



# Agilent 8920A

## RF Communications Test Set

Data Sheet

The Agilent Technologies 8920A RF communication test set is a full-featured, one-box test set designed to meet the service and repair needs of today's RF wireless communications market.

Single keystroke transmitter and receiver testing simplifies radio test. Signaling for multiple formats is supported, including tone sequential, digital paging (CCITT, POCSAG, ZVEI, etc.), DTMF, trunking, and cellular signaling.

For cellular phone test, the call processing interface emulates a base station, allowing you to automatically establish and maintain a cellular link between the test set and an analog cellular phone.

The built-in controller allows you to automate measurements and test routines, and control external instruments. Combined with the Agilent 11807A software, it provides a self-contained, automated radio test solution.



### Key Features:

- Intuitive call processing interface for cellular phone test
- Functions of more than 20 complete instruments
- Frequency ranges:
  - Signal generator: 30 MHz to 1 GHz
  - RF analyzer: 10 MHz to 1 GHz
- Portable and lightweight
- Optional full-span spectrum analyzer, tracking generator and adjacent channel power meter
- Built-in IBASIC computer



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# Agilent 8920A RF Communications Test Set Specifications

Specifications describe the instrument's warranted performance and are valid over the entire operating/environmental range unless otherwise noted.

*Supplemental Characteristics are intended to provide additional information useful in applying the instrument by giving typical, but non-warranted performance parameters. These characteristics are shown in italics or labeled as "typical," "usable to," or "nominal."*

## Signal Generator Specifications

### RF Frequency

#### Frequency Range:

**Standard:** 30 MHz to 1 GHz

**Option 055:** 250 kHz to 1 GHz

**Accuracy and Stability:** Same as reference oscillator  $\pm 0.015$  Hz

### Reference Oscillator Specifications

**TCXO** (Agilent 8920A standard)

**Temperature:** 1 ppm (0 to +55 °C)

**Aging:** <2 ppm/year

**Warm-Up time:** <30 sec. to be  $\pm 2$  ppm of final freq.

### Supplemental Characteristics

**Switching Speed:** <150 ms to within 100 Hz of the carrier frequency

**Minimum Resolution:** 1 Hz

### Output

#### RF IN/OUT Connector

**Level Accuracy:**  $\pm 1.8$  db (level  $\geq -127$  dBm),  
*Typically  $\pm 1.0$  dB for all levels*

#### Level Range

##### Standard:

**Level Range:**  $-137$  to  $-20.5$  dBm into 50  $\Omega$

**Reverse Power:** 60 watts continuous,  
100 watts for 10 seconds/minute

##### With Option 007:

**Level Range:**  $-137$  to  $-6.5$  dBm into 50  $\Omega$

**Reverse Power:** 2.4 watts continuous,  
4 watts for 10 seconds/minute

##### With Option 008:

**Level Range:**  $-137$  to  $-10.5$  dBm into 50  $\Omega$

**Reverse Power:** 6 watts continuous,  
10 watts for 10 seconds/minute

##### With Option 016:

**Level Range:**  $-137$  to  $-22.5$  dBm into 50  $\Omega$

**Reverse Power:** 100 watts continuous,  
125 watts for 10 seconds/minute

#### Option 055:

**Level Range:**  $-137$  to  $-19$  dBm into 50  $\Omega$

**Reverse Power:** 60 watts continuous,  
100 watts for 10 seconds/minute

#### With Option 007:

**Level Range:**  $-137$  to  $-5$  dBm into 50  $\Omega$

**Reverse Power:** 2.4 watts continuous,  
4 watts for 10 seconds/minute

#### With Option 008:

**Level Range:**  $-137$  to  $-9$  dBm into 50  $\Omega$

**Reverse Power:** 6 watts continuous,  
10 watts for 10 seconds/minute

#### With Option 016:

**Level Range:**  $-137$  to  $-21$  dBm into 50  $\Omega$

**Reverse Power:** 100 watts continuous,  
125 watts for 10 seconds/minute

### DUPLEX OUT Connector

#### Standard:

**Level Accuracy:**  $\pm 1.5$  dB, *typically  $\pm 1.0$  dB for all levels*

**Level Range:**  $-127$  to  $+5$  dBm into 50  $\Omega$

**Reverse Power:** 200 mW max

#### Option 055:

**Level Range:**  $-127$  to  $+7$  dBm into 50  $\Omega$

#### SWR:

**RF In/Out:** <1.5:1

**Duplex Out:** <2.0:1 (level  $< -4$  dBm)

### Supplemental Characteristics

**Minimum Resolution:** 0.1 dB

### Spectral Purity

**Spurious Signals:** For specified output levels at DUPLEX OUT port or specified output level at RF IN/OUT port.

Option	DUPLEX OUT	RF IN/OUT
Standard	$\leq -2.5$ dBm	$\leq -26.5$ dBm
007	$\leq -2.5$ dBm	$\leq -12.5$ dBm
007 with Opt. 055	$\leq -1.0$ dBm	$\leq -11.0$ dBm
008	$\leq -2.5$ dBm	$\leq -16.5$ dBm
008 with Opt. 055	$\leq -1.0$ dBm	$\leq -15.0$ dBm
016	$\leq -2.5$ dBm	$\leq -28.5$ dBm
016 with Opt. 055	$\leq -1.0$ dBm	$\leq -27.0$ dBm
055	$\leq -1.0$ dBm	$\leq -25.0$ dBm

**Harmonics:**  $< -30$  dBc

**Non-Harmonic Spurious:**  $< -60$  dBc (at  $> 5$  kHz from carrier)

**Residual FM (rms, CCITT):**

Frequency Range	8920A Standard	8920A Opt. 050
250 kHz $\leq f_c < 249$ MHz	<20 Hz	<7 Hz
249 MHz $\leq f_c < 501$ MHz	<10 Hz	<4 Hz
501 MHz $\leq f_c \leq 1000$ MHz	<20 Hz	<7 Hz

## Supplemental Characteristics

**SSB Phase Noise:** (For >20 kHz offsets at 1 GHz)

**8920A** <-110 dBc/Hz

**8920A Opt. 050** <-116 dBc/Hz

## FM

**FM Deviation Maximum** (For rates >25 Hz)

**Standard and Options 007, 008, 016:**

100 kHz for  $f_c$  from 30 MHz to <249 MHz

50 kHz for  $f_c$  from 249 MHz to <501 MHz

100 kHz for  $f_c$  from 501 MHz to 1000 MHz

**Option 055:**

100 kHz for  $f_c$  from 0.25 MHz to <249 MHz

50 kHz for  $f_c$  from 249 MHz to <501 MHz

100 kHz for  $f_c$  from 501 MHz to 1000 MHz

**FM Rate** (1 kHz reference)

**Internal:** DC to 25 kHz (1 dB BW)

**External:**

*AC Coupled: 20 Hz to 75 kHz (typically 3 dB BW)*

*DC Coupled: DC to 75 kHz (typically 3 dB BW)*

**FM Accuracy:** (1 kHz rate)

≤10 kHz dev: ±7.5% (3.5%\*) of setting ±50 Hz

>10 kHz dev: ±7.5% (3.5%\*) of setting ±500 Hz

**FM Distortion:** (THD + Noise, in a 0.3 to 3 kHz BW)

<1% (0.5%\*) at > 4 kHz deviation and 1 kHz rate

**Center Frequency Accuracy in DC FM Mode:**

(External source impedance <1 kΩ) ± 500 Hz

(after DC FM zero), typically ±50 Hz

## Supplemental Characteristics

**External Modulation Input Impedance:** 600 Ω nominal

**Resolution:** 50 Hz for <10 kHz deviation, 500 Hz for >10 kHz deviation

## AM

**Standard:**

**Frequency Range:** 30 MHz to 1 GHz

**AM Depth:** 0 to 90% (usable to 99%) for DUPLEX OUT level ≤-2.5 dBm or RF IN/OUT level ≤-26.5 dBm; 0 to 70% (usable to 90%\*)

**Option 055:**

**Frequency Range:** 1.5 MHz to 1 GHz (usable to 250 kHz)

**AM Depth:** 0 to 90% (usable to 99%) for DUPLEX OUT level ≤+1 dBm or RF IN/OUT level ≤-27 dBm; 0 to 70% (usable to 90%\*)

**AM Rate:** 20 Hz to 25 kHz (3 dB BW)

**AM Accuracy:** (1 kHz rate)

≤10% AM: ±5% of setting ±1.0% AM

>10% AM: ±5% of setting ±1.5% AM

**AM Distortion:** (THD+Noise 0.3 to 3 kHz BW)

<2% at 1 kHz rate, <30% AM

<3% at 1 kHz rate, ≤90% AM

## Supplemental Characteristics

**External Mod. Input Impedance:** 600 Ω nominal

**Residual AM:** <0.1% in a 50 Hz to 15 kHz BW

**Resolution:** 0.05% AM from 0 to 10% AM, 0.5% AM from 10 to 100% AM

## Audio Source Specifications

(Applicable to both internal sources)

### Frequency

**Range:** dc to 25 kHz

**Accuracy:** 0.025% of setting

### Supplemental Characteristics

**Minimum Resolution:** 0.1 Hz

### Output Level

**Range:** 0.1 mV to 4 Vrms

**Maximum Output Current:** 20 mA peak

**Output Impedance:** <1 Ω (1 kHz)

**Accuracy:** ±2% of setting plus resolution

**Residual Distortion:** 0.125%

(THD plus noise, for amplitudes >200 mVrms), for tones 20 Hz to 25 kHz measured in an 80 kHz BW

### Supplemental Characteristics

**Resolution:** Level <0.01V: ±50 μV

Level <0.1V: ±0.5 mV

Level <1V: ±5 mV

Level <10V: ±50 mV

**Offset in DC Coupled Mode:** <50 mV

## RF Analyzer Measurements

### RF Frequency Measurements

**Measurement Range:**

**Standard:** 30 MHz to 1 GHz

**Option 055:** 400 kHz to 1 GHz

**Level Range:**

**RF In/Out:**

**Standard:** 1 mW to 60 W continuous 100 W for 10 seconds/minute

**Option 007:** 40 mW to 6 W continuous 4 W for 10 seconds/minute

**Option 008:** 0.1 mW to 6 W continuous 10 W for 10 seconds/minute

**Option 016:** 1.6 mW to 100 W continuous 150 W for 10 seconds/minute

**ANT IN:** -36 dBm to +20 dBm

**Accuracy:** ±1 Hz plus timebase accuracy

## Supplemental Characteristics

**Minimum Frequency Resolution:** 1 Hz

## RF Power Measurements

### Frequency Range:

**Standard:** 30 MHz to 1 GHz

**Option 055:** 400 kHz to 1 GHz

**SWR:** <1.5:1 for standard and all options

### RF IN/OUT Measurement Range:

**Standard:** 1 mW to 60 W continuous or to 100 W for 10 sec/minute

**Accuracy:**  $\pm 10\%$  of reading  $\pm 1$  mW

**Option 007:** 40  $\mu$ W to 2.4 W continuous 4 W for 10 seconds/minute

**Accuracy:**  $\pm 10\%$  of reading  $\pm 40$   $\mu$ W

**Option 008:** 0.1 mW to 6 W continuous 10 W for 10 seconds/minute

**Accuracy:**  $\pm 10\%$  of reading  $\pm 0.1$  mW

**Option 016:** 1.6 mW to 100 W continuous 125 W for 10 seconds/minute

**Accuracy:**  $\pm 10\%$  of reading  $\pm 1$  mW

## Supplemental Characteristics

**Resolution:**  $P > 10$  W: 10 mW,  $P < 10$  W: 1 mW;  $P < 100$  mW: 0.1 mW,  $P < 10$  mW: 0.01 mW

## FM Measurement

### Frequency Range:

**Standard:** 10 MHz to 1 GHz

**Option 055:** 5 MHz to 1 GHz (Usable to 400 kHz)

**Deviation:** 20 Hz to 75 kHz

**Sensitivity:** 2  $\mu$ V (15 kHz IF BW, high sensitivity mode, 0.3 to 3 kHz BW, 12 SINAD,  $f_c > 10$  MHz) **Typically:** <1  $\mu$ V

**Accuracy:**  $\pm 4\%$  of reading plus residual FM and noise contribution (20 Hz to 25 kHz rates, deviation  $\leq 25$  kHz)

**Bandwidth (3 dB):** 2 Hz to 70 kHz (DC FM measurements also available)

### Input Level Range for Specified Accuracy:

**Standard:** -50 dBm to +14 dBm at ANT IN -18 to +50 dBm at RF IN/OUT (0.16 mW to 100 W\*)

**Option 007:** -32 to +36 dBm at RF IN/OUT (0.63  $\mu$ W to 4 W\*)

**Option 008:** -28 to +40 dBm at RF IN/OUT (1.58  $\mu$ W to 10 W\*)

**Option 016:** -16 to +51 dBm at RF IN/OUT (0.25  $\mu$ W to 125 W\*)

\*Note: The accuracy shown is for the complete range of power. The maximum power levels shown are only usable for 10 sec/min.

**Residual FM and Noise:** 20 Hz (0.3 to 3 kHz, rms), <7 Hz (with Agilent 8920A Opt 050)

## Supplemental Characteristics

**Resolution:** 1 Hz,  $f < 10$  kHz; 10 Hz,  $f \geq 10$  kHz

## AM Measurement

**Frequency Range:** 10 MHz to 1 GHz (usable to 400 kHz)

**Depth:** 0 to 95%

**Accuracy:**  $\pm 5\%$  of reading  $\pm 1.5\%$  AM (50 Hz to 10 kHz rates, modulation  $\leq 80\%$ )

**THD + Noise:** <2% rms for modulation  $\leq 80\%$  AM (at 1 kHz rate in a 0.3 to 3 kHz BW)

### Input Level Range for Specified Accuracy:

**Standard:** -50 dBm to +14 dBm at ANT IN -18 to +50 dBm at RF IN/OUT (0.16 mW to 100 W\*)

**Option 007:** -32 to +36 dBm at RF IN/OUT (0.63  $\mu$ W to 4 W\*)

**Option 008:** -28 to +40 dBm at RF IN/OUT (1.58  $\mu$ W to 10 W\*)

**Option 016:** -16 to +51 dBm at RF IN/OUT (0.25  $\mu$ W to 125 W\*)

\*Note: The accuracy shown is for the complete range of power. The maximum power levels shown are only usable for 10 sec/min.

**Residual AM:** <0.2% in a 0.3 to 3 kHz bw

## Supplemental Characteristics

**Resolution:** 0.1%

## SSB Measurement

### Frequency Range:

**Standard:** 10 MHz to 1 GHz

**Option 055:** 400 kHz to 1 GHz

**Bandwidth (3 dB):** 20 Hz to 70 Hz

**Distortion and Noise:** <3% (at 1 kHz rate in a 0.3 to 3 kHz BW)

## AF Analyzer Specifications

### Frequency Measurement

**Measurement Range:** 20 Hz to 400 kHz

**Accuracy:**  $\pm 0.02\%$  plus resolution plus timebase accuracy

**External Input:** 20 mV to 30 Vrms

### Supplemental Characteristics

**Resolution:** 0.01 Hz,  $f < 10$  kHz; 0.1 Hz,  $f < 100$  kHz; and 1 Hz for  $f \geq 100$  kHz

### AC Voltage Measurement

**Measurement Range:** 0 to 30 Vrms

**Accuracy:**  $\pm 3\%$  of reading (20 Hz to 15 kHz, inputs >1 mV)

**Residual Noise:** 150  $\mu$ V (15 kHz bandwidth)

## **Supplemental Characteristics**

**3 dB Bandwidth:** Typically 2 Hz to 100 kHz

**Nominal Input Impedance:** Switchable between 1 MW in parallel with 95 pF or 600 Ω floating

**Minimum Resolution:** 4 digits for inputs  $\geq 100$  mV; three digits for inputs  $< 100$  mV

## **DC Voltage Measurement**

**Voltage Range:** 100 mV to 42 V

**Accuracy:**  $\pm 1\%$  of reading plus DC offset

**DC Offset:**  $\pm 45$  mV

## **Supplemental Characteristics**

**Resolution:** 1 mV

## **Distortion Measurement**

**Fundamental Frequency:** 1 kHz  $\pm 5$  Hz

**Option 019 Frequency Range:** 0.3 to 10 kHz  $\pm 5\%$

**Input Level Range:** 30 mV to 30 Vrms

**Display Range:** 0.1% to 100%

### **Accuracy:**

$\pm 1$  dB (0.5 to 100% distortion) for tones from 300 to 1500 Hz measured with the 15 kHz LPF

$\pm 1.5$  dB (1.5 to 100% distortion) for tones from 300 Hz to 10 kHz measured with the  $> 99$  kHz LPF)

### **Residual THD + Noise:**

$-60$  dBc or 150  $\mu$ V whichever is greater, for tones from 300 to 1500 Hz measured with the 15 kHz LPF

$-57$  dBc or 450  $\mu$ V, whichever is greater, for tones from 300 Hz to 10 kHz measured with  $> 99$  kHz LPF)

## **Supplemental Characteristics**

**Resolution:** 0.1% distortion

## **SINAD Measurement**

**Fundamental Frequency:** 1 kHz  $\pm 5$  Hz

**Option 019 Frequency Range:** 0.3 to 10 kHz  $\pm 5\%$

**Input Level Range:** 30 mV to 30 Vrms

**Display Range:** 0 to 60 dB

### **Accuracy:**

$\pm 1$  dB (0 to 46 dB SINAD) for tones from 300 to 1500 Hz measured with the 15 kHz LPF

$\pm 1.5$  dB (0 to 36 dB SINAD) for tones from 300 Hz to 10 kHz measured with the  $> 99$  kHz LPF

### **Residual THD + Noise:**

$-60$  dBc or 150 mV, whichever is greater, for tones from 300 to 1500 Hz measured with the 15 kHz LPF

$-57$  dBc or 450 mV, whichever is greater, for tones from 300 Hz to 10 kHz measured with  $> 99$  kHz LPF

## **Supplemental Characteristics**

**Resolution:** 0.01 dB

## **Audio Filters**

**Standard:**  $< 20$  Hz HPF, 50 Hz HPF, 300 Hz HPF 300 Hz LPF, 3 kHz LPF, 15 kHz LPF,  $> 99$  kHz LPF, and 750  $\mu$ sec de-emphasis

**Fixed Notch:** 1 kHz, (Agilent 8920A standard)

**Variable Notch:** 300 Hz to 10 kHz (Option 019)

**Optional:** C-Message, CCITT, 400 Hz HPF, 4 kHz BPF, 6 kHz BPF (see options)

**Audio Detectors:** RMS, RMS $\times$ SQRT2, Pk+, Pk-, Pk+hold, Pk-hold, Pk $\pm$ /2, Pk $\pm$ /2 hold, Pk $\pm$ max and Pk $\pm$ max hold

## **Oscilloscope Specifications**

**Frequency Range:** 2 Hz to 50 kHz (3 dB BW)

**Scale/Division:** 10 mV to 10 V

**Amplitude Accuracy:**  $\pm 1.5\%$  of reading  $\pm 0.1$  division (20 Hz to 10 kHz)

**Time/Division:** 1  $\mu$ sec to 200 msec

## **Supplemental Characteristics**

**3 dB Bandwidth:** Typically  $> 100$  kHz

**Internal DC Offset:**  $\leq 0.1$  div ( $\geq 50$   $\mu$ V/div sensitivity)

## **Input and Output Specifications**

### **Digital Interface Port**

**RS-232 port:** 2 way

**Connector:** RJ-11 connector (6 pins; 2 addressable serial ports with single connector; Agilent 8920A rear panel)

**Baud Rates:** 300/600/1200/2400/4800/9600/19200

### **Reference In Port**

**Connector:** BNC female (8920A rear panel)

**Input frequency:** 1/2/5/10 MHz

**Input Level Range:**  $> 0.15$  Vrms

### **Reference Out Port**

**Connector:** BNC female (8920A rear panel)

**Output Frequency:** 10 MHz

**Output Level:**  $> 0.5$  Vrms

## **Standard User Memory, RAM**

Approximately 1 Mbyte of RAM is available for nonvolatile save/recall of settings. This typically will allow you to save  $> 1000$  sets of instrument settings; depending on the type of information saved.

## Option Specifications

### Option 001: High Stability Timebase

**OCXO:** (Oven controlled crystal oscillator)

**Temperature:** 0.05 ppm (0 to +55 °C)

**Aging:** <0.5 pm/year (<1 ppm in first year)

**Warm-up Time:** <15 minutes to be within  $\pm 0.1$  ppm of final frequency

### Supplemental Characteristics

**Rear Panel BNC Connectors:**

**Input Frequency:** 1, 2, 5, and 10 MHz

**Input Level:** >0.15 Vrms

**Output Frequency:** 10 MHz

**Output Level:** >0.5 Vrms

### Option 004: Tone/Digital Signalling

**Capability for generating and analyzing the formats listed here:** CDCSS, DTMF, 1-TONE, 2-TONE, 5/6 TONE SEQUENTIAL, RPC1, POCSAG, EIA, CCITT, CCIR, ZVEI, DZVEI, GOLAY, EEA, NMT-450, NMT-900, LTR, AMPS/EAMPS/NAMPS, TACS/ETACS, JTACS/NTACS, EDACS, and MPT 1327.

**A General Purpose function generator with the following wave forms included:** Sine, square, triangle, ramp, Gaussian white noise, uniform white noise

**Frequency Range/Level:** Same as audio source

### Option 007 and Low-Level RF Power Measurements

Option 007 removes a 14 dB attenuator at the RF IN/OUT port allowing lower-level, higher sensitivity measurements. This option reduces the maximum continuous input power of the Agilent 8920A from 60 watts to 2.4 watts. Specifications for Option 007 are included in the appropriate sections of: Signal Generator output, RF Analyzer, Frequency and Power Measurement Ranges, FM and AM Measurement Input Level Ranges.

### Option 008 Cellular Mobile RF Power

#### Measurement Range

Option 008 removes 10 dB attenuation at the RF IN/OUT port allowing lower-level, higher sensitivity measurements specifically for the range of cellular telephones testing. This option reduces the maximum continuous input power of the 8920A from 60 watts to 6 watts. Specifications for Option 008 are included in the appropriate sections of: Signal generator output, RF analyzer, frequency and power measurement ranges, FM and AM measurement input level ranges.

### Option 010: 400 Hz High Pass Filter

### Option 011: CCITT Weighting Filter

### Option 012: 4 kHz Bandpass Filter

### Option 013: C-Message Weighted Filter

### Option 014: 6 kHz Bandpass Filter

### Option 016 High-Level RF Power Measurements

Option 016 for the 8920A supports high-power transmitter measurement applications. Option 016 can only be ordered on a new instrument at the time of purchase. Option 016 can only be installed at the factory.

### Option 019: Variable Notch Filter

**Frequency Range:** 300 Hz to 10 kHz

**Notch Depth:** >60 dB

**Notch Width:** Typically  $\pm 5\%$

### Option 020: Radio Interface Card

The Option 020 for the 8920A is a built-in radio interface card for automating module and radio board test. It contains 16 parallel data lines, two interrupts, and brings the audio in/out lines and a relay closure out from the MIC/ACC connector on the front panel. These are controlled by the 8920A BASIC control language.

**Line Levels:** 5 volts or 12 volts

### Option 050: Improved Residual FM Performance

Includes high stability timebase (Option 001), improved residual FM performance.

### Option 102: Spectrum Analyzer with Tracking Generator and ACP

**Frequency Range:** 10 MHz to 1 GHz

**Frequency Span/Resolution Bandwidth:** (coupled)

Span	Bandwidth
<50 kHz	300 Hz
<200 kHz	1 kHz
<1.5 MHz	3 kHz
<18 MHz	30 kHz
>18 MHz	300 kHz, plus full span capability

**Display:** Log with 1, 2, and 10 dB/div

**Display Range:** 80 dB

**Reference Level Range:** +50 to -50 dBm

**Residual Responses:** <-70 dBm (no input signal, 0 dB attenuation)

**Image Rejection:** >50 dBm

### Supplemental Characteristics

**Non-Harmonic Spurious Responses:** >70 dB down (for input signals  $\leq -30$  dBm)



**Level Accuracy:**  $\pm 2.5$  dB

**Displayed Average Noise Level:**  $< -114$  dBm for  $< 50$  kHz spans

**Log Scale Linearity:**  $\pm 2$  dB (for input levels  $\leq -30$  dBm and/or 60 dB range)

## Tracking Generator (In Option 102)

**Frequency Range:** 30 MHz to 1 GHz

**Frequency Offset:** Frequency span endpoints  $\pm$  frequency offset cannot be  $< 30$  MHz or  $\geq 1$  GHz

**Output Level Range:** Same as signal generator

**Sweep Modes:** Normal and inverted

## Adjacent Channel Power (In Option 102)

**Relative Measurements:**

**Level Range:**

**Antenna IN:**  $-40$  dBm to  $+20$  dBm

**RF/Input:** 0.16 mW ( $-8$  dBm) to 60 W (47.8 dBm) continuous; or up to 100 mW (50 dBm) for 10 sec/min

**Dynamic Range:** Typical values for channel offsets

Channel Offset	Res. BW	Dyn. Range
12.5 kHz	8.5 kHz	$-65$ dBc
20 kHz	14 kHz	$-68$ dBc
25 kHz	16 kHz	$-68$ dBc
30 kHz	16 kHz	$-68$ dBc
60 kHz	30 kHz	$-65$ dBc

**Relative Accuracy:**  $\pm 2$  dB

**Absolute Level Measurements:**

**Level:** (Results of absolute power in watts or dBm are met by adding the ACP ratio from the SA to the carrier power from the input section RF power detector).

**Level Range:**

**Antenna:** N/A

**RF/Input:** 1 mW (0 dBm) to 60 W (47.8 dBm) continuous; or up to 100 W (50 dBm) for 10 sec/min

**Dynamic Range:** Typical values for channel offsets

Channel Offset	Res. BW	Dyn. Range
12.5 kHz	8.5 kHz	$-65$ dBc
20 kHz	14 kHz	$-68$ dBc
25 kHz	16 kHz	$-68$ dBc
30 kHz	16 kHz	$-68$ dBc
60 kHz	30 kHz	$-65$ dBc

**Absolute Accuracy:** RF power measurement accuracy found in the RF Analyzer section and ACP relative accuracy of  $\pm 2$  dB

## Option 103: DC Current Sensing and I/O: GPIB/RS-232/Parallel (Centronics)

### DC Current Meter

**Measurement Range:** 0 to 10 A (usable to 20 A)

**Accuracy:** The greater of  $\pm 10\%$  of reading after zeroing or 30 mA (levels  $> 100$  mA)

### Remote Programming

**GPIB:** Agilent's implementation of IEEE Standard 488.2

**Functions Implemented:** SH1, AH1, T6, L4, SR1, RL1, LE0, TE0, PPO, DC1, DT1, C4, C11, E2

**RS-232:** Two serial ports through RJ-11 connector used for serial data in and out

**Baud Rates:** 150, 300, 600, 1200, 2400, 4800, 9600 and 19200 Hz

**Parallel (Centronics) Connector:** A standard 25-pin, sub-min D female connector with right-angle adapter is included

Note: Retrofittable only for 8920A units with serial prefix numbers of 3501 or greater

### General Specifications

**8920A Dimensions:** H  $\times$  W  $\times$  D in inches and (mm): 7.5 H  $\times$  13 W  $\times$  19 D (188 H  $\times$  330 W  $\times$  456 D)

**8920A Weight:** (fully optioned) 37 lbs. (16.8 kgs)

**8920A Power:**

AC: 100 V to 240 V, 48 to 440 Hz, *nominally 80 watts*

DC: 11 to 28 V, *nominally 120 watts*

**8920D Power:**

AC: 100 V to 240 V  $\pm 10\%$ , 48 Hz to 440 Hz, *nominally 100 watts*

**CRT Size:** 7  $\times$  10 cm

**Operating Temperature:** 0 to  $+55$   $^{\circ}$ C

**Storage Temperature:**  $-55$  to  $+75$   $^{\circ}$ C

**Calibration Interval:** Two years

### Supplemental Characteristics

**Leakage:** At signal generator output frequency and level  $< -40$  dBm, typical leakage is  $< 0.5$   $\mu$ V induced in a resonant dipole antenna one inch from any surface except the rear panel. Spurious leakage levels are typically  $< 1$   $\mu$ V in a resonant dipole antenna.

# Configuration Information

X = Required Option    0 = Recommended Option

	001	004	007 <sup>1</sup>	008 <sup>1</sup>	010	011	012	013	014	019	055	102	103	
	High Stability Timebase	Signaling	Low-Power Measurement	Cellular MS RF Power Range	400 Hz High-Pass Filter	CCITT Weighting Filter	4 kHz Bandpass Filter	C-Message Weighting Filter	6 kHz Bandpass Filter	Variable Frequency Filter	Mechanical Attenuator	Spectrum Analy./Tracking Gen	GPIB/RS-232 Parallel	11807A Radio Test Software (Options)
Measuring Capability	Automated FM Radio Test <sup>3</sup>	0	0		0	0				0			0	001
	Automated $\phi$ m Radio Test <sup>3</sup>	0	0		0	0							0	002
	Automated AM Radio Test	0											0	003
	Testing Communications Bandwidths <30 MHz										X			
	Cordless Phone Test <sup>3</sup>	0	0	X		0								
	Frequency Scanning Cable Fault Location <sup>2</sup> Field Strength Measurement Intermodulation Prod. Cal. Save/Recall Procedure												X X	0 0 0 0
Trunked Radio	LTR Trunked Radio Test <sup>3</sup> (Includes FM radio tests)	0	X		X	0				0			0	010
	EDACS Trunked Radio Test <sup>3</sup> (Includes FM radio tests)	0	X		0	0				0			0	011
	MPT 1327 Trunked Radio Test <sup>3</sup>	0	X			0				0		0	0	012
Cellular Phone Test	AMPS/EAMPS/NAMPS	0	X					0	0	0			0	004
	TACS/ETACS	0	X			0			0	0			0	005
	NMT 450/900	0	X			0	0			0			0	006
	JTACS/NTACS	0	X			0				0			0	007

- Options 007 and 008 reduce the maximum input power of the 8920A from 60 watts to 2.4 and 6 watts respectively. Option 008 is recommended for applications where the 8920A is used for cellular phone test only.
- Requires an external power divider and 50 ohm load to make measurement.
- Testing frequencies below 30 MHz will require ordering Option 055 (400 kHz to 1 GHz).

By internet, phone, or fax, get assistance with all your test and measurement needs.

**Online Assistance**  
[www.agilent.com/find/assist](http://www.agilent.com/find/assist)

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