HEWLETT® PACKARD

Simplicity and flexibility in automatic transceiver testing

HP 11807A Radio Test Software

for the HP 8920A/D RF Communication Test Set

HP 11807E Radio Test Software on PCMCIA Cards

for the HP 8920B RF Communication Test Set

Product Overview

Trunked Mobile Testing

- Logic Trunked Radio (LTR)
- Enhanced Digital Access Communications System (EDACS) Trunked Mobile Radio
- MPT1327 Trunked Radio (HP 11807A only)

Cellular Phone Testing

- AMPS/EAMPS/NAMPS
- TDMA Dual-mode DAMPS (IS-54)
- TDMA Dual-mode DAMPS/DCCH (IS-136) (HP 11807E only)
- TACS/ETACS
- NMT 450 and 900 Systems (HP 11807A only)
- JTACS/NTACS

System Support Tests

- Cable fault location
- Intermodulation products calculation
- Field strength measurement
- Frequency scanning

Radio Testing

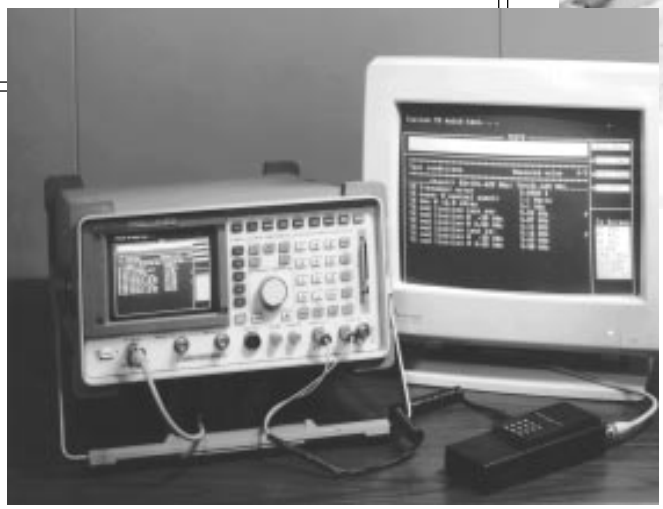
- FM • ΦM • AM

Easy-to-use Software Solution for Automatic Testing

The HP 11807A Radio Test Software is an easy-to-use software solution for automatic testing of radio transceivers with the HP 8920A/D RF Communications Test Set.

The HP 11807A offers a complete selection of tests on EPROM memory cards for, land mobile radios, cellular phones, and communication systems.

The HP 11807E Radio Test Software is designed to run on the HP 8920B RF Communications Test Set from PCMCIA memory cards.



Customizing tests for your radio is simple and requires no programming knowledge.

The flexibility and modularity of the HP 11807A/E allow you to change the tests to be run, test parameters, test frequencies, and pass/fail limits by filling in simple on-screen menus. Test conditions for different radios can be stored on memory cards and are easily loaded for testing.

Flexibility Provides a New Way to Perform Automatic Test

While other service monitors offer sequencing, learn modes, or hard-coded test capability, *the flexibility of the HP 11807A/E provides you a new way to perform automated radio test with a service monitor.*

You perform the tests you want to perform, at the frequencies and pass/fail limits you desire.

Radio Service

The HP 11807A/E allows technicians to automatically perform radio checkout and final test with documented results. This capability decreases radio test and repair time by aiding the technician in determining the problem and then verifying that the radio is operating correctly once it has been repaired. The test software also ensures that radios are tested to a consistent set of procedures.

Radio Manufacturing

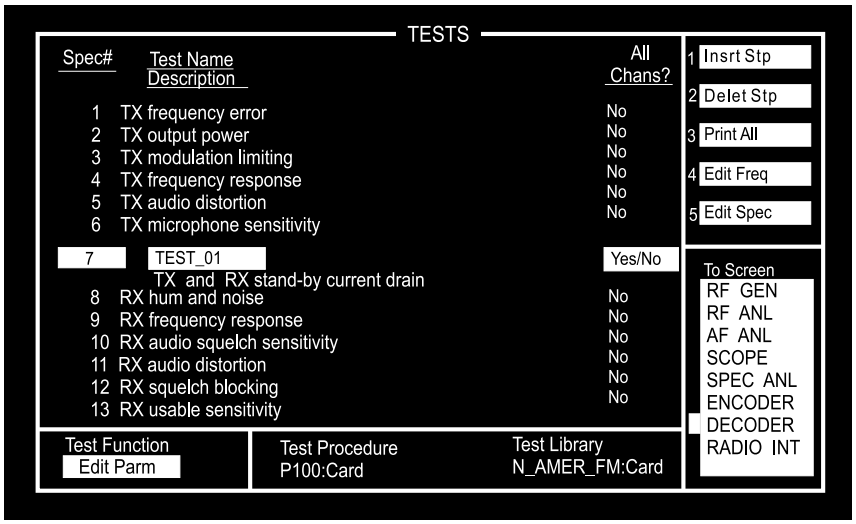
The operating speed of the HP 11807A/E makes it ideal for production environments. With pass/fail readouts and typical test times of one to two minutes with quick general tests, your production line can cut test time and increase confidence that all radios are meeting specification. All parameters, specifications, and test conditions for a particular type or model of radio can be stored and identified with a single file name. Changing radio parameters and test conditions is as simple as entering a new file name. Compared to the HP 8920A and stand-alone instruments, the HP 8920B using HP 11807E software is the fastest test set for manufacturing and service.

Select from Flexible Testing Modes

Quick Functional or Full Parametric Testing

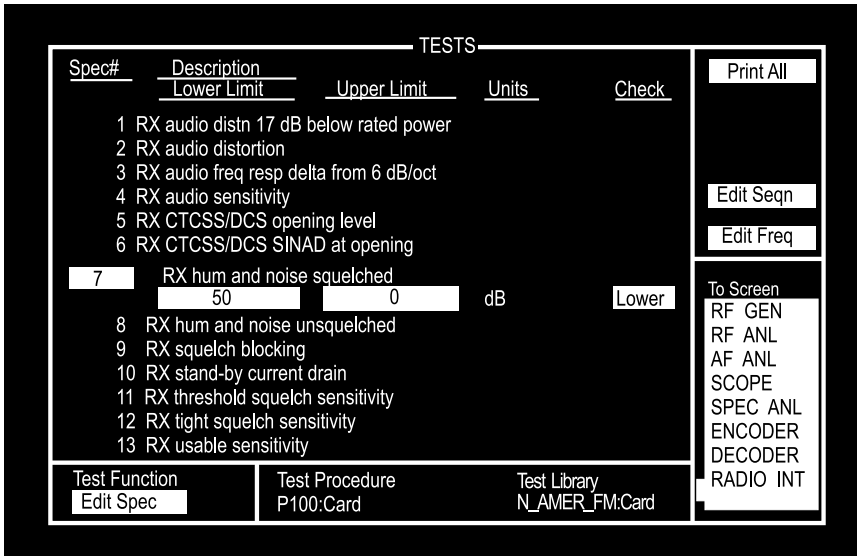
Quick functional RX and TX testing is available for fast radio characterization. By selecting the quick functional RX or TX tests, your transceiver can be characterized in one to two minutes with documented pass-fail results. Quick functional tests can be performed on a single channel or multiple channels.

Full parametric testing is available for more complete characterization of your transceiver. A complete list of individual tests can be selected. This allows you to run only those tests you need to perform on your transceiver. Parametric tests can also be performed on a single channel or multiple channels.



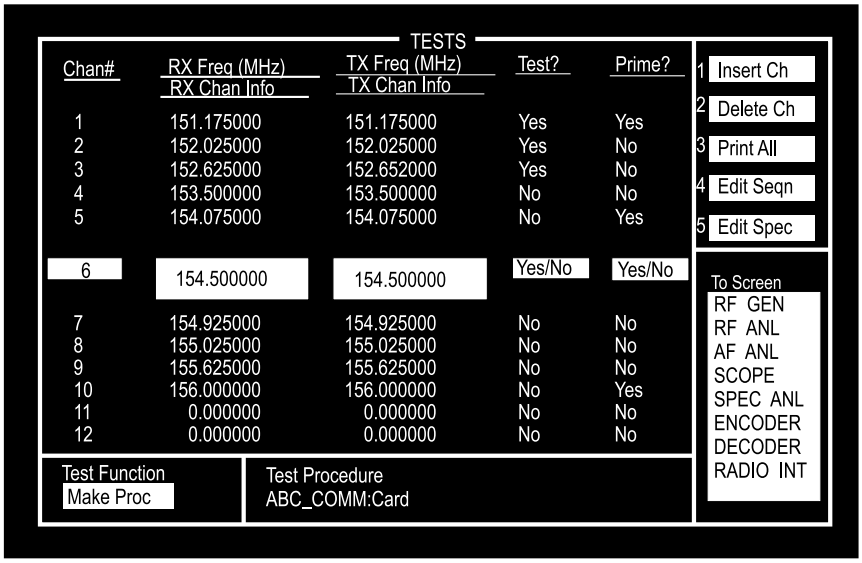
Set Your Own Pass/Fail Limits

A comprehensive specifications file allows you to completely define the standards to which each transceiver is tested. The program automatically does pass-fail testing according to the upper and lower limits entered in the specifications table. It can be configured to continue or stop on a radio failure, and print all results or just the failures.



Multiple Test Frequencies

For multichannel radios, up to fifty sets of test frequencies may be specified. If multiple channels are being tested, a program prompt will guide the technician to set the radio to the appropriate channel being tested. Separate RX and TX entries simplify automatic testing of duplex radios.



Manual Cellular Phone Troubleshooting

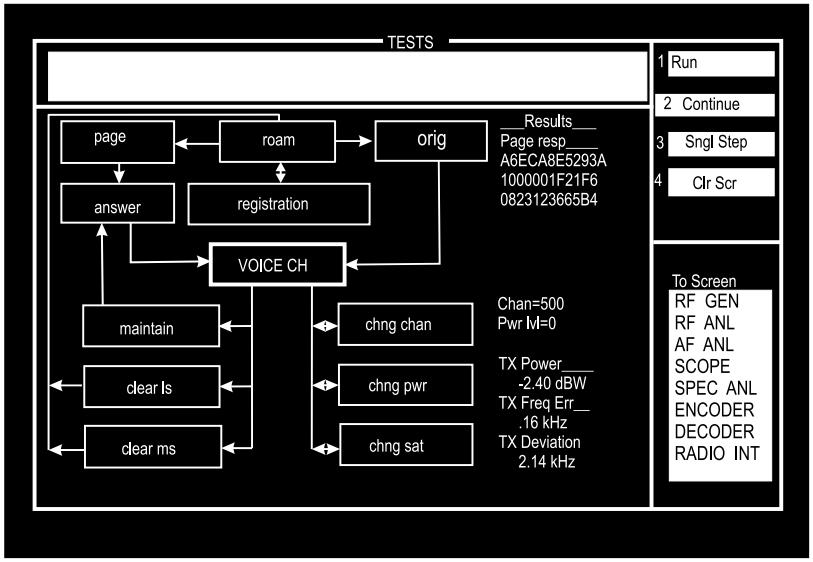
In addition to quick functional and full parametric testing for cellular phones, manual phone troubleshooting is also available with the HP 11807A/E. Using the on-screen flowchart program, you are able to troubleshoot a phone as it gains access to a system and while on a voice or a digital traffic channel. Once a voice or traffic channel is assigned, you are able to test functions of the phone normally performed during use including handoffs, power level changes, and releases. At each stage RECC or RVC orders are displayed for analysis along with measurements of power, frequency error, deviation (for analog voice channel) and, EVM (for digital traffic channels). While on an analog voice channel you can change SAT/DSAT, test DTMF tones, perform a maintenance check of the phone's signaling tone frequency, deviation, and test hook flash numbers. While on a digital traffic channel you can perform channel quality measurements, talk back test, and measure EVM. The spectrum analyzer, oscilloscope, and duplex test screens can be accessed once a voice channel has been established. This provides you with additional operating information which can aid in troubleshooting a phone.

TDMA Dual-Mode Cellular Phones

HP 11807A/E software provides a comprehensive set of tests for TDMA North American dual- mode cellular phones, including new HP 11807E software for DCCH (IS-136) phones. All HP 11807A/E dual-mode packages include complete digital call processing tests such as digital-to-digital handoff, call processing talkback, page, origination and release. Digital transmitter tests for error vector magnitude, phase and magnitude error, adjacent channel power and I/Q origin offset have adjustable pass-fail limits and test conditions to simplify DAMPS/DCCH phone testing.

TDMA dual-mode cellular test requires the HP 8920D or HP 8920B option 500 or 800. For configuration information, refer to HP 8920A/D product overview #5963-5197E and HP 8920B configuration guide #5965-1572E.

HP 8920B with HP 83206A TDMA Cellular Adapter



```
Date [MM/DD/YY] 062593     Time (HH.MM) 15.11

Final Test Run of TR 750 Portable
Operator:  L. Davis

Test conditions              Measured value       Lower limit  Upper limit  P/F
_____Chan=1: RX Freq=935.125 MHz: TX Freq=896.125 MHz_____

TX frequency error           -0.84 ppm            -1.50         1.50
TX power @ nominal supply     1.5 Watts            1.8          3.0        FAIL
TX mod limiting inst pk+      4.44 kHz                          5.00
TX mod limiting @  .30 kHz    4.14 kHz                          5.00
TX mod limiting @ 3.00 kHz    3.96 kHz                          5.00
TX mod limiting inst pk-      4.22 kHz                          5.00
TX mod limiting @  .30 kHz    3.99 kHz                          5.00
TX mod limiting @ 3.00 kHz    3.77 kHz                          5.00
TX audio distortion           1.2 %                            10.0
TX dev @ 7.5 mVrms            3.2 kHz              2.5          3.5
TX FM hum and noise          -40.7 dB                         -35.0

RX hum & noise unsquelched    39.8 dB              35.0
RX hum & noise squelched      85.2 dB              35.0
RX audio distn 17 dB down     1.9 %                             5.0
RX audio distortion           1.8 %                            10.0
RX usable sensitivity          .13 uV                            .50
RX threshold squelch sens      .10 uV                            .50
RX tight squelch sens          .15 uV                          10.00

Points passed= 16; Points failed= 1

Test time= 149 secs.
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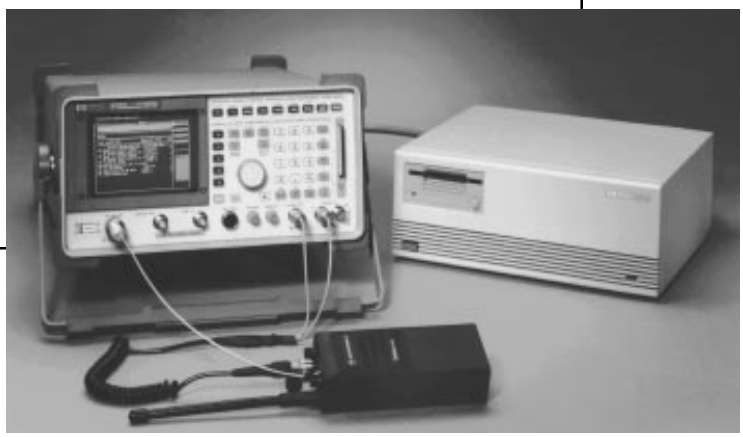


Documented Test Results

A concise, easy-to-read printout accompanies all radio tests if an external printer is added. The test name is displayed along with measured values, test limits, and a pass/fail statement. This not only tells if the radio passed or failed, but how close it was to its limit.

A date and time statement is given on all printouts and comments may be added to help identify the printout.

Store Test Procedures

All test sequences, frequencies, radio parameters, and specifications can be stored on a memory card or external disk drive. These files can be stored using the model number of the radio or any other text string. Later, when you recall this file, you are ready to test the radio again without any further data entry or changes.

The HP 11807A/E can be modified to quickly develop test files for your radios.

No programming knowledge is necessary to setup and change these for your radio.

Store Test Results

The HP 11807A/E also allows you to save your test results for future retrieval. All information that is normally sent to your printer when testing a radio can also be sent to RAM memory cards, external disk drives (DOS or LIF format) plus the RS-232 port.

Option 001 - North American FM Tests

Radios Supported:
Single and Multiple Channel FM Radios
Duplex FM Radios
CTCSS Squelched Radios
CDCSS Squelched Radios

Testing Modes Supported:
Quick Functional
Full Parametric

Standard Derived From:
Electronic Industry Association (EIA)
FM test specifications EIA/TIA 603
Land Mobile FM or PM Communications Equipment Measurement and Performance Standard

FM Transceiver Performance Tests

TX and RX standby current drain
TX frequency error
TX output power
TX modulation limiting
TX audio frequency response
TX audio distortion
TX microphone sensitivity
TX FM hum and noise
TX residual AM hum and noise
TX CTCSS/CDCSS deviation, freq/code
TX quick general test

RX hum and noise
RX audio distortion
RX frequency response
RX usable sensitivity
RX audio squelch sensitivity
RX squelch blocking
RX CTCSS/CDCSS opening
RX audio sensitivity
RX variation of sensitivity with frequency
RX quick general test

Option 002 - European ΦM Tests

Radios Supported:
Single and Multiple Channel ΦM Radios
Duplex ΦM Radios
CTCSS Squelched Radios
CDCSS Squelched Radios

Testing Modes Supported:
Quick Functional
Full Parametric

Standard Derived From:
Conference of European Postal Telecommunications (CEPT)
ΦM Tests T/RA-24-01
European Telecommunications Standards Institute (ETSI)
Project Team 8 Final Report (June 1990)

ΦM Transceiver Performance Tests

TX and RX standby current drain
TX frequency error
TX output power error
TX modulation limiting
TX frequency deviation
TX audio frequency response
TX audio distortion
TX microphone sensitivity
TX residual modulation
TX CTCSS/CDCSS deviation, freq/code
TX quick general test

RX noise and hum
RX audio distortion
RX frequency response
RX usable sensitivity
RX amplitude characteristics
RX audio squelch sensitivity
RX CTCSS/CDCSS opening
RX quick general test

Option 003 - AM radio Tests

Radios Supported:
Single and Multiple Channel AM Radios

Testing Modes Supported:
Quick Functional
Full Parametric

Standard Derived From:
Electronic Industry Association (EIA)
AM radio test specifications [RS-382-A]

AM Transceiver Performance Tests

TX and RX standby current drain
TX frequency error
TX output power
TX audio frequency response
TX audio distortion
TX microphone sensitivity
TX AM hum and noise
TX quick general test

RX hum and noise
RX audio distortion
RX audio frequency response
RX sensitivity (signal-to-noise)
RX sensitivity (SINAD)
RX audio squelch sensitivity
RX automatic gain control
RX quick general test

Option 004 - AMPS/EAMPS/NAMPS Cellular Phone Tests

Radios Supported:
AMPS, EAMPS, and NAMPS
Cellular Phones

Testing Modes Supported:
Quick Functional
Full Parametric
Manual Phone Troubleshooting
Call Processing

Standard Derived From:
Electronic Industries Association (EIA)
[EIA/TIA-553 and EIA-IS-19B] cellular radio specifications with modifications for narrow band systems (NAMPS) [EIA IS-89].

AMPS/EAMPS/NAMPS Cellular Phone Performance Tests

CP call processing registration
CP call processing page
CP call processing release
CP call processing origination
CP call processing hook flash
CP flow chart (manual phone test)

TX frequency error
TX RF power output
TX modulation deviation limiting
TX audio frequency response
TX audio distortion
TX signaling tone/DST
TX FM hum and noise
TX SAT/DSAT
TX RVC data deviation
TX compressor response
TX current drain
TX DTMF frequency error
TX switch channels
TX quick general test

RX expandor response
RX audio frequency response
RX audio distortion
RX hum and noise
RX SINAD
RX FVC order message error rate
RX MRI
RX quick general test
TX/RX quick functional test (no audio)

Option 005 - TACS/ETACS Cellular Phone Tests

Radios Supported:
TACS and ETACS
Cellular Phones

Testing Modes Supported:
Quick Functional
Full Parametric
Manual Phone Troubleshooting
Call Processing

Standard Derived From:
Total Access Communication System (TACS)

TACS/ETACS Cellular Phone Performance Tests

CP call processing registration
CP call processing page
CP call processing release
CP call processing origination
CP call processing hook flash
CP TACS-2 page and release
CP flow chart (manual phone test)

TX frequency error
TX carrier power
TX peak frequency deviation
TX audio frequency response
TX audio distortion
TX signaling tone
TX FM hum and noise
TX SAT frequency error and deviation
TX wideband data deviation
TX compressor response
TX current drain
TX DTMF frequency error
TX switch channels
TX quick general test

RX expandor response
RX audio frequency response
RX audio distortion
RX hum and noise
RX SINAD
RX FVC order message error rate
RX quick general test
TX/RX quick functional test (no audio)

Option 006 - NMT Cellular Phone Tests
(HP 11807A only *)

Radios Supported:
450 and 900 MHz NMT
Cellular Phones

Testing Modes Supported:
Quick Functional
Full Parametric
Manual Phone Troubleshooting
Call Processing

Standard Derived From:
Nordic Mobile Telephone (NMT) [DOC.1.1980, DOC.3.1979, and DOC-900-3.1985]

NMT Cellular Phone Performance Tests

CP call MTX to MS
CP clearing from MTX
CP call MS to MTX
CP roaming updating
CP switch channel
CP clearing from MS
CP all call processing
CP flow chart (manual phone test)

TX frequency error
TX carrier power
TX frequency deviation
TX limit character of modulator
TX harmonic distortion
TX audio frequency response
TX microphone sensitivity
TX supervisory signal deviation
TX residual modulation
TX audio muting
TX quick general test

RT current drain
RT quick functional test (no audio)

RX RF sensitivity
RX amplitude characteristics of RX limiter
RX harmonic distortion
RX AM suppression
RX audio frequency response
RX noise and hum
RX quick general test

NMT 450 Systems Supported:
Austria, Belgium, Denmark, Finland, Iceland, Indonesia, Luxembourg, Malaysia, Norway, Netherlands, Oman, Saudi Arabia, Spain, Sweden, Thailand, and Tunisia.

NMT 900 Systems Supported:
Cyprus, Denmark, Finland, France, Norway, Netherlands, Sweden, Switzerland, and Turkey.

*For HP 11807E compatibility, contact your local Hewlett-Packard sales representative for information on HP 11807A Option H29.

Option 007 - JTACS/NTACS Cellular Phone Tests

Radios Supported:
JTACS and NTACS
Cellular Phones

Testing Modes Supported:
Quick Functional
Full Parametric
Manual Phone Testing
Call Processing

Standard Derived From:
Total Access Communications System for Japan (JTACS) mobile station compatibility specification, version five with modifications for narrowband systems (NTACS).

JTACS/NTACS Cellular Phone Performance Tests

CP call processing registration
CP call processing page
CP call processing release
CP call processing origination
CP call processing hook flash
CP flow chart (manual phone test)

TX frequency error
TX carrier power
TX peak frequency deviation
TX audio frequency response
TX audio distortion
TX DTMF frequency error
TX signaling tone/DST
TX FM hum and noise
TX SAT/DSAT
TX RVC data deviation
TX compressor response
TX current drain
TX switch channels
TX quick general test

RX expandor response
RX audio frequency response
RX audio distortion
RX hum and noise
RX SINAD
RX FVC order message error rate
RX quick general test
TX/RX quick functional test (no audio)

Option 008 -
TDMA Dual-Mode (DAMPS, IS-54)
Cellular Phone Tests Using TIA Adapter

Requires a TIA interface adapter to control the mobile under test.

Radios Supported:
North American, TDMA Dual-Mode (DAMPS, IS-54) Cellular Phones

Testing Modes Supported:
Full Parametric
Call Processing
NAM
Manual PhoneTrouble Shooting

Standards Derived from:
EIA/TIA IS-55-A Recommended Minimum Performance
Standards of 800 MHz Dual-mode Mobile Stations.
Electronic Industries Association (EIA)
[EIA/TIA-553 and EIA-IS-19B] cellular radio specifications

TDMA Dual-Mode Cellular Phone Performance Tests

Analog Tests

NAM numeric assignment module

CPA call processing page
CPA call processing origination
CPA call processing release
CPA switch channels

CP manual flowchart
CP call processing registration

TXA quick general test
TXA frequency error
TXA RF output power
TXA modulation deviation limiting
TXA audio frequency response
TXA audio distortion FM hum, noise, and muting
TXA signaling tone
TXA compressor response
TXA current drain
TXA DTMF frequency error
TXA SAT frequency error and deviation
TXA wideband data deviation

RXA expandor response
RXA audio frequency response
RXA audio distortion FM hum, noise and muting
RXA SINAD
RXA quick general test
TXA/RXA functional (no audio)

Digital Tests

TXD RF output power
TXD modulation accuracy including:
- Error vector magnitude
- 10 burst error vector magnitude
- Magnitude error
- Phase error
- Burst amplitude droop
- I/Q origin offset
- Carrier frequency error

TXD calibrate RF power
TXD adjacent channel power

RXD usable sensitivity including:
- BER
- WER on speech data
- FACCH, and SACCH

CP manual flow chart (manual phone testing)
CP call processing handoffs including:
- Digital-to-digital (D-D)
- Digital-to-analog (D-A)
- Analog-to-digital (A-D)
- Analog-to-analog (A-A)

CPD quick digital test
CPD call processing page
CPD call processing talkback
CPD switch channel
CPD origination
CPD release

Option 009 - AMPS/EAMPS/NAMPS/TDMA Dual-Mode (DAMPS, IS-54) Cellular Tests

Radios Supported:
AMPS/NAMPS/EAMPS/North American
TDMA Dual-Mode (DAMPS, IS-54) Cellular Phones

Testing Modes Supported:
Quick Functional
Full Parametric
Call Processing
Manual Phone Troubleshooting

Standards Derived from:
EIA/TIA IS-55-A Recommended
Minimum Performance Standards
of 800 MHz Dual-mode Mobile Stations.
Electronic Industries Association (EIA)
[EIA/TIA-553 and EIA-IS-19B] cellular
radio specifications with modifications
for narrow band systems (NAMPS)
[EIA IS-89].

Dual-Mode Cellular Phone Performance Tests

Includes all tests in HP 11807A/E Option 004 AMPS/NAMPS/EAMPS Plus:

CP call processing handoffs including:

- Digital-to-digital (D-D)
- Digital-to-analog (D-A)
- Analog-to-digital (A-D)
- Analog-to-analog (A-A)
- Analog-to-narrow analog (A-NA)
- Narrow analog-to-analog (NA-A)

CPD call processing talkback
CPD quick digital test
CPD call processing page
CPD switch channel
CPD origination
CPD release
CPD manual flow chart (manual phone testing)

TXD modulation accuracy including:

- Error vector magnitude
- 10 burst error vector magnitude
- Magnitude error
- Phase error
- Burst amplitude droop
- I/Q origin offset
- Carrier frequency error

TXD RF output power
TXD adjacent channel power
TXD calibrate RF power

RXD receiver sensitivity (loop back)

- BER
- WER (FACCH, SACCH, Speech data)

RXD receiver sensitivity (channel quality, RSSI)

Option 010 - LTR Trunked Mobile Radio Tests

Radios Supported:
Simplex and Duplex FM radios,
both conventional (carrier
squelch, CTCSS, and CDCSS)
and those using the LTR trunking protocol

Testing Modes Supported:
Manual: Conventional or Trunked
Automated: Conventional and/or
Trunked Single and Multiple
Channel Testing

Standard Derived From:
Electronic Industry Association (EIA)
FM test specifications
TIA/EIA-603 as
modified to support the
EF Johnson Logic
Trunked Radio (LTR) protocol

LTR Trunked Mobile Radio Performance Tests

TX and RX standby current drain
TX frequency error
TX output power
TX modulation limiting
TX audio frequency response
TX audio distortion
TX microphone sensitivity
TX FM hum and noise
TX residual AM hum and noise
TX signaling deviation and freq/code
TX quick test

RX hum and noise
RX audio distortion
RX frequency response
RX usable sensitivity
RX conv. audio squelch sensitivity
RX conv. squelch blocking
RX squelch opening with signaling
RX audio sensitivity
RX conv. variation to sens with freq.
RX quick test

RT trunked manual test

Option 011 - EDACS Trunked Mobile Radio Tests

Radios Supported:
Simplex and Duplex FM radios, both conventional (Carrier squelch, CTCSS, and CDCSS) and those using the EDACS trunking protocol

Testing Modes Supported:
Manual: Conventional or Trunked
Automated: Conventional and/or Trunked
Single and Multiple Channel Testing

Standard Derived From:
Electronic Industry Association (EIA) FM test specifications
TIA/EIA-603 as modified to support the Ericsson GE Enhanced Digital Access Communications System (EDACS) protocol

EDACS Trunked Mobile Radio Performance Tests

TX and RX standby current drain
TX frequency error
TX output power
TX modulation limiting
TX audio frequency response
TX audio distortion
TX microphone sensitivity
TX FM hum and noise
TX residual AM hum and noise
TX signaling deviation and freq/code
TX quick test
TX transient frequency behavior

RX hum and noise
RX audio distortion
RX frequency response
RX usable sensitivity
RX conv. audio squelch sensitivity
RX conv. squelch blocking
RX squelch opening with signaling
RX audio sensitivity
RX conv. signal displacement bandwidth
RX quick test

RT manual test

Option 012 - MPT 1327 Trunked Radio Tests **(HP 11807A only)**

Radios Supported:
MPT 1327 Trunked Radios

Testing Modes Supported:
Quick Functional
Full Parametric
Manual Radio Troubleshooting

Standard Derived From:
MPT 1323 and ETS 300-086

MPT 1327 Trunked Radio Performance Tests

Call registration
Control channel set-up
Broadcast channel set-up
Call TSC to RU (simulates call from RU, PABX or PSTN)
Call RU to TSC
RU response timing
Pressel on/off
Clear from TSC
Clear from RU
Flow chart (manual radio test)
FFSK modem checks

TX RF output power
TX frequency error
TX modulation limiting
TX modulation response (passband and stopband)
TX modulation distortion
TX FM hum and noise
TX adjacent channel power (with spectrum analyzer option fitted)
RX usable sensitivity (20 dB and 12 dB SINAD)
RX amplitude characteristic
RX audio response
RX audio distortion
RX audio power

DC current (with current measurement option fitted)

Option 014 - Preliminary AMPS/NAMPS/DAMPS DCCH Mobile Test (HP 11807E only)

Radios Supported:
AMPS/EAMPS/NAMPS/North American TDMA Dual-Mode (DAMPS, IS-54) and DCCH (IS-136) Cellular Phones

Testing Modes Supported:
Quick Test
Full Parametric
Call Processing
Manual Phone Troubleshooting

Standards Derived From:
Electronic Industries Association (EIA) [EIA/TIA-553 and EIA-IS-19B] cellular radio specifications with modifications for narrow band systems (NAMPS) [EIA IS-89]

EIA/TIA IS-137 800 MHz TDMA Cellular-Radio Interface Minimum Performance Standards for Mobile Stations

EIA/TIA IS-55-A Recommended Minimum Performance Standards of 800 MHz Dual-mode Mobile Stations.

AMPS/NAMPS/DAMPS/DCCH Dual-Mode Cellular Performance Tests

CP registration on analog control channel

CP registration on digital control channel

CP page:
- Analog control channel to analog voice channel
- Analog control channel to digital traffic channel
- Digital control channel to analog voice channel
- Digital control channel to digital traffic channel

CP origination:
- Analog control channel to analog voice channel
- Analog control channel to digital traffic channel
- Digital control channel to analog voice channel
- Digital control channel to digital traffic channel

CP Release to analog control channel

CP Release to digital control channel

CP call processing handoffs including:
- Digital-to-digital (D-D)
- Digital-to-analog (D-A)
- Analog-to-digital (A-D)
- Analog-to-analog (A-A)
- Analog-to-narrow analog (A-NA)
- Narrow analog-to-analog (NA-A)

CP hook flash

TXA audio distortion

TXA audio frequency response

TXA compressor response

TXA current drain

TXA digital signaling tone (DST) deviation and code

TXA DTMF key pad and DTMF frequency error

TXA DSAT deviation, closure, and phase jitter

TXA FM hum and noise

TXA frequency error

TXA modulation deviation limiting

TXA RF power output

TXA RF power output vs. channel (plotted)

TXA signaling tone frequency and deviation

TXA SAT frequency and deviation

TXA wideband data deviation

RXA audio distortion

RXA audio frequency response

RXA expandor

RXA FVC order message error rate

RXA hum and noise

RXA mobile reported interference (MRI)

RXA RF sensitivity (SINAD)

RXA RF sensitivity vs. channel (plotted)

TXD adjacent channel power

TXD calibrate RF power (non-Opt 006 only)

TXD modulation accuracy including:
- Error vector magnitude (EVM)
- Peak error vector magnitude (EVM)
- Phase error
- Magnitude error
- Burst amplitude droop
- I/Q origin offset
- Carrier frequency error

TXD modulation accuracy (10 burst), including:
- Error vector magnitude (EVM)
- Peak error vector magnitude (EVM)
- Phase error
- Magnitude error
- Burst amplitude droop
- I/Q origin offset
- Carrier frequency error

TXD RF power output

TXD RF power output vs channel (plotted)

TXD time alignment

RXD receiver sensitivity (channel quality BER, RSSI)

RXD receiver sensitivity (loopback), includes:
- BER
- FACCH WER
- SACCH WER
- Speech WER

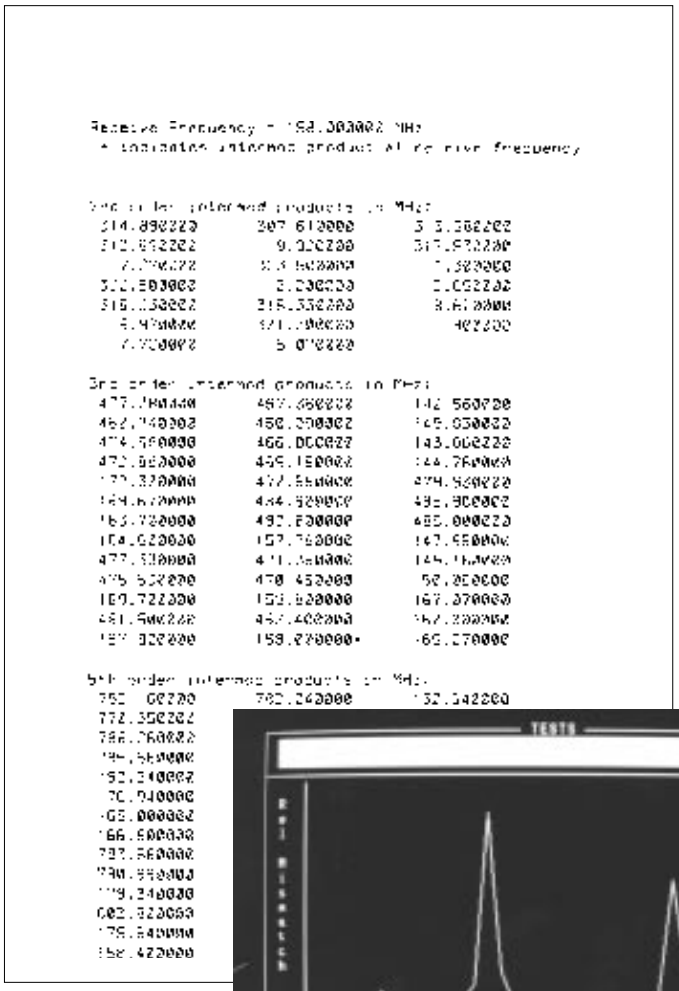
MISC battery life test, transmit

MISC battery life test, standby

MISC digital talk back

MISC no audio functional

MISC quick test



Option 100 - System Support Tests

The HP 11807A/E system support tests provide technicians with automated test capability for commonly performed tasks on communications systems. System support tests include cable fault location, intermodulation products calculation, frequency scanning, and field strength measurement.

Cable Fault Location

The cable fault location program contains 2 tests; test setup diagram and cable fault locator that automatically detects cable faults or breaks. The results are shown in a graphical form of relative mismatch versus distance, allowing for quick identification of a fault. Numerical results can be displayed in meters or feet. More than 100 different cable types can be selected or you can enter the velocity of propagation for your particular cable directly. Cable fault location measurements can typically be made up to 500 feet on low loss cables and 300 feet on higher loss cables. Resolution of the fault location is 0.4 feet for cable lengths up to 50 feet and then linearly increases to 4 feet for a 500 foot cable.

An external power divider and 50 ohm load are required to make this measurement.

Intermodulation Products Calculation

This program (calculate intermods) automatically calculates and displays intermodulation products to the fifth order. Products which are at the same frequency as the receive frequency are identified. The program will accept up to 20 transmitter frequencies and 1 receive frequency for thecalculation. This program can be used to help determine the cause of unwanted interference at an antenna site. This allows you to provide the customers with quality, reliable communications.

Frequency Scanner

With the frequency scanning program (scanner), the HP 8920 automatically scans up to 100 frequencies. When a signal is found, the HP 8920 will display the frequency, and the recovered audio can be monitored on the speaker. Entered frequencies can be labeled with a text name, and this is also displayed.

Field Strength Measurement

With this program, the HP 8920 will make field strength measurements for a specified measurement plan. It contains 2 tests; measure test plan and print stored measured data. The plan may contain up to 22 frequencies to be measured at up to 22 different locations. Results are displayed in minimum peak and average power measured for each frequency at a given location. This can be used to determine coverage of antenna sites so that you can improve the quality of service to your customers.

To Configure the HP 8920A/D or HP 8920B to run HP 11807A/E software, refer to HP 8920A/D Product Overview #5963-5197E and HP 8920B Configuration Guide #5965-1572E for configuration information.

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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