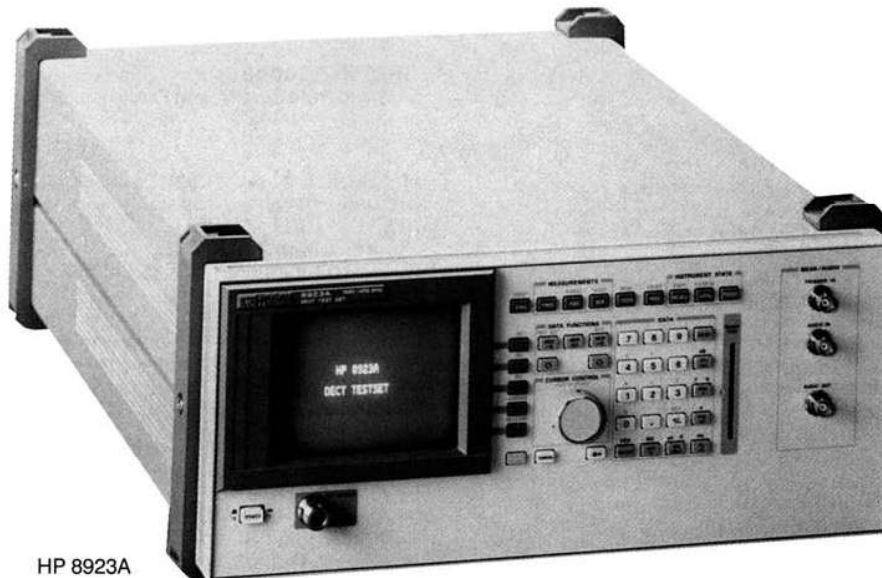


MOBILE/CELLULAR RADIO TEST SETS

DECT Test Set

HP 8923A

- Complete solution for DECT testing
- Test DECT portable and fixed parts
- Easy-to-use for repair and rework
- Toolkit of instruments for troubleshooting
- Fast DSP measurements for high throughput
- Easy upgrade path



HP 8923A



HP 8923A DECT Test Set

The HP 8923A DECT test set is an integrated, one-box test solution for Digital European Cordless Telecommunications. The test set provides the functionality and the measurement speed required to meet the needs of high throughput testing, essential in DECT production.

HP 8923A incorporates the following key DECT measurements:

- Bit error ratio
- Carrier power
- Power versus time
- Center frequency
- Frequency deviation
- Audio tests

The HP 8923A implements a MAC-to-MAC layer connection to the device under test (DUT) using the MAC layer test messages. These include the MAC layer test escape message which can be used to send proprietary information to the DUT (for example to program an electronic serial number). Any data can be entered in the Escape test message and transmitted to the DUT.

When functional testing of components of the DUT is required, the tests can be run without MAC protocol. In this case, the HP 8923A will synchronize to the RF rise of the signal to make the measurements.

These two approaches to testing mean that the HP 8923A can be used in various stages of the test process, e.g., functional testing of the RF board, final testing of the assembled phone, or rework of faulty phones.

Maximize Your Production Efficiency

The measurement techniques adopted in the HP 8923A are chosen to minimize the test time for the key DECT tests. Many of the measurements are implemented using fast digital signal processing. "Parallel processing" techniques allow the bit error ratio measurement to be made while the DSP analyzes the signals from the DUT and can quickly report back the measurement results. All HP 8923A functions are accessible over HP-IB allowing easy integration into production line test systems. The HP 8923A is priced competitively to give you the opportunity to keep your test cost low. The competitive price means that the HP 8923A is a good fit in both main line manufacturing, production rework and servicing.

Ease of Use

The HP 8923A user interface has been carefully designed to allow the user to quickly learn how to operate the instrument effectively and carry out the key measurements. The screen layouts are clear and softkey menus make it easy to access the main measurement functions and parameters you wish to change. These ease of use benefits ensure that the HP 8923A can be used manually in repair and rework stations with the minimum of operator training.

Easy Upgrade Path

The modular architecture of the HP 8923A ensures that instrument upgrades are accomplished quickly and easily by replacing the relevant module. The calibration information for that module is stored in on-board ROM and is downloaded into the instrument when the module is fitted. This maintains the overall instrument calibration and means that the instrument does not need to be recalibrated after upgrade.

HP 8923A Specifications

The following describe the instruments warranted performance and apply after a 30-minute warmup period. These specifications are valid over its operating/environmental range unless otherwise noted.

DECT Source Specifications

RF Carrier Frequency¹

Range: 1880 to 1990 MHz at DECT channels

Switching Speed: to ±1kHz of the final frequency within one timeslot

Accuracy: ±(0.02 ppm + reference accuracy)

RF Carrier Level

Range: -110 dBm to 0 dBm

Resolution: 0.1 dB

Accuracy: ±1.0 dB

Reverse Power: 2W continuous

SWR: 1.5:1

Pulse Modulation

Attack Time: <5 ms

Release Time: <5 ms

On/Off Ratio: >70 dB

Transmitter Test Specifications

DECT Protocol

The HP 8923A uses Medium Access Control (MAC) layer test messages (compliant to ETS 300 175-3 section 7.2.5.4 and section 12.1) to establish and maintain the link to the DUT. The MAC layer test messages supported include:

- FORCE TRANSMIT, LOOPBACK DATA, ESCAPE, CLEAR TEST MODES, NETWORK TEST

Transmitter tests can be performed by synchronizing to:

- Protocol frame, RF rising edge, or external trigger
- Note: The user is required to provide a signal from the device under test which matches the following criteria:
 - Frequency presented to the HP 8923A — within ±200 kHz of DECT channel frequency
 - Amplitude presented to the HP 8923A — within ±3 dB of HP 8923A setting

Normal Transmitted Power (NTP) Measurement

Range: 0 dBm to +30 dBm

Accuracy: ±0.6 dB ± noise effects (0.015 mW)

Timing: Referenced to bit p₀

Power Versus Time Template Measurement

Measurement Range: 0 dBm to +30 dBm

Dynamic Range: 40 dB

Timing: Referenced to bit p₀

GFSK Measurement

Level: 0 dBm to +30 dBm

Peak Frequency Deviation Error: ±20 kHz

Centre Frequency Measurement Error: ±1 kHz

Receiver Test Specifications

Residual Bit error

Ratio: 10⁻⁶ for PRBS 2⁹-1 (CCITT 0.153)

Audio Source Specifications

Frequency

Range: 400 Hz and 1 kHz

Accuracy: 1% of setting

Level Range: 1V_{pk-pk}

Output Impedance: 1 Ω

Distortion: <0.1% in a 10 kHz bandwidth

Audio Analyzer Specifications

DC Voltmeter Accuracy: (1% of reading + dc offset)

DC Offset: 45 mV

Audio Frequency Counter Range: 20 Hz to 400 kHz

Accuracy: (0.02% + resolution + reference accuracy)

Resolution: 4 digits (0.1 Hz @ 10 Hz)

Reference Specifications

Standard Frequency Reference

Stability: 1 ppm (0° to 55°C)

Aging: 2 ppm/year

Warmup Time: <30 seconds to be within 2 ppm of final frequency

High Stability Frequency Reference (Option 1D5)

Stability: <2.5x10⁻³ ppm/°C (0° to 55°C)

Aging: 5x10⁻⁴ ppm/day after 24 hour warm-up

<0.1 ppm/year for continuous operation

Warmup Time: Within 5x10⁻⁴ ppm of final value 10 minutes after turn on at 25°C

Digital Oscilloscope

Frequency Range: dc to 50 kHz

External Interfaces

HP-IB: IEEE 488.2

RS-232: Serial port through RJ-11 connector used for serial data in and out

Baud Rates: 300, 1200, 2400, 4800, and 9600 baud

Internal Programming

Programming Language: Hewlett-Packard Instrument BASIC

General Specifications

Size: 177mm H x 426mm W x 574mm D (7in x 16.75in x 23in)

Weight: 32 kg (70 lb)

Operating Temperature: 0° to 55°C

Storage Temperature: -40° to +75°C

Power: 100, 120, 220, 240, Vac, 48 to 440Hz, ±10% of line voltage

Ordering Information

HP 8923A DECT Test Set

Opt 0BF Programming Reference Manual

Opt AV4 Users Manual

Opt OB3 Service Manual

Opt 1D5 High stability frequency reference

Opt 1CP Rack mount and handle kit

Price

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¹ Frequency = F₀ - c x 1728 kHz where F₀ = 1897.344 MHz, c = 0,1,2,3,.....9