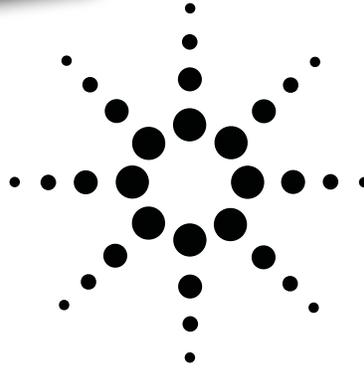




Agilent Technologies E8285A CDMA Mobile Station Test Set

Product Note



Product Comparison: the E8285A CDMA Mobile Station Test Set versus the 8924C CDMA Mobile Station Test Set

The Agilent Technologies 8924C Option 601 CDMA mobile station test set and E8285A CDMA MS service test set act as calibrated, high-performance base stations to provide the essential set of measurements required to test the parametric and functional characteristics of dual-band, dual-mode CDMA phones. This summarizes the key differences between the 8924C and the E8285A test sets.

Typical Customer Applications

The 8924C and the E8285A are both optimized for the following applications:

- High-volume CDMA manufacturing for mobile phone calibration, final test and repair
- CDMA research and development for mobile phone design
- High-volume CDMA mobile phone incoming inspection and return testing

The E8285A is a follow-on product to the 8924C. It is designed to directly replace the 8924C Option 601. Though it was built on the same platform as the 8924C, the E8285A has many new features, a more customer-friendly user interface, increased speed, and improved accuracy and flexibility.



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E8285A Features Summary

As of firmware revision A.06.25, the E8285A has all the features and capabilities of the 8924C. In comparison to the 8924C, the E8285A has:

- PCS and Cellular capability in a single test set
- A lower cost
- Graphical measurements (gated power and open-loop time response)
- An electronic attenuator (for PCS and cell-band frequencies)
- An optional spectrum analyzer (standard in the 8924C)
- Faster overall test speed and throughput
- Improved output level accuracy specification
- Lighter weight
- A smaller frame
- A larger display
- Type N connectors on all RF inputs and outputs
- No external cable needed for channel calibration
- No external timebase jumper required
- A new front panel and key layout
- Rear panel changes
- Independent forward and reverse external losses

Common Features of the E8285A and the 8924C

CDMA and Analog Testing

With the 8924C or E8285A you save space, cost, and training expenses by making both analog (AMPS, NAMPS, TACS, NTACS and JTACS) and digital CDMA measurements with the same instrument. With the press of a button, the instruments automatically handle the complex, over-the-air call processing required to make a CDMA phone call. Mobile and base station-initiated calls and disconnects are supported. The test sets also support a number of service options and protocol stacks that offer a variety of formats for easy and convenient testing.

CDMA Transmitter Measurements

The test sets measure transmitted waveform quality by the IS-95A recommended correlated power method, also known as the rho (ρ) measurement. The rho measurement also reports frequency error, amplitude error, time offset, phase error, and carrier feedthrough.

The test sets incorporate a next generation average power measurement that allows the maximum power of the phone to be measured. The channel power measurement is calibrated against the average power measurement, thereby enabling the test sets to achieve accurate low-level CDMA power measurements for all Cellular and PCS bands.

Furthermore, the access probe power measurement reports the power in a 1.23 MHz bandwidth by automatically triggering a channel power measurement each time the mobile station registers, originates a call, or is paged.

CDMA Receiver Tests

The instruments have a high-accuracy CDMA source that generates all of the channels required by the IS-95A air interface, just like an operational CDMA base station. An Additive White Gaussian Noise (AWGN) source is also included to simulate the interference generated by adjacent cells in a working CDMA network.

The key performance parameter for CDMA mobile station receivers is Frame Error Rate (FER) in the presence of AWGN. The test sets fully support Service Options 002 and 009 (9600 bps and 14,400 bps data loopback modes) to test FER performance. For complete receiver characterization, the test sets measure FER at all four data rates used in the CDMA system: full, half, quarter, and one-eighth.

Hard Handoff and CDMA-to-Analog Handoff Verification

To speed testing, the test sets support hard handoffs between RF channels. Handoffs between the TSB-74 and J-STD-008 CDMA protocols can be tested with dual-band /tri-mode digital phones. Furthermore, CDMA-to-analog handoffs from both Cellular and PCS bands are supported.

Two-Unit Synchronization for Soft Handoffs

With two-unit synchronization, two 8924Cs or E8285As can be time-aligned and synchronized. This powerful feature allows the user to test the decision of power control bits and some of the idle-state handoff tests defined in TIA/EIA-98-B.

As an aid to using this feature, the product note, *Measuring Idle and Soft Handoff Performance with the 8924C*, literature number 5968-6357E (written specifically for the 8924C) describes the setup procedure and operation details of two-unit synchronization.

Second Sector for Softer Handoffs

With two configurable CDMA sectors, the test sets can also verify the ability of a CDMA mobile phone to support softer handoffs. Softer handoffs are similar to soft handoffs, and testing differs only in that for softer handoffs, the test sets send identical power control bits to both CDMA cell sectors. This capability offers a low-cost way to verify softer handoffs, along with all soft handoff functionality except for power control.

Authentication and Short Message Service (SMS) Support

The 8924C and the E8285A provide the necessary features for testing a CDMA mobile station's ability to perform call-processing functions with Authentication for Korea and the United States. Once a mobile station is registered, valid A-Key Check Digits are generated. Unique Challenge and Shared Secret Data Update are fully supported. A table displays the authentication parameters sent by the mobile station, along with the expected value and a passed/failed indication. Mobile-terminated SMS is supported by the 8924C and the E8285A, which provide fields for entering and sending messages to the mobile station over both the Traffic and Paging channels. Alert, priority, and privacy options can be added to the SMS message to test whether the phone responds properly.

Protocol Message Logging

The ability to view over-the-air messages between a test set and CDMA mobile yields valuable debugging information for new designs. The 8924C and the E8285A provide this information as a standard feature to aid in the development process. By connecting a PC running a communications program via a serial interface to the logging ports of the test set, all protocol messages sent to and received from the CDMA mobile can be viewed in a formatted text form as well as in the raw hex data form. These logging ports also display the traffic channel frame rates, power control data, and frame data, if desired. Many other base station parameters not accessible via the user interface can be displayed using the logging functions.

NOTE: For the 8924C, the connection from the PC's serial port to the logging ports is made using a breakout adapter. The breakout adapter attaches to the 37-pin D connector on the 8924C's rear panel. This connector is labeled as CELLSITE/TRIGGERS. However a breakout adapter is not needed when using the E8285A. Rather, two new serial ports, CSD1 SERIAL and CSD2 SERIAL are used for the logging ports.

As an aid to using this feature, the product note, *Using the 8924C CDMA Logging Functions*, literature number 5965-9473E (written specifically for the 8924C) describes protocol logging setup and operation.

The E8285A and the 8924C also allow customers to more fully perform certain TIA/EIA-98-B, ANSI J-STD-018 and CDG Stage 2 tests, with the following additional protocol message support:

- The ability to send a PMRO (Pilot Measurement Request Order) when desired.
- The ability to send an Audit Order at the beginning of each valid paging slot.
- The ability to send an EHDMM (Extended Handoff Direction Message) when desired.
- The ability to send a custom neighbor list entry with frequency included.
- The ability to perform power down registration.

TIA/EIA-95-B Support

The E8285A and the 8924C both support TIA/EIA-95-B protocol, as of firmware release versions A.02.04 and A.07.06, respectively. Protocol support is equivalent to that of other versions of supported protocol (IS-95A, J-STD-008, and others), to allow the same level of mobile phone testing. In addition, the following TIA/EIA-95-B features are supported:

- Estimated Open-Loop Output Power
- Closed-Loop Power Control Step Size
- Power Class Reporting
- Dynamic Pilot Thresholds
- Pilot Strength Reporting on the Access Channel
- Access Probe Handoff
- Enhanced Status Request/Response.
- Interband CDMA-to-CDMA Hard Handoff.

Automated Software

E8290A PoST PC-Based Software

The 8924C and the E8285A can both be utilized in conjunction with the new E8290A Point of Service Test (PoST) PC-based software to automate dual-mode mobile phone testing. The easy-to-use, mouse-driven, on-screen graphics allow operators to make fast, accurate, and repeatable measurements with minimal training, virtually eliminating the need for manual interaction with the 8924C or the E8285A. This allows sales clerks and other non-technical personnel to perform testing at the point of sale, and thereby respond more quickly to customer problems.

A built-in database allows the operator to view results for further analysis. Reports can be generated and data can be combined into customer-care databases so trends in phone performance can be characterized. The 8924C or the E8285A and E8290A solution saves cost by reducing the number of No Trouble Found (NTF) phones sent back to manufacturers and by reducing the number of phones handed out as exchange replacements.

The combination of the E8290A CDMA PoST software and the 8924C or the E8285A provides a practical test solution to meet your R&D needs as well. The E8290A features two modes of operation: one that ensures ease-of-use for non-technical users, and another that provides access to a rich development environment.

In the software's password-protected development mode, technical operators can access the software's full set of capabilities. Test configurations, tests plans, test specifications and measurement parameters can all be set up and customized with ease.

83217A IBASIC Software

The 83217A CDMA dual-mode mobile station test software can also be used to automate CDMA and analog mobile phone measurements for the 8924C and E8285A. The 83217A solution does not require a PC. Rather, the software runs on the instrument's internal controller, and automatic tests can be completely set up using the front panel of the 8924C and E8285A. Options are available to meet your test needs for CDMA, AMPS, NAMPS, JTACS, NTACS, U.S. PCS and Korean PCS phones.

Other Standard Common Features

Test Mode Support

The 8924C and the E8285A can make transmitter tests and calibrate the open-loop power characteristics of CDMA phones in a test mode.

One-Button Call Processing

The 8924C and the E8285A support analog Cellular and digital CDMA formats with one-button call processing.

High-Stability Timebase

The timebase of both test sets has a 0.1 ppm per year stability to ensure the accuracy of critical CDMA measurements.

Simple Upgrades

Agilent provides firmware upgrades for the 8924C and the E8285A on PC cards. By inserting the upgrade card into the test set, cycling power and following the easy on-screen instructions, users can update to the latest firmware within minutes.

Worldwide Service and Support

Agilent Technologies provides CDMA hands-on training that helps bring customers of the 8924C and the E8285A up to speed quickly. Job aids—step-by-step procedures on equipment connection and use—provide customers with easy to understand quick reference guides for Agilent Technologies products. Customers have direct access to Agilent Technologies product experts through Agilent Technologies' wireless application support line, 1-800-922-8920. Technical consultation with engineers is also available.

Differences between the E8285A and the 8924C

Features

PCS and Cellular Capability in a Single Test Set

The 8924C requires the 83236B PCS Interface (8924C Option 601) to extend all CDMA measurement capabilities to the Korean PCS and North American PCS frequency bands, (see Figure 1). Power cycling of the 8924C is required after it is configured for use with the 83236B.

With the E8285A, CDMA PCS, CDMA cellular, and analog test capability is available in a single test set (see Figure 2).

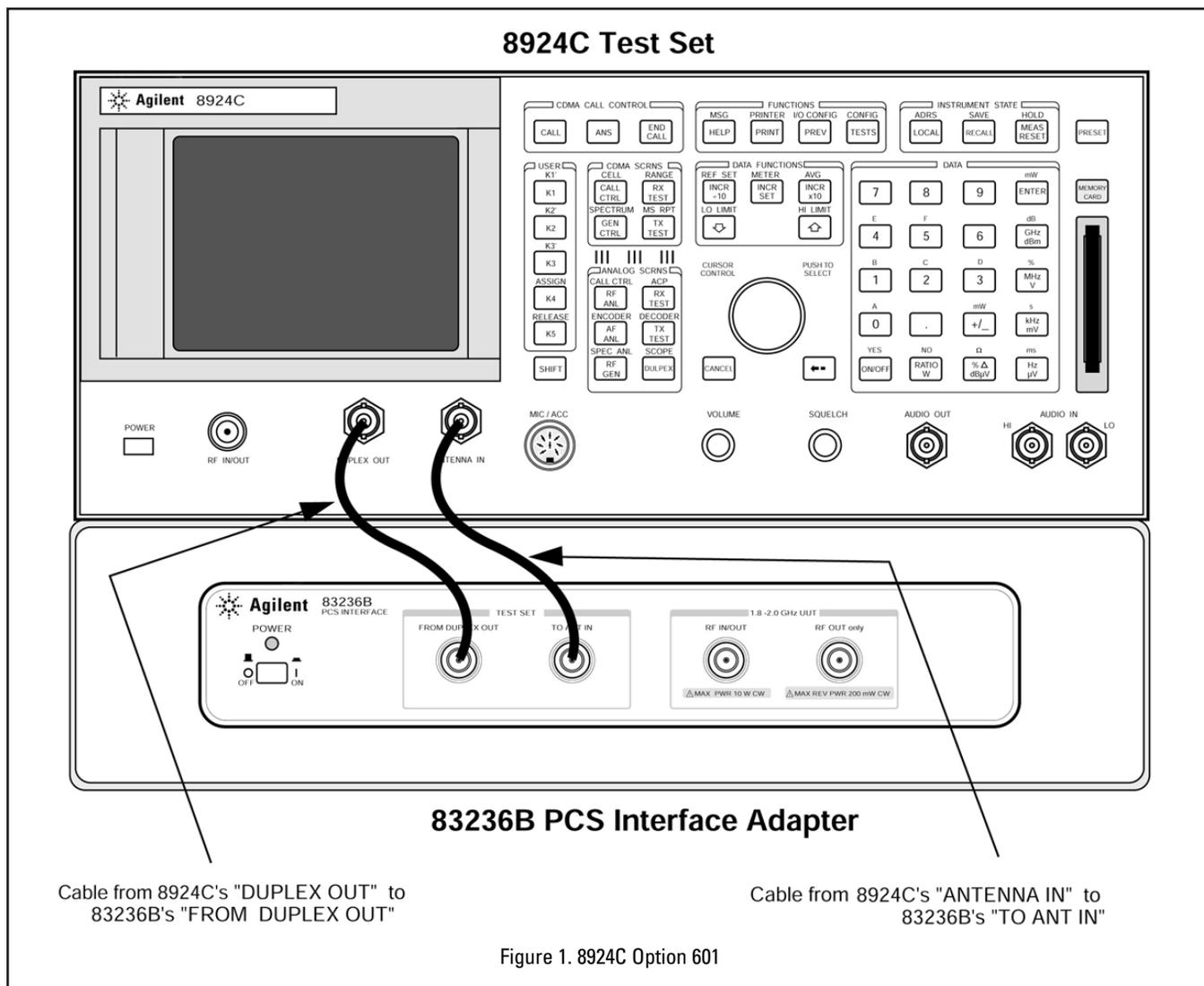
The E8285A has CDMA and analog measurement capability in the following frequency bands: (a) 800 MHz to 960 MHz, and (b) 1700 MHz to 2000 MHz.

The E8924C has CDMA and analog measurement capability in the following frequency bands: (a) 30 MHz to 248.9 MHz (b) 501 MHz to 1000 MHz, and (c) 1700 MHz to 2000 MHz (with the 8326B).

Electronic Attenuator

The 8924C has an electronic attenuator, but the 83236B has a mechanical attenuator at its RF front end. Thus, when the 8924C is used with the 83236B, the switching dropout transients of the 83236B may cause the CDMA mobile phone open-loop power control to react.

The E8285A has an electronic attenuator at its RF front end with switching dropout transients less than or equal to 15 microseconds in duration. This is much faster than the open-loop power control response of the CDMA mobile phone.



Channel Power Calibration Changes

The 8924C requires that channel power measurements be calibrated whenever the ambient temperature of the instrument drifts by more than 10 °C, the firmware is upgraded, the RF connections to the 83236B are adjusted, or the “Uncal” annunciator is flashing. Channel power calibration of the 8924C requires a cable connection between the RF IN/OUT and DUPLEX OUT ports (or the RF OUT ONLY and RF IN/OUT ports when using the 83236B).

With the E8285A, no external calibration cable is required for channel power calibration. Also, no re-calibration is required after a firmware upgrade. Furthermore, a status register, which can be queried by GPIB code, indicates when a channel power calibration is needed.

The application note, *Converting Software Written for the 8924C for Compatibility with the E8285A*, literature number 5968-4610E, aids the conversion from 8924C GPIB code to E8285A GPIB code.

Optional Spectrum Analyzer

The 8924C includes a built-in synthesized spectrum analyzer as a standard feature. The spectrum analyzer of the E8285A is optional and must be ordered as E8285A Option 102. This gives users who do not need the spectrum analyzer the choice to not include it in their purchase.

Power Cycling After PCB Calibration Can Be Done Automatically Over GPIB

PCB_CAL is a ROM-based program which optimizes the level accuracy of CDMA code channels and the AWGN (Additive White Gaussian Noise) generators of the 8924C and E8285A.

The 8924C requires that PCB_CAL be done after a 30-minute warmup period, whenever the ambient temperature of the instrument drifts by more than 5 °C, or after firmware is upgraded. The E8285A does not require re-calibration after a firmware upgrade.

When the calibration procedure completes on the 8924C, the message “PCB_CAL successful. Cycle instrument power to restore test set to normal conditions” displays on the top of the TESTS screen. At this point, power must be cycled by the user. When using the 8924C, there is no way to cycle power remotely. However, a GPIB command can be sent to the E8285A to cycle power once calibration is complete. This allows PCB calibration to be performed automatically, without operator intervention at any time.

The application note, *Converting Software Written for the 8924C for Compatibility with the E8285A*, literature number 5968-4610E, aids the conversion from 8924C GPIB code to E8285A GPIB code.

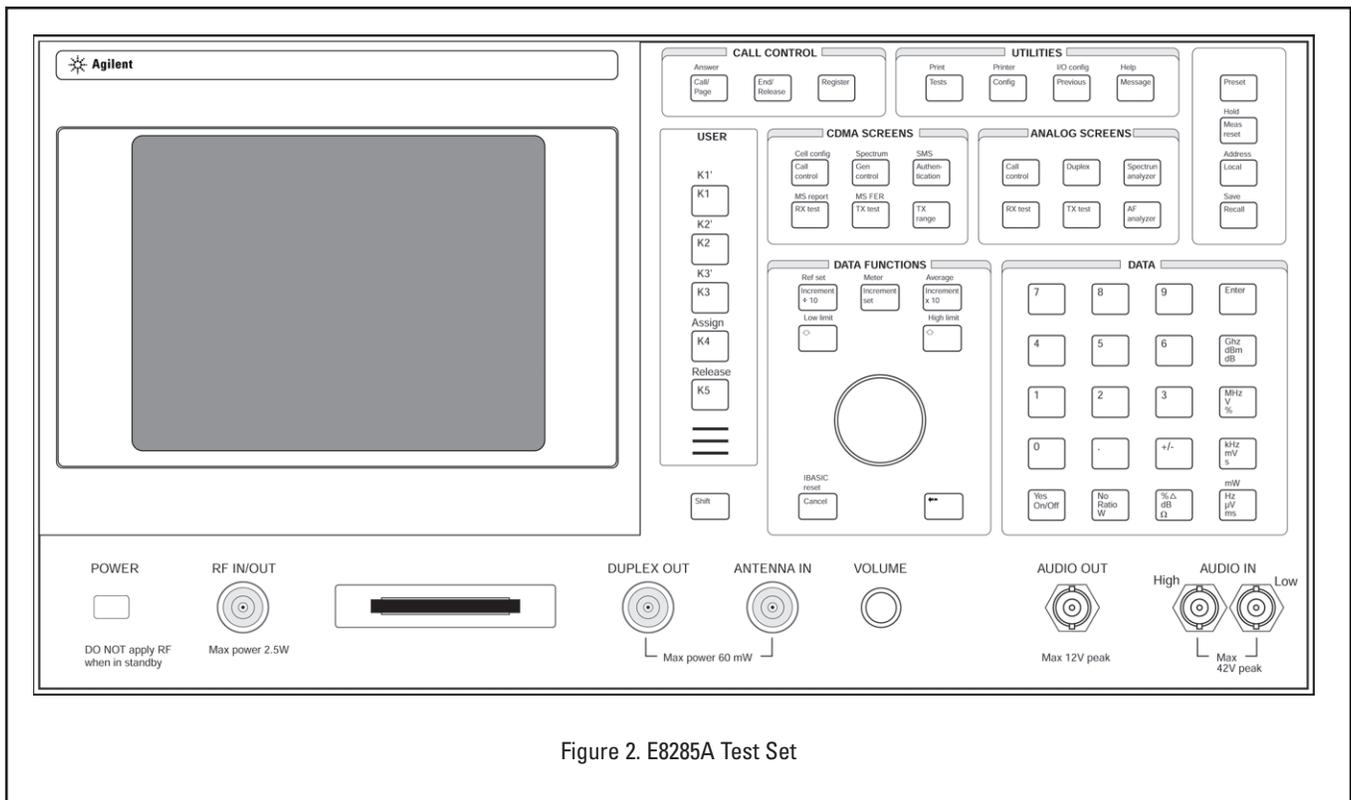


Figure 2. E8285A Test Set

Graphical Measurements

The Gated Power and Open Loop Time Response graphical measurements (as established by the corresponding standards bodies) have been added to the E8285A CDMA mobile station test set. The Gated Power measurement, for which the E8285A displays the time response of an ensemble of power control groups, is implemented on the 'CDMA Gated Power Test' screen (Figure 3). The Open Loop Time Response, for which the E8285A displays the time response of the mobile station's output power in response to a step change in the instrument's output power, is implemented on the 'Open Loop Time Response' screen (Figure 4). Graphical results, comparison to a mask, and pass/fail results are given for both measurements. The 8924C requires an external spectrum analyzer w/CDMA personality to perform these measurements.

No External Timebase Jumper Required

The 8924C uses an external jumper cable to connect the internal 10 MHz high-stability timebase to the reference input (Figure 5). To use an external user-supplied timebase, the jumper must be removed. The external timebase is then connected to the reference input.

The E8285A does not require an external timebase jumper. It switches automatically between the internal 10 MHz high-stability timebase and an externally supplied 1, 2, 5, or 10 MHz timebase. The external signal overrides the internal signal and a message is posted just under the Timebase field to notify the user that the E8285A has switched to the external input.

If the E8285A detects that the signal is no longer present (out-of-lock), then it automatically switches to the internal reference and posts a message just under the Timebase field indicating that the external signal was lost and that the internal reference is now in use. This can be caused by the user connecting an external reference that does not match the selected reference frequency, or by the user setting the Timebase field to Int (see Figure 5).

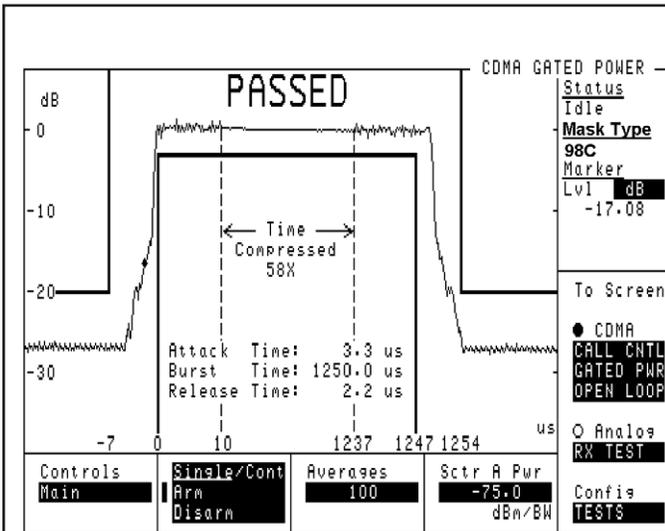


Figure 3. E8285A CDMA Gated power screen

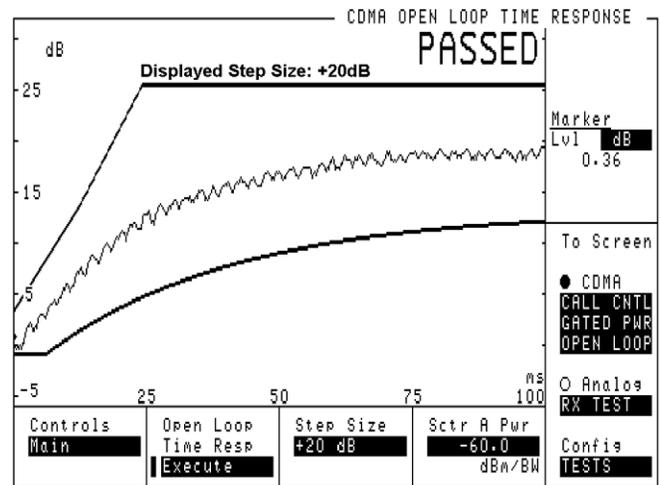


Figure 4. E8285A CDMA open-loop time response screen

Specifying Forward and Reverse External Losses Independently

The 8924C does not have the capability of specifying forward and reverse external losses independently. Rather, there is one field, the RF In/Out field on the CONFIGURE screen, in which losses or gains between the ports of the 8924C and the device-under-test can be entered (see Figure 6). The E8285A has the capability of specifying independent forward and reverse losses for bidirectional RF ports. Forward path loss can be entered on the RF Out field of the CONFIGURE screen. Reverse path loss can be entered on the RF In field of the CONFIGURE screen.

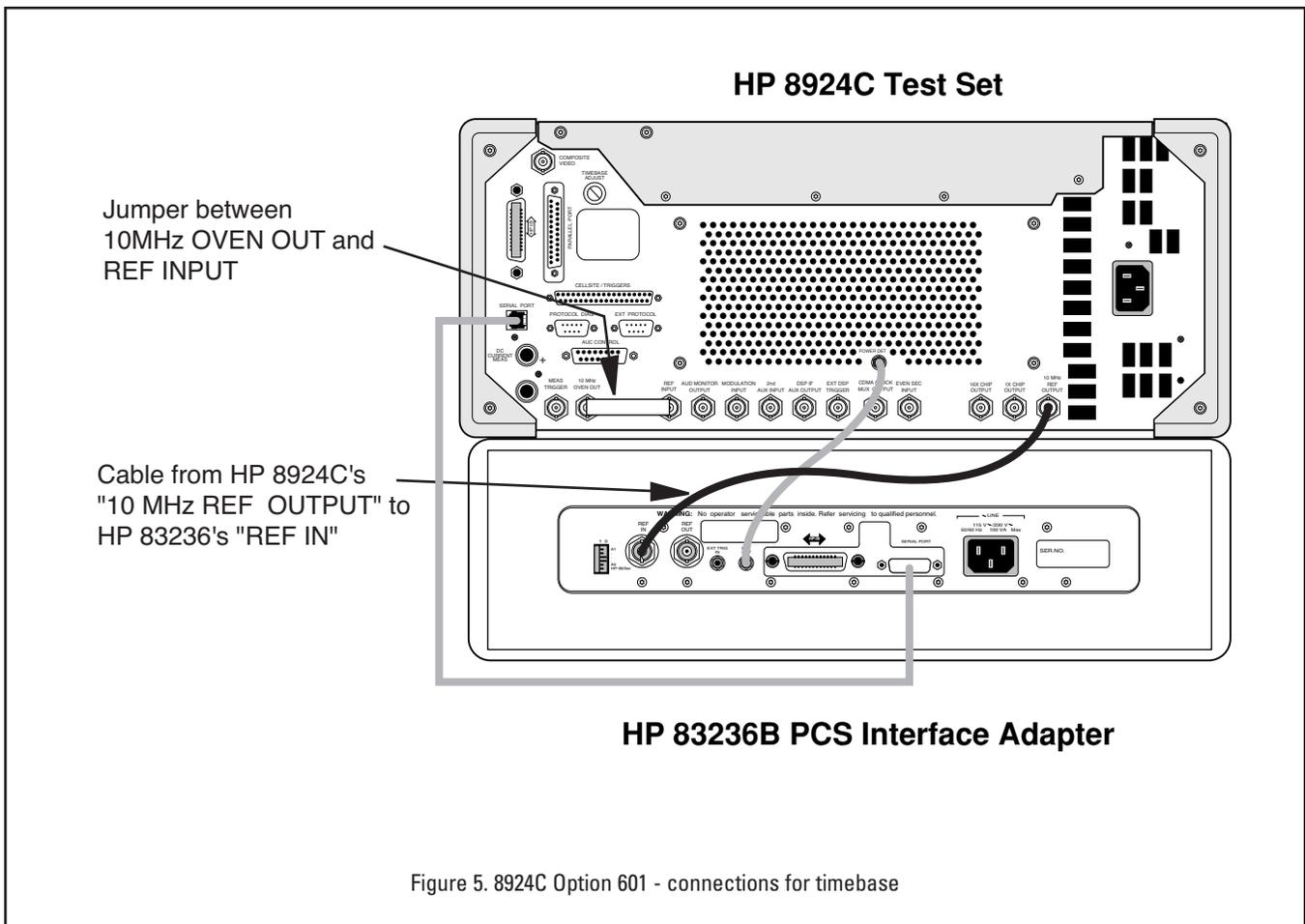
Greater Time Offset Capability

The 8924C has the ability to test phones with time offsets between -10 microseconds and +50 microseconds. The maximum time offset allowed can be set on the Time Offset field of the CONFIGURE screen to one of three settings:

- Normal (approx. -1 microsecond)
- -5 microseconds
- -10 microseconds

See Figure 4, which shows the CONFIGURE screen of the 8924C.

The E8925A also has the ability to test the phones with time offsets between -10 microseconds and +50 microseconds. However, the E8285A does not have a TIME OFFSET field. It automatically handles time offsets between -10 microseconds and +50 microseconds.



Indeterminate Measurement Result

The GPIB code of the 8285A is greater than 98% backward compatible with that of the 8924C. Minor changes will be required to existing 8924C software. For example, when no measurement is available, both the 8924C and the E8285A display “- - -” (see Figure 7). If an 8924C is being used, then when the measurement is queried by GPIB code, the GPIB bus will be held until a measurement result is available. In some cases a measurement may not be possible, so the GPIB bus is held indefinitely. To detect this situation and continue with remote operation, the remote control software must use a timeout routine. Typically, a timeout of 5 seconds is used.

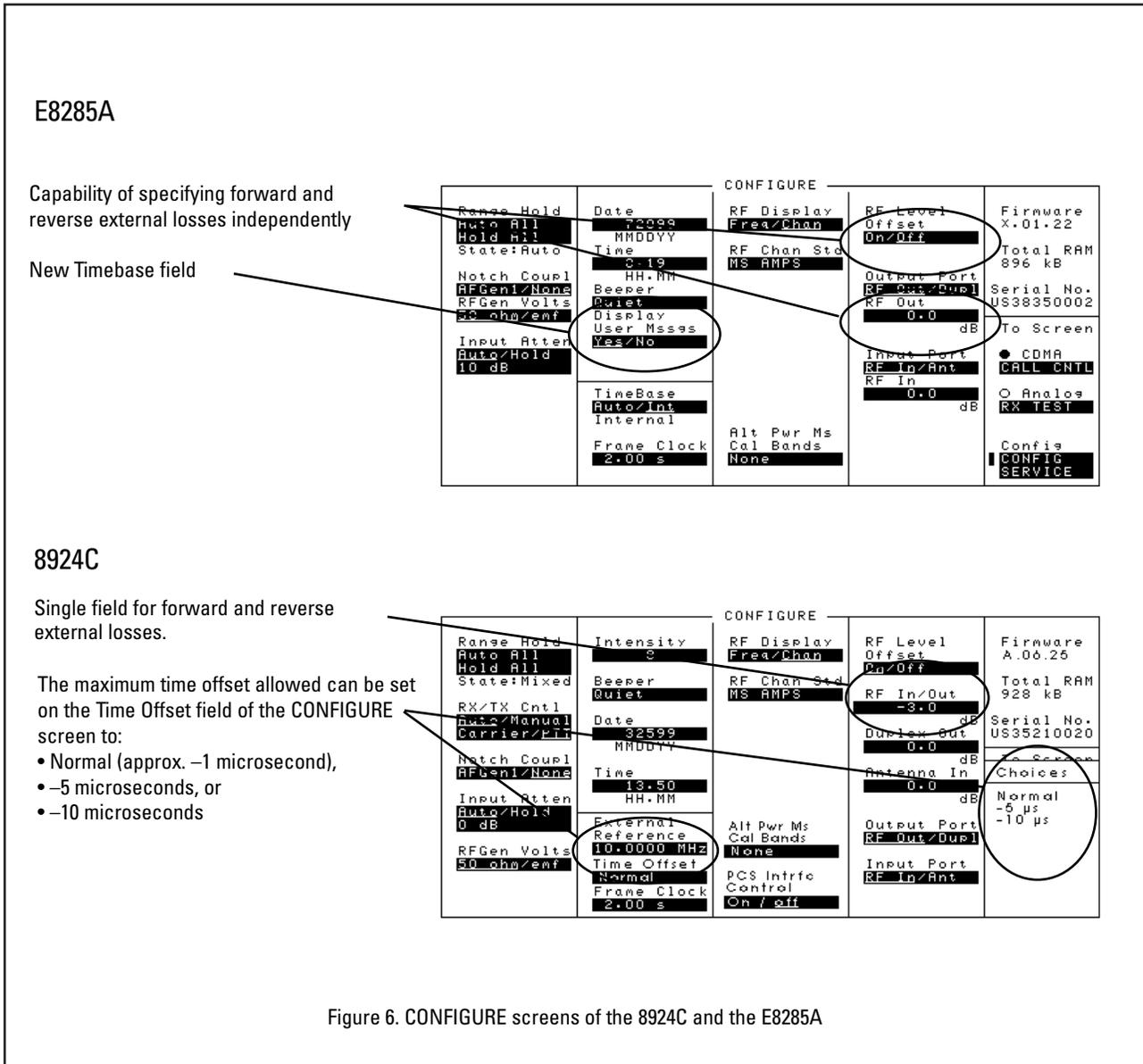
The E8285A will return a value of 1.7976931348623157e+308 (maximum real number) or 2147483647 (maximum integer) when a measurement produces an indeterminate result.

Thus, the E8285A will require different error handling in the case where no measurement is available.

NOTE: For those customers who do not want to revise their existing 8924C timeout routine, an GPIB command can be sent to the E8285A that will cause it to hold the GPIB bus until a measurement is available, rather than return the out-of-range value.

NOTE: As of firmware release version A.07.06, the 8924C can be set to return a value of 1.79769313e+308 (maximum real number) or 2147483647 (maximum integer) when a measurement produces an indeterminate result.

The application note, *Converting Software Written for the 8924C for Compatibility with the E8285A*, literature number 5968-4610E, an aid to converting from 8924C GPIB code to E8285A GPIB code.



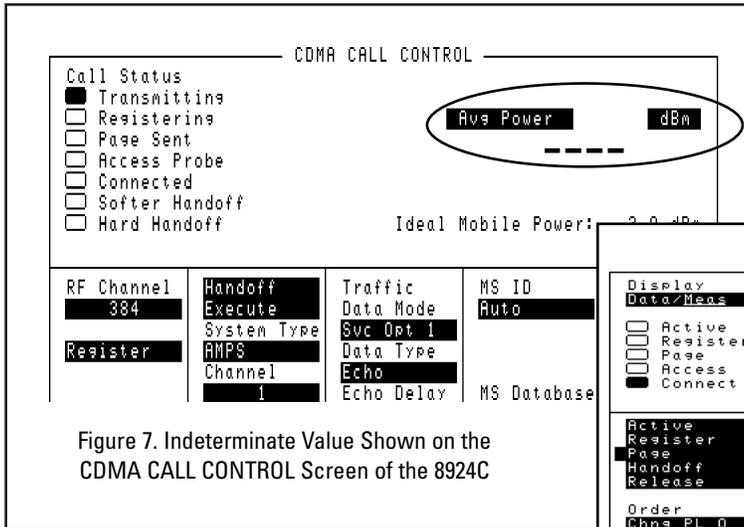


Figure 7. Indeterminate Value Shown on the CDMA CALL CONTROL Screen of the 8924C

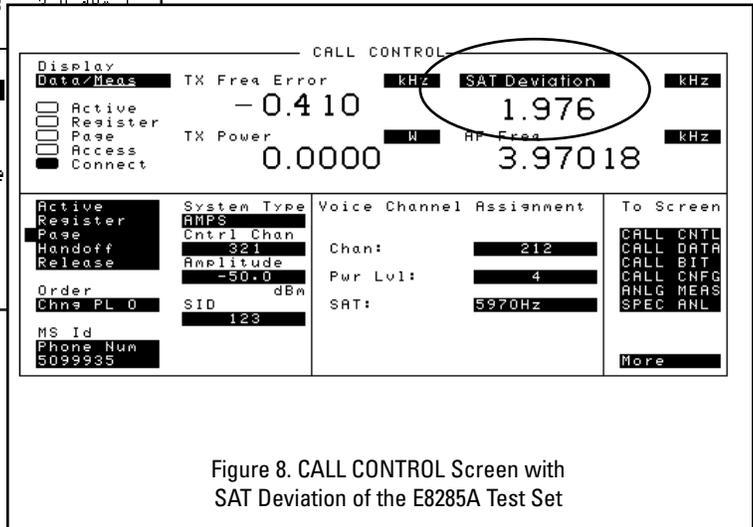


Figure 8. CALL CONTROL Screen with SAT Deviation of the E8285A Test Set

DSP-Based SAT Tone Deviation Measurement

The 8924C uses a 6 kHz bandpass filter for SAT tone measurements. The passband ripple of this filter can affect the accuracy of the SAT deviation measurement. Typically, FM measurement accuracy is $\pm 10\%$ when the 6 kHz bandpass filter is selected. A DSP-based SAT tone deviation measurement feature has been added to the E8285A (see Figure 8).

The DSP SAT deviation measurement in the E8285A is much more accurate (less than $\pm 2.5\%$ error) than the analog measurement made by the 8924C.

User Interface

New Display, Connectors, Front Panel Layout, and Key Layout

- The E8285A has a new, larger flat-panel electroluminescent display (9.7 cm by 13 cm) (Figure 2).
- The E8285A has Type N connectors on all RF inputs and outputs, whereas the 8924C has BNC connectors on the DUPLEX OUT and ANTENNA IN ports (see Figure 1).
- The front panel layout of the E8285A is somewhat different from that of the 8924C. For example, the memory card slot of the E8285A is just under the display, whereas that of the 8924C is to the far right of the front panel.
- The ANALOG SCREENS keys and the DATA FUNCTIONS keys of the E8285A have switched places relative to the 8924C (Figure 9).
- Front panel access to the SMS, AUTHENTICATION, and MS FER screens has been added to the E8285A.

Rear Panel Changes

The rear panel of the E8285A is significantly different from that of the 8924C (see Figure 10). For example, the E8285A uses 9-pin "D" connectors for all serial ports. These ports are not blocked by the attachment of any other cables (such as GPIB).

Smaller and Lighter

The E8285A is smaller and lighter than the 8924C. The E8285A is 8.75 inches high and 18 inches deep, whereas the 8924C Option 601 is 10 inches high and 23 inches deep.

The E8285A weighs 50 pounds. In comparison, the 8924C weighs 59 pounds, and 72 pounds when it is combined with the 83236B PCS interface.

Performance

Faster Overall Test Speed and Throughput

The E8285A has faster overall operation compared to the 8924C. The E8285A can test a CDMA dual-mode phone 10% faster than the 8924C for a typical CDMA mobile manufacturer's final test suite. The speed improvement stems from the following changes in the E8285A:

- A new host microprocessor which is 65% faster than that of the 8924C.
- Improved internal processor LAN communication speed.
- Faster GPIB operation
- Faster DSP-based measurements (rho, average power, channel/access power).
- The 8924C needs to communicate with the 83236B PCS interface when setting RF channels in the PCS frequency range. The E8285A does not use an 83236B for PCS frequencies. Its frequency switching speed has been greatly improved for PCS frequencies.

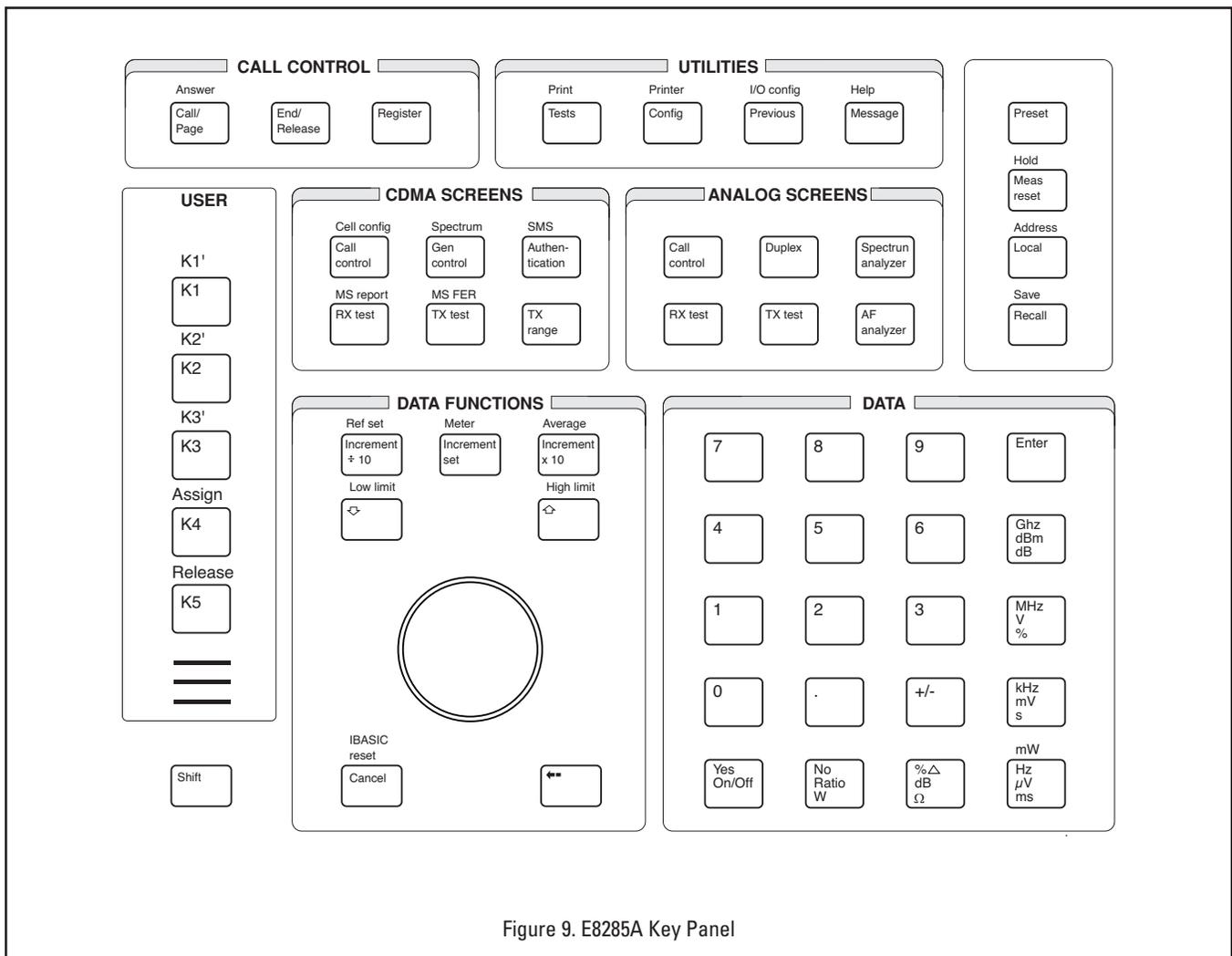


Figure 9. E8285A Key Panel

Lower Price

For Cellular and PCS tests, the 8924C is a less expensive Cellular-only test solution. The E8285A has a lower price than the 8924C Option 601.

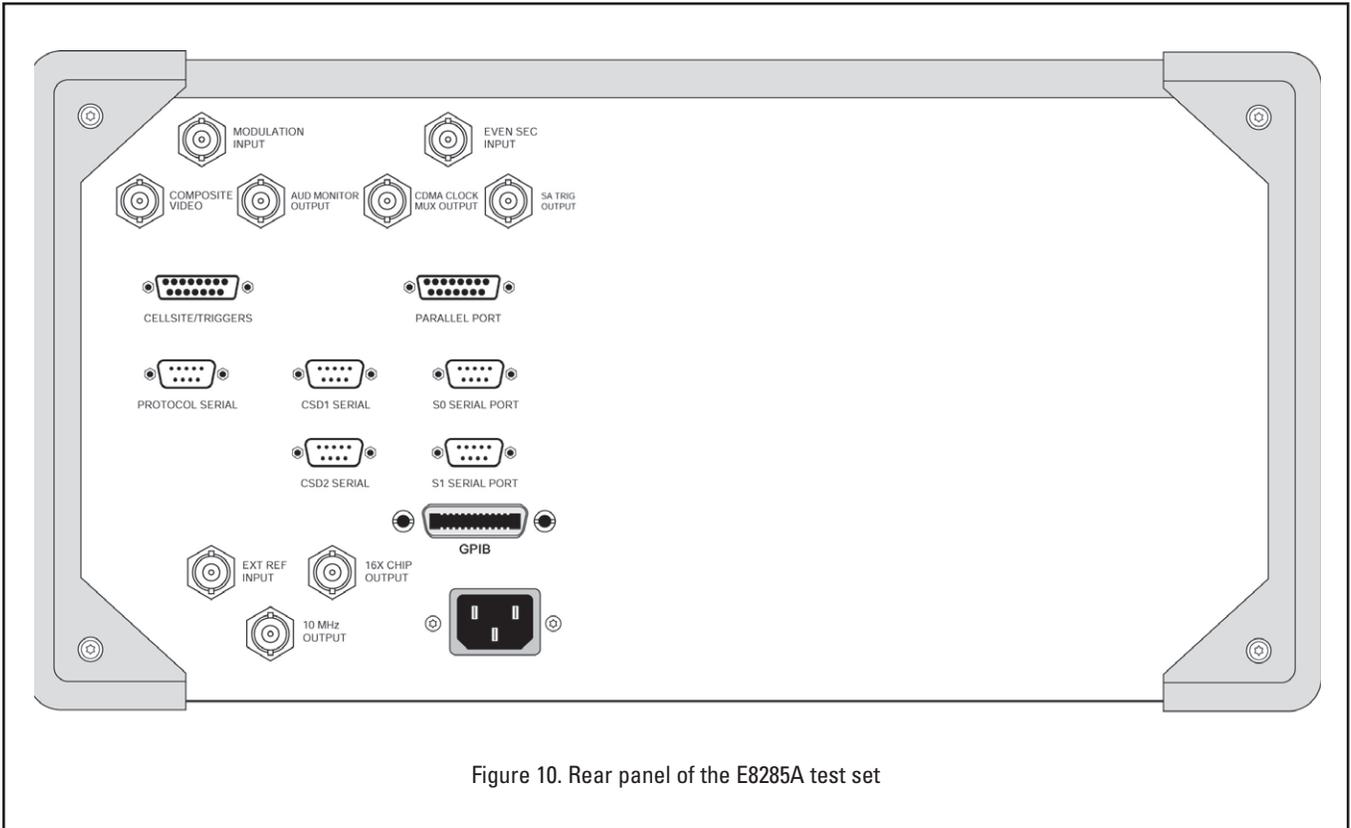


Figure 10. Rear panel of the E8285A test set

Key Specification Differences

CDMA Specifications

NOTE: 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.” The following data is subject to change without notice.

CDMA Specification	E8285A	8924C
Channel power accuracy	<i>Typically ±1.2 dB</i>	Standard: ±1 dB With 83236B: ±1.6 dB
Average power accuracy	<i>±7.5% (typically ±5%), 0 to 35 °C</i> Relative Humidity (RH) <50% <i>±7.5% (typically +5%)</i> 0 to 25% °C RH <85% ±10.5% at 35 to 55 °C, RH <50% ±12% at 35 to 55 °C, RH <90%	Standard: ±5% ±1 mW at 15 to 35 °C ±10% ±1 mW from 0 to 55 °C With 83236B: ±5% ±2.5 mW at 13 to 33 °C ±10% ±2.5 mW from 0 to 55 °C
Output Level RF In/Out	-109 dBm to -20 dBm	Standard: -109 dBm to -21.5 dBm With 83236B: -109 dBm to -20.01 dBm
Output Level Duplex Out RF Out Only	-127 dBm to -10 dBm	Standard: -127 dBm to -7.5 dBm With 83236B: -130 dBm to -10.01 dBm
Output Level Accuracy RF In/Out	AWGN Off: ±1.25 dB, 501 to 1000 MHz ±1.35 dB, 1700 to 2000 MHz AWGN On: ±1.75 dB, 501 to 1000 MHz ±1.85 dB, 1700 to 2000 MHz <i>Typically ±1 dB</i>	Standard: AWGN Off: ±1.5 dB AWGN On: ±2.0 dB With 83236B: AWGN Off: ±2.1 dB, at 15 to 35 °C ±2.3 dB, at 0 to 55 °C AWGN On: ±2.6 dB, at 15 to 35 °C ±2.8 dB, at 0 to 55 °C
RF Frequency Range	800 MHz to 1000 MHz 1700 MHz to 2000 MHz	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 MHz to 1999.999999 MHz
Maximum Input Power RF In/Out	2-5 W	3 W continuous
Maximum Input Power Duplex Out	60 mW	200 mW

Analog Specifications

NOTE: 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.” The following data is subject to change without notice.

Analog Specification	E8285A	8924C
Output Level RF In/Out	-127 dBm to -18 dBm	Standard: -127 dBm to -10.5 dBm With 83236B: -130 dBm to -20 dBm
Output Level Duplex Out RF Out Only	-127 dBm to -8 dBm	Standard: -127 dBm to +3.5 dBm With 83236B: -130 dBm to -10 dBm
SWR RF In/Out	<1.5:1	Standard: <1.5:1 With 83236B: <1.2:1
SWR Duplex Out RF Out Only	<1.7:1	Standard: <2.0:1 With 83236B: <1.6:1
Output Level Accuracy RF In/Out	±1.0 dB	Standard: ±1.2 dB With 83236B: ±1.8 dB, at 15 to 35 °C ±2.0 dB, at 0 to 55 °C
Output Level Accuracy Duplex out RF Out Only	±1.0 dB	Standard: ±1.0 dB With 83236B: ±1.8 dB, at 15 to 35 °C ±2.0 dB, at 0 to 55 °C
Maximum Input Level	+34 dBm (2.5 W)	+35 dBm (3 W)
RF Power Measurement Accuracy	±7.5% at 0 to 35 °C, Relative Humidity (RH) <50% ±7.5% at 0 to 25 °C, RH <85% ±10.5% at 35 to 55 °C, RH <50% ±12% at 35 to 55 °C, RH <90% <i>Typically 5%, 5%, 7%, and 10%, respectively</i>	±5% ±1 mW at 15 to 35 °C ±10% ±1 mW at 0 to 55 °C
RF Frequency Range	800 MHz to 1000 MHz 1700 MHz to 2000 MHz	Standard: 30 MHz to 1000 MHz With 83236B: 800 MHz to 960 MHz 1710 MHz to 1785 MHz 1805 MHz to 1910 MHz 1930 MHz to 1990 MHz usable from 1700 MHz to 1999.999999 MHz

NOTES

For more product information, visit our Web site at:

<http://www.agilent.com/find/E8285A>

Agilent Technologies' Test and Measurement Support, Services, and Assistance

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Our Promise

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