

UBS Component Identification

The UBS is comprised of the following modules (see [Figure 1-2](#)):

- Power Distribution Unit (PDU)
- DMI (Digital Module Internal)
- XMI (Transceiver Module Internal)
- SSI (Site Span I/O)
- IDRf (Integrated Duplexers & RF Filters)
- CRMS (Cellular Remote Monitoring System)
- External GPS (Optional)
- QHSO (Optional)

Figure 1-5 UBS Site Span I/O Panel

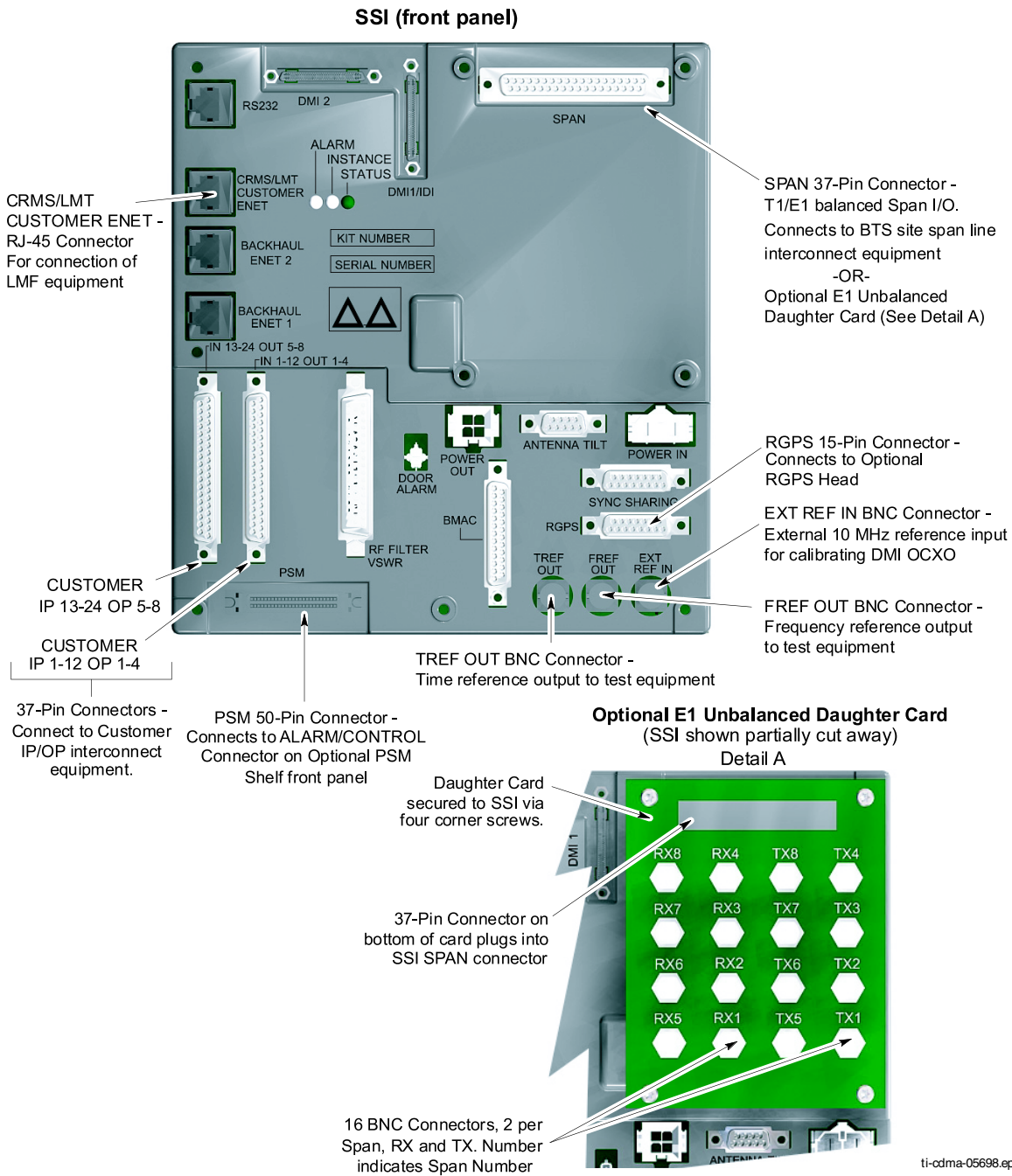
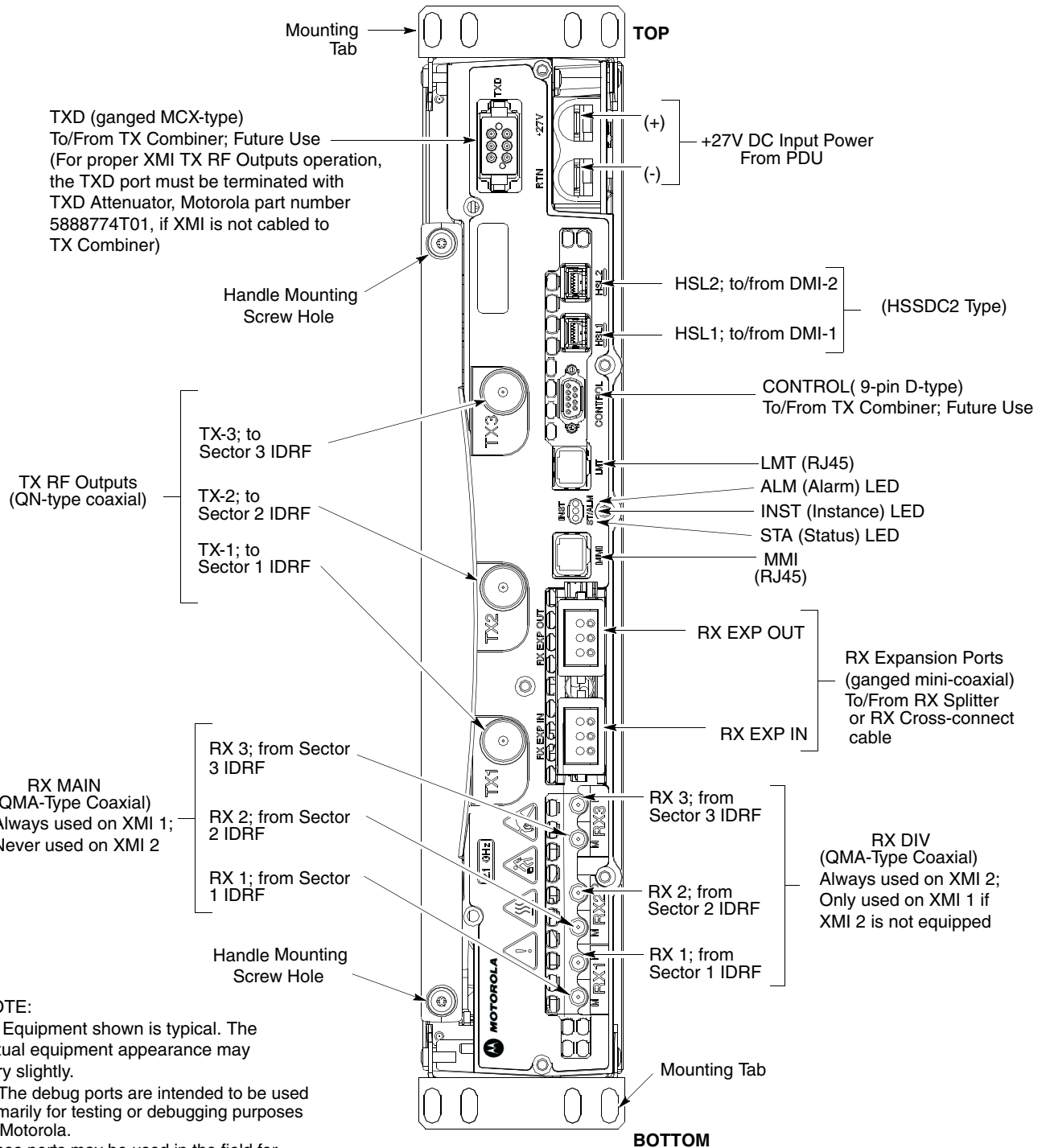
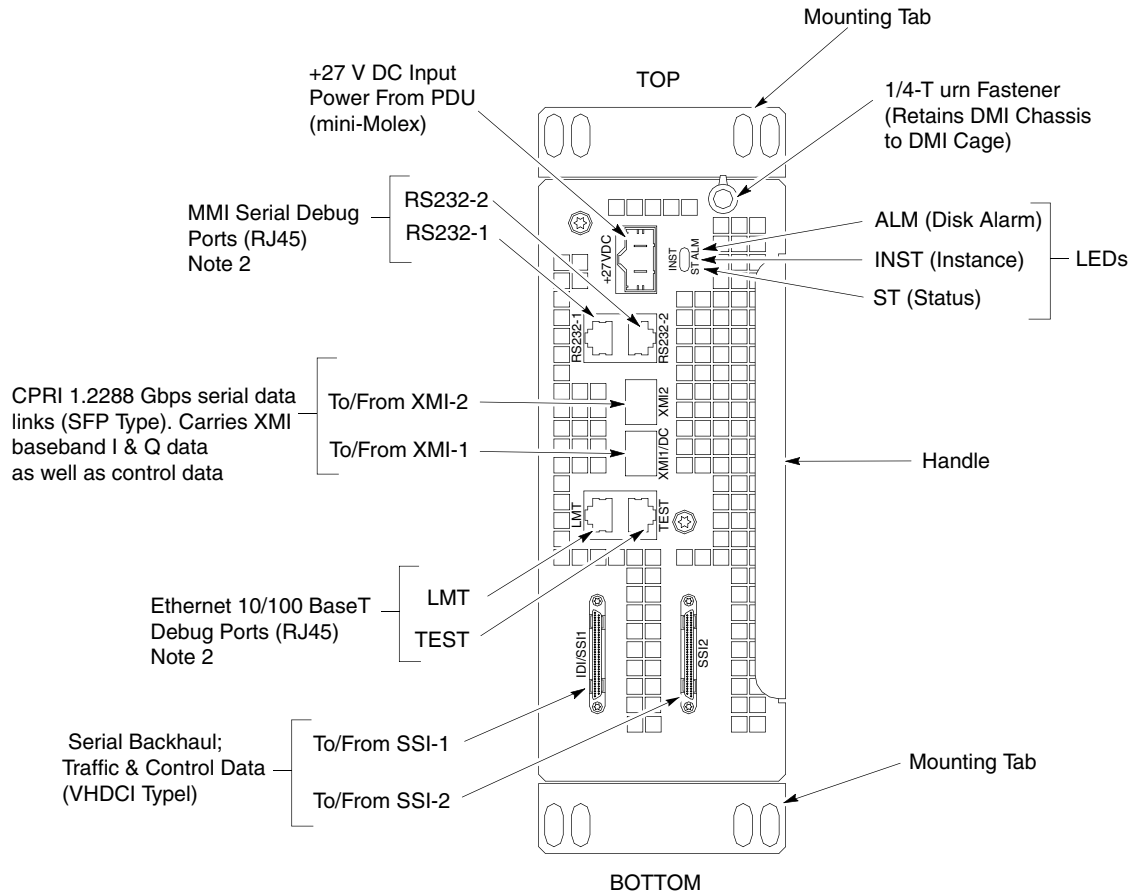


Figure 1-6 XMI Front Panel



ti-cdma-06106.eps

Figure 1-7 DMI Front Panel



NOTES:

1. Equipment shown is typical. The actual equipment appearance may vary slightly.
2. The debug ports are intended to be used primarily for testing or debugging purposes by Motorola. These ports may be used in the field for maintenance purposes by customers. Carefully follow written procedures when using these ports in the field. Failure to do so could result in an inoperable FRU.

ti-cdma-06111.eps

Preliminary Operations

Introduction

This section first verifies proper frame equipage.

Cell Site Types

Sites are configured as omni, 2-sector or 3-sector with a maximum of two carriers. For more information on the differences in site types, please refer to the 1X UBS Macro BTS Hardware Installation manual.

NEC Files

The Network Element Configuration (NEC) files contains site type and equipage data information and passes it directly to the LMF during optimization. The number of sector-carriers and carrier frequency assignments are two of the equipage data included in the NEC files.



CAUTION

Be sure that the correct `NECB-<version information>-bts#.xml` and `NECJ-<version information>-bts#.xml` files are used for the specific UBS site. These should be the NEC files that are provided for the UBS by the OMC-R. Code version of the UBS should be synched with the code in the OMC-R before leaving the site. Failure to use the correct NEC files can cause system errors. Failure to use the correct NEC files to log into a site can cause incorrect calibration information to be generated.

Site Equipage Verification

Review the site documentation. Match the site engineering equipage data to the UBS and optional equipment installed at the site. Physically inspect and verify the equipment provided for the UBS.



CAUTION

Always wear a conductive, high impedance wrist strap while handling any circuit card/module to prevent damage by ESD. After removal, the card/module should be placed on a conductive surface or back into the anti-static shipping container.

Pre-Powerup Tests

Objective

This procedure checks for any electrical short circuits and verifies the operation and tolerances of the cell site and UBS power supply units prior to applying power for the first time.

Test Equipment

The following test equipment is required to complete the pre-power-up tests:

- Digital Multimeter (DMM)



CAUTION

Always wear a conductive, high impedance wrist strap while handling any circuit card/module to prevent damage by Electrostatic Discharge (ESD).

Cabling Inspection

Using the site-specific documentation generated by Motorola Systems Engineering, verify that the following cable systems are properly installed according to the 1X UBS Macro Installation manual:

- Receive RF cabling
- Transmit RF cabling
- GPS cabling to E-GPS (GPS RF cable or RGPS cable from the RGPS antenna (if the EGPS option is not used))

DC Power Pre-Test

Before applying any power to the UBS, follow the procedure in [Procedure 2-1](#) to verify there are no shorts in the UBS DC distribution system.

Procedure 2-1 DC Power Pre-test (UBS)**NOTE**

When handling circuit boards and modules, be sure to wear a grounding strap to prevent damages caused by Electrostatic Discharge (ESD).

1	Verify that unit is a DC powered unit. <i>Physically verify</i> that all DC power sources supplying power to the UBS are OFF or disengaged.
2	Ensure that all available circuit breakers on PDU are disengaged (pulled out).
3	Verify that DC power cable is properly connected.
4	Enable power at the source. Use a DMM to verify that the power to the UBS is within specification.

Initial Power-up Tests

Power-up Procedures



WARNING

Potentially lethal voltage and current levels are routed to the UBS equipment. This test must be performed with a second person present, acting in a safety role. Remove all rings, jewelry, and wrist watches prior to beginning this test.

DC Input Power

In the tests to follow, before applying any power, verify the correct power feed and return cables are connected between the power supply breakers and the power connectors of the UBS.

Power will first be verified at the input to each UBS. After power is verified, modules within the UBS itself will be powered up and verified one at a time.

Motorola recommends that the DC input power cable used to connect the UBS to the main DC power source conforms to the guidelines outlined in *1X UBS Macro BTS Hardware Installation – 68P09283A62*.

Common Power Supply Verification

Perform [Procedure 2-2](#) on any UBS connected to the common power supply at the site after the common power supply has been installed and verified per the power supply OEM suggested procedures.



WARNING

Make sure the connector adapters are securely attached to each of the UBS power feeds and returns. Also, make sure the cables have been properly installed into each connector. Loose power cables may cause a fire.

Continued

Procedure 2-2 Procedure for Common Power Supply Verification

1	<i>Physically verify</i> that all DC power sources supplying the UBS are OFF or disengaged.
2	Visually inspect input cables, verify correct input power polarity. (Cables should be marked.)
3	Engage all available circuit breakers on PDU.
4	After power is applied to the UBS, use a DMM to verify power supply output voltages are within specifications.

Initial Power-up (Frame)

This procedure must be performed on each frame after input power from the common power supply has been verified. Follow the procedure in [Procedure 2-3](#) to apply initial power to the frame itself, verifying that it is operating within specification.

Procedure 2-3 Procedure for Initial Power-up (Frame)

1	Verify that power cable is properly connected. Set UBS power switch to ON.
2	Use a DMM to verify power supply output voltage remains within nominal specifications: +27V (<i>nominal</i>).

LMF Operation

Optimization/Calibration Introduction

Introduction

This section describes for using the Line Maintenance Facility (LMF) to verify the proper operation of the installed UBS system. Test setup and calibration are provided in support of the installation verification and optimization.



NOTE

Before using the WinLMF, use an editor to view the *CAVEATS* section in the *readme.html* file in the c:\wlmf folder for any applicable information.

Preparing the LMF

Overview

Before optimization can be performed, the LMF application software must be installed and configured on a computer platform meeting Motorola-specified requirements (see Recommended Test Equipment and Software in [Chapter 1 Introduction](#)).

Software and files for installation and updating of the LMF are provided on CD ROM disks. The following installation items must be available:

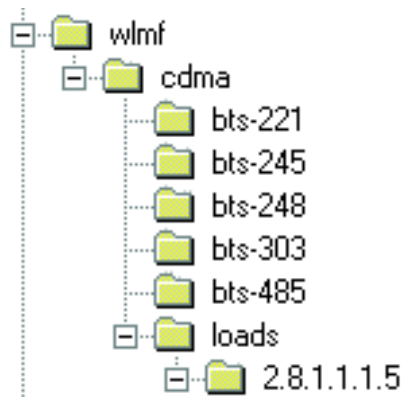
- LMF Program on CD ROM

The following section provides information and instructions for installing and updating the LMF software and files.

WinLMF File Structure Overview

The WinLMF uses a `<x>:\lmf home directory` folder that contains all of the essential data for installing and maintaining the UBS. The following list outlines the folder structure for LMF. Except for the UBS-# folders, these folders are created as part of the LMF installation. Refer to the *CDMA LMF Operator's Guide* for a complete description of the folder structure.

Figure 3-1 LMF Folder Structure



ti-cdma-05823.eps



NOTE

The *loads* folder and all the folders below it are no longer contained on the LMF CD as of LMF 2.9.0.0. When installing LMF software on a system that has never contained LMF software before, the user will need to create these folders manually. When installing a new version of LMF onto a PC already containing LMF software, any existing folders will be unaffected.

WinLMF Directory

The CDMA LMF installation program creates the default home directory, `c:\wlmf`, and installs the application files and subdirectories (folders) in it. Because this can be changed at installation, the CDMA LMF home directory will be referred to with the generic convention of:

`<x>:\lmf home directory`

Where:

- `<x>` = the LMF computer drive letter where the CDMA LMF home directory is located.
- `<lmf home directory>` = the directory path or name where the CDMA LMF is installed.

WinLMF Operating System Installation

This section provides information and instructions for installing and updating the LMF software and files.



NOTE

First Time Installation Sequence:

1. Install Java Runtime Environment (JRE)
2. Install U/WIN K-shell emulator (optional)
3. Install LMF application programs



NOTE

Any time U/WIN is re-installed, the LMF application software must also be re-installed. This is because the LMF application installation modifies some of the files that are installed during the U/Win installation. These modifications are necessary for proper LMF CLI operation.

If required, a separate CD ROM of UBS Binaries may be obtained for binary updates.

First Time Installation Sequence

Follow the procedure in [Procedure 3-1](#) to install the LMF application program using the LMF CD ROM.

Procedure 3-1 CD ROM Installation

1	Insert the LMF Program CD ROM into the LMF CD ROM drive. <ul style="list-style-type: none"> • If the Setup screen appears, follow the instructions displayed on the screen. • If the Setup screen is not displayed, proceed to step 2.
2	Click on the Start button.
3	Select Run .
4	Enter d:\autorun in the Open box and click OK .
	<div style="display: flex; align-items: center;"> <div style="background-color: #00e0e0; color: white; padding: 5px; font-weight: bold;">NOTE</div> </div> <p>If applicable, replace the letter d with the correct CD ROM drive letter.</p>

LMF to UBS Connection

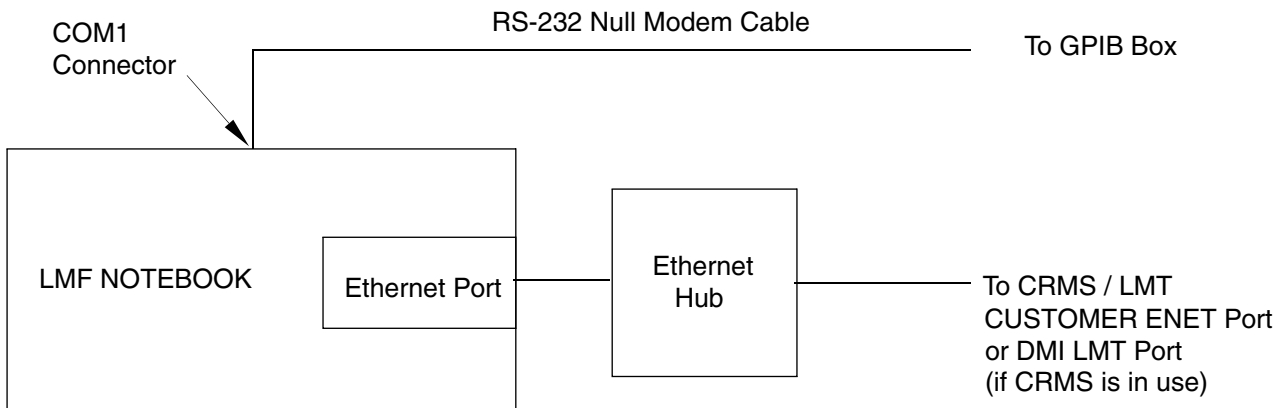
LMF to UBS Connection

Follow the procedure in [Procedure 3-2](#) to establish LMF to UBS connection.

Procedure 3-2 LMF to UBS Connection Procedure

1	Verify that the WinLMF computer has an Ethernet port.
2	Verify that a serial port (normally COM 1) is available for use.
3	Connect CDMA LMF to the UBS via the CRMS/LMT Customer ENET or DMI LMT port.

Figure 3-2 LMF Connection Detail



NOTE:
The Ethernet hub is used when the Ethernet interface on the LMF PC may not be able to keep a reliable ethernet link.

ti-cdma-05842-A.eps

Using WinLMF

Basic WinLMF Operation

LMF Coverage in This Publication — All references to the LMF in this publication are for the CDMA application program

Operating Environments — The LMF application program allows the user to work in the two following operating environments which are accessed using the specified desktop icons:

- Graphical User Interface (GUI) using the WinLMF with UBS Support icon
- Command Line Interface (CLI) using the WinLMF CLI UBS icon



NOTE

CLI can be run if the GUI is already running.

Basic Operation — The GUI is the primary optimization and acceptance testing operating environment. The CLI environment provides additional capability to the user to perform manually controlled acceptance tests and audit the results of optimization and calibration actions. Both operations allow the following:

- Selecting and deselecting UBS devices
- Unlocking devices
- Locking devices
- Resetting devices
- Obtaining device status

The following additional basic operation can be performed in a GUI environment:

- Sorting a status report window
- Displaying the Electronic Identification (EID) information of the FRUs

For detailed information on performing these and other LMF operations, refer to the LMF On-Line Help.



NOTE

Unless otherwise noted, LMF procedures in this manual are performed using the GUI environment.

Online Help - Task oriented online help is available in the LMF by clicking on Help from the menu bar.

The LMF Display and the UBS

UBS Display - When the LMF is logged into a UBS, a frame tab is displayed. The frame tab will be labeled with *Frame*, the UBS number, a dash, and the frame number (for example, Frame-812-1 for UBS 812, RFMF 1). There is only one frame for the UBS, so there will only be one tab.

Graphical User Interface Overview

The LMF uses a Graphical User Interface (GUI), which supports the following functions:

- Selecting a device or devices
- Selecting an action to apply to selected device(s)
- Status report window displaying progress of actions taking place and related information
- Notification when an action is complete and related information such as indication of success or failure
- An **OK** button to close the status report window.

Understanding GUI Operation

For detailed information on GUI operation and the LMF, refer to the *LMF Help function on-line documentation*.

Command Line Interface Overview

The LMF also provides Command Line Interface (CLI) capability. Activate the CLI by clicking on a shortcut icon on the desktop. The CLI can only be launched while the GUI is running.

If the CLI tool was *NOT* installed, it is possible to telnet to the CLI without the UWIN tool by using the command line in windows (**RUN-> cmd**) and typing in the window after the LMF has already logged in: **telnet localhost 9600**
appset newline value=2

CLI Format Conventions

The CLI command can be broken down in the following way:

- verb
- device including device identifier parameters
- switch
- option parameters
 - o keywords
 - o equal signs
 - o parameter values

Spaces are required between the verb, device, switch, and option parameters. A hyphen is required between the device and its identifiers. The following is an example of a UBS CLI command:
configure sc-<bts#>-<sector#>-<carrier#> pgain=<pgain#>
 mdm_slot=<mdm_slot#> ce=<ce#> [poffset=<poffset#>]
 Refer to the *WinLMF CDMA CLI Commands - 68P09275A12* manual for further information on CLI commands and their use.

Logging into a UBS

Logging into a UBS establishes a communications link between the UBS and the LMF. An LMF session can be logged into only one UBS at a time.

Prerequisites

Before attempting to login to a UBS, ensure the following have been completed:

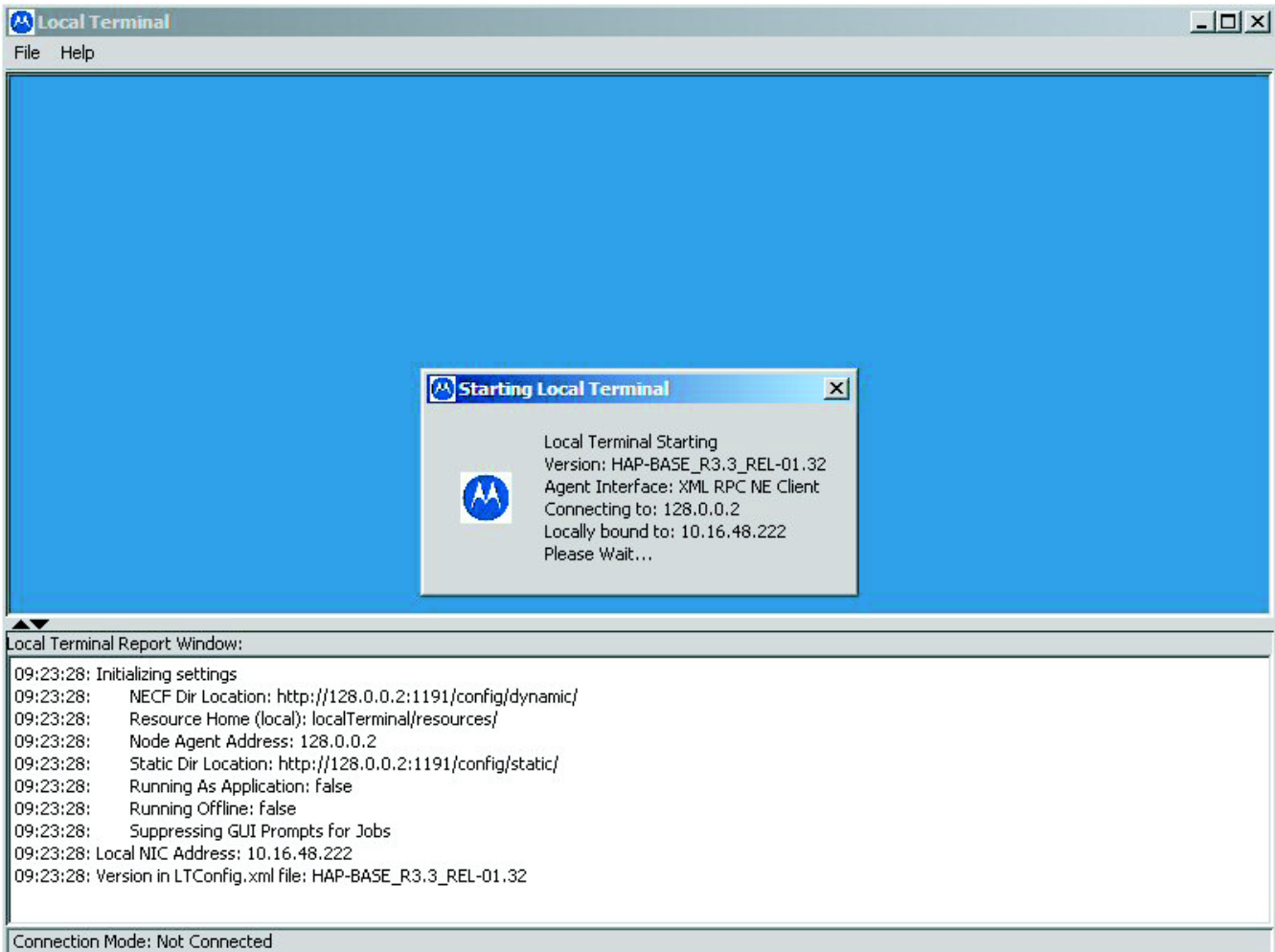
- The LMF is properly connected to the UBS (see [Figure 3-2](#))
- The LMF application program is correctly installed and prepared
- Preparing the LMF for Connectivity and Configuring the Controller of UBS procedures are completed
- The LMF computer was connected to the UBS before starting the Windows operating system and LMF software. If necessary, restart the computer after connecting it to the UBS in accordance with [Procedure 3-3](#) and [Figure 3-2](#).
- When the PC has completed startup, click on **WinLMF with UBS Support** icon [Figure 3-3](#) to bring up the Local Terminal window ([Figure 3-4](#))
- IP Address is 128.0.0.xxx
- Netmask address is 255.255.255.128
- BlackICE or other similar process is disabled
- Window *Internet Connection Firewall* and other firewall programs should be disabled
- Java Runtime Environment (JRE) is installed and version matched

Figure 3-3 WinLMF Icon



ti-cdma-LMF_UBS_Support.eps

Figure 3-4 Local Terminal (Login Screen)



ti-cdma-06193.eps

UBS Login from the GUI Environment

Follow the procedure in [Procedure 3-3](#) to log into a UBS when using the GUI environment.

Procedure 3-3 UBS GUI Login Procedure



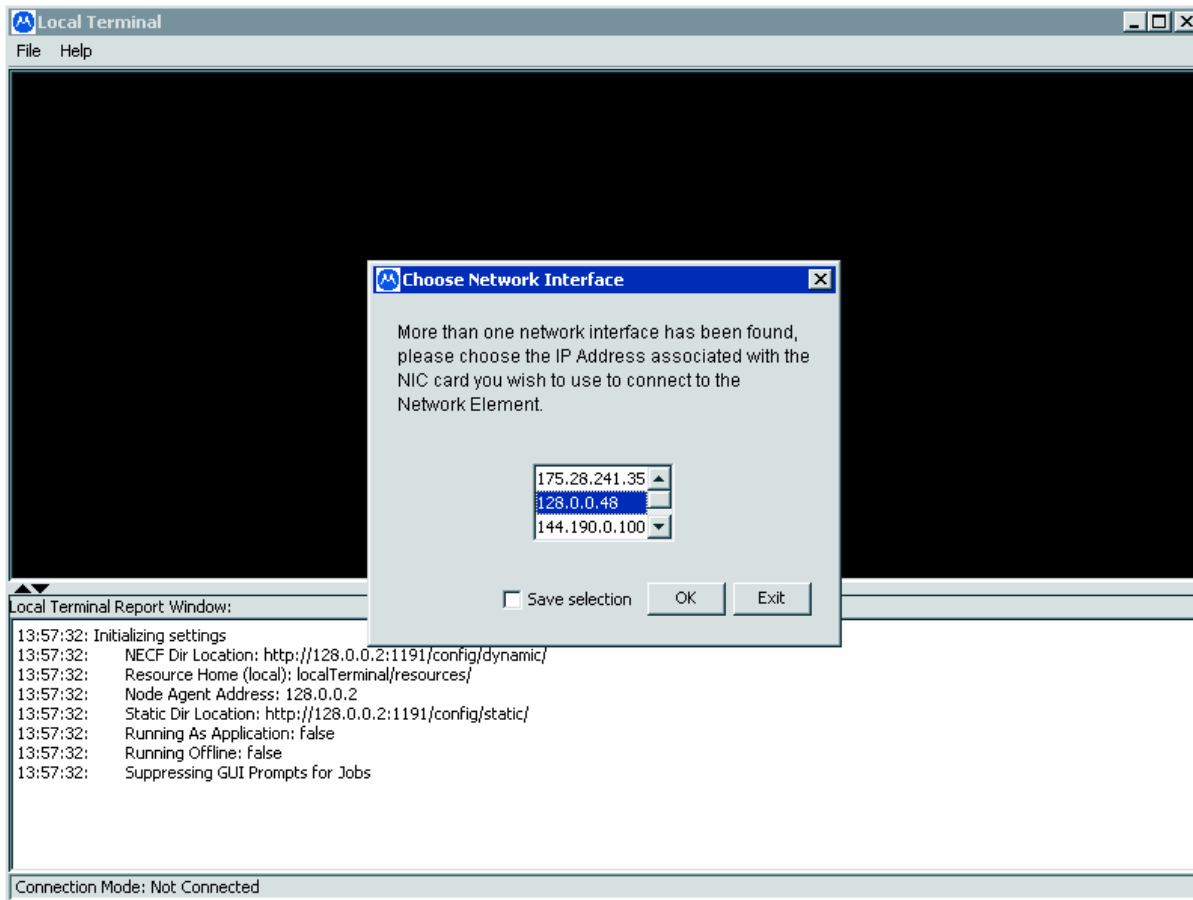
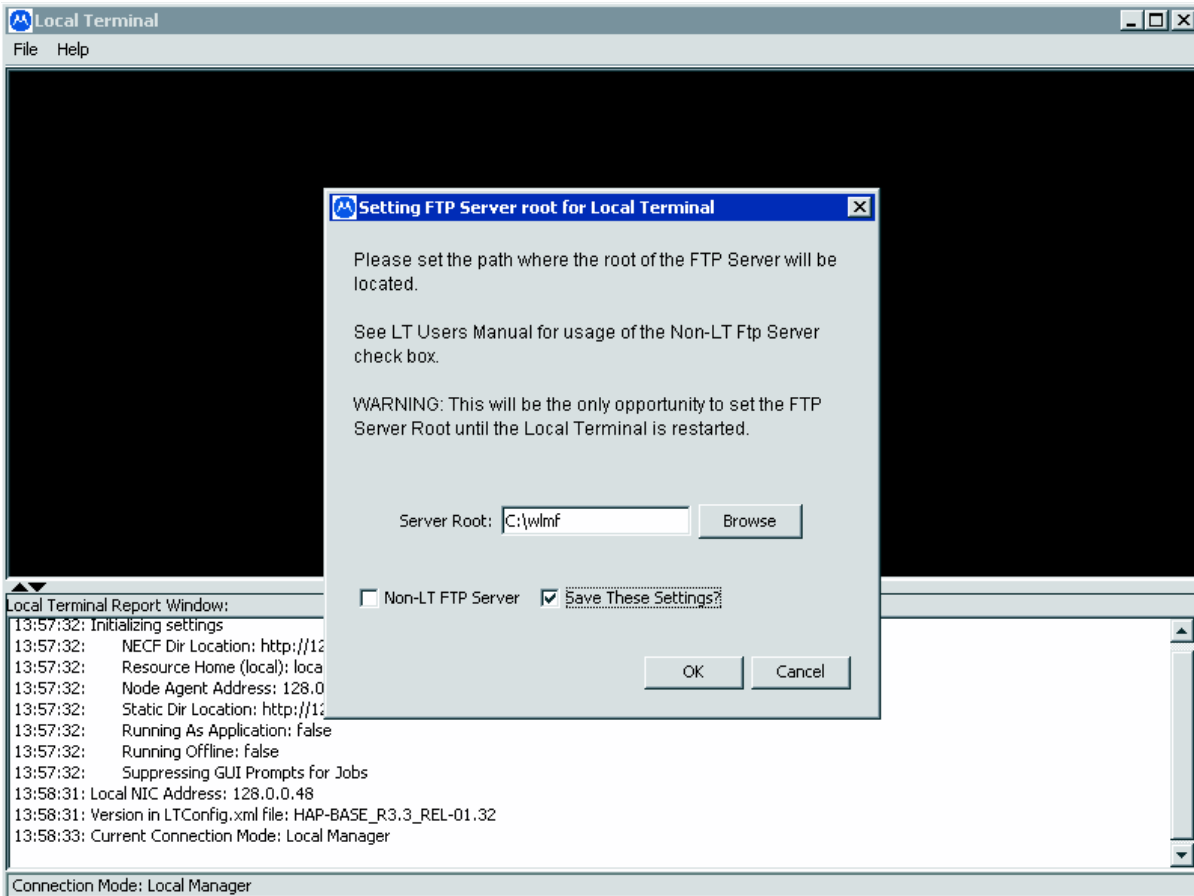
	 <div style="border: 1px solid black; background-color: #f4a460; padding: 2px; display: inline-block; margin: 5px 0;">WARNING</div> <p>The LMF computer Network Interface Card (NIC) IP address is set to 128.0.0.48, subnetmask 255.255.255.128. Ping UBS frame (128.0.0.2) from PC (128.0.0.48) Disable/Stop all firewalls and other applications (e.g. BlackICE) which may block UDP / TCP transfers. Disable all active FTP servers running on the PC. Terminate process called <i>inetd.exe</i> if it is running. NOTE: <i>inetd32.exe</i> may be active and doesn't require termination</p>
1	<p>Start the CDMA LMF GUI environment by double clicking on the WinLMF with UBS Support desktop icon (if the LMF is not running). See Figure 3-4</p>  <div style="border: 1px solid black; background-color: #00ffff; padding: 2px; display: inline-block; margin: 5px 0;">NOTE</div> <p>For the first connection the user may be prompted about FTP server localization on PC and choose the Ethernet adapter.</p>
2	<p>A <i>Choose Network Interface</i> window will appear asking for IP Address of the Network Interface Card (NIC) of the element under test. See Figure 3-5.</p>
3	<p>A <i>Setting FTP Server root for Local Terminal</i> window will appear to asking for the path to the root directory. For the typical LMF installation, the default Server Root path is C:\wlmf. See Figure 3-6.</p>
4	<p>A <i>Frame Selection</i> window will appear asking for type of UBS under test. See Figure 3-7</p>
5	<p>A window similar to Figure 3-8 should appear.</p>
6	<p>Click on BTS. A drop down menu appears. Select Enter invasive mode. See Figure 3-9</p>
7	<p>A message window appears stating that invasive mode is successful. See Figure 3-10.</p>

Figure 3-5 Network Interface Selection



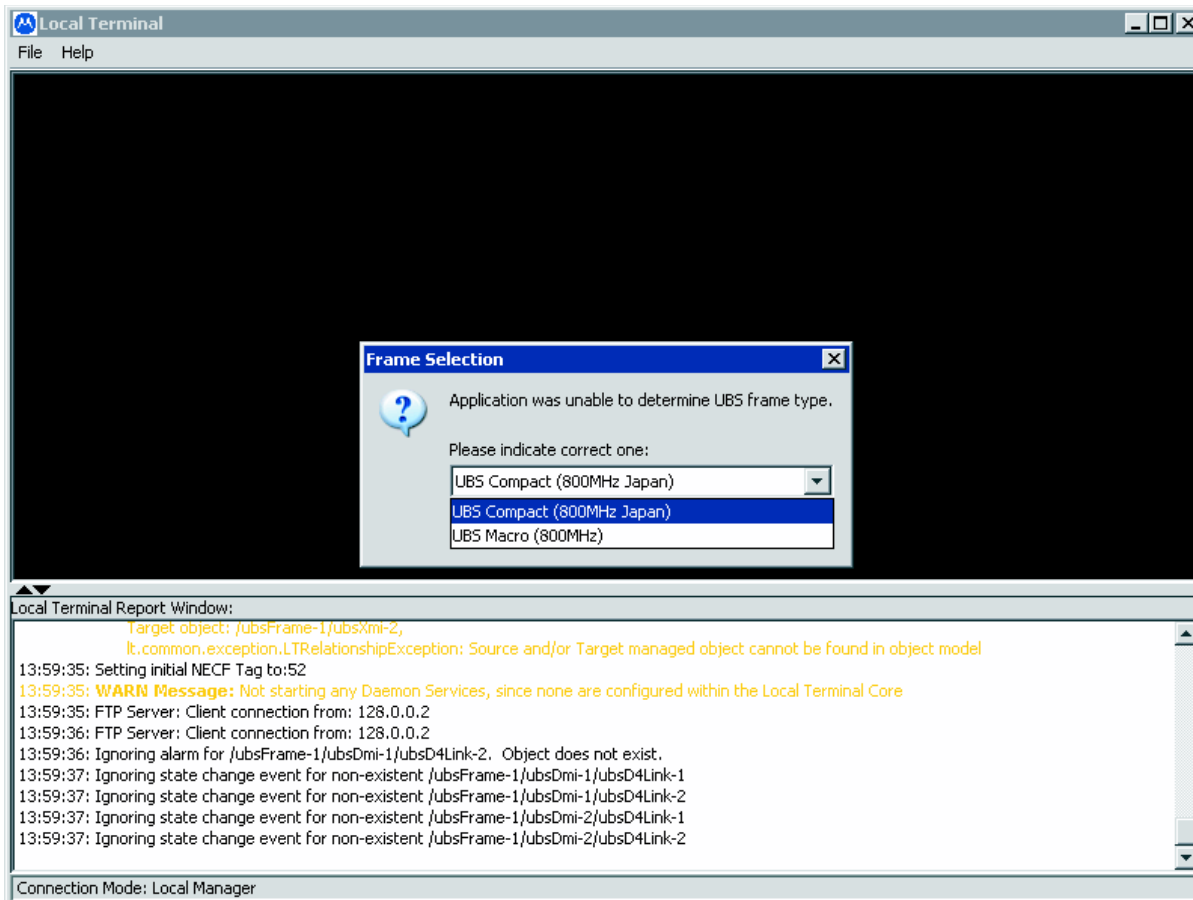
ti-cdma-01683.eps-

Figure 3-6 FTP Server



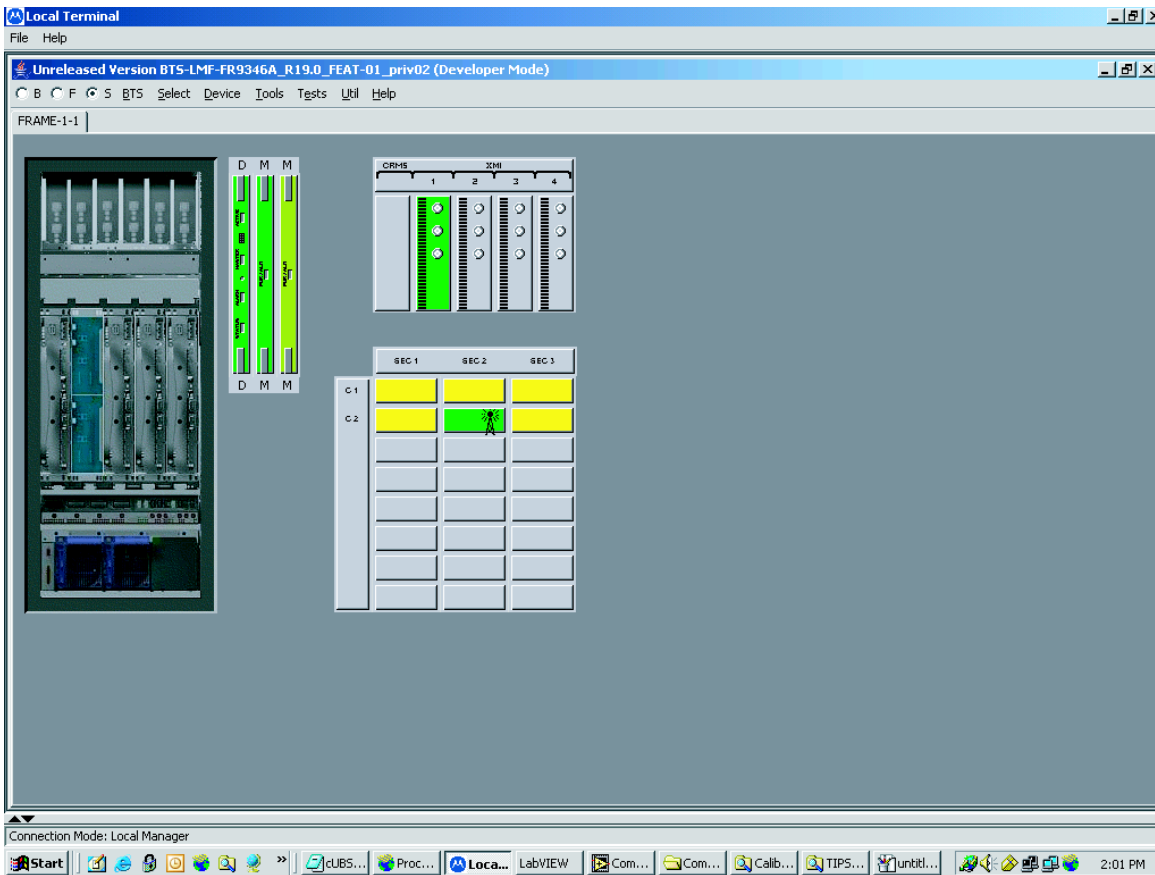
ti-cdma-06188.eps-

Figure 3-7 Frame Selection



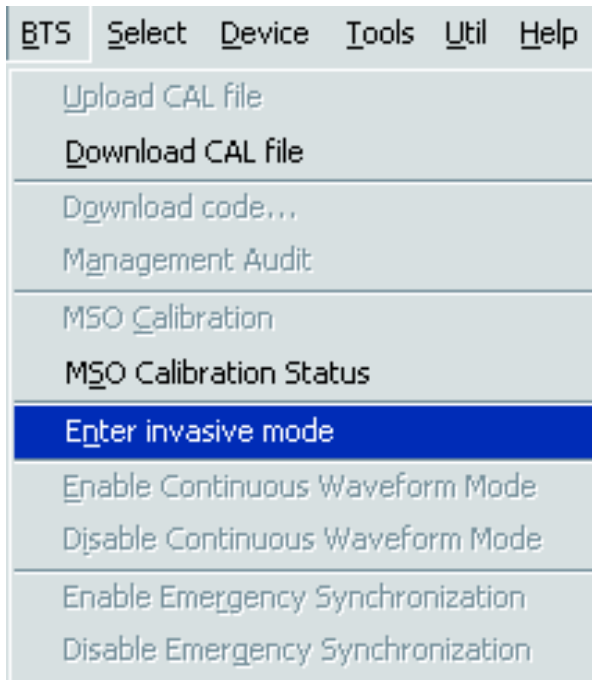
t+cdma-01687.eps-

Figure 3-8 Local Terminal GUI



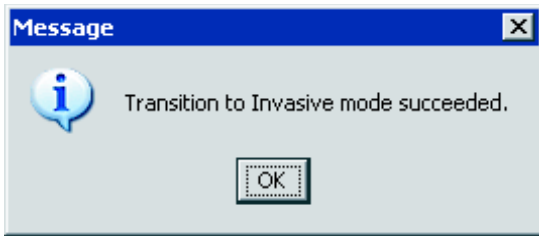
ti-cdma-06194.eps-

Figure 3-9 Invasive Mode Selection



ti-cdma-06190.eps

Figure 3-10 Invasive Mode Message Window



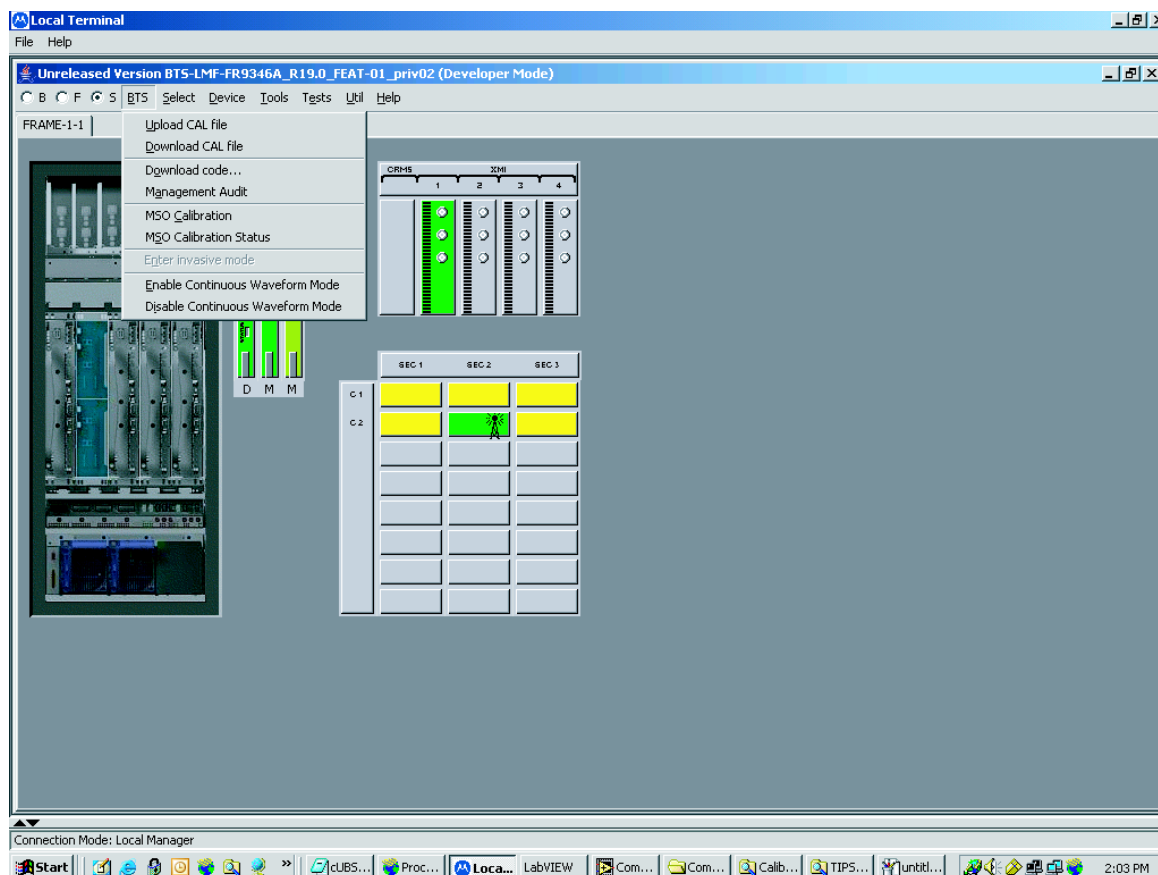
ti-cdma-06189.eps

LMF Menu and Options

The following figures display the menus and options available to the user.

Figure 3-11 displays the selections available under the BTS menu.

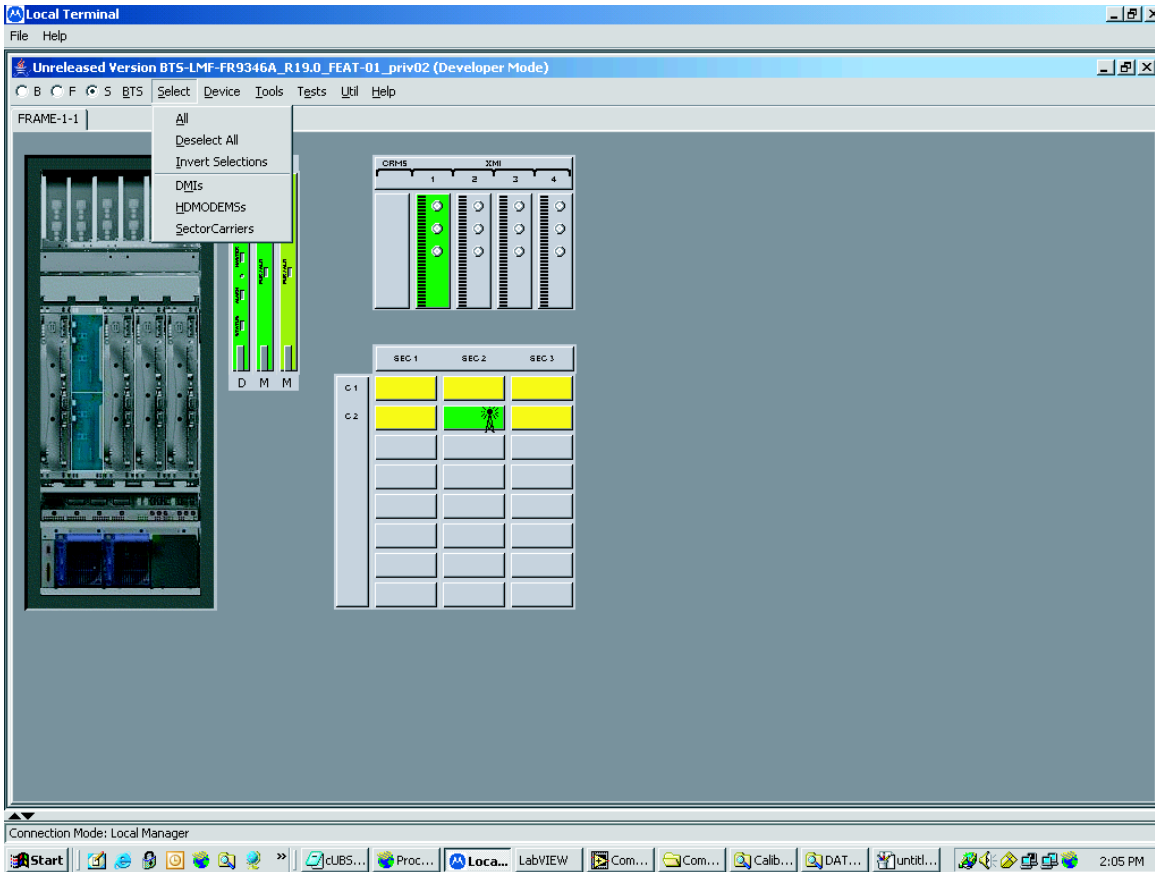
Figure 3-11 BTS Menu



ti-cdma-01682.eps

Figure 3-12 displays the choices that can be selected for testing.

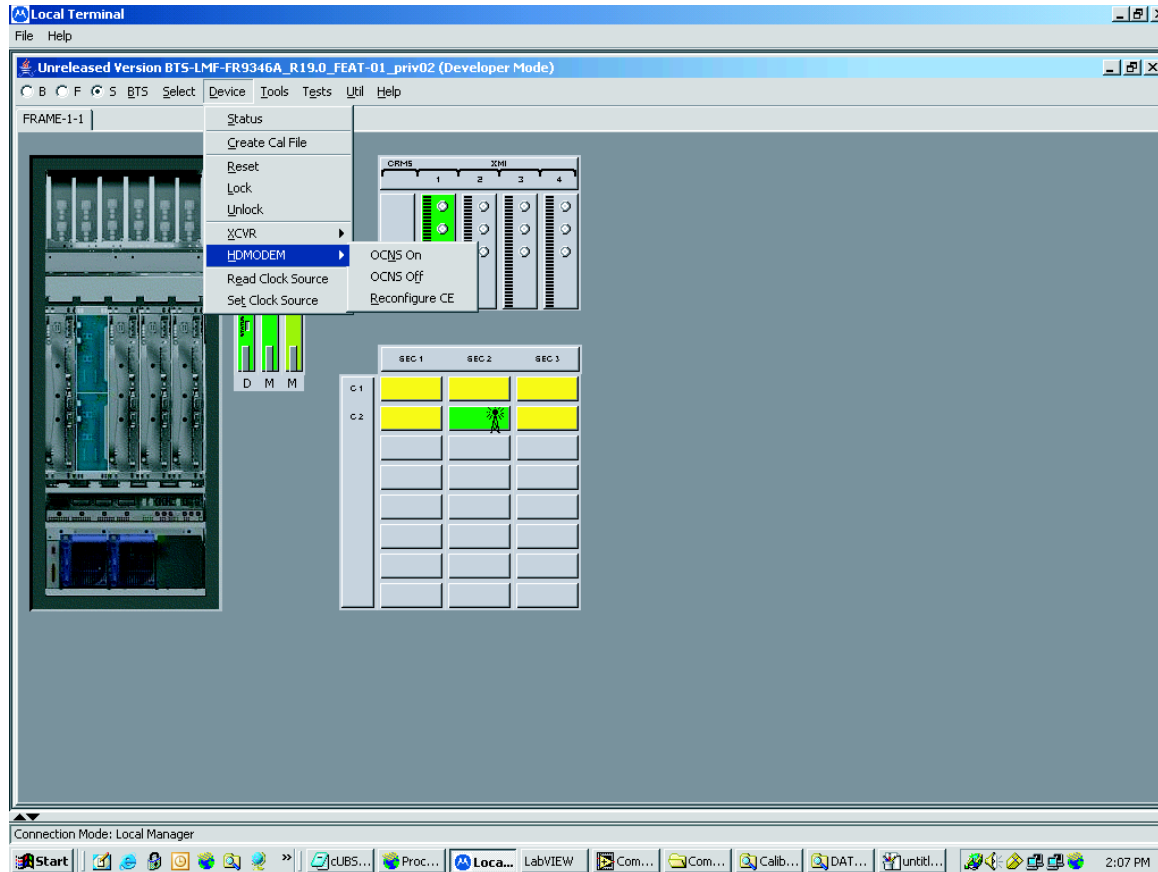
Figure 3-12 Select Menu



ti-cdma-06198.eps

Figure 3-13 displays the actions for the DMI.

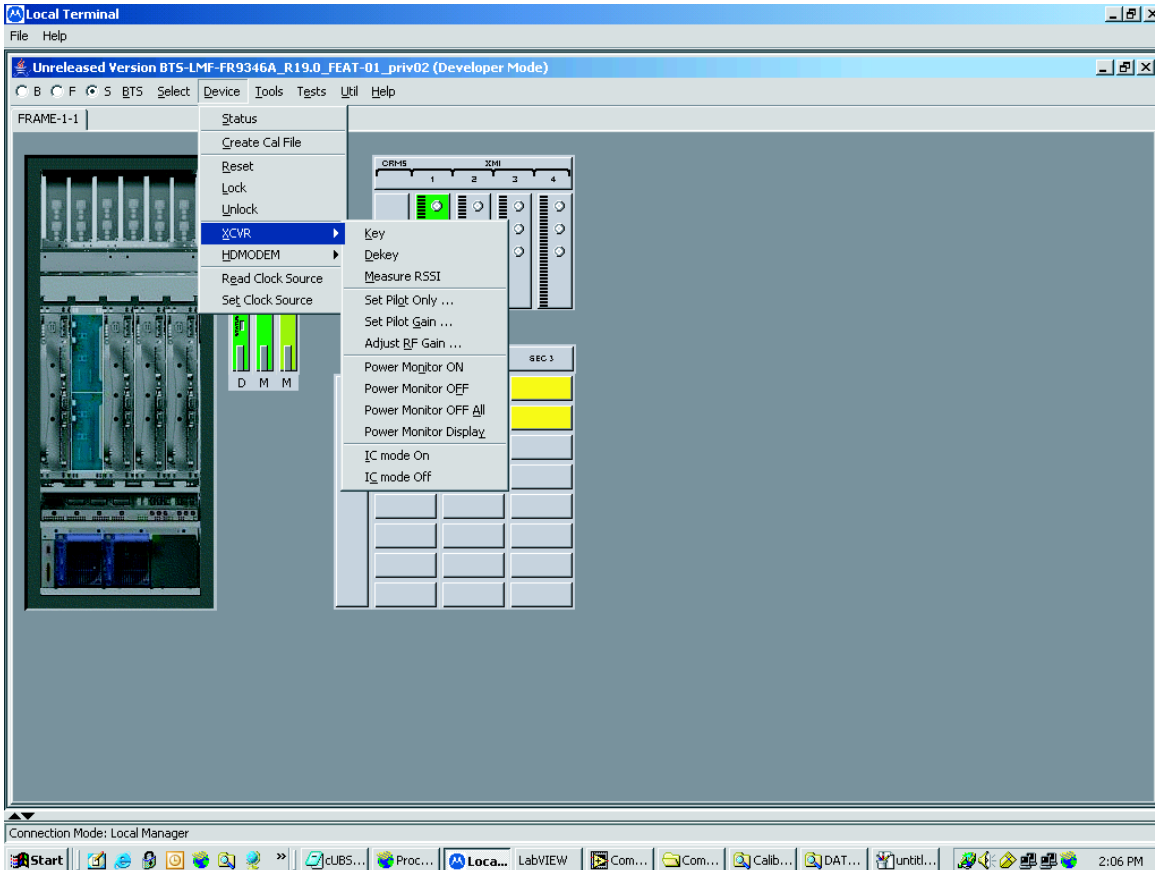
Figure 3-13 Device Menu - DMI (HDModem)



ti-cdma-01685.eps

Figure 3-14 displays the actions for the XMI.

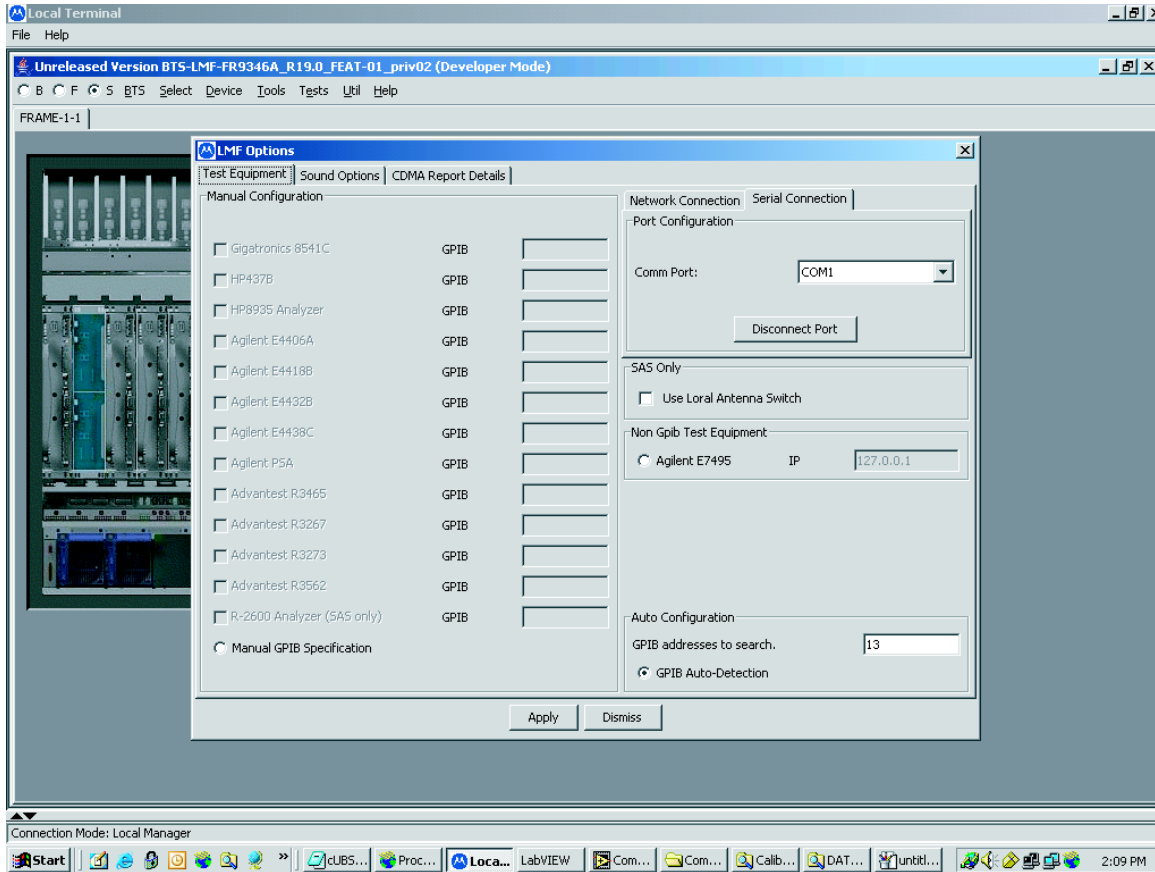
Figure 3-14 Device Menu - XMI



t+-cdma-01686.eps

Figure 3-15 displays the choices for the manually configuring equipment.

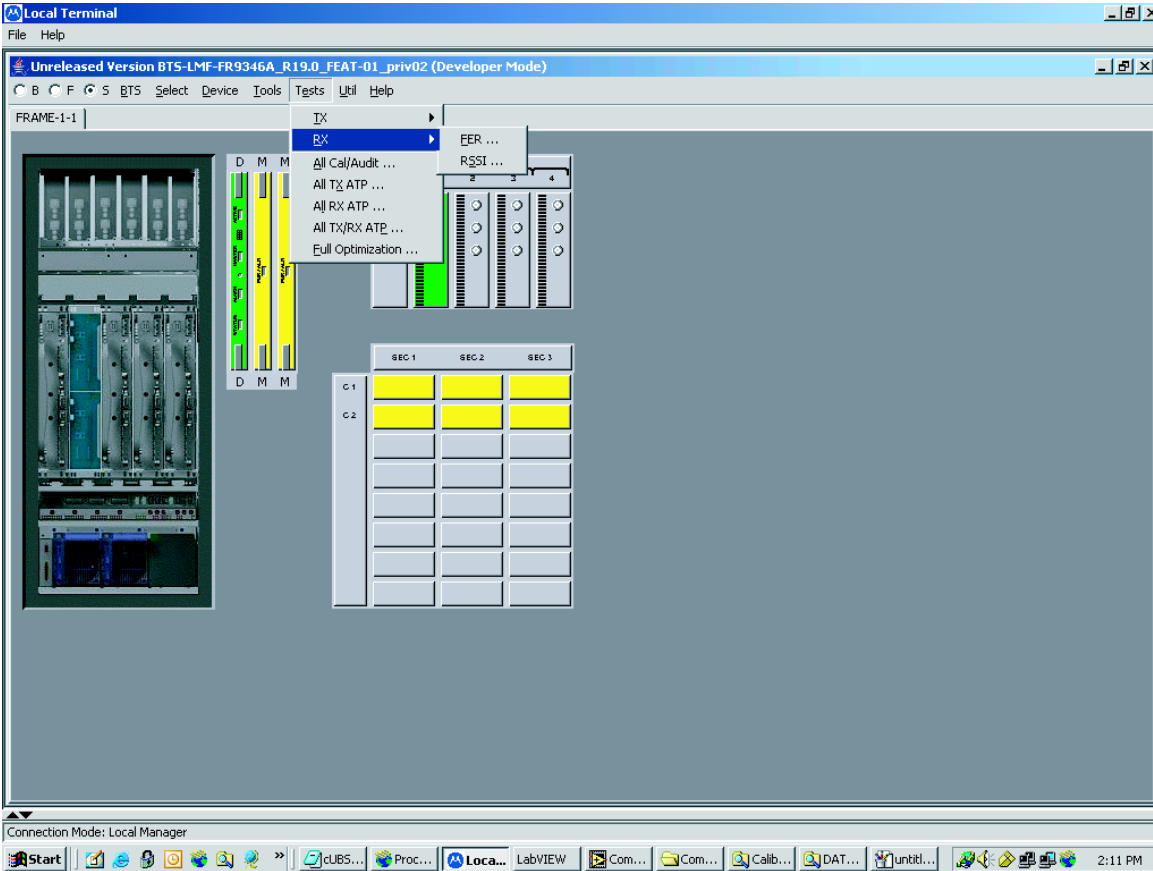
Figure 3-15 Tools Menu - Options



ti-cdma-06201.eps

Figure 3-16 displays the receive tests for the UBS.

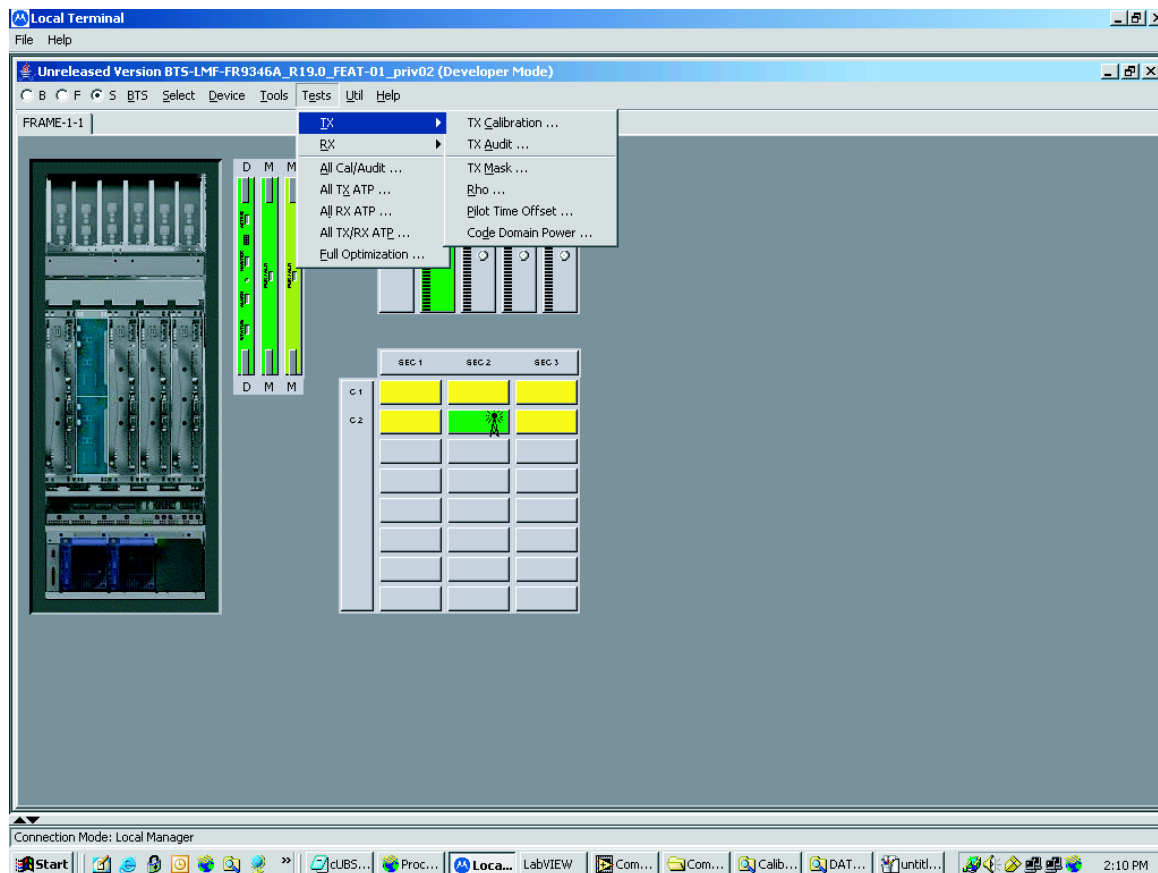
Figure 3-16 Tests Menu - RX



ti-cdma-06199.eps

Figure 3-17 displays the transmit tests for the UBS.

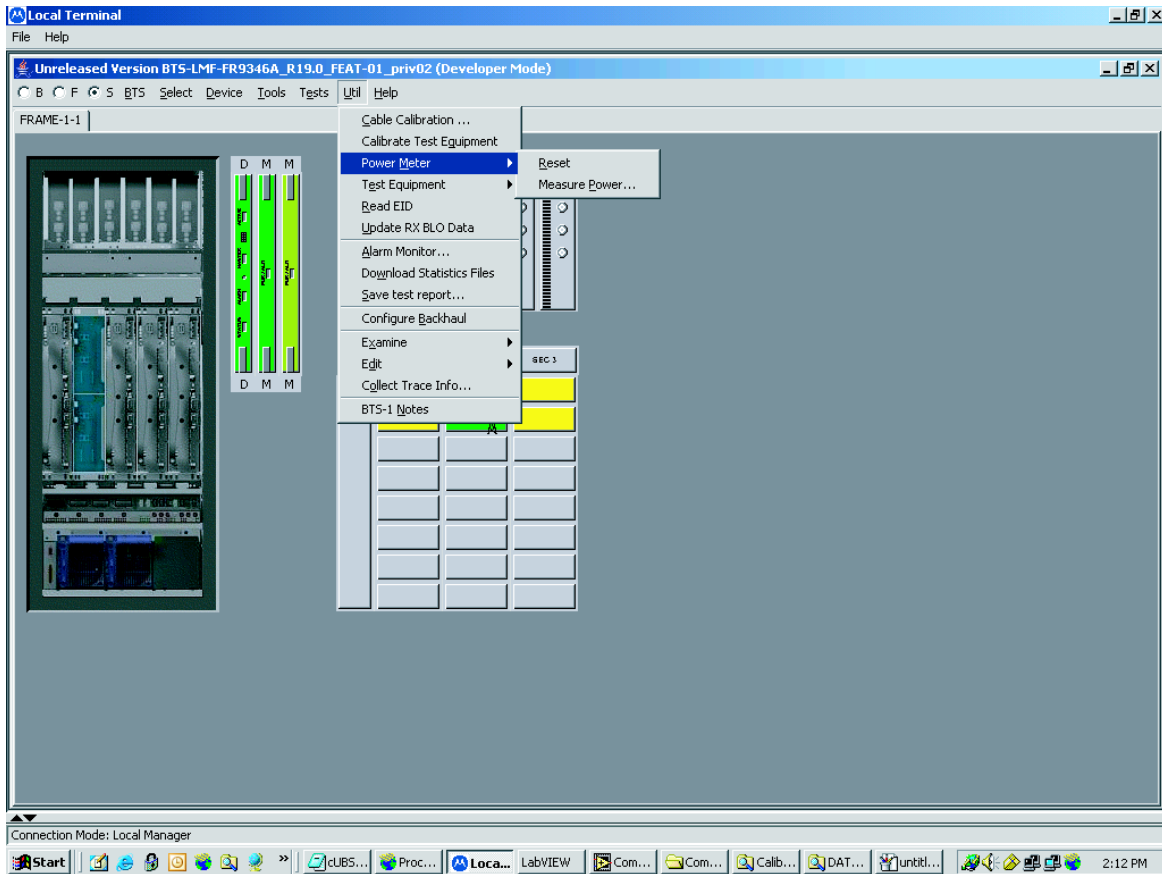
Figure 3-17 Tests Menu - TX



ti-cdma-06200.eps

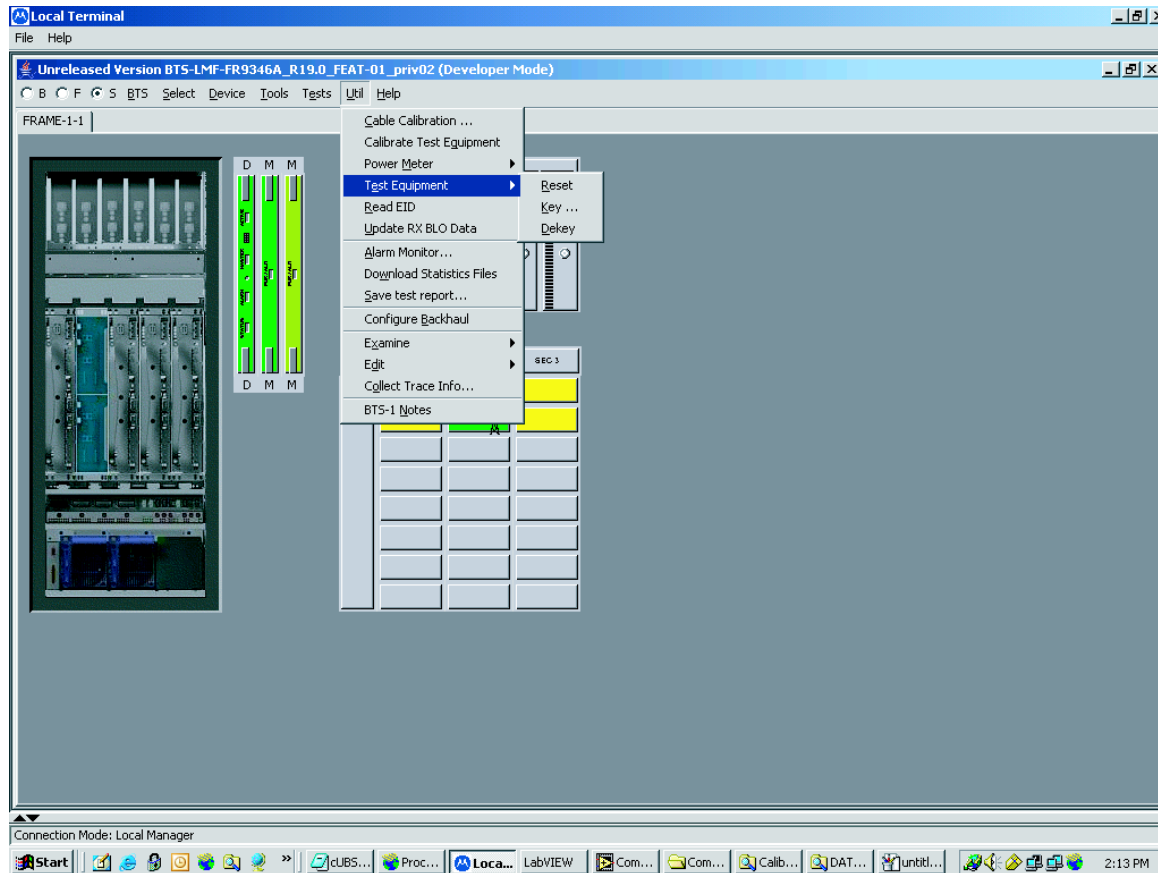
Figure 3-18 through Figure 3-21 display the various UTIL menu choices that allow analysis of the UBS under test.

Figure 3-18 Util Menu - Power Meter



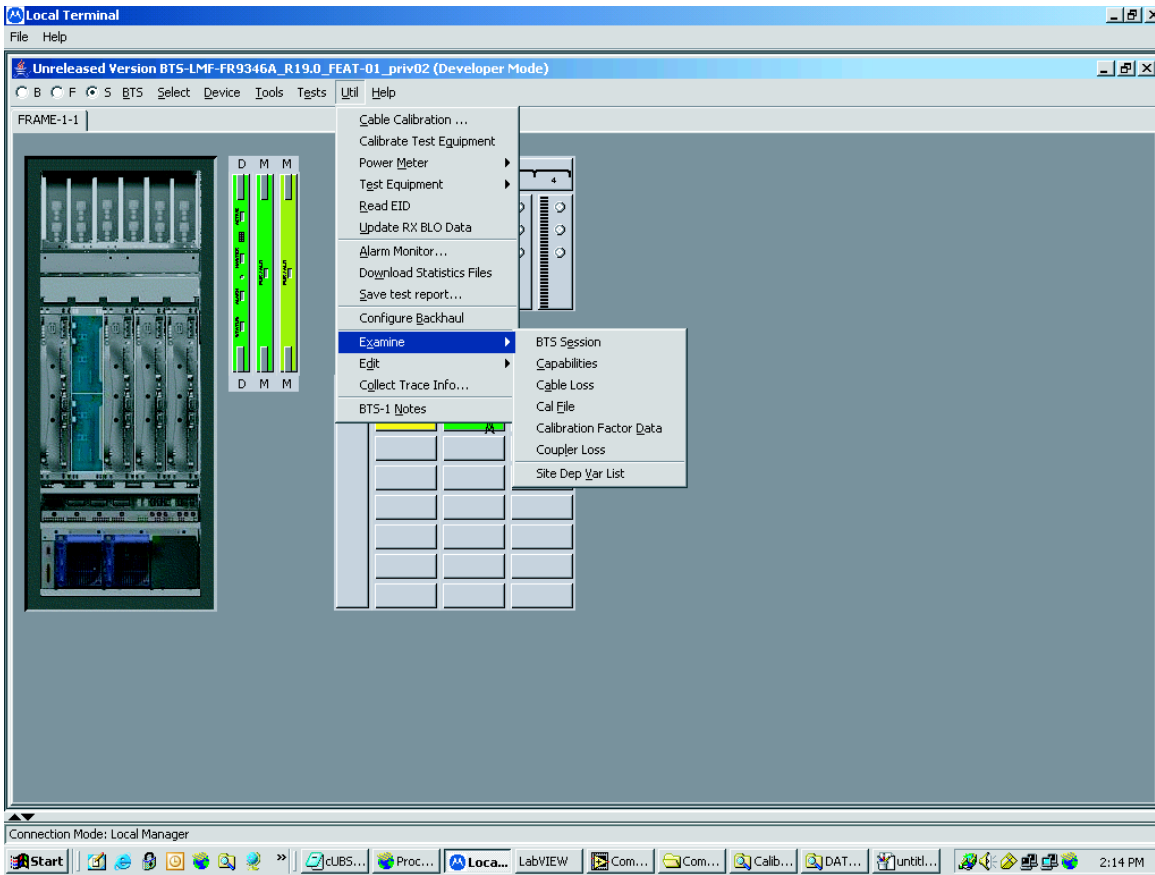
ti-cd-ma-06204.eps

Figure 3-19 Util Menu - Test Equipment



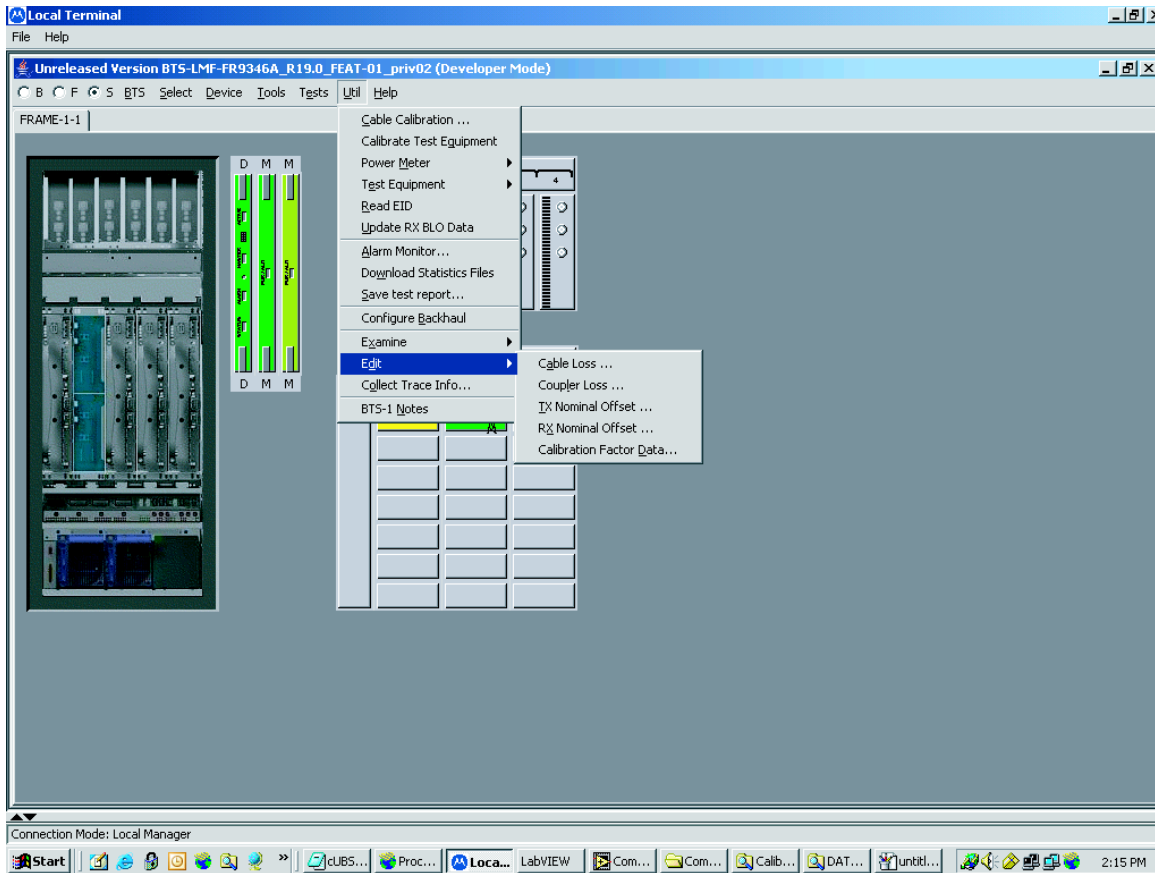
ti-cdma-06205.eps

Figure 3-20 Util Menu - Examine



ti-cdma-06203.eps

Figure 3-21 Util Menu - Edit



ti-cdma-06202.eps

Logging Out

Logging out of a UBS can only be accomplished from the Graphical User Interface (GUI) mode.



NOTE


The GUI and CLI environments use the same connection to a UBS. If a GUI and the CLI session are running for the same UBS at the same time, logging out of the UBS environment will log out of it for both.

Logging Out of a UBS from the GUI Environment

Follow the procedure in [Procedure 3-4](#) to logout of a UBS when using the GUI environment.

Procedure 3-4 UBS GUI Logout Procedure

1	Click on File on the Local Terminal menu bar.
2	Click the Exit item in the pull-down menu. UBS will perform a soft reset.



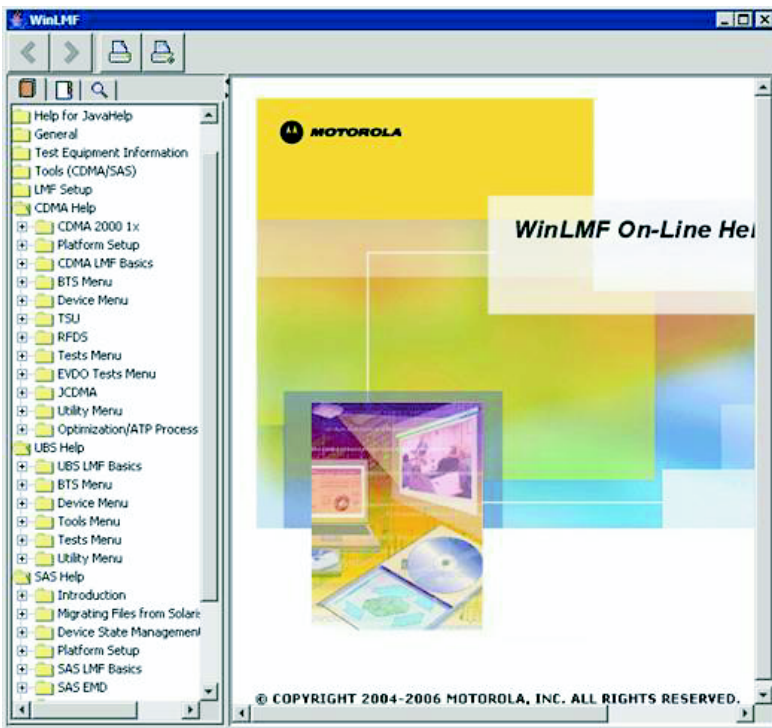
NOTE

Anytime the LMF is exited from the UBS, the DMI controller(s) will automatically reboot within 1 minute in order to clear out any test configurations and boot up under the original configuration in the NECB and NECJ files.

On-Line Help

Task oriented on-line help is available in the LMF by clicking on **Help** in the window menu bar, and selecting **LMF Help** from the pull-down menu.

Figure 3-22 Help Screen



ti-ccdma-06191.eps

Download Code to UBS

The process of downloading code to a UBS consists of two principal steps:

1. Code transfer to the UBS followed by distribution to the devices
2. Code activation

Normally, the OMC-R will download code to the UBS through the span line once the UBS is configured to establish communication with the OMC-R. However, there may be some occasions that the LMF may be used to download load instead, such as at a staging location used to pre-load replacement DMIs with same code load version required by OMC-R. Then, when the new DMI is taken to the site, it will integrate and synchronize much faster with the OMC-R.

When the code is activated, the UBS will re-start, and the LMF will lose contact with the UBS. It will be necessary to log into the UBS again after the UBS devices complete initialization with the new code.

Prerequisites

The following must be accomplished before downloading code:

- A *bts-#* folder has been created for the UBS in the *cdma* subdirectory of the LMF home directory. (Refer to [WinLMF File Structure Overview on page 3-3](#))
- The current *NECB-
<software_release#>-bts#.xml* and *NECJ-
<software_release#>-bts#.xml* files for the UBS are saved in the UBS *bts-#* folder
- The LIF.xml file and code and data binary files for the software release are saved in the *cdma\loads\<software_release#>* subdirectory folder of the LMF home directory, where *<software_release#>* is the number of the software release installed on the BSS. The *<software_release#>* should be the same as defined in the NECB/NECJ files
- The LMF is logged into the UBS in invasive mode



NOTE

If WinZip is used to unzip codeload, please be sure to uncheck the CR/LF conversion on the WinZip tool: From WinZip window, select **Options -> Configuration -> Miscellaneous** and unchecked TAR file smart CR/LF conversion box.

Download Procedure

Code files are downloaded to the UBS using an FTP server. The user is given a choice of using the built-in LMF FTP server or an external FTP server. For initial download of a UBS, the built-in FTP server in the LMF should be used. This procedure covers using the LMF built-in FTP server.



NOTE

The UBS code load should always be synchronized with the download from the OMC-R before leaving the UBS site. Refer to [Reset All Devices and Initialize Site Remotely on page 5-8](#) for the procedure to do this.

Procedure 3-5 Download Code

1	In the menu bar of the Local Terminal BTS window, select BTS > Download Code...
2	If prompted that the “Following operation may overwrite NECB, NECJ, LIF, and calibration files on the BTS”, click Yes .
3	In the dialog box which appears, if the Use Local FTP server checkbox is not checked, click in it to select this option. Result: A check mark will appear in the box.
4	In field labeled Software version enter the <software_release#> as specified in the prerequisite section (for example, 2.19.0.0.20).
5	If a “clean download” is required (download every file, even if they are the same as those currently installed on the UBS), click in the Perform clean load checkbox. Result: A check mark will appear in the box.
6	Click Ok to start the download. <div style="display: flex; align-items: center;"> <div style="background-color: #00b050; color: white; padding: 5px 10px; font-weight: bold;">NOTE</div> </div> <p style="margin-left: 40px;">Code download can require up to 40 minutes to complete.</p>
7	When the download is complete, click Ok to close the status report window. <div style="display: flex; align-items: center;"> <div style="background-color: #00b050; color: white; padding: 5px 10px; font-weight: bold;">NOTE</div> </div> <p style="margin-left: 40px;">When the code load is complete, the UBS will re-start, and the LMF will lose contact with the UBS.</p>
8	Log the LMF into the UBS again.

Test Equipment Set Up

Connecting Test Equipment to the UBS

The following equipment is required to perform optimization:

- LMF
- Communications system analyzer model supported by the LMF
- Non-radiating transmit line termination load
- Directional coupler and in-line attenuator
- RF cables and connectors
- Null modem cable (see [Figure 1-1](#))
- GPIB interface box

The following figures provide representative illustrations of connections for test equipment currently supported by the LMF:

- [Figure 3-23](#), [Figure 3-24](#), [Figure 3-25](#), and [Figure 3-26](#) show the test set connections for TX calibration.
- [Figure 3-27](#), [Figure 3-28](#), [Figure 3-29](#), and [Figure 3-30](#) show test set connections for optimization/ATP tests.
- [Figure 3-31](#), [Figure 3-32](#), [Figure 3-33](#), or [Figure 3-34](#) illustrate cable calibration test set-up.

Test Equipment GPIB Address Settings

All test equipment except the Agilent E7495A and *Anritsu* MT8212B is controlled by the LMF through an IEEE-488/GPIB bus. To communicate on the bus, each piece of test equipment must have a GPIB address set which the LMF will recognize. The standard address settings used by the LMF for the various types of test equipment items are as follows:

- Signal generator address: **1**
- Power meter address: **13**
- Communications system analyzer: **18**

Using the procedures included in the Setting GPIB Addresses section of [Appendix D Test Equipment Preparation](#), verify and, if necessary, change the GPIB address of each piece of test equipment used to match the above.

Supported Test Equipment

Optimization and ATP testing for CDMA2000 1X sites or carriers may be performed using the following test equipment:

- Advantest R3267 Analyzer with Advantest R3562 Signal Generator
- Agilent E4406A with E4432B Signal Generator
- Agilent 8935 series E6380A communications test set (formerly HP 8935) with option 200 or R2K and with E4432B signal generator for 1X FER
- Agilent E7495A or Agilent E7495B communications test sets

The E4406A/E4432B pair, or the R3267/R3562 pair, should be connected together using a GPIB cable. In addition, the R3562 and R3267 should be connected with a serial cable from the Serial I/O to the Serial I/O. This test equipment is capable of performing tests in both IS-95 A/B mode and CDMA 2000 mode if the required options are installed.



CAUTION

To prevent damage to the test equipment, all TX test connections must be through the directional coupler and in-line attenuator as shown in the test setup illustrations.

Optional test equipment

A spectrum analyzer, such as the HP8594E, and a signal generator supporting the required frequency ranges can be used to perform manual cable calibration.

Test Equipment Preparation

See [Appendix D Test Equipment Preparation](#) for specific steps to prepare each type of test set and power meter to perform calibration and ATP. The Agilent E7495A communications test set requires additional setup and preparation. This is described in detail in [Appendix D Test Equipment Preparation](#).



NOTE

Calibration of the communications test set (or equivalent test equipment) must be performed at the site before calibrating the overall test equipment set. Calibrate the communications test set after it has been allowed to warm up and stabilize for a *minimum of 60 minutes*.



CAUTION

If any piece of the test equipment set (for example, test cable, RF adapter) has been replaced, the test equipment set must be re-calibrated. Failure to do so could introduce measurement errors, resulting in incorrect measurements and degradation to system performance.

Equipment Warm-up

Warm-up UBS equipment for a *minimum of 60 minutes* prior to performing the UBS optimization procedure. This assures UBS site stability and contributes to optimization accuracy.



NOTE

Time spent running initial power-up, hardware/firmware audit, and UBS download counts as warm-up time.



WARNING

Before connecting any test equipment directly to any UBS TX or duplexed TX/RX connector (for example, the **TX/RX M** connectors for a UBS equipped with IDRFs), verify there are **NO** channels keyed. At active sites, have the OMC-R place the carriers assigned to the XMI under test OOS. Failure to do so can result in serious personal injury and/or equipment damage.

Automatic Cable Calibration

Refer to [Calibrate Test Cabling using Communications System Analyzer on page 3-64](#) for automatic cable calibration procedures using a communications test set.

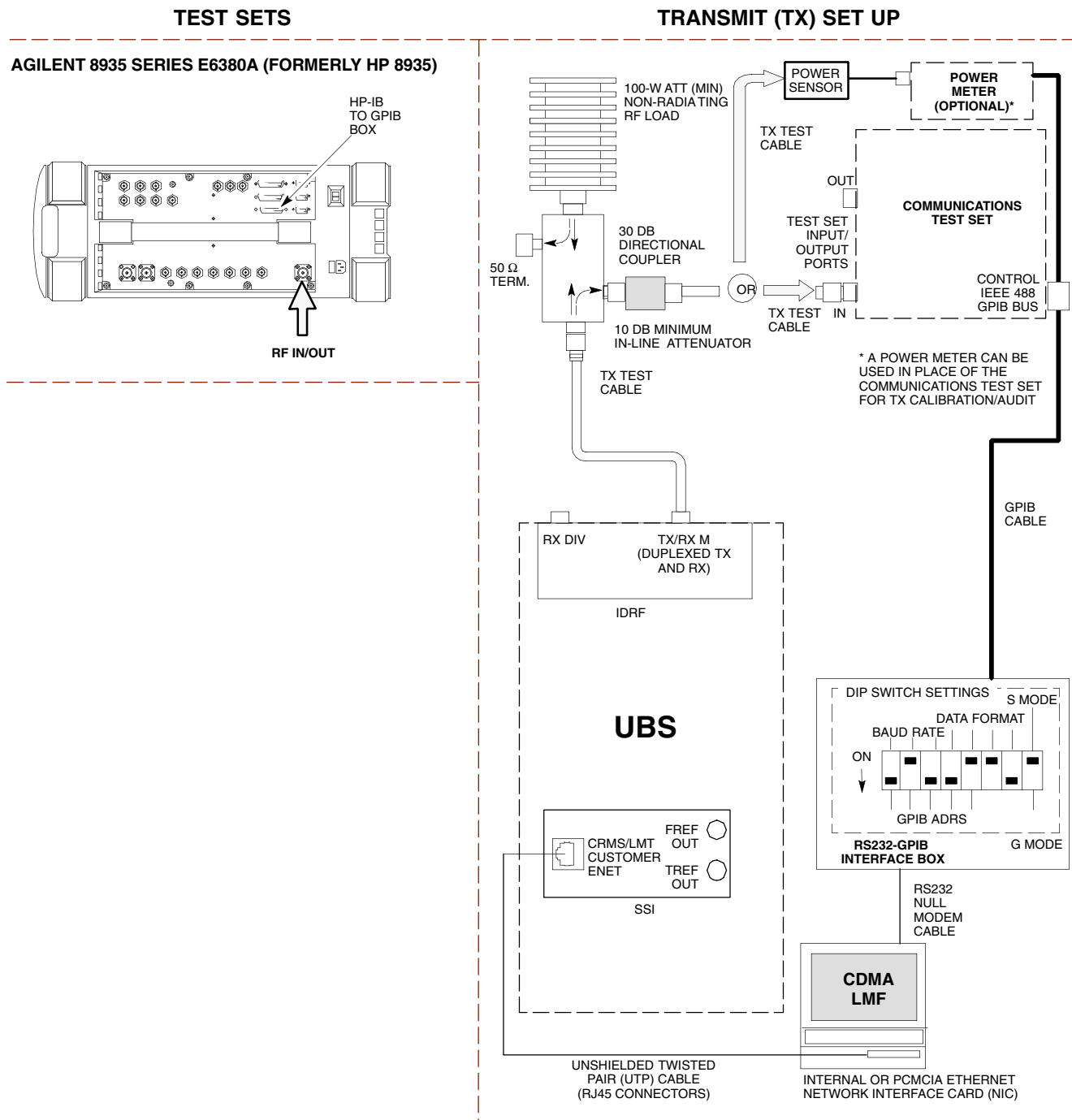
Manual Cable Calibration

If manual cable calibration is required, refer to [Calibrate Test Cabling Using Signal Generator & Spectrum Analyzer on page 3-69](#) for procedures to use a spectrum analyzer and signal generator.

Set-up for TX Calibration

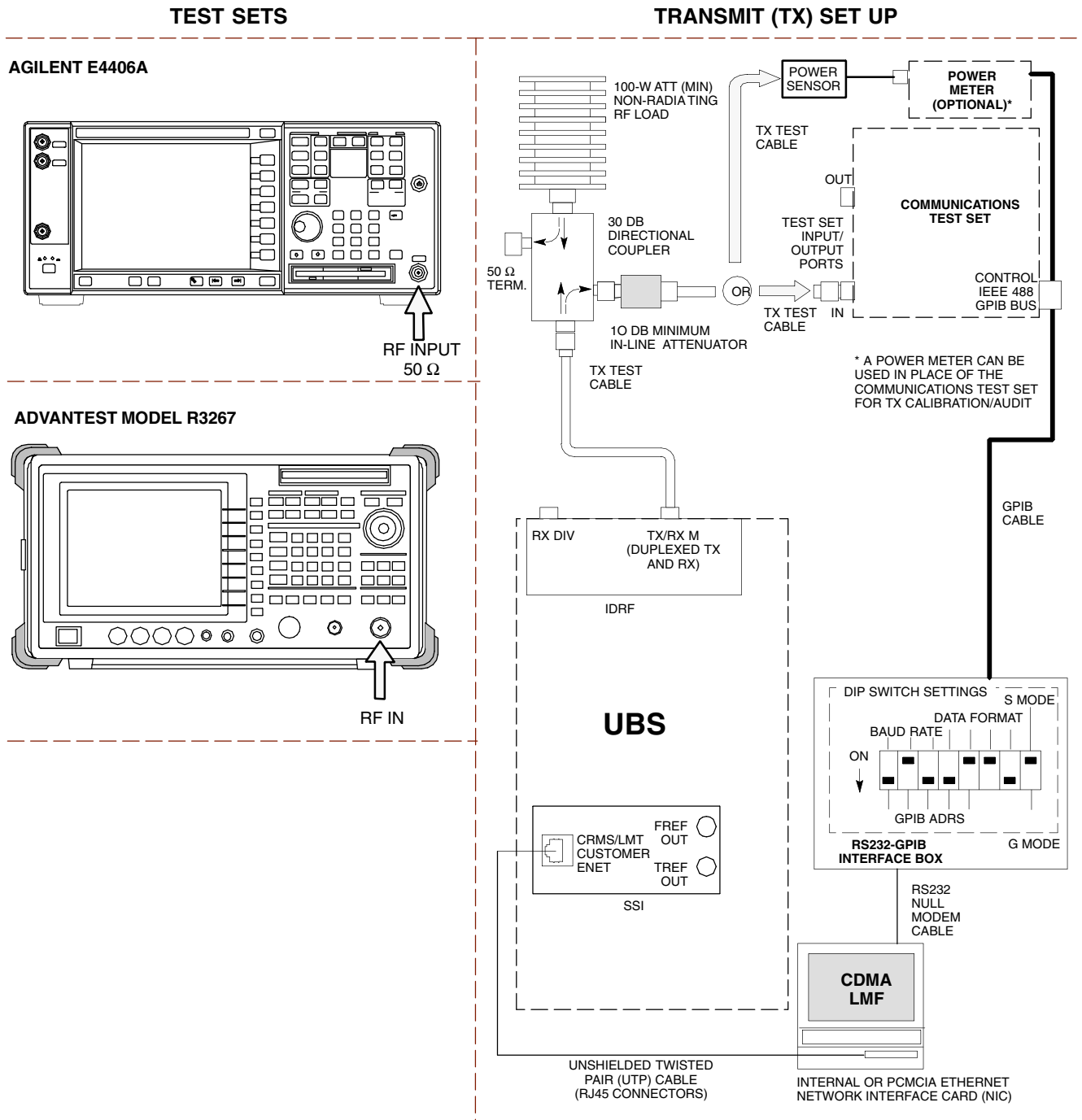
[Figure 3-23](#), [Figure 3-24](#), [Figure 3-25](#), and [Figure 3-26](#) show test set connections for TX calibration.

Figure 3-23 TX Calibration Test Setup – Agilent 8935



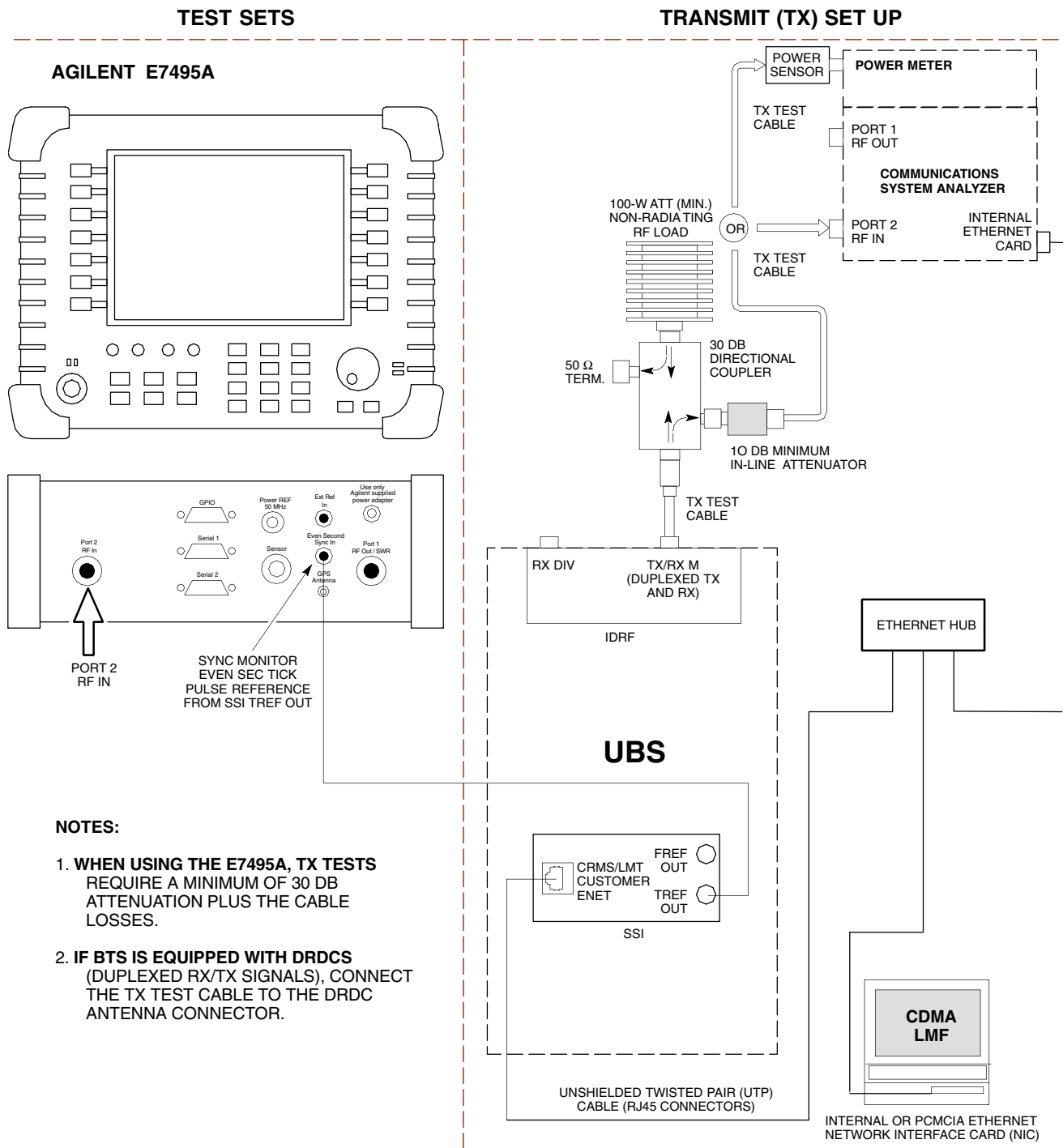
ti-cdma-06170.eps

Figure 3-24 TX Calibration Test Setup – Agilent E4406A and Advantest R3267



ti-cdma-06171.eps

Figure 3-25 TX Calibration Test Setup – Agilent E7495A



ti-cdma-06172.eps