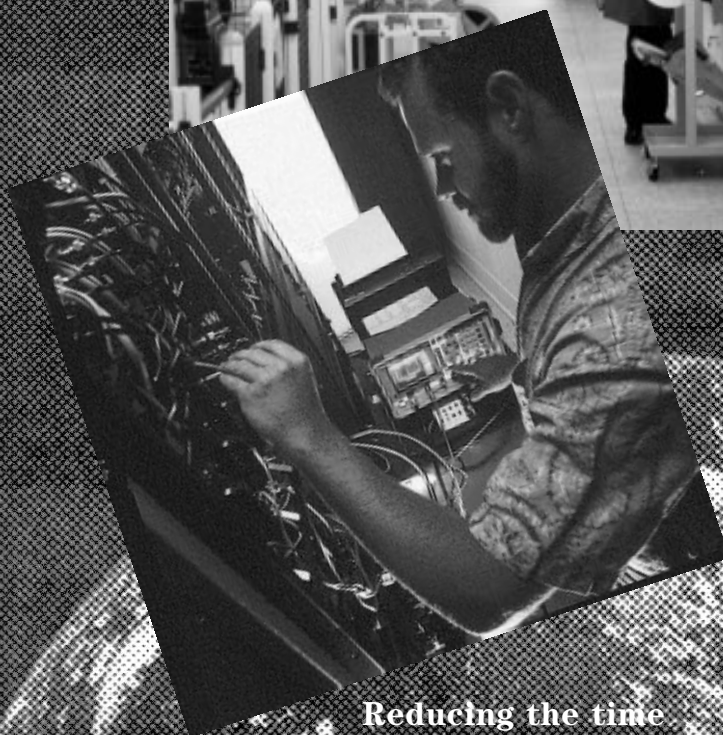
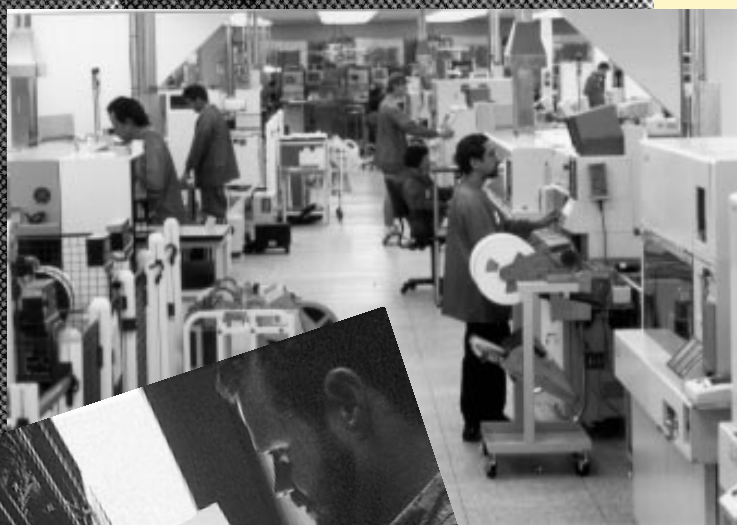


RF Test Sets for Wireless Communications

Brochure

*Hewlett-Packard has
the RF Test Set
for your wireless
test requirements*



Reducing the time
it takes to get
the job done

Mobile Test

Check product specific configuration guides for detailed option configuration information

		CELLULAR				
Wireless Systems	Land mobile Trunked Pagers Analog cordless	AMPS TACS NMT	TDMA IS-136 IS-54B	CDMA IS-95/95A	GSM900	PDC
Service Test	HP 8920A		HP 8920B-800		HP 8922S	HP 8920DT
	HP 11807A Software		HP 83206A		HP 83212C Software	HP 83201B
Manufacturing Test			HP 8920B	HP 8924C		HP 8920B
	HP 8920B			HP 83217A Software		HP 83215A/B
	HP 11807E Software		HP 11807E Software		HP 8922M	HP 11807F Software
					HP 83212C Software	

Infrastructure Test

		CELLULAR			
Wireless Systems	Land mobile Trunked Pagers Analog cordless	AMPS TACS	TDMA IS-136 (CDPD option available)	CDMA IS-95A/97 (CDPD option available)	GSM900
Service & Manufacturing Test		HP 8921A ¹	HP 8921A-500	HP 8921A-600	HP 8590 E-Series ²
	HP 8920A	HP 11807B Software	HP 83204A-001	HP 83205A-001	
			HP 8921A ¹	HP 8921A ¹	HP 85715B Measurement Personality
			HP 11807B Software		

Mobile Test Continued

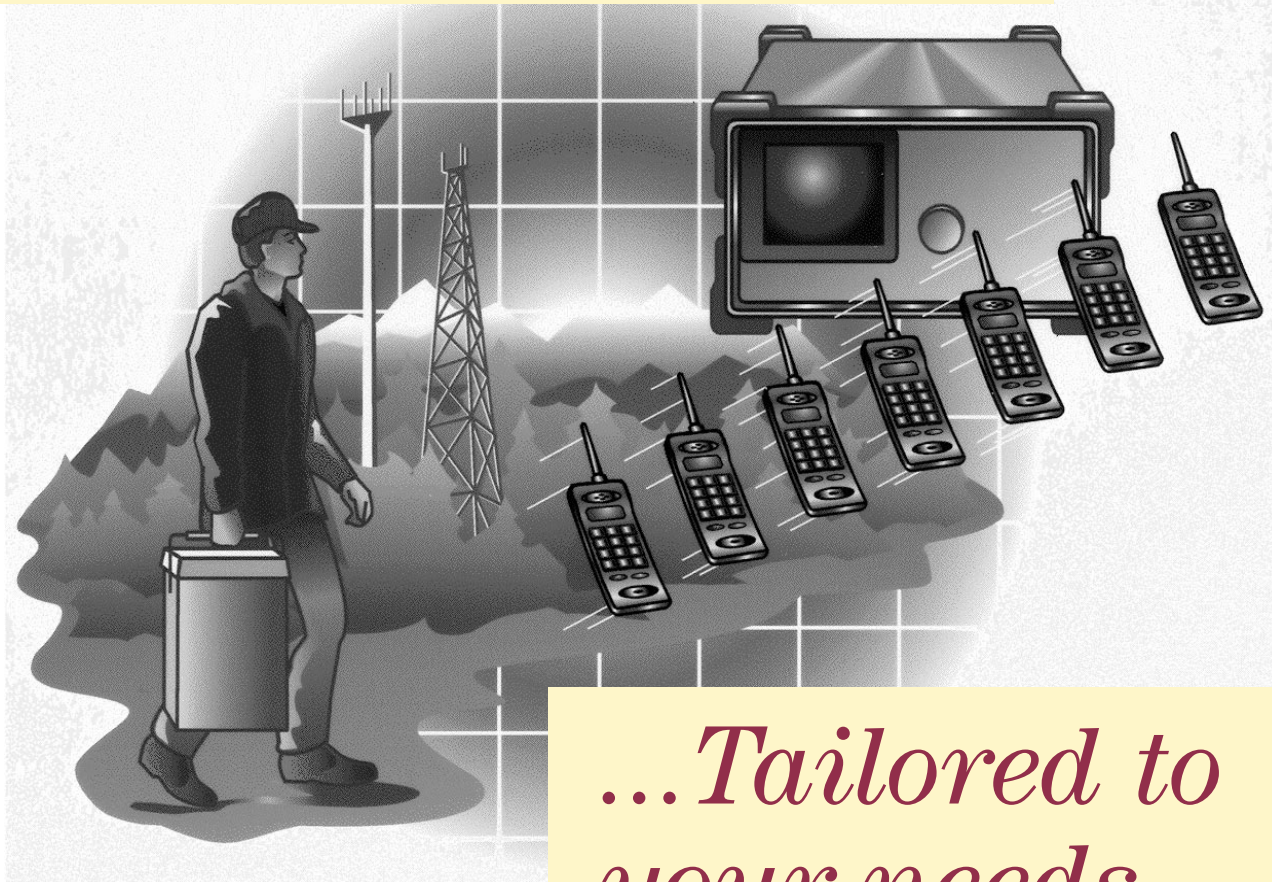
CORDLESS		PCS (PCN)			
PHS	DECT	DCS1800	GSM-Based (PCS1900)	TDMA-Based (IS-136)	CDMA-Based (J-STD-008)
HP 8920DT HP 83201B HP 8920B HP 83215A/B	HP 8923B	HP 83220E HP 8922S HP 83212C Software	HP 83220E HP 8922S HP 83212C Software	HP 83206A HP 8920B HP 83236B HP 11807E Software	HP 8924C HP 83236B
HP 11807F Software		HP 83220A/E HP 8922M HP 83212C Software	HP 83220E HP 8922M HP 83212C Software		

Infrastructure Test Continued

CORDLESS		PCS (PCN)			
PHS	DECT	DCS1800	GSM Based (PCS1900)	TDMA-Based (IS-136)	CDMA-Based (IS-95A/97)
HP 8920DT HP 83201B HP 8920B HP 83215A/B HP 11807F Software	HP 8923B	HP 8590 E-Series ² HP 85722B Measurement Personality	HP 8590 E-Series ² HP 85722B- H19 Measurement Personality	HP 8921A-501 HP 83204A-001 HP 8921A ¹ HP 83236B HP 11807B Software	HP 8921A-601 HP 83205A-001 HP 8921A ¹ HP 83236B HP 11807B Software

Check product specific configuration guides for detailed option configuration information

High performance test solutions...



...Tailored to your needs...

**...Rely on Hewlett-Packard test equipment
to ensure the quality of your communications
products and systems.**

Testing RF communications equipment requires more than good RF test sets. Hewlett-Packard has the knowledge and products to complement your organization — optimizing your resources. We have the test hardware, software, computers, system integrators, consultants, training classes, etc. to provide you what you need to be successful. From offering single instruments to setting up complete test lines/programs — we can work with you to meet *YOUR* needs.

...Around the world

*Global Sourcing
available from
Hewlett-Packard.*

*Global Sourcing...
What is it?*

Worldwide consistency in product quality

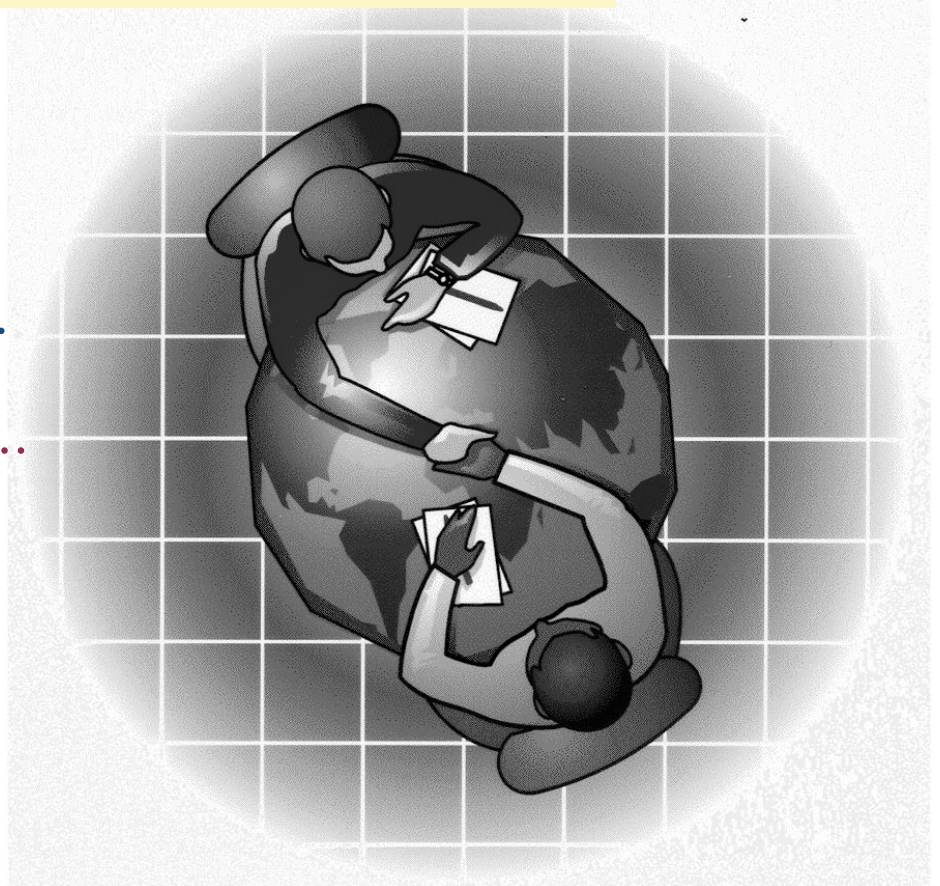
Count on it! The HP product you use to build your testing solution in Europe, the U.S. or Asia Pacific is available worldwide. You can be assured that a test plan developed around Hewlett-Packard instruments at one site can be duplicated around the world — maximizing your test engineering investment and minimizing the amount of time it takes to get a new test capability on line.

Worldwide consistency in quality test support

Hewlett-Packard has a global support organization offering you product support, consulting and training regardless of your location. You benefit from Hewlett-Packard's worldwide presence when your testing schedule demands a close relationship with your equipment supplier after the sale — not just before the sale.

Worldwide consistency as a partner/supplier

Working with one supplier with standardized purchasing and support processes around the globe simplifies your procurement process. You benefit from standardized ordering, terms and conditions, pricing, and warranty interactions that streamline your procurement and equipment management efforts.



Mobile Test

LAND MOBILE
TRUNKED
PAGERS
ANALOG
CELLULAR
ANALOG
CORDLESS



HP 8920A RF Communications Test Set

- New, intuitive call processing interface with AMPS authentication for cellular phone test
- Functions of more than 20 complete instruments
- Frequency range 400 kHz to 1000 MHz
- Portable and lightweight
- Optional full-span spectrum analyzer, tracking generator and adjacent channel power meter
- Built-in IBASIC computer

The HP 8920A RF Communications Test Set is a full-feature, one-box test set designed to meet service and repair needs in the 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.

**NEW AMPS
Authentication**

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

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

HP 11807A Software

Land Mobile

- AM
- North American FM
- European FM

Trunked

- LTR
- EDACS
- MPT 1327

Analog Cellular

- AMPS/EAMPS/NAMPS
- TACS/ETACS
- JTACS/NTACS
- NMT 450/900

Mfg.



*LAND MOBILE
TRUNKED
PAGERS
ANALOG
CELLULAR
ANALOG
CORDLESS*

HP 8920B RF Communications Test Set

- All of the standard HP 8920A features
- Fast measurement speed
- Accuracy of stand-alone instruments
- Simplified programming with high-level HP-IB commands for call processing
- Firmware updates via front panel
- PCMCIA memory card format
- New, intuitive call processing interface with AMPS authentication for cellular phone test

The HP 8920B takes you another step forward in manufacturing productivity. Processing speed improvements more than double the computing speed over the HP 8920A for initial transceiver measurements and HP-IB commands. This means lower cost per test and higher throughput from your production line. With accuracy as good as stand-alone instruments, you can be sure of passing more good radios and of consistently finding those that are out of specification.

The HP 8920B meets your test needs on multiple radio test lines; testing land mobile, trunked, cordless, and cellular phones while meeting your need for fast parametric tests.

HP 11807E Software

Land Mobile

- AM
- North American FM
- European FM

Trunked

- LTR
- EDACS

Analog Cellular

- AMPS/EAMPS/NAMPS
- TACS/ETACS
- JTACS/NTACS
- NMT 450/900

CELLULAR TEST

- TDMA

Service
& Mfg.



DCCH IS-136

HP 8920B RF Communications Test Set with Options 001, 004, 006, 051, 800

- All of the standard HP 8920B features
- TDMA dual-mode DAMPS (IS-54B) and DCCH (IS-136) phone test capability
- DCCH (IS-136) measurements such as:
 - DCCH authentication
 - SMS and caller ID
 - Mobile reported parameters for MAHO
 - Power control commands
 - Unique programming of FACCH, SACCH
- PCS upgrade path

High-quality digital cellular measurements have never been easier — a real bonus for users immersed in the rapidly changing technologies of digital cellular radios.

From programming a test sequence to troubleshooting phones, the new call processing subsystem simplifies even the most complex DCCH (IS-136) measurements. RF measurements include:

- Analog/digital tests for TIA/EIA IS-19B, IS-54B, and IS-136 phones
- Error vector magnitude (EVM)
- 10-burst error vector magnitude
- Magnitude error/phase error
- I/Q origin offset
- Carrier frequency error
- Bit error rate (BER) loop-back mode
- TX power levels 0 through 10
- Adjacent channel power

HP 11807E Software

- AMPS/EAMPS/NAMPS
- TACS/ETACS
- JTACS/NTACS
- NMT 450/900
- TDMA (DAMPS) Dual-mode Cellular Tests using the TIA Adapter
- AMPS/EAMPS/NAMPS/TDMA (DAMPS) Dual-mode Cellular Tests
- AMPS/NAMPS/DAMPS/DCCH

Mobile Test

CELLULAR TEST

• CDMA

Service
& Mfg.



14.4 Kb
Vocoder Support

HP 8924C CDMA Mobile Station Test Set

- High accuracy and speed for manufacturing test
- Analog and IS-95/95A and J-STD-008 CDMA digital phone test capability
- Both functional and parametric phone testing
- CDMA base station simulator
- PCS upgrade path

The HP 8924C CDMA Mobile Station Test Set provides the key set of measurements necessary to manufacture high-quality, dual-mode CDMA mobile telephones that comply with the TIA/EIA IS-95/95A and J-STD-008 air interface standard. Acting as a calibrated, high-performance, CDMA base station, the HP 8924C is optimized to provide high-accuracy measurements with the speed required for efficient manufacturing. In addition to its CDMA functionality, the HP 8924C includes full AMPS, NAMPS, and TACS analog phone test capability. With the HP 8924C, you save space and cost by making both analog cellular and CDMA digital cellular measurements with the same test set.

HP 83217A Software

- AMPS/NAMPS/CDMA
- TACS/ETACS/CDMA

PCS

• TDMA • CDMA

Service
& Mfg.



Upgrade
Existing Systems

HP 83236B PCS Interface

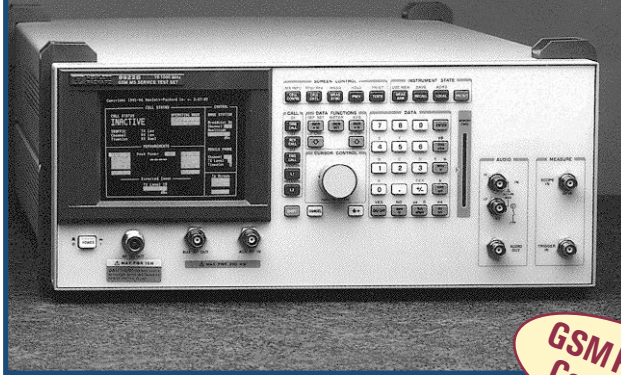
- North American, Korean, and international-band PCS interface (1710-1990 MHz)
- Cost-effective PCS upgrade
- Upgrade existing HP 8920B, HP 8924C systems in the field

Extend TDMA and CDMA phone test capabilities to PCS-band frequencies by adding the HP 83236B PCS Interface to existing HP 8920B Option 800 - TDMA and HP 8924C - CDMA mobile test solutions. HP 83236B hardware can be integrated with existing RF test systems in the field. Adding the HP 83236B to existing mobile test systems is a low-cost way to obtain PCS-band measurement capability.

CELLULAR TEST

• GSM900

Service



**GSM Phase II
Compatible**

HP 8922S

GSM Mobile Station Service Test Set

- Stand-alone GSM tester
- GSM Phase II compatible
- Easy to use
- Tool-kit of instruments
- Accurate and repeatable measurements
- Spectrum analyzer option
- PCS1900/DCS1800 upgrade path

The HP 8922S is a stand-alone GSM mobile station tester tailored to the demanding needs of incoming inspection and mobile repair.

It includes a GSM base station emulator and all the signaling capability to fully test a mobile without additional equipment. By emulating a GSM base station, the HP 8922S is able to verify that a mobile can establish and maintain a GSM link over the air. Once a link has been established, tests such as transmitter phase and frequency error, transmitted power, and receiver sensitivity can be performed.

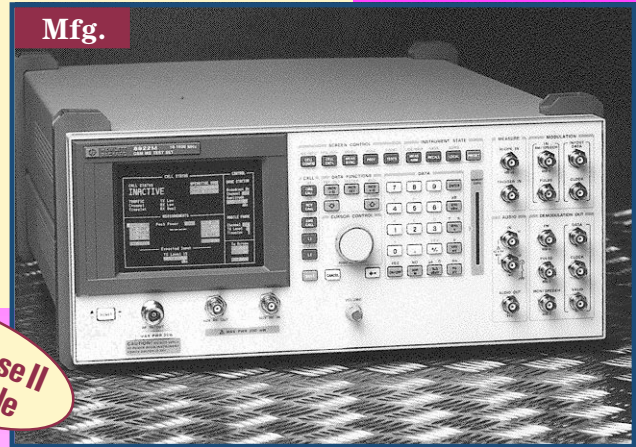
Reducing complexity and focusing on ease-of-use, the HP 8922S provides a cost effective solution for servicing GSM radios.

The HP 83212C measurement software ensures consistent quality by automating phone test.

HP 83212C Software

- GSM900

Mfg.



HP 8922M

GSM Mobile Station Test Set

- All of the standard HP 8922S features
- HP-IB measurement throughput 40% faster than HP 8922S
- Designed for high-volume manufacturing test
- PCS1900/DCS1800 upgrade path
- More GSM phones are tested with the HP 8922 than any other test set

Fulfilling the needs of the GSM mobile manufacturer, the HP 8922M maximizes production throughput and minimizes the cost per test. It offers the highest testing speed in its class while guaranteeing accurate and repeatable measurements.

The HP 8922M performs all the measurements that the HP 8922S performs. Its performance is peaked for manufacturing with additional flexibility in areas such as protocol logging, available demodulation ports, and pulse modulation capabilities.

HP 83212C Software

- GSM900

Mobile Test



PCS

- DCS1800
- PCS1900

**PCS1900
Software**

HP 8922M/S GSM Mobile Station Test Set

HP 83220A/E DCS/PCS MS Test Set

- All of the standard HP 8922M/S features
- Tool-kit of instruments
- Fast and accurate testing of DCS1800 and PCS1900 mobiles

The HP 8922M/S can be expanded to provide fast and accurate testing of DCS1800 and PCS1900 mobile radios with the addition of the HP 83220A/E. The resulting system comprehensively tests DCS1800 and PCS1900 mobile radios across their frequency bands. All the features of the RF generator, RF analyzer and general instrumentation of the HP 8922 series are retained.

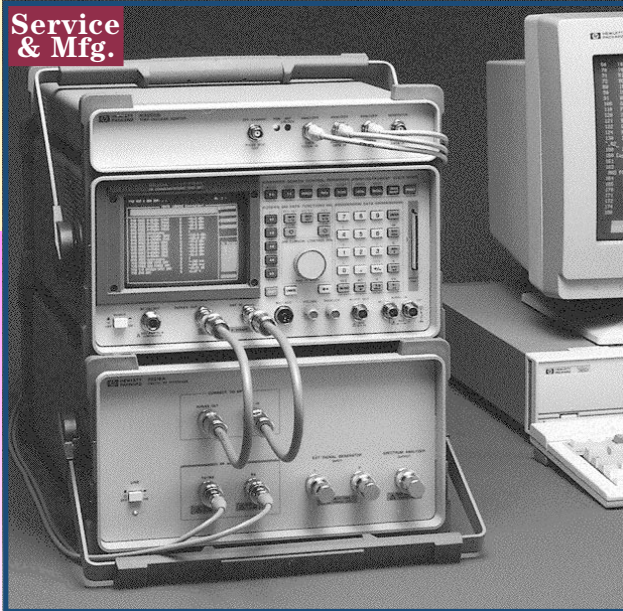
HP 83212C Software

- GSM900
- DCS1800
- PCS1900

Mobile Test

CORDLESS
• **DECT**

CELLULAR TEST • PDC
CORDLESS • PHS

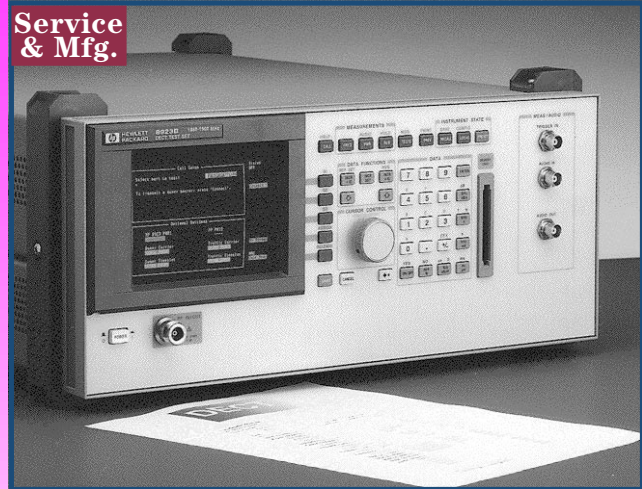


HP 8920DT **Digital RF Communications System**

- Configurations for mobile (PDC/PHS) or base station (PHS) test
- Operates stand-alone or with an external computer
- Fast testing using DSP technology
- Performs sequential list or repeats selected tests

The HP 8920DT is designed around the HP 8920B Communications Test Set to test 800 and 1500 MHz PDC radios and PHS radios in the manufacturing environment. The basic HP 8920DT configuration can perform most in-channel RCR-specified tests. The system can also be configured for out-of-channel tests.

The basic HP 8920DT system consists of the HP 8920B, HP 83215A/B frequency converter, and HP 83201B cellular adapter. The HP 83215A PDC/PHS interface and HP 83215B PHS-only interface provide accurate frequency conversion to bring the test signals into the range of the HP 8920B. The HP 83201B TDMA Cellular Adapter adds the specific digital signal processing needed for PDC and PHS.



HP 8923B DECT Test Set

- Repeatability and measurement speed for high-volume testing
- Performance for testing both portable parts and fixed parts
- Key DECT measurements complying with DECT CTR-06 standard
- Interface ports for ease of integration

The HP 8923B DECT Test Set delivers the key RF measurements required for high-volume production testing of Digital Enhanced Cordless Telecommunications (DECT) equipment as well as the measurement accuracy required in R&D applications. The HP 8923B measures the following parameters to the ETSI CTR-06 standards: carrier power, power versus time (top 40 dB of power time mask), center frequency accuracy, frequency deviation, frequency drift, timing jitter, and bit and word error rates. All HP 8923B functions are accessible over HP-IB allowing easy integration into automated test systems. The HP 8923B allows very high measurement speed with no sacrifice in measurement integrity.

HP 11807F Software

- PDC/PHS

Infrastructure Test



Infrastructure Test



Service
& Mfg.

CELLULAR TEST • AMPS/TACS

TDMA,
CDMA, CDPD, and
PCS Upgrades
are Available

HP 8921A Cell Site Test Set

- Reduced cell site maintenance time with automated testing
- Standardized testing with proven test procedures
- Ease of setup with graphical displays
- Complete testing using manufacturers' procedures
- Can be upgraded for TDMA or CDMA, CDPD and PCS

Install and maintain AMPS, NAMPS, TACS, ETACS, and UTACS cell site radio equipment with the HP 8921A Cell Site Test Set and the HP 11807B Cell Site Test Software.

The HP 8921A/11807B test solution uses the HP 8921A's built-in IBASIC controller to fully automate base station test procedures with the HP 11807B software test packages.

Developed from manufacturers' recommended maintenance procedures, the HP 11807B Cell Site Test Software ensures complete test and adjustment of cell sites as recommended by the manufacturers. By using the standardized maintenance procedures, each cell site receives the same high-quality test and adjustment.

Manufacturer-specific connection kits containing all necessary cables, connectors, and interface/switch boxes (where required) are also available to simplify "start-up" testing.

HP 11807B Software

- Motorola Base Station Test
- GE Base Station Test
- Lucent (formerly AT&T) Base Station Test
- Ericsson Base Station Test
- Nortel Base Station Test
- Hughes GMH Base Station Test
- AMPS Call Analysis, Logging, and Monitoring

CELLULAR TEST

• TDMA



HP 8921A Option 500 TDMA Cell Site Test System

- All of the standard HP 8921A features
- Both analog and digital test capabilities
- $\pi/4$ DQPSK signal generation and analysis
- CDPD Mobile Data Base Station (MDBS) test option
- PCS upgrade

The HP 8921A adds the HP 83204A 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 dedicated screen provides control of the TDMA source and provides selection of several measurement modes, making all test results visible on one screen. CDPD Mobile Data Base Station (MDBS) test features and PCS test capability can be added to existing HP 8921A Option 500 TDMA test capabilities in the field.

HP 11807B Cell Site Test Software fully automates TDMA base station test procedures, reducing maintenance time.

Manufacturer-specific connection kits containing all necessary cables, connectors, and interface/switch boxes (where required) are also available to simplify "start-up" testing.

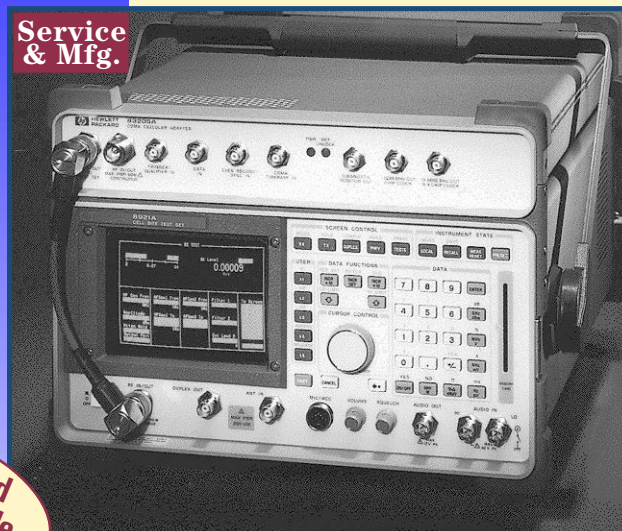
HP 11807B Software

- Lucent (formerly AT&T) Base Station Test
- Ericsson Base Station Test
- Nortel Base Station Test

CDPD and
PCS Upgrade
Available

CELLULAR TEST

• CDMA



HP 8921A Option 600 CDMA Cell Site Test System

- All HP 8921A standard features
- Waveform quality ρ (rho), frequency error, code domain power, timing, and phase analysis measurements
- Average power and CDMA channel power measurements
- Built-in AWGN source for calibrated E_b/N_0 settings
- CDPD Mobile Data Base Station (MDBS) test option
- PCS upgrade

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 & IS-97) base station equipment. This system provides signal generation and analysis of QPSK/OQPSK signals. The system measures the power in each Walsh coded signal, the code channel timing, and the code channel phase relative to the pilot.

CDPD Mobile Data Base Station (MDBS) test features and PCS test capability can be added to existing HP 8921A Option 600 CDMA test capabilities in the field.

The HP 8921A Option 600 retains its full capability for testing analog base stations.

Infrastructure Test

CELLULAR TEST

• CDPD

Service
& Mfg.



**HP 83204A TDMA/CDPD
Cellular Adapter**

**HP 83205A CDMA/CDPD
Cellular Adapter**

- The *ONLY* RF parametric CDPD tester available today referencing CDPD 1.1 RF specifications
- CDPD options for existing HP 8921A AMPS, TDMA or CDMA test solutions
- MDBS measurements for forward channel transmitter and reverse channel receiver RF parameters
- System-level tests consisting of sniffer measurements and display of PDUs
- Simple, intuitive user interface for increased technician efficiency



The HP 8921A has optional Cellular Digital Packet Data (CDPD) capabilities for installing and maintaining CDPD Mobile Data Base Station (MDBS) RF infrastructure equipment.

CDPD MDBS test capability is designed to quickly and accurately test key RF parameters on both the forward channel transmitter and the reverse channel receiver. In addition, a sniffer receiver test verifies proper sniffer functionality. Measurement procedures and default pass/fail limits are taken directly from the CDPD system specification 1.1.

CDPD capability can be ordered with TDMA, CDMA, or analog test systems by selecting the desired "500" or "600" option to the HP 8921A. Existing HP 8921As can be retrofitted with CDPD measurement capability.

PCS

- **TDMA**
- **CDMA**



HP 83236B PCS Interface

- North American, Korean, and international band PCS test solution (1710 to 1990 MHz)
- Upgrades for existing HP 8921A systems in the field
- Cost-effective PCS upgrade

PCS infrastructure test solutions for TDMA and CDMA build on the successful cellular band HP 8921A test solutions by adding the HP 83236B PCS Interface to extend testing to the North American, Korean, and international PCS bands (1710 to 1990 MHz). For GSM-based PCS infrastructure equipment testing refer to the HP 85722B literature (special option H19).

The HP 83236B PCS Interface translates PCS signals to the RF range of the HP 8921A, enabling the same TDMA or CDMA measurements performed in the cellular band. Power measurements are performed directly in the HP 83236B to maximize power measurement accuracy and speed.

Adding the HP 83236B to existing HP 8921A systems is a cost-effective solution for PCS-band measurement capability. The HP 83236B can be combined with existing HP 8921A systems in the field.

HP 11807B Software

- Lucent (formerly AT&T) Base Station Test
 - TDMA
 - CDMA

For more information on Hewlett-Packard Test & Measurement products, applications or services please call your local Hewlett-Packard sales offices. A current listing is available via Web through Access HP at <http://www.hp.com>.

If you do not have access to the internet please contact one of the HP centers listed below and they will direct you to your nearest HP representative.

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Hewlett-Packard Canada Ltd.
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Mississauga, Ontario
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(905) 206 4725

Europe:

Hewlett-Packard
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Tokyo 192, Japan
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Fax: (81-426) 56-7840

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