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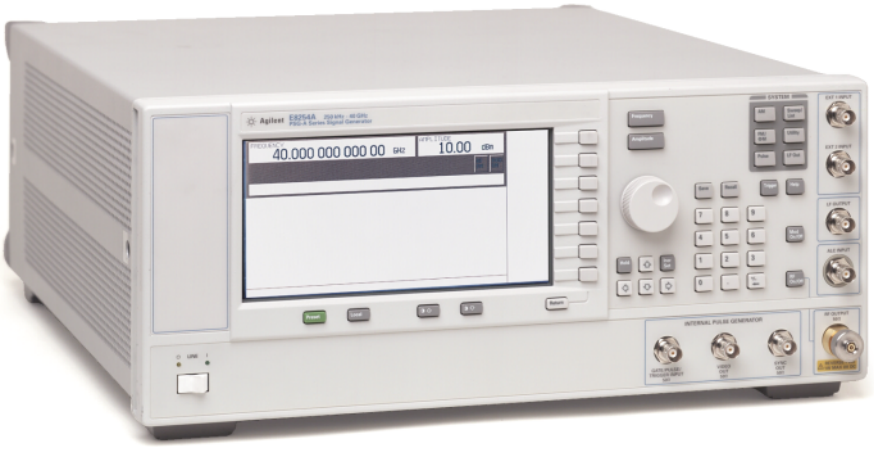
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Agilent E8241A/44A/51A/54A PSG Series Performance Signal Generator

Product Overview

- Excellent phase noise performance
- High output power
- Superior specified level accuracy



Microwave Synthesized Signal Generators 250 kHz to 110 GHz

The PSG series is ideally suited for design and test systems with high frequencies, wide bandwidths and complex modulation formats. Broadband component manufacturers can now quicken design time, simplify test, reduce measurement uncertainty, and streamline production by incorporating Agilent PSGs into their design and production cycles.

The PSG series provides 20 dBm at 20 GHz and 14 dBm at 40 GHz, eliminating the need for external amplifiers and reducing overall equipment and test costs during production test for MMDS, LMDS, point-to-point radios use microwave sources as LOs and to test converters, transceivers, ODU's and radios.

Agilent's PSG consists of two series. The microwave PSG – L Series is optimized to local oscillator (LO) needs at industry leading cost and performance. Agilent microwave PSG – A Series is optimized to meet analog modulation needs. Both series are available in 20 GHz and 40 GHz models.

Agilent Technologies

Microwave PSG – L Series

Optimized to meet your local oscillator (LO) needs



Agilent E8241A 250 kHz to 20 GHz
Agilent E8244A 250 kHz to 40 GHz

- Widest frequency range with 0.01 Hz frequency resolution
  Standard 250 kHz to 20 GHz
  250 kHz to 40 GHz
- Highest power available
  Standard +13 at 20 GHz
  +9 at 40 GHz
  Optional +20 at 20 GHz
  +14 at 40 GHz
- Lowest phase noise
  Standard –110 dBc at 20kHz offset at 10 GHz carrier
  Optional –101 at 1 kHz offset at 10 GHz carrier
- Long warranty
  3-year standard and 5-year optional
- Excellent level accuracy
  (0.7 & 0.9 dB)
- Digital sweep functions (list and step)
- Easy frequency extension to 110 GHz using Agilent's 83550-Series mm-heads
- User flatness power correction
- No manual field service adjustments. All adjustments can be made with covers on.
- Extensive self-tests to quickly isolate instrument failures

Microwave PSG – A Series

Optimized to meet your analog modulation needs with all of the features of the PSG-L Series.



Agilent E8251A 250 kHz – 20 GHz
Agilent E8254A 250 kHz – 40 GHz

- DC synthesized FM
- Simultaneous AM/FM or ΦM/pulse with flexible input selection and additional LF output 0.5 Hz to 1MHz
- Dual internal modulation generator with these waveforms; sine, square, triangle, positive and negative ramp, Gaussian noise, uniform noise, swept sine and dual sine up to 1 MHz rates.
- Pulse modulator with 80 dB on/off ratio with a 10 ns risetime (>3.2 GHz) for radar and EMC applications
- Internal pulse generation with free-run triggered doublet and gated modes

AM	FM	ΦM
Bandwidth 100 kHz (1 MHz)	Bandwidth dc to 10 MHz	Bandwidth dc to 100 kHz (1 MHz)

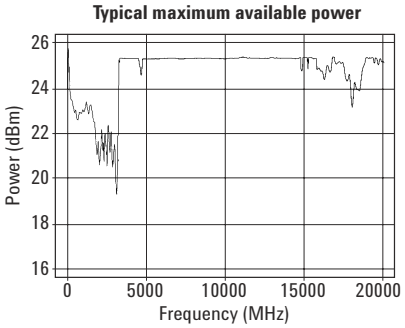
Modes	Deviation	Deviation
Linear (>90%)	16 MHz at 20 GHz	160 radians at 20 GHz
Exponential (>25 dB)	32 MHz at 40 GHz	320 radians at 40 GHz

Internal pulse generator	14 MHz max PRF[1]
Pulse modulation (<3.2 GHz)	10 Hz to 1 MHz PRF
Pulse modulation (>3.2 GHz)	10 Hz to 20 MHz PRF

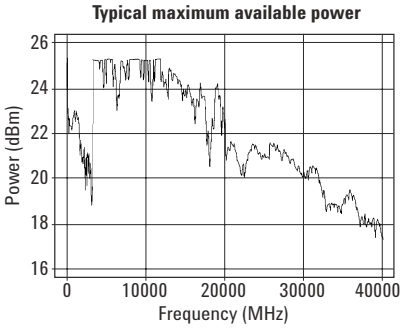
[1] Pulse repetition frequency

The performance you demand

Reduce cost of test and simplify test configurations



20 GHz models with option 1EA power versus frequency



40 GHz models with option 1EA power versus frequency

High output power

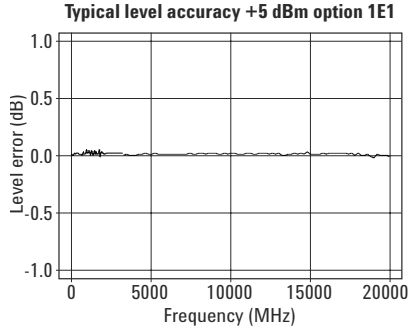
Frequency range	20 GHz models Standard (dBm)	Option 1EA (dBm)	40 GHz models Standard (dBm)	Option 1EA (dBm)
250 kHz to 3.2 GHz	+13 to –20	+16 to –20	+9 to –20	+15 to –20
>3.2 to 20 GHz	+13 to –20	+20 to –20	+9 to –20	+18 to –20
>20 to 40 GHz			+9 to –20	+14 to –20

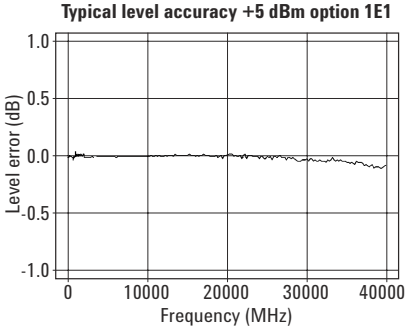
Wide output power range with optional step attenuator

Frequency range	20 GHz models Standard (dBm)	Option 1EA (dBm)	40 GHz models Standard (dBm)	Option 1EA (dBm)
250 kHz to 3.2 GHz	+11 to –135	+15 to –135	+7 to –135	+14 to –135
>3.2 to 20 GHz	+11 to –135	+18 to –135	+7 to –135	+16 to –135
>20 to 40 GHz			+7 to –135	+12 to –135

CW level accuracy with option 1E1 (dB)
Specifications apply over the 15 to 35 deg. C temperature range and are degraded typically 0.3 dB outside of that range. The use of Type-N RF connectors avove 18 GHz degrades specification typically by 0.2 dB. Level accuracy is not specified below -110 dBm.

Frequency	>+10 dBm	+10 to –10 dBm	–10 to –70 dBm	–70 to –90 dBm	–90 to –110 dBm
250 kHz to 2 GHz	±0.6	±0.6	±0.7	±0.8	±1.4
>2 to 20 GHz	±0.8	±0.8	±0.9	±1.0	±1.7
>20 to 40 GHz	±1.0	±0.9	±1.2	±2.0	





The frequency coverage you need

Direct millimeter head interface for banded frequency solution to 110 GHz

The PSG series comes standard with a millimeter head interface that is compatible with Agilent's 83550 series millimeter heads for coverage to 110 GHz. All four models of the PSG series with Option 1EA have enough power to drive millimeter heads directly which eliminates the need for an external amplifier.

The PSG series provides the extra power required eliminating the need for external amplifiers. The PSG series also provides the broad frequency coverage available with a microwave source. This reduces your need for an addition RF source to test at low frequencies. Both of these features simplify test setups and reduce costs.



Option 1EA provides direct extension to millimeter frequencies without amplifiers.

Reduce test uncertainties and improve manufacturing yields

- Unparalleled level and amplitude accuracy
- User flatness correction
- Extended frequency coverage down to 250 kHz
- Frequency resolution (0.01 Hz)
- High output power

Agilent's PSG series test reduces measurement uncertainty and improves overall throughput. The superior level accuracy of the PSG series (±0.7 dB) reduces test uncertainties and improves production throughput. The user flatness feature allows you to calibrate the instrument's power to the input port of your device under test (DUT), at the frequencies you test, to help reduce uncertainties introduced by transmission lines. Extended frequency and resolution allow full characterization of your products. The high output power allows you to eliminate amplifiers and uncertainties and improve yields.



Directly manage the power meter from the source.

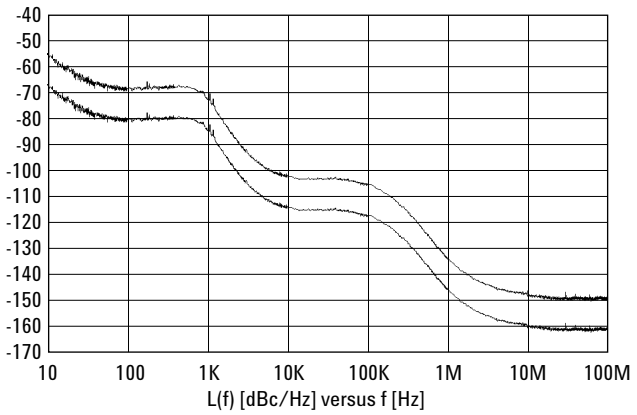
The phase noise performance you demand

Agilent's PSG series can help you to test uncertainties with its improved phase noise performance. The standard products provide a 20 dB improvement at 10 kHz offset over the 8360 series. From 1 kHz out to 100 MHz offset. The PSG series offers a 2–5 improvement with a noise floor around 160 dBm.

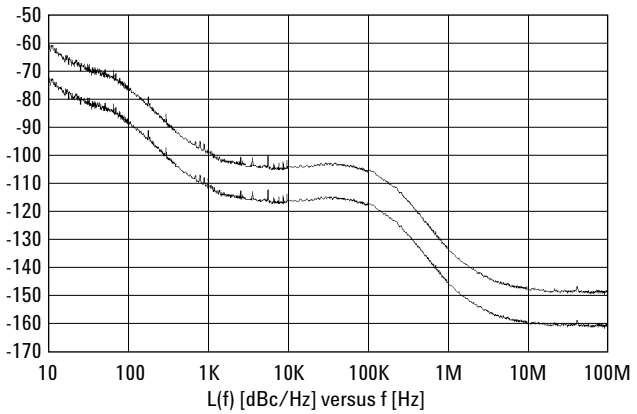
Improved close to carrier performance

Option UNJ improves the time base and reference section, reducing close to carrier phase noise. It extends the improved performance at 10 kHz to less than 1 kHz offset.

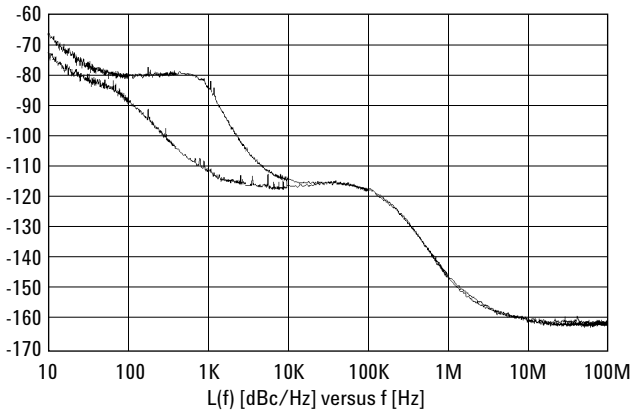
Standard typical performance at 10 GHz versus standard at 40 GHZ from 10 Hz to 100 MHz



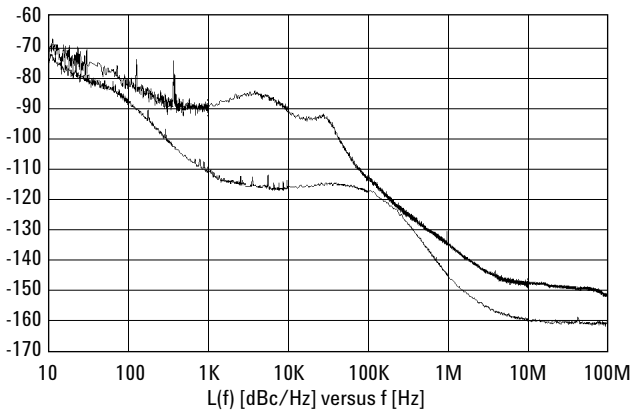
Option UNJ typical performance at 10 GHz and 40 GHz



Standard typical performance versus option UNJ at 10 GHz from 10 Hz to 100 MHz



Option UNJ typical performance versus 8360 at 10 GHz



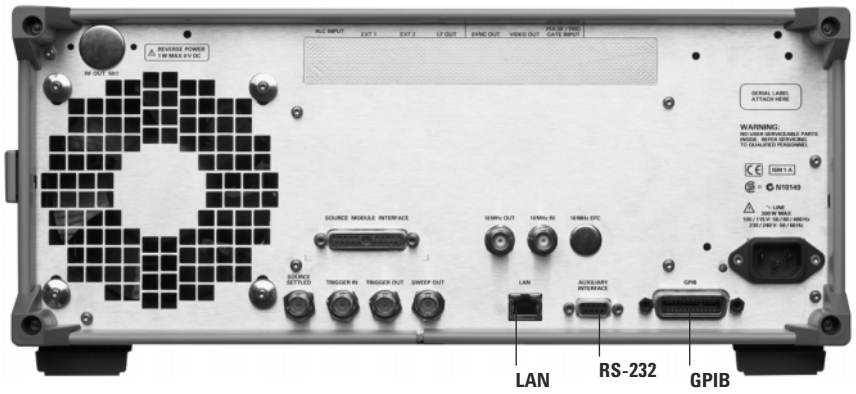
The connectivity you need

Gain speed and throughput

Flexibility

The PSG series comes standard with a LAN connection that allows you to communicate with SCPI commands.

Connectivity Speed	
LAN	Ethernet 10 Base-T (~300KB/sec top)
RS-232	57600 baud
GPIB	~100KB/sec



Rear panel of PSG series.

Automation

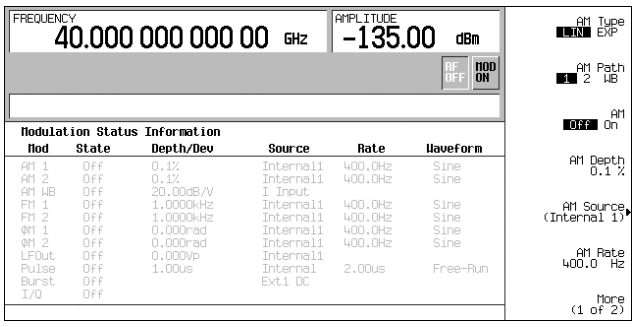
The PSG series offers a flexible automation environment allowing you to reduce test time and reduce the cost of test

- Control the signal generator using SCPI commands. Or, gain the speed and connectivity advantage of the VXI Plug & Play Driver.
- Code execution via an external PC through LAN, GPIB, or RS-232.
- Develop code in languages; Visual Basic, Visual C++, Agilent-VEE, or LabView™.
- The power correction feature allows for automated user-flatness corrections to ensure calibration of power and frequency at any point in your list or step sweep

Easy to use interface

The PSG series has an easy-to-use, menu-driven user interface. The seven by three and an half inches display screen allows you to view up to 22 parameters at once. The information you need to know is easily found with extensive help files and online help.

Save/Recall allows you to save states and register for later use. This feature allows for easy and quick recall of test setups, frequency lists, and correction arrays.



Find out more go to:
www.agilent.com/find/psg

Related Agilent literature

PSG Series Product Overview
literature number 5988-2411EN

PSG Series Data Sheet
literature number 5988-2412EN

PSG Series Product Note:
User Flatness correction
literature number 5988-2410EN

PSG Series Product Note:
Self Guided Demo
literature number 5988-2414EN

PSG Series Configuration Guide
literature number 5988-2413EN

PSG Series Product Note:
Millimeter Head
literature number 5988-2567EN

PSG Series Product Note:
Programming Conversion Guide
literature number 5988-2568EN

Warranty

Standard warranty is three years. Extended five year warranty is available with Option W50.

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

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Printed in U.S.A. June 7, 2001
5988-2411EN

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