Overview

HEWLETT PACKARD

HP 8920A RF Communications Test Set

Cut through problems faster!

The HP 8920A RF communications test set was designed to ***solve your radio testing and troubleshooting problems faster.***

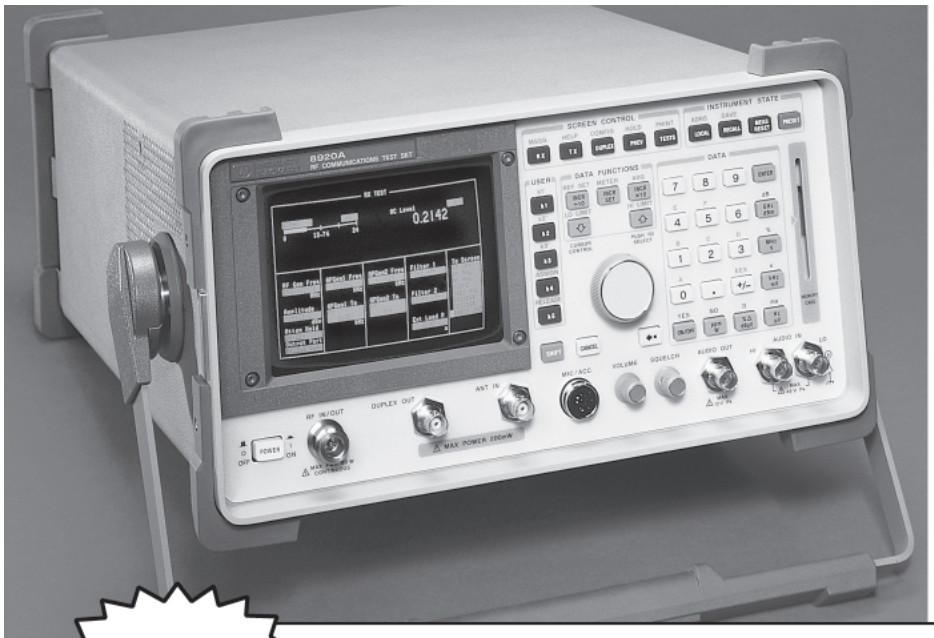
The HP 8920A integrates 22 complete instruments into a small, portable package. It provides technicians with the functionality needed to test and maintain a wider variety of communication systems. The HP 8920A's full feature set ***increases technician efficiency*** by simplifying standard measurement tasks and providing more needed capability in one box.

HP 8920A standard features summary:

- Synthesized AM/FM signal generator
- Electronic solid state attenuator
- AM/FM modulation analyzer
- Duplex offset generator
- SSB demodulator
- RF power meter
- RF frequency counter, frequency error meter
- Audio frequency counter
- AF power meter
- ac voltmeter
- dc voltmeter
- Distortion meter
- SINAD meter
- Two variable audio sources
- Digital oscilloscope
- Built-in IBASIC computer

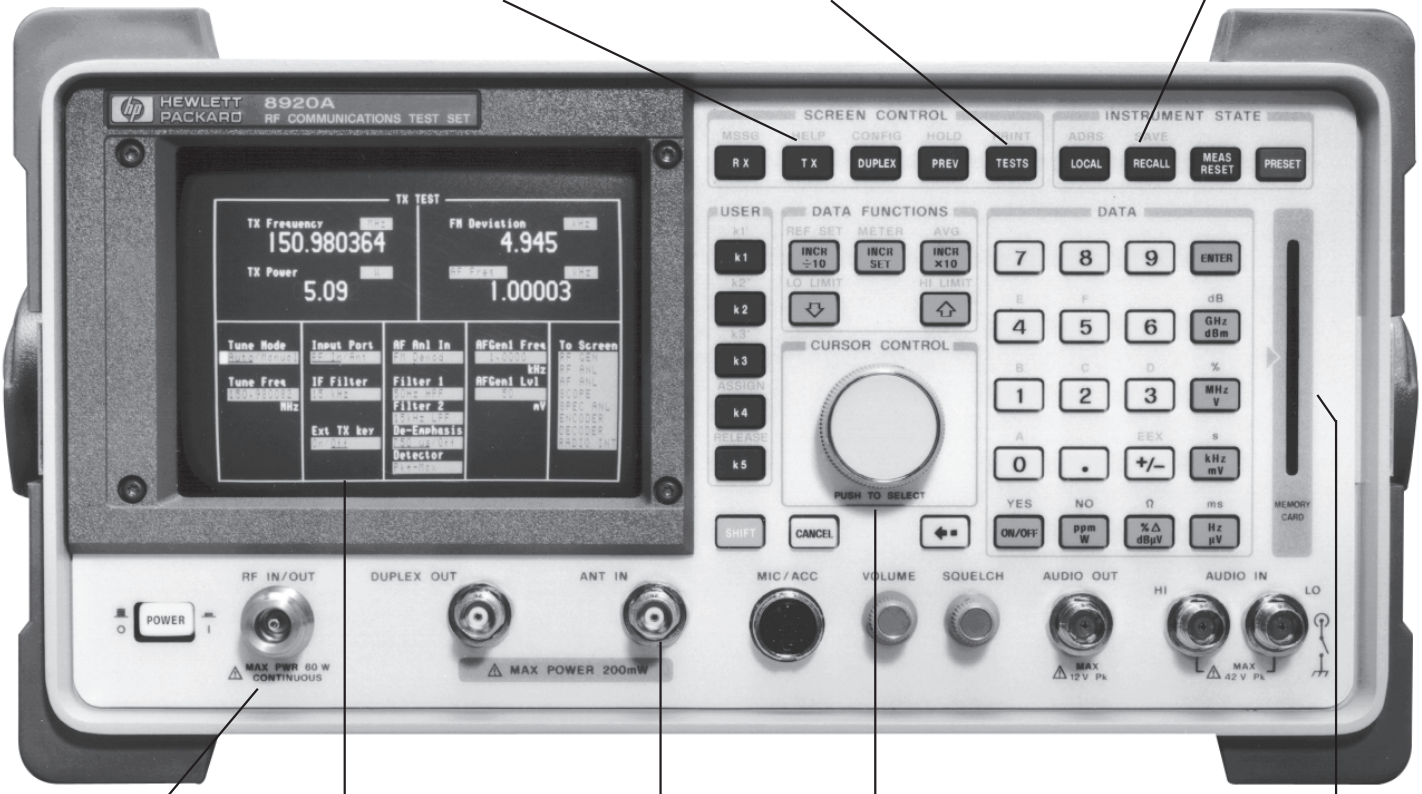
HP 8920A optional features summary:

- Spectrum analyzer
- Tracking generator
- Adjacent channel power test
- Signaling encoder/decoder
- Cellular phone test capability
- Trunked radio testing
- Lower residual FM
- Function generator
- dc current meter
- IEEE 488.2/RS-232 interface busses
- Parallel printer
- Battery pack for portable operation
- Radio control interface
- Radio test programs
- System support programs
  - Cable fault location
  - Field strength
  - Intermodulation calculation
  - Frequency scanning
  - Save/recall automation
- Low-power measurements for cordless and cellular phones
- Variable frequency notch filter
- High-power input option to 100 watts continuous

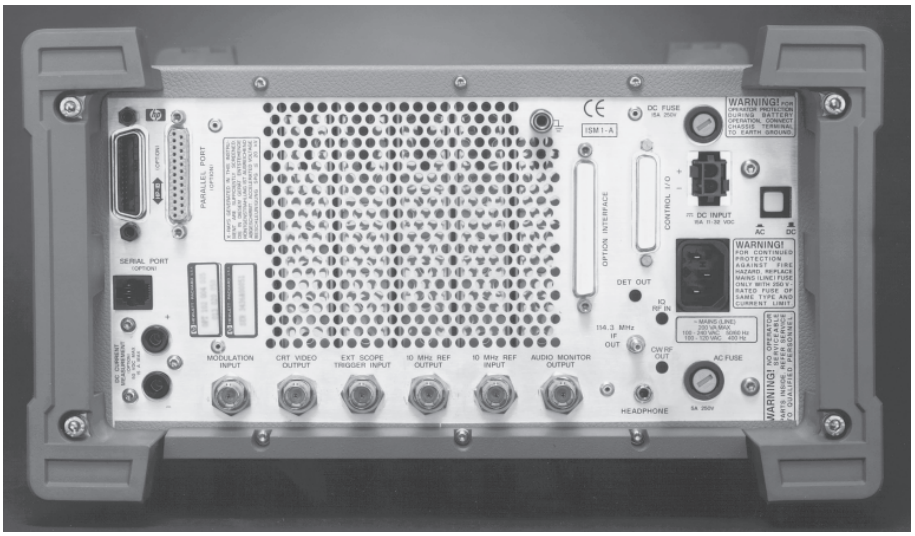


UPDATE! New Electronic Attenuator Increases Reliability!

HP 8920A front panel features

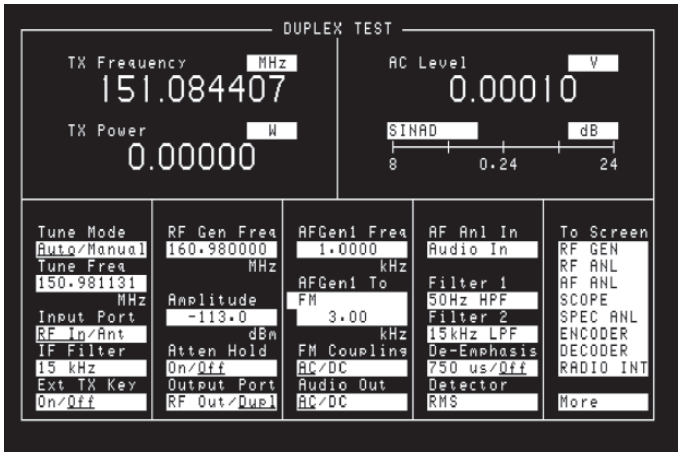


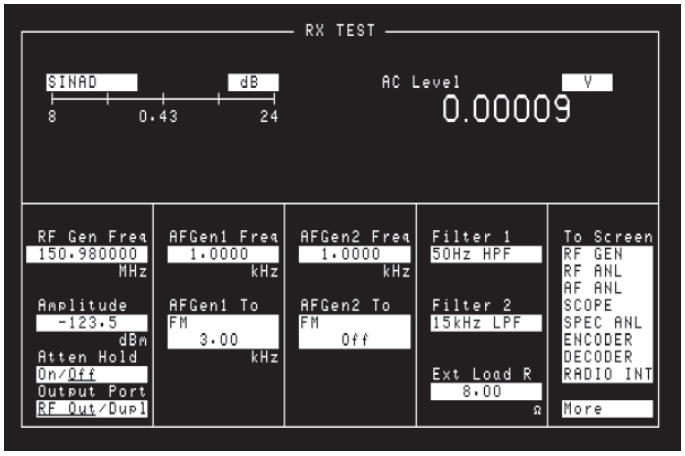
HP 8920A rear panel features



GPIB/RS-232 and parallel interfaces are available as Option 103 on HP 8920A.

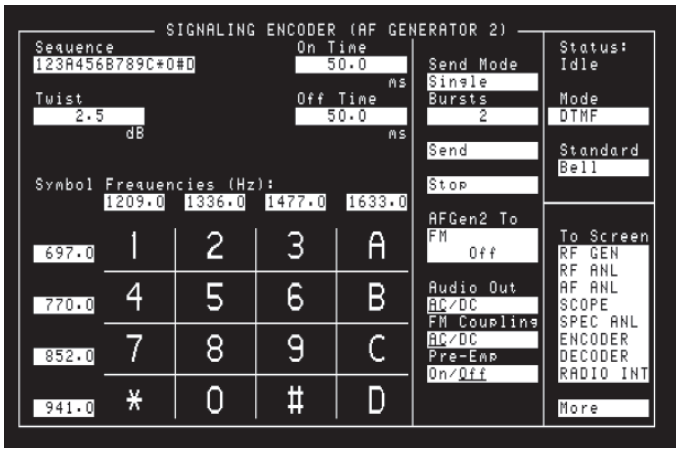
Radio testing made easier





Duplex test

The duplex test mode provides ***full-range offset capability***. The RF generator and receiver are fully independent and allow selectable offsets from 250 kHz to 1 GHz and amplitudes from +5 to –127 dBm. This can be used for duplex radio systems with fixed RX/TX offsets, or other applications like crossband repeater testing. RX and TX measurements can be displayed simultaneously in the duplex mode.

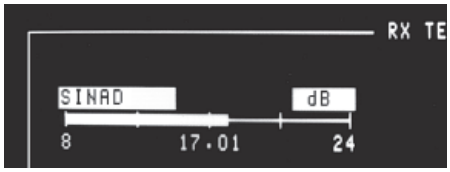


Signaling encoder and decoder

The optional signaling encoder and decoder (Option 004) supports common formats including tone sequential, digital paging, DTMF, trunking and cellular signaling. Common standards are included, and are easily modified for different user formats. The decoder will display the tone, DTMF, or digital sequence transmitted, and the durations of the tones or tone pairs. For testing digital paging transmitters, the decoder will display the address/code, message, and the transmission rate. New capabilities include the ability to decode paging messages "off-the-air" and capturing up to 65 seconds of "batch" transmissions.

Single-key radio characterization

Single keystroke transmitter and receiver testing simplifies radio test. For transmitter testing, the HP 8920A ***autotunes*** to the transmitter signal and automatically displays RF frequency, power, and modulation information. For receiver testing, audio quality (including SINAD/distortion) and level information are displayed simultaneously. All settings and measurements are easily accessed and changed using the front-panel knob, and all settings can be saved in ***Save/Recall*** registers.



Analog meters

All measurements can also be displayed in analog bar-graph meters. Meters can be set up for absolute or relative measurements. Additional meter functions include reference set, settable endpoints, linear or logarithmic scale, and settable high and low limits with on-screen and audible representation of out-of-limit.

A variety of radio test applications

Trunked radio test

Software for manual and automated tests of trunked mobile radios and repeaters is available for LTR and Enhanced Digital Access Communications System (EDACS) formats, plus MPT 1327 systems. Use the **Manual** mode to perform quick functional checks and to verify system programming. For full characterization, run a suite of tests on multiple channels. Printouts of radio test results can be generated to show radio performance and programming information.

High-power option for the HP 8920A to 100 watts

Option 016 is a special option for the HP 8920A to support high-power transmitter measurement applications.

For example, using the RF In/Out connector, frequency and power measurements can be made on transmitters up to 100 W continuous or up to 125 W intermittently with 10 seconds On, 50 seconds Off duty cycle. AM and FM measurements can be made from –16 dBm to +50 dBm.

This option is retrofittable at the factory only.

Cellular radio test

The HP 8920A automatically tests cellular phones when combined with the HP 11807A software for cellular test. Cellular formats supported include AMPS/NAMPS, TACS/ETACS, NMT 450, NMT 900, and JTACS/NTACS. Using the HP 11807A test software, cellular test setups are simple, and a wide variety of testing is supported including go/no go testing, full parametric testing, and phone troubleshooting.

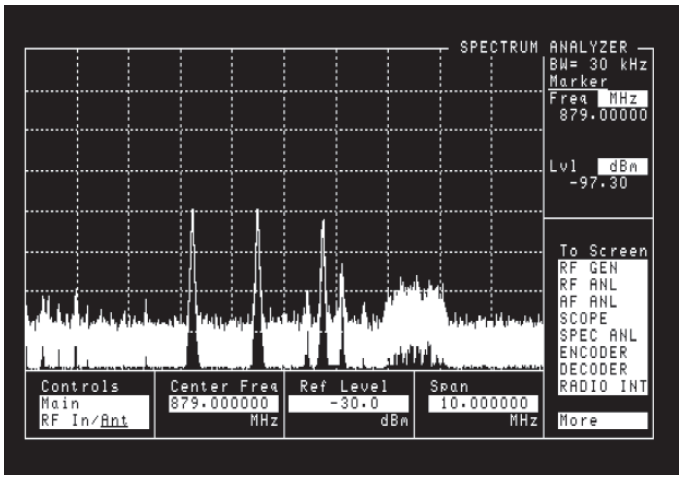
For cellular radio testing, power measurements on the standard HP 8920A are calibrated over the range of 1 mW to 60 W continuous, with a measurement accuracy of ±10% of reading.

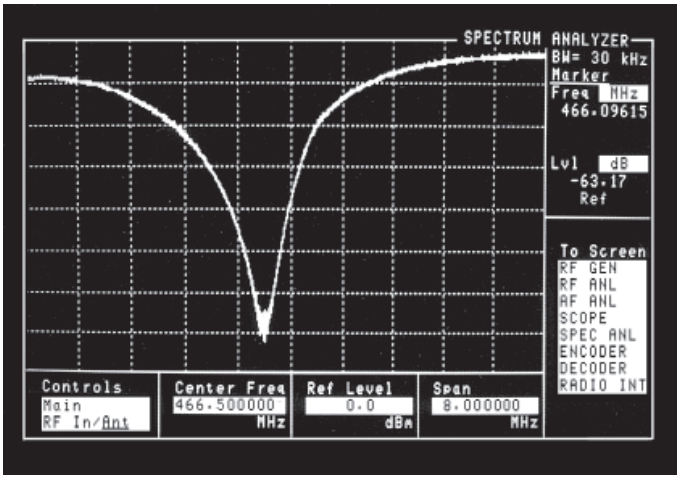
Low-level RF power measurements

Option 007 of the HP 8920A shifts the input range for RF power measurements to a level ideal for characterization of low-power transmitters. RF power with fully specified accuracy can be measured on signals as low as 40 mW. This option provides more accurate measurements on low-power RF products such as cordless phones, data terminals, and short-range transceivers.

Option 007 reduces the maximum input power of the HP 8920A from 60 W to 2.4 W. It is not intended for use with high-power transmitters.

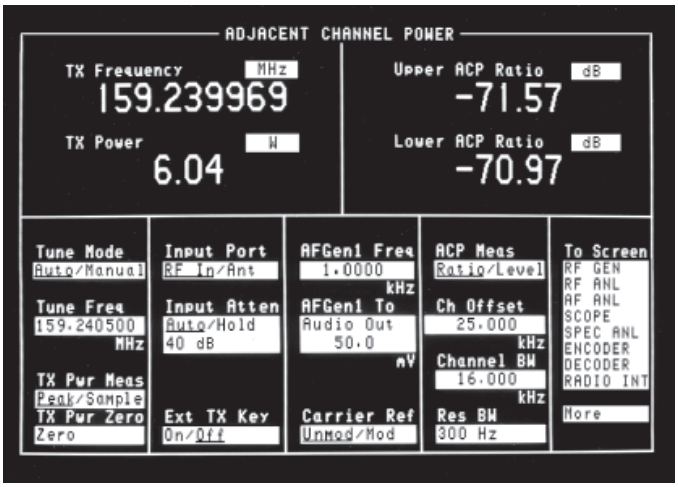
Full spectrum analyzer capabilities





Spectrum analyzer

The optional spectrum analyzer (Option 102) measures signals from 10 MHz to 1 GHz with a variable span of 5 kHz to 1 GHz (full span). Display resolution is selectable between 1, 2, and 10 dB per division. The tunable marker provides automatic readout of frequency and amplitude, or relative frequency and amplitude from a reference. Other marker functions, ***previously only available in standalone spectrum analyzers***, include peak hold, video averaging, marker-to-peak, marker-to-next-peak, marker-to-center-frequency, and marker-to-reference; all of which speed up and simplify signal searching and measurement.



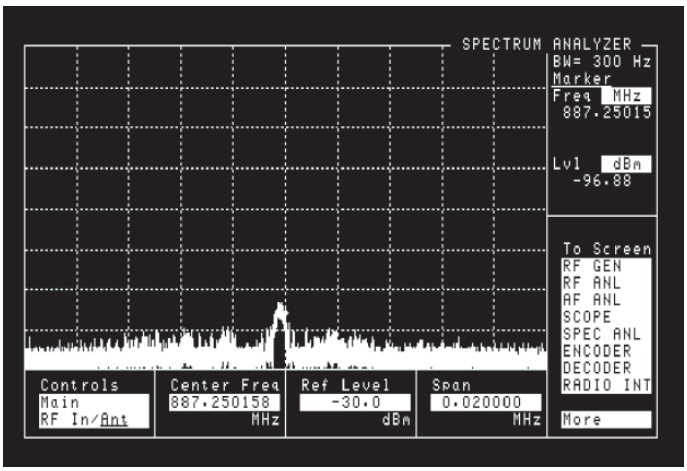
Adjacent channel power tests

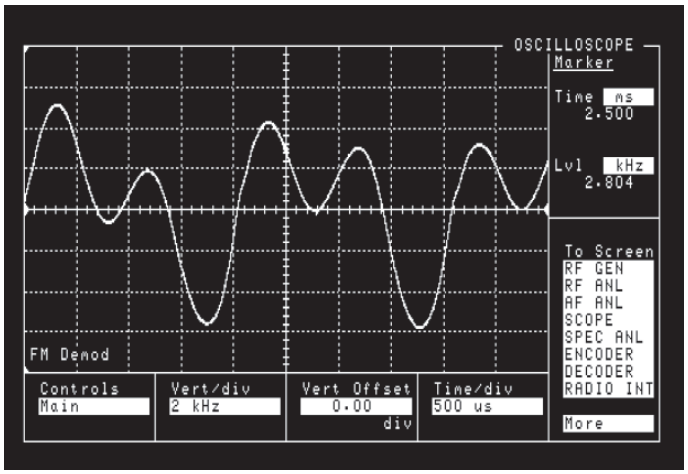
Included in the Option 102 is the capability to make adjacent channel power (ACP) tests on transmitters to measure and regulate undesirable signals that spill into and interfere with neighboring channels. ACP tests can be made by varying three parameters: channel offset, channel bandwidth, and resolution (measurement bandwidth). The dynamic range for ACP is typically –65 dBc to –70 dBc, adequate for most radio standards.

Tracking generator

The tracking generator, included with the spectrum analyzer option, allows for quick and accurate characterization of filters, duplexers, combiners, and RF to IF conversions. Broadband RF devices can be characterized with single sweeps due to the full-span sweep capability to 1 GHz. The tracking generator also includes fully settable amplitude and frequency offset, and a tunable marker which provides automatic readout of frequency and amplitude of any response point.

Monitor low-level signals and display recovered audio





Oscilloscope screen displaying triggering format

Sensitive receiver

2 µV sensitivity (typically 1 µV) available through the ANT IN port allows for off-the-air monitoring of low-level signals. These signals can be displayed on the spectrum analyzer, or demodulated and measured. The recovered audio can be listened to using the built-in speaker while the signal is being viewed on the analyzer or measured.

For measuring high-power signals, the RF IN/OUT port can accept 60 W continuous or 100 W for 10 seconds per minute in a standard instrument.

Digital oscilloscope

The built-in 50 kHz digital oscilloscope provides multiple triggering formats (internal, external, and encoder), single-shot and pre-trigger view for signaling analysis, and full marker capability with automatic level and time readout. Time/division, volts/division, and vertical offset are displayed and easily changed using the front panel knob.

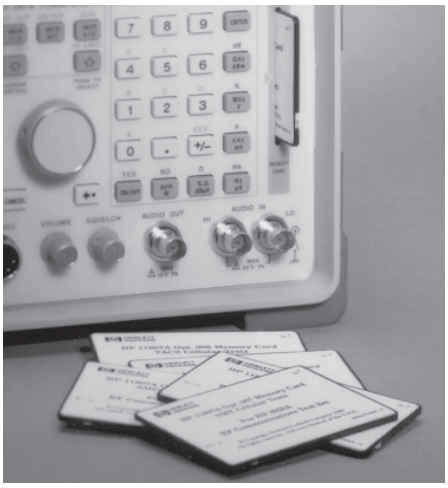
Variable frequency notch

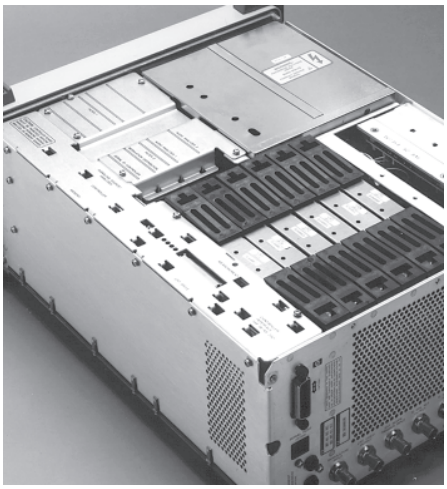
Option 019 is a variable frequency notch (VFN) filter selectable from 300 Hz to 10 kHz. It is useful for making distortion and SINAD measurements over this range with the same accuracy of the fixed 1 kHz notch filter that is standard in the HP 8920A.

This feature can be used in two modes, coupled or uncoupled. When coupled, the internal source (AF Gen 1) and the notch filter are tuned to the same frequency. This is useful when doing SINAD sensitivity or distortion tests at several frequencies, wherein the user simply changes the source or the filter frequency. The default setting at turn-on is 1 kHz.

There is a retrofit kit available to upgrade HP 8920A units with firmware A.12.03 or later. The VFN retrofit kit is HP 8920ART Option R19.

Module and radio testing can be automated





Built-in IBASIC computer

The built-in computer (IBASIC programming language) allows you to automate measurements and test routines, and control external instruments. ***This built-in computer differentiates the HP 8920A from other service monitors*** which only offer limited sequencing or programming capability. The IBASIC computer gives you automation and control benefits of an external BASIC controller. The built-in computer also offers an autostart utility that allows you to run a pre-loaded program by simply turning on the HP 8920A.

Radio test software

The HP 11807A is an easy-to-use, comprehensive software solution for automatic testing of radio receivers and transmitters. It offers a complete selection of transceiver tests for FM, AM, FM, cellular and trunked radios. Its flexibility and modularity allow you to select and change test sequences, test parameters, and pass/fail limits. Test results are displayed on the CRT or can be documented with hard-copy printouts when an external printer is added.

For a complete overview of the HP 11807A radio test software, please visit our web site at:
http://www.hp.com/hp8920support

Modular repair strategy

The HP 8920A is designed for reliability. The low failure rate and two-year calibration cycle of the HP 8920A were achieved by designing for reliability, component stress testing, and stringent environmental testing.

If an instrument failure occurs, the modular design and built-in test capability supports quick diagnosis and repair. With the addition of the assembly-level repair manual and the built-in diagnostic program, failures are diagnosed to the module level, ***and modules can be replaced in minutes at the customer site.***

Sample Order:

HP 8920A RF communications test set ..... qty 1

Opt 001 High stability timebase ..... qty 1

Opt 004 Tone/digital signaling (necessary for cellular and trunked radio testing). ..... qty 1

Opt 013 C-message weighting filter ..... qty 1

Opt 014 6 kHz bandpass filter ..... qty 1

Opt 102 Spectrum analyzer with tracking generator and ACP (adjacent channel power). ..... qty 1

Opt 103 HP-IB/RS-232/Centronics/dc current measurement (includes 08920-90601 IBASIC/Programming Manual). ..... qty 1

Opt W30 3-year return repair service ..... qty 1

For more information about the HP 8920A RF Communications Test Set visit our web site at:

http://www.hp.com/hp8920support

Available literature includes: brochures, technical specifications, product notes, and configuration guide.

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For more information about Hewlett-Packard test and measurement products, applications, services, and a current sales office listing, visit our web site at:

http://www.hp.com/go/tmdir

You can also contact one of the following centers and ask for a test and measurement sales representative.

United States:
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Test and Measurement Call Center
P.O. Box 4026
Englewood, CO 80155-4026
(tel) 1 800 452 4844

Canada:
Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
(tel) 1 877 894 4414

Europe:
Hewlett-Packard Company
European Marketing Organisation
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
(tel) (31 20) 547 9999

Japan:
Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi,
Tokyo 192-8510, Japan
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Latin America:
Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive, 9th Floor
Miami, Florida 33126 U.S.A.
(tel) (305) 267-4245
(tel) (305) 267-4220
(fax) (305) 267-4288

Australia/New Zealand:
Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
(tel) 1 800 629 485 (Australia)
(tel) 0800 738 378 (New Zealand)
(fax) (61 3) 9210 5489

Asia Pacific:
Hewlett-Packard Asia Pacific Ltd.
17-21/F Shell Tower, Times Square,
1 Matheson Street, Causeway Bay,
Hong Kong, SAR
(tel) (852) 2599 7777
(fax) (852) 2506 9285

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