

Figure 2-24 illustrates the pinout for the RJ-48C to DSUB 120 ohm conversion cable.

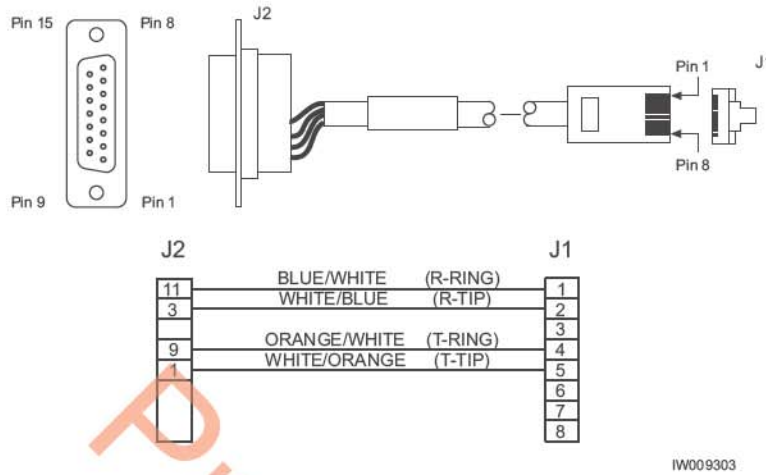


Figure 2-25: 120 ohm Conversion Cable

2.6.2 100 OHM T1 CABLES

For T1 connections, the proper cable is an individually shielded twisted pair with a nominal impedance of 100 ohm +/-5% at 772 kHz. The maximum allowable cable distance depends directly on the insertion loss of the cable at 772 kHz. The T1 card can accommodate up to 9 dB of cable loss. When using 22 AWG ABAM cable, 9 dB of loss is approximately 2000 feet. When using Belden type 9729 (with a cable loss of 6 dB per 1000 feet at 772 kHz) the maximum cable distance is approximately 1500 feet.

Table 2-14 provides a description of cables required for installation and connection to a T1 network, but not supplied with the Micro BTS.



Note: Before connecting T1 lines to the Micro BTS, it is assumed that the quality of the lines has been verified. It is recommended that BER tests be completed to ensure that the BER is less than 10^{-8} .

Table 2-14: Customer-Supplied T1 Cabling

CABLE IDENTITY	CABLE TYPE	CORRESPONDING CABLE PLUG
T1, 100 ohm	Shielded, Twisted, 2-Pair	RJ-48C, Male

Note: The number of cables required depends on the ordered configuration of the Micro BTS.

2.6.3 CONNECTING E1 OR T1 LINES

All E1 or T1 cable routing should be installed per the site survey documentation in conjunction with the information identified in the [GSM Network Implementation Manual](#).

- Using the appropriate customer-supplied cables, connect the Abis interface E1 and/or T1 cables to the local E1 or T1 provider.

2.6.4 DIRECT CABLING BETWEEN MULTIPLE ULTRAWAVE OR WAVEXPRESS SYSTEMS

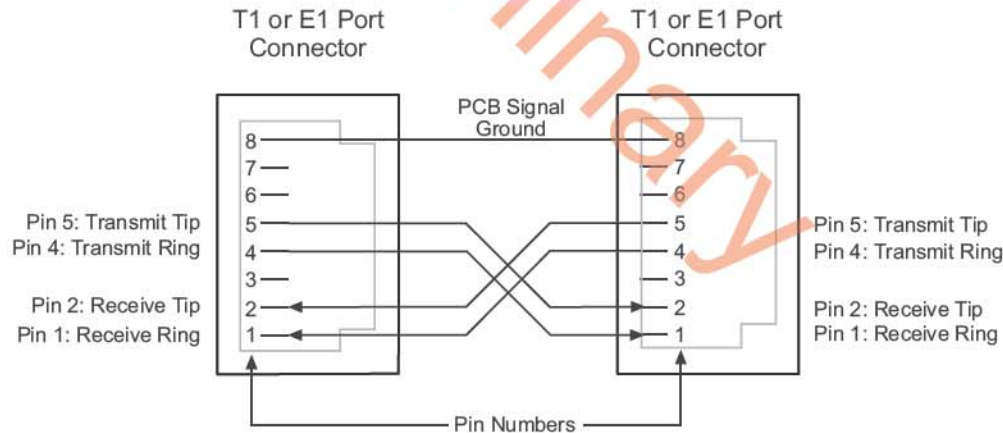
This section provides information for cabling between ADC equipment. The external cabling between your equipment will vary depending on the configuration of the cable management assembly of each chassis. This could consist of any combination of BNC, DSUB or RJ-48C connectors and either E1 or T1 signaling.



Note: The direct cabling between systems requires crossover cables (Tx to Rx, and Rx to Tx), instead of the straight-through cabling used when connecting systems through a radio or telephone provider network.

2.6.4.1 Using Cross-Over RJ-48C Cables

When connecting a shielded twisted pair crossover cable between two UltraWAVE or WAVEXpress systems, the routing of the pins needs to comply with the cable mapping shown in Figure 2-25. The RJ-48C cable connector may be of the conventional plastic body type with the shield and drain wires of the cable connected to a pigtail to pin 8 (Signal Ground), which is internally grounded to the card. However, a shielded cable plug may also be used, terminating the cable shield to an integral metal shell of the RJ-48 jack which then makes an electrical connection to the front panel when installed. Figure 2-25 provides the pin assignments for the RJ-48C jacks.



IW140401

Figure 2-26: Cable Mapping of RJ-48C Crossover Cable

To connect two systems using RJ-48C cables, connect a crossover cable (see Figure 2-25) from port 1 of the first chassis to port 0 of the second chassis.

2.7 CONNECTING ANTENNAS

The cabinet assembly provides external access to the female N-type connectors for your external antennas. Your antenna cable should terminate with a 90° N-type male connector or an N-type female to male elbow adapter may be used for a more convenient connection to the cabinet. Insertion loss for the elbow type of connector is typically between 0.1 and 0.2 dBm.

The antenna cabling for the Micro BTS can be configured in several ways depending on a number of factors including the number of TRXs, number of antennas and use of diversity. Your site specific configuration was determined during the network planning stage of implementation.

Table 2-15: Customer-Supplied Adapters and Cabling

IDENTITY	CABLE TYPE	CORRESPONDING CABLE PLUG
Antenna cable (external)	Coaxial	N-type, male
Adapter (optional)	90 degree elbow	N-type Female to N-type Male
Note: The number of cables required depends on the ordered configuration of the Micro BTS.		

In the subsequent sections, each RF configuration is detailed from the RF module connector to the internal RF connector. Figure 2-26 illustrates the relationship between the three connectors. The RF modules are connected to the internal RF connectors at the factory and are pre-configured for your Micro BTS configuration.

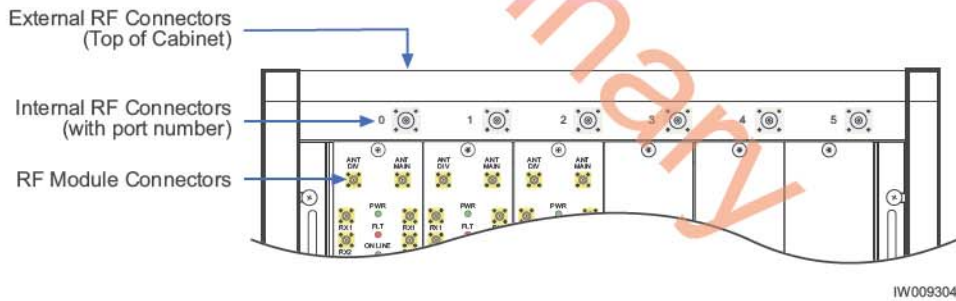


Figure 2-27: Antenna Cabling for Standard BTS Configurations

You will attach an elbow connector and your antenna cable to the external RF connector associated with the internal RF connector shown in the appropriate figure.

The subsequent sections identify the cable routing for the different Micro BTS antenna configurations that you identified in Chapter 1 - Unpacking and Configuration Verification. You must install the antennas such that the general population is kept at least 164 inches from the main beam of the antenna. For more information on the RF radiation properties of the UltraWAVE, refer to Section 2.7.6.

Proceed to the appropriate subsection to connect your site-specific antenna cable configuration.



WARNING: All RF cabling must be completed with the chassis powered off and, preferably, with the power cable disconnected from the cabinet.

Do not disconnect RF coaxial connectors on the ADC equipment or antenna systems while the radio equipment is operating. **Never** place any body part over or look into any RF connector while the radio equipment is transmitting.

RF signal levels that give rise to hazardous radiation levels can exist within the transmitter, power amplifiers, associated RF multiplexers and antenna systems.

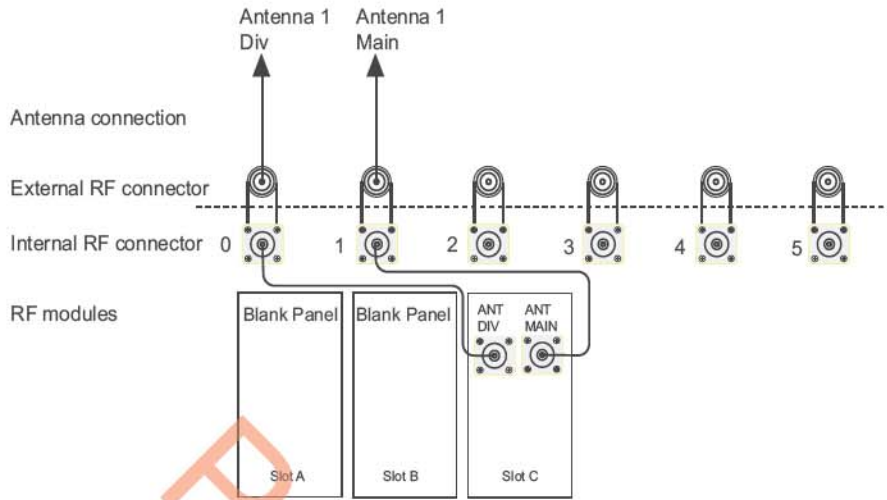
2.7.1 OMNI 1 TRX (01) CONFIGURATION

The Omni 1 TRX (01) configuration is available as a 15 watt, 25 watt, 40 watt or a 50 watt, two antenna configuration. See Table 2-16.

Table 2-16: Omni 1 TRX (01) Configuration

FREQUENCY	OUTPUT POWER	NUMBER OF ANTENNA	CONFIGURATION NUMBER
850 MHz	25 or 50 watt (44 or 47 dBm)	2	330628
900 MHz	25 or 50 watt (44 or 47 dBm)	2	330602
1800 MHz	15 or 40 watt (42 or 46 dBm)	2	330728
1900 MHz	15 or 40 watt (42 or 46 dBm)	2	330702

For the 15 watt, 25 watt, 40 watt, 50 watt Omni 1 TRX (01) configurations, connect your antennas as shown in Figure 2-27.



AD228807

Figure 2-28: Antenna Cabling for O1 Configuration

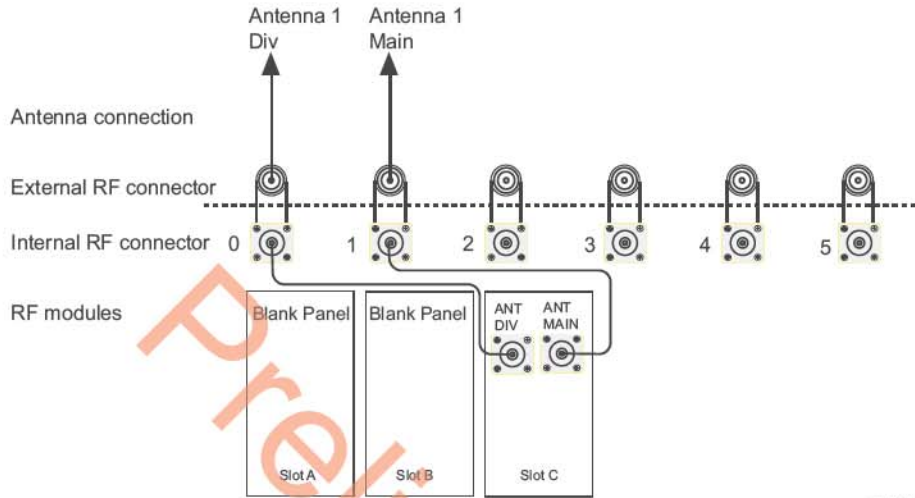
2.7.2 OMNI 2 TRX (02) CONFIGURATION

The Omni 2 TRX (02) configuration is available as a 15 watt, 25 watt, 40 watt or a 50 watt, two antenna configuration. See Table 2-17.

Table 2-17: Omni 2 TRX 02 Configuration

FREQUENCY	OUTPUT POWER	NUMBER OF ANTENNA	CONFIGURATION NUMBER
850 MHz	25 or 50 watt (44 or 47 dBm)	2	330629
900 MHz	25 or 50 watt (44 or 47 dBm)	2	330603
1800 MHz	15 or 40 watt (42 or 46 dBm)	2	330729
1900 MHz	15 or 40 watt (42 or 46 dBm)	2	330703

For the 15 watt, 25 watt, 40 watt and 50 watt Omni 2 TRX (02) configurations, connect your antennas as shown in Figure 2-28.



AD228807

Figure 2-29: Antenna Cabling for O2 Configuration

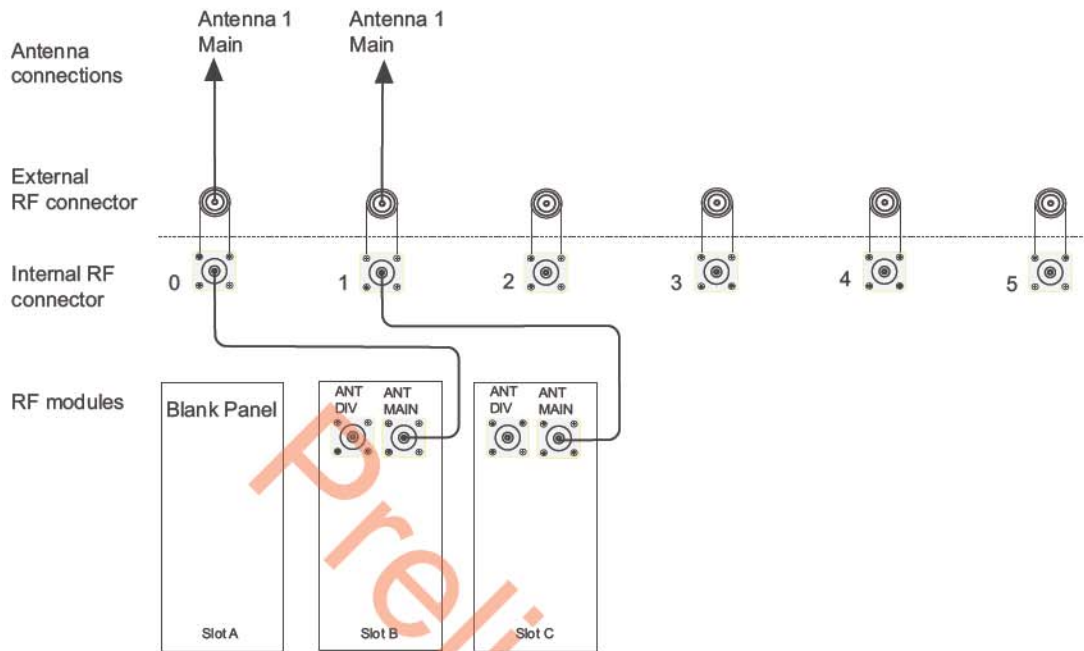
2.7.3 OMNI 3 TRX (O3) CONFIGURATION

The Omni 3 TRX (O3) configuration is available as a 15 watt or a 25 watt, two antenna configuration. See Table 2-18.

Table 2-18: Omni 2 TRX O3 Configuration

FREQUENCY	OUTPUT POWER	NUMBER OF ANTENNA	CONFIGURATION NUMBER
850 MHz	25 watt (44 dBm)	2	330630
900 MHz	25 watt (44 dBm)	2	330630
1800 MHz	15 watt (42 dBm)	2	330730
1900 MHz	15 watt (42 dBm)	2	330730

For both the 15 watt and 25 watt Omni 3 TRX (O3) configurations, connect your antennas as shown in Figure 2-29.



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Figure 2-30: Antenna Cabling for O3 Configuration



Note: For the Omni 3 TRX (O3), a spatial diversity of 10 lambdas is required between antennas.

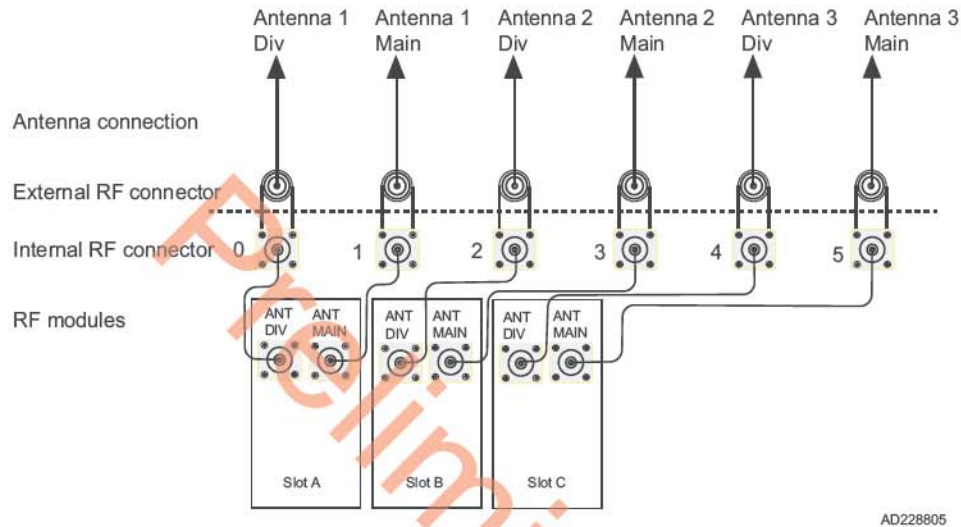
2.7.4 SECTORIZED THREE TRX (S111) CONFIGURATION

The sectorized three TRX (S111) configuration is available as a 15 watt, 25 watt, 40 watt or a 50 Watt six antenna configuration. See Figure 2-19.

Table 2-19: Sectorized 3 TRX S111 Configuration

FREQUENCY	OUTPUT POWER	NUMBER OF ANTENNA	CONFIGURATION NUMBER
850 MHz	25 or 50 watt (44 or 47 dBm)	2	330635
900 MHz	25 or 50 watt (44 or 47 dBm)	2	330636
1800 MHz	15 or 40 watt (42 or 46 dBm)	2	330735
1900 MHz	15 or 40 watt (42 or 46 dBm)	2	330736

This configuration has three sectors with one TRX per sector. For the 15 watt, 25 watt, 40 watt and 50 watt configurations, connect your antennas as shown in Figure 2-30.



AD228805

Figure 2-31: Antenna Cabling for S111 Configuration

2.7.5 THREE SECTOR SIX TRX (S222) CONFIGURATION

The three sector, six TRX (S222) configuration is available as a 15 watt, 25 watt, 40 watt or a 50 watt, six antenna configuration. See Table 2-20.

Table 2-20: Sectorized 6 TRX S222 Configuration

FREQUENCY	OUTPUT POWER	NUMBER OF ANTENNA	CONFIGURATION NUMBER
850 MHz	25 or 50 watt (44 or 47 dBm)	2	330622
900 MHz	25 or 50 watt (44 or 47 dBm)	2	330617
1800 MHz	15 or 40 watt (42 or 46 dBm)	2	330722
1900 MHz	15 or 40 watt (42 or 46 dBm)	2	330717

This configuration has three sectors with two TRXs in one sector and one TRX in the other two sectors. For the 15 watt, 25 watt, 40 watt and 50 watt S222 configurations, connect your antennas as shown in Figure 2-31.

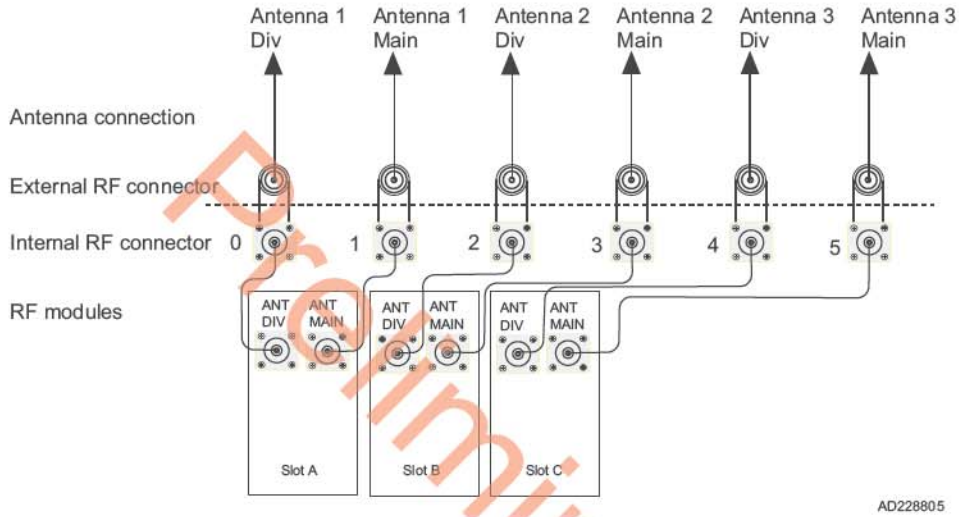


Figure 2-32: Antenna Cabling for S222 Configuration

2.7.6 RF RADIATION HAZARD

As of October 15, 1997, all products must address the issue of Human Exposure to RF electromagnetic fields. Referring to OET Bulletin 65, RF radiation limits for the 300 - 1500 MHz range are $f / 300 \text{ mW/cm}^2$ for occupational exposure, and $f / 1500 \text{ mW/cm}^2$ for general population exposure (where f is frequency in MHz). At the 869 MHz cellular band these limits are 2.90 mW/cm^2 for occupational exposure, and 0.58 mW/cm^2 for general population exposure.

The UltraWAVE base station may consist of up to six separate transceivers, with each of the transmitters operating at a maximum output power of +47 dBm (50W). The UltraWAVE base station transmitters operate in the U.S. cellular band of 869 to 894 MHz.

As the UltraWAVE is intended to be operated in cellular service, each of its transmitters is typically connected to a 65 - 120 degree sector antenna or omni directional antenna. For the purpose of the MPE calculations, it will be assumed that the UltraWAVE is fully equipped with six transceivers, and that two different transmitters are used in each 120 degree sector. For the MPE calculations this would be the worst case radiation levels as the equivalent RF power of +50 dBm (100 Watt) would be transmitted into a 120 degree sector.

The typical gain of 65 - 120 degree sector antenna is in the range of +6 to +18 dBi. However, there is the highest ERP limitation on the Part22 requirement which is 500 Watt (57 dBd).

The duty cycle of the transmitter is 100%. Assuming two transmitters are operating into the same 120 degree sector, a maximum of +47 dBm of RF energy would be transmitted into two antennas, with total EIRP=61 dBi would be the worst case.

Preliminary

RF power density can be calculated with the equation: $S = P * G / 4\pi R^2$, where S = power density in mW/cm, P = power input to the antenna in mW, G = power gain of the antenna, and R = distance to the center of radiation of the antenna in cm. By rearranging this equation, the relationship between distance (R) and Power Density (S) can be found.

Rearranging $R = \sqrt{PG/4\pi S}$, and solving for the maximum limits of 2.90 mW/cm², and 0.58 mW/cm² we have:

$$R(2.90 \text{ mW/cm}^2) = \sqrt{(1,260,000 \text{ mW}/4\pi * 2.90)} = 186 \text{ cm, or 73 inches.}$$

$$R(0.58 \text{ mW/cm}^2) = \sqrt{(1,260,000 \text{ mW}/4\pi * 0.58)} = 416 \text{ cm, or 164 inches.}$$



Note: 1,260,000 mW is used to account for two 50,000 mW transmitters operating into each 120 degree sector.

These results show that the general population RF exposure limits are not exceeded as long as the general population is kept 164 inches from the feed point of the antenna.

The propagation characteristics at 870 MHz dictate a line-of-sight type of RF path. As such, typical installation locations are up on rooftops or masts to get above ground level path obstructions. When the UltraWAVE antennas are installed in this manner, the general population will be further than 164 inches from the antenna, and RF exposure limits will be met.

2.8 CONNECTING EXTERNAL ALARMS

The OMC supports many alarms from the Micro BTS. The external alarms are reflected at the OMC operator station, and may be used for site alarms, such as open door, temperature and battery back-up alarms. These customer defined alarms are sampled every two minutes by default and will report an alarm when sent by the Micro BTS alarm controller.

Using the details provided in these sections, make your connections for external alarm inputs.



Note: If you are replacing an existing system which has external alarms connected directly to the processor card, you may connect your existing RJ-45 alarm cable directly into the ICP processor card alarm connector. Optionally, you can re-route your existing alarms to the UltraWAVE alarm terminal block or add additional external alarms.

The OMC operator can set the alarm text as described in the [UltraVIEW OMC Setup and System Administration Guide](#).

2.8.0.1 Identifying the Terminal Block

The alarms are processed on the alarm interface module located on the rear of the Micro subrack assembly. The alarm interface module has connections for incoming signals from external alarms and the power supplies and an outgoing connection to the ICP processor card through a USB type cable. The interfaces are shown in Figure 2-32.

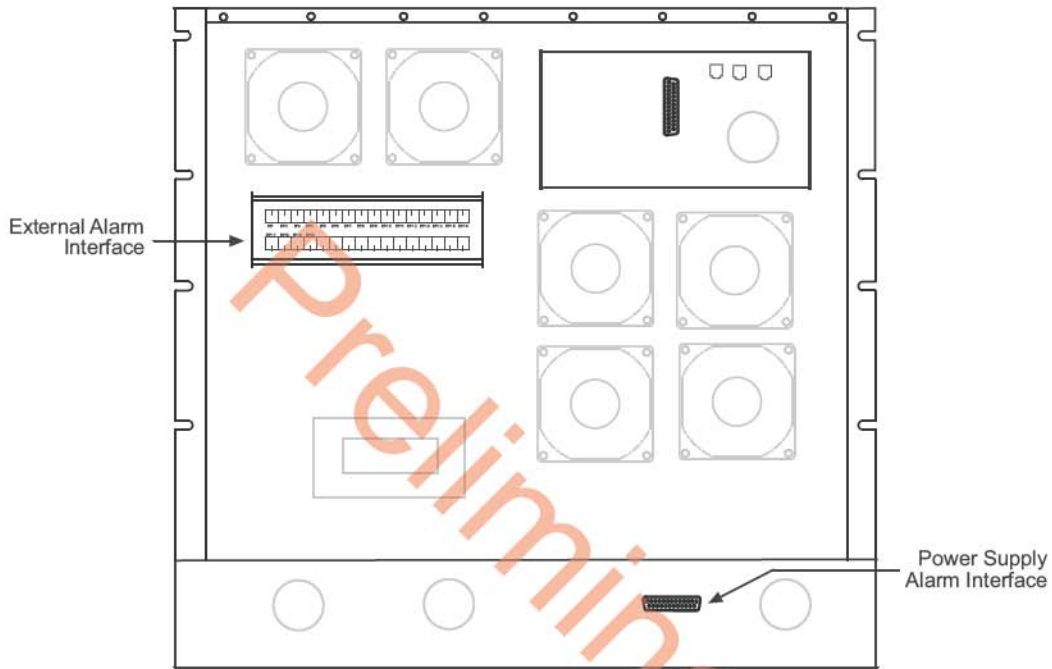


Figure 2-33: Alarm Interface Module

This terminal block provides a plug connection for up to seventeen external alarms. The plugs supplied with the Micro BTS provide a closed loop for connection to a normally open alarm mechanism. The plug identifiers correspond to the alarm codes sent to the OMC. See Table 2-21 for Terminal Block pin assignments, and see Figure 2-33 for external alarm connection details.

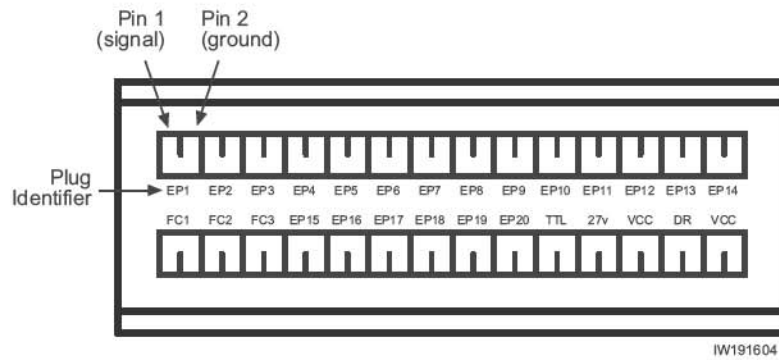


Figure 2-34: Customer-Defined External Alarm Connections

Table 2-21: External Alarm Terminal Block Pin Assignment

PLUG IDENTIFIER	ALARM CODE	MAJOR ALARM TYPE
EP1	2326	Customer definable UltraWAVE External Alarm 1
EP2	2327	Customer definable UltraWAVE External Alarm 2
EP3	2328	Customer definable UltraWAVE External Alarm 3
EP4	2329	Customer definable UltraWAVE External Alarm 4
EP5	2330	Customer definable UltraWAVE External Alarm 5
EP6	2331	Customer definable UltraWAVE External Alarm 6
EP7	2332	Customer definable UltraWAVE External Alarm 7
EP8	2333	Customer definable UltraWAVE External Alarm 8
EP9	2334	Customer definable UltraWAVE External Alarm 9
EP10	2335	Customer definable UltraWAVE External Alarm 10
EP11	2336	Customer definable UltraWAVE External Alarm 11
EP12	2337	Customer definable UltraWAVE External Alarm 12
EP13	2338	Customer definable UltraWAVE External Alarm 13
EP14	2339	Customer definable UltraWAVE External Alarm 14
EP15	2340	Customer definable UltraWAVE External Alarm 15
EP16	2341	Customer definable UltraWAVE External Alarm 16
EP17	2342	Customer definable UltraWAVE External Alarm 17

To connect the external alarm contacts to the external alarm terminal block:

- 1 Route the external alarm input cables from the external equipment through the cable gland on the external interface to the external alarm terminal block.

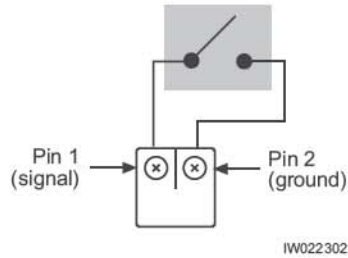


Figure 2-35: External Alarm Plug

- 2 Using the details provided in Figure 2-34, connect the normally-open alarm inputs from the external equipment to the external alarm plug.
- 3 Connect the alarm plug to the terminal block. Note the plug identifier and using Table 2-21 inform the OMC operator which alarm code corresponds to the external alarm that you have just installed.



Caution: Inputs from external alarms should be normally open. When the external contacts close, the Micro BTS sends an alarm to the OMC.

2.9 MAKING A SERIAL CONNECTION TO THE PROCESSOR CARD

The serial connection is used to check the software version installed on the processor card, verify boot parameters and monitor test results. An RJ-11 to RJ-11 cable and an RJ-11 to DB-9 adapter is normally used to connect the Craft PC to the ICP CON serial port. This hardware is supplied in the Craft PC Accessories kit.

An alternative configuration can also be used to connect the Craft PC to an ICP serial port. This configuration requires:

- One RJ-45 to RJ-45 patch cable
- One RJ-45 to DB-9 adapter

This adapter is not included with the Craft PC accessories kit.

See Figure 2-35 for the ICP CON serial port pin-out.

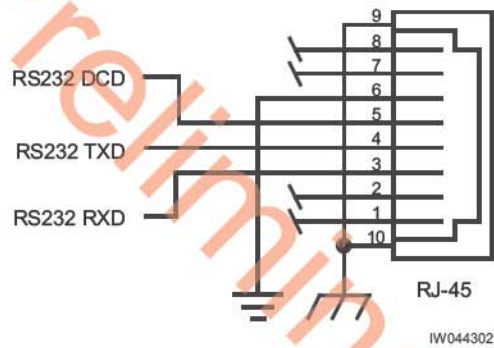


Figure 2-36: ICP Serial Pin-Out



Note: For more information pertaining to pinouts and cables, please refer to the [GSM Craft PC Guide](#).

2.10 POST INSTALLATION CABLING AND CHECKS

You should ensure that all internal and external cabling is correctly connected.

2.10.1 CONNECTING THE CHASSIS

Before commissioning the equipment, ensure that:

- The Abis interface E1 and/or T1 cables are routed to the telephone provider.
- The DIP switch settings on the E1 or T1 trunk cards are set correctly and if you are using the 75 ohm E1 trunk card that the ground jumper is in the correct position. Refer to [Section 2.3](#) for E1 and/or T1 DIP switch settings.
- The chassis power is turned off.
- Antenna cables are connected to RF antenna port connectors as appropriate.

2.10.2 VERIFYING EXTERNAL CABLING

- It is the operator's responsibility to verify that all inter-chassis E1 and/or T1 links are ordered, installed and certified by the telephone provider according to ANSI T1.403 specifications before on-line commissioning is performed.
- The operator should also perform end-to-end bit error ratio or Bit Error Rate (BER) tests over a 20-minute period on the E1 and T1 Abis interface link(s), and verify that the BER is 10^{-8} or better.

CHAPTER 3 - OFF-LINE COMMISSIONING

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The off-line commissioning process includes the following steps:

- Pre off-line commissioning, where you ensure that the system is in an appropriate state. This includes:
 - Visual inspection
 - Compliance checks
- Startup verification, where you verify that the system boots up correctly by observing the LEDs on the front panel.
- Craft PC tests, where you use the Craft PC to verify the software configuration and run tests.
- Post off-line commissioning, where you prepare the system for on-line commissioning.

The rest of this chapter includes detailed instructions for these steps.

WARNING: Under normal operating conditions, ADC Telecommunications radio equipment complies with the limits for human exposure to radio frequency (RF) fields adopted by the Federal Communications Commission (FCC). All ADC Telecommunications, Inc. radio equipment is designed so that under normal working conditions radio frequency radiation directly from the radio is negligible when compared with the permissible limit of continuous daily exposure recommended in the United States of America by ANSI/IEEE C95.1-19991 (R1997), Safety Levels with Respect to Human Exposure to RF Electromagnetic Fields, 3 kHz to 300 GHz.



RF signal levels that give rise to hazardous radiation levels can exist within the transmitter, power amplifiers, associated RF multiplexers and antenna systems.

Do not disconnect RF coaxial connectors on the ADC equipment or antenna systems while the radio equipment is operating. **Never** place any body part over or look into any RF connector while the radio equipment is transmitting.



WARNING: The BSS software used in the UltraWAVE Micro BTS is highly complex. **Before proceeding**, contact Customer Service to verify that you have the latest available software. You must **have** the correct software CD-ROM and **know** the current patch level for your software version before commissioning the UltraWAVE Micro BTS. Contact your Level 2 support representative for additional assistance.



Note: The off-line commissioning steps are listed in Checklist 3 - Commissioning Checklist.

3.1 PRE OFF-LINE COMMISSIONING

The following sections must be completed before doing the off-line commissioning. The off-line commissioning of the Micro BTS must take place on-site after installation. It is critical that all RF connections have been completed before proceeding with the off-line commissioning.

3.1.1 VISUAL INSPECTIONS

Complete the following inspections to ensure that the system is ready for off-line commissioning.

3.1.1.1 On-Site Visual Inspection

If you are doing your visual inspection on-site, check that:

- The chassis has been securely installed at the appropriate site.
- The chassis power supplies are OFF.
- The chassis is connected to a suitable power source.
- Power supply fans are running and INPUT LEDs are illuminated.
- The chassis is correctly grounded.
- All cables are available and secured in their correct positions.
- All cards and modules are correctly seated and populated according to the original purchase order.
- E1 or T1 transmission cables are available and labeled.
- RF transmission cables are connected to antennas.

3.1.1.2 Compliance and Power Checks

- Cross-check with the site specific data to ensure that the Micro BTS is correctly configured with all cards and modules.
- Ensure that you have access to [Checklist 2 - Installation Checklist](#) and that all serial numbers of all cards are listed there. This should have been completed in [Chapter 1 - Unpacking and Configuration Verification](#).
- Verify that any test equipment to be used has a current calibration certificate.
- Verify that the voltage for the installation site match those of the chassis power supply modules (either 230 VAC, 110 VAC, or -48 VDC, as specified on the front panel).

3.1.1.3 Labeling and Disconnecting Cables

- 1 Verify that all E1 or T1 cables connected to the chassis are properly labeled.
- 2 Disconnect all E1 or T1 cables from the top of the cabinet if there are any cables connected.

Preliminary

3.2 OFF-LINE COMMISSIONING OF THE MICRO BTS

The verification procedures for off-line commissioning are run on the processor card in the Micro BTS. Locate the processor card in the Micro BTS subrack assembly as shown in Figure 3-1.

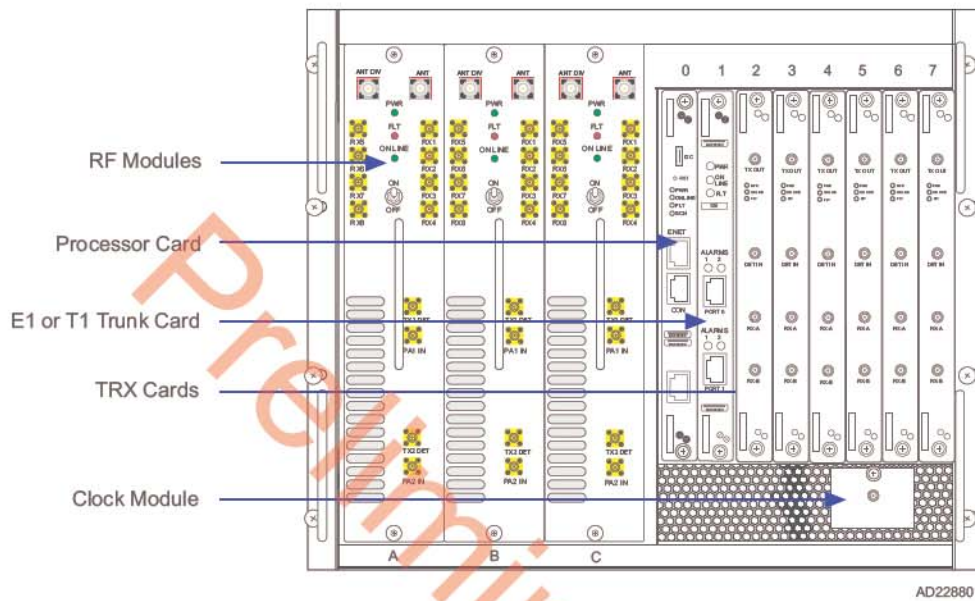


Figure 3-1: Micro BTS Subrack Assembly

3.2.1 STARTING XWINDOWS USING THE CRAFT PC

In this chapter, you will use the Craft PC to verify the software configuration and other aspects of the Micro BTS operation. This section describes how to start the Craft PC and the Windows environment while subsequent sections will provide connection, test and verification procedures.



Note: The following sections describe procedures performed using the Craft PC. For more information pertaining to the use of the Craft PC, please refer to the [GSM Craft PC Guide](#). Note that all commands in bold are those entered by the user.

- 1 Login to your PC as the `build` user.
- 2 With your left mouse button, double click the Craft PC icon on the desktop or navigate through the **Start** menu -> **Programs** -> **IWV Software** -> **Craft PC**.

If you get an error message, or if the XWindows environment does not allow you to create new XWindows, stop the Craft PC environment by pressing `[ALT-F4]` and restart the environment.

The XWindows environment now starts.



Caution: Before starting, set the xterm window to its maximum width. This prevents wordwrap.

3.2.2 CONNECTING THE CRAFT PC TO THE ICP PROCESSOR CARD

You will be making two connections from the Craft PC to the ICP processor card. The first is a slow-speed serial connection used for checking the software version installed on the card, verifying boot parameters and monitoring test results. The second is a faster Ethernet connection used for opening telnet sessions with the ICP. Telnet sessions are required for downloading software to the ICP. The serial and Ethernet connections are both required to configure and test the Micro BTS.

3.2.2.1 Required Hardware

The following hardware is required to connect the Craft PC to the ICP processor card through an Ethernet and serial connection. Note that this hardware is supplied with the Craft PC:

- One Windows 2000, NT or XP compatible Ethernet port
- One 3 meter (10 feet) standard RJ-11 patch cable
- One 3 meter (10 feet) standard Ethernet crossover cable
- One RJ-11 to DB-9 adapter

3.2.3 SETTING UP A SERIAL CONNECTION VIA THE ICP PROCESSOR CARD SERIAL PORT

- 1 Connect one end of the RJ-11 patch cable to ICP processor card connector labeled CON.
- 2 Connect the opposite end of the RJ-11 patch cable to the DB-9 adapter and connect the DB-9 adapter to the serial port on the back of the Craft PC, as shown in the Figure 3-2.

Figure 3-2 shows a physical serial port connection between the Craft PC and the ICP processor card.

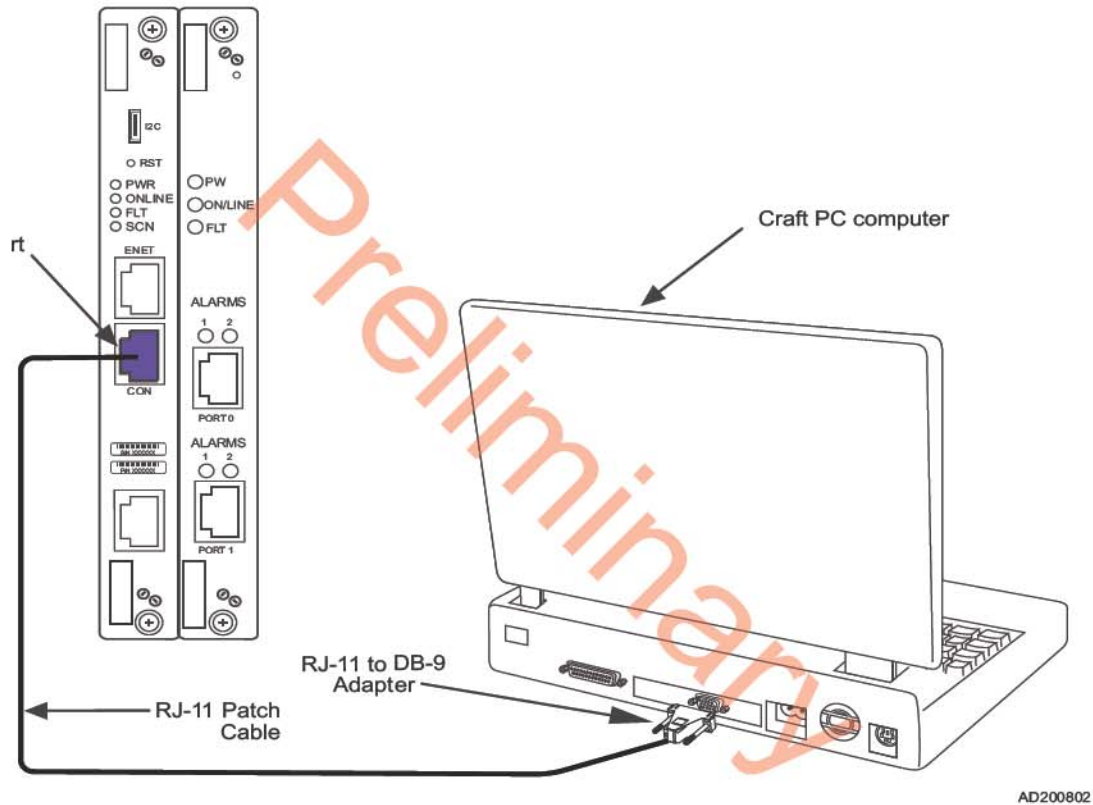


Figure 3-2: Connecting the Craft PC to the ICP Serial Port



Note: In order to establish a serial connection between the Craft PC and the Micro BTS, there cannot be an existing telnet or rlogin connection on the Micro BTS. In the case where a user using the Craft PC tries to establish a connection locally and a user using the OMC tries to establish a connection remotely, the remote user has priority access to the Micro BTS over the local user.



Note: The following section describes procedures performed using the Craft PC. For more information pertaining to the use of the Craft PC, please refer to the [GSM Craft PC Guide](#).

- 1 If not already done, connect the Craft PC to the Micro BTS as described in [Section 3.2.3](#), and start XWindows on the Craft PC as described in [Section 3.2.1](#).
- 2 There are two methods to open a serial connection. You can use Hyper Terminal or open the serial session in the Craft PC environment.

To use Hyper Terminal:

- A Launch the application by navigating: Start -> Programs -> Accessories -> Communications -> **Hyper Terminal**
- B Enter `CraftPC` for the connection name and select an icon. Then click the **OK** button.
- C The `Connect To` dialog box displays. You select **COM1** from the `Connect` using drop-down list and click the **OK** button. If you know that your serial port is configured on a different port, select that port from this drop-down list.
- D The `COM1 Properties` dialog box displays. Set the following properties and then click the **OK** button. See [Figure 3-3](#).

```
Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
```