

KEYSIGHT TECHNOLOGIES (AGILENT HP)

8642A

The Agilent Keysight HP 8642A is a high-performance synthesized RF signal generator designed for demanding out-of-channel receiver measurements and stringent RF testing. Covering a frequency range from 100 kHz to 1057.5 MHz, it delivers exceptionally low SSB phase noise and non-harmonic spurious signals alongside excellent level accuracy down to -127 dBm. Built for robustness and versatility, the 8642A supports AM, FM, phase, and optional pulse modulation, and features a low-distortion internal modulation oscillator that can operate as an independent audio source.

SPECIFICATIONS

Frequency

Minimum Frequency	100 kHz Hz
Maximum Frequency	1057.5 MHz Hz
Frequency Resolution	0.1 Hz
Frequency Switching Speed	< 85 ms (to within 100 Hz of final frequency)

Output

Maximum Output Power	+20 dBm dBm
Output Power Range	-140 dBm to +20 dBm
Phase Noise	<-134 dBc/Hz @ 20 kHz offset (1 GHz carrier)

Modulation

Modulation	AM, FM, Phase, Pulse
Sweep Modes	Frequency sweep, Amplitude sweep
Phase Modulation Distortion	< 1% (at 1 kHz rate and 10 rad deviation)
Option 003 Pulse Modulation Rise/Fall Time	< 100 ns
Option 003 Pulse Modulation On/Off Ratio	> 80 dB
External Modulation Input Impedance	600 ohms (nominal)
External Modulation Input Coupling	AC or DC

General

Reference Oscillator	10 MHz Quartz Crystal Oscillator (Option 001 Ovenized High Stability available)
Interfaces	HP-IB (IEEE-488)

Physical

Power Supply	100 / 120 / 220 / 240 V AC $\pm$ 10%, 48 to 440 Hz
Dimensions (W×H×D)	425 mm × 133 mm × 568 mm mm
Weight	32.7 kg kg

Amplitude and Output Power

Absolute Level Accuracy	±1 dB (down to -127 dBm)
Output Impedance	50 Ω
Reverse Power Protection Level	50 W RF, 25 V DC

Spectral Purity

Non-harmonic Spurious	-100 dBc (at offsets > 10 kHz)
Harmonics	<-30 dBc (for output levels < +10 dBm)

Internal Modulation Source

Internal Modulation Frequency Range	20 Hz to 100 kHz
Internal Modulation Waveform	Low-distortion Sine wave
Internal Modulation Output Level Range	1 mV to 3 V into 600 Ω

Power and Environmental

Operating Temperature Range	0 °C to +55 °C
-----------------------------	----------------

Physical Characteristics

Rack Unit Height Compatibility	3U
--------------------------------	----

Factory Options and Configurations

Option 001	High-Stability Ovenized Timebase
Option 002	Rear Panel RF Output
Option 003	Pulse Modulation capability
Option 1CP	Rack Flange and Front Handle Kit

Frequency Modulation (FM)

Maximum FM Deviation	Up to 1.5 MHz (carrier-frequency dependent)
FM Frequency Response	DC to 100 kHz (DC-coupled) / 20 Hz to 100 kHz (AC-coupled)
Incidental AM	< 0.5% (FM deviation up to 20 kHz, 1 kHz rate, carrier > 1 MHz)

Amplitude Modulation (AM)

Maximum AM Depth	99%
AM Frequency Response	DC to 100 kHz (DC-coupled) / 20 Hz to 100 kHz (AC-coupled)
AM Distortion	< 2% at 1 kHz rate, 30% depth

Remote Control and Interfaces

Front Panel RF Output Connector	Type-N female (50 Ω)
---------------------------------	----------------------

Frequency Specifications

External Reference Input Frequency	1, 2, 5, or 10 MHz
------------------------------------	--------------------

RF Output

Output Level Resolution	0.1 dB
-------------------------	--------

Signal Purity

Residual AM	< 0.01% RMS (0.3 to 3 kHz post-demodulator bandwidth)
Subharmonics	None (for carrier frequencies $\leq$ 1057.5 MHz)

Reference Oscillator

Reference Oscillator Aging Rate	$< 1 \times 10^{-9}$ per day
Reference Oscillator Temperature Stability	$\pm 7 \times 10^{-9}$ (0 to 55 °C)
Rear Panel 10 MHz Reference Output	> 0.5 Vrms into 50 ohms
Rear Panel 10 MHz Reference Input	0.15 Vrms to 5 Vrms into 50 ohms

Connectivity

HP-IB Capabilities	SH1, AH1, T6, TE0, L4, LE0, SR1, RL1, PP0, DC1, DT1, C0, E1
--------------------	---

Power

Line Voltage	100 V / 120 V / 220 V / 240 V AC (+5%, -10%)
Line Frequency	48 to 440 Hz

Sweep

Sweep Time Range	50 ms to 999 s
------------------	----------------

System Features

Save/Recall Register Capacity	100 registers (00 to 99)
-------------------------------	--------------------------

Environmental

Storage Temperature Range	-55 °C to +75 °C
Maximum Operating Altitude	4,600 m (15,000 ft)
Maximum Storage Altitude	15,200 m (50,000 ft)

Options

Option 010	Reduced RF Leakage
------------	--------------------

TECHNOLOGY

Synthesized RF Signal Generation

APPLICATIONS

Out-of-channel RF receiver testing, local oscillator substitution, 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.