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Agilent 8924C
CDMA Mobile Station Test Set

Data Sheet



83236B PCS Interface
83217A CDMA Dual-Mode
Mobile Station Test Software
E8290A Point of Service Test (PoST) Software

30 MHz to 1000 MHz, 1700 MHz to 2000 MHz

The Agilent Technologies 8924C CDMA mobile station test set provides the key set of measurements to verify the performance of dual-mode CDMA mobile phones operating from 500 to 1000 MHz. With the Agilent Technologies 83236B PCS Interface, the 8924C additionally offers CDMA mobile testing from 1700 to 2000 MHz. Acting as a calibrated, high performance CDMA base station, the 8924C verifies not only the parametric characteristics of CDMA phones, but also the functional aspects of phone performance.

The 8924C's full AMPS, NAMPS, EAMPS, TACS, NTACS, ETACS, and JTACS test capability saves you space, cost, and training expenses by allowing you to make both analog and CDMA digital measurements with the same instrument.

For complete call processing verification, the 8924C supports both mobile and base station initiated call connect and disconnect. Once a phone call is established, verifying the overall functionality of a CDMA mobile is simple using the 8924C's voice echo mode. For testing a variety of protocol formats, the 8924C offers six user selectable protocol stacks: IS-95, IS-95A, TSB-74, J-STD-008, ARIB T53, and KOREAN PCS. The 8924C also supports a number of service options, including 9600 BPS and 14,400 BPS traffic channel configurations.

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High Accuracy CDMA Source for CDMA Receiver Test

Active cell site emulation in the 8924C is supplied by Sector A. The Sector A source supports the following CDMA channels: pilot, sync, paging, traffic, and orthogonal channel noise source (OCNS). In addition, the 8924C has a second sector for testing softer hand-offs. Sector B is a partial sector that has a pilot channel, a traffic channel, and an OCNS channel. An additive white Gaussian noise (AWGN) Source is also included to provide the interference generated by adjacent cells in a working CDMA network. The 8924C measures receiver frame error rate (FER) at all four data rates used in the CDMA system: full, half, quarter, and one-eighth. Confidence limit technology is used to reduce receiver test time to an absolute minimum.

CDMA Transmitter Measurements

The 8924C provides an average power measurement based on new DSP technology. A DSP based channel power measurement enables the 8924C to achieve accurate low level CDMA power measurements. Access probe power measurements are also available. The 8924C measures transmitted waveform quality by using the IS-98A/J-STD-018 recommended correlated power method, also known as the rho (ρ) measurement. In addition, the rho measurement reports the frequency error, modulation phase and amplitude error, and the carrier feedthrough.

Hand-off Verification

To speed testing, the 8924C supports hard hand-offs between RF channels. CDMA to analog hand-offs from both cellular and PCS bands are also supported. With two configurable CDMA sectors, the 8924C can verify the ability of a CDMA mobile to support softer hand-offs. Two 8924C test sets can be synchronized for complete idle and soft hand-off testing.

Authentication and Short Message Service Support

The 8924C provides the necessary features for testing a CDMA mobile station's ability to perform call processing functions with authentication for Korea and the United States. Also, the 8924C supports mobile terminated SMS.

Automated Software

The new E8290A PoST (point of service test) software makes the 8924C an automated CDMA test solution. The E8290A quickly provides accurate phone performance and quality data at the point of sale. This PC-based solution is very easy to use, reduces churn, reduces NTF (no trouble found), and improves customer care.

The 83217A CDMA dual-mode mobile station test software can also be used to automate CDMA and analog mobile phone measurements. The 83217A solution does not require a PC. Rather, automatic tests can be completely set up using the front panel of the 8924C. Options are available to meet your test needs for CDMA, AMPS, NAMPS, JTACS, NTACS, U.S. PCS, and Korean PCS phones.

Specifications describe the instrument's warranted performance and apply after a 30 minute warm-up. These specifications are valid over the 8924C's entire operating environmental range unless otherwise noted. Specifications are subject to change without notice.

Supplemental Characteristics *(shown in italics) are intended to provide additional information, useful in applying the instrument by giving typical expected, but non-warranted, performance.*

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8924C ANALOG MODE SPECIFICATIONS

Call Processing Functionality

Standards: AMPS, NAMPS, TACS, JTACS, and NTACS

Registration Support: Zone Registration

Call Control: BS call originate and disconnect, MS call originate and disconnect

Authentication: Registration, paging, origination, SSD update, and unique challenge

Orders: Power levels 0 through 7, maintenance, and alert

Hand-off Support: Hand-off to new frequency, between narrow channel and wide channel

Signal Generator

RF Frequency

Range:

Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

Accuracy and Stability: Same as reference oscillator ±0.015 Hz

Switching Speed: *<150 ms to be within 100 Hz of carrier frequency*

Resolution: *1 Hz*

Output

RF In/Out Connector

Level Range:

Standard: -127 dBm to -10.5 dBm into 50 Ω
With the 83236B: -130 dBm to -20 dBm into 50 Ω

Level Accuracy:

Standard: ±1.2 dB (Level ≥-127 dBm)
Typically ±1.0 dB for all levels
With the 83236B:
±1.8 dB, at 25° C ±10° C
±2.0 dB, at 0° C to 55° C
±1.0 dB typically

Reverse Power:

Standard: 3 W
With the 83236B: 10 W

SWR:

Standard: <1.5:1
With the 83236B: <1.2:1

Duplex Out/RF Out Only Connector

Level Range:

Standard: -127 dBm to +3.5 dBm into 50 Ω
With the 83236B: -130 dBm to -10 dBm into 50 Ω

Level Accuracy:

Standard: ±1.0 dB
With the 83236B:
±1.8 dB, at 25 °C ±10 °C
±2.0 dB, at 0 °C to 55 °C
±1.0 dB typically

Reverse Power: 200 mW maximum

SWR:

Standard: <2.0:1 (level <-7.5 dBm)
With the 83236B: <1.6:1

Resolution: *0.1 dB (setable in 0.01 dB increments)*

Spectral Purity

All specifications are for ≤-2.5 dBm output level at Duplex Out or ≤-16.5 dBm output level at RF In/Out

Harmonics: <-30 dBc

Non-Harmonic Spurious: <-60 dBc (at >5 kHz offset from carrier)

Residual FM (CCITT, rms):

Standard:
<7 Hz for 500 MHz <f_c≤1000 MHz
<4 Hz for 250 MHz ≤f_c ≤500 MHz
<7 Hz for 30 MHz ≤f_c <250 MHz
With the 83236B:
<7 Hz for 810 MHz ≤f_c ≤960 MHz
<10 Hz for 1710 MHz ≤f_c ≤1990 MHz

SSB Phase Noise:

Standard: *<-116 dBc/Hz (for >20 kHz offsets at a 1000 MHz carrier frequency)*
With the 83236B: *<-100 dBc/Hz at >20 kHz offsets*

FM

Maximum FM Deviation (rates >25 Hz):

Standard:
100 kHz; 30 to <249 MHz
50 kHz; 249 to <501 MHz
100 kHz; 501 to 1000 MHz
With the 83236B:
100 kHz; 800 MHz to 960 MHz, 1710 MHz to 1785 MHz, 1805 MHz to 1910 MHz, 1930 MHz to 1990 MHz

FM Rate (1 kHz reference):

Internal: DC to 25 kHz (1 dB BW)
External:
AC Coupled: 20 Hz to 75 kHz (typical -3 dB BW)
DC Coupled: DC to 75 kHz (typical -3 dB BW)

FM Accuracy (1 kHz rate):

≤10 kHz deviation: ±3.5% of setting ±50 Hz
>10 kHz deviation ±3.5% of setting ±500 Hz

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FM Distortion (THD+Noise, 0.3 to 3 kHz BW):
<0.5 % at >4 kHz deviation and 1 kHz rate

Center Frequency Accuracy in DC FM Mode (external source impedance <1 kΩ): ±500 Hz (after DCFM zero), *typically ±50 Hz*

External Modulation Input Impedance: *600 Ω nominal*

Resolution:
50 Hz for <10 kHz deviation
500 Hz for ≥10 kHz deviation

Audio Source (both internal sources)

Frequency

Range: dc to 25 kHz

Accuracy: 0.025 % of setting

Resolution: *0.1 Hz*

Output Level

Range: 0.1 mV to 4 Vrms

Maximum Output Current: 20 mA peak

Output Impedance: <2.5 Ω (at 1 kHz)

Accuracy: ±2% of setting plus resolution

Residual Distortion (THD + Noise, level ≥200 mVrms):
<0.125 %; 20 Hz to 25 kHz in an 80 kHz BW

Resolution:
Level ≤0.01V: ±50 μV
Level ≤0.1V: ±0.5 mV
Level ≤1V: ±5 mV
Level <10V: ±50 mV

Offset in DC Coupled Mode: *<50 mV*

RF Analyzer

RF Frequency Measurement

Measurement Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

Level Range:
Standard:
RF In/Out: -10 dBm to +35 dBm (0.1 mW to 3 W)
ANT In: -36 dBm to +20 dBm
With the 83236B:
RF In/Out: -10 dBm to +40 dBm (0.1 mW to 10 W)

Accuracy: ±1 Hz plus timebase accuracy

Minimum Resolution: *1 Hz*

RF Power Measurement

Note: To achieve the specified accuracy when measuring power at the RF In/Out port, the internal signal generator level must be 40 dB below the measured power or less than -20 dBm at the Duplex output port.

Frequency Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz

Input Connector: RF In/Out connector only

Measurement Range:
Standard: -10 dBm to +35 dBm (0.1 mW to 3 W)
With the 83236B: -13 dBm to +40 dBm (50 μW to 10 W)

Accuracy (after power meter zero):
Standard:
±5% of reading ±1 μW from 15° C to 35° C
±10% of reading ±1 μW from 0° C to 55° C
With the 83236B:
±5% of reading ±2.5 μW at 23° C ±10° C
±10% of reading ±2.5 μW

SWR:
Standard: <1.5:1
With the 83236B: <1.2:1

Resolution:
Standard:
Power <10W: 1 mW
Power <100 mW: 0.1 mW
Power <10 mW: 0.01 mW
With the 83236B: 0.01 dB or 10 μW

FM Measurement

Frequency Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz

Deviation Range: 20 Hz to 75 kHz

Sensitivity: 2 μV (15 kHz IF BW, High Sensitivity Mode, 0.3 to 3 kHz BW),[1] *Typically <1 μV* (12 dB SINAD, f_c ≥30 MHz)

1. Possible degradation in the 1700 to 1999 MHz bandwidth.

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Accuracy (20 Hz to 25 kHz rates, deviation ≤25 kHz): ±4 % of reading plus residual FM and noise contribution

Bandwidth (3 dB): 2 Hz to 70 kHz (DCFM measurements also available)

THD+Noise: <1% for ≥5 kHz Deviation and 1 kHz rate in a 0.3 to 3 kHz BW[1]

Input Level Range for Specified Accuracy:

Standard:
-28 to +35 dBm at RF In/Out (1.6 µW to 3 W)
-50 to +14 dBm at Ant In
With the 83236B: *-36 dBm to +40 dBm*

Residual FM and Noise (0.3 to 3 kHz, rms):

Standard: <7 Hz
With the 83236B: <10 Hz

Resolution:

Deviation <10 kHz: *1 Hz*
Deviation ≥10 kHz: *10 Hz*

Spectrum Analyzer

Frequency Range: (Center frequency coupled to RF Analyzer setting)

Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz

Frequency Span/Resolution Bandwidth (coupled)

Standard:

Span	Bandwidth
<50 kHz	300 Hz
<200 kHz	1 kHz
<1.5 MHz	3 kHz
<18 MHz	30 kHz
≥18 MHz	300 kHz

Plus full span capability

With the 83236B:

Span	Bandwidth
<50 kHz	300 Hz
<200 kHz	1 kHz
<1.5 MHz	3 kHz

Display: Log with 10 dB/division, 2 dB/division, or 1 dB/division

Display Range: 80 dB

Reference Level Range: +50 to -50 dBm

Residual Responses: <-70 dBm (no input signal, 0 dB attenuation)

Image Rejection: >50 dB

Non-harmonic Spurious Responses: *>70 dB (for input signals ≤–30 dBm)*

Level Accuracy: *±2.5 dB*

Log Scale Linearity: *±2 dB (for input levels ≤–30 dBm and/or 60 dB range)*

Displayed Average Noise Level: *<-114 dBm (≤50 kHz spans)*

Other Features: *Peak hold, marker with frequency and level readout, marker to peak, marker to next peak, trace comparison A-B.*

Tracking Generator

(Not available when used with the 83236B)

Frequency Range: 30 MHz to 1000 MHz

Frequency Offset: Frequency span endpoints ± frequency offset cannot be <30 MHz or >1000 MHz

Output Level Range: Same as signal generator

Sweep Modes: Normal and Inverted

Adjacent Channel Power

Relative Measurements

Level Range:

RF In/Out: -10 dBm to +35 dBm
ANT In: -40 dBm to +20 dBm

Dynamic Range: Typical values for channel offsets

Offset	*Residual BW*	*Dynamic Range*
12.5 kHz	*8.5 kHz*	*-65 dBc*
20 kHz	*4 kHz*	*-68 dBc*
25 kHz	*16 kHz*	*-68 dBc*
30 kHz	*16 kHz*	*-68 dBc*
60 kHz	*30 kHz*	*-65 dBc*

Relative Accuracy: ±2.0 dB

Absolute Measurements

Level: Results of absolute power in watts or dBm are determined by adding the ACP ratio from the Spectrum Analyzer to the carrier power measurement obtained from the input section RF power detector.

Level Range:

RF In/Out: -10 dBm to +35 dBm
Antenna In: Not available

Dynamic Range: Typical values for channel offsets

Offset	*Residual BW*	*Dynamic Range*
12.5 kHz	*8.5 kHz*	*-65 dBc*
20 kHz	*14 kHz*	*-68 dBc*
25 kHz	*16 kHz*	*-68 dBc*
30 kHz	*16 kHz*	*-68 dBc*
60 kHz	*30 kHz*	*-65 dBc*

Absolute Accuracy: Is the sum of the RF Power Measurement Accuracy found in the RF Analyzer section and the ACP Relative Accuracy of ±2.0 dB.

1. Possible degradation in the 1700 to 1999 MHz bandwidth.

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Audio Analyzer

Frequency Measurement

Measurement Range: 20 Hz to 400 kHz

Accuracy: ±0.02% plus resolution plus reference oscillator accuracy

External Input: 20 mV to 30 Vrms

Resolution:
f <10 kHz: 0.01 Hz
f <100 kHz: 0.1 Hz
f ≥100 kHz: 1 Hz

AC Voltage Measurement

Measurement Range: 0 to 30 Vrms

Accuracy (20 Hz to 15 kHz, ≥1 mV): ±3% of reading

Residual THD+Noise (15 kHz BW):

With a load (≤600 Ω) connected to
"Audio In Hi": 150 µV
Without load: 480 µV

3 dB Bandwidth: *Typically 2 Hz to 100 kHz*

Nominal Input Impedance: *Switchable between 1 M Ω in parallel with 95 pF or 600 Ω floating.*

Resolution:
4 digits for inputs ≥100 mV
3 digits for inputs <100 mV

DC Voltage Measurement

Voltage Range: 100 mV to 42 V

Accuracy: ±1.0 % of reading plus DC Offset

DC Offset: ±45 mV

Resolution: *1 mV*

Distortion Measurement

Fundamental Frequency Range: 300 Hz to 10 kHz ±5%

Input Level Range: 30 mV to 30 Vrms

Display Range: 0.1% to 100%

Accuracy: ±1 dB for frequencies from 300 to 1500 Hz, measured with the 15 kHz LPF (0.5 to 100% distortion).

±1.5 dB for frequencies from 300 Hz to 10 kHz, measured with the >99 kHz LPF (1.5 to 100% distortion).

Residual THD + Noise: -60 dB or 150 µV, whichever is greater for frequencies from 300 Hz to 1500 Hz measured with the 15 kHz LPF.

-57 dB or 450 µV, whichever is greater for frequencies from 300 Hz to 10 kHz measured with the >99 kHz LPF.

Resolution: *0.1% distortion*

SINAD Measurement

Fundamental Frequency Range: 300 Hz to 10 kHz ±5%

Input Level Range: 30 mV to 30 Vrms

Display Range: 0 to 60 dB

Accuracy: ±1 dB for frequencies from 300 to 1500 Hz, measured with the 15 kHz LPF (0 to 46 dB SINAD).

±1.5 dB for frequencies from 300 Hz to 10 kHz, measured with the >99 kHz LPF (0 to 36 dB SINAD).

Residual THD + Noise: -60 dB or 150 µV, whichever is greater for frequencies from 300 Hz to 1500 Hz measured with the 15 kHz LPF.

-57 dB or 450 µV, whichever is greater for frequencies from 300 Hz to 10 kHz measured with the >99 kHz LPF.

Resolution: *0.01 dB*

Audio Filters

High Pass Filters: <20 Hz, 50 Hz, and 300 Hz

Low Pass Filters: 300 Hz, 3 kHz, 15 kHz, >99 kHz

Other Filters: C-Message Weighting Filter, and 6 kHz Bandpass Filter

Optional Filters: Option 011, CCITT Weighting Filter replaces the C-Message filter (for TACS phones)

Compander: None

Variable Frequency Notch Filter

Frequency Tuning Range: 300 Hz to 10 kHz

Notch Depth: >60 dB

Notch Width: *Typically ±5% of the notch center frequency*

Audio Detectors: RMS, Pk+, Pk-, Pk+hold, Pk-hold, Pk±/2, Pk±/2 hold, Pk±max, Pk±max hold, rms *SQRT2

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Oscilloscope

Frequency Range (-3 dB BW): 2 Hz to 50 kHz

Scale/Division: 10 mV to 10 V

Amplitude Accuracy (20 Hz to 10 kHz): ±1.5% of reading ±0.1 division

Time/Division: 10 µs to 100 ms

Trigger Delay: 20 µs to 3.2 seconds

3 dB Bandwidth: *Typically >100 kHz*

Internal DC Offset: *<=0.1 division (≥50 µV/division sensitivity)*

Signaling

Capability for Generating and Analyzing the Following Formats: AMPS, EAMPS, NAMPS, TACS, JTACS, NTACS, ETACS, NMT-450S, NMT-900S, LTR, EDACS, MPT 1327.

Function Generator Waveforms: Sine, square, triangle, ramp, dc, White Gaussian and White Uniform noise.

Function Generator Frequency Range and Level: Same as audio source

DC Current Meter

Measurement Range: 0 to 10A *(Usable to 20A)*

Accuracy: The greater of ±10% of reading after zeroing or 30 mA (levels >100 mA)

8924C CDMA MODE SPECIFICATIONS

Call Processing Functionality

User Settable Parameters

Protocol Stack: J-STD-008, KOR PCS, ARIB T-53, IS-95, IS-95A, TSB-74

Channel Standards: MS AMPS, US PCS, Korean PCS 0, Korean PCS 1, Japan CDMA, MS NAMPS Upper/Middle/ Lower, MS TACS, MS ETACS, MS NTACS, MS JTACS, and User Defined (PCS bands require the 83236B PCS Interface).

Base Station Parameters: NID, SID, BASE_ID, Country Code, Network Code, SRCH_WIN_A, SRCH_WIN_N, SRCH_WIN_R, CDG Esc Mode on/off, Register SID, Register NID, and Power-On Registration on/off.

Access Probe Parameters: NOM_PWR, NOM_PWR_EXT, INIT_PWR, PWR_STEP, PAM_SZ, NUM_STEP, MAX_REQ_SEQ, and MAX_RSP_SEQ.

Paging Channel Parameters: Paging Data Rate (full or half rate), NUM_PAGES.

Threshold Parameters: T_ADD, T_DROP, T_COMP, and T_TDROP.

Service Option Support:
Service Option 001 (Normal Voice)
Service Option 002 (9600 bps Data Loopback)
Service Option 003 (EVRC 9600 bps Voice)
Service Option 006 SMS for Rate Set 1 (9600 bps)
Service Option 014 SMS for Rate Set 2 (14,400 bps)
Service Option 009 (14.4 kbps Data Loopback)
Service Option 32768 (14.4 kbps Voice)

Call Control: BS call originate, BS call disconnect, MS call originate, MS call disconnect.

Hand-off Support:
CDMA to CDMA Hard (RF Frequency)
CDMA Softer (between two sectors)
CDMA Soft (requires two units)
CDMA to Analog (intra band)
CDMA PCS to Analog cellular

CDMA to Analog Hand-off: Execute, System Type, Channel, SAT, and Power Level.

Authentication: Registration, paging, origination, SSD update, data burst, and unique challenge.

Short Message Service: Mobile terminated on paging or traffic channel

Call Status Indicators: Transmitting (cell active), Registering, Page Sent, Access Probe Received, Connected, Softer Hand-off, Hard Hand-off, Service Option 002/009.

SMS In Progress, MS Acknowledge Received. All indicators are also available over GPIB.

Speech Encoding: None (No vocoder)

Speech Echo Mode: Three user selectable fixed delays: 0 seconds, 2 seconds, and 5 seconds.

CDMA Data Source:
Pseudorandom data (CCITT 2^{15}–1 pattern)
Voice Echo
1 kHz Tone
400 Hz Tone
Audio Chirp (3 second sweep from 5 Hz to 3.75 kHz)

Closed Loop Power Control:
Supports True Closed Loop Power Control
Open Loop (Alternating 0 and 1 power control bits)
Always Up
Always Down
Off (no puncturing, requires special mode in mobile)

Closed Loop Change Modes:
Step n Up (up to 150 bits)
Step n Down (up to 150 bits)
Ramp of n Up followed by n Down power (max. 150)

Open Loop Power Control: Supported through varying the level of CDMA Generator. CDMA analyzer auto-ranges to the ideal RF power level for the nominally expected open loop response.

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Ideal Mobile Power Display: Reports the ideal open loop power for the mobile's transmitter based upon the forward link power set on the 8924C, the current protocol mode, and the set values of NOM_PWR, NOM_PWR_EXT (J-STD-008 mode only), and INIT_PWR.

Mobile Station FER Reporting: User selectable number of frames (from predefined list). Report by number of frames or by user defined number of errors.

Adjacent Cell Mobile Reporting: Displays status, PN offset, strength, and keep bit for all pilots found by the CDMA mobile and reported via pilot strength messages. Also displays the current user set PN offsets and strengths of Sector A and Sector B to aid in verifying mobile performance.

Neighbor List Support: Automatically generates a list of seven neighbors based on the user entry of Sector A PN offset, Sector B PN offset, and Pilot Increment.

Mobile Station Identification: 10-digit phone number (IS-95 mode only), MIN (IS-95 mode only with hex entry), IMSI (MCC + MNC + MSIN), or AUTO (uses power-on or user initiated registration to obtain the mobile ID).

Registration: Supports mobile power-on registration, timer-based registration (registration period parameter settable from 29 to 85, 12.18 to 199515 seconds), implicit, or user-initiated registration (modulates SID to force the mobile to perform a zone based registration) via GPIB command or front panel button.

IMSI Support: Class 0 only in TSB-74 and J-STD-008 protocols:

IMSI Mode: Class 0, Type 3 only

Auto Mode: The phone's registration subclass is used by the instrument to page the phone.

Mobile Database: Upon registration, the database contains the following information:

IS-95 Mode: ESN, MIN1, MIN2, Phone Number, Dual-Mode, Slot Class, Slot Index, Protocol Revision, Power Class, Transmit Mode, and Called Number.

IS-95A, TSB74 and ARIB T-53 Modes: ESN, MCC, MNC, MSIN, Dual-mode, Slot Class, Slot Index, Protocol Revision, Power Class, Transmit Mode, and Called Number.

J-STD-008 and Korean PCS Modes: ESN, MCC, MNC, MSIN, Slot Class, Slot Index, Protocol Revision, Band Class, EIRP Class, Operation Modes, and Called Number.

Retrievable Mobile Parameters:

IS-95/IS-95A Modes: MUX1_REV_(1 to 8, 11 to 14), MUX1_FOR_(1 to 14), PAG_(1 to 7), ACC_(1 to 8), and LAYER2_RTC(1 to 5).

TSB-74/J-STD-008 Modes: In addition to the above parameters, these parameters are available: MUX2_REV_(1 to 25), and MUX2_FOR_(1 to 26).

Protocol Logging: Two rear panel serial ports allow logging of paging/access channel messages and forward/reverse traffic channel messages. Requires an external PC running terminal emulation software connected to the rear panel serial ports.

CDMA Signal Generator

CDMA Channels

Additive White Gaussian Noise

Sector A with Selectable PN Offset:
Pilot Channel at Walsh Code 0
Sync Channel at Walsh Code 32
Paging Channel at Walsh Code 1
Traffic Channel with selectable Walsh Code
OCNS Channel with selectable Walsh Code

Sector B with Selectable PN Offset:
Pilot Channel at Walsh Code 0
Traffic Channel with Selectable Walsh Code
OCNS Channel with Selectable Walsh Code

Frequency

Frequency Range:

Standard: 501 MHz to 1000 MHz
Usable from 30 MHz to 248.9 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

Frequency Resolution: 1 Hz

Frequency Accuracy: Same as reference oscillator accuracy ±0.015 Hz

Amplitude

Composite Signal Output Level Range:

Standard:
RF In/Out: -109 dBm/1.23 MHz to -21.5 dBm/1.23 MHz
Duplex Out: -109 dBm/1.23 MHz to -7.5 dBm/1.23 MHz
With the 83236B:
RF In/Out: -109 dBm/1.23 MHz to -20.01 dBm/1.23 MHz (-23 dBm/1.23 MHz max. if AWGN only)
RF Out Only: -109 dBm/1.23 MHz to -10.01 dBm/1.23 MHz (-13 dBm/1.23 MHz max. if AWGN only)

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Composite Signal Output Level Accuracy:
(Using the IS-98A sensitivity setup)
Standard:
AWGN Off: ±1.5 dB
±1.0 dB typically
AWGN On: ±2.0 dB
With the 83236B:
AWGN Off: ±2.1 dB, at 25 °C ±10 °C
±2.3 dB. at 0 °C to 55 °C
±1.3 dB typically
AWGN On:
±2.6 dB. at 25 °C ±10 °C
±2.8 dB. at 0 °C to 55 °C

Attenuator Hold:
Standard: *-15 dB from attenuator setting when hold is enabled.*

With the 83236B: *Up to -60 dB from attenuator setting when hold is enabled depending upon the initial setting level. Holds mechanical attenuator in the 83236B and uses the electronic attenuator in the 8924C to provide low-transient amplitude transitions.*

Composite Signal Output Power: Equal to the sum of the individually settable power levels for AWGN, Sector A, and Sector B.

Maximum Individual Signal Dynamic Range: The maximum dynamic range of any CDMA channel (AWGN, Sector A: Pilot, Sync, Paging, Traffic, or OCNS, Sector B: Pilot, Traffic, or OCNS) is from 0 dB to -30 dB relative to the total composite output power. Paging and Traffic channels may have more or less dynamic range depending on the data rate in use.

AWGN Bandwidth: *Typically >1.8 MHz bandwidth. Because the reported total composite power and AWGN power is in terms of dBm in a 1.23 MHz bandwidth, the actual broadband output power as seen by a power meter on the front panel will be higher than reported on the front panel.*

Sector A OCNS Channel Relative Level Range:
Automatically calculated from other Sector A channel relative levels to provide the set Sector A power.

Sector B OCNS Channel Relative Level Range:
Automatically calculated from other Sector B channel relative levels to provide the set Sector B power.

Individual Channel Amplitude Resolution: 0.01 dB

Relative CDMA Channel Level Accuracy:
AWGN to Traffic Channel: <0.2 dB, ±5 °C from the last temperature at which PCB_CAL was run for values of E_b/N_t from 1 dB to 10 dB.

Between any Two CDMA Channels: <0.2, dB ±5 °C from the last temperature at which PCB_CAL was run.

CDMA Modulation

Modulation Type: QPSK per TIA IS-95A/J-STD-008

Residual ρ: Better than 0.97, *typically >0.98*

Carrier Feedthrough: Better than -30 dBc, *typically better than -30 dBc*

Adjacent Channel Spectral Purity: *<-45 dBc at ±895 kHz offset from carrier frequency relative to the total carrier power in a 1.23 MHz bandwidth.*

Rate Set Support: Rate set 1 (9600 bps traffic -8 kbps voice)

Rate set 2 (14.4 kbps traffic -13 kbps voice)

Data Rate Transmission Modes: IS-95A/J-STD-008 defined base station modes including full rate, half rate, quarter rate, one-eighth rate data transmission, and variable rate with equally weighted, randomly spaced occurrences of each rate.

Data Generator Patterns:
Pseudorandom data (CCITT 2^{15}-1 pattern)
1 kHz tone
400 Hz tone

Audio Chirp (3 second sweep from 10 Hz to 3.75)

Tones and chirp conform to IS-96A (Service Option 1), IS-127 (Service Option 3), and CDG-27 (Service Option 32768) vocoder standards

CDMA Analyzer

CDMA Average Power Measurement

Note: To achieve the specified accuracy when measuring power at the RF In/Out port of the 8924C or the 83236B, the internal signal generator level must be 40dB below the measured power or less than -20 dBm at the 8924C's Duplex Output port or the 83236B's RF Out Only port.

Input Frequency Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

Input Connector:
Standard: RF In/Out connector on the 8924C
With the 83236B: RF In/Out connector on the 83236B

Measurement Bandwidth: Provides an accurate measure of the total power for all present signals within ±2 MHz of the specified operating frequency. If other signals are present outside of this frequency range, reduced measurement accuracy will result.

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Maximum Input Level:
Standard: +35 dBm (3 W continuous)
With the 83236B: +37 dBm (5 W continuous)

Measurement Range:
Standard: -10 dBm to +35 dBm.
Usable to -20 dBm with degraded accuracy
With the 83236B: -13 dBm to +37 dBm

Measurement Method: Reports the overall average power for all active power control groups captured

Measurement Period: Measures over ½ of a CDMA frame (eight power control groups) in full, half, quarter, or one-eighth rate modes

Measurement Update Rate: *Typically 1.5 readings per second*

Measurement Accuracy (after power meter zero):
Standard:
±5% ±1 µW at 25 °C ±10 °C
±10% ±1 µW from 0 °C to +55 °C
With the 83236B:
±5% ±2.5 µW at 23 °C ±10 °C
±10% ±2.5 µW from 0 °C to +55 °C

CDMA Tuned Channel Power and Access Probe Power Measurements

Input Frequency Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

Input Connector:
Standard: RF In/Out connector on the 8924C
With the 83236B: RF In/Out connector on the 83236B

Measurement Bandwidth: Measures the total power in a 1.23 MHz bandwidth centered on the active reverse channel center frequency.

Maximum Input Level:
Standard: +35 dBm (3 W continuous)
With the 83236B: +37 dBm (5 W continuous)

Measurement Range:
Standard: -50 dBm to +30 dBm, usable to -60 dBm

Measurement Update Rate: *Typically two readings per second*

Measurement Accuracy:
Relative Mode (Uncalibrated against average power):
0 to -10 dB relative level: ±0.1 dB
-10 to -20 dB relative level: ±0.2 dB
-20 to -40 dB relative level: ±0.5 dB

Calibrated Mode (Calibrated against average power):
Standard: ±1.0 dB at ±10 °C from the calibration temperature
With the 83236B Cellular bands (source level <-35 dBm/1.23 MHz): ±1.0 dB at ±10 °C from the calibration temperature
With the 83236B PCS bands (source level <-35 dBm/1.23 MHz): ±1.6 dB at ±10 °C from the calibration temperature

Temperature Drift: *Typically 0.1 dB per 10 °C temperature change*

Measurement Period: Measures power in a 1.23 MHz bandwidth over ½ of a CDMA frame (eight power control groups) in full, half, quarter, or one-eighth rate modes.

Calibrate: Calibrates the channel power measurement over the entire operating frequency range of the currently selected RF Channel Standard. This calibration requires the user to connect the Duplex Out Port to the RF In/Out port (or to connect the RF Out Only Port to the RF In/Out Port when using the 83236B) before initiating the calibration.

Alternate Channel Standard: Allows the selection of a second channel standard to be calibrated when the channel power calibration is performed. Also allows calibrating the entire cell band, PCS band, or all bands at one time. This allows switching between to standards without having to recalibrate after each RF Channel Standard change.

Uncalibrated Flag: Displays “Uncal” under the Channel Power measurement whenever the unit detects that the channel power calibration has not been run for the currently set RF Channel Standard.

Access Probe Power Measurement Triggering: Measurement automatically triggers above -55 dBm

CDMA Modulation Measurement

Input Frequency Range:
Standard: 30 MHz to 1000 MHz
With the 83236B:
800 MHz to 960 MHz
1710 MHz to 1785 MHz
1805 MHz to 1910 MHz
1930 MHz to 1990 MHz
Usable from 1700 to 1999.999999 MHz

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Modulation Measurement Format: OQPSK per TIA IS-95A/J-STD-008

ρ (rho) Measurement Input Level Range:
Standard: -20 dBm to +35 dBm
Usable to -25 dBm with degraded accuracy
With the 83236B: -25 dBm to +37 dBm
Usable to -28 dBm with degraded accuracy

Range of ρ Measurement for Specified Accuracy: 0.45 to 1.00

ρ Measurement Interval:
Traffic Channel ρ: 1.042 msec (5 Walsh symbols)
Test Mode ρ: 1.25 msec (6 Walsh symbols)

Measurement Update Rate: *Typically 1.5 readings per second*

ρ Measurement Accuracy: ρ ±0.003

Frequency Error Measurement Range: ±1 kHz

Frequency Error Measurement Accuracy: ±30 Hz

Other Reported Parameters with ρ Measurement: Transmit time error (τ, time offset), frequency error, carrier feedthrough, amplitude error, and phase error

CDMA Frame Error Rate Measurement

FER Measurement Method: Data loopback per Service Option 002 or Service Option 009 supporting confidence limits as outlined in TIA/EIA-98-B.

Supported Data Rates for FER Measurement: Full, half, quarter, or one-eighth rate

Confidence Limit Range: User definable from 80.0% to 99.9% and Off

Confidence Limit Statistical Model: Meets TIA/EIA-98-B statistical model parameters

FER Reported Parameters: Measured FER, number of errors, number of frames tested, and one of the following: passed confidence limit, failed confidence limit, or max. frames (test indeterminate).

Conditions for Terminating FER Test (with confidence limits on):
Max Frames: Maximum number of frames to test completed, indicative of an indeterminate test result.
Failed: Measured FER failed the specified FER limit with specified confidence.
Passed: Measured FER passed the specified FER limit with specified confidence.

FER Measurement Indicators: Testing, passed, failed, and max. frames. All indicators are available over GPIB.

One Button Min/Max Power Measurement

Measurement Method: Automatically sets the 8924C to the nominal TIA/EIA-98-B test conditions for the minimum power measurement and then maximum power measurement. Restores the 8924C to the instrument state active before the measurement in initiated.

Measurement Output: Maximum TX power and minimum TX power measured

Measurement Rate: *Approximately 7 seconds per measurement*

CDMA Reverse Channel Spectrum Display

Frequency Range: Fixed to the active CDMA reverse channel setting. Not independently adjustable.

Frequency Span/Resolution Bandwidth (coupled, maximum span of 5 MHz):

Span	Bandwidth
<50 kHz	300 Hz
<200 kHz	1 kHz
<1.5 MHz	3 kHz
5 MHz	30 kHz

Display: Log with 10 dB/division

Display Range: 80 dB

Reference Level Range: +50 to -50 dBm

Residual Responses: <-70 dBm (no input signal, 0 dB attenuation)

Image Rejection: >50 dB

Non-harmonic Spurious Responses: *>70 dB (for input signals ≤-30 dBm)*

Level Accuracy: *±2.5 dB*

Log Scale Linearity: *±2 dB (for input levels ≤-30 dBm and/or 60 dB range)*

Displayed Average Noise Level: *<-114 dBm (≤50 kHz spans)*

Other Features: *Peak hold, marker with frequency and level readout, marker to peak, marker to next peak, trace comparison A-B.*

CDMA Triggers

Output Trigger Signals: Open loop power trigger on AUX CONTROL connector (line toggles whenever the output level of the 8924C's CDMA source is changed)

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8924C CDMA COMMON SPECIFICATIONS

Remote Programming

GPIB: Agilent Technologies implementation of IEEE Standard 488.2

Remote Front Panel Lockout: Allows remote user to disable the front panel display to improve GPIB measurement speed.

Functions Implemented: SH1, AH1, T6, L4, SR1, RL1, LE0, TE0, PP0, DC1, DT1, C4, C11, E2.

RS-232: 3-wire RJ-11 connector used for serial data in and out (no hardware handshake capability; two RS-232 ports available in standard mode, one RS-232 port available with the 83236B).

Baud Rates: 300, 600, 1200, 2400, 4800, 9600, and 19200 selectable

Centronics Port: Industry standard parallel printer port for hardcopies of test results or screen dumps.

Timebase Subsystem

(For proper operation, this reference must be locked to either the 8924C's high stability 10 MHz timebase output on the rear panel or to an external, high quality reference.)

Locking Range: ±10 ppm

Input: Rear panel coaxial BNC

Accepted Input Frequencies: 19.6608 MHz, 15 MHz, 10 MHz, 9.8304 MHz, 5 MHz, 4.9152 MHz, 2.4576 MHz, 2 MHz, 1.2288 MHz, and 1 MHz.

Outputs (All on Rear Panel):
Coaxial BNC's: 19.6608 MHz, 10 MHz, 1.2288 MHz

Frame Clock BNC Output (CDMA Mode Only): User selectable output of one of the following clocks via this BNC:

1.25 msec
20 msec frame clock
26.67 msec short sequence clock
80 msec clock
Every even second (PP2S)

TTL Sub Min. D Connector: Individual pins for 1.25 msec, 20 msec frame clock, 26.67 msec short sequence clock, 80 msec clock, and every even second (PP2S).

Ovenized Reference

Aging Rate: <0.005 ppm pk-pk/day, <±0.1 ppm per year (±85 Hz at 850 MHz in one year)

Warm-up: ±0.1 ppm in 5 minutes, ±0.01 ppm in 15 minutes

Temperature: <0.01 ppm

Supply Voltage: *2×10^{-9} (±1%)*

Rear Panel BNC Connectors:

Output Frequency: *10 MHz*
Output Level: *0 dBm ±3 dB into 50 Ω*

Store/Recall

Available RAM: *Approximately 928 Kbytes of user available RAM. When running the 83217A Dual-mode CDMA Mobile Station Test Software, about 280 Kbytes of RAM is available for save/recall use.*

Memory Card

Card Compatibility: Single industry standard PCMCIA slot that accepts type I and type II SRAM and ROM cards.

Storage Capability: Allows for the storage and retrieval of IBASIC programs, IBASIC program parameter and results data, input of new calibration data, and long-term storage of Store/Recall information.

Firmware Upgrades: Accepts PCMCIA memory cards to allow automatic loading of new firmware for the Host CPU, Protocol CPU, DSP, and Channel Card CPU's without opening the 8924C (order 8924 CRT Option R58 for latest version; contact Agilent Technologies if unit contains firmware revision A.02.37 or less).

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General Specifications

Dimensions (HxWxD):

Standard: 177 H x 426 W x 629 D mm (7 x 16.75 x 24.75 inches)

With the 83236B: 254 H x 426 W x 574 D mm (12 x 16.75 x 24.75 inches) using the optional bench-top cabinet

Weight:

Standard: 27 kg, 59 lbs

With the 83236B: 32.6 kg, 72 lbs

CRT Image Size: 7 x 10 cm

Operating Temperature: 0 °C to +55 °C

Storage Temperature: -55 °C to +75 °C

Power:

8924C: 100 V to 240 V, 50/60 Hz, *nominally 400 VA*

83236B: 90 V to 132 V, 198 V to 264 V, 47 to 63 Hz, 100 VA maximum

Calibration Interval: One year

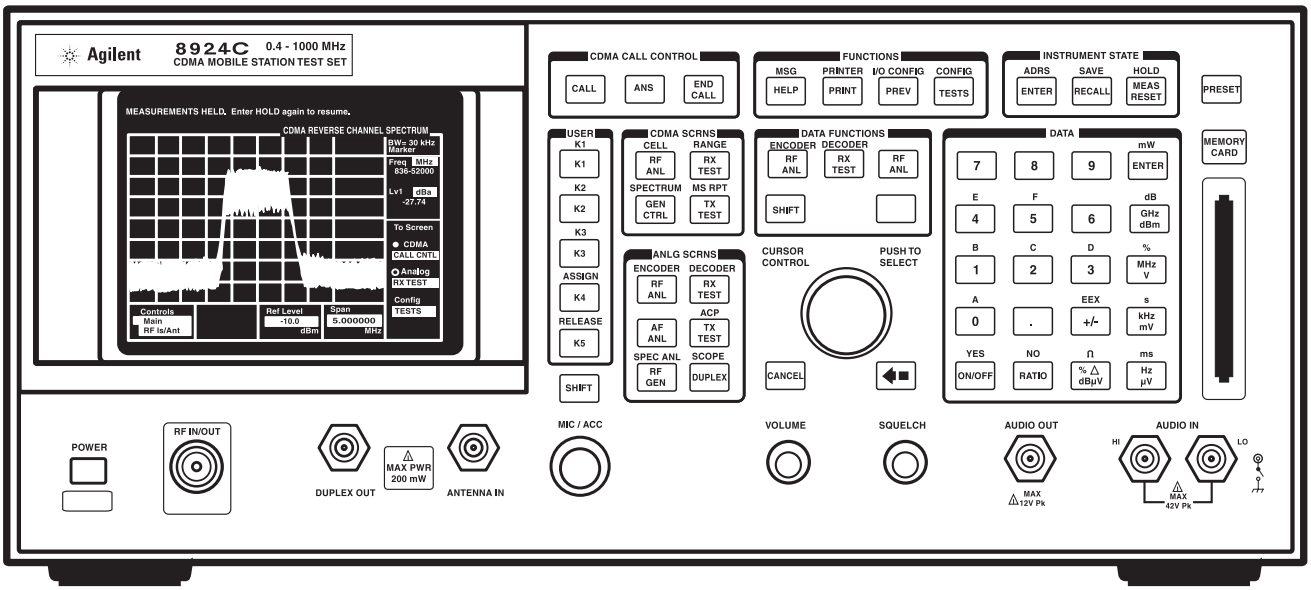
EMI:

Standard: Conducted and Radiated interference meets CISPR-11, IEC 801-2, IEC 801-3, and IEC 801-4.

With the 83236B: Conducted and Radiated interference meets IEC 801-3.

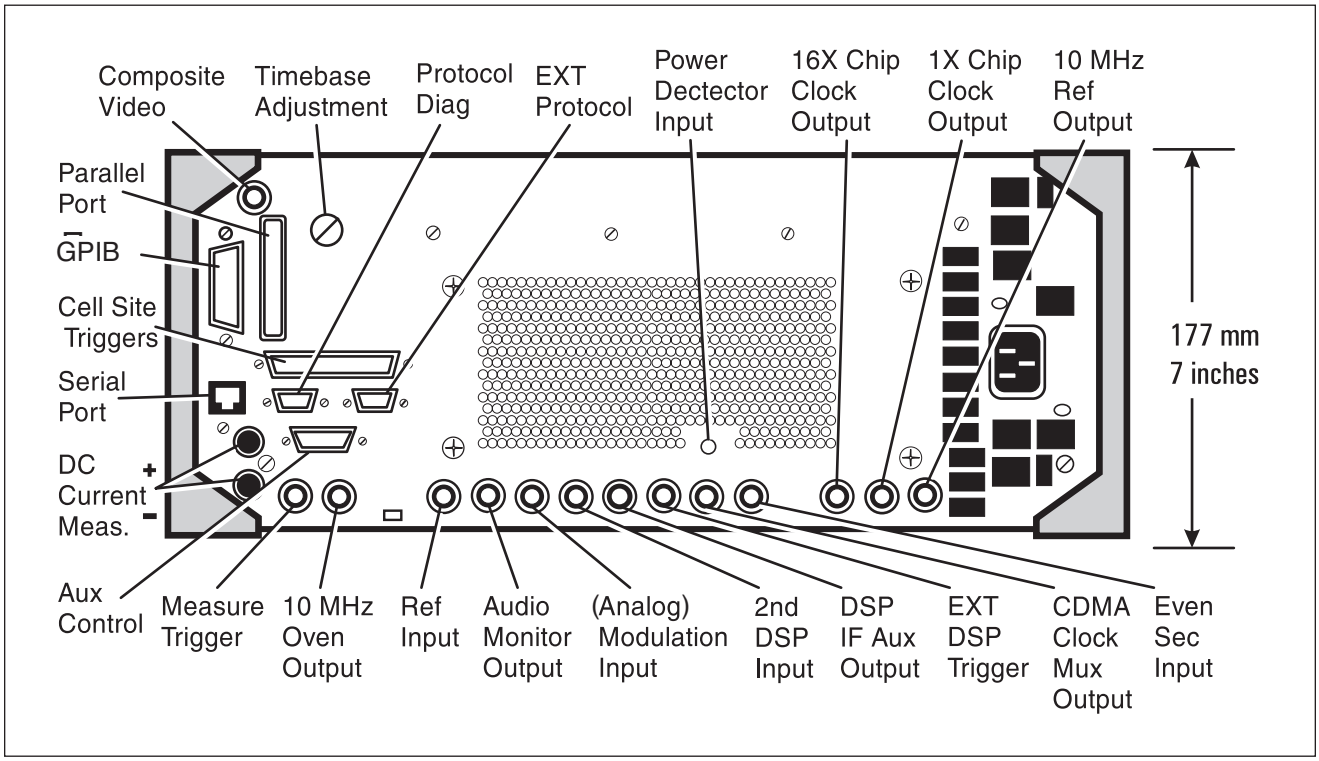
Leakage: *At RF Generator output levels <-40 dBm, typical radiated leakage is <1 µV induced in a resonant dipole antenna 25 mm (one inch) away from any surface except the rear panel. Spurious leakage levels are typically <5 µV in a resonant dipole antenna 25 mm (1 inch) away from any surface except the rear panel. Spurious leakage levels at the rear panel are typically <5 µV in a resonant dipole antenna at a distance of 250 mm (ten inches).*

Front Panel



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Rear Panel



Front Panel Inputs
RF Input/Output: Type N
Antenna Input: BNC
Microphone/Accessory: 8-pin DIN
Audio Input: Dual BNC's

Rear Panel Inputs
Modulation Input (analog): BNC
Measurement Trigger [input for oscilloscope]: BNC
Reference Input: BNC
Second DSP Auxillary [Baseband] Input: Not functional
Even Second Input: BNC
External DSP [Input]: BNC
Power Detector [input for 83236B]: SMA
DC Current Measure [input]: Dual banana jacks

Rear Panel Digital Ports
Aux. Control: 15-pin sub-min D [Open loop power trigger output]
Parallel Printer Port: Centronics 25-pin sub-min D
Serial Port (RS-232): RJ-11
Ext. Protocol: Not functional
Protocol Diag: Not functional
GPIB Port: 24-pin GPIB

Front Panel Outputs
RF Input/Output: Type N
Duplex Output: BNC
Audio Output: BNC

Rear Panel Outputs
CRT Video Output: BNC
Audio Monitor Output: BNC
10 MHz Oven Output: BNC
10 MHz Reference Output: BNC
CDMA [Frame] Clock Multiplexer Output: BNC
16X Chip [19.6608 MHz Clock] Output: BNC
1X Chip [1.2288 MHz Clock] Output: BNC
DSP IF Aux [3.6864 MHz] Output: BNC
Cellsite/Triggers: 37-pin sub-min D [protocol logging output]

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83217A CDMA Dual-Mode Mobile Station Test Software Test List

Option 001
AMPS/NAMPS/CDMA

CDMA RX/TX Quick General Test
CDMA RX/TX Voice Quality
CDMA Call Processing Registration
CDMA Call Processing Origination
CDMA Call Processing Page
CDMA Call Processing Release
CDMA Call Processing Digital to Analog Hand-off
CDMA Call Processing Talk Time
CDMA Call Processing Check
CDMA CP Softer Hand-off Add and Drop Check
CDMA RX Sensitivity and Dynamic Range
CDMA RX Traffic Channel FER with AWGN
CDMA RX Sensitivity Level Search
CDMA TX Modulation Quality (includes frequency accuracy)
CDMA TX Open Loop Power Control Accuracy
CDMA TX Closed Loop Power Control Range
CDMA TX Maximum RF Output Power
CDMA TX Minimum Controlled Output Power
CDMA TX Spectrum Emissions
AMPS/NAMPS CP Call Processing Registration
AMPS/NAMPS CP Call Processing Page
AMPS/NAMPS CP Call Processing Release
AMPS/NAMPS CP Call Processing Origination
AMPS/NAMPS Call Processing Hook Flash
AMPS/NAMPS CPA Flow Chart (manual phone test)
AMPS/NAMPS TX Functional Test (no audio connections)
AMPS/NAMPS TX Frequency Error
AMPS/NAMPS TX RF Output Power
AMPS/NAMPS TX Modulation Deviation Limiting
AMPS/NAMPS TX Audio Frequency Response
AMPS/NAMPS TX Audio Distortion
AMPS/NAMPS TX Signaling Tone/DST
AMPS/NAMPS TX FM Hum and Noise
AMPS/NAMPS TX SAT/DSAT
AMPS/NAMPS TX RVC Data Deviation
AMPS/NAMPS TX Compressor Response
AMPS/NAMPS TX Current Drain
AMPS/NAMPS TX DTMF Frequency Error
AMPS/NAMPS TX Switch Channels
AMPS/NAMPS TX Quick General Test
AMPS/NAMPS RX Expandor Response
AMPS/NAMPS RX Audio Frequency Response
AMPS/NAMPS RX Audio Distortion
AMPS/NAMPS RX Hum and Noise
AMPS/NAMPS RX Sensitivity (SINAD)
AMPS/NAMPS RX FVC Order Message Error Rate
AMPS/NAMPS RX Quick General Test
NAMPS RX MRI Performance

Option 003
JTACS/NTACS/CDMA

CPA Registration
CPA Page
TXA Frequency Error
TXA Carrier Power
TXA Peak Frequency Deviation
TXA Audio Frequency Response
TXA Audio Distortion
TXA Signaling Tone / DST
TXA FM Hum and Noise
TXA SAT / DSAT
TXA RVC Data Deviation
TXA Compressor Response
TXA Current Drain
RXA Expandor
RXA Audio Frequency Response
RXA Audio Distortion
RXA Hum and Noise
RXA SINAD
RXA FVC Order Message Error Rate
CPA Release
CPA Origination
OTA No Audio Functional
TXA Quick General
RXA Quick General
CPA Flow Chart
TXA Switch Channels
CPA Hook Flash
TXA DTMF Frequency Error
CPD Registration
CPD Origination
CPD Page
TXD Waveform Quality and Freq. Acc.
TXD Open Loop Power Range
TXD Closed Loop Power Control
TXD Maximum RF Output Power
TXD Min. Controlled Output Power
RXD Traffic Channel FER
RXD Sensitivity and Dynamic Range
CPD Softer Hand-off
CPD CDMA Voice Quality
TXD Spectrum Emissions
CPD CDMA Release
CPD Digital to Analog Hand-off
CPD Talk Time
RXD Sensitivity Level Search

Option 004
CDMA/PCS/AMPS/NAMPS

CPA Registration
CPA Page
TXA Frequency Error
TXA RF Power Output
TXA Modulation Deviation Limiting
TXA Audio Frequency Response
TXA Audio Distortion
TXA Signaling Tone / DST
TXA FM Hum and Noise
TXA SAT / DSAT
TXA RVC Data Deviation
TXA Compressor Response
TXA Current Drain
RXA Expandor
RXA Audio Frequency Response
RXA Audio Distortion
RXA Hum and Noise
RXA SINAD
RXA FVC Order Message Error Rate
CPA Release
CPA Origination
OTA No Audio Functional
TXA Quick General
RXA Quick General
CPA Flow Chart
TXA Switch Channels
CPA Hook Flash
TXA DTMF Frequency Error
RXA MRI
CPD Registration
CPD Origination
CPD Page
TXD Waveform Quality and Freq. Acc.
TXD Open Loop Power Range
TXD Closed Loop Power Control
TXD Maximum RF Output Power
TXD Minimum Controlled Output Power
RXD Traffic Channel FER
RXD Sensitivity and Dynamic Range
CPD Softer Hand-off
RTD RX/TX CDMA Quick General
CPD CDMA Voice Quality
TXD Spectrum Emissions
CPD CDMA Release
CPD Digital to Analog Hand-off
CPD Talk Time
RXD Sensitivity Level Search

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E8290A Point of Service Test (PoST) Software Test List

CDMA Tests

CDMA Registration
CDMA Origination
CDMA Page
CDMA Base Station Release
CDMA Quick General
CDMA Waveform Quality and Frequency Accuracy
CDMA Open Loop Power Range
CDMA Closed Loop Power Control
CDMA Maximum RF Output Power
CDMA Minimum RF Output Power
CDMA Traffic Channel FER with AWGN
CDMA Sensitivity and Dynamic Range
CDMA Softer Hand-off
CDMA Voice Quality
CDMA Spectrum Emissions
CDMA Talk Time
CDMA Sensitivity Level Search
CDMA Digital to Analog Hand-off

Analog Tests

Analog Registration
Analog Page
Analog Origination
Analog Base Station Release
Analog TX Quick General
Analog RX Quick General
Analog No Audio Functional
Analog TX Frequency Error

Analog Tests, continued

Analog TX RF Power Output
Analog TX Modulation Deviation Limiting
Analog TX Audio Frequency Response
Analog TX Audio Distortion
Analog Signaling Tone/DST
Analog TX FM Hum and Noise
Analog SAT/DSAT
Analog RVC Data Deviation
Analog Compressor Response
Analog Current Drain
Analog Expandor Response
Analog RX Audio Frequency Response
Analog RX Audio Distortion
Analog RX Hum and Noise
Analog SINAD
Analog FVC Order Message Error Rate
Analog No Audio Functional
Analog Switch Channels
Analog Hook Flash
Analog DTMF Frequency Error
Analog NAMPS MRI

Other Tests

Change Global Parameters
Change Channel For
Change Channel List
Access to a User DLL

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