 m (15,000 ft)
Storage Temperature	-51 to +71 °C (without battery)

Preamplifier

Preamplifier Option Frequency Range	100 kHz to 26.5 GHz (Option 235)
Preamplifier Nominal Gain	20 dB (Option 235)

Real-Time Spectrum Analyzer

Real-Time Spectrum Analyzer (RTSA) Bandwidth	10 MHz (Option 350)
Minimum Signal Duration for 100% POI	122 us (Option 350, 10 MHz Span, RBW 300 kHz)

Tracking Generator

Tracking Generator Frequency Range	30 kHz to 26.5 GHz (Option 210)
Tracking Generator Output Power Range	-15 dBm to -45 dBm (Option 210, 1 dB steps)

Triggering

Trigger Sources	Free run, External, Video, RF Burst
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Performance

Third-Order Intercept (TOI)	+15 dBm (typical, at 2.4 GHz)
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Environmental

Operating Humidity Range	Up to 95% relative humidity at 40 °C (non-condensing)
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TECHNOLOGY

RF and Microwave Spectrum Analysis

APPLICATIONS

Field testing, transmitter power measurement, cable and antenna analysis, interference hunting

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