

Agilent Economy RF Signal Generators Keep Your Budget in Balance...

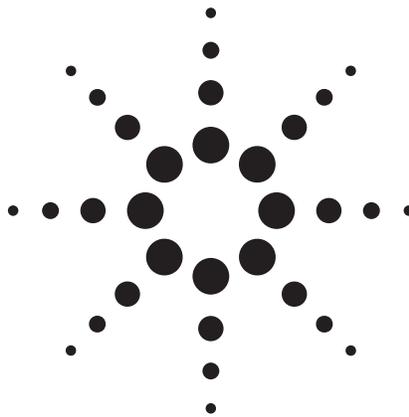
Discontinuance Notice

On 1 March 2007, the 8648x Series signal generators will be discontinued. Agilent will continue to support these products until 1 March 2012. The recommended replacement is the Agilent MXG analog signal generator.

The Agilent MXG analog offers frequency ranges up to 6 Hz, fast frequency and amplitude switching, analog and pulse modulation, high reliability, and simplified design for easy self-maintenance - all in two rack units (2RU).

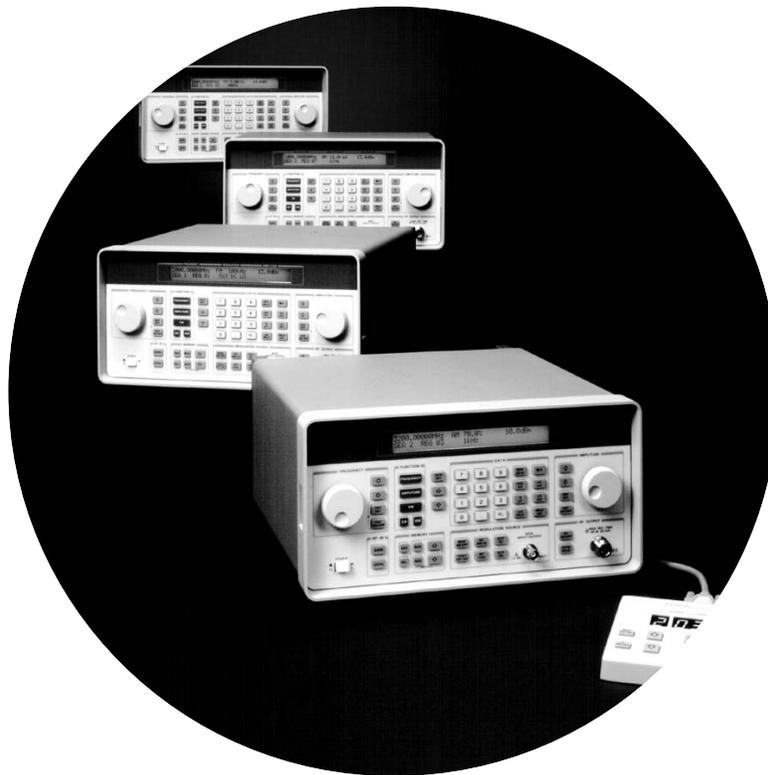
For more information visit
www.agilent.com/find/mxg.

Product Overview



8648A
8648B
8648C
8648D

1 GHz
2 GHz
3.2 GHz
4 GHz



Agilent Technologies

...Without Compromising Performance



In-channel receiver tests

For:

- Pagers
- Cordless phones
- Low cost two-way radios
- 900 MHz trunked radios

Receiver testing has reached a new level of affordability. Ideal for in-channel receiver testing, Agilent Technologies' additions to the economy line of RF signal generators offer improved performance at affordable prices. The 8648A/B/C/D provide 1, 2, 3.2 and 4 GHz coverage, respectively, with a simple user interface and the quality and reliability you expect from Agilent Technologies products.

Sensitivity

Sensitivity measurements are easy to perform with the economy signal generator's wide dynamic range. Covering the operating range of even the most sensitive receivers, the 8648A offers +10 to -136 dBm, while the 8648B/C/D provide +13 to -136 dBm output power levels. With ±1 dB level accuracy to -127 dBm below 1GHz, you can be assured of accurate repeatable measurements every time.

Determine receiver sensitivity in seconds by scrolling through required test levels. With independent amplitude and frequency control knobs, amplitude levels can be changed almost instantly.

Low RF leakage levels are necessary to successfully test today's sensitive receivers. The 8648 series meet these requirements with typically less than 1 µV leakage (nominally equivalent to 0.1 µV when measured with a two-turn loop).

Harmonic Distortion

Low modulation distortion is important for harmonic distortion testing. FM distortion of typically less than 0.5% allow you to make these measurements with confidence.

Hum and Noise

Accurately characterize receiver hum and noise with the low residual FM performance of the economy RF signal generators.

- In-channel receiver testing
- Semi-automated testing
- General purpose stimulus/local oscillator

8648 series	Residual FM (CCITT, rms)	SSB Phase Noise ¹
< 249 MHz	< 7 Hz	< -120 dBc/Hz (fc=500 MHz)
< 501 MHz	< 4 Hz	< -116 dBc/Hz (fc=1000 MHz)
< 1001 MHz	< 7 Hz	< -110 dBc/Hz (fc=2000 MHz)
< 2001 MHz	< 14 Hz	< -106 dBc/Hz (fc=3000 MHz)
≤ 4000 MHz	< 28 Hz	< -104 dBc/Hz (fc=4000 MHz)

¹ The table represents typical values at 20kHz offset from the carrier frequency specified in brackets.

Digitally squelched receivers

Extremely stable dc coupled FM precisely reproduces digital signaling codes for pagers and other FM receivers with selective squelch

Quickly make sensitivity measurements with the twist of a knob. Two independent frequency- and amplitude-control knobs provide instant access.



Semi-automated testing

Increase manual test productivity in semi-automated tests, such as receiver tuning and alignment. Agilent Technologies economy signal generators are ideal for high-volume manufacturing.

Easy to use

Designed to simplify operator use and training, the front panel is organized in easy-to-identify functional blocks, and offers independent frequency and amplitude control knobs. The 300 internal storage registers and ten user-definable sequences easily adapt to any test procedure. Once test setups are saved in storage registers, operators can quickly sequence through them to efficiently make pass/fail decisions or tune a receiver.

High reliability

Keep production lines up and running with the 8648 series economy signal generators. Designed to Agilent Technologies' stringent quality and reliability specifications, these signal generators are optimized for long-term dependability.

The 8648 signal generators are manufactured in an ISO 9002 registered facility in concurrence with Agilent Technologies' commitment to quality.

Use the latest in attenuator technology to keep up with the increasing demands of output-level cycling. The 1 GHz signal generators, the 8648A, maximize reliability with a patented all-electronic attenuator. With no moving parts to wear-out, the electronic attenuator easily handles millions of amplitude cycles with highly repeatable performance.

Low cost of ownership

Low price, high reliability and a two-year calibration cycle keep cost of ownership to a minimum.



The small size and lightweight are ideal for field test applications.

Remote interface

Maximize operator efficiency with the 83300A remote interface. This mouse-like keypad provides quick access to the sequences and storage registers in the signal generator, as well as RF amplitude on/off, and modulation on/off. When the 83300A is connected to the rear panel, remote control is at your fingertips. The operator no longer needs to access the front panel of the source. Operator training costs and required skill level is significantly reduced, while measurement consistency is assured across the production line.

Memory interface

Use the 83301A memory interface to simplify storage register maintenance when using multiple 8648 signal generators. The memory interface copies the register information from one instrument to another.

Compact and lightweight

Save valuable bench space with the compact design of the economy signal generators. Measuring 13 inches wide and less than 15 inches deep the 8648 require only minimal test space. In addition, they are lightweight æ less than 18 lb. (9 kg) - ideal for service applications.

General purpose stimulus/local oscillator

The economy line of RF signal generators are ideal for RF receiver and component measurements. Wide frequency coverage, solid performance, multiple modulation formats, uncompromised quality and reliability allow you to meet testing requirements while maintaining a budget.

Compatibility

GPIB programmability is standard for automated test applications. The SCPI programming standard is provided to protect software investments. In addition, the 8648 series reduces software development costs by providing full GPIB code compatibility with the 8656B and 8657A/B signal generators.

RF Signal Generator Performance Summary

(Please refer to data sheet, literature number 5965-3432E, for full specifications)

	8648A	8648B	8648C	8648D
FREQUENCY				
Range	100 kHz to 1000 MHz	9 kHz to 2000 MHz	9 kHz to 3200 MHz	9 kHz to 4000 MHz
Resolution	0.001 Hz	0.001 Hz	0.001 Hz	0.001 Hz
Switching Speed (typical)				
< 1001 MHz	< 75 ms	< 75 ms	< 75 ms	< 75 ms
≥ 1001 MHz	---	< 100 ms	< 100 ms	< 100 ms
Aging Rate	< ± 2 ppm/year	< ± 2 ppm/year	< ± 2 ppm/year	< ± 2 ppm/year
SPECTRAL PURITY				
Harmonics	< -30 dBc	< -30 dBc	< -30 dBc	< -30 dBc
Subharmonics				
< 1001 MHz	-60 dBc	-60 dBc	-60 dBc	-60 dBc
≤ 3200 MHz	---	---	-50 dBc	-50 dBc
≤ 4000 MHz	---	---	---	-40 dBc
Nonharmonics				
< 249 MHz	< -55 dBc	< -55 dBc	< -55 dBc	< -55 dBc
< 1001 MHz	< -60 dBc	< -60 dBc	< -60 dBc	< -60 dBc
< 2001 MHz	---	< -54 dBc	< -54 dBc	< -54 dBc
≤ 4000 MHz	---	---	---	< -48 dBc
Residual FM (CCITT, rms) ¹				
< 249 MHz	< 7 Hz	< 7 Hz	< 7 Hz	< 7 Hz
< 501 MHz	< 4 Hz	< 4 Hz	< 4 Hz	< 4 Hz
< 1001 MHz	< 7 Hz	< 7 Hz	< 7 Hz	< 7 Hz
< 2001 MHz	---	< 14 Hz	< 14 Hz	< 14 Hz
≤ 4000 MHz	---	---	---	< 28 Hz
OUTPUT				
Range	+ 10 to -136 dBm	+13 to -136 dBm	≤2500 MHz : +13 to -136 dBm ≤4000 MHz : +10 to -136 dBm	≤2500 MHz : +13 to -136 dBm ≤4000 MHz : +10 to -136 dBm
Resolution	0.1 dB	0.1 dB	0.1 dB	0.1 dB
Accuracy ²	± 1.0 dB	± 1.0 dB	± 1.0 dB	± 1.0 dB
SWR ³ (typical)	< 1.5:1	< 1.5:1	< 1.5:1	< 1.5:1
Reverse Power Protection	50 W	50 W	50 W (≤2000 MHz)	25 W (≤4000 MHz)
Electronic Attenuator	Yes	No	No	No
FREQUENCY MODULATION				
Deviation Range	0 to 100 kHz	0 to 200 kHz	0 to 400 kHz	0 to 800 kHz
Rate (external, typical)	dc to 150 kHz	dc to 150 kHz	dc to 150 kHz	dc to 150 kHz
Distortion	< 1%	< 1%	< 1%	< 1%
PHASE MODULATION				
Deviation Range	0 to 10 radians	0 to 20 radians	0 to 40 radians	0 to 40 radians
Rate (external, typical)	20 Hz to 10 kHz	20 Hz to 10 kHz	20 Hz to 10 kHz	20 Hz to 10 kHz
Distortion				
AMPLITUDE MODULATION⁴				
Range	0 to 100%	0 to 100%	0 to 100%	0 to 100%
Rate (external, typical)	1 Hz to 25 kHz	1 Hz to 25 kHz	1 Hz to 25 kHz	1 Hz to 25 kHz
Distortion	< 3%	< 3%	< 3%	< 3%

¹Residual FM is specified over 0.3 to 3 kHz BW, and with a CCITT filter

²Accuracy applies for frequency less than 1001 MHz.

³8648 SWR is <2.5:1 for frequencies <249 kHz and <2.0:1 for frequencies >2.5 GHz.

⁴AM performance is not specified below 1.5 MHz and is typical above 1001 MHz.



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