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Data Sheet

August 14, 2026

AGILENT / KEYSIGHT

Agilent / Keysight N5166B CXG RF Vector Signal Generator, 9 kHz to 3/6 GHz

Agilent Keysight N5166B CXG RF Vector Signal Generator The Keysight N5166B CXG is an X-Series RF vector signal generator covering 9 kHz to 3 GHz (Option 503) or 9 kHz to 6 GHz (Option 506). OEM N5166B data sheet lists 0.001 Hz frequency resolution, settable amplitude +19 to minus 144 dBm, +18 dBm maximum output from 10 MHz to 3 GHz, and 60 or 120 MHz internal baseband bandwidth. IoT and general-purpose receiver tests; Signal Studio waveform playback; analog AM/FM/PM/pulse plus vector IQ generation for educational and DVT labs.

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MODEL

**Agilent / Keysight
N5166B**

CALIBRATION

**Available on
request**

CONDITION

Used

STATUS

In stock

RFQ / SKU

N5166B

LISTING

<https://aumictechlabs.com/products/n5166b-2/>

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 · 811210 · 541380

This unit

The Keysight N5166B CXG RF Vector Signal Generator delivers precision signal generation across 9 kHz to 3 GHz or 6 GHz, purpose-built for component and receiver testing in IoT and general-purpose device validation. This vector signal generator combines a wide frequency range with flexible modulation capabilities and high spectral purity, enabling accurate characterization of complex RF behaviors.

Technical Specifications

Frequency Performance
Frequency range: 9 kHz to 3 GHz or 6 GHz (model dependent)
Frequency resolution: 0.001 Hz
Frequency switching speed: ≤ 5 ms typical (SCPI, List/Step sweep)
Frequency reference accuracy: $\pm 4 \times 10^{-8}$ calibration accuracy
Internal timebase aging: $\leq \pm 5$ ppm/10 years; $< \pm 1$ ppm/year
External reference input: 10 MHz standard; 1–50 MHz with Option 1ER
External reference lock range: ± 1 ppm
Amplitude and Power Output power at 1 GHz: +18 dBm
Maximum output power range: –3.0 to +20 dBm nominal
Amplitude resolution: 0.01 dB
Amplitude flatness (120 MHz): ± 0.2 dB (with channel corrections optimized for I/Q output)
Amplitude drift: 0.10 dB 3 GHz per g/kg absolute humidity change
Temperature coefficient (outside 20–30°C): 0.01 dB/°C for both output power and absolute level accuracy

Modulation Capabilities
RF modulation bandwidth: Up to 120 MHz
Baseband channels: 2 (I and Q)
Baseband resolution: 12 bits
Baseband sample rate: 100 Sa/s to 75 MSa/s (Option 653); 100 Sa/s to 150 MSa/s (Options 653 + 655)
Arbitrary waveform memory: 512 MSa typical
Frequency offset range: ± 80 MHz baseband
Modulation types: AM, FM, phase modulation (Option UNT), narrow pulse modulation (Option UNW)
Sweep modes: Step and List; List mode supports independent waveforms, user-defined frequencies and amplitudes per point
Spectral Purity
Harmonics at 1 GHz: –35 dBc
Non-harmonics at 1 GHz: –72 dBc

Key Features
High-resolution frequency tuning with 0.001 Hz steps
Extended waveform memory supports complex signal playback
Multiple baseband bandwidth options: 60 MHz (Option 653) or 120 MHz (Option 655 with 653)
Memory upgrade path: 32 MSa to 512 MSa (Option 022 with 653)
Excellent frequency stability and low phase noise for precise testing
List sweep capability for multi-point characterization without gaps

Typical Applications
Component and receiver testing for wireless devices
IoT device validation and characterization
Complex signal generation for protocol testing
Spectral purity verification and harmonic analysis
Arbitrary waveform playback for custom modulation schemes

Compatibility & Integration
External frequency reference input accepts 1–50 MHz sources (Option 1ER) with ± 1 ppm lock range for synchronization with external standards.
SCPI command interface supports automated test sequences and frequency/amplitude sweep control.

N5166B Characteristics / Specifications

PARAMETER	VALUE
Model	N5166B
Instrument Type	RF vector signal generator
Series Family	Keysight X-Series CXG
Frequency Range Option 5	9 kHz (5 MHz IQ mode) to 3 GHz
Frequency Resolution	0.001 Hz
Phase Offset	adjustable in nominal 0.1 degree increments
Frequency Switching Speed Typical	≤5 ms typical, SCPI or list/step sweep
Aging Rate	less than ±1 ppm/year; ≤ ±5 ppm/10 years
Temperature Effects Nominal	±1 ppm, 0 to 55 C, nominal
Settable Amplitude Range	+19 to minus 144 dBm
Amplitude Resolution	0.01 dB
Step Attenuator	0 to 130 dB in 5 dB steps, electronic
Rf Connector	Type N, 50 ohm nominal
Maximum Output 9 Khz To 10 Mhz	+13 dBm
Maximum Output 10 Mhz To 3 Ghz	+18 dBm
Maximum Output 3 To 6 Ghz	+16 dBm
Specified Output Power Range	minus 110 to +18 dBm
Phase Noise Typical 1 Ghz 20 Khz	minus 119 dBc/Hz typical
Amplitude Accuracy	±0.6 dB
Internal Baseband Rf Bandwidth	60 or 120 MHz
External Iq Rf Bandwidth	200 MHz
Baseband Amplitude Flatness	±0.2 dB, measured with channel correction
Baseband Memory Standard	32 MSa
Baseband Memory Option 0	512 MSa
Sweep Dwell Time	100 us to 100 s

PARAMETER	VALUE
Step Sweep Points	2 to 65535
List Sweep Points	1 to 3201
Reference Output	10 MHz, greater than +4 dBm nominal into 50 ohm
Warm Up Time	45 minutes for warranted specs
Operating Temperature Spec	0 C to 55 C storage-to-operate window; typical 20 to 30 C
Bandwidth	60 or 120 MHz
Operating temperature	Spec: 0 C to 55 C storage-to-operate window; typical 20 to 30 C

General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Operating temperature	Spec: 0 C to 55 C storage-to-operate window; typical 20 to 30 C
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Operating Temperature Spec	0 C to 55 C storage-to-operate window; typical 20 to 30 C Notes Numeric rows from Keysight N5166B CXG RF Vector Signal Generator data sheet. Option 503 is 3 GHz; Option 506 is 6 GHz.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications	
Specifications	
PARAMETER	VALUE
Model	N5166B
Instrument Type	RF vector signal generator
Series Family	Keysight X-Series CXG
Frequency Range Option 503	9 kHz (5 MHz IQ mode) to 3 GHz
Frequency Range Option 506	9 kHz (5 MHz IQ mode) to 6 GHz
Frequency Resolution	0.001 Hz
Phase Offset	adjustable in nominal 0.1 degree increments
Frequency Switching Speed Typical	≤5 ms typical, SCPI or list/step sweep
Aging Rate	less than ±1 ppm/year; ≤ ±5 ppm/10 years
Temperature Effects Nominal	±1 ppm, 0 to 55 C, nominal
Settable Amplitude Range	+19 to minus 144 dBm
Amplitude Resolution	0.01 dB
Step Attenuator	0 to 130 dB in 5 dB steps, electronic
Rf Connector	Type N, 50 ohm nominal
Maximum Output 9 Khz To 10 Mhz	+13 dBm
Maximum Output 10 Mhz To 3 Ghz	+18 dBm
Maximum Output 3 To 6 Ghz	+16 dBm
Specified Output Power Range	minus 110 to +18 dBm
Phase Noise Typical 1 Ghz 20 Khz	minus 119 dBc/Hz typical
Amplitude Accuracy	±0.6 dB
Internal Baseband Rf Bandwidth	60 or 120 MHz
External Iq Rf Bandwidth	200 MHz
Baseband Amplitude Flatness	±0.2 dB, measured with channel correction
Baseband Memory Standard	32 MSa
Baseband Memory Option 022	512 MSa
Sweep Dwell Time	100 us to 100 s

PARAMETER	VALUE
Step Sweep Points	2 to 65535
List Sweep Points	1 to 3201
Reference Output	10 MHz, greater than +4 dBm nominal into 50 ohm
Warm Up Time	45 minutes for warranted specs
Operating Temperature Spec	0 C to 55 C storage-to-operate window; typical 20 to 30 C

Notes
Numeric rows from Keysight N5166B CXG RF Vector Signal Generator data sheet. Option 503 is 3 GHz; Option 506 is 6 GHz.

Ordering Information

OPTION	DESCRIPTION
Option 655	External IQ inputs 200 MHz RF bandwidth
Option 503	is 3 GHz; Option 506 is 6 GHz.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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30-day returns
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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.