

**Agilent Technologies 8960 Series 10 Wireless Communications Test Set
Agilent Technologies E1966A 1xEV-DO Terminal Test Application**

Manual Operation Guide

Making C.S0033 Tests Manually

E1966A 1xEV-DO Terminal Test Application Revision: A.01

1000-1870 (not orderable)

© Copyright Agilent Technologies 2000-2003

www.agilent.com/find/8960/



Agilent Technologies

Notice

Information contained in this document is subject to change without notice.

All Rights Reserved. Reproduction, adaptation, or translation without prior written permission is prohibited, except as allowed under the copyright laws.

This material may be reproduced by or for the U.S. Government pursuant to the Copyright License under the clause at DFARS 52.227-7013 (APR 1988).

Agilent Technologies, Inc.
Learning Products Department
24001 E. Mission
Liberty Lake, WA 99019-9599
U.S.A.

Contents

Introduction	5
Performing Individual Measurements	6
Measuring Access Probe Power	7
General Procedure	7
Testing 3.1.2.3.1 Range of Open Loop Output Power	9
Measuring Channel Power	10
General Procedure	10
Testing 3.1.2.3.5 Minimum Controlled Output Power	11
Measuring Digital Average Power	12
General Procedure	12
Testing 3.1.2.3.4 Maximum RF Output Power	13
Measuring Packet Error Rate (PER)	15
General Procedure	15
Testing 3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN	17
Testing 3.1.1.3.1 Receiver Sensitivity and Dynamic Range	18
Measuring Time Response of Open Loop Power Control (TROLPC)	19
General Procedure	19
Testing 3.1.2.3.2 Time Response of Open Loop Power Control	21
Measuring TX Spurious Emissions	23
General Procedure	23
Testing 3.1.2.4.1 Conducted Spurious Emissions	26
Measuring Waveform Quality + Code Domain Power	27
General Procedure	27
Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy	30
Testing 3.1.2.3.7 RRI Channel Output Power	31
Testing 3.1.2.3.8 Code Domain Power	31
Appendix	33
Test Adherence to Standards	34

Contents

Standards Table	34
Calibrating the Test Set	36
Calibration Strategy	36
Description	36
Calibration Procedures	36
Recommended Calibration Intervals	38
How Do I Open a Session and Connection?	39
A. Configure Call Parameters	39
B. Open a Session	40
C. Configure the Connection	41
D. Open a Connection	41
How Do I Change Call Parameters?	42
How Do I Change Access Parameters?	44
A. Select the Access Parameters Menu.	44
B. Set an Access Parameter.	45
How Do I Change Channel Gain Parameters?	46
A. Select the Channel Gain Parameters Menu.	46
B. Set a Channel Gain Parameter.	47

Introduction

The intent of this guide is to help you quickly learn how to use the E1966A 1xEV-DO Terminal Test Application to manually make access terminal receiver and transmitter tests as specified in the C.S0033 standard.

The Appendix includes additional information to help you perform the C.S0033 tests:

- Test Adherence to Standards table that shows which tests are supported by the test set.
- General procedures that are required to set up the measurements.
- Calibration procedures that must be performed periodically when testing access terminals with the test set.

The scope of this guide does not cover the numerous features and capabilities of the test set. For additional information, refer to the E1966A Online User's Guide which is available at:

- <http://www.agilent.com/find/e1966a>, or
- User Documentation CD-ROM shipped with your application.

Performing Individual Measurements

This chapter demonstrates the step-by-step procedures for making the following tests specified in the C.S0033 standard:

- [“Testing 3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN” on page 17](#)
- [“Testing 3.1.1.3.1 Receiver Sensitivity and Dynamic Range” on page 18](#)
- [“Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy” on page 30](#)
- [“Testing 3.1.2.3.1 Range of Open Loop Output Power” on page 9](#)
- [“Testing 3.1.2.3.2 Time Response of Open Loop Power Control” on page 21](#)
- [“Testing 3.1.2.3.4 Maximum RF Output Power” on page 13](#)
- [“Testing 3.1.2.3.5 Minimum Controlled Output Power” on page 11](#)
- [“Testing 3.1.2.3.7 RRI Channel Output Power” on page 31](#)
- [“Testing 3.1.2.3.8 Code Domain Power” on page 31](#)
- [“Testing 3.1.2.4.1 Conducted Spurious Emissions” on page 26](#)

To learn more about which tests are supported by the test set, see [“Test Adherence to Standards” on page 34](#).

Measuring Access Probe Power

- “General Procedure”
- “Testing 3.1.2.3.1 Range of Open Loop Output Power”

General Procedure

NOTE Channel power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. The channel power calibration also calibrates the access probe power measurement. See “Calibrating the Test Set” on page 36 for details.

1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “How Do I Open a Session and Connection?” on page 39 for more details.
2. Initialize the access probe power measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the **Access Probe Power** measurement and press the knob.
3. Select **Access Probe Power Setup (F1)** to access the **Access Probe Power Setup** menu. From this menu you can configure measurement parameters such as **Measurement Timeout** and **Trigger Arm**, and also access parameters (such as **Open Loop Adjust** and **Preamble Length**), specified for some C.S0033 tests.

Access Probe Power Setup	Value
Open Loop Adjust	71 dB
Probe Power Step	0.0 dB
Probe Num Step	5
Probe Sequence Max	1
Preamble Length (Frames)	7
Trigger Arm	Continuous
Measurement Timeout	Off

4. Select **Close Menu (F6)** to close the **Access Probe Power Setup** window.
5. Set the access network to ignore all access attempts by setting **Call Limit Mode** to **On (F10)** on the **Call Parm 2 of 3** menu). See “How Do I Change Call Parameters?” on page 42 for more details.

Measuring Access Probe Power

NOTE It is recommended that you always turn Call Limit Mode on when measuring access probe power. The easiest way to induce access probes from the access terminal is to page the access terminal. If you do not have call limit mode set to on, when you page the access terminal, the connection will complete, which clears the access probe power result from the measurement screen.

Set call limit mode back to off when you have finished measuring access probe power.

6. If you wish to only capture the first access probe, set Trigger Arm to Single and press the **START SINGLE** key. When the Trigger Arm is set to Continuous, the test set will display the power level of the most recent access probe power measurement. In either case, a measurement result will not be returned until you complete step 7.

IMPORTANT If Trigger Arm is set to Single, you must press the **Start Single** key to arm the measurement. The measurement will not operate until you arm it by pressing the **Start Single** key.

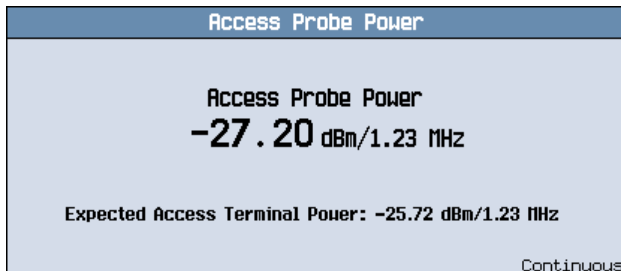
7. In order to perform the access probe power measurement, the access terminal must send an access probe. The easiest way to induce this is to page the AT (open a connection) by selecting Start Data Connection (**F3** on the Control 2 of 2 menu). When the AT sends an access probe in response the page, its power level will be measured and displayed.

8. After finishing the measurements:

- End the connection attempt by selecting End Data Connection (**F3** on the Control 2 of 2 menu).
- Turn the Call Limit Mode back to Off.
- Turn the access probe power measurement off by pressing the **Measurement selection** key, selecting Access Probe Power, then Close Measurement (**F4**).

IMPORTANT If the access probe power measurement is on and waiting to measure a probe, all other measurements (except digital average power) will not be able to execute. It is therefore recommended that you turn off the access probe power measurement before attempting any other measurements.

A typical display is shown below:



Testing 3.1.2.3.1 Range of Open Loop Output Power

For details on performing the steps below, see the [“General Procedure” on page 7](#) above.

1. Initialize the access probe measurement.
2. Set Probe Power Step to 0 dB. This ensures that all access probes in the probe sequence will transmit at the same power level, rather than incrementing in power. This is beneficial in manual operation if you are running the measurement in continuous mode for the purpose of measuring the power level of all of the probes rather than just the first probe in the sequence.
3. Set Probe Sequence Max to 1.
4. Set Preamble Length to 7.
5. Set Open Loop Adjust to 78 dB or 81 dB, depending upon band class.
6. C.S0033 specifies to set the AN forward packet activity to 100%. Forward packet activity is fixed in the test set, always set to 100%.
7. Set the access network to ignore all access attempts by setting Call Limit Mode to On.
8. Set I_{or} (Cell Power) to -25, -65 or approximately -95 dBm/1.23 MHz (value depends on band class and access terminal class) for tests 1-3 as specified by C.S0033.

IMPORTANT If Trigger Arm is set to Single, you must press the **Start Single** key to arm the measurement. The measurement will not operate until you arm it by pressing the **Start Single** key.

9. Send a page to the access terminal by selecting Start Data.
10. Measure access probe power.
11. Stop the page to the access terminal by selecting Stop Data Connection.
12. Perform steps 8-11 for tests 1-3.

Measuring Channel Power

- “General Procedure”
- “Testing 3.1.2.3.5 Minimum Controlled Output Power”

General Procedure

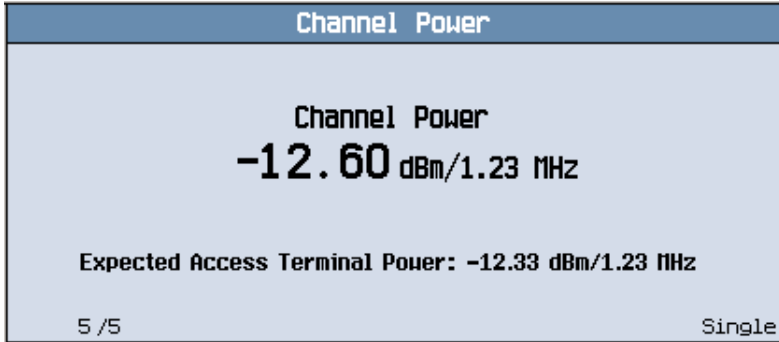
NOTE Channel power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. See “Calibrating the Test Set” on page 36 for details.

1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “How Do I Open a Session and Connection?” on page 39 for more details.
2. Open an RTAP connection (see “How Do I Open a Session and Connection?” on page 39 for more details):
 - Select Application Config (**F10** on the Call Parms menu).
 - Set Application to RTAP. Select Close Menu (**F6**)
 - Set RTAP Rate (**F12** on the Call Parms menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the channel power measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the Channel Power measurement and press the knob.
4. Select Channel Power Setup (**F1**) to access the Channel Power Setup menu. From this menu you can configure measurement parameters such as Multi-Measurement Count and Trigger Arm. For statistical measurement results, highlight the Multi-Measurement Count parameter and press the **ON** key. The number of averages will default to 10.

Channel Power Setup	Value
Multi-Measurement Count	5
Trigger Arm	Single
Measurement Timeout	0.5 s

5. Select **Close Menu (F6)** to close the **Channel Power Setup** window.
6. From the **Call Parms** menu, configure **Cell Power (F7)**, as needed.
7. Measure channel power:
 - If the **Trigger Arm** field is set to **Single**, press the **START SINGLE** key to trigger each measurement.
 - If the **Trigger Arm** field is set to **Continuous** the measurement began executing as soon as you initialized it in step 3.

A typical measurement result is shown below:



Testing 3.1.2.3.5 Minimum Controlled Output Power

For details on performing the steps below, see the [“General Procedure” on page 10](#) above.

1. Set up a Test Application session and open an RTAP connection with a Reverse Data Channel rate of 9.6 kbps.
2. Initialize the channel power measurement.
3. Set the **Call Drop Timer** to **Off (F9 on the Call Parms 2 of 3 menu)** to keep the test set from closing the connection based on the very low output power level of the access terminal.
4. Set $\hat{I}_{or}$ (**Cell Power, F7 on the Call Parms 1 of 3 menu**) to -25 dBm/1.23 MHz.
5. Set **Rvs Power Ctrl** to **All Down bits (F7 on the Call Parms 2 of 3 menu)** to transmit continuous down power control bits.
6. Measure channel power.

NOTE When you have finished testing, be sure to set **Reverse Closed Loop Power control** back to **Active Bits** to ensure that subsequent signalling is successful.

Measuring Digital Average Power

- “General Procedure”
- “Testing 3.1.2.3.4 Maximum RF Output Power”

General Procedure

NOTE Digital average power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. See “[Calibrating the Test Set](#)” on page 36 for details.

1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “[How Do I Open a Session and Connection?](#)” on page 39 for more details.
2. Open an RTAP connection (see “[How Do I Open a Session and Connection?](#)” on page 39 for more details):
 - Select Application Config (**F10** on the Call Parms menu).
 - Set Application to RTAP. Select Close Menu (**F6**)
 - Set RTAP Rate (**F12** on the Call Parms menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the digital average power measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the Digital Average Power measurement and press the knob.
4. Select Digital Average Power Setup (**F1**) to access the Digital Average Power Setup menu. From this menu you can configure measurement parameters such as Multi-Measurement Count and Trigger Arm. For statistical measurement results, highlight the Multi-Measurement Count parameter

and press the **ON** key. The number of averages will default to 10.

Digital Average Power Setup	Value
Multi-Measurement Count	5
Trigger Arm	Single
Measurement Timeout	1.0 s

5. Select Close Menu (**F6**) to close the Digital Average Power Setup window.
6. From the Call Parm's menu, configure Cell Power (**F7**), as needed.
7. Measure digital average power:
 - If the Trigger Arm field is set to Single, press the **START SINGLE** key to trigger each measurement.
 - If the Trigger Arm field is set to Continuous, the measurement began executing as soon as you initialized it in step 3.

A typical measurement result is shown below:

Digital Average Power
Digital Average Power -17.90 dBm Expected Access Terminal Power: -17.33 dBm/1.23 MHz 5 / 5 Single

Testing 3.1.2.3.4 Maximum RF Output Power

For details on performing the steps below, see the [“General Procedure” on page 12](#) above.

1. Initialize the digital average power measurement.
2. Set the following access parameters (see [“How Do I Change Access Parameters?” on page 44](#)):

Measuring Digital Average Power

- Set Open Loop Adjust to 81 dB or 84 dB, depending upon band class.
 - Set Probe Initial Adjust to 15 dB.
 - Set Probe Power Step to 7.5 dB/step (this step will be removed from C.S0033 in January 2003).
 - Set Probe Num Step to 15 probes/sequence (this step will be removed from C.S0033 in January 2003).
 - Set Probe Sequence Max to 15 sequences (this step will be removed from C.S0033 in January 2003).
3. Set up a Test Application session and open an RTAP connection with a Reverse Data Channel rate of 153.6 kbps.
 4. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 307.2 kbps (2-slot version), such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (**F11** on the Call Params menu) to 307.2 (2 Slot) and set ACK Channel Bit Fixed Mode to On (under Application Config, **F10**).
 5. Set $\hat{I}_{or}$ (Cell Power) to -105.5 dBm/1.23 MHz.
 6. Set Rvs Power Ctrl to All Up bits (**F7** on the Call Params 2 of 3 menu) to transmit continuous up power control bits.
 7. Measure digital average power.

NOTE	When you have finished testing, be sure to set Reverse Closed Loop Power control back to Active Bits to ensure that subsequent signalling is successful.
-------------	--

Measuring Packet Error Rate (PER)

- “General Procedure”
- “Testing 3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN”
- “Testing 3.1.1.3.1 Receiver Sensitivity and Dynamic Range”

General Procedure

1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “How Do I Open a Session and Connection?” on page 39 for more details.
2. Open an FTAP connection (see “How Do I Open a Session and Connection?” on page 39 for more details):
 - Select Application Config (**F10** on the Call Params menu).
 - Set Application to FTAP. Select Close Menu (**F6**)
 - Set FTAP Rate (**F11** on the Call Params menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the PER measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the Packet Error Rate measurement and press the knob.
4. Select Packet Error Rate Setup (**F1**) to access the Packet Error Rate Setup menu. From this menu you can configure measurement parameters such as Confidence Level and PER Requirement, and also Control Channel Data Rate, which is specified for some C.S0033 tests. You can also set AT Directed Packets, which helps you optimize PER test throughput.

Measuring Packet Error Rate (PER)

NOTE If “Limited TAP” is on while Application is set to FTAP, “AT Directed Packets” must not be greater than 50%.

Packet Error Rate Setup	Value
Confidence Level	95.00 %
PER Requirement	1.00 %
Maximum Packet Count	10000
Control Channel Data Rate	76.8 kbps
AT Directed Packets	50 %
Trigger Arm	Continuous
Measurement Timeout	Off

5. Select Close Menu (**F6**) to close the Packet Error Rate Setup window.
6. From the Call Params menu, configure Cell Power (**F7**) and FTAP Rate (**F11**), as needed.

NOTE If “Limited TAP” is on while “Application” is set to FTAP, “RTAP Rate” must be set to 9.6 kbps.

7. From the Control menu, configure AWGN Power (**F3**), as needed. (If you set AWGN Power too high relative to Cell Power, you may drop the connection).
8. Measure PER:
 - If the Trigger Arm field is set to Single, press the **START SINGLE** key to trigger each measurement.
 - If the Trigger Arm field is set to Continuous the measurement began executing as soon as you initialized it in step 3.

A typical display is shown below:

Packet Error Rate	
Confidence	PER
Pass	0.00 %
Packet Error Count:	0
Packets Tested:	327
Maximum Packet Count:	10000
Eb/Nt:	2.19 dB
PER Requirement:	1.00 %
Single	

Testing 3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN

For details on performing the steps below, see the [“General Procedure” on page 15](#) above.

1. C.S0033 specifies to set the AN forward packet activity to 100%. Forward packet activity is fixed in the test set, always set to 100%.
2. Set up a Test Application session and open an FTAP connection.
3. Initialize the PER measurement.
4. Set **AT Directed Packets** as needed (if “Limited TAP” is on, “AT Directed Packets” must not be greater than 50%, and “RTAP Rate” must be set to 9.6 kbps).
5. Set the **Control Channel Data Rate** to 38.4 kbps.
6. C.S0033 specifies to set Pilot Drop to -14 dB. Pilot Drop is a fixed parameter in the test set, always set to -14 dB.
7. Set $\hat{I}_{or}$ (Cell Power) to -55 dBm/1.23 MHz.
8. Set I_{oc} (AWGN Power) and Data Rate/Slots per Physical Layer Packet (FTAP Rate) for tests 1-20 as specified by C.S0033.
9. Set Confidence Level to 95% and PER Requirement as specified by C.S0033.
10. Set Maximum Packet Count as desired.
11. Measure PER for tests 1-20.

Measuring Packet Error Rate (PER)

Testing 3.1.1.3.1 Receiver Sensitivity and Dynamic Range

For details on performing the steps below, see the [“General Procedure” on page 15](#) above.

1. Set up a Test Application session and open an FTAP connection.
2. Initialize the PER measurement.
3. Set `AT Directed Packets` as needed (if “Limited TAP” is on, “AT Directed Packets” must not be greater than 50%, and “RTAP Rate” must be set to 9.6 kbps).
4. Test 1 Receiver Sensitivity: Set FTAP Rate to 307.2 (2 Slot) and $\hat{I}_{or}$ (Cell Power) to -105.5 dBm/1.23 MHz.
5. Test 2 Dynamic Range: Set FTAP Rate to 2457.6 (1 Slot) and $\hat{I}_{or}$ (Cell Power) to -25 dBm/1.23 MHz.
6. Set Confidence Level to 95% and PER Requirement to 0.50%.
7. Set Maximum Packet Count as desired.
8. Measure PER for each test.

Measuring Time Response of Open Loop Power Control (TROLPC)

- [“General Procedure”](#)
- [“Testing 3.1.2.3.2 Time Response of Open Loop Power Control”](#)

General Procedure

NOTE Channel power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. The channel power calibration also calibrates the TROLPC measurement.

1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session.
 2. Open an RTAP connection (see [“How Do I Open a Session and Connection?”](#) on page 39 for more details):
 - Select Application Config (**F10** on the Call Parms menu).
 - Set Application to RTAP.
 - C.S0033 does not specify that the R-ACK Channel must be active for 3.1.2.3.2 Time Response of Open Loop Power Control. If the R-ACK Channel is active during this test, the access terminal's power may fall outside of the mask specifications. To help ensure that your access terminal does not fail this test, you should disable the R-ACK Channel as follows:
 - Set ACK Channel Bit Fixed Mode Attribute to Off.
 - Set AT Directed Packets to 0%.
-

IMPORTANT After completing TROLPC testing, you must return “ACK Channel Bit Fixed Mode Attribute” to on and set “AT Directed Packets” to a non-zero value, if needed.

- Select Close Menu (**F6**).
 - Set RTAP Rate (**F12** on the Call Parms menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the TROLPC measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the Time Response of Open Loop Power Control measurement and press the knob.
-

NOTE If any measurements are open during initiation of a TROLPC, the test set will automatically close them and display an error message indicating the last measurement that was closed.

Measuring Time Response of Open Loop Power Control (TROLPC)

4. Select Time Response of OLPC Setup (F1) to access the Time Response of OLPC Setup menu. You can also configure AT directed packets and ACK channel bit fixed mode attribute from this menu.

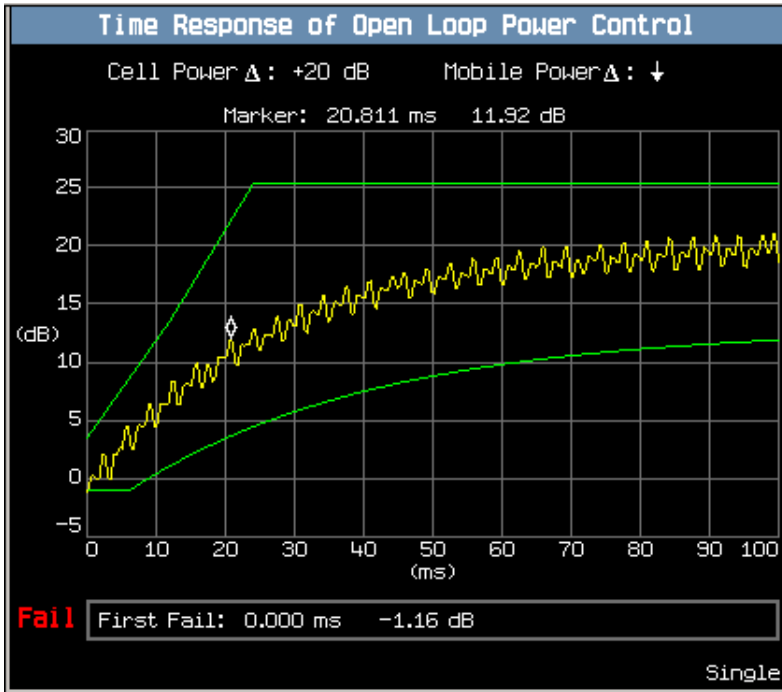
Time Response of OLPC Setup	Value
AT Directed Packets	50 %
ACK Channel Bit Fixed Mode Attribute	Off
Measurement Timeout	Off

5. Select Close Menu (F6) to close the Time Response of OLPC Setup window.
6. From the Call Parms menu, configure Cell Power (F7), as needed.
7. Measure TROLPC:
- Select Start Meas Up (F2), which automatically increases Cell Power by 20 dB and captures the resulting access terminal output power for 100 ms, or
 - Select Start Meas Down (F3) which automatically decreases Cell Power by 20 dB and captures the resulting access terminal output power for 100 ms.
 - You may also select START SINGLE to start the measurement. The cell power will increase by 20 dB if Start Meas Up was last performed (or if the test set is in a preset state), or decrease by 20 dB if Start Meas Down was last performed.
8. After the measurement has completed, select Marker (F4) and turn the knob to display power at points along the access terminal output power trace. If the test failed, next to the word “Fail,” the first data point at which the test failed is displayed.

NOTE As specified by C.S0033, the AT output power level curve is shown in absolute terms. The delta expressions above the display indicate the direction of power change.

Measuring Time Response of Open Loop Power Control (TROLPC)

An example of a “Fail” test result is shown below.



IMPORTANT After completing TROLPC testing, you must return “ACK Channel Bit Fixed Mode Attribute” to on and set “AT Directed Packets” to a non-zero value appropriate for your test setup.

Testing 3.1.2.3.2 Time Response of Open Loop Power Control

For details on performing the steps below, see the “General Procedure” on page 19 above.

1. Set up a Test Application session and open an RTAP connection with a Reverse Data Channel rate of 9.6 kbps.
2. Configure the Test Application FTAP so that the ACK Channel is not transmitted by the access terminal, by setting ACK Channel Bit Fixed Mode Attribute to Off and AT Directed Packets to 0%.
3. Initialize the TROLPC measurement.
4. Set $\hat{I}_{or}$ (Cell Power) to -60 dBm/1.23 MHz.
5. C.S0022 specifies to send alternating ‘0’ and ‘1’ power control bits on the Forward Traffic Channel. When you start the TROLPC measurement, the test set automatically sends alternating closed loop power control

Measuring Time Response of Open Loop Power Control (TROLPC)

bits during the test.

6. Measure TROLPC:

- Select Start Meas Up (F2), (cell power transitions to -40 dBm/1.23 MHz), and note the pass/fail result.
- Select Start Meas Down (F3), (cell power transitions to -60 dBm/1.23 MHz), and note the pass/fail result.
- Select Start Meas Down (F3), (cell power transitions to -80 dBm/1.23 MHz), and note the pass/fail result.
- Select Start Meas Up (F2), (cell power transitions to -60 dBm/1.23 MHz), and note the pass/fail result.

Measuring TX Spurious Emissions

- “General Procedure”
- “Testing 3.1.2.4.1 Conducted Spurious Emissions”

General Procedure

NOTE Channel power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. The channel power calibration also calibrates the TX spurious emissions measurement. See “Calibrating the Test Set” on page 36 for details.

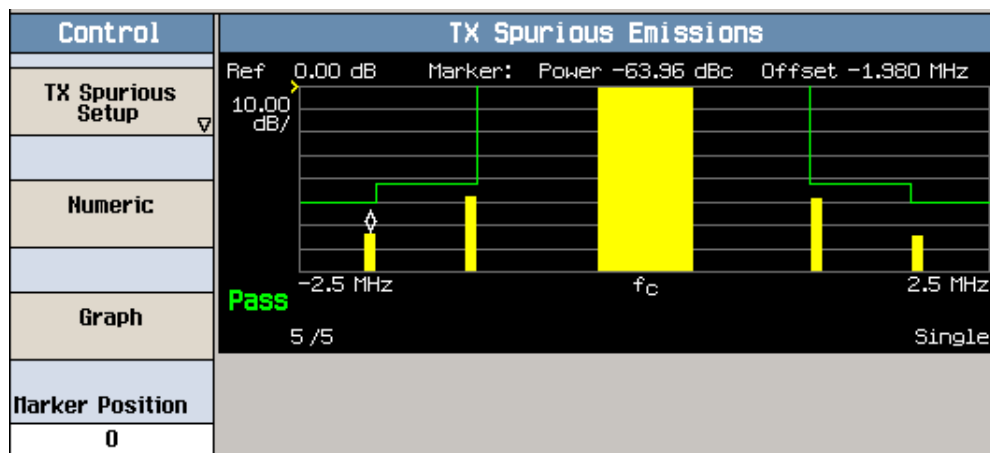
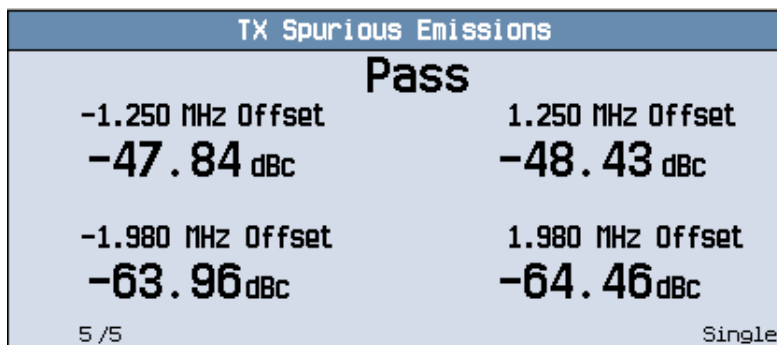
1. Connect the access terminal to the test set's front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “How Do I Open a Session and Connection?” on page 39 for more details.
2. Open an RTAP connection (see “How Do I Open a Session and Connection?” on page 39 for more details):
 - Select Application Config (**F10** on the Call Parms menu).
 - Set Application to RTAP. Select Close Menu (**F6**)
 - Set RTAP Rate (**F12** on the Call Parms menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the TX spurious emissions measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the TX Spurious Emissions measurement and press the knob.
4. Select TX Spurious Emissions Setup (**F1**) to access the TX Spurious Emissions Setup menu. From this menu you can configure measurement parameters such as Mask Control and Adjacent Limit and Alternate Limit. (These parameters are only available when Mask Control is set to Manual. For statistical measurement results, highlight the Multi-Measurement Count parameter and press the **ON** key. The number of averages will default to 10.

Measuring TX Spurious Emissions

TX Spurious Emissions Setup	Value
Multi-Measurement Count	5
Open Loop Adjust	81 dB
Mask Control	Auto
Adjacent Limit	-42.00 dB
Alternate Limit	-50.00 dB
Trigger Arm	Single
Measurement Timeout	5.0 s

5. Select Close Menu (**F6**) to close the TX Spurious Emissions Setup window.
6. From the Call Parms menu, configure Cell Power (**F7**), as needed.
7. Measure TX spurious emissions:
 - If the Trigger Arm field is set to Single, press the **START SINGLE** key to trigger each measurement.
 - If the Trigger Arm field is set to Continuous, the measurement began executing as soon as you initialized it in step 3.
8. Select Graph (**F3**) to display a graphical view of the results, or Numeric (**F2**) to display numeric results.
9. When viewing the graphical display, you can select Marker Position (**F4**) and turn the knob to display the spurious emissions levels at each of the frequency offsets.

Typical numeric and graphical measurement results are shown below:



Measuring TX Spurious Emissions

Testing 3.1.2.4.1 Conducted Spurious Emissions

For details on performing the steps below, see the [“General Procedure” on page 23](#) above.

1. Initialize the TX spurious emissions measurement.
2. Set Open Loop Adjust to 81 dB or 84 dB, depending upon band class (Open Loop Adjust is available from the TX Spurious Emissions Setup (**F1**) window).
3. Set the following access parameters (see [“How Do I Change Access Parameters?” on page 44](#)):
 - Set Probe Initial Adjust to 15 dB.
 - Set Probe Power Step to 7.5 dB/step (this step will be removed from C.S0033 in January 2003).
 - Set Probe Num Step to 15 probes/sequence (this step will be removed from C.S0033 in January 2003).
 - Set Probe Sequence Max to 15 sequences (this step will be removed from C.S0033 in January 2003).
4. Set up a Test Application session and open an RTAP connection with a Reverse Data Channel rate of 153.6 kbps.
5. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 307.2 kbps (2-slot version), such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (**F11** on the Call Params menu) to 307.2 (2 Slot) and set ACK Channel Bit Fixed Mode to On (under Application Config, **F10**).
6. Set $\hat{I}_{or}$ (Cell Power) to -105.5 dBm/1.23 MHz.
7. Set Rvs Power Ctrl to All Up bits (**F7** on the Call Params 2 of 3 menu) to transmit continuous up power control bits.
8. Measure TX Spurious Emissions, and note the pass/fail result.

NOTE	When you have finished testing, be sure to set Reverse Closed Loop Power control back to Active Bits to ensure that subsequent signalling is successful.
-------------	--

Measuring Waveform Quality + Code Domain Power

- “General Procedure” on page 27
- “Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy” on page 30
- “Testing 3.1.2.3.7 RRI Channel Output Power” on page 31
- “Testing 3.1.2.3.8 Code Domain Power” on page 31

General Procedure

NOTE Channel power calibration should be performed if the test set is being used for the first time or the operating environment has changed significantly since the last calibration was performed. The channel power calibration also calibrates the waveform quality + code domain measurement. See “Calibrating the Test Set” on page 36 for details.

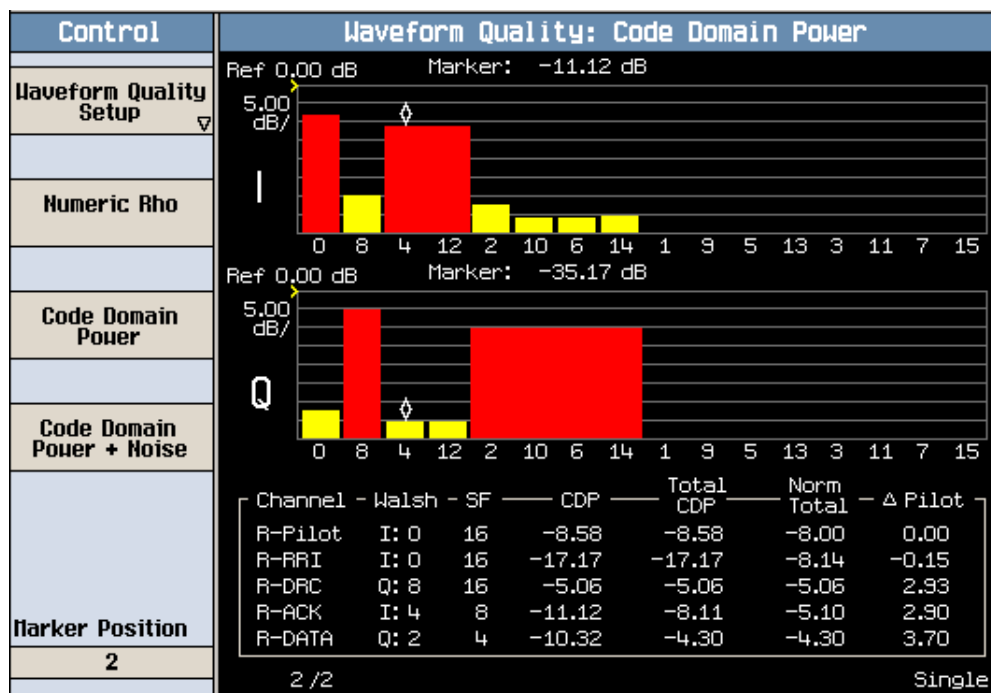
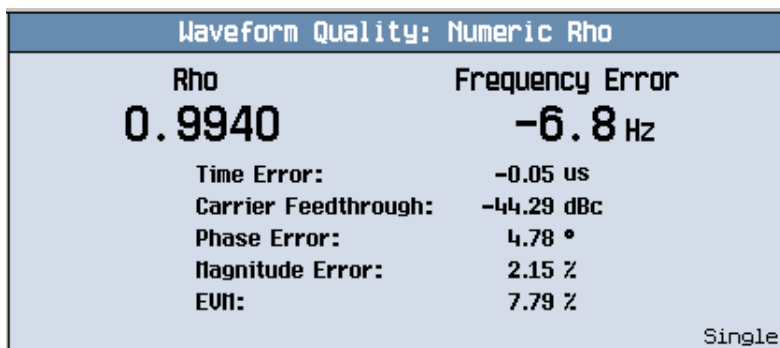
1. Connect the access terminal to the test set’s front panel **RF IN/OUT** connector and power it on. If the access terminal does not automatically open a session, perform whatever actions are necessary to open a session. See “How Do I Open a Session and Connection?” on page 39 for more details.
2. Open an RTAP connection (see “How Do I Open a Session and Connection?” on page 39 for more details):
 - Select Application Config (**F10** on the Call Parms menu).
 - Set Application to RTAP. Select Close Menu (**F6**)
 - Set RTAP Rate (**F12** on the Call Parms menu), as needed.
 - Select Start Data Connection (**F3** on the Control 2 of 2 menu).
3. Initialize the waveform quality + code domain measurement:
 - Press the **Measurement selection** key.
 - Turn the knob to highlight the Waveform Quality + Code Domain measurement and press the knob.
4. Select Waveform Quality + Code Domain Setup (**F1**) to access the Waveform Quality + Code Domain Setup menu. From this menu you can configure measurement parameters such as Slots to Measure and DRC Channel Gain. For statistical measurement results, highlight the Multi-Measurement Count parameter and press the **ON** key. The number of averages will default to 10.

Measuring Waveform Quality + Code Domain Power

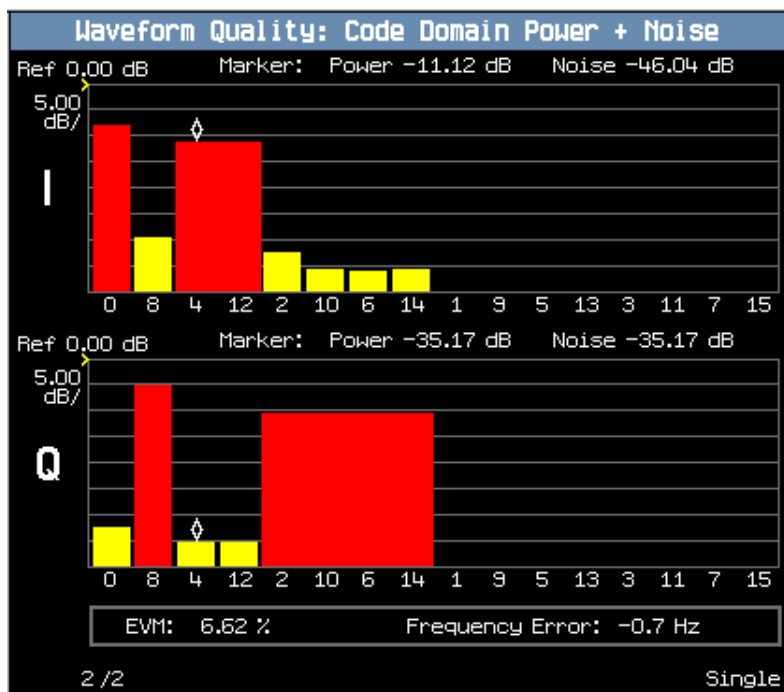
Waveform Quality Setup	Value
Multi-Measurement Count	Off
Slots To Measure	1
Ack Channel Gain	3.0 dB
DRC Channel Gain	3.0 dB
Trigger Arm	Continuous
Measurement Timeout	Off

5. Select **Close Menu (F6)** to close the Waveform Quality + Code Domain Setup window.
6. From the **Call Params** menu, configure **Cell Power** and **RTAP Rate**, as needed.
7. Measure waveform quality + code domain noise:
 - If the **Trigger Arm** field is set to **Single**, press the **START SINGLE** key to trigger each measurement.
 - If the **Trigger Arm** field is set to **Continuous**, the measurement began executing as soon as you initialized it in step 3.
8. Select **Numeric Rho (F2)** to view the waveform quality results, **Code Domain Power (F3)** or **Code Domain Power + Noise (F4)** to view the code domain results.
9. When viewing the code domain results, you can select **Marker Position (F6)** and turn the knob to select a Walsh code and display its power.

Typical measurement results are shown below:



Measuring Waveform Quality + Code Domain Power



Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy

For details on performing the steps below, see the [“General Procedure” on page 27](#) above.

1. Set up a Test Application session and open an RTAP connection with RTAP Rate set to 9.6 kbps.
2. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 38.4 kbps, and such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (F11) to 38.4 kbps and set ACK Channel Bit Fixed Mode to On (under Application Config, F10).
3. Initialize the waveform quality + code domain measurement.
4. Set Slots to Measure to 1.
5. Set $\hat{I}_{or}$ (Cell Power) to -75 dBm/1.23 MHz.
6. Measure waveform quality + code domain.
7. Select Numeric Rho (F2) to view the Rho, Frequency Error and Time Error results.

Testing 3.1.2.3.7 RRI Channel Output Power

For details on performing the steps below, see the [“General Procedure” on page 27](#) above.

1. Set up a Test Application session and open an RTAP connection.
2. Initialize the waveform quality + code domain measurement.
3. Set Slots to Measure to 8.
4. Set $\hat{I}_{or}$ (Cell Power) to -75 dBm/1.23 MHz.
5. Measure waveform quality + code domain.
6. Select Code Domain Power (F3) to view the R-RRI Δ Pilot result (available in the last column of the table of data).

Testing 3.1.2.3.8 Code Domain Power

For details on performing the steps below, see the [“General Procedure” on page 27](#) above.

Testing 3.1.2.3.8.1 DRC Channel Output Power

1. Initialize the waveform quality + code domain measurement.
2. Set Slots to Measure to 2.
3. Set DRC Channel Gain to 0 dB.
4. Set up a Test Application session and open an RTAP connection.
5. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 38.4 kbps, and such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (F11) to 38.4 kbps and set ACK Channel Bit Fixed Mode to On (under Application Config, F10).
6. Set $\hat{I}_{or}$ (Cell Power) to -75 dBm/1.23 MHz.
7. Measure waveform quality + code domain.
8. Select Code Domain Power (F3) to view the R-DRC Δ Pilot result (available in the last column of the table of data).
9. Set DRC Channel Gain to 3 dB and repeat steps 5 and 6.

Measuring Waveform Quality + Code Domain Power

Testing 3.1.2.3.8.2 ACK Channel Output Power

1. Initialize the waveform quality + code domain measurement.
2. Set Slots to Measure to 2.
3. Set ACK Channel Gain to 0 dB.
4. Set up a Test Application session and open an RTAP connection.
5. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 38.4 kbps, and such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (F11) to 38.4 kbps and set ACK Channel Bit Fixed Mode to On (under Application Config, F10).
6. Set $\hat{I}_{or}$ (Cell Power) to -75 dBm/1.23 MHz.
7. Measure waveform quality + code domain.
8. Select Code Domain Power (F3) to view the R-ACK Δ Pilot result (available in the last column of the table of data).
9. Set ACK Channel Gain to 3 dB and repeat steps 5 and 6.

Testing 3.1.2.3.8.3 Data Channel Output Power

1. Initialize the waveform quality + code domain measurement.
2. Set Slots to Measure to 2.
3. Set Data Offset Nom and Data Offset <rate> (for all rates) to 0 dB (see [“How Do I Change Channel Gain Parameters?” on page 46](#)).
4. Set up a Test Application session and open an RTAP connection with RTAP Rate set to 9.6 kbps.
5. C.S0033 specifies to configure the Test Application FTAP with a Forward Traffic Channel rate of 38.4 kbps, and such that the ACK Channel is transmitted at all the slots. To do this, set FTAP Rate (F11) to 38.4 kbps and set ACK Channel Bit Fixed Mode to On (under Application Config, F10).
6. Set $\hat{I}_{or}$ (Cell Power) to -75 dBm/1.23 MHz.
7. Measure waveform quality + code domain.
8. Select Code Domain Power (F3) to view the R-Data Δ Pilot result (available in the last column of the table of data).
9. Repeat steps 5 and 6 with RTAP rates of 19.2, 38.4 and 76.8 kbps.
10. Repeat steps 5 and 6 with an RTAP rate of 153.6 kbps. Then use the marker to measure the power in all inactive Walsh codes.

Appendix

This Appendix includes some general setup procedures that are required to perform the tests, and other helpful information:

- [“Test Adherence to Standards” on page 34](#)
- [“Calibrating the Test Set” on page 36](#)
- [“How Do I Open a Session and Connection?” on page 39](#)
- [“How Do I Change Call Parameters?” on page 42](#)
- [“How Do I Change Access Parameters?” on page 44](#)
- [“How Do I Change Channel Gain Parameters?” on page 46](#)

Test Adherence to Standards

Standards Table

This table lists the capabilities of the E1966A 1xEV-DO Terminal Test Application. This test capability is effective with the release of revision A.01.20.

Table 1. Support of C.S0033 Tests

C.S0033 Test	Supported by E1966A?	Comments
3.1.1 Receiver Tests		
3.1.1.1 Frequency Coverage Requirements	Yes	Supports Band Classes 0, 1, 3, 4, 5, 6 and 9.
3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN	Yes	See “Testing 3.1.1.2.1 Demodulation of Forward Traffic Channel in AWGN” on page 17.
3.1.1.2.2 Demodulation of Forward Traffic Channel in Multipath Fading Channel	Partially	Requires external fader and AWGN generator.
3.1.1.2.3 Decision of Power Control Bit for Channels Belonging to Different Power Control Sets During Soft Handoff	No	Requires soft handoff capability.
3.1.1.2.4 Decision of Power Control Bit for Channels Belonging to the Same Power Control Set	No	Requires soft handoff capability.
3.1.1.2.5 Demodulation of Reverse Power Control Channel During Soft Handoff	No	Requires soft handoff capability.
3.1.1.3.1 Receiver Sensitivity and Dynamic Range	Yes	See “Testing 3.1.1.3.1 Receiver Sensitivity and Dynamic Range” on page 18.
3.1.1.3.2 Single Tone Desensitization	Partially	Requires external CW signal generator.
3.1.1.3.3 Intermodulation Spurious Response Attenuation	Partially	Requires two external CW signal generators.
3.1.1.3.4 Adjacent Channel Selectivity	Partially	Requires external HRPD (1xEV-DO) and CDMA sources.
3.1.1.3.5 Receiver Blocking Characteristics	Partially	Requires external CW signal generator.
3.1.1.4.1 Conducted Spurious Emissions	No	Requires full spectrum analyzer
3.1.1.4.2 Radiated Spurious Emissions	No	Requires full spectrum analyzer
3.1.2 Transmitter Tests		

Table 1. Support of C.S0033 Tests

C.S0033 Test	Supported by E1966A?	Comments
3.1.2.1.1 Frequency Coverage	Yes	Supports Band Classes 0, 1, 3, 4, 5, 6 and 9.
3.1.2.1.2 Frequency Accuracy	Yes	See “Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy” on page 30.
3.1.2.2.1 Time Reference	Partially	Supports static time reference only. See “Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy” on page 30.
3.1.2.2.2 Waveform Quality and Frequency Accuracy	Yes	See “Testing 3.1.2.2.2 Waveform Quality and Frequency Accuracy” on page 30.
3.1.2.2.3 Redundant ACK Transmission	No	Requires dynamic ACK response.
3.1.2.3.1 Range of Open Loop Output Power	Partially	Supports 100% forward packet activity only. See “Testing 3.1.2.3.1 Range of Open Loop Output Power” on page 9
3.1.2.3.2 Time Response of Open Loop Power Control	Yes	See “Testing 3.1.2.3.2 Time Response of Open Loop Power Control” on page 21
3.1.2.3.3 Range of Closed Loop Power Control	Partially	Supports tests 1 and 3-6, Minimum Standard (a) only, by remote program only.
3.1.2.3.4 Maximum RF Output Power	Yes	See “Testing 3.1.2.3.4 Maximum RF Output Power” on page 13
3.1.2.3.5 Minimum Controlled Output Power	Yes	See “Testing 3.1.2.3.5 Minimum Controlled Output Power” on page 11
3.1.2.3.6 Standby Output Power	Partially	Supports idle standby output power fully. Supports measurement of standby power between access probe bursts by remote program only.
3.1.2.3.7 RRI Channel Output Power	Yes	See “Testing 3.1.2.3.7 RRI Channel Output Power” on page 31
3.1.2.3.8.1 DRC Channel Output Power	Yes	See “Testing 3.1.2.3.8 Code Domain Power” on page 31
3.1.2.3.8.2 ACK Channel Output Power	Yes	See “Testing 3.1.2.3.8 Code Domain Power” on page 31
3.1.2.3.8.3 Data Channel Output Power	Partially	Does not support test 6. See “Testing 3.1.2.3.8 Code Domain Power” on page 31
3.1.2.4.1 Conducted Spurious Emissions	Yes	Supports adjacent and alternate channels only. “Testing 3.1.2.4.1 Conducted Spurious Emissions” on page 26
3.1.2.4.2 Radiated Spurious Emissions	Partially	Requires external spectrum analyzer.
3.1.2.4.3 Occupied Bandwidth	Partially	Requires external spectrum analyzer.

Calibrating the Test Set

Calibration Strategy

Various calibration routines must be run to ensure measurement accuracy. The type of calibration and appropriate intervals for performing calibrations vary with each application.

Description

There are four calibrations that must be performed periodically on the test set:

- Channel Power calibration
- Digital Average Power calibration
- I/Q calibration
- Spectrum Monitor calibration

Calibration Procedures

- Channel Power Calibration

To perform the channel power calibration from the front panel, initialize the Channel Power measurement and press the Calibrate Channel Power softkey. To perform a channel power calibration from a remote program, use the “CALibration:CPOwer?” command. During Channel Power calibration no power should be applied to the front panel.

Channel Power calibration takes about two minutes.

This calibration generates calibration data for the following measurements:

- “Access Probe POver Measurement Description”
- “Channel Power Measurement Description”
- “Time Response of Open Loop Power Control (TROLPC) Measurement Description”
- “TX Spurious Emissions Measurement Description”
- “Waveform Quality + Code Domain Measurement Description”
- Spectrum Monitor

During calibration the internal temperature of the test set will be measured and calibration data will be generated that covers the measurement amplitude range of the available frequency bands. During channel power measurements, the test set will once again measure the internal temperature and calibrate the temperature measurement that was made when calibration data was generated.

An integrity bit is set true and is returned with Channel Power measurement results when the measurement is uncalibrated due to temperature drift.

- Digital Average Power Calibration

To perform the digital average power calibration, initialize the Digital Average Power measurement and press the Calibrate Digital Avg Pwr softkey. To perform a digital average power calibration from a remote program, use the “CALibration DAPower?” command. During Digital Average Power calibration no power should be applied to the front panel RF IN/OUT connector.

Digital average power measurement calibration loops back a CDMA signal from within the test set to the average power meter to generate a table of calibration values.

Digital Average Power measurement calibration takes about ten minutes.

Power must be cycled off then back on after the Digital Average Power calibration routine has completed.

- I/Q Calibration

This calibration is required if the Baseband Generator or the Vector Output modules are serviced or swapped. The CALibration:IQ subsystem should not be used as part of frequent (i.e. daily, weekly or monthly) test set calibration.

Manually initiating the IQ calibration routines requires pressing the SYSTEM CONFIG hardkey, then pressing the 1 of 2 hardkey, then pressing the Service softkey.

- Spectrum Monitor Calibration

The spectrum monitor must be calibrated for each test application or lab application in your test set, as well as for each format within a fast switching test application or lab application. For example, if you calibrate the spectrum monitor while the GSM format of the GSM_AMPS/136_GPRS_W-CDMA fast switching test application is active, you must also calibrate the spectrum monitor while the AMPS/136, GPRS, and W-CDMA formats are active, individually.

The spectrum monitor is automatically calibrated when performing a channel power calibration (see [“Channel Power Calibration” on page 36](#)). Similarly, the channel power calibration is run as part of the spectrum monitor calibration.

To perform the spectrum monitor calibration from the front panel, initiate the spectrum monitor by pressing **Instrument selection**, and then selecting Spectrum Monitor from the menu. Next, select Trigger Setup (F4), then Calibrate Measurement (F11). To perform this calibration from a remote program, use the “CALibration SMONitor” command. During spectrum monitor calibration, no power should be applied to the front panel RF IN/OUT connector.

The spectrum monitor calibration takes less than 5 minutes.

Remotely initiating any of the calibration routines is accomplished through the use of single query-only headers. The test set returns a numeric value indicating the outcome of the calibration attempt.

Calibrating the Test Set

Recommended Calibration Intervals

Table 2.

Condition:	Calibrating Channel Power Measurements	Calibrating Digital Average Power Measurements	I/Q Calibration	Spectrum Monitor Calibration
When Test Set is being used for the first time (allow 30-minute warm-up period).	✓			✓
After firmware is upgraded or after switching between revisions of the application	✓	✓		✓
If the ambient temperature changes more than 10 degrees C since latest calibration	✓			✓
Once every month	✓			✓
Once every year	✓	✓		✓
If Baseband Generator or Vector Output modules are serviced			✓	

How Do I Open a Session and Connection?

A. Configure Call Parameters

1. Press the **CALL SETUP** key.
2. Select Operating Mode (**F1**) and set the operating mode to Active Cell.
3. Configure the parameters necessary for your access terminal to find service with the test set, such as Cell Power, Cell Band and Channel (see [“How Do I Change Call Parameters?” on page 42](#)).

How Do I Open a Session and Connection?

B. Open a Session

A session can only be established from the access terminal. The test set can not open a session.

1. Turn on the access terminal and wait for it to open a session.
2. Check for Session Open in the Active Cell status field.

Call Setup Screen									
Call Control		Active Cell Operating Mode						Call Params	
Operating Mode		Access Terminal Information (AT Reported) Session Seed: 0x605B927A Hardware ID Type (Hex): 0x010000 ESN Hardware ID (Hex): 0x7403BA66 Hardware ID (Decimal): 116-00244326						Cell Power	
Active Cell								-55.00	
								dBm/1.23 MHz	
								Cell Band	
								US PCS	
								Channel	
Start Data Connection		Access Terminal Information (AN Assigned) UATI 024: 1 UATI Color Code: 64 MAC Index: 5						500	
Close Session		Access Terminal Information (User Entered) AT Max Power: 23 dBm/1.23 MHz						Application Config ▾	
Handoff Setup ▾		Application Configuration Application FTAP Limited TAP: Off AT Directed Packets: 50 %						FTAP Rate	
								307.2 kbps	
								(2 Slot, QPSK)	
AT Max Power								RTAP Rate	
23 dBm/1.23 MHz								9.6 kbps	
						Active Cell		Sys Type: IS-856	
						Session Open			
1 of 2									
		IntRef		Offset				FTAP	
								1 of 3	

The Access Terminal Information will also become populated with values.

C. Configure the Connection

1. Select Application Config (F10) and set Application, Limited TAP, and AT Directed Packets as needed (see “How Do I Change Call Parameters?” on page 42).
2. Set FTAP Rate and RTAP Rate as needed (see “How Do I Change Call Parameters?” on page 42).

D. Open a Connection

1. Select Start Data Connection (F3 on Call Control 1 of 2) to page the access terminal.

Call Setup Screen									
Call Control	Active Cell Operating Mode						Call Parms		
Operating Mode	Access Terminal Information (AT Reported) Session Seed: 0x6D5B927A Hardware ID Type (Hex): 0x010000 ESN Hardware ID (Hex): 0x7403BA66 Hardware ID (Decimal): 116-00244326						Cell Power		
Active Cell							-55.00		
							dBm/1.23 MHz		
							Cell Band		
							US PCS		
							Channel		
End Data Connection	Access Terminal Information (AM Assigned) UATI 024: 1 UATI Color Code: 64 NAC Index: 5						500		
Close Session	Access Terminal Information (User Entered) AT Max Power: 23 dBm/1.23 MHz						Application Config ▾		
							FTAP Rate		
Handoff Setup ▾	Application Configuration Application FTAP Limited TAP: Off AT Directed Packets: 50 %						307.2 kbps		
							(2 Slot, QPSK)		
AT Max Power							RTAP Rate		
23 dBm/1.23 MHz							9.6 kbps		
			Active Cell Connected		Sys Type: IS-856				
1 of 2			IntRef	Offset			FTAP		1 of 3

2. Check for Connected in the Active Cell status field.

How Do I Change Call Parameters?

Call Setup Screen											
Control		Active Cell Operating Mode					Call Parms				
g Mode		Access Terminal Information (AT Reported) Session Seed: 0x605B927A Hardware ID Type (Hex): 0x010000 ESN Hardware ID (Hex): 0x7403BA66 Hardware ID (Decimal): 116-00244326 Access Terminal Information (AN Assigned) UATI 024: 1 UATI Color Code: 64 MAC Index: 5 Access Terminal Information (User Entered) AT Max Power: 23 dBm/1.23 MHz Application Configuration Application FTAP Limited TAP: Off AT Directed Packets: 50 %					Cell Power			Call Parms	
e Cell							-55.00			Rvs Power Ctrl	
							dBm/1.23 MHz			Active bits	
							Cell Band			Pwr Ctrl Step	
		US PCS			1.0 dB		Rcvr Power Ctrl				
Data		Channel			Call Drop Timer		Auto				
ection		500			On						
					Application Config		Meas Frequency				
se					FTAP Rate		Auto				
sion					307.2 kbps						
					(2 Slot, QPSK)						
doff					RTAP Rate						
up					9.6 kbps						
Power											
1.23 MHz											
if 2		Active Cell			Sys Type: IS-856						
		Session Open									
		IntRef Offset			FTAP			1 of 3			
								2 of 3			
								3 of 3			

1. Press the **CALL SETUP** key.
2. Select any **Call Parms** softkey (**F7** to **F12**) to select a parameter.
3. Change the parameter as needed using the knob and/or keypad.
4. Select **More** (**1 of 3**) under **Call Parms** for additional call parameters.

Select **Application Config** (**F10**) to configure Application, Limited TAP, AT Directed Packets and ACK Channel Bit Fixed Mode Attribute

Application Configuration	Value
Application	FTAP
Limited TAP (AT Firmware Rel 3.1)	Off
AT Directed Packets	50 %
ACK Channel Bit Fixed Mode Attribute	On

Your settings are displayed in the **Application Configuration** window on the **Call Setup** screen (and **FTAP** or **RTAP** is displayed at the bottom of the screen, to indicate the **Application** setting).

Application Configuration	
Application:	FTAP
Limited TAP:	Off
AT Directed Packets:	50 %
ACK Channel Bit Fixed Mode Attribute: On	

How Do I Change Access Parameters?

A. Select the Access Parameters Menu.

1. Press the **CALL SETUP** key.
2. Select **More** (1 of 2) under Call Control.
3. Select Access Network Info (F2).

Call Setup Screen									
AN Info		Access Network Information						Call Params	
Cell Parameters ▾ Channel Gain Parameters ▾ Access Parameters ▾ Return		Cell Parameters Sector ID (Hex): FEA0:0000:0000:0000:0000:0000:0001 Country Code: 310 Color Code: 64 Subnet Mask: 104 Control Channel Data Rate: 76.8 kbps Preferred Control Channel Cycle: Off						Cell Power -55.00 dBm/1.23 MHz	
								Cell Band US PCS	
								Channel 500	
								Application Config ▾	
								FTAP Rate 307.2 kbps (2 Slot, QPSK)	
		Channel Gain Parameters Data Offset Nom: 0.0 dB Data Offset 9k6: 0.00 dB Data Offset 19k2: 0.00 dB Data Offset 38k4: 0.00 dB Data Offset 76k8: 0.00 dB Data Offset 153k6: 0.00 dB Ack Channel Gain: 3.0 dB DRC Channel Gain: 3.0 dB				Access Parameters Open Loop Adjust: 81 dB Probe Initial Adjust: 0 dB Probe Power Step: 1.0 dB Probe Num Step: 5 Probe Sequence Max: 1 Preamble Length (Frames): 2		RTAP Rate 9.6 kbps	
		Active Cell Session Open				Sys Type: IS-856			
		IntRef Offset				FTAP		1 of 3	

4. Select Access Parameters (F4).

B. Set an Access Parameter.

1. Turn the knob to highlight a parameter and then press the knob.

Call Setup Screen									
AN Info	Access Network Information						Call Parms		
Cell Parameters ▾	Cell Parameters						Cell Power		
	Sector ID (Hex): FE40:0000:0000:0000:0000:0000:0001						-55.00		
	Country Code: 310						dBm/1.23 MHz		
	Color Code: 64						Cell Band		
Channel Gain Parameters ▾	Subnet Mask: 104						US PCS		
	Control Channel Data Rate: 76.8 kbps						Channel		
Access Parameters ▾	Preferred Control Channel Cycle: Off						500		
	Access Parameters						Value		
	Open Loop Adjust						81 dB		
	Probe Initial Adjust						0 dB		
	Probe Power Step						1.0 dB		
	Probe Num Step						5		
	Probe Sequence Max						1		
Close Menu	Preamble Length (Frames)						2		
	Active Cell				Sys Type: IS-856				
	Session Open								
		IntRef	Offset			FTAP	1 of 3		

2. Enter a value or selection and press the knob.
3. Select Close Menu (F6).

How Do I Change Channel Gain Parameters?

A. Select the Channel Gain Parameters Menu.

1. Press the **CALL SETUP** key.
2. Select **More** (1 of 2) under Call Control.
3. Select Access Network Info (F2).

Call Setup Screen									
AN Info	Access Network Information						Call Params		
	Cell Parameters Sector ID (Hex): FEA0:0000:0000:0000:0000:0000:0001 Country Code: 310 Color Code: 64 Subnet Mask: 104 Control Channel Data Rate: 76.8 kbps Preferred Control Channel Cycle: Off						Cell Power		
Cell Parameters ▾							-55.00		
							dBm/1.23 MHz		
							Cell Band		
Channel Gain Parameters ▾							US PCS		
							Channel		
							500		
Access Parameters ▾							Application Config ▾		
							FTAP Rate		
							307.2 kbps		
							(2 Slot, QPSK)		
							RTAP Rate		
Return							9.6 kbps		
			Active Cell			Sys Type: IS-856			
			Session Open						
			IntRef	Offset				FTAP	
									1 of 3

4. Select Channel Gain Parameters (F3).

B. Set a Channel Gain Parameter.

1. Turn the knob to highlight a parameter and then press the knob.

Call Setup Screen									
AN Info	Access Network Information						Call Params		
Cell Parameters ▾	Cell Parameters Sector ID (Hex): FE40:0000:0000:0000:0000:0000:0001 Country Code: 310 Color Code: 64 Subnet Mask: 104 Control Channel Data Rate: 76.8 kbps Preferred Control Channel Cycle: Off						Cell Power		
							-55.00		
							dBm/1.23 MHz		
							Cell Band		
Channel Gain Parameters ▾							US PCS		
							Channel		
							500		
	Channel Gain Parameters						Value		
Access Parameters ▾	Data Offset Nom						0.0 dB		
	Data Offset 9k6						0.00 dB		
	Data Offset 19k2						0.00 dB		
	Data Offset 38k4						0.00 dB		
	Data Offset 76k8						0.00 dB		
	Data Offset 153k6						0.00 dB		
Close Menu	Ack Channel Gain						3.0 dB		
	DRC Channel Gain						3.0 dB		
	Active Cell				Sys Type: IS-856				
	Session Open								
		IntRef	Offset				FTAP	1 of 3	

2. Enter a value or selection and press the knob.
3. Select Close Menu (F6).

How Do I Change Channel Gain Parameters?