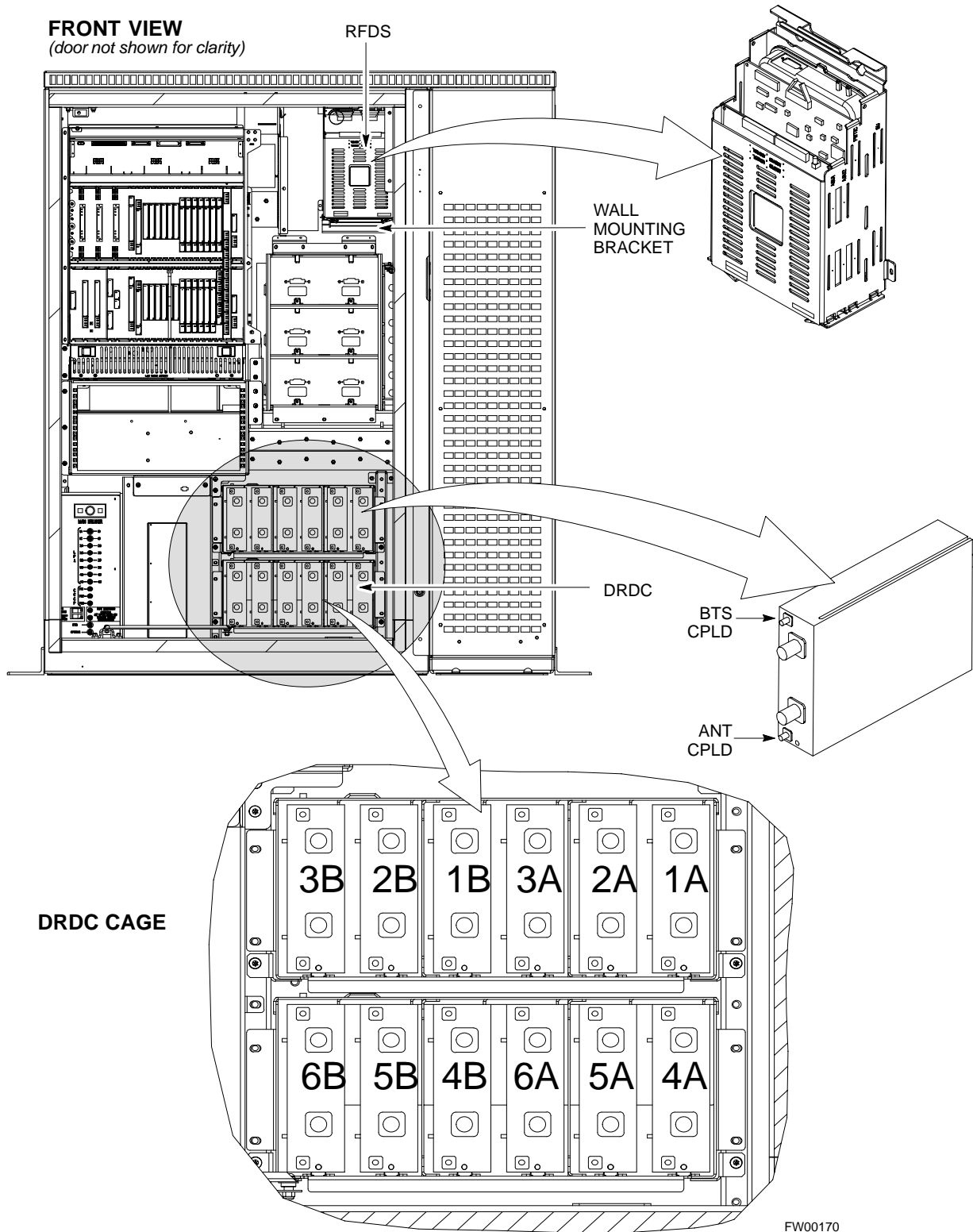


Figure 1-7: RFDS Location in an SC 4812ET RF Cabinet



Sector Configuration

There are a number of ways to configure the BTS frame. Table 1-5 outlines the basic requirements. When carrier capacity is greater than two, a 2:1 or 4:1 cavity combiner must be used. For one or two carriers, bandpass filters or cavity combiners may be used, depending on sectorization and channel sequencing.

Table 1-5: BTS Sector Configuration

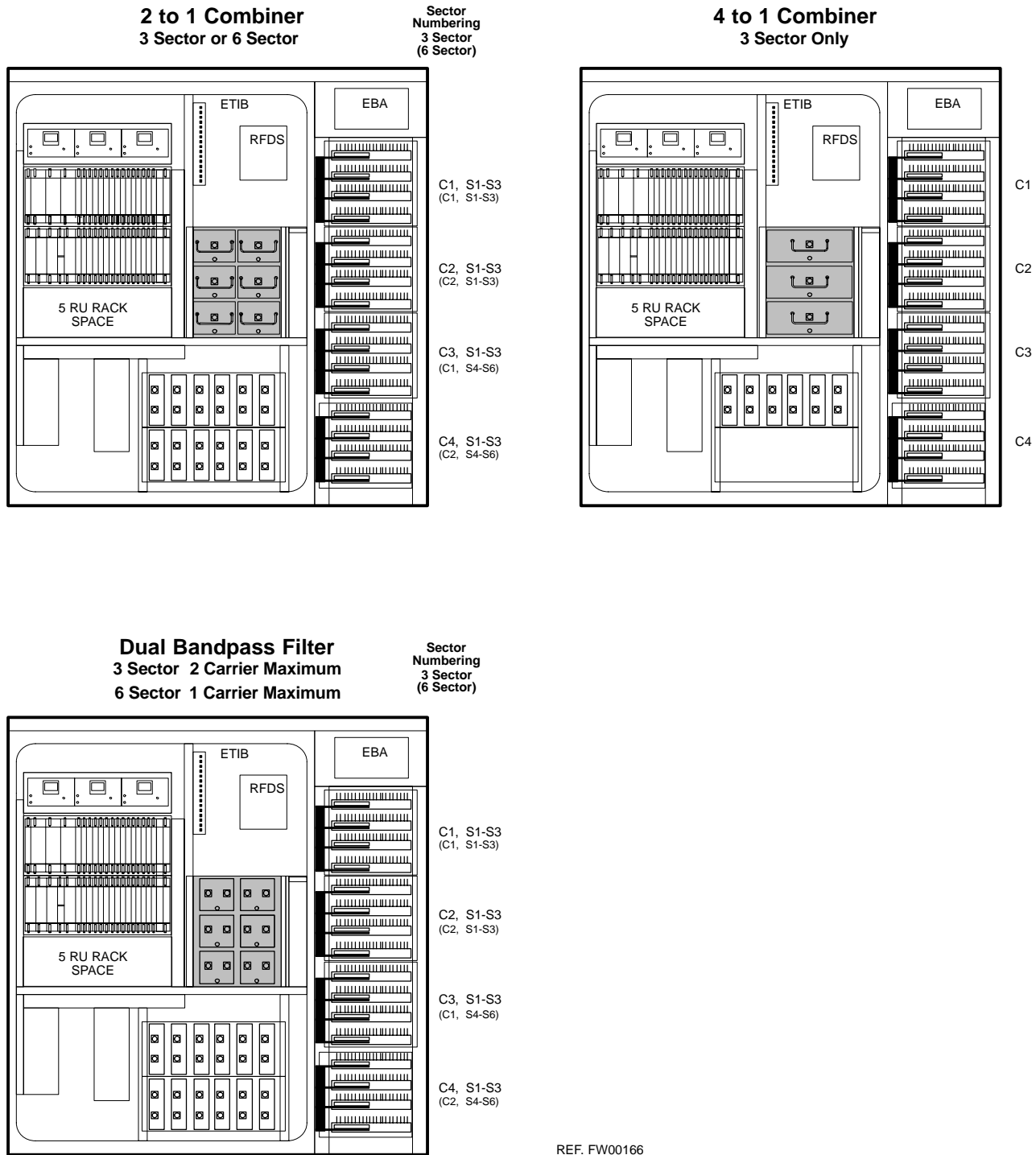
Number of carriers	Number of sectors	Channel spacing	Filter requirements
1	3 or 6	N/A	Bandpass Filter, Cavity Combiner (2:1 or 4:1)
2	6	Non-adjacent	Cavity Combiner (2:1 Only)
2	6	Adjacent	Dual Band Pass Filter
2	3	Non-adjacent	Cavity Combiner (2:1 or 4:1)
2	3	Adjacent	Bandpass Filter
3,4	3	Non-adjacent	Cavity Combiner (2:1 or 4:1)
3,4	3	Adjacent	Cavity Combiner (2:1 Only)

The matrix in Table 1-6 shows a correlation between the various sector configurations and BBX cards.

NOTE	In Table 1-6, BBXs may be BBX2s or BBX-1Xs.
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Table 1-6: Sector Configurations							
Config Ref. No.	Description						
1	3-Sector/2-ADJACENT Carriers - The configuration below maps TX with optional 2:1 cavity combiners for 3 sectors/2 carriers for <i>adjacent</i> channels. Note that 2:1 cavity combiners are used (6 total).						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1 N/A	BBX-2 N/A	BBX-3 N/A	N/A BBX-4	N/A BBX-5	N/A BBX-6	1 2
2	6-Sector/2-NON-ADJACENT Carriers - The configuration below maps TX with 2:1 cavity combiners for 6 sectors/2 carriers for <i>non-adjacent</i> channels.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1 BBX-7	BBX-2 BBX-8	BBX-3 BBX-9	BBX-4 BBX-10	BBX-5 BBX-11	BBX-6 BBX-12	1 2
3	3-Sector/2-NON-ADJACENT Carriers - The configuration below maps TX with 2:1 cavity combiners for 3 sectors/2 carriers for <i>non-adjacent</i> channels.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1 BBX-7	BBX-2 BBX-8	BBX-3 BBX-9	N/A N/A	N/A N/A	N/A N/A	1 2
4	3-Sector/4-ADJACENT Carriers - The configuration below maps TX with 2:1 cavity combiners for 3 sector/4 carriers for <i>adjacent</i> channels.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1	BBX-2	BBX-3	N/A	N/A	N/A	1
	BBX-7	BBX-8	BBX-9	N/A	N/A	N/A	2
	N/A	N/A	N/A	BBX-4	BBX-5	BBX-6	3
N/A	N/A	N/A	BBX-10	BBX-11	BBX-12	4	
5	3-Sector / 2-ADJACENT Carriers - The configuration below maps TX with bandpass filters for 3 sectors/2 carriers for <i>adjacent</i> channels.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1 N/A	BBX-2 N/A	BBX-3 N/A	N/A BBX-7	N/A BBX-8	N/A BBX-9	1 2
6	3-Sector/3 or 4-NON-ADJACENT Carriers - The configuration below maps TX with 4:1 cavity combiners for 3 sectors/3 or 4 carriers for <i>non-adjacent</i> channels.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1	BBX-2	BBX-3	N/A	N/A	N/A	1
	BBX-7	BBX-8	BBX-9	N/A	N/A	N/A	2
	BBX-4	BBX-5	BBX-6	N/A	N/A	N/A	3
BBX-10	BBX-11	BBX-12	N/A	N/A	N/A	4	
7	6-Sector/1-Carrier - The configuration below maps TX with either bandpass filters or 2:1 cavity combiners for 6 sector/1 carrier.						
	TX1	TX2	TX3	TX4	TX5	TX6	Carrier#
	BBX-1	BBX-2	BBX-3	BBX-4	BBX-5	BBX-6	1

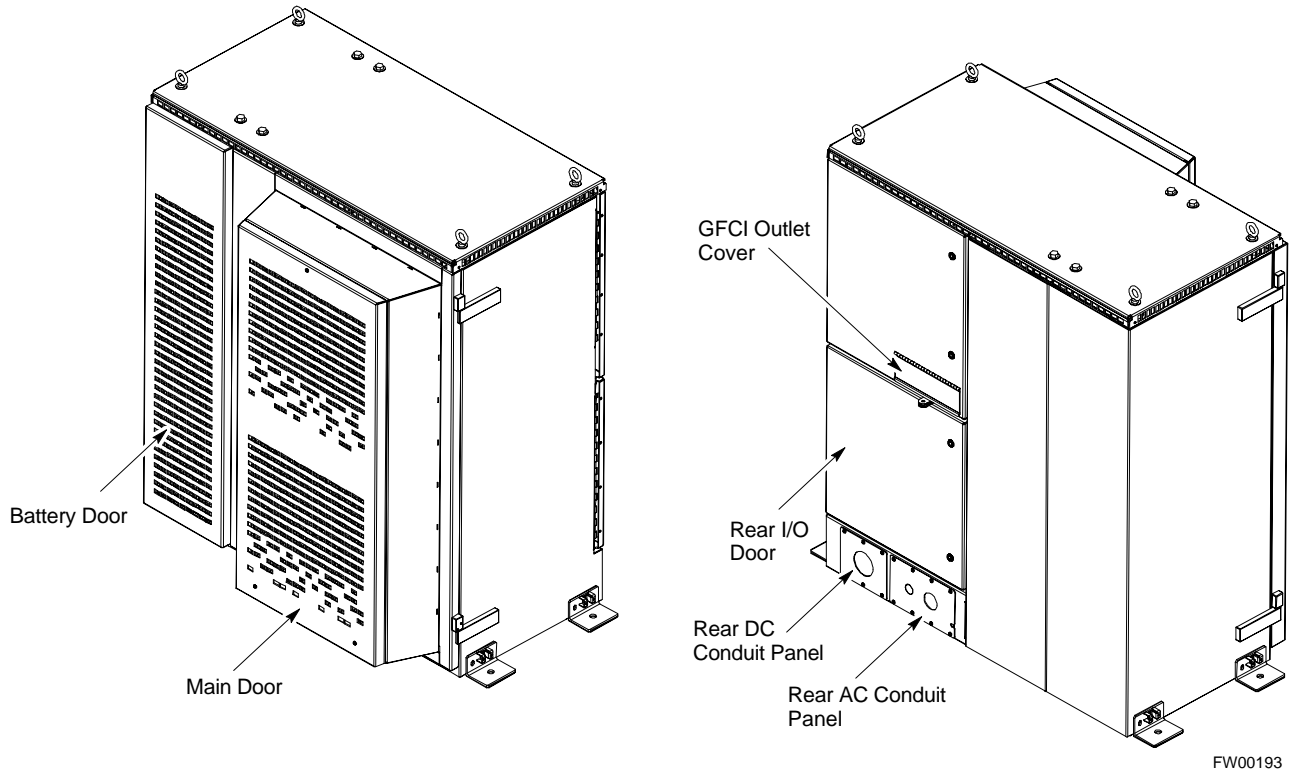
Figure 1-8: SC4812ET LPA Configuration with Combiners/Filters



Power Cabinet

Figure 1-9 illustrates the Power Cabinet design.

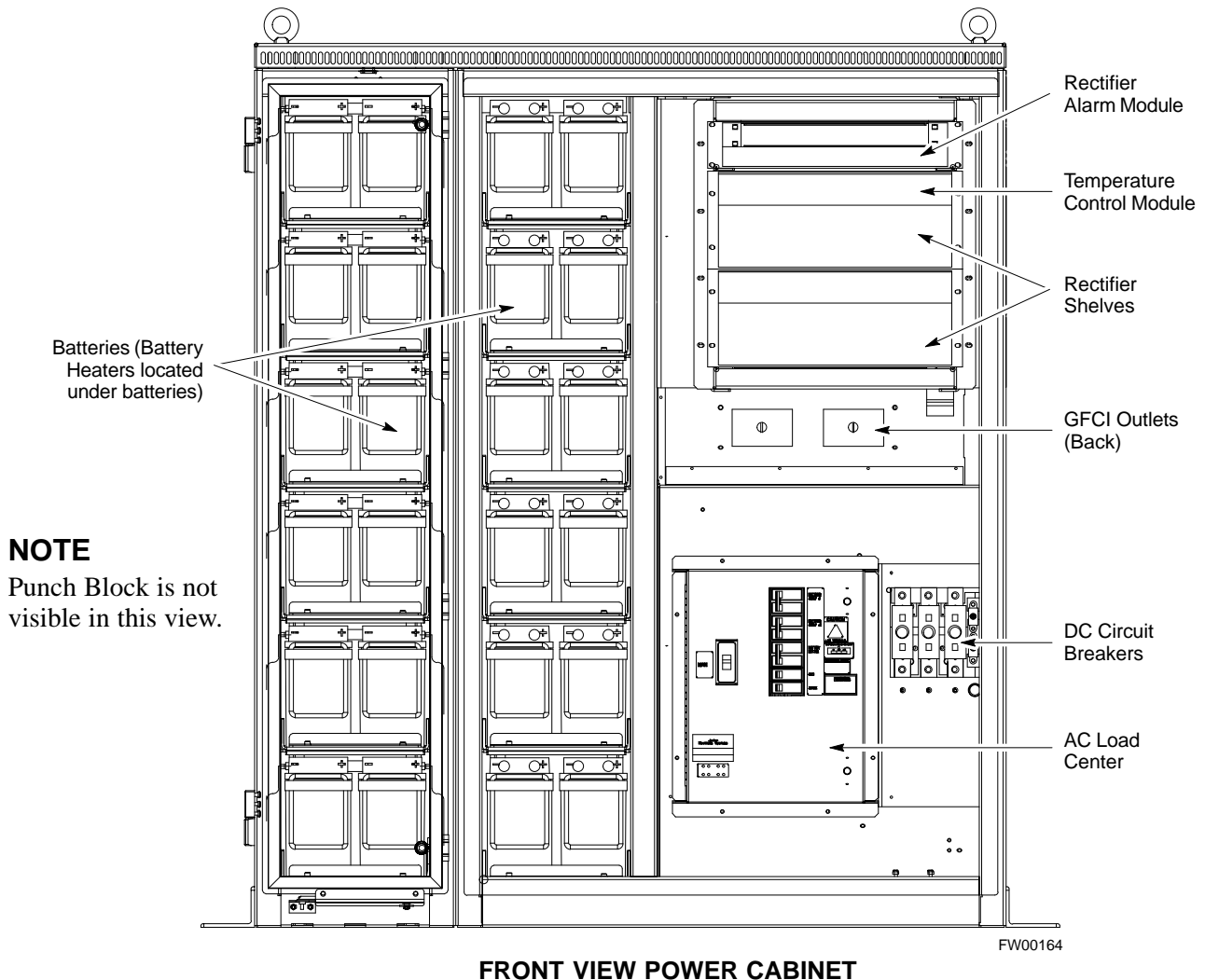
Figure 1-9: Power Cabinet



Internal FRUs

Figure 1-10 shows the location of the Internal Field Replaceable Units (FRUs). A brief description of each Internal FRU is found in the following paragraphs.

Figure 1-10: Power Cabinet with Batteries Installed (Doors Removed for Clarity)



Batteries

The batteries provide a +27 Vdc backup to the RF Cabinet should AC Power be lost. The Power Cabinet can accommodate a total of 24 12-V batteries, configured in 12 strings of 2 batteries each. The time duration of backup provided depends on system configuration.

Battery Heater

The battery heaters provide heating to the batteries in the Power Cabinet. A separate heater is required for each string of batteries. The heater is a pad the batteries sit on located top of each battery shelf. The number of heaters is dependent on system configuration.

Battery Compartment Fan

The battery compartment fan provides air circulation for the two battery compartments. It is located on the inside of the battery compartment door.

Heat Exchanger

The Heat Exchanger provides cooling to the rectifier compartment of the Power Cabinet. The Heat Exchanger is located in the primary front door of the Power Cabinet.

Rectifiers

The +27 Vdc rectifiers convert the AC power supplied to the Power Cabinet to +27 Vdc to power the RF Cabinet and maintain the charge of the batteries.

AC Load Center

The ACLC is the point of entry for AC Power to the Power Cabinet. It incorporates AC power distribution and surge protection.

Punch Block

The Punch Block is the interface for the alarm signalling between the Power Cabinet and the RF Cabinet.

Chapter 2

Power Up Procedures

Prepower-up

This section first verifies proper frame equipage. This includes verifying module placement, jumper, and dual in-line package (DIP) switch settings against the site-specific documentation supplied for each BTS application. Next, pre-power up and initial power-up procedures are presented.

Cellsite Types

Sites are configured as with a maximum of 4 carriers, 3-sectored with a maximum of 4 carriers, and 6-sectored with a maximum of 2 carriers. Each type has unique characteristics and must be optimized accordingly.

CDF

The Cell-site Data File (CDF) contains site type and equipage data information and passes it directly to the LMF during optimization. The number of modem frames, C-CCP shelves, BBX and MCC boards (per cage), and linear power amplifier assignments are some of the equipage data included in the CDF.

Site Equipage Verification

Review the site documentation. Match the site engineering equipage data to the actual boards and modules shipped to the site. Physically inspect and verify the equipment provided for the BTS or Modem frame and ancillary equipment frame.

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 bag it was shipped in.

Initial Installation of Boards/Modules

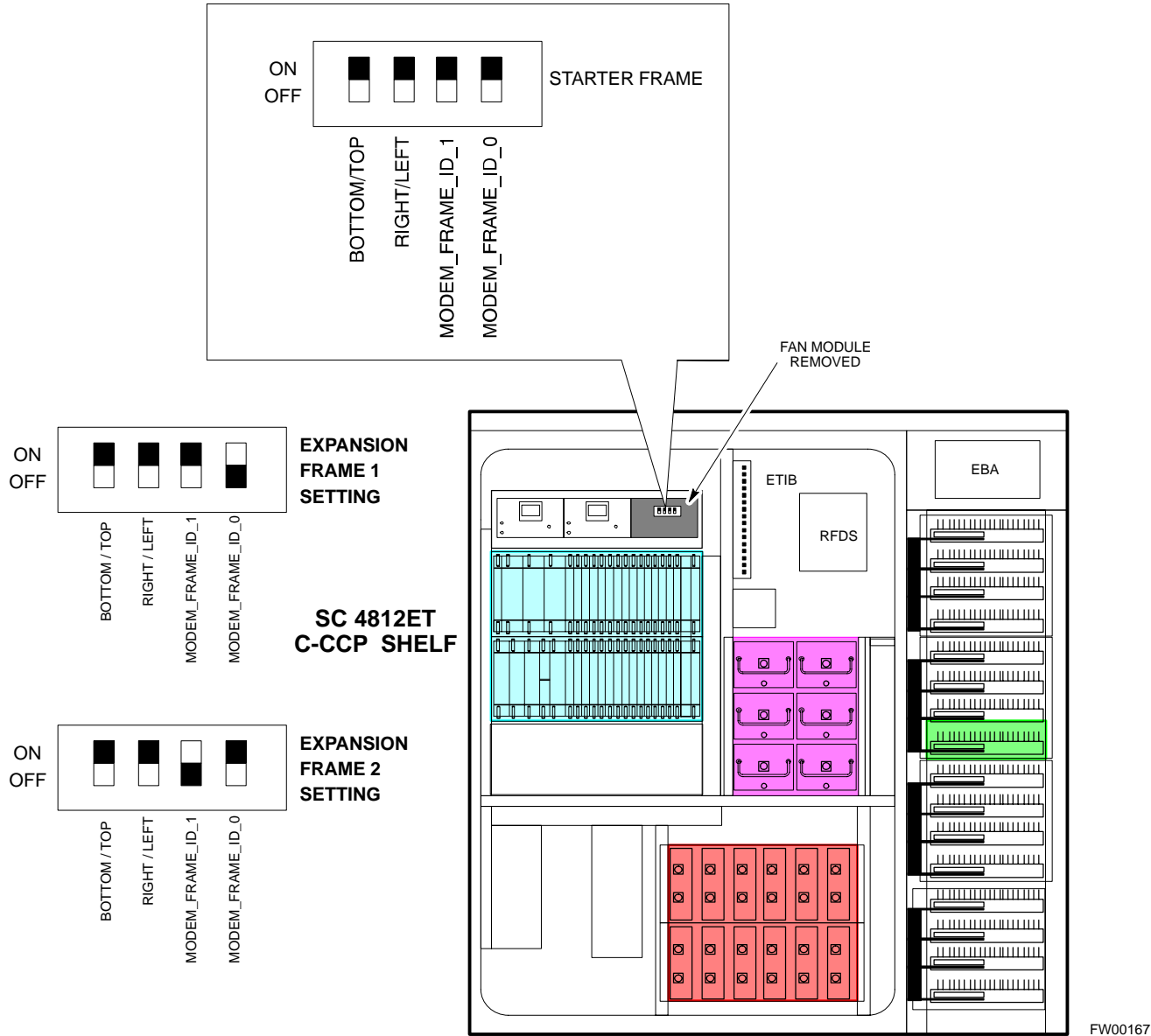
Table 2-1: Initial Installation of Boards/Modules	
Step	Action
1	Refer to the site documentation and install all boards and modules into the appropriate shelves as required. Verify they are NOT SEATED at this time.
2	As the actual site hardware is installed, record the serial number of each module on a “Serial Number Checklist” in the site logbook.

Setting Frame C-CCP Shelf Configuration Switch

If the frame is a Starter BTS, the backplane switch settings behind the fan module should be set to the ON position (see Figure 2-1).

The switch setting must be verified and set before power is applied to the BTS equipment.

Figure 2-1: Backplane DIP Switch Settings



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Checking for shorts

The following information is used to check for any electrical short circuits and to verify the operation and tolerances of the cellsite and BTS power supply units before applying power for the first time. It contains instructional information on the initial proper power up procedures for the SC 4812ET power cabinet and RF cabinet. Also presented are tests to be performed on the power cabinet. Please pay attention to all cautions and warning statements in order to prevent accidental injury to personnel.

Required Tools

The following tools are used in the procedures.

- DC current clamp (600 Amp capability with jaw size to accommodate 2/0 cable).
- Hot Air Gun - (optional for part of the Alarm Verification)
- Digital Multimeter (DMM)

Cabling Inspection

Using the site-specific documentation generated by Motorola Systems Engineering, verify that the following cable systems are properly connected:

- Receive RF cabling - up to 12 RX cables
- Transmit RF cabling - up to six TX cables

NOTE For positive power applications (+27 V):

- The positive power cable is red.
- The negative power cable is black. (The black power cable is at ground potential.)

Initial Inspection and Setup

CAUTION Ensure all battery breakers for unused battery positions are open (pulled out) during any part of the power up process, and remain in the off position when leaving the site.

Table 2-2: Initial Inspection and Setup	
Step	Action
1	Verify that ALL AC and DC breakers are turned OFF in both the Power and RF cabinets. Verify that the DC power cables between the Power and RF cabinets are connected with the correct polarity
2	The RED cables connect to the uppermost three (3) terminals (marked +) in both cabinets. Confirm that the split phase 240/120 AC supply is correctly connected to the AC load center input.

CAUTION Failure to connect the proper AC feed will damage the surge protection module inside the AC load center.

AC Power Check

The first task in the power up sequence is to apply AC power to the Power cabinet. Once power is applied a series of AC Voltage measurements is required.

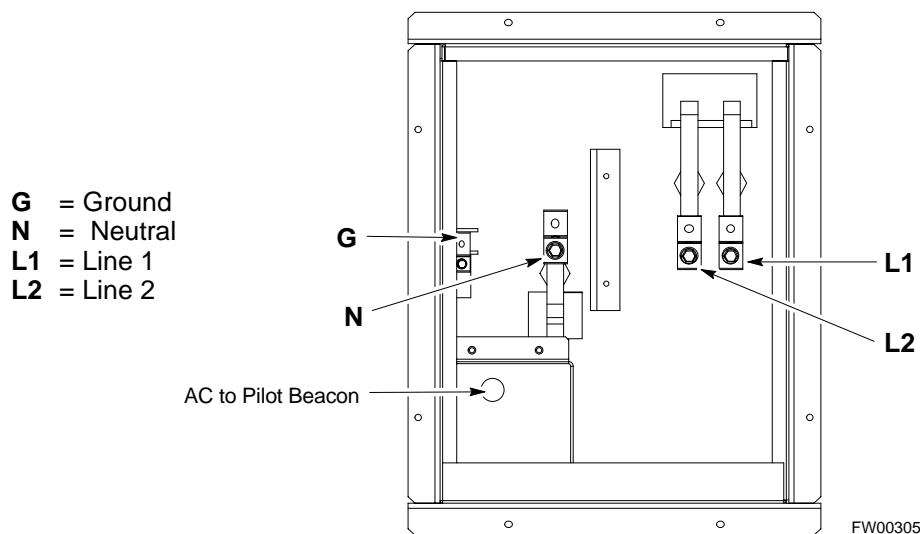
Table 2-3: AC Voltage Measurements	
Step	Action
1	Measure the AC voltages connected to the AC load center (access the terminals from the rear of the cabinet after removing the AC load center rear panel). See Figure 2-2.
2	Measure the AC voltage from terminal L1 to neutral. This voltage should be in the range of nominally 115 to 120 Vac.

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Table 2-3: AC Voltage Measurements

Step	Action
3	Measure the AC voltage from terminal L1 to ground. This voltage should be in the range of nominally 115 to 120 Vac.
4	Measure the AC voltage from terminal L2 to neutral. This voltage should be in the range of nominally 115 to 120 Vac.
5	Measure the AC voltage from terminal L2 to ground. This voltage should be in the range of nominally 115 to 120 Vac.
6	Measure L1 - L2 - should be from 208 to 240 Vac.

CAUTION If the AC voltages are in excess of 120 V (or exceed 200 V) when measuring between terminals L1 or L2 to neutral or ground, **STOP** and Do Not proceed until the cause of the higher voltages are determined. The power cabinet **WILL** be damaged if the Main breaker is turned on with excessive voltage on the inputs.

Figure 2-2: AC Load Center Wiring

AC Power Up Sequence

Applying AC Power

Once AC Voltage Measurements are complete, apply AC power to the Power Cabinet. Table 2-4 provides the procedure for applying AC power.

Step	Action
1	When the input voltages are verified as correct, turn the Main AC breaker (located on the front of the ACLC) ON. Observe that all eight (8) green LEDs on the front of the ACLC are illuminated (see Figure 2-7).
2	Turn Rectifier 1 and Rectifier 2 AC branch breakers (on the AC Load Center) ON. All the installed rectifier modules (see Figure 2-7) will start up and should each have two green LEDs (DC and Power) illuminated.
3	Turn the Meter Alarm Panel module, ON (see Figure 2-3), while observing the K2 contact in the PDA assembly (see Figure 2-9). The contact should close. The Meter Alarm Panel voltage meter should read approximately 27.4 ± 0.2 Vdc.
4	Turn the Temperature Compensation Panel (TCP) ON, (see Figure 2-4). Verify that the Meter Alarm Control Panel does not have any alarm LEDs illuminated.
5	Check the rectifier current bargraph displays (green LED display on the rectifier module). None should be illuminated at this point.

NOTE If batteries are fitted, turn on the two battery heater AC breakers on the AC Load Center.

Figure 2-3: Meter Alarm Panel

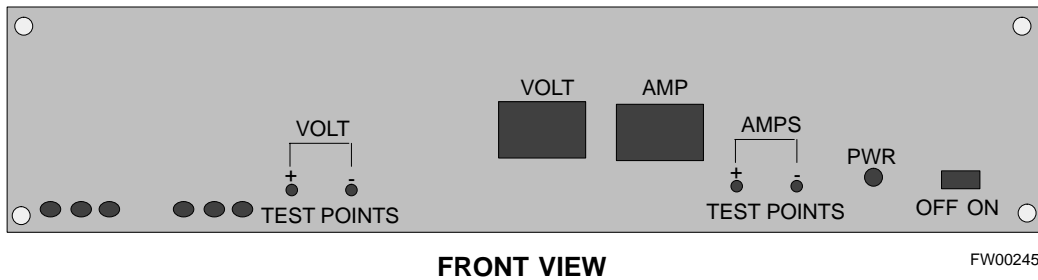
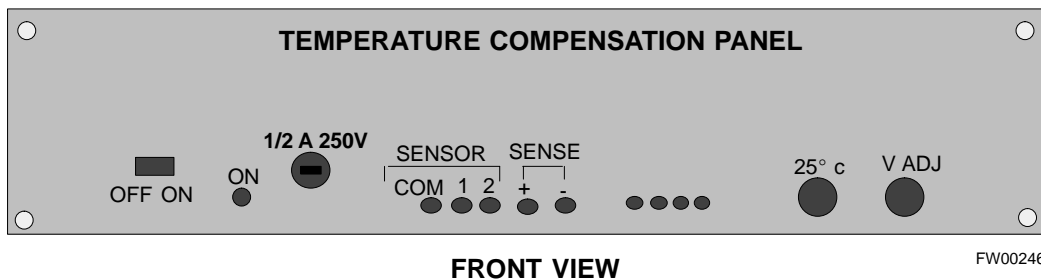


Figure 2-4: Temperature Compensation Panel



Power Cabinet Power Tests

Table 2-5 lists the step-by-step instructions for Power Up Tests.


Table 2-5: Power Cabinet Power Up Tests	
Step	Action
1	Probe the output voltage test point on the Meter Alarm Panel while pressing the 25° C set button on the TCP (see Figure 2-4). The voltage should read 27.4 ± 0.2 Vdc. Adjust Master Voltage on Meter Alarm Panel if necessary. Release the TCP 25° C set button.
2	Depending on the ambient temperature, the voltage reading may now change by up to ± 1.5 V compared to the reading just measured. If it is cooler than 25°C, the voltage will be higher, and if it is warmer than 25°C, the voltage will be lower.
3	Ensure the RF cabinet 400A main DC breaker is OFF.
4	Close the three (3) Main DC breakers on the Power Cabinet ONLY. Close by holding in the reset button on the front of the PDA, and engaging one breaker at a time.
5	Measure the voltage between the + and - terminals at the rear of the Power Cabinet and the RF Cabinet, observing that the polarity is correct. The voltage should be the same as the measurement in step 2.
6	Place the probes across the black and red battery buss bars in each battery compartment. Place the probe at the bottom of the buss bars where the cables are connected. The DC voltage should measure the same as the previous step.

DC Power Pre-test

DC Power Checks

Before applying any power to the BTS cabinet, verify there are no shorts in the RF or power DC distribution system (see Figure 2-5).

Table 2-6: DC Power Pre-test (BTS Frame)

Step	Action
1	<i>Physically verify</i> that all AC rectifiers supplying power to the RF cabinets are OFF or disabled (see Figure 2-5). There should be no 27 Vdc on DC feed terminals.
2	<p><i>On each RF cabinet:</i></p> <ul style="list-style-type: none"> • <i>Unseat</i> all circuit boards/ modules in the distribution shelf, transceiver shelf, and Single Carrier Linear Power Amplifier (SCLPA) shelves, but leave them in their associated slots. • <i>Unseat</i> all circuit boards (except CCD and CIO cards) in the C-CCP shelf and LPA shelves, but leave them in their associated slots. • Set C-CCP shelf breakers to the OFF position by <i>pulling out</i> power distribution breakers (labeled C-CCP 1, 2, 3 - located on the power distribution panel). • Set LPA breakers to the OFF position by <i>pulling out</i> power distribution breakers (8 breakers, labeled 1A-1B through 4C-4D - located on the power distribution panel).
3	<p>Verify that the resistance from the power (+) feed terminals with respect to the ground terminal on the cabinet measures $\geq 500 \Omega$ (see Figure 2-5).</p> <ul style="list-style-type: none"> • If reading is $< 500 \Omega$, a short may exist somewhere in the DC distribution path supplied by the breaker. Isolate the problem before proceeding. A reading $> 3 \text{ M}\Omega$ could indicate an open (or missing) bleeder resistor (installed across the filter capacitors behind the breaker panel).
4	<p>Set the 400 Amp Main Breaker and the C-CCP breakers (C-CCP 1, 2, 3) to the ON position by pushing them <i>IN one at a time</i>. Repeat step 3 after turning on each breaker.</p> <p>* IMPORTANT</p> <p>If, after inserting any board/module, the ohmmeter stays at 0 Ω, a short probably exists in that board/module. Replace the suspect board/module and repeat the test. If test still fails, isolate the problem before proceeding.</p>
5	<p>Insert and lock the DC/DC converter modules into their associated slots <i>one at a time</i>. Repeat step 3 after inserting each module.</p> <ul style="list-style-type: none"> • A typical response is that the ohmmeter will steadily climb in resistance as capacitors charge, finally indicating approximately 500 Ω. <p>! CAUTION</p> <p>Verify the correct power/converter modules by observing the locking/retracting tabs appear as follows:</p> <p>- </p>
6	<p>Insert and lock all remaining circuit boards and modules into their associated slots in the C-CCP shelf. Repeat step 3 after inserting and locking each board or module.</p> <ul style="list-style-type: none"> • A typical response is that the ohmmeter will steadily climb in resistance as capacitors charge, stopping at approximately 500 Ω.

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Table 2-6: DC Power Pre-test (BTS Frame)

Step	Action
7	Set the 8 LPA breakers ON by pushing them IN <i>one at a time</i> . Repeat step 3 after turning on each breaker. <ul style="list-style-type: none"> A typical response is that the ohmmeter will steadily climb in resistance as capacitors charge, stopping at approximately 500 Ω.
8	Seat all LPA and associated LPA fan modules into their associated slots in the shelves <i>one at a time</i> . Repeat step 3 after seating each LPA and associated LPA fan module. <ul style="list-style-type: none"> A typical response is that the ohmmeter will steadily climb in resistance as capacitors charge, stopping at approximately 500 Ω.
9	Seat the Heat Exchanger, ETIB, and Options breakers one at a time. Repeat step 3.

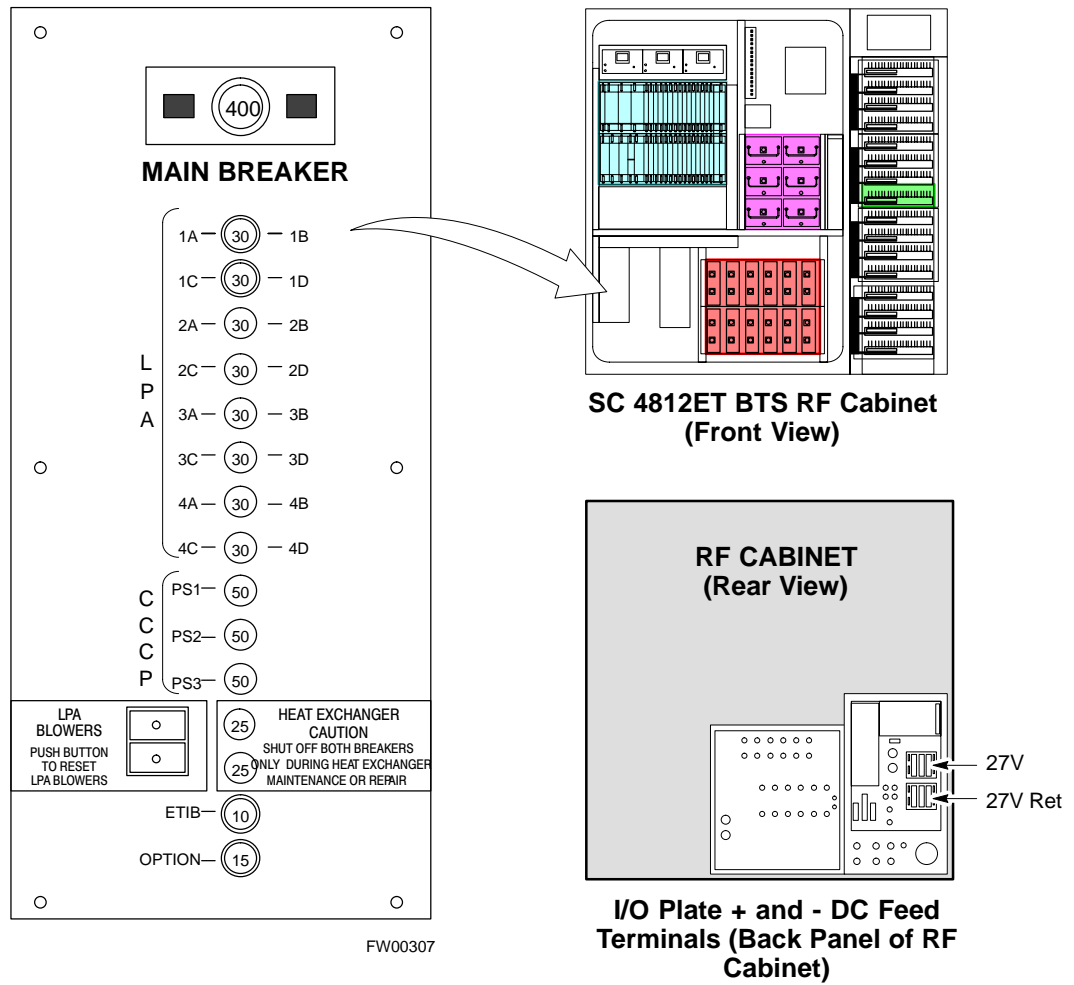
RF Cabinet Power Up

Table 2-7 covers the procedures for properly powering up the RF Cabinet.

Table 2-7: RF Cabinet Power Up

Step	Action
1	Ensure the 400 Amp Main DC breaker and all other breakers in the RF Cabinet are OFF.
2	Proceed to the DC Power Pre-test (BTS Frame) sequence (see Table 2-6) (for initial power-up as required).
3	Ensure the power cabinet is turned on (see Table 2-5). Verify that 27 volts is applied to the terminals on the back of the RF cabinet.
4	Engage the main DC circuit breaker on the RF cabinet (see Figure 2-5).
5	<p><i>On each RF cabinet:</i></p> <ul style="list-style-type: none"> Set C-CCP shelf breakers to the ON position by pushing them in one at a time (labeled C-CCP 1, 2, 3 - located on the power distribution panel). Set LPA breakers to the ON position by pushing them in one at a time (8 breakers, labeled 1A-1B through 4C-4D - located on the power distribution panel). Set the two heat exchanger breakers to the ON position by pushing them in one at a time. Set the ETIB breaker to the ON position by pushing it in. Set the OPTION breaker to the ON position by pushing it in.
6	<p>Measure the voltage drop between the Power Cabinet meter test point and the 27 V buss bar inside the RF Cabinet PDA while the RF Cabinet is transmitting.</p> <p>NOTE</p> <p>For a 3-sector carrier system, the voltage drop should be less than 0.2 V.</p> <p>For a 12-sector carrier system, the voltage drop should be less than 0.3 V.</p>
7	Using a DC current probe, measure the current in each of the six (6) DC cables that are connected between the RF and Power Cabinet. The DC current measured should be approximately the same. If there is a wide variation between one cable and the others (>20 A), check the tightness of the connections (torque settings) at each end of the cable.

Figure 2-5: RF Cabinet Circuit Breaker Panel and 27Vdc Terminal Locations



Battery Test

Charge Test (Connected Batteries)

Table 2-8 lists the step-by-step instructions for testing the batteries.

Table 2-8: Battery Charge Test (Connected Batteries)	
Step	Action
1	<p>Close the battery compartment breakers for connected batteries ONLY. This process should be completed quickly to avoid individual battery strings with excess charge current</p> <p>NOTE</p> <p>If the batteries are sufficiently discharged, the battery circuit breakers may not engage individually due to the surge current. If this condition is observed, turn off the Meter Alarm Panel power switch, and then engage all the connected battery circuit breakers, the Meter Alarm Panel power switch should then be turned ON.</p>
2	<p>Using the DC current probe, measure the current in each of the battery string connections to the buss bars in each battery cabinet. The charge current may initially be high but should quickly reduce in a few minutes if the batteries have a typical new battery charge level.</p>
3	<p>The current in each string should be approximately equal (± 5 A).</p>
4	<p>The bargraph meters on the rectifier modules can be used as a rough estimate of the total battery charge current. Each rectifier module has eight LEDs to represent the output current. Each illuminated LED indicates that approximately 12.5% (1/8 or 8.75 A) of the rectifier's maximum (70 A) current is flowing.</p> <p>EXAMPLE:</p> <p>Question: A system fitted with three rectifier modules each have three bargraph LEDs illuminated. What is the total output current into the batteries?</p> <p>Answer: Each bargraph is approximately indicating 12.5% of 70 A, therefore, 3 X 8.75A equals 26.25A. As there are three rectifiers, the total charge current is equal to (3 X 26.25 A) 78.75 A.</p> <p>This charge current calculation only applies at this part of the start up procedure when the RF Cabinet is not powered on, and the power cabinet heat exchanger is turned off.</p>
5	<p>Allow a few minutes to ensure that the battery charge current stabilizes before taking any further action. Recheck the battery current in each string. If the batteries had a reasonable charge, the current in each string should reduce to less than 5 A.</p>
6	<p>Recheck the DC output voltage. It should remain the same as measured in step 4 of the Power Up Test.</p> <p>NOTE</p> <p>If discharged batteries are installed, all bargraphs may be illuminated on the rectifiers during the charge test. This indicates that the rectifiers are at full capacity and are rapidly charging the batteries. It is recommended in this case that the batteries are allowed to charge and stabilize as in the above step before commissioning the site. This could take several hours.</p>

Discharge Test

Perform the test procedure in Table 2-9 only when the battery current is less than 5 A per string. Refer to Table 2-8 for the procedures to check current levels.

2

Table 2-9: Battery Discharge Test

Step	Action
1	Turn the battery test switch on the Meter Alarm Panel, ON (see Figure 2-3). The rectifier output voltage and current should decrease by approximately 10% as the batteries assume the load. Alarms for the Meter Alarm Panel may occur.
2	Measure the individual battery string current using the DC current probe. The battery discharge current in each string should be approximately the same (within ± 5 A).
3	Turn Battery Test Switch OFF.

CAUTION	Failure to turn OFF the Battery Test Switch before leaving the site, will result in low battery capacity and reduce battery life.
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Heat Exchanger Power Up

Table 2-10: Heat Exchanger Power Up	
Step	Action
1	Turn the Power Cabinet Heat Exchanger breakers ON (see Figure 2-6 for breaker location).
2	The Heat Exchanger will now go into a five (5) minute test sequence. Ensure that the internal and external Heat Exchanger grills are open. Place a hand on the internal and external Heat Exchanger grills to feel for air draft.

Figure 2-6: Heat Exchanger Blower Assembly

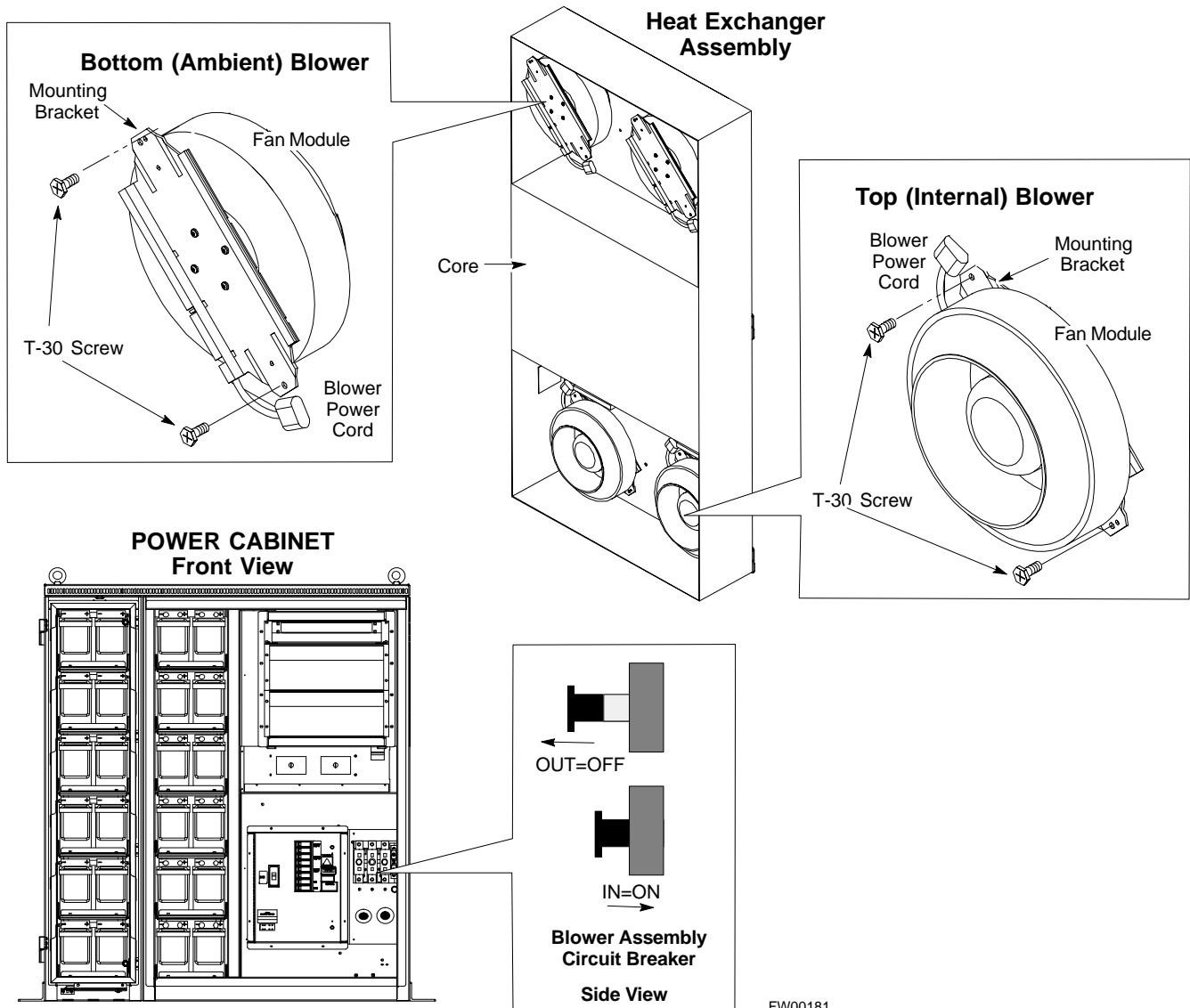


Figure 2-7: Power Cabinet Circuit Breaker Assemblies

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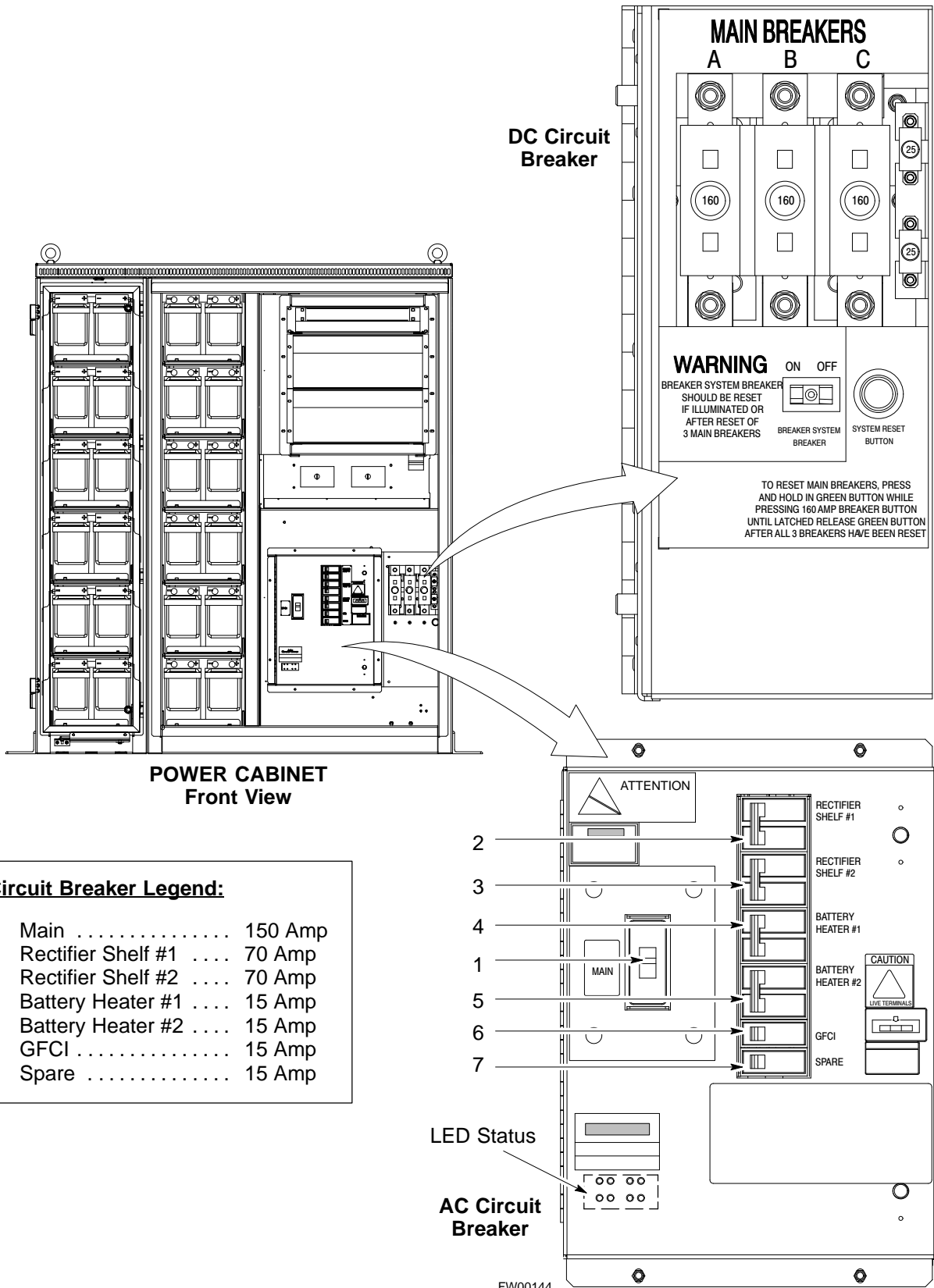
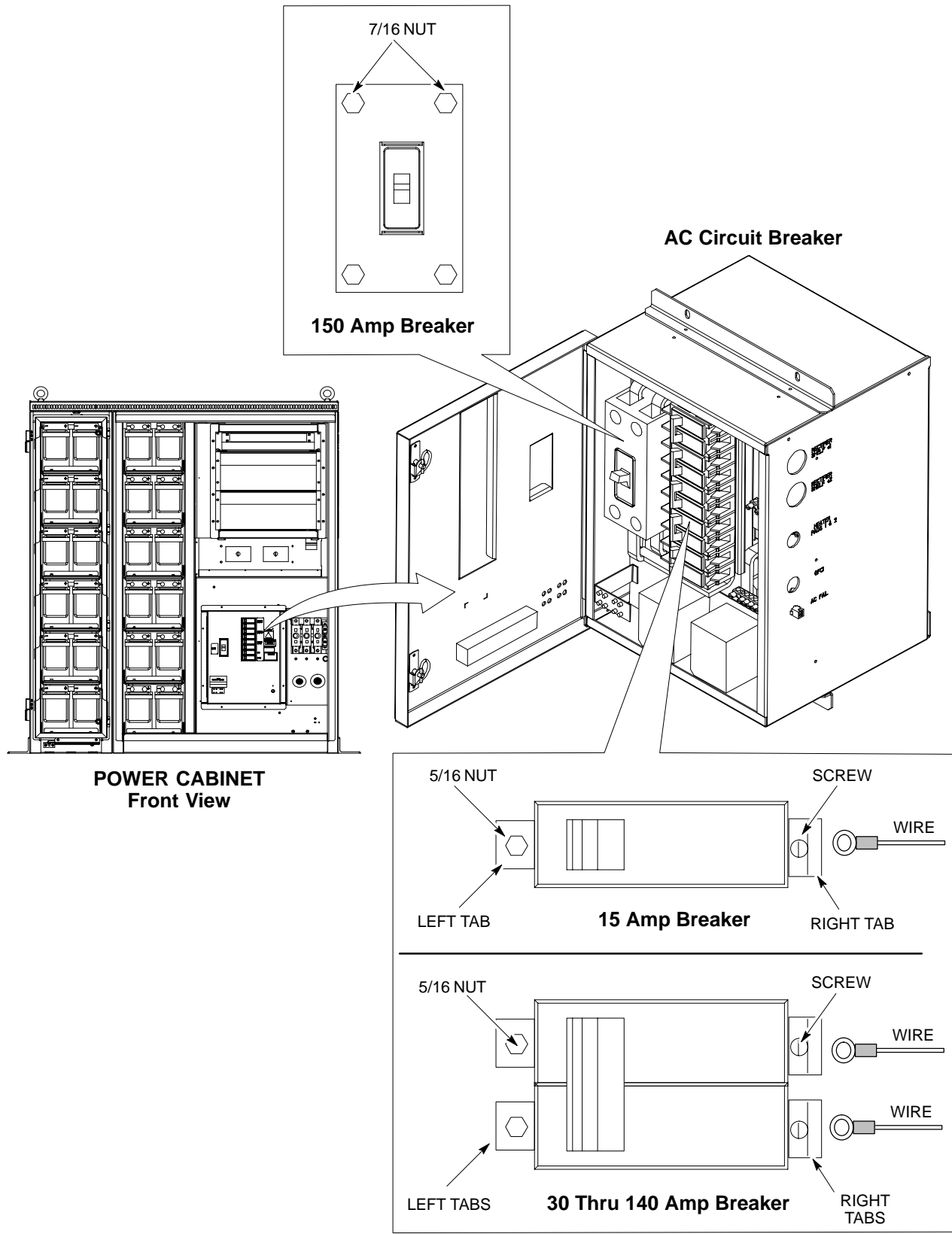


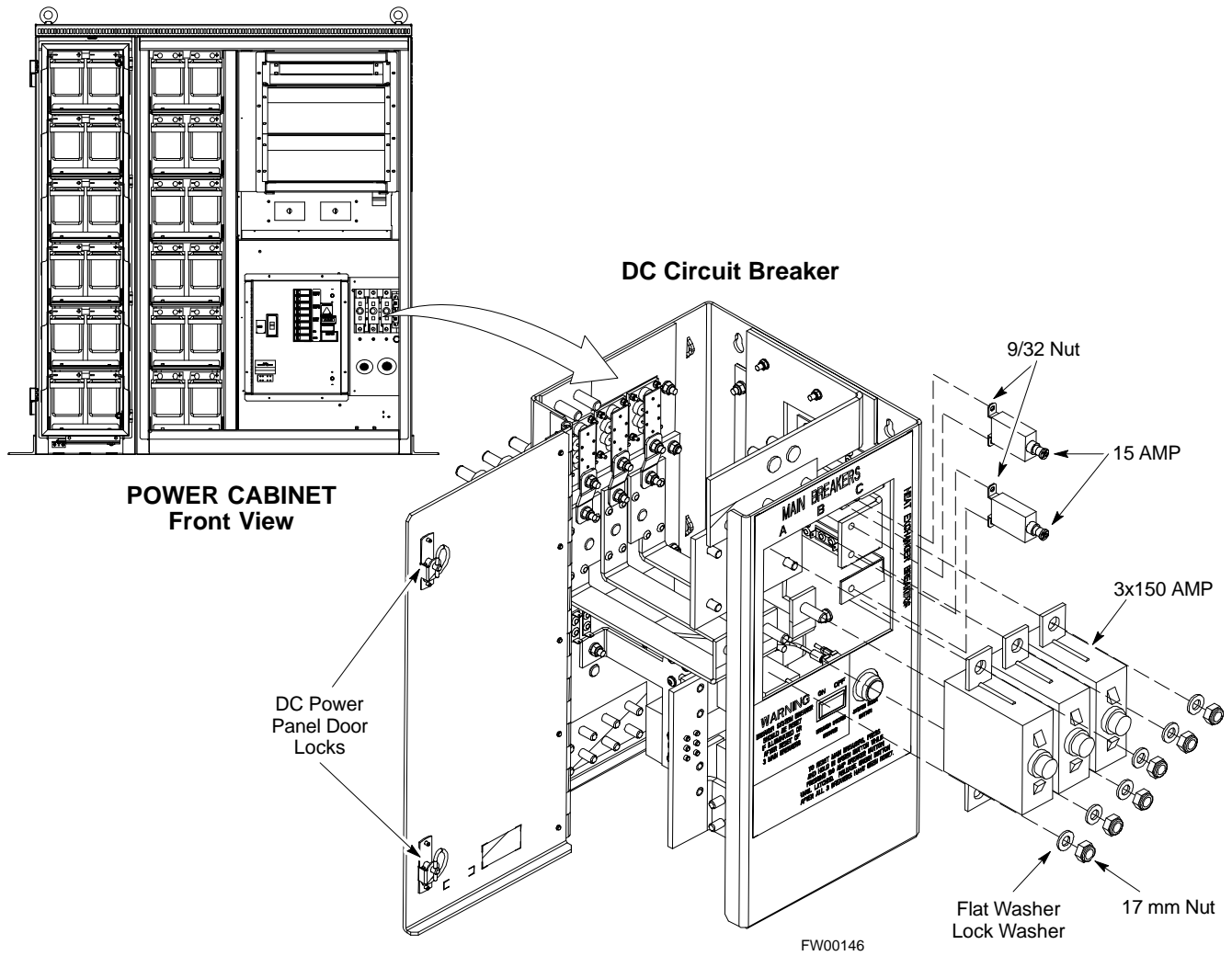
Figure 2-8: Power Cabinet AC Circuit Breakers



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Figure 2-9: Power Cabinet DC Circuit Breakers

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*Chapter 3***Optimization/ATP**

Basic Optimization

Introduction

This chapter provides procedures for downloading system operating software, set up of the supported test equipment, CSM reference verification/optimization, and transmit/receive path verification.

NOTE	Before using the LMF, use an editor to view the "CAVEATS" section in the "readme.txt" file in the c:\wlmf folder for any applicable information.
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Optimization Process

After a BTS is physically installed and the preliminary operations (power up) have been completed, the CDMA LMF is used to calibrate and optimize the BTS. The basic optimization process can be accomplished as follows:

- Download MGLI with code and data and then enable MGLI.

NOTE	The GLIs may be GLI2s or GLI3s
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- Use the status function and verify that all of the installed devices of the following types respond with status information: CSM, BBX, GLI3, and MCC (and TSU if RFDS is installed). If a device is installed and powered up but is not responding and is colored gray in the BTS display, the device is not listed in the CDF file. The CDF file will have to be corrected before the device can be accessed by CDMA LMF.
- Download code and data to all devices of the following types:
 - CSM
 - BBX (may be BBX2 or BBX-1X)
 - GLI3 (other than GLI3-1)
 - MCC (may be MCC-8E, MCC24, or MCC-1X)
- Download the RFDS TSIC (if installed).
- Verify the operation of the GPS and HSO or LFR signals.
- Enable the following devices (in the order listed):
 - Secondary CSM (slot 2)
 - Primary CSM (slot 1)
 - All MCCs
- Connect the required test equipment for a full optimization.
- Select the test equipment.
- Calibrate the TX and RX test cables if they have not previously been calibrated using the CDMA LMF that is going to be used for the optimization/calibration. The cable calibration values can also be entered manually.
- Select all of the BBXs and all of the MCCs and use the full optimization function. The full optimization function performs TX calibration, BLO download, TX audit, all TX tests, and all RX tests for all selected devices.

- If the TX calibration fails, repeat the full optimization for any failed paths.
- If the TX calibration fails again, correct the problem that caused the failure and repeat the full optimization for the failed path.
- If the TX calibration and audit portion of the full optimization passes for a path but some of the TX or RX tests fail, correct the problem that caused the failure and run the individual tests as required until all TX and RX tests have passed for all paths.

Cell-site Types

Sites are configured as Omni/Omni or Sector/Sector (TX/RX). Each type has unique characteristics and must be optimized accordingly.

NOTE	For more information on the different in site types, please refer to the applicable <i>BTS/Modem Frame Hardware Installation and Functional Hardware Description</i> manuals.
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Cell-site Data File

The Cell-Site Data File (CDF) contains information that defines the BTS and data used to download files to the devices. A CDF file must be placed in the applicable BTS folder before the LMF can be used to log into that BTS. CDF files are normally obtained from the CBSC using a floppy disk. A file transfer protocol (ftp) method can be used if the LMF computer has the capability.

The CDF includes the following information:

- Download instructions and protocol
- Site specific equipage information
- C-CCP shelf allocation plan
 - BBX equipage (based on cell-site type) including redundancy
 - CSM equipage including redundancy
 - MCC (MCC24E, MCC8E or MCC-1X) channel element allocation plan. This plan indicates how the C-CCP shelf is configured, and how the paging, synchronization, traffic, and access channel elements (and associated gain values) are assigned among the (up to 12) MCCs in the shelf.
- CSM equipage including redundancy
- Effective Rated Power (ERP) table for all TX channels to antennas respectively. Motorola System Engineering specifies the ERP of a transmit antenna based on site geography, antenna placement, and government regulations. Working from this ERP requirement, the antenna gain, (dependent on the units of measurement specified) and antenna feed line loss can be combined to determine the required power at the top of the BTS frame. The corresponding BBX output level required to achieve that power level on any channel/sector can also be determined.

NOTE	Refer to the <i>CDMA LMF Operator's Guide</i> for additional information on the layout of the LMF directory structure (including CDF file locations and formats).
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BTS System Software Download

BTS system software must be successfully downloaded to the BTS processor boards before optimization can be performed. BTS operating code is loaded from the LMF computer terminal.

Circuit Backhaul BTS

The information below is for Circuit-Backhaul BTS. GLI-3's configured for Circuit-backhaul use bts.cdf files.

NOTE	Before using the LMF for optimization/ATP, the correct bts-#.cdf and cbcs-#.cdf files for the BTS must be obtained from the CBSC and put in a bts-# folder in the LMF. Failure to use the correct CDF files can cause wrong results.
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CAUTION	<u>Failure to use the correct CDF files to log into a live (traffic carrying) site can shut down the site.</u>
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Packet-Backhaul BTS

GLI-3's are configured for Packet-backhaul BTS's the file that is needed to login to the BTS is the NECF file (bts-xxx.xml) located on the OMC/R.

The CDF is normally obtained from the CBSC on a DOS formatted diskette, or through a file transfer protocol (ftp) if the LMF computer has ftp capability. Refer to the *CDMA LMF Operator's Guide*, or the LMF Help screen, for more information.

Site Equipage Verification

If you have not already done so, use an editor to view the CDF, and review the site documentation. Verify the site engineering equipage data in the CDF to the actual site hardware.

CAUTION	Always wear a conductive, high impedance wrist strap while handling any circuit card/module to prevent damage by ESD. Extreme care should be taken during the removal and installation of any card/module. After removal, the card/module should be placed on a conductive surface or back into the anti-static bag in which it was shipped.
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Isolate BTS from T1/E1 Spans

NOTE	At active sites , the OMC/CBSC must disable the BTS and place it out of service (OOS). DO NOT remove the span surge protectors until the OMC/CBSC has disabled the BTS.
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Each frame is equipped with one 50-pair punch block for spans, customer alarms, remote GPS, and power cabinet alarms. See Figure 3-2 and refer to Table 3-1 for the physical location and pin call-out information. To disable the span, pull the surge protectors for the respective span.

Before connecting the LMF to the frame LAN, the OMC/CBSC must disable the BTS and place it OOS to allow the LMF to control the CDMA BTS. This prevents the CBSC from inadvertently sending control information to the CDMA BTS during LMF based tests.

Configure Channel Service Unit

The M-PATH 537 Channel Service Unit (CSU) provides in-band SNMP-managed digital service access to T1 and fractional T1 lines. M-PATH units plug into the Kentrox 2-slot frame (see Figure 3-1).

Remote M-PATH management is available via SNMP over an in-band data link on the T1 line (using a facility data link or 8-64 kbps of a DS0 channel). The unit at the near end of the management path can be an SNMP manager or another M-PATH CSU.

Each 19 inch rack can support two CSU M-PATH 537 modules. Each M-PATH 537 module supports one and only one span connection.

Programming of the M-PATH is accomplished through the DCE 9-pin connector on the front panel of the CSU shelf. Manuals and a Microsoft Windows programming disk is supplied with each unit.

Setting the Control Port

Whichever control port is chosen, it must first be set up so the control port switches match the communication parameters being used by the control device. If using the rear-panel DTE control port, set the shelf-address switch SA5 to “up” (leave the switch down for the rear-panel DCE control port).

For more information, refer to the vendor user manual (part number 1174139) and installation manual (part number 1174462) provided with each CSU.

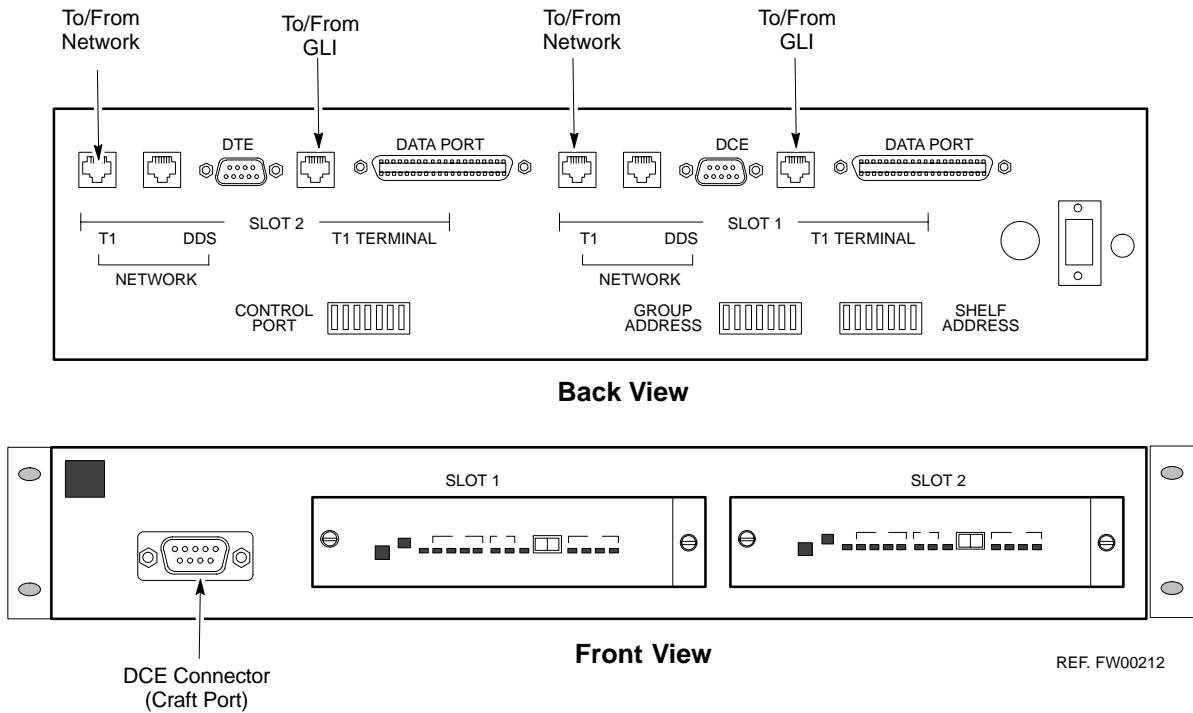
Plug one of the cables listed below into the Control Port connectors:

<i><u>Part Number</u></i>	<i><u>Description of Cable</u></i>
01-95006-022 (six feet)	DB-9S to DB-9P
01-95010-022 (ten feet)	

The control port cables can be used to connect the shelf to:

- A PC using the AT 9-pin interface
- A modem using the 9-pin connector
- Other shelves in a daisy chain

Figure 3-1: Back and Front View of the CSU



REF. FW00212

CAUTION SC4812ET Span Line Labeling for Span B and Span C is swapped

- On the SC4812ET's, the span cable internal to the base station that connects the 50 pin header on the I/O plate to the CSU has Span B and Span C (RJ-45) connectors mis-labeled.
- CFE will punch down the span on the 50 pair bunchblock as per Motorola documentation and punchdown chart. When connecting the span input to the CSU re-label "Span B" cable to "Span C" cable to "Span B". Connect to CSU as per documentation

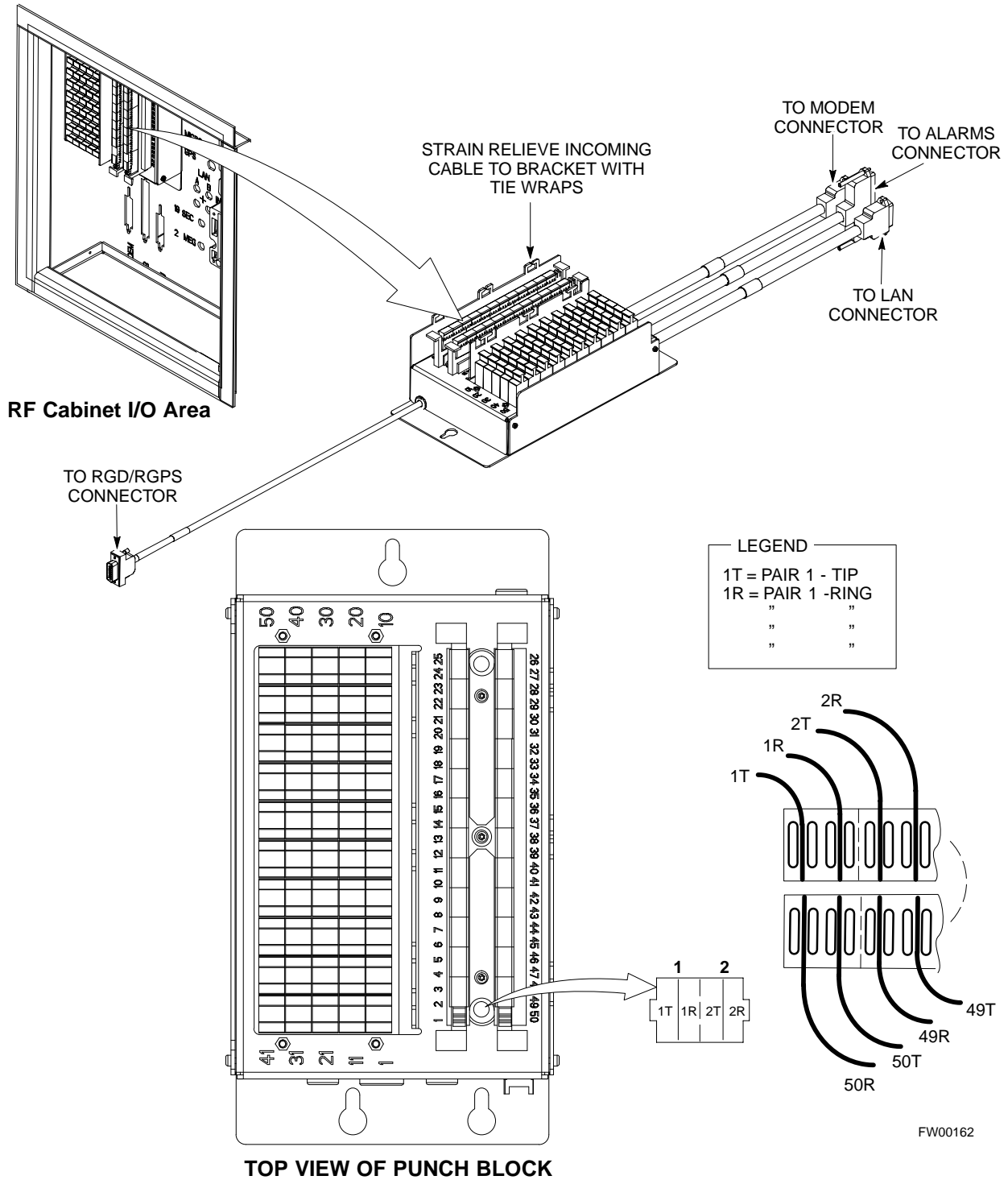
Note: The labeling issue on the cable from the I/O plate to the CSU Part Number 3086601H01 Rev C shall be corrected on revision "D" to address this issue. The cut over date to Rev. D will be approximately January 30, 2001.

3

Alarm and Span Line Cable Pin/Signal Information

See Figure 3-2 and refer to Table 3-1 for the physical location and pin call-out information for the 50-pin punch block.

Figure 3-2: 50 Pair Punch Block



Alarm and Span Line Cable Pin/Signal Information

Table 3-1 lists the complete pin/signal identification for the 50-pin punch block.

Table 3-1: Pin-Out for 50-Pair Punchblock

Punchblock Cable Connector	Function	Signal Name	Punch Pin	Ext. Cable Wire Color
ALARM	Power Cabinet	Power Cab Control - NC	1T	Blue
		Power Cab Control - NO	1R	Blk/Blue
		Power Cab Control-Com	2T	Yellow
		Reserved	2R	N/C
		Rectifier Fail	3T	Blk/Yellow
		AC Fail	3R	Green
		Power Cab Exchanger Fail	4T	Blk/Grn
		Power Cab Door Alarm	4R	White
		Power Cab Major Alarm	5T	Blk/White
		Battery Over Temp	5R	Red
		Power Cab Minor Alarm	6T	Blk/Red
		Reticifier Over Temp	6R	Brown
		Power Cab Alarm Rtn	7T	Blk/Brn
	HSO/LFR Extension	LFR_HSO_GND	7R	
		EXT_1PPS_POS	8T	
		EXT_1PPS_NEG	8R	
	LFR Antenna	CAL_+	9T	
		CAB_-	9R	
		LORAN_+	10T	
		LORAN_-	10R	
	Pilot Beacon	Pilot Beacon Alarm - Minor	11T	
		Pilot Beacon Alarm - Rtn	11R	
		Pilot Beacon Alarm - Major	12T	
		Pilot Beacon Control-NO	12R	
		Pilot Beacon Control - COM	13T	
		Pilot Beacon Control - NC	13R	

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Table 3-1: Pin-Out for 50-Pair Punchblock

Punchblock Cable Connector	Function	Signal Name	Punch Pin	Ext. Cable Wire Color
ALARM	Customer Outputs	Customer Outputs 1 - NO	14T	
		Customer Outputs 1 - COM	14R	
		Customer Outputs 1 - NO	14T	
		Customer Outputs 1 - COM	14R	
		Customer Outputs 1 - NC	15T	
		Customer Outputs 2 - NO	15R	
		Customer Outputs 2 - COM	16T	
		Customer Outputs 2 - NC	16R	
		Customer Outputs 3 - NO	17T	
		Customer Outputs 3 - COM	17R	
		Customer Outputs 3 - NC	18T	
		Customer Outputs 4 - NO	18R	
		Customer Outputs 4-COM	19T	
		Customer Outputs 4 - NC	19R	
ALARM	Customer Inputs	Customer Inputs 1	20T	
		Cust_Rtn_A_1	20R	
		Customer Inputs 2	21T	
		Cust_Rtn_A_2	21R	
		Customer Inputs 3	22T	
		Cust_Rtn_A_3	22R	
		Customer Inputs 4	23T	
		Cust_Rtn_A_4	23R	
		Customer Inputs 5	24T	
		Cust_Rtn_A_5	24R	
		Customer Inputs 6	25T	
		Cust_Rtn_A_6	25R	
		Customer Inputs 7	26T	
		Cust_Rtn_A_7	26R	
		Customer Inputs 8	27T	
		Cust_Rtn_A_8	27R	
		Customer Inputs 9	28T	
		Cust_Rtn_A_9	28R	
Customer Inputs 10	29T			
Cust_Rtn_A_10	29R			

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Table 3-1: Pin-Out for 50-Pair Punchblock

Punchblock Cable Connector	Function	Signal Name	Punch Pin	Ext. Cable Wire Color
SPAN I/O	Span 1	RCV_TIP_A	30T	
		RCV_RING_A	30R	
		XMIT_TIP_A	31T	
		XMIT_RING_A	31R	
	Span 2	RCV_TIP_B	32T	
		RCV_RING_B	32R	
		XMIT_TIP_B	33T	
		XMIT_RING_B	33R	
	Span 3	RCV_TIP_C (Note)	34T	
		RCV_RING_C (Note)	34R	
		XMIT_TIP_C (Note)	35T	
		XMIT_RING_C(Note)	35R	
	Span 4	RCV_TIP_D (Note)	36T	
		RCV_RING_D (Note)	36R	
		XMIT_TIP_D (Note)	37T	
		XMIT_RING_D(Note)	37R	
	Span 5	RCV_TIP_E (Note)	38T	
		RCV_RING_E (Note)	38R	
		XMIT_TIP_E (Note)	39T	
		XMIT_RING_E(Note)	39R	
	Span 6	RCV_TIP_F (Note)	40T	
		RCV_RING_F (Note)	40R	
		XMIT_TIP_F (Note)	41T	
		XMIT_RING_F(Note)	41R	
		NOTE Span 3 through 6 are spares for expansion purposes		

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3

Table 3-1: Pin-Out for 50-Pair Punchblock

Punchblock Cable Connector	Function	Signal Name	Punch Pin	Ext. Cable Wire Color
RGD/RGPS	For frame without RGD Expansion Punchblock Single Frame BTS;RGPS Head Connection OR Multiple Frame BTS; RGD Connection at RGPS Secondary Frame	GPS_Power_A	42T	Yellow
		GPS_Power_A_Return	42R	Yellow/Black
		GPS_Power_B	43T	Blue
		GPS_Power_B_Return	43R	Blue/Black
		GPS_TXD+	44T	White
		GPS_TXD-	44R	White/Black
		GPS_RXD+	45T	Green
		GPS_RXD-	45R	Green/Black
		Signal Ground (TDR+)	46T	Red
		Signal Ground (TDR-)	46R	Red/Black
		GPS_1PPS+	47T	Brown
		GPS_1PPS-	47R	Brown/Black
RGD/RGPS	For frame with RGD Expansion Punchblock OR Multiple Frame BTS; RGPS Head Connection at RGPS Primary Frame	GPS_Power_A	42T	Yellow
		GPS_Power_A_Return	42R	Yellow/Black
		GPS_Power_B	43T	Blue
		GPS_Power_B_Return	43R	Blue/Black
		GPS_TXD+	44T	White
		GPS_TXD-	44R	White/Black
		GPS_RXD+	45T	Green
		GPS_RXD-	45R	Green/Black
		Signal Ground (TDR+)	46T	Red
		Master Frame (TDR-)	46R	Red/Black
		GPS_1PPS+	47T	Brown
		GPS_1PPS-	47R	Brown/Black
MODEM		Reserved	48T	
		Reserved	48R	
RGD/RGPS		Chassis Ground	49T	N/A
None		No Connection	49R	None
ALARM		Reserved	50T	None
		Reserved	50R	None

T1/E1 Span Isolation

Table 3-2 describes the action required for span isolation.

Isolate BTS from T1/E1 Spans

NOTE At active sites, the OMC/CBSC must disable the BTS and place it out of service (OOS). **DO NOT** remove the span surge protectors until the OMC/CBSC has disabled the BTS.

Table 3-2: T1/E1 Span Isolation

Step	Action
1	<p>The OMC/CBSC must disable the BTS and place it OOS.</p> <p>The Span Lines can be disabled by removing the surge protectors on the 50-pin punch block. Using Table 3-1 locate the span or spans which need to be disabled and remove the respective surge protector.</p> <p>NOTE If a third party is used for span connectivity, the third party must be informed before disabling the span line.</p>

3

LMF Operation

Preparing the LMF

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).

NOTE For the LMF graphics to display properly, the computer platform must be configured to display *more than 256 colors*. See the operating system software instructions for verifying and configuring the display settings.

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

- LMF Program on CD ROM
- CDF for each supported BTS (on diskette or available from the CBSC)
- CBSC File for each supported BTS (on diskette or available from the CBSC)

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

LMF Operating System Installation

Follow the procedure in Table 3-3 to install the LMF operating system.

Table 3-3: LMF Operating System Installation	
Step	Action
1	Insert the LMF Program CD ROM into the LMF CD ROM drive. <ul style="list-style-type: none"> - If the Setup screen is displayed, go to step 5. - If the Setup screen is not displayed, proceed to step 2.
2	Click on the Start button.
3	Select Run .
4	In the Open box, enter d:\autorun and click on the OK button. NOTE If applicable, replace the letter d with the correct CD ROM drive letter.
5	Follow the instructions displayed on the Setup screen.

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Table 3-3: LMF Operating System Installation

Step	Action
	<p>* IMPORTANT</p> <p>First Time Installations:</p> <ul style="list-style-type: none"> - Install U/WIN (First) - Install Java Runtime Environment (Second) - Install LMF Software (Third) - Install BTS Binaries (Fourth) - Install/Create BTS Folders (Fifth) <p>Any time you install U/WIN, you must install the LMF software because the installation of the LMF modifies some of the files that are installed during the U/Win installation. Installing U/Win over-writes these modifications.</p> <p>NOTE</p> <p>There are multiple binary image packages for installation on the CD-ROM. When prompted, choose the load that corresponds to the switch release that you currently have installed. Perform the Device Images install after the WinLMF installation.</p> <p>If applicable, a separate CD ROM of BTS Binaries may be available for binary updates.</p>

3

CDMA LMF Home 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

NOTE The CDMA LMF installation program creates the default home directory **c:\wlmf** when the CDMA LMF is installed.

Copy CBSC CDF Files to the LMF Computer

Before logging on to a BTS with the LMF to execute optimization/ATP procedures, the correct **bts-#.cdf** and **cbsc-#.cdf** files must be obtained from the CBSC and put in a **bts-#** folder in the LMF computer. This requires creating versions of the CBSC CDF files on a DOS-formatted floppy diskette and using the diskette to install the CDF files on the LMF computer.

NOTE

When copying CDF files, comply with the following to prevent BTS login problems with the LMF.

- The numbers used in the **bts-#.cdf** and **cbsc-#.cdf** filenames must correspond to the locally assigned numbers for each BTS and its controlling CBSC.

- The generic **cbsc-1.cdf** file supplied with the LMF will work with locally numbered BTS CDF files. Using this file *will not provide a valid optimization* unless the generic file is edited to replace default parameters (e.g., channel numbers) with the operational parameters used locally.

The procedure in Table 3-4 lists the steps required to transfer the CDF files from the CBSC to the LMF computer. For any further information, refer to the CDMA LMF Operator's Guide (Motorola part number 68P64114A21) or the LMF Help screen..

Table 3-4: Copying CBSC CDF Files to the LMF

Step	Action
1	Login to the CBSC workstation.
2	Insert a DOS-formatted floppy diskette in the workstation drive.
3	Type eject -q and press <Enter>.
4	Type mount and press <Enter>. NOTE <ul style="list-style-type: none"> • Look for the “<i>floppy/no_name</i>” message on the last line displayed. • If the eject command was previously entered, <i>floppy/no_name</i> will be appended with a number. Use the explicit <i>floppy/no_name</i> reference displayed when performing step 7.
5	Change to the directory, where the files to be copied reside, by typing cd <directoryname> (e.g., cd bts-248) and pressing <Enter>.
6	Type ls and press the Enter key to display the list of files in the directory.
7	With <i>Solaris versions of Unix</i> , create DOS-formatted versions of the bts-#.cdf and cbsc-#.cdf files on the diskette by entering the following command: unix2dos <source filename> /floppy/no_name/<target filename> (e.g., unix2dos bts-248.cdf /floppy/no_name/bts-248.cdf). NOTE <ul style="list-style-type: none"> • Other versions of Unix do not support the unix2dos and dos2unix commands. In these cases, use the Unix cp (copy) command. The <i>copied</i> files will be difficult to read with a DOS or Windows text editor because Unix files do not contain line feed characters. Editing copied CDF files on the LMF computer is, therefore, not recommended. • Using cp, multiple files can be <i>copied</i> in one operation by separating each filename to be copied with a space and ensuring the destination directory (<i>floppy/no_name</i>) is listed at the end of the command string following a space (e.g., cp bts-248.cdf cbsc-6.cdf /floppy/no_name).
8	Repeat steps 5 through 7 for each bts-# that must be supported by the LMF.

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Table 3-4: Copying CBSC CDF Files to the LMF

Step	Action
9	When all required files have been copied to the diskette, type eject and press <Enter>.
10	Remove the diskette from the CBSC drive.
11	If it is not running, start the Windows operating system on the LMF computer.
12	Insert the diskette containing the <i>bts-#.cdf</i> and <i>cbsc-#.cdf</i> files into the LMF computer.
13	Using Windows Explorer (or equivalent program), create a corresponding <i>bts-#</i> folder in the <i><lmf home directory></i> directory for each <i>bts-#.cdf/cbsc-#.cdf</i> file pair copied from the CBSC.
14	Use Windows Explorer (or equivalent program) to transfer the cbsc-#.cdf and bts-#.cdf files from the diskette to the corresponding <i><lmf home directory>\cdma\bts-#</i> folders created in step 13.

3

Creating a Named HyperTerminal Connection for MMI Connection

Confirming or changing the configuration data of certain BTS FRUs requires establishing an MMI communication session between the LMF and the FRU. Using features of the Windows operating system, the connection properties for an MMI session can be saved on the LMF computer as a named Windows HyperTerminal connection. This eliminates the need for setting up connection parameters each time an MMI session is required to support optimization.

Once the named connection is saved, a shortcut for it can be created on the Windows desktop. Double clicking the shortcut icon will start the connection without the need to negotiate multiple menu levels.

Follow the procedures in Table 3-5 to establish a named HyperTerminal connection and create a Windows desktop shortcut for it.

NOTE There are differences between Windows NT and Windows 98 in the menus and screens for creating a HyperTerminal connection. In the following procedure, items applicable to:

- Windows NT will be identified with *Win NT*
- Windows 98 will be identified with *Win 98*

Table 3-5: Creating a Named Hyperlink Connection for MMI Connection

Step	Action
1	From the Windows Start menu, select: Programs>Accessories
2	Perform one of the following: <ul style="list-style-type: none"> • For <i>Win NT</i>, select Hyperterminal and then click on HyperTerminal or • For <i>Win 98</i>, select Communications, double click the Hyperterminal folder, and then double click on the Hyperterm.exe icon in the window that opens. <p>NOTE</p> <ul style="list-style-type: none"> • If a Location Information Window appears, enter the required information, then click Close. (This is required the first time, even if a modem is not to be used.) • If a You need to install a modem..... message appears, click NO.
3	When the Connection Description box opens: <ul style="list-style-type: none"> - Type a name for the connection being defined (e.g., MMI Session) in the Name: window. - Highlight any icon preferred for the named connection in the Icon: chooser window, and - Click OK.
4	NOTE For LMF configurations where COM1 is used by another interface such as test equipment and a physical port is available for COM2, select COM2 to prevent conflicts.
5	From the Connect using: pick list in the Connect To box displayed, select the RS-232 port to be used for the connection (e.g., COM1 or COM2 - <i>Win NT</i> - or Direct to Com 1 or Direct to Com 2 - <i>Win 98</i>), and click OK .
6	In the Port Settings tab of the COM# Properties window displayed, configure the RS-232 port settings as follows: <ul style="list-style-type: none"> • Bits per second: 9600 • Data bits: 8 • Parity: None • Stop bits: 1 • Flow control: None
7	Click OK .
8	Save the defined connection by selecting: File>Save
9	Close the HyperTerminal window by selecting: File>Exit
10	Click Yes to disconnect when prompted.
11	Perform one of the following: <ul style="list-style-type: none"> • If the Hyperterminal folder window is still open (<i>Win 98</i>) proceed to step 12 or • From the Windows Start menu, select Programs > Accessories

. . . continued on next page

Table 3-5: Creating a Named Hyperlink Connection for MMI Connection

Step	Action
11	Perform one of the following: <ul style="list-style-type: none"> • For <i>Win NT</i>, select Hyperterminal and release any pressed mouse buttons. • For <i>Win 98</i>, select Communications and double click the Hyperterminal folder.
12	Highlight the newly created connection icon by moving the cursor over it (<i>Win NT</i>) or clicking on it (<i>Win 98</i>).
13	<i>Right click and drag</i> the highlighted connection icon to the Windows desktop and release the right mouse button.
14	From the popup menu displayed, select Create Shortcut(s) Here .
15	If desired, reposition the shortcut icon for the new connection by dragging it to another location on the Windows desktop.

3

Folder Structure Overview

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:

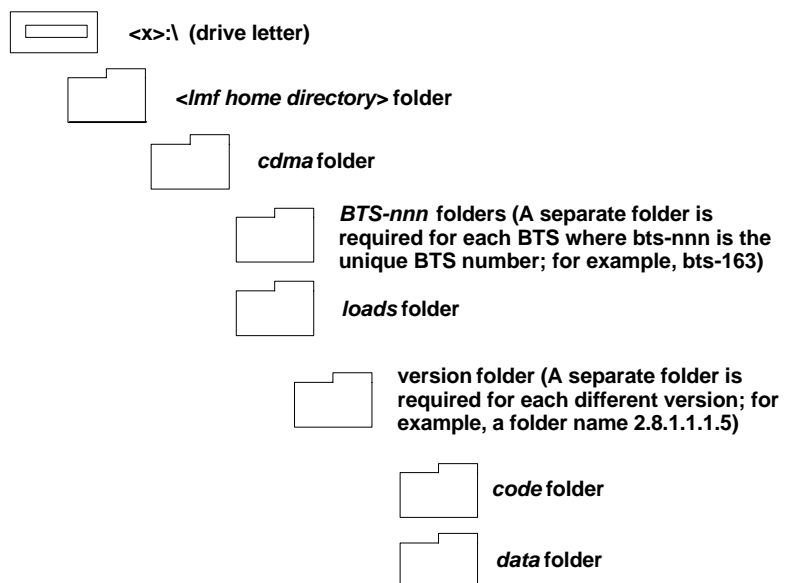
`<x>:\<lmf home directory>`

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.

Figure 3-3: LMF Folder Structure



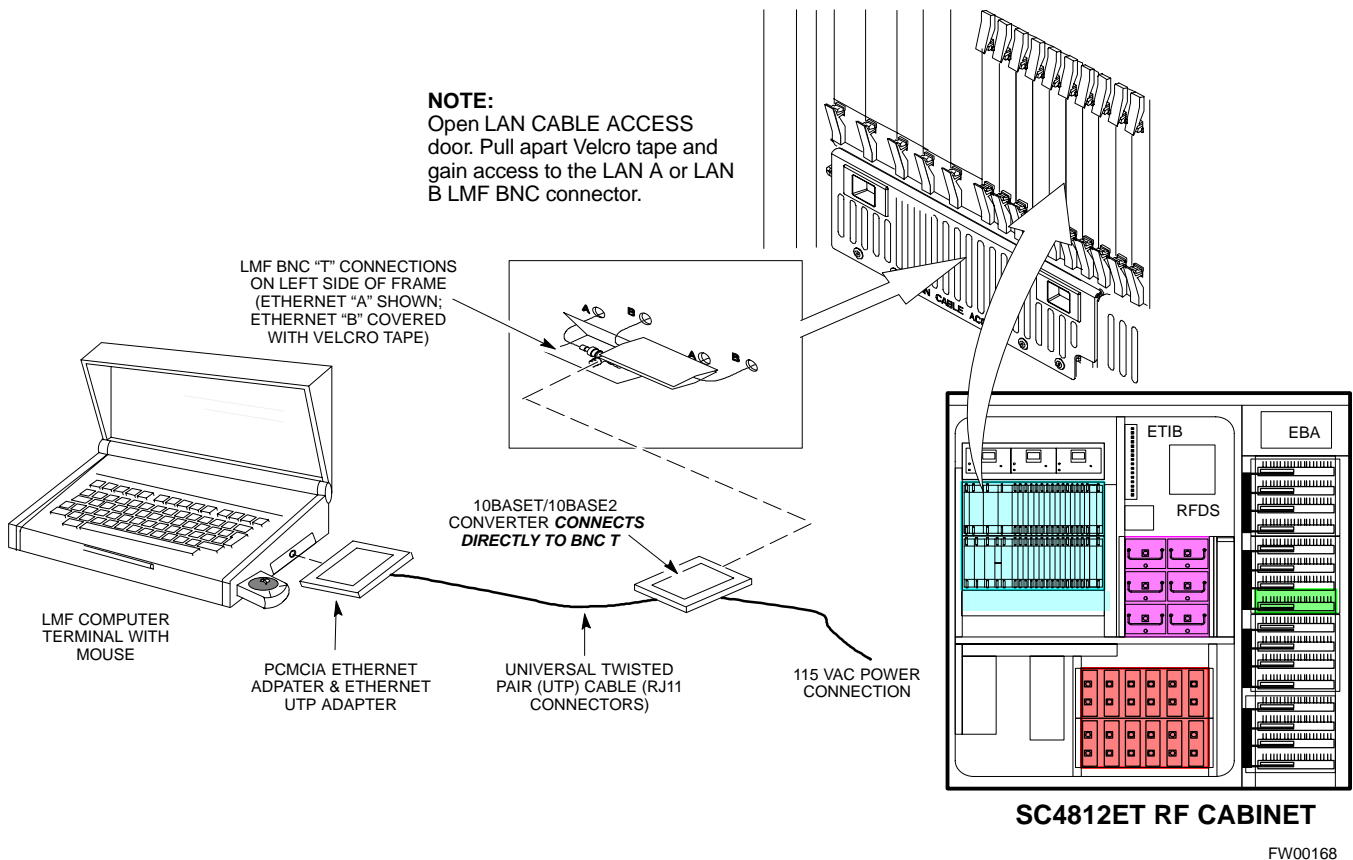
LMF to BTS Connection

The LMF is connected to the LAN A or B connector located on the left side of the frame's lower air intake grill, behind the LAN Cable Access door (see Figure 3-4).

Table 3-6: LMF to BTS Connection	
Step	Action
1	To gain access to the connectors, open the LAN Cable Access door, then <i>pull apart the Velcro® tape covering the BNC "T" connector</i> and slide out the computer service tray, if desired (see Figure 3-4).
2	Connect the LMF to the LAN A BNC connector via PCMCIA Ethernet Adapter with an unshielded twisted-pair (UTP) Adapter and 10BaseT/10Base2 converter (powered by an external AC/DC transformer). If there is no login response, connect the LMF to the LAN B BNC connector. If there is still no login response, see Table 6-1, Login Failure Troubleshooting Procedure.
<p>NOTE</p> <ul style="list-style-type: none"> - Xircom Model PE3-10B2 or equivalent can also be used to interface the LMF Ethernet connection to the frame connected to the PC parallel port, powered by an external AC/DC transformer. In this case, <i>the BNC cable must not exceed 91 cm (3 ft) in length.</i> 	
<p>* IMPORTANT</p> <p>The LAN shield is isolated from chassis ground. The LAN shield (exposed portion of BNC connector) must not touch the chassis during optimization.</p>	

3

Figure 3-4: LMF Connection Detail



Pinging the Processors

For proper operation, the integrity of the Ethernet LAN A and B links must be verified. Figure 3-5 represents a typical BTS Ethernet configuration. The drawing depicts one (of two identical) links, A and B.

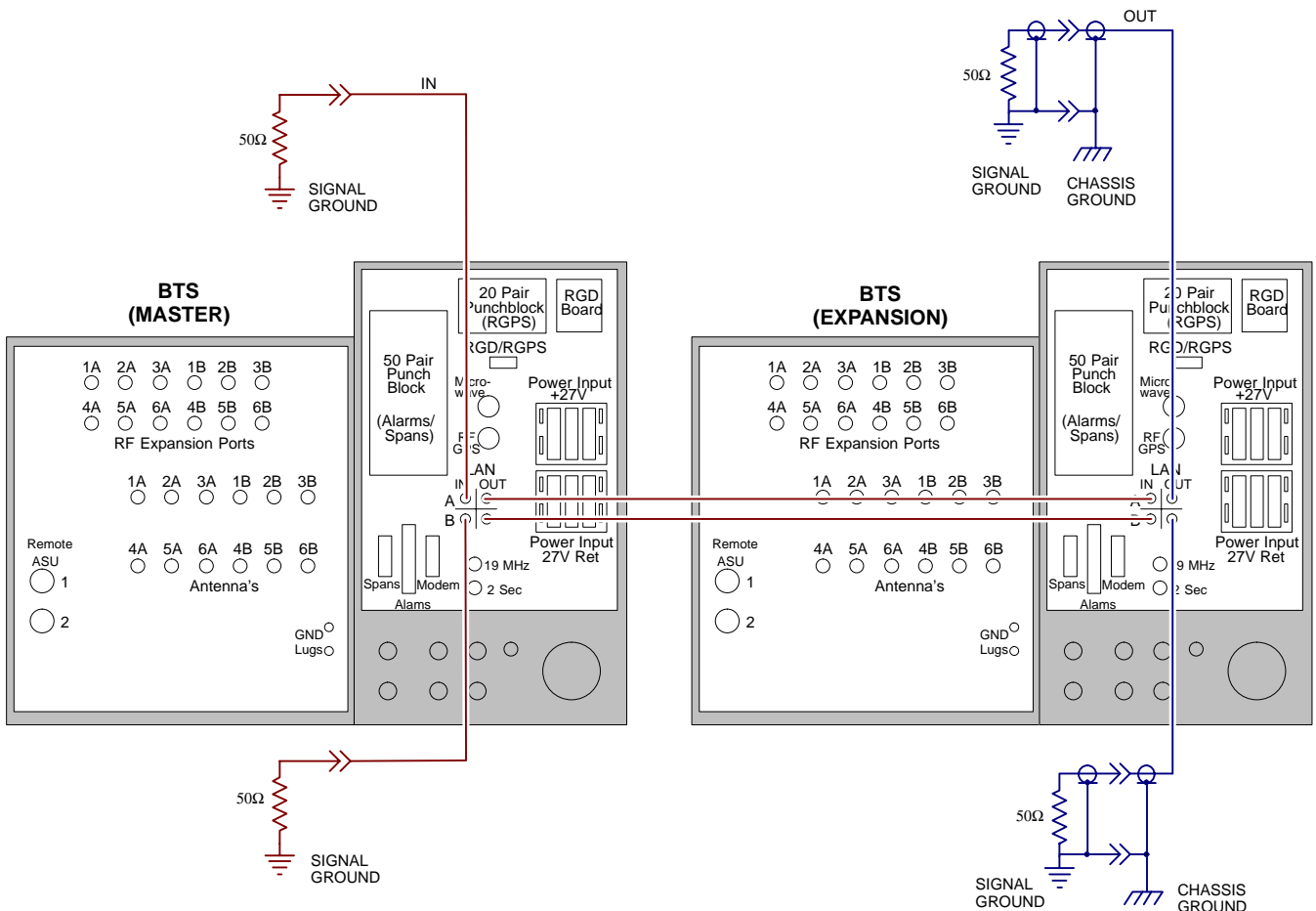
Ping is a program that sends request packets to the LAN network modules to get a response from the specified “target” module.

NOTE WinLMF (unreleased version 2.16.1.0.15 for example) has an option in the LOGIN menu to ping the GLI prior to login.

Follow the steps in Table 3-7 to ping each processor (on both LAN A and LAN B) and verify LAN redundancy is working properly.

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

Figure 3-5: BTS Ethernet LAN Interconnect Diagram



FW00199

NOTE **IMPORTANT:** The Ethernet LAN A and B cables must be installed on each frame/enclosure before performing this test. All other processor board LAN connections are made via the backplanes.

3

Table 3-7: Pinging the Processors

Step	Action
1	From the Windows desktop, click the Start button and select Run .
2	In the Open box, type ping and the GLI IP address (for example, ping 128.0.0.2). NOTE 128.0.0.2 is the default IP address for the GLI3 in field BTS units.
3	Click on the OK button.
4	If the targeted module responds, text similar to the following is displayed: Reply from 128 128.0.0.2: bytes=32 time=3ms TTL=255 If there is no response the following is displayed: Request timed out If the GLI3 fails to respond, it should be reset and re-pinged. If it still fails to respond, typical problems are shorted BNC to inter-frame cabling, open cables, crossed A and B link cables, or the GLI3 itself.

Log into and out of the BTS

Table 3-8: Logging into the BTS

Step	Action
	NOTE The LMF Mouse/Tracball must be attached if Windows and/or the GUI applications will be used.
1	Connect the LMF to the BTS as shown in .
2	Power-up the LMF. Allow the Windows operating system to come up.
3	Click the CDMA LMF desktop icon.
4	Click CDMA icon. This list of available BTS cell sites appears.
5	Click on the desired BTS (for example, BTS-6). If the IP Address and Port number are correct, press Login to BTS .
6	To keep the current IP Address for the next log in, click the Remember Modified Address box (a check appears in the box).
7	To use the default IP Address setting, click on Use Defaults .

Download Files to the LMF - Site Specific BTS Files

These procedures must be followed prior to an initial BTS optimization, or anytime a new release of the BTS operating system software is to be loaded from the LMF to the BTS.

Follow the steps outlined in Table 3-9 to create a bts directory and download files to that bts-specific directory. Perform this procedure *only if the CDF files have not been previously loaded*.

Table 3-9: Downloading Site Specific BTS Files

Step	Action
	<p>NOTE</p> <p>The types of files that can be downloaded include calibration files (.cal extension) and CDF files (.cdf extension). Files may be compressed (indicated by a .Z extension).</p>
1	Obtain the 3.5-in. diskette(s) containing the configuration data file and calibration data.
2	Enter the following UNIX command from the /usr/lmf directory, to create a BTS specific directory (<i>if it does not already exist</i>).
	mkdir bts-<bts#>
3	Enter the following UNIX command to change to the newly created directory:
	cd bts-<bts#>
4	Insert the first 3.5 inch floppy diskette. Verify disk is loaded with the proper BTS files/ versions by typing the following at the (lmf) : prompt:
	seedisk <cr>
5	To load the BTS files from the disk into the appropriate directory, enter the following at the (lmf) : prompt:
	fromdisk <cr>
	<p>NOTE</p> <ul style="list-style-type: none"> • Copy bts-#.cdf and (if they exist) bts-#.cal files to the /usr/lmf/bts-# directory. (# equates to the actual BTS site number). • Unless sites use different device loads, create links to device files (as described in Table 3-10) rather than placing individual copies into each bts directory.
6	<i>If files are compressed</i> , use the <code>uncompress *.Z</code> command to unpack files.

Download Files to the LMF - Master-bts-cdma Files

These procedures must be followed prior to an initial BTS optimization, or anytime a new release of the BTS operating system software is to be loaded from the LMF to the BTS.

Follow the steps outlined in Table 3-10 to create a bts-master-cdma directory, to download files, and to create softlinks to the device load files into the appropriate bts- <bts#> subdirectory. (Always consult latest software release notes as this *is an interim procedure and is subject to change*).