



HP 8921A

HP 8921A Cell Site Test Set



The HP 8921A cell site test set is a highly-portable, integrated solution for the installation and maintenance of AMPS and TACS cell sites. The HP 8921A incorporates more than twenty powerful instruments into a compact, 38-pound package. The integral IBASIC controller in the HP 8921A runs the HP 11807B cell site test software to fully automate base station test and adjustment procedures. Automation combined with accurate measurements increases technician efficiency to speed installation and maintenance procedures.

HP 8921A Features Summary

- AM/FM signal generator
- AM/FM modulation analyzer
- Duplex offset generator
- RF power meter
- RF frequency counter/frequency error meter
- Audio frequency counter and power meter
- AC/DC voltmeter
- SINAD/SNR/distortion meter
- Two variable frequency AF generators
- Digital oscilloscope
- Built-in IBASIC controller
- Spectrum analyzer with tracking generator
- Adjacent channel power meter
- Signaling encoder and decoder
- High-stability timebase
- DC current meter
- HP-IB/RS-232/parallel remote interfaces
- Upgradability to TDMA, CDMA, CDPD, or PCS test capability
- Optional cellular base station test software
- Optional Amps cellular phone test software
- Optional radio interface card
- Optional Ericsson PCM reference

Upgrading for New Formats

Beyond testing analog AMPS and TACS base stations, the HP 8921A is ready to grow with your measurement needs for digital cellular systems with upgrades available for:

- TDMA
- CDMA
- CDPD
- PCS (1710–1990 mHz)

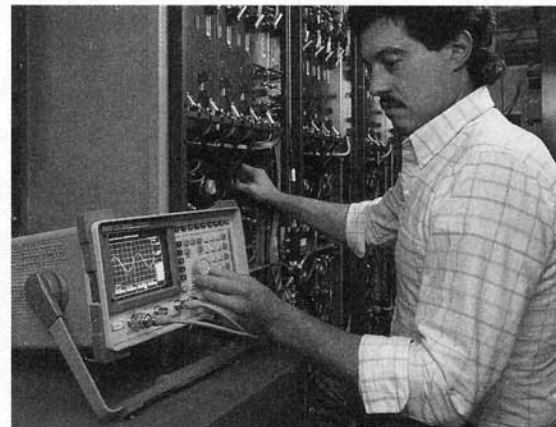
High-Performance Spectrum Analyzer

The spectrum analyzer of the HP 8921A has the wide dynamic range and synthesized frequency accuracy previously found only in expensive stand-alone spectrum analyzers. Wide dynamic range allows the HP 8921A to locate low level signals in the presence of high power transmitters. Synthesized frequency accuracy translates into high confidence that you've located the correct signals.

With frequency spans ranging from 1 GHz to as narrow as 5 kHz, the HP 8921A has the flexibility to look at the entire RF spectrum and then zoom in on the desired signals. The marker function displays the frequency and amplitude of any displayed signal. The marker-to-peak function displays the frequency and amplitude of the largest on-screen signal with a single keystroke.

Built-in Tracking Generator

The HP 8921A spectrum analyzer also includes a built-in tracking generator for tuning base station duplexers. With +13 dBm power output (over range), use the tracking generator as an input stimulus to the duplexer. The calibrated level of the spectrum analyzer ensures accurate adjustment of duplexers. Using the marker function of the spectrum analyzer, the rejection of the duplexer can be measured at any point of the filter response. Antenna return loss can be quickly and accurately measured onsite with the HP 8921A tracking generator. Using the tracking generator to drive the antenna through an external VSWR bridge, the reflected power can be measured on the HP 8921A spectrum analyzer. Other measurements performed with the tracking generator include insertion loss and frequency response of filters, cables, or attenuators. The tracking generator features calibrated output level from -137 to +7 dBm and variable frequency offset for IF to RF conversion measurements. Coupled with 1, 2, and 10 dB per division spectrum analyzer ranges, normalization, and marker capability, the tracking generator makes the HP 8921A ideal for all types of measurements and adjustments.



Automated Base Station Maintenance

For complex base station maintenance, the HP 11807B cell site test software, running on the HP 8921A's internal controller, guides the user through each step of the procedure. Graphical displays show connection diagrams and highlight key adjustment points when required. Technicians spend less time learning and more time testing with the HP 8921A cell site test set.

Another software package, the HP 11807B Option 120, provides AMPS system information. The software uses the HP 8921A to scan for and decode local control channels, display system data, and measure key transmitter characteristics.

Key Literature

- HP 8921A Brochure, p/n 5965-1579E
- HP 8921A Technical Specifications, p/n 5965-7062E
- HP 8921A Configuration Guide, p/n 5965-7061E
- HP 8921A Price List, p/n 5965-7063E

Also available are videos showing automated testing of cell site equipment:

- Optimize Motorola Cell Sites Fast, p/n 5965-2988E
- Install and Maintain Ericsson Cell Sites Fast, p/n 5965-2986E
- Install and Maintain AT&T Cell Sites Fast, p/n 5965-2987E

HP 8921A
HP 83204A
HP 83205A



HP 8921A Option 600, 602, 603



HP 8921A Option 500, 502, 503

HP 8921A Option 600, 602, 603 CDMA/CDPD Cell Site Test System



Option 600 for the HP 8921A adds the HP 83205A CDMA cellular adapter to the cell site test set to provide testing of CDMA (IS-95A and IS-97) base station equipment. This system provides signal generation and analysis of QPSK/OQPSK signals. The system measures power in each Walsh-coded signal, code channel timing, and code channel phase relative to the pilot.

The HP 83205A CDPD test option quickly and accurately tests key RF parameters on both the forward-channel transmitter and the reverse-channel receiver. CDPD software, included with all CDPD hardware, automates transmitter, receiver, and system tests—making it easy to standardize system maintenance with fast and accurate test procedures.

HP 8921A Option 600 Features Summary

All HP 8921A standard features, plus:

- Measurements of waveform quality “ρ” (rho), frequency error, time offset, and carrier feedthrough
- Code domain power, timing, and phase analysis
- Average power and CDMA channel power measurements
- CDMA QPSK/OQPSK RF source with data buffer and IS-95 reverse link coding
- Built-in AWGN (Added White Gaussian Noise) source for calibrated E_s/N_t settings

HP 8921A Option 500, 502, 503 TDMA/CDPD Cell Site Test System

The HP 8921A Option 500 adds the HP 83204A to the HP 8921A to provide testing of TDMA (IS-136) base station equipment. This unit adds $\pi/4$ DQPSK signal generation and analysis to the powerful analog features of the standard HP 8921A. A custom screen provides control of the TDMA source and provides selection of several measurement modes, making all test results visible in one place.

The HP 83204A CDPD test option quickly and accurately tests key RF parameters on both the forward-channel transmitter and the reverse-channel receiver. CDPD software, included with all CDPD hardware, automates transmitter, receiver, and system tests—making it easy to standardize system maintenance with fast and accurate test procedures.

HP 8921A Option 500 Features Summary

All HP 8921A standard features, plus:

- Measurements of TDMA modulation accuracy, including phase error, magnitude error, and error vector magnitude (EVM)
- Measurements of I/Q origin offset and frequency error
- Measurements of adjacent and alternate channel power
- TDMA power measurement
- $\pi/4$ DQPSK signal generator
- $\pi/4$ DQPSK modulation analyzer
- Continuous/pulsed RF power meter
- Bit-error rate meter
- Baseband data source

HP 83204A TDMA/CDPD Cellular Adapter

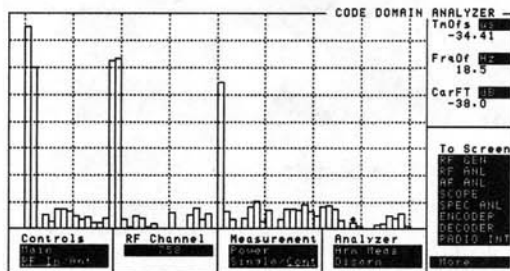
For those who already own the HP 8921A cell site test set, the HP 83204A Option 003 TDMA/CDPD cellular adapter can be added to upgrade the unit to provide TDMA (IS-136) and CDPD tests on cell site equipment. Once added, all TDMA test features described above are available for manual use as well as under HP 11807B software control.

HP 83202A Interface Kits

Order the HP 83202A base station connection kit to receive the necessary cables, connectors, and adapters to connect the HP 8921A to a specific type of base station. Available options include connection kits for Motorola, General Electric/Nortel, Ericsson, and AT&T base stations. The 83202A provides everything needed to test base stations with the HP 8921A. Some connection kits also include an interface/switch box to more fully automate the testing process.

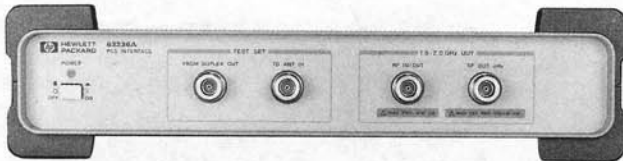
HP 83202A Base Station Connection Kits

- Option 032 Ericsson RBS 884 Connection Kit
- Option 040 Motorola Connection Kit
- Option 042 Ericsson Connection Kit
- Option 043 AT&T Connection Kit
- Option 044 GE and Nortel Connection Kit
- Option 070 Motorola AMPS/NAMPS MicroC•I•T•E Connection Kit
- Option 083 Lucent PCS Connection Kit



HP 83205A CDMA/CDPD Cellular Adapter

For those who already own HP 8921As, the HP 83205A Option 003 CDMA/CDPD cellular adapter can be added to upgrade the unit to perform the CDMA/CDPD tests described above for the HP 8921A. Note: Older HP 8921As may require an upgrade for complete CDMA capabilities.



HP 83236B PCS Interface

HP 83236B PCS Interface

The HP 83236B PCS interface extends the HP 8921A CDMA and TDMA measurement capability to the International and U.S. PCS bands. The HP 83236B is controlled via HP-IB from an external controller or from the HP 8921A internal IBASIC controller. The HP 83236B hardware can be integrated with existing HP 8921A systems in the field.

HP 11807B Software for Automated Base Station Maintenance

Developed from manufacturers' recommended maintenance procedures, the HP 11807B cell site test software ensures complete test and adjustment of cell sites. Standardizing system maintenance with the HP 8921A and HP 11807B software increases system integrity. The fast measurement speed of the HP 8921A and HP 11807B software results in less off-line time for each transceiver during maintenance work. Since all cells are uniformly tested using the same test procedure, problems are detected earlier.



Hewlett-Packard has automated testing solutions for the following manufacturers' equipment:

- Motorola HDII, HDII/NAMPS, LD series, TACS, ETACS, UTACS, EUTACS, and MicroC•I•T•E AMPS/NAMPS
- GE standard, extended frequency, and compact RCU series
- Ericsson 882 and 882M analog, microcell, 882D DTRM, and 883, 883M TACS/ETACS, and 884
- Lucent Autoplex Series II analog, LMT microcell, and TDMA/CDMA
- Nortel DRU and P-series
- Hughes GMH 2000 AMPS

In addition to the automated maintenance procedures, the HP 11807B Option 120 provides detailed analysis of AMPS cellular networks. An automated application using the HP 8921A's receiver and decoder, the package displays a wealth of AMPS system data. The system can find local AMPS control channels and display decoded forward control channel data. Other modes decode reverse control channel data, follow calls, and perform measurements on sites or mobiles (see product overview, p/n 5963-6891 EUS).

Total HP Support for Your Cell Site Test Needs

HP offers a variety of options to support cell site testing and keep your solution up to date with the latest technology. The HP 11807B software Option +36H Start-Up Assistance provides one day of on-site training for up to five people. Additional HP consulting/training is also available as needed. Option +SAJ Software Update Subscription keeps your software current by ensuring you get all software enhancements/updates sent to you automatically.

Key Literature

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- HP 8921A Configuration Guide, p/n 5965-7061E
- HP 8921A Price List, p/n 5965-7063E
- Also available are videos showing automated testing of cell site equipment:
- Optimize Motorola Cell Sites Fast, p/n 1000-1300
- Install and Maintain Ericsson Cell Sites Fast, p/n 1000-1297
- Install and Maintain AT&T Cell Sites Fast, p/n 1000-1304

Ordering Information

Ordering Information	Price
AMPS/TACS and CDMA/TDMA/CDPD Cell Site Test	
HP 8921A Cell Site Test Set	\$20,300
Opt 011 CCITT Weighting Filter	\$0
Opt 020 Radio Interface Adapter	+\$2,080
Opt 042 Ericsson PCM Reference	+\$620
Opt 500 TDMA Cell Site Test System	+\$11,425
Opt 502 CDPD MDS Cell Site Test System	+\$11,425
Opt 503 TDMA/CDPD MDS Cell Site Test System	+\$21,625
Opt 600 CDMA Cell Site Test System	+\$13,700
Opt 602 CDPD MDS Cell Site Test System	+\$11,425
Opt 603 CDMA/CDPD MDS Cell Site Test System	+\$23,900
Opt W30 Three-Year Warranty	+\$475
HP 83204A TDMA Cellular Adapter	\$0
Opt 001 TDMA Cellular Adapter, upgradeable to CDPD	+\$11,425
Opt 002 CDPD Cellular Adapter, upgradeable to TDMA	+\$11,425
Opt 003 TDMA/CDPD Cellular Adapter	+\$21,625
HP 83205A CDMA Cellular Adapter	\$0
Opt 001 CDMA Cellular Adapter, upgradeable to CDPD	+\$13,700
Opt 002 CDPD Cellular Adapter, upgradeable to CDMA	+\$11,425
Opt 003 CDMA/CDPD Cellular Adapter	+\$23,900
HP 83236B PCS Interface	+\$10,150

Software for Automated Base Station Maintenance

HP 11807B Cell Site Test Software	
Opt 040 Motorola AMPS/NAMPS Test Software	+\$2,600
Opt 041 General Electric AMPS Test Software	+\$2,600
Opt 042 Ericsson AMPS/TDMA Test Software	+\$2,600
Opt 043 AT&T AMPS/TDMA Test Software	+\$2,600
Opt 044 Nortel AMPS/TDMA Test Software	+\$2,600
Opt 045 Hughes AMPS Test	+\$2,600
Opt 050 Motorola TACS/ETACS/UTACS Test Software	+\$2,600
Opt 052 Ericsson TACS Test Software	+\$2,600
Opt 070 Motorola AMPS/NAMPS MicroC•I•T•E	+\$2,600
Opt 120 AMPS Call Analysis, Logging and Monitoring Software	+\$2,705

Base Station Connection Kits

HP 83202A Base Station Connection Kit	
Opt 032 Ericsson RBS 884 Connection Kit	+\$1,775
Opt 040 Motorola Connection Kit	+\$5,720
Opt 042 Ericsson Connection Kit	+\$1,560
Opt 043 AT&T Connection Kit	+\$625
Opt 044 GE and Nortel Connection Kit	+\$780
Opt 070 Motorola MicroC•I•T•E	+\$6,555
Opt 083 Lucent CDMA/TDMA Base Station Connector Kit	\$700
Opt 023 Lucent Cellular Base Station Test Software	\$3300
Opt 032 Ericsson RBS884 Base Station Test Software	\$3300

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