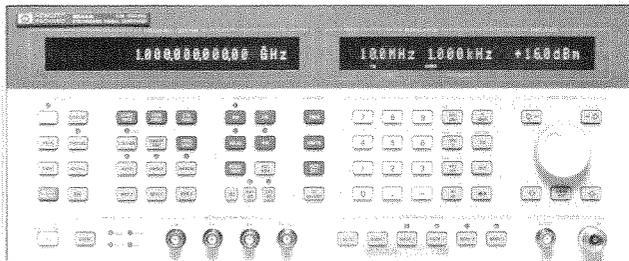


# SIGNAL GENERATORS

## High-Performance RF

### HP 8644A

- 252kHz to 1030MHz frequency range with optional coverage to 2060MHz
- -136 dBc/Hz phase noise at 20 kHz offset, 1 GHz carrier
- -100 dBc nonharmonic spurious



#### HP 8644A



### HP 8644A Synthesized Signal Generator

The HP 8644A Synthesized Signal Generator is a high performance, 252 kHz to 1030 MHz generator that provides excellent spectral purity for confidence in RF measurements. For R & D or stringent testing of communications equipment, the low phase noise and low spurious provide the measurement margin necessary for repeatability and accuracy.

The HP 8644A uses a modular platform that allows you to configure the instrument for your application.

#### High Performance Modulation

For receiver measurements the HP 8644A offers AM, FM, and pulse modulation. FM deviations up to 20 MHz combined with specified rates to 100 kHz can test most communication receivers. AM performance includes 0-100% depth and rates to 100 kHz.

#### Advanced Internal Modulation Source

An optional internal modulation synthesizer provides four sources each with a frequency coverage of 0.1 Hz to 400 kHz and sine, square, sawtooth, and white gaussian noise waveforms. Two of these sources can be summed together to provide two-tone capability, and one of these sources can be modulated by up to three of the sources with AM/FM/ØM, and pulse. This source can also generate signals for testing VOR and ILS receivers.

#### Lowest Specified Leakage of Any Signal Generator

The standard HP 8644A has typical leakage of <math>< 1 \mu V</math> induced in a two-turn loop, which is sufficient for most R & D or production testing. For sensitive measurements, Option 010, a low leakage configuration, provides more RF shielding and has typical leakage of 0.1  $\mu V$ .

#### On-Site Repair and Calibration

The HP 8644A contains its own firmware and hardware for calibration, troubleshooting, and monitoring instrument performance. Built-in sensors continually monitor internal voltages to notify users of temperature drift, hardware failure, or the need for recalibration.

### HP 8644A Specifications

#### Frequency

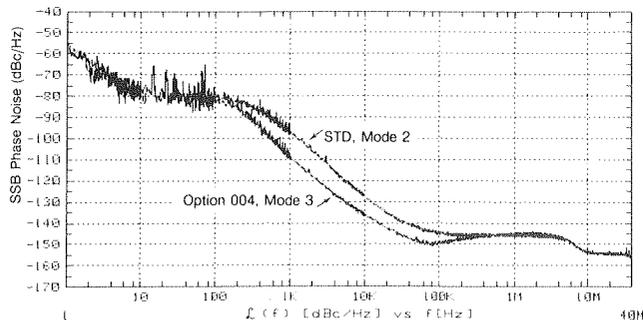
**Range:** 251.46485 kHz to 1030 MHz; 251.46485 kHz to 2060 MHz with Opt 002. See Optional Internal Modulation Source for coverage below 252 kHz.

**Frequency bands:** The approximate endpoints of each frequency band can be determined by dividing the 1030 to 2060 MHz band by two for each band decrease.

**Stability, Opt 001:** <math>< 5 \times 10^{-10}</math>/day aging after 10 day warm-up.

- AM, FM, and pulse modulation
- Internal modulation source for complex waveforms
- Options to configure for specific applications
- On-site repair and calibration

#### Typical SSB phase noise and spurs at 1 GHz.



**Residual AM:** <math>< 0.01\%</math> AM rms, 0.3 to 3 kHz post detection bandwidth.

#### Spectral Purity\*1

**Phase noise (CW, AM, or FM<sup>2</sup> (operation) Standard/Option 004**

Carrier Frequency (MHz)	Offset Frequency		
	1 kHz (dBc/Hz)	20 kHz (dBc/Hz)	100 kHz (dBc/Hz)
1030 - 2060	-81/-94	-121/-130	-131/-136
515 - 1030	-88/-100	-128/-136	-138/-142
257 - 515	-93/-106	-134/-142	-141/-145
128 - 257	-98/-111	-138/-145	-142/-145
64 - 128	-103/-116	-140/-145	-144/-145
32 - 64	-108/-121	-142/-145	-145/-145
16 - 32	-113/-127	-144/-145	-145/-145
8 - 16	-118/-130	-145/-145	-145/-145
4 - 8	-123/-135	-145/-145	-145/-145
2 - 4	-127/-135	-145/-145	-145/-145
1 - 2	-131/-135	-145/-145	-145/-145
0.5 - 1	-135/-135	-145/-145	-145/-145
0.25 - 0.5	-138/-135	-145/-145	-145/-145

#### Spurious Signals

**Harmonics:** -30 dBc, output <math>< +8</math> dBm; -25 dBc, 1030 to 2060 MHz, output <math>< +8</math> dBm.

**Subharmonics:** none, 0.25 to 515 MHz; <math>< -55</math> dBc, 515 to 1030 MHz; <math>< -40</math> dBc, 1030 to 2060 MHz.

**Nonharmonics:** <math>< -100</math> dBc, >15 kHz offset, 0.25 to 1030 MHz; <math>< -94</math> dBc, >15 kHz offset, 1030 to 2060 MHz.

**Residual FM (CW, AM, FM operation)<sup>3 4</sup>**

**Standard/Option 004**

Carrier Frequency (MHz)	Post Detection Bandwidth	
	0.3 to 3 kHz (Hz rms)	0.05 to 15 kHz (Hz rms)
0.25 - 257	<math>< 1 / < 0.5</math>	<math>< 1.2 / < 0.5</math>
257 - 515	<math>< 1.2 / < 0.5</math>	<math>< 2 / < 1</math>
515 - 1030	<math>< 2 / < 1</math>	<math>< 4 / < 2</math>
1030 - 2060	<math>< 4 / < 2</math>	<math>< 8 / < 4</math>

\* Refer to product note HP 8644A-1 before using the HP 8644A in phase noise measurements.

<sup>2</sup> FM at 1% maximum specified deviation for offsets > 1 kHz, FM at minimum deviation for offsets < 1 kHz.

<sup>3</sup> Specified for 48 to 63 Hz power line. Typical for 400 Hz power line.

<sup>4</sup> Deviation  $\leq 0.1\%$  of maximum available.

