

KEYSIGHT TECHNOLOGIES (AGILENT HP)

N5182A-503

The Keysight (Agilent) N5182A-503 is a high-performance vector signal generator from the MXG series, configured with Option 503 to provide a frequency range from 250 kHz to 3 GHz. It is engineered for fast switching speeds, high reliability, and excellent spectral purity. It is ideal for testing components and receivers in cellular and lower ISM frequency bands, including W-CDMA, cdma2000, WLAN, and WiMAX.

SPECIFICATIONS

General

Interfaces	GPIB, LAN (100Base-T), USB 2.0 Host, USB 2.0 Device, LXI Class C
Display	Monochrome backlit LCD screen

Physical

Power Supply	100 to 240 VAC, 50 to 60 Hz (100 to 120 VAC at 400 Hz); < 250 W maximum power consumption
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 88 mm × 489 mm mm
Rack Height	2U

Frequency

Frequency Range	250 kHz to 3 GHz
Frequency Resolution	0.01 Hz
Frequency Switching Speed (List Mode)	5 ms (standard with digital modulation) / 900 μs (with Option UNZ)
Frequency Switching Speed (SCPI Mode)	5 ms (standard with digital modulation) / 1.15 ms (with Option UNZ)
Sweep Modes	Step, List

Amplitude

Output Power Range (Minimum)	-110 dBm (standard with electronic attenuator) / -127 dBm (with Option 1EQ)
Amplitude Resolution	0.01 dB
Output Voltage Standing Wave Ratio (VSWR)	< 1.4:1 (typical, 250 kHz to 3 GHz)
Maximum Reverse Power	50 W (average, ≤ 3 GHz)
Amplitude Switching Speed	≤ 5 ms (standard) / ≤ 1.15 ms (with Option UNZ)

Spectral Purity

SSB Phase Noise	-116 dBc/Hz (at 1 GHz carrier, 20 kHz offset)
Harmonics	<-30 dBc (at 1 GHz, output level $\leq$ +4 dBm)
Non-Harmonics (Spurious)	<-62 dBc (carrier $\leq$ 3 GHz, offset > 10 kHz)
Sub-Harmonics	None (for carrier $\leq$ 3 GHz)

Vector Modulation

Internal Baseband Generator Bandwidth	up to 80 MHz (RF bandwidth, option dependent)
Arbitrary Waveform Memory Capacity	up to 64 MSa (baseband option dependent)
DAC Resolution	16-bit
Sampling Rate Range	100 kSa/s to 100 MSa/s
I/Q Modulation Bandwidth (Internal)	up to 80 MHz (RF bandwidth)
I/Q Modulation Bandwidth (External RF)	up to 160 MHz
Error Vector Magnitude (EVM)	< 1.2% (typical, 1-carrier W-CDMA, 2 GHz, +4 dBm)

Analog Modulation

Frequency Modulation (FM) Maximum Deviation	up to 40 MHz (carrier dependent)
Phase Modulation (Phi-M) Maximum Deviation	up to 40 rad (carrier dependent)
Amplitude Modulation (AM) Depth Range	0 to 100%
Minimum Pulse Width	20 ns (typical)

Frequency Reference

Internal Reference Aging Rate	± 1 ppm/year (standard TCXO) / ± 0.05 ppm/year (with Option UNX)
Temperature Stability	± 1 ppm (0 to 55 °C, standard TCXO) / ± 0.01 ppm (with Option UNX)
External Reference Input Frequency	10 MHz (standard)
External Reference Input Level	-3.5 to +20 dBm (typical)
Reference Output Frequency	10 MHz
External Reference Input Impedance	50 Ω (nominal)
External Reference Output Impedance	50 Ω (nominal)

Rear and Front Panel Connectivity

RF Output Connector Type	Type-N female, 50 Ω
External I/Q Inputs (I and Q)	BNC female, front panel, 50 Ω
External I/Q Outputs (I and Q)	BNC female, front panel, 50 Ω
Trigger/Event Inputs and Outputs	External Trigger Input, Event Outputs, Marker Outputs (BNC)
LAN Interface	100Base-T (RJ-45)
GPIB Interface	IEEE-488 (rear panel)
USB 2.0 Host/Device Ports	Type-A (front/rear panel) and Type-B (rear panel)

System and Software Features

SCPI Command Compatibility	Compatible with ESG, PSG, and standard SCPI
Instrument Drivers (IVI/LabVIEW)	IVI-COM, IVI-C, LabVIEW drivers available
Signal Creation Software Compatibility	Keysight Signal Studio (N76xx)
Embedded Web Server	Yes (LXI compliant web interface)

Physical and Environmental Specifications

Storage Temperature Range	-40 to 70 °C
Operating Humidity	Up to 95% relative humidity at 40 °C (non-condensing)
Calibration Cycle	3 years recommended

Ordering Configurations and Options

Frequency Range Options	Option 503 (100 kHz to 3 GHz)
Attenuator Options	Electronic attenuator (standard)

Available Options

Option UNT	AM, FM, Phase Modulation
Option UNW	Narrow pulse modulation
Option 1EL	Differential I/Q outputs
Option 1EM	Rear-panel RF output
Option 1ER	Flexible reference input
Option 019	64 MSa ARB memory
Option 651	Internal baseband generator (30 MSa/s, 8 MSa)
Option 652	Internal baseband generator (60 MSa/s, 8 MSa)
Option 654	Internal baseband generator (125 MSa/s, 8 MSa)

Sweep

Step Sweep Points	2 to 601
List Sweep Points	2 to 3,201

Compliance

EMC Compliance	Complies with European EMC Directive 2004/108/EC
Safety Compliance	Complies with European Low Voltage Directive 2006/95/EC

RF Output

RF Output Impedance	50 Ω
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Connectivity

LXI Compliance	LXI Class C
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TECHNOLOGY

RF Vector Signal Generator

APPLICATIONS

LO/clock substitution, interference generation, component testing, and receiver verification in cellular and ISM bands

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