

Installing RBS

RBS 6601

INSTALLATION INSTRUCTIONS

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1 Introduction

The RBS 6601 is a main-remote RBS and a member of the RBS 6000 family. The RBS consists of an indoor main unit and a number of RRUs.

This document describes how to install the RBS on site and how to connect it to external interfaces. Other documents containing installation instructions are:

Installing Antenna Integrated Radio Units⁽¹⁾

Installing Remote Radio Units⁽²⁾

Installation Instruction, RRU22 found in an RBS 3000 library

Installing Optical Cables for Main-Remote Solutions

(1) Antenna Integrated Radio (AIR) unit

(2) Remote Radio Unit (RRU)

1.1 Target Group

The target group for this information is installation personnel.





2 Prerequisites

This section contains information on the documentation, tools, equipment, and conditions required for the installation procedure.

2.1 Documentation

Make sure that the following documents are read and understood:

- *Personal Health and Safety Information*
- *System Safety Information*
- *Transportation and Storage*



2.2 Tools

The tools required for the installation of the RBSt are listed in Table 1.

Table 1 Required Tools

Product Name	Product Number	Included in
Box socket set including the following: <ul style="list-style-type: none">• Torx bit, T20• Socket, 13 mm	<i>LTT 601 138/1</i>	Personal tools light (<i>LTT 601 156/1</i>) or Personal tools (<i>LTT 601 135/1</i>)
Torx screwdriver, T20	<i>LSA 901 43/3</i>	
Wire stripper 0.2 - 0.6 mm ²	<i>LSD 901 45/1</i>	
Side cutters (side cutting pliers)	<i>LSD 901 43/1</i>	
Tool for cable ties	<i>LSD 901 46/1</i>	
Screwdriver, 0.4x2.5x60	<i>LSA 901 44/1</i>	
Screwdriver for bits	<i>LSS 103 28/1</i>	
Electrostatic Discharge (ESD) wrist strap (static control wrist strap)	<i>LTT 601 136/1</i>	
Torque set, 0.5 - 4 Nm	<i>LTT 601 145/1</i>	-
Torque set, 5 - 25 Nm with socket adapter 3/8 inch	<i>LTT 601 140/1</i>	-
Ferrule end-face cleaner	<i>LTT 601 154/1</i>	-

2.3 Equipment

This section describes the equipment required for the installation of the RBS 6601.

For the overview of RBS equipment, refer to *RBS Description*.

The instructions in this document describe the installation of the following hardware:

- RBS 6601 main unit that consists of a support system and one or two Digital Units (DUs). The support system for the RBS 6601 main unit is available in two variants: variant 1 and variant 2. Information related to a specific variant is included when necessary.



For CDMA, the RBS 6601 main unit consists of a Digital Unit LTE (DUL) and an AuXiliary Multiplexing Unit (XMU). The RBS comes with the DUL and the XMU installed.

Note: Screws required to install the main unit in the rack are not included.

- Alarm cables (optional)
- Global Positioning System (GPS) cable (optional)
- Grounding cable connecting the main unit to the grounding point in the rack
- Optical cables
- Power cables
- Site LAN cable (optional)
- Small Form-factor Pluggable (SFP) modules
- Transmission cables
- Transport Connectivity Unit (TCU)

2.4 Conditions

The conditions in this section must be fulfilled before starting work.

2.4.1 Before Going to the Site

Before going to the site, make sure the following:

- Site access permission has been received.
- Documentation stated in Section 2.1 on page 3 is available.
- All tools and instruments are available.

2.4.2 Before Starting the Installation

Before starting the installation, make sure the following:

- The site is prepared according to *Site Installation Documentation*.
- Ordered hardware is available.
- The -48 V DC mains power supply is installed and tested.
- Site grounding is installed and tested.



- Site material is installed and checked according to the relevant site material installation instruction.
- Transmission cables are labeled.
- Optical cables are labeled.
- The site heating, ventilation, and air conditioning are installed and tested.



3 RBS Overview

For an overview of the cabinet, refer to *RBS Description*.





4

Work Process for Installing the RBS

This section provides an overview of the installation procedure of the RBS.

Figure 1 shows the work process for installing the RBS.

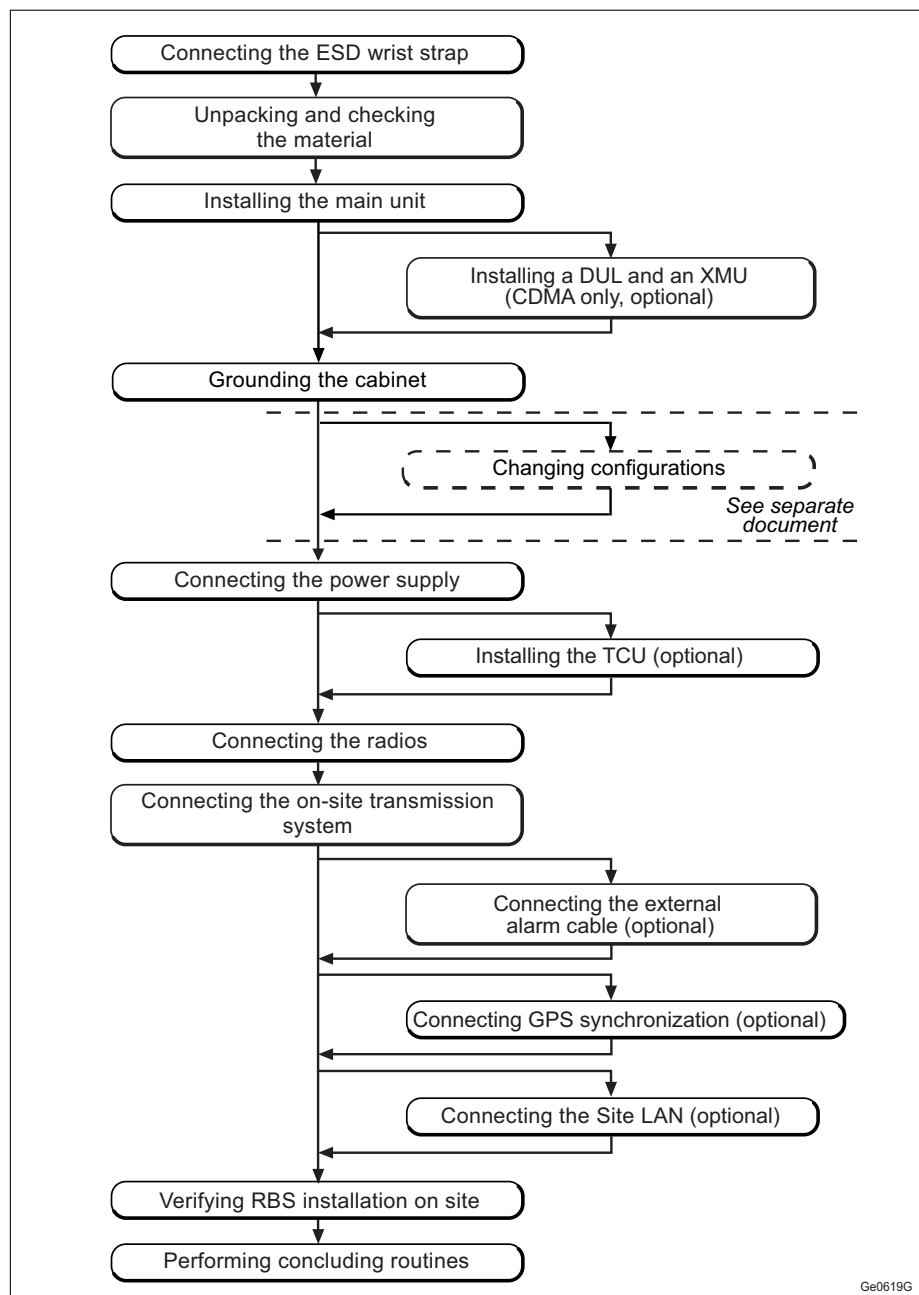


Figure 1 RBS Installation Work Process





5 Unpacking and Checking the Material

This section provides the procedure for unpacking and checking the material.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

Note: The main unit must be unpacked from its transport package in an environment identical to its operating environment. The maximum main unit weight is 10 kg.

To unpack and check the materials, do the following:

1. Examine the packaging for damage. If it has been damaged, make an immediate complaint to the transport company.
2. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
3. Check that the items delivered correspond to the packing list. More information can be found in *Site Installation Documentation*.
4. Unpack the main unit.

Note: Handle the main unit with care when laying it down and place a protective board under it to avoid scratching its surface.





6 Installing the Main Unit

This section describes the procedure for installing the main unit.

If you are installing a front cover with the main unit, see Section 6.2 on page 14.

Information about on-site space requirements can be found in *RBS Description* and in the manual for the rack.

6.1 Installing the Main Unit in the Rack

This section describes how to install the main unit in a 19-inch rack according to IEC 60297.



Do!

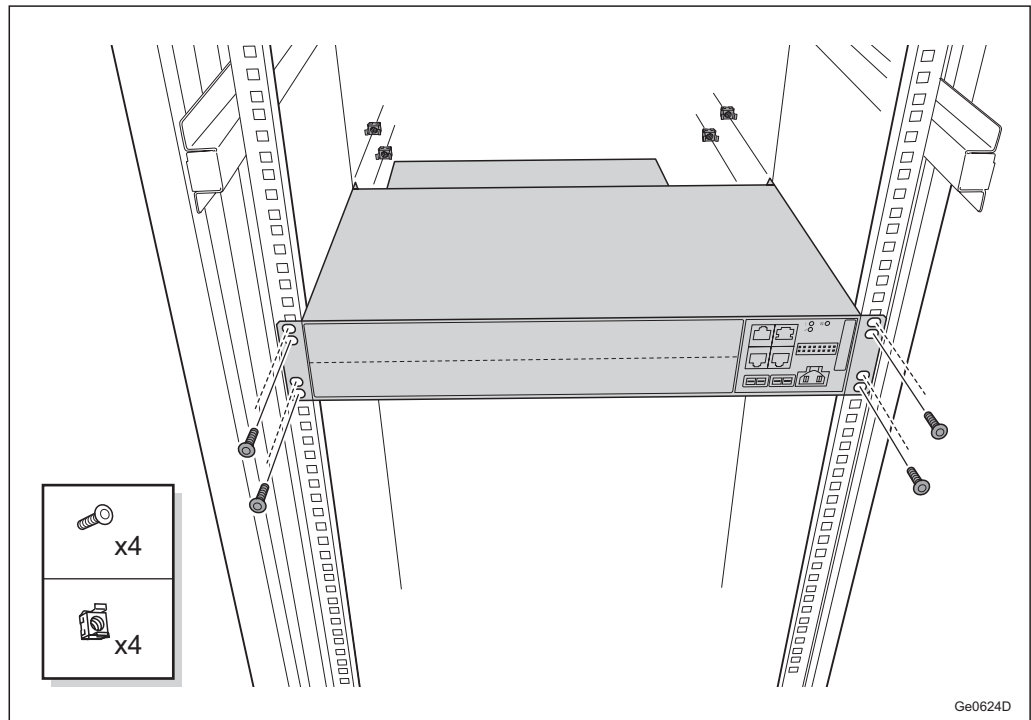
Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

Note: The fan module can be replaced in a live node. If the fans are inaccessible from the back of the rack, the replacement of the fans requires that the main unit is removed from the rack. Therefore, install the main unit at a convenient working height and route all cables with necessary extra length to allow the removal of the main unit without disconnecting the cables.

To prepare for an expansion with a secondary support system, reserve space close to this main unit.

To install the main unit in a 19-inch rack:

1. Select the 1.5 U you wish the main unit to occupy in the rack.
2. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
3. Place the main unit in the rack. Tighten the rack screws at the brackets according to the rack supplier's specification.



6.2 Installing the Main Unit with Front Cover (Optional)

The front cover is an optional part that is installed on the main unit. The front cover is only applicable with the support system variant 2.

This section describes the procedure for installing the main unit when a front cover is used.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

Note: The fan module can be replaced in a live node. If the fans are inaccessible from the back of the rack, the replacement of the fans requires that the main unit is removed from the rack. Therefore, install the main unit at a convenient working height and route all cables with necessary extra length to allow the removal of the main unit without disconnecting the cables.

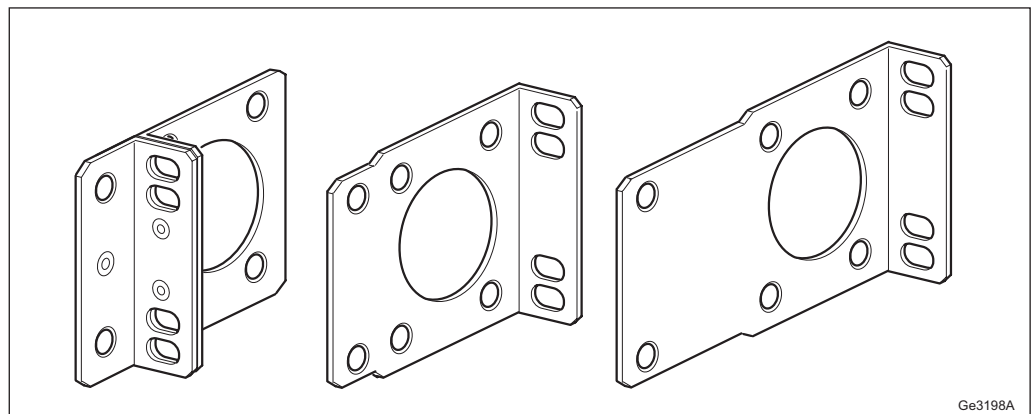
To prepare for an expansion with a secondary support system, reserve space close to this main unit.



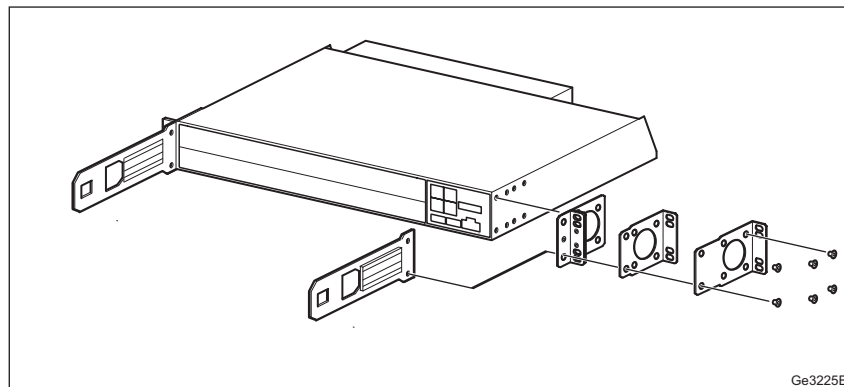
To install the main unit with a front cover:

1. Check if the main unit has the standard brackets installed for 19-inch rack. If so, remove the standard brackets and install the brackets that are supplied with the front cover.

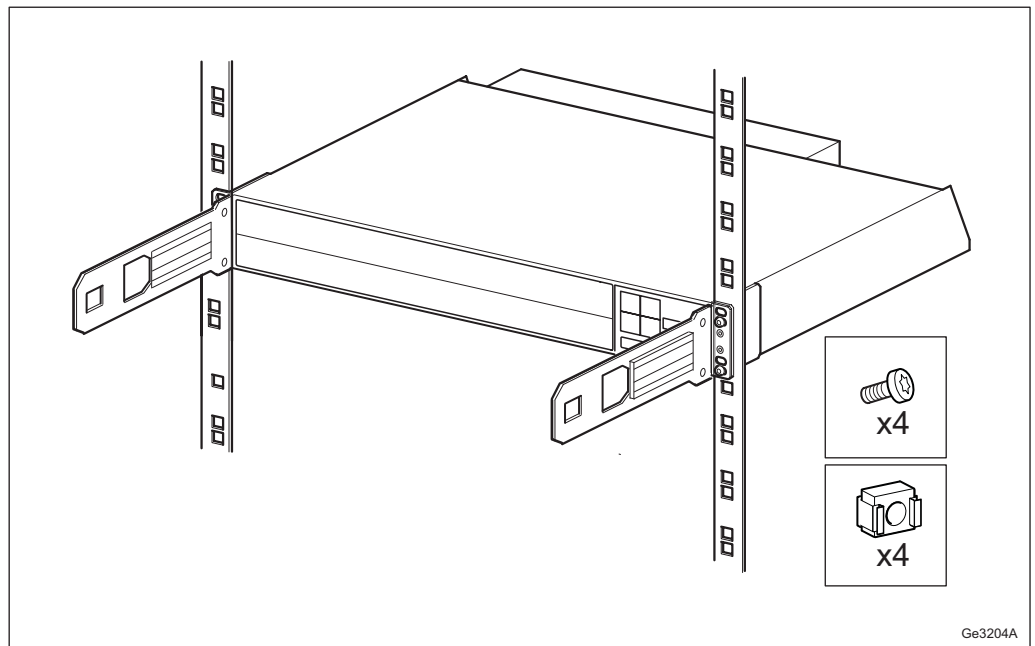
Note: The front cover brackets come in three different sizes depending on the position of the main unit in the rack. The length of the front cover is 170 mm and the protrusion is either 170 mm, 220 mm, or 250 mm from the rack.



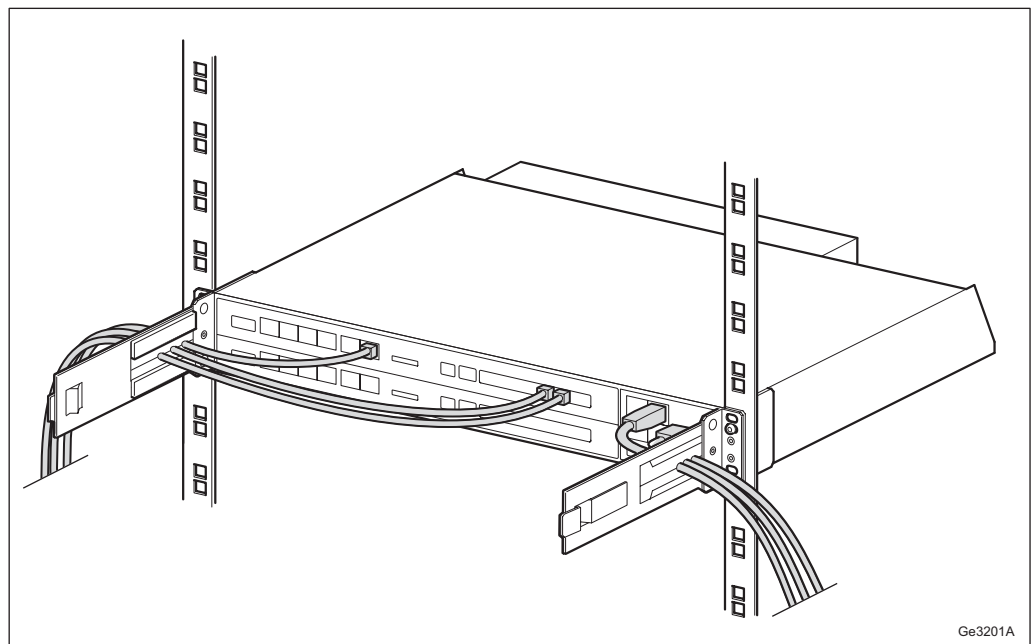
2. Install the railings on the main unit and tighten the M4 screws in the brackets to a torque of 1.1 Nm using a torque wrench fitted with a T20 Torx bit.



3. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
4. Place the main unit in the rack and tighten the rack screws on the brackets according to the rack supplier's specification. A Prolonged screwdriver is needed to reach the screws.



5. Route the cables to the main unit using the rail openings and connect them according to the cabling instructions.



6. Place the front cover on the railings and push the front cover until it snaps in its place.



6.3 Adjusting the Main Unit

This section describes the procedure for adjusting the main unit using standard and front-cover brackets.

6.3.1 Adjusting the Main Unit using Standard Brackets

The standard brackets are movable and can be placed in three different positions to adjust the main unit in the right position in the hosting rack.

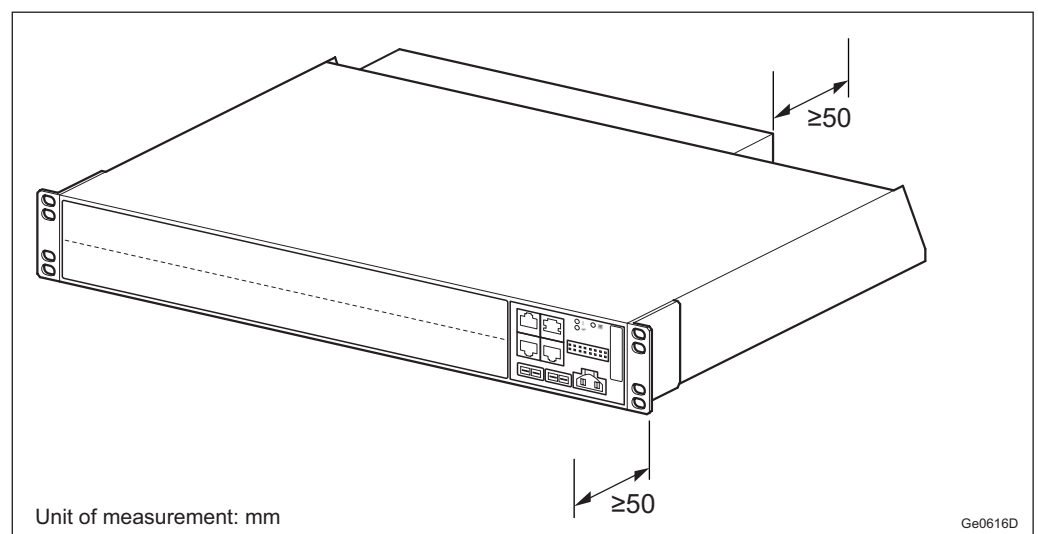
The final installation must be capable of evacuating 75 m³/h of exhaust air from each main unit. Exhaust air from the rear may not be allowed to circulate to the front air intake in the rack.

If the rack is equipped with a door, the door must not block the necessary cooling air. Therefore, a minimum free space of 50 mm in front of, and 50 mm behind the main unit is required.

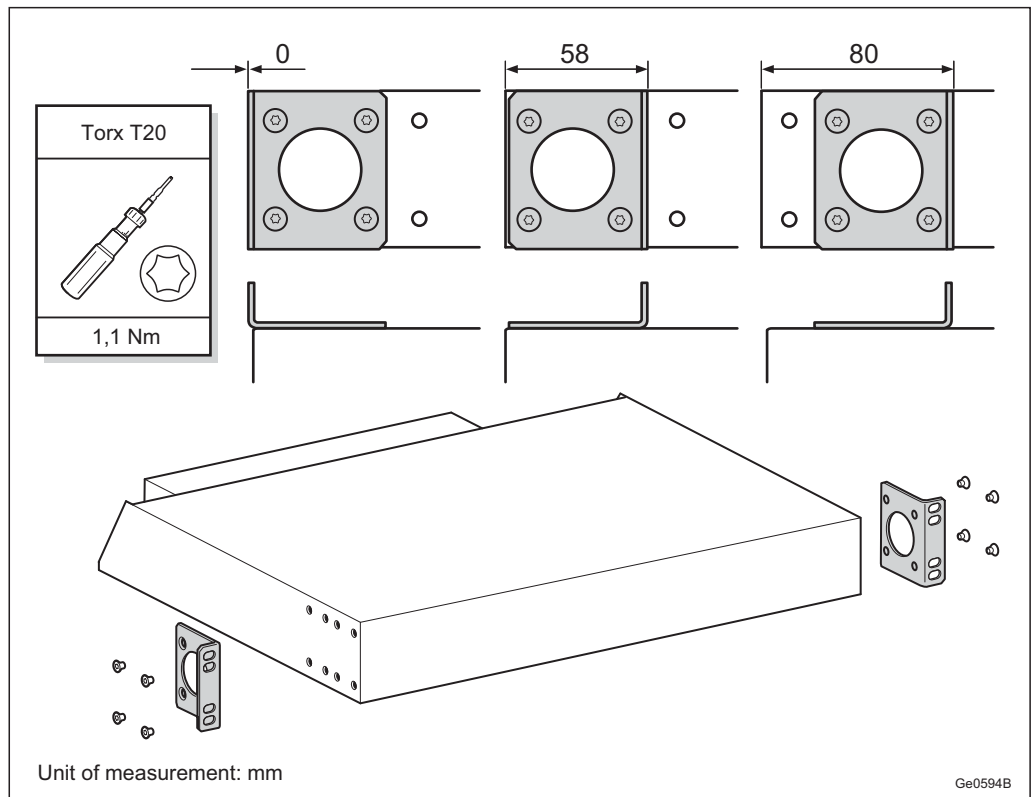
To adjust the main unit using standard brackets:

1. Check if the rack is placed against a wall or if the rack has a rear wall. If so, measure the distance from the rear of the main unit to the rear rack wall. If the distance is less than 50 mm, the brackets must be adjusted, see Step 2.

If the rack is equipped with a door, measure the distance between the front of the main unit and the door. A minimum free space of 50 mm in front of the main unit is required for cables and air intake. If the distance is less than 50 mm, the brackets must be adjusted, see Step 2.



2. Place the brackets in the proper position: 0 mm, 58 mm, or 80 mm.



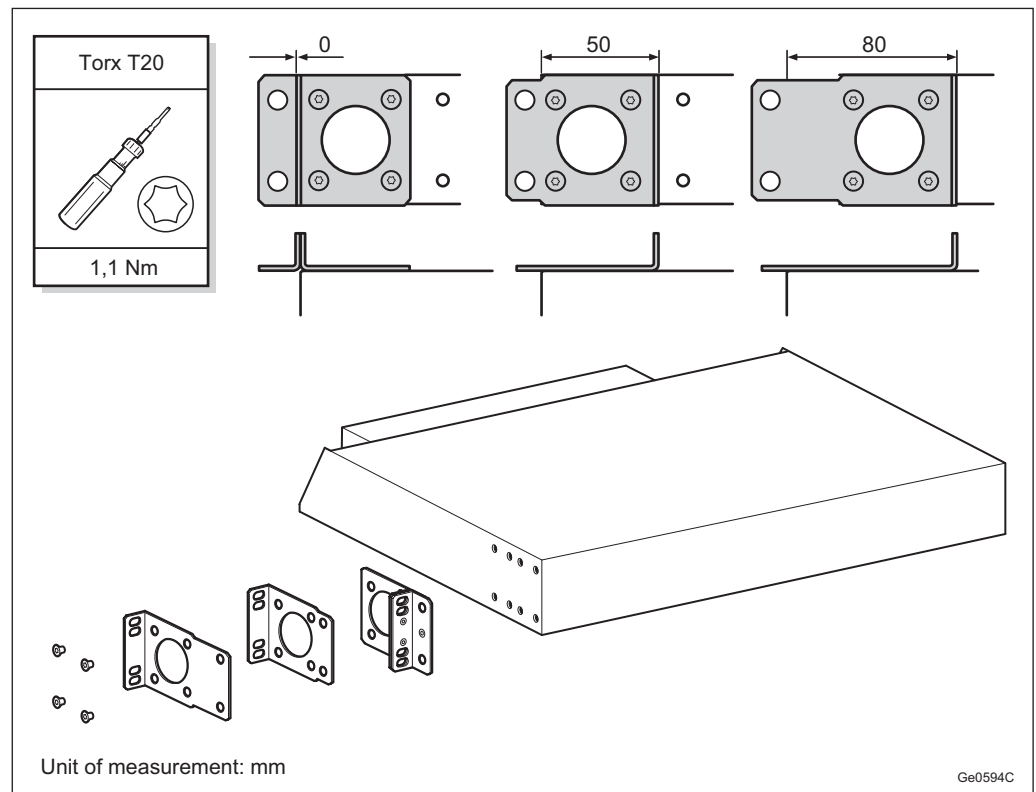
3. Tighten the M4 screws in the brackets to a torque of 1.1 Nm using a torque wrench fitted with a T20 Torx bit.

6.3.2 Adjusting the Main Unit using Front Cover Brackets

The front cover brackets are not movable and therefore, come in three different sizes to adjust the main unit position in the rack. The length of the front cover is 170 mm and the protrusion is either 170 mm, 220 mm, or 250 mm from the rack.

To adjust the main unit using front cover brackets:

1. Place the brackets in the proper position: 0 mm, 50 mm, or 80 mm.



2. Tighten the M4 screws in the brackets to a torque of 1.1 Nm using a torque wrench fitted with a T20 Torx bit.

6.4

Installing a Secondary Support System (WCDMA and LTE, Optional)

It is possible to extend the main unit with a secondary support system in a dual support system or multi DU configuration. The fans in both support systems are controlled by the primary DU. Each support system provides power to its hosted DU. All external RBS connections are made to the primary DU or any of the support systems. This includes connections to the support systems' built-in external alarm interface and to an optional Support Alarm Unit (SAU). Follow the instructions in Section 6 on page 13 when installing the two support systems in the rack. It is recommended to place the two support systems on top of each other.

Note: The cable connecting the two support systems is 1 m long to allow the removal of the support systems from the rack for service purposes without disconnecting the cables.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To complete the main unit cabling:

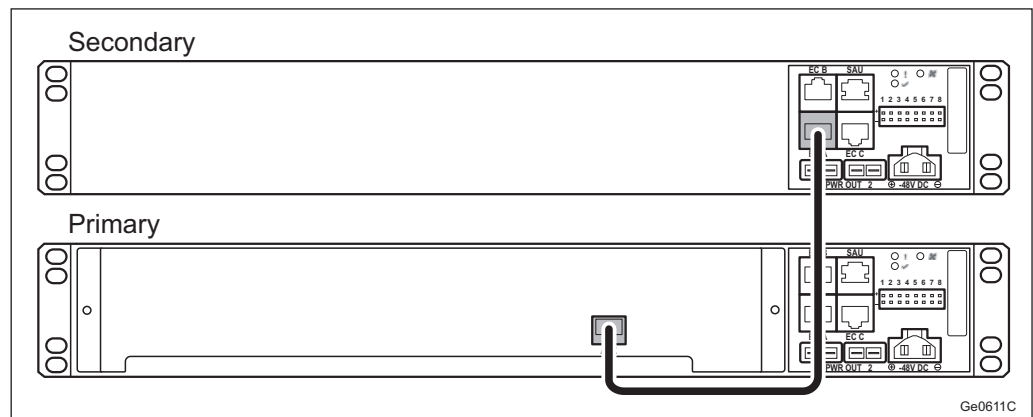
1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Connect the longer Enclosure Control (EC) bus cable as follows:

For WCDMA

DUW with AUX Port in Support System Variant 1 or 2

Note: Support system variant 1 only supports DUW 10 01, DUW 20 01, and DUW 30 01. Support system variant 2 supports all DUW versions.

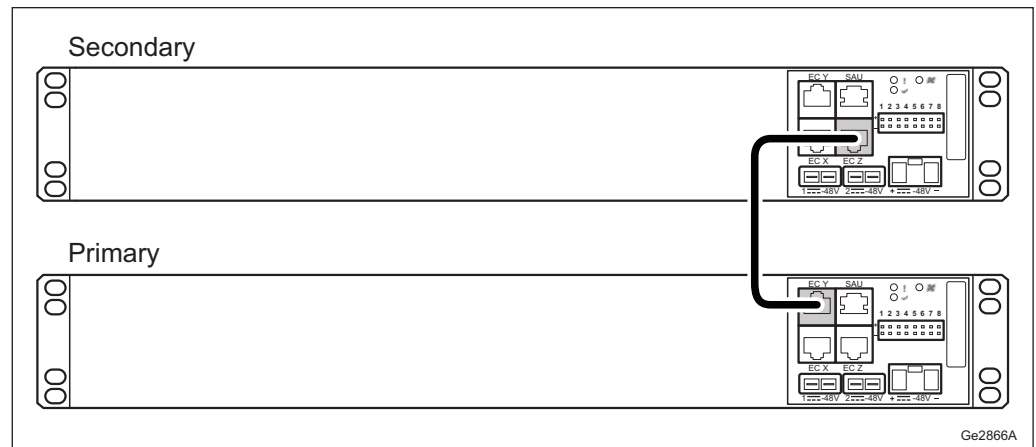
Connect the longer EC bus cable between the primary Digital Unit WCDMA (DUW) port AUX and the secondary support system port EC A for variant 1, or EC X for variant 2.



For WCDMA

DUW without AUX Port in Support System Variant 2

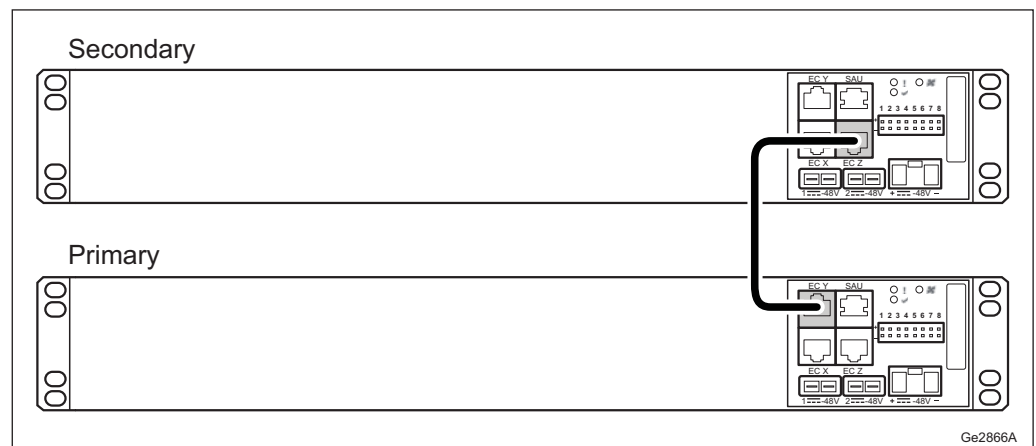
Connect the longer EC bus cable between the primary support system port EC Y and the secondary support system port EC Z.



For LTE

Support System Variant 2

Connect the longer EC bus cable between the primary support system port EC Y and the secondary support system port EC Z.



Note: For instructions on how to connect the Inter DU Link (IDL) cable and the optical cable, refer to *Non-RF Connections*.

6.5 Installing a Second Digital Unit in the Support System (WCDMA, LTE, and GSM, Optional)

For LTE and GSM, it is possible to install up to two DUs in a support system. For WCDMA it is possible to install up to two DUW 11 in a support system variant 2.

Instructions on how to install a DU can be found in *Replacing Digital Units*.

Instructions on how to connect the cables can be found in *Non-RF Connections*.





7 CDMA Support

To support CDMA, the RBS comes with a DUL and an XMU installed. The DUL is placed in slot 1, position A and the XMU is placed in slot 2, position B, in the main unit, as shown in Figure 2 below.

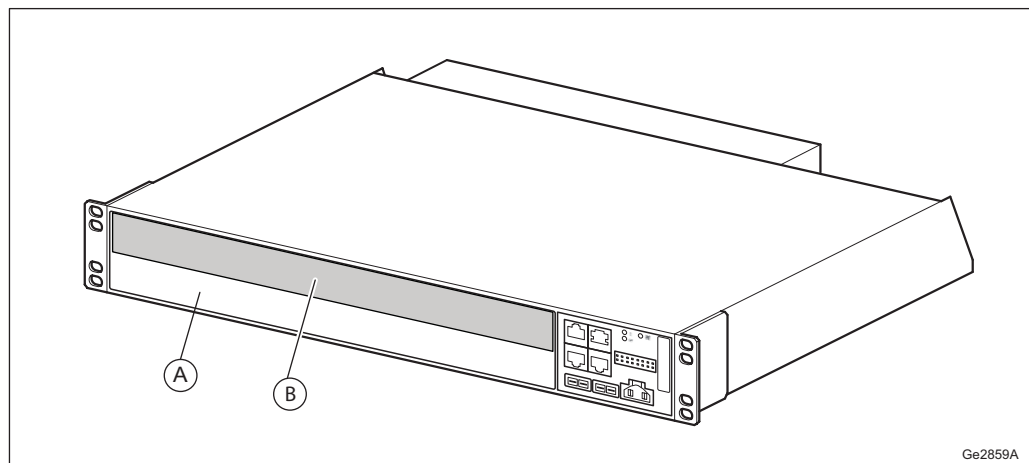


Figure 2 The Main Unit

The XMU is also connected to a DBA. Section 7.1 on page 23 shows how to connect an XMU to a DBA.

7.1 Connecting the XMU to the DBA

This section describes how to connect optical cables between the XMU and the DBA.

A DBA is placed in the same 19-inch rack that the main unit is placed in, or in another rack. For instructions on how to install the DBA, refer to *Replacing Digital Units*.



Do!

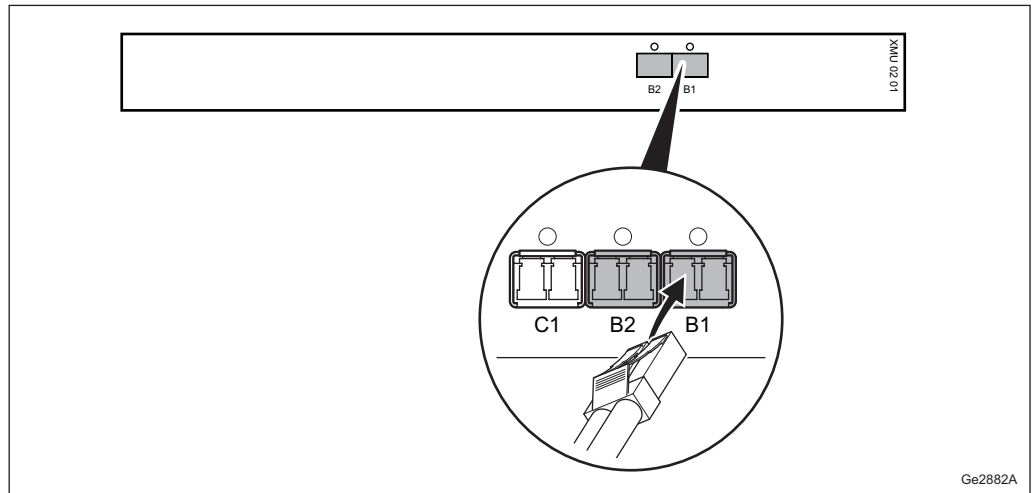
Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the XMU to the DBA:



1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the optical cables into XMU ports B1 and B2.

For more information on XMU connections and connections to the DBA, refer to *Non-RF Connections*.





8 Grounding the Cabinet



Do!

Products not connected to ground risk being damaged by overvoltage or overcurrent. Always connect products to ground according to instructions.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

General information about grounding principles can be found in *Grounding Guidelines for RBS Sites*.

To connect the grounding cable to the RBS:

1. Make sure that the rack is grounded according to *RBS Site Installation Products* library.
2. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
3. Remove the grounding screw and washers using a 13 mm socket. Connect the protective grounding cable from the distribution central. Reinsert and tighten the hexagon screw to a torque of 15 Nm using a torque wrench and a 13 mm socket.

Note: Take care not to damage the front when handling the main unit.

Figure 3 shows the grounding for the support system variant 1, and Figure 4 for the support system variant 2.

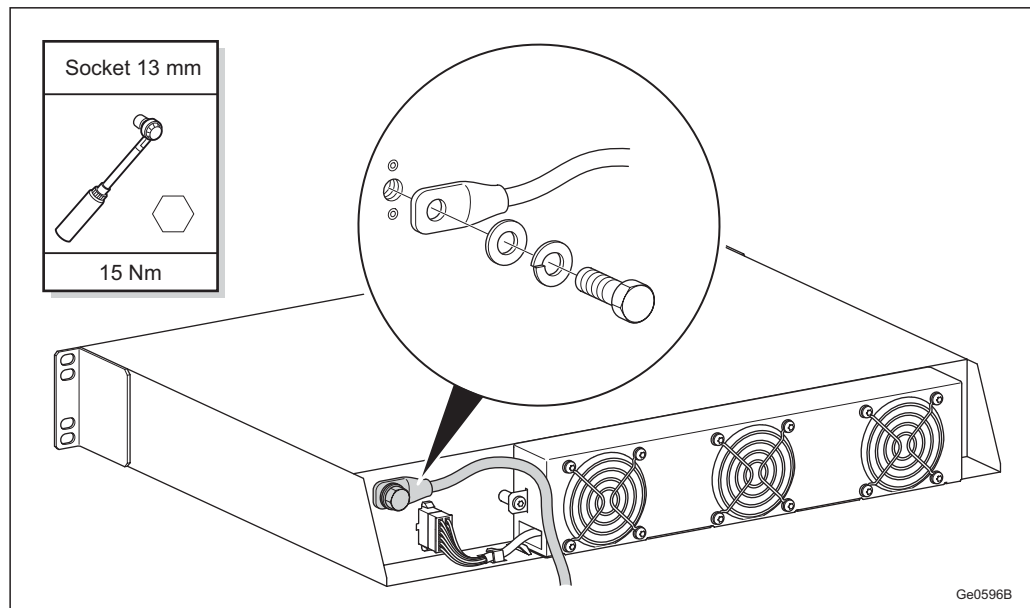


Figure 3 Grounding for the Support System Variant 1

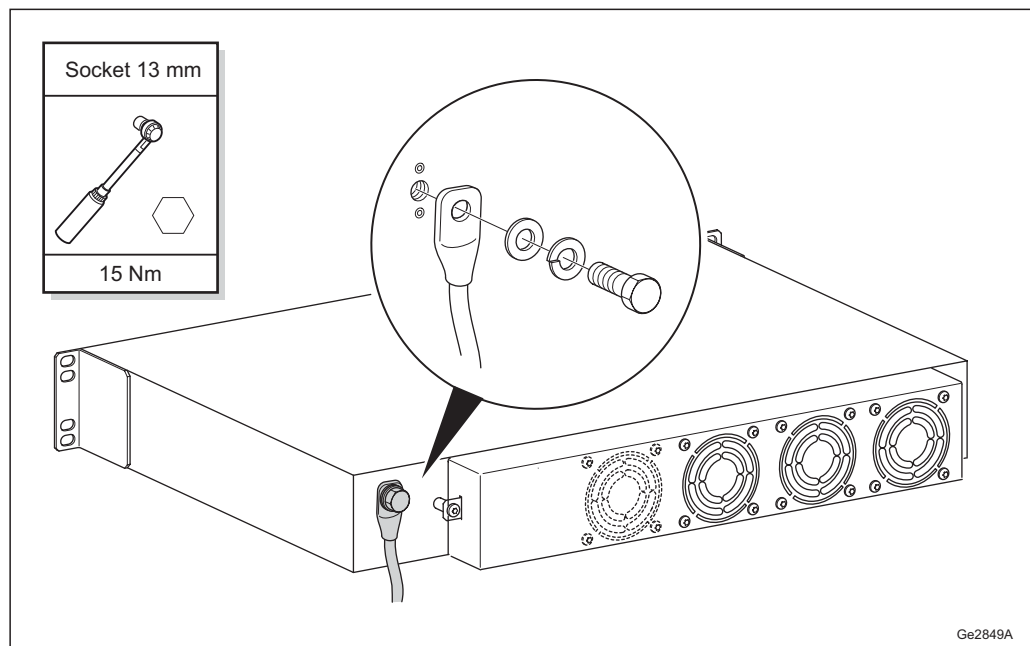


Figure 4 Grounding for the Support System Variant 2



9 Changing Configurations

Instructions for changing a configuration are found in *RBS Configurations*.





10 Connecting the Power Supply

This section provides the procedure for connecting the power supply.

10.1 Connecting the wires to the Power Connector (Support System Variant 2 Only)

To prepare the power connector for the support system variant 2:

1. Strip off 12 mm of each wire using the cable shield cutter.

Note: Make sure that cables with recommended cross sectional area are used.

2. Insert the power cable wires into each dedicated tension clamp connection and check that they are properly fastened.

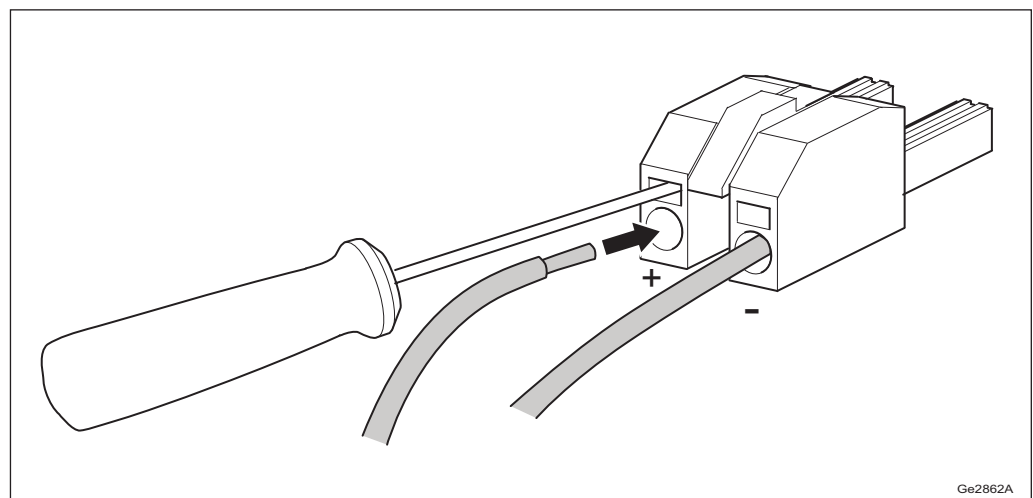
Table 2 lists the cross sectional area requirements for variant 2 power cables.

Table 2 Cross Sectional Area Requirements for Variant 2 Power Cables

Polarity	Cross Sectional Area
-48 V DC	2.5 mm ² to 10 mm ²
+24 V DC	4 mm ² to 10 mm ²

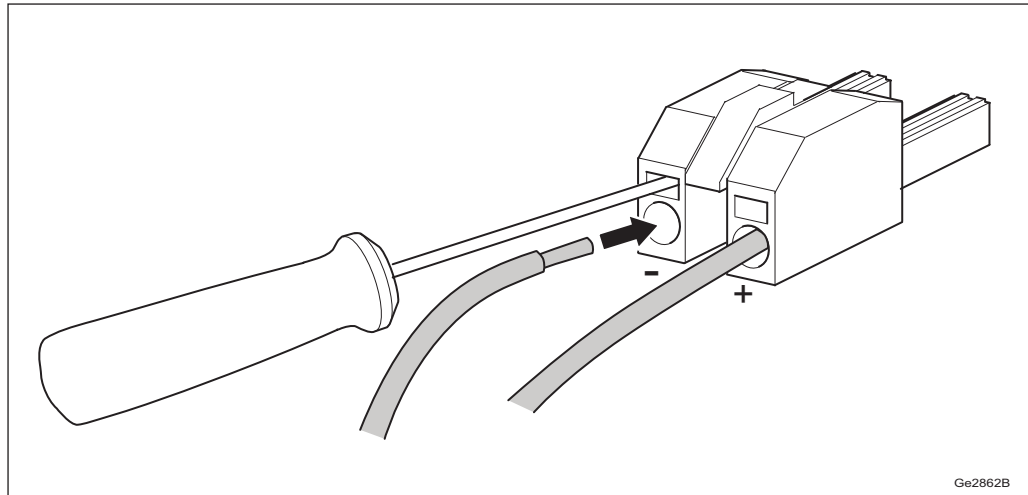
If needed, push a flat screwdriver into the release tab above the clamp connection to open the cable clip inside the power connector.

The following figure shows the procedure for making a -48 V DC power connector.



Ge2862A

The following figure shows the procedure for making a +24 V DC power connector.



10.2 Connecting Power to the Main Unit

This section provides the procedure for connecting -48 V DC and +24 V DC power to the main unit depending on the system variant.



Stop!

Do not install or modify AC or DC powered equipment unless you are a qualified and authorized electrician. Improper installation work can seriously damage the equipment.

Note: Make sure that the DC power supply cable has enough extra length to allow the removal of the main unit from the rack for service purposes without disconnecting the cable.

The DC power supply must be equipped with an external fuse or circuit breaker. If the node configuration is a dual support system configuration, each support system requires a separate DC in cable and fuse. More information can be found in *RBS Description*.

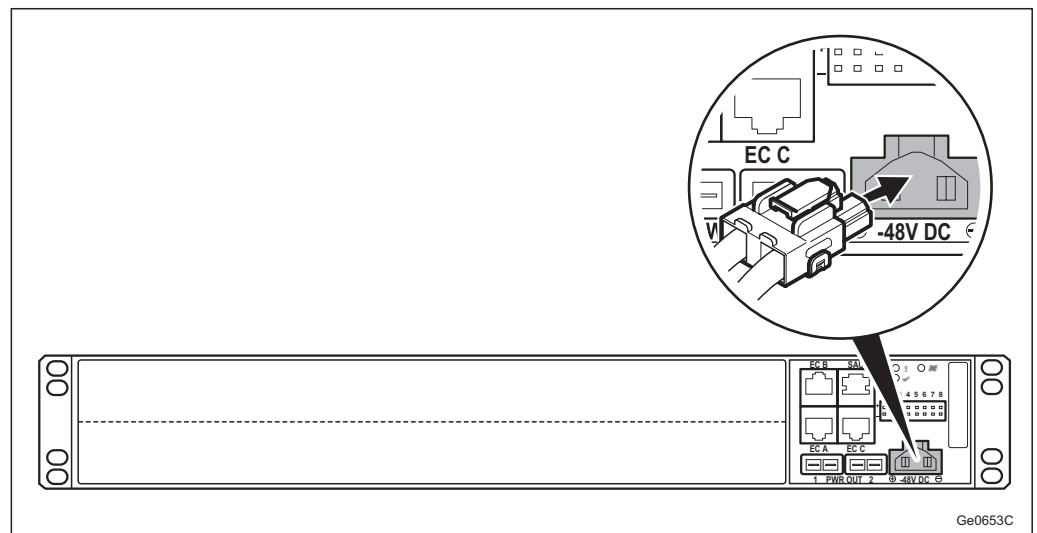
To connect the DC power supply to the main unit:

1. Make sure that the external DC power is switched off before connecting the cables.
2. Switch off or disconnect any external battery back-up.

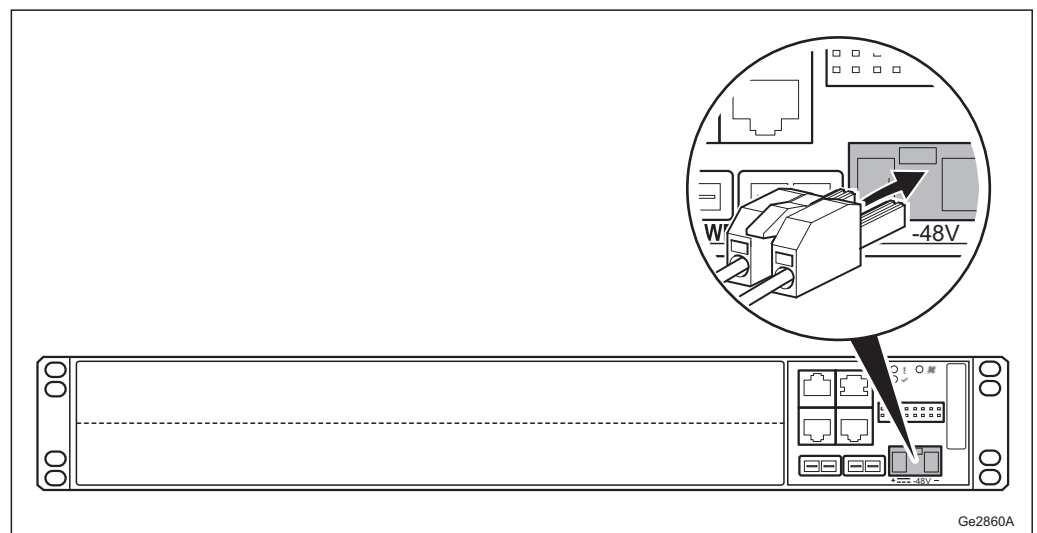


3. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
 4. Connect the DC power cable to the power supply terminals.
- Note:** Carefully observe the polarity of the cable installation.
5. Connect the DC power cable to the main unit and click it into place.

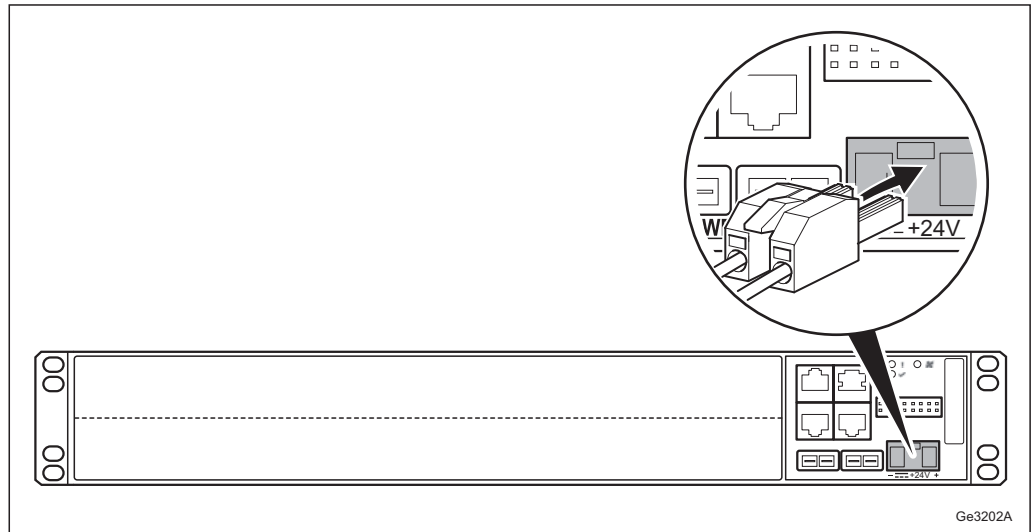
The following figure shows how to connect the -48 V DC power cable for support system variant 1:



The following figure shows how to connect the -48 V DC power cable for support system variant 2:



The following figure shows how to connect the +24 V DC power cable for support system variant 2:





11 Installing the TCU (Optional)

This section provides the procedure for installing the optional TCU.

The TCU is installed in the slot 2 in the main unit. See Figure 5, letter B.

Note: The DU must be placed in slot 1 and connected to the support system, since the TCU does not control or supervise the support system.

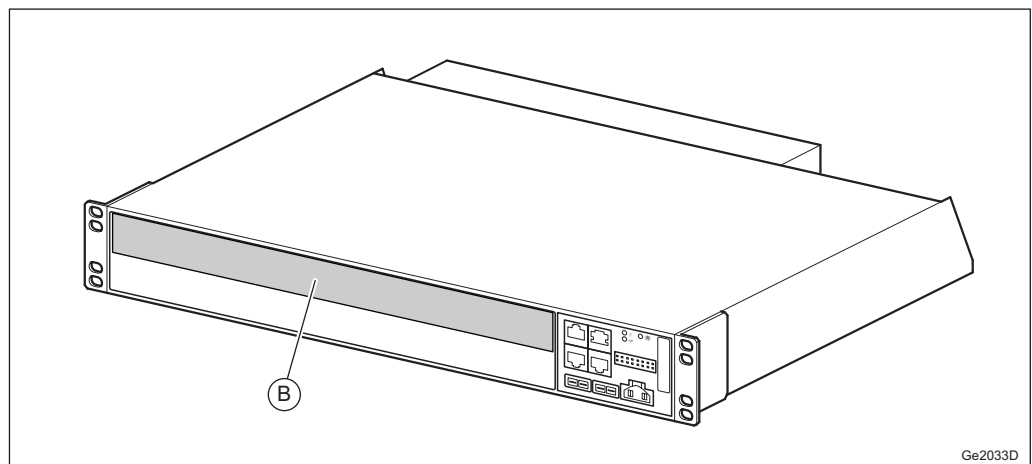


Figure 5 TCU Placement in the Main Unit

Note: Slot 2 is the upper position in the main unit.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To install a TCU in slot 2 in the main unit:

1. Put on the ESD wrist strap and connect it to the ESD common point ground of the cabinet.
2. Unpack the TCU and verify that it is not damaged.
3. Remove the dummy board in slot 2, if there is one. Use a T20 Torx screwdriver to remove the two screws on the front of the dummy board.

4. Insert the TCU in slot 2 in the main unit. Fasten the two screws on the TCU board front. Tighten both screws to a torque of 2.5 Nm, using a torque wrench fitted with a T20 Torx bit.
5. Connect cables to the TCU.

Note: More information on cabling can be found in *Non-RF Connections*.

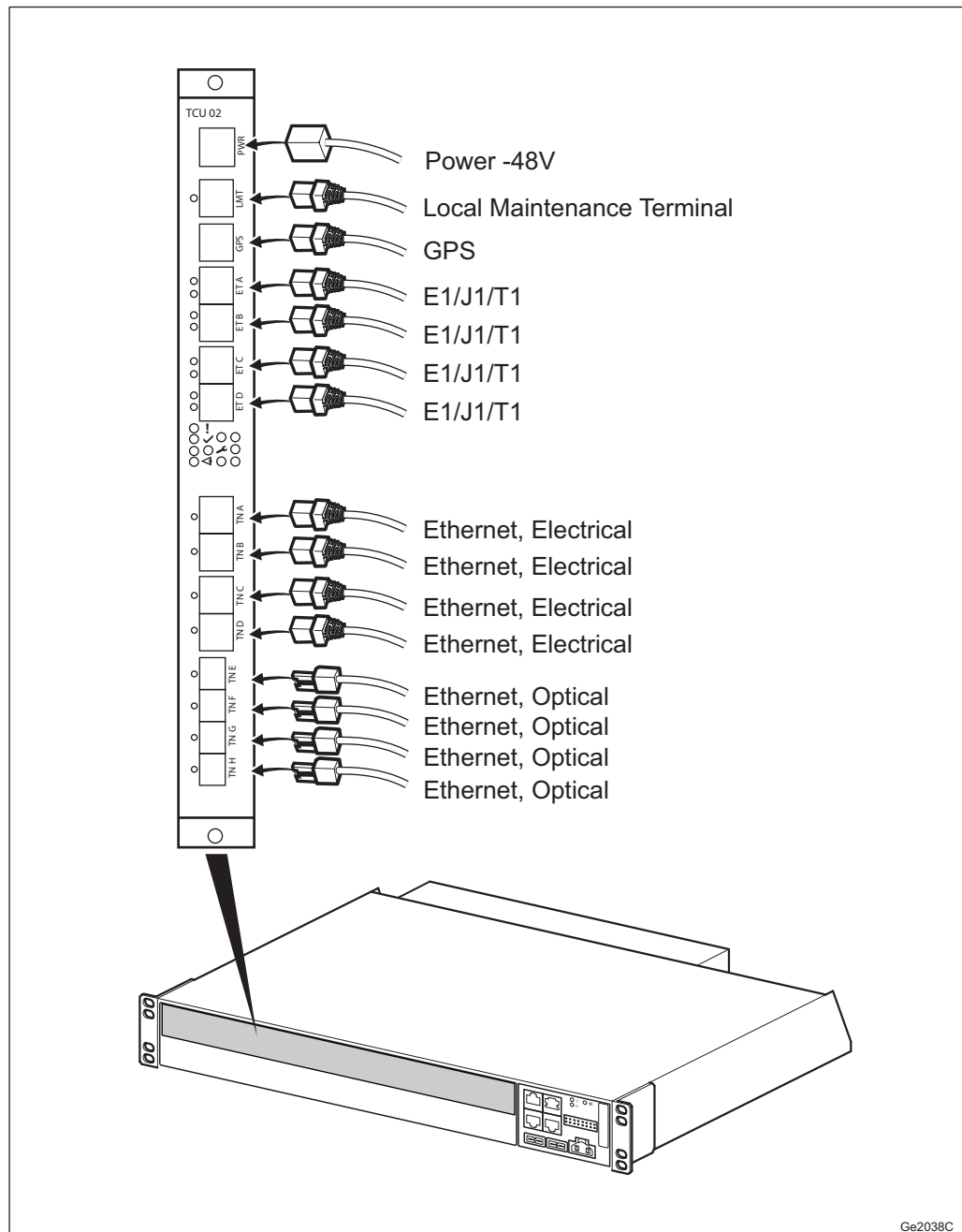


Figure 6 Connect Cables to TCU



Note: Connect the GPS cable from TCU port GPS to the GPS receiver. The GPS signal is used for synchronization of the oscillator in TCU.

The TCU ports ET A - ET D and TN A - TN H, are I/O ports.

Cables from the ET A - ET D and TN A - TN H ports of the TCU are connected to DU(s) and WAN in the following priority order:

1. WAN cable(s).
2. DU cable(s).

Recommended TCU ports for cables connected to WAN and DU(s):

- Connect cables from TCU port ET A - ET D to WAN starting from TCU port ET D, if applicable.
- Connect cables from TCU port TN A - TN D to WAN starting from TCU port TN D, if applicable.
- Connect cables from TCU port TN E - TN H to WAN starting from TCU port TN H, if applicable.
- Connect cables from TCU port ET A - ET D to DU starting from TCU port ET A, if applicable.
- Connect cables from TCU port TN A - TN D to DU starting from TCU port TN A, if applicable.
- Connect cables from TCU port TN E - TN H to DU starting from TCU port TN E, if applicable.

Information about configuration of the TCU can be found in *TCU 02 Basic Configuration*.

Information about TCU synchronization functionality can be found in *User Guide, Synchronization*.





12 Connecting the Radios

This section provides procedures for connecting the external radios.

12.1 Connecting the Optical Cables from the RRU or the AIR Unit

This section provides the procedure for connecting the optical cable to the DU, and for the CDMA to the XMU through an SFP.

Instructions for installation of the RRU can be found in *Installing Remote Radio Units* and instructions for installation of the AIR unit can be found in *Installing Antenna Integrated Radio Units*. Instructions for installation of the optical cable can be found in *Installing Optical Cables for Main-Remote Solutions*.

Note: Make sure that the optical cables have enough extra length to allow the removal of the main unit from the rack for service purposes without disconnecting the cables. Do not tighten the cable straps too tight.

The cables are optical and must be handled with care. Never touch the end-face of the optical connectors. Only remove protective covers immediately before installation.

Note: Be careful if the installation requires pulling the cables. The minimum allowed bending radius for the optical cable provided by Ericsson is 40 mm and the minimum allowed bending radius for each individual fiber is 15 mm. The minimum bending cables for other cables can be found in the manufacturer's specification. Do not twist the fiber to the minimum bending radius.

12.1.1 Connecting the Optical Cables to the DU

This section provides the procedure for connecting the optical cables to the DU through an SFP.



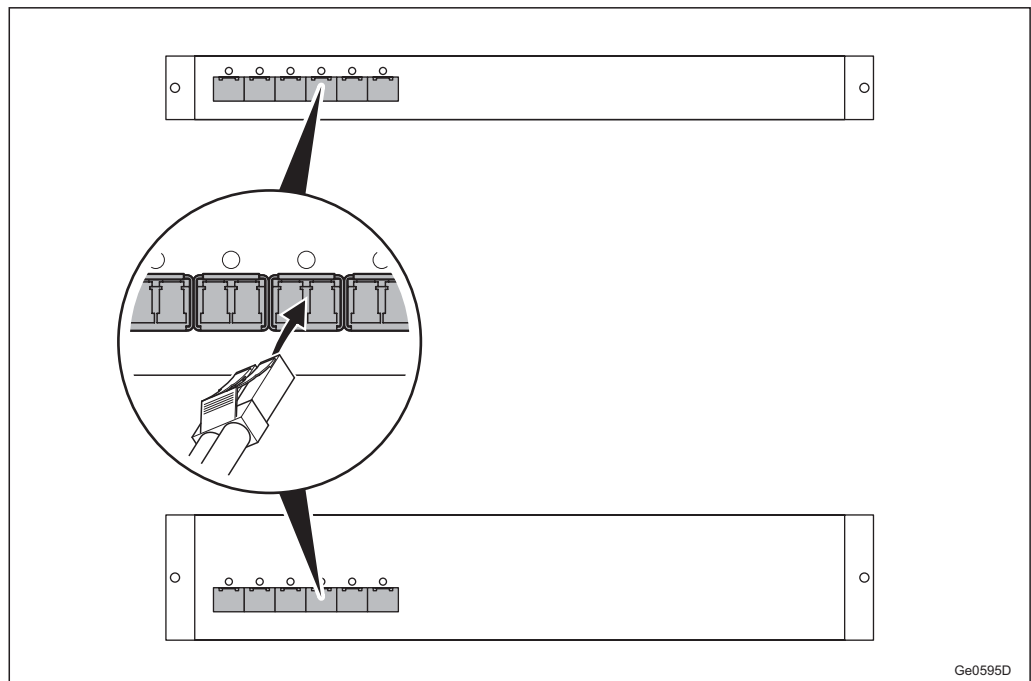
Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the optical cables to the DU:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the SFP module into the main unit according to *Site Installation Documentation*.
3. Remove the protective caps from the connectors on the cables and the DU.
4. Make sure that the cable connectors and the connectors on the DU are clean. If caps are missing or if the connectors are dirty, use ferrule end-face cleaner.
5. Insert the cables into the specified ports on the main unit according to *Site Installation Documentation*.

Note: For instructions on how to connect the optical cable to a bidirectional transceiver SFP, see Section 12.1.3 on page 40.



6. Check that each cable is as straight as possible and make any necessary adjustments.

Note: No bends in cables are allowed close to connectors.

12.1.2 Connecting the Optical Cables to the XMU

This section provides the procedure for connecting the optical cables to the XMU through an SFP.



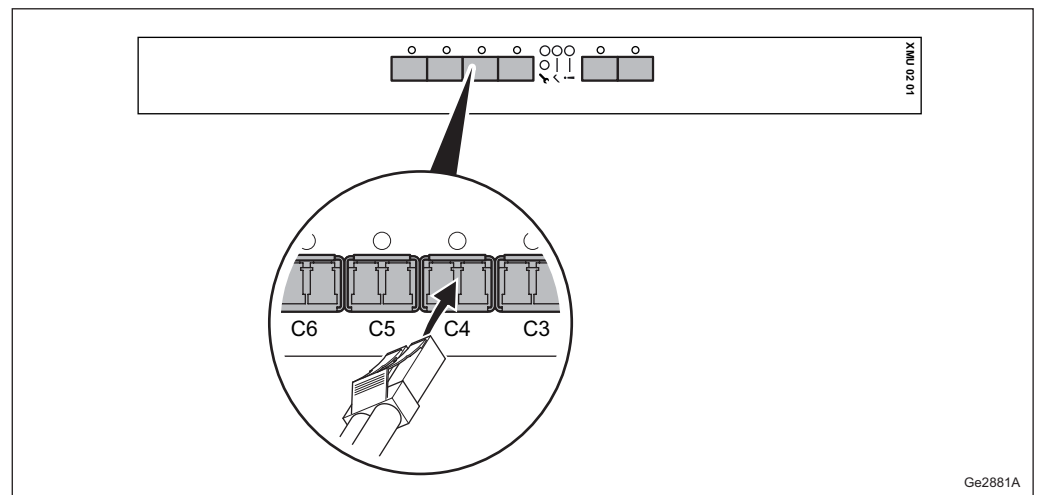
Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the optical cables to the XMU:

1. Follow steps 1 and 2 as described in Section 12.1.1 on page 37.
2. Remove the protective caps from the connectors on the cables and the XMU.
3. Make sure that the cable connectors and the connectors on the XMU are clean. If caps are missing or if the connectors are dirty, use ferrule end-face cleaner.
4. Insert the cables into the specified ports on the XMU according to *Antenna and RF Connections*.

Note: For instructions on how to connect the optical cable to a bidirectional transceiver SFP, see Section 12.1.3 on page 40.



5. Check that each cable is as straight as possible and make any necessary adjustments.

Note: No bends in cables are allowed close to connectors.

For more information on connecting the optical cables to the XMU, refer to *Antenna and RF Connections*.

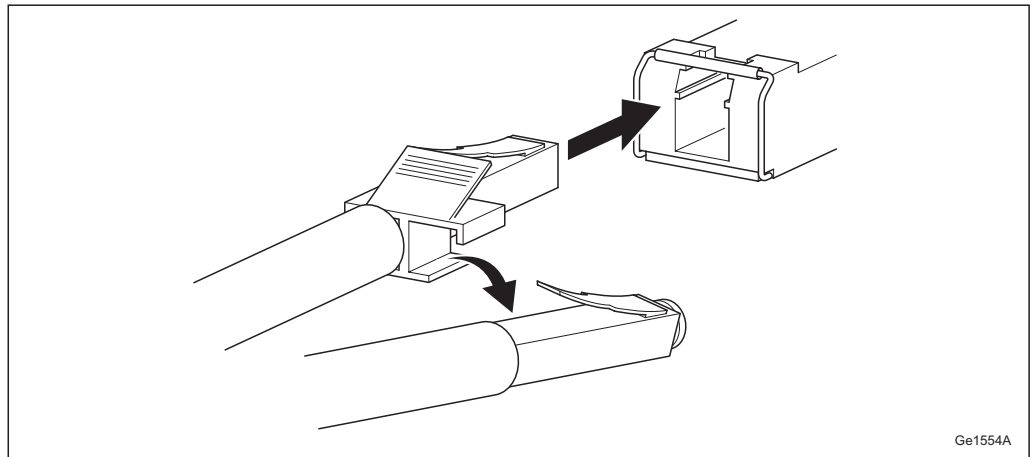
For information on connecting the optical cable interface to the DBA, refer to *Antenna and RF Connections*.

12.1.3 Connecting the Optical Cable to a Bidirectional Transceiver SFP

This section provides the procedure for connecting the optical cable to a bidirectional transceiver SFP.

To connect the optical cable to the bidirectional transceiver SFP, do the following:

1. Split the duplex house that holds the two LC connectors together.



2. Remove the protective cap from the active fiber marked with white. Insert that fiber into the SFP.

Note: Leave the protective cap on the inactive fiber marked with yellow.



13 Connecting the On-Site Transmission System

This section provides the procedure for connecting the RBS to the on-site transmission system. The external transmission cables are connected to the DU. External transmission cables must be connected to the TCU if applicable. The cable connections depend on the transmission alternative chosen for the specific site. The positions indicated in the figures can vary.

Note: Information about transmission alternatives and the connections to be used for each site can be found in *Site Installation Documentation*.

Make sure that the transmission cables have enough extra length to allow the removal of the main unit from the rack for service purposes without disconnecting the cables.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

The on-site transmission system depends on the used DU. Select one of the following three options for connecting the on-site transmission system and go to the appropriate section:

- Transmission interface E1/T1/J1; Section 13.1 on page 41
- Transmission interface Ethernet, electrical; Section 13.3 on page 43
- Transmission interface Ethernet, optical; Section 13.4 on page 44
- Transmission interface STM-1 (Synchronous Transport Mode level-1); Section 13.5 on page 46

13.1 Connecting Transmission Interface E1/T1/J1 (WCDMA Only)

This section provides the procedure for connecting the E1/T1/J1 transmission for WCDMA.



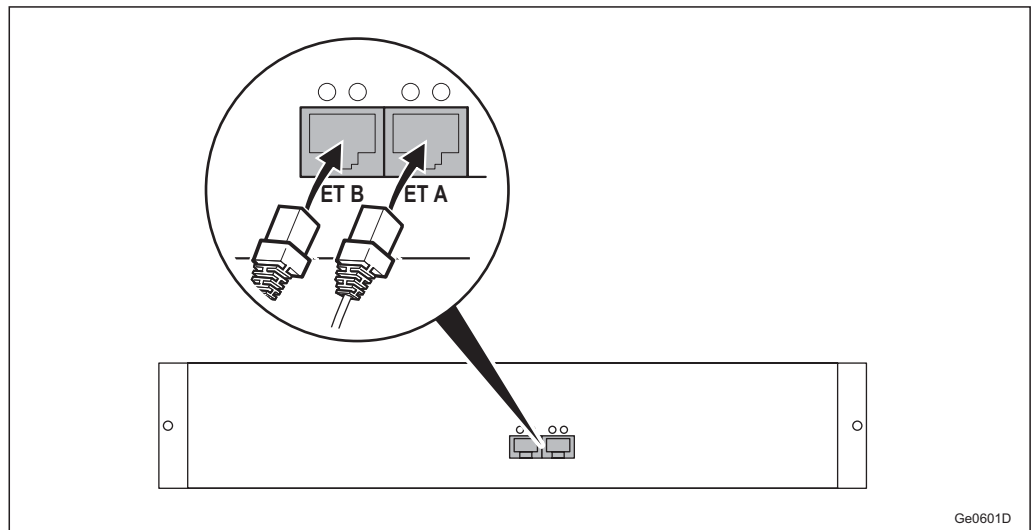
Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the RBS to the twisted-pair cables:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the cables into DU port ET A and ET B.

Detailed information can be found in *Site Installation Documentation*.



13.2

Connecting Transmission Interface E1/T1 (GSM Only)

This section provides the procedure for connecting the E1/T1 transmission for GSM.



Do!

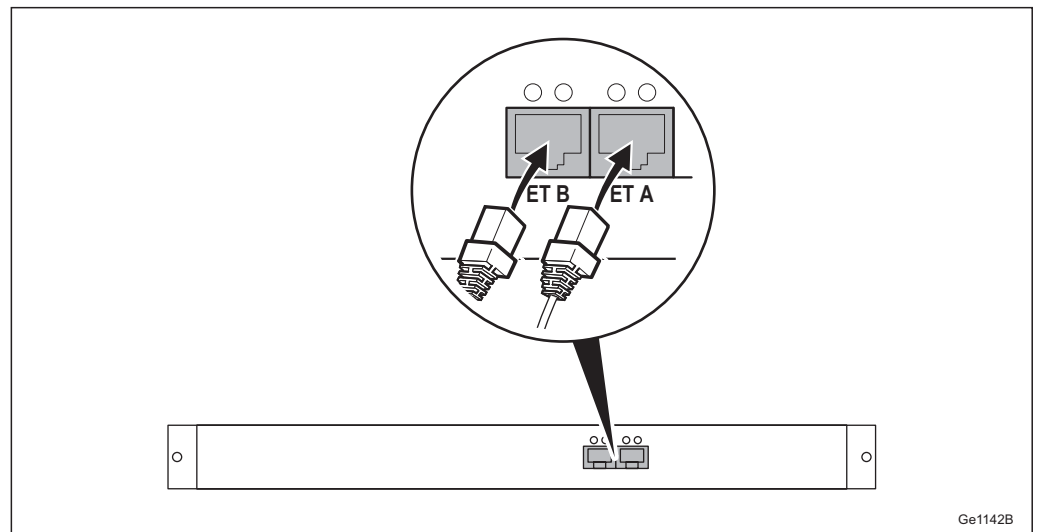
Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.



To connect the RBS to the twisted-pair cables:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the cables into DU port ET A and ET B.

Detailed information can be found in *Site Installation Documentation*.



13.3 Connecting Transmission Interface Ethernet, Electrical (WCDMA and LTE)

This section provides the procedure for connecting the electrical Ethernet transmission interface.



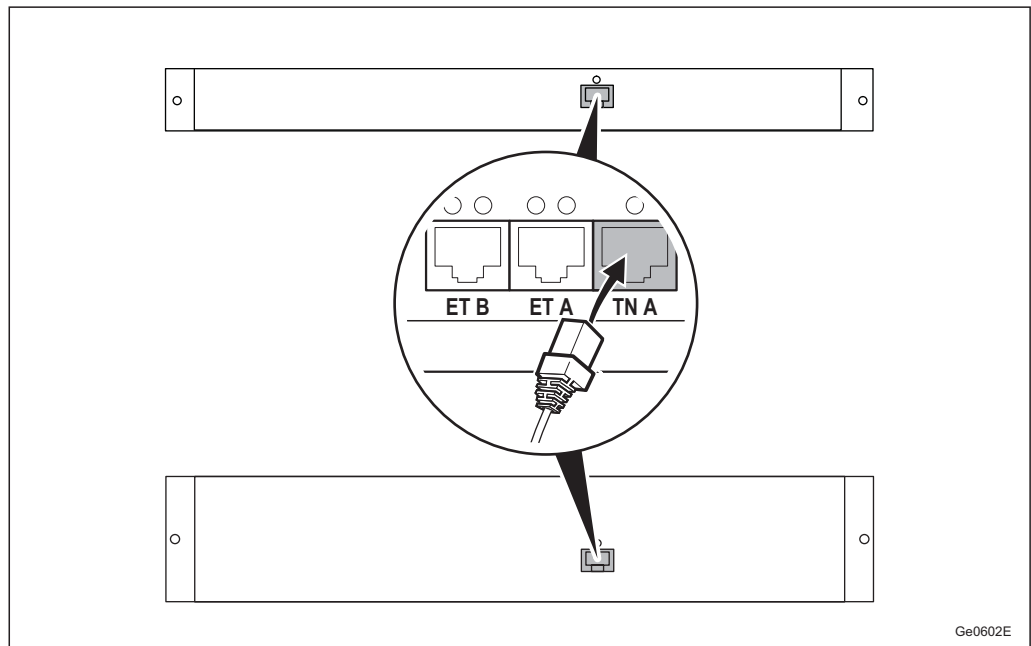
Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the RBS to the twisted-pair cable:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the cable into DU port TN A.

Detailed information can be found in *Site Installation Documentation*.



13.4 Connecting Transmission Interface Ethernet, Optical (WCDMA and LTE, Optional)

This section provides the procedure for connecting the optional optical Ethernet transmission interface.

Make sure the type of the cable and the SFP module on the DU match (only LC contacts applicable).

Note: Handle the optical cables with care and do not exceed the minimum bending radius, see the manufacturer's specification.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.



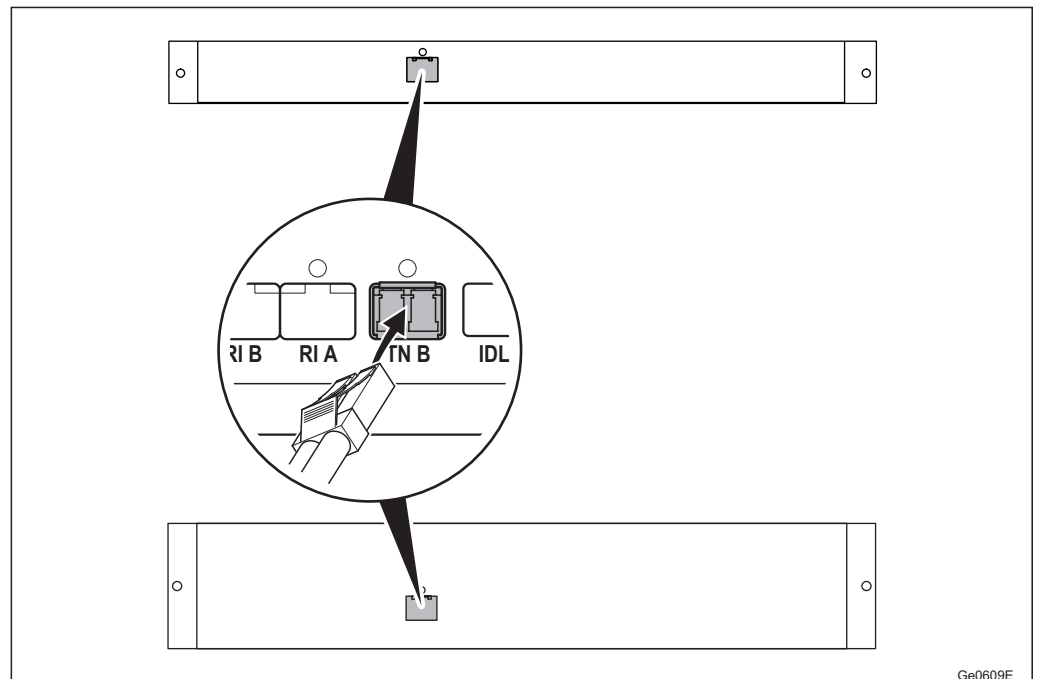
Danger!

Never look directly into the end of an optical cable, or other laser source. Equipment that transmits laser light can cause permanent eye damage. Switch off the laser before starting work on laser equipment.

To connect the main unit to Ethernet optical cables:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Remove the protective caps from the connector on the cable and the DU.
3. Make sure that the cable connectors and the connectors on the DU are clean. If caps are missing or if the connectors are dirty, use ferrule end-face cleaner.
4. Insert the cable into DU port TN B, see figure below.

Detailed information can be found in *Site Installation Documentation*.



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13.5 Connecting Transmission Interface STM-1, Optical (WCDMA only)

This section provides the procedure for connecting the optical STM-1 transmission interface.

Make sure that the type of the cable and the SFP module on the DU match (only LC contacts applicable).

Note: Handle the optical cables with care and do not exceed the minimum bending radius (the fiber bending radius shall never be less than 30 mm). See the manufacturer's specification for further details.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.



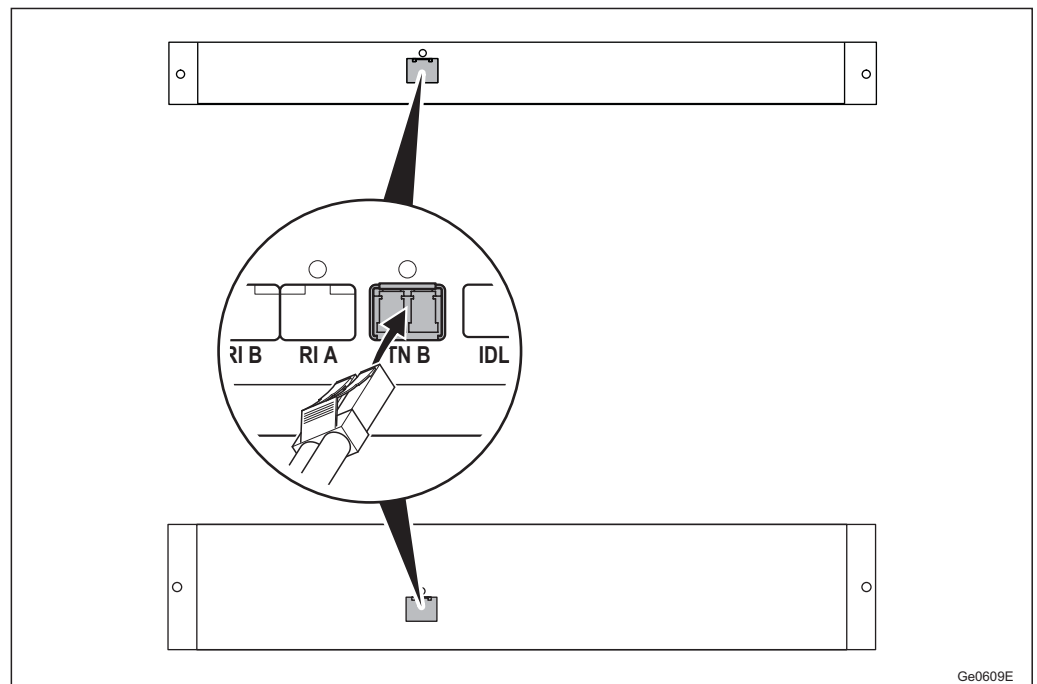
Danger!

Never look directly into the end of an optical cable, or other laser source. Equipment that transmits laser light can cause permanent eye damage. Switch off the laser before starting work on laser equipment.

To connect the main unit to Ethernet optical cables:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Remove the protective caps from the connector on the cable and the DU.
3. Make sure that the cable connectors and the connectors on the DU are clean. If caps are missing or if the connectors are dirty, use ferrule end-face cleaner.
4. Insert the cable into DU port TN B, see figure below.

Detailed information can be found in *Site Installation Documentation*.







14 Connecting the External Alarm Cable

This section provides the procedure for connection to the built-in ports for external alarms and to the optional Support Alarm Unit (SAU).

Note: For WCDMA and LTE, external alarms can also be connected to an RRUS as instructed in *Installing Remote Radio Units*.

14.1 Connecting to the Built-in Ports for External Alarms

This section provides the procedure for connection of the external alarms to the built-in ports for external alarms.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

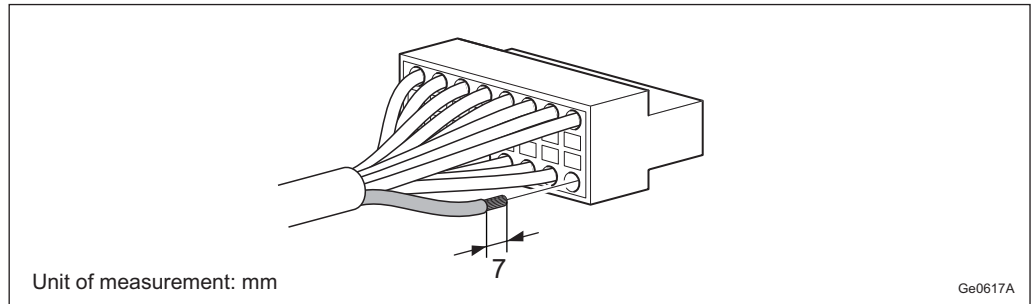
The alarm ports are marked on the support system front panel. Each alarm signal consist of one pair of wire connections. The connection marked minus (-) is internally connected to ground in the support system and the connection marked plus (+) is used to sense an open or closed loop connection. Electrical details of the alarm connector can be found in *RBS Description*.

Each alarm signal wire is connected to the removable alarm connector. The wire should be of single-strand type with an area of 0.2 – 1.0 mm². If a multi-strand wire is used, the end of the wire should be tinned or provided with a wire end ferrule.

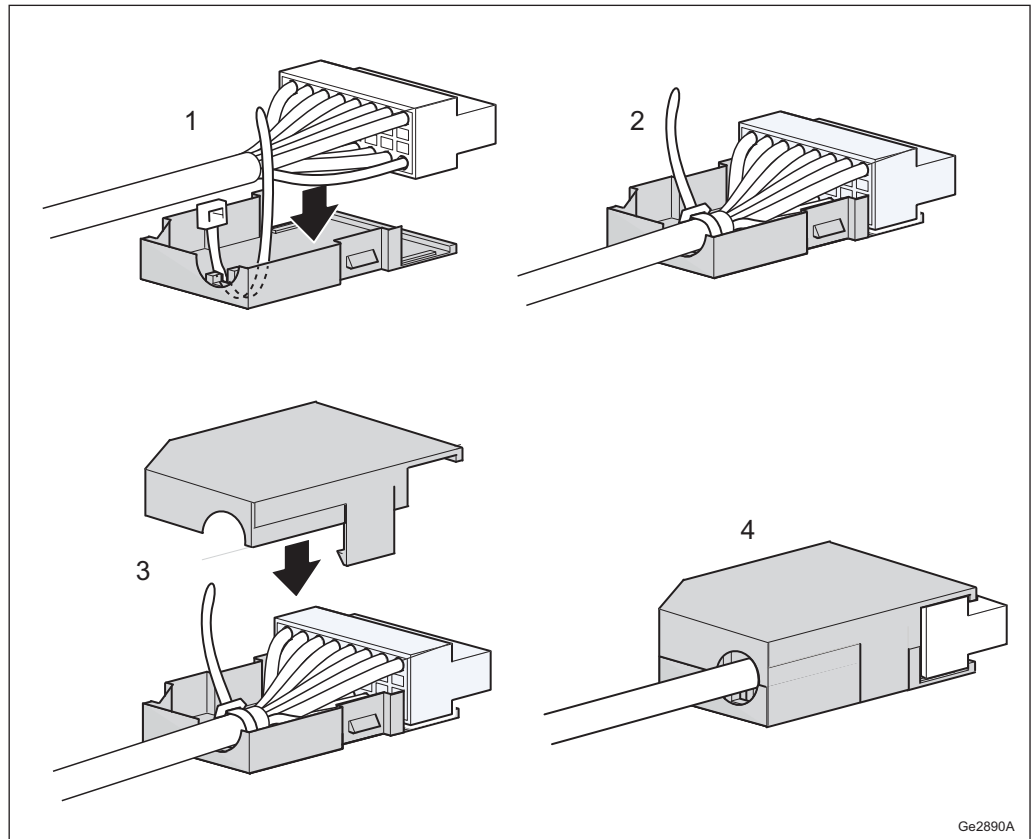
To connect the external alarms to the built-in ports for external alarms on the main unit:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Strip 7 mm of each wire using the cable shield cutter.
3. Connect the alarm signal wires to the alarm connector by inserting each wire into each dedicated tension clamp connection and check that they are properly fastened.

(To remove a wire from the connector, push the corresponding release tab on the connector with a small screwdriver and carefully pull the wire.)



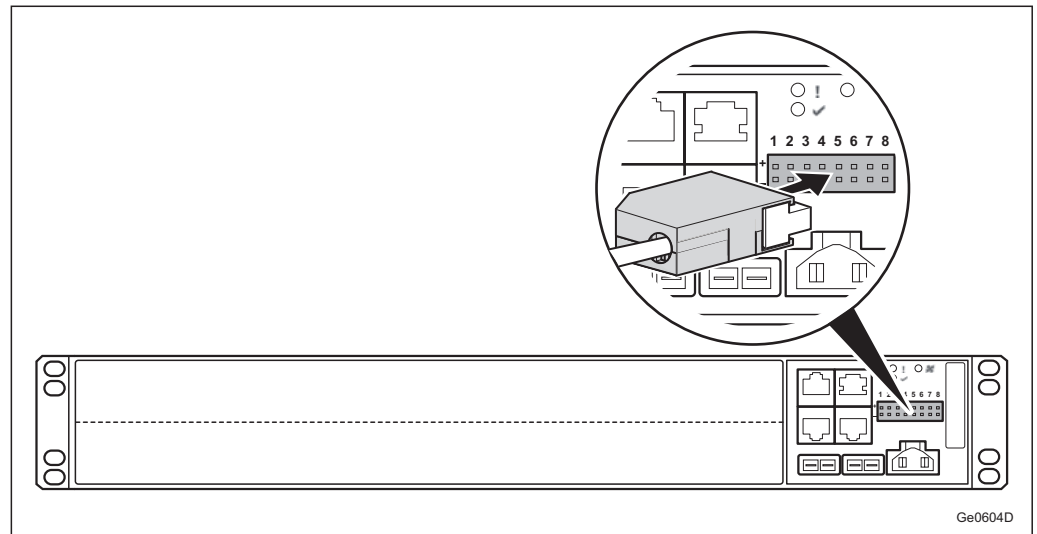
4. Align the connector with the cable protective cap and tie the cable with the cable strap as show in numbers 1 and 2 in the following figure.
5. Align the lock of the cable protective cab and close it as shown in numbers 3 and 4 in the following figure.



6. Insert and push the alarm connector firmly into the specified port on the main unit.

(To remove the alarm connector, grip and pull the connector from the socket.)

Note: Never pull out the connector using the alarm wires.



Detailed information can be found in *Site Installation Documentation*.

14.2 Connecting the SAU (Optional)

This section provides the procedure for connection of the SAU.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

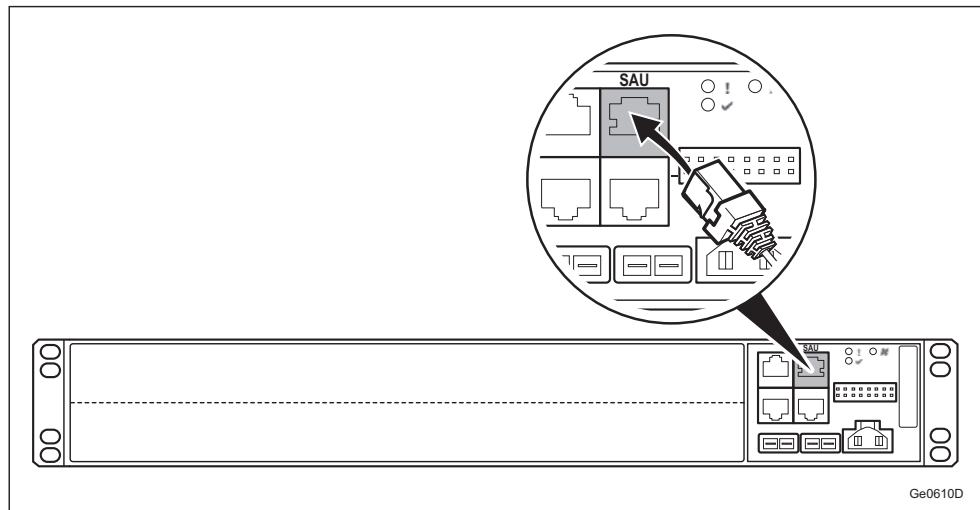
Note: Make sure that the external alarm cable from the SAU has enough extra length to allow the removal of the main unit from the rack for service purposes without disconnecting the cable.

To connect the external alarm cable from the SAU to the main unit:

1. Put on the ESD wrist strap, and connect it to a suitable unpainted ground in the rack.
2. Insert the cable into the main unit port SAU.

Note: The connector is keyed so that only one end fits into port SAU on the support system.

Detailed information can be found in *SAU Description*.





15 Connecting GPS Synchronization (Optional)

This section provides instructions for connecting the GPS solution. Information about installing the *GPS Receiver System for RBS 6000 User Guide* can be found in the *RBS Site GPS Synchronization* library.

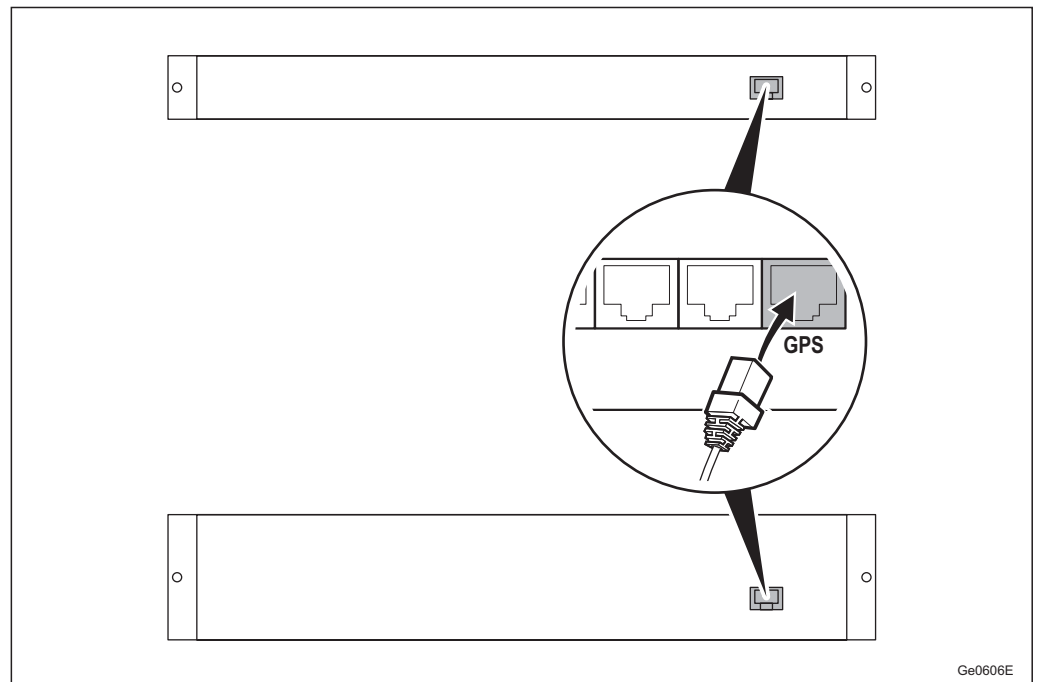


Do!

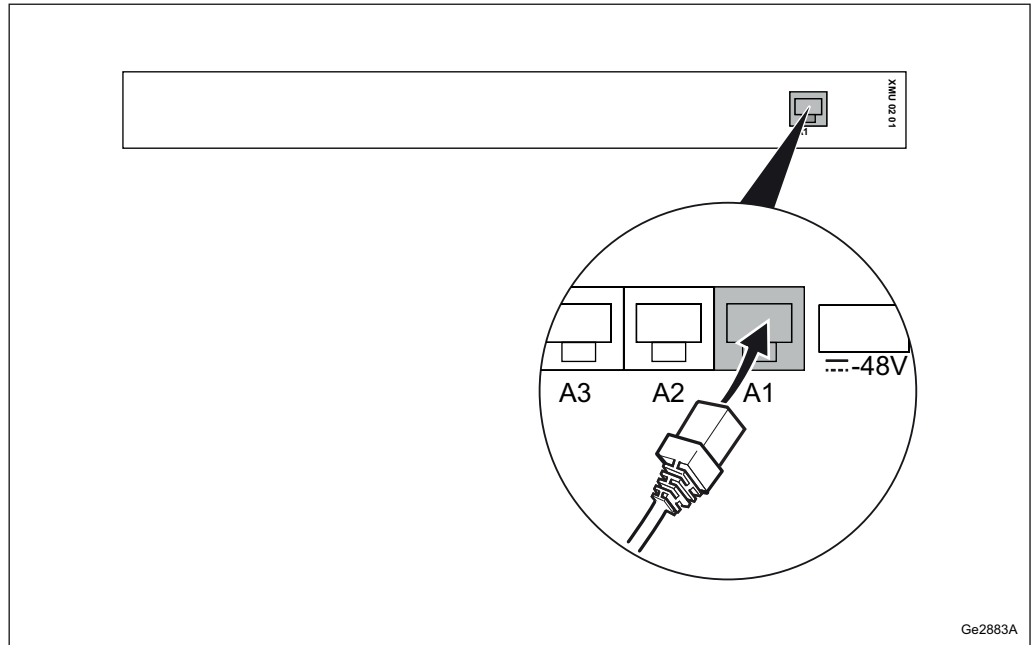
Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used.

To connect the GPS solution:

1. Put on the ESD wrist strap, and connect it to the ESD common point ground of the cabinet.
2. Connect the digital GPS cable to the GPS port on the DU.



For CDMA, insert the cable into XMU port A1.





16 Connecting the Client to the Cabinet

This section provides the procedure for connecting the client to the cabinet for configuration and service purposes.

In WCDMA the site LAN is used to communicate with the RBS Element Manager (EM). In LTE and CDMA the Local Maintenance Terminal (LMT) is used to communicate with the RBS EM. In GSM the site LAN is used to communicate with the Operation and Maintenance Terminal (OMT).

The client is connected to the LMT port on the DU. The LMT, LMT A, and LMT B ports are RJ-45 connectors.

For initial configuration LMT A is used as shown in Figure 9. If the DU only has one LMT port, an LMT splitter cable is used to access LMT A, as shown in Figure 7.

For site LAN access LMT B is used as shown in Figure 9. If the DU only has one LMT port, that LMT port is configured as an LMT B port by default, see Figure 8. The LMT B can also be accessed via the LMT splitter cable as shown in Figure 7.



Do!

Always use an approved ESD wrist strap when working with sensitive equipment. Damage to components mounted on printed board assemblies can occur if an ESD wrist strap is not used. A crocodile clip (or spring clip) can be useful when connecting to the ESD common point ground due to limited space.

To connect the client to the LMT port on the DU, or the VRX port on the DBA, perform the following:

1. Put on the ESD wrist strap and connect it to the ESD grounding point of the cabinet.
2. Connect the Local Maintenance Terminal cable to the DU as shown in Figure 7, Figure 8, and Figure 9, depending on the scenario. For CDMA: Connect the Vortex cable to the DBA as shown in Figure 10.

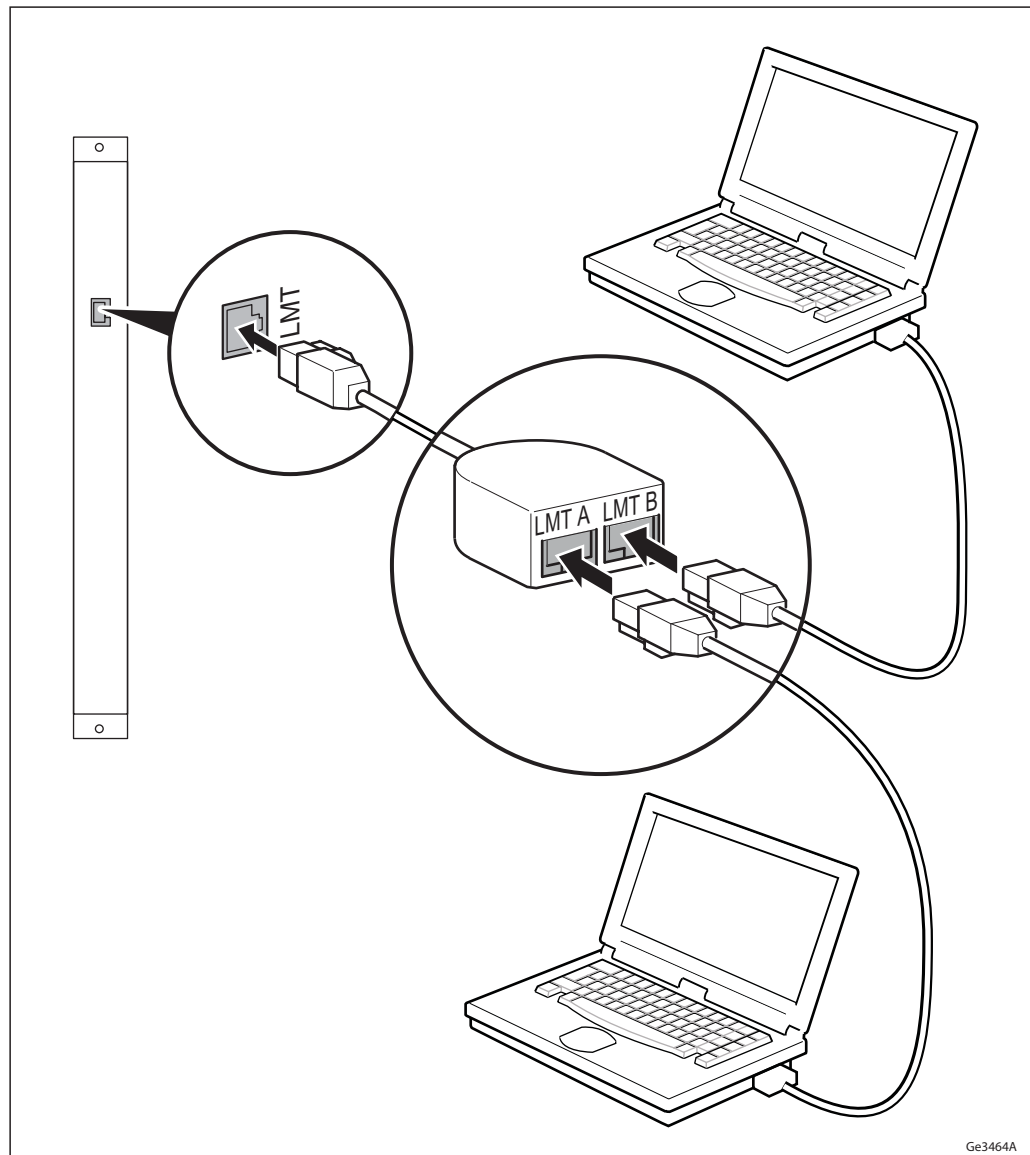


Figure 7 Connecting to the Client, DU with LMT Port. Accessing LMT A and LMT B using an LMT Splitter Cable.

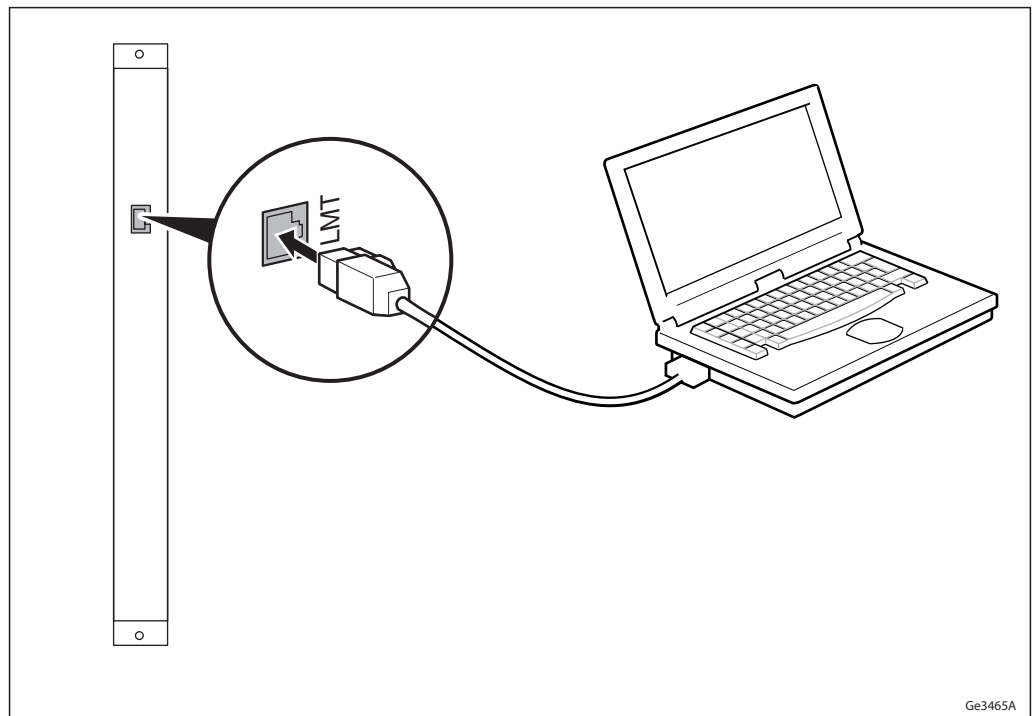


Figure 8 Connecting to the Client, DU with LMT Port. LMT B by Default.

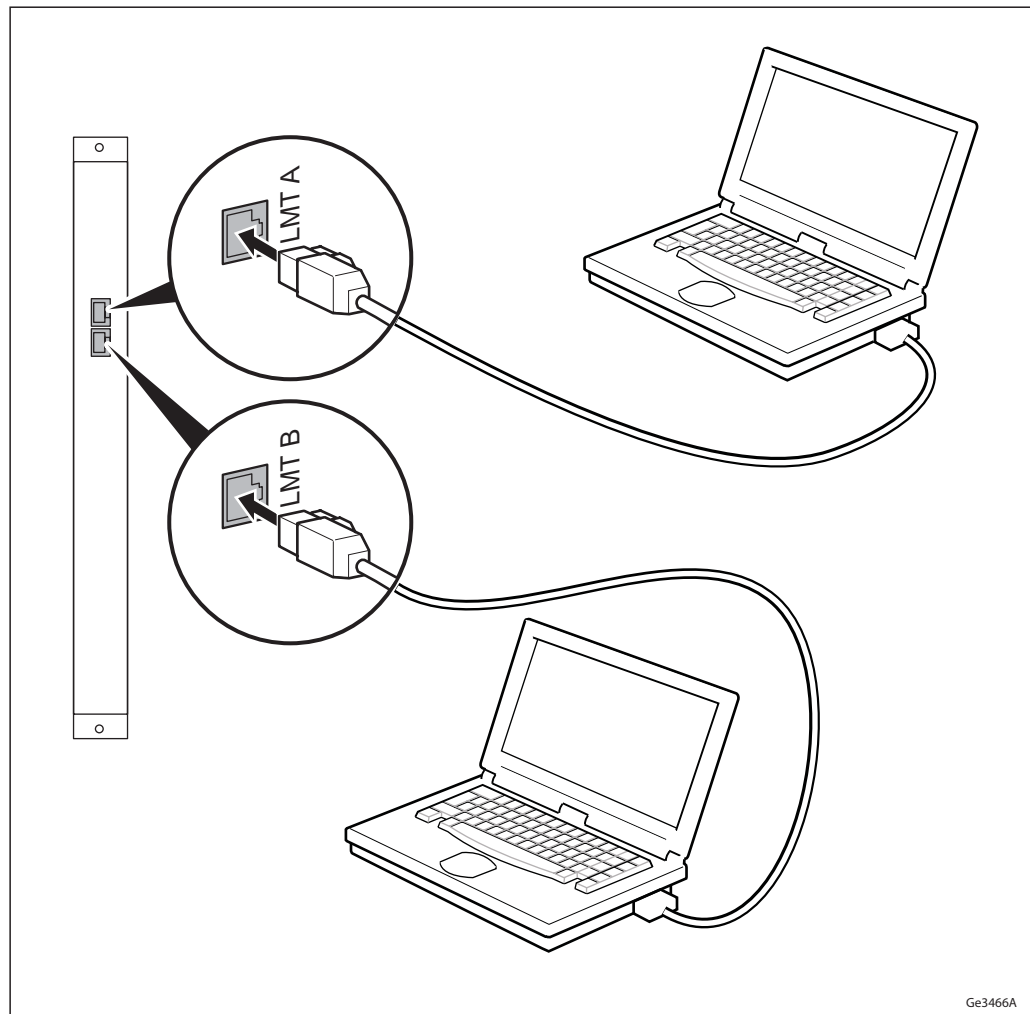


Figure 9 Connecting to the Client, DU with LMT A and LMT B Ports.

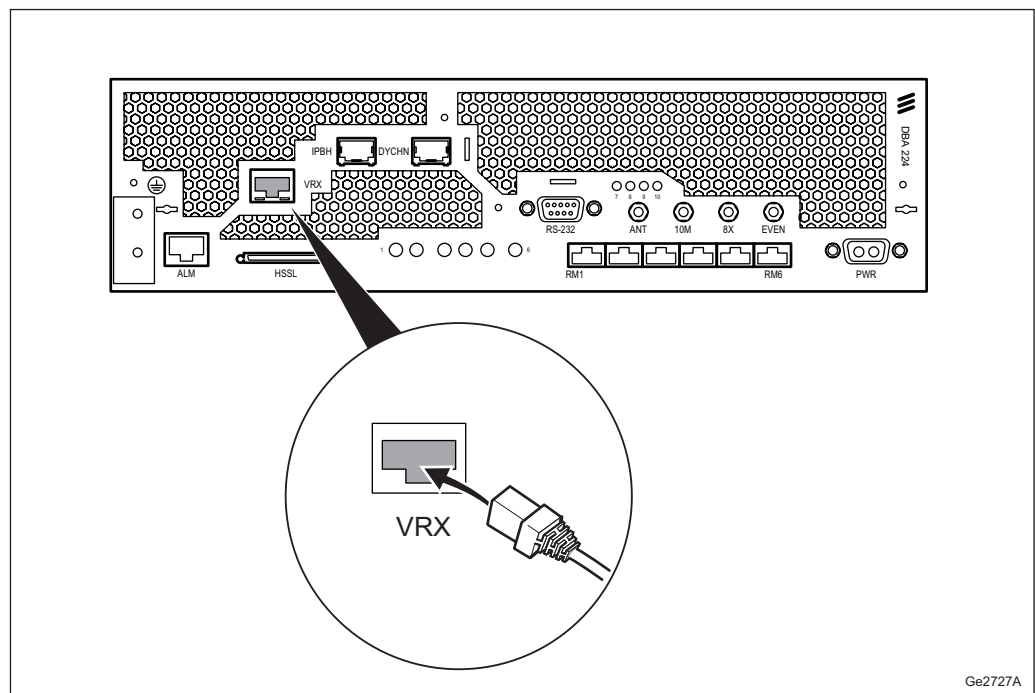


Figure 10 CDMA: Connecting the Vortex cable to the VRX port on DBA.

Detailed information is found in *Hardware Maintenance Instructions*.





17 Verifying RBS Installation on Site

This section describes the verification that must be performed to check the installation of the main unit before it is integrated with the radio network. The main unit has already been verified at the factory.

17.1 Inspecting RBS installation

This section provides checklists for verifying the main unit installation. See also the following documents for verifying other units installation:

- Verifying the RRU installation: *Installing Remote Radio Units and Verification of Installation at Site, RRU*
- Verifying the AIR installation: *Installing Antenna Integrated Radio Units*
- Verifying the optical cable installation: *Installing Optical Cables for Main-Remote Solutions*

17.1.1 Checking the Main Unit

Use the checklist in Table 3 to check the installation of the main unit.

Table 3 Main Unit Installation Checklist

#	Item	YES	N/A ⁽¹⁾
1	The site is prepared according to <i>Site Installation Documentation</i> ?		
2	Equipment undamaged and free from contamination?		
3	Minimum 50 mm between the main unit and the cabinet door, if applicable?		
4	Minimum 50 mm between the main unit and the rear rack wall?		
5	The main unit horizontally and vertically aligned with other cabinets or equipment?		
6	The main unit grounded, washer in place, and bolts tightened to torque of 15 Nm?		
7	Grounding cable insulation undamaged?		
8	All cables in the front of the cabinet are properly connected?		
9	All screws are tightened to the correct torque?		



#	Item	YES	N/A ⁽¹⁾
10	No cables are damaged?		
11	Equipment labeled as required according to <i>Site Installation Documentation</i> ?		
12	All cables have enough extra length to enable the removal of the main unit without damaging or disconnecting the cables?		
Notes:			

(1) (Not applicable)

17.1.2 Checking Transmission and Alarm Cables

Use the checklist in Table 4 to check the installation of transmission and alarm cables.

Table 4 Transmission and Alarm Cable Checklist

#	Item	YES	N/A
1	Optic cables connected?		
2	Minimum bending radius of optical cables complies with <i>Site Installation Documentation</i> ?		
3	Electrical transmission cables connection complies with <i>Site Installation Documentation</i> ?		
4	Electrical transmission cables labeled at both ends with termination point and opposite end?		
5	Alarm cables connection complies with <i>Site Installation Documentation</i> ?		
6	Alarm cables labeled at both ends with termination point and opposite end?		
7	All cables have enough extra length to enable removal of the main unit without damaging or disconnecting the cables?		
Notes:			



17.1.3 Checking the Optical Cables

Use the checklist in Table 5 to check the installation of the radio link, its cabling, and external equipment.

Table 5 Optical Cable Checklist

#	Item	YES	N/A
1	Equipment installation complies with <i>Site Installation Documentation</i> ?		
2	Cables connected properly?		
3	No cables are damaged?		
4	Cables labeled properly?		
5	All cables have enough extra length to enable the removal of the main unit without damaging or disconnecting the cables?		
Notes:			

Note: To check the other side of the radio link, refer to *Installing Remote Radio Units* or *Installing Antenna Integrated Radio Units*.

17.2 Powering Up the RBS

This section describes how to power up the RBS.

The RBS must be powered up within 48 hours after installation even if the RBS is not taken into service. The reason is to start the basic climate function to ensure the protection of the internal units from local climate conditions.



Do!

Products not connected to ground risk being damaged by overvoltage or overcurrent. Always connect products to ground according to instructions.

To power up the RBS:

1. Make sure that the room climate is within the RBS operating environment.
2. Make sure that the site power is switched off before starting.



3. Switch on the site power.

17.3 Checking the RBS after Powering Up

This section provides checks to perform after the RBS is powered up.

Once the power is switched on, the boards load with their specific software. Optical indicators show the board status.

Note: It may take up to 10 minutes before all units in the cabinet are in operation.

To check the RBS after powering up:

1. Check that all red optical indicators are off, and that the rest of the optical indicators are lit as they should according to *Indicators, Buttons, and Switches*.

If any red optical indicator is on or if any other optical indicator does not lit as it should, then contact the next level of maintenance support.

Detailed information about optical indicators can be found in *Indicators, Buttons, and Switches*.

2. If applicable, check that the optical indicators next to the optical cables interfaces on the DU are flashing.

Note: Some red indicators may flicker during startup.



18 Performing Concluding Routines

Before leaving the site:

1. Clean the site and remove objects such as wrapping paper and cable clippings.
2. Dispose of waste according to local regulations.
3. Fill in the verification checklist in *Site Installation Documentation*.
4. Report any faults according to local requirements.
5. Hand over *Site Installation Documentation* to the person responsible for the site.
6. Lock all doors and gates to the site.

Environment

Ericsson strongly recommends that installers pay particular attention to the environment when cleaning the site after RBS installation, in particular, recycle all waste that can be recycled and sort the rest so that it can be disposed according to local regulations. Use the checklist in Table 6 to recycle and sort waste.

Table 6 Recycling and Sorting Waste

Recycle or Sort	Item	YES	N/A
Sorted with plastics	Pieces of cable, low metallic content		
	Cable insulation from crimping, brazing or welding		
	Packing chips		
	Foam		
	Polystyrene		
	Bubble plastic		
	Cable tie clippings		
Paper recycling	Paper		
Recycled or sorted as wood	Wood		



Recycle or Sort	Item	YES	N/A
Recycled or sorted as metals	Waste metal from cable ladders		
	Pieces of cable, high metallic content		
	Nuts bolts, washers, and screws		
Notes:			



Reference List

The following documents are related to this procedure:

Safety

- [1] *Personal Health and Safety Information*, 124 46-2885
- [2] *System Safety Information*, 124 46-2886
- [3] *Transportation and Storage*, 114/1551-LZA 701 6001

Generic

- [4] *Antenna and RF Connections*, 26/1551-LZA 701 6001
- [5] *Indicators, Buttons, and Switches*, 19/1551-LZA 701 6001
- [6] *Installing Antenna Integrated Radio Units*, 12/1531-LZA 701 6001
- [7] *Installing Remote Radio Units*, RRUS 01, 9/1531-LZA 701 6001
- [8] *Installing Remote Radio Units*, RRUS 11 and RRUS 61, 16/1531-LZA 701 6001
- [9] *Installing Remote Radio Units*, RRUS 02, 21/1531-LZA 701 6001
- [10] *Non-RF Connections*, 23/1551-LZA 701 6001
- [11] *RBS Description*, 22/1551-LZA 701 6001
- [12] *Replacing Digital Units*, 2/1543-LZA 701 6001
- [13] *Replacing Digital Units*, 66/1543-LZA 701 6001
- [14] *SAU Description*, 13/1551-LZA 701 6001
- [15] *System Safety Information*, 124 46-2886
- [16] *TCU 02 Basic Configuration*, 1/1531-LZA 104 105/7
- [17] *User Guide, Synchronization*, 4/1553-LZA 104 105/6

LTE

- [18] *Installing Remote Radio Units*, RRUL, 10/1531-LZA 701 6001

WCDMA

- [19] *Installation Instruction*, RRU22, 2/1531-HRB 105 102/1



[20] *Installing Remote Radio Units, RRUW, 6/1531-LZA 701 6001*

[21] *Verification of Installation at Site, RRU, 1/1532-HRB 105 102/1*

Site

[22] *GPS Receiver System for RBS 6000 User Guide , 6/1553-LZA 701 6009*

[23] *Grounding Guidelines for RBS Sites, 23/1551-LZA 701 6009*

[24] *Installing Optical Cables for Main-Remote Solutions, 15/1531-LZA 701 0003*

[25] *Site Installation Documentation*