

KEYSIGHT TECHNOLOGIES (AGILENT HP)

N9041B

The Keysight N9041B UXA is a flagship high-performance signal analyzer designed for millimeter-wave applications, offering continuous sweep capabilities up to 110 GHz. It delivers exceptional phase noise performance, wide analysis bandwidth, and outstanding amplitude accuracy to meet the demanding requirements of aerospace, defense, and 5G/6G communications research.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (1000Base-T), USB 3.0 (host & device), USB 2.0, DisplayPort, VGA
Display	14.1-inch (357 mm) capacitive multi-touch screen, 1280 x 800 WXGA resolution
Warm-up Time	30 minutes
Internal Storage	256 GB removable solid state drive (standard) or 512 GB (optional)

Physical

Power Supply	100 to 120 V AC (50/60/400 Hz), 220 to 240 V AC (50/60 Hz), < 450 W maximum power consumption
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 266 mm × 556 mm mm
Weight	29.8 kg kg

Frequency and Time Specifications

Frequency Range	2 Hz to 90 GHz (Option 590) or 110 GHz (Option 511)
Frequency Span Range	0 Hz (zero span), 10 Hz to 90 or 110 GHz
Frequency Reference Accuracy	±(aging rate × time since last adjustment + temperature stability + calibration accuracy)
Aging Rate (per Year)	±1.5 × 10 ⁻⁷ per year
Temperature Stability	±1.5 × 10 ⁻⁸ (0 to 55 °C)

Amplitude Specifications

Measurement Range	Displayed Average Noise Level (DANL) to +30 dBm
Maximum Input Level (DC Voltage) - Input 1	±0.2 V
Maximum Input Level (DC Voltage) - Input 2	0 V (DC coupled)
Maximum Input Level (RF Power) - Input 1	+30 dBm (1 W)
Maximum Input Level (RF Power) - Input 2	+23 dBm
Attenuator Range (Input 1)	0 to 70 dB in 2 dB steps
Attenuator Range (Input 2)	0 to 40 dB in 2 dB steps

Bandwidth and Sweep

Resolution Bandwidth (RBW) Range (-3 dB)	1 Hz to 8 MHz (in 1-3-10 sequence), wideband options to 20 MHz
Resolution Bandwidth (RBW) Accuracy	±1.0% (1 Hz to 3 MHz)
Video Bandwidth (VBW) Range	1 Hz to 8 MHz, plus wide open (VBW ≥ RBW)
Sweep Points Range	1 to 40,001 (swept and FFT)
Sweep Triggers	Free Run, Line, Video, External 1, External 2, RF Burst, Periodic Timer

Phase Noise and Spurious

Phase Noise at 1 GHz (10 kHz Offset)	-136 dBc/Hz
Phase Noise at 1 GHz (100 kHz Offset)	-135 dBc/Hz
Phase Noise at 1 GHz (1 MHz Offset)	-145 dBc/Hz

Analysis and Real-Time Capabilities

Standard Analysis Bandwidth	25 MHz
Maximum Analysis Bandwidth (with Options)	Up to 1 GHz (Option B1X)
Real-Time Bandwidth (RTBW)	Up to 510 MHz (Option RT1 or RT2)
Probability of Intercept (POI) for 100% Amplitude	3.51 μs (with 510 MHz RTBW option)

Inputs, Outputs, and Connectivity

RF Input 1 Connector Type	2.4 mm female or 1.85 mm female (configuration dependent)
RF Input 2 Connector Type	1.0 mm male (up to 110 GHz)
RF Input Impedance	50 Ω (nominal)
10 MHz Reference Input	BNC female, -5 to +10 dBm (nominal)
10 MHz Reference Output	BNC female, ≥ 0 dBm (nominal)

Control and Software

Operating System	Windows 10 IoT Enterprise
Standard Measurements	Channel Power, ACP, OBW, Multi-Carrier Power, Power Stat CCDF, Harmonic Distortion, Spurious Emission, Spectrum Emission Mask

Physical, Environmental, and Power

Recommended Calibration Cycle	1 year
EMC Compliance	Complies with European EMC Directive 2014/30/EU, IEC/EN 61326-1
Safety Compliance	Complies with European Low Voltage Directive 2014/35/EU, IEC/EN 61010-1

Environmental

Storage Temperature Range	-40 °C to +70 °C
Operating Altitude	Up to 4,600 meters
Operating Humidity	Up to 95% relative humidity (non-condensing)
Vibration (Operating)	0.21 g rms, 5 to 500 Hz
Shock (Non-operating)	30 g, half-sine, 11 ms

Interfaces

External Display Outputs	DisplayPort and DVI-I
LAN Interface Speed	1000Base-T (Gigabit) Ethernet
USB Ports	1x USB 2.0 (front), 1x USB 3.0 (front), 4x USB 3.0 (rear)

Power

Power Consumption (Maximum)	450 W
Power Consumption (Typical)	350 W

Dynamic Range

Displayed Average Noise Level (DANL) at 1 GHz (Input 1, No Preamp)	-153 dBm/Hz (typical)
Displayed Average Noise Level (DANL) at 50 GHz (Input 1, No Preamp)	-140 dBm/Hz (typical)
Displayed Average Noise Level (DANL) at 110 GHz (Input 2, No Preamp)	-136 dBm/Hz (typical)
Third-Order Intercept (TOI) at 1 GHz (Input 1)	+21 dBm (typical)
Third-Order Intercept (TOI) at 50 GHz (Input 1)	+13 dBm (typical)
Third-Order Intercept (TOI) at 110 GHz (Input 2)	+15 dBm (typical)
1 dB Gain Compression at 1 GHz (Input 1)	+15 dBm (nominal)

Performance

Sweep Time Range (Span > 0 Hz)	1 μs to 6000 s
Sweep Time Range (Zero Span)	1 μs to 6000 s

TECHNOLOGY

Superheterodyne Spectrum and Signal Analysis

APPLICATIONS

Millimeter-wave RF design, 5G/6G research, aerospace and defense communication testing

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