

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8647A

The Keysight (Agilent) 8647A is an economical synthesized RF signal generator designed for high-volume manufacturing lines of pagers, cordless telephones, two-way radios, and general receiver testing. It features an electronic attenuator with no moving parts for high repeatability, 300 storage registers, and 10 user-definable sequences to streamline semi-automated test procedures.

SPECIFICATIONS

Frequency

Minimum Frequency	250 kHz Hz
Maximum Frequency	1000 MHz Hz
Frequency Resolution	1 Hz

Output

Maximum Output Power	+10 dBm dBm
Output Power Range	+10 to -136 dBm
Phase Noise	<-115 dBc/Hz @ 20 kHz offset (500 MHz carrier)

Modulation

Modulation	AM, FM
Sweep Modes	Frequency, Amplitude
External Modulation Input Level	1 V _{peak} (for specified deviation)
Residual AM	< 0.01% (AM off, 0.3 to 3 kHz BW, post-detection)

General

Reference Oscillator	10 MHz (internal)
Interfaces	GPIB (IEEE-488)
Display	LCD

Physical

Power Supply	90 to 264 Vac, 47 to 440 Hz
Dimensions (W×H×D)	325 mm × 133 mm × 422 mm mm
Weight	7 kg kg
Shipping Weight	11 kg (24 lbs)

Frequency Specifications

Frequency Accuracy	Same as timebase accuracy
Frequency Switching Speed	<120 ms
Internal Reference Frequency	10 MHz
Internal Reference Aging Rate	<2 ppm/year
External Reference Input Frequency	1, 2, 5, 10 MHz (± 10 ppm)
External Reference Input Level	>0.15 Vrms
Reference Output Frequency	10 MHz

Amplitude and Output Power

Output Impedance	50 ohms
Maximum Reverse Power Protection (DC Voltage)	50 Vdc
Maximum Reverse Power Protection (RF Power)	50 W
Amplitude Resolution	0.1 dB
Amplitude Accuracy	± 1.0 dB (levels > -127 dBm)
Attenuator Type	Electronic

Spectral Purity

SSB Phase Noise at 1 GHz	<-109 dBc/Hz (at 20 kHz offset)
Harmonics	<-30 dBc (outputs $\leq +4$ dBm)
Non-harmonics Spurious	<-55 dBc (offsets > 50 kHz)
Residual FM	<20 Hz rms (0.3 to 3 kHz BW, carrier <500 MHz)
SSB Phase Noise at 500 MHz	<-115 dBc/Hz (@ 20 kHz offset)
Subharmonics	None (< 1000 MHz)

Frequency Modulation (FM)

Maximum FM Deviation (Carrier <249 MHz)	100 kHz
Maximum FM Deviation (Carrier 249 to 501 MHz)	50 kHz
Maximum FM Deviation (Carrier 501 to 1000 MHz)	100 kHz
FM Resolution	100 Hz (deviation 1 to 10 kHz); 1 kHz (deviation 10 to 100 kHz)
FM Accuracy	$\pm 7.5\%$ of setting + 200 Hz (1 kHz rate)
FM Distortion	<1% (1 kHz rate, max deviation)
FM External Input Impedance	600 ohms
FM Coupling	AC

Amplitude Modulation (AM)

AM Depth Range	0 to 100% (outputs $\leq +4$ dBm)
AM Resolution	0.1%
AM Accuracy	$\pm 5\%$ of setting $\pm 1.5\%$ (at 1 kHz rate, depth $< 90\%$)
AM Distortion	$< 2\%$ (at 1 kHz rate, 30% depth)
AM External Input Impedance	600 ohms
AM Coupling	AC

Internal Modulation Source

Internal Modulation Waveforms	Sine
Internal Modulation Frequencies	400 Hz, 1000 Hz
Internal Modulation Frequency Accuracy	$\pm 2\%$

Sweep and List Modes

Storage Registers	300 registers
User-Definable Sequences	10 sequences

Connectivity and Interfaces

RF Output Connector Type	Type-N female
External Modulation Input Connector	BNC female
External Reference Input Connector	BNC female
Internal Reference Output Connector	BNC female

Remote Programming and Emulation

Remote Programming Languages	SCPI
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Physical and Environmental

Operating Temperature Range	0 to 50 °C
Power Consumption (Maximum)	170 VA

Factory Options and Configurations

High-Stability Timebase Option	Option 1E5
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Amplitude

Amplitude Flatness	$< \pm 0.5$ dB (at 0 dBm)
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Reference Oscillator

Standard Timebase Aging Rate	< 2 ppm/year
Standard Timebase Temperature Stability	$< \pm 10$ ppm (0 °C to 50 °C)
Option 1E5 High Stability Timebase Aging Rate	$< 1.5 \times 10^{-8}$ /month
Option 1E5 High Stability Timebase Temperature Stability	$< \pm 0.05$ ppm (0 °C to 50 °C)

Power Requirements

AC Input Voltage	90 to 264 VAC
AC Input Frequency	48 to 440 Hz

Environmental

Storage Temperature Range	-40 °C to +71 °C
Operating Altitude	4,600 m (15,000 ft)
Storage Altitude	15,000 m (50,000 ft)
Operating Humidity	Up to 95% relative humidity at 40 °C
Acoustic Noise	< 30 dBA (typical)

Interfaces

GPIB Address Range	0 to 30
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Compliance

EMC Compliance	CISPR 11/EN 55011 Class A, IEC 801-2/3/4
Safety Compliance	IEC 1010-1, CSA C22.2 No. 1010.1

Frequency Modulation

FM Rate (AC Coupled)	10 Hz to 75 kHz (3 dB bandwidth)
FM Rate (DC Coupled)	DC to 75 kHz (3 dB bandwidth)

Amplitude Modulation

AM Rate (AC Coupled)	10 Hz to 25 kHz (3 dB bandwidth)
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RF Output

Reverse Power Protection Reset	Automatic or manual (front panel key or GPIB command)
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Options

Option 001	Rear panel RF output
Option 1EP	Pager Signaling (adds internal pager encoder)
Option 1CN	Handle Kit
Option 1CP	Rack Mount Kit with Handles

TECHNOLOGY

Synthesized RF Signal Generator

APPLICATIONS

Receiver testing, manufacturing of cordless telephones, pagers, and two-way radios, and general-purpose RF testing

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.