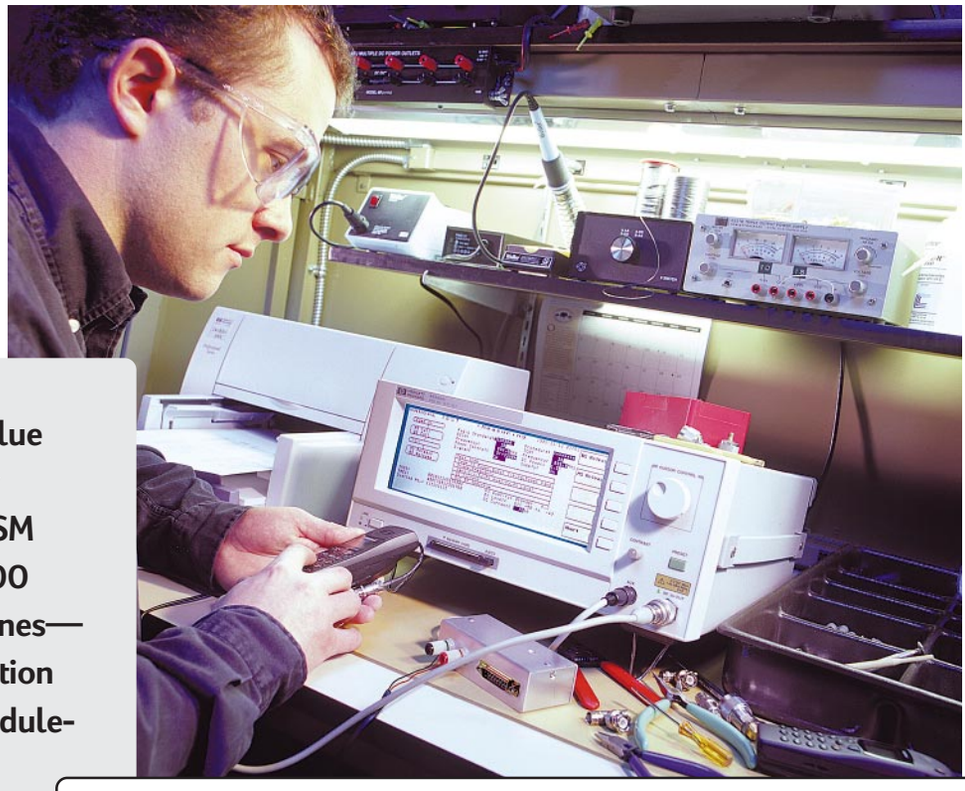
HEWLETT PACKARD

Overview

HP | E6392A | GSM Mobile Station Test Set

GSM, E-GSM, DCS1800 Frequency Bands



The best-value solution for servicing GSM and DCS1800 mobile-phones—from inspection through module-level repair

Versatility, performance, and a great low price

- Complete tool sets for measuring dc current, RF spectrum, and more
- Flexibility for performing MS service tasks, from simple auto test for go/no-go inspection to manual test for detail troubleshooting
- Accurate, reliable troubleshooting
- Adjustment capabilities after repair
- Easy operation and intuitive interface
- Load and store test plans quickly on PCMCIA cards
- Firmware easily upgradable from the web or PCMCIA card
- Complete accessories, including cables and adapters
- Complementary solution to HP's high-end MS repair test set
- PoST software for flexible testing and database management

Designed for Today's Mobile-Phone Repair Needs

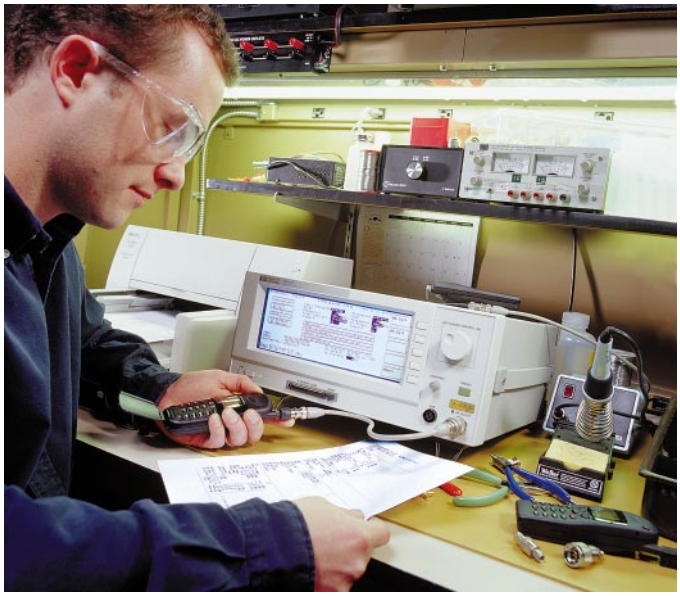
As a GSM service provider or mobile-phone repair organization, you face the challenge of servicing a rapidly growing industry. Worldwide, the number of GSM mobile-phones in use has increased dramatically—and so has the need for mobile-phone service and repair. To accommodate this need, you may be delegating more repair tasks to remote service centers. A key part of your new repair strategy includes equipping these remote service centers with test sets that are affordable, accurate, flexible, and easy-to-use.

Essential Measurement Capability

Hewlett-Packard provides a solution designed for the changing mobile-phone repair environment. The HP E6392A GSM mobile station test set combines just-enough functionality, good performance, and an attractive low price. It lets you check the overall functionality of a mobile-phone—and it provides the essential measurement capability you need to diagnose and repair module-level faults.

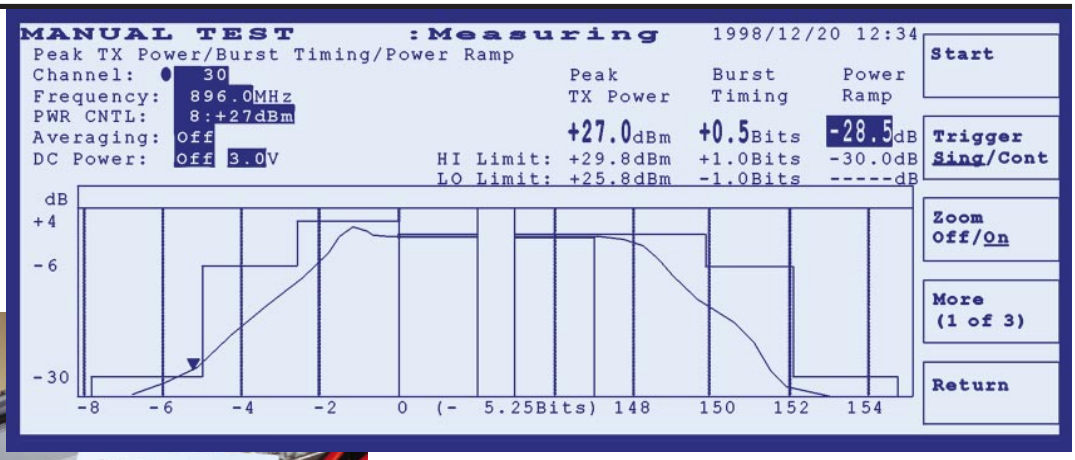
Increased Effectiveness

With this new GSM test set, you can increase the repair capability and effectiveness of your entire service network, extending repair coverage to local shops while keeping equipment costs in line. The HP E6392A complements the high-end HP 8922 series test sets, which can be used at service-center hubs for component-level testing and analysis, so you can pursue a complete and cost-effective mobile test strategy.



A Module-Repair Tester at a Go/No-Go Tester Price!

The HP E6392A GSM mobile station test set wraps substantial measurement capability and performance in a compact, easy-to-use package that is easy to maintain and support. No other test set in its price range offers you this much value for servicing and repairing mobile-phones.



Flexible with Just-Enough Functionality

A first-level test set must be affordable. But price isn't the only factor in your decision. Today, your service centers require instruments with more than just "go/no-go" test capability. They need tools with enough functionality and flexibility to make quick inspections of overall mobile-phone performance, to locate mechanical and module faults, and to do module-level repairs.

Automatic and Manual Testing for Greater Efficiency

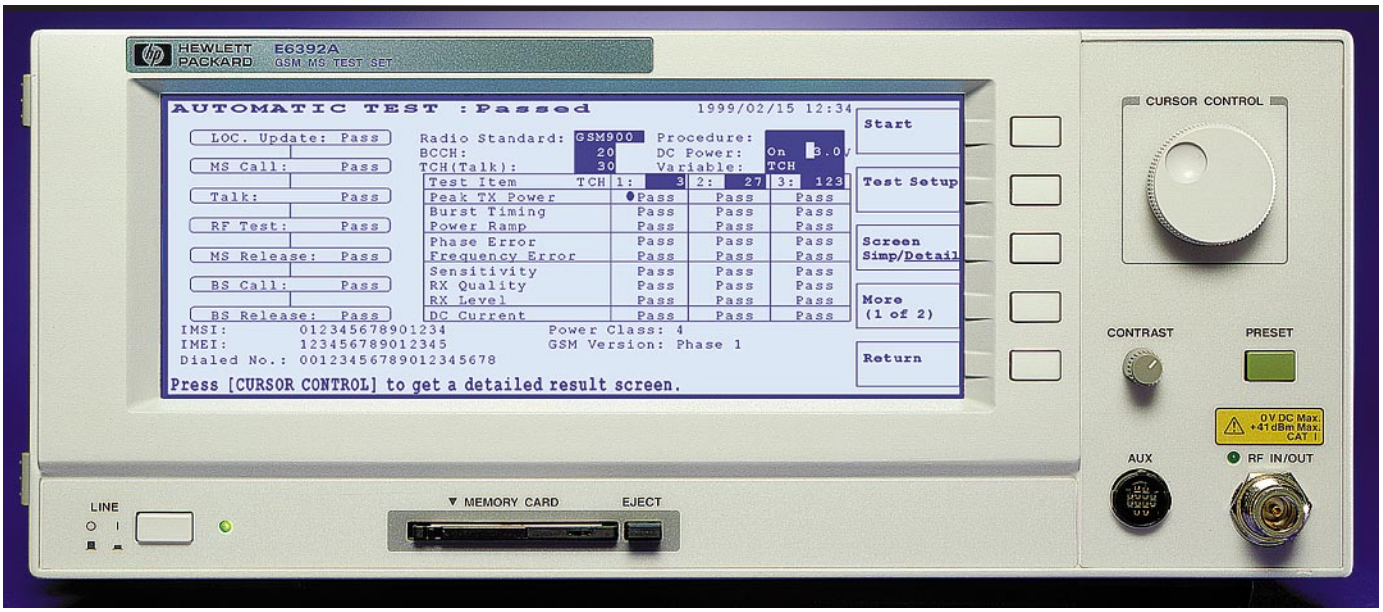
With a growing number of mobile-phones coming into the repair shops every month, you need to perform inspections quickly and thoroughly. The HP E6392A's automatic GSM measurements speed you through a comprehensive functionality check and provide consistent, repeatable results. If you spot a fault in a phone, the test set's manual measurement tools let you troubleshoot the problem to the mechanical or module level through changeable test parameters and make the necessary module replacements.

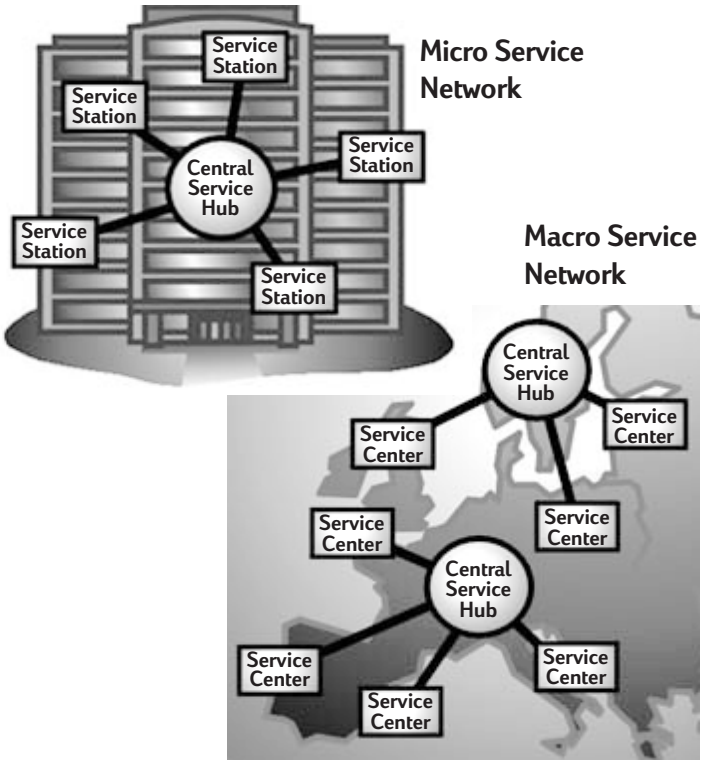
The Right Amount of Performance

Although you do not always require the power of a high-end test set for mobile service and repair, you still need enough performance to obtain accurate, reliable measurement results. For example, the power measurement of a mobile phone's transmitter is critical since there is direct correlation between the power and the current drawn from the battery and therefore the life of the battery. So that you can be confident in the accuracy of your power measurements, the HP E6392A test set provides good RF performance with a peak power measurement accuracy of ±0.6 dB.

Fault-Finding Capability and More

The HP E6392A includes a complete set of measurement tools for inspection, troubleshooting, repair of faulty modules and adjustment after repair. These tools include a power consumption check (dc current measurement), various transmitter/receiver measurements, and dc power supply. The test set also has an optional spectrum monitor, signal generator, and asynchronous test mode for customers who want more troubleshooting capabilities.





With the hub-and-spoke* approach, use the low-end HP E6392A for incoming inspection, troubleshooting, and module level repair at remote "spoke" service centers and stations.

Component-level repairs can be made at the central "hub" service centers using the high-end HP 8922 series test set for manufacturing-quality measurements, troubleshooting, failure analysis, and final checkout.

The Foundation of a Cost-Effective Service-Repair Strategy

To optimize a distributed repair strategy and facilitate fast turnaround of mobile-phone repairs, you can combine the cost advantages of the HP E6392A with the factory-level quality of the HP 8922 series GSM mobile station test set.

Following a hub-and-spoke approach, you can delegate module-level repairs to remote (spoke) service centers, using the low-end HP E6392A for incoming inspection, troubleshooting, and repair of the mobile-phones. With this test set's economical price, you will want to put one on every test bench!

Component-level repairs can be made at central hub service centers using the low-end test set for incoming inspection, and the high-end HP 8922 series test set for manufacturing-quality measurements, troubleshooting, failure analysis, and final checkout.

***Spoke service centers and stations** = Low-end phone test solution with the HP E6392A

Hub service centers = High-end board and phone calibration solution with the HP 8922 series, in conjunction with the HP E6392A

Useful Accessories

When speed and convenience count, it's important to have the right test accessories within easy reach. For example, you'll want the correct RF cable to connect the test set to the mobile-phone's hand set. HP offers a growing family of optional accessories for the new GSM test set that includes RF cables, RF and dc power adapters, couplers, GSM test SIMs, and a shield box for testing in open, spectrally noisy environments.

Easy to Use, Easy to Manage

With the HP E6392A, you will cut the time and costs of training. About 30 minutes is all it takes to learn how to use this test set. An intuitive user interface and PCMCIA memory-card reader help make the test set especially easy to set up and operate.

Different test conditions can be stored on a PCMCIA card for easy uploading into the instrument. Measurements can be selected and run by simply rotating a knob and pressing a few keys.

Update Firmware Via the Internet or PCMCIA Card

To significantly reduce the time and effort it takes to update the HP E6392A, HP provides firmware updates for the GSM test set on PCMCIA cards and *via the Internet*. With the PCMCIA card, you simply insert it into the test set and follow the simple instructions. With one card, you can efficiently update all the test sets in your service center. Alternatively, you can get the download software and the latest firmware files from the Internet with your Windows® PC, and update your test set through the RS-232 connection.

Windows® is a U.S. registered trademark of Microsoft Corp.

Automate Testing with PoST Software

With the addition of Option 150, Point of Service Test (PoST) Windows®-based PC software, the HP E6392A increases its capability to quickly and easily screen customer returned phones by automating test sequences. This practical test solution's mouse driven, graphical-user interface enables any operator to make fast, accurate measurements regarding the performance of GSM mobile phones. The detailed performance data provided by the PoST software can be saved in PC database and spreadsheet formats, for use in trend-analysis and customer care programs. Technicians can also use PoST to easily customize test plans to test mobiles according to individual testing needs.

HP E6392A GSM MS Test Set Specifications

Specifications describe the test set's warranted performance and are valid over the entire operation and environmental ranges unless otherwise noted. All specifications are valid after a 30-minute warm up period of continuous operation, and within the frequency ranges defined below.

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 and labeled as "nominal", "typical", or "supplemental."

RF Signal Generator

Frequency Range:
935 MHz to 960 MHz (GSM downlink)
925 MHz to 960 MHz (E-GSM downlink)
1805 MHz to 1880 MHz (DCS1800 downlink)

Frequency Resolution: 200 kHz, at channel frequency

Frequency Accuracy: Same as reference

Output Level Range: –110 dBm to –50 dBm

Output Level Accuracy: ±1.0 dB at GSM/E-GSM, ±1.3 dB at DCS1800

Modulation: 0.3 GMSK

Phase Error: *<5° rms typical*

Peak Phase Error: *<15° peak typical*

RF Analyzer

Frequency Range:
890 MHz to 915 MHz (GSM uplink)
880 MHz to 915 MHz (E-GSM uplink)
1710 MHz to 1785 MHz (DCS1800 uplink)

Transmitter Carrier Peak Power Measurement

Range: –20 dBm to +39 dBm (0.3 GMSK at burst/ continuous or CW)

Accuracy:
±1.0 dB *(±0.6 dB typical at 25 °C ±5 °C)* at ≥0 dBm
±2.0 dB *(±1.6 dB typical at 25 °C ±5 °C)* at <0 dBm

Resolution: 0.2 dB

Power Ramp Measurement

Range: 0 dBm to +39 dBm (0.3 GMSK at burst)

Accuracy:
±0.6 dB typical at 25 °C ±5 °C at ≥0 dBm
±1.6 dB typical at 25 °C ±5 °C at <0 dBm

Resolution: 0.2 dB

Dynamic Range: *≥40 dB typical*

Phase and Frequency Error Measurement

Input Level Range: –11 dBm to +39 dBm

Input Phase Error Range: 0 to 20° (0.3 GMSK at burst)

Phase Error Measurement Accuracy:
≤1.5° rms at phase error ≥2.5°
≤6.0° peak at phase error ≥2.5°

Frequency Error Measurement Range: ±9 kHz (0.3 GMSK at burst/continuous or CW)

Frequency Error Measurement Accuracy (average of 10 measurements)**:**
±(10 Hz + frequency reference accuracy) at GSM/E-GSM
±(25 Hz + frequency reference accuracy) at DCS1800

DC Power Supply

Range: 3 Vdc to 9 Vdc

Resolution: 0.1 V

Accuracy: 0.1 V at 100 mA load

Maximum Current: 1 A, peak 2 A

Ripple Noise: *100 mV p-p typical*

DC Current Measurement

Range: 3 mA to 1000 mA

Accuracy: ±(3 mA +2% of reading)

Frequency Reference

Frequency: 13 MHz

Frequency Accuracy: ±[(Time since calibration × aging) + temperature effects + accuracy of calibration]

Aging: ±0.1 ppm/year

Temperature Stability: ±0.1 ppm (20 °C to 30 °C)

Reference Input: *13 MHz, 0 to +10 dBm typical, 50 Ω nominal*

Reference Output: *13 MHz, >+3 dBm typical, 50 Ω nominal*

Serial Interface

Interface: EIA RS-232C

Baud Rate: 9600

Connector: D-Sub 9-pin male

Printer Interface

Interface: Centronics

Connector: D-Sub 25-pin female

Memory Card

Type: PCMCIA (U.S.)

Memory Size: SRAM 512 KB

RF Input/Output

Impedance: *50 Ω nominal*

SWR: ≤1.5:1

Connector: N-type, female

Maximum Safe Reverse Power *(peak): +41 dBm (12.6 W)*

Asynchronous Test (Option 002)

In-Band Spectrum Measurement (Option 002)

Frequency Range:
890 MHz to 915 MHz (GSM uplink)
880 MHz to 915 MHz (E-GSM uplink)
1710 MHz to 1785 MHz (DCS1800 uplink)

Input Level Range:
–11 dBm to +39 dBm

Frequency Span (from channel frequency): 0 Hz to +400 kHz or ±100 kHz

Amplitude Accuracy: *±2.0 dB typical*

Amplitude Resolution: *0.4 dB typical*

Dynamic Range: *≥40 dB typical at input ≥0 dBm*

RF Signal Generator (Option 002)

Frequency Range:
935 MHz to 960 MHz (GSM downlink)
925 MHz to 960 MHz (E-GSM downlink)
1805 MHz to 1880 MHz (DCS1800 downlink)

Frequency Resolution: 200 kHz at channel frequency

Frequency Accuracy: Same as frequency reference

Output Level Range: –110 dBm to –50 dBm

Output Level Accuracy: ±1.0 dB at GSM/E-GSM, ±1.3 dB at DCS1800

0.3 GMSK Modulation: PN9 (with training sequence), all 0, Off (CW sinewave)

Phase Error: *<5° rms typical*

Peak Phase Error: *<15° peak typical*

General Specifications

Size: 350 mm (W) × 150 mm (H) × 350 mm (D)

Weight: 10 kg

Power Voltage: 90 V to 264 V

Power Frequency: 47 Hz to 63 Hz

Power Consumption: ≤135 VA

Operating Temperature: 0 °C to +40 °C

Storage Temperature: –20 °C to +60 °C

Ordering Information

Order number	Description
E6392A	GSM Mobile Station Test Set

Option	Description
001	Antenna coupler
002	Add asynchronous test capability
007	Test SIM
008	Test SIM micro
010	Delete 512 KB SRAM memory card
011	Delete DC power adapter
150	PoST GSM software
0B0	Delete manual set
0B1	Add manual set
UK6	Test report

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For more product information visit our web site:
http://www.tmo.hp.com

Available literature includes:

HP E6392A Preview Flyer

HP E6392A Technical Specifications

HP E6392A GSM Point of Service Test (PoST) Software

Worldwide service and support

The HP E6392A GSM mobile repair test set is backed by Hewlett-Packard's renowned service and support. A variety of support options are available to meet your individual needs:

- Telephone support line
- Instrument training
- Expert consultants trained in mobile-phone testing
- Sales, support, and service organizations available worldwide

Hewlett-Packard Company offers additional hardware, software, computers, consultants, training, and technical support built upon our many decades of experience and leadership in communications technology and testing. As part of our extensive customer education program, we offer introductory and advanced technical seminars on today's major wireless communication technologies, including GSM. Visit our web site at:

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

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.tmo.hp.com

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

United States:
Hewlett-Packard Company
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,
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Technical data subject to change
Printed in U.S.A. 8/99
5968-5445E