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Troubleshooting UltraSite EDGE BTS

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1 Statutory information

1.1 CE Marking

Standard	Description
C E 0168 ⓘ	Hereby, Nokia Corporation, declares that this Nokia UltraSite EDGE Base Station is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC.

1.2 FCC Statement

Standard	Description
FCC Statement	<p>Hereby, Nokia Corporation declares that this Nokia UltraSite EDGE Base Station is in compliance with the essential requirements and other relevant provisions of Directive: 1999/5/EC.</p> <p>The product is marked with the CE marking and Notified Body number according to the Directive 1999/5/EC.</p> <p>This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.</p>

2 Trouble management

2.1 Trouble management of UltraSite EDGE BTS

Summary

For additional information on Nokia UltraSite EDGE BTS status when troubleshooting, use a mobile phone to contact Base Station Controller (BSC) personnel.

If a fault occurs during BTS operation, connect the BTS Manager laptop PC to the BOIx unit. BTS Manager windows, Supervision, BTS Events, and Alarms, can help you identify the problem.

Note

For instructions on troubleshooting during commissioning, see *Overview of commissioning UltraSite EDGE BTS*.



Steps

1. **Troubleshoot the BTS Manager connection.**
2. **Troubleshoot electrical power.**
3. **Troubleshoot transmission unit operation.**
4. **Troubleshoot transceiver unit operation.**
5. **Troubleshoot fan units.**
6. **Report damage, failure or fault.**

2.2 Troubleshooting the BTS Manager connection of UltraSite EDGE BTS

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS*. Pay careful attention to all Warning and Cautions.

Summary

Fault - Cannot connect to BTS Manager



Steps

1. Determine cause and corrective action.

Table 1. Troubleshooting BTS Manager connection

Potential cause	Corrective action
Wrong BTS Manager port setting (COM1, COM2)	Correct the settings.
LMP cable broken or not properly connected	Check the connection, or replace/repair the cable.
Faulty or damaged BOIx unit	<i>Reset or replace the BOIx.</i>
Old or incorrectly installed BTS Manager software	Check the software version and <i>install latest BTS software</i> , if required. Reinstall correct software version, if CD is available.

2. Report damage, failure or fault.

2.3 Troubleshooting electrical power to the UltraSite EDGE BTS

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS*. Pay careful attention to all Warning and Cautions.

Summary

Fault - No power to UltraSite EDGE BTS



Steps

1. Determine cause and corrective action.

Table 2. Troubleshooting lack of power

Potential cause	Corrective action
Power supply unit is in STAND BY mode	Turn the switch to the ON position.
Site mains power supply fault (power supply LED is OFF)	<ul style="list-style-type: none"> • <i>Replace the power supply unit, if necessary.</i> • Check the site mains power source and fuses.
Defective power cable	Replace the power cable. <i>Replacing AC power cables of UltraSite EDGE BTS</i> <i>Replacing DC power cables of UltraSite EDGE BTS</i>
Cold-start function activates (power supply LED is YELLOW)	Close the door to allow the units to warm up to a temperature of -5° C (20° F).
Defective power supply unit (LED is RED may indicate the unit is overheated)	<i>Replace the power supply unit.</i>
Short in one of the plug-in units	<ul style="list-style-type: none"> • Pull the units out one by one until the power comes back on. • Return the units one by one and <i>replace the faulty unit(s).</i>
Wrong power supply type Install correct power supply unit(s).	

2. Report damage, failure or fault.

2.4 Troubleshooting transmission unit operation of UltraSite EDGE BTS

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS.* Pay careful attention to all Warning and Cautions.

Summary

Fault - No transmission connection to the BSC



Steps

1. Potential cause and corrective action.

Table 3. Troubleshooting Transmission unit operation

Potential cause	Corrective action
Abis cable not connected (LED is RED)	Check the connection of the Abis cable on the Transmission unit and at the BSC. <i>Installing procedure</i>
Defective Abis cable (LED is RED)	<i>Repair or replace the cable.</i>
Line interface disconnected (LED is RED)	<ul style="list-style-type: none"> Connect a jumper cable from the TX connector of each transmission interface to its RS connector. If the GREEN LED is Steady, the line interface is OK. Otherwise, <i>replace the Transmission unit.</i>
Incorrect transmission card setting (LED is GREEN or YELLOW)	<ul style="list-style-type: none"> Check the alarm with the Transmission Manager software. Check cross-connection and ensure the interface is enabled. Check line interface settings.
Master Transmission unit is not in slot 1	Check location of transmission units.
Defective Transmission unit (LED is RED)	<i>Replace the Transmission unit</i>

2. Report damage, failure or fault.

2.5 Troubleshooting Transceiver unit operation of UltraSite EDGE BTS

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS*. Pay careful attention to all Warning and Cautions.

Summary

Fault – The device status report in Nokia BTS Manager indicates that both the BCCH TRX and the TCH TRXs are in Supervisory state.

Note

When calls are ongoing, normal TSxx LED indication is GREEN for both the BCCH TRX and TCH TRXs. Normal TSxx LED indication with no ongoing calls is GREEN for BCCH TRX and YELLOW for TCH TRX.



Steps

1. Determine cause and corrective action.

Table 4. Troubleshooting Transceiver unit operation

Potential cause	Corrective action
Objects are locked from the BSC, NMS/2000 or NetAct	<ul style="list-style-type: none"> • Request the state from the BSC, NMS/2000 or NetAct. • Request an unlock from the BSC, NMS/2000, NetAct or by using BTS Manager, if necessary.

2. Report damage, failure or fault.

2.6 Troubleshooting Fan units of UltraSite EDGE BTS

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS*. Pay careful attention to all Warning and Cautions.

Summary

Fault – The fan is not rotating.



Steps

1. **Determine cause and corrective action.**

Table 5. Troubleshooting Fan unit operation

Potential cause	Corrective action
Fan cable not properly connected	<i>Verify proper cable connection</i>
OAK electronics module cable not properly connected to cabinet fan	<i>Verify proper cable connection</i>
Fan rotor blocked	Clear rotor.
Door switch faulty or not engaged (cabinet fan)	<ul style="list-style-type: none"> • <i>Replace switch.</i> • Engage door switch button.

2. **Report damage, failure or fault**

2.7 Trouble management of UltraSite EDGE BTS with WCDMA upgrade

Summary

If a fault occurs during BTS operation, connect the WCDMA BTS Manager laptop PC to the WAM unit. The LED indications and the WCDMA BTS Alarm Manager can help you identify the problem.

For additional information on the WCDMA status of Nokia UltraSite EDGE BTS when troubleshooting, use a mobile phone to contact Radio Network Controller (RNC) personnel.

Note

For instructions on troubleshooting during commissioning, see *Overview of commissioning UltraSite EDGE BTS*



Steps

1. Troubleshoot the WCDMA BTS Manager connection.
2. Troubleshoot electrical power to the BTS.
3. Troubleshoot transmission unit operation.
4. Troubleshoot wideband transceiver unit (WTR) operation.
5. Troubleshoot wideband temperature control (WTCx) fan module.
6. Report all damage, failure or fault.

2.8 Troubleshooting the BTS Manager connection of UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS with WCDMA upgrade*. Pay careful attention to all Warning and Cautions.

Summary

Fault – Cannot connect to Nokia WCDMA BTS Manager.



Steps

1. Determine cause and corrective action.

Table 6. Troubleshooting WCDMA BTS Manager connection

Potential cause	Corrective action
Wrong WCDMA BTS Manager port setting (COM1, COM2)	Correct the settings.

Table 6. Troubleshooting WCDMA BTS Manager connection (cont.)

Potential cause	Corrective action
LMP cable broken or not properly connected	Check the connection, or <i>replace/repair</i> the cable.
Faulty or damaged WAM unit	<i>Reset or replace the WAM unit.</i>

2. Report damage, failure or fault.

2.9 Troubleshooting electrical power to the UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS with WCDMA upgrade..* Pay careful attention to all Warning and Cautions.

Summary

Fault – No power to the WCDMA part of the Nokia UltraSite EDGE BTS.



Steps

1. Determine cause and corrective action.

Table 7. Troubleshooting electrical power to the BTS

Potential cause	Corrective action
WCDMA Power supply is in STAND BY mode	Turn the switch to the ON position.
Site mains power supply fault (power supply LED is OFF)	<ul style="list-style-type: none"> • Check the site mains power source and fuses. • <i>Replace the WPS unit if necessary.</i>
Defective power cable	<i>Replace the power cable.</i>
Cold-start function activates (power supply LED is YELLOW)	Close the cabinet door to allow the units to warm up to a temperature of -5°C (20° F).

Table 7. Troubleshooting electrical power to the BTS (cont.)

Potential cause	Corrective action
Defective power supply unit (LED is RED may indicate the unit is overheated)	<i>Replace the WPS unit.</i>
Short in one of the plug-in units	<ul style="list-style-type: none"> • Pull the units out one by one until the power comes back on. • Return the units one by one and replace the faulty unit(s). <p><i>Installing units with handles</i> <i>Installing units with ejectors</i></p>
Wrong power supply type	<i>Install correct power supply units.</i>

2. Report damage, failure or fault.

2.10 Troubleshooting Transmission unit operation of UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS with WCDMA upgrade*. Pay careful attention to all Warning and Cautions.

Summary

Fault – No transmission connection to the RNC.



Steps

1. Determine cause and corrective action.

Table 8. Troubleshooting transmission unit operation

Potential cause	Corrective action
Abis cable not connected (LED is RED)	<i>Check the connection of the Abis cable on the Transmission unit and at the RNC.</i>
Defective Abis cable (LED is RED)	<i>Repair or replace the cable.</i>

Table 8. Troubleshooting transmission unit operation (cont.)

Potential cause	Corrective action
Line interface disconnected (LED is RED)	<ul style="list-style-type: none"> • Connect a jumper cable from the TX connector of each transmission interface to its RX connector. • If the GREEN LED is Steady, the line interface is OK. • Otherwise, <i>replace the Transmission unit.</i>
Incorrect transmission card setting (LED is GREEN or YELLOW)	<ul style="list-style-type: none"> • Check the alarm with the Transmission Manager Software. • Check the cross-connection and ensure the interface is enabled. • Check the interface settings.
Master Transmission unit is not in slot 1	Check location of transmission units.
Defective Transmission unit (LED is RED)	<i>Replace the Transmission unit.</i>

2. Report damage, failure or fault

2.11 Troubleshooting Wideband Transceiver (WTR) unit operation of UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS with WCDMA upgrade*. Pay careful attention to all Warning and Cautions.

Summary

Fault – The device status report in Nokia WCDMA BTS Manager indicates that the WTR unit is in Supervisory state.



Steps

1. Determine cause and corrective action.

Table 9. Troubleshooting WTR unit operation

Potential cause	Corrective action
Objects are locked from the RNC or NetAct	<ul style="list-style-type: none"> Request the state from the RNC or NetAct. Request an unlock from the RNC or NetAct.

2. Report damage, failure or fault.

2.12 Troubleshooting Wideband Temperature Control (WTCx) Fan Module unit of UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Trouble management of UltraSite EDGE BTS with WCDMA upgrade*. Pay careful attention to all Warning and Cautions.

Summary

Fault – The fan is not rotating.



Steps

1. Determine cause and corrective action.

Table 10. Troubleshooting WTCA Fan Module unit operation

Potential cause	Corrective action
Fan cable not properly connected	Verify proper cable connection.
Fan rotor blocked	Clear rotor.

2. Report damage, failure or fault.

2.13 Reporting faults

Summary

Note

You can save the alarm information to a log file on your laptop with Nokia BTS Manager software. Remember to attach the alarm log file with the Failure Report Form (FRF).



Steps

1. *If* you identify any damage, failure, or fault in a unit,

Then

Notify Nokia using the FRF provided by your local Nokia representative.

2.14 Trouble management of UltraSite EDGE BTS alarms

Summary

UltraSite EDGE Base Station alarms issued at the BSC or NMS/2000 have a four-digit alarm number and an alarm name, and an optional fault reason.

- The BTS Manager shows an Alarms window with an Object column giving the object (e.g. BCF), that the alarm refers to, and also specifying the unit, rack shelf and slot.
- Faulty units can be identified on the Nokia BTS Manager desktop.
- The Severity column in the Alarms window indicates the level of the alarm (e.g. critical, minor).
- The Equipment view in the Supervision window shows the location of the units in the cabinet.

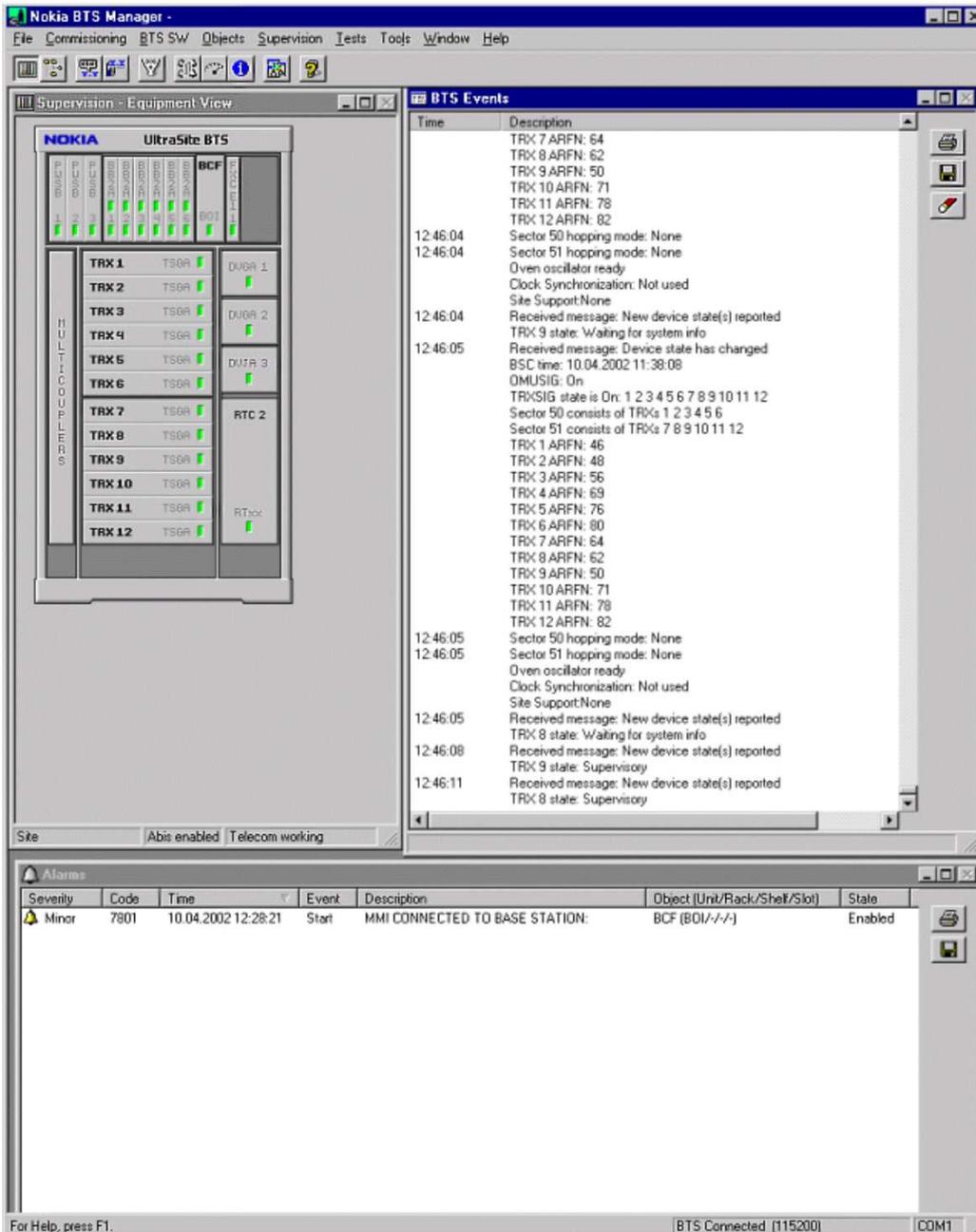


Figure 1. Alarms window of Nokia BTS Manager



Steps

1. **Check the alarm number and name in the procedure Identifying the faulty units.**
2. **Find the fault reason.**
3. *If the fault reason cannot be found in the **Fault reason** field(s),*
Then
Follow the instructions given in the *Instruction* field for *Other faults*.
4. **Follow the instructions for correcting the fault.**
5. *If there is no fault reason text with the alarm,*
Then
then follow the possible instructions provided.
6. **Cancel the alarm**

3 Trouble Management of UltraSite BTS Hub

3.1 Overview of replacing units

Summary

The following table shows if it is possible to replace units physically when the power is on, if traffic is affected by the replacing, and if MetroHub Manager is needed when changing units.

Table 11. Replacing units

Unit	Hot insert/ remove possible	Traffic affected	Manager needed	Note
Power interface panel	No	Yes	No	
Redundant power supply	Yes	No	Yes	When added or inserted into another slot
Power supply unit	Yes	Yes	No	Hot insertion of a unit is possible if another supply unit or battery backup unit is also simultaneously in use.
Fan unit	Yes	No	No	

Table 11. Replacing units (cont.)

Unit	Hot insert/ remove possible	Traffic affected	Manager needed	Note
Interface unit	Yes	No	No	
Battery unit	Yes	No	Yes	User gives new ID information
New FXC unit	Yes	No	Yes	
Replaced FXC unit	Yes	Yes	Yes	

Note

If a master unit is removed, all traffic going through the node is cut.

If a slave unit is removed, only the traffic going through that particular unit is cut.

You can:



Steps

- 1. Replace a unit with a unit of the same type**

Or

Replace a unit with a unit of a different type

3.2 Replacing a unit with a unit of the same type

Purpose

If a unit is faulty, you can replace it with another unit of the same type by removing the faulty unit and then inserting a replacement unit.

After this, use the restore backup settings feature to update the settings of the replaced unit into the new unit from the previously saved backup file.

If the backup file, node offline file, or site configuration file does not correspond to the current settings, you have to reconfigure the settings manually.

Note

If the replacement unit has been used previously, it must be set to factory defaults.

Note

The restore backup settings feature requires that the equipping of the transmission units in MetroHub matches the node file. You cannot add or remove units while using the restore backup settings feature.



Steps

1. **Make a backup file as described in Saving node information in a file**
2. To replace a slave unit (other than slot 1 unit)



Steps

- a. **Remove the unit without uninstalling it logically**
- b. **Insert the new unit**

Expected outcome

The cross-connections and other node settings of the unit you want to replace are not removed.

- c. **Restore backup settings**

For instructions, see *Restoring backup settings from a file*.

Select only the unit to which the settings should be sent.

3. To replace a master unit (slot 1 unit)

**Steps**

- a. **Uninstall the unit logically if not broken**
- b. **Remove the unit**
- c. **Insert the new unit**

Further information

All node settings are saved in the master unit, and thus the node settings as well as the master unit settings must be restored from the backup file.

- d. **Reset the node to factory default settings by selecting Maintenance → Resets...**
- e. **Install the units logically**
- f. **Restore backup settings**

For instructions, see *Restoring backup settings from a file*.

Select **Select all** so that all settings are sent.

3.3 Replacing a unit with a unit of a different type

Before you start

Note

If you replace a unit with a unit of a different type, all settings and cross-connections are lost.

**Steps**

1. **Connect to a node or open a node file**
2. **Point to the unit to be replaced and click the left mouse button to access the Equipment window pop-up menu**
3. **Select the Uninstall Unit pop-up menu command**

Expected outcome

The uninstalled unit can no longer be used.

4. **Remove the uninstalled unit physically**
5. **Install a new unit**
6. **Click the Refresh button to read all data from the node**

Expected outcome

The new unit should be displayed with diagonal stripes.

7. **Click the right mouse button to access the Equipment window pop-up menu**
8. **Select the Install Unit pop-up menu command**
9. **Check the settings**

Expected outcome

The new unit is ready for use.

3.4 Reading alarms

Purpose

Nokia MetroHub Manager can monitor a number of different alarms generated by Nokia MetroHub.

Summary

The manager is able to provide you with the following information about any alarm that has occurred in the node (see figure below):

- **Severity** – severity class of the alarm
- **Location** – unit the alarm is located in
- **Description** – brief description of the alarm
- **Time stamp** – date and time when the alarm was detected

- **Code** – fault code of the alarm
- **Activation** (in the alarm history view) – indicates if an alarm is active or cancelled

The unit alarm status in **Equipment View** is only visible when the **Alarms** window is open and alarm polling on.

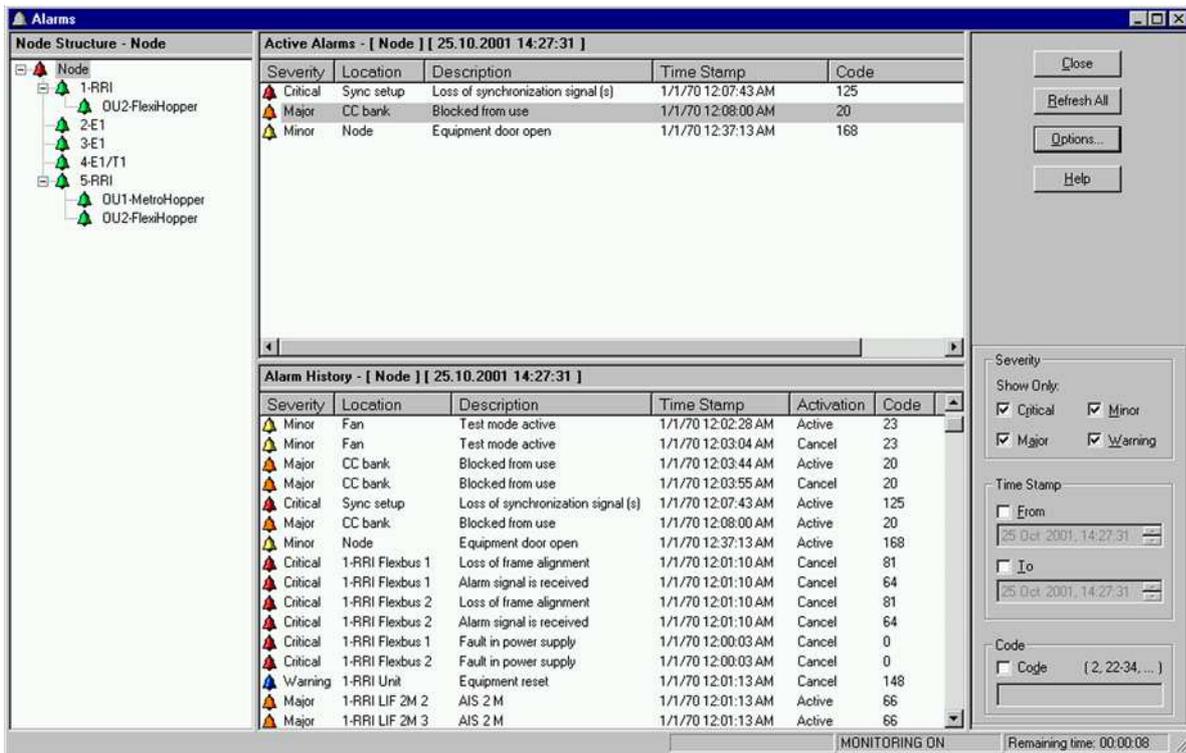


Figure 2. Alarms window

Note

If the alarm(s) and the alarm history of a unit cannot be read, the state is *Missing unit* in the **Equipment view**.

 **Caution**

Avoid setting the alarm monitoring delay to a very small value when monitoring a network element remotely. This places a strain on the Q1 bus resources and causes delays for other activities.

Severity

Severity shows the severity class of the alarm as it appears in the node manager. The severity classes are listed in *Alarm information*.

Colour codes of the alarms

The alarms are colour-coded according to the **Severity** of the alarm.

Table 12. Colour codes of the alarms

Severity	Symbol	Colour
Critical (***)		Red
Major (**)		Orange
Minor (*)		Yellow
Warning (W)		Blue

Location

The **Location** field indicates which unit or interface is producing the alarm.

By default the alarms are listed by **Time stamp**. You can sort the alarms by clicking on the column heading in the window. To sort the alarms in reverse order, click a heading a second time.

Description and code

Alarm descriptions and fault codes are listed in *Alarm information*.



Steps

1. Open the alarms window



Steps

- a. **Select Alarms → View**

Expected outcome

The **Alarms** window opens (see above) and a list of active alarms, the node structure view, and the filter view are shown.

- 2. Open the alarm history view



Steps

- a. **Click the Options button in the Alarms window**

Expected outcome

The **Alarm Options** window opens.

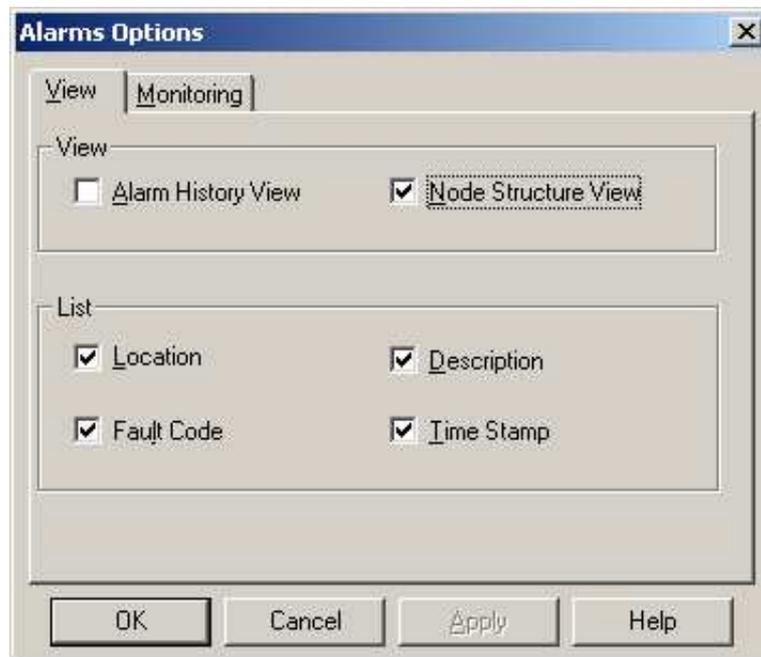


Figure 3. Alarm Options window, View tab

- b. **Tick the Alarm History View box in the View tab**
- c. **Click OK**

Expected outcome

The alarm history view opens.

Further information

Past alarms which have occurred in the network element are shown in the **Alarm History** window (i.e. the alarm polling history). The alarm history view contains a header that shows the location and time of the last refresh, that is, when the currently shown events were last read.

You can sort the alarm history by clicking the column heading in the window. Every time the column is clicked, the sort order is reversed.

The **Activation** field lists if an alarm is active or if it has been cancelled.

Note

The alarm history is saved as a text file with the extension .alr and has to be opened with a text editor.

3. Keep the list of active alarms updated by enabling alarm monitoring

**Steps**

- a. **Click Options in the Alarms window**

Expected outcome

The **Alarm Options** window opens.

- b. **Click the Monitoring tab**

Expected outcome

The **Monitoring** tab of the **Alarm Options** window is displayed.

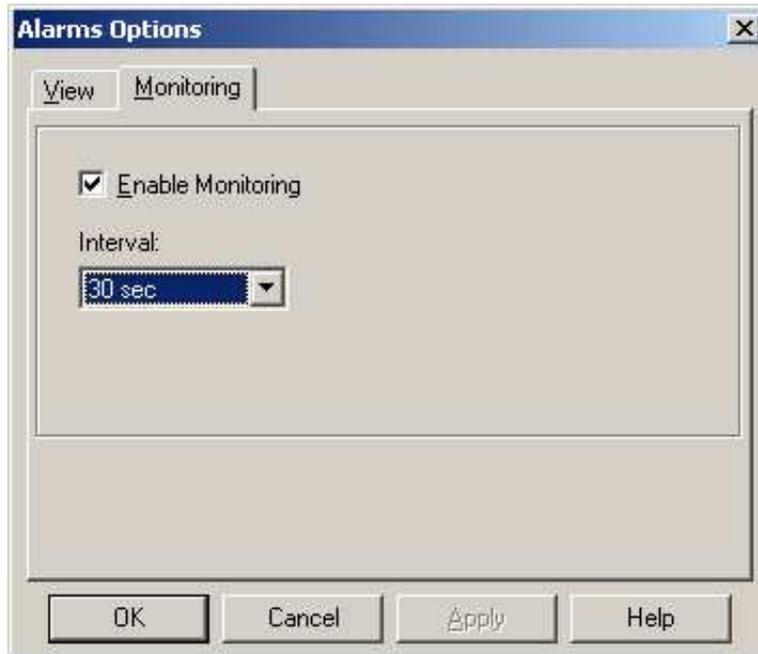


Figure 4. Alarm Options window, Monitoring tab

- c. **Tick the Enable Monitoring box**
- d. **Select the desired interval**
- e. **Click OK**

Expected outcome

Remaining time clock indicator in the right bottom corner shows the interval progressing.

Further information

The most critical alarms of the FXC units are shown as bell symbols in the node structure view. The bell symbols show the colour corresponding to the highest severity of the alarms present in the unit in question. For example, if the most severe alarm is a critical alarm, the bell symbol is red.

When monitoring is enabled, the LED states are also updated in the **Equipment** window.

4. Refresh active alarms and alarm history

**Steps**

- a. **Click the Refresh All button in the Alarms window**

Expected outcome

The information in the **Alarms** window and alarm history view is updated..

5. Select filtering options

Summary

The filter options are located on the right hand side of the alarms window. You can select the alarms to be displayed according to severity, time stamp, and code.

**Steps**

- a. **Tick the desired filtering options**

For example, if you only want to be notified about critical and major alarms, tick only those boxes.

Expected outcome

Only the selected alarms are displayed in the alarms window.

6. Change the alarm list options

**Steps**

- a. **Click Options in the Alarms window**
- b. **In the View tab, select the columns you want to be displayed in the alarms window**
- c. **Click OK**

Expected outcome

Only the selected columns are displayed in the alarms window.

Further information

By right-clicking the mouse, you can open a pop-up menu for sorting and viewing alarms.

3.5 No power to Nokia MetroHub

Description

If there are no LEDs activated in any of the FXC units in MetroHub, check the power system of MetroHub. Start from the mains power supply side and move on to check the MetroHub cabinet.

Possible causes are:

- fault in the site mains power supply
- broken power cable
- power supply unit switch in stand-by position
- loose fixing screws in the power interface unit or the power supply unit
- active cold start
- overheated power supply unit

Symptoms**Power supply in stand-by position**

Blinking yellow LED in the power supply unit.

Cold start active

Steady yellow LED in the power supply unit.

Overheated power supply unit

Steady yellow LED in in the power supply unit.

Power supply unit broken

Alarm 'Fault in power supply' may be activated. No lights in the power supply unit, or the LED is red.

Recovery procedures

Fault in the site mains power supply



Steps

1. Check the site mains power source and fuses. Replace if needed.
2. Measure with a multimeter that the DIPx has operating voltage
3. Make sure the polarity is correct if using DC mains

Broken power cable



Steps

1. Replace the power cable

Power supply unit switch in stand-by position



Steps

1. Turn the switch ON

Power interface unit's or power supply unit's fixing screws are loose



Steps

1. Tighten the loose screws

Cold start active



Steps

1. Wait until the units have been warmed up to the operational temperature range and the power supply unit LED switches from yellow to green

Overheated power supply unit



Steps

1. Wait for the power supply unit to cool down
2. Check that the fan is functioning correctly

**Power supply unit broken****Steps**

1. **Replace the power supply unit**

**Power interface unit broken****Steps**

1. **Replace the unit**

**Short circuit in one of the units****Steps**

1. **Pull the units out, one by one, until the power comes back on**

Start from the FXC units and proceed to the fan, and finally replace the interface unit.

2. **Re-install the units, one by one, and replace the faulty unit(s)**

3.6 Nokia MetroHub powered but a manager connection cannot be established

Description

The problem situation when Nokia MetroHub is powered but a connection to the manager cannot be established can be caused by:

1. a bad or poorly connected LMP cable
2. the wrong COM port settings in MetroHub Manager
3. SW problems in the PC
4. a broken FXC master unit
5. a broken DIUx interface unit

Symptoms**FXC master unit broken**

The transmission unit LED is off.

**Recovery
procedures****Bad or poorly connected LMP cable**

Check the cable and verify that it is properly connected.

Check that the pins are not broken in the DIUx and that the sockets are fine in the LMP connector. Replace the DIUx interface unit or the cable if the connections are bad.

Wrong COM port settings in MetroHub Manager

Select the right COM port settings in the Tools → Options menu. The default settings are: port: COM1, and speed: 9600.

SW problems in the PC

Restart the PC. It might be useful to restart Nokia MetroHub as well by turning the power switch off and after a few seconds back on if you are setting up a new node.

Note

Do not restart a MetroHub which is already operating in a network, as you may cause severe traffic cuts.

FXC master unit is broken

Replace the FXC master unit.

DIUx interface unit is broken

Check that the DIUx interface unit has been correctly installed. Restart Nokia MetroHub by turning the power switch off and after a few seconds back on. If the LED is still red, restart the DIUx unit by removing it for a few seconds and putting it back in. If the LED is still red, replace the DIUx interface unit.

3.7 Cross-connections test fails

Description

Cross-connections test fails in the Commissioning Wizard. This may be caused by a fault in an FXC unit.

Symptoms

The cross-connections test fails

The cross-connections test fails in the Commissioning Wizard.

Recovery procedures

Fault in an FXC unit



Steps

- 1. Remove the unit, starting from the right hand side**
- 2. Redo the test until you find the faulty unit**
- 3. To test the master FXC unit, change it to another slot while using another unit as the master**

4

Reading GSM/EDGE alarms of UltraSite EDGE BTS

4.1 Identifying faulty units of UltraSite EDGE BTS

Summary

Use the Nokia BTS Manager desktop to identify faulty units.

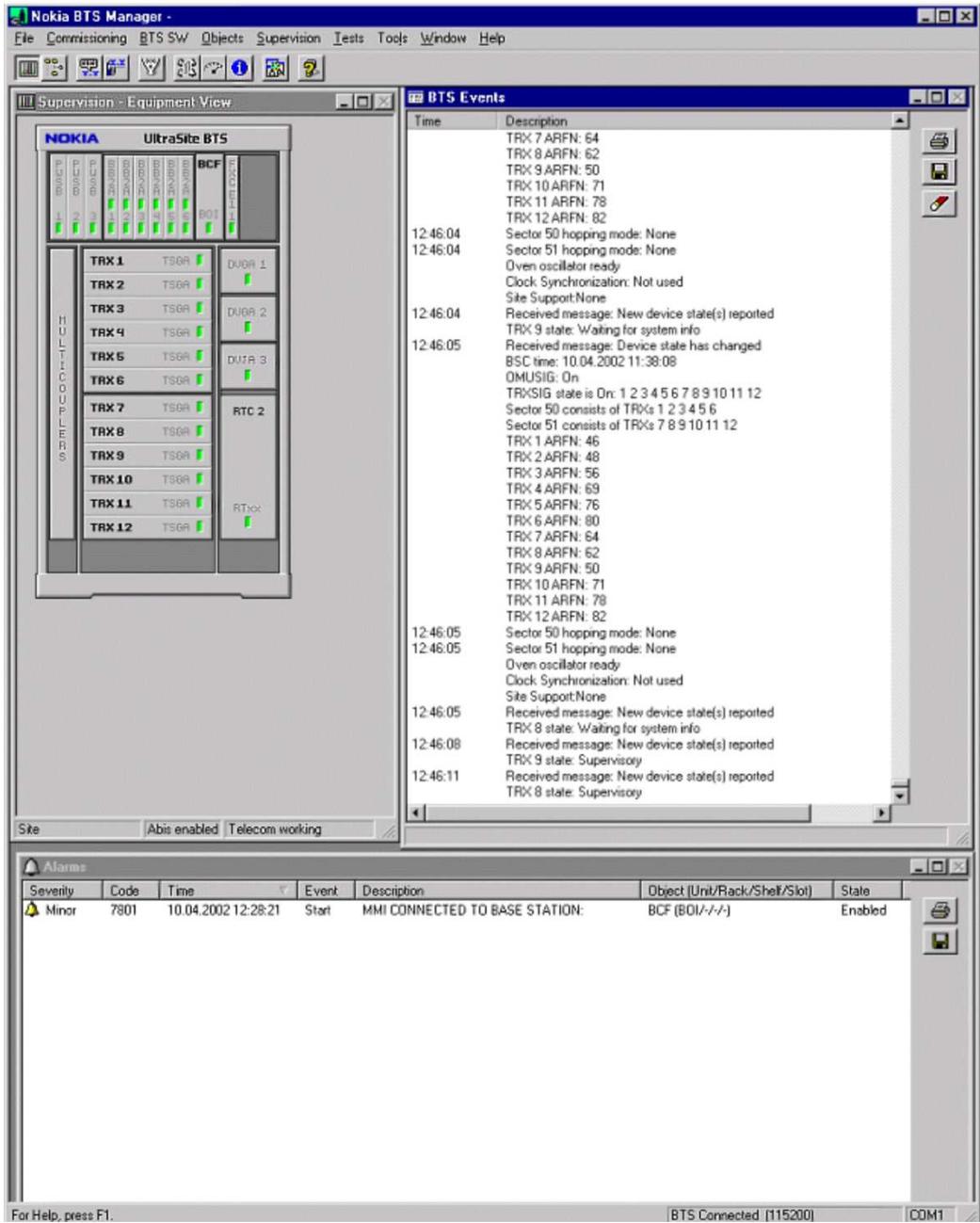


Figure 5. Nokia BTS Manager desktop showing the alarms in the Alarms window

Note

The figure does not represent an actual situation and should be considered only an example.

Note

For identifying the faulty transmission unit, and for checking the transmission-related alarms, use the Nokia UltraSite BTS Hub Manager.

Note

For location of the fan units, refer to the *technical description of the temperature control system*.



Steps

1. **Open Nokia BTS Manager.**
2. **Refer to the Alarms window to identify a unit that has triggered an alarm.**

Refer to the Object column in the Alarms window of the BTS Manager desktop for information about the unit that has triggered an alarm. Unit location numbers are used in alarm information to locate a failed unit. The main principle for numbering locations is from top to bottom and from the left to right. Location numbers are defined with the following parameters:

RACK - specifies the rack of the cabinet

SHELF - specifies the shelf in the cabinet

SLOT - specifies the location on the shelf

3. **Refer to the Supervision window, Equipment view to determine the location of the units in the BTS cabinet.**

4.2 Alarms list for UltraSite EDGE BTS

Note

If the base station otherwise operates properly, there is no need for an immediate repair. However, the transmission alarms for the node are not reported to the BSC nor the Nokia BTS Manager.

Note

When baseband hopping is used, alarms do not cancel automatically when a fault is corrected. Sector reset from Nokia BTS Manager or BTS lock/unlock from the BSC is required to clear the active alarms.

Note

If the fault reason cannot be found in the *Fault reason* field, the instructions given for *Other faults*

apply for the current fault.

Note

For instructions on how to replace units or carry out other maintenance tasks, refer to *Trouble management of UltraSite EDGE BTS* and *UltraSite EDGE Base Station Installation information*.

Alarms are described with the following types of information:

Table 13. Alarm description fields

Field	Description
Severity	Shows the alarm severity as displayed at the BSC or NMS/2000. The options are: <ul style="list-style-type: none"> • * = Minor • ** = Major • *** = Critical • User definition
Object affected	The logical object affected by the fault. The options are: <ul style="list-style-type: none"> • BCF • BTS • TRX • TRE • RTS
Object state	The state of the affected object at the time the alarm is issued. The options are: <ul style="list-style-type: none"> • Enabled • Disabled
Unit	The alarm origin(s). The unit is given an acronym, such as: BOI, RTxx, TSxx, BB2.
Fault reason	This field describes the cause of the alarm. Example: BOI temperature is dangerously high.
Instruction	This field gives instructions for the operator at the NMS/2000 or at the BSC how to correct the fault causing the alarm. Example: <ol style="list-style-type: none"> 1. Ensure that the ambient temperature of the base station is within specified limits. 2. Check the cabinet fans. 3. If cabinet fans are OK, replace the BOI.
Alarm cancelling	This field describes how the alarm is cancelled. The options are: <ul style="list-style-type: none"> • Automatic • Manual

The UltraSite EDGE BTS alarms are:

Alarm 7208 / LOCAL BLOCK

Alarm 7401 / EXTERNAL ALARM

Alarm 7600 / BCF FAULTY

Alarm 7601 / BCF OPERATION DEGRADED

Alarm 7602 / BCF NOTIFICATION

Alarm 7603 / BTS FAULTY

Alarm 7604 / BTS OPERATION DEGRADED

Alarm 7605 / BTS NOTIFICATION

Alarm 7606 / TRX FAULTY

Alarm 7607 / TRX OPERATION DEGRADED

Alarm 7608 / TRX NOTIFICATION

Alarm 7609 / TRE FAULTY

Alarm 7612 / SITE POWERING FAULTY

Alarm 7613 / SITE POWERING OPERATION DEGRADED

Alarm 7614 / SITE POWERING NOTIFICATION

Alarm 7615 / RTS IN TEST USE

Alarm 7616 / OSCILLATOR ADJUSTMENT TEMPORARILY INTERRUPTED

*Alarm 7617 / SEVERAL CALLS DROPPED DUE PROBLEM WITH
TRANSCODER*

Alarm 7622 / CABINET OPEN

Alarm 7801 / MMI CONNECTED TO BASE STATION

Alarm 7995 / MAINS BREAKDOWN WITH BATTERY BACKUP

The Transmission unit alarms are:

Alarm 20 / BLOCKED FROM USE

Alarm 21 / LOOP TO INTERFACE

Alarm 22 / LOOP TO EQUIPMENT

Alarm 23 / TEST MODE ACTIVE

Alarm 25 / TEST GENERATOR ON

Alarm 32 / LOSS OF OUTGOING SIGNAL

Alarm 50 / LOSS OF INCOMING 2M SIGNAL

Alarm 56 / LOSS OF INCOMING 1.5M SIGNAL

Alarm 62 / NO CONNECTION

Alarm 64 / ALARM SIGNAL RECEIVED

Alarm 66 / AIS 2M

Alarm 73 / AIS 1.5M

Alarm 81 / LOSS OF FRAME ALIGNMENT

Alarm 86 / LOSS OF CRC MULTIFRAME ALIGNMENT

Alarm 99 / ERROR RATE > 1 E-3

Alarm 102 / ERROR RATE > 1 E-6

Alarm 112 / FREQUENCY ERROR

Alarm 124 / SYNCHRONISING FAULT IN CLOCK RECOVERY

Alarm 125 / LOSS OF SYNCHRONISATION SIGNALS

Alarm 128 / FAULT IN EQUIPMENT

Alarm 137 / FAULT IN OSCILLATOR

Alarm 139 / SUBRACK IS MISSING UNITS

Alarm 140 / SUBRACK HAS EXCESSIVE UNITS

Alarm 141 / FORCED CONTROL ON

Alarm 142 / FAULT IN INSTALLATION OF EQUIPMENT

Alarm 143 / FAULT IN CHANGE OVER FUNCTION

Alarm 148 / EQUIPMENT RESET

Alarm 150 / FAULT IN UNIT

Alarm 162 / DATABASE FULL

Alarm 172 / YELLOW ALARM

Alarm 179 / FAR-END ALARM

Alarm 221 / VERSION MISMATCH

4.3 Reclassification of UltraSite EDGE BTS alarms

In fault situations, Nokia UltraSite EDGE BTS runs an automatic reclassification procedure for major (**) and critical (***) alarms before it sends an alarm to the BSC. When an object becomes faulty, only one critical (***) alarm from the object can be active at a time.

Note

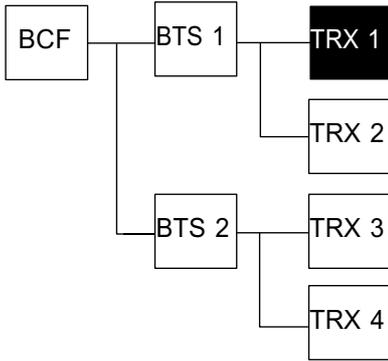
In reclassification the alarm handling detects which logical base station object is affected by a unit level fault.

After reclassification, the BTS sends only one object level alarm with only one fault reason to the BSC. However, the same alarm can be caused by several different fault reasons.

Nokia UltraSite EDGE BTS automatically reclassifies a major or critical alarm.

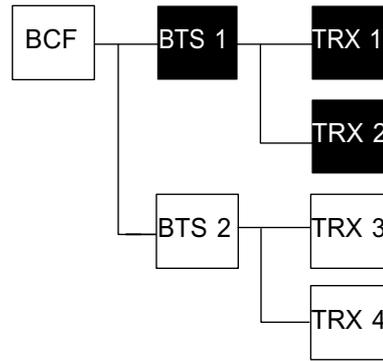
① Alarm Output:

7606 TRX FAULTY (TRX 1)



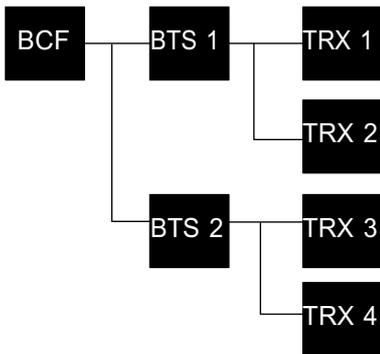
② Alarm Output, in this order:

7606 TRX FAULTY (TRX 1)
7606 TRX FAULTY (TRX 2)
7603 BTS FAULTY (BTS 1)



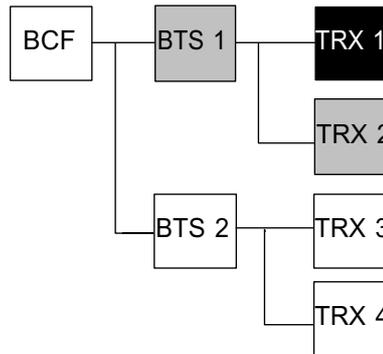
③ Alarm Output, in this order:

7606 TRX FAULTY (TRX 1)
7606 TRX FAULTY (TRX 2)
7603 BTS FAULTY (BTS 1)
7606 TRX FAULTY (TRX 3)
7606 TRX FAULTY (TRX 4)
7600 BCF FAULTY (BCF)



④ Alarm Output, in this order:

7606 TRX FAULTY (TRX 1)
7607 TRX DEGRADED (TRX 2)
7604 BTS OPERATION DEGRADED (BTS 1)



- Functioning object
- Degraded object
- Faulty object

Figure 6. Faulty and degraded object alarm reclassification

Fault situation 1:

1. TRX 1 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.

Fault situation 2:

1. TRX 1 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.
2. TRX 2 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.
3. Now both TRXs are not operating, which causes BTS 1 cease to operate. A BTS alarm, 7603 BTS FAULTY, is issued.

Fault situation 3:

1. TRX 1 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.
2. TRX 2 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.
3. Now both TRXs are not operating, which causes BTS 1 cease to operate. A BTS alarm, 7603 BTS FAULTY, is issued.
4. TRX 3 becomes faulty, and another 7606 TRX FAULTY alarm is issued.
5. TRX 4 becomes faulty, and another 7606 TRX FAULTY alarm is issued. BTS 2 ceases to operate.
6. Now both sectors in the BCF are not operating, and a BCF alarm, 7600 BCF FAULTY, is issued.

Fault situation 4:

1. TRX 1 becomes faulty and ceases to operate. 7606 TRX FAULTY alarm is issued.
2. TRX 2 becomes partially faulty but calls are getting through. 7607 TRX DEGRADED alarm is issued.
3. Now the sector is partially faulty, and a BTS alarm, 7604 BTS OPERATION DEGRADED, is issued.

4.4 Clearing alarms of UltraSite EDGE BTS with IBBU after commissioning

Summary

If using Power System Management (PSM) Package Release for Nokia UltraSite Support IBBU, two alarms may be active after commissioning:

- AC Over-Voltage Protectors Tripped alarm. This alarm is active after commissioning unless an Over-Voltage Protection (OVP) kit is connected to the External Alarms and Controls (EAC) interface. This alarm must be deleted.
- Configuration Management alarm. If this alarm is active after commissioning, it must be cleared.

If these alarms are active, they appear in the PSM Manager Alarms window after commissioning.



Steps

1. Delete the AC Over-Voltage Protectors Tripped alarm

- In the PSM Manager Alarms window, right click to select **Properties**.

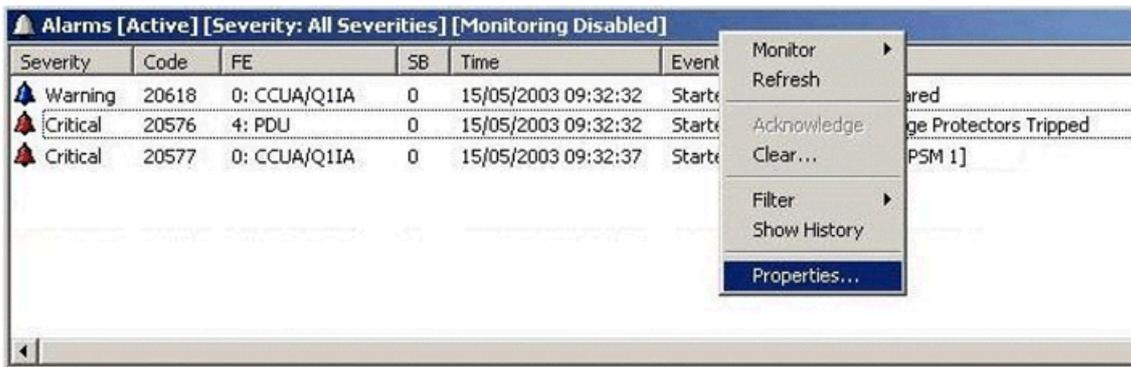


Figure 7. PSM Manager Alarms

The Properties window opens.

- Select the Functional Entity (FE) **4: PDU** from the list of alarms.

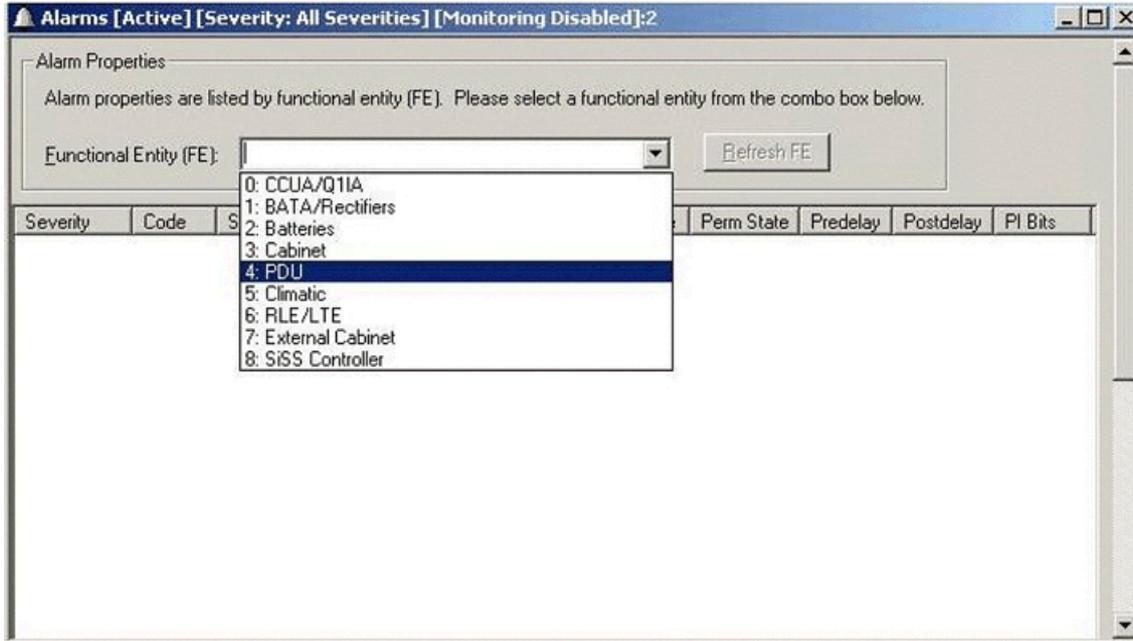


Figure 8. Alarms list menu

Alarm properties for **4: PDU** are listed in the Properties window.

- c. Select the AC Over-Voltage Protectors Tripped alarm from the list in the Properties window.

- d. Right click the AC Over-Voltage Protectors Tripped alarm to select **Perm State>Inhibited**.

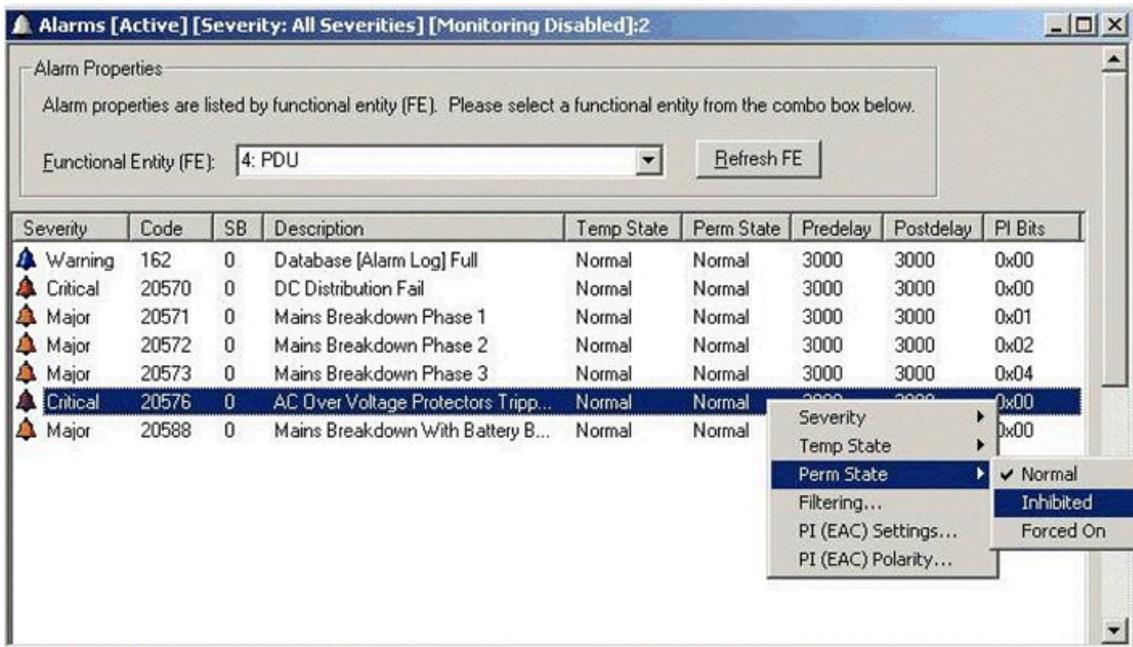


Figure 9. Alarm properties

The Perm State of the AC Over-Voltage Protectors Tripped alarm is changed from **Normal** to **Inhibited**.

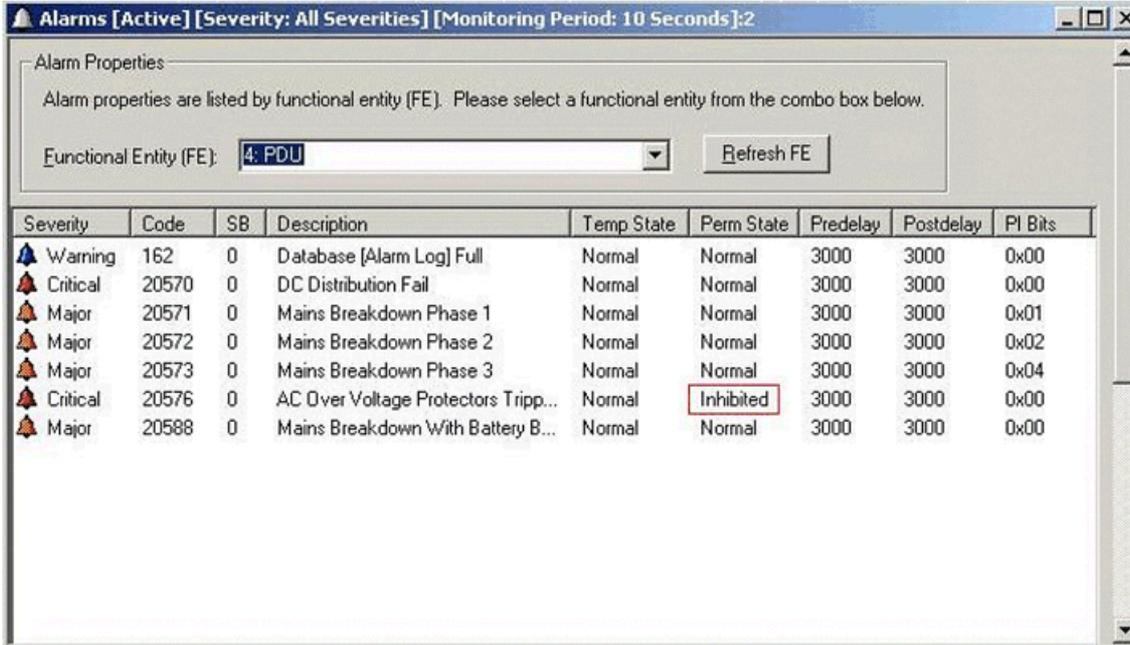


Figure 10. Perm State

- e. Wait a few seconds and then refresh the window.
The AC Over-Voltage Protectors Tripped alarm is deleted from the Alarms window.

2. Clear the Configuration Management alarm

- a. In the PSM Manager Alarms window, right click to select **Clear...**
The Delete/Clear Alarms window opens.

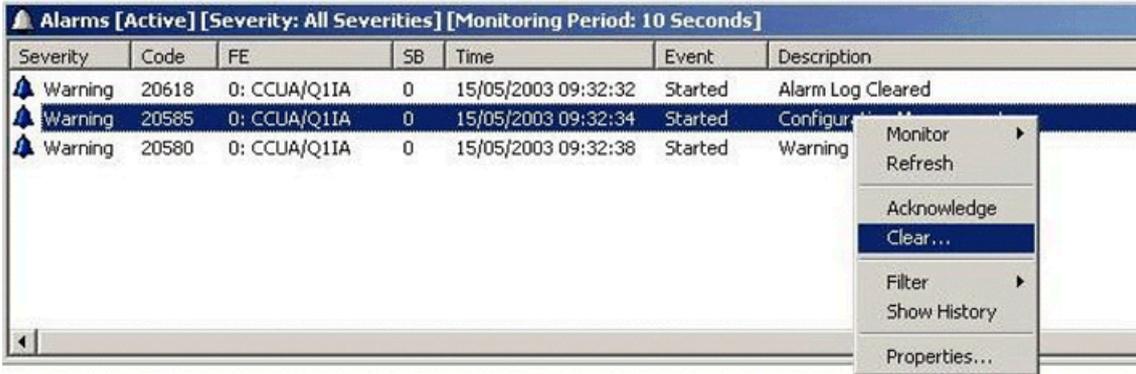


Figure 11. Delete/Clear Alarms

- b. In the Delete/Clear Alarms window, select **Clear Active "Configuration Management (Changed)" Alarm Only at Note.**

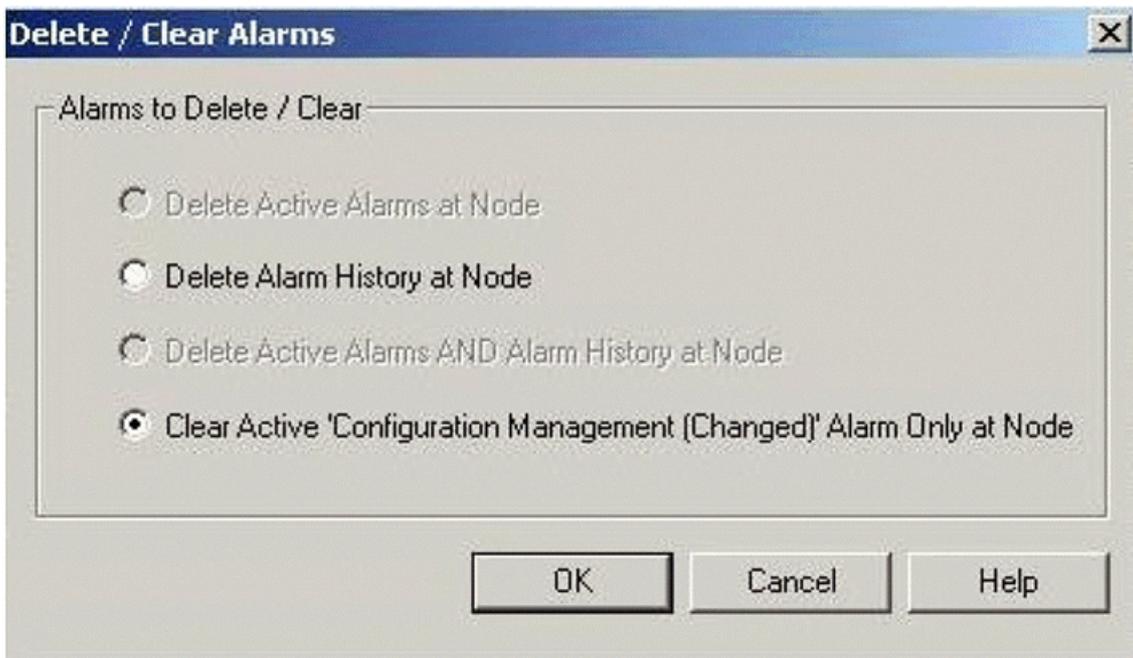


Figure 12. Alarms to Delete/Clear

- c. Click **OK**.
- d. Wait a few seconds and then refresh the window.

The Configuration Management alarm is deleted from the Alarms window.

Alarms [Active] [Severity: All Severities] [Monitoring Period: 10 Seconds]						
Severity	Code	FE	SB	Time	Event	Description
Warning	20618	0: CCUA/Q1IA	0	15/05/2003 09:32:32	Started	Alarm Log Cleared

Figure 13. Active alarms

4.5 Trouble management of UltraSite EDGE BTS commissioning

Purpose

In the case of a failure in any part of the whole commissioning procedure, an alarm will appear in the alarm window (refer to *Trouble management of UltraSite EDGE BTS alarms*).

Nokia UltraSite Hub Manager must be used for checking the transmission related alarms. Also, you may check the cause of a failure from the commissioning reports.

Summary

- The commissioning procedure may fail due to the following:
- the RX and TX cables are not properly connected, then the TRX test fails.
- the Abis cables are not properly connected (then the transmission unit LED is not green)
- the pre-configuration failed at the BSC, e.g. the BCF and TRX objects were not created

- the oven oscillator has not yet warmed up (then the BCF remains in the ‘Configuring’ state)
- the TRXs are not unlocked at the BSC (then the TRXs do not enter the ‘Supervisory’ state)
- the PCM port is not activated at the BSC



Steps

1. *If the TRX test fails,*

Then

Ensure that the RX and TX cables are properly connected.
2. *If the transmission unit LED is not green,*

Then

Ensure that the he Abis cables are properly connected.
3. *If The pre-configuration fails at the BSC,*

Then

Ensure that the BCF and TRX objects were created.
4. *If the BCF remains in the ‘Configuring’ state,*

Then

Ensure that the oven oscillator has warmed up.
5. *If the TRXs do not enter the ‘Supervisory’ state,*

Then

Ensure that the TRXs are unlocked at the BSC.
6. *If The commissioning procedure fails,*

Then

Ensure that the PCM port is activated at the BSC.
- 7.

Abis loop test (Synchronisation loop bit adjustment of UltraSite EDGE BTS) measures bit transfer errors between the BTS and the BSC. If the BER value is bigger than normal that might indicate trouble between the BSC and the BTS.

Before starting to re-commission the BTS, first run the Undo Commissioning procedure in BTS Commissioning Wizard. *Commission the BTS with BTS Commissioning Wizard*

Further information

All damages, failures or faults must be reported to Nokia using the *Failure Report Form* provided by your local Nokia representative.

For more information on possible faults and appropriate corrective actions, see the Generic Failure Status Report document in the SW release binder. For transmission unit failures, see *Checking UltraSite EDGE BTS Transmission unit LEDs*

5 Alarms for UltraSite EDGE BTS

5.1 7208 Local block

Severity

Minor

Fault reason

Nokia UltraSite EDGE Base Station BTS object is blocked with Nokia BTS Manager

Note

There is no fault reason text with the alarm.

Description

Object affected: BCF, BTS, or TRX

Object state: disabled

Unit: --

Instructions

No action is required.

Cancelling

Automatic

Note

The alarms from the blocked object are cancelled.

5.2 7401-7424 External alarm 1-24

Severity

User defined

Fault reason

This is an external user-defined alarm.

Note

There is no fault reason text with the alarm.

Description

Object affected: BCF

Object state: Enabled

Unit: BOI

Instructions

1. Check the settings at the BSC.
2. Check the cable connected to the Interface Module.
3. Check the unit connected to the external alarm line.
4. If all of the above are OK, *check the Interface Module and replace it if faulty.*

Cancelling

Automatic

5.3 7600 BCF faulty

Severity

Critical

Fault reason

Oven oscillator is broken.

Description

Object affected: BCF

Object state: disabled

Unit: BB2x, BOI, DVxx, PWSx, RTxx, TSxx, MNxx

Instructions

Replace the BOI.

Cancelling

Automatic

Fault reason

Base station synchronisation failed.

Description

Object affected: BCF

Object state: disabled

Unit: BB2x, BOI, DVxx, PWSx, RTxx, TSxx, MNxx

Instructions

1. Check the synchronisation cabling.
2. If the cabling is OK, *replace the BOI.*
3. Reset BCF.

Cancelling

Automatic

Fault reason

BOI temperature is dangerously high.

Description

Object affected: BCF

Object state: disabled

Unit: BB2x, BOI, DVxx, PWSx, RTxx, TSxx, MNxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. If the cabinet fans are OK, *replace the BOI*.

Cancelling

Automatic

Fault reason

Other faults

Description

Object affected: BCF

Object state: disabled

Unit: BB2x, BOI, DVxx, PWSx, RTxx, TSxx, MNxx

Instructions

1. Check whether either of the following alarms is active:
 - *Alarm 7606 TRX faulty*
 - *Alarm 7603 BTS faulty*

2. Follow the instructions for the active alarm(s).
3. If necessary, replace all faulty units indicated in the active alarm(s)

Cancelling

Automatic

5.4 7601 BCF operation degraded

Severity

Major

Fault reason

Power unit output voltage fault

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

Replace all faulty power units.

Note

More than one power unit is broken, or there is only one power unit in the configuration.

Cancelling

Automatic

Fault reason

Power unit input voltage fault

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

1. Ensure that the input voltage is correct.
 2. *Replace all faulty power units.*
-

Note

More than one power unit is broken, or there is only one power unit in the configuration.

Cancelling

Automatic

Fault reason

No connection to power unit

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

Replace all faulty power units.

Note

More than one power unit is broken, or there is only one power unit in the configuration.

Cancelling

Automatic

Fault reason

Power unit temperature is dangerously high.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. *Replace all faulty power units.*

Cancelling

Automatic

Fault reason

Transmission unit temperature is dangerously high.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. *Replace the faulty transmission unit.*

Cancelling

Automatic

Fault reason

Difference between PCM and base station frequency reference

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

1. Check the cabling.
2. If the cabling is OK, *replace the BOI*

Cancelling

Automatic

Fault reason

Flash operation failed in BOI or TRX.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

Replace the BOI

Cancelling

Automatic

Fault reason

BOI detected that the site support is dumb.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

Check the SISU cabinet or IBBU and the connections.

Cancelling

Automatic

Fault reason

Other faults

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, DVxx, MNxx, PWSx, RTxx, SISU, TSxx

Instructions

1. Check whether any of the following alarms are active:

- *Alarm 7606 TRX FAULTY*
- *Alarm 7603 BTS FAULTY*
- *Alarm 7607 TRX OPERATION DEGRADED*

- *Alarm 7604 BTS OPERATION DEGRADED*
- *Alarm 7602 BCF NOTIFICATION*

2. Follow the instructions for the active alarm(s)

Cancelling

Automatic

5.5 7602 BCF notification

Severity

Minor

Fault reason

BOI temperature is low.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet heater if it is installed.
3. *Replace the BOI*

Cancelling

Automatic

Fault reason

Power unit temperature is low.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet heater if it is installed.
3. *Replace the faulty power unit.*

Cancelling

Automatic

Fault reason

Transmission unit temperature is low.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet heater if it is installed.
3. *Replace the transmission unit.*

Cancelling

Automatic

Fault reason

BOI has lost connection to temperature sensor.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

Replace the BOI

Note

Temperature sensor is probably broken. Temperature changes cannot be measured.

Cancelling

Automatic

Fault reason

Power unit has lost connection to temperature sensor.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

Replace the faulty power unit.

Note

Temperature sensor is probably broken. Temperature changes cannot be measured.

Cancelling

Automatic

Fault reason

Transmission unit has lost connection to temperature sensor.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

Replace the transmission unit.

Note

Temperature sensor is probably broken. Temperature changes cannot be measured.

Cancelling

Automatic

Fault reason

BOI detected that connection to transmission unit is lost.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Open the Nokia UltraSite BTS Hub Manager and check the active alarms.
-

Note

If this base station or other base stations beyond it otherwise operate properly, there is no need for immediate repair. However, the transmission alarms for the faulty unit are not reported to the BSC or the Nokia BTS Manager.

2. Reset the faulty transmission unit.
-

Note

Resetting the unit affects the traffic routed through it.

3. If the alarm reappears after you reset the transmission unit, switch the cabinet power OFF and ON.
4. If the alarm reappears after the recovery actions above, *replace the faulty transmission plug-in unit.*

Cancelling

Automatic

Fault reason

Cooling fan is broken.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. If something has jammed the unit cooling fan, remove the jamming object.
2. Otherwise, *replace the fan unit*.
3. Otherwise, *replace the BOI*

Cancelling

Automatic

Fault reason

Cabinet fan is broken.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. If something has jammed the cabinet fan unit, remove the jamming object.
2. Otherwise, *replace the fan unit*.
3. Otherwise, *Replace the BOI*

Cancelling

Automatic

Fault reason

Cooling fan speed has reduced from the set speed.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. If something has jammed the unit cooling fan, remove the jamming object.
2. If there is no jamming object, *replace the fan unit*.

Cancelling

Automatic

Fault reason

Cabinet fan speed has reduced from the set speed.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. If something has jammed the cabinet fan unit, remove the jamming object.
2. If there is no jamming object, *replace the fan unit*.

Cancelling

Automatic

Fault reason

Heater is broken.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

Install or replace the heater.

Note

The heater is faulty or is not installed.

Cancelling

Automatic

Fault reason

Power unit output voltage fault

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

Replace the faulty power unit.

Note

Other power units are still functioning.

Cancelling

Automatic

Fault reason

Power unit input voltage fault

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Ensure that the input voltage is correct.
 2. *Replace the faulty power unit.*
-

Note

Other power units are still functioning.

Cancelling

Automatic

Fault reason

Common rack PWS I²C bus is jammed.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Check the power unit(s) and power connections.
2. *Replace the faulty power unit(s).* as required.

Cancelling

Automatic

Fault reason

Common rack EAC I²C is jammed.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

If the cabling is OK, *replace the Interface Module.*

Cancelling

Automatic

Fault reason

TSxx rack I²C bus is jammed

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Check the DVxx and cabling, and *replace the DVxx* as required.
2. Check the TSxx, and *replace the TSxx, as required.*
3. *Replace the faulty RFU backplane.*

Cancelling

Automatic

Fault reason

No connection to power unit.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Check if the power unit is switched OFF.
2. If the power unit is ON, *replace the faulty power unit.*

Cancelling

Automatic

Fault reason

Mismatch between BSC/ MMI configuration file and the actual configuration.

Description

Object affected: BCF

Object state: Enabled

Unit: BB2x, BOI, Cabinet, Cabinet fan, DVxx, HETx, PWSx, RTxx, SISU, TRE, TSxx, Unit fan

Instructions

1. Check the base station configuration and the configuration file.

Make necessary corrections.

Cancelling

Automatic

5.6 7603 BTS faulty**Severity**

Critical

Fault reason

Other faults

Description

Object affected: BTS

Object state: Disabled

Unit: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check whether the following alarm is active:

7606 TRX FAULTY and follow the instructions given for the alarm. If necessary, replace all faulty units indicated in the active alarm(s).

Cancelling

Automatic

5.7 7604 BTS operation degraded**Severity**

Major

Fault reason

Remote tune combiner temperature is dangerously high.

Description

Object affected: BTS

Object state: Enabled

Unit: BOI, DVxx, MNxx, RTxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. *Replace the remote tune combiner.*

Cancelling

Automatic

Fault reason

Remote tune combiner temperature is low.

Description

Object affected: BTS

Object state: Enabled

Unit: BOI, DVxx, MNxx, RTxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet heater if it is installed.
3. *Replace the remote tune combiner.*

Cancelling

Automatic

Fault reason

Rx levels differ too much between main and diversity antennas.

Instructions

1. Check the RSSI measurements by BTS Manager.
2. Locate the cause of the alarm (unit, cable, antennas.)
3. Replace the cause of the alarm.

Cancelling

Automatic

Fault reason

Other faults

Description

Object affected: BTS

Object state: Enabled

Unit: BOI, DVxx, MNxx, RTxx

Instructions

1. Check whether either of the following alarms is active:
 - *7606 TRX FAULTY*
 - *7607 TRX OPERATION DEGRADED*
2. Follow the instructions for the active alarm(s).

Cancelling

Automatic

5.8 7605 / BTS notification

Severity

Minor

Fault reason

Remote tune combiner flash checksum is invalid and the code is corrupted

Description

Object affected: BTS

Object state: Enabled

Unit:BOI, RTxx

Instructions

1. Reset BCF.
2. If the fault occurs, *replace the remote tune combiner*.

Cancelling

Automatic

Fault reason

Cavity stepper motor cannot tune the remote tune combiner.

Description

Object affected: BTS

Object state: Enabled

Unit:BOI, RTxx

Instructions

1. Reset BCF.
2. If the fault occurs, *replace the remote tune combiner*.

Cancelling

Automatic

Fault reason

Remote tune combiner has lost connection to temperature sensor

Description

Object affected: BTS

Object state: Enabled

Unit:BOI, RTxx

Instructions

Replace the remote tune combiner.

Cancelling

Automatic

5.9 7606 TRX faulty

Severity

Major

Note

When baseband hopping is used, the alarm cancelling is manual.

Note

In case of alarm 7606, if a BCCH TRX is affected, the BSC performs a BCCH reconfiguration if possible.

Fault reason

Antenna connection faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Note

An alarm reports only if the PMAX value is 0 or 2 (two highest power levels). If a sector configured with RTxx is reset, while the antenna cable is disconnected, and if there is no traffic in the current TRX, the alarm 7606 TRX FAULTY with a fault reason 'Tuning carrier is not detected in remote tune combiner' is issued.

1. Check the antenna and cabling. If either the antenna or cabling are faulty, *replace the faulty units* and reset TRX to cancel the alarm.
2. If the antenna and cabling are OK, the TSxx is faulty. *Replace the TSxx*.

Cancelling

Automatic

Fault reason

Fault in VSWR antenna monitoring

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check the antenna and cabling. If either the antenna or cabling are faulty, *replace the faulty units* and reset TRX to cancel the alarm.
2. If the antenna and cabling are OK, the TSxx is faulty. *Replace the TSxx*.

Cancelling

Automatic

Fault reason

Fault in the chain between power unit and MHA.

Instructions

1. Check the chain between the power unit and the MHA.
2. If the chain is OK, replace the MHA.
3. If the chain and MHA are OK, *replace the faulty power unit.*

Cancelling

Automatic

Fault reason

Failure detected during TRX configuring.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. The TSxx is either faulty, or its frequency band is different from the one that was configured into BSC.
2. *Replace the TSxx* with a functional TSxx or with another TSxx with correct frequency band.

Cancelling

Automatic

Fault reason

BOI detected that connection to TRX is lost.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Check the BTS configuration, *and install the BB2x* if it is missing.

Cancelling

Automatic

Fault reason

Failure in 26 MHz clock input.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. If all TRXs indicate this fault, *replace the BOI*.
2. If only one TRX indicates this fault, *replace the faulty BB2x*.

Cancelling

Automatic

Fault reason

BOI or TRX has detected a failure in the incoming frame clock signal.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. If all TRXs indicate this fault, *replace the BOI*.
2. If only one TRX indicates this fault, *replace the faulty BB2x*.

Cancelling

Automatic

Fault reason

Interface problems between O&M and DSP SW.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Reset the TRX.
2. If the fault occurs, *replace the faulty BB2x*.

Cancelling

Automatic

Fault reason

Failure in internal DSP monitoring loop.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Reset the TRX.
2. If the fault occurs, *replace the BB2x*.

Cancelling

Automatic

Fault reason

The synthesiser in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Replace the remote tune combiner that is connected to the alarming TRX.

Cancelling

Automatic

Fault reason

The controller in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Replace the remote tune combiner that is connected to the alarming TRX.

Cancelling

Automatic

Fault reason

The tuning of a cavity has failed in remote tune combiner.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check the remote tune combiner cabling.
2. If cabling is OK, *replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

Cavity reset has failed. Cavity is not available in remote tune combiner.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Reset BCF.
2. If the fault reappears, *replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

Tuning carrier is not detected in remote tune combiner.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check the remote tune combiner cabling.
2. If cabling is OK, *replace the TSxx*.
3. If the fault occurs, *replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

LNA main branch in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Both the main branch and the diversity branch are faulty.
2. *Replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

LNA diversity branch in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Both the main branch and the diversity branch are faulty.
2. *Replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

The reflected power of remote tune combiner is too high.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check the antenna connection to the remote tune combiner.
2. If the antenna connection is OK, *replace the remote tune combiner* connected to the alarming TRX.

Cancelling

Automatic

Fault reason

Software downloading to remote tune combiner failed.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Reset BCF.
2. If the fault occurs, *replace the remote tune combiner*.

Cancelling

Automatic

Fault reason

Remote tune combiner initialisation failed.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Reset BCF.
2. If the fault reappears, *replace the remote tune combiner*.

Cancelling

Automatic

Fault reason

No connection to remote tune combiner.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Check that the remote tune combiner is properly connected.
2. If the connection is OK, *replace the remote tune combiner*.

Cancelling

Automatic

Fault reason

First branch LNA in Dual Variable Gain Duplex Unit is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Second branch is not in use. Activate the second branch or *replace the DVxx*.

Cancelling

Automatic

Fault reason

Second branch LNA in Dual Variable Gain Duplex Unit is faulty.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

First branch is not in use. Activate the 1st branch or *replace the DVxx*.

Cancelling

Automatic

Fault reason

BB2x temperature is dangerously high.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. *Replace the BB2x.*

Cancelling

Automatic

Fault reason

TSxx temperature is dangerously high.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. Ensure that the ambient temperature of the base station is within specified limits.
2. Check the cabinet fans.
3. *Replace the faulty TSxx.*

Cancelling

Automatic

Fault reason

There is a disturbance in the serial DL bus or bus is broken.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

1. If the TSxx is not properly installed or is missing, *install it* properly.
2. If the TSxx is broken, *replace the TSxx*.

Cancelling

Automatic

Fault reason

No data is received from DIBA Asic traffic channels to CHDSP.

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Replace the BB2x.

Cancelling

Automatic

Fault reason

IDD main/auxiliary TRX frequency band mismatch.

Instructions

Note

main TRX

1. Check the IDD configuration of the BCF.
2. Check the configuration of the TRX.
3. *Replace the auxiliary TSxx with one of the same frequency as the IDD main TSxx unit.*

Cancelling

Automatic

Fault reason

Non EDGE TRX device type used accidentally in IDD mode.

Instructions

Note

main TRX

1. Check the IDD configuration of the BCF.
2. Check the configuration of the TRX.
3. *Replace the IDD auxiliary TSxx with an EDGE capable unit.*

Cancelling

Automatic

Fault reason

Other faults

Description

Object affected: TRX

Object state: Disabled

Units affected: BB2x, DVxx, RTxx, TSxx, MNxx

Instructions

Replace the TSxx.

Cancelling

Automatic

5.10 7607 TRX operation degraded

Severity

Major

Fault reason

Flash operation failed in BOI or TRX.

Description

Object affected: TRX

Object state: Enabled

Units affected: BB2x, DVxx, MNxx, RTxx, TSxx

Instructions

Note

Rack/Shelf/Slot information gives the position of the IDD auxiliary TRX.

Replace the BB2x.

Cancelling

Automatic

Fault reason

Remote tune combiner controller is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Cancelling

Automatic

Fault reason

The reflected power of remote tune combiner is too high.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

1. Check the antenna connection to the remote tune combiner.
2. If the antenna connection is OK, *replace the remote tune combiner.*

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

LNA main branch in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

LNA Diversity branch in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Main branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

The synthesiser in remote tune combiner is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

The controller in remote tune combiner is faulty

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

Performance of the main branch LNA in remote tune combiner is degraded

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

Performance of the diversity branch LNA in remote tune combiner is degraded.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the remote tune combiner.

Note

Main branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

First branch LNA in dual variable gain duplex unit is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the DVxx.

Note

Second branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

2nd branch LNA in dual variable gain duplex unit is faulty.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the DVxx.

Note

First branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

Performance of the first branch LNA in dual variable gain duplex unit is degraded.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the DVxx.

Note

Second branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

Performance of the second branch LNA in dual variable gain duplex unit is degraded.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

Replace the DVxx.

Note

First branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

No connection to dual variable gain duplex unit

Instructions

1. Check the BTS configuration and *install the DVxx* if it is missing.

Cancelling

Automatic

Fault reason

Fault in the chain between power unit and MHA

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

1. Check the chain between the power unit and the MHA.
2. If the chain is OK, *replace the MHA*.

Cancelling

Automatic

Fault reason

Fault in VSWR antenna monitoring.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

1. Check the antenna and cabling.
2. *If either the antenna or cabling are faulty, replace the faulty units and reset TRX to cancel the alarm.*
3. If the antenna and cabling are OK, the TSxx is faulty. *Replace the faulty TSxx.*

Note

Diversity branch is still working and calls are getting through.

Cancelling

Automatic

Fault reason

TRX is unable to implement EDGE services.

Description

Object affected: TRX

Object state: Enabled

Units affected: DVxx, MHA, RTxx

Instructions

1. *Check the configuration of TRXs.*
2. *Upgrade the TSxx/BB2x units to EDGE capability .*

Cancelling

Automatic

Fault reason

IDD main/auxiliary TRX frequency band mismatch.

Instructions

Note

auxiliary TRX.

1. Check the IDD configuration of the BCF.
2. Check the configuration of the TRX.
3. *Replace the IDD auxiliary TSxx. with one of the same frequency as the IDD main TSxx unit.*

The TSxx units used for an IDD pair must be of the same type.

Cancelling

Automatic

Fault reason

Mismatch between BSC/MMI configuration and/or IDD TRX.

Instructions

Note

auxiliary TRX

1. Delete the IDD auxiliary TRX from the BSC configuration.
2. Reset the IDD main TRX.

IDD auxiliary TRXs are not to be defined at the BSC.

Cancelling

Automatic

Fault reason

Non EDGE TRX device type used accidentally in IDD mode.

Instructions

Note

auxiliary TRX

1. Check the IDD configuration of the BCF.
2. Check the configuration of the TRX.
3. *Replace the IDD auxiliary TSxx* with an EDGE capable unit.

IDD TRXs must be EDGE capable.

Cancelling

Automatic

Fault reason

Diversity branch runtime loop failure between CHDSP and EQDSP via Fbus.

Instructions

Note

auxiliary TRX

1. Cancel alarm manually.
2. If the alarm reappears, reset the IDD main TRX.
3. *Replace the BB2x.*

This alarm may appear when the IDD auxiliary TRX is reset.

Cancelling

Automatic

Fault reason

Diversity branch FBUS HW failure.

Instructions

Note

auxiliary TRX

1. Reset the IDD main TRX.
2. *Replace the BB2x.*

This alarm may appear when the IDD auxiliary TRX is reset.

Cancelling

Automatic

Fault reason

TSxx software download failure.

Instructions

1. Reset the TRX.
2. If the fault reappears, *replace the TSxx*.

Cancelling

Automatic

Fault reason

The transmitter output power has dropped at least 3 dB.

Instructions

1. Reset the IDD main TRX.
2. *Replace the BB2x*.

Cancelling

5.11 7608 TRX notification

Severity

Minor

Fault reason

TSxx internal I²C bus is jammed.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

1. Reset the TRX.
2. If the fault recurs, *replace the TSxx*.

Cancelling

Automatic

Fault reason

Impossible to execute TRX loop.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

1. Reset the TRX.
2. If the fault recurs, *replace the TSxx*.

Cancelling

Automatic

Fault reason

BB2x temperature is low.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

1. Check the ambient temperature
2. If the temperature is OK, *Replace the BB2x*.

Cancelling

Automatic

Fault reason

TSxx temperature is low.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

1. Check the ambient temperature
2. If the temperature is OK, *replace the TSxx.*

Cancelling

Automatic

Fault reason

BB2x has lost connection to temperature sensor.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

Replace the BB2x.

Note

Temperature sensor is probably broken. Temperature changes cannot be measured.

Cancelling

Automatic

Fault reason

TSxx has lost connection to temperature sensor.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, BOI, DVxx, RTxx, TSxx

Instructions

Replace the TSxx.

Note

Temperature sensor is probably broken. Temperature changes cannot be measured.

Cancelling

Automatic

5.12 7609 TRE Faulty

Severity

Critical

Fault reason

BOI detected that connection to transmission unit is lost.

Description

Object affected: BCF

Object state: Disabled

Unit: TRE

Instructions

Note

If the base station otherwise operates properly, there is no need for an immediate repair. However, the transmission alarms for the node are not reported to the BSC nor the Nokia BTS Manager.

1. Reset BCF.
 2. If the alarm recurs after the BCF reset, switch the cabinet power off and on.
 3. If the alarm recurs after the recovery actions above, *replace the faulty transmission plug-in unit* located in slot 1.
-

Note

Replacing the unit blocks the base station and cuts off the traffic routed through it.

Cancelling

Automatic

5.13 7612 Site powering faulty

Severity

Critical

Fault reason

CCUA PSM alarm 1.

Description

Object affected: BCF

Object state: Enabled

Unit: SISU

Instructions

1. Use the PSM Manager software to check the active SISU alarms and follow the instructions given to the SISU.

Cancelling

Automatic

5.14 7613 Site powering operation degraded

Severity

Major

Fault reason

CCUA PSM alarm 2

Description

Object affected: BCF

Object state: Enabled

Unit: SISU

Instructions

1. Use the PSM Manager software to check the active SISU alarms and follow the instructions given to the SISU.

Cancelling

Automatic

5.15 7614 Site powering notification

Severity

Minor

Fault reason

CCUA PSM alarm 3

Description

Object affected: BCF

Object state: Enabled

Unit: SISU

Instructions

1. Use the PSM Manager software to check the active SISU alarms and follow the instructions given to the SISU.

Cancelling

Automatic

5.16 7615 RTS in test use

Severity

Minor

Fault reason

Internal O&M SW is testing the timeslots during TRX test.

Note

There is no fault reason text with the alarm.

Description

Object affected: RTS

Object state: Disabled

Unit: TSxx

Instructions

No actions required.

Cancelling

Automatic

Note

Alarm 7615 is sent to the BSC only when the abis loop or TRX test is started from the BTS Manager.

5.17 7616 Oscillator adjustment temporarily interrupted

Severity

Minor

Fault reason

Oven oscillator adjustment function interrupted.

Description

Object affected: BCF

Object state: Enabled

Unit: BOI

Instructions

1. Check the Abis connection.
2. If the Abis connection is OK, *replace the BOI*.

Cancelling

Automatic

5.18 7617 Several calls dropped due to problems with transcoder

Severity

Major

Fault reason

There is an error with the connection between the BTS and the transcoder.

Description

Object affected: TRX

Object state: Enabled

Unit: BB2x, TSxx

Instructions

Check the transmission path between the base station and the transcoder.

Cancelling

Automatic

5.19 7622 Cabinet open

Severity

Major

Note

Alarm 7622 applies to outdoor cabinets only. Indoor cabinets do not issue alarm 7622.

Fault reason

Cabinet door is open.

Description

Object affected: BCF

Object state: Enabled

Unit: BOI

Instructions

Ensure the cabinet door is properly closed and secured.

Cancelling

Automatic

5.20 7801 MMI connected to base station

Severity

Minor

Fault reason

Note

Alarm 7801 applies to both local and remote Nokia BTS Manager.

Nokia BTS Manager is connected to Nokia UltraSite EDGE Base Station.

Note

There is no fault reason text with the alarm.

Description

Object affected: BCF

Object state: Enabled

Unit: Cabinet

Instructions

No actions required.

Cancelling

Automatic

5.21 7995 Mains breakdown with battery backup

Severity

Minor

Fault reason

Other faults

Description

Object affected: BCF

Object state: Enabled

Unit: SISU

Instructions

1. Check the mains supply.
2. If the mains supply is OK, check the cabling between the BTS and IBBU/SISU.
3. Repair the IBBU/SISU.

Cancelling

Automatic

5.22 Alarms for the 1300 W Rectifier (BATA) of the UltraSite EDGE BTS

When a fault occurs, the BATA sends an alarm after the CCUA has requested a reply. The alarm condition remains active until the cause of the fault is removed. Alarms are transmitted to the CCUA via the RS485 interface.

Table 14. Alarms

Alarm Number	Alarm	Description	Status	Cause
1	Unit Failure	BATA unit (position x) failure	warning ¹	Alarm when BATA in psotion x faulty
2	Over-temperature	BATA unit (position x) over-temperature	warning	Alarm when BATA in position x shows overtemperature (output power reduction started)
3	Over-temperature Shutdown	BATA unit (position x) overtemperature shutdown	warning	Alarm when BATA in position x has been shutdown because of overtemperature
4	Overvoltage Shutdown	BATA unit (position x) overvoltage shutdown	warning	Alarm when BATA in position x has been shut down because of overvoltage
5	Load Sharing Failure	BATA unit (position x) load sharing failure	warning	Alarm when BATA in position x is not sharing the load current being drawn

Table 14. Alarms (cont.)

Alarm Number	Alarm	Description	Status	Cause
6	Auxiliary Supply Failure	BATA unit (position x) auxiliary supply failure	warning	Alarm when BATA in position x is non functional
7	Mains Supply Failure	BATA unit (position x) mains supply failure	warning	Alarm when input AC voltage to BATA in position x is out of range

¹If more than one BATA is faulty, the status is URGENT.

6 Transmission unit alarms

6.1 20 Blocked from use

Severity

Major

Fault reason

A cross-connection bank has pending cross-connections. This happens when a node has a cross-connection terminated in an interface, which is not in use. The cross-connections are also set to pending state if a slave unit with cross-connections is removed without uninstalling it. In these cases the cross-connection remains in the cross-connection bank, but it is not set in the hardware.

Description

Location: Node cross-connection bank

Instructions

Check that all interfaces, in which cross-connections have been created, are in use. Remove cross-connections that are connected to non-existing interfaces. Reinstall the removed unit(s).

Cancelling

Automatically cancelled when there are no blocked cross-connections.

6.2 162 Database full

Severity

Warning

Fault reason

Fault management event history database is full. New events are not recorded in the database. This happens when the poller (NMS/BSC) is unable to poll the unit and thus it clears the alarm history.

Description

Location: Node or FXC unit event history

Instructions

Check that the polling is working.

Cancelling

Warnings are not cancelled.

6.3 142 Fault in installation of equipment

Severity

Critical

Fault reason

The installed FXC or outdoor unit has been changed to a unit of a different type than specified in the installation.

Description

Location: Node HW setup

Instructions

Uninstall the unit that is of the wrong type or run the "Install all" command. You can also replace the unit with the same type of unit as used previously.

Cancelling

Automatically cancelled.

6.4 112 Frequency error

Severity

Minor

Fault reason

None of the Rx or external clock sources defined in the timing priority list is valid, or the Rx source signal in use has its MCB in state "1".

Description

Location: Node sync setup

Instructions

Check the incoming signals in the synchronisation priority list.

Cancelling

Automatically cancelled when at least one Rx signal in the priority list is valid.

6.5 125 Loss of synchronisation signals

Severity

Critical

Fault reason

All synchronisation sources from the priority list are unavailable.

Description

Location: Node synchronisation setup

Instructions

Check the incoming signals in the synchronisation priority list.

Cancelling

Automatically cancelled when at least one synchronisation source in the priority list is available.

6.6 62 No connection

Severity

Critical

Fault reason

Enabling Trunet has failed because the cross-connection capacity required is not free.

Description

Location: Node Trunet

Instructions

Disable Trunet and remove the connections that are using the capacity needed for Trunet. After performing this action, re-enable Trunet.

Cancelling

Automatically cancelled when Trunet can create the needed cross-connections during enabling.

6.7 140 Subrack has excessive units

Severity

Major

Fault reason

A unit, which is physically present, has not been logically installed with the manager.

Description

Location:

1. Node HW setup
2. FAN (only MetroHub)
3. Power supply 1/2 (only MetroHub)

4. Battery (only MetroHub)
5. DIU (only MetroHub)

Instructions

Install the unit.

Cancelling

Automatically cancelled when the excessive unit has been installed logically with the manager.

6.8 139 Subrack is missing units

Severity

Critical

Fault reason

The unit is logically installed, but it has been removed or it is broken.

Description

Location:

1. Node HW setup
2. DIU (only MetroHub)
3. FAN (only MetroHub)
4. Power supply 1/2 (only MetroHub)
5. Battery (only MetroHub)

Instructions

Uninstall the removed unit logically, or replace the broken unit.

Cancelling

Automatically cancelled.

6.9 124 Synchronising fault in clock recovery

Severity

Major

Fault reason

A missing synchronisation input clock signal with a priority on the synchronisation list.

Description

Location: Node sync setup

Instructions

Check the incoming clock signal used, or remove the sync input from the priority list.

Cancelling

Automatically cancelled

6.10 221 Version mismatch

Severity

Critical

Fault reason

At least one slave unit is not compatible with the master unit.

Description

Location: Node HW setup

Instructions

Check the SW versions of the units and upgrade them to the same level as the master unit.

Note

The 221 Version mismatch alarm has to be cancelled in order to manage the node successfully.

Cancelling

Automatically cancelled when all units are compatible with the master unit.

6.11 23 Test mode active**Severity**

Major

Fault reason

1. Heating test activated by the user
2. External alarm connectors test or external control connectors test is active
3. User-activated or fan test is active
4. User-activated or battery test is ongoing

Description

Location:

1. Power supply 1
2. DIU
3. Fan unit
4. Battery unit

Instructions

Wait for the test to be performed.

Cancelling

Automatically cancelled when testing has been completed.

6.12 66 AIS 2M

Severity

Major

Fault reason

Alarm signal is received, the received signal has no framing and it is all ones.

Description

Location:

1. FXC RRI platform interface
2. FXC E1 interface

Consequence: FEA alarm (TS0/B3) generated to the far-end.

Instructions

The signal is cut somewhere in the network and AIS replacement has taken place. Follow the 2M signal in the network to find out the place where AIS replacement has been done. This link is usually faulty or has configuration errors. Other alarms may cause this alarm because of AIS switching in the receiving direction as shown in the Consequence field of some alarms.

Cancelling

Automatically cancelled when AIS not received.

6.13 148 Equipment reset

Severity

Warning

Fault reason

The unit has started up after power-on or reset.

Description

Location: FXC unit

Cancelling

This reset indication is not an alarm and does not need to be cancelled.

6.14 99 Error rate > 1 E-3**Severity**

Critical

Fault reason

Received signal bit error rate is worse than $1.0 * 10^{-3}$.

If the location is FXC RRI protected hop, both links in the HSB hop have a bit error rate worse than $1.0 * 10^{-3}$.

Description

Location:

1. FXC RRI Flexbus
2. FXC RRI platform interface
3. FXC E1/T1 interface
4. FXC RRI protected hop

Consequence:

1. AIS is connected to all received Flexbus channels.
2. FEA alarm (TS0/B3) generated to far end AIS to RX direction.
3. FEA alarm (TS0/B3) generated to far end AIS to RX direction.
4. AIS is connected to all received Flexbus channels.

Instructions

1. "Alarm signal received" also causes this alarm. The signal may be faded in the radio path or the antenna alignment has changed.
2. If the Flexbus, to which this interface has been connected, has the same alarm, see its instructions. If the Flexbus does not have this alarm, use loop to equipment for both the platform interface and the Flexbus. If either of the loops gives this alarm, replace the unit.

3. Check the cabling between the units.
4. "Alarm signal received" also causes this alarm. The signal may be faded in the radio path or the antenna alignment has changed.

Cancelling

1 - 4. Automatically cancelled when the received signal BER is better than $1.0 * 10^{-3}$. If the radio signal is faded, it is restored when the fading stops. If the antenna alignment has changed, align the antennas according to the instructions in the radio documentation.

6.15 102 Error rate > 1 E-6

Severity

Major

Fault reason

Received signal bit error rate is worse than $1.0 * 10^{-6}$.

Description

Location:

1. FXC RRI platform interface
2. FXC E1/T1 interface

Instructions

Most commonly caused by radio path fading. If it persists for a long time, use loop to equipment for both the platform interface and Flexbus. If either of the loops gives this alarm, replace the unit.

Cancelling

Automatically cancelled when the received signal is without errors.

6.16 179 Far-end alarm

Severity

Major

Fault reason

Sent by the equipment in the far-end (TS0/B3); indicates a serious fault in the received signal of the far-end equipment.

Description

Location:

1. FXC RRI platform interface
2. FXC E1 interface

Instructions

Check the signal flow from the transmit direction of the alarming interface to the far end.

Cancelling

Automatically cancelled when FEA not detected from the far end

6.17 137 Fault in oscillator

Severity

Major

Fault reason

Unit oscillator is not working correctly.

Description

Location: FXC unit

Instructions

Change the unit.

Note

The 16 MHz oscillator in the master unit is used as the internal clock of the node. If a slave unit raises the alarm there is no immediate need to replace the unit.

Cancelling

The alarm is cancelled by resetting the unit.

6.18 150 Fault in unit

Severity

Critical

Fault reason

Operating voltages +5 V or -5 V have been detected to be out of range.

Description

Location: FXC Unit

Instructions

There is too much variation in unit operating voltages. Failure caused by bad input voltage, broken power supply or broken unit. If input voltage is valid, change the power supply or the unit.

Cancelling

The alarm is cancelled by resetting the unit.

6.19 22 Loop to equipment

Severity

Major

Fault reason

The user has activated an equipment loop. Tx signal of the interface is looped back to the equipment.

Description

Location:

1. FXC RRI Flexbus
2. FXC RRI platform interface
3. FXC E1/T1 interface

Consequence:

1. AIS is connected to all transmitted Flexbus channels in the receiving equipment.
2. AIS to TX direction.
3. AIS to TX direction.

Cancelling

Loopbacks are automatically removed after the control timeout has expired. A loop can also be removed with the manager by setting the interface or Flexbus back to the normal state.

6.20 21 Loop to interface

Severity

Major

Fault reason

1. The Flexbus interface loop is set active. The whole received Flexbus signal is looped back to the OU (or another IU). The IU - OU communication is cut during the loop.
2. The Flexbus channel loop to interface is set active. The whole received Flexbus channel signal is looped back to the OU (or another IU).

3. The platform interface loop to interface is set active. The whole received platform signal is looped back to the OU (or another IU) without regenerating time slot 0.
4. The user has activated an interface loop.

Description

Location:

1. FXC RRI Flexbus
2. FXC RRI Flexbus channel
3. FXC RRI platform interface
4. FXC E1/T1 interface

Consequence:

1. AIS is connected to all received Flexbus channels.
2. AIS is connected to the receiving direction of the looped channel.
3. AIS is connected to the receiving direction of the looped interface.
4. AIS to RX direction (towards the cross-connection field).

Cancelling

Loopbacks are automatically removed after the control timeout has expired. A loop can also be removed with the manager by setting the interface, channel or Flexbus back to the normal state.

6.21 86 Loss of CRC multiframe alignment

Severity

Critical

Fault reason

Platform interface has lost CRC frame alignment.

Description

Location:

1. FXC RRI platform interface
2. FXC E1 interface

Consequence:

- AIS is connected to the receiving direction of the platform interface.
- FEA alarm (TS0/B3) generated to far end.

Instructions

Check that the other end of the link has CRC in use. Use the same instructions as in the *Loss of frame alignment* alarm to locate the fault.

Cancelling

Automatically cancelled.

6.22 81 Loss of frame alignment

Severity

Critical

Fault reason

The interface does not detect framing from the received signal.

Description

Location:

1. FXC RRI Flexbus
2. FXC RRI platform interface
3. FXC E1/T1 interface

Consequence:

1. AIS is connected to all received Flexbus channels.
2. AIS is connected to the receiving direction of the platform interface. FEA alarm (TS0/B3) is generated to the far-end.
3. FEA alarm is generated to the far-end AIS to RX direction.

Instructions

1. Check in the Configuration view that all installed units are present. A faulty outdoor unit may not be present in the view. Try connecting power feed off and back on. If the outdoor unit does not stay present, replace it.
 - Check that the radios are configured correctly (no configuration error or fault in unit alarms). If the receiving level is sufficient, check the following:
 - a. Both ends of the hop are set to the same capacity.
 - b. Flexbus interfaces are in use.
 - c. The outdoor unit's interleaving settings are the same at both ends of the hop.
 - Check with Flexbus loop to equipment if the indoor unit locks to its own signal. If not, replace it.
2. Check in the Cross-connections view that the right signal is connected to this interface at both ends of the hop.
 - Use a platform interface loop to equipment to check that the platform interface locks to its own transmit signal. If not, replace the unit.
 - Use Flexbus loop to equipment and check that the platform interface locks to its own signal. If not, replace the unit.
3. Check the interface and synchronisation settings at both ends. If the settings are correct, replace the unit. Check the Flexbus cable.

Cancelling

Automatically cancelled when the frame is received correctly.

6.23 50 Loss of incoming 2M signal

Severity

Critical

Fault reason

Incoming 2M signal is not received.

Description

Location:

1. FXC RRI platform interface
2. FXC E1 interface

Consequence:

FEA alarm (TS0/B3) is generated to the far-end AIS to RX direction.

Instructions

1. Replace the unit.
2. Check the interface settings and cabling at both ends.

Cancelling

Automatically cancelled when the signal is received.

6.24 32 Loss of outgoing signal

Severity

Critical

Fault reason

In MetroHub's signal test, the received signal was lost. Some unit is not functioning properly.

Description

Location: FXC unit

Instructions

Find the broken unit and replace it. The faulty unit can be different than the unit in which the alarm is active. The alarm is activated in the unit where pattern detection is done. After changing the unit, run the test again.

Cancelling

Alarm is cancelled when the signal test is completed.

6.25 25 Test generator on

Severity

Major

Fault reason

The user has activated the signal test generator on the unit.

Description

Location: FXC unit

Cancelling

Alarm cancelled when the signal test is completed.

6.26 64 Alarm signal received

Severity

Major

Fault reason

An outdoor unit has lost frame lock and it has replaced the frame with a pseudo-frame to ensure indoor unit - outdoor unit communication.

Description

Location: FXC RRI Flexbus

Consequence: AIS is connected to all received Flexbus channels. This causes an AIS 2 Mbit/s alarm to all used platform interfaces that are connected to the alarming Flexbus interface.

Instructions

The signal may be faded in the radio path. In this case the alarm 'Loss of incoming radio signal' is activated in the outdoor unit. If this alarm is not active in the outdoor unit, check the radios at both ends of the hop. They must have the right configuration (frequency, interleaving and TX power on). Check also that the same capacity has been selected for both ends of the hop.

Cancelling

If the radio signal is faded, it recovers when the fading stops. If the outdoor unit is Nokia FlexiHopper, check the maximum TX power setting. If a stronger TX power is allowed, it withstands fading better.

6.27 143 Fault in change over function**Severity**

Critical

Fault reason

1. OU configuration incompatible with protection mode.
2. OU configuration checksum missing, or incompatible OU software. The outdoor unit SW is incompatible with the protection mode or the outdoor unit is faulty.

Description

Location: FXC RRI operation mode

Instructions

1. Check Tx-frequency and interleaving settings.
2. Update outdoor unit software.

Cancelling

Automatically cancelled when the problem has been corrected.

6.28 128 Fault in equipment**Severity**

Major

Fault reason

Protection is lost and a redundant signal path is in use. Reasons:

1. OU1 transmitter error. Outdoor unit in Flexbus 1 is faulty or not present.
2. OU2 transmitter error. Outdoor unit in Flexbus 2 is faulty or not present.
3. OU1 receiver error. Outdoor unit in Flexbus 1 is not locked to the RX-signal, or it is faulty or not present.
4. OU2 receiver error. Outdoor unit in Flexbus 2 is not locked to the RX-signal, or it is faulty or not present.

Description

Location: FXC RRI protection lost

Instructions

Check the outdoor unit installation. If the configuration is correct and the signal is valid, change the faulty outdoor unit.

Cancelling

Automatically cancelled when the protection is in order.

6.29 141 Forced control on

Severity

Critical

Fault reason

1. The user has started Automatic Fading Margin Measurement (AFMM), and AFMM forced control is on. Protection is disabled until AFMM is done.
2. Forced controls on OU TX. The user has selected active transmitter using forced control.
3. Forced controls on OU RX. The user has selected active receiver using forced control.

Description

Location: FXC RRI operation mode

Cancelling

Automatically cancelled when the measurement has finished.

6.30 73 AIS 1.5M

Severity

Major

Fault reason

Alarm signal is received; the received signal has no framing and it is all ones.

Description

Location: FXC T1 interface

Consequence: Yellow alarm (TS0/B3) generated to the far-end and AIS to RX direction.

Instructions

The signal is cut somewhere in the network and AIS replacement has taken place. Follow the 1.5M signal in the network to find out the place where AIS replacement has been done. This link is usually faulty or has configuration errors. Other alarms may cause this alarm because of AIS switching in the receiving direction as shown in the Consequence field of some alarms.

Cancelling

Automatically cancelled when signal is OK.

6.31 56 Loss of incoming 1.5M signal

Severity

Critical

Fault reason

Proper 1.5M signal not received

Description

Location: FXC T1 interface

Consequence: Yellow alarm generated to far-end and AIS to RX direction

Instructions

Check interface cabling

Cancelling

Automatically cancelled when signal received

6.32 172 Yellow alarm

Severity

Major

Fault reason

Sent by the equipment in the far-end, indicates a serious fault in the received signal of the far-end equipment

Description

Location: FXC T1 interface

Instructions

Check both end interface and synchronisation settings.

Cancelling

Automatically cancelled

7 Replacing UltraSite EDGE BTS units

7.1 Preparing to replace UltraSite EDGE BTS units

Summary



Warning

Potentially lethal voltages!

Switch the BTS power OFF from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shock!



Caution

Notify BSC personnel before you replace or add units to Nokia UltraSite EDGE BTS.

Note

Before installing replacement units, ensure that the new units are the same type and version as those being removed.



Steps

1. **Ensure the tools required are available**

*Tool requirements***2. Remove replacement units from packaging***Handling and unpacking units***3. Connect anti-static wrist strap, if required**

While handling static-sensitive units, make sure the anti-static wrist strap is *connected*.

4. Review torque requirements

Prior to installing units, ensure the proper tools are available for compliance with the *torque values*.

7.2 Overview of installing the units of the UltraSite EDGE BTS

Summary

**Warning**

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. When you turn OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch, the BTS is in STANDBY mode.

To switch the BTS power OFF, follow the Powering down UltraSite EDGE BTS procedure.

**Warning**

Follow national regulations when working with power supply and power cables.

**Warning**

Unit mounting fasteners may be nickel-plated. Nokia recommends that personnel allergic to nickel wear protective gloves when handling units.

**Caution**

Keep the units in their protective packages until installation to protect them against humidity.

**Caution**

Always use the antistatic hand strap when handling units that are marked with the ESD sign. Units carrying the ESD sign are sensitive to electrostatic discharging.

**Caution**

Handle the heavy units with care. The following WCDMA units are considered heavy: WAF, WMP, WTR, WPS and WTCA Fan Module.

**Caution**

Install the units into the slots with great care to avoid damage to the backplanes and connectors.

**Caution**

Be careful not to bend the RF and antenna cables more than is allowed. The smallest allowed bending radius is 25 mm (1 inch).

Note

Have the following tools available on site when installing Nokia UltraSite EDGE BTS units:

- Nokia BTS key
 - Antistatic wrist strap
 - PC with Nokia BTS Manager SW
 - Local Managements Port (LMP) cable
-

Note

When you install a Nokia UltraSite EDGE BTS unit, ensure that the unit is properly secured with mounting screws.



Steps

1. **Verify that the installation tools are available on site.**

Further information

Tools requirements for UltraSite EDGE BTS

2. **Connect the antistatic wrist strap to UltraSite EDGE BTS**
3. **Unpack the units.**
4. *If units have ejectors,*

Then

Follow these instructions.

5. *If units have handles,*

Then

Follow these instructions.

7.3 Handling and unpacking units

Purpose

To prepare units for installation.

Before you start

Ensure that the site is ready for unit installation. Refer to the *Overview of installing units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Unpack the unit from its protective package and check for damage.**
2. **Check the contents of the delivery.**
3. **Recycle the packing material.**

Nokia recommends that a suitable sampling of packing material be retained for shipment of faulty units when necessary.

Expected outcome

Units are prepared for installation and have sustained no damage.

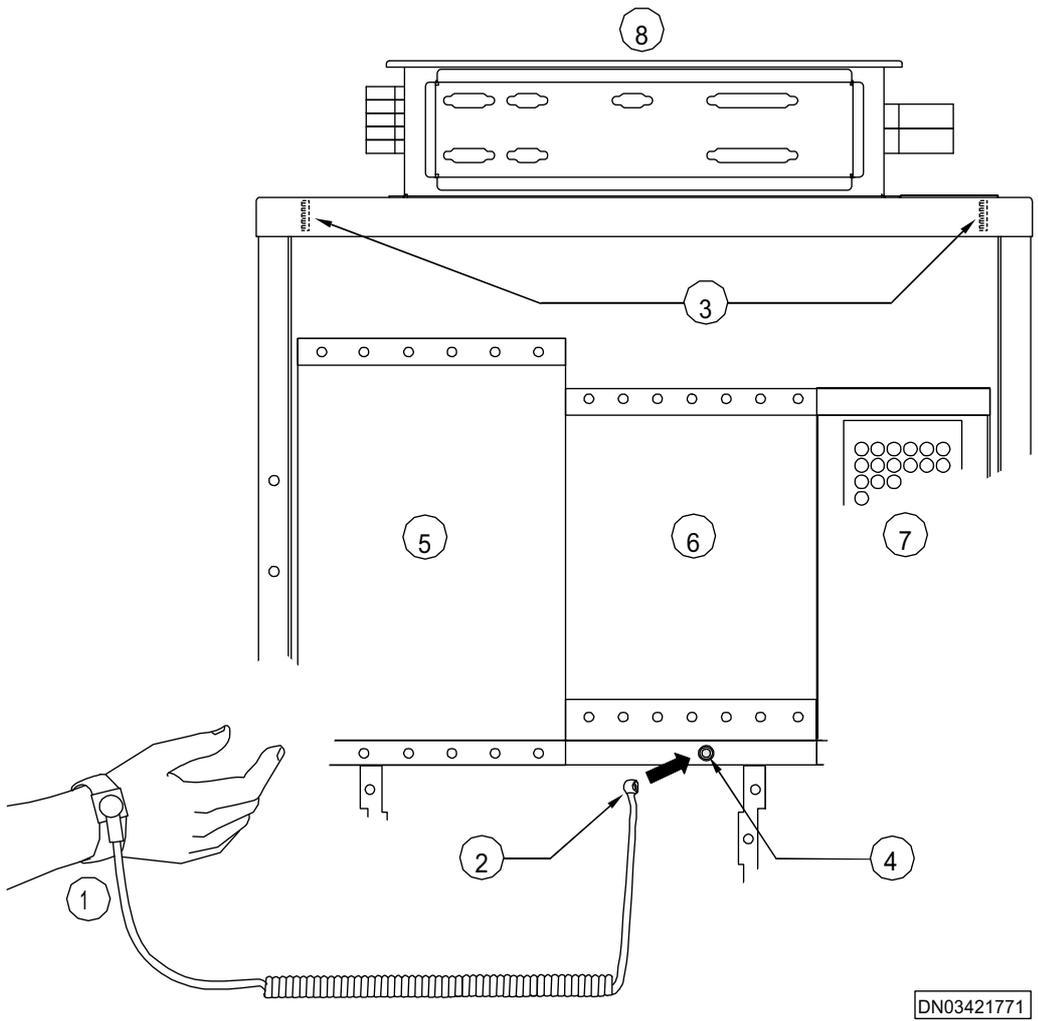
7.4 Connecting the antistatic wrist strap to UltraSite EDGE BTS

Summary



Warning

Always use the antistatic wrist strap when handling units marked with the Electrostatic Sensitive Device (ESD) sign. Units carrying the ESD sign are sensitive to electrostatic discharge!



1	Wrist strap
2	To ESD snap
3	Grounding stud behind front flange
4	ESD snap

Figure 14. Antistatic wrist strap connection



Steps

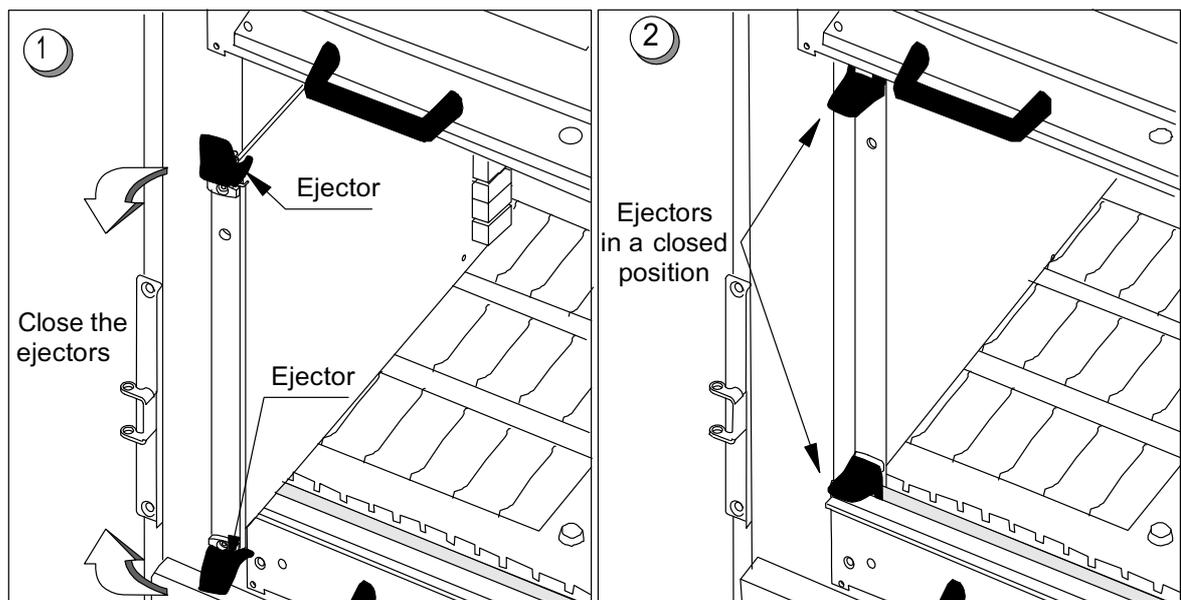
1. **Discharge to ground any electrostatic charges that may have accumulated (before you touch the assembly) by touching the ground stud with your bare hand. A ground stud is provided on all system units.**
2. **Use a grounding wriststrap to remain discharged. The grounding wriststrap should be worn around your bare wrist and attached to the ground stud until you have completed work with the ESD-sensitive unit or assembly. Do not handle any exposed connector contacts.**

7.5 Installing units with ejectors

Before you start

Ensure that the site is ready for unit installation. Refer to the *Overview of installing units*. Pay careful attention to all Warnings and Cautions.

Summary



DN02165143

Figure 15. Using ejectors in unit installation

**Steps**

1. **Slide the unit into the rack.**

Slide the unit into the rack, keeping the ejectors in an open position.

Note

It is important to lift the units when tightening the screws. This prevents damage to the thread of the screws. Support the unit while tightening the screws.

2. **Once the unit is in place, close the ejectors.**

Once the unit is in place, with the ejectors behind the channel, close the ejectors.

3. **When all the units in the rack are in place, tighten the screws.**

Slightly lift the unit and tighten the retaining screws on the unit front panel. Lifting the units eases tightening. Use a TORX bit T10 screwdriver.

7.6 Installing units with handles

Before you start

Ensure that the site is ready for unit installation. Refer to the *Overview of installing units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Align the unit and rack guides.**

Line up the unit's top and bottom guides or the left and right side guide trails to the guide trails of the rack.

2. **Slide the plug-in unit in until the rear connectors are fully engaged.**

3. **When all the units in the rack are in place, tighten the screws.**

Slightly lift the unit and tighten the screws on the front panel. Lifting the units eases the tightening. Use a TORX bit 10 screwdriver.

7.7 Storage and disposal of UltraSite EDGE BTS units

Before you start



Warning

When handling units marked with the Electrostatic Sensitive Device (ESD) sign, use an antistatic wrist strap. Units carrying the ESD sign are sensitive to electrostatic discharging.



Warning

Unit mounting fasteners may be nickel-plated. Nokia recommends that persons allergic to nickel wear protective gloves when handling units.



Warning

Nokia UltraSite EDGE BTS units have many sharp edges. Use caution during handling.



Warning

Empty CRMA and CRMC cabinet cores weigh 79 kg (155 lb) and 52 kg (115 lb), respectively. Nokia recommends that a lifting device be used when moving a cabinet core.



Caution

Handle the heavy units with care. The following WCDMA units are considered heavy: WAF, WMP, WTR, WPS and WTCA fan module.



Caution

Be careful not to bend RF and antenna cables more than is allowed. The smallest allowed bending radius is 25 mm (1 in).



Steps

1. *If storing an UltraSite EDGE BTS unit*

Then

Follow these guidelines:

- a. If storing a unit marked with the Electrostatic Sensitive Device (ESD) sign, insert the unit into an antistatic envelope.
- b. Insert the antistatic envelope or unit into a 0.13 mm, 3-layer LD-HD-LD, polyethylene bag, to protect against humidity and corrosion.
- c. Insert the appropriate amount of dehydrant into the polyethylene bag, to protect against humidity and corrosion.

Table 15. Dehydrant requirements

Climate	Number of bags of dehydrant for 6-month storage period/m2
Temperate climate ^a	3
Tropical climate ^b	10

^arelative humidity 80%, temperature +20 °C

^brelative humidity 95%, temperature +35 °C

- d. Steam seal the polyethylene bag.
- e. Pack the unit individually into a sturdy corrugated board or wood box.
- f. Maintain proper storage conditions for the unit.

Table 16. Climatic conditions for storage

Condition	Parameter
Temperature range	-45° C to +45° C (-49° F to +113° F)
Relative humidity	8% to 100%
Absolute humidity	0.03 to 30 g/m ³
Change rate of temperature	0.5° C/min. maximum
Air pressure	70 to 106 kPa
Solar radiation	1120 W/m ² maximum
Movement of surrounding air	<50 m/s

Table 17. Mechanical conditions for storage

Condition	Parameter
Stationary vibration, sinusoidal (peak value of displacement amplitude) at frequency range 9 to 200 Hz	10 mm
Non-stationary vibration, including shock: peak value of acceleration	100 m/s ²
Static load	5 kPa

2. *If disposing of an UltraSite EDGE BTS unit*

Then

Contact a Nokia representative for proper end-of-life treatment procedures.

Units are appropriately recycled with proper disposal of any hazardous materials according to Nokia's Environmental Policy.

7.8 Torque settings of UltraSite EDGE BTS

Nokia recommends the following torque values for various fasteners used in UltraSite EDGE BTS.

Note

Over-tightening causes stress on the connectors. For the TSxx, BB2x and BOIx units, ensure a gap of 1.0 to 3.0 mm exists between the front flange of the unit and the cabinet when tightened to 1.0 Nm (maximum).

Note

The following table provides the torque measurements that Nokia recommends for installing the GSM/EDGE BTS units. All torque values assume a lubricated bolt or fastener.

Note

These are basic torque values. Any exceptions to these values are provided in the installation procedures.

Table 18. Cabinet installation torque recommendations

Bolt/screw type	DIN	Size	Torque
Plastic connector finger screws			0.2 - 0.3 Nm (0.15 - 0.22 ft lb)
Slotted head, phillips head or Torx head screw		M3	0.7 - 1.0 Nm (0.52 - 0.74 ft lb)
Slotted head, phillips head or Torx head screw		M4	1.2 - 1.6 Nm (0.88 - 1.18 ft lb)

Table 18. Cabinet installation torque recommendations (cont.)

Bolt/screw type	DIN	Size	Torque
Slotted head, phillips head or Torx head screw		M5	2.0 - 2.6 Nm (1.47 - 1.92 ft lb)
Hexagon socket head screw	933-A2	M6	4.2 - 5.5 Nm (3.1 - 4.05 ft lb)
Nut	934-A2	M6	4.2 - 5.5 Nm (3.1 - 4.05 ft lb)
Hexagon socket head screw	912-A2	M8	8.0 - 10.0 Nm (5.9 - 7.37 ft lb)
3/8 hexagon head bolt	933-A2	M10	24 Nm (17.69 ft lb)
Lifting eye bolt (not included)	580	M12	39 Nm (28.74 ft lb)
Torx socket head screw cylinder head	934-A2	M3	0.7 Nm 0.52 ft lb
Torx socket head screw cylinder head	934-A2	M4	1.2 Nm 0.89 ft lb
Torx socket head screw cylinder head	934-A2	M5	2.5Nm 1.84 ft lb

Table 19. Unit installation torque recommendations

Bolt/screw type	DIN	Size	Torque
Antenna flange mount connector 7/16 in. (4 each)	934-A2	M3	1.0 Nm 0.7 ft lb
Thumb screw	934-A2	M4	1.0 Nm 0.7 ft lb
Ground lug nut	934-A2	M5	2.0 Nm 1.5 ft lb

Table 19. Unit installation torque recommendations (cont.)

Bolt/screw type	DIN	Size	Torque
Ground lug nut		M8	4.0 Nm 3.0 ft lb
Battery terminal screws		Not available	6.78 Nm 5.0 ft lb
Antenna connector		7/16 in	25 Nm 18.5 ft lb
SMA connector		Not available	1.0 Nm 0.7 ft lb
PWSC terminals		M8	10 Nm 7.0 ft lb
DCFB Output terminals		M8	10 Nm 7.0 ft lb
DCFB Input terminals		M10	28 Nm 19.6 ft lb

Table 20. WCDMA unit installation torque recommendations

Bolt/Screw Type	Size	Torque
Antenna Flange Mount Connector (4 ea.)	M3	0.1 Nm 0.074 ft lb
Unit mounting screw	M3	0.7 Nm 0.52 ft lb
Unit mounting screw	M4	1.2 Nm 0.89 ft lb
Right angle Antenna connector	N/A	25 Nm 18.5 ft lb

8

Replacing UltraSite EDGE BTS GSM/EDGE units

8.1 Overview of removing units from UltraSite EDGE BTS

Summary



Warning

Potentially lethal voltages!

Switch the BTS power OFF from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shock!



Warning

Unit mounting fasteners may be nickel-plated. Nokia recommends that personnel allergic to nickel wear protective gloves when handling units.



Warning

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. When you turn OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch, the BTS is in STANDBY mode.

Switch BTS power OFF in accordance with Powering down UltraSite EDGE BTS.



Warning

Follow national regulations when working with power supply and power cables.



Caution

Notify BSC personnel before you remove or add units to Nokia UltraSite EDGE BTS.



Caution

Always use the antistatic hand strap when handling units that are marked with the ESD sign. Units carrying the ESD sign are sensitive to electrostatic discharging.



Caution

Handle the heavy units with care. The following WCDMA units are considered heavy: WAF, WMP, WTR, WPS and WTCA Fan Module.



Caution

Be careful not to bend the RF and antenna cables more than is allowed. The smallest allowed bending radius is 25 mm (1 inch).

Note

If removing to install replacement units, ensure that the new units are the same type and version as those being removed.

**Steps**

1. **Connect the antistatic wrist strap to UltraSite EDGE BTS.**
2. **Remove GSM/EDGE unit cables of UltraSite EDGE BTS.**
3. **Remove Bias Tee (BPxx) unit from UltraSite EDGE BTS.**
4. **Remove PWSA/PWSB unit from UltraSite EDGE BTS.**
5. **Remove PWSC unit from UltraSite EDGE BTS.**
6. **Remove VXxx unit from UltraSite EDGE BTS.**
7. **Remove BB2x unit from UltraSite EDGE BTS.**
8. **Remove BOIx unit from UltraSite EDGE BTS.**
9. **Remove M2xA or M6xA unit from UltraSite EDGE BTS.**
10. **Remove TSxx unit from UltraSite EDGE BTS.**
11. **Remove DU2A unit from UltraSite EDGE BTS.**
12. **Remove DVxx unit from UltraSite EDGE BTS.**
13. **Remove RTxx unit from UltraSite EDGE BTS.**
14. **Remove WCxA unit from UltraSite EDGE BTS.**

8.2 Overview of installing GSM/EDGE units of UltraSite EDGE BTS

Before you start

Ensure that the site is ready for unit installation.

Review the *Overview of installing the units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

The GSM/EDGE unit positions in the cabinet are pre-determined. You can launch the Site Hardware Configuration Manager from the SiteWizard to check the configuration.



Warning

Electrical hazards exist while installing DV_{xx}/RT_{xx} cables to the RFU backplane of a powered Nokia BTS. Hold cable being connected clear of all conductive surfaces during installation.

Note

Nokia recommends installing the DV_{xx}/RT_{xx} cable to the RFU backplane before you install the Transceiver RF unit in the cabinet.

Note

Protect all unused connectors and slots in the Outdoor cabinet with connector caps and sealing units.

Note

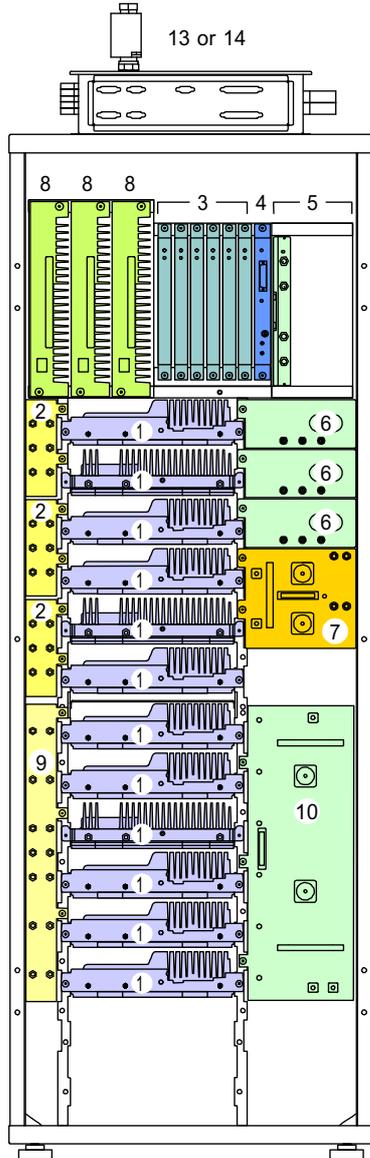
Properly tighten all mounting screws.

Note

The online help provides information on using SiteWizard, Nokia BTS Manager, and Site Hardware Configuration Manager.

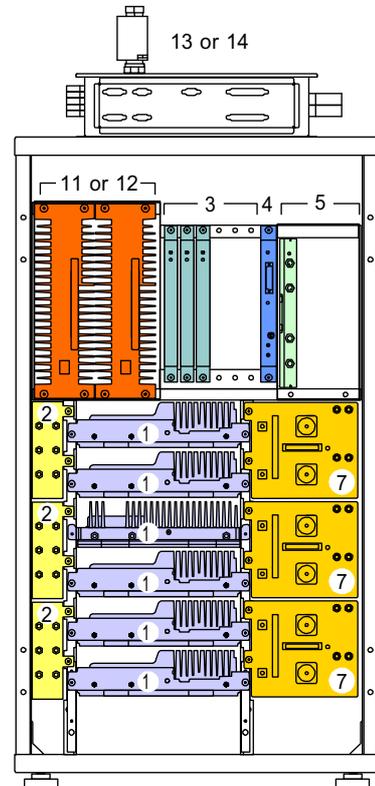
Note

You can use the PWSA, PWSB, and PWSC units in either cabinet.



DN03459836

UltraSite cabinet core



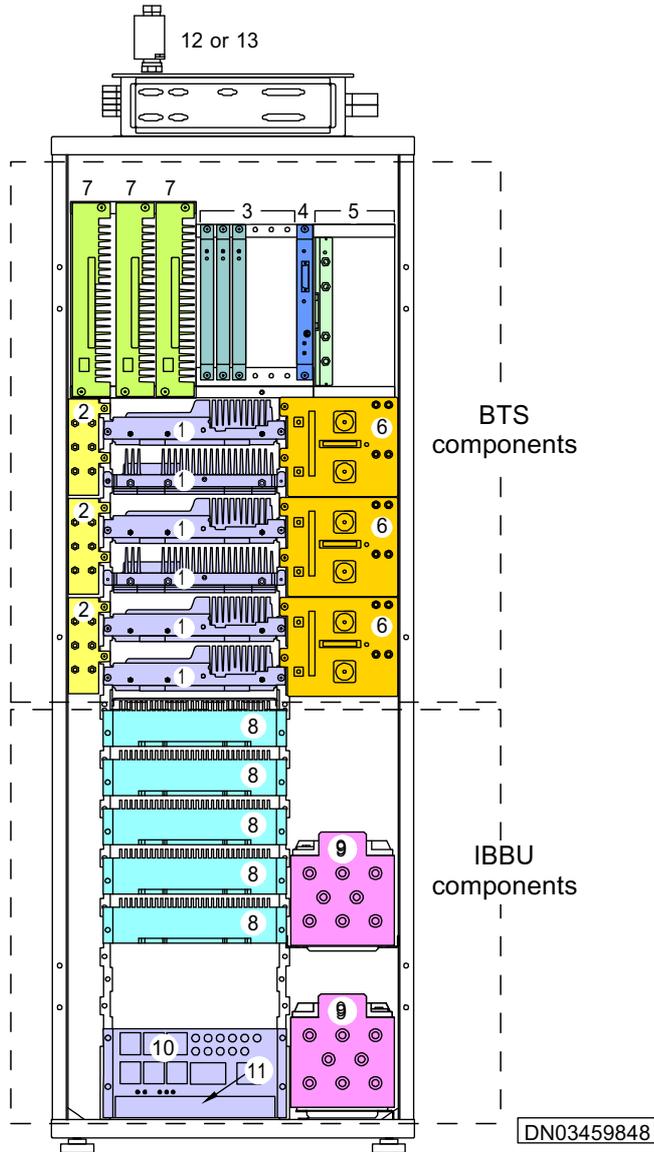
UltraSite MIDI cabinet core

1	Transceiver unit (TSxx)
---	-------------------------

2	2-way Receiver Multicoupler unit (M2xA)
3	Transceiver Baseband unit (BB2x)
4	Base Operations and Interfaces unit (BOIx)
5	Transmission unit (VXxx)
6	Wideband Combiner unit (WCxA)
7	Dual Variable Gain Duplex Filter unit (DVxx)
8	DC/DC Power Supply unit (PWSB)
9	6-way Receiver Multicoupler unit (M6xA)
10	Remote Tune Combiner unit (RTxx)
11	AC/DC Power Supply unit (PWSA)
12	DC/DC Power supply unit (PWSC)
13	Bias Tee unit (BPxx) ¹
14	Dual Band Diplex Filter unit (DU2A) ¹

¹Items 13 and 14 are not plug-in units.

Figure 16. Unit positions in the BTS



1	Transceiver unit (TSxx)
2	2-way Receiver Multicoupler unit (M2xA)
3	Transceiver Baseband unit (BB2x)
4	Base Operations and Interfaces unit (BOIx)
5	Transmission unit (VXxx)

6	Wideband Combiner unit (WCxA)
7	Dual Variable Gain Duplex Filter unit (DVxx)
8	Rectifier unit (BATx)
9	Battery unit for IBBU (BBAx)
10	AC/DC Distribution unit for IBBU (ADUx)
11	Cabinet Control unit (CCUx) 9
12	Bias Tee unit (BPxx) ¹
13	Dual Band Diplex Filter unit (DU2A) ¹

¹Items 12 and 13 are not plug-in units.

Figure 17. Unit positions in the BTS with IBBU



Steps

1. **Install a Wideband Combiner (WCxA) unit.**
2. **Install a Remote Tune Combiner (RTxx) unit.**
3. **Install a Dual Variable Gain Duplex Filter (DVxx) unit.**
4. **Install a Dual Band Diplex Filter (DU2A) unit.**
5. **Install a Transceiver (TSxx) unit.**
6. **Install a Receiver Multicoupler (M2xA or M6xA) unit.**
7. **Install a Base Operations and Interfaces (BOIx) unit.**
8. **Install a Transceiver Baseband (BB2x) unit.**
9. **Install a Transmission unit.**
10. **Install a Power Supply (PWSx) unit.**
11. **Install a Bias Tee (BPxx) unit.**
12. **Install an optional AC Filter module.**

13. **Install an optional DC Filter module.**
14. **Install a Heater (HETA) unit.**
15. **Install optional Integrated Battery Backup (IBBU).**

8.3 Replacing a Wideband Combiner unit

8.3.1 Replacing a Wideband Combiner (WCxA) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS unit*. Pay careful attention to all Warnings and Cautions.



Steps

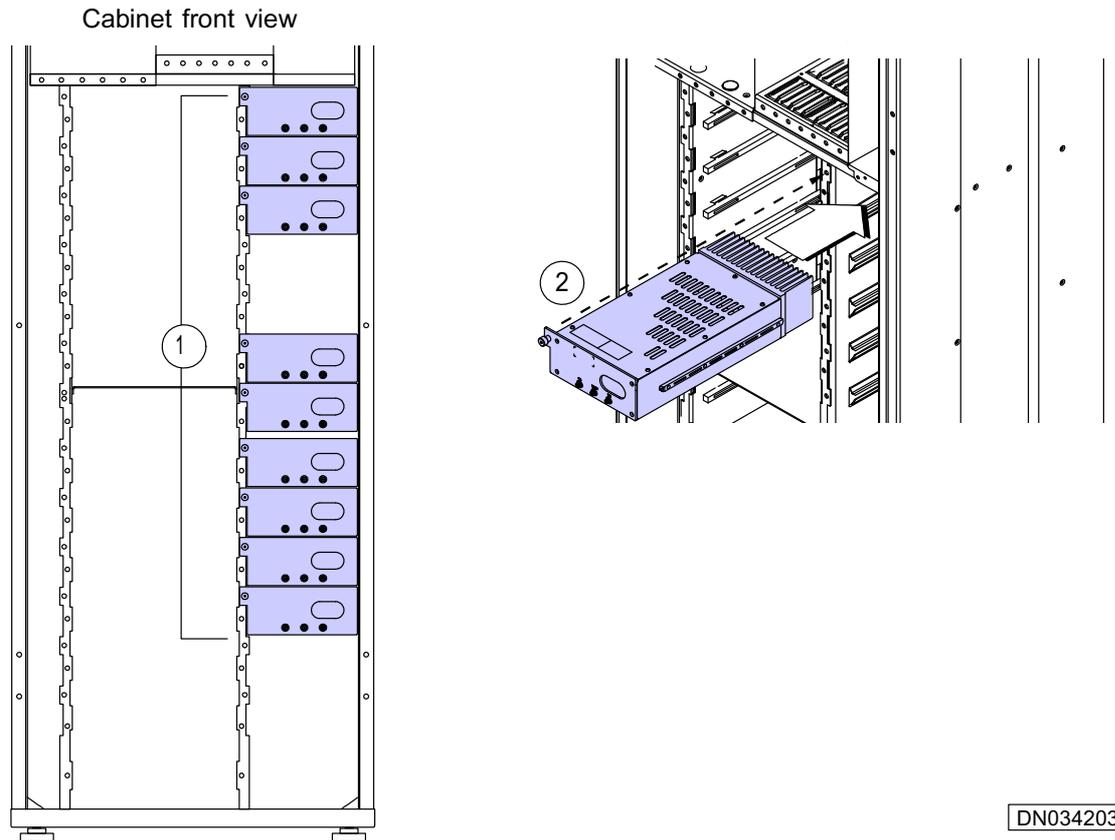
1. **Remove the faulty WCxA unit from UltraSite EDGE BTS**
2. **Install the new WCxA unit in UltraSite EDGE BTS**
3. **Unblock the TRXs associated with the WCxA unit**
Blocking and unblocking a TRX
4. **Make a test call on the TRXs**
5. **Leave the site**

8.3.2 Removing a Wideband Combiner (WCxA) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	WCxA
2	WCxA

Figure 18. WCxA unit replacement



Steps

- 1. Block the TRXs associated with the WCxA unit either locally or from the BSC.**

Block the TRXs associated with the WCxx unit to be removed either locally with Nokia BTS Manager, or request TRX lock from the BSC.

- 2. Note the unit cable configuration.**

3. **Disconnect the unit cables.**
4. **Loosen the unit retaining screws with a T20 Torx driver.**
5. **Remove the WCxA unit.**

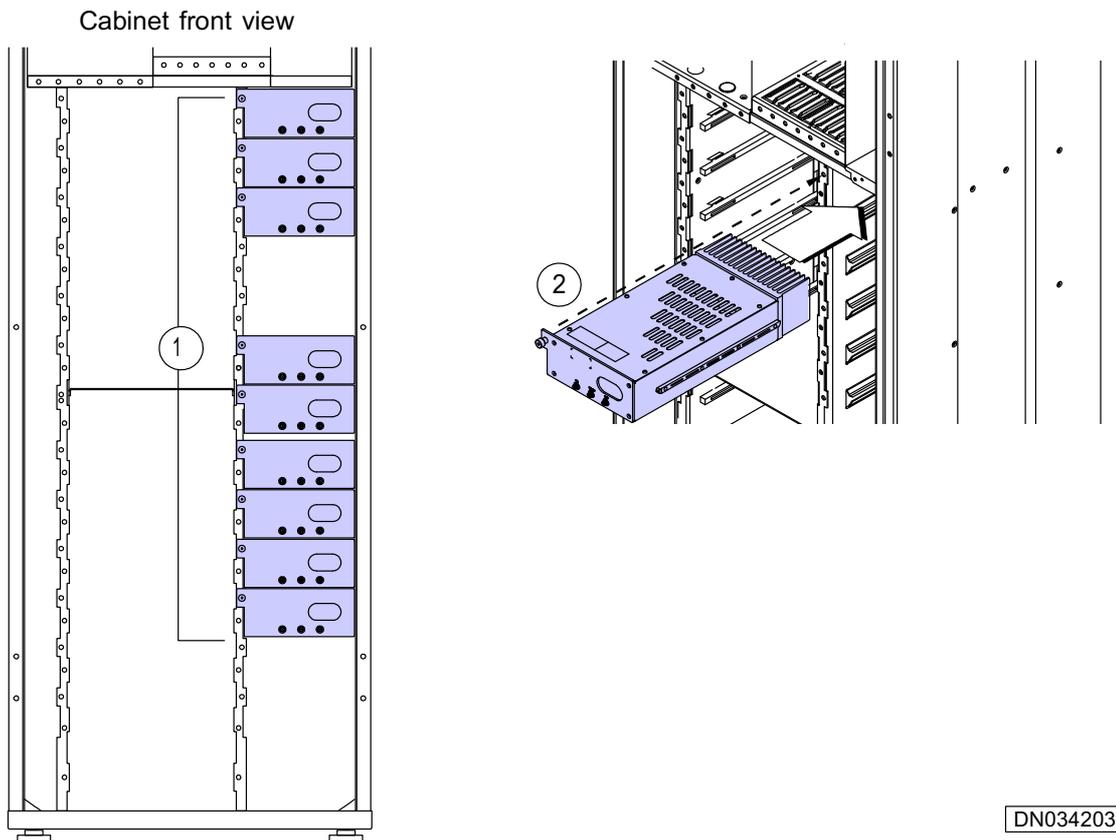
8.3.3 Installing a Wideband Combiner (WCxA) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

The cabinet holds a maximum of nine WCxA units.



1	WCxA
2	WCxA

Figure 19. WCxA unit installation



Steps

1. Use the handles on the front of the unit to slide the unit into the cabinet core.
2. Check that the rear connections are fully engaged.
3. Tighten the unit retaining screw.
See Torque settings of UltraSite EDGE BTS.
4. Repeat steps 1 through 3 for each additional WCxA unit.
5. Connect the unit cables.
6. Unblock the BCF either locally using Nokia BTS Manager or from the BSC.
7. Make a test call on the TRXs.

8.4 Replacing a Remote Tune Combiner unit

8.4.1 Replacing a Remote Tune Combiner (RTxx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary

Note

To prevent traffic interruption following replacement of RTxx units, Nokia recommends that you should not perform Hot insertion of RTxx units.



Steps

1. **Remove the faulty RTxx unit from UltraSite EDGE BTS**
2. **Install the new RTxx unit in UltraSite EDGE BTS**
3. **Switch the PWSx unit to ON**
4. **Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTS Manager, or request BCF unlock from the BSC.

5. **Make a test call on the TRXs**
6. **Leave the site**

8.4.2 Removing a RTxx unit from UltraSite EDGE BTS

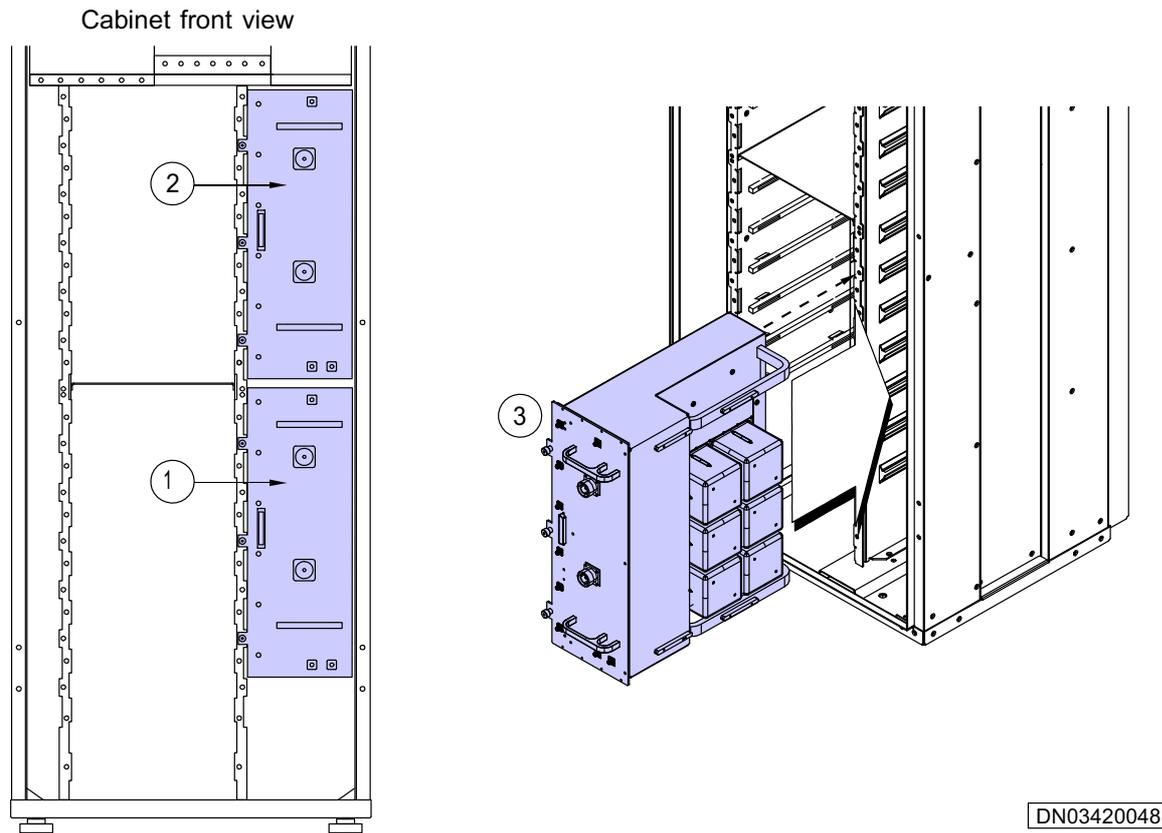
Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Note

To prevent traffic interruption following replacement of RTxx units, Nokia recommends that you should not perform Hot insertion of RTxx units.



1	RTxx #2
2	RTxx #1
3	RTxx

Figure 20. RTxx unit replacement



Steps

- 1. Notify the appropriate personnel and block the BCF either locally or from the BSC.**

Block the BCF locally with Nokia BTS Manager or request BCF lock from the BSC.

2. **Switch the PWSx units to standby mode.**
3. **Note the unit cable configuration.**
4. **Disconnect the unit cables.**
5. **Loosen the unit retaining screws with a T20 Torx driver.**
6. **Remove the RTxx unit.**

8.4.3 Installing a Remote Tune Combiner (RTxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

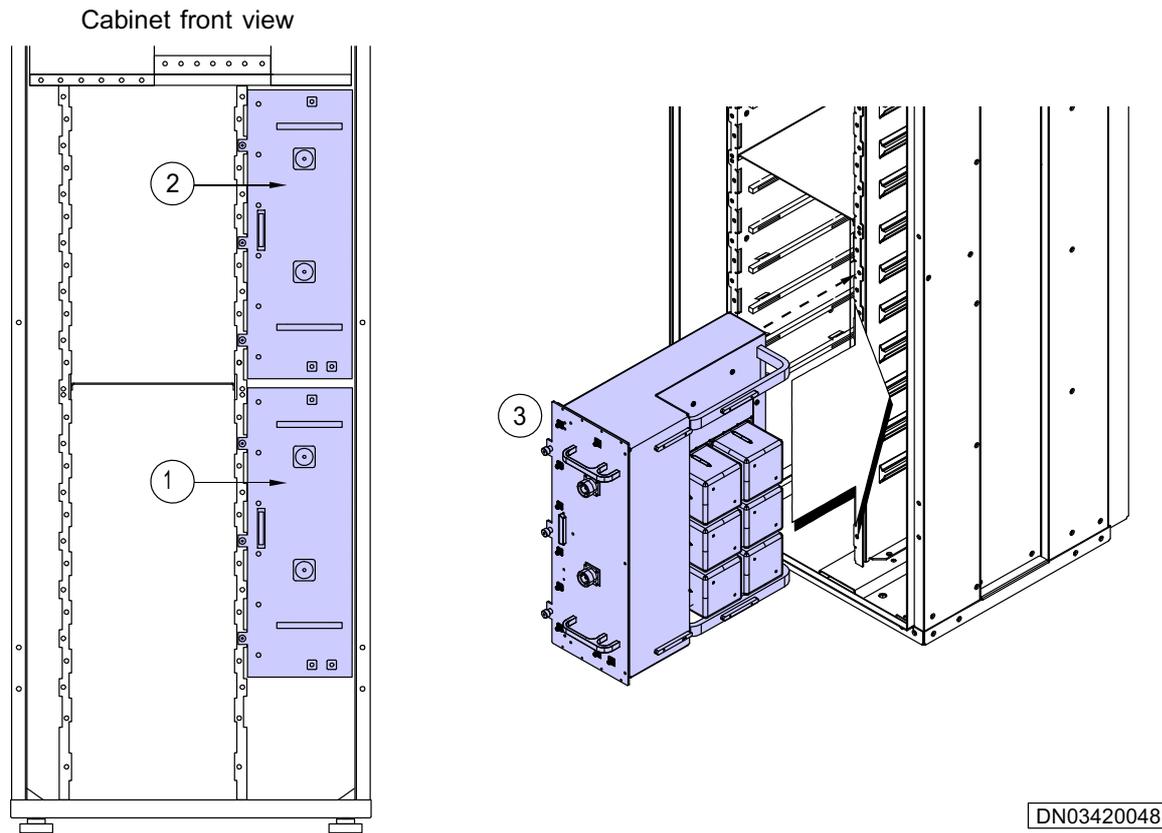
Summary



Warning

Electrical hazards exist while installing RTxx cables to the RFU backplane of a powered UltraSite EDGE BTS. Ensure the cable being connected is held clear of all conductive surfaces during installation.

Two slots are available for RTxx units (upper and lower).



1	RTxx #2
2	RTxx #1
3	RTxx

Figure 21. RTxx unit installation



Steps

1. **Align the top and bottom RTxx unit guides with those on the rack.**
2. **Use the handles on the front of the unit to slide the unit into the cabinet.**
3. **Check that the rear connectors are fully engaged.**

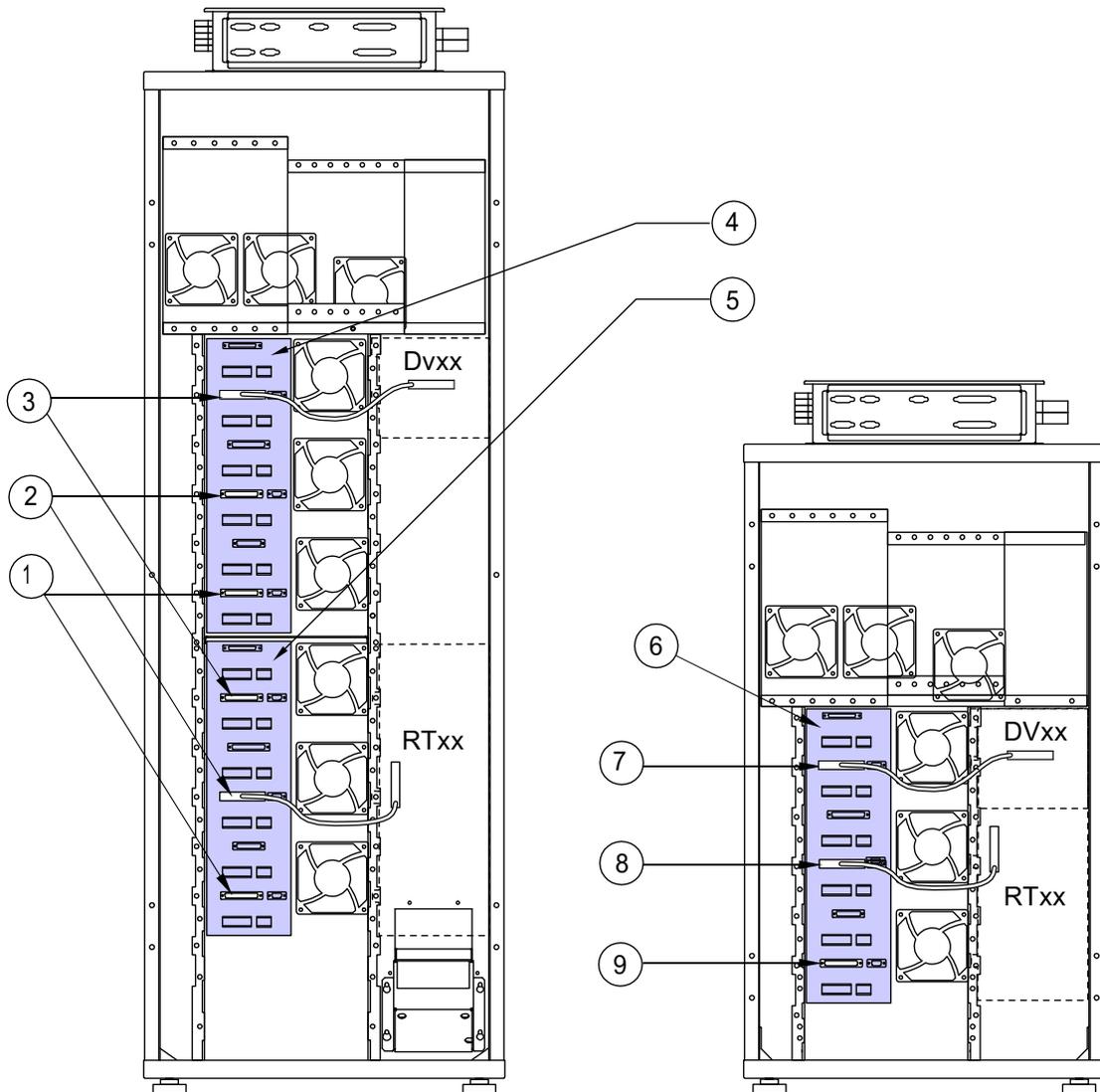
- 4. Tighten the unit retaining screws.**

See Torque settings of UltraSite EDGE BTS.

- 5. Connect the RTxx cable from the X14 connector on the RFU backplane to the RTxx unit.**
-

Note

You can only connect the RTxx cable to the centre D-37 connector on each RFU backplane, as shown in the following figure.



DN03419022

UltraSite cabinet core

UltraSite MIDI cabinet core

1	X23
2	X14
3	X5
4	Upper RFU backplane
5	Lower RFU backplane

6	RFU backplane
7	X5
8	X14
9	X23

Figure 22. Installation of DVxx or RTxx power supply cables to the RFU backplane

- Repeat steps 1 through 5 for each additional RTxx unit.

8.5 Replacing a Dual Variable Gain Duplex Filter unit

8.5.1 Replacing a Dual Variable Gain Duplex Filter (DVxx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

- Remove the faulty DVxx unit from UltraSite EDGE BTS**
- Install the new DVxx unit in UltraSite EDGE BTS**
- Switch the PWSx units to ON**
- Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTS Manager or request BCF unlock from the BSC.

- Make a test call to the associated TRXs**
- Leave the site**

8.5.2 Removing a Dual Variable Gain Duplex Filter (DVxx) unit from UltraSite EDGE BTS

Before you start

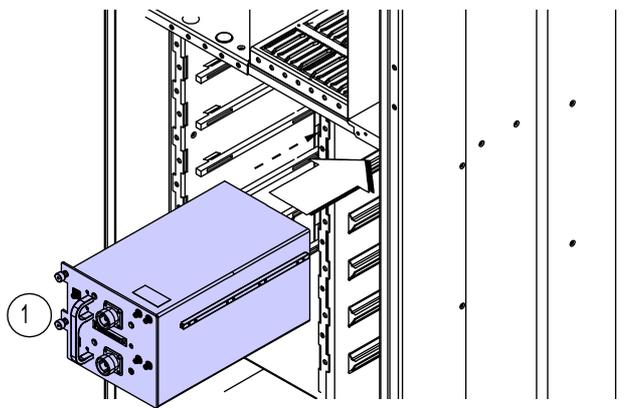
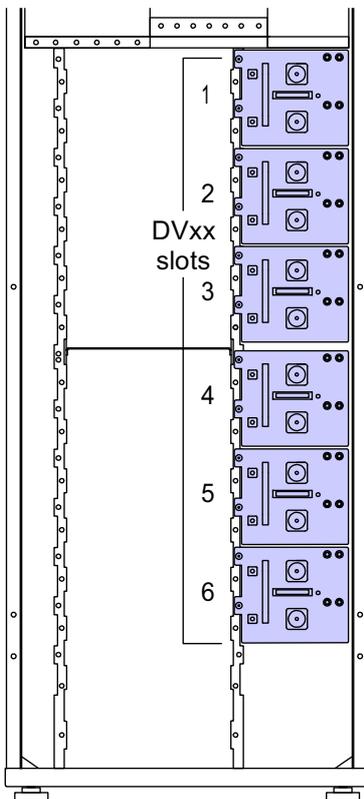
Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Note

To prevent traffic interruption following replacement of DVxx units, Nokia recommends that that you should not perform Hot insertion of DVxx units.

Cabinet front view



DN03418771

1DVxx

Figure 23. DVxx unit replacement

**Steps**

1. **Notify the appropriate personnel and block the BCF either locally or from the BSC.**

Block the BCF locally with Nokia BTS Manager or request BCF lock from the BSC.

2. **Switch the PWSx units to standby mode.**
3. **Note the unit cable configuration.**
4. **Disconnect the unit cables.**
5. **Loosen the unit retaining screws with a T20 Torx driver.**
6. **Remove the DVxx unit.**

8.5.3 Installing a Dual Variable Gain Duplex Filter (DVxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

**Warning**

Electrical hazards exist if removing or installing DVxx cables to the RFU backplane of a powered Nokia BTS. Hold cable being connected clear of all conductive surfaces during installation.

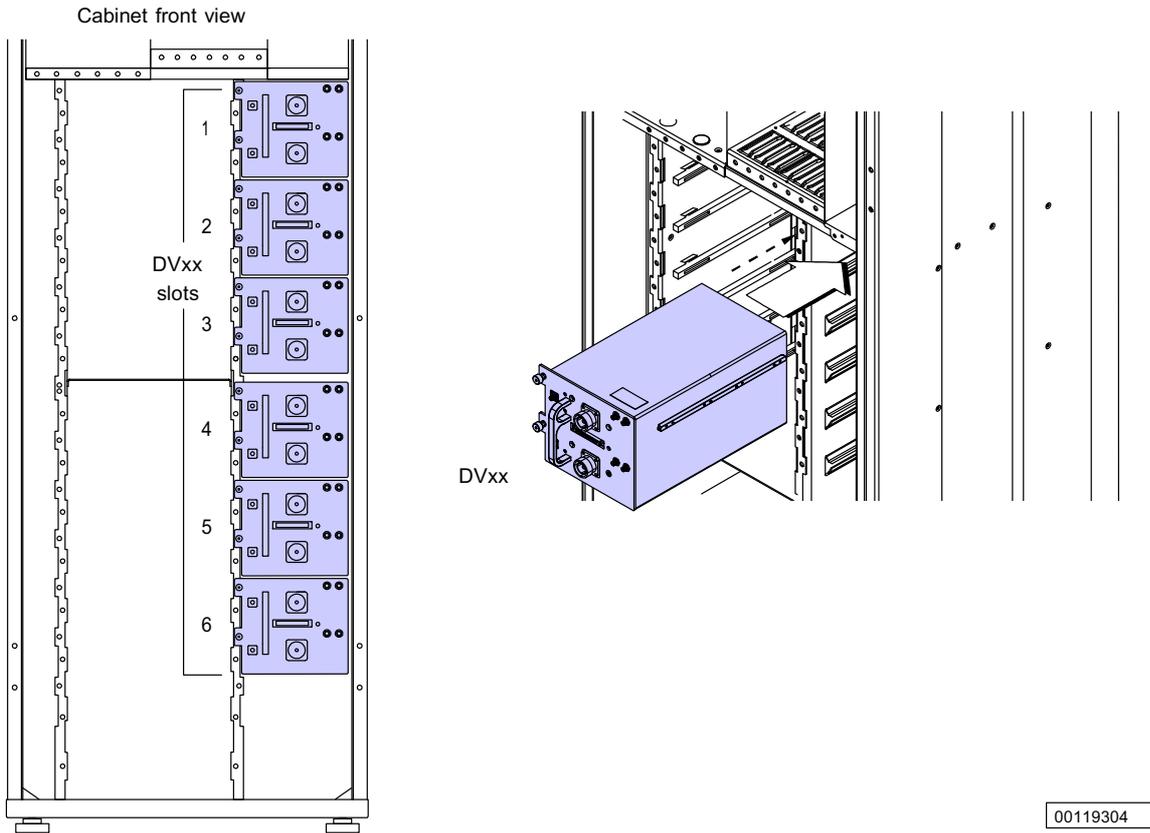


Figure 24. DVxx unit installation

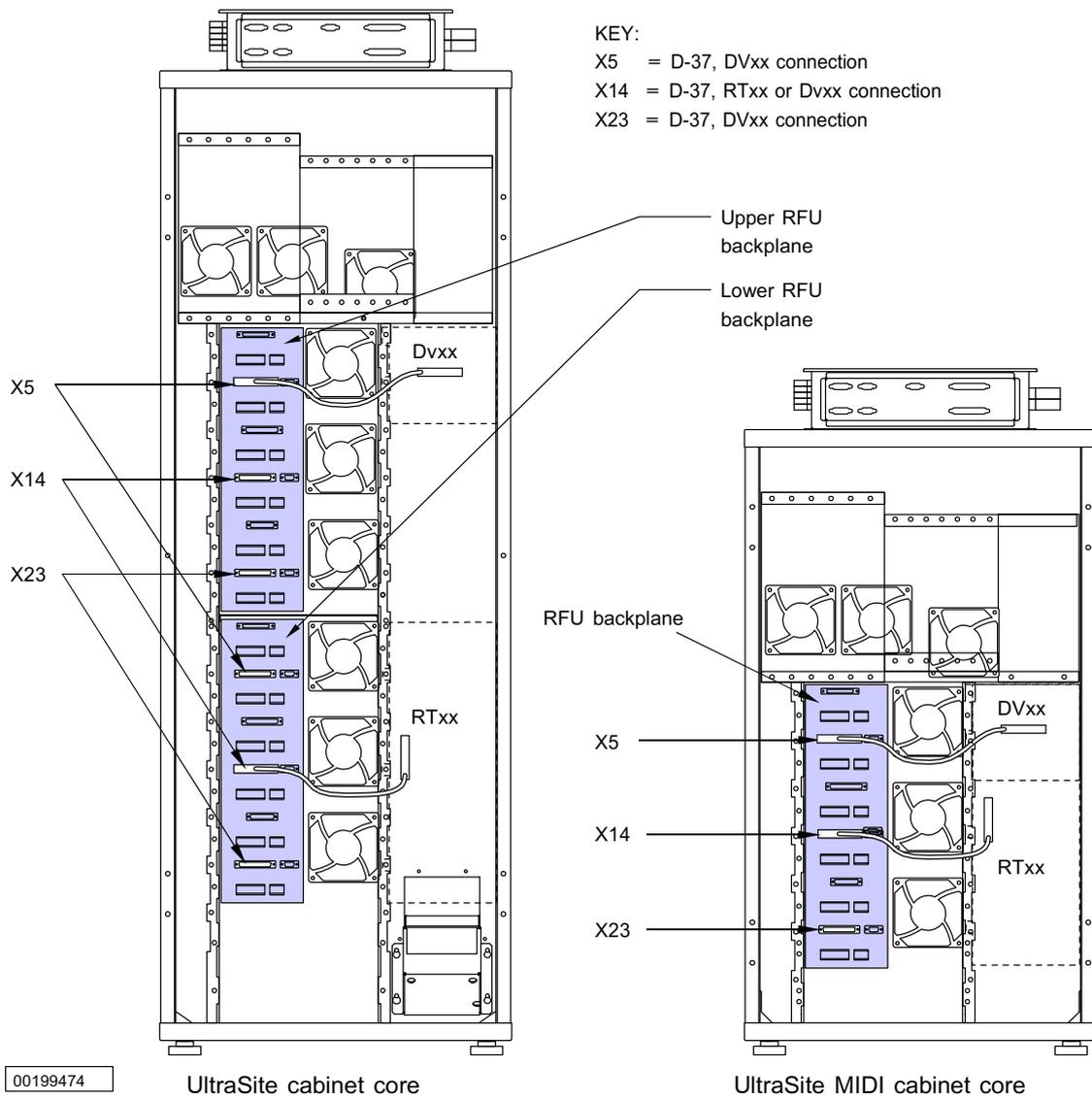


Figure 25. Installation of DVxx or RTxx power supply cables to the RFU backplane

The cabinet provides slots for up to six DVxx units, three in the upper and three in the lower right area of the cabinet.



Steps

1. Align the top and bottom RTxx unit guides with those on the rack.

2. Use the handles on the front of the unit to slide the unit into the cabinet.
3. Check that the rear connectors are fully engaged.
4. Tighten the unit retaining screws.

See Torque settings of UltraSite EDGE BTS.
5. Remove the connector cap on the backplane.
6. Connect the DVxx cable from the X14 connector on the RFU backplane to the DVxx unit.
7. Repeat steps 1 through 6 for each additional DVxx unit.

8.6 Replacing a Dual Band Diplex Filter unit

8.6.1 Replacing a Dual Band Diplex Filter (DU2A) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. Remove the faulty DU2A unit from UltraSite EDGE BTS
2. Install the new DU2A unit in UltraSite EDGE BTS
3. Power ON the UltraSite EDGE BTS
4. Unblock the BCF either locally or from the BSC

Unblock the BCF locally with Nokia BTS Manager or request BCF unlock from the BSC.

5. Make a test call on the associated TRXs
6. Leave the site

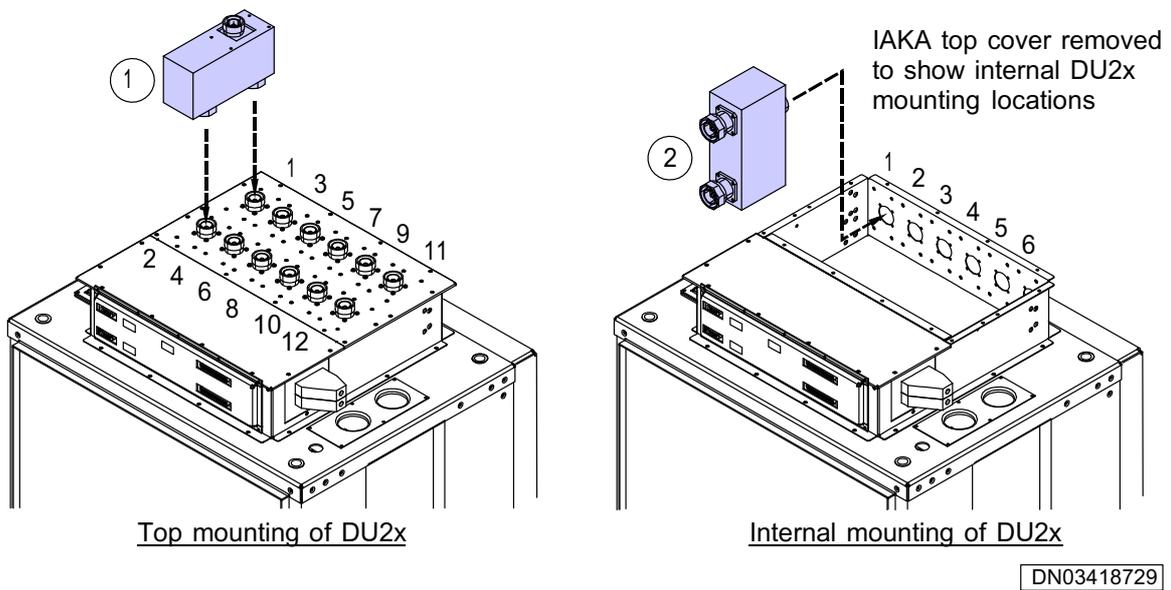
8.6.2 Removing a Dual Band Diplex Filter (DU2A) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

The DU2A unit is mounted on top of the BTS cabinet.



1	DU2x
2	DU2x

Figure 26. DU2A installation in Indoor cabinet

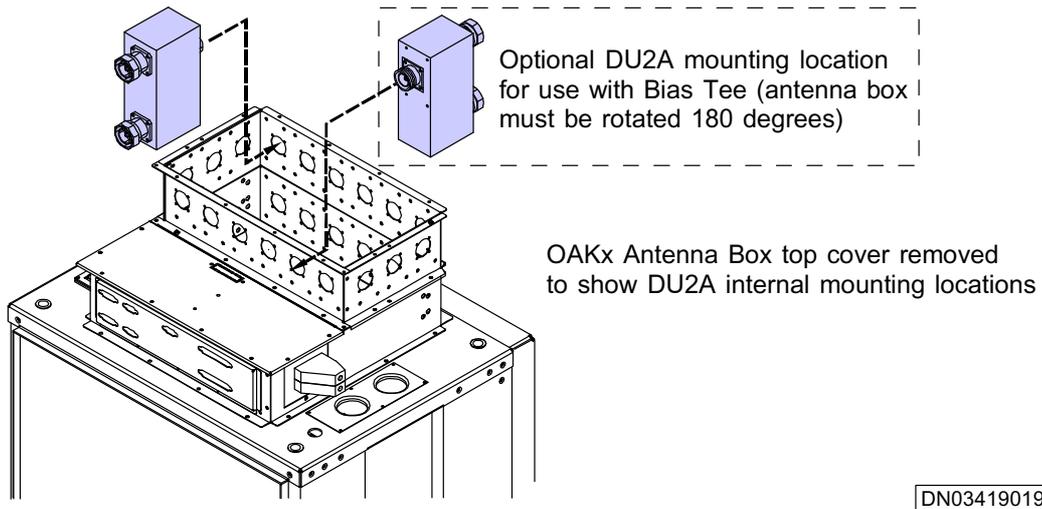


Figure 27. Installation of DU2A to Outdoor cabinet



Steps

1. Block the BCF locally or from the BCS.

Block the BCF locally with Nokia BTS Manager or request BCF lock from the BSC.

2. Power down the UltraSite EDGE BTS.

3. To remove DU2A units from the outside of the IAKx antenna box.

- a. On top of the antenna box, loosen the antenna cable from the DU2A unit.
- b. Remove the DU2A unit from the antenna connectors.
- c. Repeat steps 1 through 2 for additional DU2A units.

4. To remove DU2A units from inside the IAKx antenna box.

- a. Remove the antenna box cover.
- b. Loosen and remove the site antenna cable(s) to the DU2A unit.
- c. Remove the four screws that secure the pass-through plate on the antenna box.
- d. Remove the connector from the pass-through plate.

- e. Remove the DU2A unit from inside the antenna box.
- f. Repeat steps a through e for additional DU2A units.
- g. Replace the antenna box cover.

5. Remove DU2A from the OAKx antenna box.

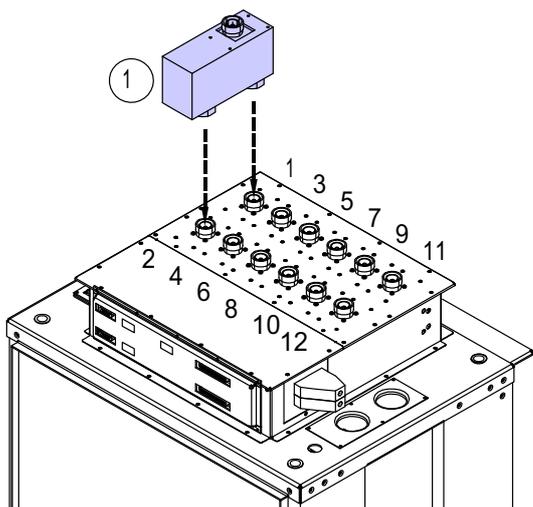
- a. Remove the antenna box cover.
- b. Loosen the site antenna cable(s) to the DU2A unit.
- c. Remove the four screws that secure the pass-through plate on the antenna box.
- d. Remove the connector from the pass-through plate.
- e. Remove the DU2A unit from the antenna box.
- f. Repeat steps b through e for each additional DU2A unit.
- g. Replace the antenna box cover.

8.6.3 Installing a Dual Band Diplex Filter (DU2A) unit in UltraSite EDGE BTS

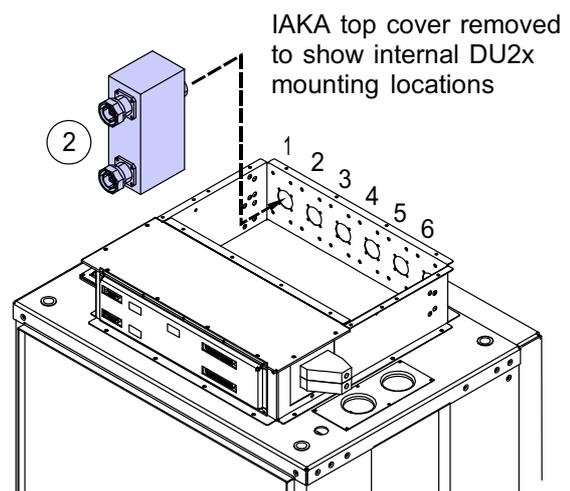
Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Top mounting of DU2x



Internal mounting of DU2x

DN03418729

1	DU2x
2	DU2x

Figure 28. DU2A unit installation in Indoor cabinet

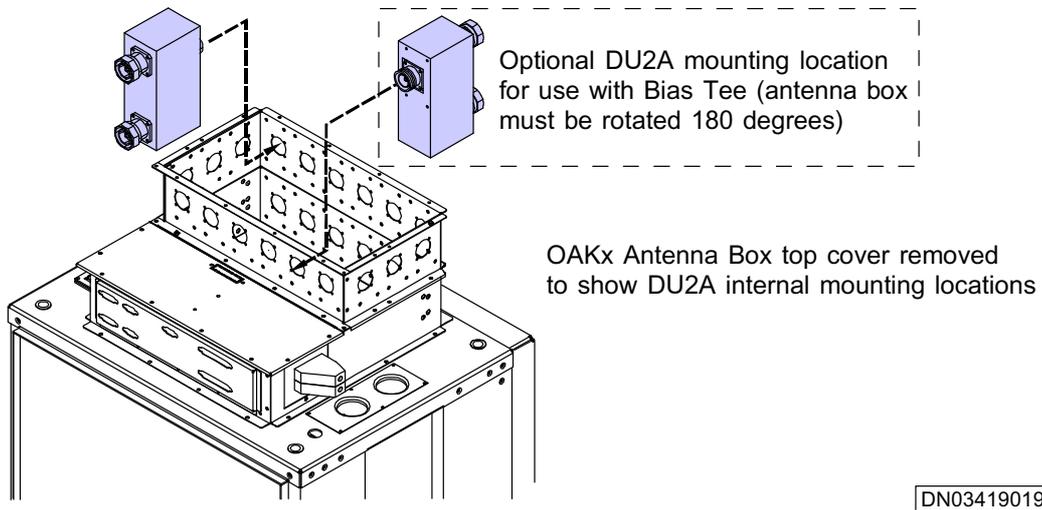


Figure 29. Installation of DU2A unit to Outdoor cabinet

You can install up to six DU2A units to the inside of the OAKx antenna box, or to the inside or outside of the IAKx antenna box, depending on your space requirements.



Steps

1. **Installing DU2A unit to the outside of the IAKx antenna box.**
 - a. Mount the DU2A unit to the antenna connectors on top of the antenna box.
 - b. Tighten the antenna cable to the DU2A unit.
See *Torque settings* .
 - c. Repeat steps 1(a) through 2(b) for additional DU2A units.
2. **Installing DU2A unit inside the IAKx antenna box.**

- a. Remove the antenna box cover.
- b. Mount the DU2A unit to the inside of the antenna box.
- c. Insert the four retaining screws into the DU2A unit through the screw holes in the antenna box.
- d. Tighten the site antenna cable(s) to the DU2A unit. See *Torque settings* .
- e. Repeat steps 2(b) through 4(d) for each additional DU2A unit.
- f. Replace the antenna box cover.

3. Installing DU2A to an outdoor cabinet.

- a. Remove the antenna box cover.
- b. Mount the unit to the rear of the antenna box.
- c. Insert the four retaining screws into the DU2A unit through the screw holes in the antenna box.
- d. Tighten the site antenna cable(s) to the DU2A unit.
See *Torque settings*.
- e. Repeat steps 2(b) through 4(d) for each additional DU2A unit.
- f. Replace the antenna box cover.

8.7 Replacing a Transceiver unit

8.7.1 Replacing a Transceiver (TSxx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary



Caution

To prevent damage to the backplane connector when removing Transceiver units, ensure the unit is pulled straight out from the backplane with no upward force.

Note

Over tightening causes stress on the connectors. Make sure a gap of 1.0 to 3.0 mm exists between the front flange of the unit and the cabinet when tightened.

Note

If you want to run the TRX test locally, the TRX must be blocked during the test. If you want to run the TRX test remotely, you must do it after you unblock the site.

**Steps**

1. **Remove the faulty TSxx unit from UltraSite EDGE BTS**
2. **Install the new TSxx unit in UltraSite EDGE BTS**
3. **Power ON the UltraSite EDGE BTS**
4. **Unblock the TRXs associated with the TSxx unit**
Blocking and unblocking a TRX
5. **Make a test call on the TRXs**
6. **Leave the site**

8.7.2 Removing a Transceiver (TSxx) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

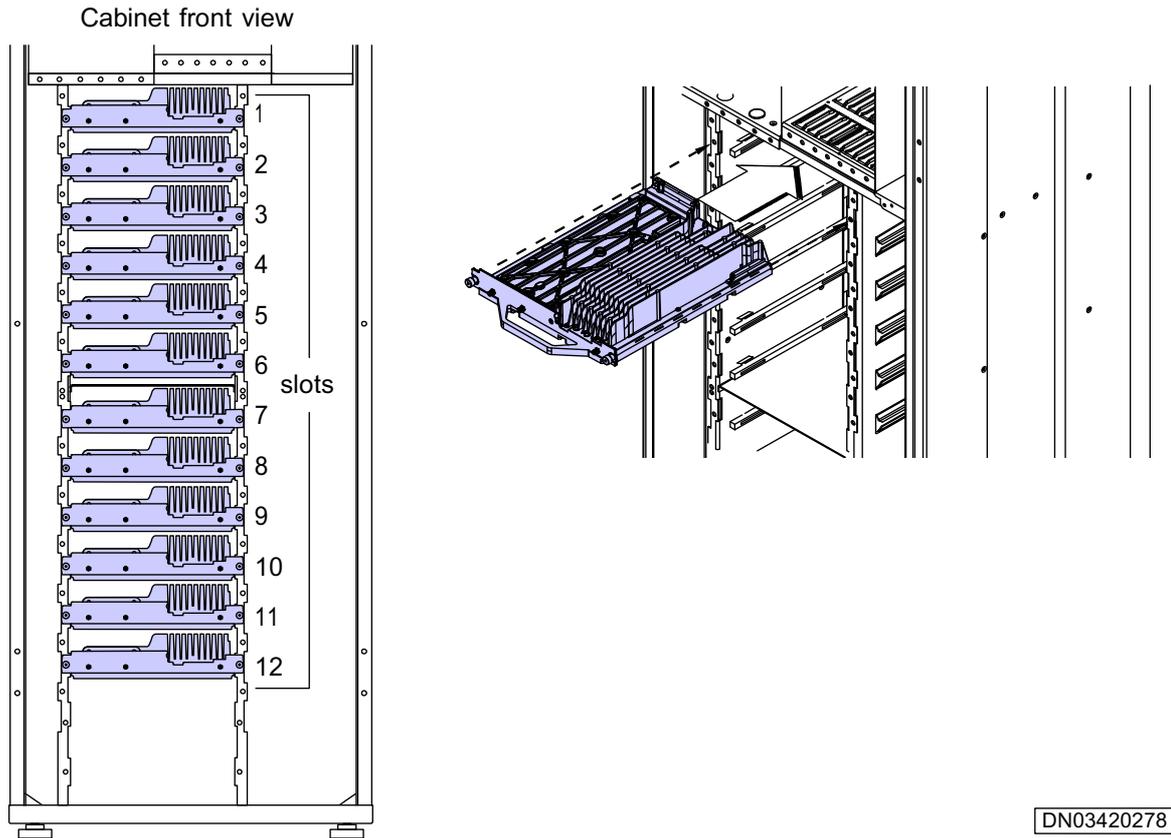


Figure 30. TCxx unit removal



Steps

1. **Block the TRX associated with the TSxx unit.**
Use Nokia BTS Manager or request TRX lock from the BSC.
2. **Note the TSxx unit cable configuration.**
3. **Disconnect the TSxx unit cables.**
4. **Loosen the unit retaining screws with a T20 Torx driver.**
5. **Remove the TSxx unit.**

8.7.3 Installing a Transceiver (TSxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing units*. Pay careful attention to all warnings and cautions.

Summary



Caution

Do not use force to insert the TSxx unit. The connector pins are fragile and may be damaged.

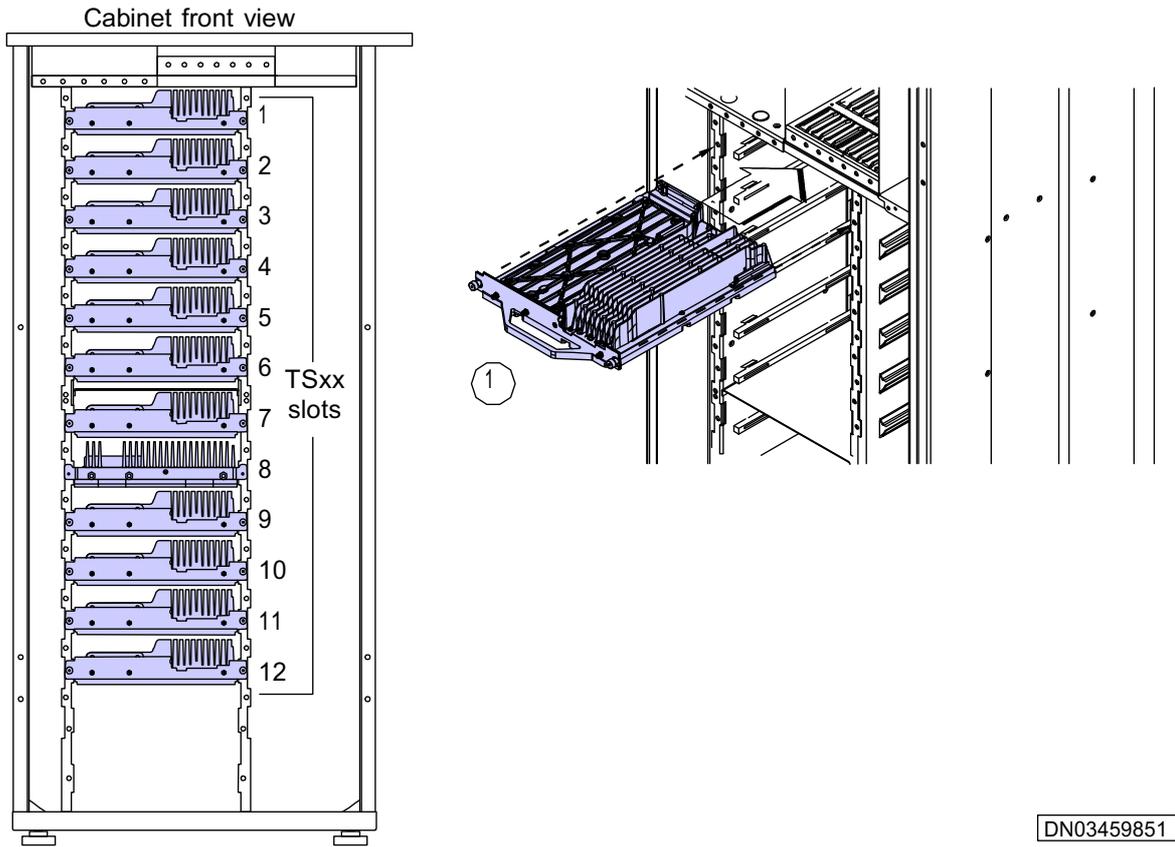


Caution

To prevent damage to the backplane connector when removing Transceiver units, ensure the unit is pulled straight out from the backplane with no upward force.

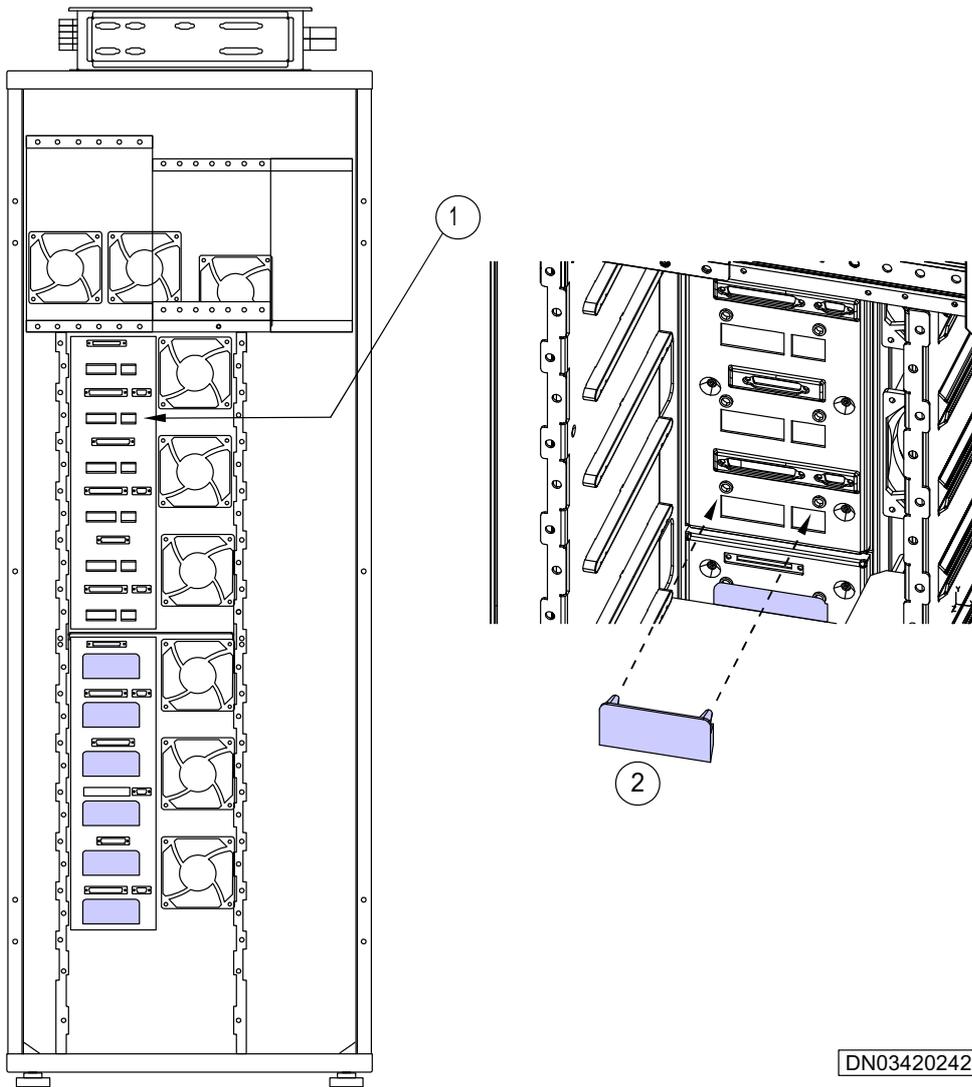
Note

A connector cap is only necessary for outdoor installations.



1	TSxx
---	------

Figure 31. TSxx unit installation



DN03420242

1	TSxx connector (12 places per cabinet)
2	TSxx connector cap

Figure 32. TSxx connector cap installation

The Transceiver (TSxx) unit consists of one transmitter, one main receiver, and one diversity receiver. The slots in the middle of the cabinet can hold up to 12 TSxx units from top to bottom.

**Steps**

1. **Insert the TSxx unit into a free slot.**
2. **Hand tighten the retaining screws.**

See Torque settings.

3. **Repeat steps 1 and 2 for each additional TSxx unit.**
4. *If An outdoor kit (OAKx) is used*

Then

Place one connector cap on each unused connector slot.

8.8 Replacing a Receiver Multicoupler unit

8.8.1 Replacing an Receiver Multicoupler (MxxA) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty M2xA or M6xA unit from UltraSite EDGE BTS**
2. **Install the new M2xA or M6xA unit in UltraSite EDGE BTS**
3. **Power ON the UltraSite EDGE BTS**
4. **Unblock the TRXs associated with the M2xA or M6xA unit**

Blocking and unblocking a TRX

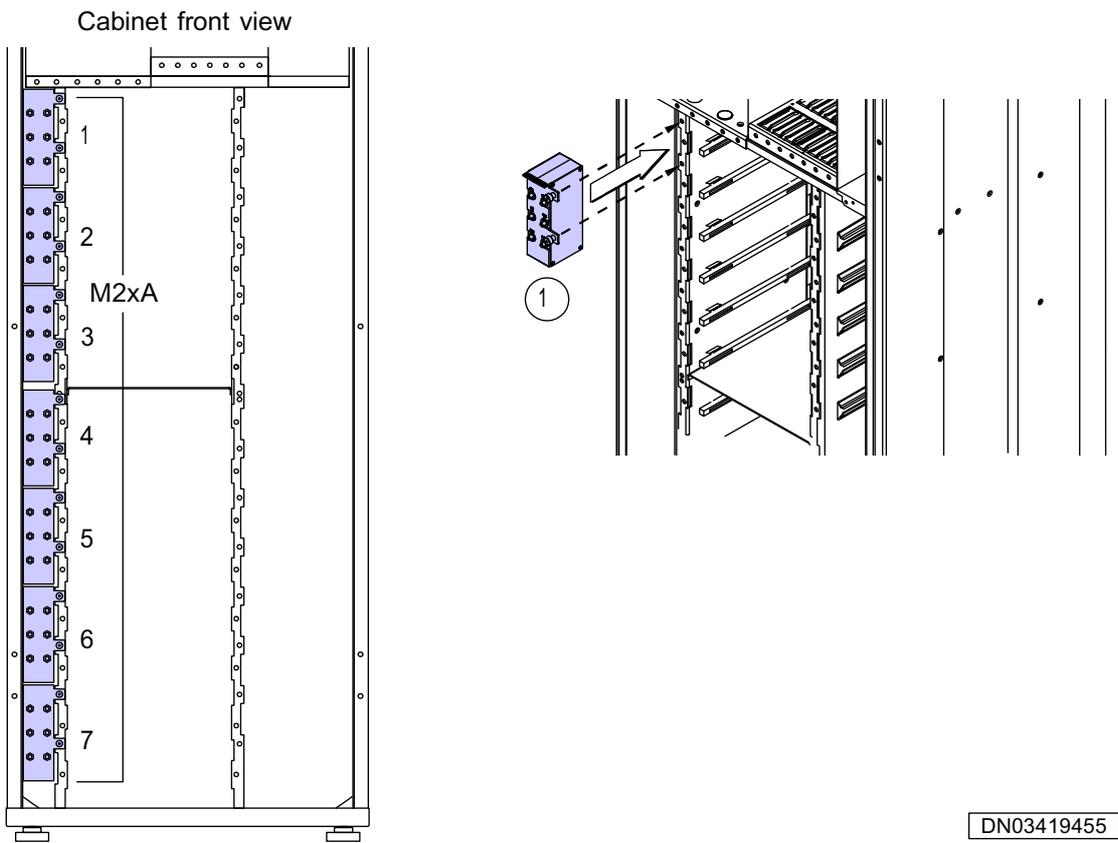
5. **Make a test call on the TRXs**
6. **Leave the site**

8.8.2 Removing a Receiver Multicoupler (MxxA) unit from UltraSite EDGE BTS

Before you start

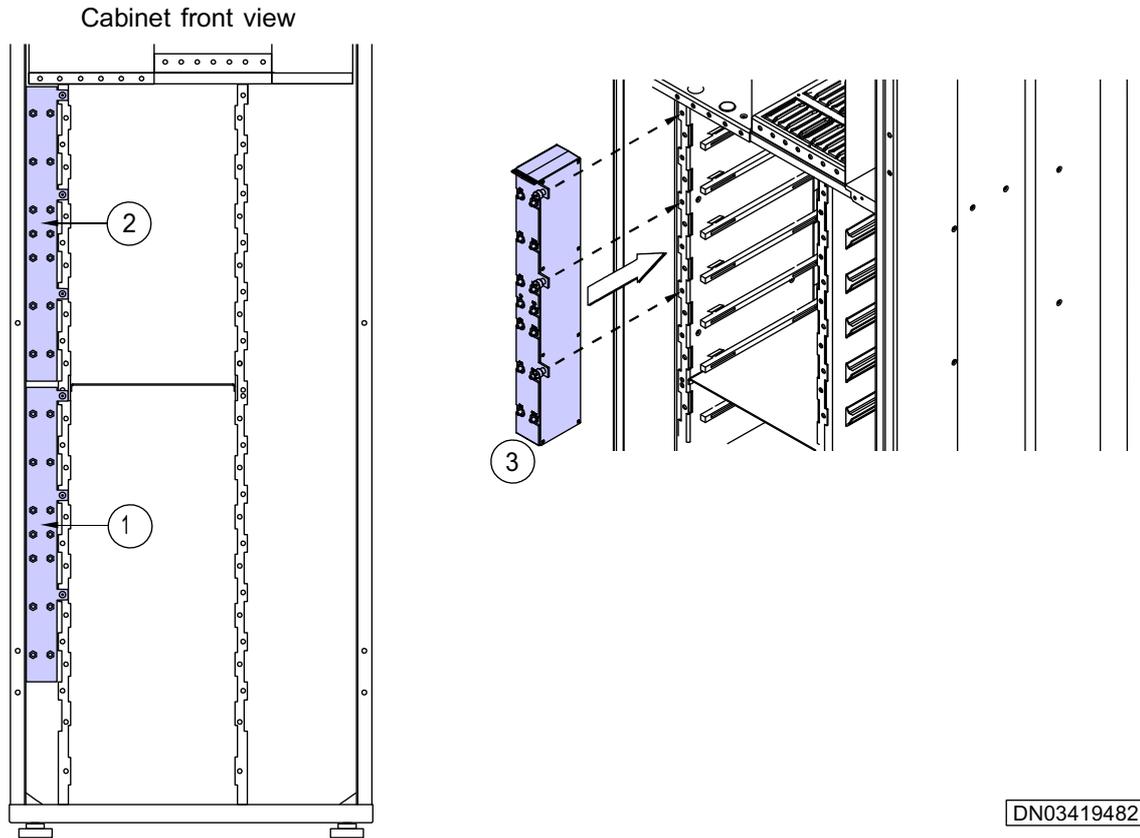
Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	M2xA
---	------

Figure 33. M2xA unit replacement



1	M6xA #2
2	M6xA #1
3	M6xA

Figure 34. M6xA unit replacement



Steps

- 1. Block the TRXs associated with the M2xA or M6xA locally or from the BSC.**

Block the TRXs associated with the M2xA or M6xA to be removed with Nokia BTS Manager or request TRX lock from the BSC.

- 2. Note the unit cable configuration.**

3. Disconnect the unit cables.
4. Loosen the unit retaining screws with a T20 Torx driver.
5. Remove the M2xA or M6xA unit.

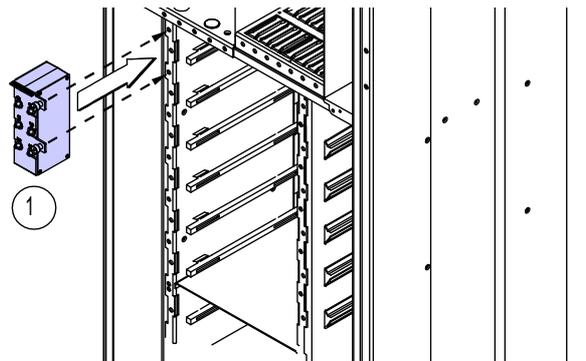
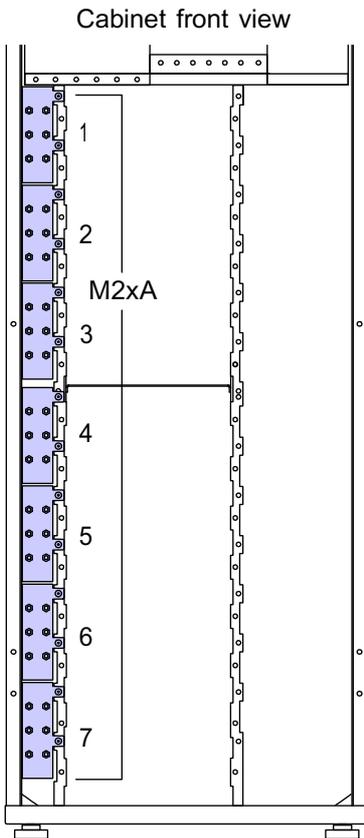
8.8.3 Installing a Receiver Multicoupler (M2xA or M6xA) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

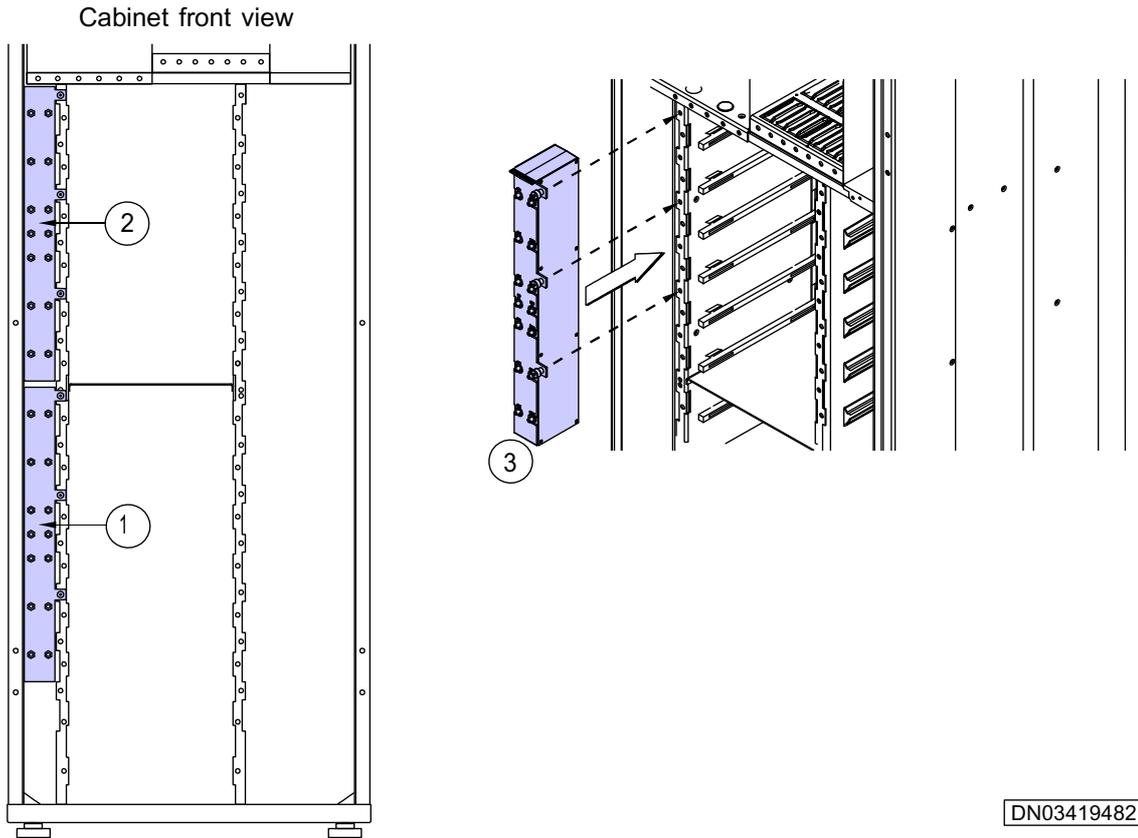
The cabinet core holds up to seven M2xA units or two M6xA units (on the left side).



DN03419455

1	M2xA
---	------

Figure 35. M2xA unit installation



1	M6xA #2
2	M6xA #1
3	M6xA

Figure 36. M6xA unit installation



Steps

1. **Mount the unit in the left front area of the cabinet.**
2. **Tighten the unit retaining screws. See Torque settings of UltraSite EDGE BTS.**
3. **Repeat steps 1 through 2 for each additional M2xA or M6xA unit.**

8.9 Replacing a Base Operations and Interfaces unit

8.9.1 Replacing a Base Operations and Interfaces (BOIx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary

Note

Over tightening causes stress on the connectors. Make sure a gap of 1.0 to 3.0 mm exists between the front flange of the unit and the cabinet when tightened.



Steps

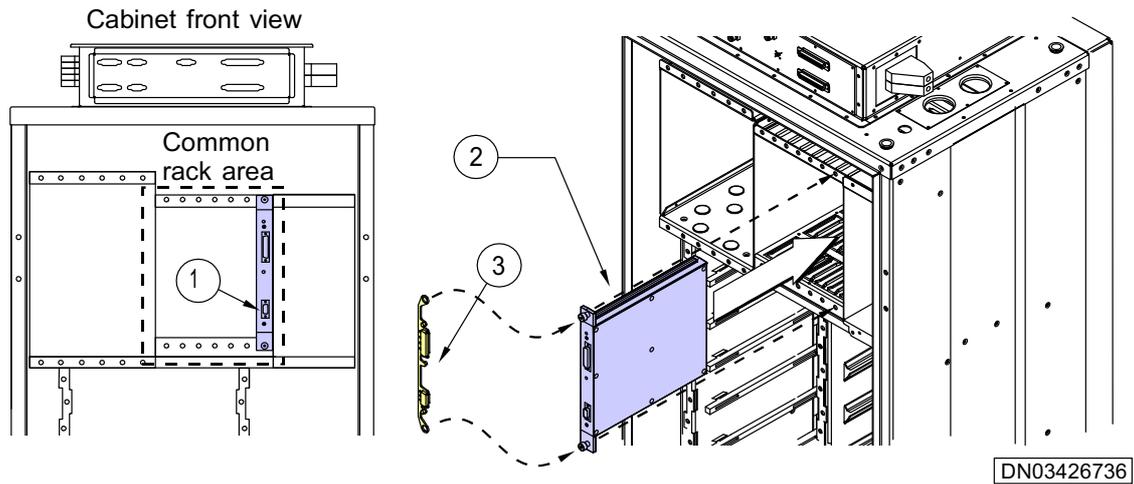
1. **Remove the faulty BOIx unit from UltraSite EDGE BTS**
2. **Install the new BOIx unit in UltraSite EDGE BTS**
3. **Power ON the UltraSite EDGE BTS**
4. **Unblock the TRXs associated with the BOIx unit**
Blocking and unblocking a TRX
5. **Make a test call on the TRXs**
6. **Leave the site**

8.9.2 Removing a Base Operations and Interfaces (BOIx) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	BOIx
2	BOIx
3	Rubber cover

Figure 37. BOIx unit replacement



Steps

- 1. Block the BCF locally or from the BSC.**

Block the BCF locally with Nokia BTS Manager, or request BCF lock from the BSC.

- 2. Loosen the upper and lower retaining screws on the unit.**

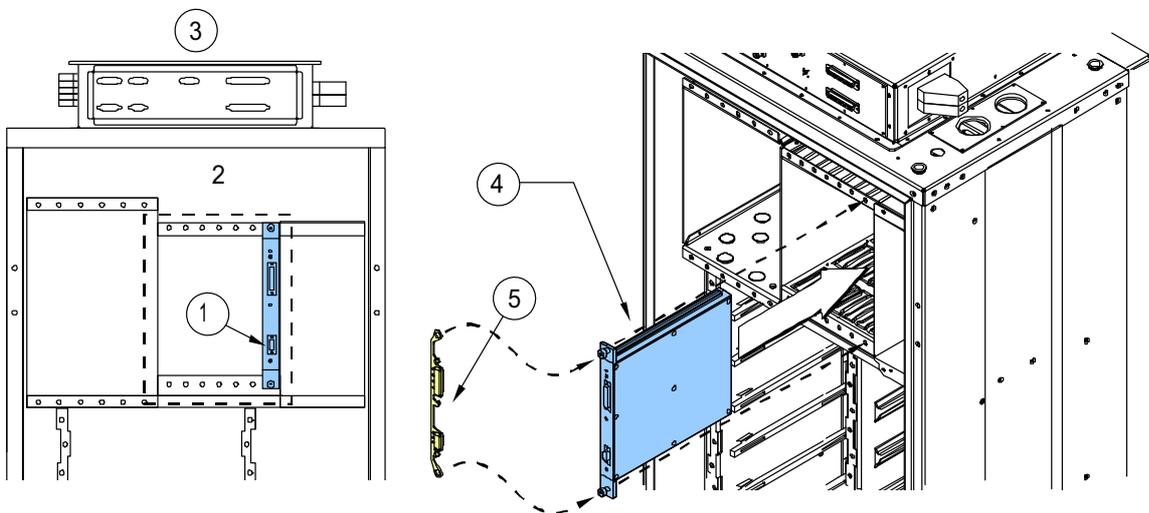
3. Remove the BOIx unit.

8.9.3 Installing a Base Operations and Interfaces (BOIx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



DN03418292

1	BOCA
2	Common rack area
3	Cabinet front view
4	BOCA
5	Rubber cover

Figure 38. BOIx unit installation

**Steps**

1. **Insert the BOIx unit into the far right slot of the common rack area of the cabinet.**
2. **Attach a rubber cover to the BOIx unit.**
3. **Tighten the retaining screws.**

See *Torque settings* .

8.10 Replacing a Transceiver Baseband unit

8.10.1 Replacing a Transceiver Baseband (BB2x) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary

**Caution**

To prevent damage to the backplane connector when removing Transceiver units, ensure the unit is pulled straight out from the backplane with no upward force.

Note

Over tightening causes stress on the connectors. Make sure a gap of 1.0 to 3.0 mm exists between the front flange of the unit and the cabinet when tightened.

Note

If you want to run the TRX test locally, the TRX must be blocked during the test. If you want to run the TRX test remotely, you must do it after you unblock the site.



Steps

1. **Remove the faulty BB2x unit from UltraSite EDGE BTS**
2. **Install the new BB2x unit in UltraSite EDGE BTS**
3. **Power ON the UltraSite EDGE BTS**
4. **Unblock the TRXs associated with the BB2x unit**

Blocking and unblocking a TRX

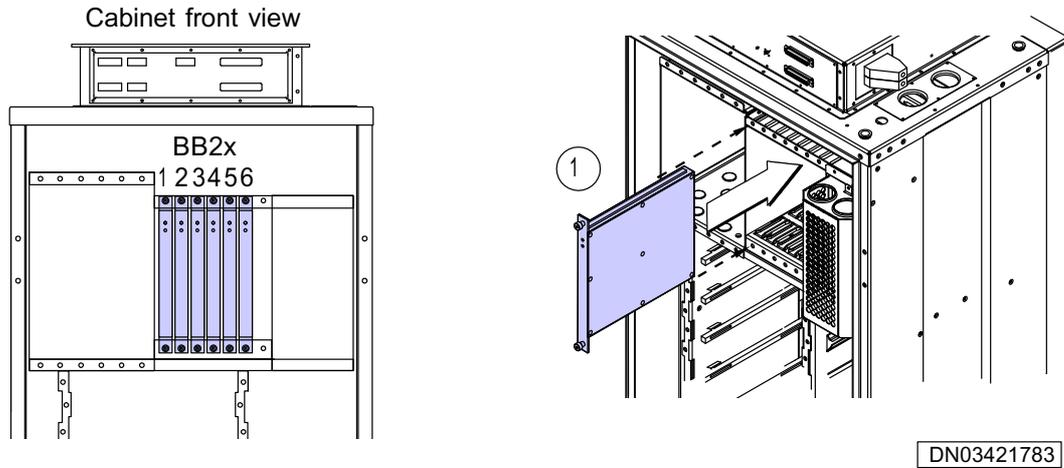
5. **Make a test call on the TRXs**
6. **Leave the site**

8.10.2 Removing a Transceiver Baseband (BB2x) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	BB2x
---	------

Figure 39. BB2x unit installation



Steps

1. Block the TRXs associated with the BB2x

Block the TRXs locally with Nokia BTS Manager or request BCF lock from the BSC.

Note

Use Nokia BTSManager to read the BB2x TSxx cross-connection in the BOIx to determine the TRXs you need to block.

2. Loosen the upper and lower unit retaining screws.

3. Remove the faulty BB2x unit.

8.10.3 Installing a Transceiver Baseband (BB2x) unit in UltraSite EDGE BTS

Purpose

The BB2x unit consists of two independent baseband modules. Each module functions with its respective TSxx unit. The cabinet provides slots from left to right for up to six BB2x units.

Before you start



Caution

This unit is sensitive to Electro Static Discharge (ESD). Proper ESD handling procedures must be used when installing this unit.



Caution

Ensure no BB2x unit is installed in the far right slot of the common subrack area. This position is only for installation of a BOIx unit.

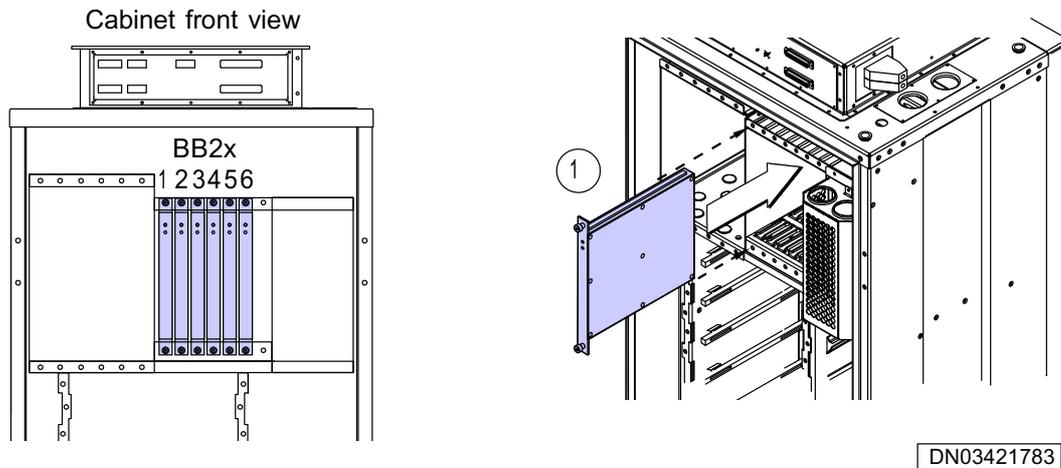
Note

BB2x units can be in any position when flexible cross-connects are used. Installation must be left to right in sequential order when flexible cross-connects are not utilised.

Note

A dummy unit is required for each unused BB2x slot in an OAKx.

Summary



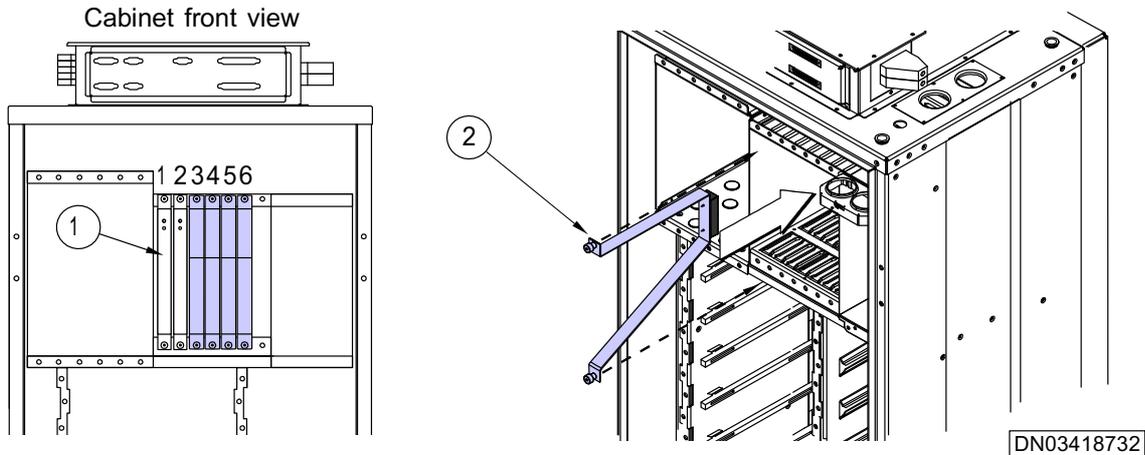
1	BB2x
---	------

Figure 40. BB2x unit installation



Steps

1. **Remove the BB2x unit from its protective package and check for visible damage.**
2. **Insert the BB2x unit into an unused slot.**
3. **Tighten the retaining screws to 1.0 Nm (0.74 ft lb) with a T20 Torx driver.**
4. **Repeat steps 1 through 3 for each additional BB2x unit.**
5. **Install dummy BB2x units, if required**



1	BB2x
2	Dummy BB2X unit

Figure 41. Dummy BB2x unit installation in an OAKx

- a. Unpack the dummy BB2x unit from its protective package and check for visible damage.
 - b. Insert the dummy unit into the unused slot.
 - c. Tighten the unit retaining screws with a T20 Torx driver.
 - d. Repeat steps a through c for additional unused slots.
6. **Recycle the packing material.**

8.11 Replacing a Transmission unit

8.11.1 Replacing a Transmission (VXxx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary

**Caution**

If replacing the FXC RRI, power off Flexbus interface with transmission unit Manager Software.

**Caution**

If disconnecting the Flexbus cable, power off Flexbus interface with transmission unit Manager Software.

Note

Before you disconnect a transmission card, notify the network operator.

Disconnecting transmission units can drop all traffic from UltraSite EDGE BTS and affect other UltraSite EDGE BTSs chained or connected to the same transmission trunk line.

Note

When replacing the FXC E1 or FC E1/T1, you can ground the outer conductor of the 75 Ω RX-connector capacitively or directly. If you remove the grounding bridge connecting the TX and RX connectors, the grounding becomes capacitive.

Note

You can install only one FC E1/T1 Transmission unit per cabinet, and you must use slot 1 (far left). You can install up to four FXC transmission units and you must install one of the units in slot 1. FC and TXC E1/T1 units cannot be used together in the same cabinet.



Steps

1. Remove the faulty VXxx unit from UltraSite EDGE BTS

Before you start

To replace a slave (other unit than in slot 1) VXxx unit:

- a. *Save the node information to a backup file*
- b. Remove the VXxx unit without uninstalling it from the node and insert the new unit. This replacement method retains the cross-connections and other node setting from the unit being replaced.

Note

If the replacement unit has been previously used in a node, the unit must be reset to Factory defaults before the setting can be restored with the **Restore Backup Settings** function.

-
- c. Select **Maintenance-Restore Backup Settings...** and select the backup file, node offline or site configuration file for the node.
 - d. Select only the unit for which the setting should be sent and click **Send**.

Note

The Restore Backup Setting feature requires that the equipping of the transmission units in UltraSite BTS hub matches the node file. Units cannot be added or removed while using Restore Backup Setting command.

To replace a master (slot 1) VXxx unit:

- a. *Save the node information to a backup file*
- b. Remove the master unit without uninstalling it from the node, and insert the new unit. Because all node setting are saved in the master unit, both the node and unit settings must be restored from the backup file.
- c. Reset the node to Factory defaults from **Maintenance-Resets...** and wait for the process to finish and for the unit to become installed again.

Note

If the replacement unit has been previously used in a node, the unit must be reset to Factory defaults before the setting can be restored with the **Restore Backup Settings** function.

- d. Select **Maintenance-Restore Backup Settings...** and select the node backup file, node offline or site configuration file for the node.
 - e. Choose **Select All** for retrieval of all setting and click **Send**.
-

Note

The Restore Backup Setting feature requires that the equipping of the transmission units in UltraSite BTS hub matches the node file. Units cannot be added or removed while using Restore Backup Setting command.

2. Install the new VXxx unit in UltraSite EDGE BTS**3. Import FC E1/T1 unit information, if required**

- a. In Nokia UltraSite BTS Manager, choose **Open** on the Transmission menu. The Manager software starts and connects to the transmission unit.
- b. Choose **File-Open**. Nokia E1/T1 Manager asks if you want to disconnect the current connection.
- c. Click **Yes**.
- d. Select the node file and click **Open**. The equipment view opens on the screen.
- e. Choose **Send All** from the **Connection** menu.
- f. Nokia E1/T1 Manager asks if you want to send all management data to the node, click **Yes**. The Nokia E1/T1 Manager starts and sends the information to the node.
- g. Quit Nokia E1/T1 Manager.

4. Unblock the BCF

Unblock the BCF locally with Nokia BTS Manager or request BCF unblock from the BSC.

5. Power ON the UltraSite EDGE BTS

6. Leave the site

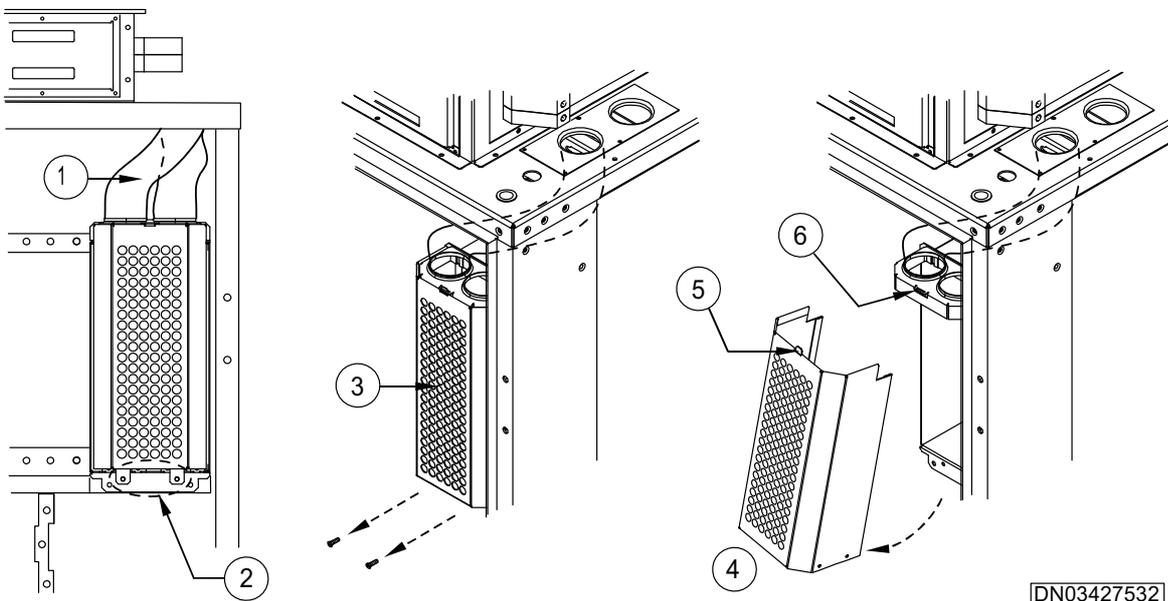
8.11.2 Removing a Transmission (VXxx) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Cabinet front view



DN03427532

1	Cable sleeve
2	Screws (2x)
3	Transmission unit cover
4	Transmission unit cover, removed
5	Tab
6	Slot

Figure 42. Transmission unit cover removal

**Steps****1. Block the BCF locally or from the BSC**

Block the BCF locally with Nokia BTSManger or request BCF lock from the BSC.

2. If required, save the node file before removing the unit to save the settings.

- a. Connect to the transmission node locally with Nokia UltraSite BTS Hub Manager software. The software unit starts and connects to the node.
- b. Click each unit once in the **Equipment** window so that the information is read and can be saved.
- c. Choose **Save As** from the **File** menu and specify a name and location for the node file.
- d. Quit Nokia UltraSite BTS Hub Manager.

3. Remove the two screws from the Transmission unit cover.**4. Pull the bottom of the Transmission unit cover away from the EMC Shield box while you pull down to release the tab.**

Set the cover aside until you reconnect the interface cables.

5. Disconnect the Transmission unit cables.**6. Loosen the upper and lower retaining screws of the unit with a T10 Torx driver.****7. Uninstall the unit logically so that all the unit settings are removed from the node.****8. Remove the Transmission unit by pulling the unit out from the front.**

8.11.3 Installing a Transmission (VXxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



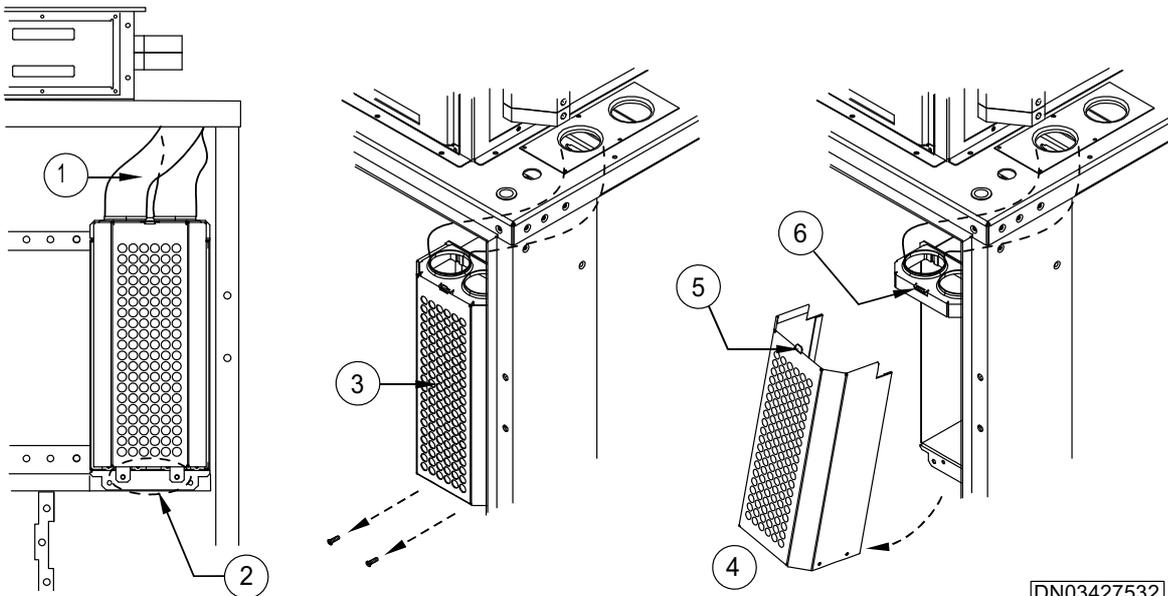
Caution

To prevent damage to the backplane, do not force the VXxx unit into position during installation. Gently tilt the rear of the VXxx unit up to engage the backplane connector.

The upper right cabinet core holds up to four Transmission (VXxx) units. The unit positions are 1 to 4 from left to right.

You can install only one FC E1/T1 transmission unit per cabinet, and you must use slot 1 (far left). You can install up to four FXC transmission units, but you must install one of the units in slot 1.

Cabinet front view

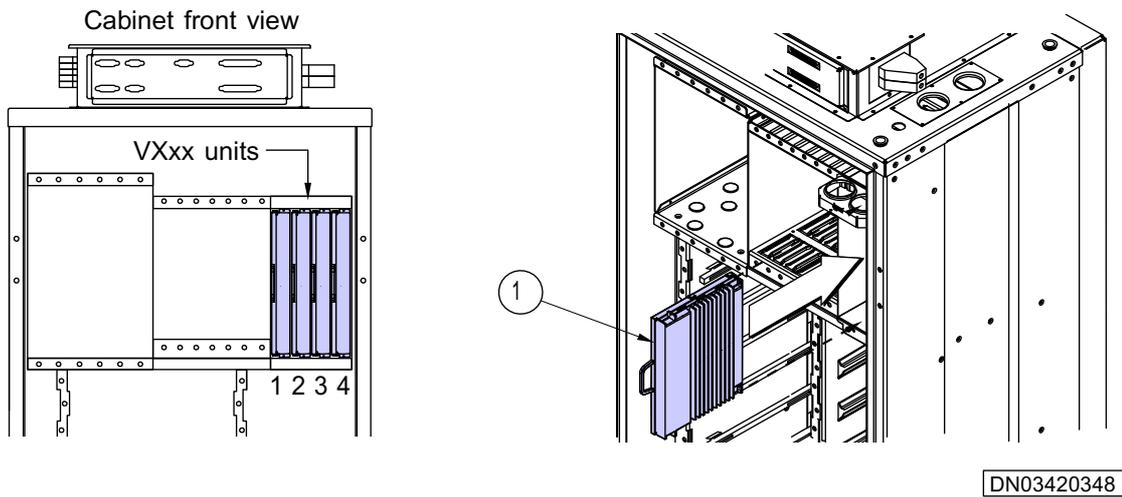


DN03427532

1	Cable sleeve
2	Screws
3	Transmission unit cover

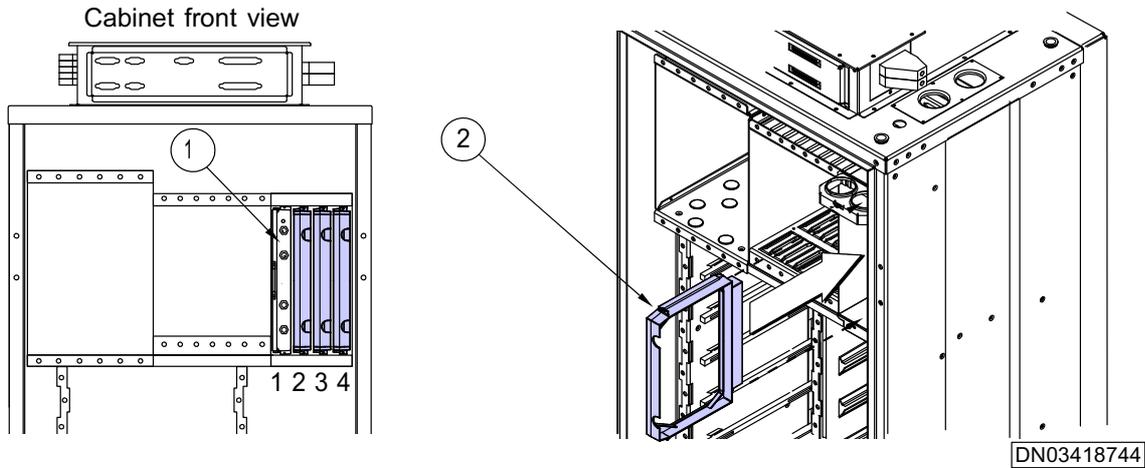
4	Transmission unit cover, removed Screws
5	Tab
6	Slot

Figure 43. Removing VXxx unit cover



1	VXxx unit
---	-----------

Figure 44. VXxx unit installation



1	VXxx unit
2	VXxx unit Dummy transmission unit

Figure 45. Dummy Transmission unit installation in an OAKx



Steps

1. **Remove the VXxx unit cover.**
 - a. Remove the two screws from the VXxx unit box.
 - b. Pull out the bottom of the VXxx unit cover while pulling down to disengage the tab.
 - c. Remove the cover and set aside until after you route the interface cables.

2. **Install VXxx units.**
 - a. Insert the VXxx unit into the cabinet.
 - b. Tighten the retaining screws. See *Torque settings* .
 - c. Repeat steps 1(a) through 2(b) for each additional VXxx unit.

3. **Install dummy VXxx unit.**
 - a. Insert the dummy unit into an unused slot.
 - b. Tighten the two retaining screws. See *Torque settings*.

- c. Repeat steps 1(a) through 2(b) for each additional dummy VXxx unit.
 - d. Recycle the packing material.
- 4. Install VXxx unit box cover.**
- a. After you route the interface cables, place the cover on the VXxx unit box. For information on cables, see *Overview of cabling GSM/EDGE units*,
 - b. Insert and tighten the two screws until the cover is flush on the VXxx unit box. See *Torque settings* .

8.12 Replacing a Power Supply unit

8.12.1 Replacing a Power Supply (PWSx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

Mains power must be removed from the BTS prior to servicing PWSC units.



Caution

Ensure the new unit is in STAND BY mode.

Note

Removing all PWSA/PWSB units from a BTS drops all traffic from Nokia UltraSite BTS and affects other BTSs chained or connected to the same transmission node. If one PWSx unit is defective but working, install the new PWSx in the open slot and power it on before you remove the faulty PWSx. This prevents interruption of service.



Steps

1. *If you are replacing a PWSA or PWSB unit*

Then

Remove the faulty PWSA or PWSB unit from UltraSite EDGE BTS
2. **Install the new PWSA or PWSB unit in UltraSite EDGE BTS**
3. *If you are replacing a PWSC unit*

Then

Remove the faulty PWSC unit from UltraSite EDGE BTS
4. **Cable a DC filter module to the PWSC unit**
5. **Install the new PWSC unit in UltraSite EDGE BTS**
6. **Power on the UltraSite BTS EDGE**
7. **Leave the site**

8.12.2 Removing a Power Supply (PWSx) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

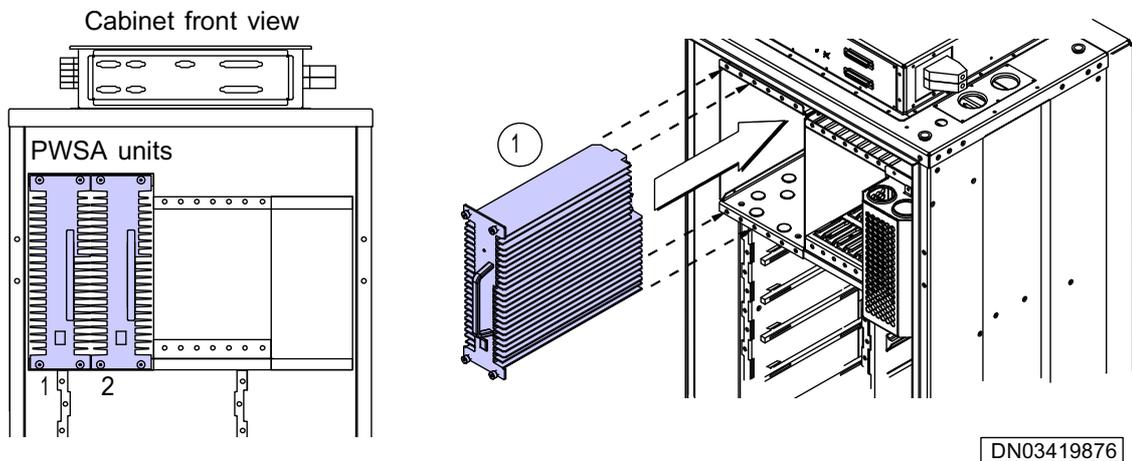


Warning

You must remove Mains power from the BTS prior to servicing PWSC units.

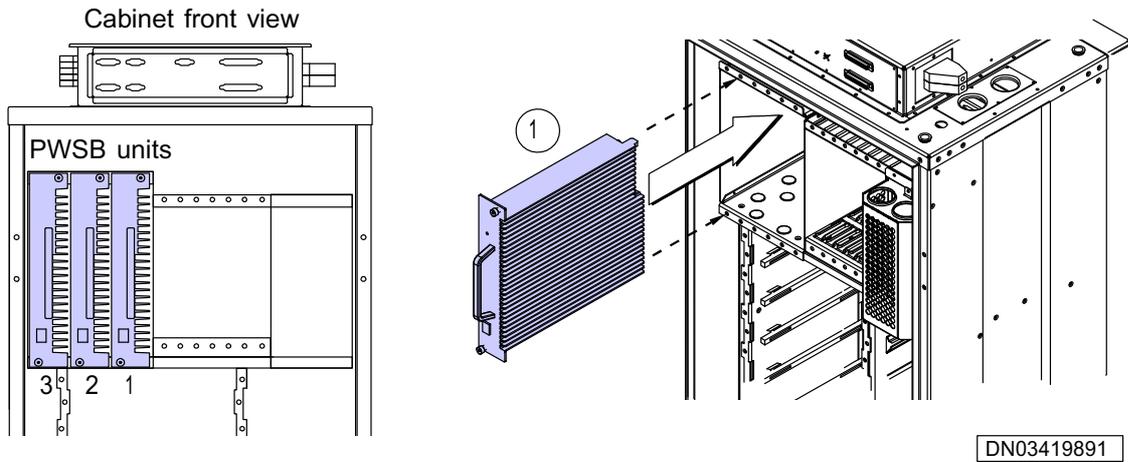
Note

Removing all PWSx units from a BTS drops all traffic from UltraSite BTS and affects other BTSs chained or connected to the same transmission node.



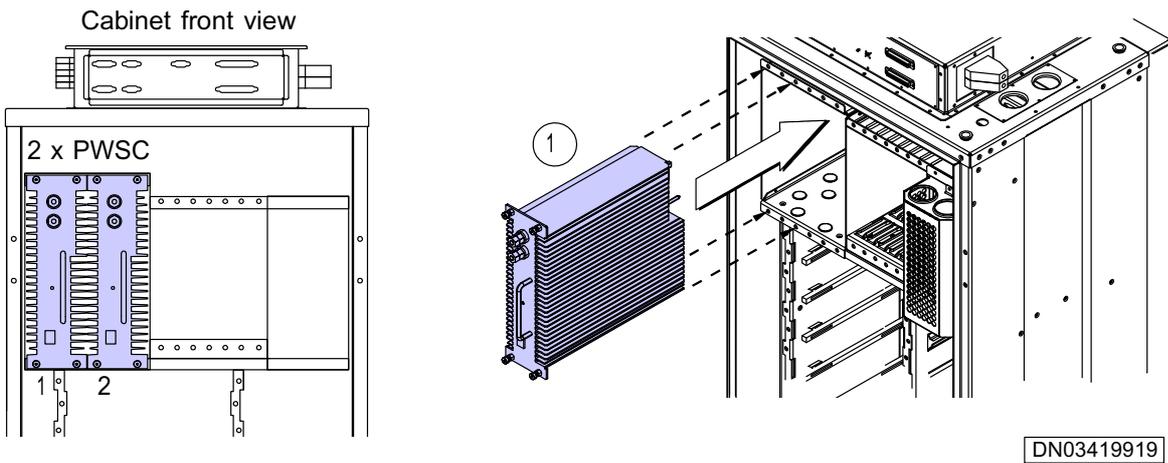
1	PWSA
---	------

Figure 46. PWSA unit replacement



1	PWSB
---	------

Figure 47. PWSB unit replacement



1	PWSC
---	------

Figure 48. PWSC unit replacement

**Steps**

1. **To remove PWSA/PWSB units, complete the following:**
 - a. Turn the PWSA/PWSB unit to be removed to the STAND BY mode.
 - b. Loosen the PWSx unit retaining screws with a T20 Torx driver.
 - c. Remove the PWSA/PWSB unit from the cabinet.

2. **To remove PWSC units, complete the following:**
 - a. Notify the appropriate personnel and block the BCF.
You can block the BCF either locally, using Nokia BTS Manager, or request BCF lock from the BSC.
 - b. Switch the PWSC units to standby mode.
 - c. Switch the mains power breaker OFF.
 - d. Remove the protective rubber boots from the power input cable terminals and remove the cables from the front of the PWSC.
 - e. Loosen the PWSC unit retaining screws with a T20 Torx driver.
 - f. Remove the PWSC unit from the cabinet.

8.12.3 Installing a Power Supply (PWSx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing the units of the UltraSite EDGE BTS* and the *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

You can install two PWSA or PWSC units or three PWSB units into UltraSite EDGE BTS cabinet. PWSA and PWSC units are fully redundant in installations of six TSxx units or less.

**Warning**

Before repositioning PWSx backplane connectors, ensure that mains power breaker is OFF. There is risk of lethal voltages and electric shock.

**Caution**

If the DC power cables are reversed during installation, it will blow (open) a fuse in the PWSC Power supply unit. Verify proper polarity before connecting power cables.

Note

To install optional units, see the following:

**Steps**

- 1. Move backplane connectors for PWSA or PWSC installation.**

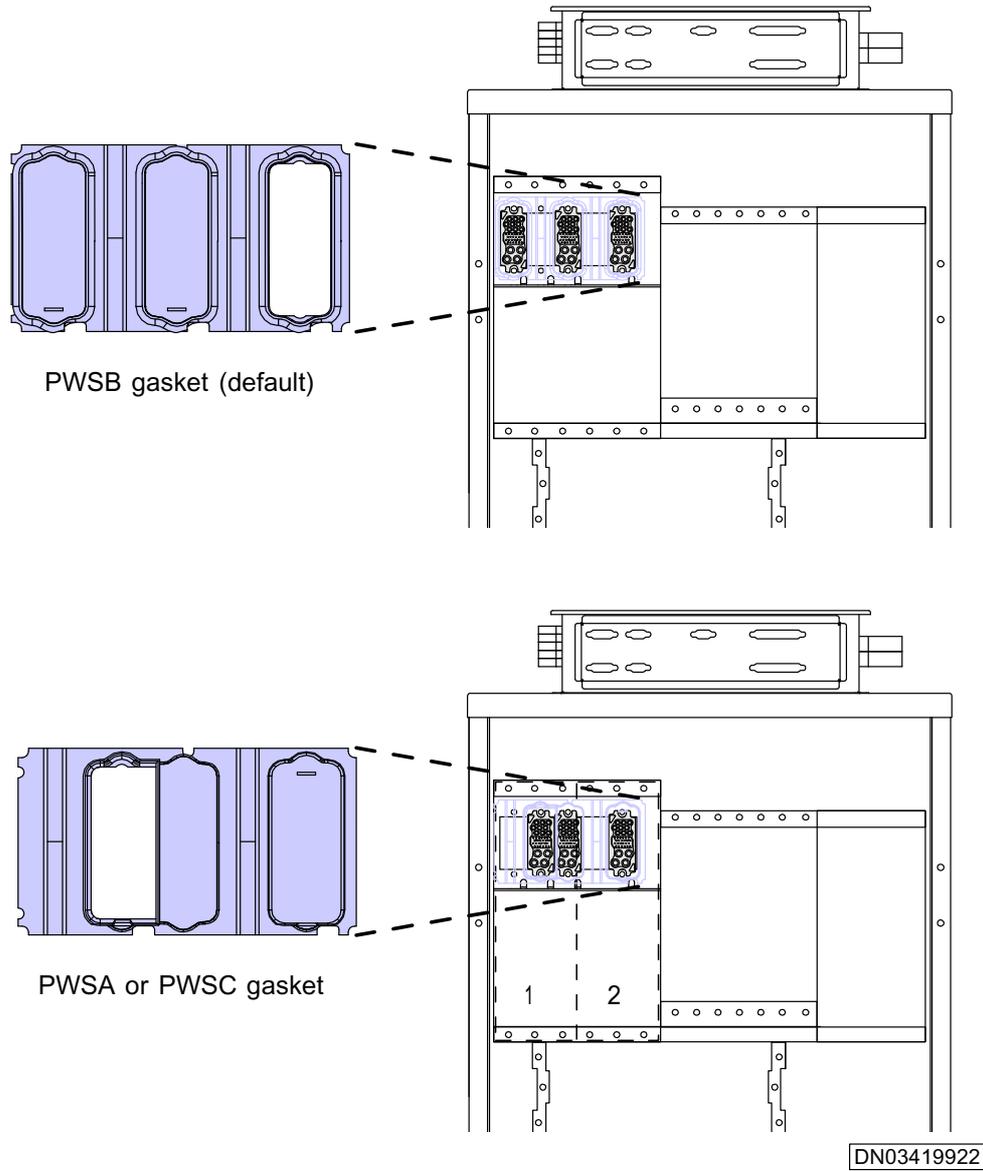
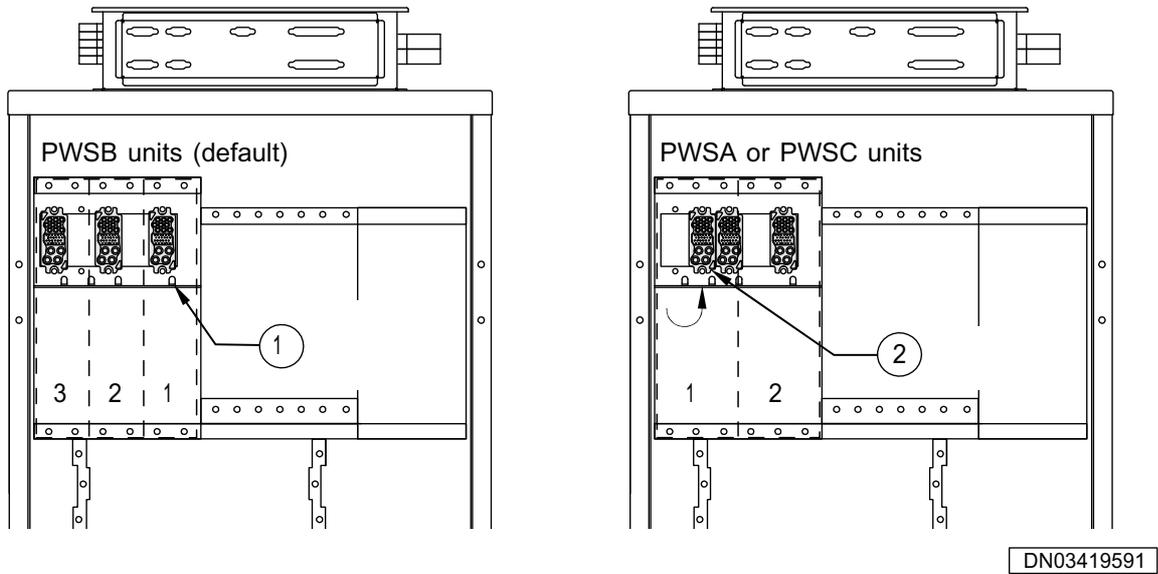


Figure 49. PWSA, PWSB, and PWSC gasket installation



1	Hole for PWSx locating pin (four places)
2	Relocated connector

Figure 50. Moving the backplane connector to install the PWSA or PWSC

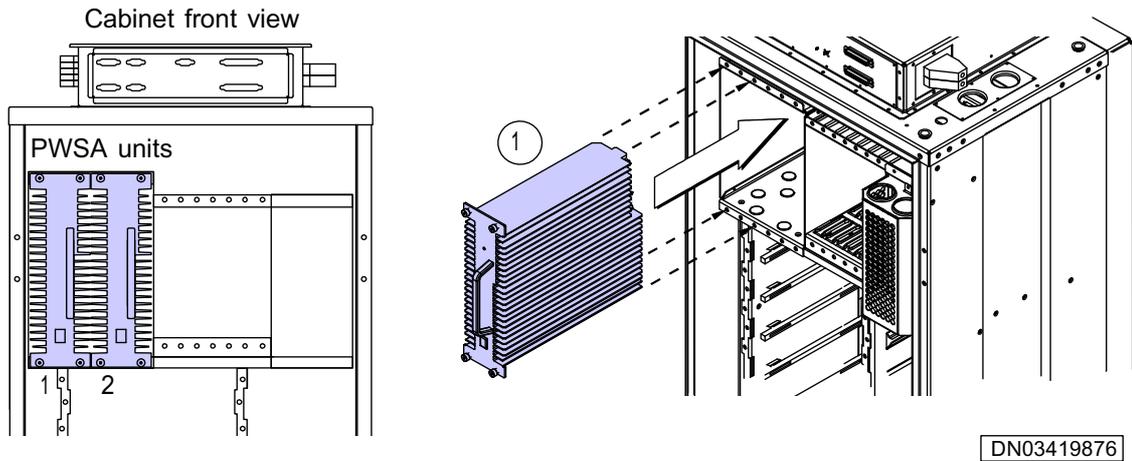
- a. Remove the default PWSB gasket from the connector.
- b. Remove the two screws that secure the far left connector to the backplane.
- c. Slide the connector to the right and align it with the screw holes.
- d. Replace the two screws.
- e. Install the PWSA gasket.

2. Install AC or DC power supply units.



Caution

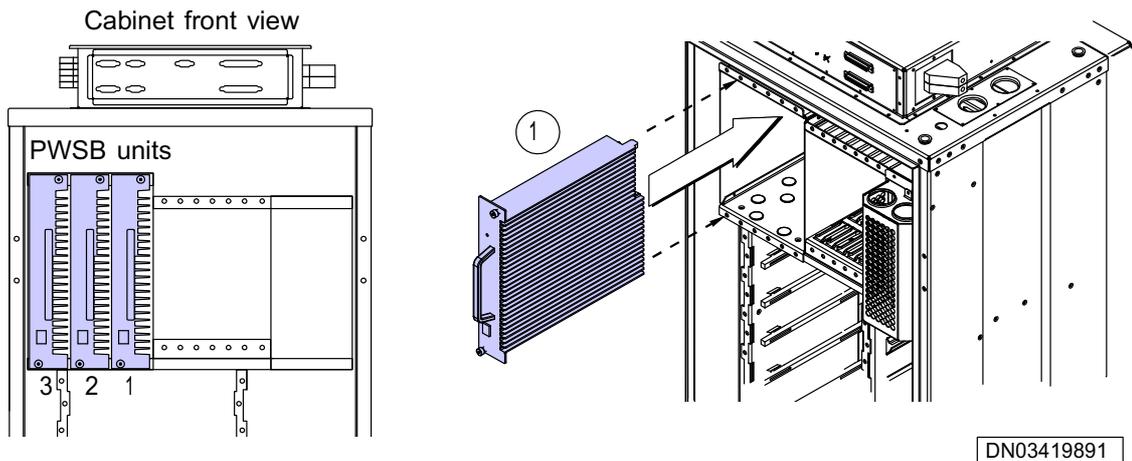
Do not insert PWSx units with the power supply switch in the ON position.



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1	PWSA
---	------

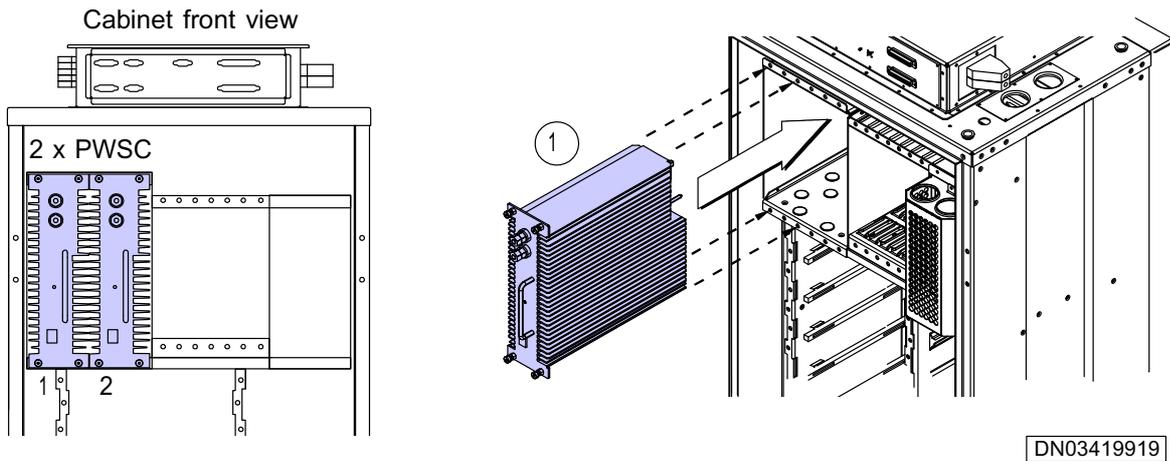
Figure 51. PWSA unit installation



DN03419891

1	PWSB
---	------

Figure 52. PWSB unit installation



1	PWSC
---	------

Figure 53. PWSC unit installation

Note

The default -48 VDC Filter module is replaced with +24 VDC Filter module (DCFB) for PWSC unit installation.

- a. Ensure the power supply switch of the PWSx unit is in STAND BY position.
- b. Slide the PWSx unit into the top left area of the cabinet. Ensure the locating pins are within the cabinet locating holes.
 - Ensure the locating pin for the power supply connector engages with the locating hole in the rack.
- c. Tighten the PWSx retaining screws.
See *Torque settings*.
- d. Repeat steps 2(a) through 4(d) for each additional PWSx unit.

8.13 Replacing a Bias Tee unit

8.13.1 Replacing a Bias Tee (BPxx) unit in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty BPxx unit from UltraSite EDGE BTS**
2. **Install the new BPxx unit in UltraSite EDGE BTS**
3. **Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTSManger or request BCF unlock from the BSC.

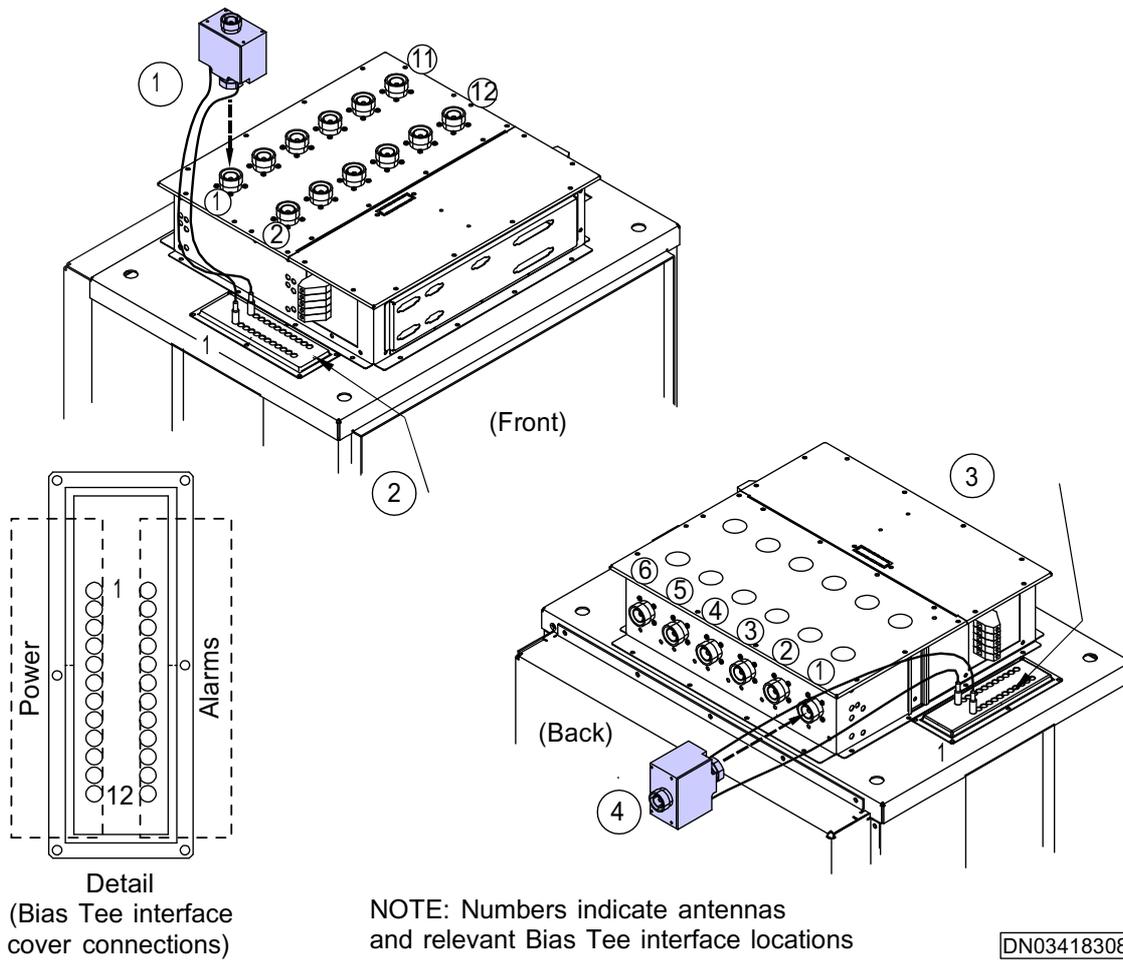
4. **Leave the site**

8.13.2 Removing a Bias Tee (BPxx) unit from UltraSite EDGE BTS

Before you start

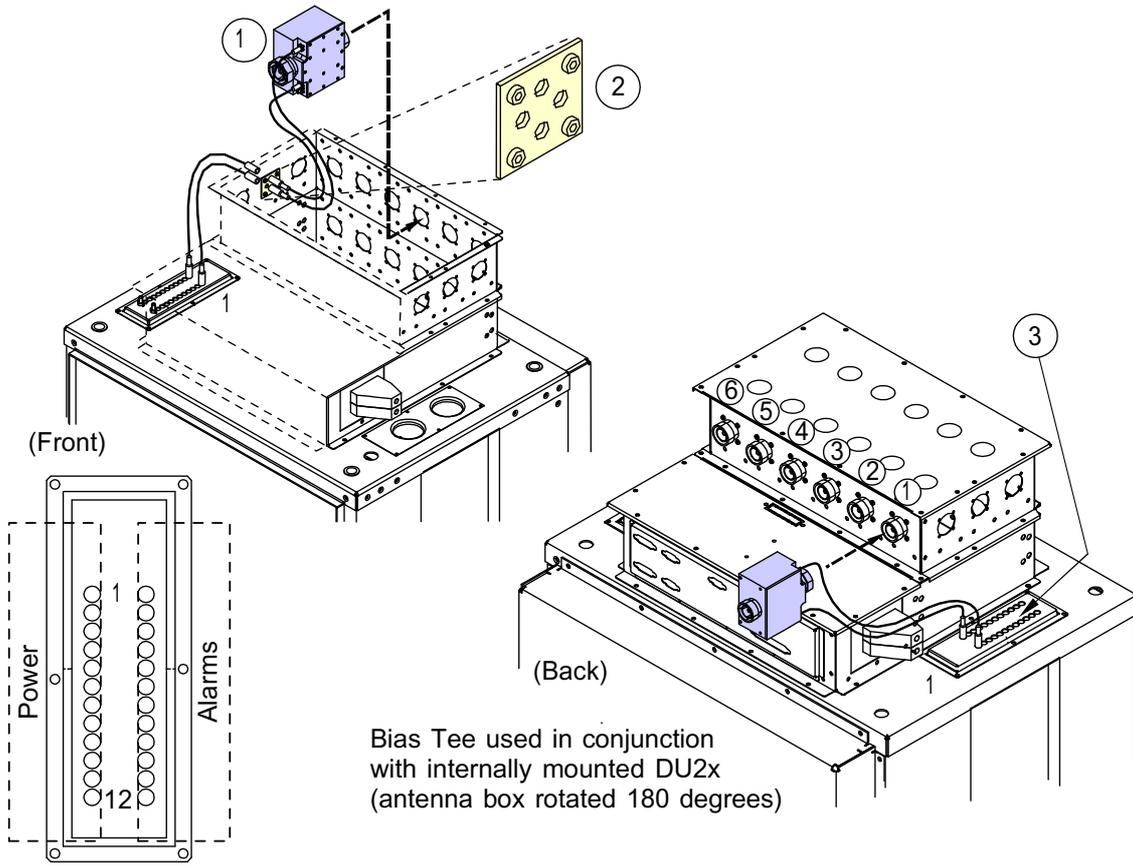
Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	Bias Tee, top mount
2	Bias Tee interface (see detail)
3	Bias Tee interface (see detail)
4	Bias Tee, back mount

Figure 54. BPxx installation in Indoor cabinet



Bias Tee used in conjunction with internally mounted DU2x (antenna box rotated 180 degrees)

NOTE: Numbers indicate antennas and relevant Bias Tee interface locations

DN03418311

1	Bias Tee, top mount
2	Bias Tee termination plate
3	Bias Tee interface (see detail)

Figure 55. BPxx installation in Outdoor cabinet



Steps

- 1. Block the BCF locally or from the BCS.**

Block the BCF locally with Nokia BTSManager or request BCF lock from the BSC.

2. Power down the BTS .

3. *If you are removing the BPxx unit from the IAKA antenna box,*

Then

Remove the BPxx using the following steps:

- a. On top of the cabinet, disconnect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface.
 - b. Loosen and disconnect the antenna box connector from the BPxx unit.
 - c. Disconnect the power supply and antenna monitoring cables from the BPxx unit.
 - d. Remove the antenna cable connectors from the BPxx unit.
 - e. Repeat steps a through d for additional BPxx units.
4. *If you are removing the BPxx unit from inside the OAKx antenna box,*

Then

Remove the BPxx using the following steps:

- a. Remove the 16 screws from the box cover and remove the cover.
 - b. Disconnect the power supply and optional VSWR antenna monitoring cables from the BPxx interface to the BPxx termination plate on the antenna box.
 - c. Loosen and disconnect the power supply and antenna monitoring cables from the BPxx interface to the BPxx termination plate.
 - d. Disconnect the power supply and optional VSWR antenna monitoring cables from the BPxx unit.
 - e. Remove the antenna cable connectors from the BPxx unit.
 - f. Repeat steps a through e for additional BPxx units.
5. *If you are removing the BPxx unit from outside the OAKx antenna box,*

Then

Remove the BPxx using the following steps:

- a. Disconnect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface.
- b. Loosen and disconnect the BPxx unit from the connector.
- c. Disconnect the power supply and antenna monitoring cables from the BPxx unit.

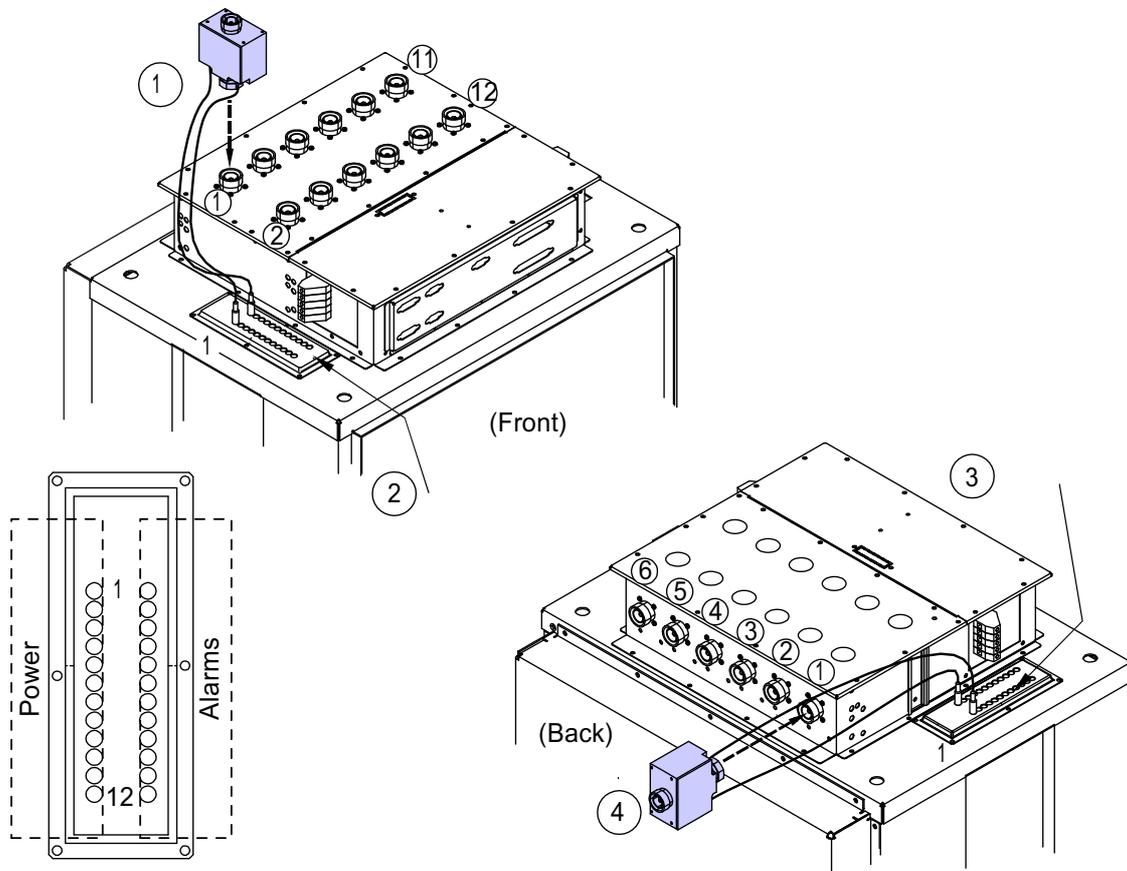
- d. Remove the antenna cable connectors from the BPxx unit.
- e. Repeat steps a through d for each additional BPxx unit.

8.13.3 Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing units* and pay careful attention to all warnings and cautions.

Summary



NOTE: Numbers indicate antennas and relevant Bias Tee interface locations

DN03418308

1	Bias Tee top mount
---	--------------------

2	Bias Tee interface
3	Bias Tee interface
4	Bias Tee back mount

Figure 56. BPxx installation in Indoor cabinet



Steps

1. **Connect the power supply and antenna monitoring cables to the BPxx unit.**
2. **Install and tighten the BPxx unit to the antenna box connector to 25 Nm.**

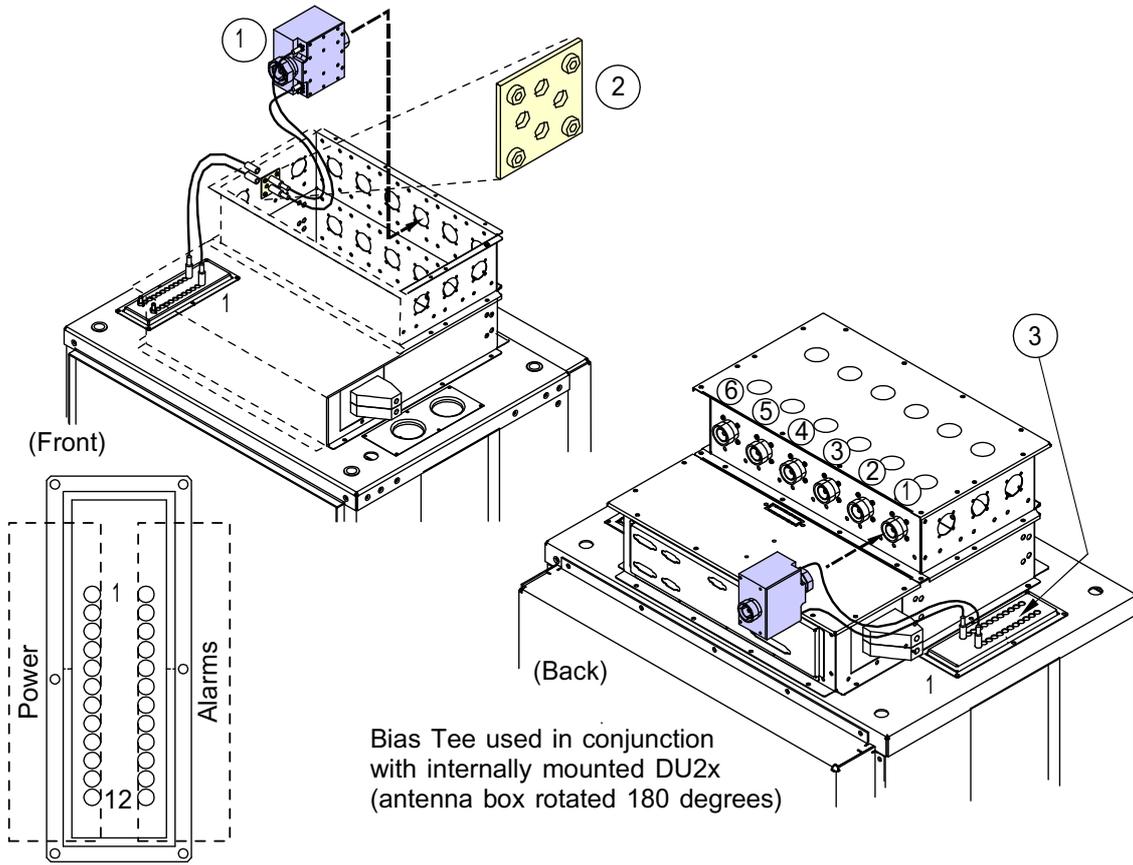
See Torque settings.
3. **Connect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface on top of the cabinet.**
4. **Repeat steps 1 through 4 for additional BPxx units.**

8.13.4 Installing a Bias Tee (BPxx) unit inside the UltraSite EDGE BTS OAKx antenna box

Before you start

Review the *Overview of installing units* and pay careful attention to all warnings and cautions.

Summary



Bias Tee used in conjunction with internally mounted DU2x (antenna box rotated 180 degrees)

NOTE: Numbers indicate antennas and relevant Bias Tee interface locations

DN03418311

1	Bias Tee unit
2	Bias Tee termination plate
3	Bias Tee interface

Figure 57. BPxx installation in Outdoor cabinet

Note

If installing the BPxx unit inside the OAKx, rotate the BPxx interface board by 180 degrees to complete the cabling inside the OAKx. If the AC filter module interferes, use an extra cable kit with termination plate.



Steps

1. **Connect the power supply with optional VSWR antenna monitoring cables to the BPxx unit.**
2. **Remove the desired antenna knock-out and install the BPxx termination plate to the antenna box.**
3. **Connect the power supply and antenna monitoring cables from the BPxx unit to the BPxx termination plate.**
4. **Install and tighten the BPxx unit to the antenna box connector.**

Torque settings of UltraSite EDGE BTS

5. **Remove rubber connector shields.**

For each BPxx interface connection used, remove the tips of the rubber connector shield by tearing or cutting them off.

6. **Connect the cables.**

Connect the power supply and optional VSWR antenna monitoring cables from the BPxx unit to the BPxx terminal plate on the antenna box.

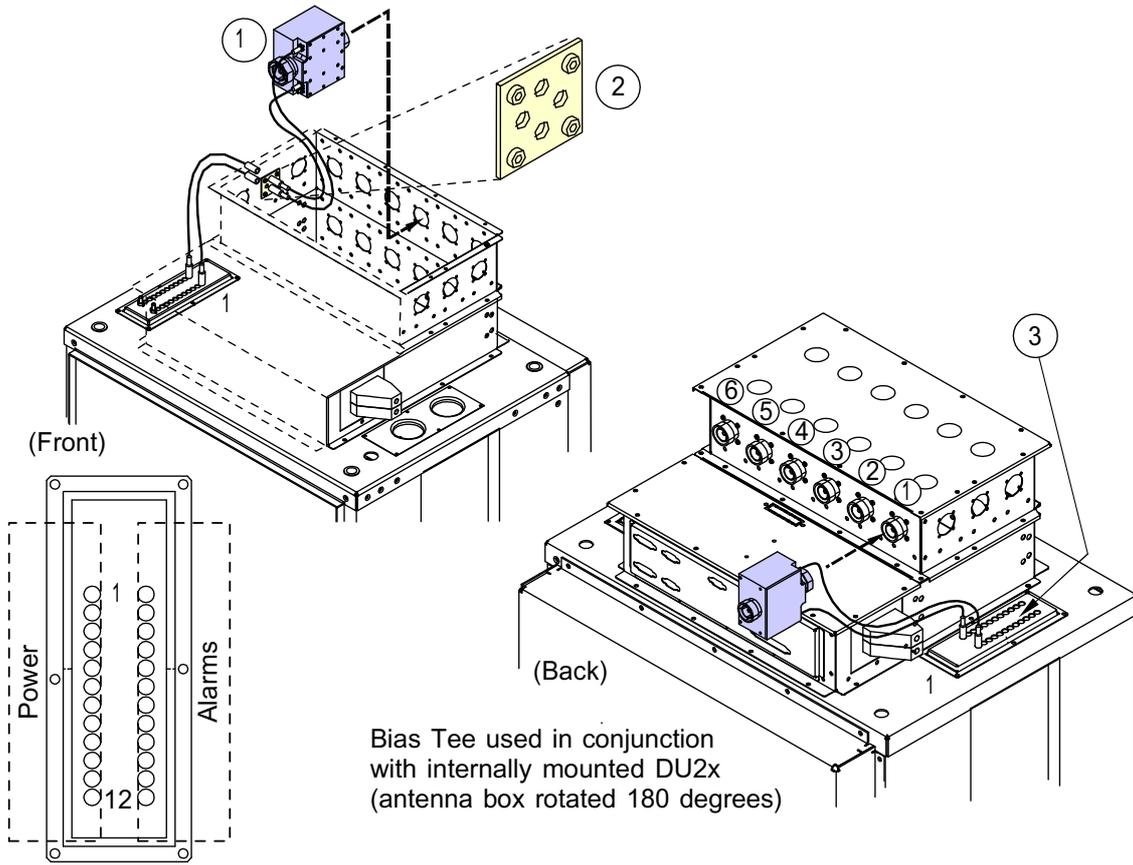
7. **Repeat steps 1 through 6 for additional BPxx units.**

8.13.5 Installing a Bias Tee (BPxx) unit outside the UltraSite EDGE BTS OAKx antenna box

Before you start

Review the *Overview of installing units* and pay careful attention to all warnings and cautions.

Summary



Bias Tee used in conjunction with internally mounted DU2x (antenna box rotated 180 degrees)

NOTE: Numbers indicate antennas and relevant Bias Tee interface locations

DN03418311

1	Bias Tee unit
2	Bias Tee termination plate
3	Bias Tee interface

Figure 58. BPxx installation in Outdoor cabinet



Steps

- 1. Position the OAKx antenna box as required.**

- 2. Connect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface on top of the cabinet.**

- 3. Install the tighten the BPxx unit to the connector.**

Torque settings of UltraSite EDGE BTS

- 4. Remove rubber connector shields**

For each BPxx interface connection used, remove the tips of the rubber connector shield by tearing or cutting them off.

- 5. Connect the cables.**

Connect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface.

- 6. Repeat steps 2 through 5 for additional BPxx units.**

9 Replacing UltraSite EDGE BTS WCDMA units

9.1 Overview of removing units from UltraSite EDGE BTS with WCDMA upgrade

Before you start



Warning

Always use the antistatic wrist strap when handling units marked with the Electrostatic Sensitive Device (ESD) sign. Units carrying the ESD sign are sensitive to electrostatic discharge.



Caution

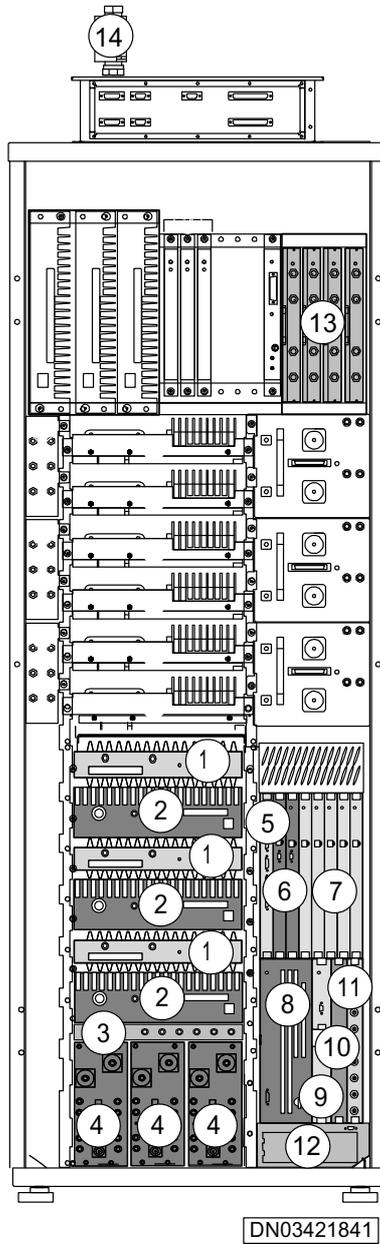
Handle heavy units with care. The following WCDMA units are considered heavy: WAF, WTR, WPS and WTCA Fan Module.



Caution

Notify RNC personnel when you replace or add WCDMA units to UltraSite EDGE BTS.

Summary



1	WCDMA Transceiver (WTR) unit
2	WCDMA Power Amplifier (WMP) unit
3	WCDMA Input Combiner (WIC) unit
4	WCDMA Antenna Filter (WAF) unit

5	WCDMA Summing and Multiplexing (WSM) unit
6	WCDMA Application Manager (WAM) unit
7	WCDMA Signal Processor (WSP) unit
8	WCDMA Power Supply (WPS) unit
9	WCDMA System Clock (WSC) unit
10	ATM Multiplexer (AXU) unit
11	Interface unit (IFU)
12	WTCA Fan Module
13	Transmission (VXxx) unit
14	Bias Tee (Bias-T or BPxx) unit

Figure 59. UltraSite EDGE BTS with WCDMA units in the lower compartment of the cabinet



Steps

1. **Connect the antistatic wrist strap to UltraSite EDGE BTS**
2. **Remove IFU unit**
3. **Remove AXU unit**
4. **Remove WSC unit**
5. **Remove WSP unit**
6. **Remove WAM unit**
7. **Remove WSM unit**
8. **Remove WIC unit**
9. **Remove WTR unit**
10. **Remove WAF unit**
11. **Remove WMP unit**

9.2 Replacing a Wideband Antenna Filter unit

9.2.1 Replacing a Wideband Antenna Filter (WAF) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary



Caution

The WAF unit is considered heavy; handle this unit with care.



Steps

1. **Remove the faulty WAF unit from UltraSite EDGE BTS**
2. **Install the new WAF unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WAF locally or from the RNC**

Unlock the sector associated with the WAF locally with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

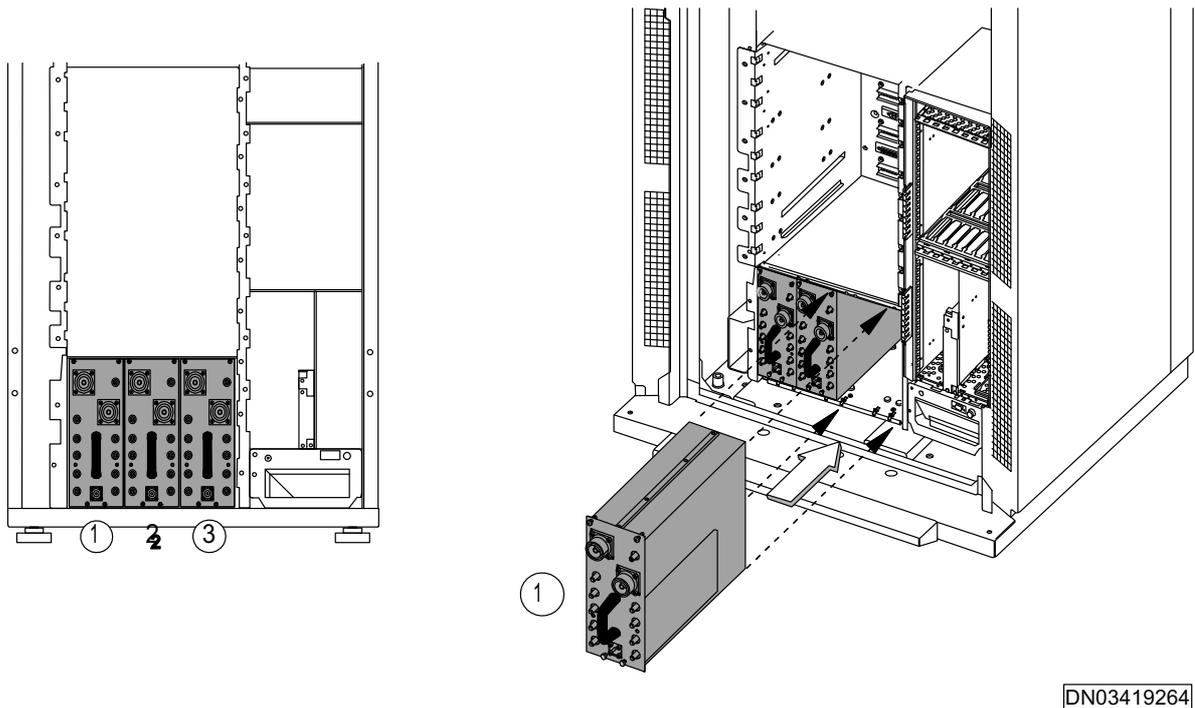
9.2.2 Removing a Wideband Antenna Filter (WAF) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides three slots for WAF units.



1	WAFx
---	------

Figure 60. WAF unit replacement



Steps

- 1. Lock the sector associated with the WAF unit.**

Lock the sector associated with the WAF locally with Nokia WCDMA BTS Manager or request sector lock from the RNC.

- 2. Disconnect the unit front cables.**
- 3. Remove the fixing screws of the unit.**
- 4. With the handle, carefully remove the unit from the rack holding .**

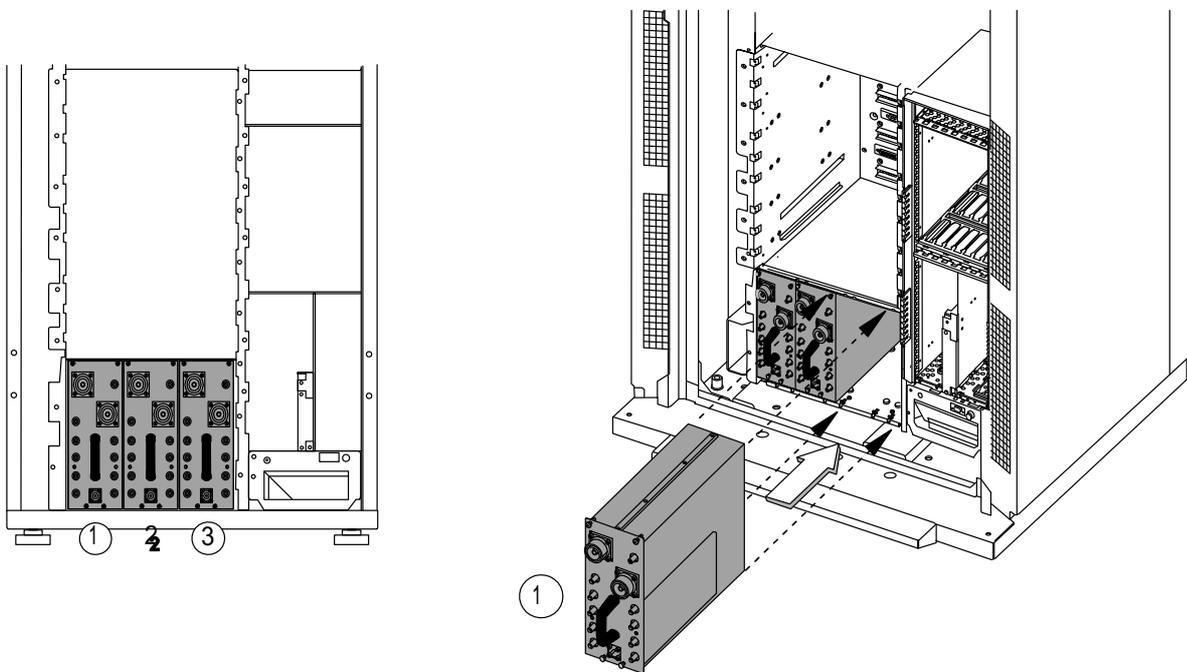
9.2.3 Installing a Wideband Antenna Filter (WAF) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides three slots for the WAF units.



DN03419264

1	WAFx
---	------

Figure 61. Installing the WAF units



Steps

1. **Install the units from left to right.**

2. **Align the WAF unit top and bottom guide trails to the guide trails of the rack.**
3. **Slide the WAF unit on the rack into the cabinet core.**
4. **Check that the rear connectors are fully engaged.**
5. **Tighten the screws on the unit front panel.**

Lifting the unit eases the tightening.

9.3 Replacing a Wideband Power Amplifier

9.3.1 Replacing a Wideband Power Amplifier (WMP) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty WMP unit from UltraSite EDGE BTS.**
2. **Install the new WMP unit in UltraSite EDGE BTS.**
3. **Unlock the sector associated with the WAF unit.**

Unlock the sector associated with the WAF unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

9.3.2 Removing a Wideband Power Amplifier (WMP) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Unpack the replacement WMP unit from its protective package.**
2. **Check the unit for visible damage.**
3. **Lock the sector associated with the WMP unit.**

Lock the sector associated with the WMP unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

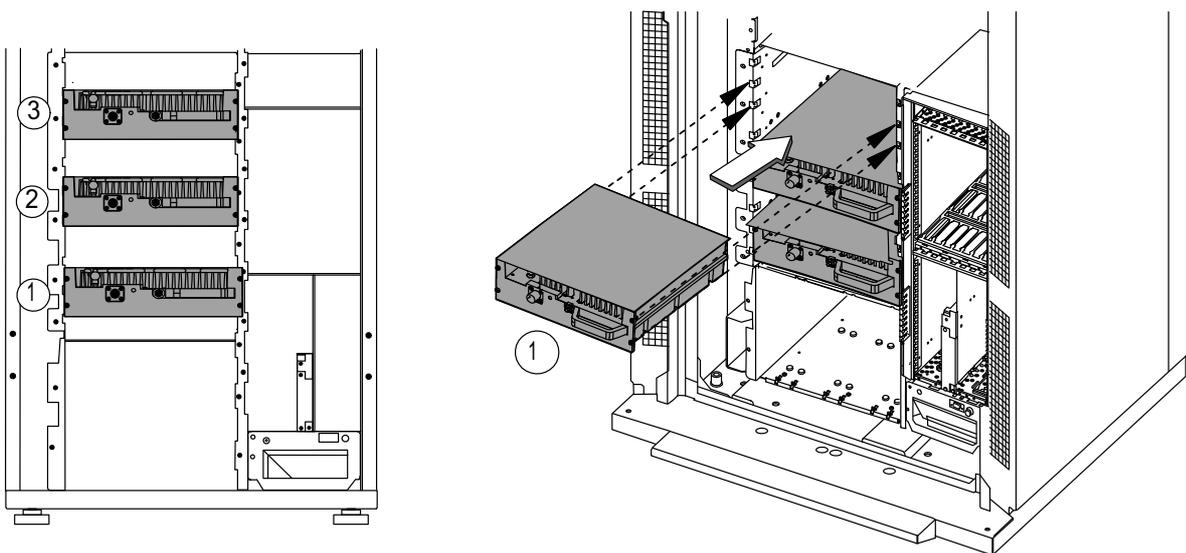
4. **Disconnect the WMP unit front cables.**
5. **Remove the WMP unit fixing screws.**
6. **Holding the WMP unit handle, carefully remove the unit from the rack.**

9.3.3 Installing a Wideband Mini Power Amplifier (WMP) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary



DN03419291

1	WMPx (units 1, 2 and 3)
---	-------------------------

Figure 62. Installing the WMP units

The cabinet provides three slots for the WMP units.



Steps

1. **Install the WMPs in this order:**
 - a. Install the lowest WMP.
 - b. Install the middle WMP.
 - c. Install the upper-most WMP.
2. **Align the left and right guide trails of the WMP unit to the guide trails of the rack.**
3. **Slide the WMP unit into the cabinet core.**
4. **Check that the rear connectors are fully engaged.**
5. **Tighten the screws on the unit front panel.**

Lifting the unit eases the tightening.

9.4 Replacing a Wideband Transmitter and Receiver unit

9.4.1 Replacing a Wideband Transmitter and Receiver (WTR) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary

**Caution**

The WTR unit is considered heavy; handle it with care.

**Steps**

1. **Remove the faulty WTR unit from UltraSite EDGE BTS**
2. **Install the new WTR unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WTR unit locally or from the RNC**

Unlock the sector associated with the WTR unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

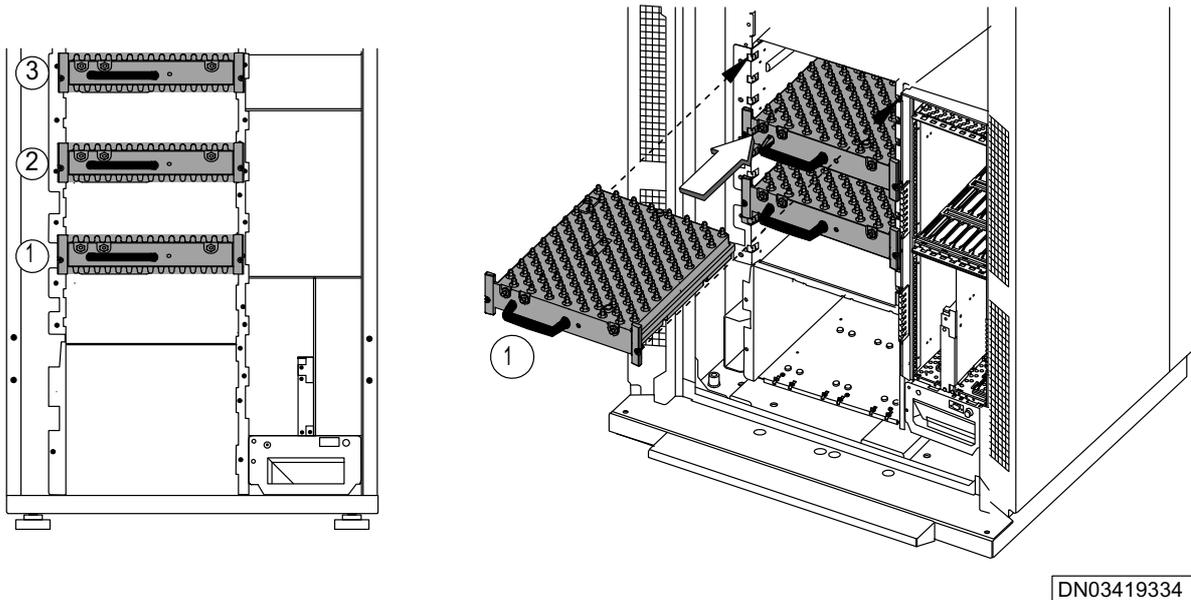
9.4.2 Removing a Wideband Transmitter and Receiver (WTR) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides three slots for WTR units.



1	WTRx
---	------

Figure 63. WTR replacement



Steps

1. **Lock the sector associated with the WTR unit.**

Lock the sector associated with the WTR unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**
3. **Remove the fixing screws of the unit.**
4. **With the handle, carefully remove the unit from the rack holding.**

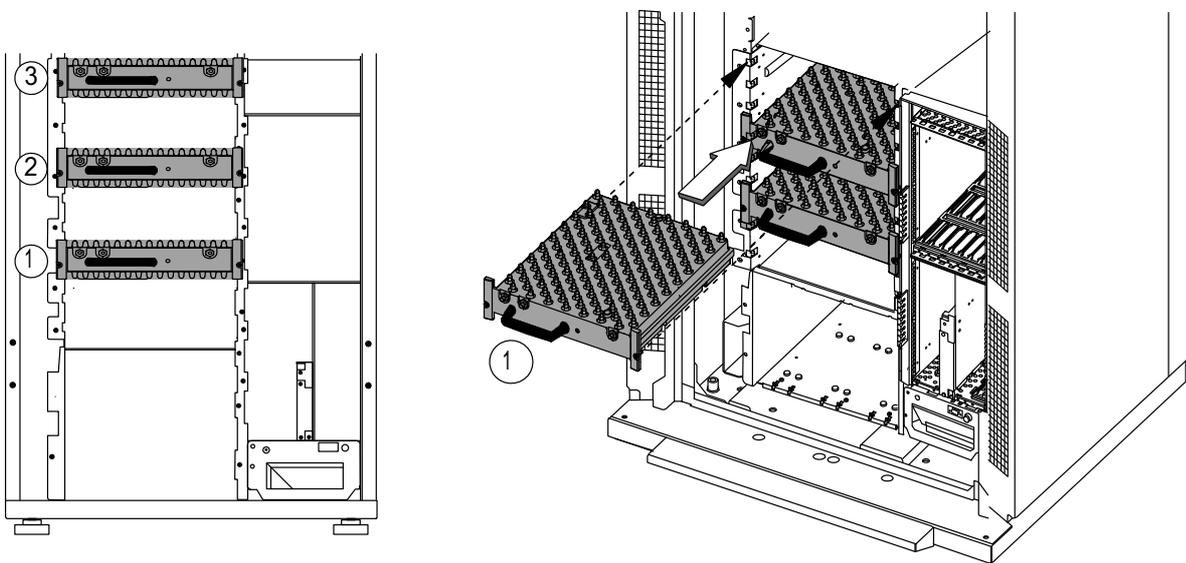
9.4.3 Installing a Wideband Transmitter and Receiver (WTR) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides three (3) slots for WTR units.



DN03419334

1	WTRx
---	------

Figure 64. Installing the WTR units



Steps

1. Install the WTRs in this order:

- a. Install the lowest WTR.
 - b. Install the middle WTR.
 - c. Install the upper-most WTR.
2. **Align the left and right guide trails of the WTR unit to the guide trails of the rack.**
 3. **Slide the WTR unit into the cabinet core.**
 4. **Check that the rear connectors are fully engaged.**
 5. **Tighten the screws on the unit front panel.**

Lifting the unit eases the tightening.

9.5 Replacing a Wideband Input Combiner unit

9.5.1 Replacing a Wideband Input Combiner (WIC) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty WIC unit from UltraSite EDGE BTS**
2. **Install the new WIC unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WIC unit locally or from the RNC**

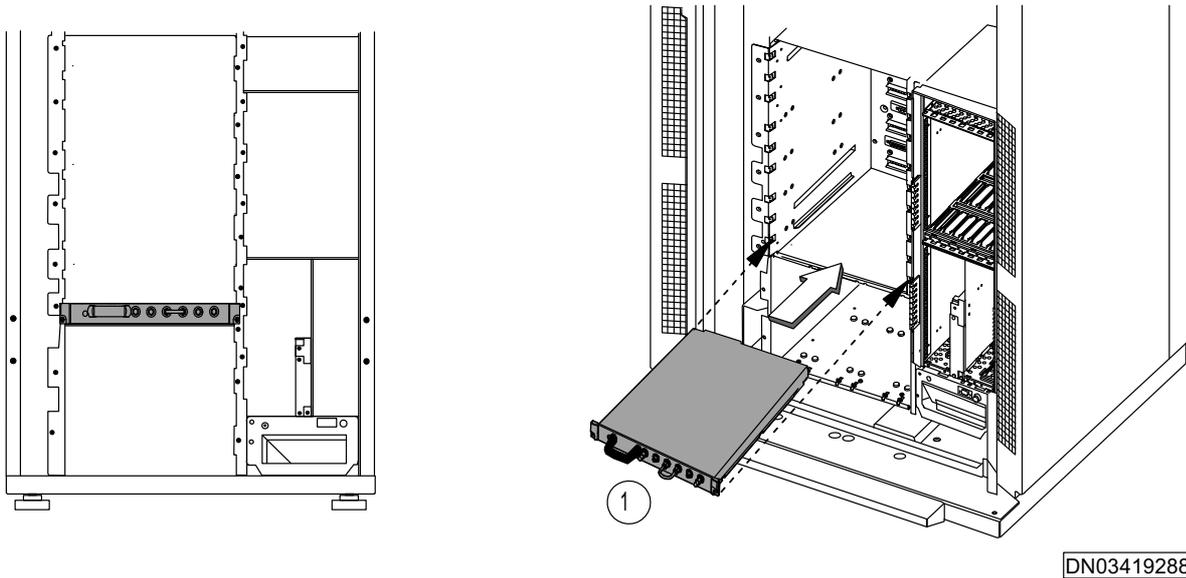
Unlock the sector associated with the WIC unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

9.5.2 Removing a Wideband Input Combiner (WIC) unit from UltraSite EDGE BTS with WCDMA upgrade

Summary

The cabinet provides one slot for a WIC unit.



1	WICx
---	------

Figure 65. WIC replacement



Steps

1. **Lock the sector associated with the WIC unit.**

Lock the sector associated with the WIC unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**
3. **Remove the fixing screws of the unit.**

4. Carefully remove the unit from the rack holding from the handle.

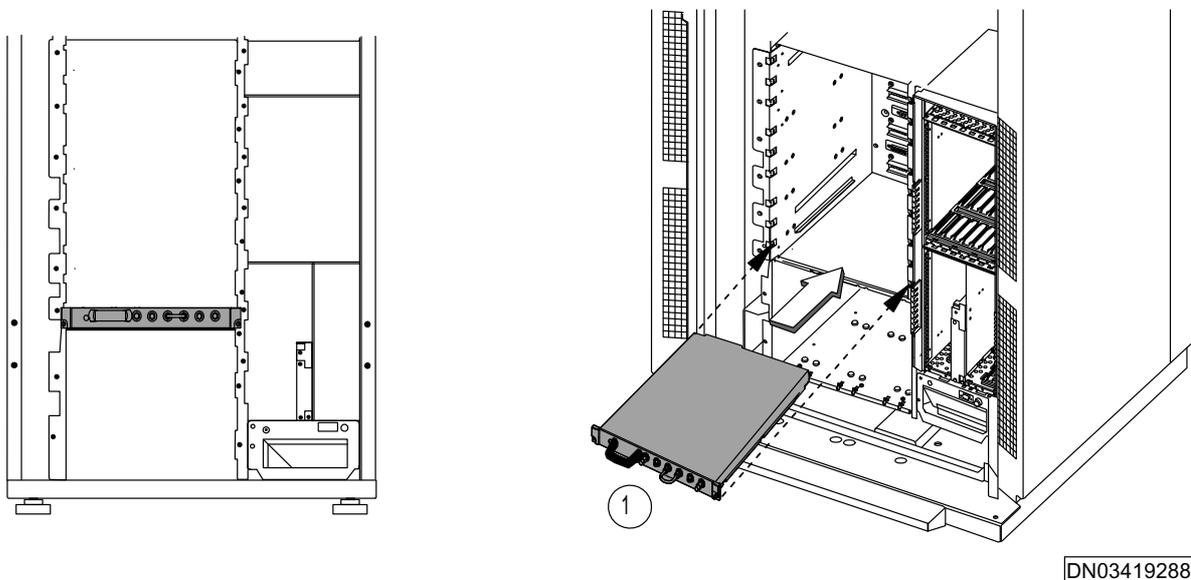
9.5.3 Installing a Wideband Input Combiner (WIC) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides one (1) slot for the WIC unit.



1	WICx
---	------

Figure 66. Installing the WIC unit



Steps

1. Align the WIC unit's left and right guide trails to the guide trails of the rack.

2. Slide the WIC unit into the cabinet core.
3. Check that the rear connectors are fully engaged.
4. Tighten the screws on the unit front panel.

Lifting the unit eases the tightening.

9.6 Replacing a Wideband Summing and Multiplexing unit

9.6.1 Replacing a Wideband Summing and Multiplexing (WSM) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. Remove the faulty WSM unit from UltraSite EDGE BTS
2. Install the new WSM unit in UltraSite EDGE BTS
3. Unlock the sector associated with the WSM unit locally or from the RNC

Unlock the sector associated with the WSM unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. Leave the site

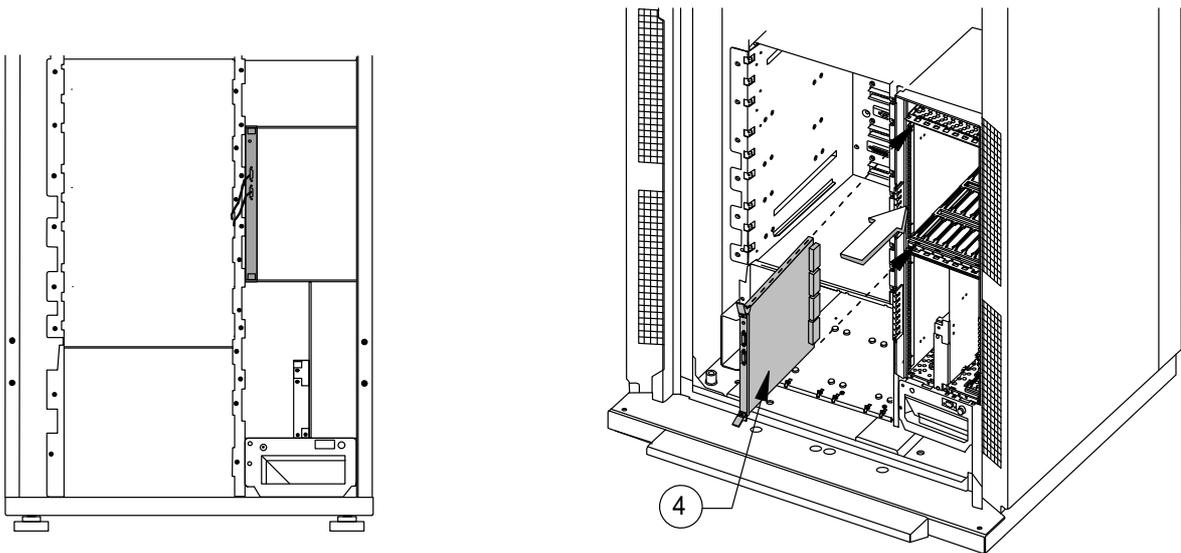
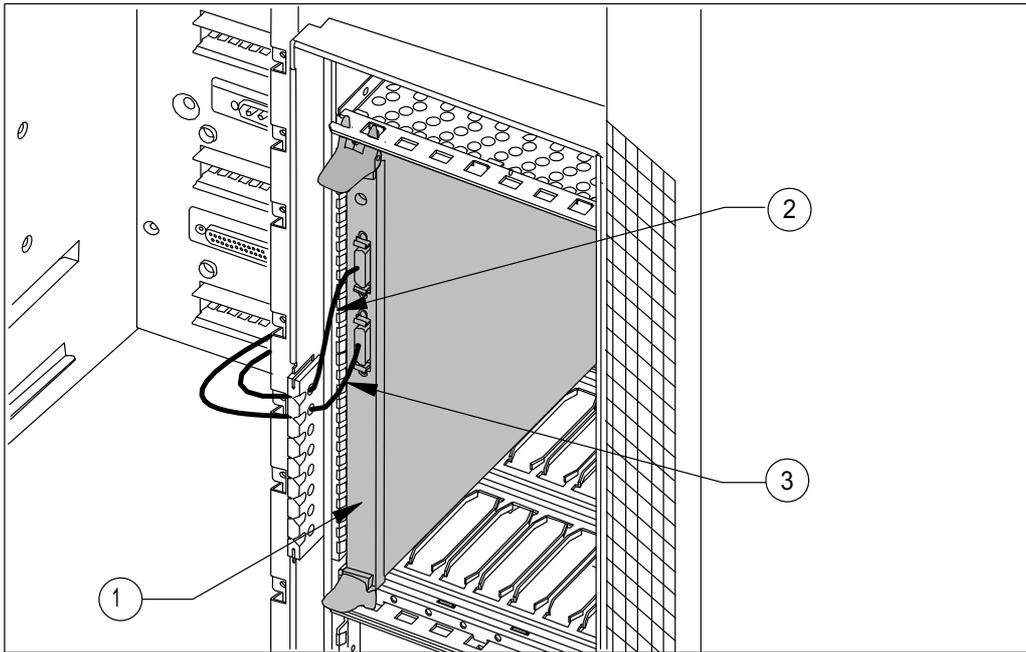
9.6.2 Removing a Wideband Summing and Multiplexing (WSM) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for a WSM unit.



DN03419319

1	WSMx
2	Bus Cable dn994106 from connector X93 in the RF Rack
3	Bus Cable dn994106 from connector X92 in the RF Rack
4	WSMx

Figure 67. WSM replacement



Steps

- 1. Lock the sector associated with the WSM unit.**

Lock the sector associated with the WSM unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

- 2. Disconnect the unit front cables.**
- 3. Remove the fixing screws of the unit.**
- 4. Open the ejectors and carefully remove the unit from the rack.**

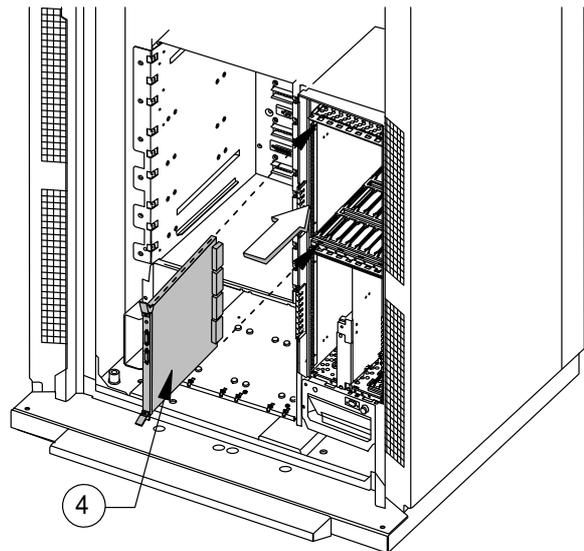
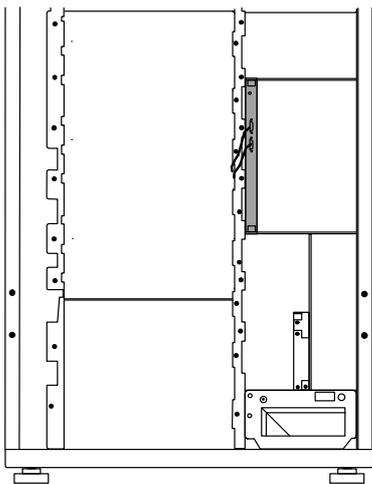
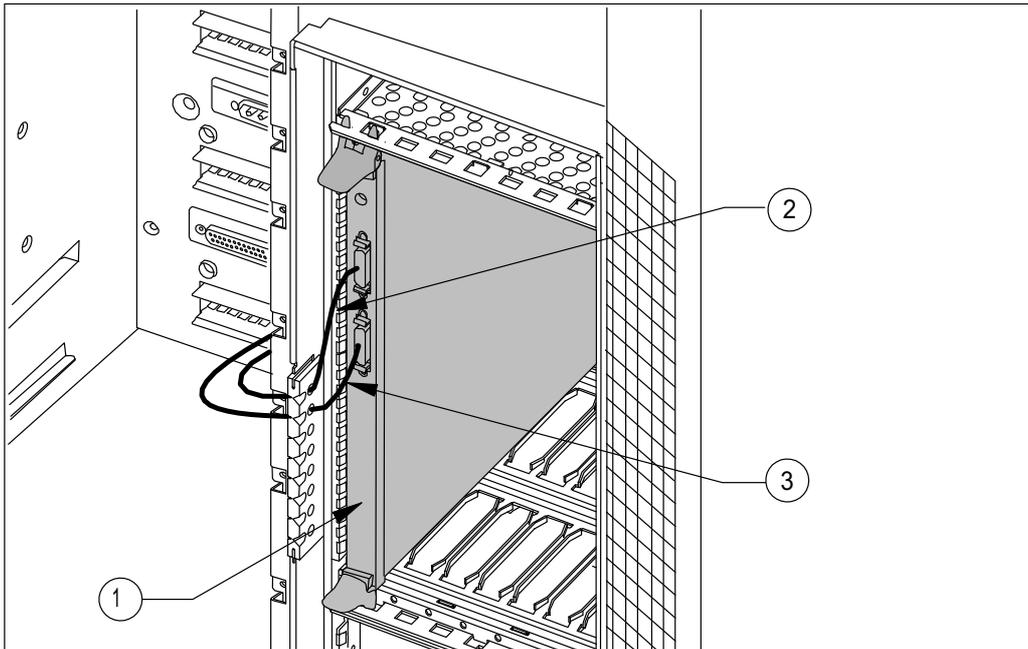
9.6.3 Installing a Wideband Summing and Multiplexing (WSM) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides one (1) slot for the WSM unit.



DN03419319

1	WSMx
---	------

2	Bus Cable dn994106 from connector X93 in the RF Rack
3	Bus Cable dn994105 from connector X92 in the RF Rack
4	WSMx

Figure 68. Installing the WSM unit



Steps

1. **Hold the ejectors open.**
2. **Slide the WSM unit into the rack.**
3. **Close the ejectors.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

4. **Tighten the screws on the unit front panel.**

Lifting the unit eases the tightening.

5. **Connect the bus cables from the RF rack to the connectors in the front of the WSM unit as follows:**

- cable dn994105 to the lower connector in the WSM
- cable dn994106 to the upper connector.

6. **Insert the bus cables in the cable block next to the WSM in the BB rack.**

9.7 Replacing a Wideband Application Manager unit

9.7.1 Replacing a Wideband Application Manager (WAM) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty WAM unit from UltraSite EDGE BTS**
2. **Install the new WAM unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WAM unit locally or from the RNC**

Unlock the sector associated with the WAM unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

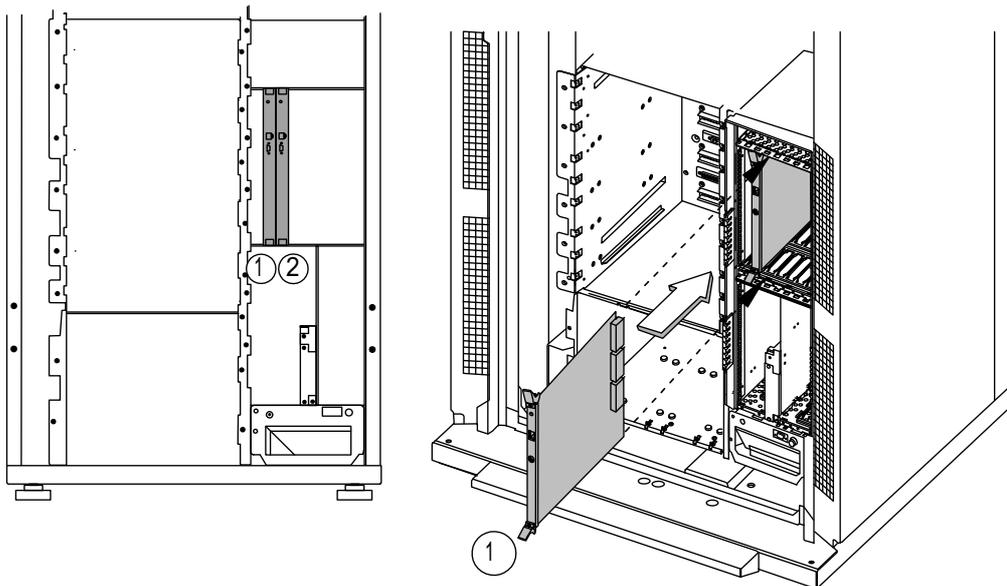
9.7.2 Removing a Wideband Application Manager (WAM) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides two slots for WAM units.



DN03419276

1WAMx

Figure 69. WAM replacement



Steps

1. **Lock the sector associated with the WAM unit.**

Lock the sector associated with the WAM unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Remove the fixing screws of the unit.**

3. **Open the ejectors and carefully remove the unit from the rack.**

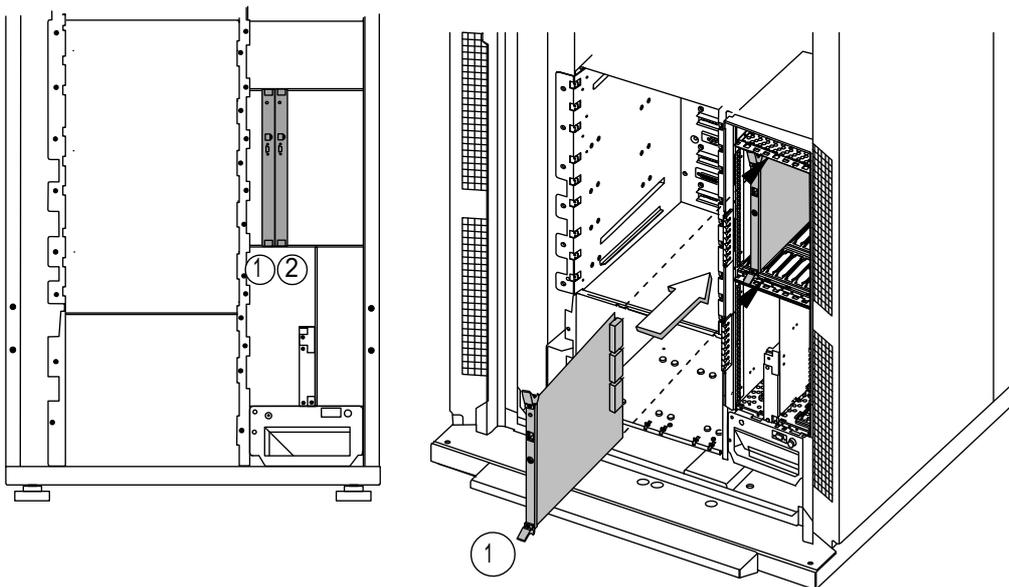
9.7.3 Installing a Wideband Application Manager (WAM) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides two (2) slots for the WAM units.



DN03419276

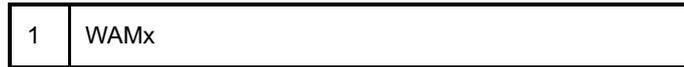


Figure 70. Installing the WAM units



Steps

1. **Install the WAM units from left to right.**
2. **Hold the ejectors open.**
3. **Slide the WSM unit into the rack.**
4. **Close the ejectors.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

5. **Tighten the screws on the unit front panel.**

Lift the unit to ease the tightening.

9.8 Replacing a Wideband Signal Processor unit

9.8.1 Replacing a Wideband Signal Processor (WSP) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty WSP unit from UltraSite EDGE BTS**
2. **Install the new WSP unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WSP unit locally or from the RNC**

Unlock the sector associated with the WSP unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. Leave the site

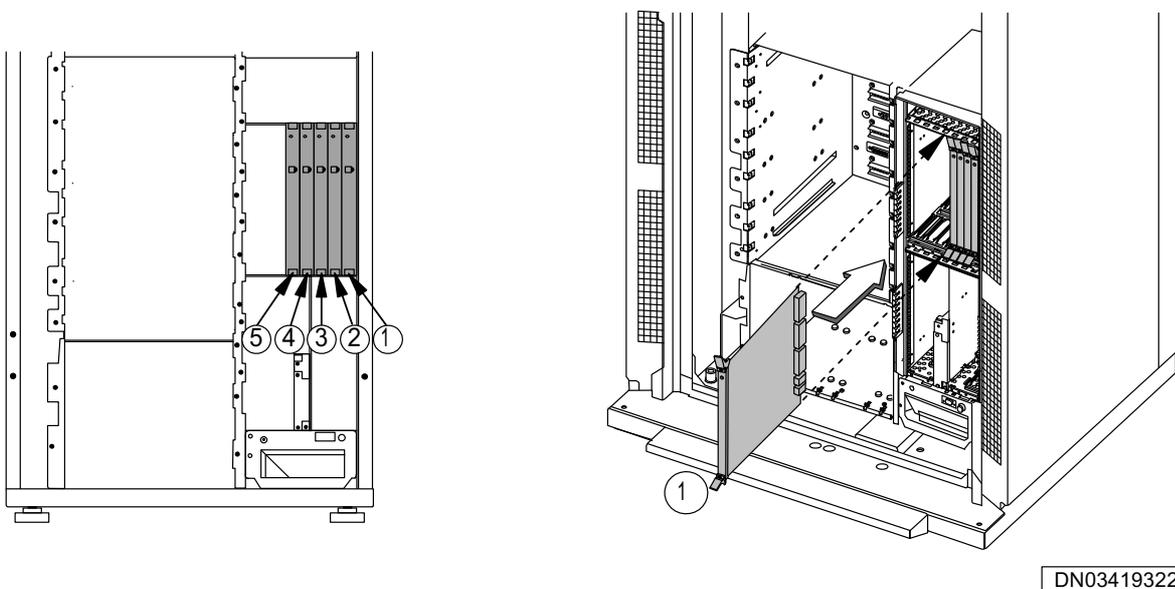
9.8.2 Removing a Wideband Signal Processor (WSP) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides five slots for WSP (WCDMA Signal Processor) units.



1	WSPx
---	------

Figure 71. WSP replacement



Steps

1. **Lock the sector associated with the WSP.**

Lock the sector associated with the WSP unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Remove the fixing screws of the unit.**

3. **Open the ejectors and carefully remove the unit from the rack.**

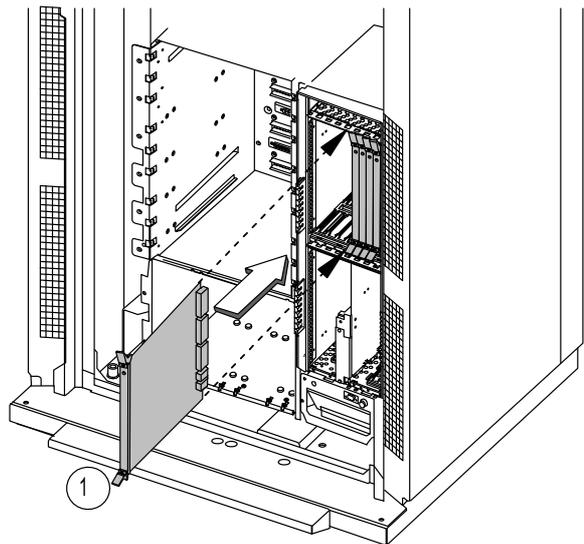
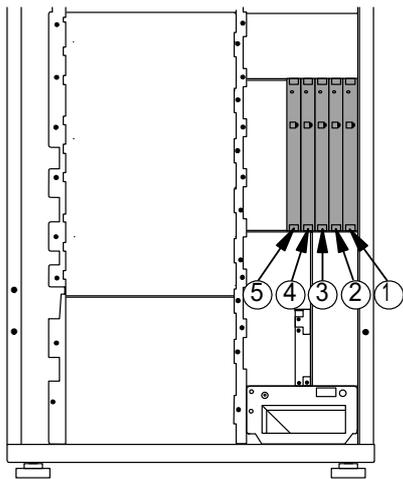
9.8.3 Installing a Wideband Signal Processor (WSP) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides five (5) slots for the WSP units.



DN03419322

1,2,3,4,5WSPx

Figure 72. Installing the WSP units

**Steps**

1. **Install the units from right to left.**
2. **Hold the ejectors open.**
3. **Slide the WSP unit into the rack.**
4. **When the WSP unit is in place, close the ejectors.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

5. **Tighten the screws on the unit front panel.**

Lift the unit to ease the tightening.

9.9 Replacing a Wideband System Clock unit

9.9.1 Replacing a Wideband System Clock (WSC) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty WSC unit from UltraSite EDGE BTS**
2. **Install the new WSC unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the WSC unit locally or from the RNC**

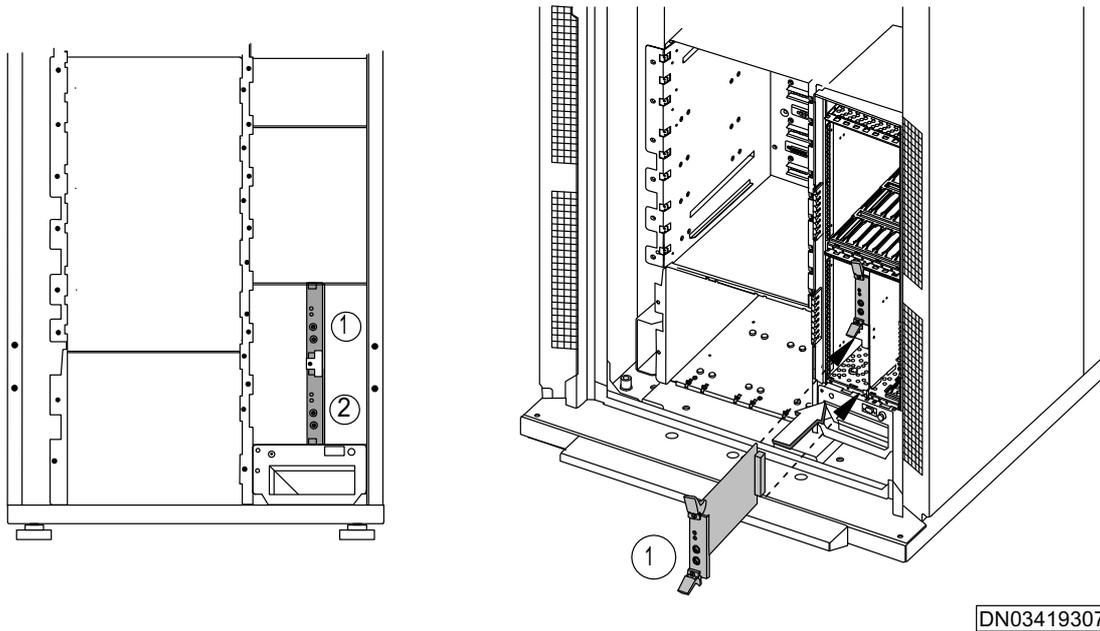
Unlock the sector associated with the WSC unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. Leave the site

9.9.2 Removing a WSC unit from UltraSite EDGE BTS

Summary

The cabinet provides one slot for a WSC (WCDMA System Clock) unit and one slot for a redundant WSC.



1	WSCx
---	------

Figure 73. WSC replacement



Steps

1. Lock the sector associated with the WSC unit locally or from the RNC.

Lock the sector associated with the WSC unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. Remove the fixing screws of the unit.

3. Open the ejectors and carefully remove the unit from the rack.

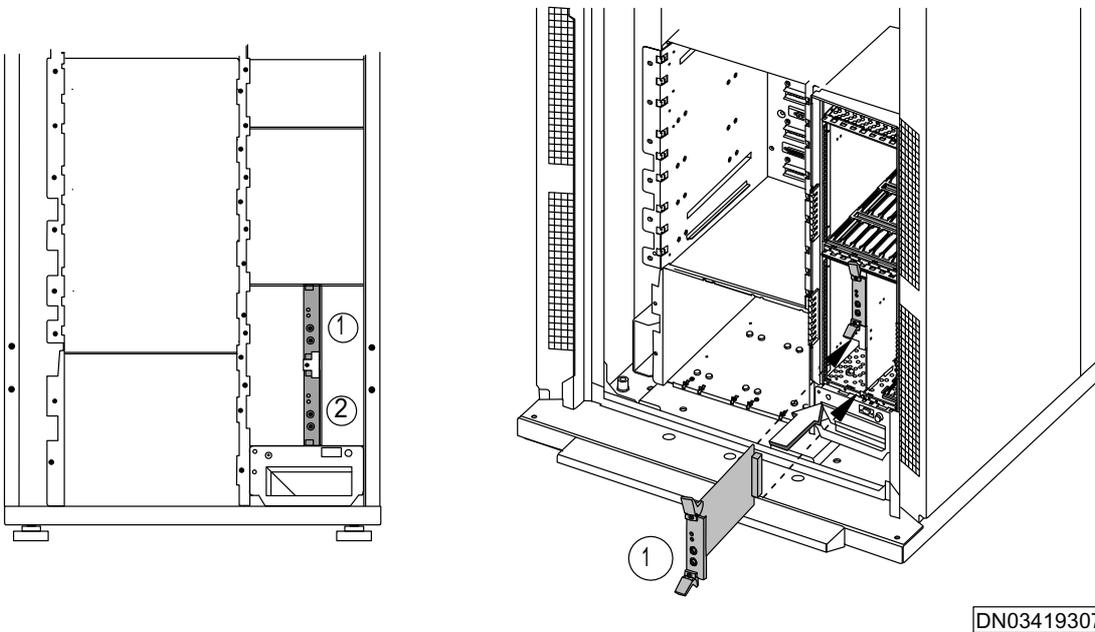
9.9.3 Installing a Wideband System Clock (WSC) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides two (2) slots for the WSC units.



DN03419307

1	WSCx
---	------

Figure 74. Installing the WSC units



Steps

1. Slide the WSC units into the racks in this order:

- a. Slide the upper WSC unit into the rack.
- b. Slide the lower WSC unit into the rack.

2. **Hold ejectors in an open position.**
3. **Close the ejectors when the WSC unit is in place.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

4. **Tighten the screws on the unit front panel.**

Lift the unit to ease the tightening.

9.10 Replacing an AXC-ATM Cross Connect unit

9.10.1 Replacing a AXC-ATM Cross Connect (AXU) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty AXU unit from UltraSite EDGE BTS**
2. **Install the new AXU unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the AXU unit locally or from the RNC**

Unlock the sector associated with the AXU unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

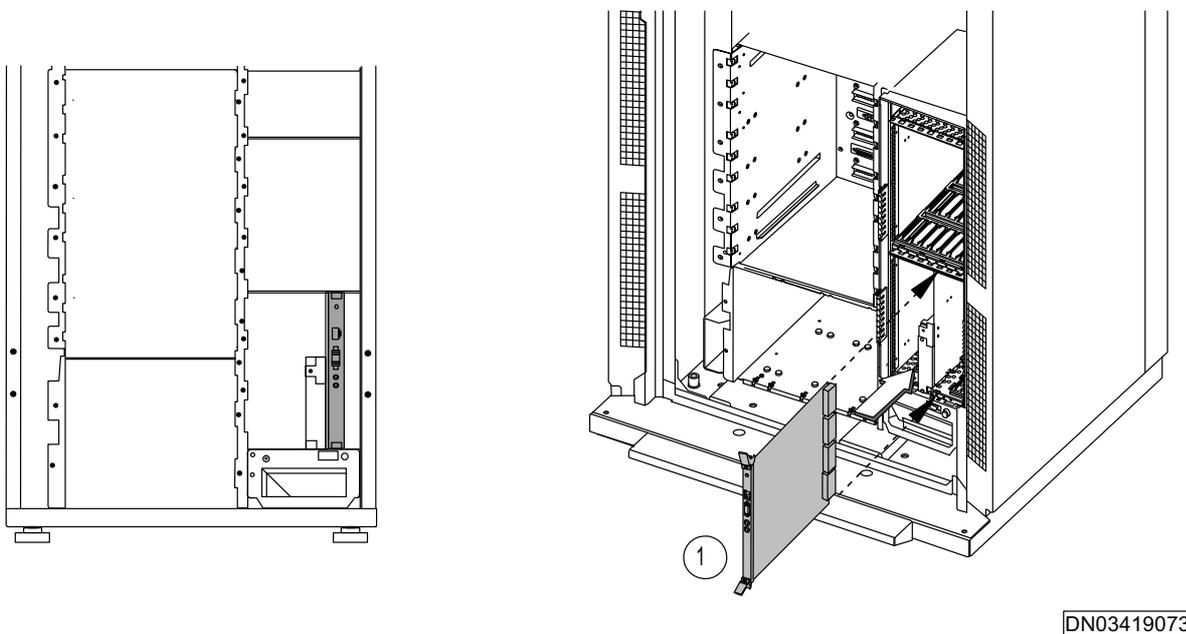
9.10.2 Removing an AXC-ATM Cross Connect (AXU) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for the AXU (ATM Cross-connect) units.



1	AXUx
---	------

Figure 75. AXU replacement



Steps

1. Lock the sector associated with the AXU unit locally or from the RNC.

Lock the sector associated with the AXU unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**
3. **Remove the fixing screws of the unit.**
4. **Open the ejectors and carefully remove the unit from the rack.**

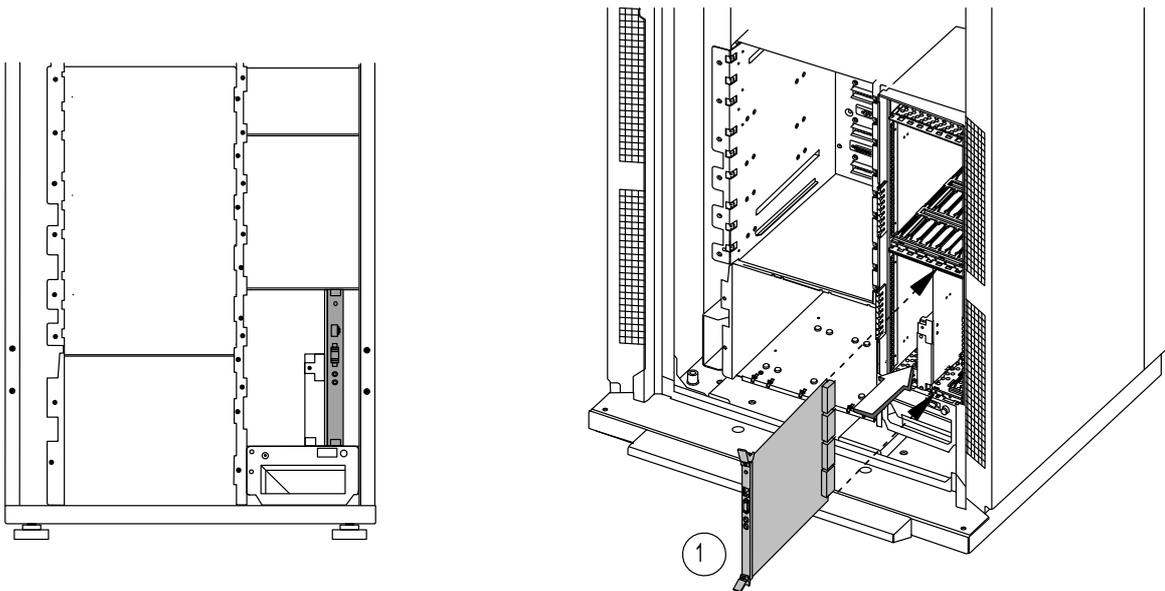
9.10.3 Installing a Wideband AXC-ATM Cross-connect (AXU) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides one (1) slot for the AXU unit.



DN03419073

1AXUx

Figure 76. Installing the AXU unit

**Steps**

1. **Slide the AXU unit into the rack.**
2. **Hold the ejectors in an open position.**
3. **When the AXU unit is in place, close the ejectors.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

4. **Tighten the screws on the unit front panel. L**

Lift the unit to ease the tightening.

9.11 Replacing an Interface unit

9.11.1 Replacing an Interface (IFU) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty IFU unit from UltraSite EDGE BTS**
2. **Install the new IFU unit in UltraSite EDGE BTS**
3. **Unlock the sector associated with the IFU unit locally or from the RNC**

Unlock the sector associated with the IFU unit with Nokia WCDMA BTS Manager or request sector unlock from the RNC.

4. **Leave the site**

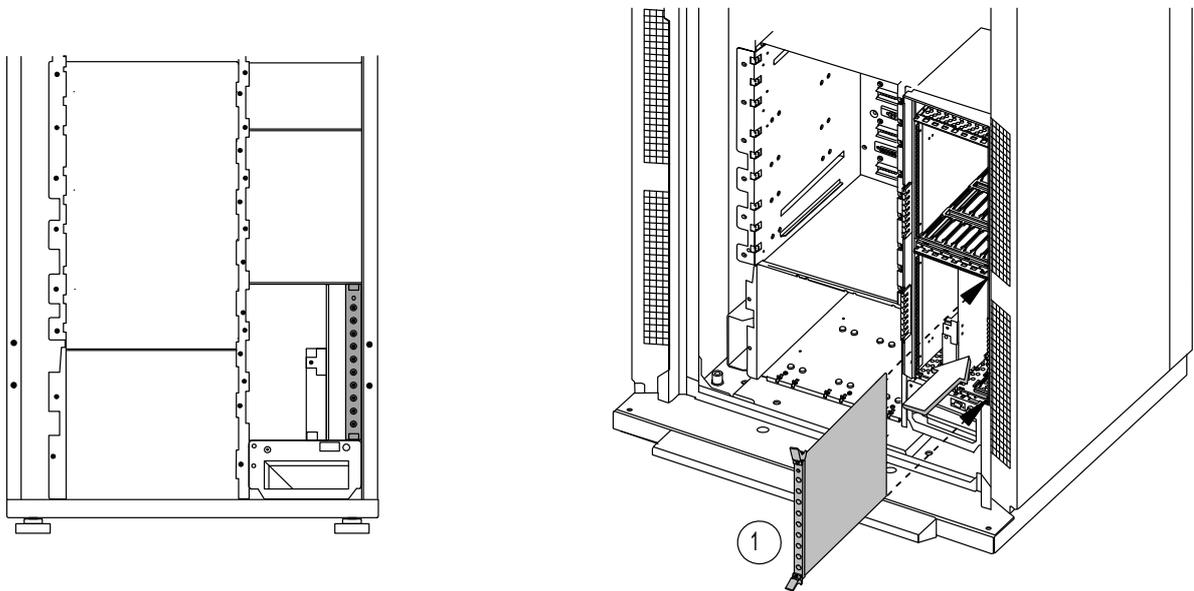
9.11.2 Removing an Interface (IFU) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for the IFU (Interface) units.



DN03419167

1	IFUx
---	------

Figure 77. IFU replacement



Steps

- 1. Lock the sector associated with the IFU unit locally or from the RNC.**

Lock the sector associated with the IFU unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. Disconnect the unit front cables.
3. Remove the fixing screws of the unit.
4. Open the ejectors and carefully remove the unit from the rack.

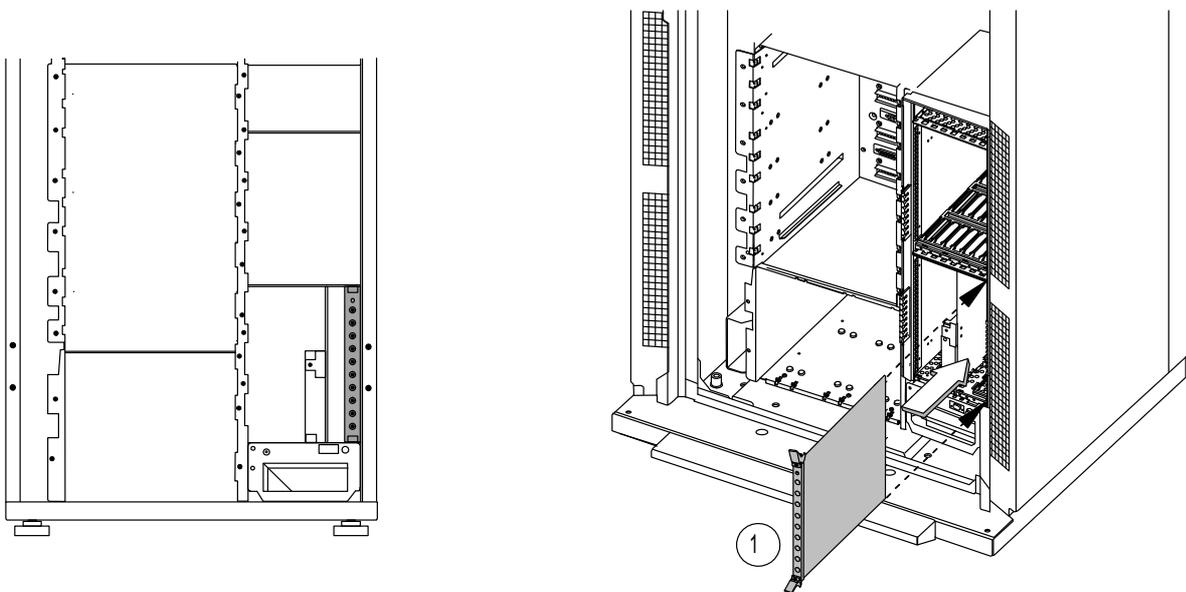
9.11.3 Installing a Wideband Interface (IFU) unit in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of installing WCDMA units*. Pay careful attention to all warnings and cautions.

Summary

The cabinet provides one (1) slot for the IFU unit.



DN03419167

1	IFUx
---	------

Figure 78. Installing the IFU unit

**Steps**

1. **Slide the IFU unit into the rack.**
2. **Hold the ejectors in an open position.**
3. **When the IFU unit is in place, close the ejectors.**

The ejectors fix the unit completely so that the rear connectors are fully engaged.

4. **Tighten the screws on the unit front panel.**

Lift the unit to ease the tightening.

9.12 Replacing a Wideband Power Supply unit

9.12.1 Replacing a WPS unit in Ultrasite EDGE BTS

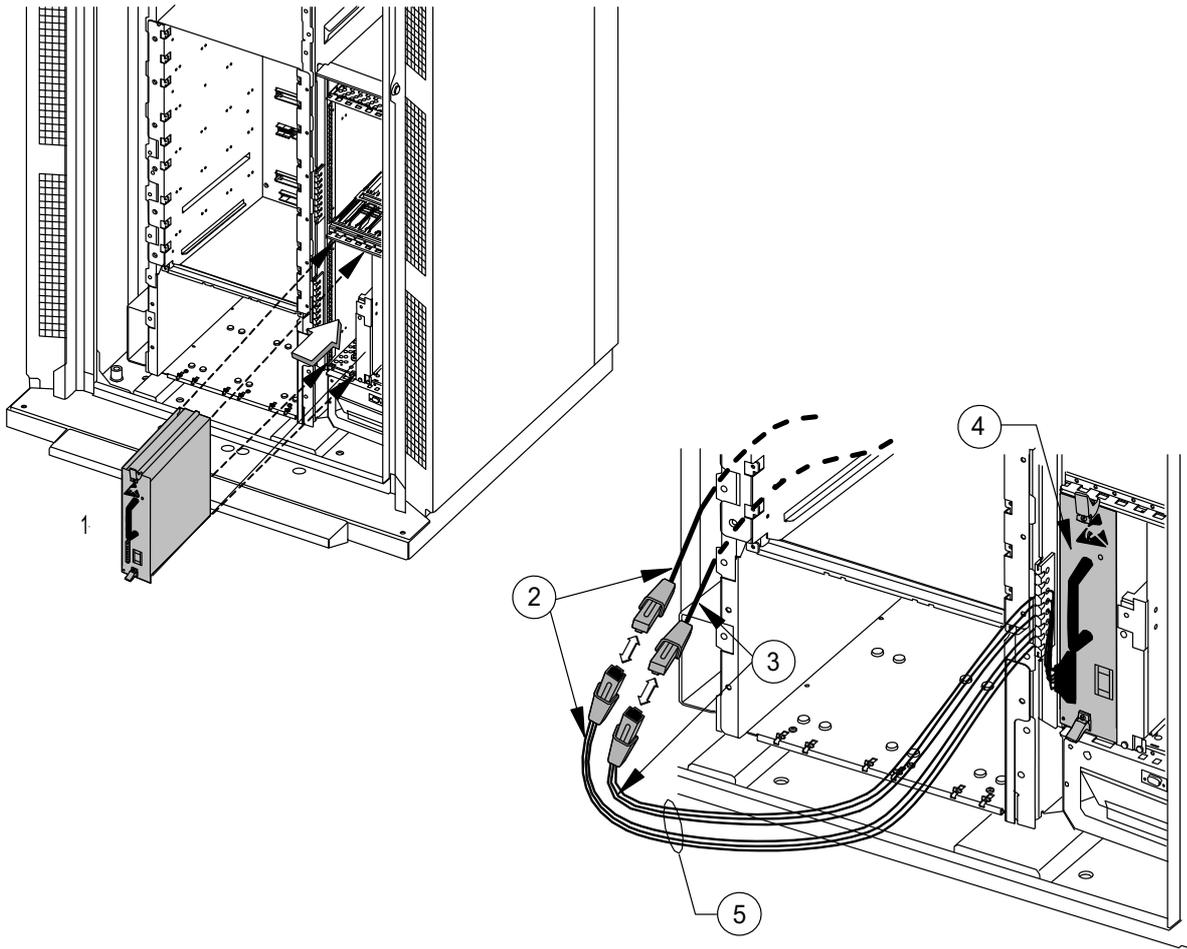
Purpose

The cabinet provides 1 slot for WPS (WCDMA Power Supply) unit.

Before you start

Refer to *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

Summary



DN03426942

1	WPSx
2	Black
3	Blue
4	WPSx
5	Power Cable extensions

Figure 79. WPS replacement



Steps

1. **Block the BCF either locally or from the RNC.**

Block the BCF locally with Nokia WCDMA BTS Manager or request BCF lock from the RNC.

2. **Power down UltraSite EDGE BTS.**
3. **Switch the BTS power OFF from the WPS unit switch.**
4. **Disconnect the power cables from the unit front panel.**
5. **Remove the fixing screws of the unit.**
6. **Open the ejectors and carefully remove the unit from the rack.**
7. **Remove the faulty WTCA Fan Module.**
8. **Install the new WPS unit.**
9. **Power ON UltraSite EDGE BTS with WCDMA upgrade.**
10. **Unblock the BCF either locally or from the RNC.**

Unblock the BCF locally with Nokia WCDMA BTS Manager or request BCF unlock from the RNC.

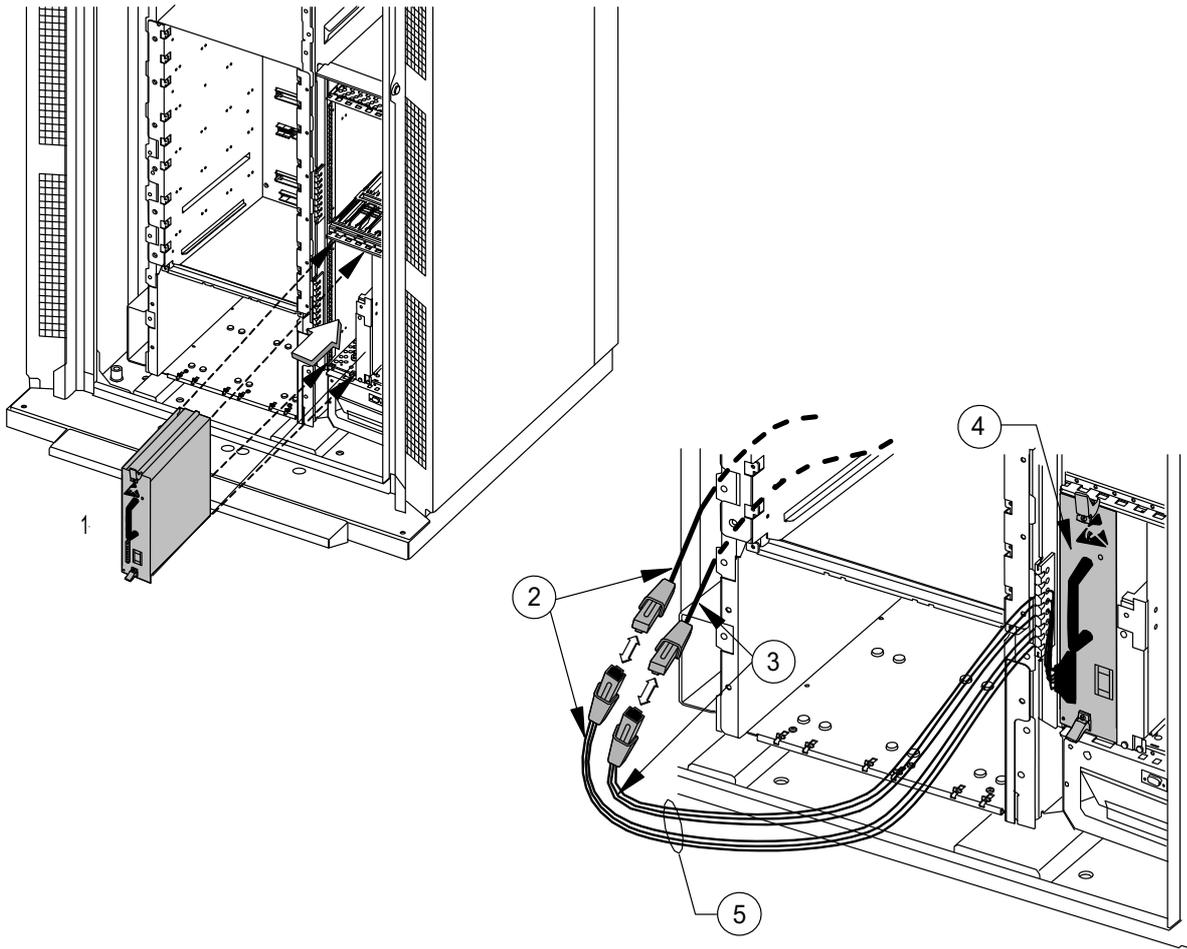
11. **Leave the site.**

9.12.2 Installing the Wideband Power Supply (WPS) unit to UltraSite EDGE BTS with WCDMA Upgrade

Before you start

Review the *Overview of upgrading UltraSite EDGE BTS with WCDMA*.

Summary



DN03426942

1	WPSx
2	Black
3	Blue
4	WPSx
5	Power Cable extension

Figure 80. Installing the WPS unit and the power cable extension



Steps

1. **Unpack the WPS unit from its protective package and check for visible damage.**

See Handling and unpacking units.

2. **Insert the WPS to the unit slot.**

See Installing units with ejectors.

3. **Close the unit ejectors.**

4. **Tighten the WPS mounting screws.**

See Torque settings.

5. **Connect the branches of the power cable extension to the branches of the BTS power cable (black cable to the black branch, blue cable to the blue branch).**

6. **Connect the power cable extension to the connector in the front of the WPS.**

7. **Insert the power cables to the cable block in the BB rack.**

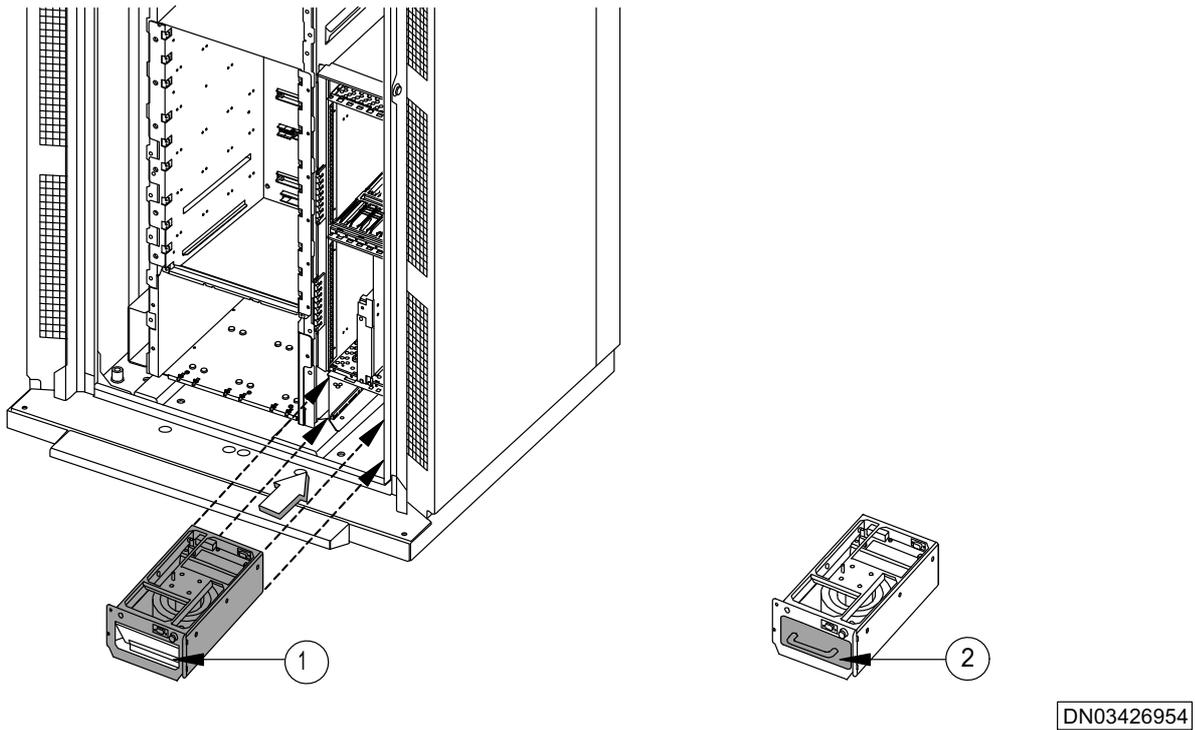
9.13 Replacing a Wideband Fan Module

9.13.1 Replacing a WTCA fan module in UltraSite EDGE BTS

Before you start

Refer to *Preparing to replace UltraSite EDGE BTS units* and pay careful attention to all warnings and cautions.

Summary



1	WTCA Fan Module for Outdoor cabinet cover plate removed
2	WTCA Fan Module for Indoor cabinet cover plate installed

Figure 81. WTCA Fan replacement



Steps

1. **Unpack the new WTCA Fan Module from its protective package and check for visible damage.**
2. **In Outdoor installation, remove the WTCA Fan Module front cover.**
3. **Lock the sector associated with the WTCA Fan Module with Nokia WCDMA BTS Manager or request sector lock from the RNC.**
4. **Switch the BTS power OFF from the WPS unit switch.**

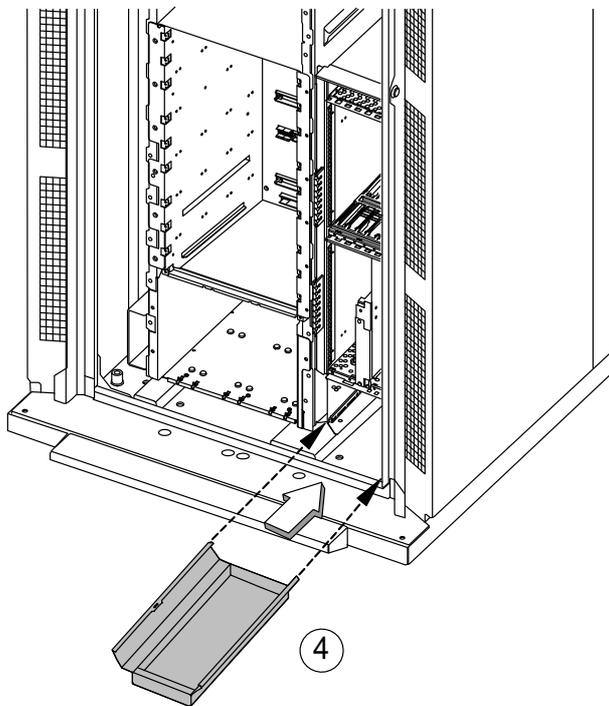
5. Disconnect the WTCA Fan Module front cables.
6. Remove the fixing screws of the WTCA Fan Module.
7. Install the new WTCA fan module.

9.13.2 Installing the Wideband Fan Module (WTCA) to UltraSite EDGE BTS outdoor with WCDMA Upgrade

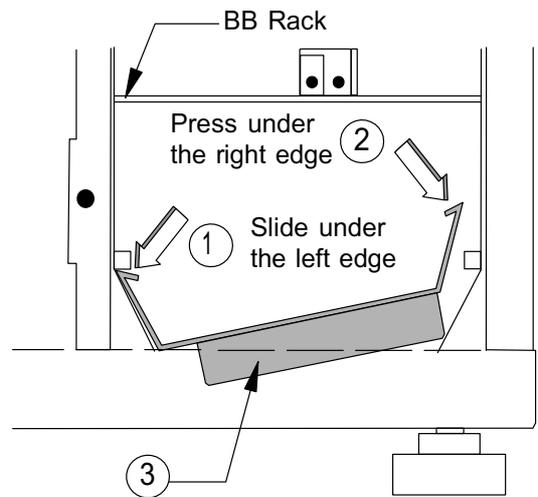
Before you start

Review the *Overview of upgrading UltraSite EDGE BTS with WCDMA*.

Summary



BB Rack and Bottom Plate, front view

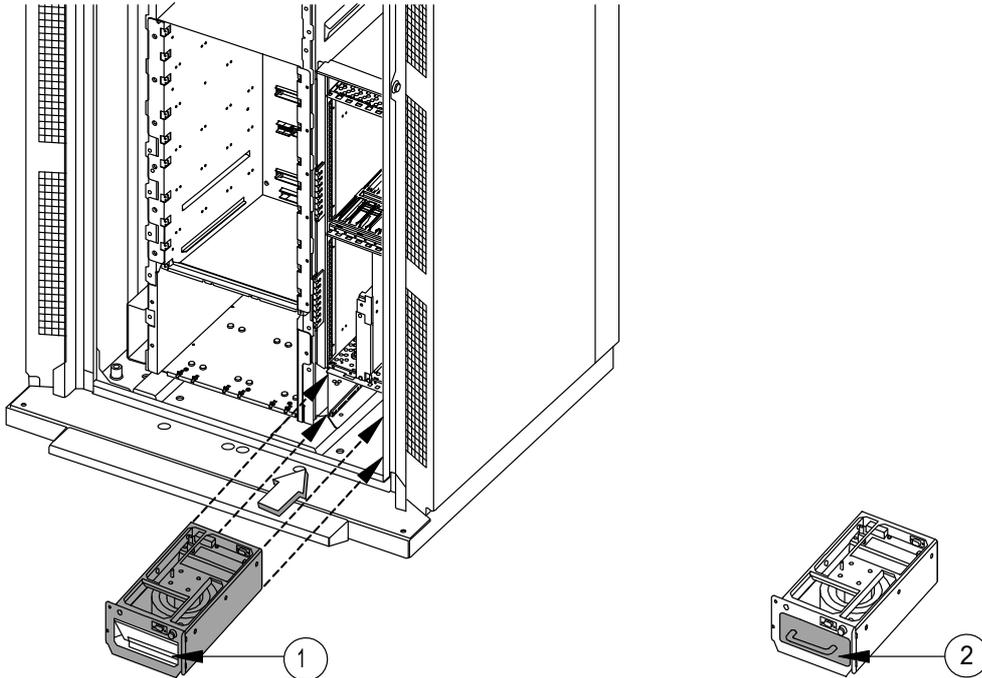


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1	Slide under the left edge
2	Press under the right edge

3	Bottom plate
4	WTCA fan module bottom plate

Figure 82. Installing the WTCA Fan Module Bottom Plate



DN03426954

1	WTCA Fan Module for Outdoor cabinet cover plate removed
2	WTCA Fan Module for Indoor cabinet cover plate installed

Figure 83. Installing the WTCA Fan Module



Steps

1. *If you are installing in an outdoor cabinet,*

Then

Make sure you have removed the WTCA Fan Module cover plate and installed it to the back of the BB rack.

2. *If you are installing in an indoor cabinet,*

Then

attach the cover plate to the WTCA Fan Module front panel.

3. **Unpack the WTCA Fan Module bottom plate and check for visible damage.**

See Unpacking the WTCA Fan Module bottom plate.

4. **Slide the left edge of the bottom plate under the bottom left edge in the BB rack.**

5. **Press the right edge of the bottom plate under the bottom right edge in the BB rack.**

6. **Insert the WTCA Fan Module to the unit slot.**

7. **Tighten the WTCA Fan Module mounting screws.**

See Torque settings.

10 Replacing UltraSite EDGE BTS IBBU units

10.1 Overview of removing units from UltraSite EDGE BTS with IBBU

Summary



Warning

Potentially lethal voltages!

Switch the BTS power OFF from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shock!



Warning

Unit mounting fasteners may be nickel-plated. Nokia recommends that personnel allergic to nickel wear protective gloves when handling units.



Warning

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. When you turn OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch, the BTS is in STANDBY mode.

Switch BTS power OFF in accordance with Powering down UltraSite EDGE BTS.



Warning

Follow national regulations when working with power supply and power cables.



Caution

Notify BSC personnel before you remove or add units to Nokia UltraSite EDGE BTS.



Caution

Always use the antistatic hand strap when handling units that are marked with the ESD sign. Units carrying the ESD sign are sensitive to electrostatic discharging.



Caution

Handle the heavy units with care.



Caution

Be careful not to bend the RF and antenna cables more than is allowed. The smallest allowed bending radius is 25 mm (1 inch).



Caution

If removing to install replacement units, ensure that the new units are the same type and version as those being removed.

**Steps**

1. **Remove BBAX unit**
2. **Remove BATx unit**
3. **Remove CCUx unit**
4. **Remove ADUx unit**

10.2 Replacing an AC/DC Connection unit

10.2.1 Replacing an AC/DC Connector (ADUA) unit in UltraSite EDGE BTS with IBBU

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty ADUx unit from UltraSite EDGE BTS**
2. **Install the new ADUx unit in UltraSite EDGE BTS**
3. **Power ON the UltraSite EDGE BTS with IBBU**
4. **Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTS Manager or request BCF unblock from the BSC.

5. **Leave the site**

10.2.2 Removing an AC/DC Connection (ADUA) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

Failure to switch off all AC and DC breakers prior to ADUx removal can result in hazardous voltage discharges.



Steps

1. Block the BCF locally with Nokia BTSManger or request BCF lock from the BSC.
2. Loosen the four M4 screws that secure the ADUx unit cover to the ADUx unit, and remove the cover.
3. Switch off all AC and DC breakers on the ADUx.
4. Remove the four M4 screws on the ADUx front.
5. Slide the ADUx unit out of the cabinet, ensuring that the cables do not become entangled.
6. Remove all cables from the ADUx.

10.2.3

Installing an AC/DC Connection (ADUx) unit in UltraSite EDGE BTS with IBBU

Before you start

Review the *Overview of installing IBBU units of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

Switch off all AC and DC breakers prior to installing the ADUx. Ensure that all AC and DC breakers on the ADUx are switched off. Failure to switch off all breakers can result in hazardous voltage discharges.

Note

The ADUx is pre-installed in the UltraSite cabinet. ADUx installation is required only if replacing a faulty ADUx unit.



Steps

- 1. Attach cables to the ADUx.**

Connect cables to the ADUx from the rectifiers, batteries and BTS.

- 2. Slide the ADUx unit into the cabinet, ensuring that the cables do not become crimped or entangled.**

- 3. Secure the ADUx unit cover with four M4 screws on the ADUx front.**

10.3 Replacing a Cabinet Control unit

10.3.1 Replacing a Cabinet Control (CCUA) unit in the AC/DC Connection (ADUA) unit of UltraSite EDGE BTS with IBBU

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

- 1. Remove the faulty CCUx unit from the ADUA unit of UltraSite EDGE BTS with IBBU**

- 2. Install the new Cabinet Control (CCUA) unit in the ADUA unit of UltraSite EDGE BTS with IBBU**

- 3. Power ON the UltraSite EDGE BTS with IBBU**

- 4. Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTS Manager or request BCF unlock from the BSC.

5. Leave the site

10.3.2 Removing a Cabinet Control (CCUx) unit from the AC/DC Connection (ADUA) unit of UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.



Steps

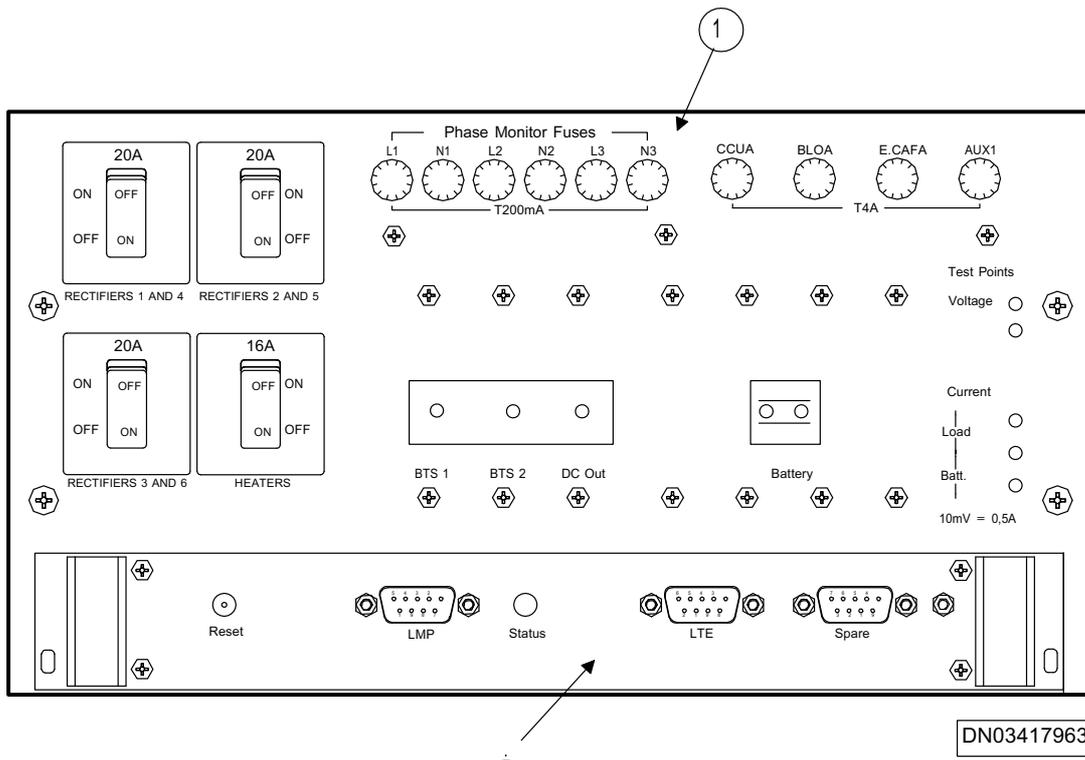
1. Remove the CCUA unit fuse (glass tube) on the front of the ADUx.
2. Remove the CCUA unit.

10.3.3 Installing a Cabinet Control (CCUA) unit in the AC/DC Connection (ADUA) unit of UltraSite EDGE BTS IBBU

Before you start

Review the *Overview of installing IBBU units of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	ADUA
2	CCUA

Figure 84. ADUA front panel



Steps

1. Remove the CCUA unit fuse (glass tube) on the front of the ADUx.
2. Remove the faulty CCUA unit.
3. Insert a new CCUA unit into the ADUx unit.
4. Replace the CCUA fuse.

10.4 Replacing a 1300 W Rectifier unit

10.4.1 Replacing a 1300 W Rectifier (BATx) unit in UltraSite EDGE BTS with IBBU

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty BATx unit from UltraSite EDGE BTS with IBBU**
2. **Install the new BATx unit in UltraSite EDGE BTS with IBBU**
3. **Power ON the UltraSite EDGE BTS with IBBU**
4. **Unblock the BCF either locally or from the BSC**

Unblock the BCF locally with Nokia BTS Manager or request BCF unlock from the BSC.

5. **Leave the site**

10.4.2 Removing a 1300 W Rectifier (BATx) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the two M4 screws on the BATx unit.**
2. **Slide the BATx out of the cabinet.**

10.4.3 Installing a Rectifier (BATx) unit in UltraSite EDGE BTS IBBU

Before you start

Review the *Overview of installing IBBU units of UltraSite EDGE BTS with IBBU*. Pay careful attention to all Warnings and Cautions.

Summary

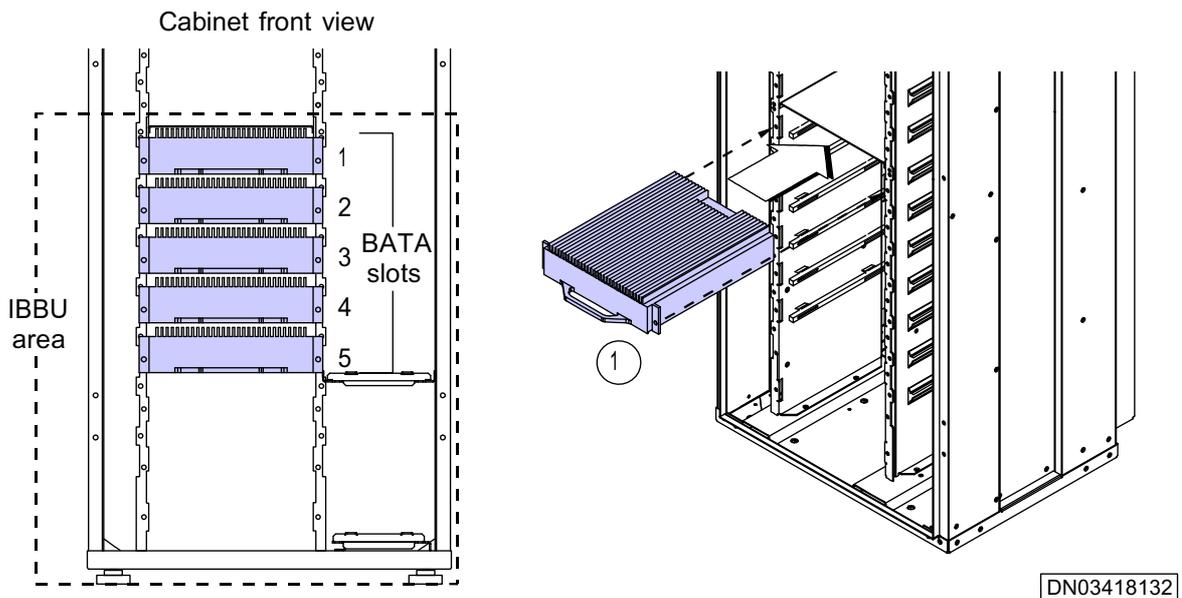


Caution

Do not use force when installing the BATx unit into the backplane connectors; backplane connector pins can be damaged.

The IBBU provides space for five BATx units above the ADUx unit. The BATx units are numbered from 1 to 5, top to bottom.

Install the rectifiers in descending slot order beginning with slot 1.



1	BATA
---	------

Figure 85. BATx unit installation

**Steps**

1. **Switch off all AC and DC breakers on the ADUx unit.**
2. **Remove the ingress covers from the connectors being used on the BATA backplane.**
3. **Position the BATx unit above the ADUx unit.**
4. **Slide the BATx unit into the cabinet while aligning the locating pins on the rear of the BATx unit with the cabinet guide holes.**
5. **Tighten the two M4 screws on the BATx unit.**

Torque settings of UltraSite EDGE BTS

6. **Repeat steps 1 through 5 for additional BATx units.**

10.5 Replacing a Battery unit

10.5.1 Replacing a Battery (BBAx) unit in UltraSite EDGE BTS with IBBU

Before you start

Review the procedure for *Preparing to replace UltraSite EDGE BTS units*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty BBAX unit from UltraSite EDGE BTS with IBBU**
2. **Install the new BBAX unit in UltraSite EDGE BTS IBBU with IBBU**
3. **Power on the UltraSite EDGE BTS with IBBU**
4. **Leave the site**

10.5.2 Removing a Battery (BBAx) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

Ensure that the battery circuit breaker is in the OFF position before starting this procedure.



Warning

Never connect or disconnect the battery cable from the ADUx when the other end of the lead is connected to the batteries.



Warning

Always disconnect the positive battery lead before the negative lead.



Warning

As the cabinets are positive earthed, to minimise the risk of short circuits while the battery leads are loose, always connect the negative battery lead before the positive lead.



Steps

1. Switch the battery circuit breaker to the OFF position.
2. Disconnect the lead of the bridging cable connected to the positive terminal of the BBAx unit in the upper battery box.

3. **Disconnect the remaining lead of the bridging cable from the negative terminal of the BBAX unit in the lower battery box.**
4. **Remove the vent tube from the BBAX units in the battery box you need to remove.**
5. **Remove the two M4 screws securing the battery box to the cabinet shelf.**
6. **Slide the battery box out of the cabinet.**
7. **Disconnect the remaining lead connected to the BBAX unit in the battery box and then route the lead clear of the battery terminals.**
8. **Remove the terminal bridge between the BBAX units.**
9. **Remove the cover plate from the BBAX you are replacing.**
10. **Carefully lift the BBAX unit from the battery box.**

10.5.3 Installing a Battery (BBAX) unit in UltraSite EDGE BTS IBBU

Before you start

Review the *Overview of installing IBBU units of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Before you install the batteries, perform voltage measurements to ensure that the batteries are acceptable. Visually check the batteries for the following:

- defects (including external damage)
- pressure spots
- deformities
- corrosion of battery terminals
- acid escape

If a defect cannot be remedied, dispose of the defective battery.

Summary



Warning

Before you start the installation, verify that the battery circuit breaker is in the OFF position. Use only insulated tools to work on the batteries.



Warning

Never connect or disconnect the battery lead from the ADUx unit when the other end of the lead is connected to the batteries.



Warning

To minimise the risk of short circuits if the battery leads are loose, connect the negative battery lead to the batteries before the positive cable. Always disconnect the positive battery cable from the batteries before the negative cable.



Warning

Ensure battery cable lugs do not touch each other during installation.



Warning

Take great care when installing the battery boxes to the cabinet. The installation is difficult and the battery boxes are heavy.

The IBBU configuration requires the installation of two 12V BBAX battery boxes that hold two batteries each. The boxes are located on shelves in the bottom right of the cabinet. During installation, the batteries are connected to the BBAX battery cables, which are attached to the ADUx unit.



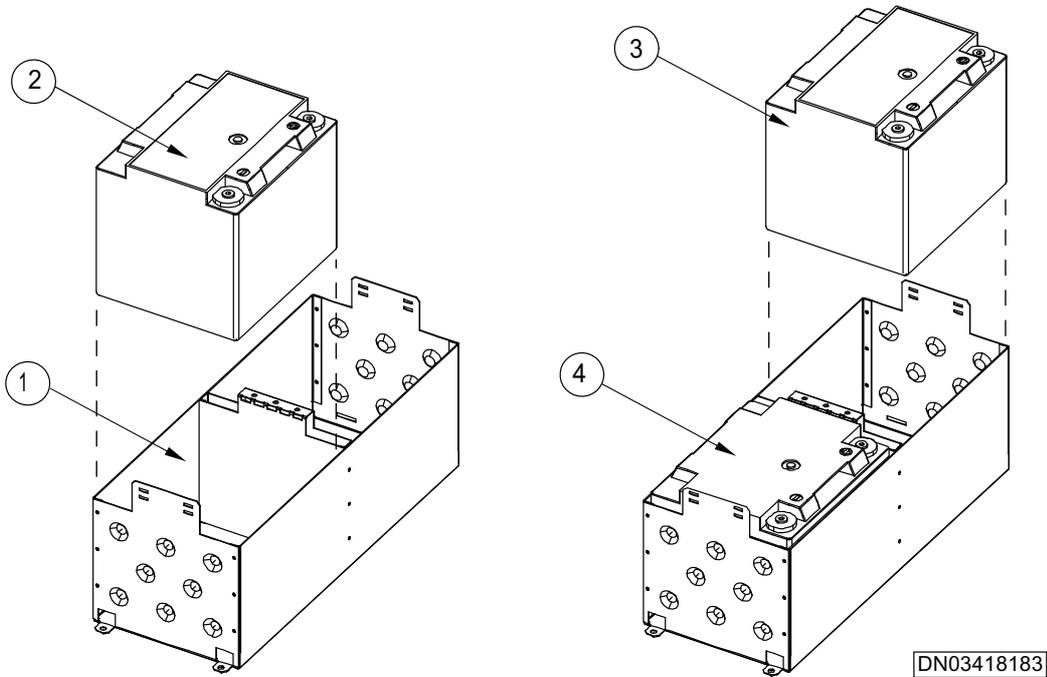
Steps

1. Install the BBAX to the battery box.

- a. Remove the two M5 screws securing each battery box in the cabinet, and remove the boxes.
- b. Position one of the batteries above a battery box.

Note

When installing the battery into the lower box, make sure the terminals are on the right side. When installing the battery into the upper box, make sure the terminals are on the left side.



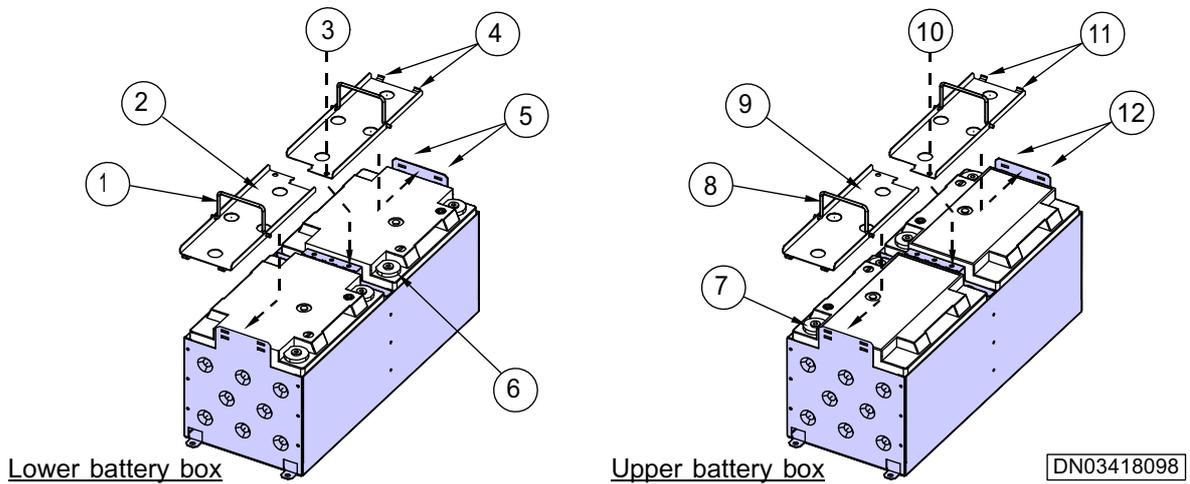
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1	Battery box
2	Battery 1
3	Battery 2

4	Battery 1
---	-----------

Figure 86. BBAX unit installation into boxes

- c. Carefully lower the BBAX unit into the battery box.
- d. Carefully lower the second BBAX unit into the battery box.
- e. Position the two battery block cover plates, and secure with three M5 screws.



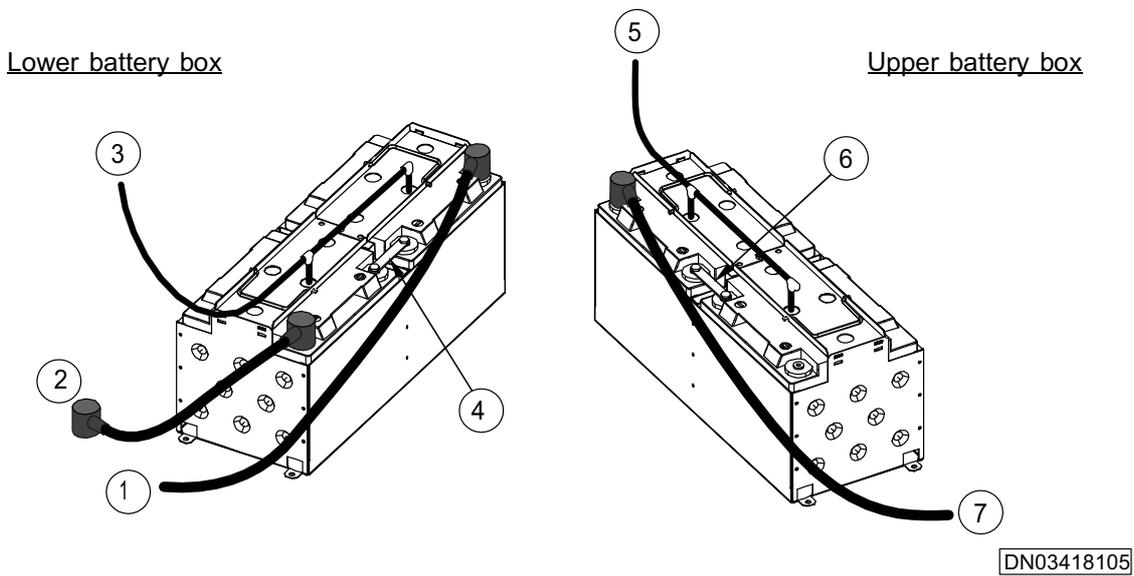
1	Handle
2	Cover plate (two places)
3	Screw (three places)
4	Tabs
5	Slots
6	Terminals
7	Terminals
8	Handle
9	Cover plate (two places)
10	Screw (three places)

11	Tabs
12	Slots

Figure 87. Battery block cover plate installation

f. Repeat steps 1(a)through 1(e) for the second battery box.

2. Connect the battery cables.



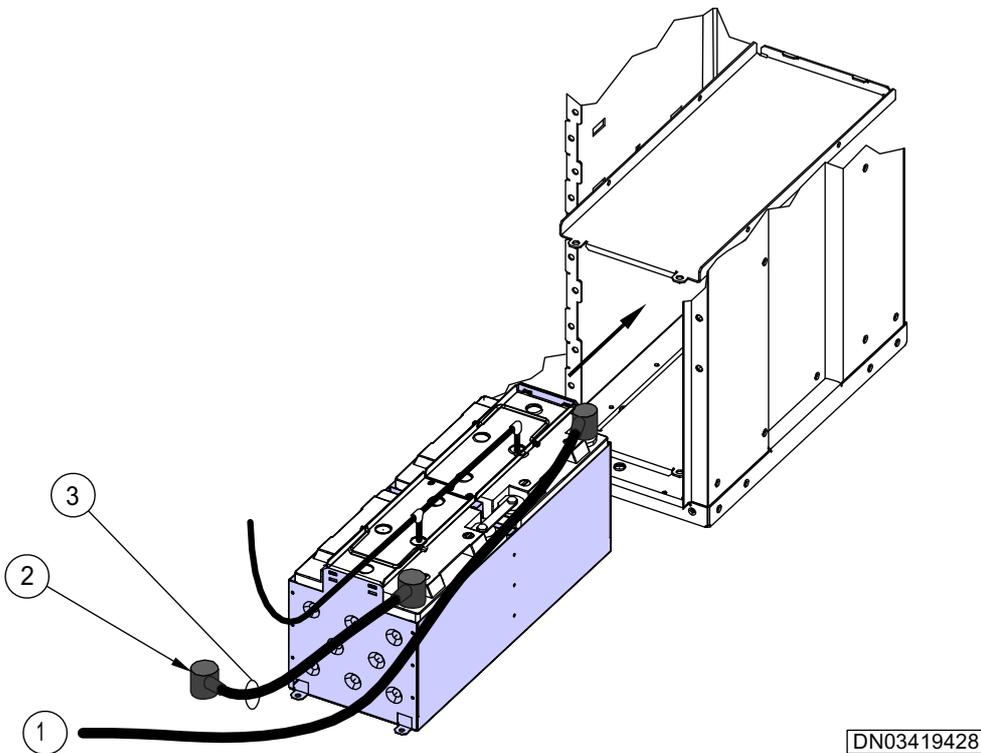
1	From ADUA (+)
2	Bridge cable to (+) terminal on upper battery
3	To venting tube on upper battery box
4	Terminal bridge
5	Venting tube
6	Terminal bridge
7	From ADUA (-)

Figure 88. Battery box cable and vent tube installation

- a. Install the terminal bridge and battery ventilation tubes on the upper battery box.
- b. Connect the negative power cable from the ADUx unit to the negative terminal on the rear battery of the upper battery box.
- c. Use an insulated torque wrench to tighten the battery terminal screws to 6.78 Nm (5.0 ft lb).
- d. Install the terminal bridge, battery ventilation tubes, and battery jumper cable on the lower battery box.
- e. Connect the positive power cable from the ADUx unit to the positive terminal on the rear battery of the lower battery box.
- f. Use an insulated torque wrench to tighten the battery terminal screws. See *Torque settings of UltraSite EDGE BTS*.
- g. Connect the battery bridge cable to the negative terminal of the front battery located in the lower battery box.

3. Install the battery boxes.

- a. Slide the lower battery box into the cabinet.

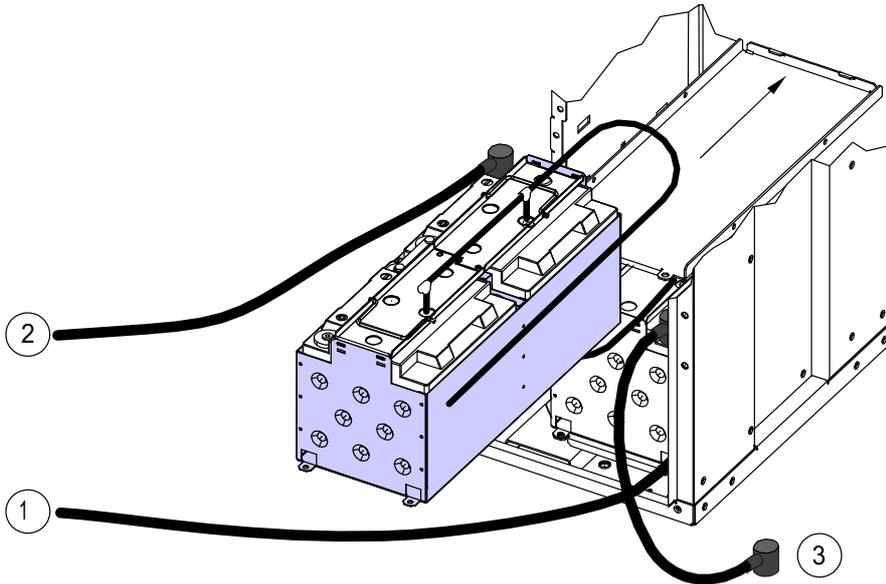


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1From ADUA (+)2Insulating cover3Bridge cable to (+) terminal on upper battery

Figure 89. Lower battery box installation

- b. Secure the battery box to the shelf using two M5 screws. See *Torque settings of UltraSite EDGE BTS*.
- c. Slide the upper battery box into the cabinet.



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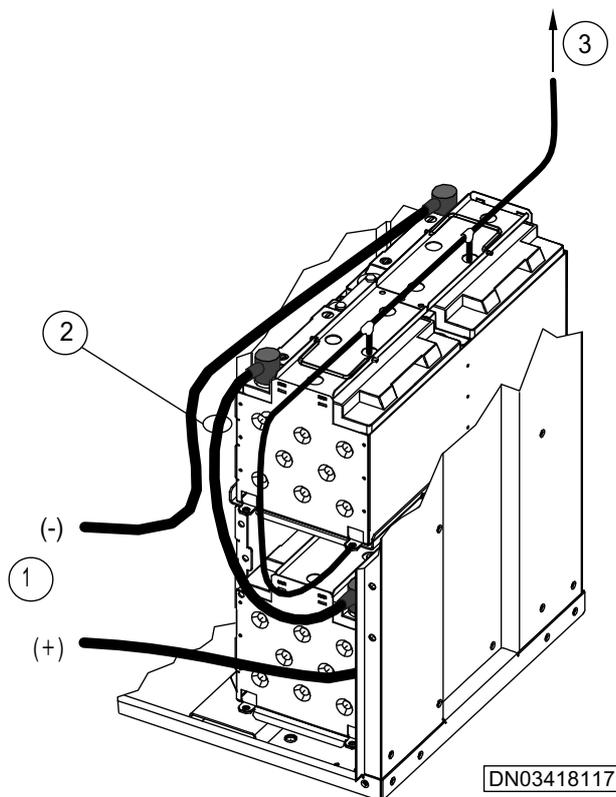
1	From ADUA (+)
2	From ADUA (-)
3	Bridge cable

Figure 90. Upper battery box installation

- d. Secure the battery box to the shelf using two M5 screws. See *Torque settings of UltraSite EDGE BTS*.

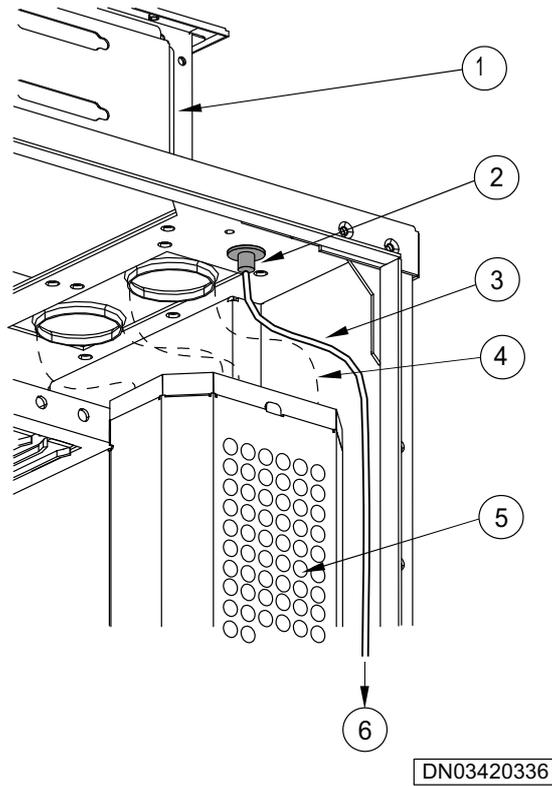
4. Connect the battery boxes.

- a. Connect the free end of the battery bridge cable to the positive terminal on the front battery of the upper battery box.
- b. Use an insulated torque wrench to tighten the battery terminal screw. See *Torque settings of UltraSite EDGE BTS*.
- c. Connect the battery ventilation tubes together; install the long ventilation tube to the combined output; and route the tube up the cable channel on the right of the cabinet, attaching it to the vent tube bushing on the top of the cabinet.



1	From ADUA
2	Bridge cable
3	To venting tube outlet on cabinet roof

Figure 91. Battery box connections



1	Antenna box
2	Vent tube bushing
3	Battery vent tube
4	Transmission cables sleeve (two places)
5	Transmission units cover
6	To battery vents

Figure 92. Vent tube installation

- d. Insert the battery temperature sensor from the ADUA in the tray channel above the left side of the lower battery box.

11 Replacing UltraSite EDGE BTS cables

11.1 Replacing cables of WCDMA units in UltraSite EDGE BTS

Before you start

Review the *Overview of cabling units of UltraSite EDGE BTS with WCDMA upgrade*.



Steps

1. **Remove cables from WCDMA units.**
2. **Connect cables to the WCDMA units.**
3. **Install cable of heater control to UltraSite EDGE BTS outdoor with WCDMA upgrade.**

11.2 Removing cables from WCDMA units

Before you start

Review the *Overview of removing WCDMA units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

5	WCDMA Summing and Multiplexing (WSM) unit
6	WCDMA Application Manager (WAM) unit
7	WCDMA Signal Processor (WSP) unit
8	WCDMA Power Supply (WPS) unit
9	WCDMA System Clock (WSC) unit
10	ATM Multiplexer (AXU) unit
11	Interface unit (IFU)
12	WTCA Fan Module
13	Transmission (VXxx) unit
14	Bias Tee (Bias-T or BPxx) unit

Figure 93. UltraSite EDGE BTS with WCDMA units in the lower compartment of the cabinet



Steps

1. **Note the configuration of the WCDMA unit.**
2. **Lock the sector affected by the maintenance work.**
3. **Disconnect the WCDMA unit front cables.**

11.3 Overview of cabling units of UltraSite EDGE BTS with WCDMA upgrade

Summary

The cable sets are delivered with the units when you order the configuration from the factory. All cables are identified by the cable code and the cable label.

Note

During commissioning, the code and label information can be stored to a file in the BTS.

**Steps**

1. **Route antenna cables.**
2. **Route TX/RX cables.**
3. **Route transmission cables.**
4. *If installing heater control in an outdoor cabinet,*
Then

Follow these instructions.

11.4 Replacing AC power cables of UltraSite EDGE BTS

11.4.1 Replacing AC power cables of UltraSite EDGE BTS

Before you start

Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove AC power cables from UltraSite EDGE BTS**
2. **Connect AC power cables to UltraSite EDGE BTS**

11.4.2 Removing AC power cables from UltraSite EDGE BTS

Before you start

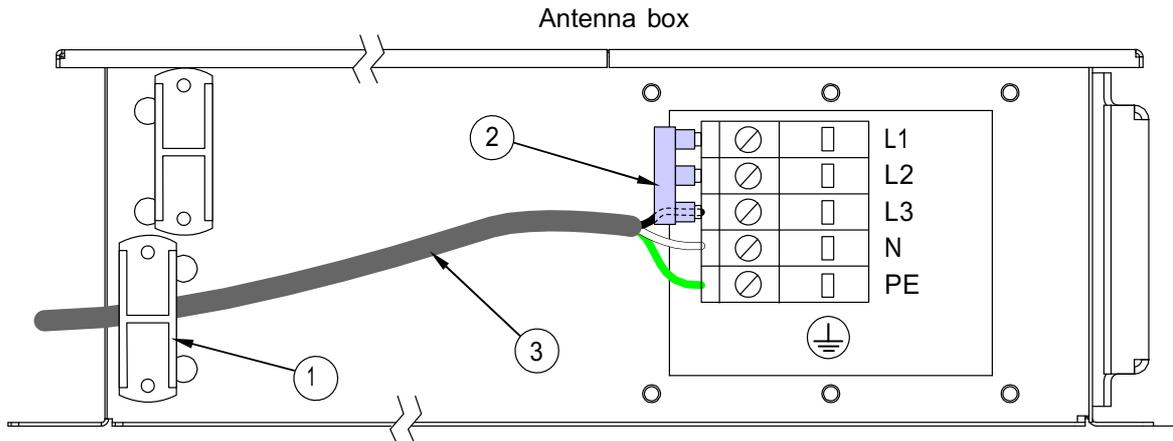
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

Depending on the position of the antenna box, you may need to remove the dummy cable entry panel adjacent to the power connector to access the connector screws. As an alternative, you can remove the screws securing the antenna box to the cabinet core and lift the antenna box to access the connector screws.

Summary

The following information describes how to remove single-phase AC power cables for UltraSite EDGE BTS cabinets located within the USA and Canada (two wires with ground) and Europe (one wire with neutral and ground). It also describes how to remove three-phase AC power cables for UltraSite EDGE BTS cabinets located within Europe.

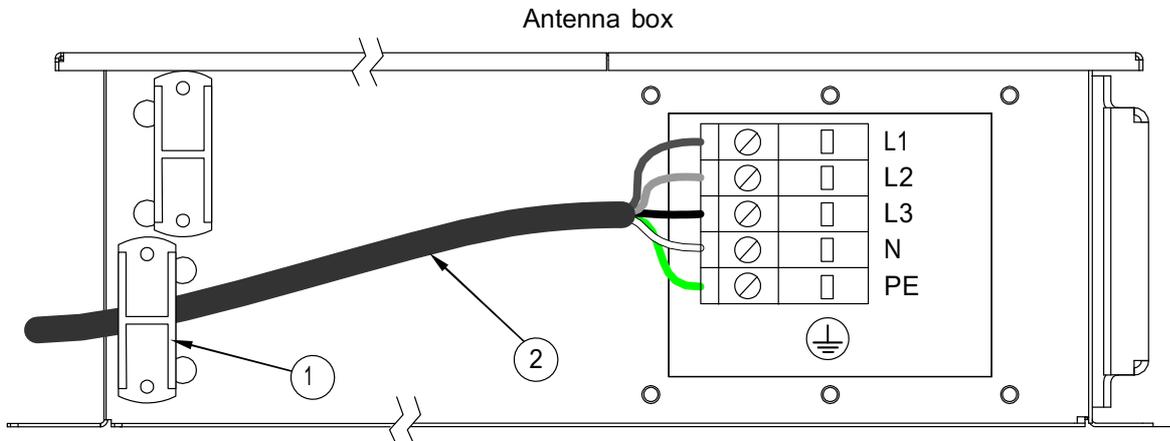


NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), PE = Ground

DN03418592

1	Strain relief
2	Shorting bar
3	AC Power input cable

Figure 94. Single-phase AC power to the BTS (USA, Canada and Europe)



NOTE: Power input wiring must adhere to local codes.
 L1 = Phase 1, L2 = Phase 2, L3 = Phase 3,
 N = Neutral, PE = Ground

DN03418608

1	Strain relief
2	AC Power input cable

Figure 95. Three-phase AC power to the BTS (Europe)



Steps

1. **Power down the UltraSite EDGE BTS.**
2. **Turn the mains power breaker OFF.**
3. *If you are removing the single-phase AC power cable from the BTS (USA and Canada),*

Then

Perform the following tasks:

- a. Loosen the screws on the strain relief.
- b. Turn the screw of the N connector to the left to open the connector. Remove the live wire.
- c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.
- d. Turn the screws of the L1 and L2 connectors to the left to open the connectors. Remove the shorting bar from L1, L2 and L3.

- e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
 - f. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
 - g. Remove the power cable from the strain relief.
4. *If you are removing the single-phase AC power cable from the BTS (Europe),*

Then

Perform the following tasks:

- a. Loosen the screws on the strain relief.
 - b. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.
 - c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.
 - d. Turn the screws of the L1 and L2 connectors to the left to open them. Remove the shorting bar from L1, L2 and L3.
 - e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
 - f. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
 - g. Remove the power cable from the strain relief.
5. *If you are removing the three-phase AC power cable from the BTS (Europe),*

Then

Perform the following tasks:

- a. Loosen the screws on the strain relief.
- b. Turn the screws of the L1, L2 and L3 connectors to the left to open them. Remove the three live wires from these connectors.
- c. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.
- d. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
- e. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
- f. Remove the power cable from the strain relief.

11.4.3 Overview of connecting AC power cables to UltraSite EDGE BTS

Summary



Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure the power cable is secure within the strain relief.

The AC terminal block is rated to accept cable from 10 to 16 mm². The recommended cross sectional area of cable connecting to the AC terminal block is 13.3 mm² (flexible stranded #6 AWG).

Note

The AC Filter module and the shorting bar are optional equipment and are installed on the opposite side of the antenna box. The default -48 VDC Filter module can be removed from the antenna box, if desired. The AC (ACFU) Filter module is installed for AC power installations.

Note

Depending on the position of the antenna box, you may need to remove the dummy cable entry panel adjacent to the power connector to access the connector screws. As an alternative you can remove the screws securing the antenna box to the cabinet core and lift the antenna box to access the connector screws.



Steps

1. *If connecting single-phase AC power to UltraSite EDGE BTS in the USA and Canada,*

Then

Follow these instructions.

2. *If connecting single-phase AC power to UltraSite EDGE BTS in Europe,*

Then

Follow these instructions.

3. *If connecting three-phase AC power to UltraSite EDGE BTS in Europe,
Then*

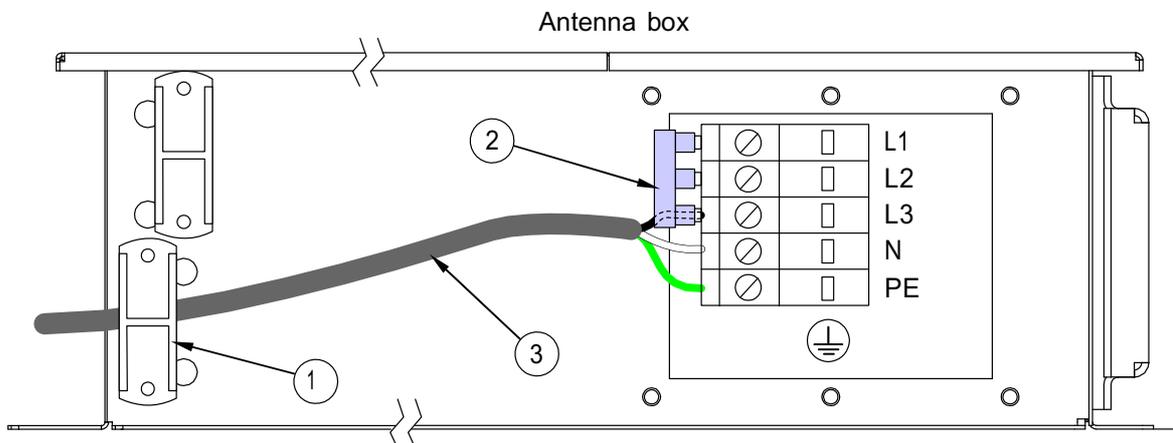
Follow these instructions.

11.4.4 Connecting single-phase AC power to UltraSite EDGE BTS in the USA and Canada

Before you start

Review the *Overview of connecting AC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), PE = Ground

DN03418592

1	Strain relief
2	Shorting bar
3	AC Power input cable

Figure 96. Connecting single-phase AC power to the BTS



Steps

1. **Verify that the cabinet is properly grounded and that the mains power breaker is OFF.**
2. **Cut the outer sheath of the AC power cable to expose the three internal wires.**
3. **Route the power cable through the strain relief on the antenna box.**
4. **Strip about 13 mm (0.5 in.) of insulation from each of the three exposed wires.**
5. **Turn the screws to the left to open the L1, L2, L3, N, and PE Phoenix connector terminals.**
6. **Insert the ground wire into the PE connector. Turn the screw to the right to close the connector.**
7. **Insert the shorting bar into L1, L2, and L3 then turn the screws to the right to close the L1 and L2 connectors.**
8. **Insert one live wire into the L3 connector. Turn the screw to the right to close the connector.**
9. **Insert the second live wire into the N connector. Turn the screw to the right to close the connector.**
10. **Tighten the screws on the strain relief to secure the power cable.**

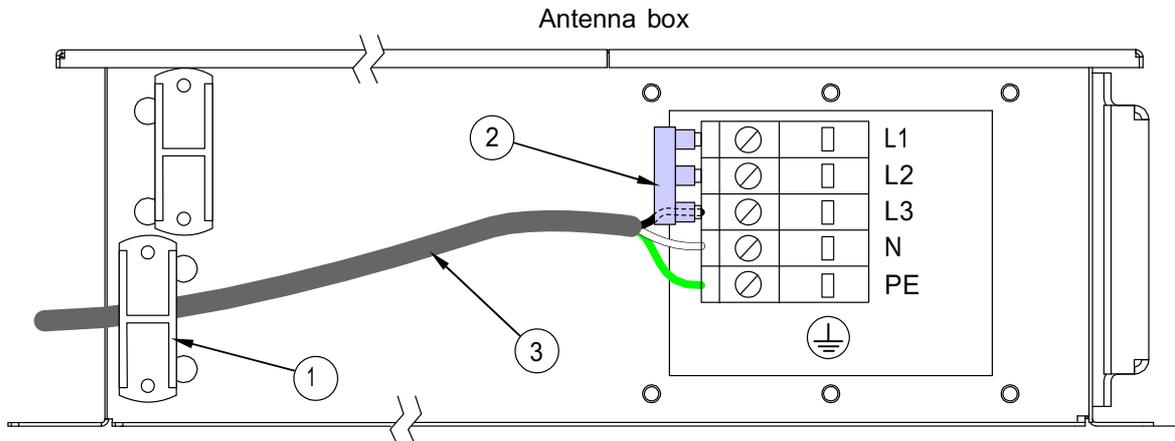
See Torque settings of UltraSite EDGE BTS.

11.4.5 Connecting single-phase AC power to UltraSite EDGE BTS in Europe

Before you start

Review the *Overview of connecting AC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), PE = Ground

DN03418592

1	Strain relief
2	Shorting bar
3	AC Power input cable

Figure 97. Connecting single-phase AC power to the BTS



Steps

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.**
2. **Cut the outer sheath of the AC power cable to expose the three internal wires.**
3. **Route the power cable though the strain relief on the antenna box.**
4. **Strip about 13 mm (0.5 in.) of insulation from each of the three exposed wires.**
5. **To open the L1, L2, L3, N and PE Phoenix connector terminals, turn the screws to the left.**
6. **Insert the ground wire into the PE connector and then turn the screw to the right to close the connector.**

7. Insert the shorting bar into L1, L2 and L3 and then turn the screws to the right to close the L1 and L2 connectors.
8. Insert the live wire into the L3 connector and then turn the screw to the right to close the connector.
9. Insert the neutral wire into the N connector and then turn the screw to the right to close the connector.
10. To secure the power cable, tighten the screws on the strain relief.

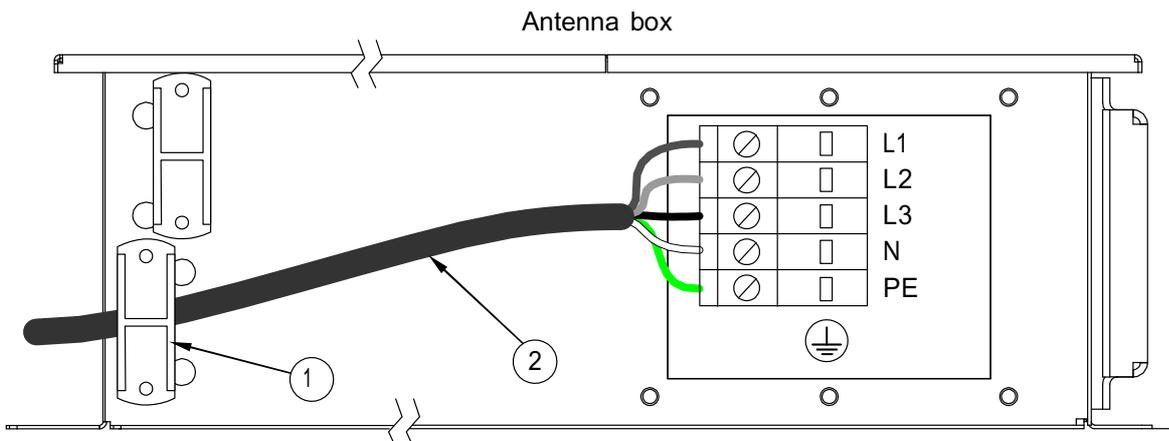
See *Torque settings of UltraSite EDGE BTS*.

11.4.6 Connecting three-phase AC power to UltraSite EDGE BTS in Europe

Before you start

Review the *Overview of connecting AC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



NOTE: Power input wiring must adhere to local codes.
 L1 = Phase 1, L2 = Phase 2, L3 = Phase 3,
 N = Neutral, PE = Ground

DN03418608

1	Strain relief
2	AC Power input cable

Figure 98. Connecting three-phase AC power to the BTS

**Steps**

1. Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.
2. Cut the outer sheath of the AC power cable to expose the five internal wires.
3. Route the power cable through the strain relief on the antenna box.
4. Strip about 13 mm (0.5 in.) of insulation from each of the five exposed wires.
5. To open the L1, L2, L3, N and PE Phoenix connector terminals, turn the screws to the left.
6. Insert the ground wire into the PE connector and then turn the screw to the right to close the connector.
7. Insert the neutral wire into the N connector and then turn the screw to the right to close the connector.
8. Insert the three live wires into the L1, L2 and L3 connectors and then turn each connector screw to the right to close the connectors.
9. To secure the power cable, tighten the screws on the strain relief.

See *Torque settings of UltraSite EDGE BTS*.

11.5 Replacing DC power cables of UltraSite EDGE BTS

11.5.1 Replacing DC power cables of UltraSite EDGE BTS

Before you start

Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

**Steps**

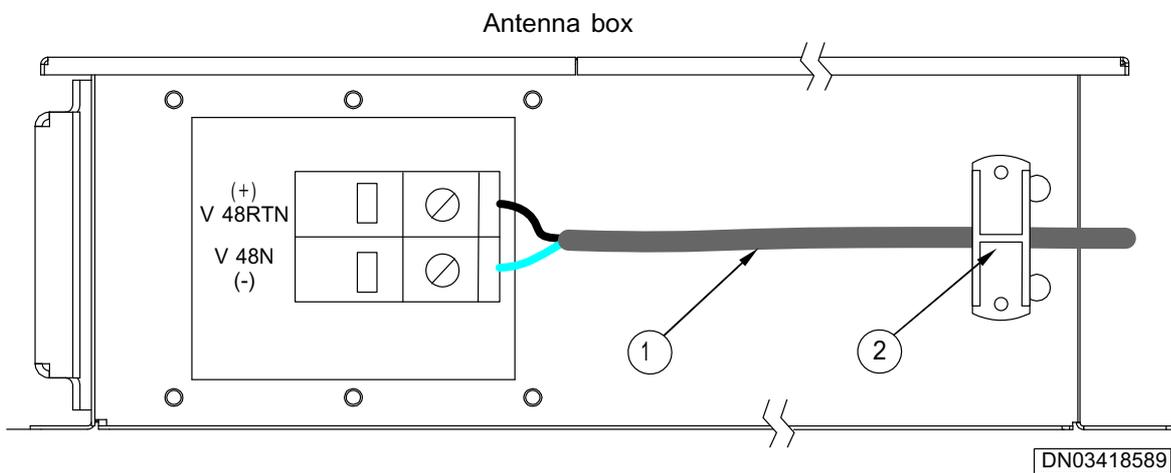
1. Remove DC power cables from UltraSite EDGE BTS
2. Connect DC power cables to UltraSite EDGE BTS

11.5.2 Removing DC power cables from UltraSite EDGE BTS

Before you start

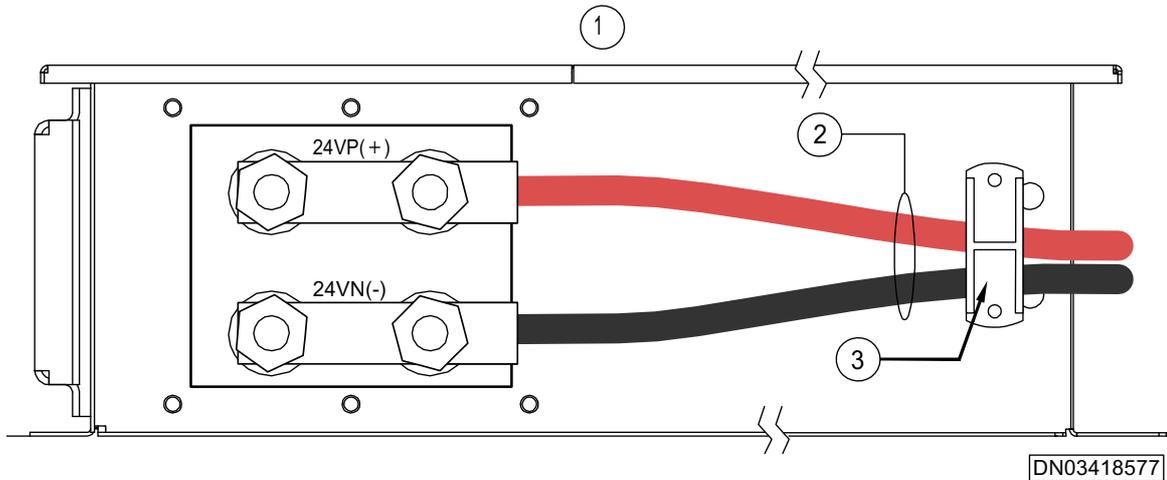
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	DC Power input cable
2	Strain relief

Figure 99. -48 VDC power to the BTS



1	Antenna box
2	DC Power input cables
3	Strain relief

Figure 100. +24 VDC power to the BTS



Steps

1. **Power down the UltraSite EDGE BTS.**
2. **Turn the mains power breaker OFF.**
3. **Loosen the screws on the strain relief.**
4. **Remove the -48 VDC power cables.**
 - a. Remove the blue (-) wire from the (-) V 48N connector.
 - b. Remove the black (+) wire from the (+) V 48RTN connector.
 - c. Turn the screws to the right to close the (+) V 48 RTN and (-) V 48N Phoenix connector terminals of the Filter module.
 - d. Remove the power cable from the strain relief on the antenna box.
5. **Remove the +24 VDC power cables.**

- a. Untie the lacing cord binding the positive and negative power cables together.
- b. Loosen and remove the two M4x12 mounting screws and two M4 nuts.
- c. Remove the terminal cover.
- d. Untie the cable from the strain relief bracket.
- e. Loosen the four installed nuts.
- f. Remove the nuts from the +24VN(-) threaded studs of the DCFB and remove the black +24VN(-) cable lug from the studs.
- g. Remove the nuts from the +24VP(+) threaded studs of the DCFB and remove the red +24VP(+) cable lug from the studs.
- h. Remove the cables from the strain relief on the antenna box.

11.5.3 Overview of connecting DC power cables to UltraSite EDGE BTS

Summary



Warning

Damage to cabinet components or personnel can occur if the power cable is not secure. Ensure that the power cable is secure within the strain relief.

For the maximum current, see *Power requirements for -48 VDC UltraSite EDGE BTS* and *Power requirements for +24 VDC UltraSite EDGE BTS*.

Note

Depending on the position of the antenna box, you may need to remove the dummy cable entry panel adjacent to the power connector or remove the screws securing the antenna box to the cabinet core and lift the antenna box to access the connector screws.



Steps

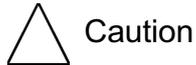
1. **Connect -48 VDC power cables to UltraSite EDGE BTS.**
2. **Connect +24 VDC power cables to UltraSite EDGE BTS.**

11.5.4 Connecting -48 VDC power cables to UltraSite EDGE BTS

Before you start

Review the *Overview of connecting DC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

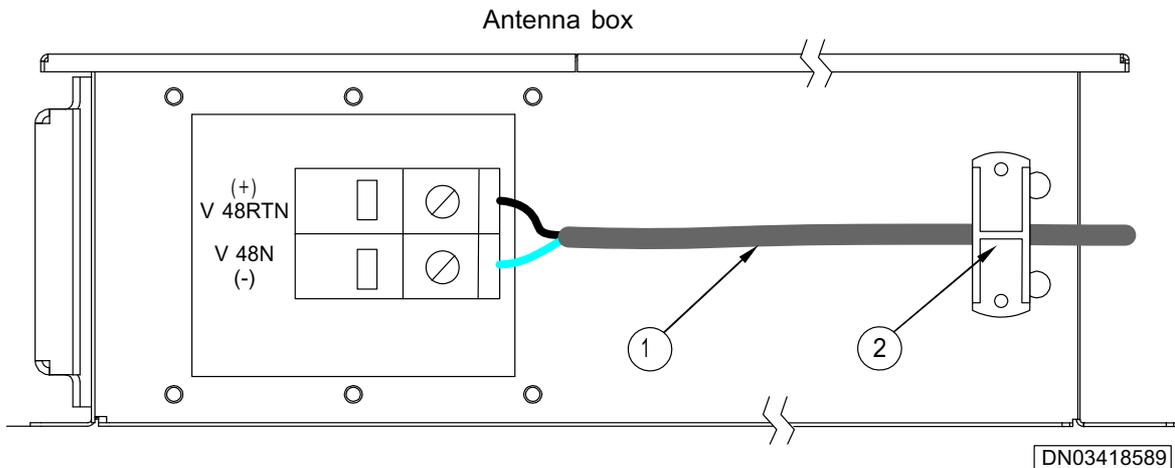
Summary



Caution

If you reverse the DC power cables while installing them, it can cause a fuse to blow (open) in the TSxA Transceiver unit when you insert the unit into the cabinet. Before you connect the power cables, check their polarity with a multimeter.

The -48 VDC power supply will operate from an input range of -36 to -60 VDC; -48 VDC is nominal. The maximum cross section of cable connecting to the Filter module -48 VDC terminal block is 50 mm² (flexible stranded 1/0 AWG). The minimum cable cross section is 33.6 mm² (flexible stranded #2 AWG).



1	DC Power input cable
2	Strain relief

Figure 101. Connecting -48 VDC power to the BTS

**Steps**

1. **Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.**
2. **Route the power cable through the strain relief on the antenna box.**
3. **Strip about 2.5 cm (1 in.) of insulation from the positive (+) and negative (-) DC wires.**
4. **Turn the screws to the left to open the (+) V 48RTN and (-) V 48N Phoenix connector terminals of the Filter module.**
5. **Insert the blue (-) wire into the (-) V 48N connector.**

To close the connector, turn the screw to the right.

6. **Insert the black (+) wire into the V 48RTN connector.**

To close the connector, turn the screw to the right.

7. **To secure the power cable, tighten the screws on the strain relief.**

See *Torque settings of UltraSite EDGE BTS*.

11.5.5 Connecting +24 VDC power cables to UltraSite EDGE BTS

Before you start

Review the *Overview of connecting DC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

**Caution**

If the DC power cables are reversed during installation, it will blow (open) a fuse in the PWSC Power supply unit. Before you connect the power cables, check their polarity with a multimeter.

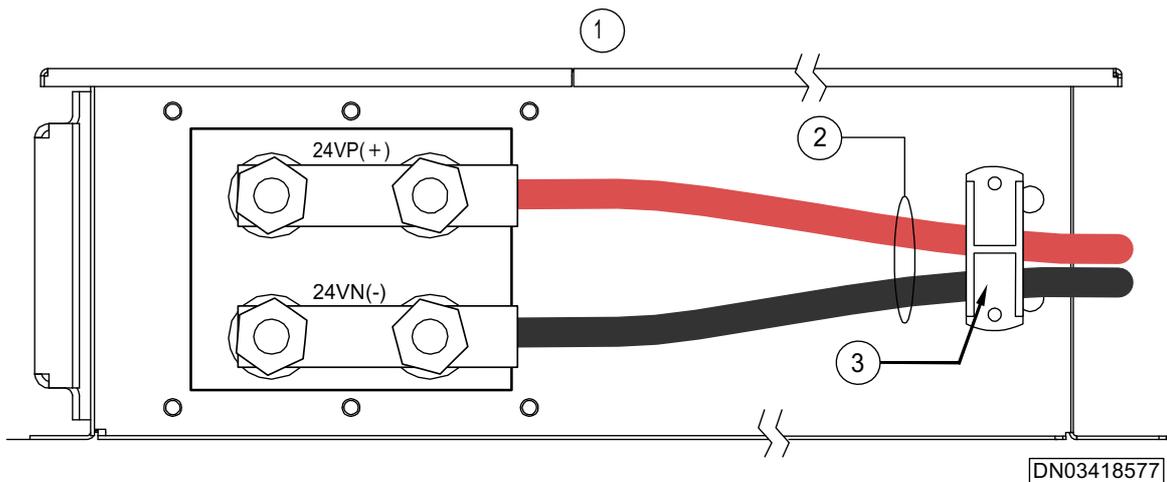
Note

The +24 VDC (DCFB) Filter module is optional equipment. You must remove the default -48 VDC Filter module from the antenna box and install the +24 VDC (DCFB) Filter module. For +24 VDC power installation, see *Installing a PWSx unit*. To place an order, contact your local Nokia representative.

Note

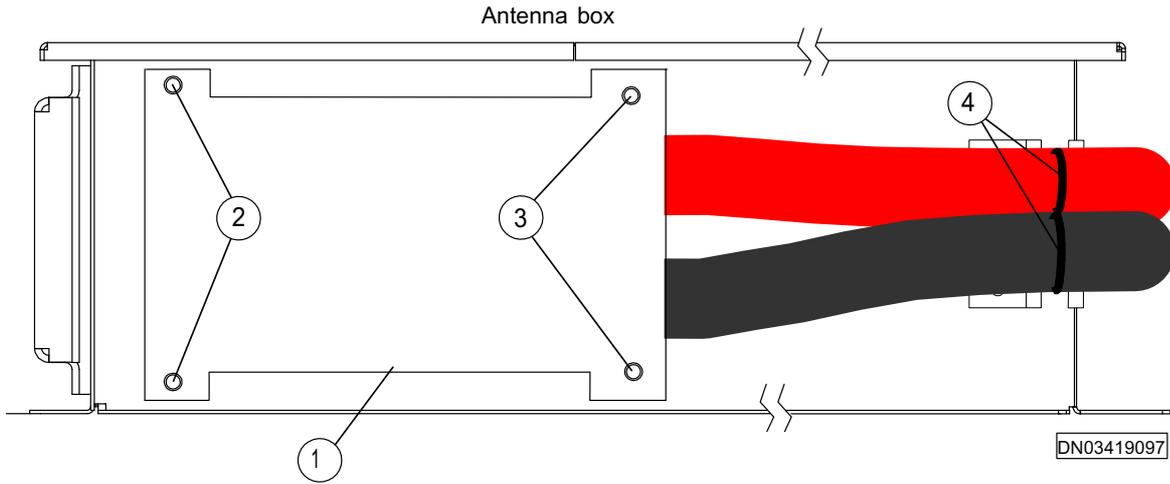
The NEMA two-hole compression lugs that are required for power connections, and all required additional hardware, are included as part of the FIKA Installation Kit.

The +24 VDC power supply operates from an input range of +20 to +32 VDC. The +24 VDC power supply is nominal. The recommended cable for connecting to the DCFB Filter module 24 VDC terminals is flexible 95 mm² (3/0 AWG), type CSA TEW or UL Style 1015.



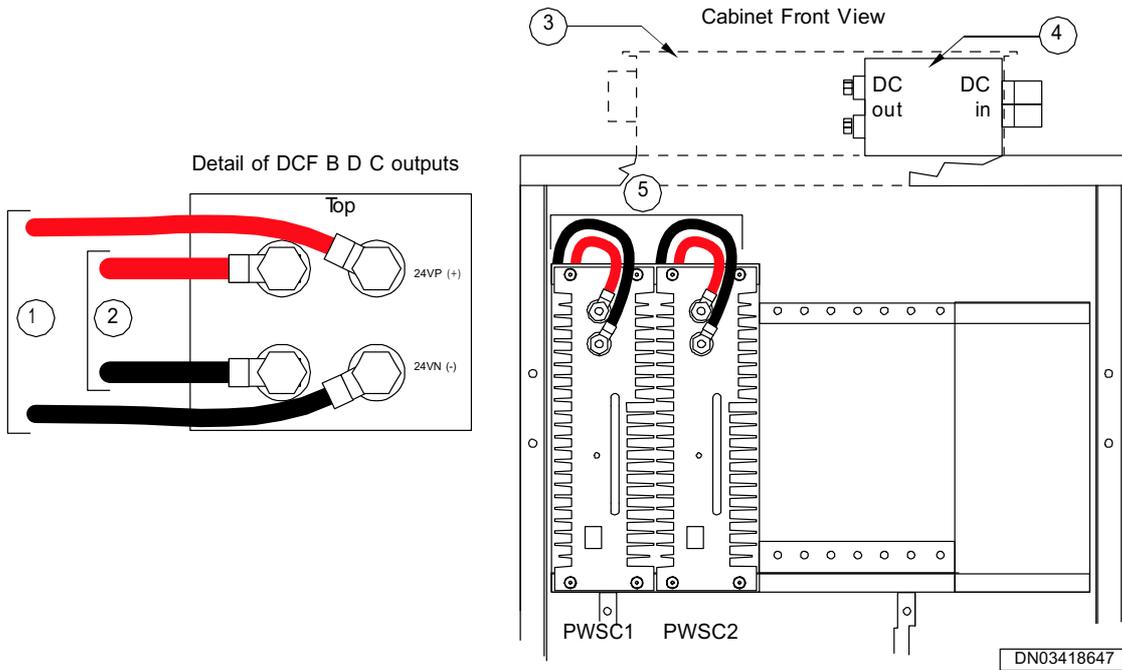
1	Antenna box
2	DC Power input cables
3	Strain relief

Figure 102. Connecting +24 VDC power to the BTS



1	Terminal Cover
2	M4x12 Screws
3	M4 Nuts
4	Tie Wraps

Figure 103. Installing the DCFB terminal cover



1	To PWSC 2
2	To PWSC 1
3	Antenna box
4	DCFB
5	To DCFB DC out

Figure 104. DCFB Filter module cable routing to PWSC



Steps

1. Ensure that the cabinet is properly grounded and that the mains power breaker is OFF.
2. Remove the existing plastic strain relief bracket, located to the rear of the DCFB, from the antenna box.

- 3. Position the new strain relief bracket supplied using two M4x8 screws and M4 washers as shown in the *Connecting +24 VDC power to the BTS* figure.**

Insert screws from the inside of the antenna box and secure them into the threaded holes in the bracket.

- 4. Locate the +24VDC power input cables.**
- 5. Route the cables over the strain relief.**
- 6. Strip about 2.5 cm (1 in.) of the power cables.**
- 7. Using emory cloth or other suitable method, bring the mating surfaces of all unplated power connections to a bright finish.**
- 8. Coat the exposed power cable conductors with antioxidant.**
- 9. Insert the stripped end of each cable into a two-hole compression lug and crimp.**
- 10. Install the +24VP(+) cable lug.**

Remove the nuts from the +24VP(+) threaded studs of the DCFB. Install the red +24VP(+) cable lug on studs and loosely secure with removed nuts.

- 11. Install the +24 VN(-) cable lug.**

Remove the nuts from the +24VN(-) threaded studs of the DCFB. Install the black +24VN(-) cable lug on the studs and loosely secure with removed nuts.

- 12. Torque the four installed nuts.**

See *Torque settings of UltraSite EDGE BTS*.

- 13. Secure the cable to the strain relief bracket with tie wrap included in the Installation Kit.**
- 14. Install the terminal cover using two M4x12 mounting screws and two M4 nuts included in the Installation Kit.**
- 15. Using tie-wrap or lacing cord, tie the positive and negative power cables together every meter (3 ft) along the length.**

11.6 Replacing ground cables of UltraSite EDGE BTS

11.6.1 Replacing ground cables of UltraSite EDGE BTS

Before you start

Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.



Steps

1. Remove ground cables from UltraSite EDGE BTS.
2. Connect grounding cables to UltraSite EDGE BTS.

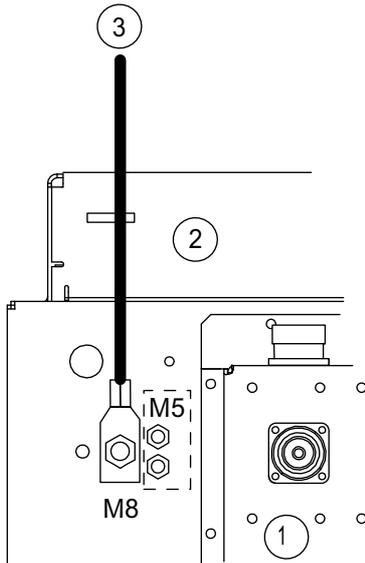
11.6.2 Removing ground cables from UltraSite EDGE BTS

Before you start

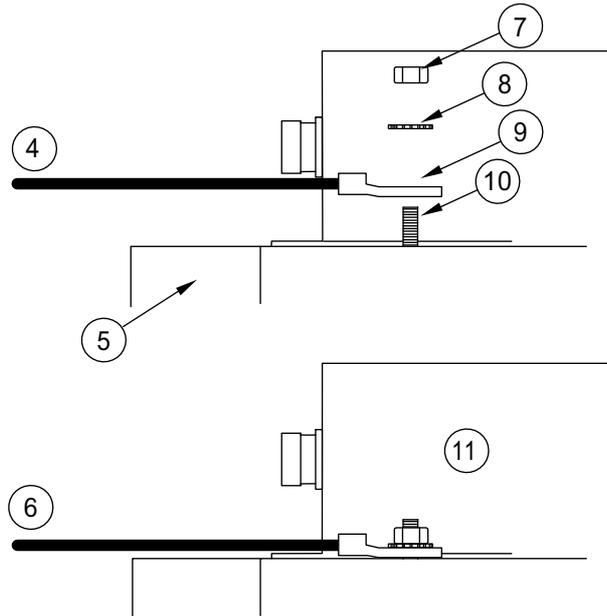
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Top view of cabinet



Side view of cabinet

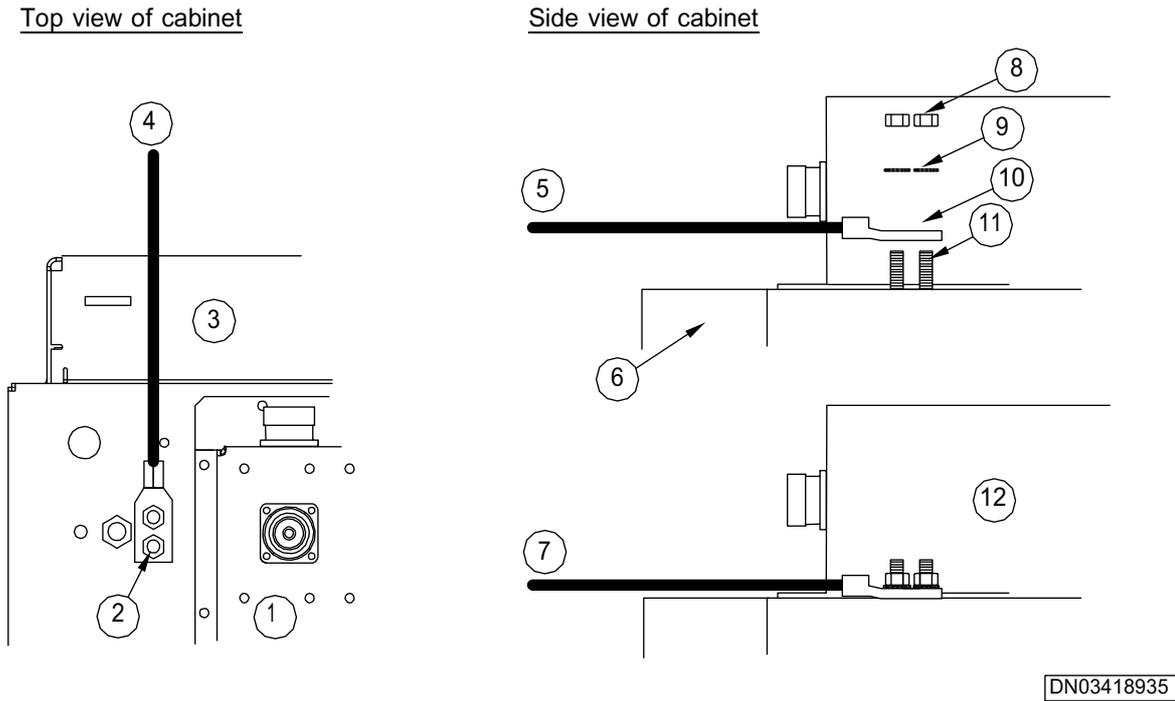


NOTE: M8/M5 studs and nuts are provided to accommodate different types of ground lugs

DN03418923

1	Antenna box
2	ICDM back
3	Cabinet ground cable
4	Cabinet ground cable
5	ICDM back
6	Cabinet ground cable
7	Nut
8	Star washer
9	Ground lug
10	Ground stud
11	Antenna box

Figure 105. Grounding (earthing) the cabinet



1	Antenna box
2	M5 (2 places)
3	IDCM back
4	Cabinet ground cable
5	Cabinet ground cable
6	IDCM back
7	Cabinet ground cable
8	Nut
9	Star washer
10	Ground lug
11	Ground stud



Figure 106. Grounding (earthing) the cabinet in NEBS compliant installations



Steps

1. **Power down the UltraSite EDGE BTS.**
2. **Turn the mains power breaker OFF.**
3. **At the top left of the cabinet, loosen the ground nut(s) and remove the ground nut(s) and star washer(s).**
4. **Remove the lug end of the ground cable from the ground connection (s).**
5. **Replace the ground nut(s) and tighten them.**

See Torque settings of UltraSite EDGE BTS.

11.6.3 Overview of connecting grounding cables to UltraSite EDGE BTS

Summary



Warning

Risk of lethal voltages and electric shock exists when routing power cables. Ensure that mains power breaker is OFF and that the cabinet is properly grounded before attempting any connections to the cabinet.



Caution

The cable cross section dimension must meet national, state and local regulations.

Note

To access cabinet interface connections, remove the cabinet roof from the BTS and replace the roof when all work is complete.

Note

For connecting ground cables, use an 8 mm single-hole lug and a 5 or 6 mm two-hole lug (NEBS) PE connector.



Steps

1. For a standard installation, connect the grounding cable to UltraSite EDGE BTS.
2. For a NEBS installation, connect the grounding cable to UltraSite EDGE BTS.

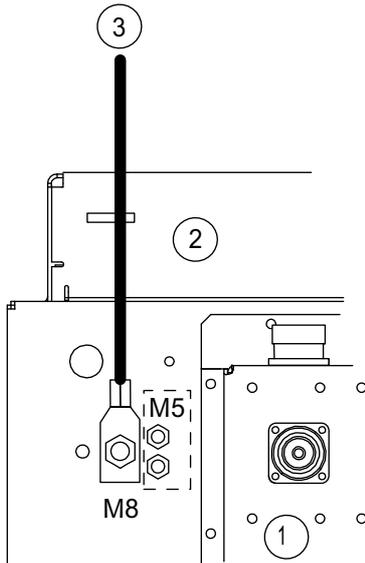
11.6.4 Connecting the grounding cable for a standard installation of UltraSite EDGE BTS

Before you start

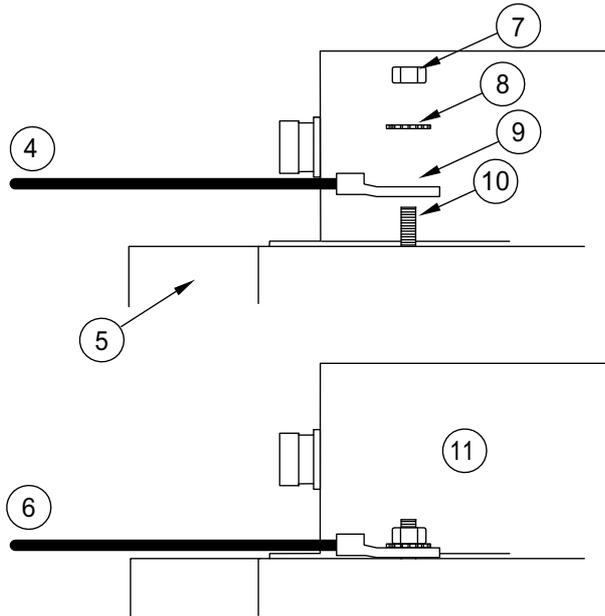
Review the *Overview of connecting grounding cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Top view of cabinet



Side view of cabinet



NOTE: M8/M5 studs and nuts are provided to accommodate different types of ground lugs

DN03418923

1	Antenna box
2	ICDM back
3	Cabinet ground cable
4	Cabinet ground cable
5	ICDM back
6	Cabinet ground cable
7	Nut
8	Star washer
9	Ground lug
10	Ground stud
11	Antenna box

Figure 107. Grounding (earthing) the cabinet

**Steps**

1. **At the top left of the cabinet, unscrew the nut(s) from the ground connection.**
2. **Strip about 2 cm (0.75 in.) off from the main ground cable.**
3. **Insert the stripped end of the cable into a cable shoe lug and crimp it.**
4. **Fit the lug end of the ground cable over the ground connection(s).**
5. **Install the star washer(s) and tighten the ground nut(s) on the ground cable stud(s).**

See Torque settings of UltraSite EDGE BTS.

11.6.5 Connecting the grounding cable for a Network Equipment Building Systems (NEBS) installation of UltraSite EDGE BTS

Before you start

Review the *Overview of connecting grounding cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

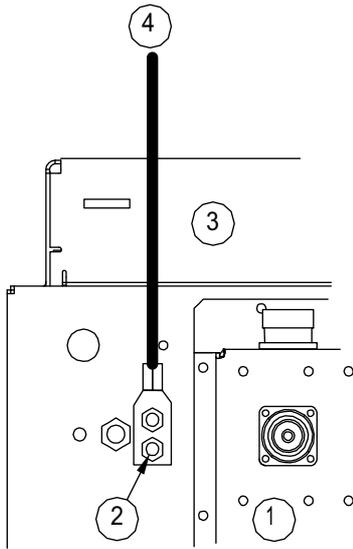
Note

For NEBS installations, use a two-hole compression lug to connect the ground conductor to the two M5 cabinet ground studs.

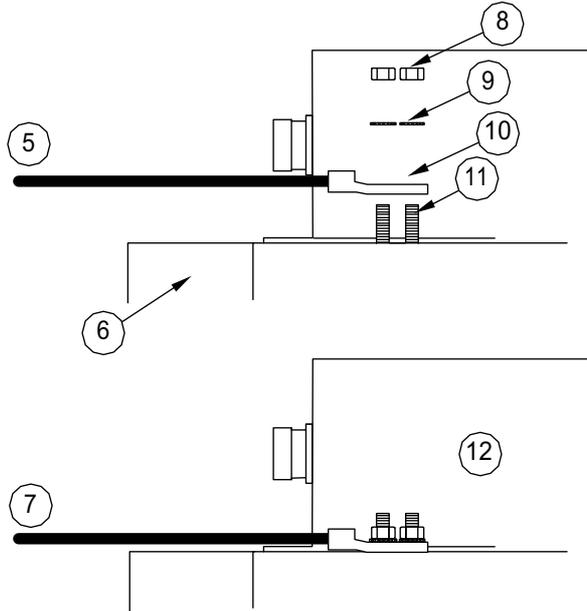
Note

When making ground connections to the BTS, do not intermix conductors of dissimilar metals.

Top view of cabinet



Side view of cabinet



DN03418935

1	Antenna box
2	M5 (2 places)
3	IDCM back
4	Cabinet ground cable
5	Cabinet ground cable
6	IDCM back
7	Cabinet ground cable
8	Nut
9	Star washer
10	Ground lug
11	Ground stud
12	Antenna box

Figure 108. Grounding (earthing) the cabinet in NEBS compliant installations



Steps

1. **At the top left of the cabinet, unscrew the nuts from the ground connection.**
2. **Strip about 2 cm (0.75 in.) off from the main ground cable.**
3. **Using emery cloth or other suitable method, bring the mating surfaces of all unplated ground connections to a bright finish.**
4. **Coat the exposed ground cable conductor with antioxidant.**
5. **Insert the stripped end of the cable into a cable shoe lug and crimp it.**
6. **Fit the lug end of the ground cable over the ground connections.**
7. **Install the star washers and tighten the ground nuts on the ground cable studs.**

See Torque settings of UltraSite EDGE BTS.

12 Replacing UltraSite EDGE BTS cabinet core units

12.1 Preparing to replace parts of the UltraSite EDGE BTS cabinet

Summary



Warning

Potentially lethal voltages!

Switch the BTS power OFF from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shock!



Warning

Always use the antistatic wrist strap when handling units marked with the Electrostatic Sensitive Device (ESD) sign. Units carrying the ESD sign are sensitive to electrostatic discharge.



Steps

1. Ensure the tools required are available.

Tool requirements

2. Remove replacement units from packaging.

*Handling and unpacking units***3. Connect the anti-static wrist strap, if required.**

While handling static-sensitive units, make sure the anti-static wrist strap is *connected*.

4. Review torque requirements.

Prior to installing units, ensure the proper tools are available for compliance with the required *torque values*.

12.2 Overview of removing cabinet core units, if required.

Before you start

Review the *Overview of removing UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

**Warning**

Be aware of the risk of lethal voltages and electric shock. Before you route AC Filter module cables, make sure the mains power breaker is in the OFF position.

**Warning**

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.

**Warning**

Ensure the fan has stopped rotating before removing the cabinet fan cover.

**Warning**

Do not open a faulty HETA unit. Return HETA unit to Nokia Service.

**Warning**

Permanently wire Nokia UltraSite EDGE BTS to a disconnect device, such as a circuit breaker.

**Warning**

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. Turning OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch leaves it in STANDBY mode.

**Warning**

Follow national regulations when working with power supply and power cables.

**Caution**

The power/alarm cable will be damaged if not properly cable tied.

**Steps**

1. Remove the +24 VDC filter module, if required.
2. Remove the AC filter module, if required.
3. Remove the GSM/EDGE unit cooling fan

4. Remove the cabinet cooling fan.
5. Remove the WCDMA unit cooling fan, if required.
6. Remove the GSM/EDGE heater (HETA) unit, if required.
7. Remove the WCDMA Heat Exchanger fan, if required.
8. Remove the WCDMA Heat Exchanger Cell, if required.
9. Remove the lower RFU backplane, if required.
10. Remove the WCDMA RF backplane, if required.
11. Remove the WCDMA BB rack, if required.
12. Remove the WAF rack, if required.

12.3 Overview of installing optional units of UltraSite EDGE BTS

Before you start

Ensure that the site is ready for unit installation.

Review the *Overview of installing the units of UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

Electrical hazards exist while installing the AC Filter Module, the DC Filter Module, and the HETA. Ensure that mains power is OFF before installation.

Note

Protect all unused connectors and slots in the Outdoor cabinet with connector caps and sealing units.

**Steps**

1. **Install a DC Filter Module.**
2. *If using a +24 VDC*
Then
a DC Filter Module (DCFB) should be used.
Else
for -48VDC a -48 VDC Filter Module (DCFx) should be used.
3. **Install a Heater (HETA) unit.**

12.4 Replacing an RF backplane

12.4.1 Replacing a RF backplane in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Remove the faulty RF backplane from UltraSite EDGE BTS with WCDMA upgrade**
2. **Install the new RF backplane in the RF rack**
3. **Install the RF rack front IP shield**
4. **Install the RF rack**
5. **Re-install the units**
6. **Power ON the UltraSite EDGE BTS with WCDMA upgrade**
7. **Leave the site**

12.4.2 Removing a WCDMA RF backplane from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

Permanently wire UltraSite EDGE BTS to a disconnect device, such as a circuit breaker.



Warning

Disconnect UltraSite EDGE BTS from the mains power network with a dedicated switch. When you turn OFF UltraSite EDGE BTS using the BTS power supply (PWSx) switch, the BTS is in STANDBY mode.



Warning

Follow national regulations when working with power supply and power cables.



Steps

1. At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs.
2. At the RNC or NetAct, lock the BCF.
3. Switch off the power supply from the UltraSite Support (Optional).
4. Switch BTS cabinet power off from the WPS unit switches.
5. Remove all the plug-in units from the RF rack (WTRs, WMPs and WIC). Place them aside on an anti-static mat.

6. **Disconnect the unit cooling fan cables from the front of the RF rack backplane with a small flathead screwdriver.**
7. **Unscrew the RF rack mounting screws.**
8. **Carefully pull the RF rack forward so that you have access to the cables and the main busbar at the back.**
9. **Carefully disconnect each cable and the main busbar from the RF rack backplane.**
10. **Take the RF rack out of the BTS.**
11. **Loosen and remove the screws holding the RF front IP shield.**
12. **Remove the RF front IP shield.**
13. **Remove the RF backplane from the RF rack.**

12.5 Replacing a lower RFU backplane

12.5.1 Replacing a lower RFU backplane in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

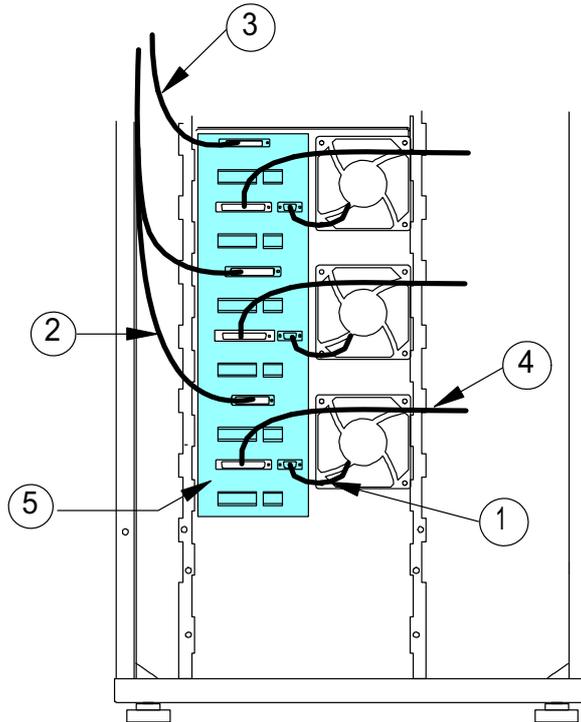
1. **Remove the faulty lower RFU backplane from UltraSite EDGE BTS.**
2. **Install the new RF rack to UltraSite EDGE BTS outdoor with WCDMA Upgrade.**
3. **Power on the UltraSite EDGE BTS.**
4. **Leave the site.**

12.5.2 Removing a lower RFU backplane from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



DN03426966

1	Unit fan cable (3 pcs) Lower RFU backplane
2	Power cable (2 pcs)
3	Bus cable between common backplane and RFU backplane
4	D-37, Dvxx or RTxx power control cable (3 pcs)
5	Lower RFU backplane

Figure 109. Disconnecting cables from the lower RFU backplane

**Steps**

1. **Disconnect the unit fan cables (1 in Figure) connected to the lower RFU backplane.**
-

Note

Do not remove the unit fans located in the cabinet core.

2. **Disconnect power cables coming from the voltage distribution bar.**
3. **Attach caps over the power cables.**
4. **Bend the cables through the cable entry so that they will not get in the way if installing the WCDMA Upgrade Kit.**
5. **Disconnect the bus cable between the lower RFU backplane and common backplane from the RFU backplane.**
6. **Attach a cap over the bus cable.**
7. **Disconnect the DVxx or RTxx power and control cables from the X5, X14, or X23 connectors on the lower RFU backplane and attach caps over the cable connectors.**
8. **Bend the cables behind the backplane so that they will not get in the way if installing the WCDMA Upgrade Kit.**
9. **Unscrew the screws in the lower RFU backplane cover plate and remove the cover plate.**
10. **Unscrew the screws in the backplane and remove the backplane.**

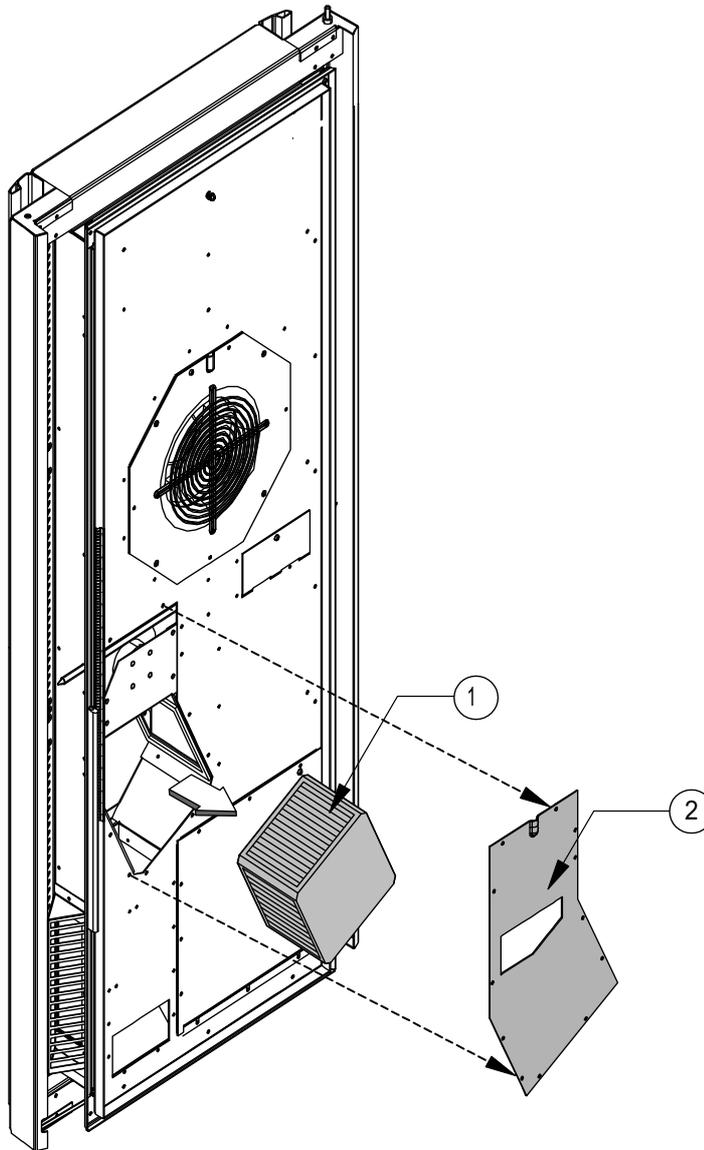
12.6 Replacing a Heat Exchanger Cell

12.6.1 Replacing a Heat Exchanger Cell in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary



DN03427162

1	Heat Exchanger Cell
2	Heat Exchanger Cover Plate

Figure 110. Heat Exchanger Cell replacement



Steps

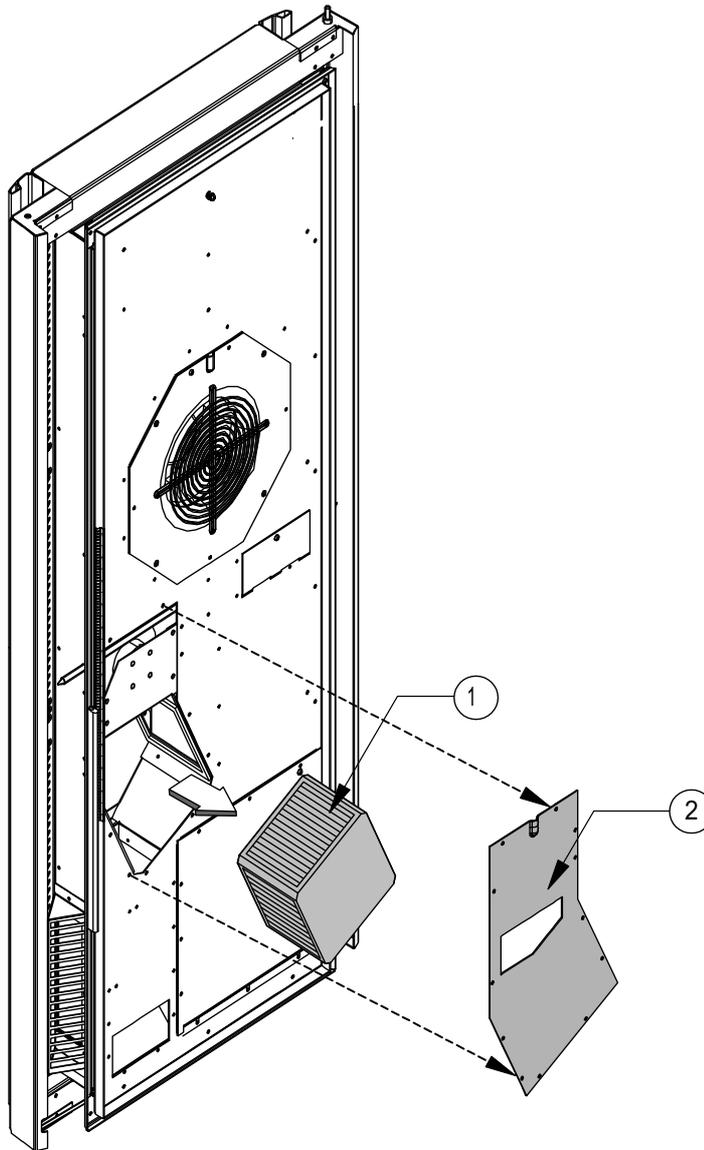
1. **Remove the faulty Heat Exchanger Cell from UltraSite EDGE BTS.**
2. **Install the new Heat Exchanger Cell in UltraSite EDGE BTS.**
3. **Re-install the Heat Exchanger cover plate.**
4. **Leave the site.**

12.6.2 Removing a Heat Exchanger Cell from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



DN03427162

-
- | | |
|---|----------------------------|
| 1 | Heat Exchanger Cell |
| 2 | Heat Exchanger Cover Plate |
-

Figure 111. Heat Exchanger Cell removal



Steps

1. Remove the Heat Exchanger cover plate from the Outdoor cabinet door.
2. Grasp of the faulty cell at its sides.
3. Remove the cell.

12.7 Replacing a Heat Exchanger fan

12.7.1 Replacing a Heat Exchanger fan in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary



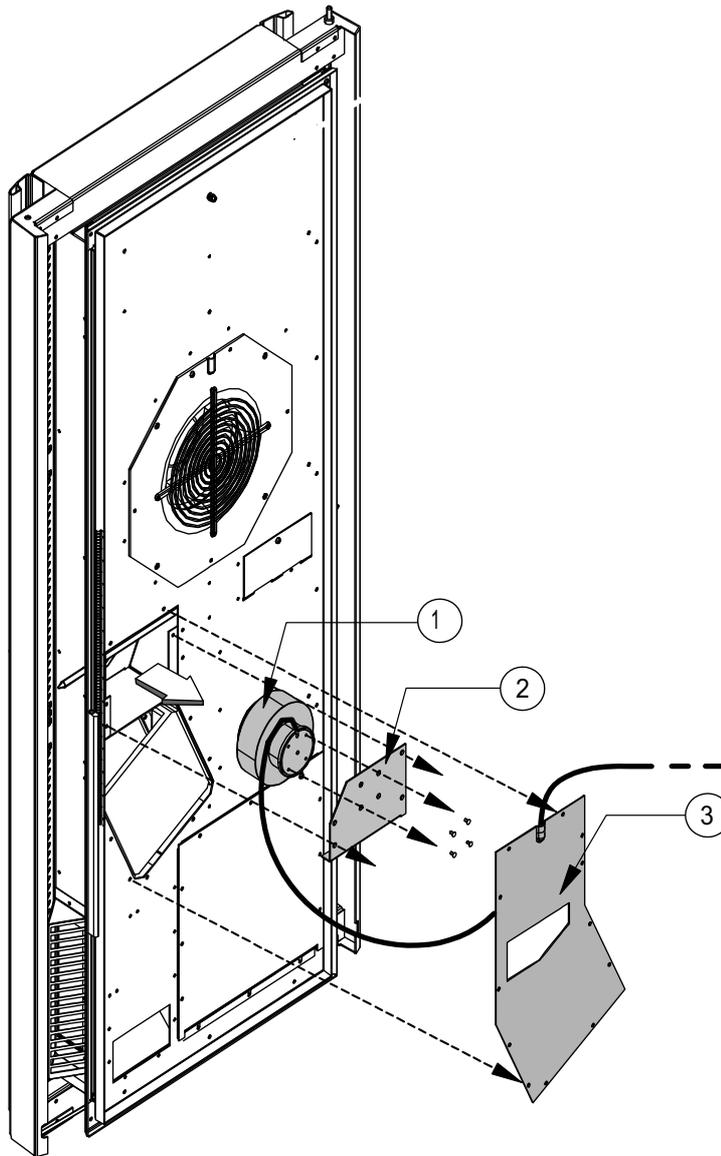
Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.



Warning

Ensure the fan has stopped rotating before removing the cabinet fan cover.



DN03427159

1	Heat Exchanger Fan
2	Heat Exchanger Fan Mounting Plate
3	Heat Exchanger Cover Plate

Figure 112. Heat Exchanger Fan replacement



Steps

1. Remove the faulty Heat Exchanger fan from UltraSite EDGE BTS.
2. Attach the fan to the mounting plate.
3. Connect the Fan Control Cable to the Heat Exchanger fan.
4. Re-attach the mounting plate to the door.
5. Re-install the Heat Exchanger cover plate.
6. Leave the site.

12.7.2 Removing a WCDMA heat exchanger fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

Potentially lethal voltages!

Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!



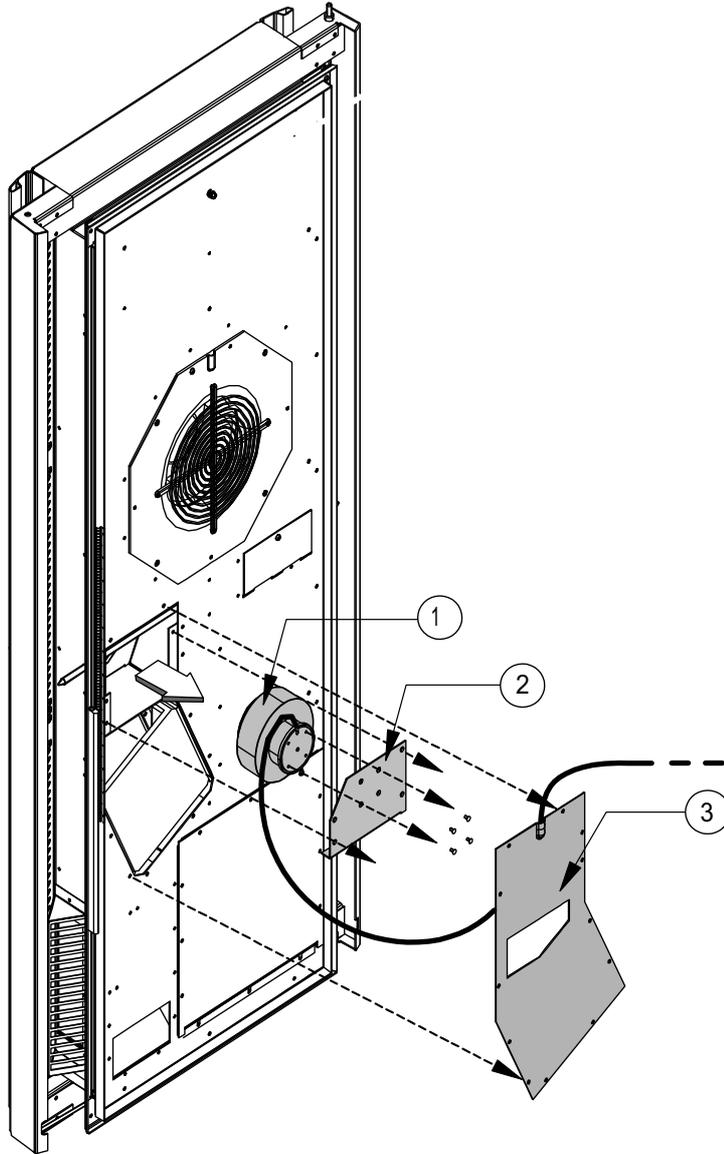
Warning

Disconnect the power/signal cable before you start to remove the fan.



Warning

Ensure that the fan has stopped rotating before you remove the cabinet fan cover.



DN03427159

1	Heat exchanger fan
2	Heat exchanger fan Mounting Plate
3	Heat exchanger Cover Plate

Figure 113. Heat exchanger fan removal

**Steps**

1. **Disconnect the fan control cable from the WTCA fan module.**
2. **Remove the heat exchanger cover plate from the Outdoor cabinet door.**
3. **Loosen the screws in the fan mounting plate and remove the plate and the fan.**
4. **Remove the fan from the mounting plate.**

12.8 Replacing a GSM/EDGE heater unit

12.8.1 Replacing a heater (HETA) unit in UltraSite EDGE BTS

Before you start

Refer to the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary

**Warning**

The HETA power cable is 230 VAC. Route cables between the OAKx door and the cabinet in a manner that will prevent damage to the cables during door opening and closing.

**Steps**

1. **Remove the faulty heater (HETA) unit from UltraSite EDGE BTS.**
2. **Install the new heater (HETA) unit in UltraSite EDGE BTS.**
3. **Leave the site.**

12.8.2 Removing a GSM/EDGE heater (HETA) unit from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

Do not open a faulty HETA unit. Return HETA unit to Nokia Service.

Note

If you are installing the HETA unit, install the AC filter unit in addition to any DC filter unit. The AC filter unit does not replace the DC filter unit.

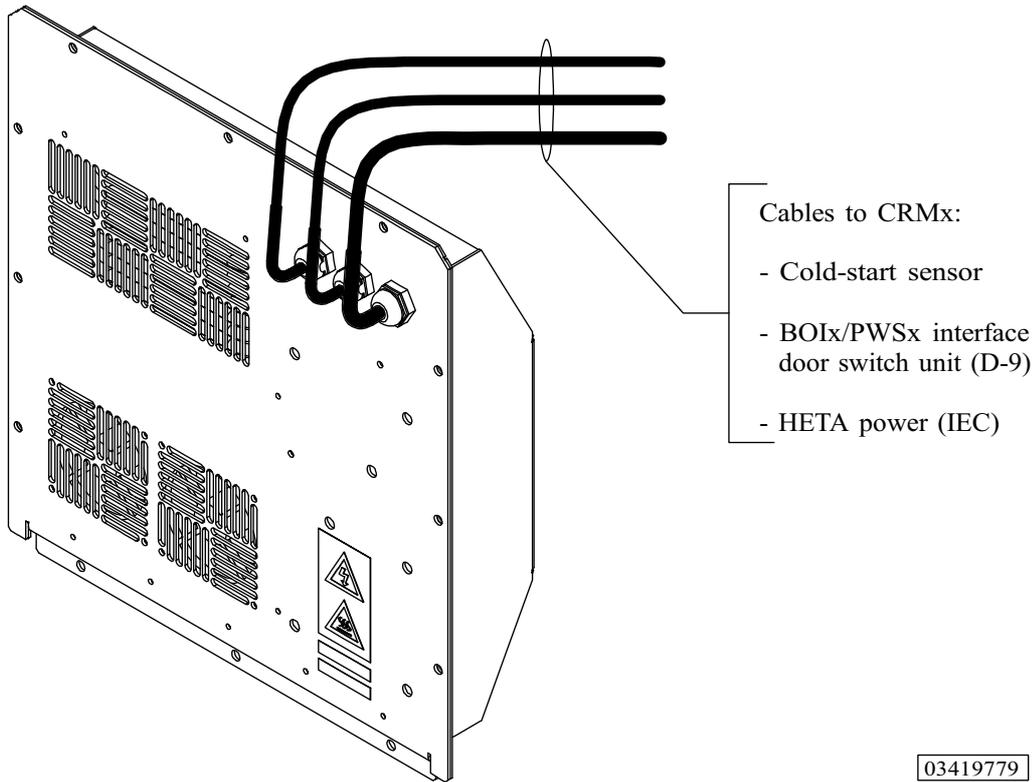
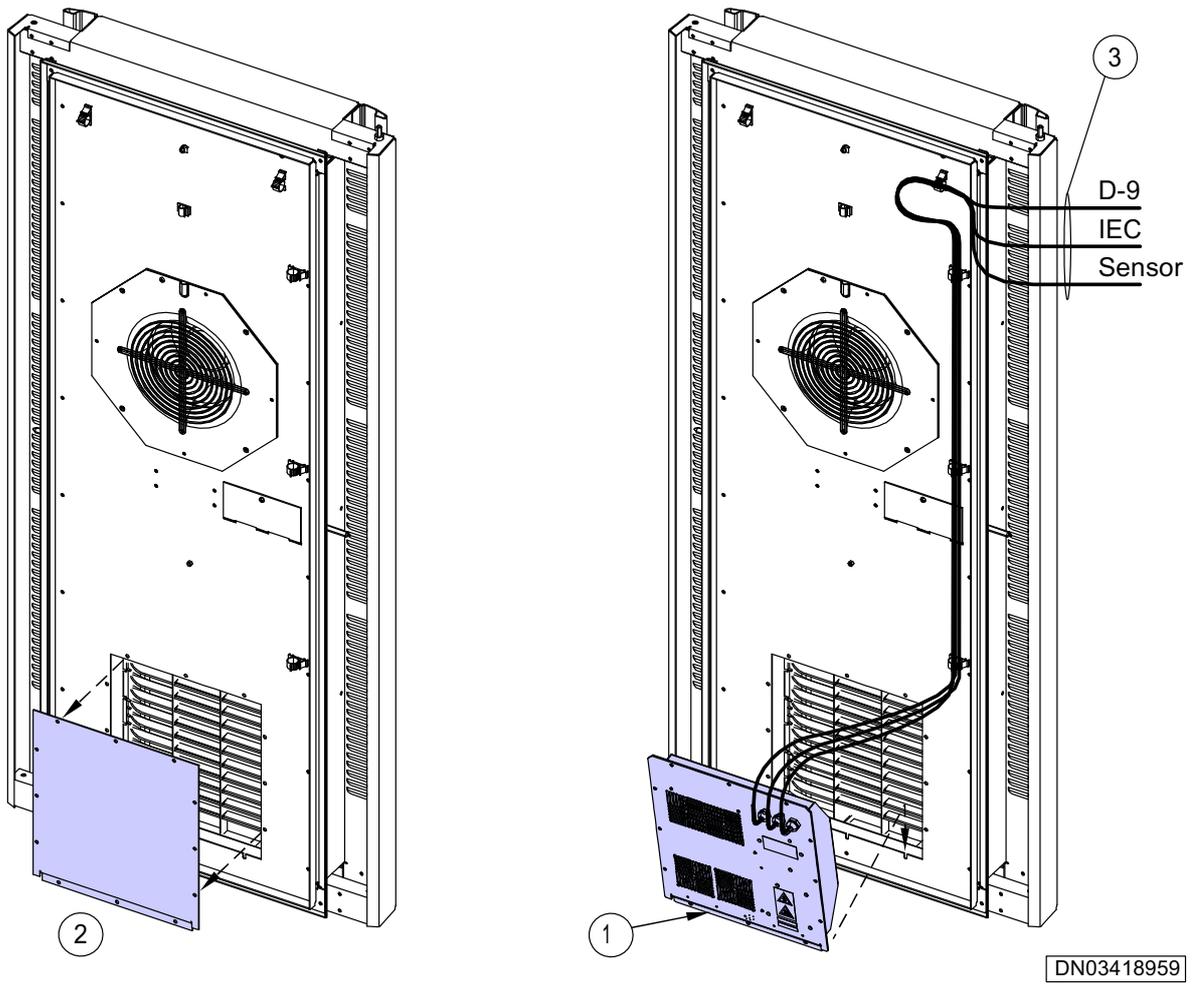
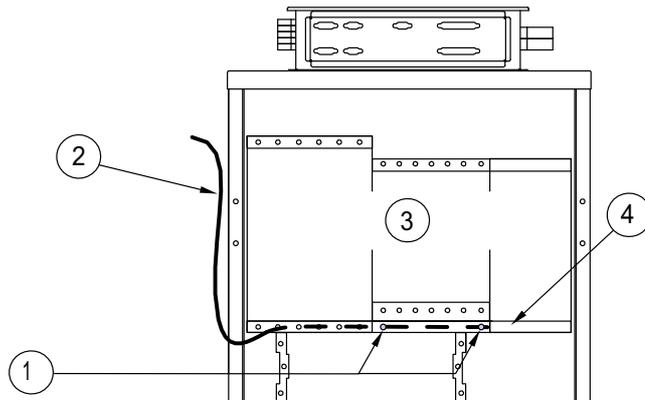


Figure 114. HETA unit cables



1	HETA unit
2	Cover (when HETA unit not used)
3	Wiring to HETA power and control

Figure 115. HETA mounted in OKAx door



DN03420075

1	Cold-start sensor cable from door mounted HETA unit
2	Cold-start sensor cable from door mounted HETA unit
3	Upper rack
4	Front flange

Figure 116. Sensor cable installation



Steps

1. **Disconnect the HETA signaling interface from the door switch box.**
2. **Remove the cold-start temperature sensor cable from the cabinet.**
3. **Disconnect the AC power cable for the HETA.**
4. **Cut any cable ties and remove the cables from the support clips.**
5. **Unscrew the 12 T25 mounting screws.**
6. **Remove the HETA unit.**

12.9 Replacing a WCDMA unit cooling fan

12.9.1 Replacing a unit cooling fan in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

When replacing fans within the BTS, the new fans may start operation as soon as the power/signal cable is connected.



Warning

Ensure that the fan has stopped rotating before removal.



Steps

1. **Remove any units required to access the faulty cooling fan.**

See the *Overview of removing units from UltraSite EDGE BTS with WCDMA upgrade* for further information.

2. **Remove the faulty unit cooling fan from UltraSite EDGE BTS.**
3. **Insert the new fan into the cabinet and align with the screw holes.**
4. **Insert and tighten the four retaining screw in the corners of the fan box with a T15 Torx driver.**
5. **Connect the power/signal cable for the fan.**
6. **Reinstall any units removed to facilitate fan replacement.**

See *Overview installing WCDMA units* for further information.

7. **Reconnect any cables removed to facilitate unit removal.**
8. **Switch the Power Supply units ON.**
9. **Unblock the BCF.**

Unblock the BCF either locally using Nokia BTS Manager or request BCF unlock from the BSC.

10. **Leave the site.**

12.9.2 Removing a WCDMA unit cooling fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

Potentially lethal voltages! Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!



Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.



Steps

1. **Lock the units for the sector.**
2. **Remove the WCDMA plug-in unit/s (WTR and WMP) directly in front of the fan. Place the unit/s aside on an anti-static mat.**

3. **Disconnect the power/signal cable for the fan with a small flathead screwdriver.**
4. **Remove the four securing screws in the corners of the fan box with a T15 Torx driver.**
5. **Remove the fan unit.**

12.10 Replacing a cabinet cooling fan

12.10.1 Replacing a cabinet cooling fan in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.



Warning

Ensure the fan has stopped rotating before removing the cabinet fan cover.



Steps

1. **Remove the faulty cabinet cooling fan from UltraSite EDGE BTS.**
2. **Install the new cabinet cooling fan in UltraSite EDGE BTS.**
 - a. Insert the new cabinet fan into the cabinet fan box.
 - b. Replace the four T25 screws to secure the cabinet fan assembly.
 - c. Route the power/alarm cable through the cable clips and replace the cable tie.

**Caution**

The power/alarm cable will be damaged if it is not properly cable tied.

- d. Route the cable through the guide in the cabinet fan cover and replace the T25 screws to secure the cabinet fan cover.
- e. Connect the power/alarm cable for the fan.

3. Leave the site.**12.10.2 Removing a cabinet cooling fan from UltraSite EDGE BTS****Before you start**

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

**Warning**

Potentially lethal voltages!

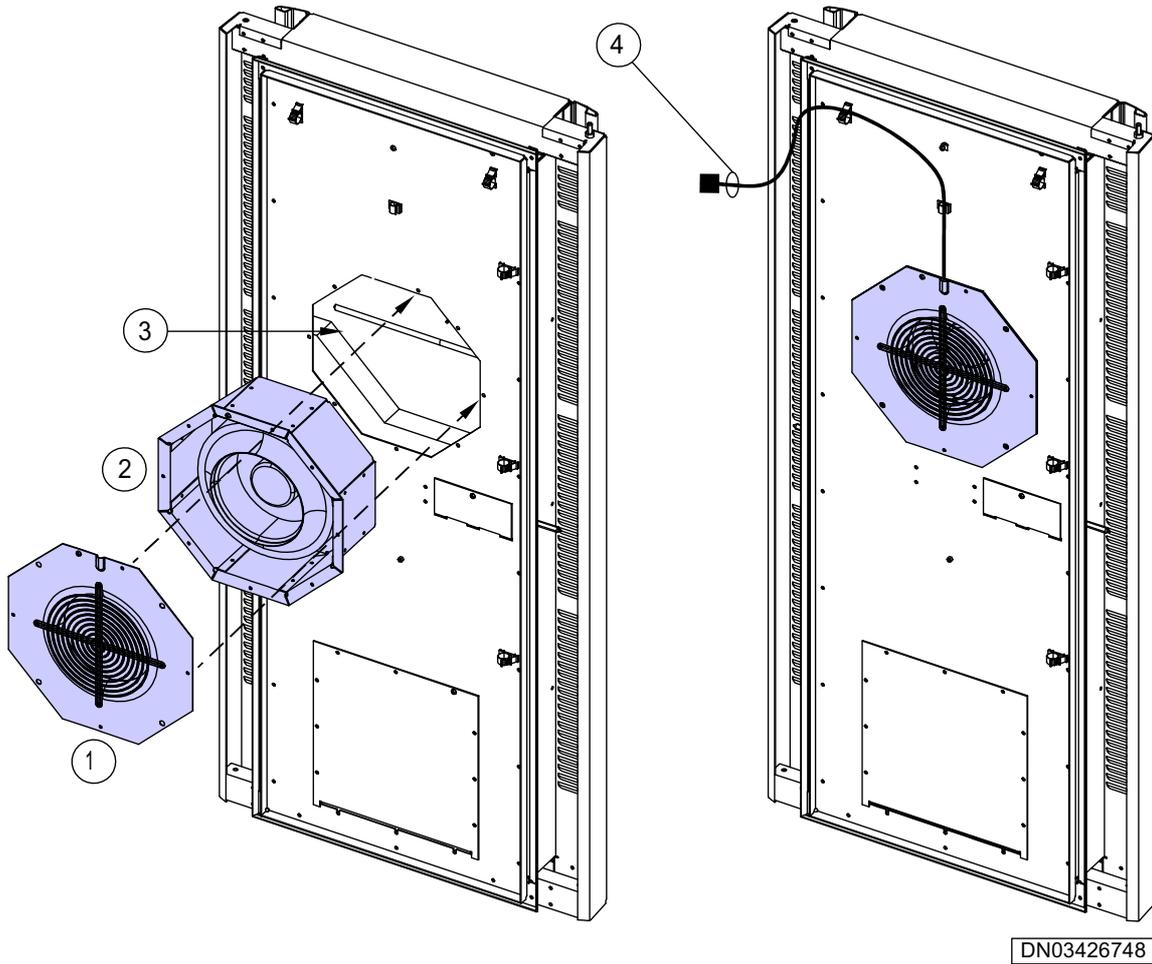
Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

**Warning**

Disconnect the power/signal cable before you start to remove the fan.

**Warning**

Ensure that the fan has stopped rotating before you remove the cabinet fan cover.



1	Cabinet fan cover, with finger guard
2	Cabinet fan assembly
3	Location for cabinet fan
4	Wiring to fan power and control door switch

Figure 117. Cabinet Cooling fan removal



Steps

- 1. Open the cabinet door to access the cabinet fan assembly.**

2. **Disconnect the power/alarm cable for the fan and disconnect the cable from the cable clips.**
3. **Remove the five T25 screws that secure the cabinet fan cover to the door and set the cover aside.**
4. **Remove the cable from the cable clip inside the fan box and cut the cable tie.**
5. **Remove the four remaining T25 screws on the back side of the box to remove the cabinet fan.**

12.11 Replacing a unit cooling fan

12.11.1 Replacing a unit cooling fan in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.

Summary



Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.



Warning

Ensure that the fan has stopped rotating before removing the cabinet fan cover.



Steps

1. **Remove any units required to access the faulty cooling fan.**

See the *Overview of removing units of UltraSite EDGE BTS* for further information.

2. **Remove the faulty unit cooling fan from UltraSite EDGE BTS.**
3. **Insert the new fan into the cabinet and align with the screw holes.**
4. **Insert and tighten the four retaining screws in the corners of the fan box with a T15 Torx driver.**
5. **Connect the power/signal cable for the fan.**
6. **Reinstall any units removed to facilitate fan replacement.**

See the *Overview of installing units of UltraSite EDGE BTS* for further information.

7. **Leave the site.**

12.11.2 Removing a GSM/EDGE unit cooling fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

Potentially lethal voltages! Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

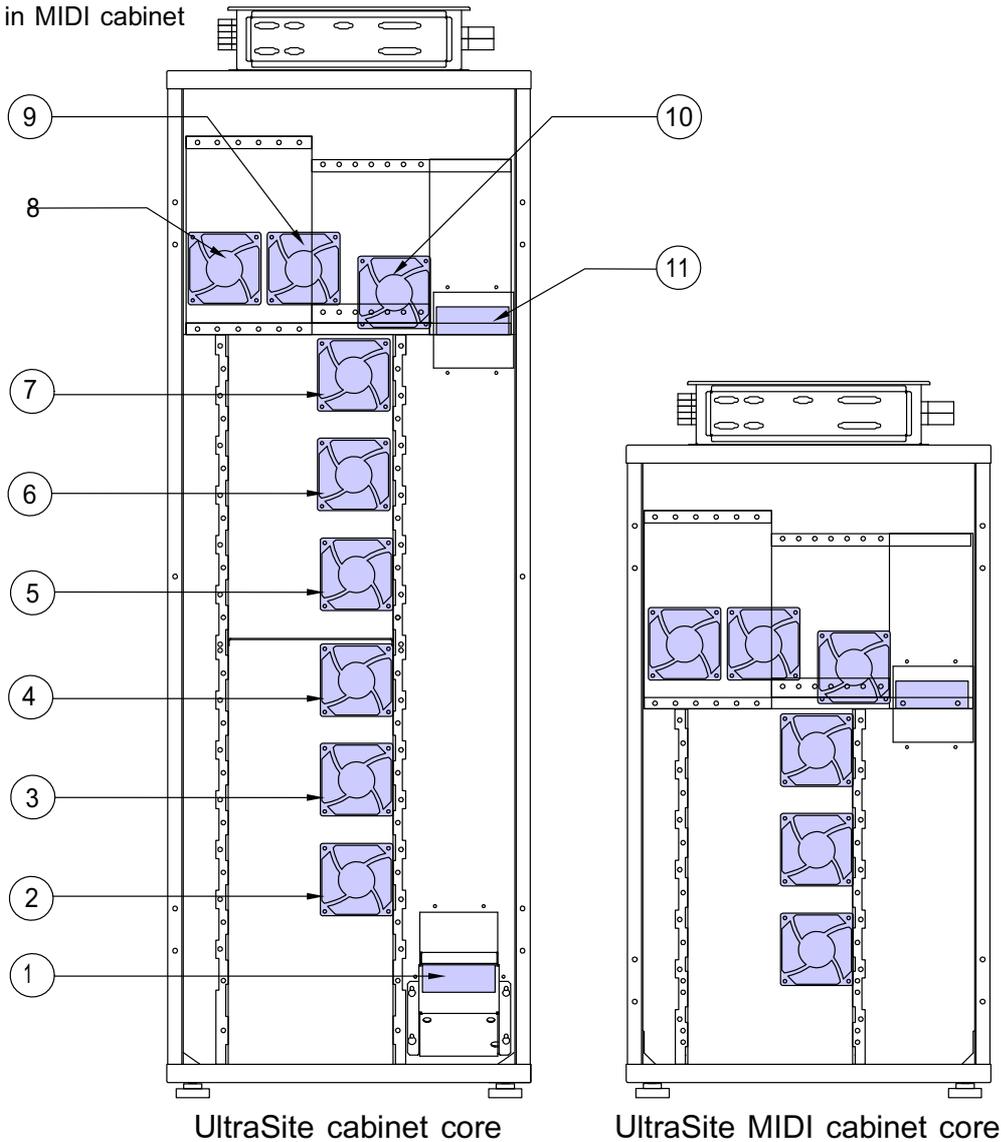


Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.

Eleven Unit Cooling fans in the cabinet (seven fans in the Midi cabinet) maintain proper airflow to the Power Supply units, common unit and transmission area, Transceivers and RF filter units. Four screws secure each fan to the cabinet core and two finger screws with moulded connectors secure the power/signal cable.

*Same location in MIDI cabinet



DN03419607

- 1 RF Filter fan 2, horizontal mount (not used in IBBU configurations)
- 2 TSxx/IBBU fan 6

3	TSxx/IBBU fan 5
4	TSxx/IBBU fan 4
5	TSxx fan 3*
6	TSxx fan 2*
7	TSxx fan 1*
8	Power fan, 1*
9	Power fan, 2*

Figure 118. Unit cooling fan locations



Steps

1. **Notify the appropriate personnel and block the BCF either locally using Nokia BTS Manager or request BCF lock from the BSC.**
2. **Switch the Power Supply units to standby mode.**
3. **Carefully remove the Power Supply units.**
4. **Disconnect the power/signal cable for the fan.**
5. **Remove the four securing screws in the fan box with a T15 Torx driver.**
6. **Remove the fan unit.**

12.12 Replacing an AC Filter Module

12.12.1 Replacing an AC filter module in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Block the BCF.**

Block the BCF either locally with BTS Manager or request BCF lock from the BSC.

2. **Power down UltraSite EDGE BTS.**
3. **Remove input power from the BTS by switching the mains power breaker OFF.**
4. **Remove the AC power cables from the AC Filter.**
5. **Remove the faulty AC filter module from UltraSite EDGE BTS.**
6. **Install the new AC Filter module in UltraSite EDGE BTS.**
7. **Re-connect AC power cables.**
8. **Power ON UltraSite EDGE BTS.**
9. **Unblock the BCF.**

Unblock the BCF either locally using Nokia BTS Manager or request BCF unlock from the BSC.

10. **Leave the site.**

12.12.2 Removing / replacing an AC filter unit on UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

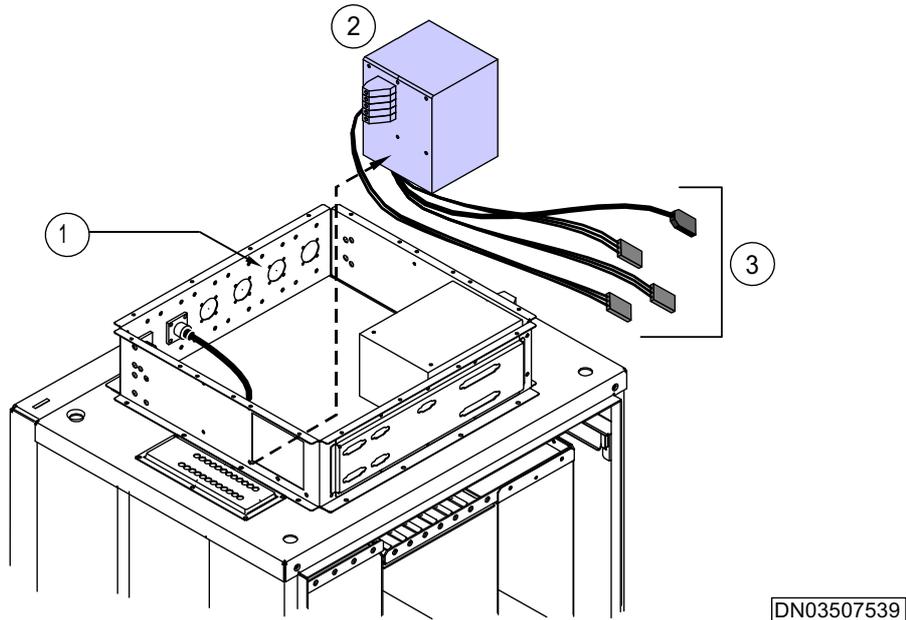


Warning

Be aware of the risk of lethal voltages and electric shock. Before you route AC filter unit cables, make sure the mains power breaker is in the OFF position.

Note

You need to have a separate plate for covering the hole where the AC filter is removed.



DN03507539

1	Antenna box, top removed
2	ACFU filter
3	ACFU Outputs

Figure 119. AC filter unit removal



Steps

1. **Remove the antenna box top front cover.**
2. **Disconnect the AC supply cables from the AC filter unit terminals L1, L2, L3, N and PE.**

3. **Disconnect the D37 connector inside the antenna box nearest the AC filter unit.**
4. **Disconnect the AC filter output cables rubber boots CONN.1 and CONN.2 and CONN.3.**
5. **Cut cable ties which locked AC cable connectors CONN.1, CONN.2 and CONN.3.**
6. **Disconnect the AC cable connectors CONN.1, CONN.2, CONN.3 and HEATER.**
7. **Loosen and remove the AC filter unit fixing screws (6 pieces).**
8. **Remove the disconnected AC filter unit.**
9. *If you do not assemble and install a new AC filter unit*
Then
cover the AC filter hole with an AC filter cover. Order the cover via HWS. You can use the screws from the AC filter fixing.
10. **Assemble the BusBar cable rubber boots.**

12.12.3 Installing an AC filter unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing optional cabinet core units*.

Pay careful attention to all warnings and cautions.



Caution

If you are installing the HETA unit with the AC filter unit (ACFU), install the AC filter unit in addition to any DC filter unit. The AC filter unit does not replace the DC filter unit.

Note

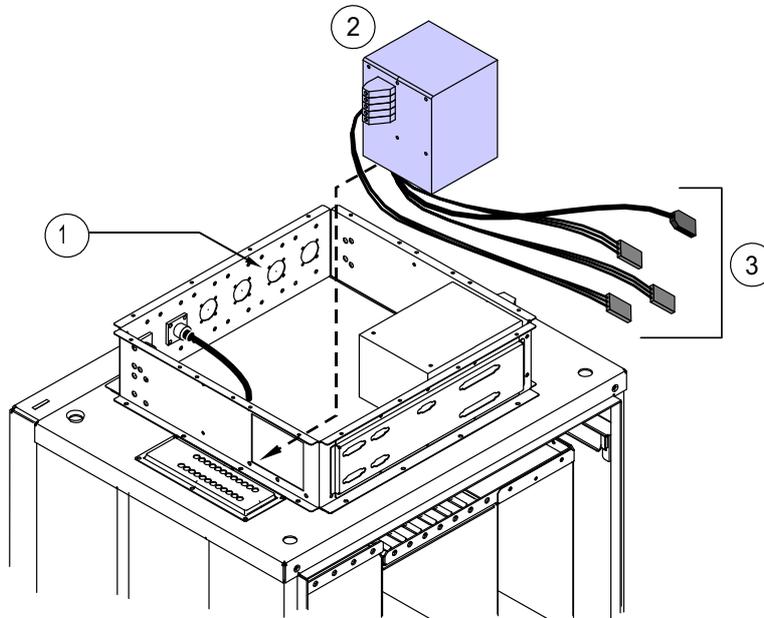
You can remove the integrated AC filter cover only one time. You cannot replace the AC filter cover if it is removed.

Summary

The AC filter unit is required when you install PWSA units or IBBU.

Steps

- 1. Install AC filter unit.**



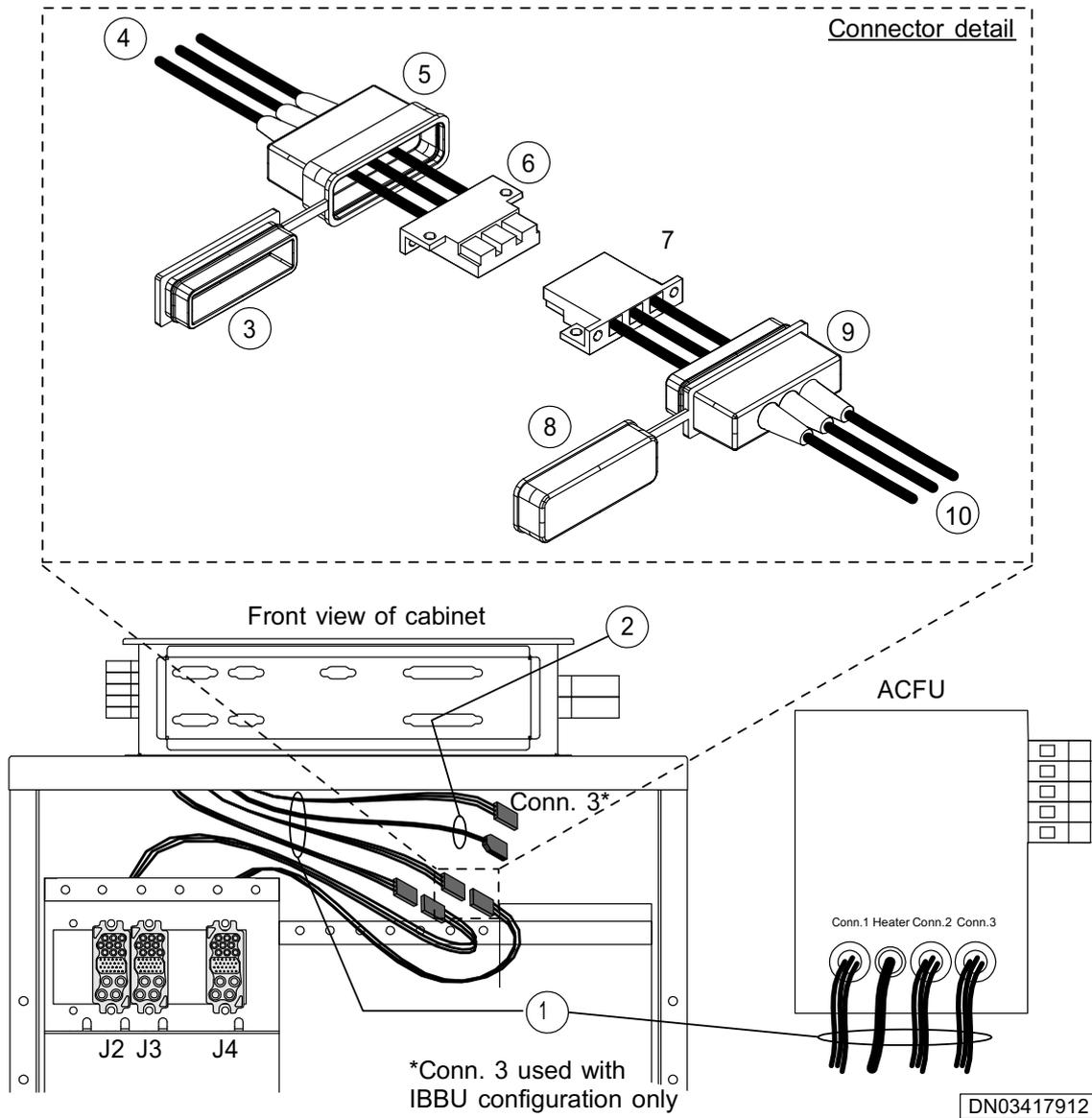
DN03417936

1	Antenna box, top removed
2	ACFU unit
3	ACFU Outputs

Figure 120. AC filter unit installation

- a. Remove the AC filter unit from its protective package and check for visible damage.
- b. Loosen the finger screws securing the left most D-37 interconnect cable from the back of the interface unit and set them aside.
- c. Remove the AC filter unit "knock-out plate" on the external interface from antenna connector box and discard the knock-out plate.
- d. Insert the AC filter unit into the unused slot on the left side of the antenna box external interface.
- e. Insert and tighten six fixing screws to secure the AC filter unit to the antenna box.
See Torque settings of UltraSite EDGE BTS.
- f. Connect the D-37 interconnect cable and secure the finger screws.
- g. Recycle the packing material.

2. Route AC filter unit cables in the cabinet.

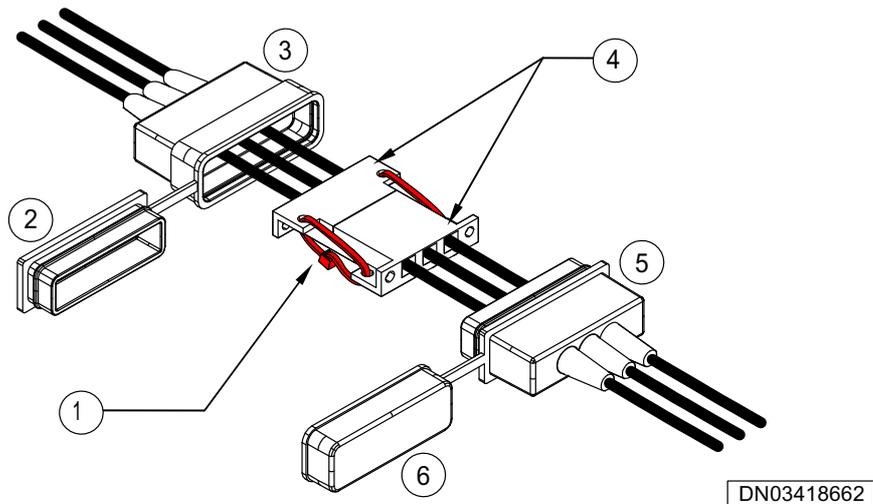


1	ACFU Outputs
2	IEC receptacle (to optional HETA)
3	Rubber boot cover
4	From ACFU
5	Rubber boot

6	Power connector
7	Cabinet Connector J2A or J4A
8	Rubber boot cover
9	Rubber boot
10	To J2 or J4 (cabinet connectors)

Figure 121. AC filter unit cable routing

- a. Locate the output cables inside the cabinet that run from the AC filter unit and the cabinet core.
- b. Open the rubber boot covers on each connector.
- c. Attach the power connector within the rubber boot from the AC filter unit connector 1 to the J4A cabinet connector of the ADUx AC cable harness.
- d. Depending on the connector ends, use a cable tie to secure the two connectors.

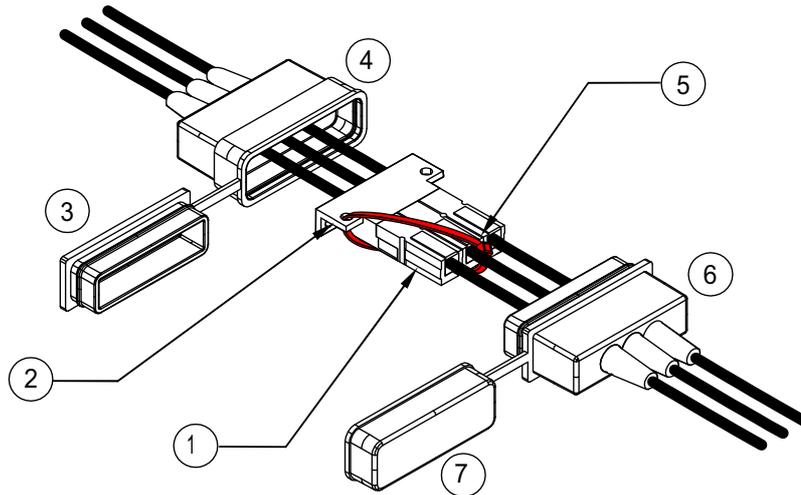


1	Cable tie, two places (Trim cable tie mid-way between connectors)
2	Rubber boot cover
3	Rubber boot

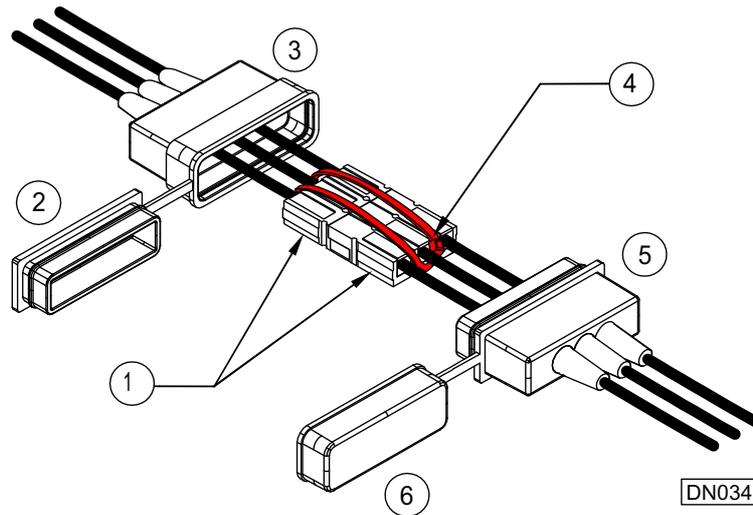
4	Power connectors
5	Rubber boot
6	Rubber boot cover

Figure 122. Default AC filter unit cable tie installation

ALTERNATE 1



ALTERNATE 2



DN03418023

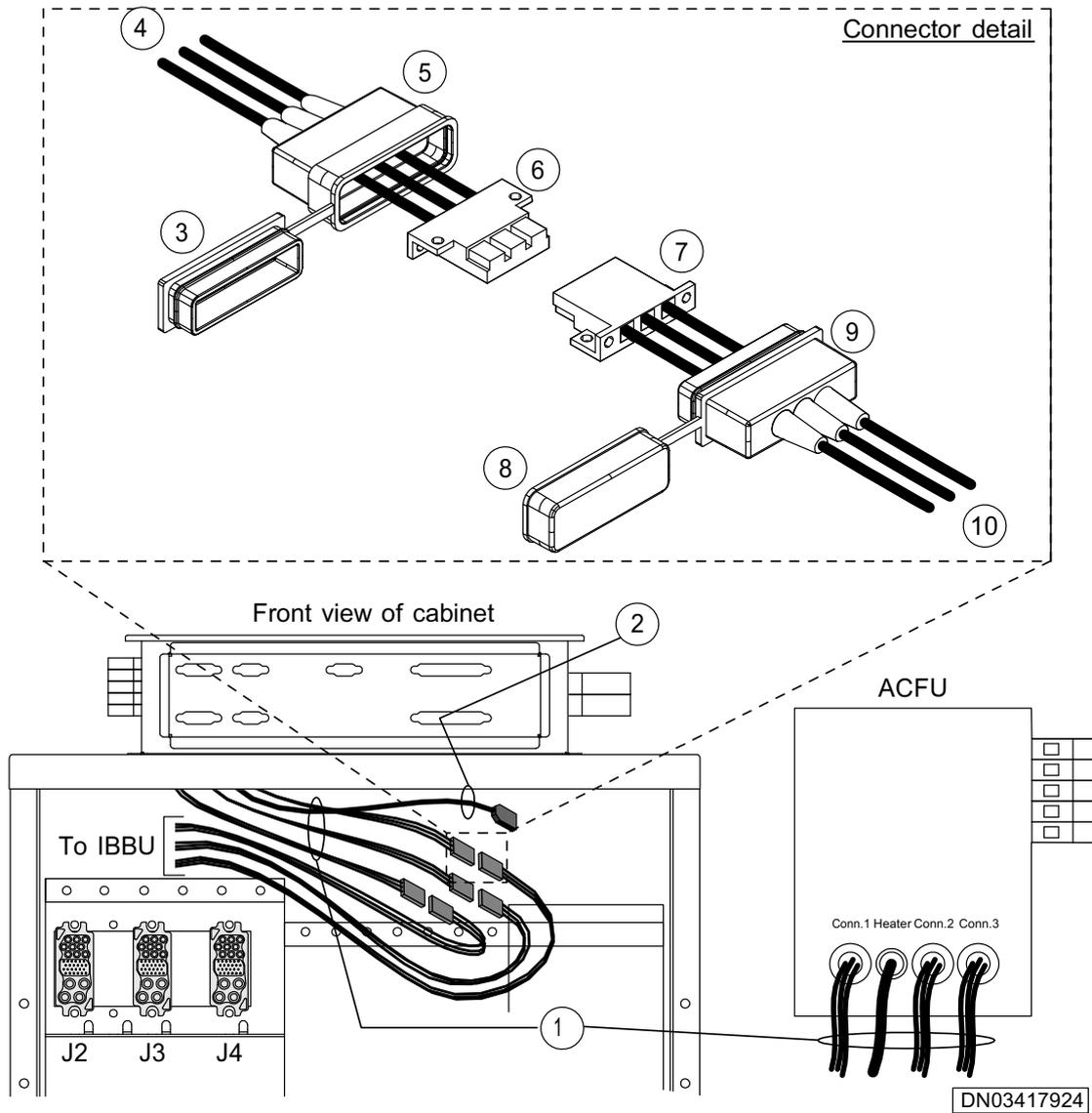
	Alternate 1	Alternate 2
--	-------------	-------------

1	Type 2 power connector	Type 2 power connectors
2	Type 1 power connector	Rubber boot cover
3	Rubber boot cover	Rubber boot
4	Rubber boot	Cable tie, (Trim cable tie between cables)
5	Cable tie, (Trim cable tie between cables)	Rubber boot
6	Rubber boot	Rubber boot cover
7	Rubber boot cover	N/A

Figure 123. Alternate cable tie installations

- e. Secure the rubber boot covers.
- f. Repeat steps 1 through 5 for connector 2 from the AC filter unit to the J2A cabinet connector.
- g. Connect the Heater connector to the (optional) HETA unit cable, if present.

3. Route AC filter unit cables with IBBU.



1	ACFU Outputs
2	IEC receptacle (to optional HETA)
3	Rubber boot cover
4	From ACFU
5	Rubber boot

6	Power connector
7	Cabinet Connector
8	Rubber boot cover
9	Rubber boot
10	To IBBU

Figure 124. AC filter unit cables routed to the IBBU

- a. Locate the output cables inside the cabinet that run from the AC filter unit and the cabinet core.
 - b. Open the rubber boot covers on each cable connector.
 - c. Attach the power connector within the rubber boot for connector 1 of the AC filter unit to the J4A connector of the ADUx AC cable harness.
 - d. Depending on the connector ends, use a cable tie(s) to secure the two connectors. For more information, see Figures 3 and 4.
 - e. Repeat steps 2 through 4 for connector 2 to the J2A connector of the cable harness.
 - f. Repeat steps 2 through 4 for connector 3 to the J3A connector of the cable harness.
 - g. Connect the Heater connector to the HETA unit cable, if installed.
 - h. Secure the rubber boot covers by connecting them together.
 - i. Route the cable harness down the left side of the cabinet with the opposite end exiting the cable channel to the left of the ADUx unit.
4. **Insert and tighten the twelve (12) fixing screws to secure the top front cover.**

12.12.4 Replacing a +24 VDC filter module in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty +24 VDC filter module from UltraSite EDGE BTS.**
2. **Install the new +24 VDC filter module in UltraSite EDGE BTS.**

3. Power ON UltraSite EDGE BTS.
4. Leave the site.

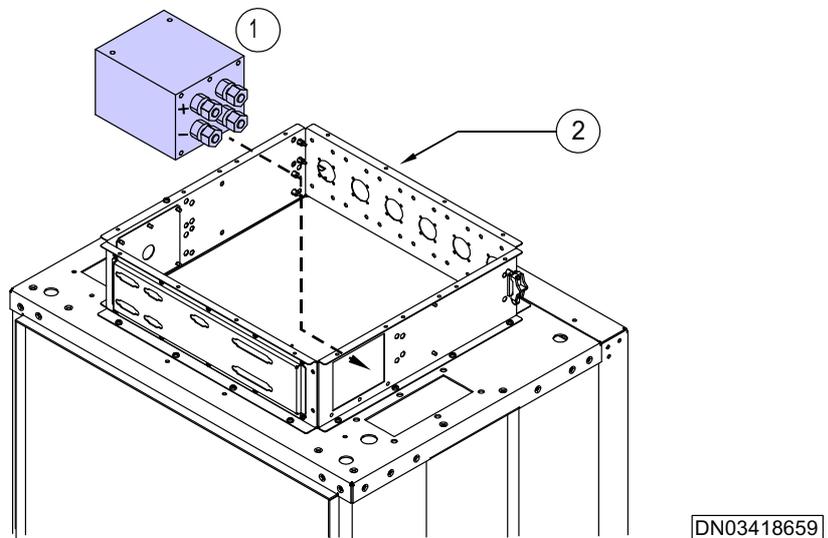
12.12.5 Removing a +24 VDC filter module from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

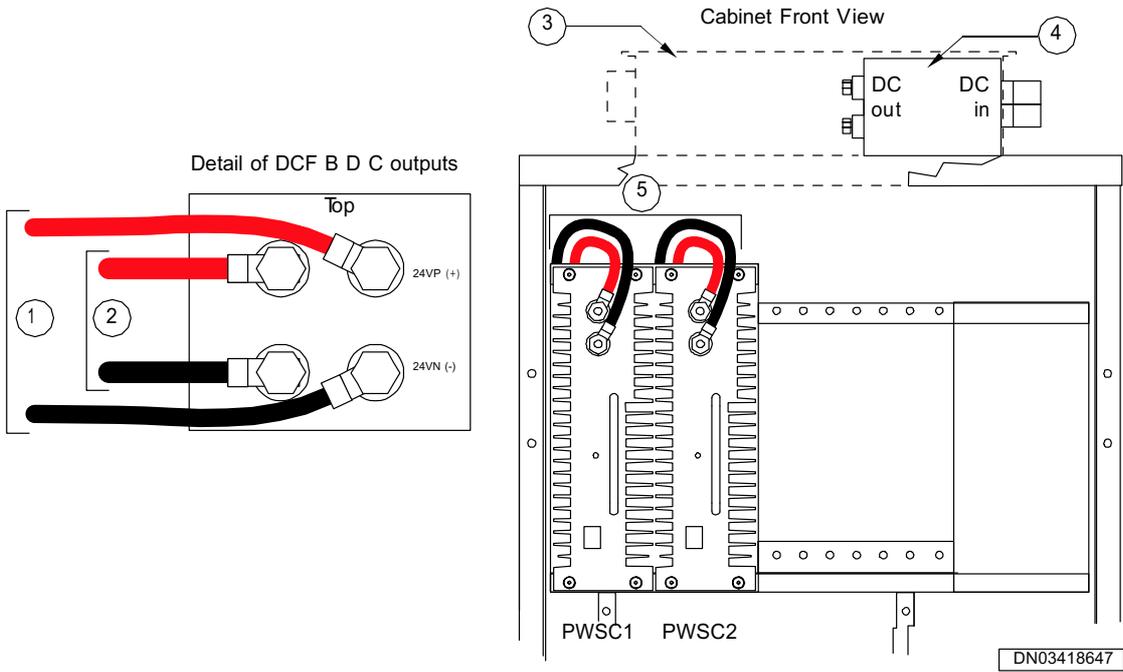
Summary

The optional +24 VDC Filter module (DCFB) is required when installing +24 VDC power.



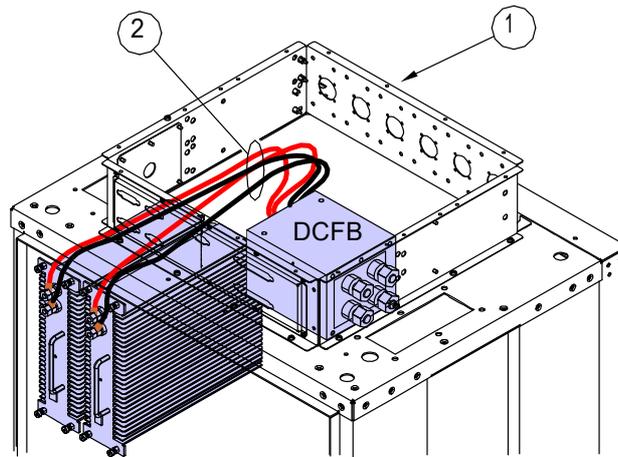
1	DCFB filter
2	Antenna box, top removed

Figure 125. DCFB Filter module removal



1	To PWSC 2
2	To PWSC 1
3	Antenna box
4	DCFB
5	To DCFB DC out

Figure 126. DCFB Filter module cable routing to PWSC



DN03419358

1	Antenna box, top removed
2	Cable tie

Figure 127. Internal Cabinet cable routing from DCFB to PWSC



Steps

1. **Remove rubber boots from the PWSC input power terminals and the DCFB output power terminals.**
2. **Remove the Red power cable to the (+) input power terminal on the left PWSC unit, if installed.**
3. **Remove the Black power cable to the (-) input power terminal on the left PWSC unit, if installed.**
4. **Remove the opposite ends of the Red and Black power cables from the left positive (+) and negative (-) output terminal pair on the DCFB Filter module.**
5. **Repeat steps 1 through 4 for the right PWSC unit, if installed, using the right output terminal pair on the DCFB Filter module.**

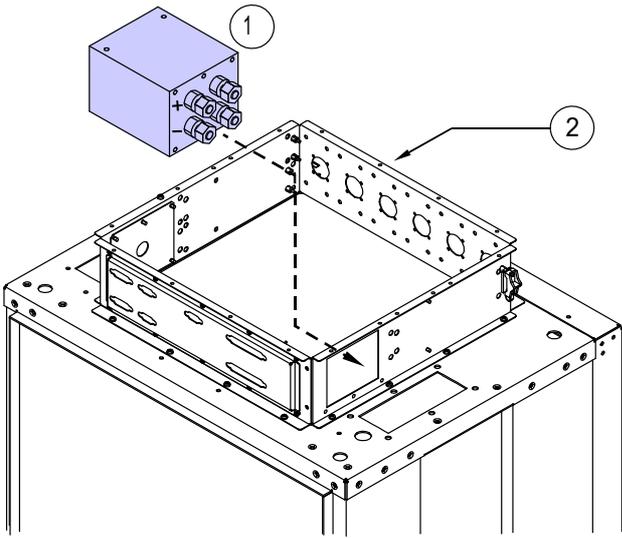
6. **Locate the existing +24 VDC Filter module in the right side of the antenna box.**
7. **Remove any external DC cable that is connected to the input of the DCFB.**
8. **Loosen and remove the four M4 mounting screws in the center and right hand side holes of the DCFB Filter module.**
9. **Remove the DCFB Filter module from the opening on the right side of the antenna box.**

12.12.6 Installing a +24 VDC filter module in UltraSite EDGE BTS

Before you start

1. Locate the existing -48 VDC Filter module in the right side of the antenna box.
2. Disconnect the blue and black filter cables from inside the cabinet and secure the caps to the protective boots of each cable.
3. Store cable behind the common subrack.
4. Remove the mounting screws securing the filter module to the antenna box and remove the unit.
5. Remove the DCFB Filter module from its protective package and check for visible damage.

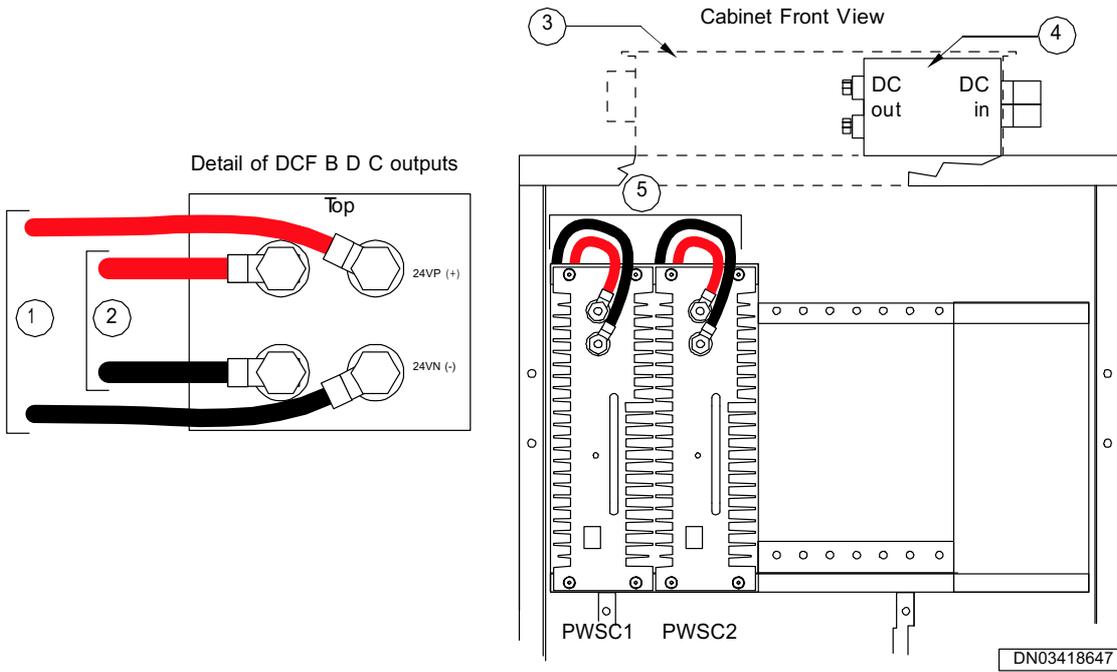
Summary



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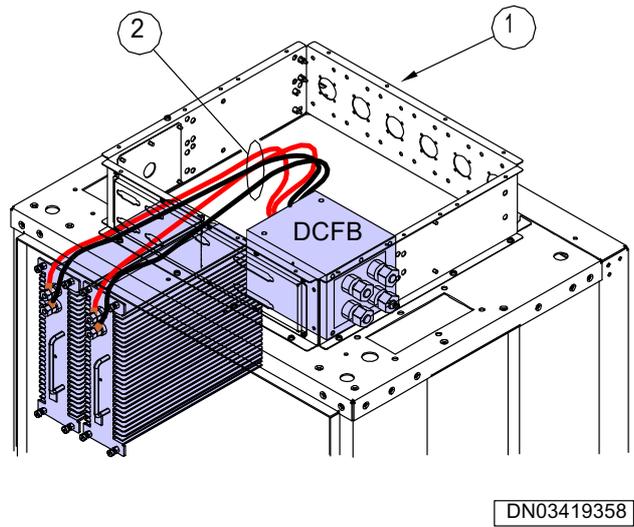
1	DCFB filter
2	Antenna box, top removed

Figure 128. DCFB Filter module installation



1	To PWSC 2
2	To PWSC 1
3	Antenna box
4	DCFB
5	To DCFB DC out

Figure 129. DCFB Filter module cable routing to PWSC



DN03419358

1	Antenna box, top removed
2	Cable tie

Figure 130. Internal cabinet cable routing from DCFB to PWSC

Review the *Overview of installing optional units of UltraSite EDGE BTS*. The +24 VDC Filter module (DCFB) is required when installing +24 VDC power.

Note

If you are installing the HETA unit, install the AC filter unit in addition to any DC filter unit. The AC filter unit does not replace the DC filter unit.



Steps

1. **Install the power cables on the filter.**
2. **Connect DCFB Filter module cables to the power supply.**

Note

If you are using only one power supply, do not install the second set of cables.

- a. Locate the Red and Black power cable assemblies included as part of the PWKA Installation Kit. One kit is provided for each PWSC power supply unit.
- b. Remove protective plastic covers from applicable cable ends of the DCFB connection terminals.
 - If you are using one power supply, remove only one set of protective covers from the filter terminals.
 - If you are using two power supplies, remove all sets of protective covers on the filter terminals.
- c. Attach the opposite ends of the Red and Black power cables to the left positive (+) and negative (-) output terminal pair on the DCFB Filter module.
- d. Install rubber boots in place over the DCFB output power terminals. Ensure that boots completely cover the terminals.

3. Install the DCFB Filter module.

- a. Insert the DCFB Filter module into the opening on the right side of the antenna box where the original unit had been installed.

Orient the positive (+) terminals toward the top of the cabinet.
- b. Secure the DCFB Filter module using four M4 mounting screws in the centre and right-hand side holes of the DCFB.

Note

The remaining mounting screws are installed following connection of input power to the DCFB. The two front M4x8 screws and the two threaded studs are used to secure the protective cover over the DCFB power input connections.

4. Attach power cables to the power terminals.

- a. Attach a Red power cable to the (+) input power terminal on the left PWSC unit, if installed.

See *Torque settings*.

- b. Attach a Black power cable to the (-) input power terminal on the left PWSC unit, if installed.
See *Torque settings*.
- c. Install rubber boots in place over the PWSC input power terminals. Ensure that boots completely cover the terminals.
- d. Repeat steps a through c for the right PWSC unit, if installed, using the right output terminal pair on the DCFB Filter module.
- e. Install a tie wrap at the back of the power supply subrack at approximately midway of the cables.

5. Recycle the packing material.

12.12.7 Replacing a -48 VDC filter module in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the faulty -48 VDC filter module from UltraSite EDGE BTS.**
2. **Install the new -48 VDC filter module in UltraSite EDGE BTS.**
3. **Power ON UltraSite EDGE BTS.**
4. **Leave the site.**

12.12.8 Removing a -48 VDC filter module from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

The optional -48 VDC Filter module is required when installing -48 VDC power.



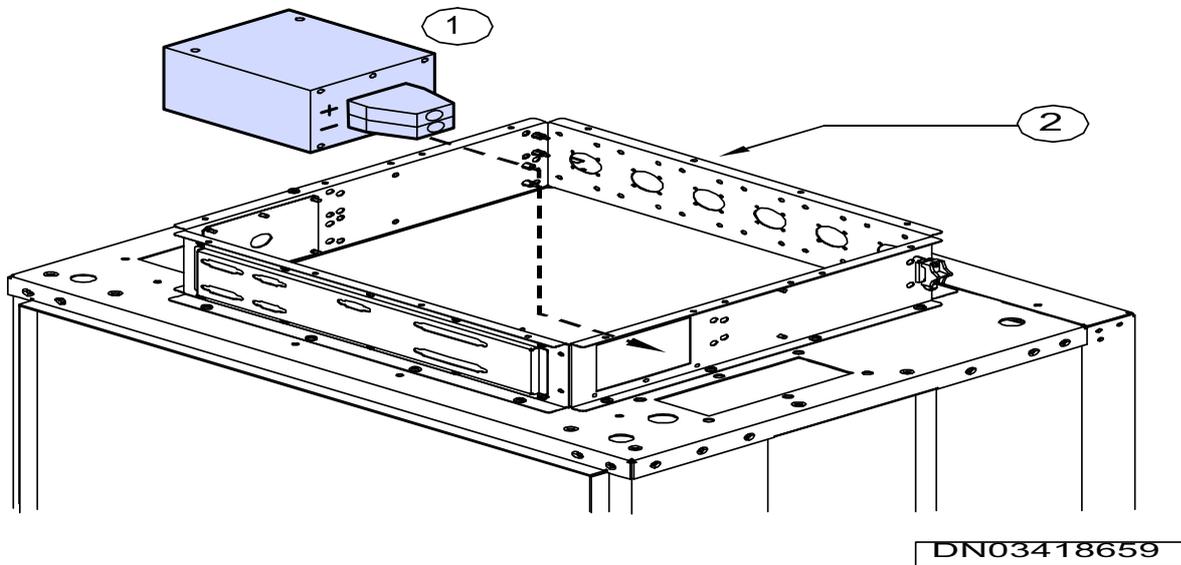
Warning

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. Turning OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch leaves it in STANDBY mode.



Caution

Verify that the cabinet is properly grounded and that mains power breaker is OFF.



DN03418659

1	-48 VDC filter
2	Antenna box, top removed

Figure 131. -48 VDC Filter module removal



Steps

1. **Locate the existing -48 VDC Filter module in the right side of the antenna box.**
2. **Disconnect the the external DC power cables.**
3. **Unplug the internal power cables from terminal J5 inside the cabinet.**
4. **Loosen and remove the six T15 TX Star Tamper proof mounting screws that secure the filter module to the antenna box.**
5. **Remove the unit from the cabinet.**

12.12.9 Installing a -48 VDC filter module in UltraSite EDGE BTS

Before you start

Note

If you are installing the HETA unit, install the AC filter unit in addition to any DC filter unit. The AC filter unit does not replace the DC filter unit.

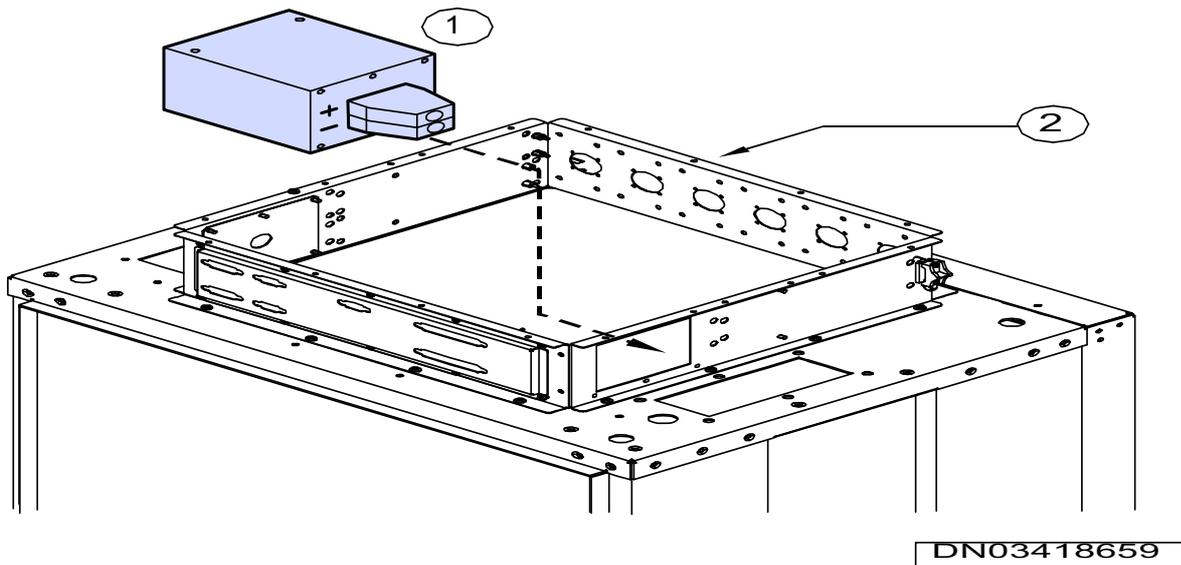
Summary

Review the *Overview of installing optional units of UltraSite EDGE BTS*. The -48 VDC Filter module is required when installing -48 VDC power.



Steps

1. **Install the -48 VDC Filter module.**



DN03418659

1	-48 VDC filter
2	Antenna box, top removed

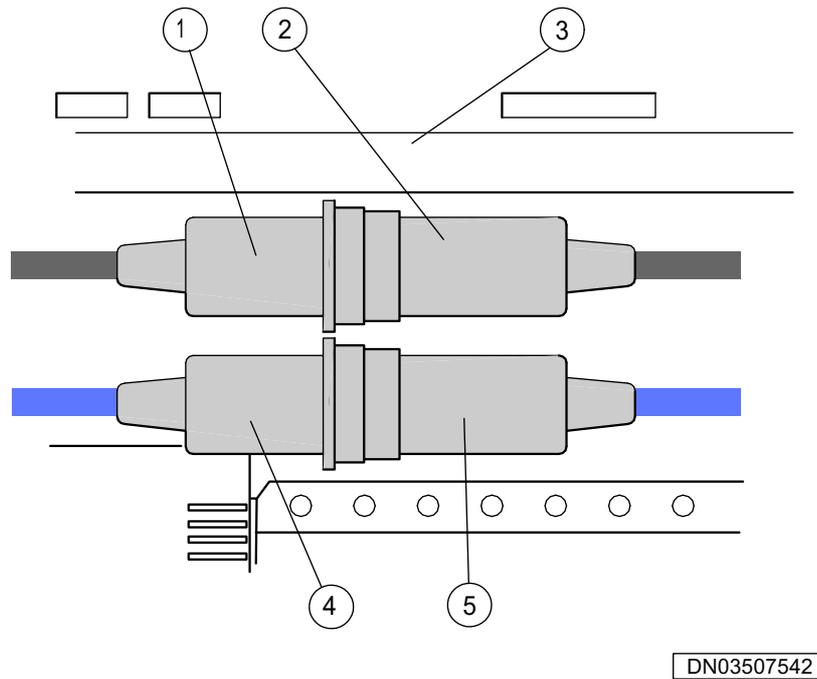
Figure 132. -48 VDC Filter module installation

- a. Remove the -48 VDC filter module from its protective package and check for visible damage.
- b. Insert the -48 VDC filter module into the opening on the right side of the antenna box where the original unit had been installed.

Note

Orient the positive (+) V 48RTN terminal toward the top of the cabinet.

- c. Secure the -48 VDC filter module using the 6 T15 T Star Tamper proof mounting screws.
 - d. Recycle the packing material.
- 2. Connect -48 VDC Filter module cables to the power supply.**



1	J5 DC feeder
2	From the DCFx -48 VDC filter module
3	Cabinet
4	J5 DC feeder
5	From the DCFx -48 VDC filter module

Figure 133. Power connectors for -48VDC filter

- a. Locate the blue power cable on the -48 VDC filter module inside the cabinet and connect to the Blue (-) J5 connector.
- b. Locate the black power cable on the -48 VDC filter module inside the cabinet and connect to the Black (+) J5 connector.

12.13 Replacing a Baseband rack

12.13.1 Replacing a BB rack in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Remove the existing BB rack from UltraSite EDGE BTS.**
2. **Install the new BB rack to UltraSite EDGE BTS.**
3. *If* input power was removed,
Then
Power ON UltraSite EDGE BTS.
4. **Leave the site.**

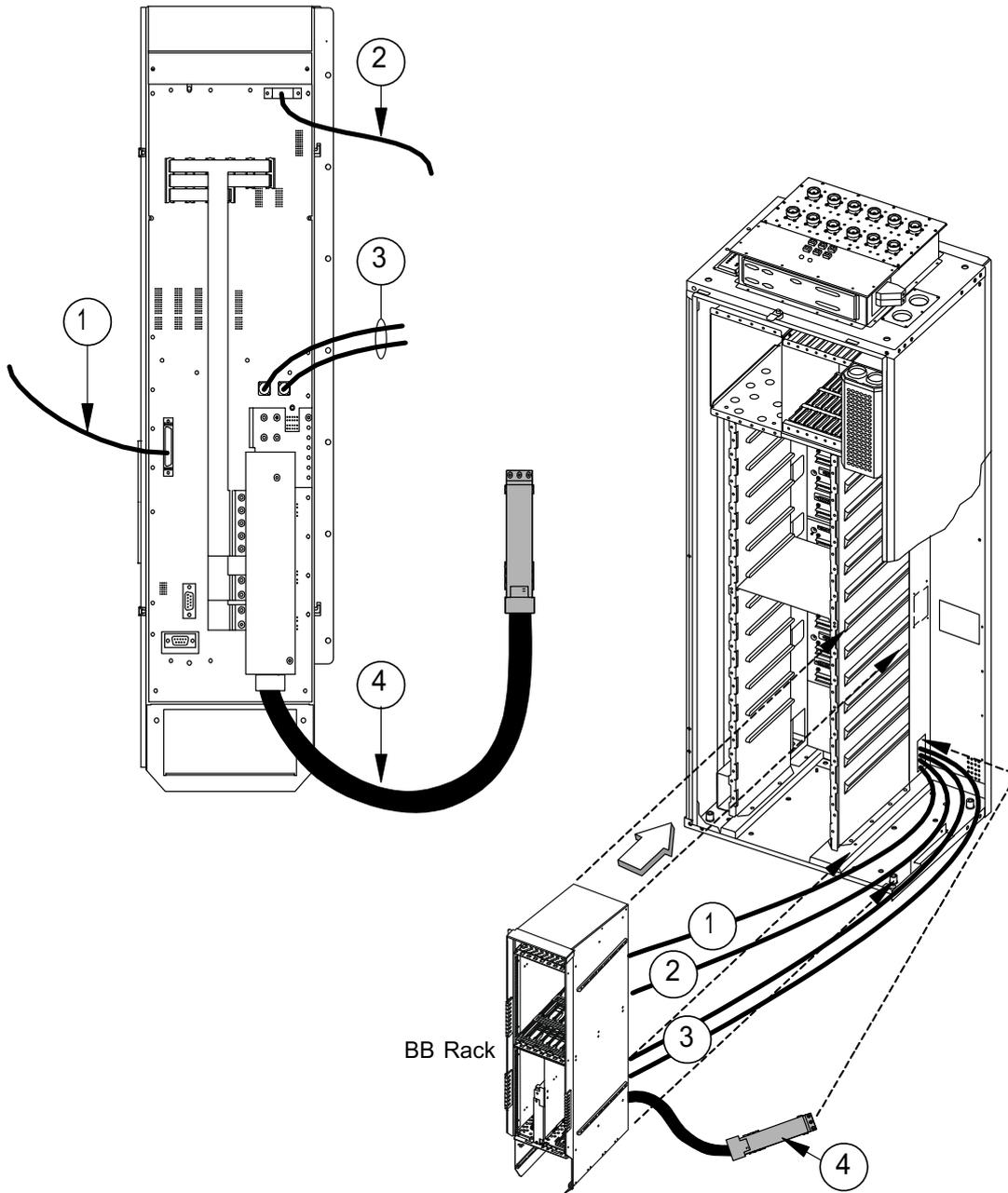
12.13.2 Removing a WCDMA BB rack from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

BB Rack backplane, back view



DN03427517

1

Bus Cable

2	Bus Cable
3	Chain clock cables
4	Main Busband

Figure 134. Removing the BB rack

**Steps**

1. **At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs.**
2. **At the RNC or NetAct, lock the BCF.**
3. **Switch off the power supply from the Nokia UltraSite Support (optional).**
4. **On the BTS site, switch BTS power off from the WPS unit switches.**
5. **Remove all the plug-in units in the RF rack.**
6. **Remove the RF rack.**
7. **Remove all plug-in units from the BB rack (WSM, WAM, WSM, WPS, WSC, AXU, IFU, WTCA Fan). Place them aside on an anti-static mat.**
8. **Pull the BB rack carefully forward so that you have access to the cables at the back.**
9. **Carefully disconnect each cable from the RF backplane in any order.**
10. **Take the BB rack out of the BTS.**
11. **Remove the BB backplane from the BB rack.**

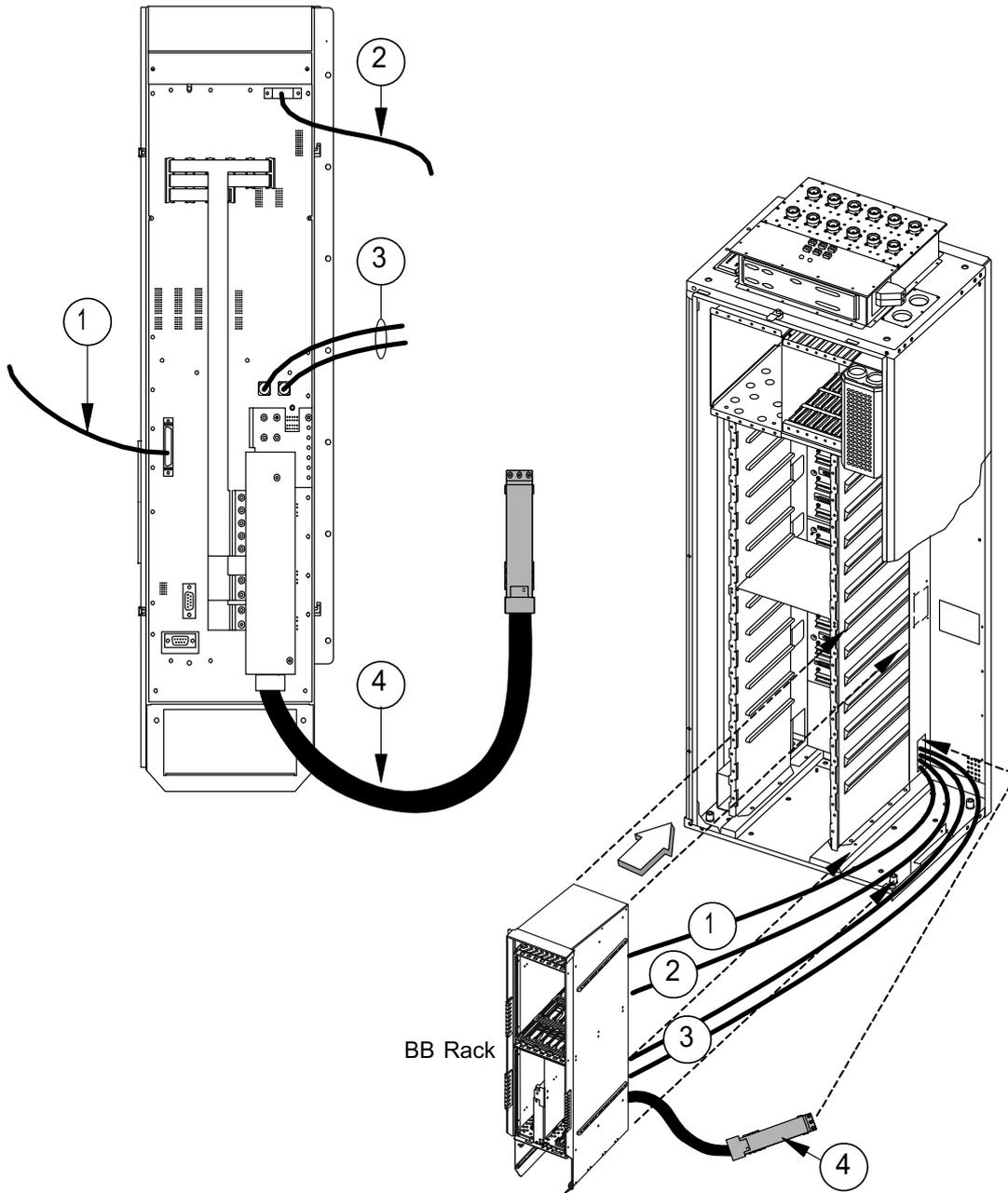
12.13.3 Installing the BB rack to UltraSite EDGE BTS with WCDMA Upgrade

Before you start

Review the *Overview of upgrading UltraSite EDGE BTS with WCDMA*.

Summary

BB Rack backplane, back view



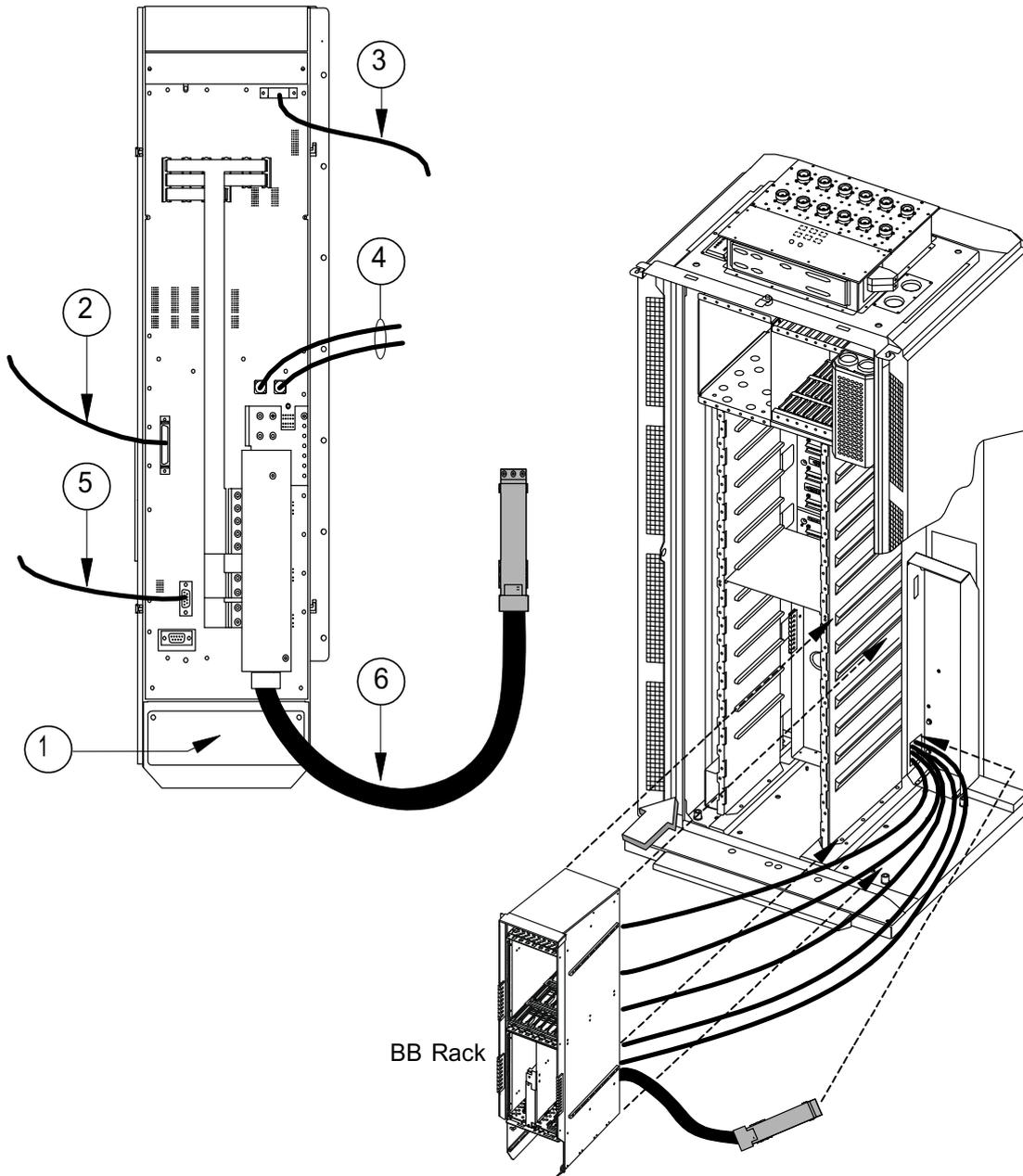
DN03427517

1	Bus cable
---	-----------

2	Bus cable
3	Chain clock cables
4	Main busbar

Figure 135. Connecting cables to the back of the BB rack backplane and installing the BB rack to the Indoor cabinet

BB Rack backplane, back view



DN03426927

1	WFA cover plate
---	-----------------

2	Bus cable
3	Bus cable
4	Chain dock cables
5	Heater control cable
6	Main busbar

Figure 136. Connecting cables to the back of the BB rack backplane and installing the BB rack to the Outdoor cabinet



Steps

1. *If you are installing the BB rack to the Indoor cabinet,*

Then

Perform the following tasks:

- a. Connect the bus cables (1 and 2 in Figure 1) to the connectors in the back of the BB rack backplane (cable dn994105 to X330 connector, cable dn994107 to X331 connector).
 - b. Connect the Chain Clock cables (3) to the connectors in the BB rack backplane (REF CLK cable to REF CLK connector X418, REF R CLK cable to REF R CLK connector X419).
 - c. Route the bus cables (1 and 2) and the Main Busbar (4) through the cable entry.
 - d. Insert BB rack to the unit slot.
 - e. Make sure the main busbar is not bent behind the BB rack.
2. *If you are installing the BB rack to the Outdoor cabinet,*

Then

Perform the following tasks:

- a. Remove the cover plate from the WTCA Fan module.
- b. Fit the cover plate to the bottom of the BB rack (1 in Figure 2) so that the handle of the cover plate is inside the BB rack.
- c. Screw the cover plate to the BB rack with three M3 Torx screws.
- d. Connect the bus cables to the connectors in the back of the BB rack backplane (cable dn994105 to X330 connector, cable dn994107 to X331 connector).

- e. Connect the Chain Clock cables to the connectors in the BB rack backplane (REF CLK cable to REF CLK connector X418, REF R CLK cable to REF R CLK connector X419).
- f. Connect the heater control cable to connector X332 in the back of the BB rack backplane.
- g. Route the bus cables and the Main Busbar through the cable entry in the lower compartment of the cabinet.
- h. Insert BB rack to the unit slot.
- i. Make sure the main busbar is not bent behind the BB rack.

12.14 Replacing a Wideband Antenna Filter rack

12.14.1 Replacing a WAF rack in UltraSite EDGE BTS

Before you start

Review the procedure for *Preparing to replace parts of the UltraSite EDGE BTS cabinet core*. Pay careful attention to all Warnings and Cautions.



Steps

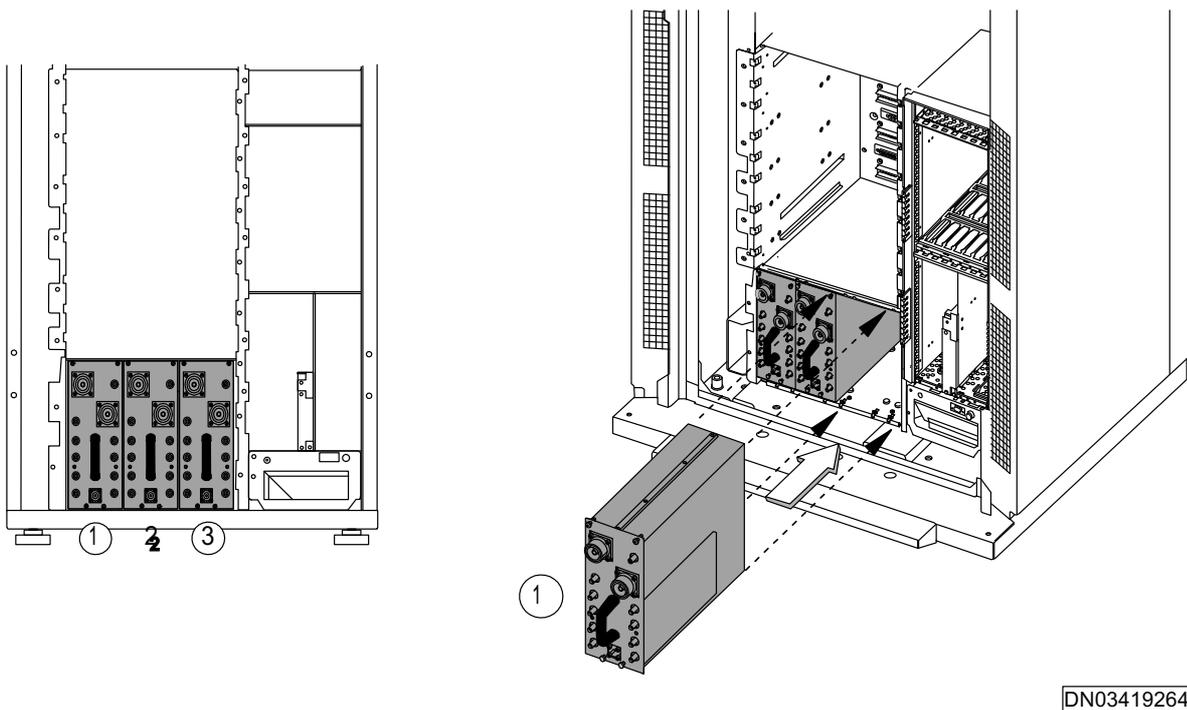
1. **Remove the WAF rack from UltraSite EDGE BTS.**
2. **Install the WAF rack to UltraSite EDGE BTS.**
3. **Power ON UltraSite EDGE BTS with WCDMA upgrade.**
4. **Leave the site.**

12.14.2 Removing a WAF rack from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary

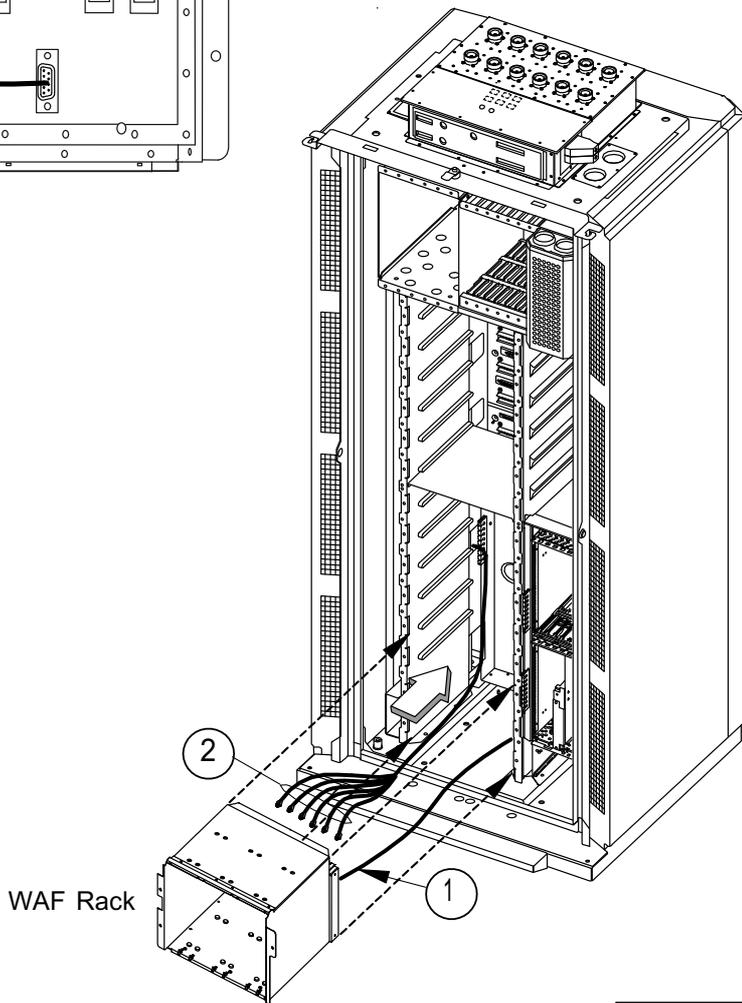
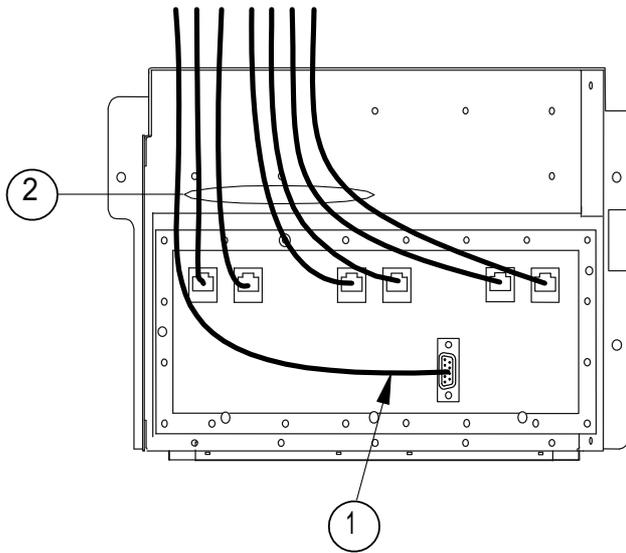


DN03419264

1	WAFx
2	WAFx
3	WAFx

Figure 137. Removing the WAF units

WAF Rack backplane, back view



DN03426896

1

Baseband cable from WAF rack to RF rack

Figure 138. Removing the WAF rack and disconnecting cables to the back of the WAF rack backplane.



Steps

1. **At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs**
2. **At the RNC or NetAct, lock the BCF.**
3. **Switch off the power supply from the Nokia UltraSite Support (Optional)**
4. **On the BTS site, switch BTS power off from the WPS unit switches.**
5. **Remove all the plug-in units in the RF rack.**
6. **Remove the RF rack.**
7. **Remove all the WAF units from the WAF rack. Place them aside on an anti-static mat.**
8. **Unscrew and remove the screws holding the WAF rack.**
9. **Pull the WAF rack carefully forward so that you have access to the cables at the back.**
10. **Carefully disconnect each cable from the WAF rack in any order.**
11. **Take the WAF rack out of the BTS.**
12. **Remove the WAF backplane from the WAF rack.**

12.14.3 Installing the WAF rack to UltraSite EDGE BTS with WCDMA Upgrade

Before you start

Review the *Overview of upgrading UltraSite EDGE BTS with WCDMA*.

Summary

Note

Take care not to damage the baseband cable and the MHA cables when inserting the WAF rack.

WAF Rack backplane, back view

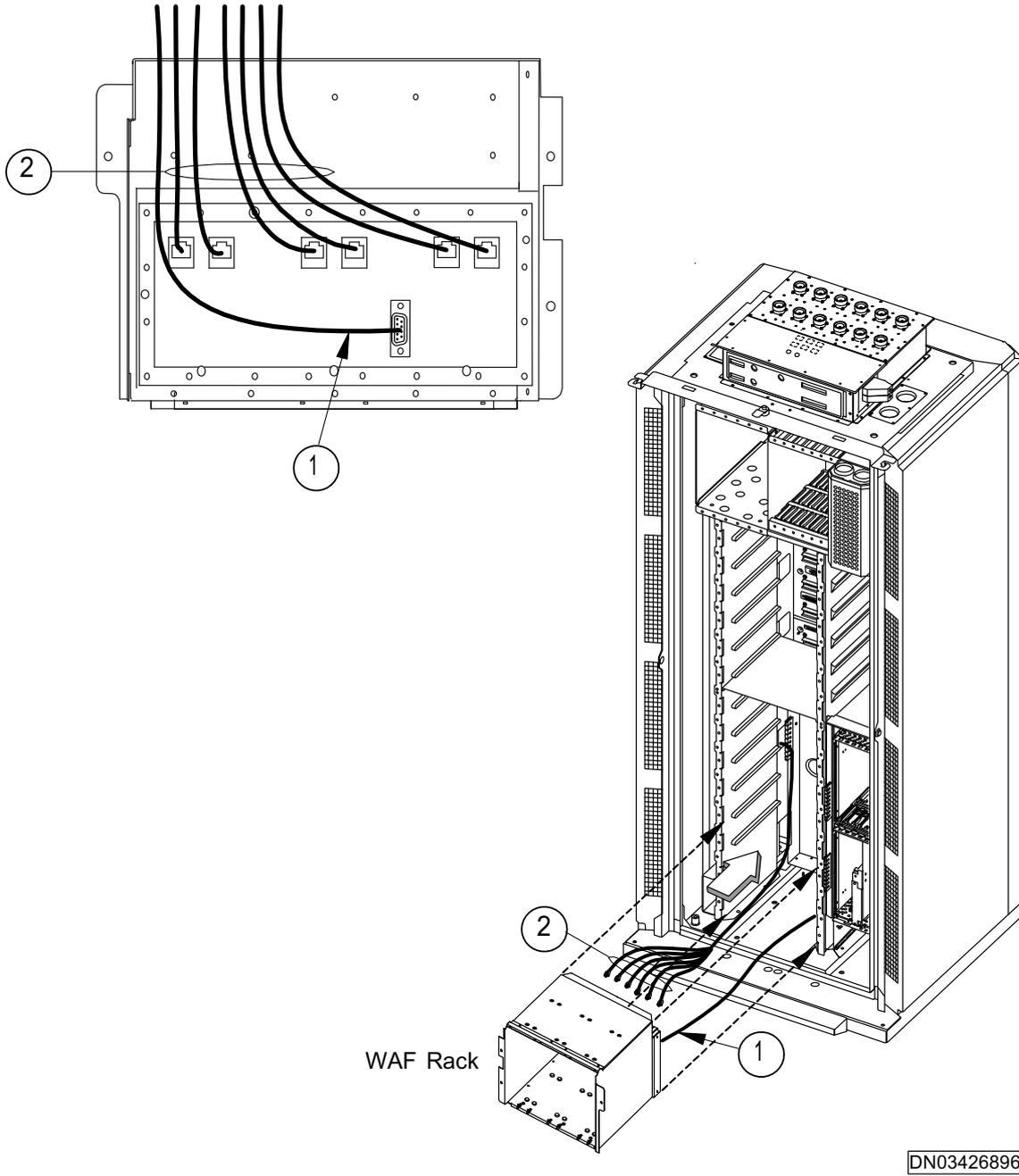


Figure 139. Connecting cables to the back of the WAF rack backplane and installing the WAF rack



Steps

1. **Connect the baseband cable dn994123 to connector X9 in the back of the WAF rack backplane (see 1 in Figure 1).**
2. **Route the baseband cable up and insert it to the cable block.**

The baseband cable will later be connected to the RF rack.
3. **Connect the six MHA cables (2) to the connectors in the back of the WAF rack backplane as listed in the following table.**

Table 21. MHA cable connections

MHA cable	Antenna box front cover	WAF rack connector
Ant 0	Ant 0	X21
Div 0	Div 0	X20
Ant 1	Ant 1	X19
Div 1	Div 1	X18
Ant 2	Ant 2	X17
Div 2	Div 2	X16

4. **In Outdoor installation, insert the cables to the cable block in the RF rack IP shield.**
5. **Insert WAF rack to the unit slot.**
6. **Tighten the WAF rack mounting screws (M4 Torx) to 1.2 Nm.**
7. **Fit the M4 Torx mounting screw to the screw hole in the inside of the WAF rack and tighten the screw.**

13 Glossary

13.1 Glossary for UltraSite EDGE BTS

13.1.1 Abbreviations and acronyms

This section lists abbreviations and acronyms used throughout Nokia UltraSite EDGE Solution documentation.

AC	Alternating Current
ACFU	AC Filter Unit
A/D	Analog/Digital
ADC	Analog to Digital Converter
ADUA	AC/DC control and distribution unit for Integrated Battery Backup (IBBU)
AGC	Automatic Gain Control
ALS	Automatic Laser Shutdown
AMR	Adaptive Multi-Rate coding
ANSI	American National Standards Institute
ANT	Antenna connector
ARFN	Absolute Radio Frequency Channel Number
ASIC	Application Specific Integrated Circuit
ATM	Asynchronous Transfer Mode

AWG	American Wire Gauge
AXC	ATM cross-connect
AXU	ATM cross-connect unit
BAPT	Bundesamt für Post und Telekommunikation Telecommunications advisory agency of Federal Republic of Germany
BATx	Rectifier for battery backup
BBAG	12 V battery for Integrated Battery Backup (IBBU)
BB2x	Transceiver Baseband unit <ul style="list-style-type: none">• BB2A for GSM• BB2E for GSM/EDGE
BCCH	Broadcast Control Channel
BCF	Base Control Function
BER	Bit Error Ratio The ratio of the number of bit errors to the total number of bits transmitted in a given time interval.
BIST	Built-In Self Test A technique that provides a circuit the capability to carry out an implicit test of itself.
BOIx	Base Operations and Interfaces unit
BPxN	Bias Tee without VSWR monitoring <ul style="list-style-type: none">• BPDN for GSM 900/1800/1900• BPxV Bias Tee with VSWR monitoring• BPGV for GSM 900• BPDV for GSM 1800/1900
BS	British Standards
BSC	Base Station Controller

BSS	Base Station Subsystem
BTS	Base Transceiver Station (Base Station)
CC	Cross-Connection
CCCH	Common Control Channel
CCITT	Comité Consultatif International Télégraphique et Téléphonique International Telegraph and Telephone Consultative Committee (Telecommunications advisory agency of France)
CCUA	Cabinet Control Unit
CDMA	Code Division Multiple Access A technique in which the radio transmissions using the same frequency band are coded in a way that a signal from a certain transmitter can be received only by certain receivers
CE	Cable Entry; Consumer Electronics; Conformit Européen (European Conformity) CH Channel
CHDSP	Channel Digital Signal Processor
CN	Change Note A short trouble management document in a specified form sent to a customer about a modification in a product
CRC	Cyclic Redundancy Check A method for detecting errors in data transmission.
CRMx	Core Mechanics for Nokia UltraSite EDGE Base Station Indoor and Outdoor cabinet <ul style="list-style-type: none">• CRMA for Indoor and Outdoor cabinets• CRMB for Site Support cabinets• CRMC for Midi Indoor and Outdoor cabinets
CSC	Customer Services Centre
D/A	Digital/Analog

DC	Direct Current
DCS	Digital Cellular System
DDS	Direct Digital Synthesis
	The frequency synthesis in which logic and memory are used to digitally construct the desired output signal, and a digital-to-analogue converter is used.
DL	(Downlink)
	The direction of transmission in which the BTS is the transmitting facility and the mobile station is the receiving facility.
DIP	Dual In-line Package
DRAM	Dynamic Random Access Memory
DRX	Discontinuous Reception
DSP	Digital Signal Processor
DTX	Discontinuous Transmission
DU2A	Dual Band Diplex Filter unit for GSM 900/1800
DVxx	Dual Variable Gain Duplex Filter unit
	<ul style="list-style-type: none">• DVTB for GSM/EDGE 800• DVTC for GSM/EDGE 800 co-siting• DVGA for GSM/EDGE 900• DVHA for GSM/EDGE 900 customer-specific H band• DVJA for GSM/EDGE 900 customer-specific J band• DVDC for GSM/EDGE 1800• DVDA for GSM/EDGE 1800 A band• DVDB for GSM/EDGE 1800 B band• DVPA for GSM/EDGE 1900
E1	European Digital Transmission Format Standard (2.048 Mbit/s)
EAC	External Alarms and Control

EC	European Community
EDGE	Enhanced Data rates for Global Evolution
EEC	European Economic Community
EEPROM	Electrically Erasable Programmable Read Only Memory
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EMP	Electromagnetic Pulse
EN	European Norm
EQDSP	Equaliser Digital Signal Processor
ESD	Electrostatic Discharge
ET	Exchange Terminal
ETSI	European Telecommunications Standards Institute
Ext.	External
FACCH	Fast Associated Control Channel
FACH	Forward Access Channel
FCC	Federal Communications Commission The United States federal agency responsible for the regulation of interstate and international communications by radio, television, wire, satellite, and cable.
FC E1/T1	Wireline transmission unit (75 [ohm] E1, 120 [ohm] E1, or 100 [ohm] T1) of Nokia UltraSite EDGE Base Station without cross-connection capability.
FCLK	Frame Clock
FET	Field Effect Transistor
FHS	Frequency Hopping Synthesiser

FIFP	Forwarded Intermediate Frequency Power
FIKA	+24 VDC Installation Kit
FPGA	Field Programmable Gate Array
FXC E1	Wireline transmission unit (75 [ohm] E1) with four line interfaces to the 2 Mbit/s (E1) transmission line; cross-connection capability at 8 kbit/s level.
FXC E1/T1	Wireline transmission unit (120 [ohm] E1 or 100 [ohm] T1) with four line interfaces to the 2 Mbit/s (E1) or 1.5 Mbit/s (T1) transmission line; cross-connection capability at 8 kbit/s level.
FXC RRI	Radio link transmission unit (radio indoor unit) with cross-connection capability at 8 kbit/s level. Used with MetroHopper Radio and FlexiHopper Microwave Radio.
Gb	Interface between RNC and SGSN
GMSK	Gaussian Minimum Shift Keying
GND	Ground; Grounding (protective earthing). See Grounding and PE.
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications <ul style="list-style-type: none">• GSM 800 GSM 800 MHz frequency band• GSM 900 GSM 900 MHz frequency band• GSM 1800 GSM 1800 MHz frequency band• GSM 1900 GSM 1900 MHz frequency band
GUI	Graphical User Interface
HDLC	High-level Data Link Control
HETA	Base station cabinet heater
HO	Handover

	The action of switching a call in progress from one radio channel to another, to secure the continuity of the established call
HSCSD	High-Speed Circuit Switched Data
HV	High Voltage
HW	Hardware
	Specifically, electronic equipment supporting data transmission and processing tasks, and the electrical and mechanical devices related to their operation
IAKx	Indoor Application Kit for Nokia UltraSite EDGE Base Station <ul style="list-style-type: none">• IAKA for UltraSite Indoor cabinet• IAKC for UltraSite Midi Indoor cabinet
IBBU	Integrated Battery Backup
IC	Integrated Cell
ICE	Intelligent Coverage Enhancement
ID	Identification; Identifier IE Information Element
	The basic unit of a transaction capabilities application part (TCAP) message.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IF	Intermediate Frequency
IFM	Interface Module
IFU	Interface unit
ILKA	Indoor Lock Kit
ILMT	Integrated Local Management Tool

IMA	Inverse Multiplexed ATM
IP	Ingress Protection
IRPA	International Radiation Protection Association
ISDN	Integrated Services Digital Network
ISHO	Inter-system handover The handover from one system to another.
ISO	International Organization for Standardization
ITU	International Telecommunication Union
L2	AC Phase 2
L3	AC Phase 3
Iu	The interconnection point between the RNC and the Core Network
Iub	Interface between the RNC and node B
Iubis	Interface between the RNC and the BTS
Iur	The logical interface for the interconnection of two radio network controller (RNC) components of the UMTS terrestrial radio access network (UTRAN) system
JIS	Japanese Industrial Standard
LAN	Local Area Network A data transmission network covering a small area.
LAPD	Link Access Protocol on D-channel between the BSC and BTS
LED	Light Emitting Diode
LMB	Local Management Bus
LMP	Local Management Port

LNA	Low-Noise Amplifier
LO	Local Oscillator
LTE	Line Terminal Equipment
LV	Low Voltage
LVD	Low Voltage Disconnect
LVDS	Low Voltage Differential Signalling
LVTTL	Low Voltage Transistor Transistor Logic
M2xA	2-way Receiver Multicoupler unit <ul style="list-style-type: none">• M2LA for GSM/EDGE 800/900• M2HA for GSM/EDGE 1800/1900• M6xA 6-way Receiver Multicoupler unit• M6LA for GSM/EDGE 800/900• M6HA for GSM/EDGE 1800/1900
MAC	Medium Access Control function, handles the channel allocation and multiplexing, that is, the use of physical layer functions.
MCLG	Master Clock Generator
MDF	Main Distribution Frame
MHA	Masthead Amplifier
MMI	Man-Machine Interface
MML	Man-Machine Language <p>A text-based command language with a standardised structure, designed to facilitate direct user control of a system.</p>
MNxx	Masthead Amplifier specific to Nokia UltraSite EDGE Base Station <ul style="list-style-type: none">• MNGA for GSM/EDGE 800/900• MNDA for GSM/EDGE 1800 A band• MNDB for GSM/EDGE 1800 B band

	<ul style="list-style-type: none">• MNPA for GSM/EDGE 1900 A band• MNPB for GSM/EDGE 1900 B band• MNPC for GSM/EDGE 1900 C band
MPT	Ministry of Posts and Telecommunications Telecommunications regulatory agency of Great Britain.
MS	Mobile Station User equipment which uses a radio connection, and which can be used in motion or at unspecified points. This is usually a mobile phone.
MSC	Mobile Switching Centre The mobile network element which performs the switching functions in its area of operation, and controls cooperation with other networks.
MTBF	Mean Time Between Failure
NCRP	National Council on Radiation Protection and Measurements
NCU	Node Control Unit
NEBS	Network Equipment Building Systems
NED	Nokia Electronic Documentation
NMS	Network Management System
O&M	Operation and Maintenance
OAKB	Cable entry kit for BTS co-siting
OAKx	Outdoor Application Kit for Nokia UltraSite EDGE Base Station <ul style="list-style-type: none">• OAKA for UltraSite Outdoor cabinet• OAKC for UltraSite Midi Outdoor cabinet• OAKD for UltraSite Midi Outdoor to Talk-family Co-siting
OBKA	Outdoor Bridge Kit

OCXO	Oven Controlled Crystal Oscillator
	An oscillator in which the crystal and critical circuits are temperature-controlled by an oven.
OEKA	Outdoor (cable) Entry Kit
OFKA	Outdoor Air Filter Kit
OFKC	MIDI Outdoor Air Filter Kit
OMU	Operation and Maintenance Unit
OMUSIG	OMU Signalling
OVP	Over-Voltage Protection
PC	Personal Computer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PE	Protective earthing (grounding)
	See GND and Grounding.
PFC	Power Factor Correction
PLL	Phase-Locked Loop
Point-to-point	Transmission between two fixed points
PSM	Power System Management
PWM	Pulse Width Modulation
PWSx	AC/DC Power Supply unit
	<ul style="list-style-type: none">• PWSA for 230 VAC input• PWSB for -48 VDC input• PWSC for +24 VDC input
Q1	Nokia proprietary transmission management protocol

RACH	Random Access Channel
RAKE	A receiver capable of receiving and combining multipath signals
RAM	Random Access Memory
RAN	Radio Access Network
	A third generation network that provides mobile access to a number of core networks of both mobile and fixed origin.
RCD	Residual Current Device
RF	Radio Frequency
RFF	Radio Frequency Fingerprinting
RIFP	Reflected Intermediate Frequency Power
RLE	Radio Link Equipment
RNC	Radio Network Controller
	The network element in a radio access network which is in charge of the use and the integrity of radio resources.
ROM	Read Only Memory
RRI	Radio Relay Interface
RSSI	Received Signal Strength Indicator
RTC	Remote Tune Combining
RTxx	Remote Tune Combiner
	<ul style="list-style-type: none">• RTGA for GSM/EDGE 900• RTHA for GSM/EDGE 900 H band• RTJA for GSM/EDGE 900 J band• RTDC for GSM/EDGE 1800• RTDA for GSM/EDGE 1800 A band• RTDB for GSM/EDGE 1800 B band• RTPA for GSM/EDGE 1900

RTN	Return
RX	Receiver; Receive
SCF	Site Configuration File
SCT	Site Configuration Tool
SDCCH	Stand-alone Dedicated Control Channel
SDH	Synchronous Digital Hierarchy
SMB	Sub-Miniature B Connector
SMS	Short Message Service
SSS	Site Support System
STM	Synchronous Transport Module
STM-1	Synchronous Transport Module (155 Mbit/s)
SW	Software
Sync	Synchronization The process of adjusting corresponding significant instances of signals, in order to obtain the desired phase relationship between these instances.
T1	North American Digital Transmission Format Standard (1.544 Mbit/s)
TC	Transcoder
TCH	Traffic Channel The logical radio channel that is assigned to a base transceiver station and is primarily intended for conversation.
TCP/IP	Transport Control Protocol/Internet Protocol
TCS	Temperature Control System
TDMA	Time Division Multiple Access

TE	Terminal Equipment
	Equipment that provides the functions necessary for user operation of the access protocols.
TMS	Transmission Management System
	The network system for managing equipment settings, and for centralised retrieval of statistics and alarm information from transmission equipment connected to the system.
TS	Time Slot
	A cyclic time interval that can be recognised and given a unique definition.
TRE	Transmission Equipment
TRX	Transceiver
TRXSIG	TRX Signalling
TS	Time Slot
TSxx	Transceiver (RF unit), specific to Nokia UltraSite EDGE Base Station
	<ul style="list-style-type: none">• TSTB for GSM/EDGE 800• TSGA for GSM 900• TSGB for GSM/EDGE 900• TSDA for GSM 1800• TSDB for GSM/EDGE 1800• TSPA for GSM 1900• TSPB for GSM/EDGE 1900
TTL	Transistor Transistor Logic
TX	Transmitter; Transmit
UC	Unit Controller
UI	User Interface
UL	Underwriters Laboratories

UL (Uplink)	<p>The direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.</p> <ul style="list-style-type: none">• 2-way uplink diversity - The function by which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.• 4-way uplink diversity - The function by which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.
UMTS	Universal Mobile Telecommunications System
UTRAN / UMTS	<p>Terrestrial Radio Access Network</p> <p>A radio access network (RAN) consisting of radio network controllers (RNCs) and base transceiver stations (BTSs). It is located between the Iu interface and the wideband code division multiple access (WCDMA) radio interface.</p>
UPS	Uninterruptible Power Supply
VC	Virtual Channel
VCO	<p>Voltage Controlled Oscillator</p> <p>An oscillator for which a change in tuning voltage results in a predetermined change in output frequency.</p>
VLL	Line-to-Line Voltage
VP	<p>Virtual Path</p> <p>The unidirectional transport of ATM cells belonging to virtual channels that are associated by a common identifier value.</p>
VPCI	<p>Virtual Path Connection Identifier</p> <p>An identifier which identifies the virtual path connection between two B-ISDN ATM exchanges, or between a B-ISDN ATM exchange and a B-ISDN user.</p>

VPI	Virtual Path Identifier
	An identifier which identifies a group of virtual channel links at a given reference point that share the same virtual path connection.
VSWR	Voltage Standing Wave Ratio
	The ratio of maximum to minimum voltage in the standing wave pattern that appears along a transmission line. It is used as a measure of impedance mismatch between the transmission line and its load.
VXxx	Transmission unit, specific to Nokia UltraSite EDGE Base Station
	<ul style="list-style-type: none"> • VXEA for FC E1/T1 • VXRA for FC RRI • VXRb for Fxc RRI • VXTA for Fxc E1 • VXTB for Fxc E1/T1
WAF	Wideband Antenna Filter unit
WAM	Wideband Application Manager unit
WBC	Wideband Combining unit
WCC	Wideband Cabinet Core
WCDMA	Wide band Code Division Multiple Access
	A spread spectrum CDMA technique used to increase the capacity and coverage of wireless communication networks.
WCH	Wideband Cabinet Heater
WCxA	Wideband Combiner, specific to Nokia UltraSite EDGE Base Station
	<ul style="list-style-type: none"> • WCGA for GSM/EDGE 800/900 • WCDA for GSM/EDGE 1800 • WCPA for GSM/EDGE 1900

WEK	Wideband Extension Kit
WFA	Wideband Fan
WHX	Wideband Heat Exchanger
WIC	Wideband Input Combiner
WIK	Wideband Indoor Kit
WOC	Wideband Output Combiner
WOK	Wideband Outdoor Kit
WPA	Wideband Power Amplifier unit
WPS	Wideband Power Supply unit
WSC	Wideband System Clock
WSM	Wideband Summing and Multiplexing unit
WSP	Wideband Signal Processor unit
WTR	Wideband Transmitter and Receiver

13.1.2 Terms

This section provides definitions for terms used throughout Nokia UltraSite Solution documentation.

Abis Interface Interface between a Base Transceiver Station (BTS) and the Base Station Controller (BSC) and between two BTSs.

Absolute radio frequency channel number
See absolute radio frequency number.

Absolute radio frequency number; absolute radio frequency channel number; ARFN; ARFCN
Radio frequency used in connection with, for example, mobile originating and terminating test calls.

Adaptive multi-rate speech codec; AMR speech codec; AMR codec; AMR
Speech codec which adapts its operation optimally according to the prevailing channel conditions.

Air Interface	Interface between MS and BTS.
Alarm	Announcement given to the operating personnel about abnormal functioning of the system or about a failure, or an indication of the degradation of the service level or reliability.
Alarm Status	Classification of the severity of an alarm, such as Critical, Major, Minor, and Information.
Alternating current; AC	A periodic current having a mean value zero.
Analogue-to-digital converter; Analog-to-digital converter /US/; A/D converter; ADC	A device which converts an analogue input signal to a digital output signal carrying equivalent information.
Application-specific integrated circuit; custom circuit; custom IC; ASIC	Integrated circuit which is designed for a specific application and a specific customer and which is not available to other customers.
ATM connection control; connection control; CC	Function that keeps track of connection resources and based on those handles the operations related to different kind of cross-connections.
ATM inverse multiplexing	See inverse multiplexing for ATM.
Backplane	Connector board at the back of Nokia UltraSite cabinets to which plug-in units are directly connected. See also BATA backplane and RFU backplane.
Base station	See base transceiver station.
Base station controller; BSC	Network element in the public land mobile network (PLMN) for controlling one or more base transceiver stations (BTS) in the call set-up functions, in signalling, in the use of radio channels and in various maintenance tasks.
Base station system; BSS	System of base stations (BSs) and base station controllers which is viewed by the mobile services switching centre (MSC) through a single interface.

Base transceiver station; base station; BTS; BS	Network element in a mobile network responsible for radio transmission and reception to or from the mobile station.
BATA backplane	Additional backplane required in a Site Support cabinet when using 12 rectifiers.
Bias Tee	Unit that provides DC power for an associated MHA unit.
Cabinet Control Unit	Module of the ADUA or ADUB that manages battery control, climatic control, alarm reporting, and serial and version number reporting for the IBBU or Nokia UltraSite Support cabinet. The CCU connects to the BOIx with Q1-bus.
Cell	Coverage area of a given BTS where transmission is acceptably received.
Cell breathing	Variation of the cell coverage area; depends on the interference and power requirements.
Cellular Network	Two or more base stations connected together to provide an area of coverage for Mobile Stations (MS).
CENELEC	Comité European de Normalisation ELECTrotechnique. European Committee for Electrotechnical Standardization.
Chain Connection	Transmission solution in which the BTSs are interconnected through a chain, and the first BTS in the chain is connected to the BSC. See Loop Connection, Multidrop Connection, and Star Connection.
Chip	Signal element.
Chip rate	Number of chips transmitted in one second.
Commissioning	Tasks performed to enable the BTS to be connected to the network. Includes operational tests and configuring of the transmission equipment.
Coverage Area	See Cell.

Cross-connection	Connection between input and output ports of a network element.
Cross-connection bank	Information base that defines the cross-connections of a network element. The network element contains two or more banks, one of which is always active.
Custom circuit	See application-specific integrated circuit.
Custom IC	See application-specific integrated circuit.
D-bus	Bus used for traffic communication between the transmission units and BB2x units (D1-bus) and for internal O&M communication with the BOIx, BB2x, and RTxx units (D2-bus).
Despreading	The received wideband signal is modulated with the spreading code to get a narrowband signal after the multipath propagation in spread spectrum systems.
Digital signal processor; DSP	A processor designed for signal handling, resembling an ordinary microprocessor.
Discontinuous reception; DRX	Means of saving battery power (for example in hand-portable units) by periodically and automatically switching the mobile station receiver on and off.
Discontinuous transmission; DTX	Feature which enables saving battery power (for example in hand-portable units) and reducing interference by automatically switching the transmitter off when no speech or data are to be sent.
Downlink Diversity	See Frequency Hopping.
Earthing	See Grounding.
F-bus	Frequency Hopping bus. See Frequency Hopping.
Finger; rake finger; RAKE finger	Receiver unit that despreads one multipath signal.

Four-way uplink diversity; 4-way uplink diversity	Function by which a base transceiver station (BTS) uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.
Forward link	See downlink.
Flash memory	Nonvolatile, electronically writable memory, similar to EEPROM in function, but which must be erased in blocks.
Flexbus	Bidirectional coaxial cable that carries up to 16 x 2 Mbit/s signals and power between transmission equipment, such as a radio outdoor and indoor unit.
Frequency-change oscillator	See local oscillator.
Frequency Hopping	Function in which a BTS swaps two transmitters on a single channel to obtain improved overall MS receiver sensitivity in a system that is subject to random fading.
Gain	Signal amplification, expressed in dBi—decibels over a theoretic, isotropic, and uniformly radiating antenna.
Grounding	Protecting the equipment and the users against lightning and surges through the external connections.
I ² C-bus	Integrated Inter Cell communication bus used for polling, autodetection, version and serial number management, temperature polling, and alarm collection in units without a microprocessor.
Handover	The handover occurs between two cells; the signal goes through one base station or base station sector at a time.
Human-machine interface; man-machine interface; HMI; MMI	A subsystem or function which provides user interface functions in a man-machine language.
Installation	Tasks performed to enable the BTS to be mounted at the site.
Integration	Tasks performed to make the BTS functional in the cellular network. Includes making test calls.

Inter-frequency handover	Handover where the new carrier frequency is different from the current one.
Inter-system handover	Handover from one system to another, e.g. between a 3rd generation system and GSM.
Inverse multiplexing for ATM; ATM inverse multiplexing; inverse multiplexing; IMA	The transmission method in which ATM cells in a cell stream are divided across several physical E1 links on a cell-by-cell basis, and then reassembled at the receiving end without affecting the original cell order.
Loop connection	Transmission solution in which BTSs are interconnected in a loop. For example, the first and last BTSs are connected to the BSC. See Chain Connection, Multidrop Connection, and Star Connection.
Macrocellular	Application that covers large areas with a cell radius of 1 to 10 km (0.6 to 6 miles). The coverage area is achieved when the antenna is installed high and off the ground.
Maximum ratio combining	A signal combining technique in which each signal is multiplied by a weight factor that is proportional to the signal amplitude: the strong signals are further amplified, while the weak signals are attenuated.
Microcellular	Application that typically covers areas with a cell radius of 100 m to 1 km (327 feet to 0.6 miles). The antennas are installed below rooftop level.
Microwave radio	Radio equipment for establishing an aligned and fixed radio connection between two points.
Midi	Indoor or Outdoor cabinet with up to six TRXs.
Multidrop Connection	Transmission solution in which one or more BTS chains are connected to one BTS that is connected to the BSC. See Chain Connection, Loop Connection, and Star Connection.

Network Element

Any equipment that can be managed, monitored, or controlled in a telecommunications network.

Network Topology

Method of transmission between the cells of a network. Examples of transmission solutions are chain, loop, multidrop, and star connections.

Node Manager

A feature of Power System Management (PSM), the Node Manager software called PSMMan is used to control network elements, or nodes, of the Site Support System.

Nokia FlexiHopper

Nokia family of Flexbus-compatible microwave radios for the 13, 15, 18, 23, 26, and 38 GHz frequency bands, in which the radio transmission capacity can be selected using software. The radio transmission capacity of Nokia FlexiHopper can be 2 x 2, 4 x 2, 8 x 2, or 16 x 2 Mbit/s.

Nokia FlexiHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia Hopper Manager

PC software application used for controlling and monitoring Nokia FlexiHopper and Nokia MetroHopper radios connected to FIU19 or RRIC indoor units.

Nokia MetroHopper

Nokia Flexbus-compatible radio for the 58 GHz frequency band that does not require coordinated frequency planning. The main use of Nokia MetroHopper is to provide 4 x 2 Mbit/s, point-to-point wireless access for Nokia MetroSite BTS and Nokia MetroHub.

Nokia MetroHopper outdoor unit can be used with different indoor units: FIU 19, RRIC, FC RRI, and FXC RRI.

Nokia MetroHub

Nokia's compact transmission node with cross-connection and grooming functions, such as FXC RRI. Nokia MetroHub contains up to five transmission units.

Nokia MetroSite GSM BTS

Nokia's compact four-TRX GSM base station for Nokia MetroSite capacity solution. Nokia MetroSite GSM BTS can contain one transmission unit.

Nokia Q1 Connection Tool	Program that makes connection and node definitions for identifying objects on a Nokia Q1 managed network. See Q1.
Nokia UltraSite	Multimedia coverage and capacity macrocellular base station.
Omnidirectional Cell	Cell with a 360° sector; also known as standard cell.
Operator	Telecommunications company running telecommunications services in a specific geographical area.
PCM time slot	1.5 Mbit/s PCM circuit is divided into twenty-four 64 kbit/s time slots. 2 Mbit/s PCM circuit is divided into thirty-two 64 kbit/s time slots.
Peltier elements	Elements that absorb or emit heat when an electric current passes across a junction between two materials. Used for heating and cooling IP20 protection class equipment.
Point-to-point	Transmission between two fixed points.
Q1-bus	Bus in Nokia UltraSite EDGE BTS, used for local transmission management (Q1int) and for extending the management to external equipment.
Radio interface; air interface; AI	The interface between the mobile station (MS) and the radio equipment in the network. This is defined by functional characteristics, common radio (physical) interconnection characteristics, and other characteristics as appropriate.
Radio Relay	Microwave radio unit that replaces a fixed cable with a microwave radio link in the Abis Interface.
Rectifier	Device for converting alternating current to direct current. See BATx.
RFU backplane	Backplane in Nokia UltraSite EDGE BTS cabinet to which RF units are attached.
Sectored BTS Site	A site with multiple cells positioned to supply the desired radiation.

Sectorized Cell	A cell with a conical coverage area achieved by means of a directional aerial.
Single Sector	A part of the BTS's physical equipment that serves a single cell in the network radio topology.
Site	Location where telecommunication equipment has been installed. For example, a site can contain a base station and transmission equipment with an equipment shelter and antenna tower. Several network elements can be located at a site.
Soft handover	Handover where the signal goes through two base stations or base station sectors at a time.
Softer handover	Handover where the signal goes through two sectors in one base station area at a time.
Software Package	Software collection consisting of the components of the BTS operating system.
Spreading	A process in which the signal is modulated with the pseudo noise code to get a wideband signal for multipath propagation in spread spectrum systems.
Spreading code	A code that is used to despread a signal in spread spectrum communications.
Star Connection	Transmission solution in which three branches with one BTS in each are connected to a common node. See Chain Connection, Loop Connection, and Multidrop Connection.
Synchronisation (Sync)	Process of adjusting the corresponding significant instances of signals (between adjacent and serving cells) to obtain the desired phase relationship between these instances.

Uplink Direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

Uplink Diversity

2-way uplink diversity – Function in which a BTS uses two antennas and two receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

4-way uplink diversity – Function in which a BTS uses four antennas and four receivers simultaneously on a single channel to obtain improved overall BTS receiver sensitivity in an environment that is subject to random multipath fading.

See Frequency Hopping.

Related Topics

Trouble management of UltraSite EDGE BTS

Instructions

Trouble management of alarms.

Overview of checking LEDs.

Reference

UltraSite EDGE Base Station alarms list.

Trouble management of UltraSite EDGE BTS with WCDMA upgrade

Instructions

Trouble management of alarms.

Overview of checking UltraSite EDGE BTS WCDMA LEDs.

Reference

UltraSite EDGE Base Station alarms list.

Trouble management of UltraSite EDGE BTS alarms

Reference

Alarms list for UltraSite EDGE BTS

Reclassification of GSM/EDGE UltraSite EDGE BTS alarms

Overview of replacing units

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Replacing a unit with a unit of the same type

Replacing a unit with a unit of a different type

Replacing a battery backup unit

Replacing a unit with a unit of the same type

Instructions

Overview of replacing units

Installing units logically with the manager

Uninstalling units logically with the manager

Saving node information in a file

Restoring backup settings from a file

Replacing a unit with a unit of a different type

Instructions

Overview of replacing units

Reading alarms

Reference

Alarm information

No power to Nokia MetroHub

Reference

Alarm information

LED information

Nokia MetroHub powered but a manager connection cannot be established

Reference

Alarm information

LED information

Cross-connections test fails

Reference

Alarm information

LED information

Descriptions

Cabinet management

Identifying faulty units of UltraSite EDGE BTS

Reference

Alarms list for UltraSite EDGE BTS

Reclassification of alarms for UltraSite EDGE BTS

Overview of installing the units of the UltraSite EDGE BTS

Instructions

Overview of installing GSM/EDGE units

Overview of installing IBBU units

Overview of installing WCDMA units

Overview of installing optional units

Overview of installing GSM/EDGE units of UltraSite EDGE BTS

Reference

Torque settings of UltraSite EDGE BTS

Instructions

Overview of cabling GSM/EDGE units of UltraSite EDGE BTS

Overview of removing UltraSite EDGE BTS

Removing a Wideband Combiner (WCxA) unit from UltraSite EDGE BTS

Instructions

Replacing a WCxA unit

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Technical description of the WCxA unit

Installing a Wideband Combiner (WCxA) unit in UltraSite EDGE BTS

Instructions

Removing a WCxA unit

Cabling DVxx and WCxA units with the SXCA kit

Removing a RTxx unit from UltraSite EDGE BTS

Instructions

Replacing a RTxx unit

Descriptions

Technical description of the RTxx unit

Installing a Remote Tune Combiner (RTxx) unit in UltraSite EDGE BTS

Instructions

Removing a RTxx unit

Overview of cabling GSM/EDGE units

Descriptions

RTxx unit technical description

Removing a Dual Variable Gain Duplex Filter (DVxx) unit from UltraSite EDGE BTS

Instructions

Replacing a DVxx unit

Descriptions

Technical description of the DVxx unit

Installing a Dual Variable Gain Duplex Filter (DVxx) unit in UltraSite EDGE BTS

Instructions

Removing a DVxx unit

Cablling a DVxx unit

Descriptions

Technical description of a DVxx unit

Removing a Dual Band Dplex Filter (DU2A) unit from UltraSite EDGE BTS

Instructions

Replacing a DU2A unit

Descriptions

Technical description of the DU2A unit

Installing a Dual Band Diplex Filter (DU2A) unit in UltraSite EDGE BTS

Instructions

Removing a DU2A unit

Overview of cabling GSM/EDGE units

Descriptions

DU2A unit technical description

Removing a Transceiver (TSxx) unit from UltraSite EDGE BTS

Instructions

Replacing a TSxx unit

Descriptions

Technical description of the TSxx unit

Installing a Transceiver (TSxx) unit in UltraSite EDGE BTS

Instructions

Removing a TSxx unit from UltraSite EDGE BTS

Description

UltraSite EDGE BTS Transceiver (TSxx) unit technical description

Removing a Receiver Multicoupler (MxxA) unit from UltraSite EDGE BTS

Instructions

Replacing a MxxA unit

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