

# Agilent Signal Generator Selection Guide

## Setting Higher Standards for Signal Generation





## Introduction

Agilent offers the widest selection of signal generators from baseband to 67 GHz, with frequency extensions to 500 GHz. From basic to advanced functionality, each signal generator delivers benchmark performance in its class to address the requirements in design and manufacture of radio transceivers and their components; and applications ranging from low-frequency navigation signals, through cellular mobile radio, to millimeter wave RADAR and satellite systems. Each offers synthesized frequency accuracy and stability, excellent calibrated level accuracy,

and remote programmability. Modulation capabilities vary from general-purpose AM, FM and digital I/Q to standard-specific formats such as GSM, W-CDMA, HSPA, LTE, GPS, and wireless LAN. Agilent provides signal generators in multiple form factors, including benchtop and PXI Modular.

This selection guide provides an overview and side-by-side comparisons to help you determine which signal generator is right for you. It is intended to supplement online selection tools available at www.agilent.com/find/siggen.

## Frequency coverage for Agilent signal generators



## **Product Categories**

## Vector signal generators

Vector signal generators or digital signal generators have a built-in I/Q modulator to upconvert complex modulation formats such as QPSK and 64QAM. When combined with an IQ baseband generator, virtually any signal can be emulated and transmitted within the information bandwidth supported by the system.

### Analog signal generators

Analog signal generators supply sinusoidal continuous wave (CW) signals with optional capability to add AM, FM,  $\Phi$ M and pulse modulation. The maximum frequency range for analog signal generators span from RF to microwave. Most generators feature step/list sweep modes for passive device characterization or calibration.

## Baseband generator

Baseband generators (BBG) output complex I/Q signals such as QPSK, and can have several modes of operation:

- Waveform playback mode to play repetitive signals for component testing
- Real-time mode to transmit non-repeating/dynamic signals for receiver test
- Digital IQ input or output mode to stimulate FPGAs, DACs or ADCs

### Channel emulator

Channel emulators are used to simulate the medium through which RF waves propagate. They can replicate multi-path and multi-channel fading for SISO or MIMO transceivers typically used to test the sensitivity, throughput or function of devices under test.

### Signal creation software

Signal creation software products enable the generation of a wide range of application-specific test signals using vector signal generators. They can easily create signals to evaluate the performance of radio designs and the components that comprise them under various parametric and functional test conditions at baseband, RF and microwave frequencies. Agilent's Signal Studio software runs on a PC and embedded software runs directly on the signal generator.

### Table of contents

Key Specifications Comparison4
Vector signal generators Analog signal generators
Application and Software Comparison6
Signal Studio Software7
PSG Signal Generators
X-Series Signal Generators
Analog Signal Generators12
Baseband Generator and Interface Module13
Modular Products14
PXI vector signal generator14
PXI CW source14
PXI local oscillator15
Migrating from Legacy Signal Generators16

## Modular products

Modular and software-defined building blocks provide flexible system configurations to meet diverse test needs. The PXI open-standard has seen rapid adoption in measurement and test automation applications, where compact form factor and modular channel expandability are required. For example, up to four PXI vector signal generators can fit within a 4U rack space.

## **Key Specifications Comparison – Vector Signal Generators**

Specifications	PSG MW	MXG RF	EXG RF	PXI RF
Model number	E8267D	N5182B	N5172B	M9381A
Performance	****	***	***	**
Frequency range (min. to max.)	100 kHz to 44 GHz	9 kHz to 6 GHz	9 kHz to 6 GHz	1 MHz to 6 GHz
Frequency switching (list mode)	9 ms	800 µs	800 µs	< 10 to 220 µs
Sweep mode	Step, list, ramp	Step, list	Step, list	Step, list
Output power (minimum)	–130 dBm	-144 dBm	-144 dBm	-130 dB
Output power (maximum; at 1 GHz)	+22 dBm (at 20 GHz)	+24 dBm	+21 dBm	+19 dBm
Level accuracy (at 1 GHz)	± 0.8 dB (at 20 GHz)	± 0.6 dB	± 0.6 dB	± 0.4 dB
SSB phase noise (at 1 GHz; 20 kHz offset)	-143 dBc/Hz (at 10 kHz offset)	-146 dBc/Hz	-122 dBc/Hz	-122 dBc/Hz
Harmonics (at 1 GHz)	-55 dBc	-35 dBc	-35 dBc	-34 dBc
Non-harmonics (at 1 GHz)	-88 dBc	-96 dBc	-72 dBc	-70 dBc
AM rate	DC to 100 kHz	DC to 50 kHz	DC to 50 kHz	6.2 MHz
FM deviation (maximum)	1 to 128 MHz	1 to 16 MHz	2.5 to 40 MHz	1.24 MHz
PM phase deviation (maximum in normal mode)	1 to 800 rad	0.5 to 8 rad	1.25 to 20 rad	10 rads
Narrow pulse width	20 ns	20 ns	20 ns	20 ns
EVM (LTE)	0.8%	0.2%	0.2%	0.32%
ACPR (3GPP W-CDMA TM1 64 DPCH)	-64 dBc (16QAM, 10 GHz)	-73 dBc	-73 dBc	-70 dBc
Internal baseband generator RF BW	80 MHz	160 MHz	120 MHz	160 MHz
External I/Q modulator RF BW	Up to 2 GHz	Up to 200 MHz	Up to 200 MHz	
Waveform playback memory	64 Msa	1024 Msa	512 Msa	1024 MSa
Baseband generator mode	Waveform playback and real-time IQ	Waveform playback and real-time	Waveform playback and real-time	Waveform playback

## **Key Specifications Comparison – Analog Signal Generators**

Specifications	PSG MW	MXG MW	PSG RF	MXG RF	EXG RF	RF	PXI local oscillator	PXI RF source
Model number	E8257D	N5183A	E8663D	N5181B	N5171B	N9310A	M9302A	M9380A
Performance	****	***	***	***	***	**	**	**
Frequency range (min. to max.)	100 kHz to 70 GHz	100 kHz to 40 GHz	100 kHz to 9 GHz	9 kHz to 6 GHz	9 kHz to 6 GHz	9 kHz to 3 GHz	3 GHz to 10 GHz	1 MHz to 6 GHz
Frequency switching (list mode)	9 ms	600 µs	9 ms	800 µs	800 μs	10 ms	500 μs	5 ms
Sweep mode	list, step, ramp	list, step	list, step, ramp	list, step	list, step	list, step	NA	NA
Output power (minimun)	–135 dBm	–90 dBm	–135 dBm	–144 dBm	–144 dBm	–127 dBm	NA	–130 dBm
Output power (at 1 GHz)	+26 dBm (at 20 GHz)	+19 dBm (at 20 GHz)	+23 dBm	+24 dBm	+21 dBm	+13 dBm	+16 dBm	+19 dBm
Level accuracy	± 0.8 dB (at 20 GHz)	± 0.6 dB (at 20 GHz)	± 0.6 dB	± 0.6 dB	± 0.6 dB	± 1.0 dB	± 2 dB	± 0.4 dB
SSB phase noise (1 GHz, 20 kHz offset)	-143 dBc/Hz (at 10 kHz offset)	-116 dBc/Hz	-143 dBc/Hz (at 10 kHz offset)	-146 dBc/Hz	-122 dBc/Hz	-95 dBc/Hz	-115 dBc/Hz (10 GHz, 10 kHz offset)	-122 dBc/Hz
Harmonics (at 1 GHz)	–55 dBc	-30 dBc	–55 dBc	-35 dBc	-35 dBc	-30 dBc	-20 dBc	–29 dBc
Non-harmonics (at 1 GHz)	-88 dBc	-70 dBc	-88 dBc	-96 dBc	-72 dBc	–50 dBc	-70 dBc	–70 dBc
AM rate	DC to 100 kHz	DC to 10 kHz	DC to 100 kHz	DC to 50 kHz	DC to 50 kHz	20 Hz to 20 kHz	NA	NA
FM deviation (maximum)	1 to 128 MHz	2.5 to 320 MHz	1 to 16 MHz	1 to 16 MHz	2.5 to 40 MHz	100 kHz	NA	NA
PM phase deviation (maximum, in normal mode)	1 to 1280 rad	1.25 to 160 rad	1 to 160 rad	0.5 to 8 rad	1.25 to 20 rad	10 rad	NA	NA
Narrow pulse width	20 ns	20 ns	20 ns	20 ns	20 ns	100 μs	NA	NA

## Applications, Core Capabilities and Software Comparison

Applications and signal creation software	PSG MW	MXG and EXG RF	PXI RF	PSG MW	MXG MW	MXG and EXG RF	PSG RF	N9310 RF	PXB
		vector				analog			
Models	E8267D	N5182B N5172B	M9381A	E8257D	N5183A	N5181B N5171B	E8663D	N9310A	N5106A
Instrument embedded capabilitie	s								
USB power meter		•			•	•			
Step/list sweep	•	•	•	•	•	•	•	•	•
Ramp sweep	•			•			•		
AM, FM, PM, pulse	•	•	•	•	•	•	•	•	
LF function generator	•	•		•		•	•	•	
Real-time custom modulation (PSK, QAM, FSK)	•	•							
Phase noise impairments		•							
Multitone, NPR	•	•							
Noise (AWGN)	•	•							•
Pulse Train		•			•	•			
SystemVue, MATLAB	•	•	•						•
Fading									
Real-time fading									•
Signal Studio Software									
Cellular communications									
LTE & LTE-Advanced FDD/TDD, W-CDMA/HSPA+, cdma2000®, 1xEVDO, GSM/EDGE/Evo, TD-SCDMA	•	•	•						•1
Real-time: LTE FDD/TDD, W-CDMA/HSPA+, cdma2000, GSM/EDGE		•							•
Wireless networking									
WLAN 802.11a/b/g/j/p/n/ac, Mobile WiMAX™, <i>Bluetooth</i> ®	•	•	•						•
Fixed WiMAX	•	•	•						
UWB	•								
Audio/video broadcast									
DVB-T/H/T2/S/S2, DVB-C (J.83 Annex A/C), J.83 Annex B (DOCSIS DS), ISDB-T/Tmm, ATSC, ATCS-M/H, DTMB (CTTB), CMMB	•	•	•						•2
Real-time: DVB-T/H/T2/S/ S2/C, J.83 Annex A/C, ISDB-T		•							•
T-DMB, DAB/DAB+/DMB-audio, FM stereo with RDS/RBDS		•	•						•
Detection, positioning, tracking, & navigation									
Pulse building	•	•							
GPS, GLONASS, Galileo, Compass/Beidou2, SBAS, QZSS	•	•	•						•

<sup>1.</sup> cdma2000 and GSM/EDGE real-time applications not available on PXB.

<sup>2.</sup> DVB-T2/S/S2, DVB-C (J83 Annex A/C) and ISDB-T not supported on PXB.

## Signal Studio Software



## Simplify signal creation

Connect your vector source to Signal Studio — and simplify signal creation. Whether you are working on a single radio format or integrating multiple formats into a single device, easy access to the right test signals streamlines validation and helps ensure interoperability. Accelerate your work with Agilent Signal Studio software, a flexible suite of signal-creation tools that reduces the time you spend on signal simulation. Its performance-optimized reference signals, validated by Agilent, enhance the characterization and verification of your devices.

Configure Signal Studio to match your requirements

- Choose basic or advanced levels of capability with scalable option structure
- Select the license type that fits your specific use case and budget, including fixed, transportable, and 5- or 50-pack waveforms
- · Connect to a wide range of Agilent instruments
- · Runs on a PC

Leverage and customize built-in signals with flexible signal generation, additive impairments, graphs, convenient connectivity and automation, and embedded and online documentation. Control your vector signal generator directly from the software GUI and/or from the instrument front panel.

Signal Studio software addresses the following applications:

### General purpose

- Jitter injection
- · Multitone, NPR
- · Waveform download utility

#### Cellular communications

- LTE & LTE-Advanced FDD/TDD,
- W-CDMA/HSPA+, cdma2000, 1xEVDO, GSM/EDGE/ Evo, TD-SCDMA

### Wireless connectivity

- WLAN 802.11a/b/g/j/p/n/ac
- · Mobile WiMAX, Fixed WiMAX
- · Bluetooth
- UWB

### Audio/video broadcasting

- · ATSC, CMMB, DTMB, DVB, S-DMB, T-DMB
- ISDB-T, J.83 Annex A/B/C
- · DAB, DAB+, DMB
- DOCSIS
- · FM Stereo, RDS/RBDS

#### Detection, positioning, tracking, and navigation

- · Pulse building
- · GPS, GLONASS, Radar

### www.agilent.com/find/SignalStudio

## Free Trial License

Free 30-day trials of Signal Studio software are available to evaluate the user interface and generate signals. Redeem a trial license online at www.agilent.com/find/SignalStudio trial

## **PSG Signal Generators**



## PSG microwave signal generator E8267D vector

The E8267D is the world's first integrated vector microwave signal generator up to 44 GHz. It continues to accelerate innovation for your RF and microwave test applications in the aerospace, defense and communication industries. When performing functional and parametric tests on advanced RF and microwave radio systems, the E8267D delivers the high quality, complex-modulated test signals you need to test your device to its maximum potential.

- Test wideband radio performance using the internal baseband generator capable of generating digitally-modulated signals with up to 80 MHz bandwidth.
- For wideband applications, the PSG's differential I/Q inputs offer up to 2 GHz bandwidth for use with the latest high-performance AWGs to generate extremely wide band microwave signals.

## www.agilent.com/find/E8267D



## PSG microwave signal generator E8257D analog

With a reputation as the standard in microwave signal generation, the E8257D offers an extremely wide frequency range, covering 100 kHz to 70 GHz. It is also the first microwave analog signal generator to break the one watt output power barrier. Characterize devices using the full suite of analog modulation formats including amplitude, frequency and phase modulation. Generate pulsed signals for radar test or simply substitute a continuous-wave (CW) signal for a local oscillator. The PSG delivers high-quality signals to test your state-of-the-art designs.

- The PSG offers extremely high signal purity, with the lowest phase noise, harmonics and spurious to insure that you measure the performance of your device, not your test equipment.
- Extend the frequency range of your PSG up to 500 GHz using the E8257DSxx series of millimeter source modules.

#### www.agilent.com/find/E8257D

Key specifications	E8267D MW vector	E8257D MW analog
Frequency range (min. to max.)	100 kHz to 44 GHz	100 kHz to 70 GHz
Frequency switching	9 ms	9 ms
Output power (at 20 GHz)	+22 dBm	+26 dBm
Level accuracy	± 0.6 dB	± 0.6 dB
SSB phase noise (1 GHz; 10 kHz offset)	–143 dBc/Hz	–143 dBc/Hz
Harmonics	–55 dBc	–55 dBc
EVM (QPSK)	0.8%	N/A
ACPR (16 QAM)	-64 dBc	N/A
Internal baseband generator RF BW	80 MHz	N/A



## PSG RF signal generator E8663D analog

The E8663D PSG RF analog signal generator provides the industry's lowest phase noise in a commercially-available signal generator. With optional analog modulation (AM, FM, ØM and pulse) capability, superior level accuracy and high output power, the E8663D is the right choice for demanding applications such as radar system development, satellite communications evaluation, or when a very low noise local oscillator or reference signal is needed. Built on the outstanding legacy of the 8663A, the E8663D delivers improved performance and is fully code compatible with its predecessor for seamless upgrades to existing test systems. Enhanced narrow pulse modulation and extended support life are optionally available.

### www.agilent.com/find/E8663D

Key specifications	
Frequency range (min. to max.)	100 kHz to 9 GHz
Frequency switching	9 ms
Output power	+23 dBm
Level accuracy	± 0.6 dB
SSB phase noise (1 GHz; 10 kHz offset)	-143 dBc/Hz
Harmonics	-55 dBc

## E8257DSxx series mm-wave source modules for PSG signal generators

The E8257DSxx series (available from OML, Inc. as the SxxMS-AG series) of external, high power, frequency banded mm-wave source modules, when paired with the high performance PSG, provide synthesized frequency performance, mm-wave test signals for waveguide bands from 50 to 500 GHz.

www.agilent.com/find/mmw\_source\_modules



## X-Series Signal Generators

## Generate true performance

To know your device's behavior, you'll take many paths. That's the idea behind Agilent's X-Series signal generators. They produce the signals you need — from simple to complex, from clean to impaired — to test your design within and beyond its limits. What's more, the X-Series is crafted to create signals capable of testing your very best devices. From the pure and precise MXG to the cost-effective EXG, the X-Series helps you generate true performance.

#### **Unmatched performance**

From 9 kHz to 6 GHz, the analog and vector MXG and EXG deliver unmatched performance in five key categories: phase noise and spectral purity, flat bandwidth, EVM, ACPR and output power. They also provide up to 1024 Msa of playback memory for vector signals.

www.agilent.com/find/X-Series SG

#### **Fast signal creation**

To help you quickly create signals that meet the needs of specific standards and measurements, the MXG and EXG are compatible with Agilent Signal Studio software (real-time and waveform playback). Its suite of signal-creation tools addresses cellular communications, wireless connectivity, audio, video, positioning, tracking, and general-purpose applications.

#### Reduce cost of ownership

To reduce cost-of-ownership, the X-Series signal generators are designed for high reliability and fast, easy calibration, service and repair. Today's MXG and EXG leverage technology used in previous-generation MXG signal generators, which are among the most reliable signal sources. The recommended three-year calibration cycle helps reduce maintenance costs and increase instrument availability.



## X-Series Signal Generators



## MXG RF signal generators N5182B vector and N5181B analog

To help you reach better performance, the MXG X-Series vector and analog signal generators are fine-tuned to be your "golden transmitter" in R&D. Whether you're pushing for a linear RF chain or an optimized link budget, the MXG delivers what you need: phase noise, ACPR, channel coding, and much more. Reveal the true performance of your devices and test your designs within and beyond their limits with the MXG.

- Test radar receiver sensitivity or characterize ADC with industry-leading phase noise
- Characterize nonlinear PA behavior with industry-leading ACPR and output power
- Test 802.11ac with < 0.4% EVM, or characterize multi-carrier PAs with <  $\pm$  0.2 dB flatness across 160 MHz bandwidth
- Go beyond standard application requirements with sophisticated real-time and waveform-based Signal Studio software

www.agilent.com/find/N5182B www.agilent.com/find/N5181B



## EXG RF signal generators N5172B vector and N5171B analog

To help you achieve faster throughput and greater uptime, the cost-effective EXG X-Series signal generators are optimized for manufacturing test. With analog and vector models, the EXG provides the signals you'll need for basic parameter testing of components and functional verification of receivers. Get "just enough" test at the right price with the EXG.

- Maximize test margins on the production line with industryleading ACPR
- Maximize throughput with < 800 μs simultaneous switching of frequency, power and waveform type</li>
- Enable rapid, accurate tests using Signal Studio's predefined, standards-based waveforms
- Shrink your test stand with two rack-unit height and integrated multi-function generator and USB power sensor interface

www.agilent.com/find/N5172B www.agilent.com/find/N5171B

Key specifications	MXG RF vector N5182B	MXG RF analog N5181B	EXG RF vector N5172B	EXG RF analog N5171B
Frequency range (min. to max.)	9 kHz to 6 GHz			
Frequency switching	800 μs	800 µs	800 µs	800 µs
Output power	+24 dBm	+24 dBm	+21 dBm	+21 dBm
Level accuracy	± 0.6 dB	± 0.6 dB	± 0.6 dB	± 0.6 dB
SSB phase noise (1 GHz; 20 kHz offset)	-146 dBc/Hz	-146 dBc/Hz	-122 dBc/Hz	-122 dBc/Hz
Harmonics	-35 dBc	–35 dBc	-35 dBc	-35 dBc
EVM (LTE)	0.2%	N/A	0.2%	N/A
ACPR (3GPP W-CDMA TM1 64 DPCH)	–73 dBc	N/A	–73 dBc	N/A
Internal baseband generator RF BW	160 MHz	N/A	120 MHz	N/A

## **Analog Signal Generators**



## MXG microwave signal generator N5183A analog

MXG microwave analog signal generators deliver the performance needed for broadband component manufacturing up to 40 GHz. It provides  $\leq 600~\mu s$  frequency switching to improve test times for applications like antenna test and manufacturing, with a small size (2RU) to better utilize rack space. Excellent power and level accuracy make the MXG microwave a reliable stimulus for driving high power devices. The MXG microwave signal generator can be configured to meet your test needs today, from LO substitution and CW interferer to analog modulation for device characterization, and is easily upgraded to meet your needs in the future.

- · Excellent output power
- · Fast frequency switching
- · High reliability and easy maintenance

#### www.agilent.com/find/N5183A

Key specifications	
Frequency range (min. to max.)	100 kHz to 40 GHz
Frequency switching	600 µs
Output power (at 20 GHz)	+19 dBm
Level accuracy	± 0.6 dB
SSB phase noise (1 GHz; 20 kHz offset)	-116 dBc/Hz
Harmonics	-30 dBc



## RF signal generator N9310A analog

The N9310A is a general-purpose RF signal generator covering a frequency range from 9 kHz to 3 GHz. With a low price, reliable performance, and multiple built-in functions, it's well-suited for manufacturing, education, and service maintenance.

While you may occasionally need a full-function and highperformance signal generator, many times you only need a simple continuous wave (CW) source. For this application, the N9310A RF signal generator is ideal. When you need the solution that provides just enough functionality at the lowest price select the N9310A RF signal generator.

- Optimized for low-cost consumer electronics manufacturing test, education and service and repair
- Optional I/Q modulator 40 MHz bandwidth (ext. I/Q inputs only)
- · USB interface, with flash memory support

## www.agilent.com/find/N9310A

Key specifications	
Frequency range (min. to max.)	9 kHz to 3 GHz
Frequency switching	10 ms
Output power	+13 dBm
Level accuracy	± 1.0 dB
SSB phase noise (1 GHz; 20 kHz offset)	-95 dBc/Hz
Harmonics	-30 dBc

## Baseband Generator and Interface Module



## PXB baseband generator and channel emulator N5106A

The PXB lets you customize test cases and validate designs under real-world conditions with the broadest range of test parameters. Create fully-parameterized signals for established and evolving standards with Agilent Signal Studio. In addition, the PXB lets you model the signal-propagation environment with fully-parameterized, real-time channel emulation (fading). With the largest playback memory available, you can run longer test sequences to better approximate real-world signals. You can also capture signals up to 512 Msa from your own device for post processing.

With less instrumentation to manage, the PXB simplifies test setup. You need only one box for multi-format baseband generation, real-time fading and signal capture. With it, you can construct over 20 configurations to meet your test needs. These configurations, along with external instrument connections, can be redefined in seconds using the PXB user interface.

- Up to 160 MHz modulation and signal capture bandwidth
- 512 Msa playback and signal capture memory per channel
- Up to six BBGs and 16 faders for interference, diversity and MIMO test

www.agilent.com/find/N5106A



## Digital signal interface module N5102A

The N5102A digital signal interface module provides fast and flexible digital inputs and outputs for the MXG and EXG X-Series vector signal generators, E8267D PSG vector signal generator and N5106A PXB baseband generator and channel emulator. In output mode, you can deliver realistic complex-modulated signals such as LTE, HSPA, W-CDMA, GPS, WLAN, digital video, custom pulses and many others directly to your digital devices and subsystems. In the input mode, the interface module ports your digital input to the signal generator's baseband system, providing a quick and easy way of upconverting to calibrated analog IF, RF or  $\mu W$  frequencies.

In both operating modes, the interface module adapts to your device with the logic type, data format, clock features, and signaling you require. With its three-meter extension cable and a selection of connector types, the interface module connects easily to your device, in most cases eliminating the need for custom fixtures.

- Up to 400 MHz in serial mode, 200 MHz in parallel mode
- · Provision for internal, external, or device clocking
- Independent data input and output rates; adjustable clock phase and skew

www.agilent.com/find/N5102A

## Modular Products PXI Signal Generators



## PXIe vector signal generator M9381A

Effective testing of today's complex products requires a balanced mix of time, coverage and cost-per-DUT. Success starts with the right combination of speed and performance. The M9381A accelerates throughput without compromising high performance in your test system.

- Fastest switching time on the market with < 250 µs from its programming interface and < 10 µs in list mode using an exclusive baseband tuning technology innovation for switching power and frequency
- Better linearity, repeatability and resolution further reduce the test time
- +18 dBm specified output power across the frequency range, excellent modulation quality -- particularly at high output power levels
- Up to 160 MHz modulation bandwidth (± 0.3 dB flatness)

### www.agilent.com/find/m9381a



## PXIe CW source M9380A

With high-power levels and accurate measurements, the Agilent M9380A CW source is a configuration without the digital vector modulator module. The Agilent M9018A all-hybrid 18-slot PXIe chassis and M9036A PXIe embedded controller are ideal to complete both configurations.

#### www.agilent.com/find/m9380a

## Agilent Quality and Support in PXI

Keep measurement quality while reducing your cost of ownership with Agilent's unique RF modular calibration and fast core exchange strategy. Agilent PXI signal generators are factory calibrated, shipped with ISO-9002, NIST traceable Cal certificate, and include a 3-year warranty.

www.agilent.com/find/pxi-vsg

Key specifications	M9381A PXIe vector	M9380A PXIe CW source
Frequency range (min. to max.)	1 MHz to 6 GHz	1 MHz to 6 GHz
Frequency switching	< 10 to 220 μs	5 ms
Output power (at 1 GHz)	+19 dBm	+19 dBm
Level accuracy	± 0.4 to 1 dB	± 0.4 to 1 dB
SSB phase noise (1 GHz; 20 kHz offset)	-122 dBc/Hz	-122 dBc/Hz
Harmonics	<-34 dBc	<-29 dBc
EVM (LTE)	0.32%	N/A
ACPR (3GPP W-CDMA TM1 64 DPCH)	-70 dBc	N/A
Internal baseband generator RF BW	160 MHz	N/A

## **Modular Products**





## PXI local oscillator M9302A

The M9302A PXI local oscillator (L0) is optimized for fast settling time to allow for fast frequency down conversion in aerospace and defense applications, such as radar and wideband signal capture, and in wireless communications applications. The M9302A is a two-slot 3U PXI VCO-based 3 GHz to 10 GHz L0. The fast switching time and low phase noise of this L0 make it an ideal component of a microwave vector signal analyzer. When integrated in the Agilent M9392A PXI vector signal analyzer, then combined with 89600 VSA software, the M9302A provides a complete signal analyzer solution enabling analysis of communications, radar and avionics signals to 26.5 GHz in a modular open-system standard.

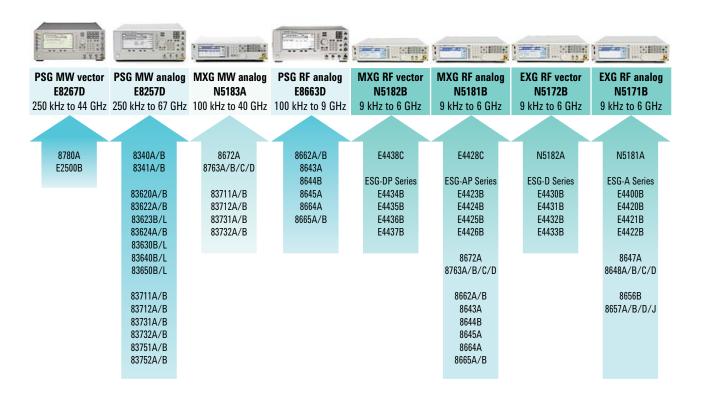
- ± 0.5 ppm frequency temperature stability (0 to 50 °C)
- · 0.1 Hz tuning resolution
- PXI 2-slot 3U

Key specifications	
Frequency range (min. to max.)	3 to 10 GHz
Frequency switching	1 ms
Output power	+16 dBm
Level accuracy	± 2 dB
SSB phase noise (10 GHz; 10 kHz offset)	-115 dBc/Hz
Harmonics	-20 dBc

www.agilent.com/find/M9302A

## Migrating from Legacy Signal Generators

Carefully planned instrument migration and modernization can maximize your test-system efficiency, performance, and readiness, while minimizing risk and potential disruptions, keeping you at the leading edge in the competitive marketplace. The Agilent PSG and X-Series signal generators are designed as evolutionary replacements to their in-class predecessors. Take advantage of their performance, flexibility, speed and modern connectivity in replacing legacy Agilent signal generators.



### Move Up to the X-Series Signal Generators

Test your designs within and beyond their limits with the MXG.

www.agilent.com/find/ESG2MXG

Optimize manufacturing test with the cost-effective EXG.

www.agilent.com/find/MXG2EXG www.agilent.com/find/8648toEXG



### www.agilent.com/find/myagilent

A personalized view into the information most relevant to you.



#### www.lxistandard.org

LAN eXtensions for Instruments puts the power of Ethernet and the Web inside your test systems. Agilent is a founding member of the LXI consortium.



#### www.pxisa.org

PCI eXtensions for Instrumentation (PXI) modular instrumentation delivers a rugged, PC-based high-performance measurement and automation system.

### **Agilent Channel Partners**

www.agilent.com/find/channelpartners Get the best of both worlds: Agilent's measurement expertise and product breadth, combined with channel partner convenience.

cdma2000® is a registered certification mark of the Telecommunications Industry Association. Used under license.

WiMAX™ is a trademark of the WiMAX Forum®.

Bluetooth® and the Bluetooth logos are trademarks owned by Bluetooth SIG, Inc, U.S.A. and licensed to Agilent Technologies, Inc.



## Three-Year Warranty

#### www.agilent.com/find/ThreeYearWarranty

Agilent's combination of product reliability and three-year warranty coverage is another way we help you achieve your business goals: increased confidence in uptime, reduced cost of ownership and greater convenience.



### **Agilent Advantage Services**

## www.agilent.com/find/AdvantageServices Accurate measurements throughout the

Accurate measurements throughout the life of your instruments.



www.agilent.com/quality

## www.agilent.com www.agilent.com/find/sg

For more information on Agilent Technologies' products, applications or services, please contact your local Agilent office. The complete list is available at: www.agilent.com/find/contactus

#### **Americas**

Canada	(877) 894 4414
Brazil	(11) 4197 3600
Mexico	01800 5064 800
United States	(800) 829 4444

#### **Asia Pacific**

Australia	1 800 629 485
China	800 810 0189
Hong Kong	800 938 693
India	1 800 112 929
Japan	0120 (421) 345
Korea	080 769 0800
Malaysia	1 800 888 848
Singapore	1 800 375 8100
Taiwan	0800 047 866
Other AP Countries	(65) 375 8100

**Europe & Middle East** 

Belgium	32 (0) 2 404 93 40
Denmark	45 45 80 12 15
Finland	358 (0) 10 855 2100
France	0825 010 700*
	*0.125 €/minute
Germany	49 (0) 7031 464 6333
Ireland	1890 924 204
Israel	972-3-9288-504/544
Italy	39 02 92 60 8484
Netherlands	31 (0) 20 547 2111
Spain	34 (91) 631 3300
Sweden	0200-88 22 55
United Kingdom	44 (0) 118 927 6201

For other unlisted countries: www.agilent.com/find/contactus

Product specifications and descriptions in this document subject to change without notice.

© Agilent Technologies, Inc. 2013 Published in USA, March 27, 2013 5990-9956EN

