
GSM mobile service test solutions

Product overview

**HP 8922S option H13/14
GSM MS service test set with
remote front panel interface**

Troubleshoot and repair GSM phones *faster!*



With a rapidly increasing installed base of GSM subscribers worldwide, pressure is increasing on mobile repair organizations to optimize throughput.

Making high-quality repairs quickly is crucial to keep customers satisfied.

Making sure that phones are accurately calibrated after the repair is important. It ensures the mobile does not cause problems on the GSM network. Examples of such problems would be bad handovers from cell to cell or calls being dropped.

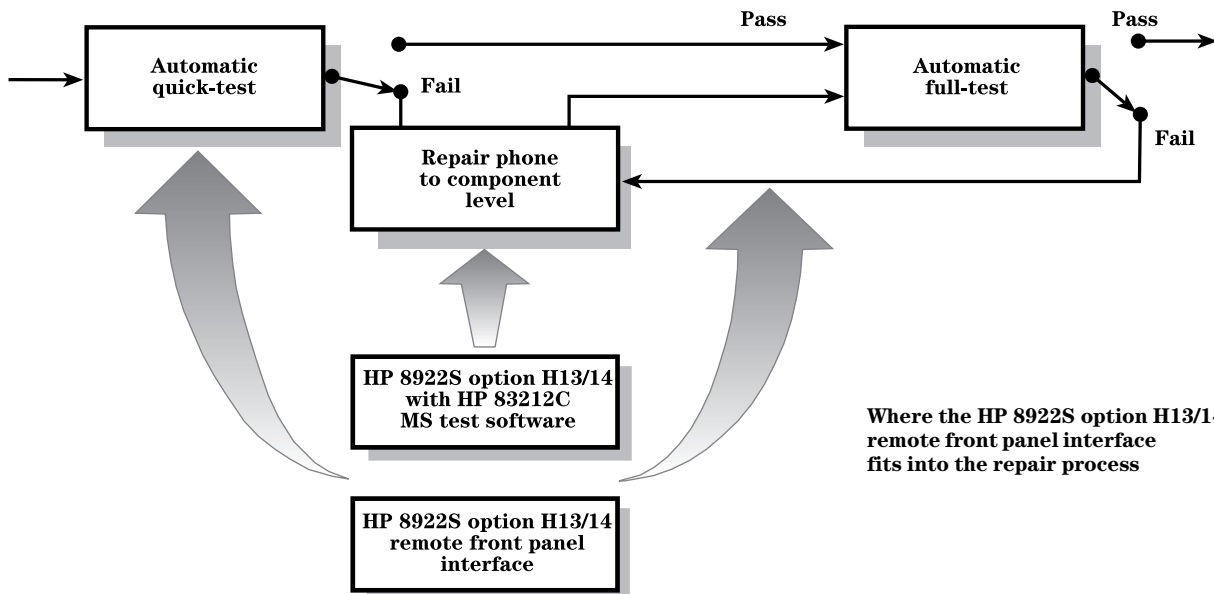
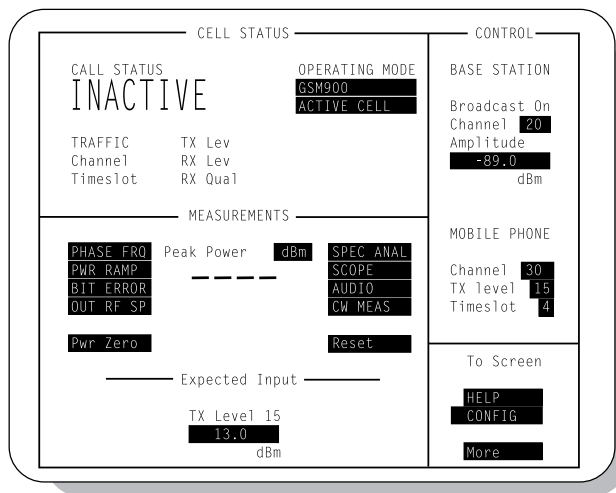
The needs of GSM mobile service can be addressed by the HP 8922S GSM MS test set.

The HP 8922S test set has been developed from the industry standard HP 8922M GSM MS test set. The HP 8922 family has a proven track record in the GSM manufacturing environment with over five million hours of GSM test experience.

The HP 8922M and HP 8922S set the standard for measurement accuracy and repeatability. However, these benefits are not confined to the manufacturing environment. In mobile service applications these features are crucial to avoid the problems caused by poorly calibrated mobiles being used on the GSM network.

The HP 8922S option H13/14 remote front panel interface (an addition for the HP 8922S test set) provides an external PAL compatible monitor, and remote interface. This puts the ideal user interface right where you want it, and leaves your bench free to position repair work. The external monitor provides a large, clear display of the instrument screen and the remote interface allows access to all the instrument features from an angled keypad. Having the keypad and large screen so close to your work area ensures that there are the minimum of hand and eye movements between adjusting the mobile and using the HP 8922S test set. The interface panel rotary knob also allows 'one-handed operation' when you need to concentrate on probing or adjusting a mobile, and changing settings on the HP 8922S test set.

HP 8922S test set's cell status screen



Where the HP 8922S option H13/14 remote front panel interface fits into the repair process

The HP 8922S may now be removed from the workbench, freeing up space for working on the mobile (for example if you require a laptop PC to control a mobile in test mode).

The measurement capabilities of the HP 8922S option H13/14 remote front panel interface include:

Receiver tests

- Sensitivity (BER).
- IF/RF signal generator to help trace faults. This operates in CW or pulsed mode.

Transmitter tests

- Power levels.
- Power versus time template.
- Output RF spectrum.
- Phase and frequency error.
- RACH measurements.
- Measurements on an unsynchronized mobile in test mode.
- Adjustments of IQ balance using the built-in spectrum analyzer.
- IF and RF probing using the independently tunable, built-in spectrum analyzer.

Other tests

- BS and MS originated calls.
- Audio tests.
- Measurements on a frequency hopped channel.
- Timebase tuning adjustment.
- Parametric confirmation of SACCH reports from the mobile.
- Automated test capability using the HP 83212C software.

The HP 8922S option H13/14 remote front panel interface allows you to:

- Focus on the repair, not operating the test equipment.
- Isolate faults down to component level, quickly.
- Maximize your workbench space.
- Accurately calibrate the mobile before returning it to the customer.

Where does the HP 8922S option H13/14 remote front panel interface fit into the GSM mobile repair process?

The HP 8922S option H13/14 remote front panel interface can be used at all stages of the repair process. Typically, the process is split into three sections:

- Automatic quick test.
- Component level repair.
- Automatic full test.

The HP 8922S test set can be used in conjunction with the HP 83212C GSM 900/DCS 1800/PCS 1900 mobile station test software to perform the automatic quick-test and full-test.

These routines can be adapted by customizing test sequences, pass/fail limits and test parameters.

When component level repair is required, the instrument can be controlled manually to isolate the source of the problem. Instrument states can be saved and recalled.

The HP 8922S test set allows the user to concentrate on repairing and calibrating the mobile by providing an easy to use and convenient interface to the test equipment.

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=====
Mobile GSM Repairs
=====
11/11/95 9.30am
Repaired and Calibrated by: G. Smith
===== CP MS originate test =====
Hopping 3 Channels: 1, 63, 124
RACHs until connected 1
Bad Syncs during connect 0
Decode errs during connect 0
CP timing advance 0 T 0 0
CP MS TX level 7 7 7
CP trigger timing error .75 T -1.00 1.00

===== TX in-channel tests =====
Hopping 3 Channels: 1, 63, 124
Radio Freq Chan #1;TX level=7
TX phase error RMS 3.4 degrees 5.0
TX phase error peak 8.9 degrees 20.0
TX frequency error 44.1 Hz -90.0 90.0
TX power error @ lvl 7 1.5 dB -2.0 2.0
TX timing error .11 T -1.0 1.0
TX ampl neg peak flatness -.08 dB -1.0 1.0
TX ampl pos peak flatness .35 dB -1.0 1.0
TX ampl envelope @ -28 us -85.24 dB -70.0
Tx ampl envelope @ -18 us -48.70 dB -30.0
Tx ampl envelope @ -10 us -44.92 dB -6.0
Tx ampl envelope @ +10 us -11.29 dB -6.0
Tx ampl envelope @ +18 us -48.10 dB -30.0
TX ampl envelope @ +28 us -90.23 dB -70.0

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Ordering information

HP 8922S GSM MS service test set

Option H13: Remote front panel interface for the HP 8922S test set. Does not include monitor, RF or oscilloscope probes. Requires a PAL compatible external monitor.

Option H14: Remote front panel interface for the HP 8922S test set. Includes monitor and remote interface. Does not include RF or oscilloscope probes.

Option K13: Retrofit kit for option H13.

Option K14: Retrofit kit for option H14.

Option 001: High stability timebase.

Option 002: Add transit protection.

Option 007: Test SIM card.

Option 008: Test micro SIM card.

Option 012: Add HP 83212C MS test software.

Option 0B1: Add manual set.

Option 0B3: Service manual.

HP 83220E DCS/PCS MS test set

The HP 83220E test set extends the HP 8922S/M test set to test DCS 1800 and PCS 1900 mobiles.

HP 83212C GSM/DCS 1800/PCS 1900 MS test software

Associated test equipment

HP 8590E Series spectrum analyzers (HP 8593E, 8594E, 8595E and 8596E)

Option 004: Precision frequency reference.

Option 105: Time-gated spectrum analysis card.

Option 101: Fast time domain sweep card.

Option 151: DSP, fast ADC and digital demodulator.

Option 163: GSM/DCS firmware for phase/frequency error.

HP 85715B GSM 900 transmitter measurement personality

HP 85722B DCS 1800 transmitter measurement personality

Option H19: PCS 1900 transmitter measurement personality.

HP 6632A DC power supply

Recommended HP accessories

HP 10438A: Miniature oscilloscope probe (high impedance/40 pF 1:1 probe).

RF probes (passive)

HP 10442A: 500 ohm, 1.2 pF shunt capacitance (limited use at DCS/PCS frequencies).

HP 54006A: 500 or 1000 ohm, 0.25 pF shunt capacitance.

HP 10240B: DC blocking capacitor.

RF probes (active)

HP 85024A: 300 kHz to 3 GHz, 1 Mohm input, 0.7 pF shunt capacitance.

HP 54701A: DC to 2.5 GHz, 100 kohm, 0.6 pF shunt capacitance.

HP 1143A: Power supply for HP 54701A RF probe.

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 AccessHP 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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