

# SIGNAL ANALYZERS

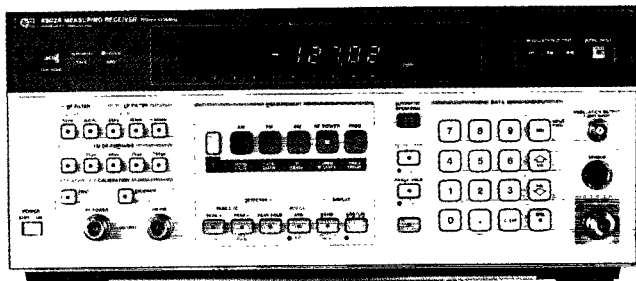
## Measuring Receiver, 150 kHz to 1300 MHz

### HP 8902A

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- RF power: digital power meter accuracy
- Tuned RF level: 0 to -127 dBm dynamic range
- Carrier noise: AM and phase noise measurements to -140 dBc/Hz

- AM and FM: 1% accuracy;  $\emptyset$ M: 3% accuracy
- RF frequency: 1 Hz resolution
- Audio: level, frequency, and distortion



HP 8902A



### HP 8902A Measuring Receiver

The HP 8902A Measuring Receiver combines 6 precise measurement functions into one fully automatic, HP-IB programmable instrument. It accurately measures RF power, tuned RF level, carrier noise/adjacent channel power, modulation, and RF frequency, and characterizes audio signals. For precise signal analysis, the HP 8902A measuring receiver provides the performance you need.

#### Metrology and Calibration

The HP 8902A measuring receiver makes signal generator and attenuator calibration easier than ever before. The HP 8902A provides exceptional accuracy, wide dynamic range, and a broad range of measurements.

It quickly and accurately measures your signal generator's RF frequency, RF level flatness, output level accuracy to -127 dBm, AM and FM with 1% accuracy, incidental and residual AM, FM and phase modulation, and carrier noise down to -140 dBc/Hz, and characterizes the demodulated audio signals.

For attenuator calibration and other relative measurements, the HP 8902A gives you great accuracy and dynamic range. Option 050 provides  $\pm(0.015 \text{ dB} + 0.005 \text{ dB}/10 \text{ dB})$  relative power accuracy to test attenuators to the most stringent specifications.

#### RF Signal Characterization

The HP 8902A measuring receiver is an excellent lab and production tool for accurately characterizing RF signals from 150 kHz to 1300 MHz.

Level measurements down to -127 dBm with superb accuracy make the HP 8902A ideal for testing devices such as antennas, multiplexers, log/linear amplifiers, filters, and mixers. Unlike diode detectors, the HP 8902A's power meter accurately measures signals with harmonics and spurious.

The HP 8902A makes accurate AM-to- $\emptyset$ M and FM-to-AM conversion measurements of phase- and amplitude-sensitive devices, such as bandpass filters and multiple-channel receivers. Excellent isolation between AM and FM makes it simple to separate the AM and  $\emptyset$ M of AM stereo, the incidental AM of FM transmitters, and the AM, FM, and  $\emptyset$ M components of complex signals.

#### Automatic Test Systems

The HP 8902A is an important component of automatic RF test systems. All functions—power, level, frequency count, carrier noise, modulation, audio analysis—are fully automatic and easily programmed. With these measurements combined in one instrument, interfacing requirements, hardware costs, and software development time are reduced.

### HP 8902A Specifications

#### RF Power (with HP 11722A Sensor Module)

**Range:** +30 dBm (1W) to -20 dBm (10  $\mu$ W)  
**Frequency Range:** 0.1 MHz to 2.6 GHz  
**Linearity:**  $\pm 0.02 \text{ dB}$  (within range)  $\pm 0.02 \text{ dB}$  per range change from reference range  $\pm 1$  count LSD  
**Input SWR:** <1.15

#### Tuned RF Level

**Range:** 0 to -127 dBm  
**Frequency Range:** 2.5 to 1300 MHz  
**Relative Accuracy:**  $\pm 0.02 \text{ dB} \pm 0.02 \text{ dB}$  per IF range change  $\pm 0.04 \text{ dB}$  per RF range change  $\pm 1$  digit  
**Worst-Case Cumulative Relative Power Accuracy** (with Opt 050<sup>1,2</sup>):  $\pm 0.005 \text{ dB}/10 \text{ dB}$  step (0 to -100 dBm)  
 $\pm 0.050 \text{ dB}/10 \text{ dB}$  step (-100 to -120 dBm)  
 $\pm 0.015 \text{ dB} \pm 1$  digit

#### Selective Power Measurements (Carrier Noise, Options 030 to 037)

**Frequency Range:** 10 to 1300 MHz  
**Carrier Power Range:**  
 +30 dBm to -20 dBm: 12.5 kHz, 25 kHz and 30 kHz filters  
 +30 dBm to -10 dBm: carrier noise filter  
**Relative Measurement Accuracy:**  
 $\pm 0.5 \text{ dB}$ ; levels > -95 dBc: 12.5 kHz, 25 kHz and 30 kHz filters  
 $\pm 0.5 \text{ dB}$ ; levels > -129 dBc/Hz: carrier noise filter  
**Filter Bandwidths:** 2.5 kHz, carrier noise filter; 8.0 kHz, 12.5 kHz filter; 16.0 kHz, 25 kHz filter; 30.0 kHz, cellular radio filter

#### RF Frequency

**Range:** 150 kHz to 1300 MHz  
**Maximum Resolution:** 1 Hz

#### Amplitude Modulation

**Rates:** 20 Hz to 100 kHz  
**Depths:** To 99%  
**Accuracy:**  $\pm 1\%$  of reading  $\pm 1$  digit, for rates 50 Hz to 50 kHz and depths  $\geq 5\%$

#### Frequency Modulation

**Rates:** 20 Hz to 200 kHz  
**Deviations:** To 400 kHz  
**Accuracy:**  $\pm 1\%$  of reading  $\pm 1$  digit, for rates 50 Hz to 100 kHz

#### Phase Modulation

**Rates:** 200 Hz to 20 kHz  
**Deviations:** To 400 radians  
**Accuracy:**  $\pm 3\%$  of reading  $\pm 1$  digit

#### Audio Level, Frequency, and Distortion Capability

**Audio Level Accuracy:**  $\pm 4\%$  of reading, 100 mV to 3 V  
**Audio Frequency Display Resolution:** 6 digits, to 250 kHz  
**Audio Distortion Accuracy:**  $\pm 1 \text{ dB}$ , 400 Hz and 1 kHz

<sup>1</sup>Specifications are warranted when using a Hewlett-Packard synthesized source with less than 100 Hz peak residual FM measured in a 3 kHz post-detection bandwidth over a 30-second period.

<sup>2</sup>Accuracy specifications do not include mismatch uncertainty.