

NOKIA

Installing UltraSite EDGE BTS

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Related Topics 421

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

Overview of installing UltraSite EDGE BTS

2.1 Overview of UltraSite EDGE BTS installation at a new site

Before you start

Review the procedure for *Overview of planning UltraSite EDGE BTS cabinet installation*. Pay careful attention to all Warning and Cautions.

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

Check that:

- *site is prepared for installation.*
 - *the proper installation tools are on site.*
-

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

- *the BTS delivery is complete and in good condition.*

Summary



Warning

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.

**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.

**Warning**

When drilling, wear the necessary protective gear, such as gloves and safety glasses.

**Warning**

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

**Caution**

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

This overview describes how to install UltraSite EDGE Base Station (BTS) Indoor, Outdoor, Midi Indoor, and Midi Outdoor cabinets, cable the BTS and install the units.

The cabinet delivery includes the following components:

- Core cabinet includes (CRMA) or MIDI cabinet core (CRMC)
- Indoor Application kit (IAKA) or MIDI Indoor Application kit (IAKC)
- Outdoor Application kit (OAKA) or MIDI Outdoor Application kit (OAKC)

**Steps**

1. **Complete installation preparations.**
2. *If you are installing cabinet core for indoor use,*
Then
 - a. *Lift and mount the CRMA or CRMC cabinet using one of the three mounting options.*
 - b. *Inspect the cabinet to ensure it is level.*
 - c. *Install the Indoor Application Kit (IAKA or IAKC) to the cabinet core.*
 - d. *Install the core mechanics.*
3. *If You are installing cabinet core for outdoor use,*
Then
 - a. *Prepare the base for CRMA or CRMC installation.*
 - b. *Lift and mount the cabinet on the plinth.*

Note

The side and back walls of the OAKA or OAKC must be installed first when you install the cabinet in limited space that restricts access to the back or sides of the cabinet.

- c. *Install the Outdoor Application Kit (OAKA or OAKC) to the cabinet core.*
 - d. *Install the core mechanics.*
 - e. *Install optional kits.*
4. **Cable the UltraSite EDGE BTS.**
 5. **Install the units in UltraSite EDGE BTS.**
 6. **Cable the units in UltraSite EDGE BTS.**
 7. **Power on the new BTS site.**
 8. **Commission the new BTS.**

2.2 Overview of UltraSite EDGE BTS installation at an existing site

Before you start

Review the *Overview of planning UltraSite EDGE BTS installation*.

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

Check that:

- *site is prepared for installation.*
 - *the proper installation tools are on site.*
-

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

- *the BTS delivery is complete and in good condition.*

Summary



Warning

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.



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.



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.



Caution

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.



Steps

- 1. Complete installation preparations.**
- 2. Decommission the existing BTS.**
- 3. Power down the existing BTS.**
4. *If you are installing cabinet core for indoor use,*
Then
 - a. *Lift and mount the CRMA or CRMC cabinet using one of the three mounting options.*
 - b. *Inspect the cabinet to ensure it is level.*
 - c. *Install the Indoor Application Kit (IAKA or IAKC) to the cabinet core.*
 - d. *Install the core mechanics.*
5. *If You are installing cabinet core for outdoor use,*
Then

- a. *Prepare the base for CRMA or CRMC installation.*
 - b. *Lift and mount the cabinet on the plinth.*
-

Note

The side and back walls of the OAKA or OAKC must be installed first when you install the cabinet in limited space that restricts access to the back or sides of the cabinet.

- c. *Install the Outdoor Application Kit (OAKA or OAKC) to the cabinet core.*
 - d. *Install the core mechanics.*
 - e. *Install optional kits.*
6. **Cable the new BTS at the existing site.**
 7. **Install the units in the new BTS.**
 8. **Cable the units in the new BTS.**
 9. **Connect synchronisation cables between new and existing BTSs.**
 10. **Power on both BTSs.**
 11. **Commission both BTSs.**

2.3 Overview of UltraSite EDGE BTS with WCDMA upgrade installation at a new site

Before you start

Review the *Overview of planning UltraSite EDGE BTS installation*.

Check that:

- *site is prepared for installation.*
 - *the proper installation tools are on site.*
-

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

- *the BTS delivery is complete and in good condition.*
-

Summary



Warning

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.



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.



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

**Caution**

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

**Caution**

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

**Caution**

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

For a new BTS site where both GSM/EDGE and WCDMA functionality is required, you may purchase the UltraSite EDGE BTS cabinet core without any GSM/EDGE equipment in the lower compartment of the cabinet to allow direct WCDMA Upgrade Kit installation. The cabinet is delivered without the lower RFU backplane or other GSM/EDGE equipment in the lower compartment of the cabinet.

**Steps**

- 1. Ensure proper installation tools are on site.**
 - 2. Install the UltraSite EDGE BTS cabinet without the cabinet door or roof.**
 - 3. Unpack and inspect the contents of the WCDMA Upgrade Kit delivery package.**
-

Note

Maintain and archive site-specific documentation, including packing lists, in the site folder.

4. Install the WCDMA Upgrade Kit.

- a. *Cut open the ventilation hole.*
- b. *Install the BB rack IP shield.*
- c. *Install the RF rack IP shield.*
- d. *Cable WCDMA antennas.*
- e. *Install MHA cables, Chain Clock cables and antenna box cover.*
- f. *Install cable of heater control.*
- g. *Install the BB rack.*
- h. *Install the WAF rack.*
- i. *Install the RF rack.*
- j. *Install the WTCA Fan Module.*
- k. *Install the WPS.*

Note

Installing the WCDMA Upgrade Kit differs between Nokia UltraSite EDGE BTS Indoor (IAKx) cabinet and the Outdoor (OAKx) cabinet. Check each instruction for installation whether it applies either to Indoor or to Outdoor cabinet only. Unless specifically mentioned, the instructions apply to both Indoor and Outdoor cabinets alike.

5. Install WCDMA plug-in units.

- a. *Installing units with handles.*
- b. *Installing units with ejectors.*

6. Switch power ON the GSM/EDGE part of BTS.

- a. *WCDMA Upgrade Kit racks and cables, WCDMA antenna cables, WTCA Fan Module and Wideband Power Supply (WPS) are installed before you switch power on to the GSM/EDGE part of the BTS.*
- b. *Create the GSM/EDGE BTS at the BSC or NMS/2000 with the new configuration.*
- c. *Install the main fuse for the BTS to the fuse box.*
- d. *Switch on the BTS mains power with a dedicated switch.*
- e. *Switch on the power supply from Nokia UltraSite Support to the BTS.*

- f. Switch the BTS power on to the GSM/EDGE part from the PWSx unit switches.
 - g. At the BSC or NMS/2000, unlock the BCF (the GSM/EDGE part of the BTS).
7. **Install the cabinet door to the indoor cabinet.**
 8. **Install the cabinet roof to the indoor cabinet.**
 9. **Install the WCDMA upgrade kit door to the outdoor cabinet.**
 10. **Install the cabinet roof.**
 - a. *Install the roof support.*
 - b. *Installing the roof of outdoor UltraSite EDGE BTS roof support.*
 11. **Install the door lock to the outdoor cabinet and lock the door.**
 12. **Refer to Commission the WCDMA part of the BTS.**

2.4 Overview of UltraSite EDGE BTS with WCDMA upgrade installation at an existing UltraSite EDGE BTS site

Before you start

Review the *Overview of planning UltraSite EDGE BTS installation*.

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

Check that:

- *site is prepared for installation.*
- *the proper installation tools are on site.*

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

- the *BTS delivery* is complete and in good condition.

Summary



Warning

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.



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.



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.



Caution

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.



Caution

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

Note

Maintain and archive site-specific documentation, including packing lists, in the site folder.

If the Nokia UltraSite EDGE BTS to be upgraded has GSM/EDGE plug-in units, Internal Battery Backup (IBBU), or other equipment in the lower compartment of the cabinet, you must remove the equipment from the lower compartment before installing the WCDMA Upgrade Kit.



Steps

1. **Ensure that the proper installation tools are on site.**
2. **Unpack and inspect the contents of the WCDMA Upgrade Kit delivery package.**
3. **Prepare the BTS for WCDMA Upgrade Kit installation.**
4. **Install the WCDMA Upgrade Kit.**
 - a. *Cut open the ventilation hole.*
 - b. *Install the BB rack IP shield.*
 - c. *Install the RF rack IP shield.*
 - d. *Cable WCDMA antennas.*
 - e. *Install MHA cables, Chain Clock cables and antenna box cover.*
 - f. *Install cable of heater control.*
 - g. *Install the BB rack.*
 - h. *Install the WAF rack.*
 - i. *Install the RF rack.*
 - j. *Install the WTCA Fan Module.*
 - k. *Install the WPS.*

Note

Installing the WCDMA Upgrade Kit differs between Nokia UltraSite EDGE BTS Indoor (IAKx) cabinet and the Outdoor (OAKx) cabinet. Check each instruction for installation whether it applies either to Indoor or to Outdoor cabinet only. Unless specifically mentioned, the instructions apply to both Indoor and Outdoor cabinets alike.

5. **Install WCDMA plug-in units.**
 - a. *Installing units with handles.*
 - b. *Installing units with ejectors.*
6. **Commission the WCDMA part of the BTS.**

2.5 Overview of UltraSite EDGE BTS with IBBU installation at a new site

Before you start

Review the *Overview of planning UltraSite EDGE BTS installation*.

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

Check that:

- *Installation of new BTS is complete.*
- Open the IBBU packages and inspect the content to ensure the *BTS delivery* is complete and in good condition.
- The proper *installation tools* are on site.

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

Summary

**Warning**

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.

**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.

**Warning**

When drilling, wear the necessary protective gear, such as gloves and safety glasses.

**Warning**

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

**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**

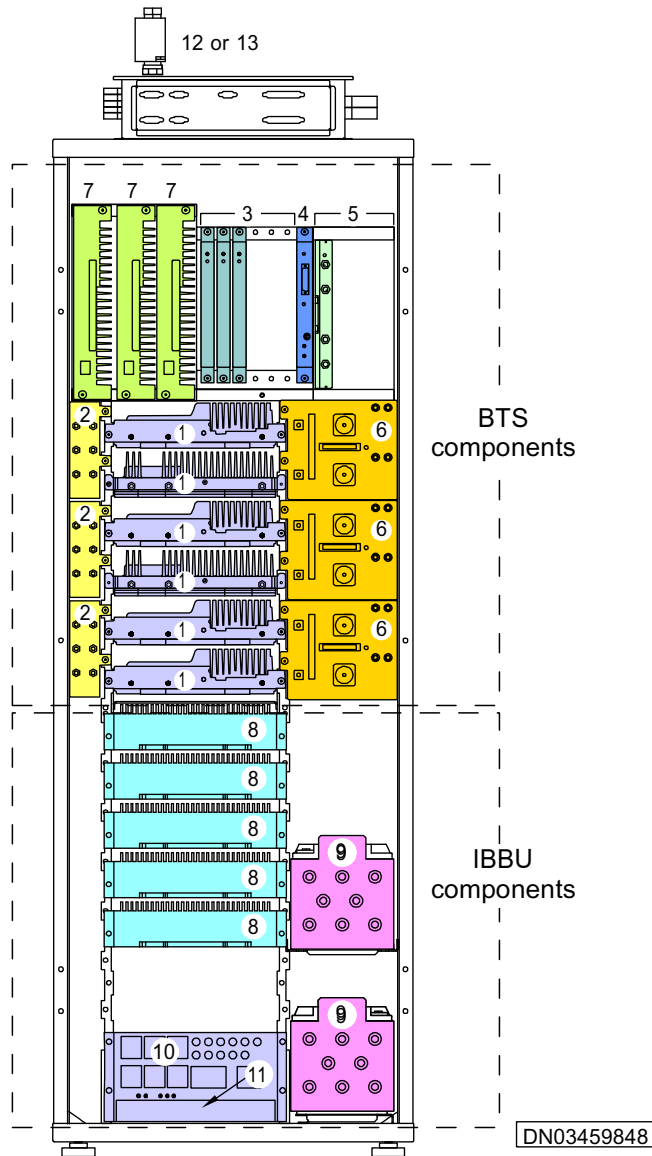
To minimise the risk of short circuits if the battery leads are loose, connect the negative battery lead to the batteries before the positive cable. Always disconnect the positive battery cable from the batteries before the negative cable.

**Caution**

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

The optional IBBU ensures a continual power supply if the main AC power fails. The IBBU can produce power for as many as 18 TSxx units in two BTS cabinets. It occupies the lower half of one UltraSite EDGE BTS.

For sites with minimised requirements, both UltraSite EDGE BTS Outdoor and Indoor cabinets can hold an Integrated Battery Backup (IBBU). However, an IBBU reduces the maximum number of Transceiver (TSxx) units in the cabinet from 12 to 6. UltraSite EDGE Midi BTS cabinets cannot accommodate the IBBU.

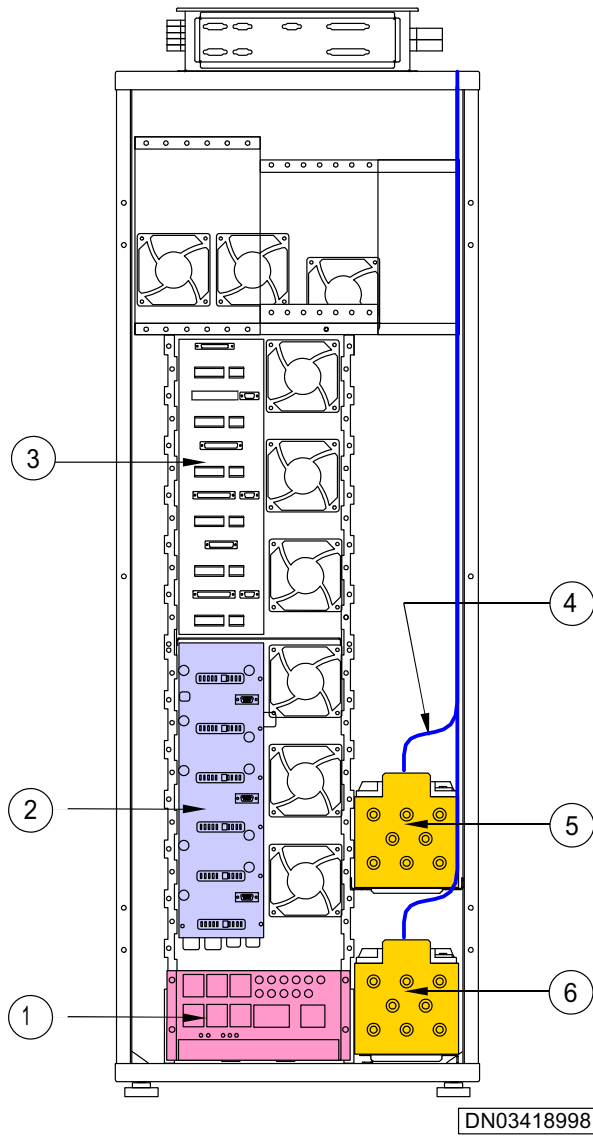


1	Transceiver unit (TSxx)
2	2-way Receiver Multicoupler unit (M2xA)
3	Transceiver Baseband unit (BB2x)
4	Base Operations and Interfaces unit (BOIx)
5	Transmission unit (VXxx)

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 1. Unit positions in the BTS with IBBU



DN03418998

1	ADUA (includes CCUA)
2	BATA backplane
3	TSxx backplane
4	Battery vent tube
5	Upper battery box

6	Lower battery box
---	-------------------

Figure 2. IBBU main components

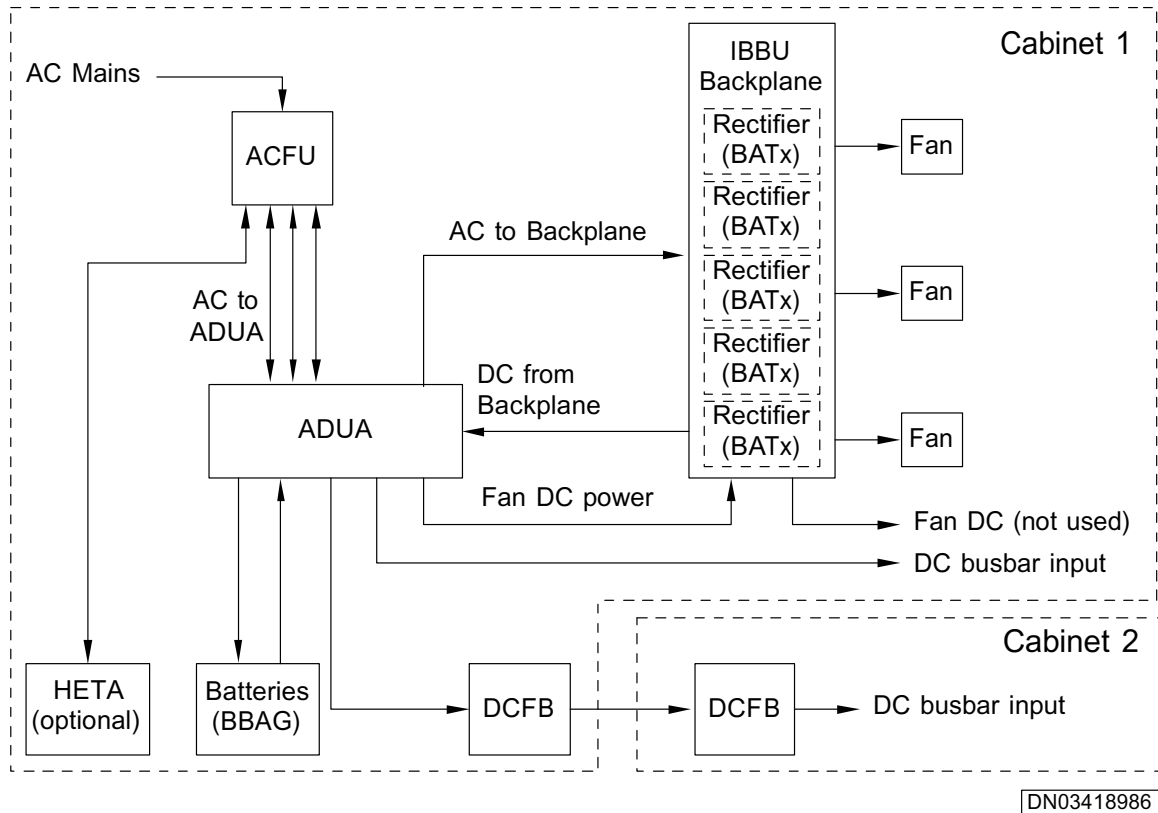


Figure 3. IBBU block diagram

The Integrated Battery Backup (IBBU) consists of the following units in the bottom of UltraSite EDGE BTS:

- BATA backplane (pre-installed)
- Rectifiers (BATx)
- Batteries (BBAx)
- ADUA - AC/DC Distribution unit for IBBU (pre-installed with Cabinet Control unit [CCUA])



Steps

1. Complete installation preparations.
2. Install BTS at a new site.
3. Install a rectifier (BATx) unit.
4. Install the batteries (BBAx) unit.
5. Power up BTS.
6. Commission the BTS.
7. Commission IBBU.

2.6 Overview of UltraSite EDGE BTS with IBBU installation at an existing site

Before you start

Check that:

- Review the *Overview of planning UltraSite EDGE BTS installation*.

Nokia requires that personnel who perform installation tasks have basic knowledge of base station systems and equipment.

Check that:

- *site is prepared for installation.*
- *the proper installation tools are on site.*

Note

Nokia does not include installation tools and equipment in the BTS delivery package.

-
- *the BTS delivery is complete and in good condition.*

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**

UltraSite EDGE BTS has many sharp edges. Exercise caution during installation.

**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.

**Warning**

When drilling, wear the necessary protective gear, such as gloves and safety glasses.

**Warning**

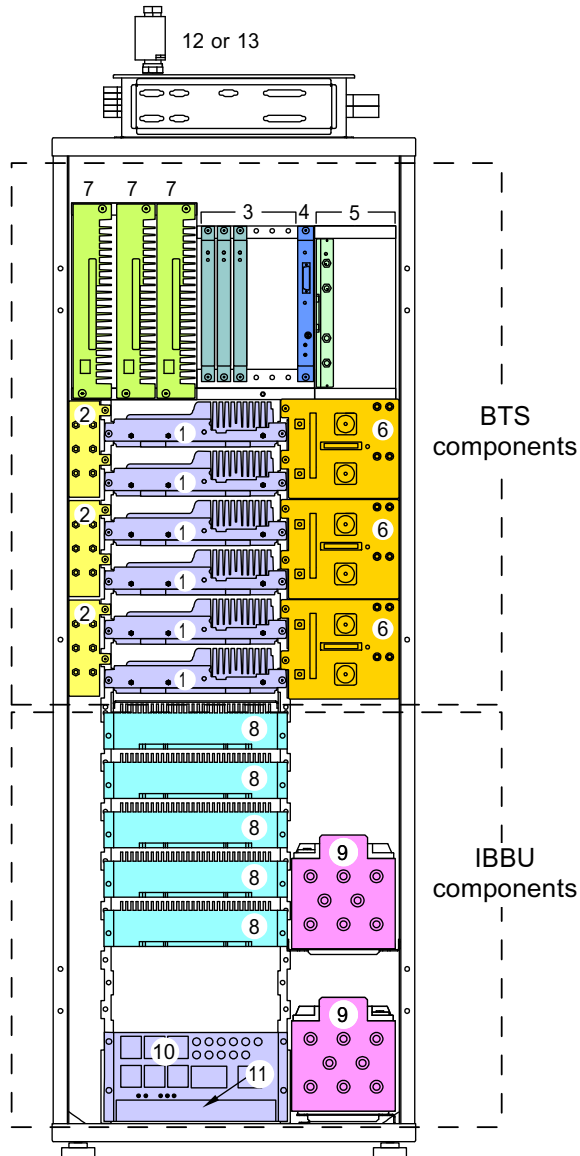
When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

**Caution**

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

The optional IBBU ensures a continual power supply if the main AC power fails. The IBBU can produce power for as many as 18 TSxx units in two BTS cabinets. It occupies the lower half of one UltraSite EDGE BTS.

For more detailed information about installing IBBU, see *Overview of UltraSite EDGE BTS with IBBU installation at a new site*.



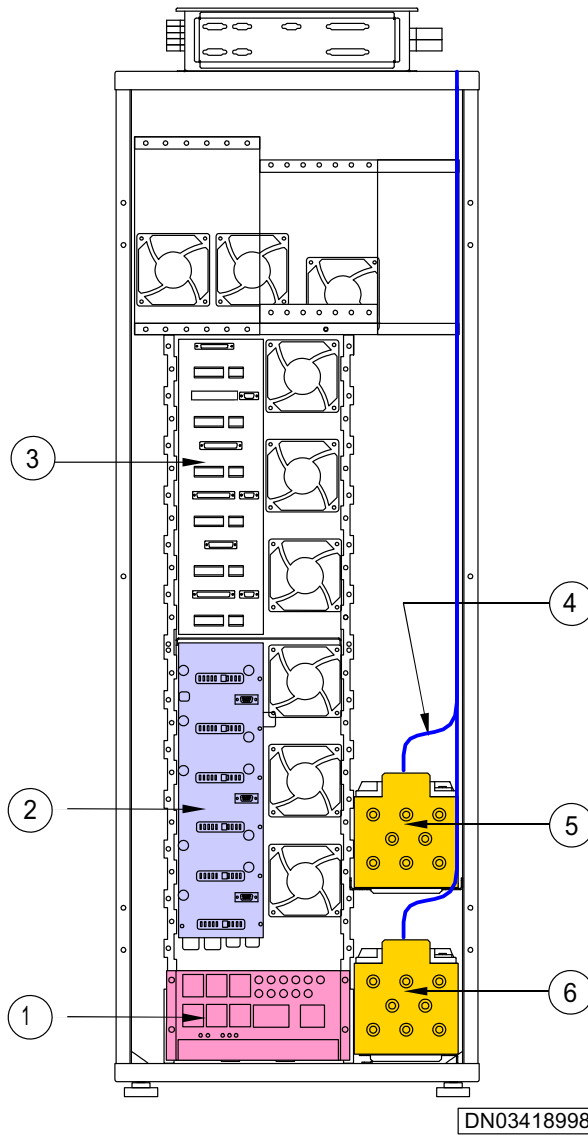
DN03420309

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 4. Unit positions in the BTS with IBBU



DN03418998

1	ADUA (includes CCUA)
2	BATA backplane
3	TSxx backplane
4	Battery vent tube
5	Upper battery box

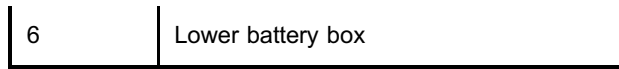


Figure 5. IBBU main components

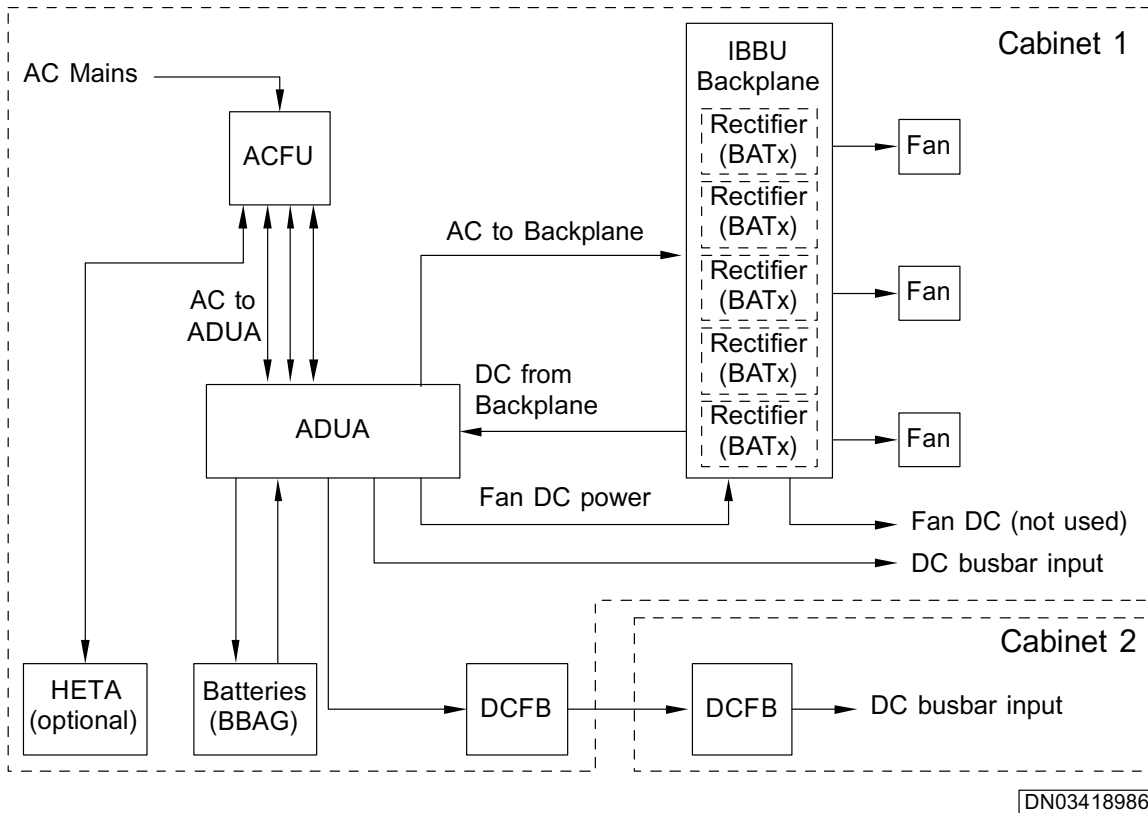


Figure 6. IBBU block diagram



Steps

1. **Complete installation preparations.**
2. **Decommission the existing BTS.**
3. **Power down the existing BTS.**
4. **Install BTS with IBBU at the existing BTS site.**
5. **Tie in the BTS with IBBU to the existing BTS cabinet without IBBU.**

Connect DCFBs of both BTSs with DC power cable.

6. **Power on both BTS cabinets.**
7. **Commission both BTS cabinets.**
8. **Commission IBBU.**

2.7 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 1. 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)
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 2. 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
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 3. 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

Table 3. WCDMA unit installation torque recommendations (cont.)

Bolt/Screw Type	Size	Torque
Right angle Antenna connector	N/A	25 Nm 18.5 ft lb

3

Preparing to install UltraSite EDGE BTS

3.1 Overview of preparing to install UltraSite EDGE BTS

Summary

This overview provides an overview of the steps required for planning a site and preparing for installation, including references to environmental, space, site, power and safety distance requirements.

Nokia requires that personnel who perform installation tasks have basic knowledge of BTS systems and equipment.



Warning

The equipment generates electromagnetic radiation that can exceed safety levels when an installer is working near the antennas. Observe the minimum distance precautions.



Warning

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



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.

**Warning**

When drilling, wear the necessary protective gear, such as gloves and safety glasses.

**Caution**

To prevent damage to units, grounding must be connected to the cabinet before installing any of the units.

Note

If space is limited for an outdoor installation, Nokia recommends installing the Outdoor Application Kit (OAKx) to the cabinet core first. Installation personnel can then lift, mount, and anchor the cabinet to the plinth.

**Steps**

- 1. Complete site planning.**
- 2. Prepare for site installation.**
- 3. Complete the site preparation checklist for UltraSite EDGE BTS installation.**
- 4. Ensure proper installation tools and equipment are on site.**
- 5. Unpack and inspect the UltraSite EDGE BTS delivery.**

3.2 Checking the site for UltraSite EDGE BTS installation

Summary

The installation team supervisor is responsible for checking the site prior to installation of the BTS.



Steps

1. **Ensure that each team member has the necessary tools, installation materials, and user manual.**
2. **Check the delivery against the packing list.**
3. **Place the list in the site folder.**
4. **Complete the installation checklist including the signature and date.**
5. **Complete the necessary Site Deficiency reports.**
6. **Complete the necessary Fault reports.**
7. **Inform the Installation Manager/Site Manager of work progress.**
8. **Complete the certificate of completion and place it in the site folder.**

3.3 Site preparation checklist for UltraSite EDGE BTS installation

Check	Action/References	Check mark
Site layout	<ul style="list-style-type: none"> • <i>Space requirements for UltraSite EDGE BTS</i> • <i>Indoor cabinet base requirements for UltraSite EDGE BTS</i> • <i>Outdoor cabinet base requirements for UltraSite EDGE BTS</i> <p>Record any differences on site drawings</p>	

Check	Action/References	Check mark
Cable routes	<ul style="list-style-type: none"> • <i>Overview of preparing UltraSite EDGE BTS for cabling</i> 	
Ensure necessary ventilation for equipment room	<ul style="list-style-type: none"> • <i>Operating conditions for UltraSite EDGE BTS</i> 	
Ensure any required heater and/or air conditioner units are installed and operational where the BTS will be installed (Indoor cabinet)	<ul style="list-style-type: none"> • <i>UltraSite EDGE BTS Temperature Control System technical description</i> • <i>Installing a HETA unit in UltraSite EDGE BTS</i> 	
Ensure external connections for the cabinet are available:	<ul style="list-style-type: none"> • <i>Overview of preparing UltraSite EDGE BTS for cabling</i> • <i>Overview of cabling UltraSite EDGE BTS at an existing site</i> 	
<ul style="list-style-type: none"> • site grounding point 	<ul style="list-style-type: none"> • <i>Grounding (earthing) requirements for UltraSite EDGE BTS</i> • <i>Overview of connecting grounding cables to UltraSite EDGE BTS</i> 	
<ul style="list-style-type: none"> • mains power (AC or DC according to the site) 	<ul style="list-style-type: none"> • <i>Power requirements for AC UltraSite EDGE BTS</i> • <i>Power requirements for +24VDC UltraSite EDGE BTS</i> • <i>Power requirements for -48VDC UltraSite EDGE BTS</i> 	
<ul style="list-style-type: none"> • transmission connection point 	<ul style="list-style-type: none"> • <i>Overview of cabling UltraSite EDGE BTS at an existing site</i> 	
Ensure the installation site is secure and accessible.		
Calculate the space requirements.	<ul style="list-style-type: none"> • <i>Space requirements for UltraSite EDGE BTS</i> 	

Check	Action/References	Check mark
Measure and calculate safety distances.	<ul style="list-style-type: none"> • <i>UltraSite EDGE BTS safety distance requirements</i> 	
Ensure installation tools and lifting equipment are available.	<ul style="list-style-type: none"> • <i>Tools requirements for UltraSite EDGE BTS</i> 	
Install adequate lighting (Indoor cabinet).		
Prepare entry holes for feeder and power cables.	<ul style="list-style-type: none"> • <i>Overview of preparing UltraSite EDGE BTS for cabling</i> 	
Ensure the walls and floors are painted or covered.	<ul style="list-style-type: none"> • <i>Acoustic sound parameters of UltraSite EDGE BTS</i> 	
Ensure the base meets the following requirements:	<ul style="list-style-type: none"> • <i>Outdoor cabinet base requirements for UltraSite EDGE BTS</i> • <i>Indoor cabinet base requirements for UltraSite EDGE BTS</i> 	
<ul style="list-style-type: none"> • supports one fully installed BTS to a maximum of 1000 lb 	<ul style="list-style-type: none"> • <i>Space requirements for UltraSite EDGE BTS</i> 	
<ul style="list-style-type: none"> • uses treated concrete or I-beam and angle bar construction for air quality 	<ul style="list-style-type: none"> • <i>Operating conditions for UltraSite EDGE BTS</i> 	
Unpack and inspect the BTS delivery.	<ul style="list-style-type: none"> • <i>Unpacking and inspecting the UltraSite EDGE BTS delivery</i> 	
Store UltraSite EDGE BTS in the delivery package until the site construction work is complete and the site is clean and dry.	<ul style="list-style-type: none"> • <i>Storage conditions for the UltraSite EDGE BTS delivery</i> 	
Ensure all required installation documentation is available on site.		

Check	Action/References	Check mark
Ensure installation and operation of AC power distribution box.	<ul style="list-style-type: none"> • <i>Overview of connecting AC power cables to UltraSite EDGE BTS</i> • <i>Installing an AC filter module in UltraSite EDGE BTS</i> • <i>Power requirements for AC UltraSite EDGE BTS</i> 	

3.4 Unpacking and inspecting the UltraSite EDGE BTS delivery

Summary



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.

Note

If any contents of the delivery are damaged or missing, immediately report these findings to your local Nokia representative.



Steps

1. **Lift the core assembly from the delivery package.**
2. **Remove the cardboard and plastic wrap from the assembly.**
3. **Remove the desiccant packs, if present.**
4. **Inspect the assembly for visible damage.**

5. **Unpack the cabinet application kit and inspect the contents for visible damage.**
 6. **Unpack the unit from its protective package and check for damage.**
 7. **Carefully check the contents of the delivery.**
 8. **Use the packing list to check the completeness of the delivery.**
-

Note

If any contents of the delivery are damaged or missing, immediately report these findings to your local Nokia representative.

9. **Store the packing list in the site folder.**
10. **Recycle the packing material.**

3.5 Positioning the UltraSite EDGE BTS cabinet

Before you start

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

Summary



Warning

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



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

**Warning**

Cover must be removed prior to lifting.

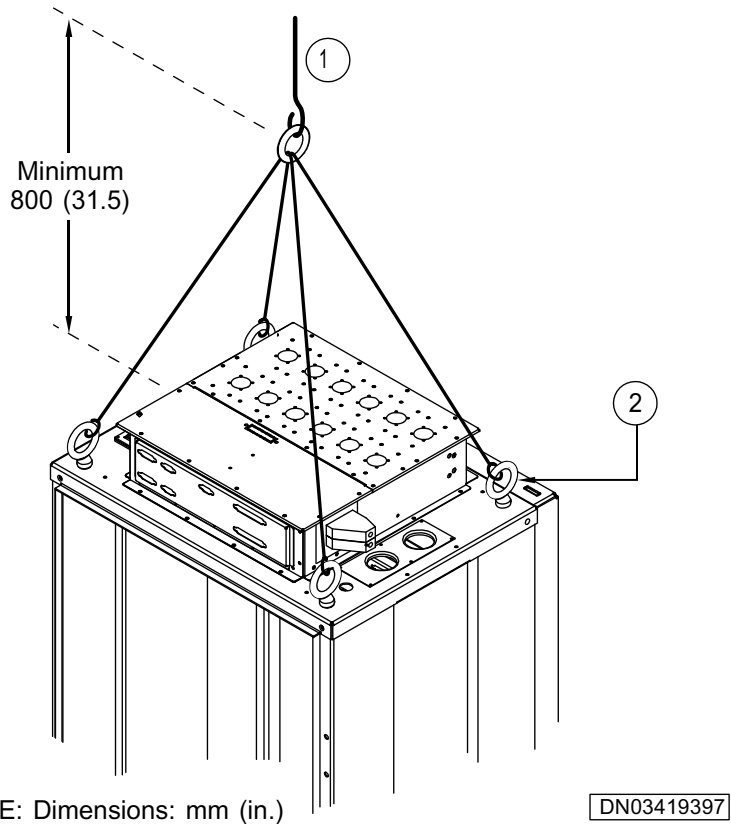
**Caution**

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

Note

The recommended M12 (1/2 in.) lifting eye bolts and anchor bolts are not included in the delivery package.

If you use a mechanical lifting device, Nokia recommends you use lifting eye bolts. Use all four lifting points on the cabinet top. The lifting points support the weight of an empty cabinet core.



1	To lifting device.
2	Lifting eye bolts (4 places)

Figure 7. Lifting the cabinet



Steps

1. **Screw one M12 (1/2 in.) lifting eye bolt into each corner of the cabinet core.**
2. **Attach the lifting ropes to the lifting eye bolts as shown in figure above.**
3. **Carefully lift the cabinet core.**
4. **Position the cabinet in place.**

5. Bolt the cabinet into position.
6. Remove the ropes and lifting eye bolts.

3.6 Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS

Before you start

Review *Overview of UltraSite EDGE BTS co-site with Talk-family BTS installation*. Pay careful attention to all Warnings and Cautions.



Caution

Switch off the power for all BTSs that you are going to modify.

Summary

Before you can co-site the UltraSite EDGE BTS with a Talk-family BTS, you must prepare the Talk-family BTS as outlined below.



Steps

1. Install the Citytalk cable entry kit.
2. Remove the existing Abis interface (ABSA).
3. Configure a new ABSA.
4. Install the new ABSA.
5. Remove the existing Base Control Function (BCFA) unit.
6. Install a Base Control Function (BCFB) unit.

3.7 Preparing to install UltraSite EDGE BTS co-site, with Talk-family BTS

Before you start

Review *Overview of UltraSite EDGE BTS co-site with Talk-family BTS installation*. Pay careful attention to all Warnings and Cautions.



Caution

Before preparation is complete, ensure that the site is prepared and identify any special requirements for installation (for example, two people needed for lifting equipment).



Steps

1. **Review the site plan to ensure that applicable kits, dummy units, backplane covers for unused slots, bolts, screws and nuts are on site.**
 2. **Verify that the proper installation tools and equipment are available.**
 3. **Unpack and inspect the contents of the UltraSite EDGE BTS delivery for any visible damage.**
 4. **Check the completeness of all kits and the cabinet delivery using the packing list(s).**
-

Note

If any contents of the kits or cabinet delivery are damaged or missing, immediately report these findings to your local Nokia representative.

5. **Store the packing list(s) in the site folder.**

4 Mounting UltraSite EDGE BTS indoor

4.1 Overview of mounting UltraSite EDGE BTS indoor cabinet

Before you start

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

Summary



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.



Caution

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

Note

In US installations, Una Struts may be used in place of levelling feet.

Note

The recommended M12 (1/2 in.) lifting eye bolts and anchor bolts are not included in the delivery package.

Note

For indoor installations, the cabinet core mounts to a base surface using one of the following anchoring procedures:

- Mount the cabinet to the base using a single anchor bolt and four levelling feet.
 - Where a support wall is within 210 mm (4.5 in.), mount the cabinet using two wall brackets and four levelling feet.
 - Where dictated by earthquake risk, mount the cabinet to the base using four anchor bolts.
-



Steps

1. **Lift the indoor UltraSite EDGE BTS cabinet.**
2. *If you are attaching the cabinet to the base with a single anchor bolt,*
Then
 - a. *Prepare the base.*
 - b. *Install leveling feet.*
 - c. *Anchor the cabinet core.*
3. *If you are attaching the cabinet to the base in an earthquake zone,*
Then
 - a. *Prepare the base.*
 - b. *Anchor the cabinet core.*
4. *If you are attaching the cabinet to a wall with a wall bracket,*
Then

- a. *Prepare a wall for installation.*
- b. *Install leveling feet.*
- c. *Attach the cabinet to the wall*

4.2 Installing leveling feet on UltraSite EDGE BTS cabinet

Before you start

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

Summary



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.



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

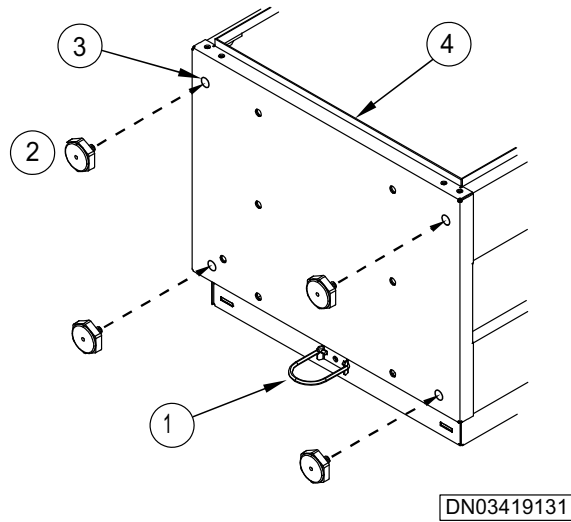


Caution

If the installation site is in an area affected by seismic activity, follow the earthquake mounting instructions.

Note

In US installations, Una Struts may be used in place of leveling feet.



1	Make sure that back stop is angled out of the way
2	Foot (four places)
3	Threaded hole (four places)
4	Cabinet core placed horizontally with front facing upwards

Figure 8. Installing the IKA feet to the cabinet core



Steps

1. **Screw the four cabinet feet into the threaded holes on the bottom of the cabinet core.**
2. **Lift the cabinet into place.**
Lifting the indoor UltraSite EDGE BTS cabinet
3. **Position the cabinet backstop outward.**
4. **Adjust the cabinet feet using a level.**

4.3 Preparing the base for installation of the indoor UltraSite EDGE BTS cabinet

Before you start

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

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Caution

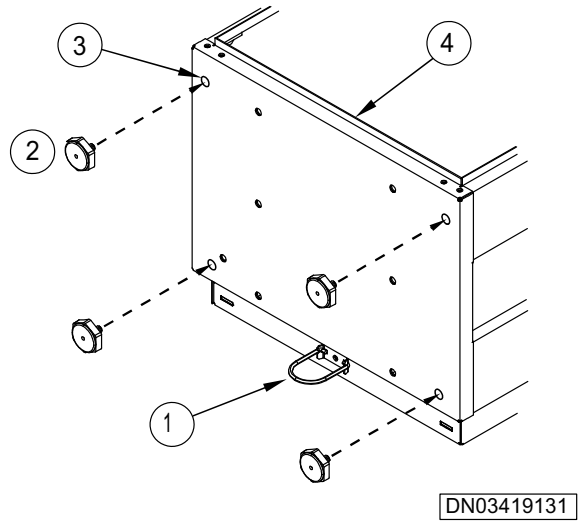
Uneven bolt installation can damage the cabinet floor.

Note

The diameter of the anchor hole in the cabinet floor is 13 mm (0.5 in). The anchor bolt size is M10 or M12.

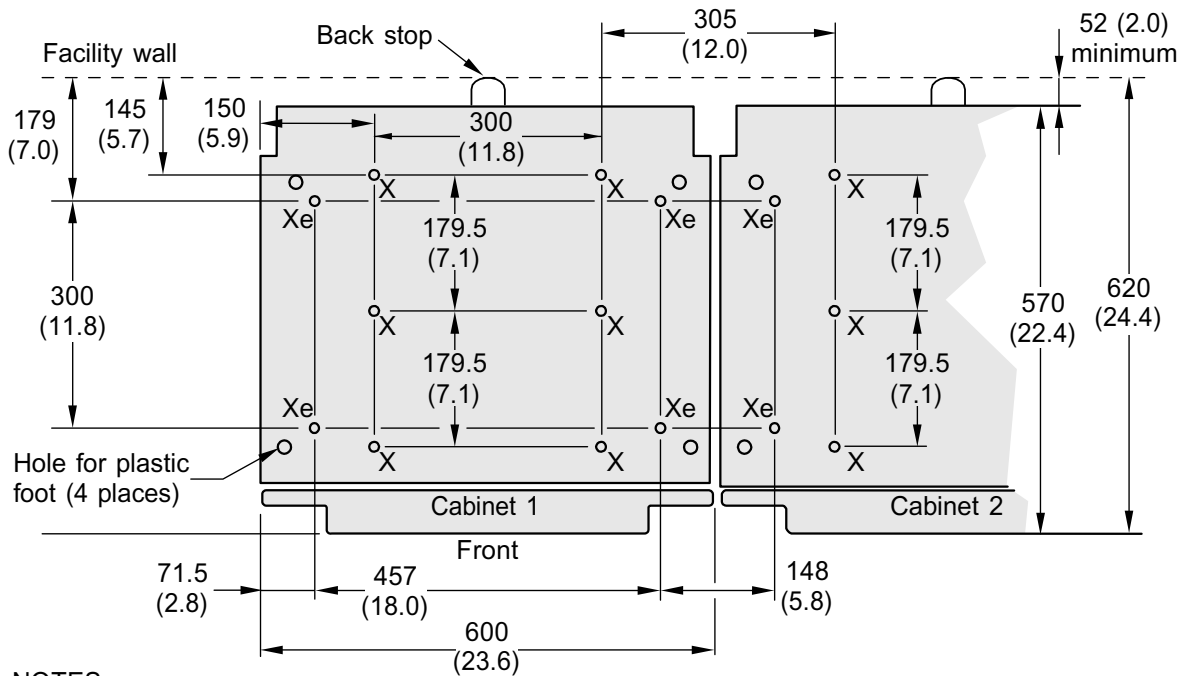
Note

You can mark anchor hole locations through the floor with the cabinet in place or using a cardboard template. You can make the template by tracing the outline of the cabinet bottom including the anchor holes.



1	Make sure that back stop is angled out of the way
2	Foot (four places)
3	Threaded hole (four places)
4	Cabinet core placed horizontally with front facing upwards

Figure 9. Installing the IAKA feet to the cabinet core



NOTES:

1. Xe - Location of earthquake anchor holes
2. X - Location of additional anchor holes
3. Dimensions: mm (in.)

DN03421795

Figure 10. Dimensions and anchor holes in the base for indoor cabinets



Steps

1. **Lift the cabinet into place.**
2. **Position the cabinet backstop outward.**
3. **Mark the base through one of the two centre bolt holes.**
4. **Move the cabinet off the base if necessary.**
5. **Drill the anchor hole as marked on the base, and clear any debris.**

4.4 Attaching the indoor UltraSite EDGE BTS cabinet to the base

Before you start

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

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Caution

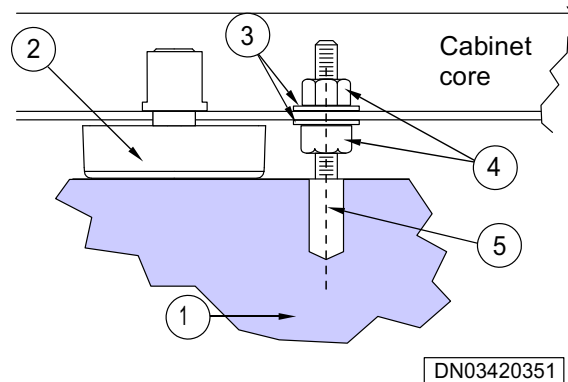
Uneven bolt installation can damage the cabinet floor.

Note

The diameter of the anchor hole in the cabinet floor is 13 mm (0.5 in.). The anchor bolt size is M10 or M12.

Note

You can mark anchor hole locations through the floor with the cabinet in place or using a cardboard template. You can make the template by tracing the outline of the cabinet bottom including the anchor holes.



1	Mounting base
2	Adjustable foot
3	Washers
4	M10 or M12 nuts
5	M10 or M12 anchor bolt

Figure 11. Anchoring the indoor cabinet to the base



Steps

1. **Insert and secure the anchor bolt in the anchor hole.**
2. **Position a nut and 50 mm flat washer on the anchor bolt and turn until it is approximately the height of the floor of the installed cabinet.**
3. **Lift the cabinet into place over the anchor bolt.**

Positioning the UltraSite EDGE BTS cabinet.

4. **Use a level and adjust the cabinet.**
5. **Install a 30 mm flat washer on the anchor bolt and secure it with a nut.**
6. **Hold the lower nut under the cabinet floor with an open end wrench while you tighten the upper nut. See Torque settings.**

4.5 Attaching the indoor UltraSite EDGE BTS cabinet to the base in an earthquake zone

Before you start

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

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Caution

Uneven bolt installation can damage the cabinet floor.

Note

The diameter of the anchor hole in the cabinet floor is 13 mm (0.5 in). The anchor bolt size is M10 or M12.

Note

You can mark anchor hole locations through the floor with the cabinet in place or using a cardboard template. You can make the template by tracing the outline of the cabinet bottom including the anchor holes.

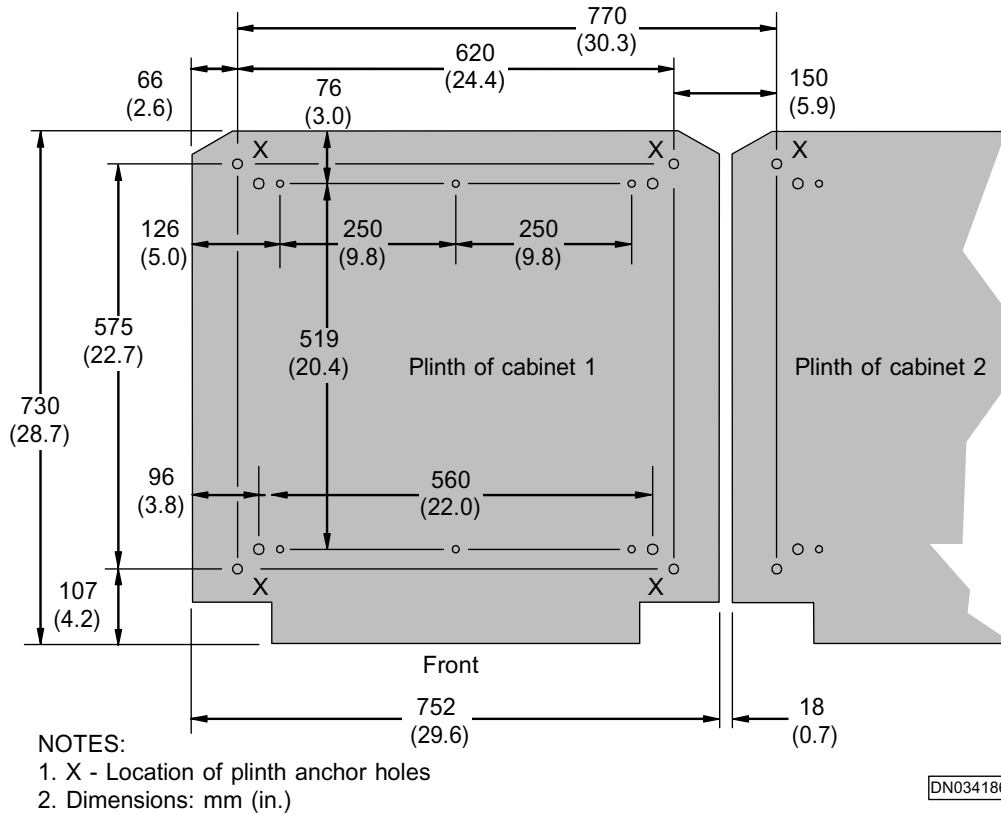
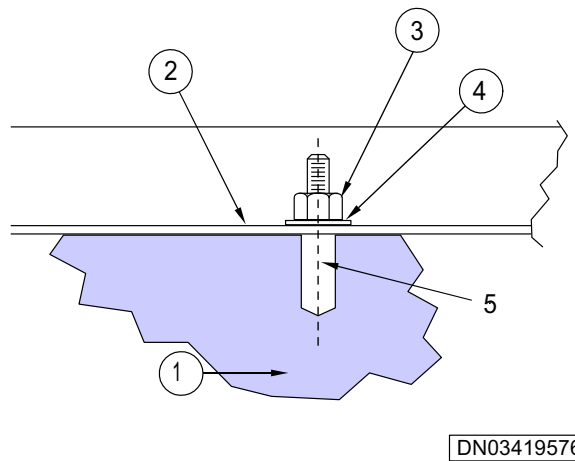


Figure 12. Dimensions and anchor holes in the base for indoor cabinets



1Mounting base2Bottom of cabinet core3M10 or M12 nut4Washer5M10 or M12 anchor bolt

Figure 13. Mounting the cabinet in earthquake zones



Steps

1. **Lift the cabinet into place to mark anchor hole locations.**
2. **Mark the base through the four corner bolt holes.**
3. **Move the cabinet off the base, if necessary.**
4. **Drill the anchor holes marked on the base and clear any debris.**
5. **Insert and secure the four anchor bolts in the anchor holes.**
6. **Lift the cabinet into place and align it over the anchor bolts.**
7. **On each anchor bolt, install a 30 mm flat washer and secure it with a nut.**
8. **Tighten the nuts.**

See Torque settings of UltraSite EDGE BTS

4.6 Preparing a wall for installation of the indoor UltraSite EDGE BTS cabinet

Before you start

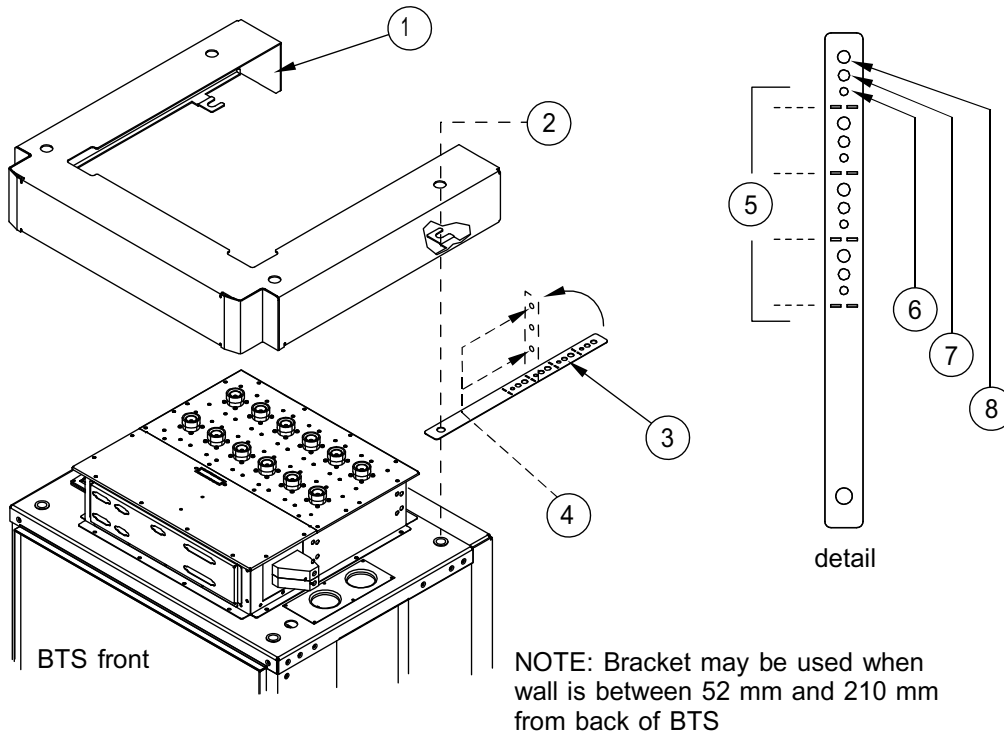
Review the *Overview of mounting UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses



DN03719588

1	Roof
2	Secure bracket to BTS using roof mounting bolt
3	Wall bracket (two places)
4	Secure bracket to site wall
5	Bent lines
6	M6
7	M8
8	M10

Figure 14. Mounting the wall bracket



Steps

1. **Position a support bracket at each top corner of the cabinet.**
2. **Bend the bracket so that it fits against the wall and the cabinet corner.**
3. **Remove the back corner bolts from the cabinet top and replace the bolts with the wall brackets in place.**
4. **Mark the wall and drill holes for anchors (not supplied).**

4.7 **Attaching the indoor UltraSite EDGE BTS cabinet to a wall**

Before you start

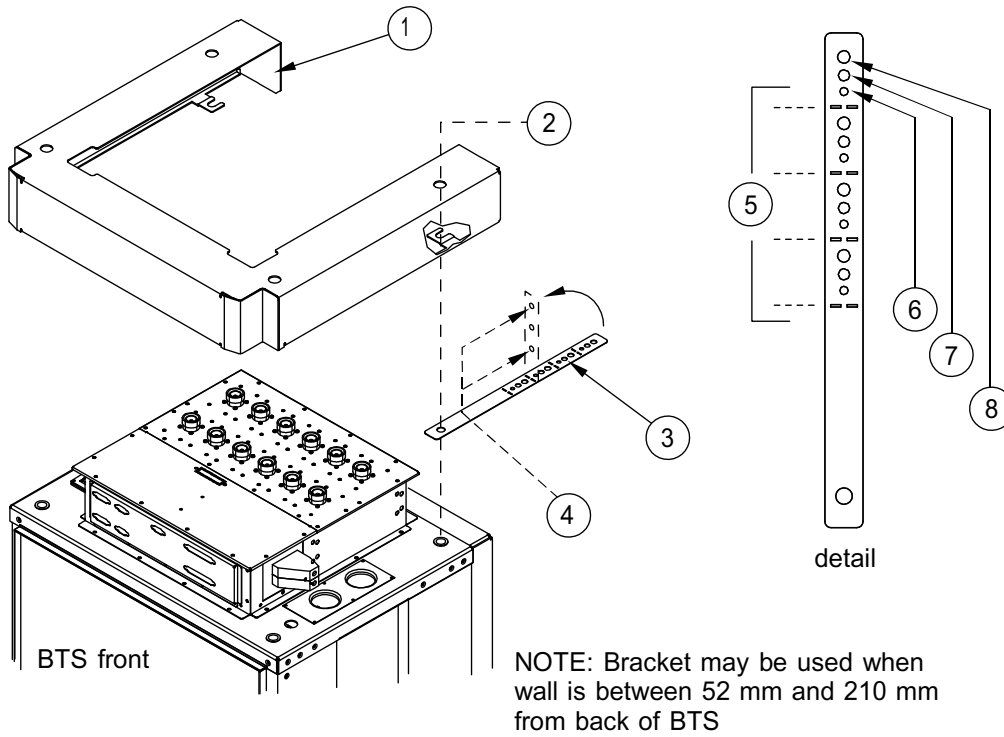
Review the *Overview of mounting UltraSite EDGE BTS*. Pay careful attention to all warnings and cautions.

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses



DN03719588

1	Roof
2	Secure bracket to BTS using roof mounting bolt
3	Wall bracket (two places)
4	Secure bracket to site wall
5	Bent lines
6	M6
7	M8
8	M10

Figure 15. Mounting the wall bracket



Steps

1. **Install the leveling feet.**
2. **Lift the cabinet into place.**
3. **Use a level and adjust the cabinet feet.**
4. **Prepare the wall for installation.**
5. **Use M6, M8, or M10 screws (not supplied) to attach the brackets to the wall.**

5 Mounting UltraSite EDGE BTS outdoors

5.1 Overview of mounting the UltraSite EDGE BTS outdoor cabinet

Before you start

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

Summary



Warning

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



Warning

When lifting or positioning the cabinet, avoid tilting the cabinet forward. Internal components, such as cables, may fall out.

Note

The *side walls* and *back walls* of the OAKA or OAKC must be installed first when you install the cabinet in limited space that restricts access to the back or sides of the cabinet.



Steps

1. Prepare the base.
2. Attach plinth to the base.
3. Position the cabinet.
4. Attach the cabinet to the plinth.

5.2 Preparing the base for installation of the outdoor UltraSite EDGE BTS cabinet

Before you start

Review the *Overview of mounting the UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



Warning

When drilling, wear the necessary protective gear, such as gloves and safety glasses.



Caution

The plinth weighs approximately 10 kg (22.05 lb). Handle the plinth with care.

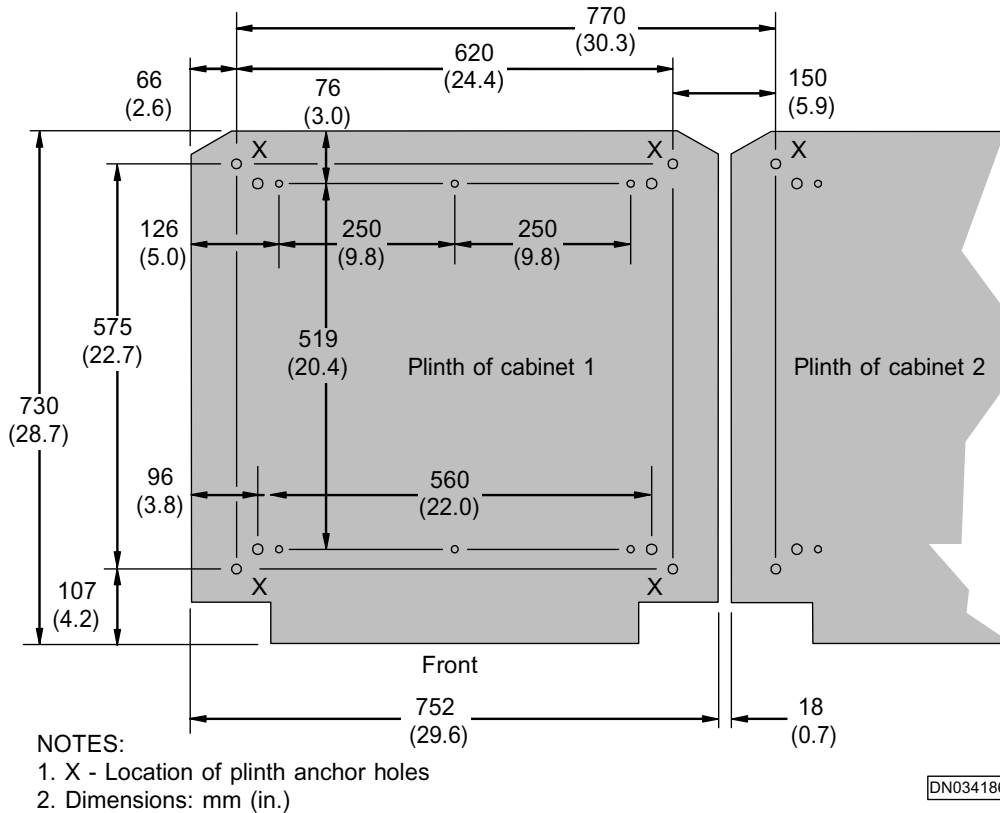


Figure 16. Dimensions and anchor holes in the plinth for Outdoor cabinets



Steps

1. **Ensure that the base is strong enough to withstand the weight of the BTS core and units.**
2. **Paint the base, if necessary.**
3. **Position the plinth on the base according to the site plan.**

If you are installing more than one cabinet, ensure that there is 18 mm (.71 in.) clearance between plinths.

Outdoor cabinet base requirements for UltraSite EDGE BTS

4. **Mark the base through the four anchor holes of the plinth.**

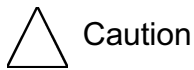
5. Remove the plinth from the base before drilling anchor holes.
6. Drill the anchor holes in the base, and then carefully remove any debris.

5.3 Attaching plinth to the UltraSite EDGE BTS base

Before you start

Review the *Overview of mounting the UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary

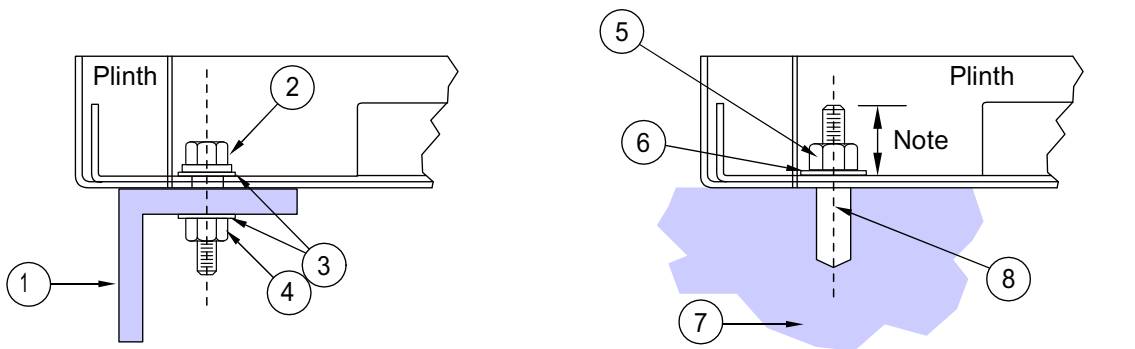


Caution

Uneven bolt installation can damage the cabinet floor.

Note

The cabinet delivery does not contain shims or plinth-to-base installation hardware. To order site-specific materials, contact your local Nokia representative.



NOTE: This dimension not to exceed 27 mm (1.1 in.)

DN03418047

1Metal frame2M10 or M12 bolt3Washers4M10 or M12 nut5M10 or M12 nut6Washers7Concrete base8M10 or M12 bolt

Figure 17. Anchoring the plinth to the base

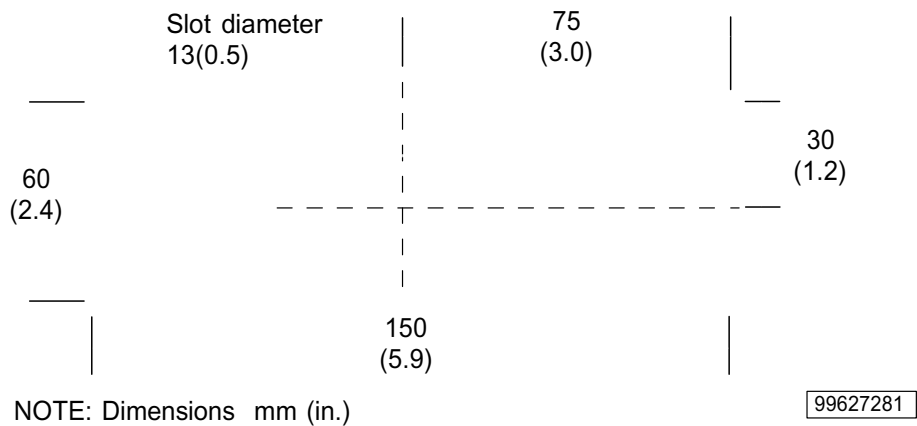


Figure 18. Recommended shim dimensions



Steps

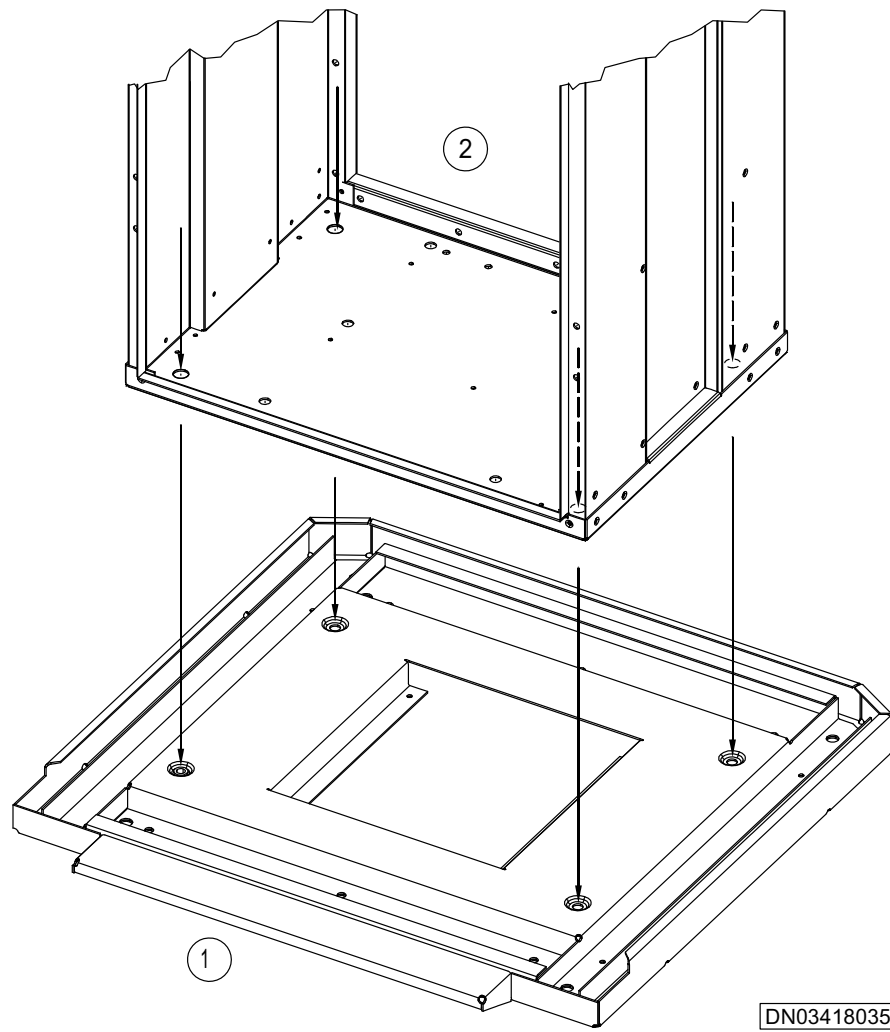
1. **Place the plinth on the base over the anchor holes.**
2. **Check the plinth for level and install shims, if required.**
3. **Depending on the type of base, do one of the following:**
 - For a concrete base, install the anchor bolts and secure the plinth to the base with four washers and nuts.
 - For metal mounting frame installation, secure the plinth to the frame with four M12 (1/2 in.) bolts, eight washers and four nuts.
4. **Tighten the nuts. See Torque settings.**

5.4 Attaching the UltraSite EDGE BTS outdoor cabinet core to the plinth

Before you start

Review the *Overview of mounting the UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



1	Plinth (Secured to base/slab)
---	-------------------------------



Figure 19. Anchor holes in plinth and Outdoor cabinet

Tip

If the cabinet does not fit on the plinth, verify the following:

- The plinth is not backwards.
- Nothing is between the cabinet bottom and the plinth.
- The plinth's mounting holes are open.
- The backstop is oriented to the rear.



Steps

1. **Lift the cabinet into place.**
2. **Secure the cabinet core with the M10 (50 mm) mounting bolts included in the OAKA or OAKC delivery.**

6

Assembling UltraSite EDGE BTS core mechanics

6.1 Overview of installing UltraSite EDGE BTS core mechanics

Before you start

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

Summary



Warning

Nokia UltraSite EDGE BTS has many sharp edges. Use caution during installation.

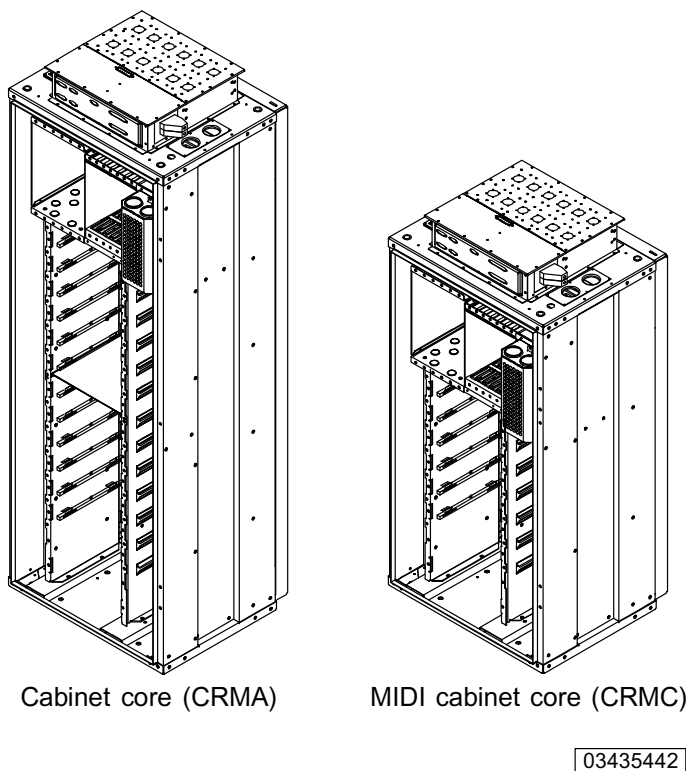


Figure 20. Cabinet core



Steps

1. *If you are installing core mechanics in an indoor cabinet,*
Then
Follow these instructions.

2. *If you are installing core mechanics in an outdoor cabinet,*
Then
Follow these instructions.

3. **Leave the site.**

6.2 Installing indoor core mechanics to UltraSite EDGE BTS

6.2.1 Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet

Before you start

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

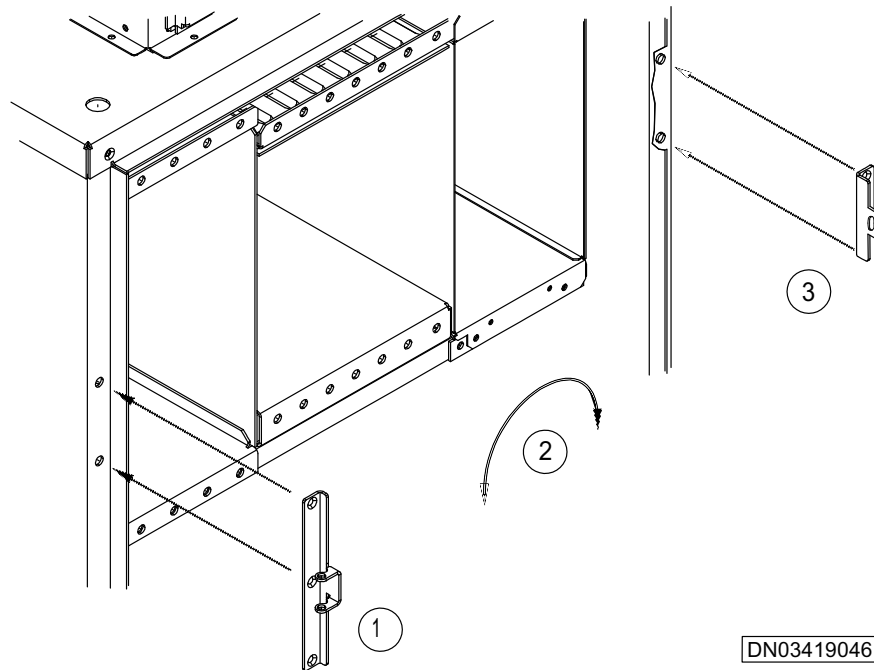


Steps

1. Install the door hinges to the cabinet core.
2. Install the optional door lock-plate (ILKA) to the cabinet core.
3. Install the door to the cabinet hinges.
4. Install the door grounding strap.
5. Install the roof.
6. Install the document holder.

6.2.2 Installing the hinges of indoor UltraSite EDGE BTS

Summary



1	Left installation of hinge (Installation of lower hinge is identical)
2	Rotate hinge/lock 180 degrees
3	Right ILKA lock installation

Figure 21. Installing cabinet hinges and lock bracket (Left hinged door shown)



Steps

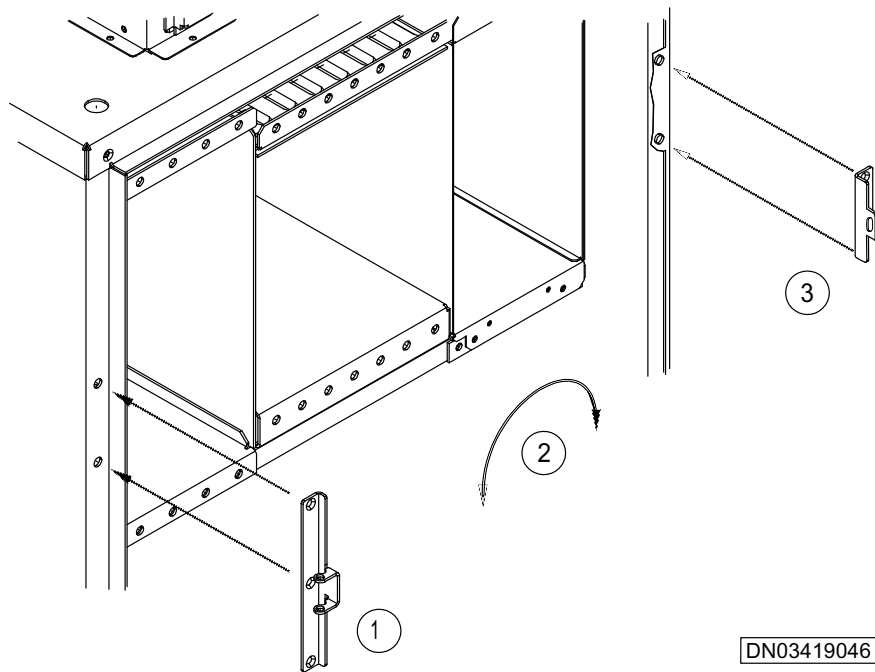
1. **Determine whether the door is left (default) or right opening in accordance with the site plan.**
2. **If necessary, remove the hinges attached to the cabinet core, rotate the hinges 180°, and reinstall them on the opposite side using the two upper mounting holes of the hinge.**
3. **Install ILKA Lock bracket on opposite side of upper hinge.**

6.2.3 Installing the optional door lock-plate (ILKA) of UltraSite EDGE BTS indoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet.*

Summary



1	Left installation of hinge (Installation of lower hinge is identical)
2	Rotate hinge/lock 180 degrees
3	Right ILKA lock installation

Figure 22. Installing lock bracket (Left hinged door shown)



Steps

- 1. Install the optional ILKA lock bracket to the cabinet core.**

Install ILKA Lock bracket on opposite side of upper hinge.

2. Secure with screws.

See *Torque settings*.

6.2.4 Installing the door switch of UltraSite EDGE BTS indoor cabinet

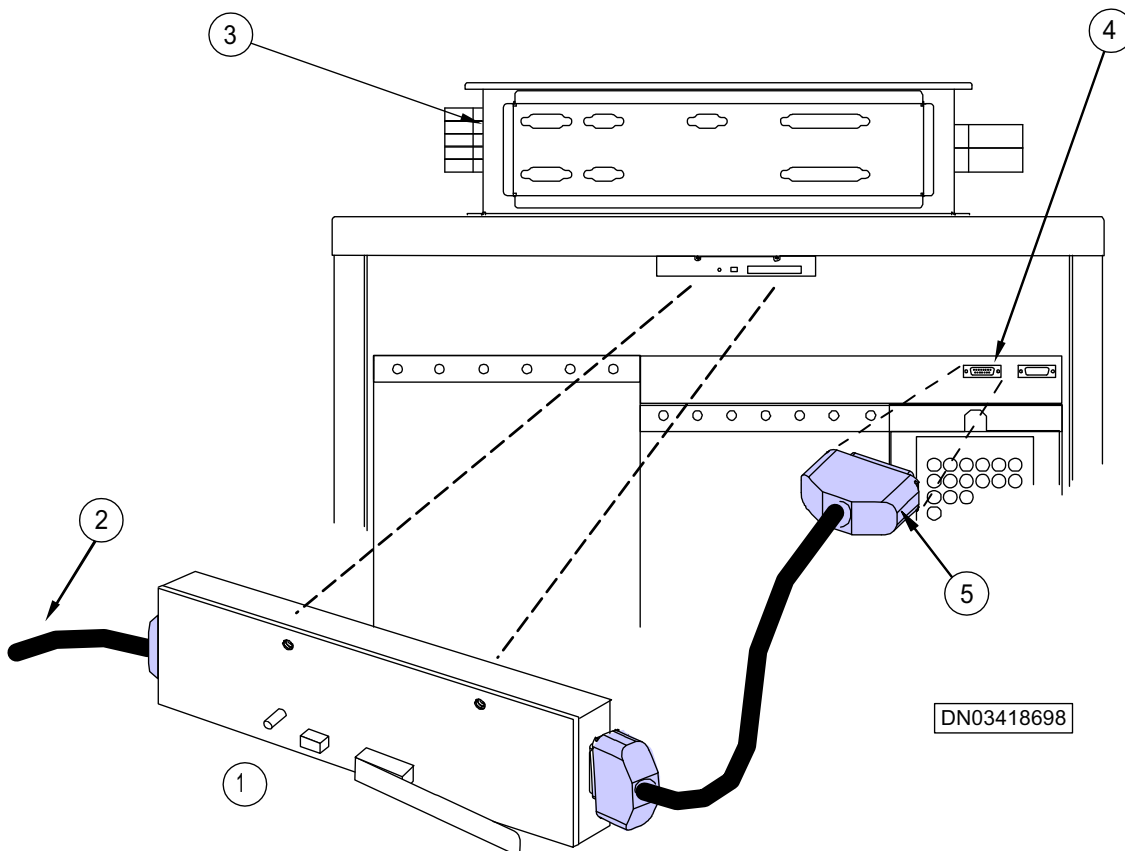
Purpose

The door switch automatically turns off the door fan and heater (if installed) when the door is opened.

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



1	Door switch assembly
2	Door fan assembly
3	Cabinet core S = M5 mounting studs with nuts behind front flange (two places)
4	D-15 (F) Cabinet power and control interface (X20 - second connector from right)
5	D15 (M) Connector to cabinet power and control interface

Figure 23. Door switch assembly



Steps

1. **Mount the door switch on the four studs inside the door frame at the top of the cabinet.**
2. **Secure the door switch to the two threaded studs with the two M5 nuts supplied with the door switch assembly.**
3. **Plug the door switch connector into the X20 receptacle on the cabinet power and control interface.**
4. **Plug the cabinet fan connector into the door switch assembly fan receptacle.**

6.2.5 Installing the door of UltraSite EDGE BTS indoor cabinet

Before you start

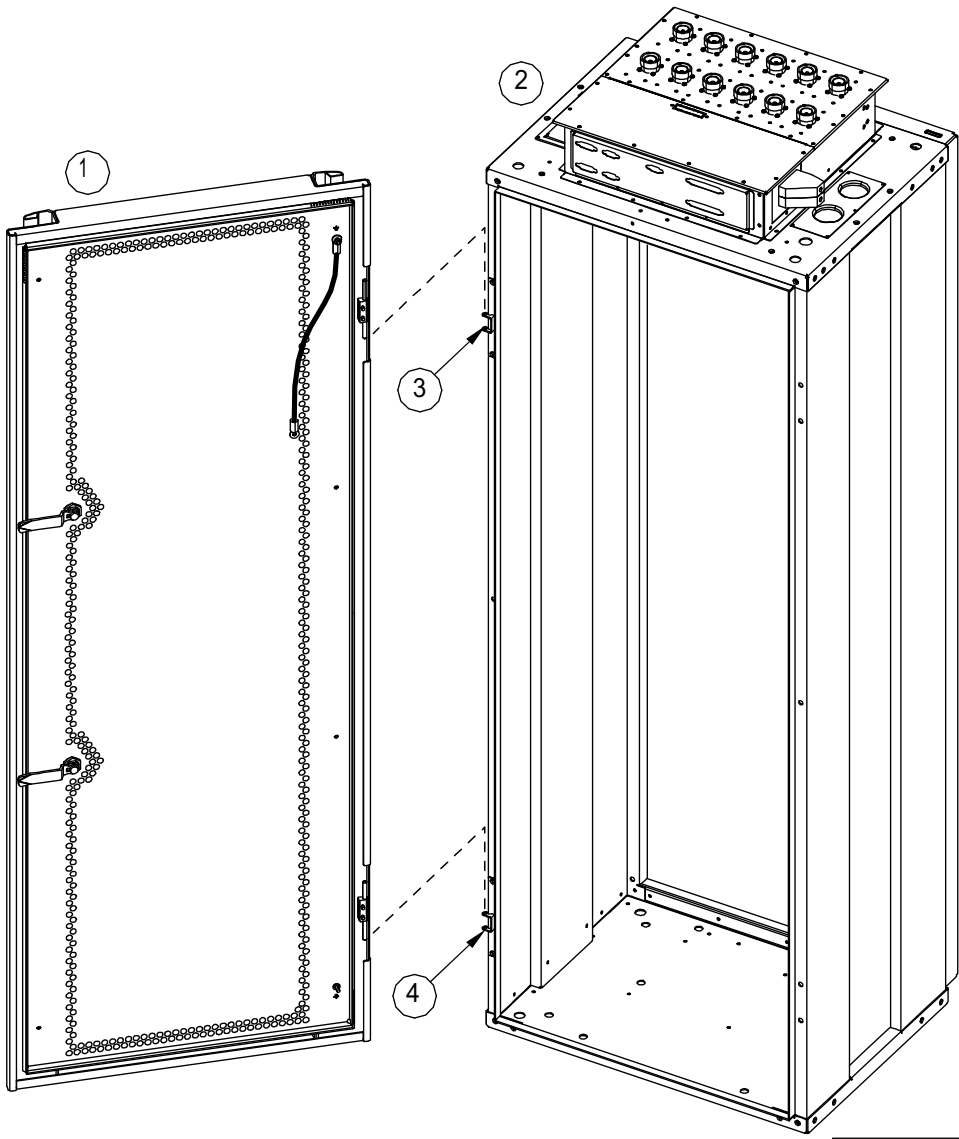
Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet.*

Summary

Tip

If the door does not go on the hinges, verify the following:

- The hinges are installed on the cabinet using the top and middle holes.
- The hinges are installed in the correct direction.

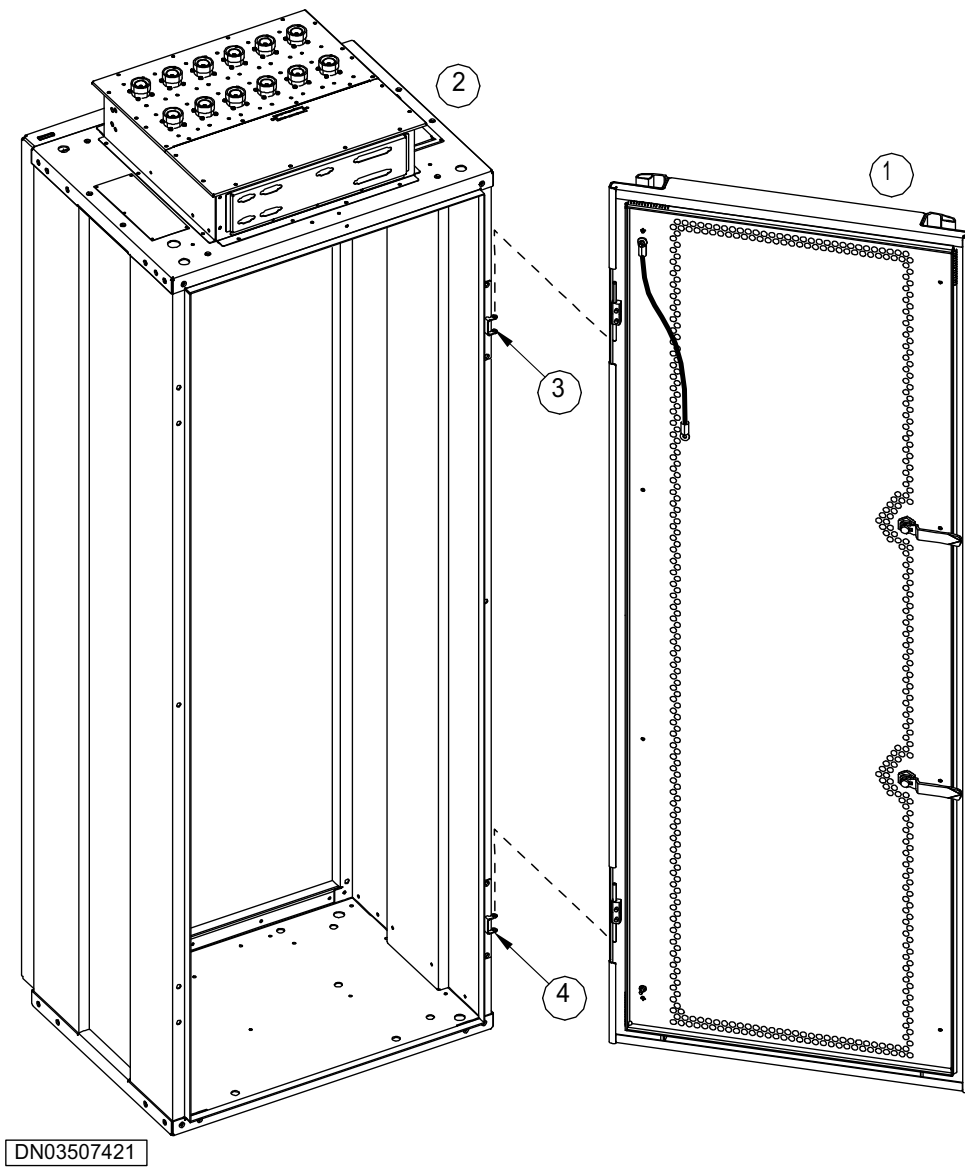


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1	Cabinet door
2	Cabinet core

3	Hinge
4	Hinge

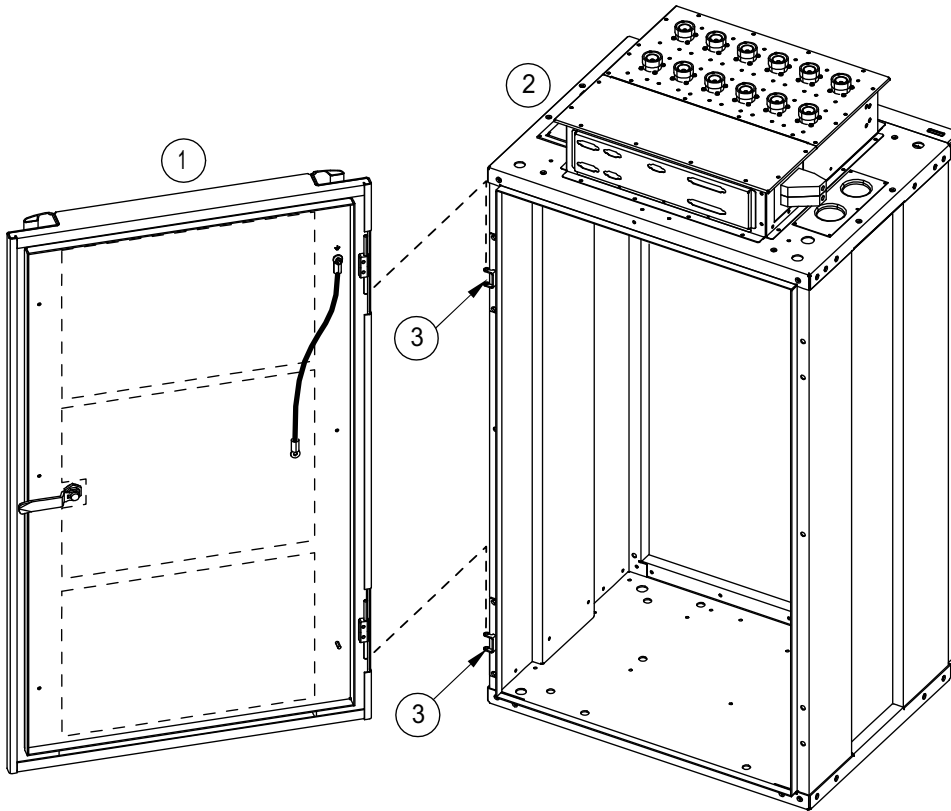
Figure 24. Installing the IAKA door



1	Cabinet door
---	--------------

2	Cabinet core
3	Hinge
4	Hinge

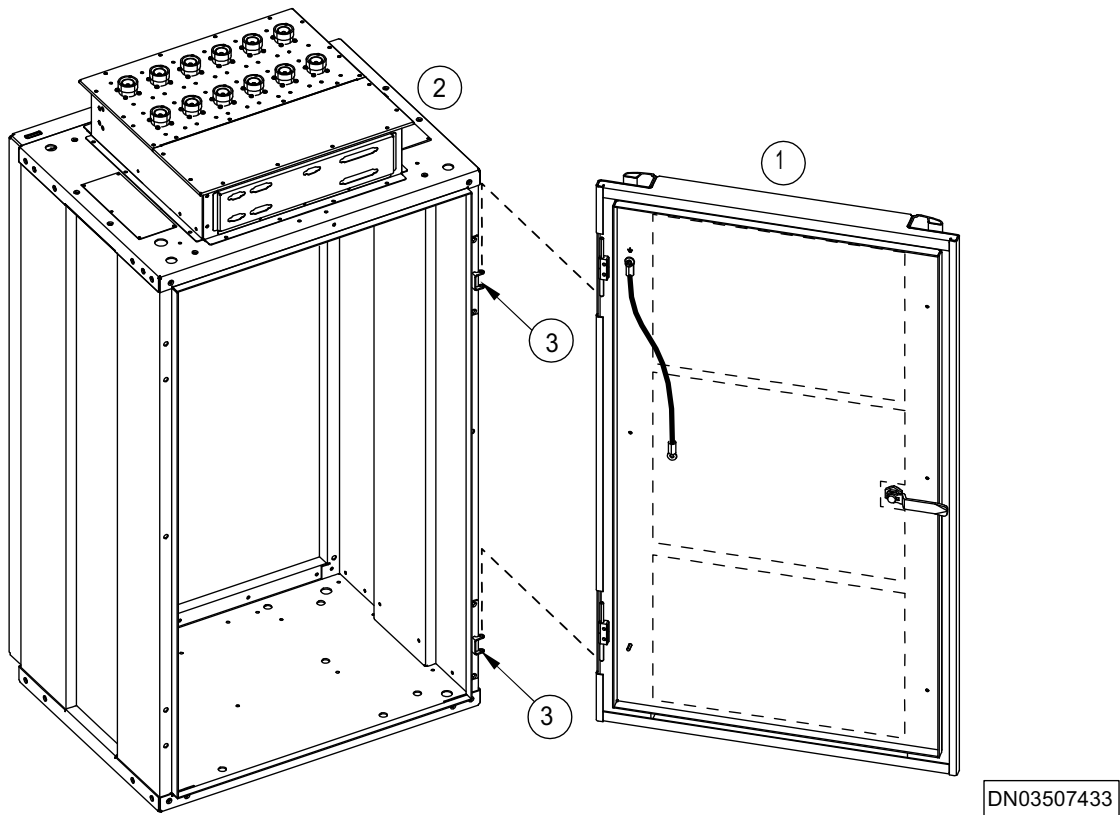
Figure 25. Installing the IAKA door on the right hand side



DN03427505

1	Cabinet door
2	Cabinet core
3	Hinge

Figure 26. Installing the IAKC door



1	Cabinet door
2	Cabinet core
3	Hinge

Figure 27. Installing the IAKC door on the right hand side



Steps

1. **If necessary, flip the door end-for-end.**
2. **Lift the door and engage the hinge pins in the sockets on the front of the cabinet core.**

Tip

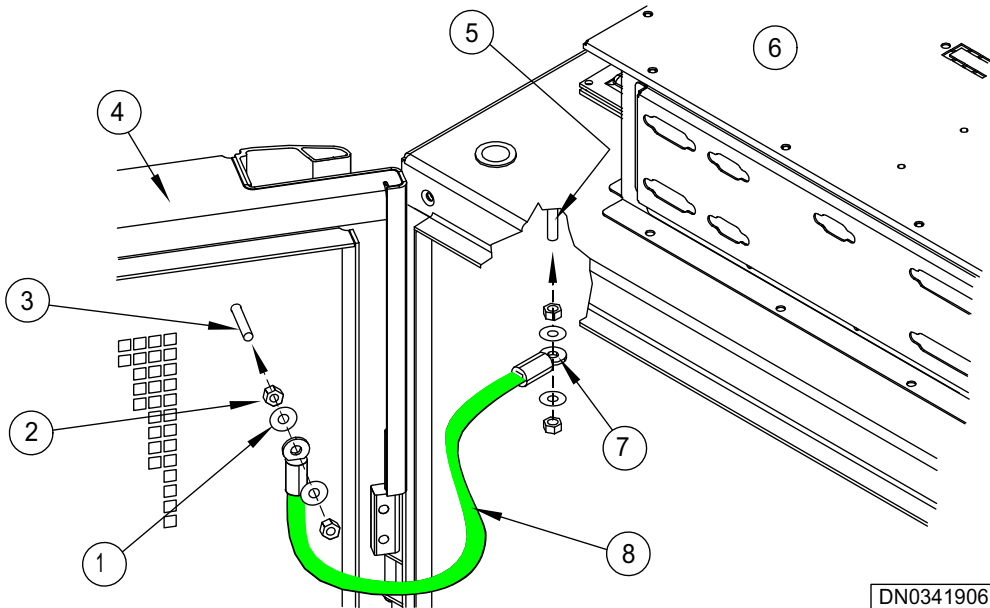
Engage the door in the hinges with the door open at a 90° angle.

6.2.6 Installing the door ground strap of UltraSite EDGE BTS indoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet.*

Summary



1	Lockwasher (4 places)
2	Lug Nut (4 places)
3	Door ground stud
4	Cabinet door

5	Cabinet ground stud (front corner, behind flange)
6	Cabinet Core
7	Lug (two places)
8	Grounding strap

Figure 28. Installing IAKx door ground



Steps

1. **If required, remove the grounding strap from the default (left opening) position on the door, and install it on the right side of the door.**
2. **Remove the outer lockwasher and nut from the door ground lug bolt inside the door.**
3. **Slide the end of the door grounding strap over the lug bolt.**
4. **Fasten the strap in place with the lockwasher and nut.**

Tip

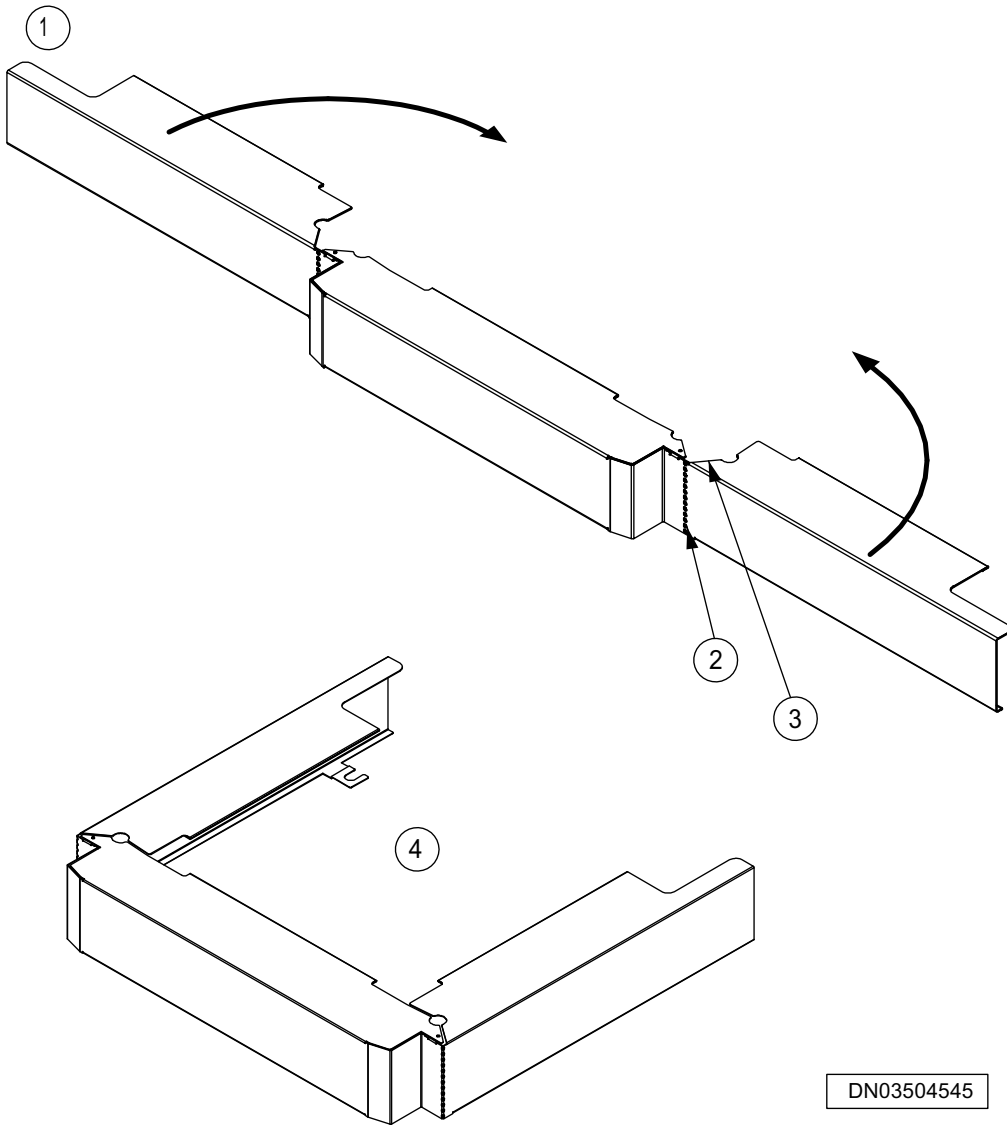
If the door does not close, verify the following:

- The grounding cable is fixed at both ends and is not between the door and the cabinet.
- The door latch is open.
- The transmission shield is assembled correctly.

6.2.7 Installing the roof of UltraSite EDGE BTS indoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet*.



DN03504545

1	Before bending by hand.
2	Bend the sides of the roof along hole patterns.


3	 <p>Caution</p> <p>Do not leave your fingers between the edges during bending.</p>
4	<p>After bending by hand.</p>

Figure 29. Bending the roof unit of UltraSite EDGE BTS cabinet

Summary

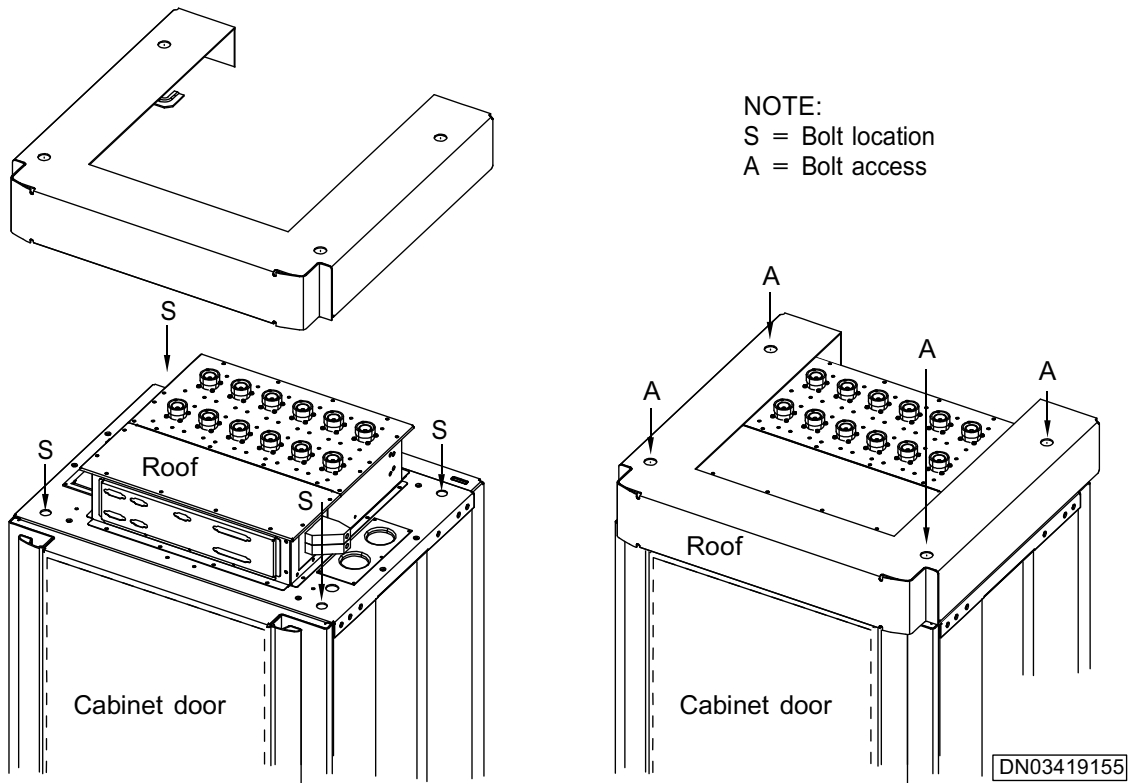


Figure 30. Installing the IAKx roof to the cabinet core

Tip

If the roof does not go onto the core, verify the following:

- The four M12 screws are loosened.
 - The cables are not between the antenna box and roof.
-

**Steps**

1. **Insert four M12 bolts through the holes and loosely screw them into the cabinet core.**
2. **Align the four slots at the bottom of the roof with the four holes on the top of the cabinet core.**
3. **Slide the roof slots around the four M12 bolts installed in the cabinet and tighten the bolts.**

See Torque settings.

6.2.8 Installing the document holder of UltraSite EDGE BTS indoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS indoor cabinet*.

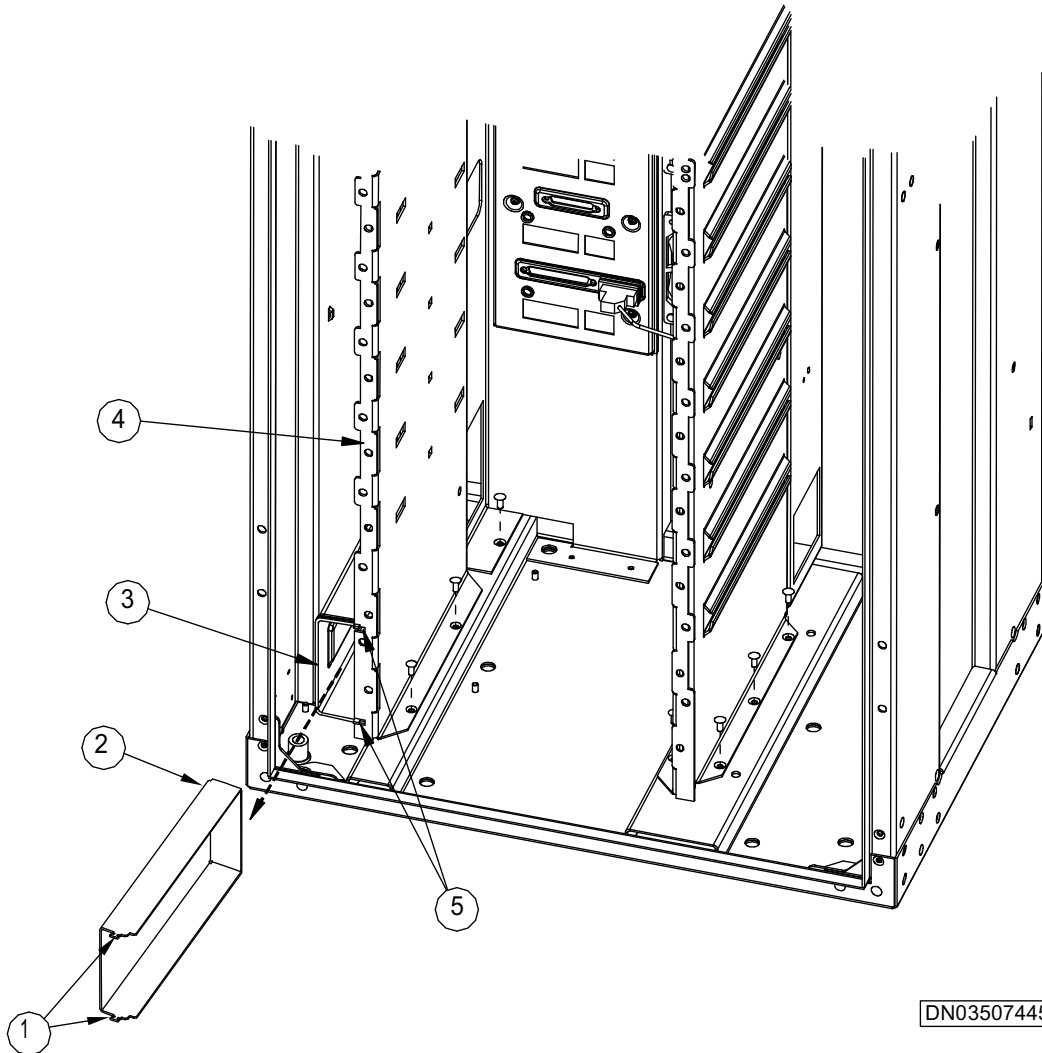
Summary

Note

The document holder is installed in the lower left corner of the CRMx cabinet for storage of papers pertaining to that particular cabinet or site.

Note

When a M2xA unit is installed in the bottom slot of the cabinet, the document holder cannot be installed.



1	Document holder front tabs
2	Document holder removed
3	Document holder installed
4	Cabinet CORE_sub_assy
5	Cabinet core front side holes

Figure 31. Document holder in indoor cabinet

**Steps**

1. **Position the document holder in front of the lower left corner of the cabinet and slide it between the unit mounting supports.**
2. **Hook the tabs on the front of the document holder into the cabinet core front side holes.**

Apply a little pressure to the document holder so the front tabs align with the cabinet core front side holes.

6.3 Installing outdoor core mechanics to UltraSite EDGE BTS

6.3.1 Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet

Before you start

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

Summary

Note

The side and back walls of the OAKA or OAKC must be installed first when you install the cabinet in limited space that restricts access to the back or sides of the cabinet.

**Steps**

1. **Install the Antenna box extension.**
2. **Install the side walls.**
3. **Install the optional Cabinet Filter kit (OFKx).**
4. **Install the back wall.**
5. **Install the door frame.**

6. **Install the roof support.**
7. **Install the cable entry kit (OEKx).**
8. **Install the roof to the roof support.**
9. **Install the door.**
10. **Install the door grounding strap.**
11. **Install the door lock.**
12. **Install the door switch.**
13. **Install the document holder.**
14. **Install applicable optional kits.**

6.3.2 Installing the side walls of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

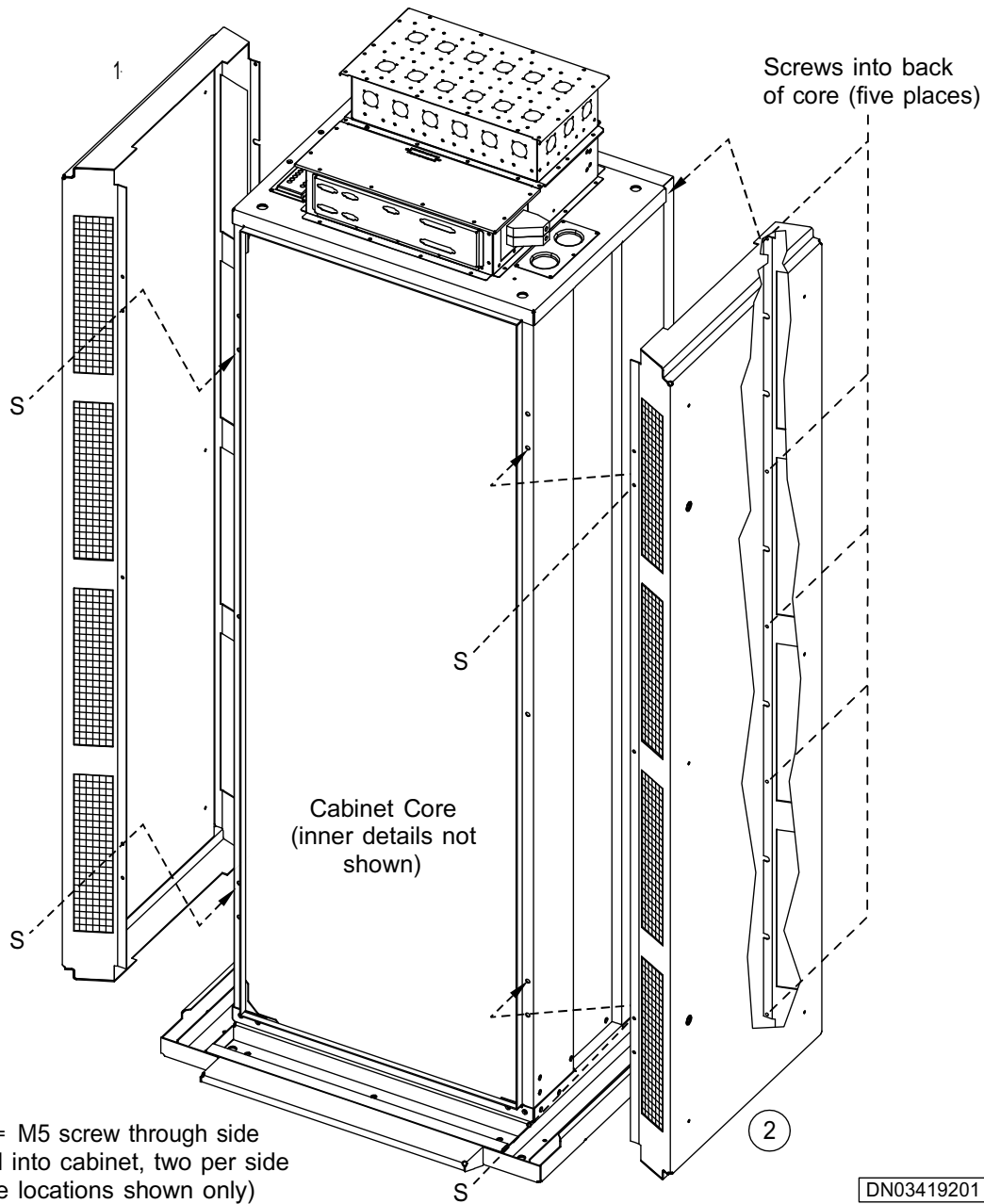
The side walls do not have a top and bottom orientation.

Summary

Tip

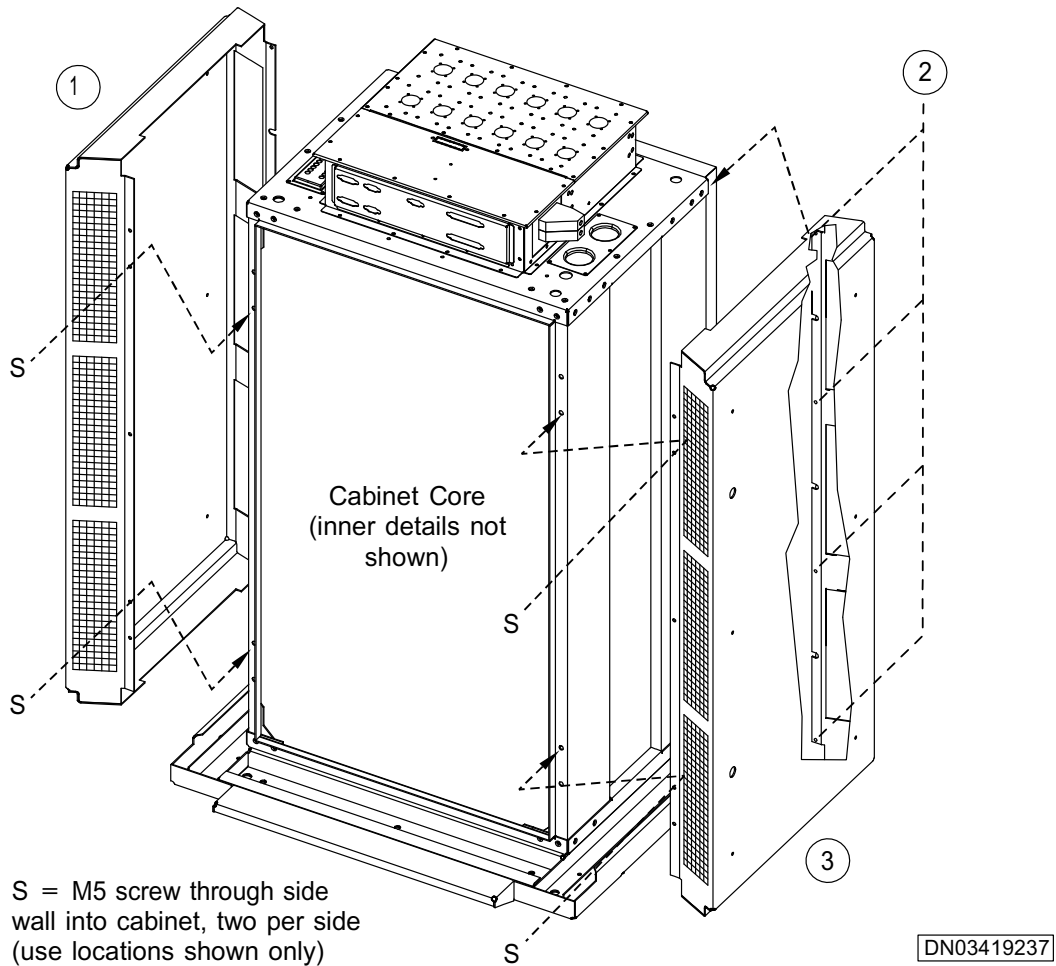
If the side walls do not fit on the cabinet, verify the following:

- Nothing is between the cabinet and the side wall at the contact area.
 - The cabinet mounting holes are open.
-



1	Side wall (left)
2	Screws into back of core (four places)
3	Side wall (right)

Figure 32. Installing the OAKA side walls to the cabinet core



1	Side wall (left)
2	Screws into back of core (four places)
3	Side wall (right)

Figure 33. Installing the OAKC side walls to the cabinet core



Steps

1. **Remove the M5 screws from the back edge of the cabinet core left side.**
2. **Align a side wall with the left side of the cabinet core.**
3. **Secure the slotted rear flange of the side wall to the back panel of the cabinet core.**

The slots of the wall slide over the rivets in the back of the cabinet core.
4. **Install the M5 screws along the back edge of the side wall.**
5. **Secure the front flange of the side wall to the front of the cabinet core with M5 screws.**
6. **To secure the remaining side wall to the right side of the cabinet core, repeat steps 1 through 5.**

6.3.3 Installing the back wall of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



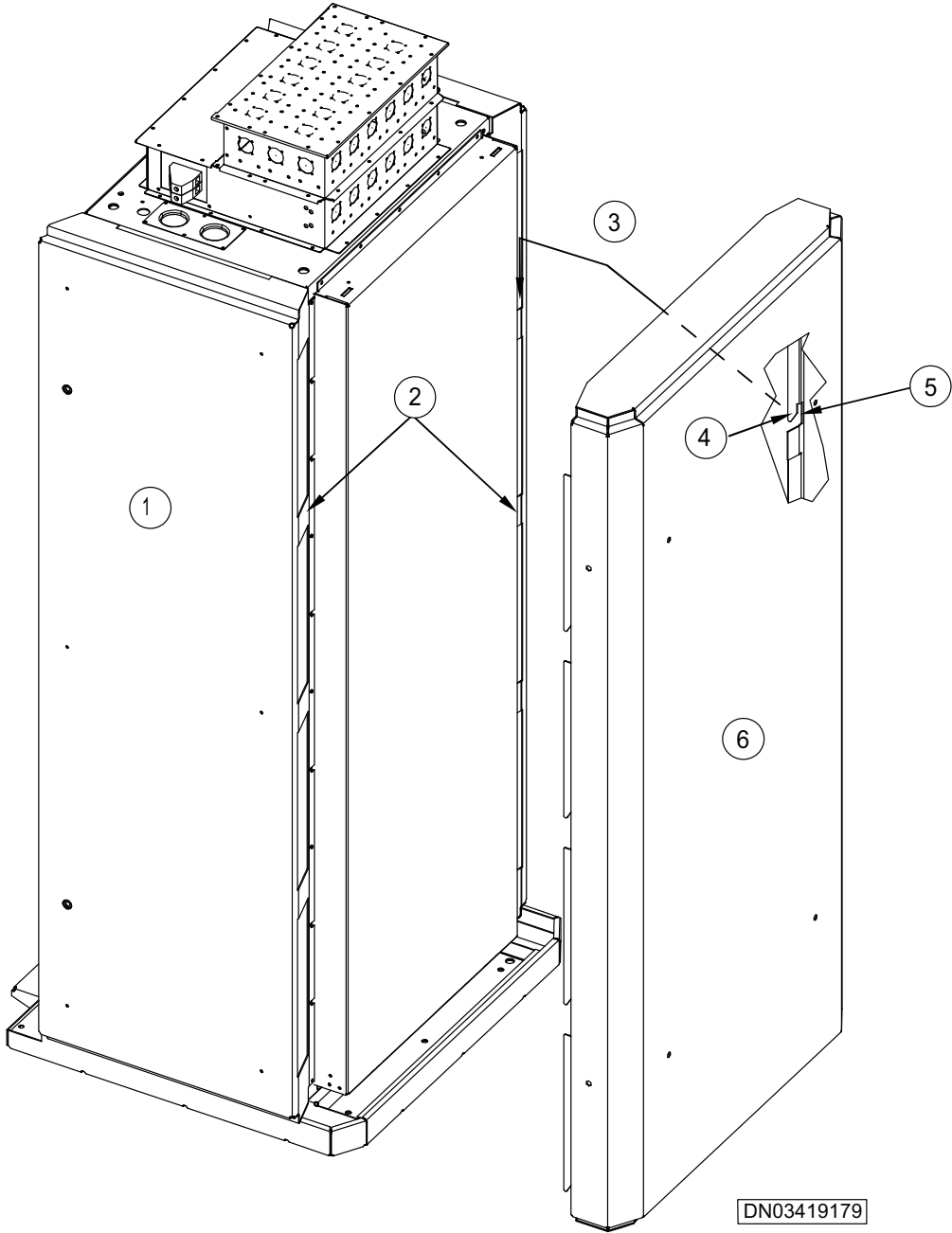
Warning

Keep your fingers clear of the metal edges on the top of the cabinet and rear wall when installing the back wall.

Tip

If the back wall does not fit, ensure the following:

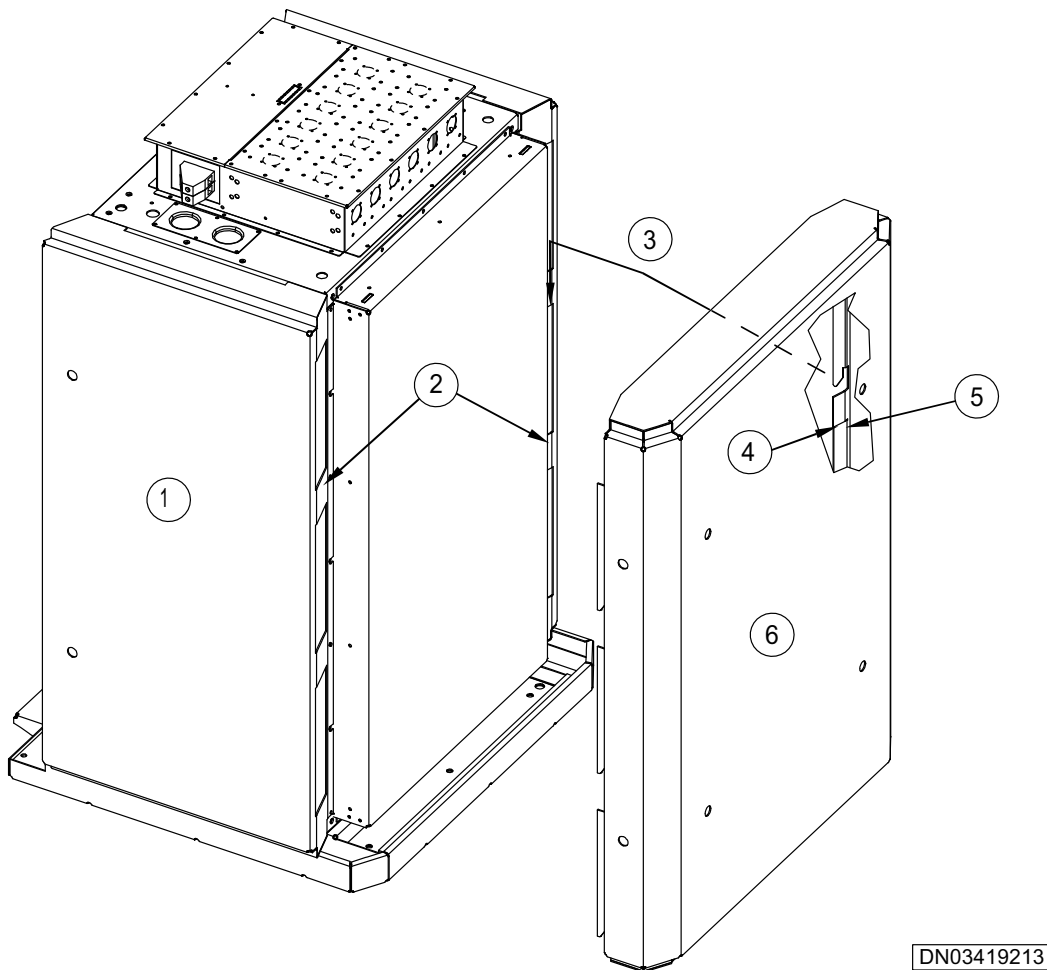
- The back wall is not upside down.
- Nothing is between the side walls and the back wall at the contact area.
- Nothing is between the plinth wall slots and the side wall at the contact area.
- The tabs of the back wall are not damaged.



1 Cabinet core with side walls

-
- | | |
|---|---|
| 2 | Struts, four places |
| 3 | Hook tab/slot over strut in side wall (two places per side) |
| 4 | Tab |
| 5 | Slot |
| 6 | Back wall |
-

Figure 34. Installing the OAKA back wall to the cabinet core



1Cabinet core with side walls2Struts, four places3Hook tab/slot over strut in side wall (two places per side)
4Tab5Slot6Back wall

Figure 35. Installing the OAKC back wall to the cabinet core



Steps

1. **Position the back wall behind the cabinet.**
2. **Align the left and right sides of the back wall with the cabinet, keeping the back wall about 52 mm (2 in.) higher than the cabinet core top.**
3. **With the back wall pressed firmly against the cabinet, push down on the back wall. The metal tabs hook over the struts of the side walls.**

6.3.4 Installing the door frame of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

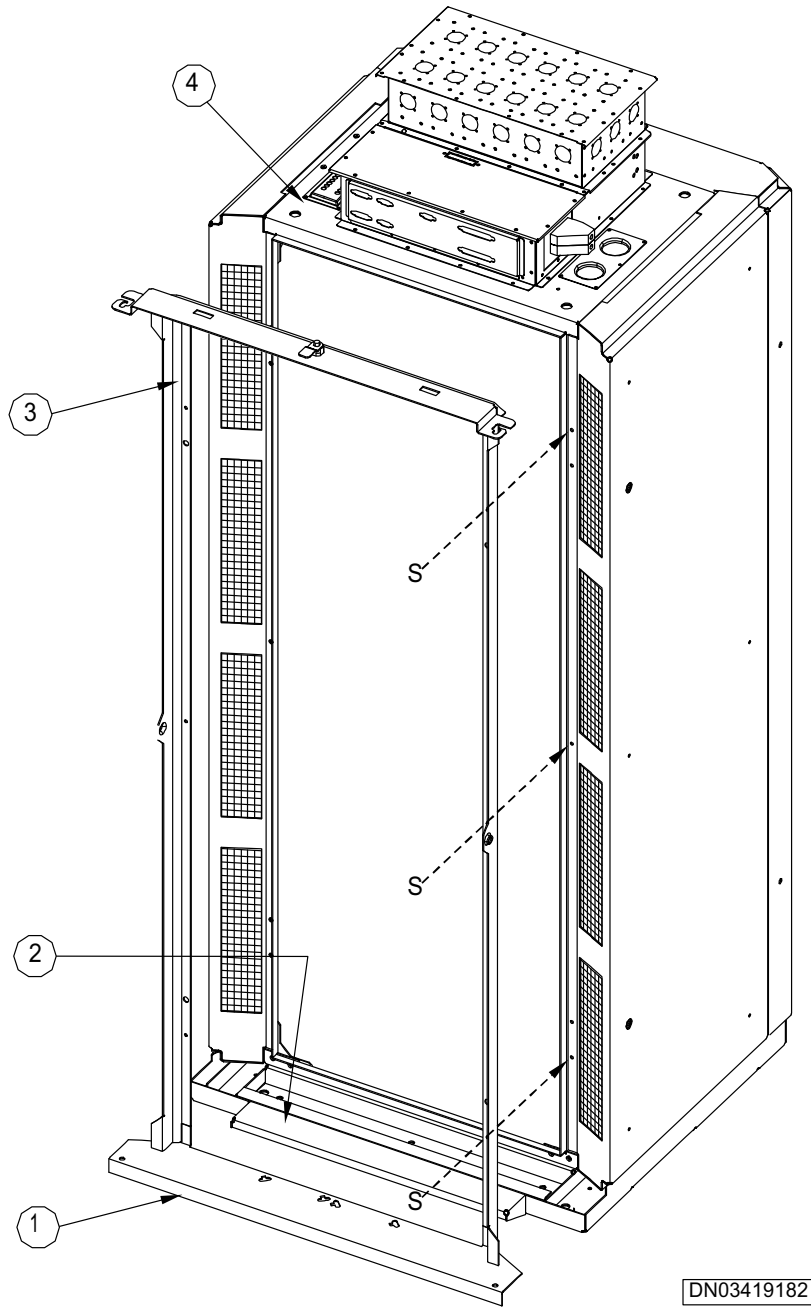
Summary

Tip

If the door frame does not fit properly, ensure the following:

- The door frame is not upside down.
 - Nothing is between the door frame and the cabinet at the contact area.
 - Nothing is between the door frame and the plinth at the contact area.
 - Nothing is between the door frame and the roof at the contact area.
 - The mounting holes on the roof are open.
 - The mounting holes of the cabinet are open.
-

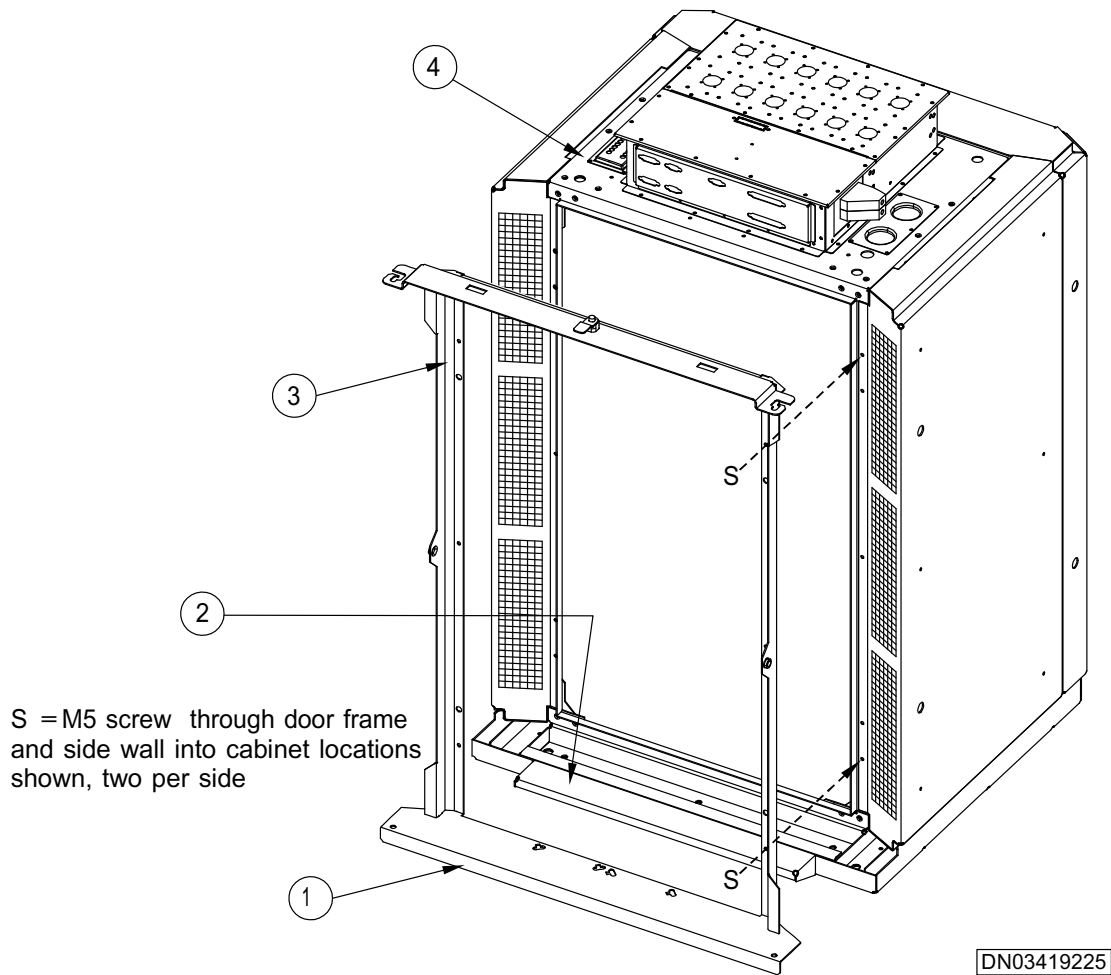
S = M5 screw through door frame and side wall into cabinet locations shown, three per side



- 1 Front flange of door frame (Install behind front lip of plinth)

- 2 Front lip of plinth
- 3 Door Frame
- 4 Cabinet Core with back and side walls
(inside details not shown)

Figure 36. Installing the OAKA door frame to the cabinet core



- 1 Front flange of door frame (Install behind front lip of plinth)

- 2 Front lip of plinth
- 3 Door Frame
- 4 Cabinet Core with back and side walls
(inside details not shown)

Figure 37. Installing the OAKC door frame to the cabinet core



Steps

1. **With the top of the door frame tilted away from the cabinet, fit the door frame inside the plinth. Align the left and right edges.**
2. **Push the top of the door frame against the top of the cabinet.**
3. **On each side of the door frame, insert three M5 screws through the frame and into the threaded holes on the front edges of the side walls.**
4. **Tighten all six screws.**

See Torque settings.

6.3.5 Installing the roof support of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary

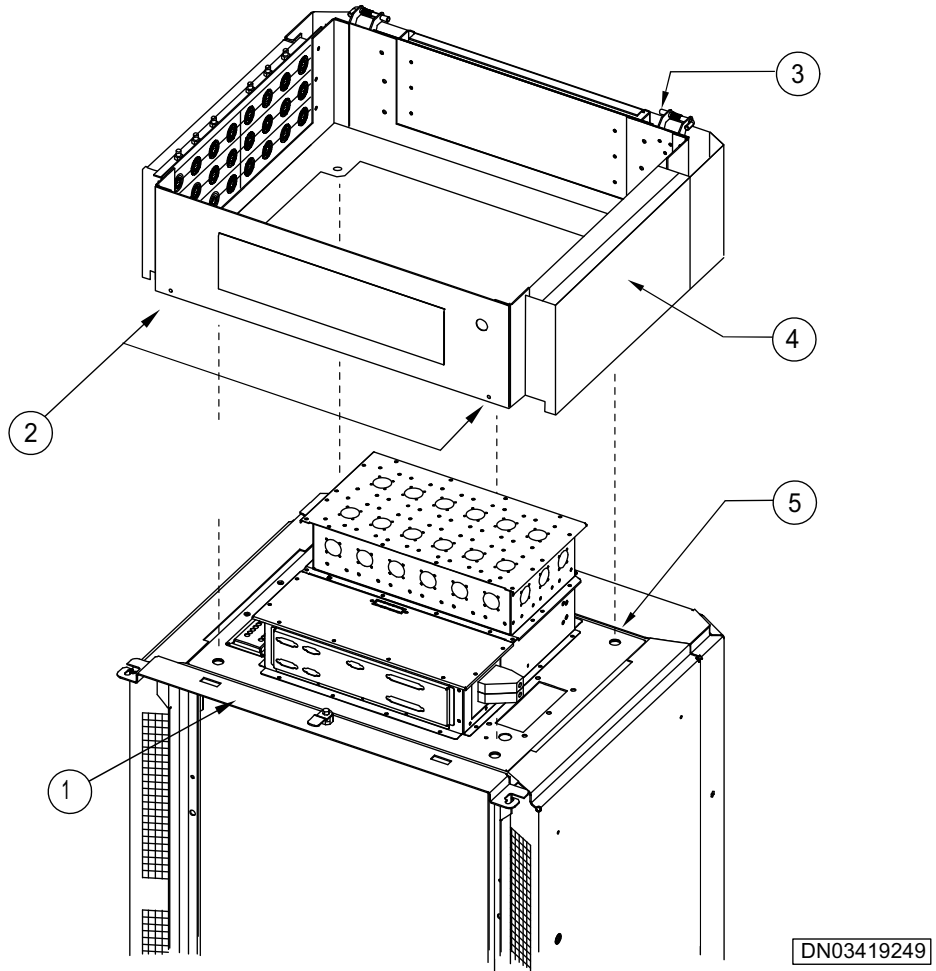
Note

You can access the roof latch only when the cabinet door is open.

Tip

If the roof support assembly does not fit properly, ensure the following:

- The roof is not backwards.
- Nothing is between the roof and the cabinet at the contact area.
- The mounting holes in the cabinet are open.



- | | |
|---|--|
| 1 | Door frame |
| 2 | Secure roof support to door frame (two places) |
| 3 | Roof hinge pin, spring-loaded (two places) |

-
- | | |
|---|--|
| 4 | Roof support (roof not shown) |
| 5 | Secure roof support to cabinet top (four places) |
-

Figure 38. Installing the roof support assembly to the cabinet core



Steps

1. **Remove the roof from the spring-loaded roof hinge pins on the roof support assembly.**
2. **Place the roof support assembly on the top of the cabinet core.**
3. **Align the four holes at the bottom of the roof support assembly with the four holes on the top of the cabinet core.**
4. **Insert four M12 bolts through the holes and loosely screw them into the cabinet core.**
5. **Align the roof support assembly with the cabinet and then tighten the four M12 bolts.**

See Torque settings.

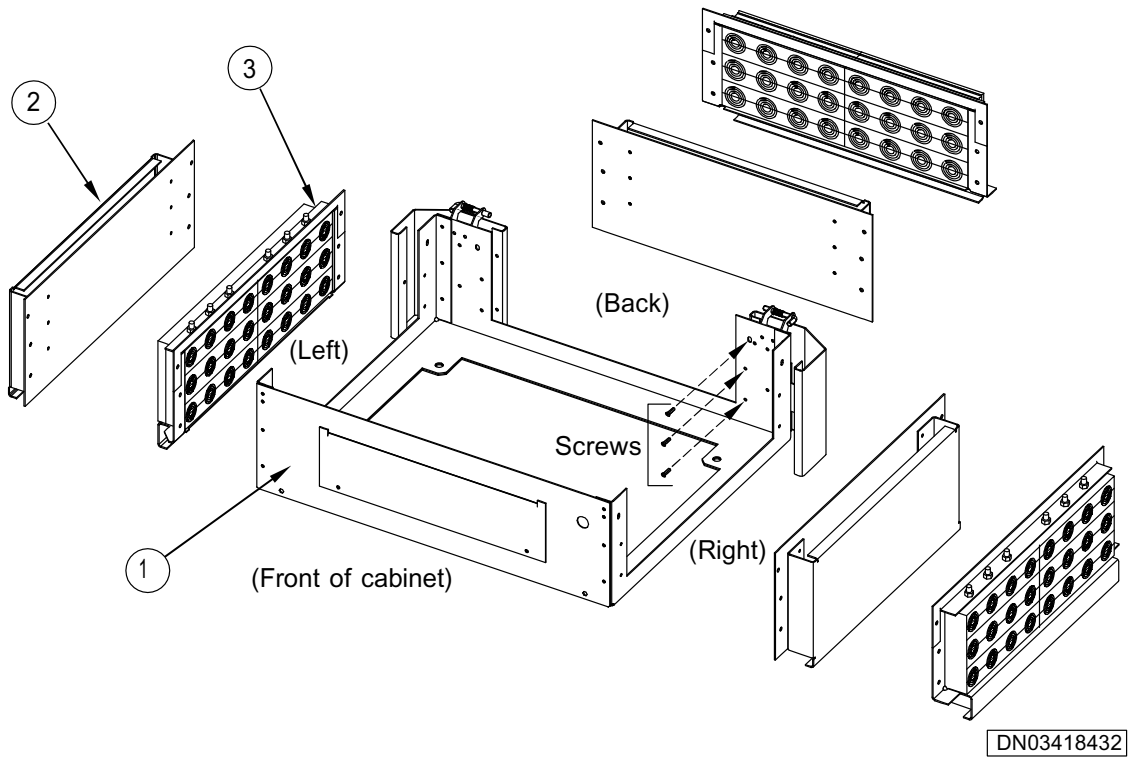
6. **Secure the roof support assembly to the door frame with two M5 screws.**

6.3.6 Installing the cable entry kit (OEKx) of UltraSite EDGE BTS outdoor cabinet

Summary

The Cable Entry Kit is used to route antenna, power, ground and signal cables. The cable entry blocks are made of elastic material and accommodate varying cable diameters.

The Cable Entry Kit is installed to the left, back or right of the Outdoor cabinet.



1	Roof support
2	Dummy cable entry
3	Cable entry

Figure 39. Cable entry block installation options



Steps

1. **Remove the rubber seal from the roof support assembly.**
2. **Remove the six screws that secure the dummy cable entry that is being replaced by the cable entry block to the roof support assembly.**
3. **Remove the dummy cable entry that is being replaced.**
4. **Insert the cable entry block in the desired position.**

5. **Align the mounting holes of the cable entry assembly with the mounting holes in the roof support assembly.**
6. **Replace the six screws, and then tighten the cable entry block into position in the roof support assembly.**
7. **Replace the rubber seal on the roof support assembly.**

6.3.7 Installing the Citytalk cable entry kit for UltraSite EDGE BTS co-site with Talk-family BTS outdoor applications

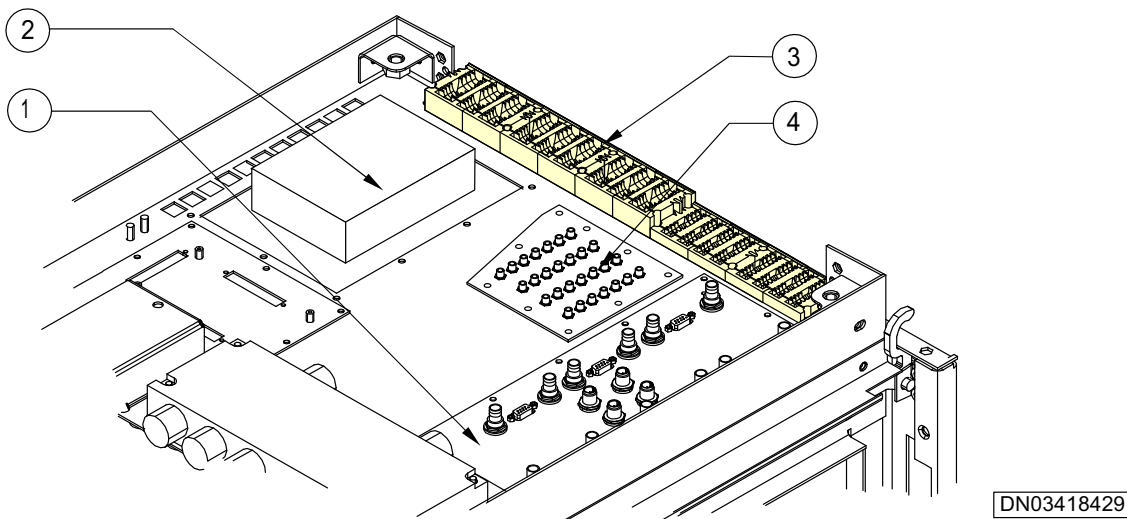
Before you start

Ensure that the site is ready for cable entry kit installation. Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS* and *Overview of preparing UltraSite EDGE BTS for cabling*. Pay careful attention to all Warnings and Cautions.

Summary

The cable entry kit provides a means of protecting the inter-cabinet cables in outdoor applications from external elements. The kit can be installed on either side or both sides of the extension cabinet.

The cable entry kit can be installed in the Citytalk Basic, Citytalk Extension, or Extratalk II Site Support cabinet, and is defined in the applicable *Nokia Citytalk GSM xxx BTS User Manual*.



1Abis interface 2Power distribution 3Cable entry block, lower rubber components 4RF cable termination plate

Figure 40. Cable entry



Steps

1. **Open the Talk-family cabinet roof.**
2. **Remove the rubber gasket along the top edge of the cabinet far enough to provide access to the cover plate that will be adjacent to the UltraSite cabinet. You do not need to remove the entire gasket.**
3. **See the applicable *Nokia Citytalk GSM xxx BTS User Manual* for cable entry kit installation procedures.**

Note

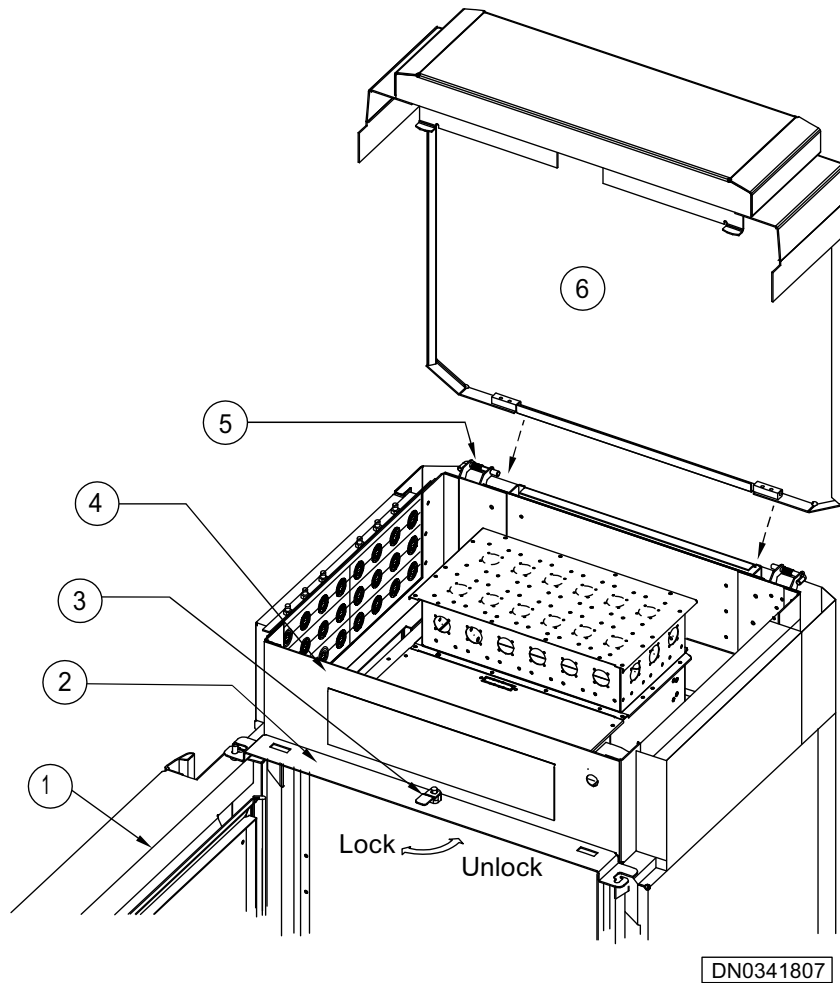
For purposes of preparing the Talk-family BTS for co-siting, install only the bottom rubber blocks at this time. Retain the upper components (rubber blocks, brackets, and bolts) for installation after you route the inter-cabinet cables.

6.3.8 Installing the roof to the roof support of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



1	Cabinet Door
2	Door frame
3	Roof Latch
4	Roof support assembly
5	Roof hinge pin, spring-loaded (two places)
6	Roof

Figure 41. Attaching the roof to the roof support assembly

**Steps**

1. **Attach the roof to the roof support assembly at the spring-loaded hinge pins.**
2. **Close the roof and lock it by turning the roof latch on the door frame to the left.**

6.3.9 Installing the door of UltraSite EDGE BTS outdoor cabinet**Before you start**

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary

You can install the door of the OAKx in a right or left opening orientation.

**Caution**

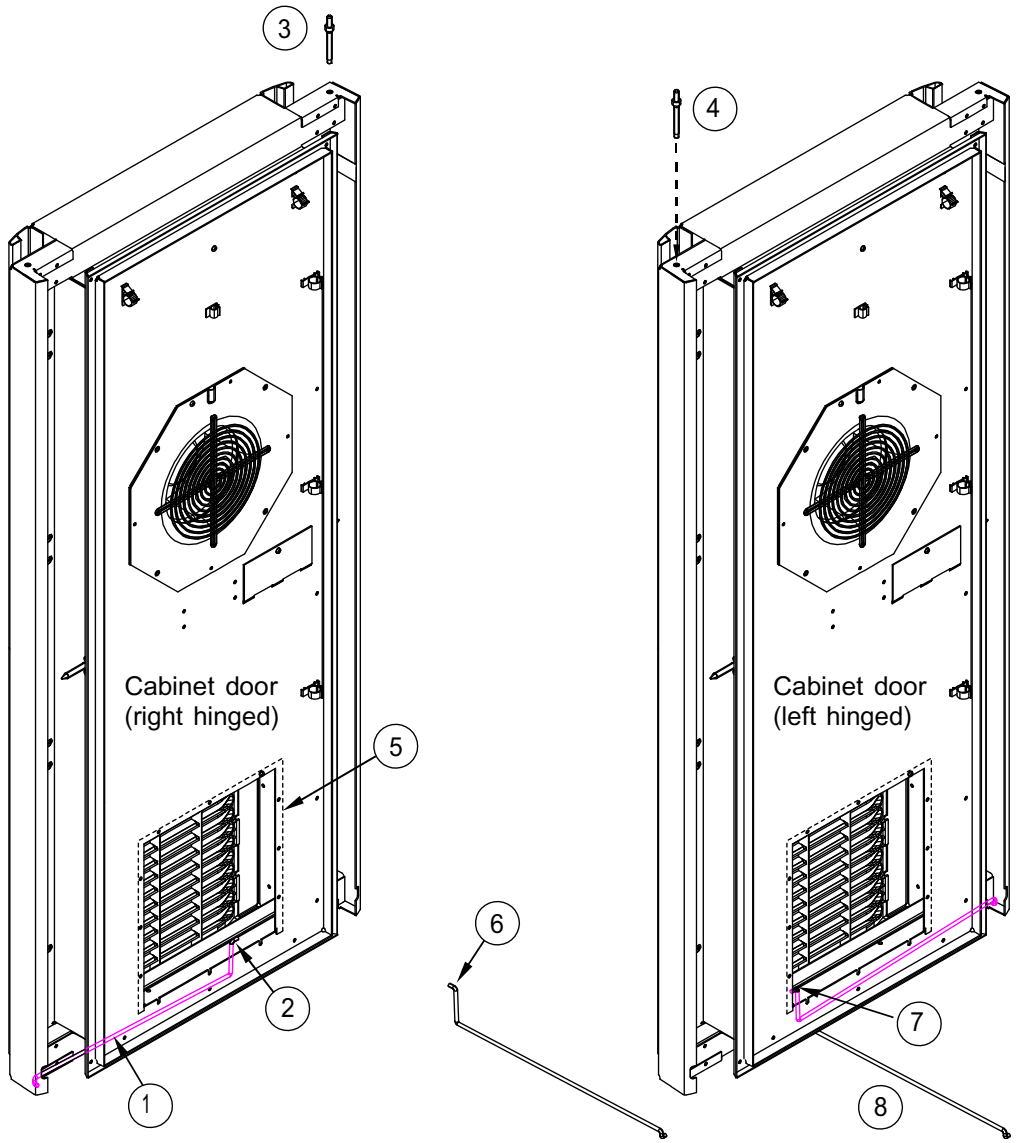
To prevent damage to the cables in windy conditions, use the door stay to hold the door open. When you close the door, ensure the cables are not between the door and door frame.

Note

The initial installation for Midi requires installation of door ground strap. The full size cabinet installs do not require cabinet fit out, but current information is required for maintenance and replacement.

Note

The OAKA door weighs 35kg (77 lb). A minimum of two installers are required to install the door.

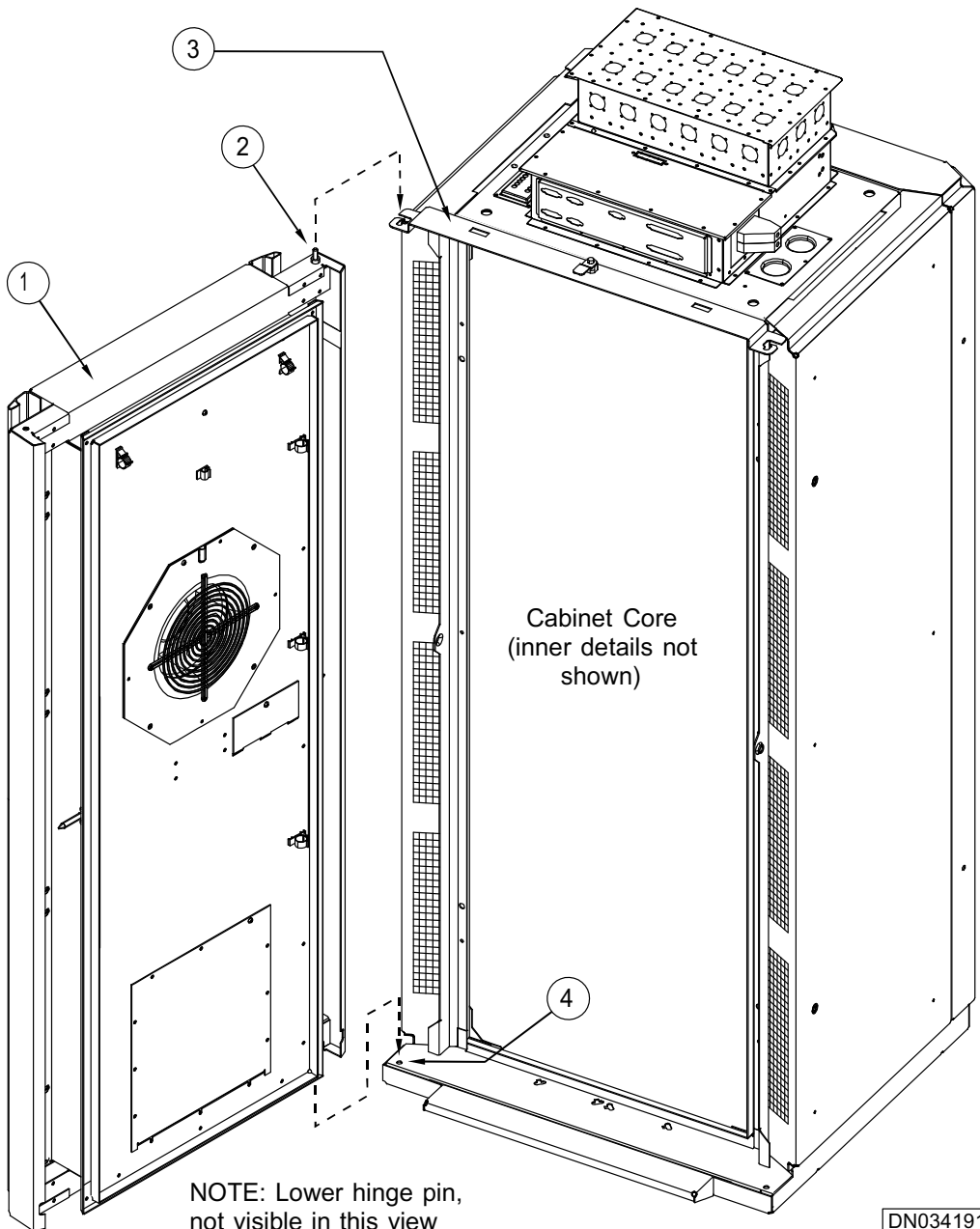


DN03418538

1	Door stay retracted into cabinet
2	Attachment point
3	Remove upper hinge pin (lower hinge pin identical)
4	Re-install upper hinge pin (lower hinge pin identical)

5	Cover panel removed to show door-stay attachment points
6	Attachment end of door stay
7	Attachment point
8	Re-Install door stay

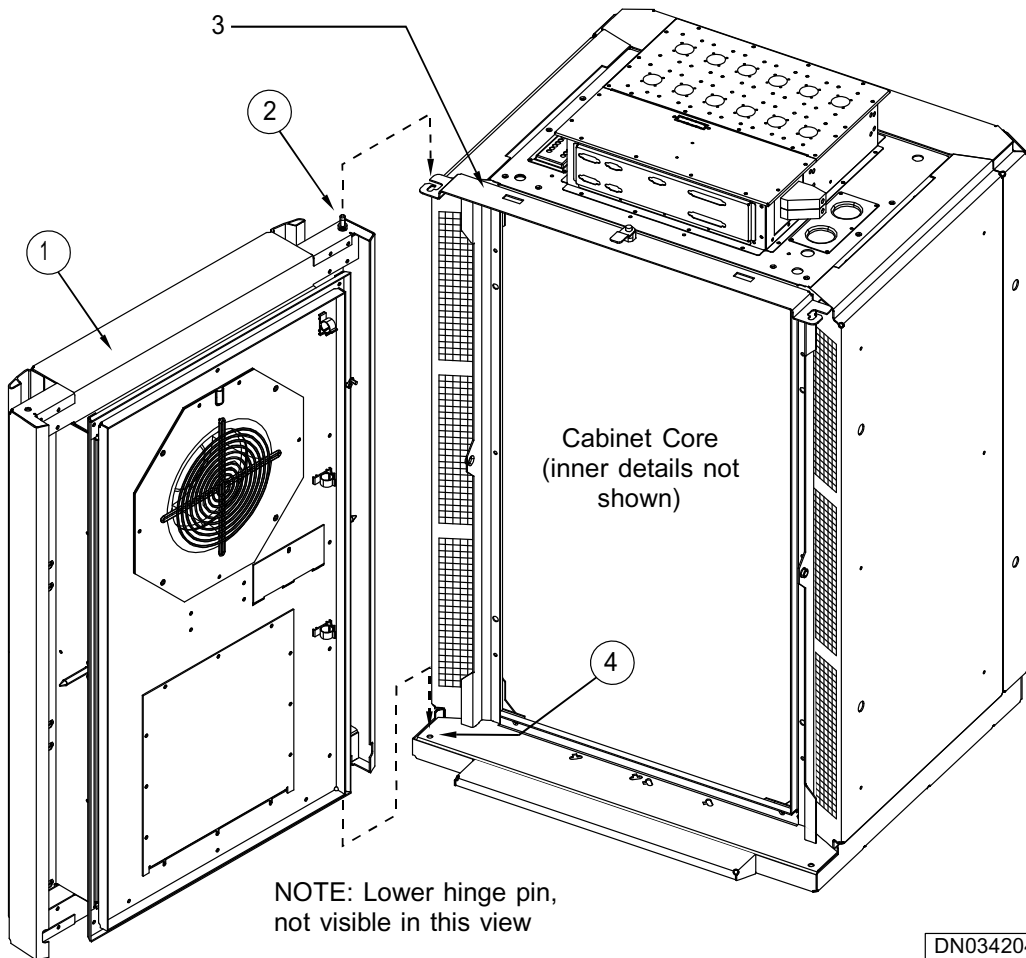
Figure 42. Configuration of OAKA door hinge pins and door stay



1	Cabinet door
2	Upper hinge pin (lower hinge pin identical)
3	Door frame

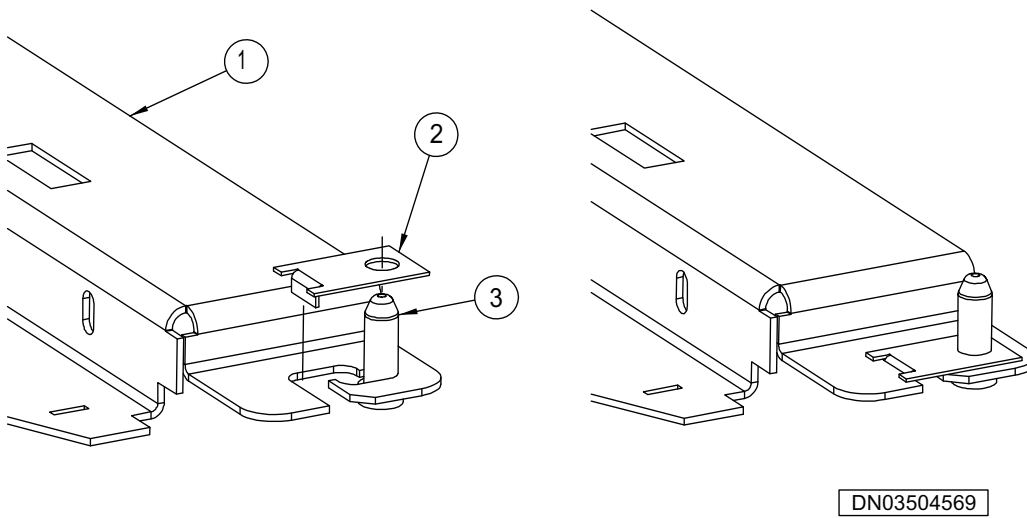
4	Hole for lower hinge pin
---	--------------------------

Figure 43. Installing the OAKA door to the cabinet



1	Cabinet door
2	Upper hinge pin (lower hinge pin identical)
3	Door frame
4	Hole for lower hinge pin

Figure 44. Installing the OAKC door to the cabinet



DN03504569

1	Door frame
2	Lock part
3	Door pin

Figure 45. Lock part assembly



Steps

1. *If* The hinge pins are installed in the desired position,

Then
 - a. Slide the lower door hinge pin into the lower hinge hole in the door frame.
 - b. Lift the door and engage the upper hinge pin of the door in the slot at the top of the door frame.
2. *If* the hinge pins and door rod need to be moved,

Then

- a. Lay the door down with the inside of the door facing up.
- b. With a hammer and long-handle screwdriver, tap out upper and lower hinge pins from the inside.
- c. Insert the hinge pins in the opposite side of the door, and gently tap them into place ensuring the pins are fully seated
- d. Remove the door stay from the bottom of the door and install it in the opposite side attachment hole.
- e. Complete steps 1(a) and 1(b).

3. Insert the lock part on the door pin on top of the door frame.

6.3.10 Installing the door grounding strap of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary

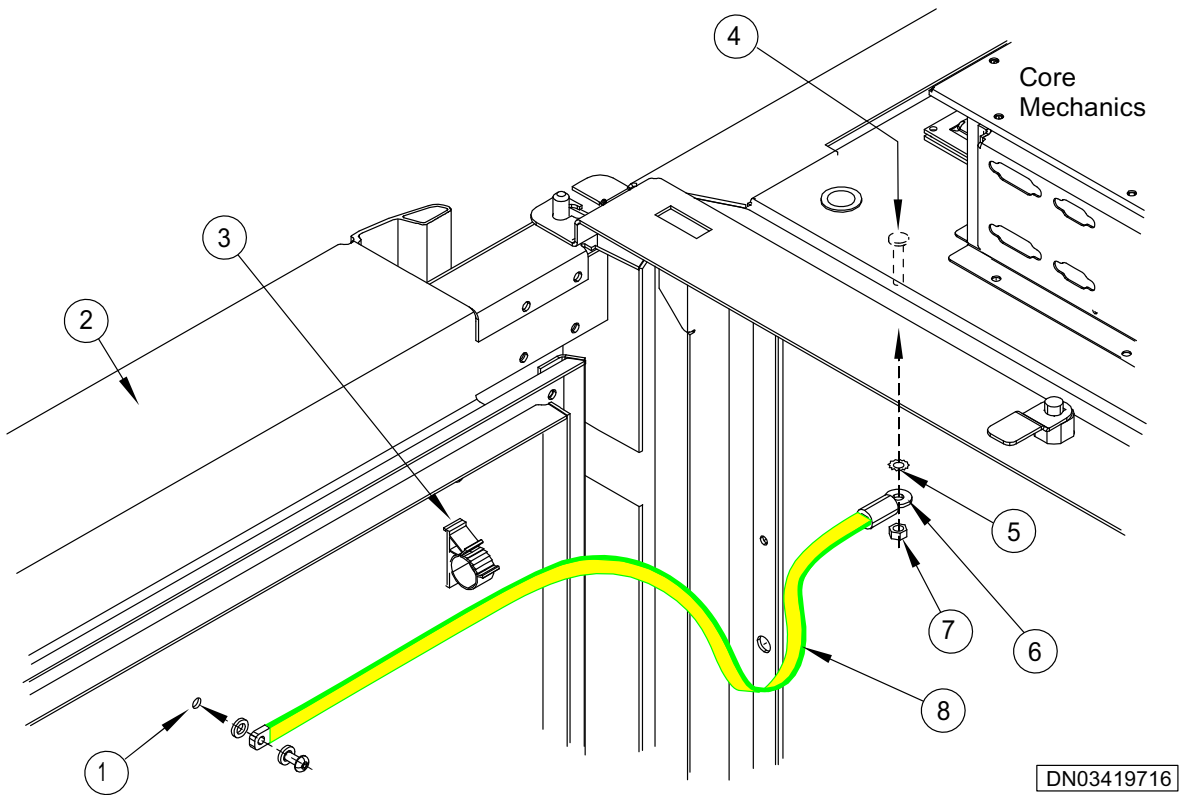


Caution

To prevent damage to the cables in windy conditions, use the door stay to hold the door open. When you close the door, ensure that the cables are not between the door and door frame.

Note

The initial installation for Midi requires installation of door ground strap. The full size cabinet installs do not require cabinet fit out, but current information is required for maintenance and replacement.



1	Cabinet ground point
2	Cabinet door
3	Cable clamp
4	Cabinet ground stud (front corner, behind flange)
5	Star washer
6	Lug
7	Nut
8	Grounding strap

Figure 46. OAK door grounding

**Steps**

1. **If required, remove the grounding strap from the default (left) position and install it on the right side of the cabinet core.**
2. **Route the grounding cable through the cable clamp near the top of the door.**
3. **Remove the nut from the door cabinet ground stud while holding the star washer in place.**
4. **Slide the end of the door grounding strap over the stud and fasten with the nut.**

6.3.11 Installing the door lock of UltraSite EDGE BTS outdoor cabinet**Before you start**

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

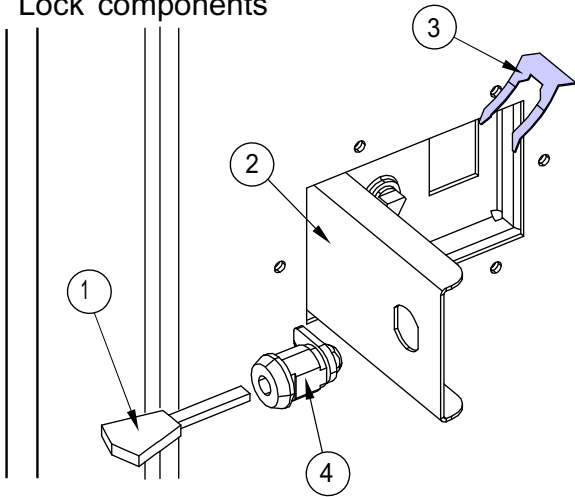
Summary

Note

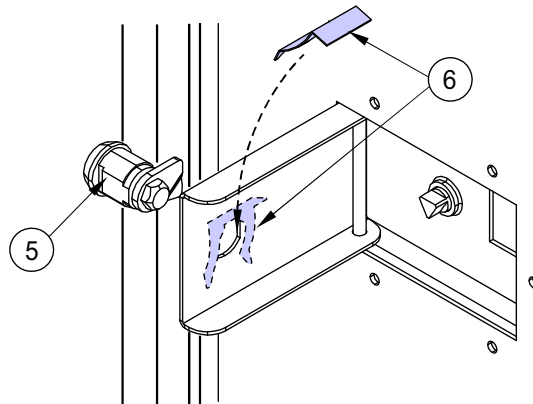
For security reasons, the door lock mechanism is not supplied by Nokia.

The door lock is installed in the cabinet door latch cover to prevent entry into the cabinet by unauthorised personnel.

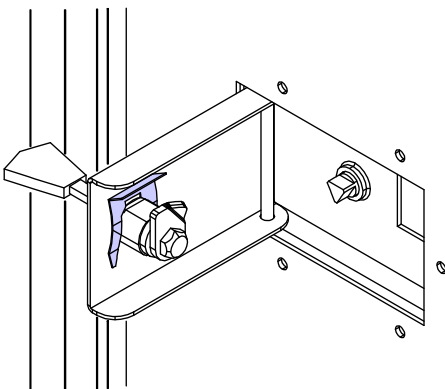
Lock components



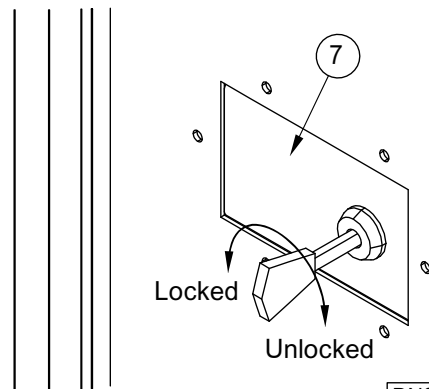
Lock clip installation direction



Lock clip installed



Lock cover closed



DN03419104

1	Key
2	Lock cover
3	Lock clip
4	Lock
5	Lock
6	Lock clip
7	Lock clip

Figure 47. Installing the door lock mechanism



Steps

1. Use the key to determine the desired lock rotation.
2. Insert the lock into the lock cover.
3. Secure the lock to the lock cover using the lock clip.

6.3.12 Installing the door switch of UltraSite EDGE BTS outdoor cabinet

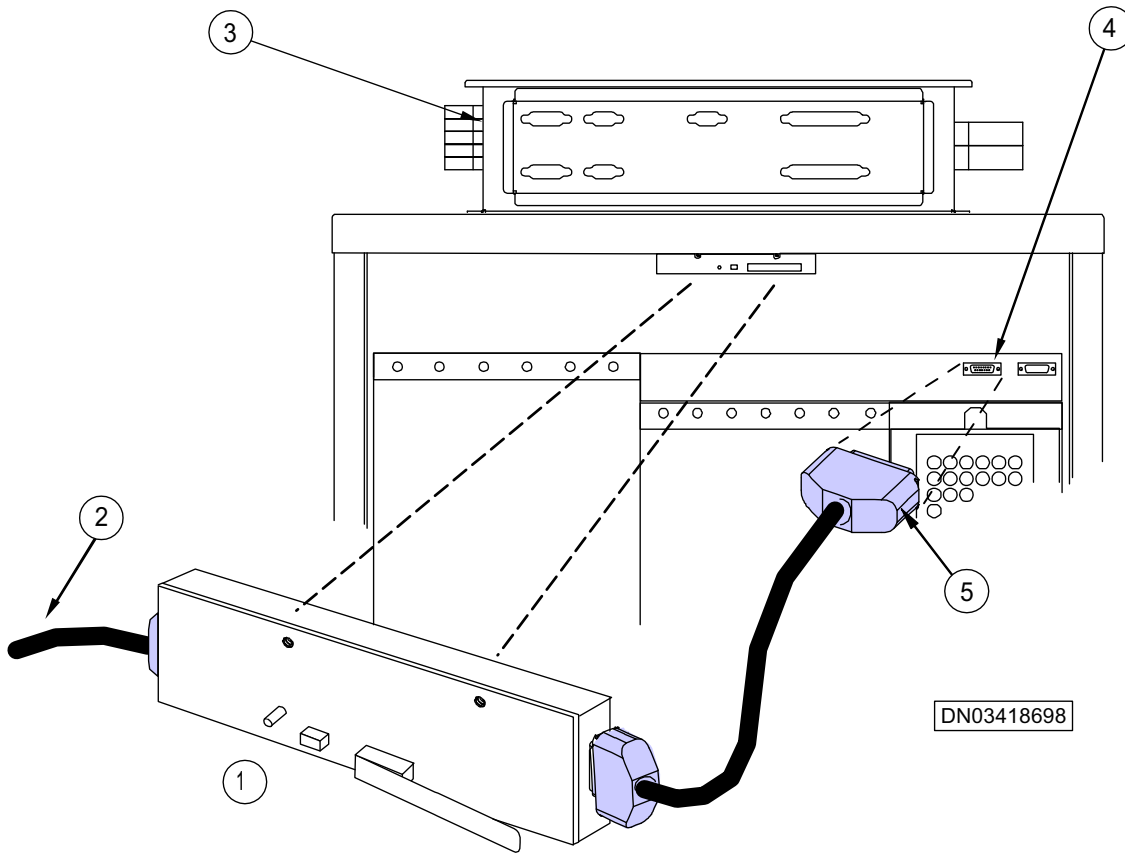
Purpose

The door switch automatically turns off the door fan and heater (if installed) when the door is opened.

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



1	Door switch assembly
2	Door fan assembly
3	Cabinet core S = M5 mounting studs with nuts behind front flange (two places)
4	D-15 (F) Cabinet power and control interface (X20 - second connector from right)
5	D15 (M) Connector to cabinet power and control interface

Figure 48. Door switch assembly



Steps

1. **Mount the door switch on the four studs inside the door frame at the top of the cabinet.**
2. **Secure the door switch to the two threaded studs with the two M5 nuts supplied with the door switch assembly.**
3. **Plug the door switch connector into the X20 receptacle on the cabinet power and control interface.**
4. **Plug the cabinet fan connector into the door switch assembly fan receptacle.**

6.3.13 **Installing the WCDMA Upgrade Kit door to the UltraSite EDGE BTS outdoor cabinet with WCDMA upgrade**

Before you start

Review the *Overview of upgrading Ultrasite EDGE BTS with WCDMA*.

Summary

You will need a minimum of two installation personnel to install the WCDMA Upgrade Kit door to the Outdoor cabinet.

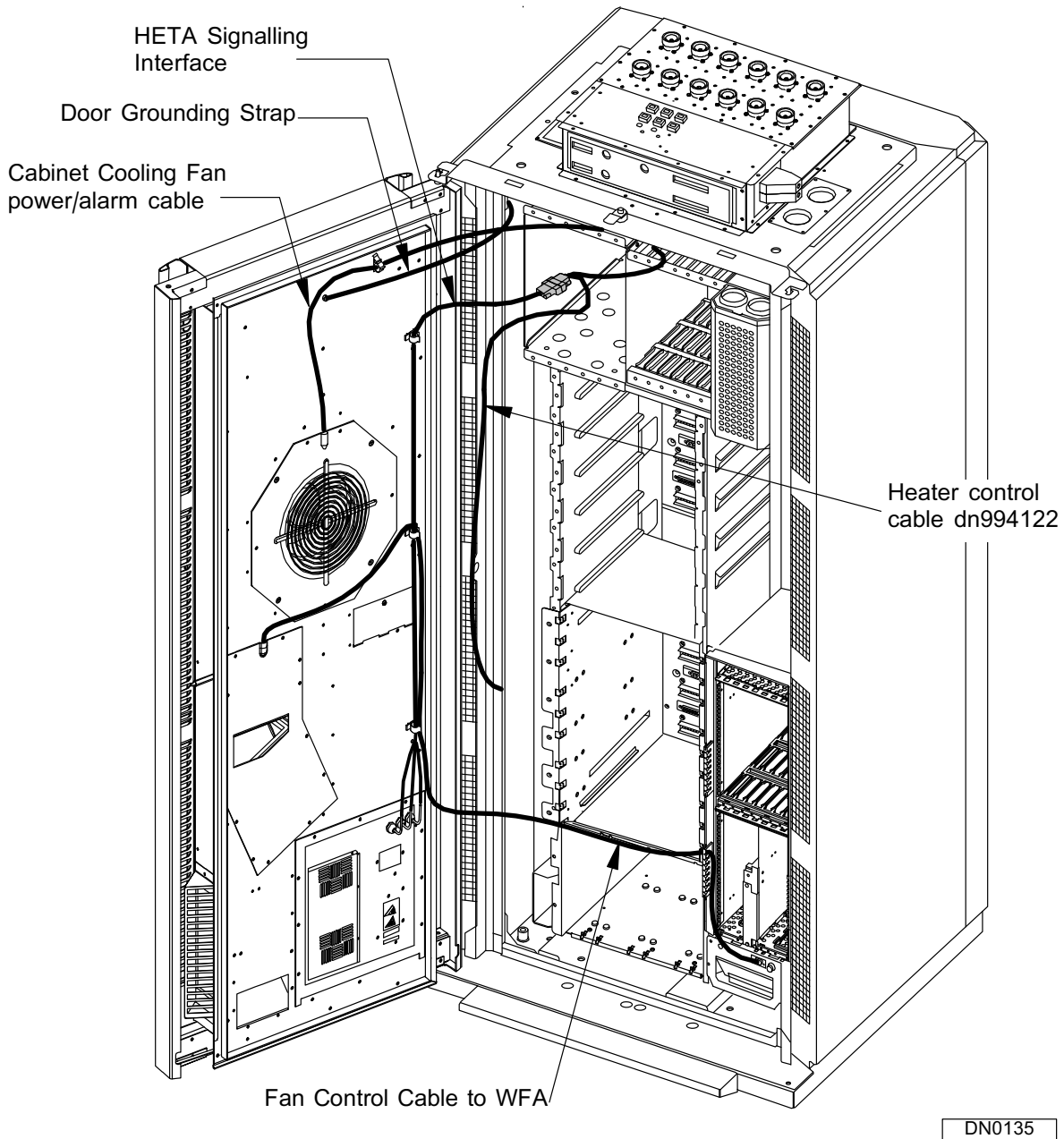


Figure 49. Installing the WCDMA Upgrade Kit door



Steps

1. **Install the WCDMA Upgrade Kit door to the Outdoor cabinet.**
2. **Install the door grounding strap.**
3. **Connect the Cabinet Cooling Fan power/alarm cable.**
4. **Install the heater unit (optional) to the WCDMA Upgrade Kit door.**
5. **Connect the heater unit signalling interface to the heater control cable (optional) coming from the BB Rack.**
6. **Connect the WTCA Fan Module control cable from the Heat Exchanger in the WCDMA Upgrade Kit door to the connector in the front of the WTCA Fan Module.**
7. **Insert the WTCA Fan Module control cable to the cable holders in the door.**
8. **Insert the WTCA Fan Module cable to the cable block in the BB rack.**

6.3.14 Installing the document holder of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing core mechanics of UltraSite EDGE BTS outdoor cabinet*

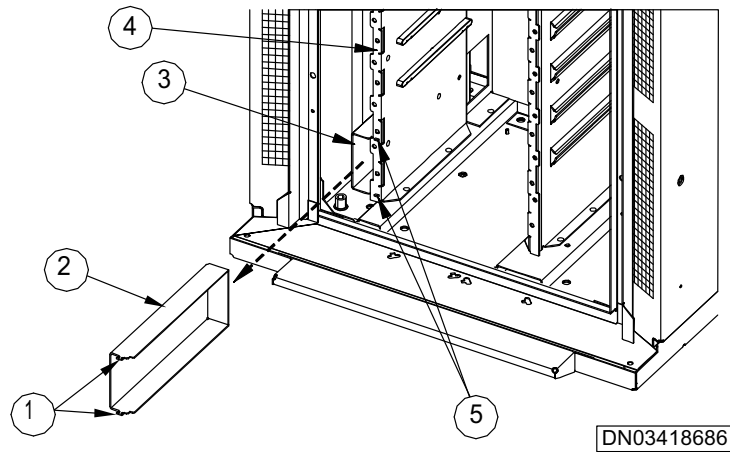
Summary

Note

The document holder is installed in the lower left corner of the CRMx cabinet for storage of papers pertaining to that particular cabinet or site.

Note

When a M2xA unit is installed in the bottom slot of the cabinet, the document holder cannot be installed.



1	Document holder front tabs
2	Document holder removed
3	Document holder installed
4	Cabinet CORE_sub_assy
5	Cabinet core front side holes

Figure 50. Document holder installation



Steps

1. **Position the document holder in front of the lower left corner of the cabinet and slide it between the unit mounting supports.**
2. **Hook the tabs of the document holder into the slots provided in the right side unit mounting support.**

Apply a little pressure to the document holder so the front tabs align with the cabinet core front side holes.

6.4 Installing optional cabinet kits of outdoor UltraSite EDGE BTS

6.4.1 Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet

Before you start

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

Note

Nokia recommends that you install the antenna box on top of the Outdoor cabinet before you install any other components of the OAKA.

Mount the cabinet filter kit after installing the Outdoor Application kit (OAKx).

Summary

This overview describes how to install the following optional kits of Outdoor UltraSite EDGE BTS:

- Antenna box extension: This is an optional component of the Outdoor Application kit (optional with OAKA and not used with OAKC).
- Cabinet filter kit (OFKA or OFKC): The *OFKx* is used for BTS operation in environments with excessive dust, sand, or saltwater spray.
- Bridge kit: The *bridge kit* provides a protected channel for inter-cabinet cables routed between adjoining UltraSite EDGE BTS Outdoor cabinets.
- Cable entry kit (OEKx): The *OEKx* is a cable entry kit that provides a protected channel for inter-cabinet cables routed between adjoining BTSs.

- MIDI to Talk Bridge kit (OBKB): The *OBKB* is a bridge kit for the roof assembly when Co-siting the UltraSite EDGE Midi Outdoor Base Station cabinet with a Citytalk cabinet. The Midi to Talk bridge kit provides a protected channel for inter-cabinet cables routed between adjoining Citytalk - UltraSite Midi Outdoor cabinets.
- Co-Siting Outdoor Application Kit (OAKB)—The *OBKB* is similar to the standard UltraSite Outdoor Application Kit (OAKA), except that the co-siting version replaces one of the side walls with a co-siting side wall and provides a new co-siting cable entry for the roof assembly.



Steps

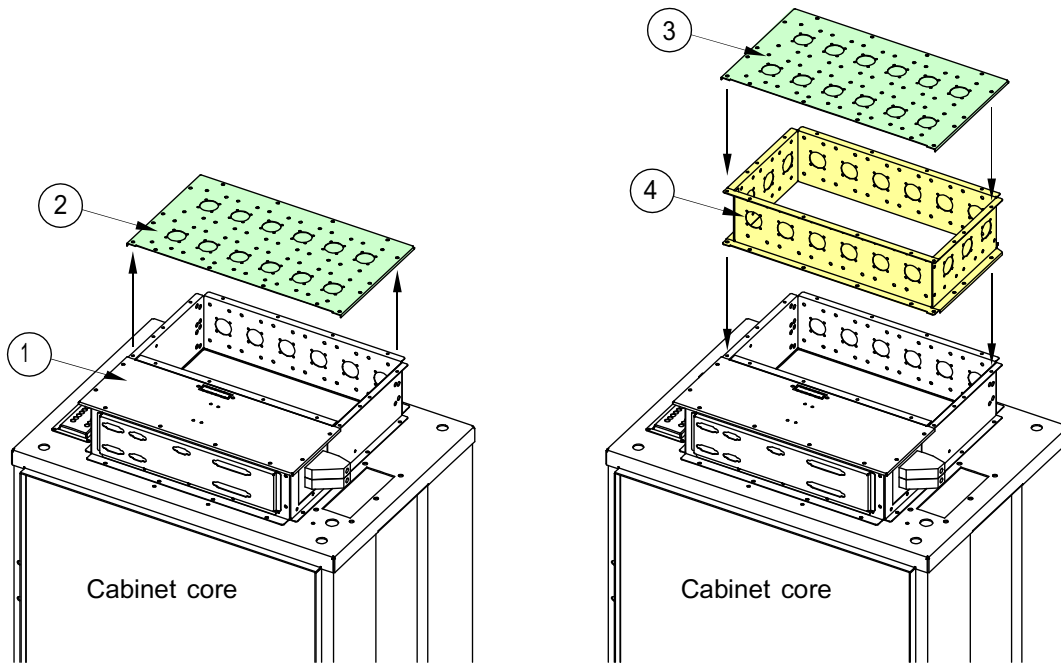
1. **Install the Antenna box extension.**
2. **Install the Cabinet Filter kit.**
3. **Install the Bridge kit of outdoor UltraSite EDGE BTS.**
4. **Install the cable entry kit (OEKx).**
5. **Install the MIDI to Talk Bridge kit.**
6. **Install the co-siting Outdoor Application kit.**

6.4.2 Installing the Antenna box extension of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

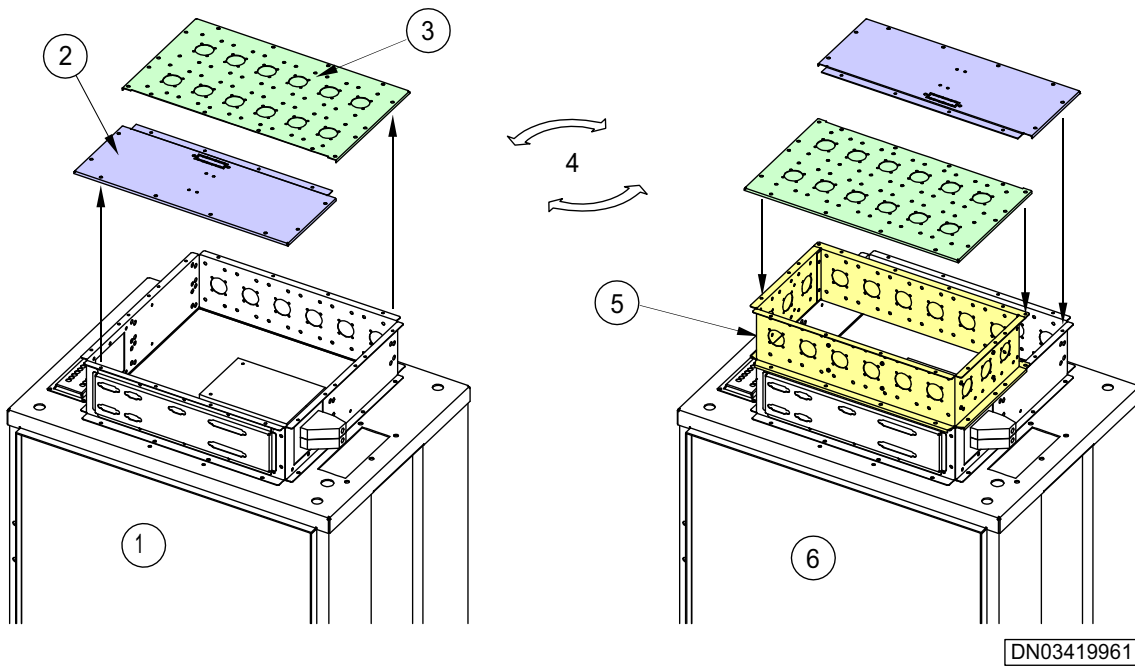
Summary



DN03419034

1	Front cover
2	Rear cover
3	Rear cover
4	Antenna box extension

Figure 51. Installation of the antenna box extension



1	Cabinet core
2	Front cover
3	Rear cover
4	Rotate components
5	Antenna box extension
6	Cabinet core

Figure 52. Rotation of antenna box covers



Steps

- 1. Remove the rear antenna box cover by removing the sixteen 8 mm M4 screws that secure it to the antenna box.**
- 2. If rotation of the covers is required, remove the front antenna box cover by removing the eight M4x8 screws that secure it to the antenna box.**

3. **If the front antenna box cover has been removed, rotate the cover 180°, and reinstall using the screws you removed in step 2.**

4. **Position the antenna extension on the top of the antenna box and secure with sixteen 8 mm M4 screws.**

See Torque settings.

5. **Install the rear antenna box cover using the sixteen 8 mm M4 you removed in step 1.**

See Torque settings.

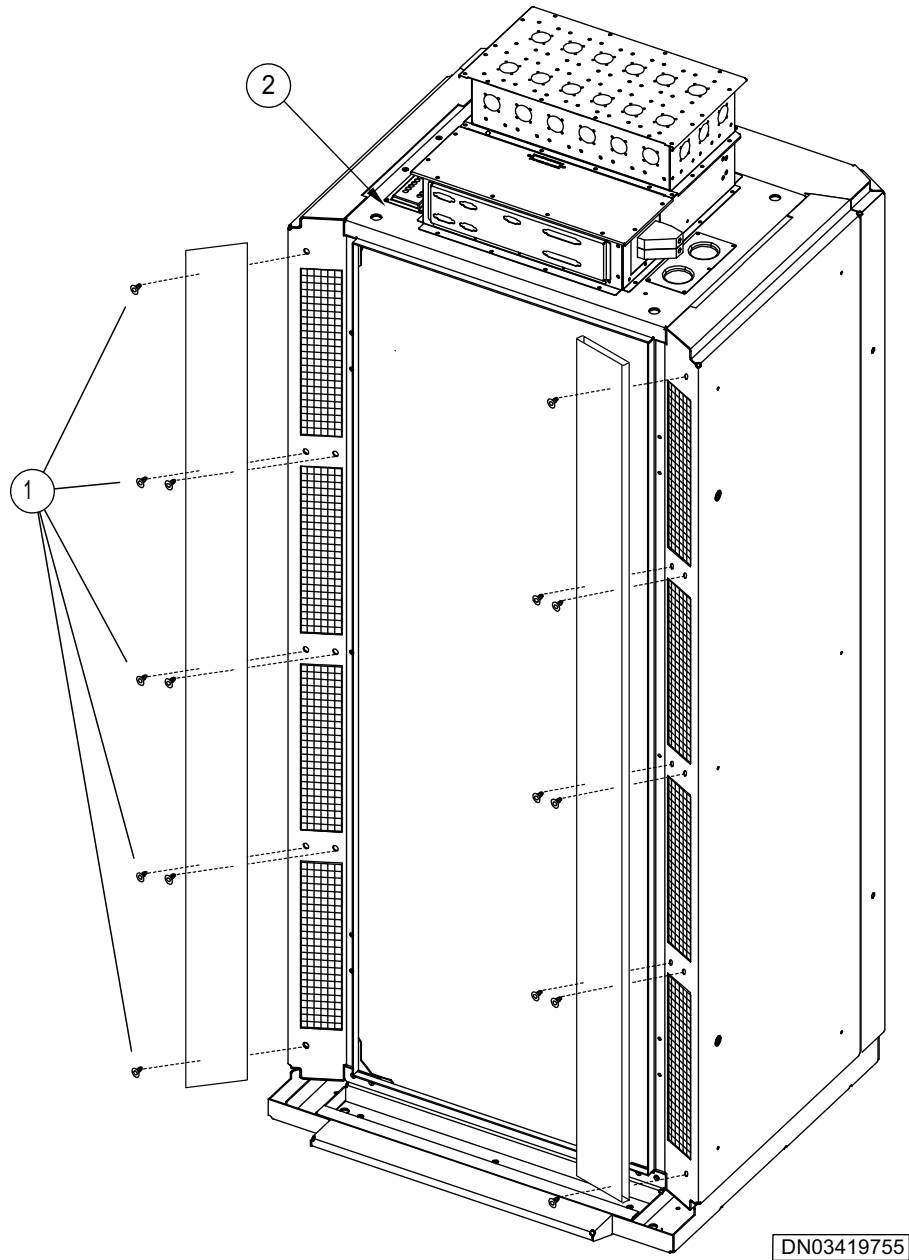
6.4.3 **Installing the cabinet filter kit (OFKx) of UltraSite EDGE BTS outdoor cabinet**

Before you start

Review the *Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet*.

Summary

The *OFKx* is used for BTS operation in environments with excessive dust, sand or saltwater spray. The *OFKx* kit consists of two filter elements mounted externally over the front air intakes of each *OAKx* side wall.



DN03419755

1	Plastic fasteners (8 per side)
2	OAKA with OAKB installed

Figure 53. OFKx Filter Kit installation

**Steps**

1. Unroll the filter material from packaging.

2. Install filter.

Place the filter over the air intake on either OAKx side wall and secure with self tapping screws in the locations shown (newer version cabinets have pre-drilled holes and use plastic trim fasteners in place of screws).

3. Repeat steps 1 and 2 on opposite side wall.

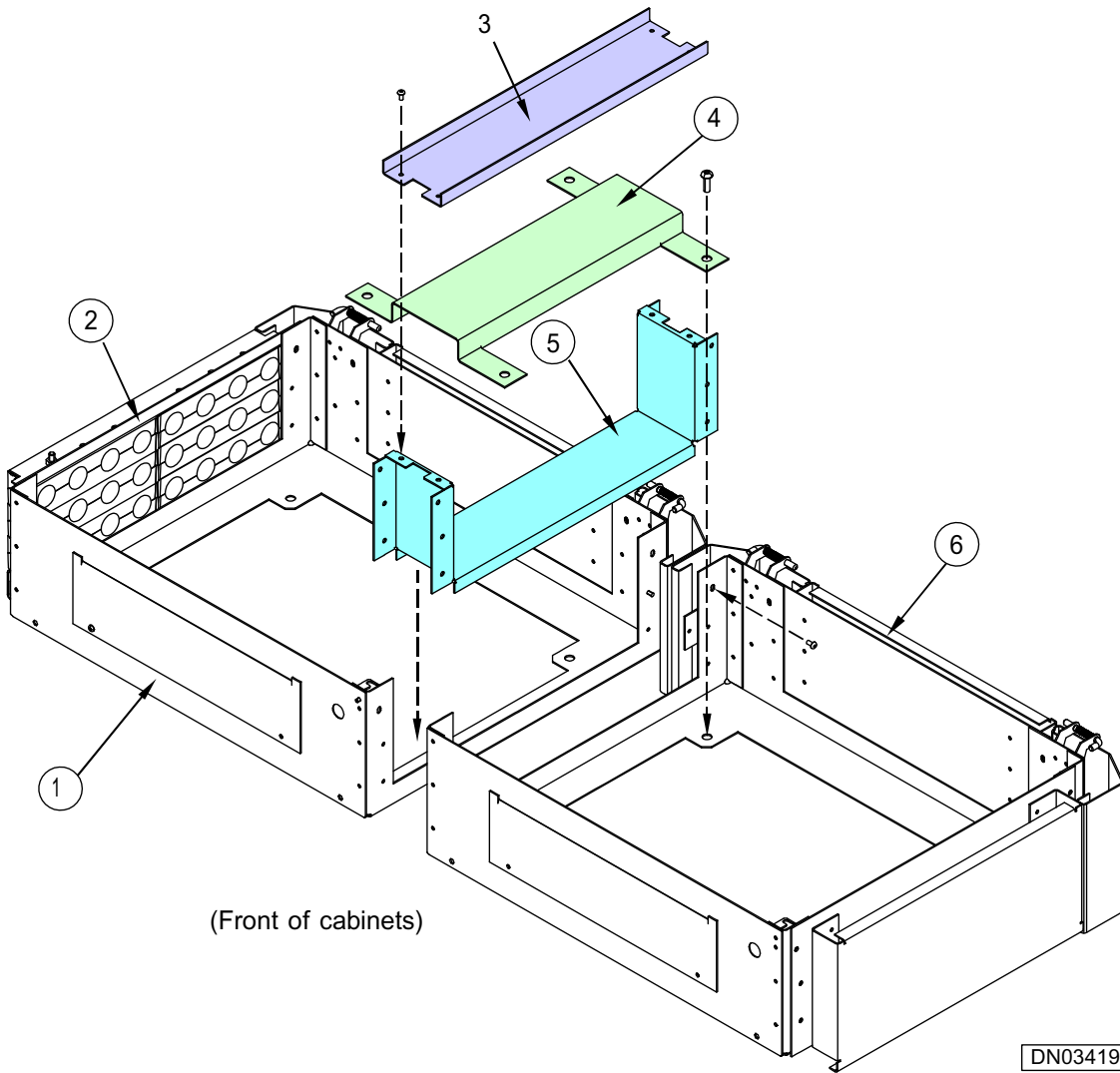
6.4.4 Installing the Bridge kit of outdoor UltraSite EDGE BTS

Before you start

Review the *Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet*.

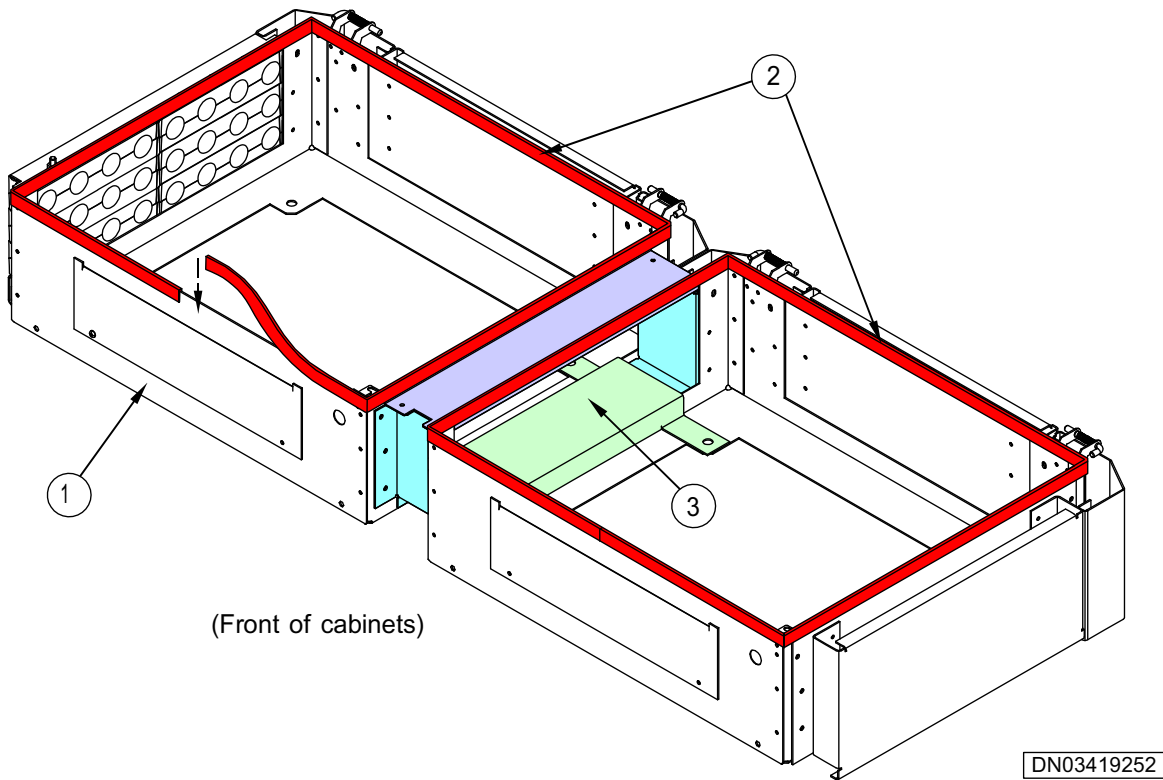
Summary

The bridge kit provides a protected channel for inter-cabinet cables routed between adjoining UltraSite EDGE BTS Outdoor cabinets.



1	Roof support
2	Cable entry
3	Bridge cover
4	Bridge support
5	Bridge
6	Dummy cable entry

Figure 54. Installing the bridge kit



1	Roof support
2	Rubber gasket strip applied along top edge of roof support
3	Bridge assembly

Figure 55. Installing the rubber gasket strip



Steps

1. **Remove the roof on both cabinets.**
2. **On both cabinets, remove the rubber gasket strip from the top edge of the roof support walls.**

3. **Remove adjacent dummy cable entry panels from both roof support assemblies (M5) screws, three on each panel end).**

4. **Position the bridge and secure with the M5 screws removed in step 3.**

See Torque settings.

5. **Remove four M12 screws from adjacent sides of roof assembly.**

6. **Position the bridge support and secure with the four M12 screws.**

See Torque settings.

Note

Route cables before you install the bridge cover.

7. **Position the bridge cover and secure with four M5 screws.**

See Torque settings.

8. **Replace the rubber gasket strip on the top edge of the roof support walls.**

9. **Install the roof on both cabinets.**

6.4.5 Installing the co-siting Cable Entry kit of outdoor UltraSite EDGE BTS

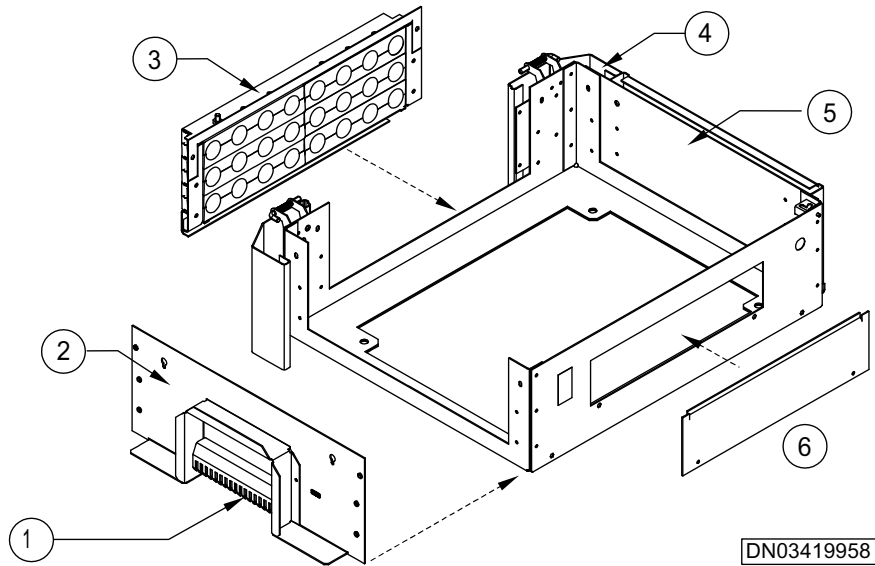
Before you start

Ensure that the site is ready for installation of optional kits. Refer to the *Overview of installing optional kits of outdoor UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

UltraSite co-siting cable entry mounts on the side adjacent to the Citytalk cabinet. If the Citytalk is located to the right of the UltraSite, the cover plate on the right side must be moved to the left side of the roof assembly before you install the cable entry.

Summary



1	Wiring tie-down points
2	UltraSite co-siting cable entry
3	UltraSite cable entry
4	Roof support
5	Dummy cable entry
6	External interface cover panel

Figure 56. Roof assembly



Steps

1. **Mount the UltraSite co-siting cable entry on the side of the roof assembly.**
2. **To provide installation access, remove the external interface cover panel and set it aside.**

6.4.6 Installing the Midi to Talk Bridge (OBKB) of UltraSite EDGE BTS outdoor cabinet

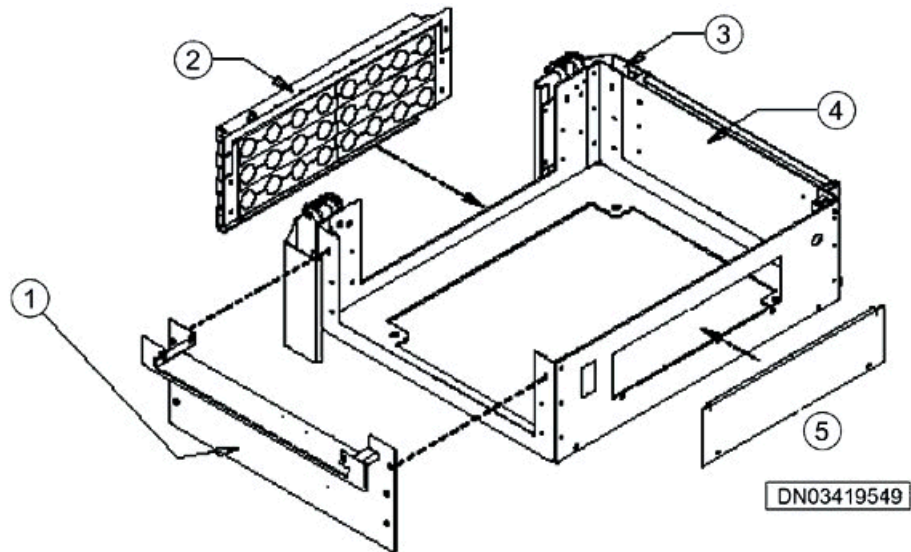
Before you start

Review the *Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary

The OBKB is a bridge kit for the roof assembly when co-siting the UltraSite EDGE Midi Outdoor Base Station cabinet with a Citytalk cabinet.

The Midi to Talk bridge kit provides a protected channel for inter-cabinet cables routed between adjoining Citytalk - UltraSite Midi Outdoor cabinets.



1	Midi to Talk bridge
2	Cable interface
3	Roof support assembly
4	Dummy cable panel
5	Cover

Figure 57. Midi to Talk Bridge (OBKB)



Steps

1. **Remove the cabinet roofs of both cabinets.**
2. **On both cabinets, remove the rubber gasket strip from the top edge of the roof support walls.**
3. **Remove adjacent dummy cable entry panels from both roof support assemblies.**
4. **Position the bridge and secure with the screws.**
5. **Route cables before installation of the bridge cover.**
6. **Position the bridge cover and secure with screws.**
7. **Replace the rubber gasket strip on the top edge of the roof support walls.**

6.4.7 Installing the co-siting Outdoor Application kit (OAKB) of UltraSite EDGE BTS

Before you start

Review the *Overview of installing optional kits of UltraSite EDGE BTS outdoor cabinet*. Pay careful attention to all warnings and cautions.

Summary



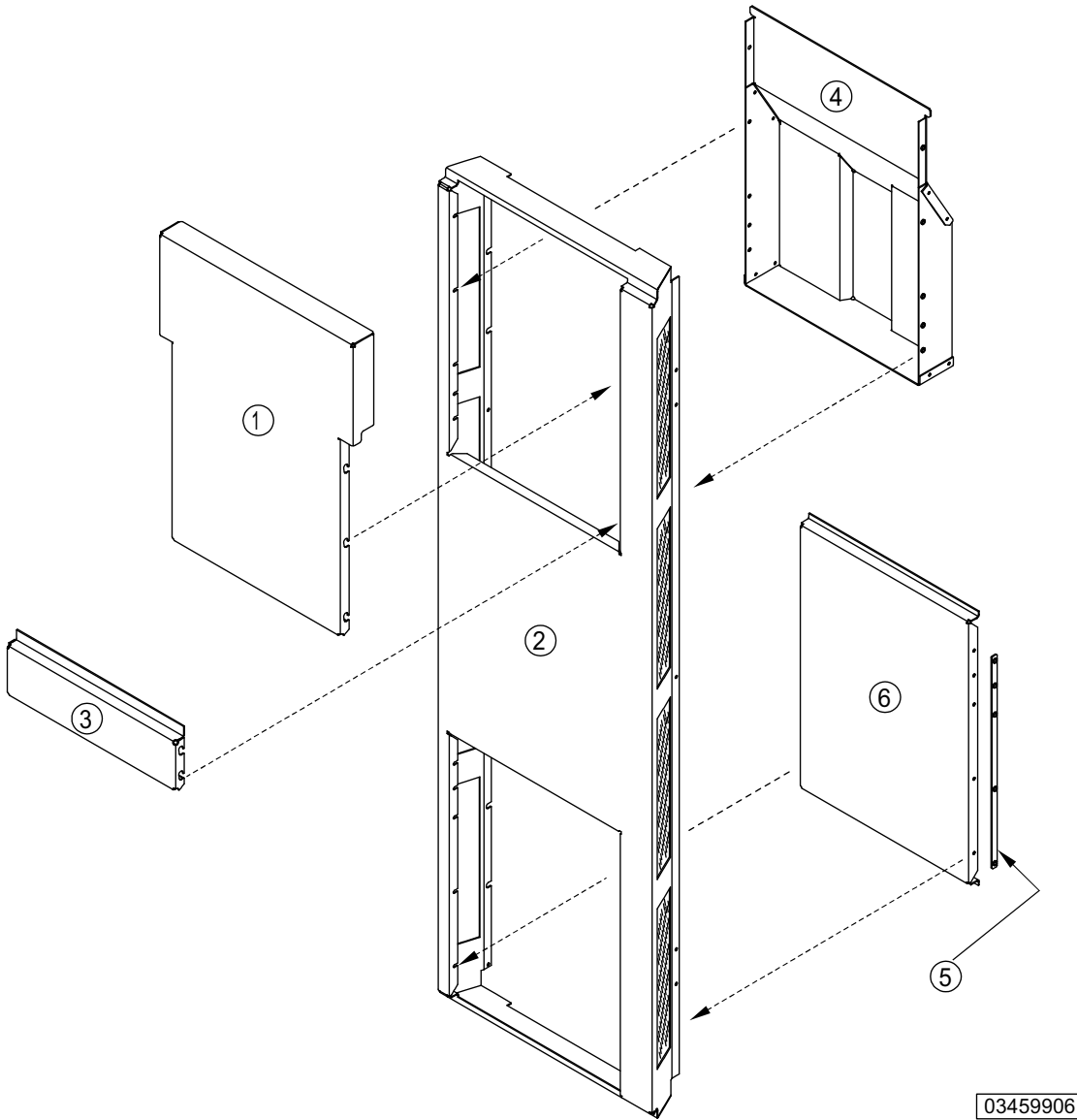
Caution

When routing power cables, adhere to national, state and local regulations.

Note

When only sync and/or DC power cables run between cabinets, the cabinets do not need to be adjacent. This section only applies to installations of adjacent cabinets. For non-adjacent cabinets, route sync and backup power cables through the normal cable entry assembly.

The *OAKB* is similar to the standard UltraSite Outdoor Application Kit (*OAKA*), except that the co-siting version replaces one of the side walls with a co-siting side wall and provides a new co-siting cable entry for the roof assembly.



1	Cover
2	Side wall

3	Trim panel
4	Channel
5	Thread bar (2 places)
6	Dummy panel

Figure 58. Co-siting Side Wall



Steps

1. **Install the back wall.**
2. **Install the door frame.**
3. **Install the roof.**
4. **Install the door switch.**
5. *If your site plan positions the Citytalk adjacent to the UltraSite's right side, Then*

Modify the co-siting wall for mounting on the right.

- a. Loosen the screws that secure the channel to the side wall.
 - b. Slide the channel out of the slots on the side flanges.
 - c. Loosen the screws that secure the dummy panel and thread bars to the side wall. Ensure that the thread bars remain attached.
 - d. Slide the dummy panel with the thread bars out of the slots on the side flanges.
 - e. Interchange the positions of the channel and dummy panel on the side wall.
 - f. Slide the channel into the slots on the side flanges and tighten the screws to secure the channel. See *Torque settings for UltraSite EDGE BTS*.
 - g. Slide the dummy panel with the thread bars into the slots on the side flanges and tighten the screws to secure the dummy panel and thread bars. See *Torque settings for UltraSite EDGE BTS*.
 - h. Flip the modified panel end-over-end for mounting on the right side of the UltraSite core.
6. **Install the co-siting cable entry kit.**
 7. **Install the roof support.**

- 8. Install the door.**
- 9. Install the door grounding strap.**
- 10. Install the door lock.**
- 11. Install the document holder.**

7 Cabling UltraSite EDGE BTS

7.1 Overview of cabling UltraSite EDGE BTS at a new site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.



Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

Note

Using external synchronisation, external alarms and controls (EAC), and external transmission equipment is optional.

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.



Steps

- 1. Prepare UltraSite EDGE BTS for cabling.**
- 2. Connect grounding cables.**
- 3. Connect AC power cables.**
- 4. Connect DC power cables.**
- 5. Connect synchronisation cables.**
- 6. Cable GSM/EDGE units.**

7.2 Overview of cabling UltraSite EDGE BTS at an existing site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.

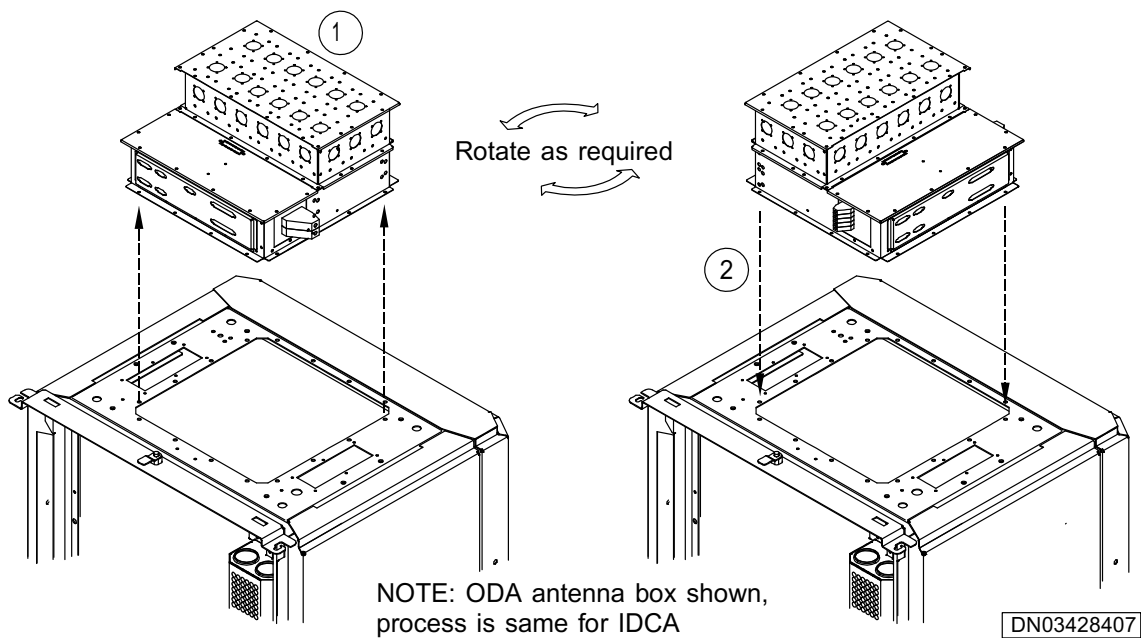


Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.

Rotate and relocate the cabinet interfaces of Nokia UltraSite EDGE BTS as required. Depending on the site configuration, you can route antenna feeder cables to the left, right, or back of the cabinet, as required.



1	Remove antenna box
2	Re-install antenna box

Figure 59. Rotating the antenna box



Steps

- 1. Remove the 16 screws around the antenna box.**

2. **Lift the antenna box and rotate the box 90° or 180° clockwise or counterclockwise as required.**
3. **Align the antenna box with the 16 mounting holes.**
4. **Install the screws in the 16 mounting holes, and tighten them until the antenna box is secured to the cabinet core.**
5. **Prepare UltraSite EDGE BTS for cabling.**
6. **Connect grounding cables.**
7. **Connect AC power cables.**
8. **Connect DC power cables.**
9. **Connect synchronisation cables.**
10. **Cable GSM/EDGE units.**

7.3 Overview of cabling UltraSite EDGE BTS with WCDMA upgrade at a new site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.



Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.



Steps

- 1. Prepare UltraSite EDGE BTS for cabling.**
- 2. Connect grounding cables.**
- 3. Connect AC power cables.**
- 4. Connect DC power cables.**
- 5. Connect synchronisation cables to BTS.**
- 6. Cable WCDMA units.**

7.4 Overview of cabling UltraSite EDGE BTS with WCDMA upgrade at an existing site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.

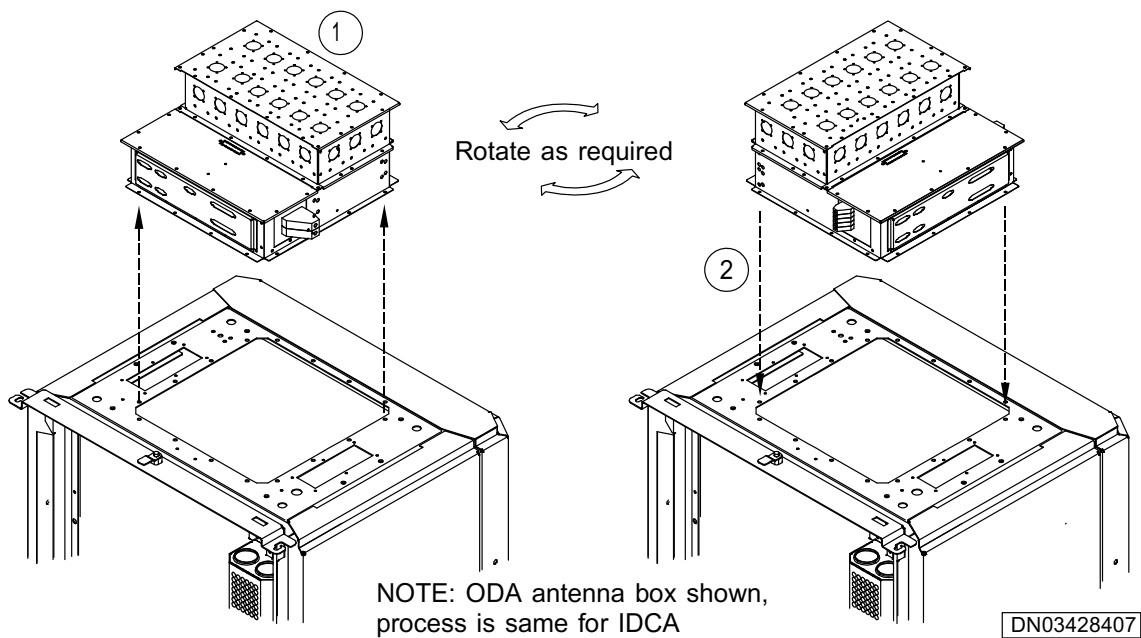


Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.

Rotate and relocate the cabinet interfaces of Nokia UltraSite EDGE BTS as required. Depending on the site configuration, you can route antenna feeder cables to the left, right, or back of the cabinet, as required.



1	Remove antenna box
2	Re-install antenna box

Figure 60. Rotating the antenna box



Steps

- 1. Remove the 16 screws around the antenna box.**

2. **Lift the antenna box and rotate the box 90° or 180° clockwise or counterclockwise as required.**
3. **Align the antenna box with the 16 mounting holes.**
4. **Install the screws in the 16 mounting holes, and tighten them until the antenna box is secured to the cabinet core.**
5. **Prepare UltraSite EDGE BTS for cabling.**
6. **Connect grounding cables.**
7. **Connect AC power cables.**
8. **Connect DC power cables.**
9. **Connect synchronisation cables to BTS.**
10. **Cable WCDMA units.**

7.5 Overview of cabling UltraSite EDGE BTS with IBBU at a new site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.



Warning

Ensure battery cable lugs do not touch each other during installation.



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.



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.

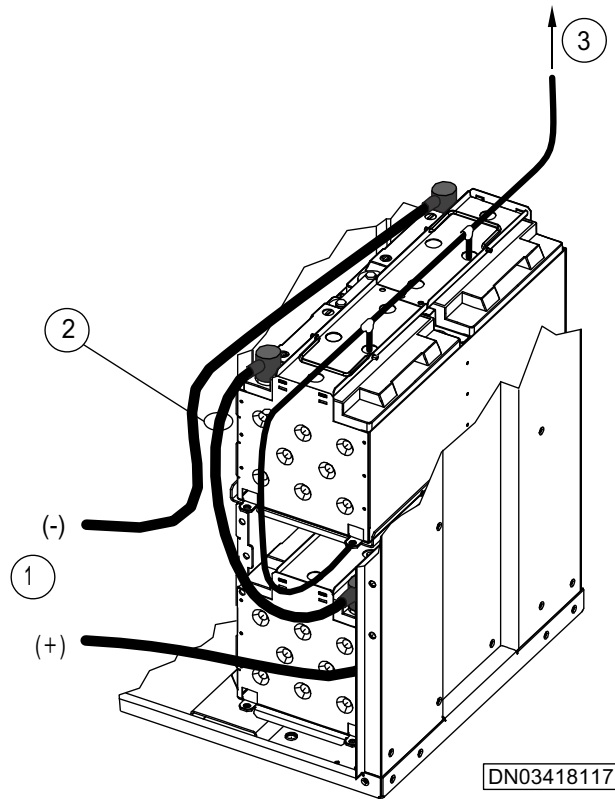


Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.

The AC Filter module is required when you install PWSA (+24VDC) units.



1	From ADUA
2	Bridge cable
3	To venting tube outlet on cabinet roof

Figure 61. Battery box connections



Steps

1. **Prepare UltraSite EDGE BTS for cabling.**
2. **Connect grounding cables.**
3. **Connect AC power cables.**

4. Connect DC power cables.
5. Connect synchronisation cables to BTS.
6. Cable GSM/EDGE units.
7. Cable IBBU units in BTS.

7.6 Overview of cabling UltraSite EDGE BTS with IBBU at an existing site

Before you start

Note

To allow for adequate clearance when using Bias Tee units, the connectors of the units must be installed prior to securing the antenna box to the cabinet core. Install Bias Tee units in accordance with *Installing a Bias Tee (BPxx) unit in UltraSite EDGE BTS*.

Note

Nokia recommends using outdoor-rated cables for the Outdoor cabinets.

Summary



Warning

Ensure battery cable lugs do not touch each other during installation.



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**

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the cabinet is properly grounded before attempting to remove any connections to the cabinet.

**Caution**

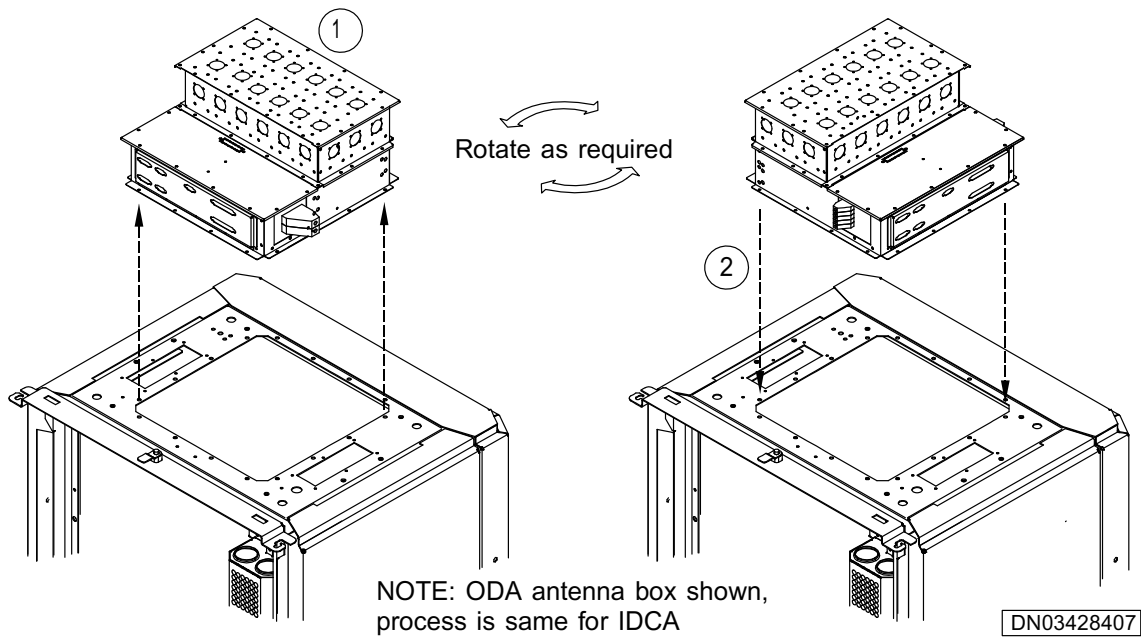
All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.

**Caution**

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

The cable sets are delivered with the units when the configuration is ordered from the factory. All cables are identified by the cable code and the cable label. During commissioning, the code and label information can be stored into a file in the BTS.

Rotate and relocate the cabinet interfaces of Nokia UltraSite EDGE BTS as required. Depending on the site configuration, you can route antenna feeder cables to the left, right, or back of the cabinet, as required.



1	Remove antenna box
2	Re-install antenna box

Figure 62. Rotating the antenna box



Steps

1. Remove the 16 screws around the antenna box.
2. Lift the antenna box and rotate the box 90° or 180° clockwise or counterclockwise as required.
3. Align the antenna box with the 16 mounting holes.
4. Install the screws in the 16 mounting holes, and tighten them until the antenna box is secured to the cabinet core.
5. Prepare UltraSite EDGE BTS for cabling.
6. Connect grounding cables.

7. **Connect AC power cables.**
8. **Connect DC power cables.**
9. **Connect synchronisation cables.**
10. **Cable GSM/EDGE units.**
11. **Cable IBBU units in BTS.**

7.7 Preparing UltraSite EDGE BTS for cabling

7.7.1 Overview of preparing UltraSite EDGE BTS for cabling

Summary



Caution

All cables connected between the interface module (Q1, Q1_SSS, etc.) and BTS units must be grounded and shielded on both ends.



Caution

Data cables over four feet in length that are installed between Outdoor cabinets must be routed through solid metal conduit (US only).

Note

Using external synchronisation, external alarms and controls (EAC), and external transmission equipment is optional.



Steps

1. **Install the cable entry block.**

2. **Prepare UltraSite EDGE BTS cable routing.**
3. *If you are co-siting an outdoor UltraSite EDGE BTS with a TalkFamily BTS,*

Then

Install CityTalk cable entry kit for UltraSite EDGE BTS.

4. *If you are cabling adjoining outdoor UltraSite EDGE BTS,*

Then

Install the Bridge kit of outdoor UltraSite EDGE BTS.

7.7.2 Preparing UltraSite EDGE BTS cable entry blocks

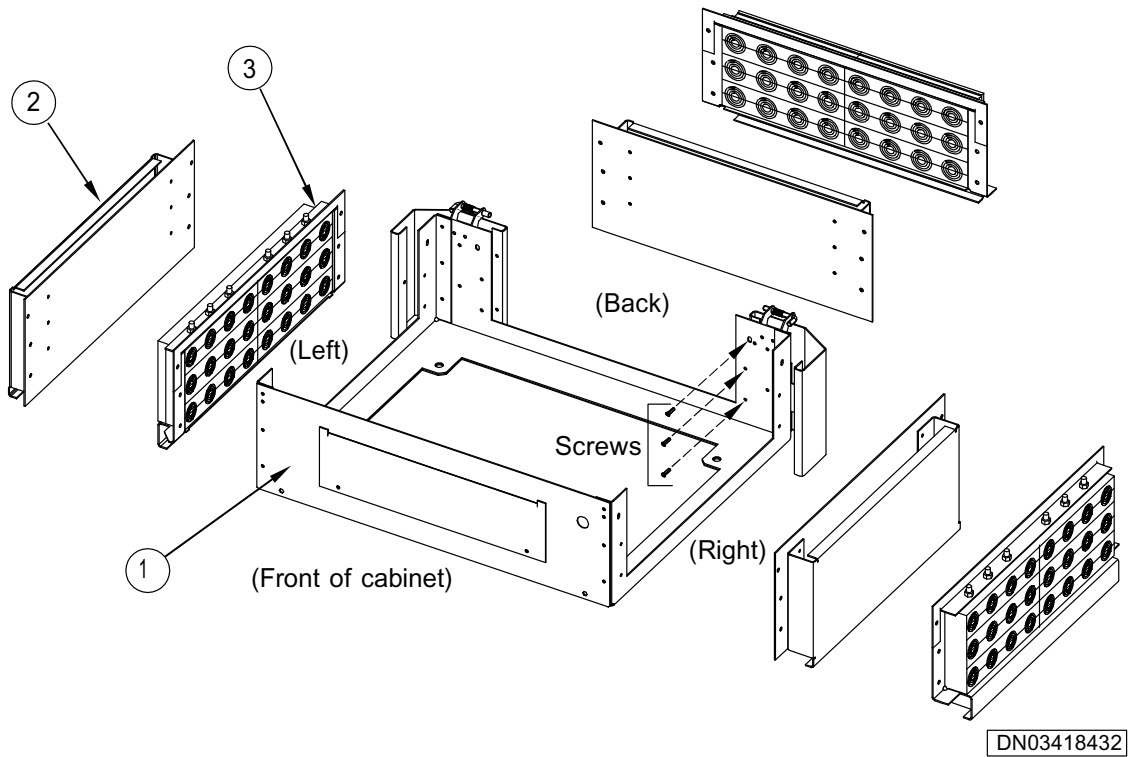
Before you start

Review the *Overview of preparing UltraSite EDGE BTS for cabling*. Pay careful attention to all Warnings and Cautions.

Summary

Use the Cable Entry Kit (OEKx) to route antenna, power, ground and signal cables. The cable entry blocks are made of elastic material and accommodate varying cable diameters.

The Cable Entry Kit is installed to the left, back or right of the Outdoor cabinet.



1	Roof support
2	Dummy cable entry
3	Cable entry

Figure 63. Cable entry block installation options



Steps

1. **Remove the rubber seal from the roof support assembly.**
2. **Remove the six screws that secure the dummy cable entry to the roof support assembly.**

The dummy cable entry is the one being replaced by the cable entry block.

3. **Remove the dummy cable entry that is being replaced.**

4. **Insert the cable entry block in the desired position.**
5. **Align the mounting holes of the cable entry assembly with the mounting holes in the roof support assembly.**
6. **Replace the six screws, and then tighten the cable entry block into position in the roof support assembly.**
7. **Replace the rubber seal on the roof support assembly.**

7.7.3 Preparing UltraSite EDGE BTS cable routing

Before you start

Review the *Overview of preparing UltraSite EDGE BTS for cabling*. Pay careful attention to all Warnings and Cautions.

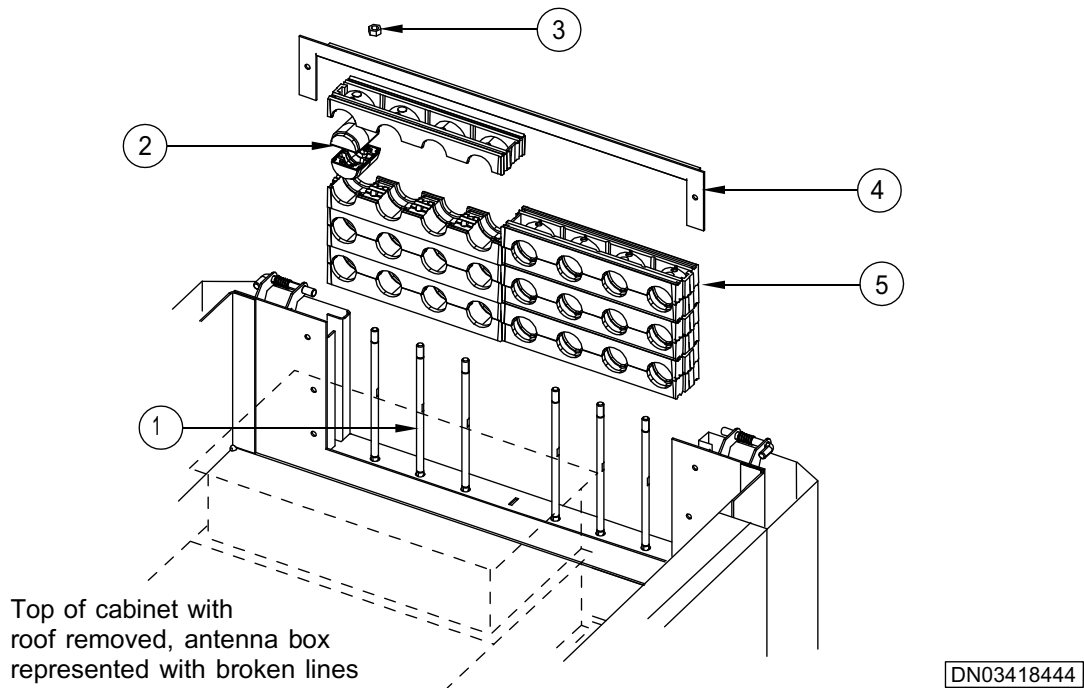
Summary



Caution

When removing bushing material from the cable entry block bushings, ensure the remaining bushing material forms a tight seal around the entire circumference of the cable.

Use the following figure as a guide to locate the Cable Entry Kit components referenced in this procedure.



1	Captive bolt (six places)
2	Cable bushing (24 pairs)
3	Nut (six places)
4	Cable entry bracket
5	Cable entry blocks (six pairs)

Figure 64. Cable Entry Kit components



Steps

1. **Remove the rubber seal from the roof support assembly.**
2. **Remove the two screws that secure the cable entry bracket to the roof support assembly.**
3. **Remove the six nuts from the exposed ends of the captive bolts.**

4. **Remove the cable entry bracket from the top of the six cable entry block captive bolts.**
5. **Remove the cable entry blocks as required.**

Modify the bushing to feed cables through the desired cable entry holes.
6. **Repeat steps 4 and 5 for additional cable entries.**
7. **Route the antenna, power, ground and signal cables.**
8. **Replace the cable entry blocks over the cables.**
9. **Slide the cable entry bracket over the top cable entry block and align it with the captive bolts.**
10. **Replace and tighten the six nuts over the exposed ends of the captive bolts.**
11. **Replace the two screws that secure the cable entry bracket to the roof support assembly.**
12. **Ensure that the cable entry bracket is level with the roof support assembly.**
13. **Replace the rubber seal on the roof support assembly.**

7.8 Connecting grounding cables to UltraSite EDGE BTS

7.8.1 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.**

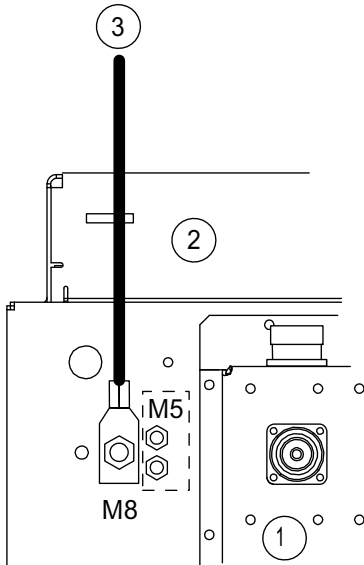
7.8.2 Connecting the grounding cable for a standard installation of UltraSite EDGE BTS

Before you start

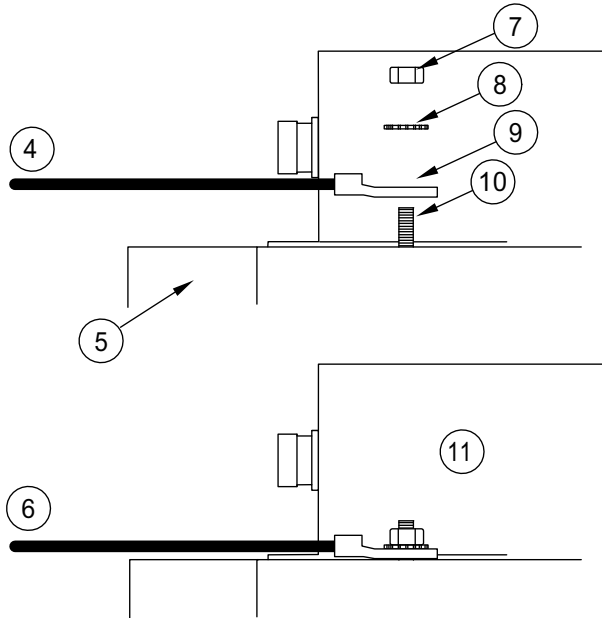
Review the *Overview of connecting grounding cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

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 65. 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.

7.8.3 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

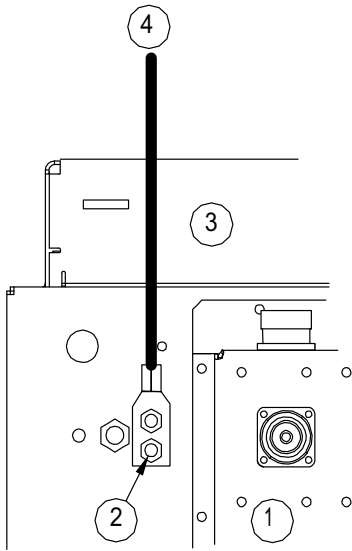
Note

For NEBS installations, use a two-hole compression lug to connect the ground conductor to the two M5 cabinet ground studs.

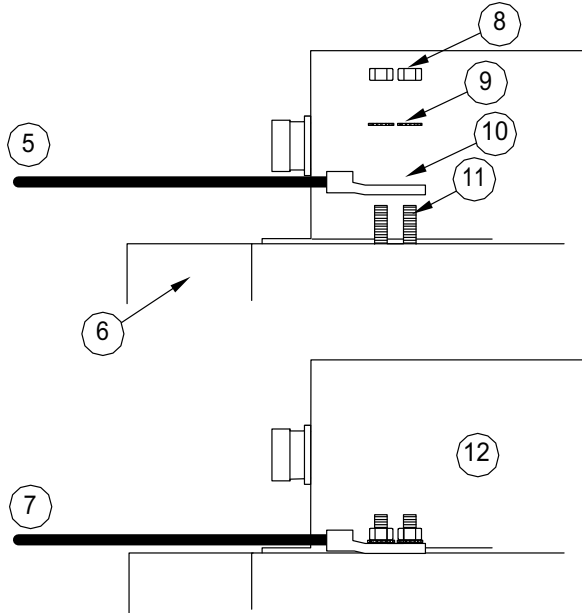
Note

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 66. 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.

7.9 Connecting AC power cables to UltraSite EDGE BTS

7.9.1 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

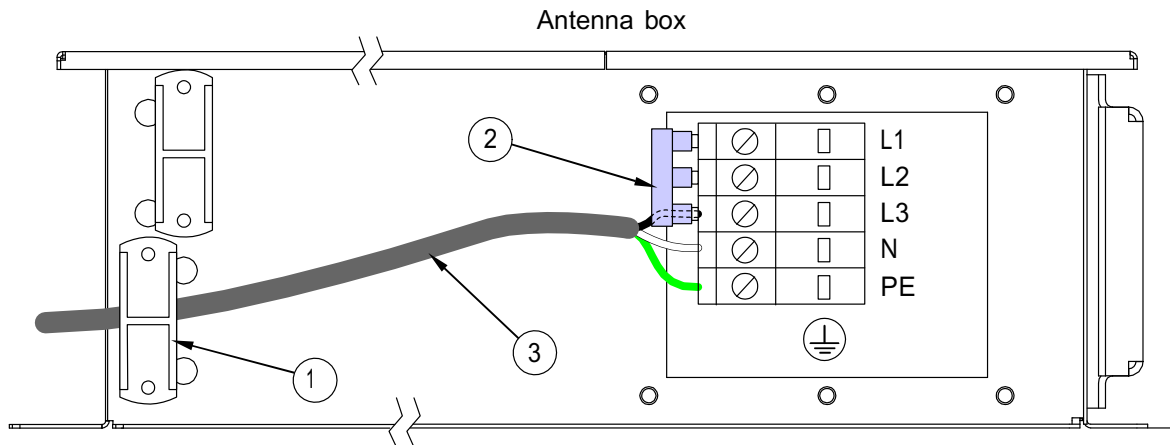
Follow these instructions.

7.9.2 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 67. 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 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. **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.

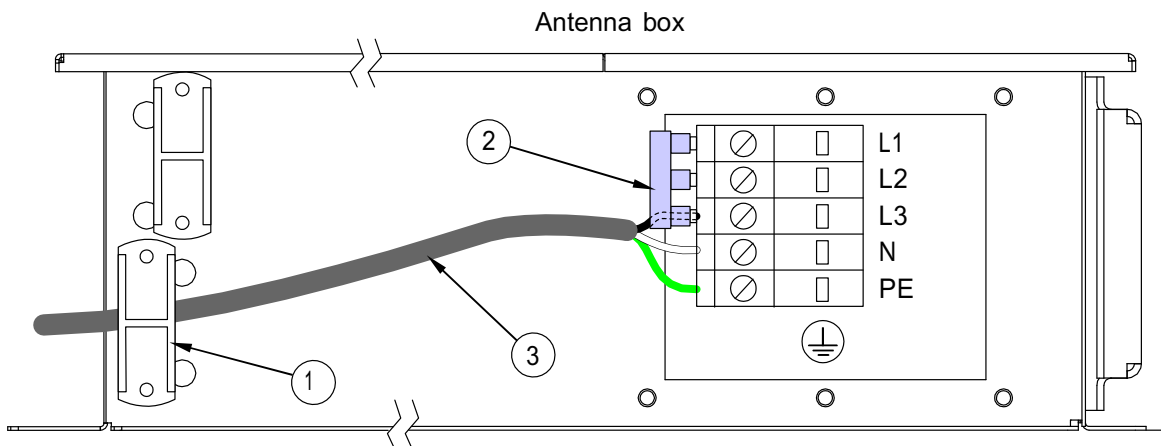
See *Torque settings of UltraSite EDGE BTS*.

7.9.3 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 68. 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 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. 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.

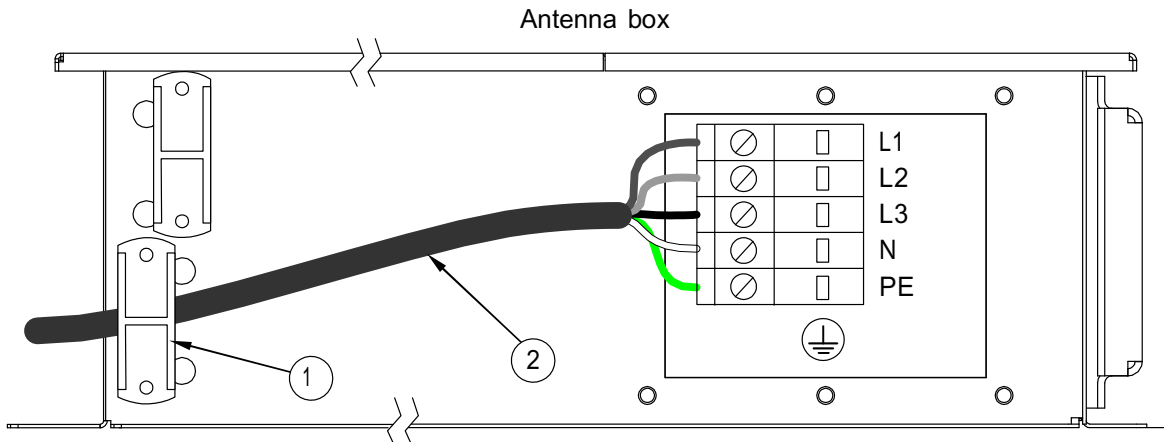
See *Torque settings of UltraSite EDGE BTS*.

7.9.4 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 69. 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.

7.10 Connecting DC power cables to UltraSite EDGE BTS

7.10.1 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.**

7.10.2 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.

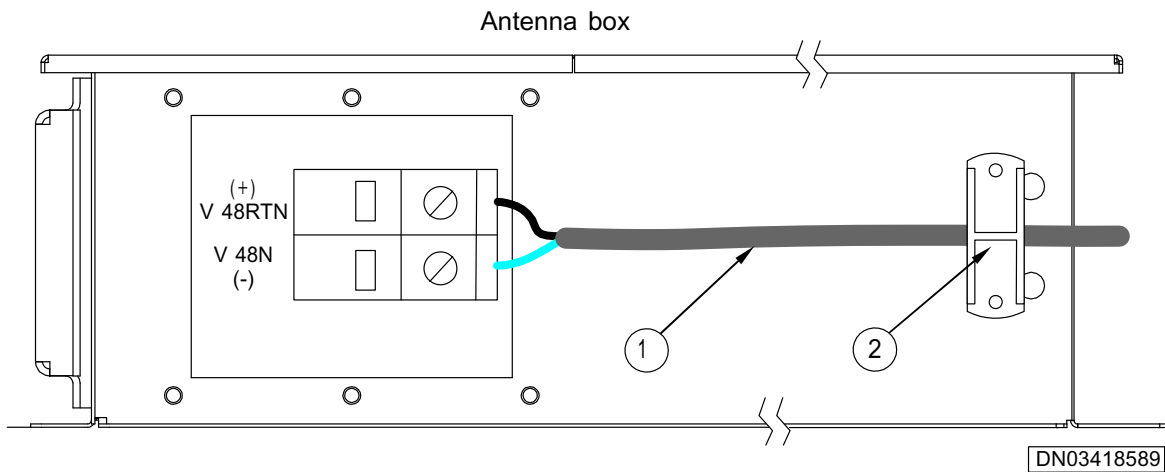
Summary



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 70. 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*.

7.10.3 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.

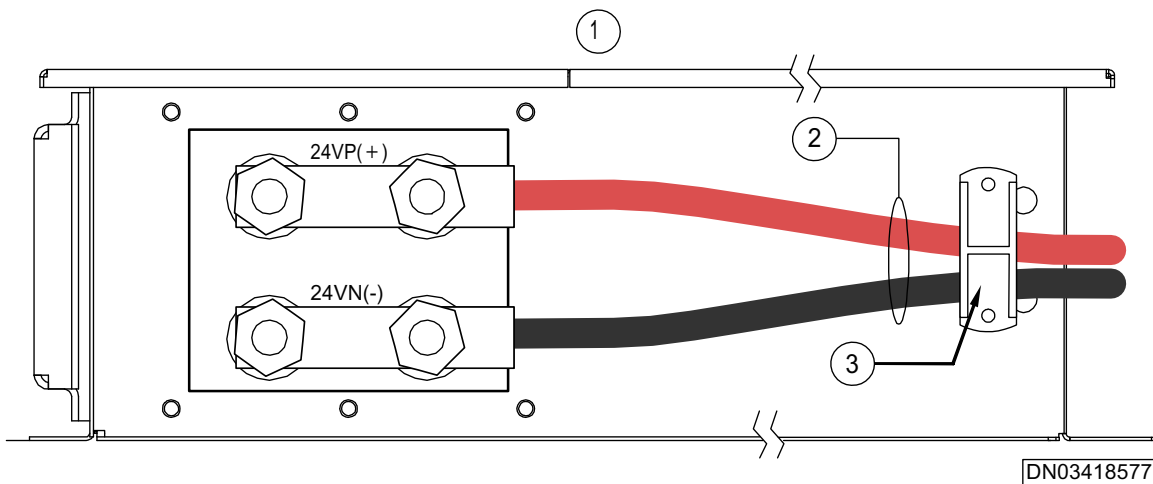
Note

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

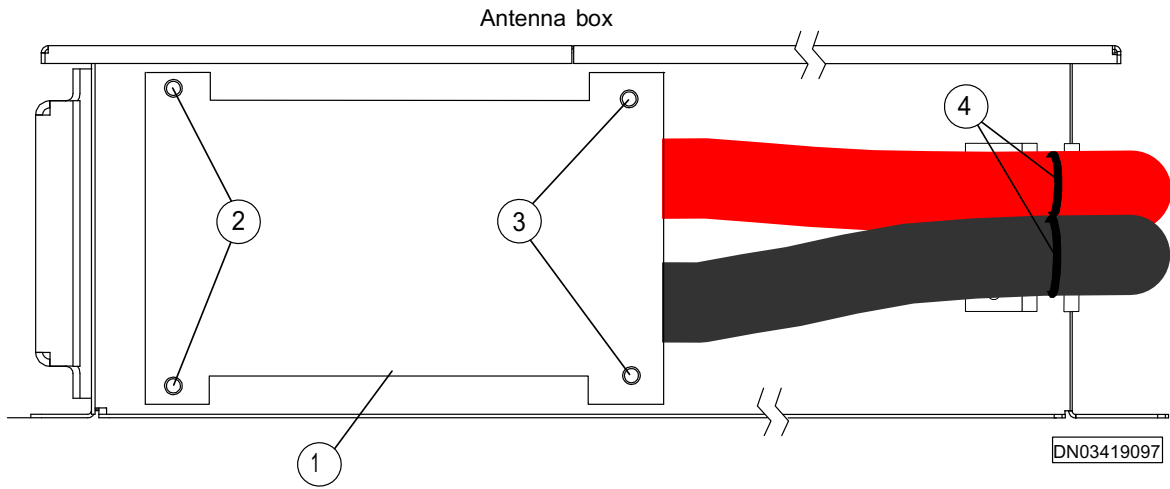
The NEMA two-hole compression lugs that are required for power connections, and all required additional hardware, are included as part of the FIKA Installation Kit.

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.



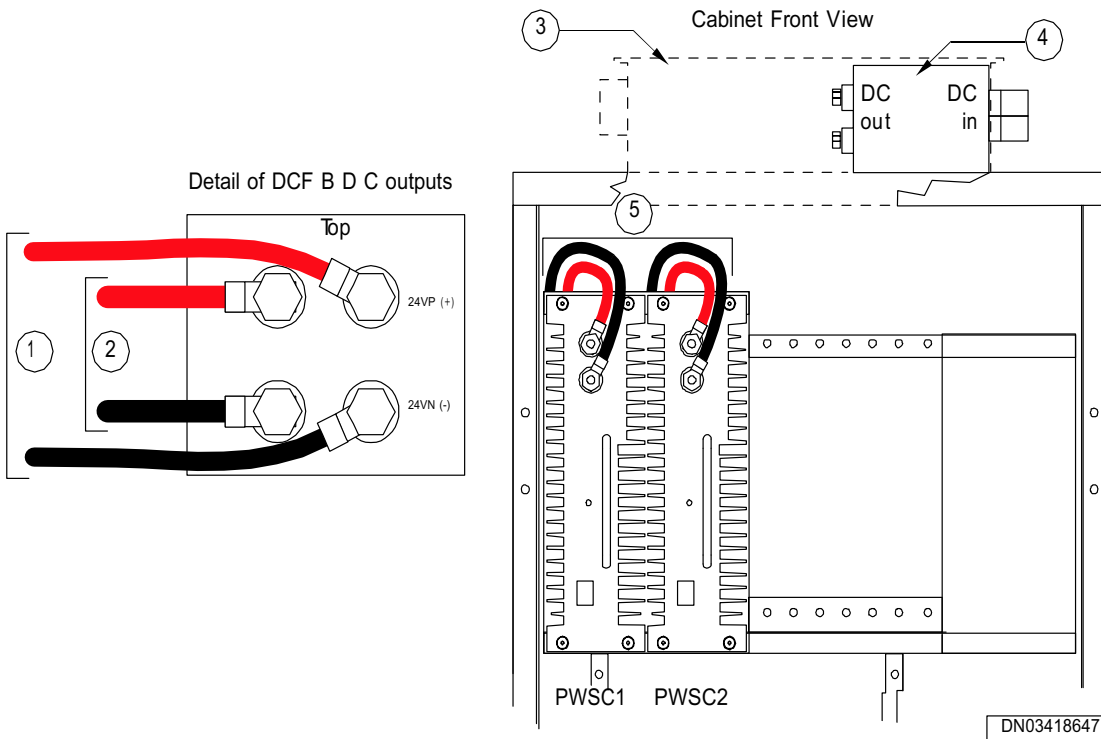
1	Antenna box
2	DC Power input cables
3	Strain relief

Figure 71. Connecting +24 VDC power to the BTS



1	Terminal Cover
2	M4x12 Screws
3	M4 Nuts
4	Tie Wraps

Figure 72. Installing the DCFB terminal cover



1	To PWSC 2
2	To PWSC 1
3	Antenna box
4	DCFB
5	To DCFB DC out

Figure 73. 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.**

7.11 Connecting DC power cables from UltraSite EDGE BTS

7.11.1 Connecting DC power cables from UltraSite EDGE BTS with IBBU

Before you start

Review the *Overview of connecting DC power cables to UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

To install a BTS with IBBU, you must connect together the DCFB units in the adjacent BTS cabinets using DC power cables.

Cables of the correct length have to be made and installed on site. The maximum cross-section of the cable used to connect the DC terminal block is 50 mm² (flexible stranded #0 AWG). The minimum cable cross-section is 16 mm² (flexible stranded #5 AWG). The dimension of the cable cross-section must meet national, state and local regulations.

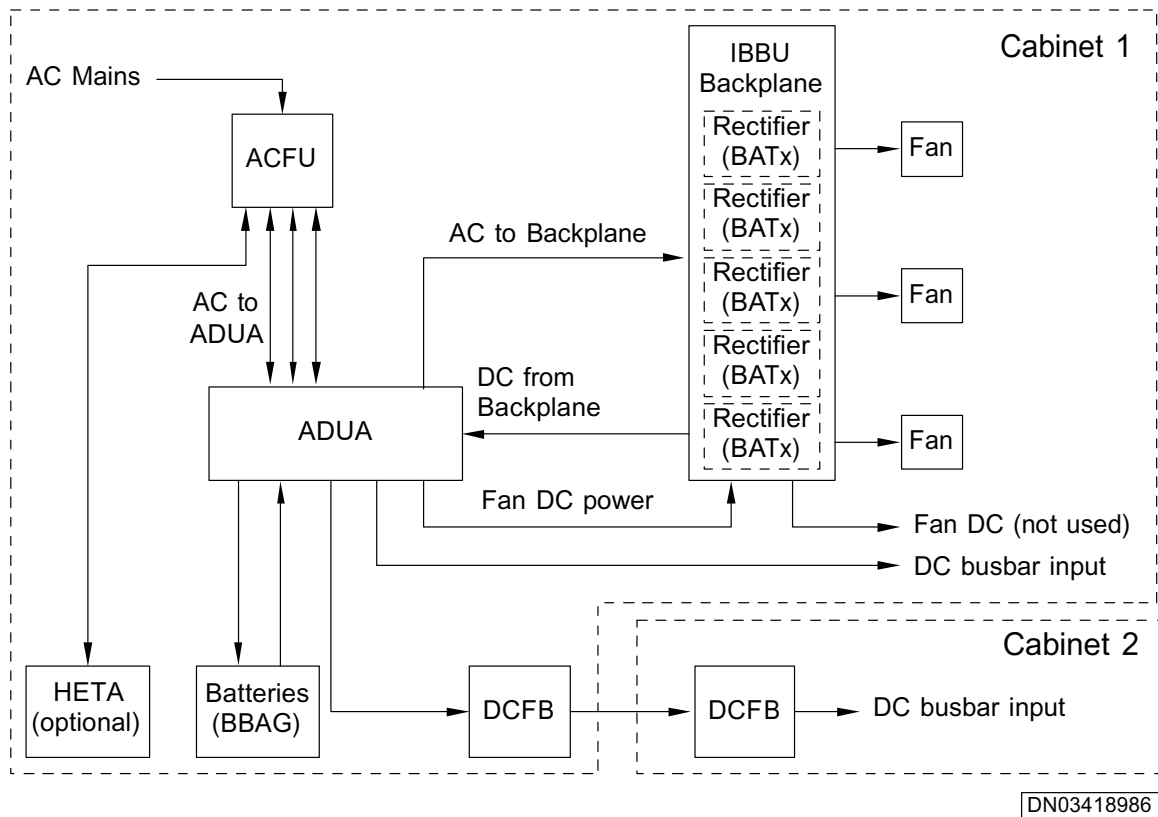


Figure 74. IBBU block diagram



Steps

1. Turn the screws to the left to open the DC Out+ and the DC Out-connector terminals of the BTS with IBBU.
2. Insert the blue [-] wire into the DC Out- connector and turn the screw to the right to close the connector.
3. Insert the black [+] wire into the DC Out+ connector and turn the screw to the right to close the connector.
4. Install the cable ends in the lugs of the DCFB input of the other UltraSite EDGE BTS.

See Torque settings of UltraSite EDGE BTS.

7.12 Preparing site support for installation of UltraSite EDGE BTS co-site with Talk-family BTS

7.12.1 Overview of preparing site support for installation of UltraSite EDGE BTS co-site with Talk-family BTS

Summary

Preparation of the site support for co-siting applications is dependent on the requirement to minimise downtime, as well as the support configuration. There are three possible approaches for providing site support:

- Adding an UltraSite EDGE BTS without changing the existing support cabinet
- Adding a support cabinet for the UltraSite EDGE BTS, or using an UltraSite EDGE BTS with IBBU, and leaving the existing support cabinet to supply the Talk-family BTS
- Replacing the existing support cabinet with a new one

Note

Refer to the applicable Nokia documentation for the site support configuration you are using.



Steps

1. **Prepare site support for UltraSite EDGE BTS co-site with Talk-family BTS with down-time consideration**
2. **Prepare site support for UltraSite EDGE BTS co-site with Talk-family BTS without down-time consideration**

7.12.2 Preparing site support for UltraSite EDGE BTS co-site with Talk-family BTS with down-time consideration

Before you start

Refer to *Overview of preparing site support for installation of UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. *If preparing support when adding an UltraSite EDGE BTS without changing existing support*

Then

Follow these steps:

- a. Ensure that circuit distribution fuses for the UltraSite BTS are OFF.
- b. Install power and ground cables to the UltraSite BTS and wire them to the existing site support cabinet.
- c. Connect cables to the existing site support cabinet and switch circuit distribution fuses for the UltraSite BTS to ON.

2. *If preparing support when adding a support cabinet for UltraSite BTS without changing support for Talk-family*

Then

Follow these steps:

- a. Install the new support cabinet/IBBU and connect power to the UltraSite BTS.
- b. Power up the new site support cabinet and commission it.

3. *If preparing support when replacing the existing support cabinet*

Then

Follow these steps:

Note

Do not disassemble and remove the existing support cabinet.

- a. Assemble the new support cabinet.
- b. Power up and commission the new support cabinet.
- c. Power down the support cabinet and leave it waiting for “down-time START” in the *working order*.

7.12.3 Preparing site support for UltraSite EDGE BTS co-site with Talk-family BTS without down-time consideration

Before you start

Refer to *Overview of preparing site support for installation of UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.



Steps

1. *If preparing support when adding an UltraSite EDGE BTS without changing existing support*

Then

Follow these instructions:

- a. Install power and ground cables to the UltraSite BTS.
 - b. Wire power and ground cables to the existing site support cabinet.
2. *If preparing support when adding a support cabinet for UltraSite BTS without changing support for Talk-family*

Then

Follow these instructions:

- a. Install the new support cabinet/IBBU.

Refer to the applicable Nokia documentation for the site support configuration you are using.

3. *If preparing support when replacing the existing support cabinet*

Then

Follow these instructions:

- a. Remove the existing support cabinet and *replace with the new one*.

7.12.4 Planning replacement of site support with down-time consideration for UltraSite EDGE BTS co-site with Talk-family BTS

Before you start

Review *Overview of planning for UltraSite EDGE BTS installation at an existing Talk-family BTS site*. Pay careful attention to all Warnings and Cautions.

Note

Refer to the applicable Nokia documentation for the site support configuration you are using.

Note

If you are removing a Talk-family support cabinet, see the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual* for removal procedures.

Note

The new support cabinet was assembled and commissioned during the *preparation of site support*.

Refer to *Nokia UltraSite Support Product Documentation*, for more detailed instructions on replacing the existing support cabinet.

**Steps**

- 1. Power down the existing support cabinet.**
- 2. Disconnect all external cables from the existing support cabinet.**
- 3. Remove batteries and units from the cabinet, if required.**
- 4. Disassemble and remove the existing support cabinet.**
- 5. Install the new support cabinet at its site and make cable connections to the BTSs.**

7.12.5 Planning replacement of site support without down-time consideration for UltraSite EDGE BTS co-site with Talk-family BTS

Before you start

Review *Overview of planning for UltraSite EDGE BTS installation at an existing Talk-family BTS site*. Pay careful attention to all Warnings and Cautions.

Note

Refer to the applicable Nokia documentation for the site support configuration you are using.

Note

If you are removing a Talk-family support cabinet, see the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual* for removal procedures.

Note

The new support cabinet was assembled and commissioned during the *preparation of site support*.

Refer to *Nokia UltraSite Support Product Documentation*, for more detailed instructions on replacing the existing support cabinet.



Steps

1. **Disconnect all external cables from the existing support cabinet.**
2. **Remove batteries and units from the cabinet, if required.**
3. **Disassemble and remove the cabinet.**
4. **Install the new support cabinet at its site.**

7.13 Connecting synchronisation cables to UltraSite EDGE BTS

7.13.1 Connecting synchronisation cables to UltraSite EDGE BTS

Summary

The first cabinet in the synchronisation chain serves as the master. All other cabinets are slaves.

Note

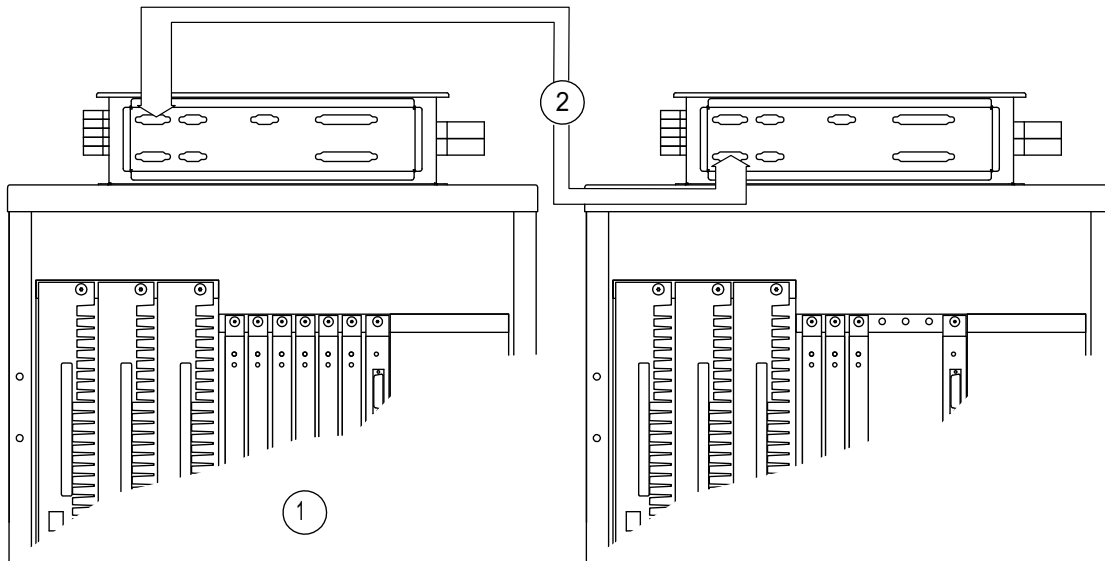
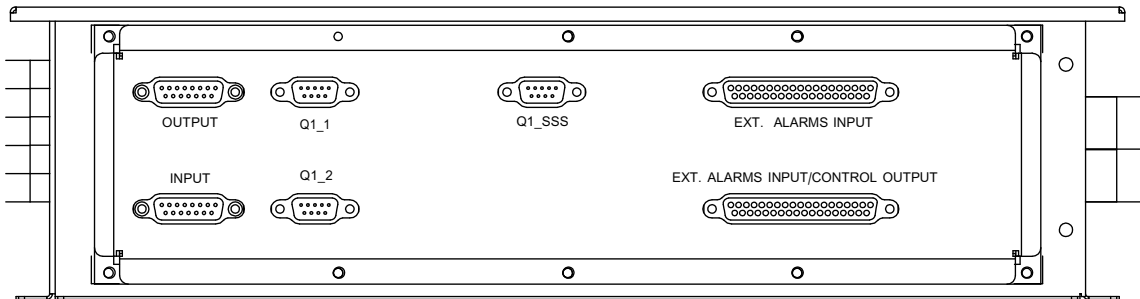
The maximum length of synchronisation cables allowed from the first to the last cabinet is 100 m (300 ft).

Note

The maximum number of cabinets that can be chained together is nine, including the master.

Note

If cabinets are using the bridge kit, route the synchronisation cables through the internal channel.



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1	Master cabinet
2	Synchronisation cable

Figure 75. Synchronising multiple cabinets



Steps

1. **Plug the synchronisation cable of the master cabinet into the connector labelled OUTPUT.**
2. **Plug the other end of the synchronisation cable into the destination cabinet connector labelled INPUT.**
3. **If required, repeat steps 1 and 2 to chain additional slave cabinets.**

8

Installing the units of UltraSite EDGE BTS

8.1 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.

8.2 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

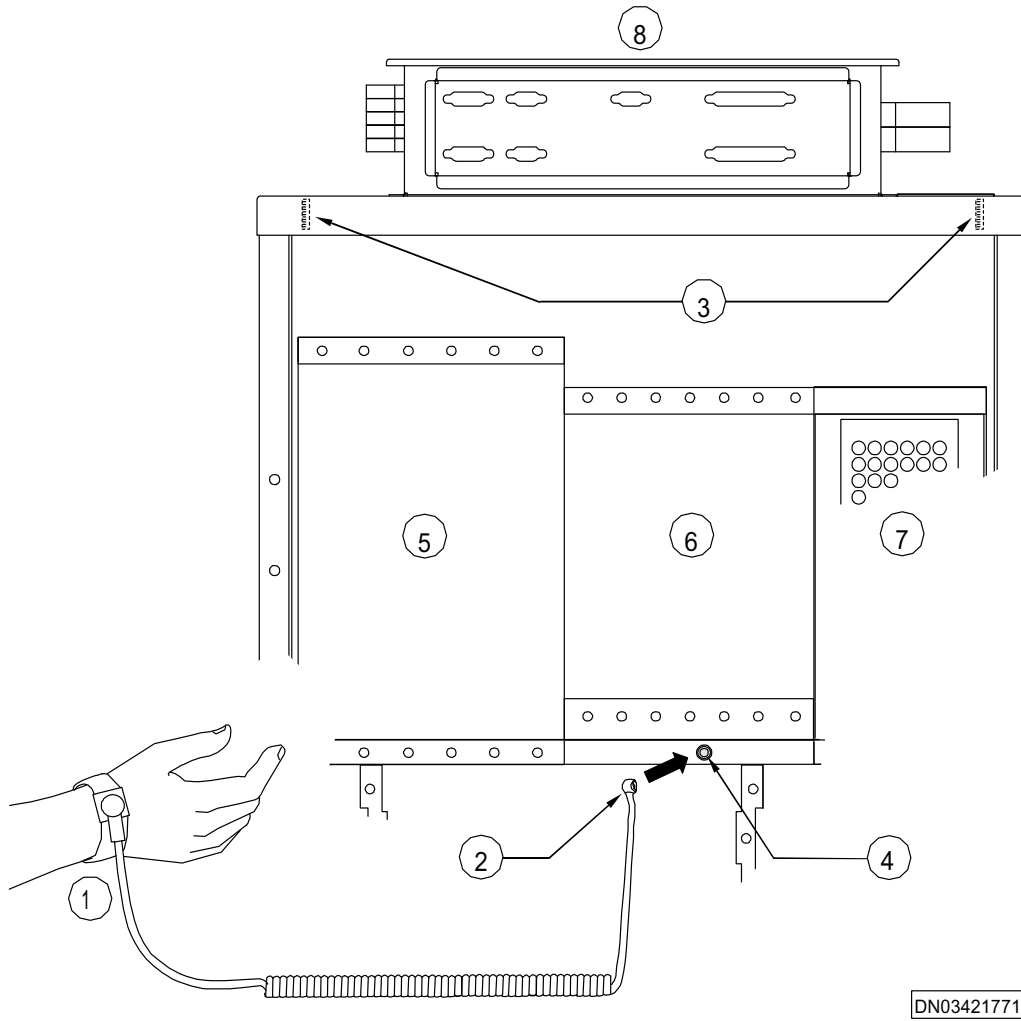
Units are prepared for installation and have sustained no damage.

8.3 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 76. Antistatic wrist strap connection



Steps

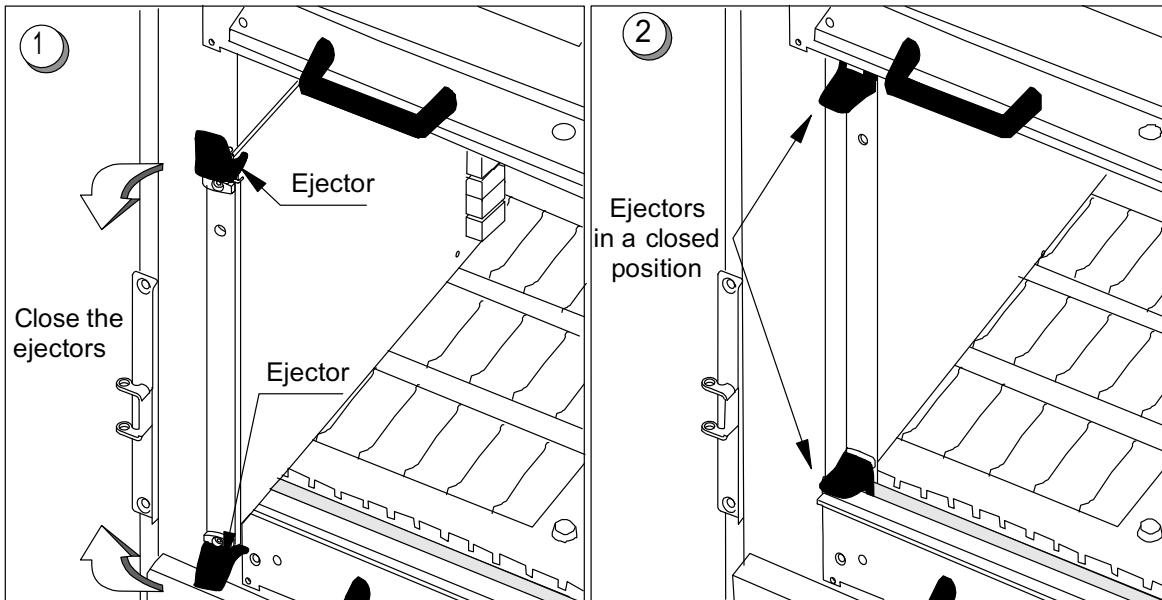
1. Discharge to ground any electrostatic charges that may have accumulated (before you touch the assembly) by touching the ground stud with your bare hand. A ground stud is provided on all system units.
2. Use a grounding wriststrap to remain discharged. The grounding wriststrap should be worn around 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.

8.4 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 77. 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.

8.5 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.

8.6 Installing optional cabinet core units of UltraSite EDGE BTS

8.6.1 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.**
- 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.**

8.6.2 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.

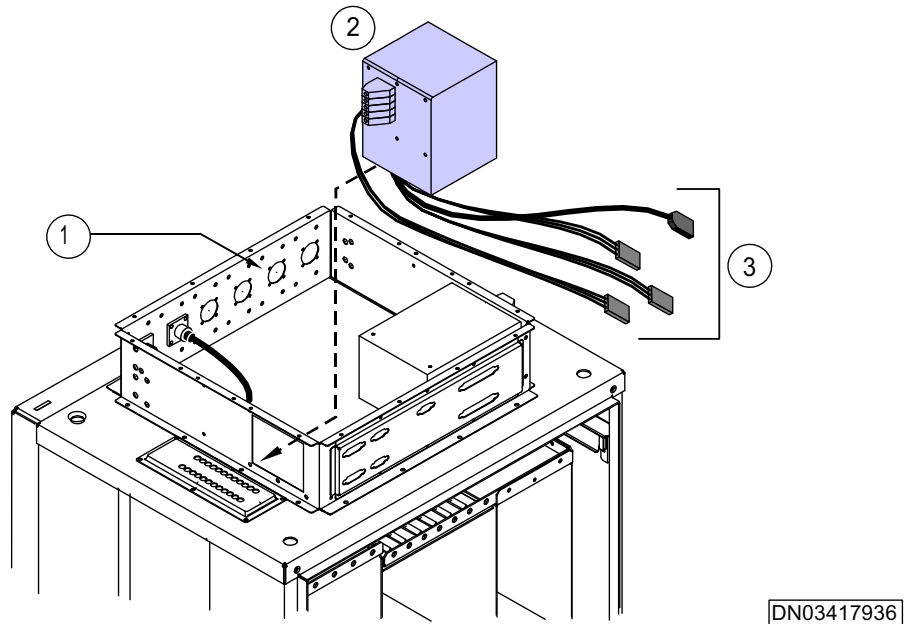
Summary

The AC filter unit is required when you install PWSA units or IBBU.



Steps

1. **Install AC filter unit.**



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1	Antenna box, top removed
2	ACFU unit
3	ACFU Outputs

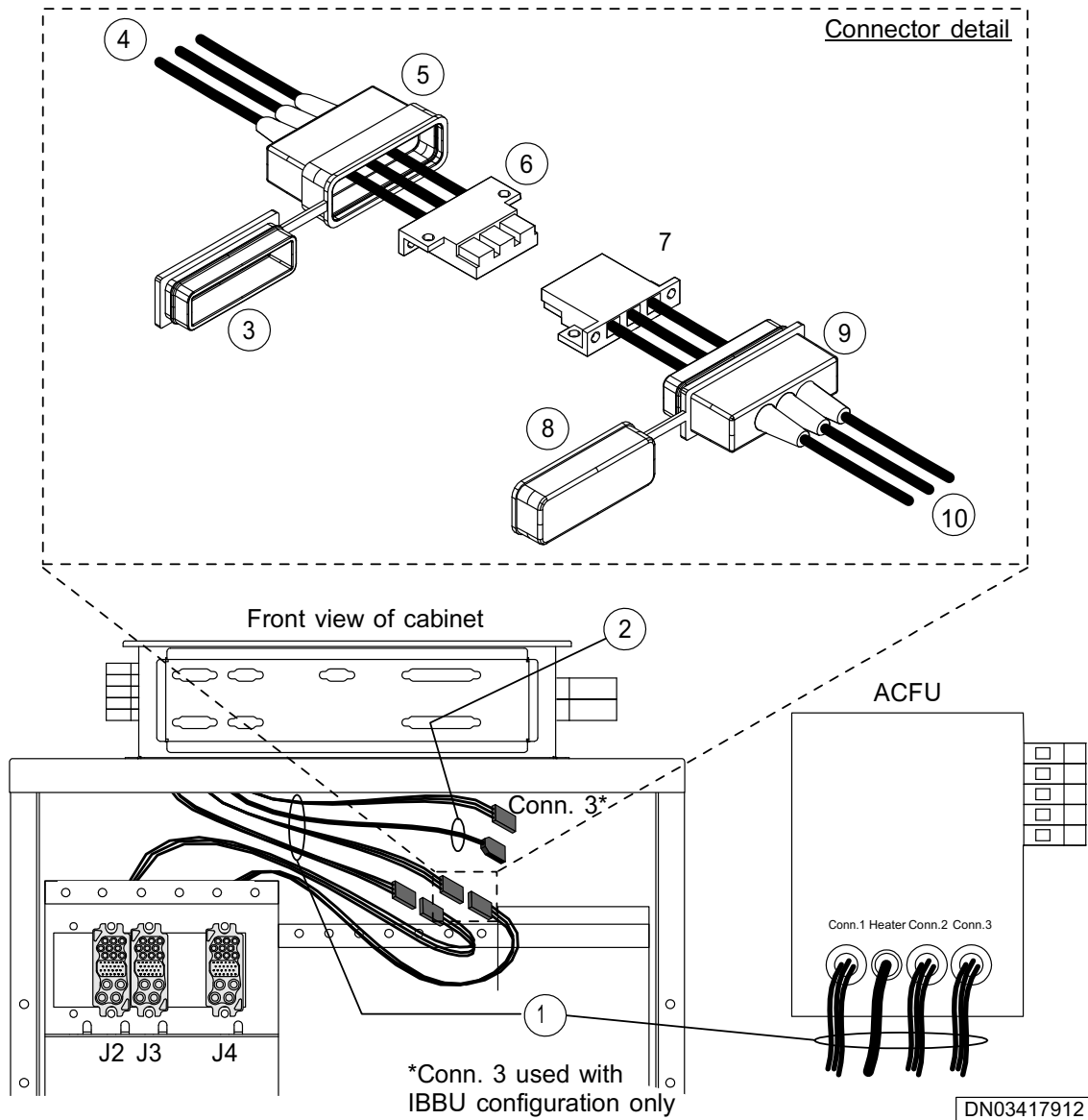
Figure 78. AC filter unit installation

- 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.

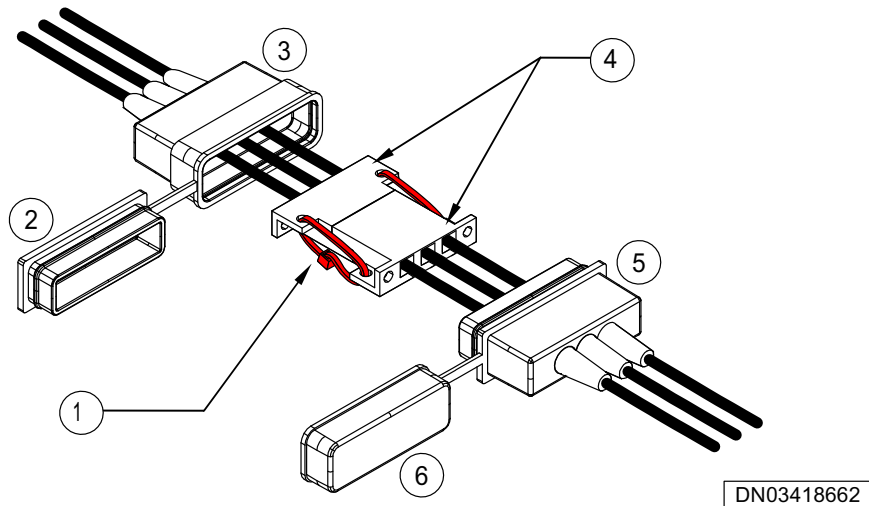


1	ACFU Outputs
2	IEC receptacle (to optional HETA)

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 79. AC filter unit cable routing

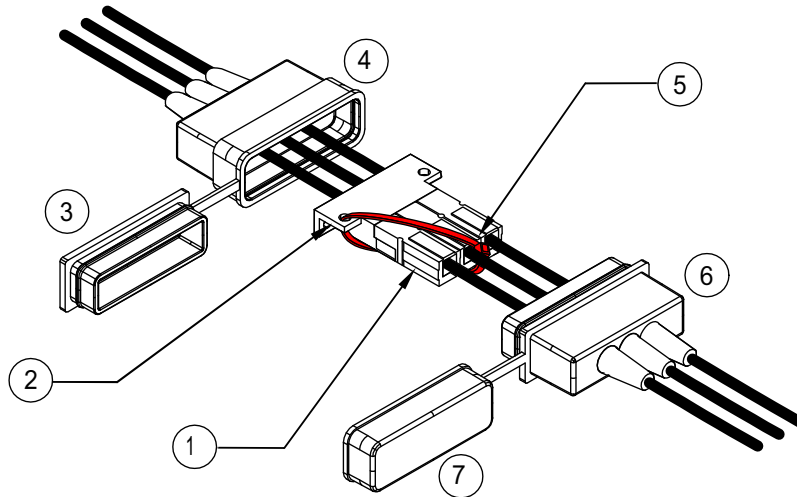
- a. Locate the output cables inside the cabinet that run from the AC filter unit and the cabinet core.
- b. Open the rubber boot covers on each connector.
- c. Attach the power connector within the rubber boot from the AC filter unit connector 1 to the J4A cabinet connector of the ADUx AC cable harness.
- d. Depending on the connector ends, use a cable tie to secure the two connectors.



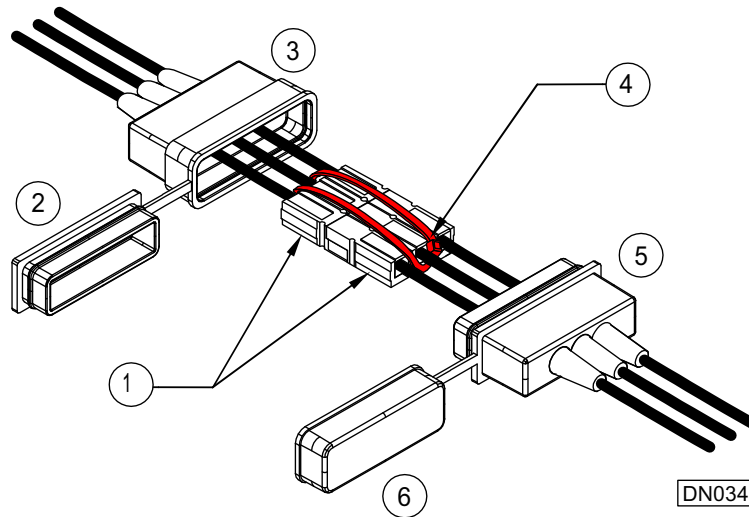
1Cable tie, two places (Trim cable tie mid-way between connectors)2Rubber boot cover3Rubber boot4Power connectors5Rubber boot6Rubber boot cover

Figure 80. Default AC filter unit cable tie installation

ALTERNATE 1



ALTERNATE 2



DN03418023

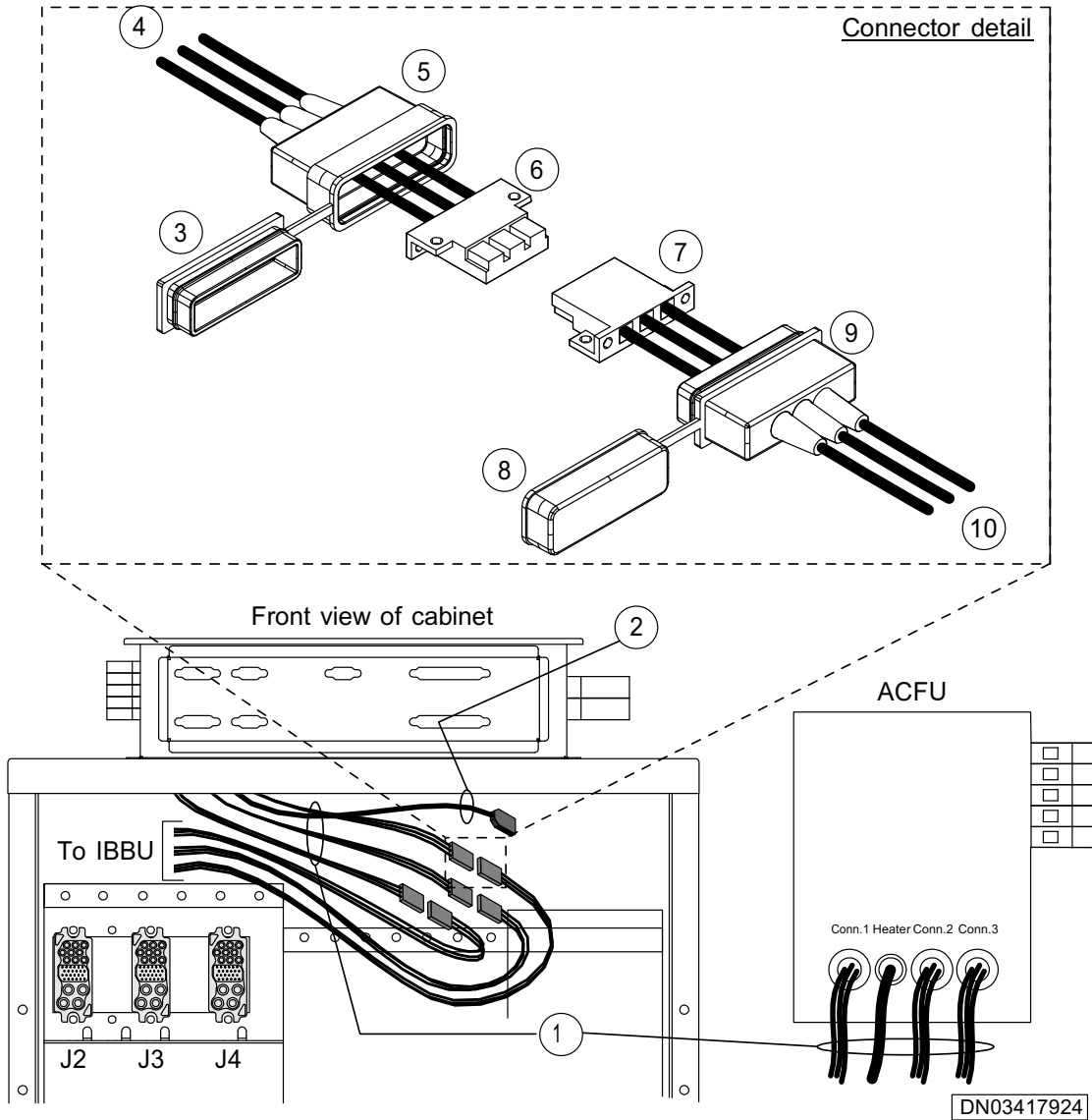
	Alternate 1	Alternate 2
1	Type 2 power connector	Type 2 power connectors
2	Type 1 power connector	Rubber boot cover

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 81. 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 82. 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.**

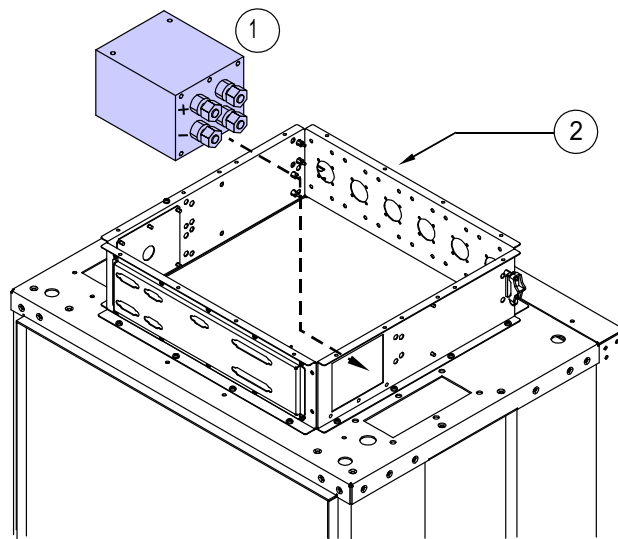
8.6.3 Installing a +24 VDC filter module in UltraSite EDGE BTS

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.

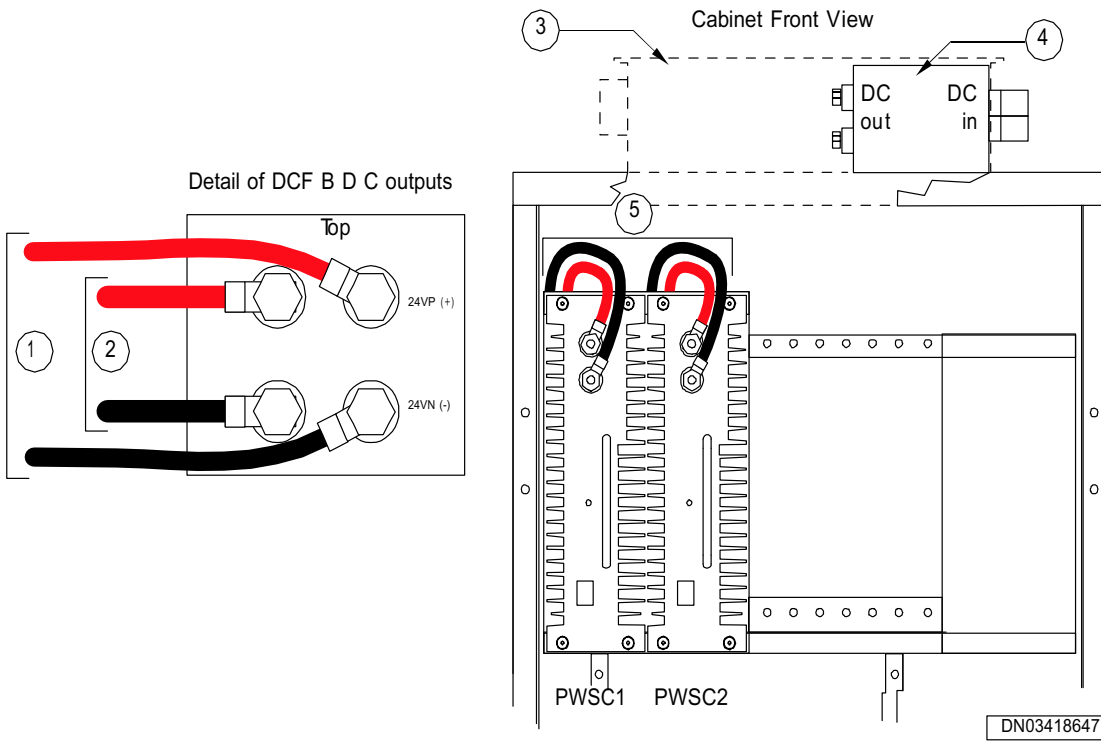
Summary



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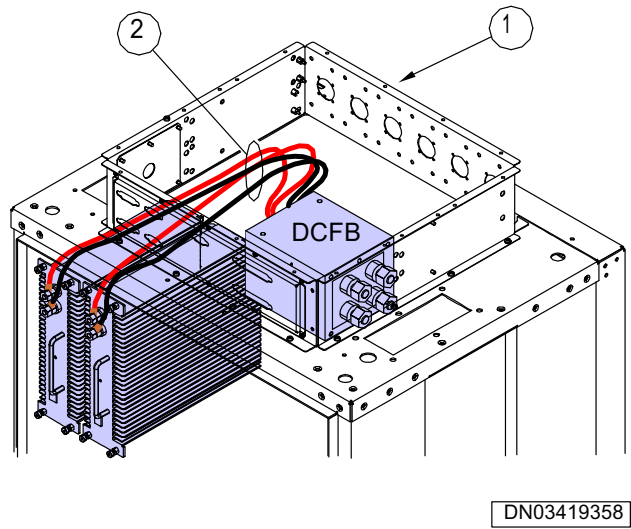
1	DCFB filter
2	Antenna box, top removed

Figure 83. DCFB Filter module installation



1	To PWSC 2
2	To PWSC 1
3	Antenna box
4	DCFB
5	To DCFB DC out

Figure 84. DCFB Filter module cable routing to PWSC



DN03419358

1	Antenna box, top removed
2	Cable tie

Figure 85. 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.

8.6.4 Installing a HETA unit in UltraSite EDGE BTS

Before you start

Review the *Overview of installing optional units of UltraSite EDGE BTS*.

Pay careful attention to all warnings and cautions.

Note

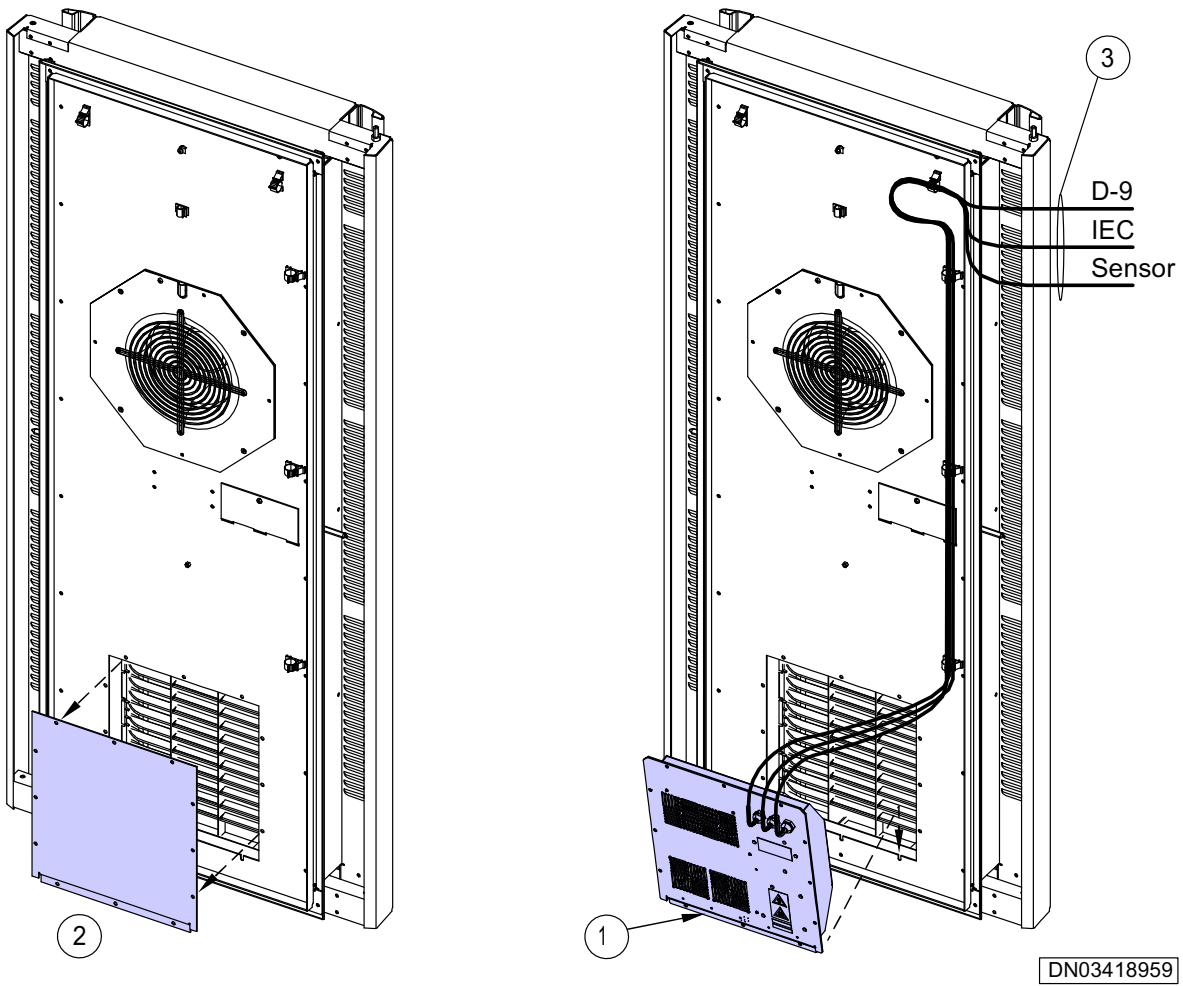
You can remove the integrated AC filter cover only one time. You cannot replace the AC filter cover if it is removed.

Note

Route cables between the OAKx door and the cabinet in a manner that will prevent damage to the cables during door opening and closing.

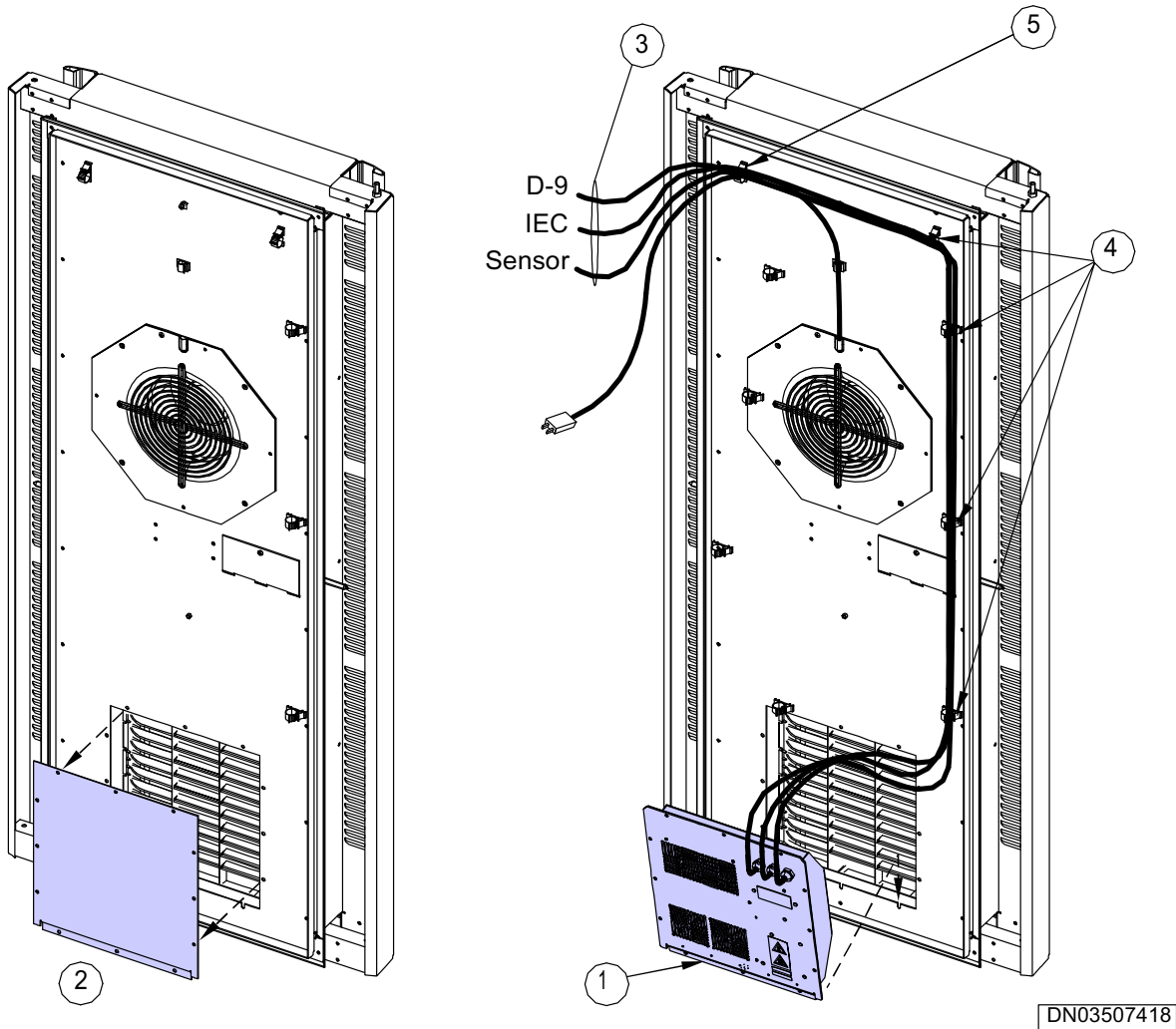
Summary

The HETA unit is optional in the OAKx door.



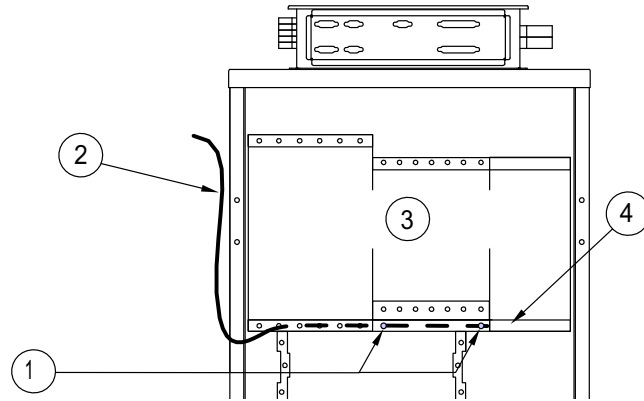
1	Install bottom of HETA unit first
2	Cover plate
3	Wiring to HETA power and control for left hand door.

Figure 86. HETA unit installation in left hand OAKx door



1	Install bottom of HETA unit first
2	Cover plate
3	Wiring to HETA power and control for right hand door.
4	Cable clamp
5	Cable clamp

Figure 87. HETA unit installation in right hand OAKx door



DN03420075

1	Route cable behind front flange of upper rack and secure with plastic cable clamps
2	Sensor cable from left hand door mounted HETA unit <p style="text-align: center;">Note</p> If the door is on the right hand side, the sensor cable will come from the right hand side door mounted HETA unit.
3	Upper rack
4	Front flange

Figure 88. Sensor cable installation for left hand door



Steps

- 1. Remove the HETA unit from its protective package and check for visible damage.**

2. **Remove the cover plate from the OAKx door and store for future installation, if the HETA unit is removed.**
-

Note

The cover plate maintains the airflow in the cabinet if the HETA unit is removed from the OAKx door.

3. **Insert the bottom of the HETA unit into the OAKx door.**
4. **Tilt the top of the HETA unit into the OAKx door.**
5. **Tighten the mounting screws.**
6. **Connect the HETA control interface (adjacent to the cabinet fan connection) to the door switch box.**
7. **Connect the HETA unit to the AC Power Supply (IEC plug located behind the AC Filter module).**
8. *If the door is on the left hand side*
Then
route the sensor cable from the left hand side door mounted HETA unit.
Else
route the sensor cable from the right hand side door mounted HETA unit.
9. **Route the sensor cable behind the front flange of the upper rack.**
10. **Secure the sensor cable to the front flange with plastic cable clamps.**
11. **Secure the cables within the appropriate cable clamps on the OAKx door.**

Note

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.

8.7 Installing GSM/EDGE units of UltraSite EDGE BTS

8.7.1 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 DVxx/RTxx 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 DVxx/RTxx 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

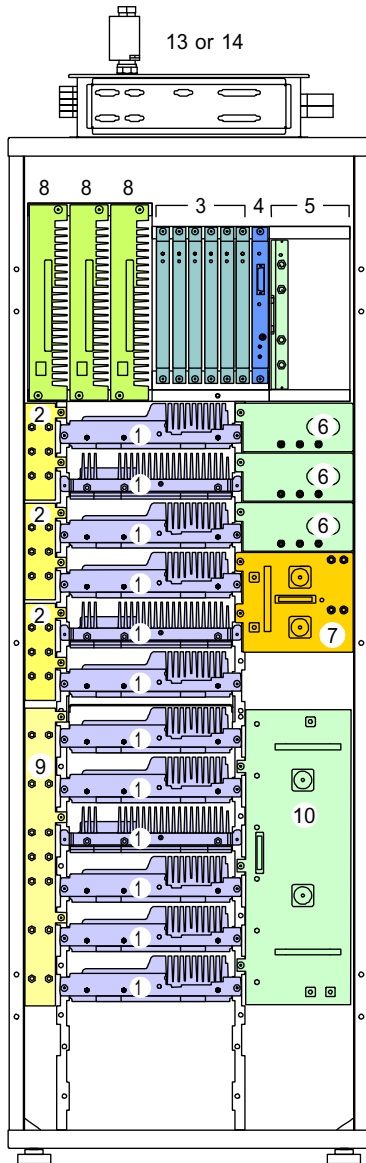
Properly tighten all mounting screws.

Note

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

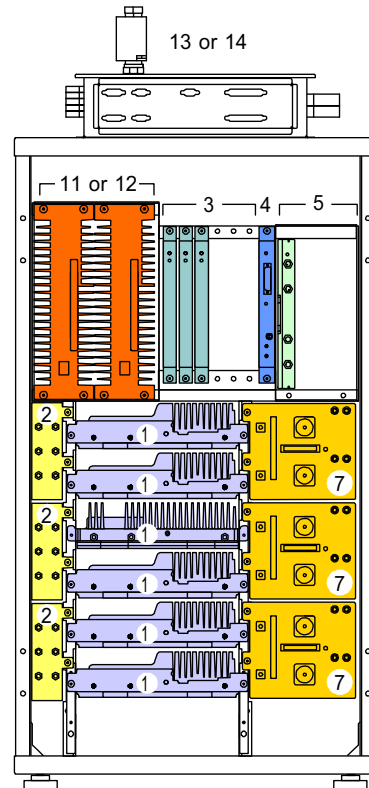
Note

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



UltraSite cabinet core

DN03459836



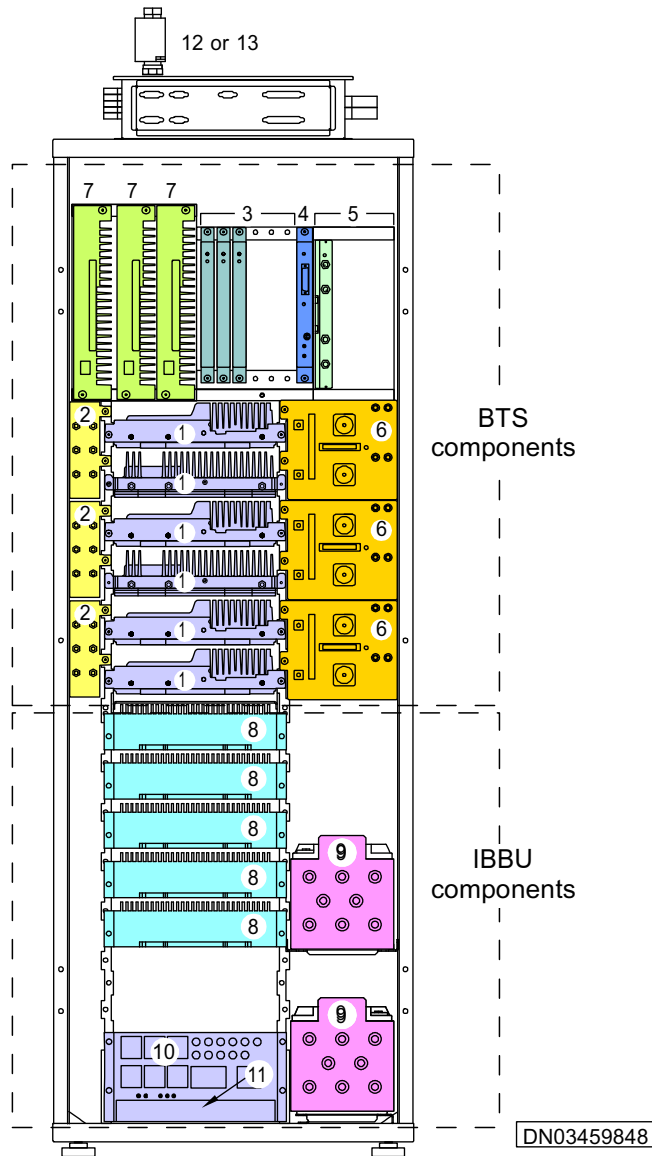
UltraSite MIDI cabinet core

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 89. 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 90. 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).

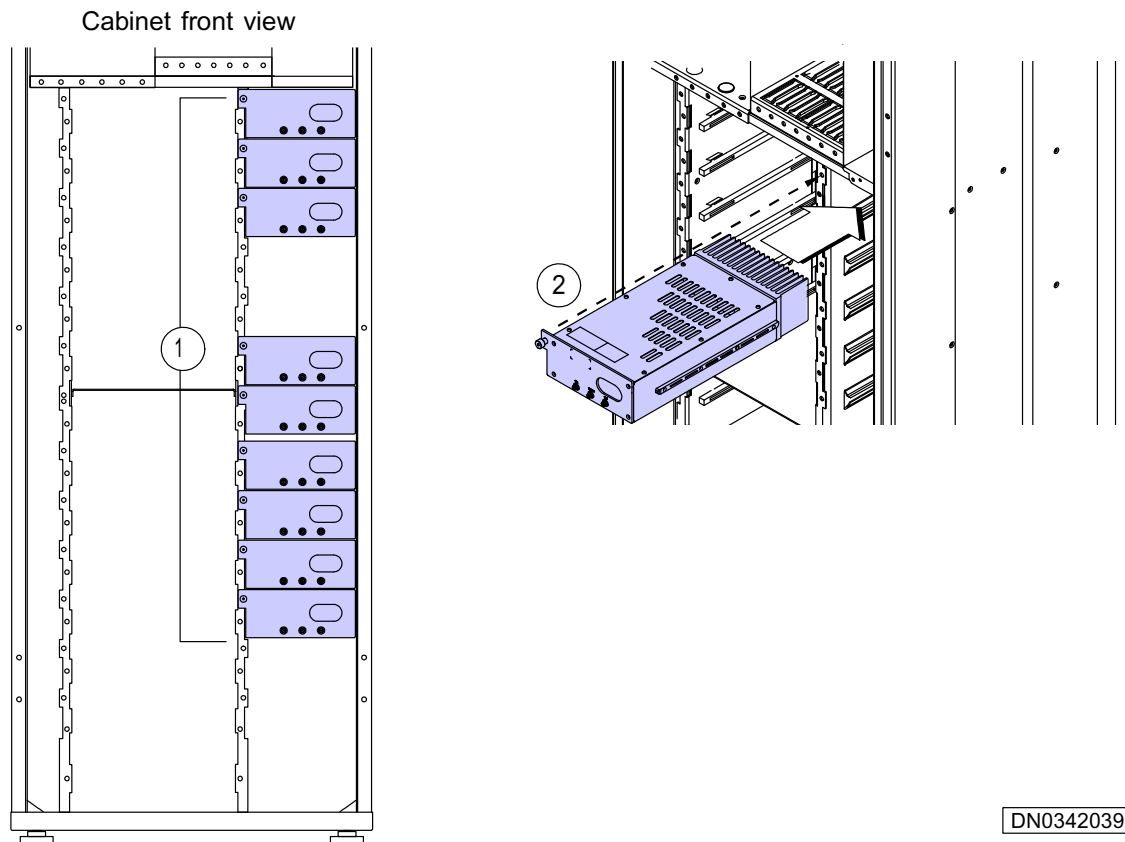
8.7.2 Installing a Wideband Combiner (WCxA) unit in UltraSite EDGE BTS

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.



DN03420399

1	WCxA
2	WCxA

Figure 91. 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.**

8.7.3 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

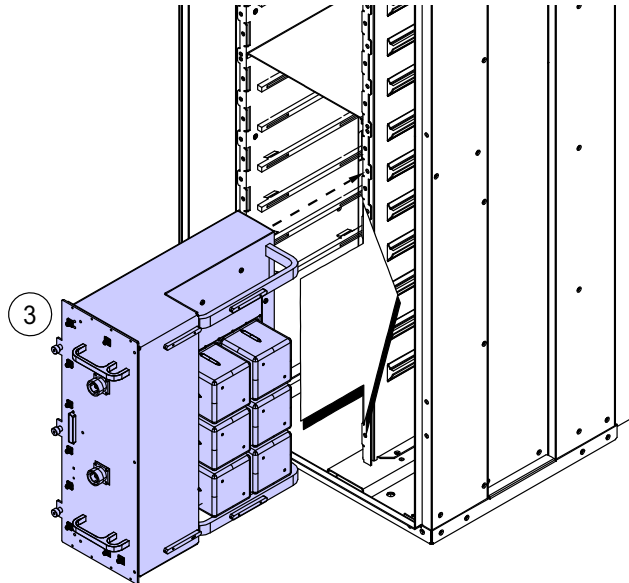
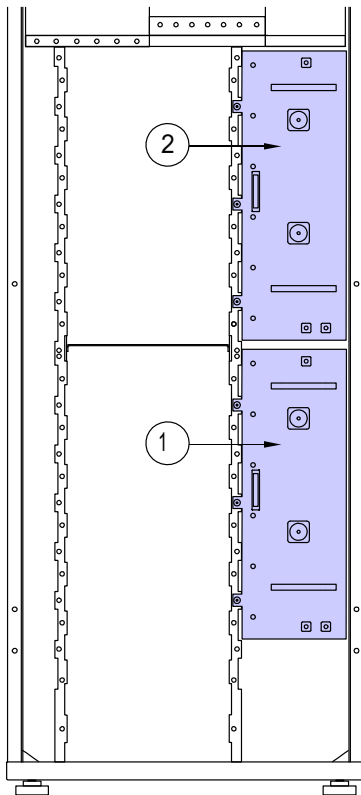


Warning

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).

Cabinet front view



DN03420048

1	RTxx #2
2	RTxx #1



Figure 92. RTxx unit installation



Steps

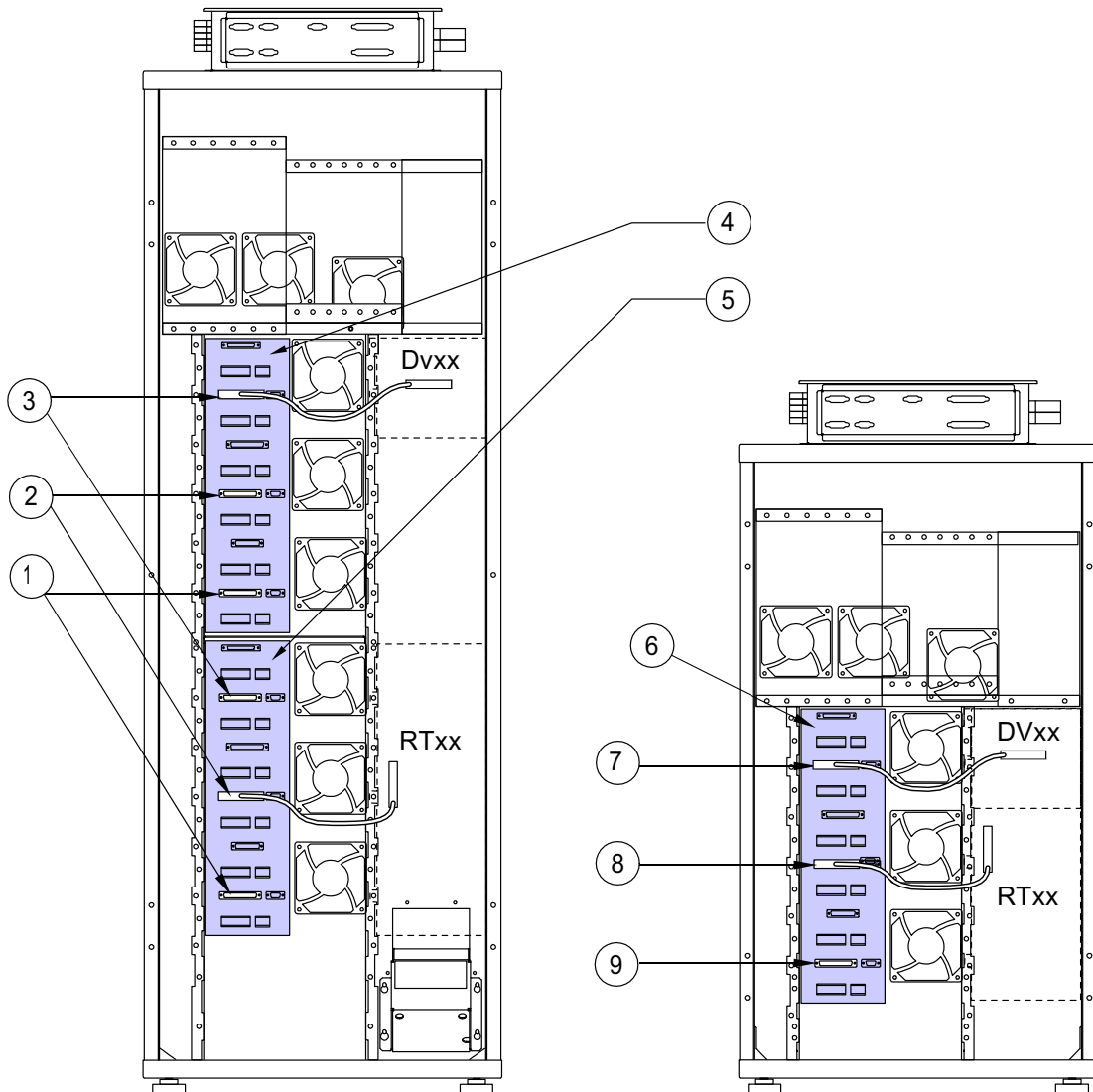
1. **Align the top and bottom RTxx unit guides with those on the rack.**
2. **Use the handles on the front of the unit to slide the unit into the cabinet.**
3. **Check that the rear connectors are fully engaged.**
4. **Tighten the unit retaining screws.**

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

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

8.7.4 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.

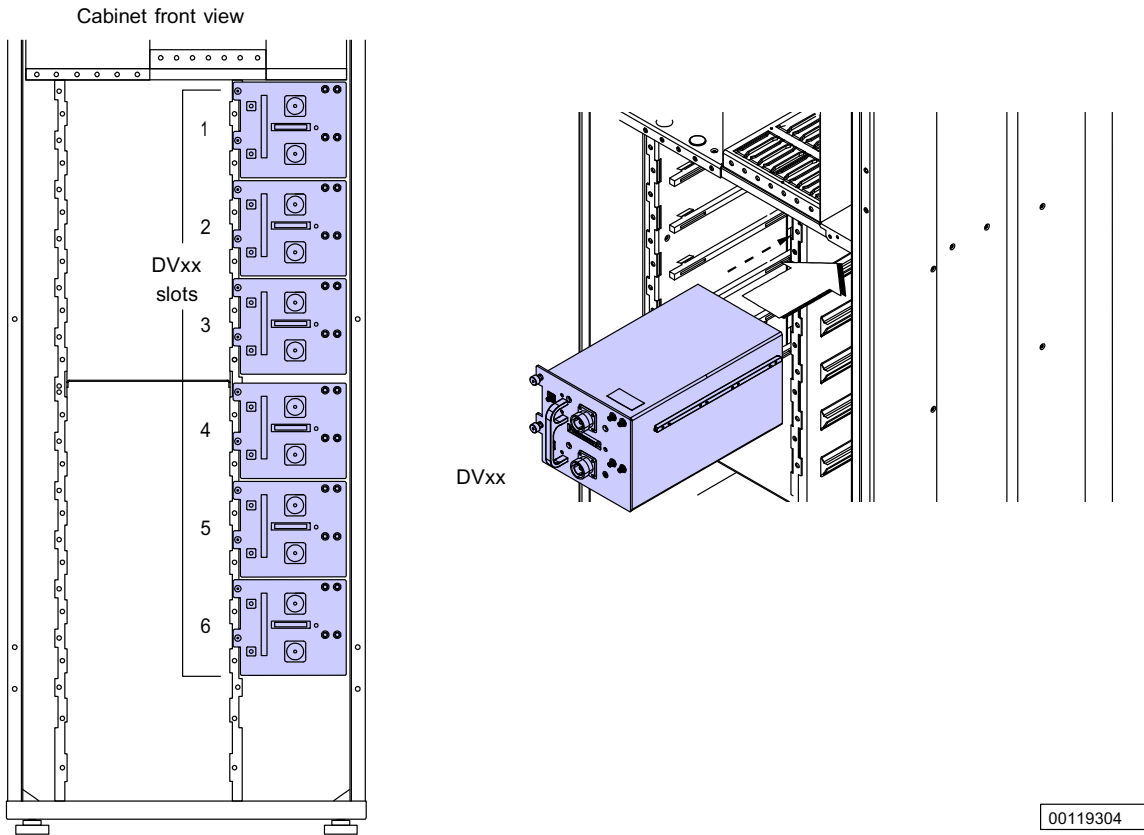


Figure 94. DVxx unit installation

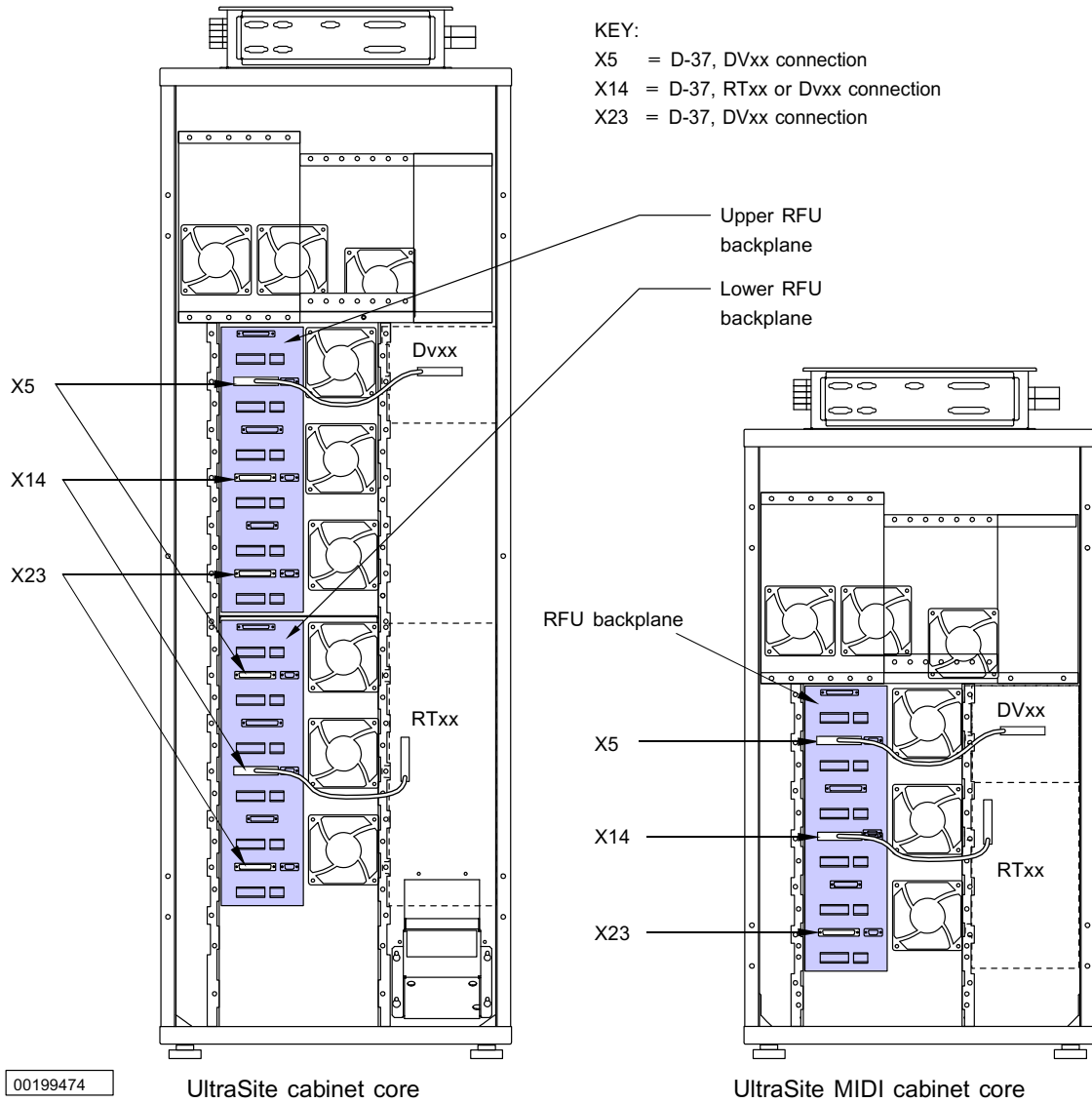


Figure 95. Installation of DVxx or RTxx power supply cables to the RFU backplane

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*.

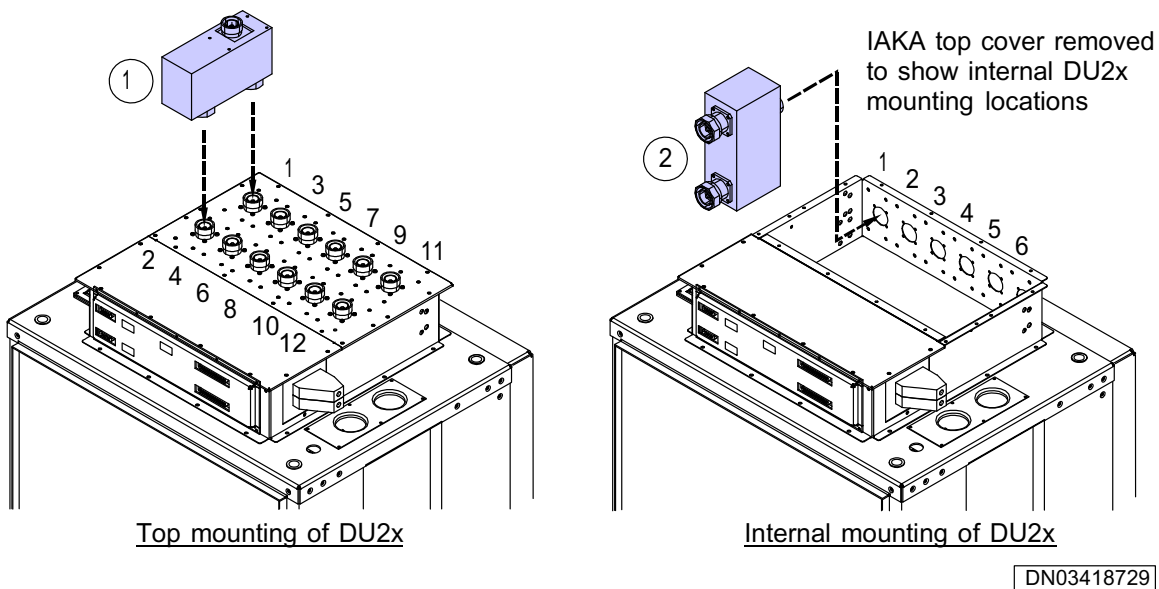
5. Remove the connector cap on the backplane.
6. Connect the DVxx cable from the X14 connector on the RFU backplane to the DVxx unit.
7. Repeat steps 1 through 6 for each additional DVxx unit.

8.7.5 Installing a Dual Band Duplex 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



1	DU2x
2	DU2x

Figure 96. DU2A unit installation in Indoor cabinet

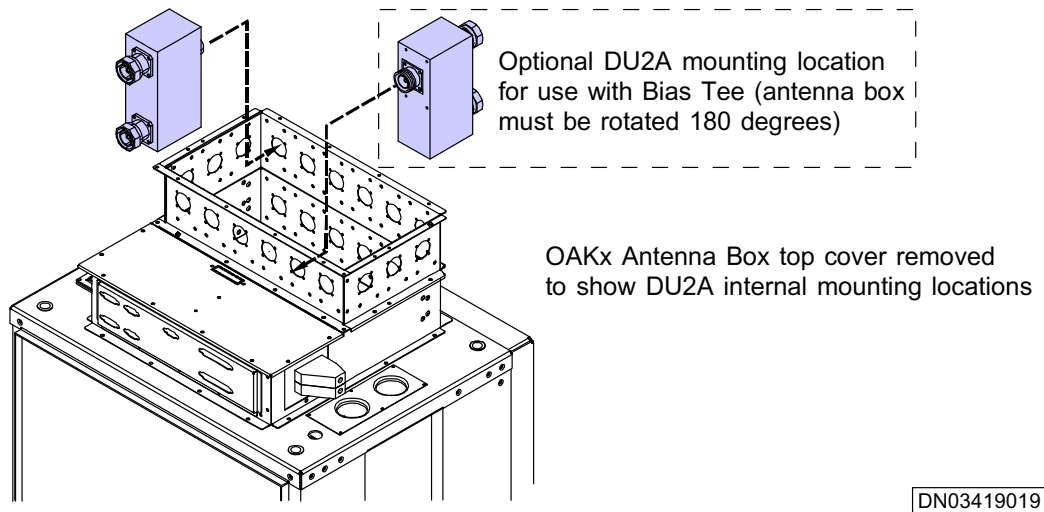


Figure 97. Installation of DU2A unit to Outdoor cabinet

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.

8.7.6 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.

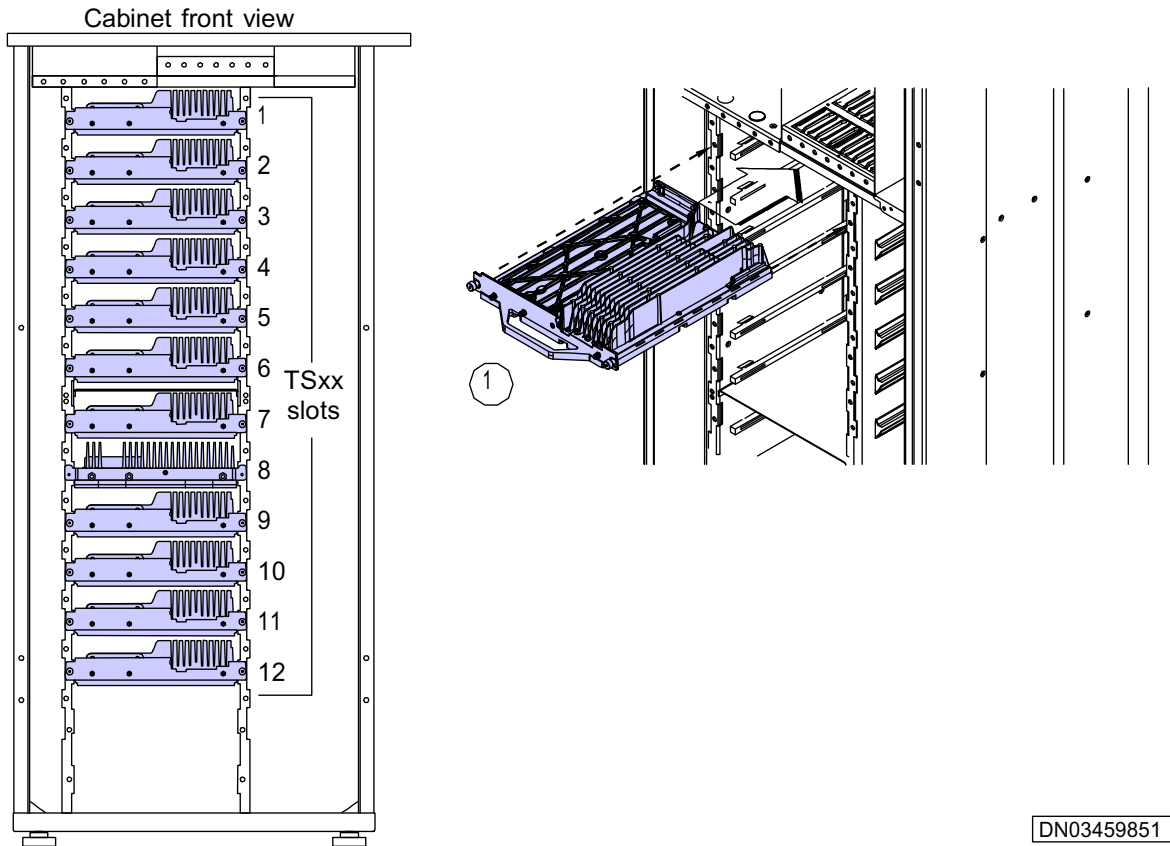


Caution

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

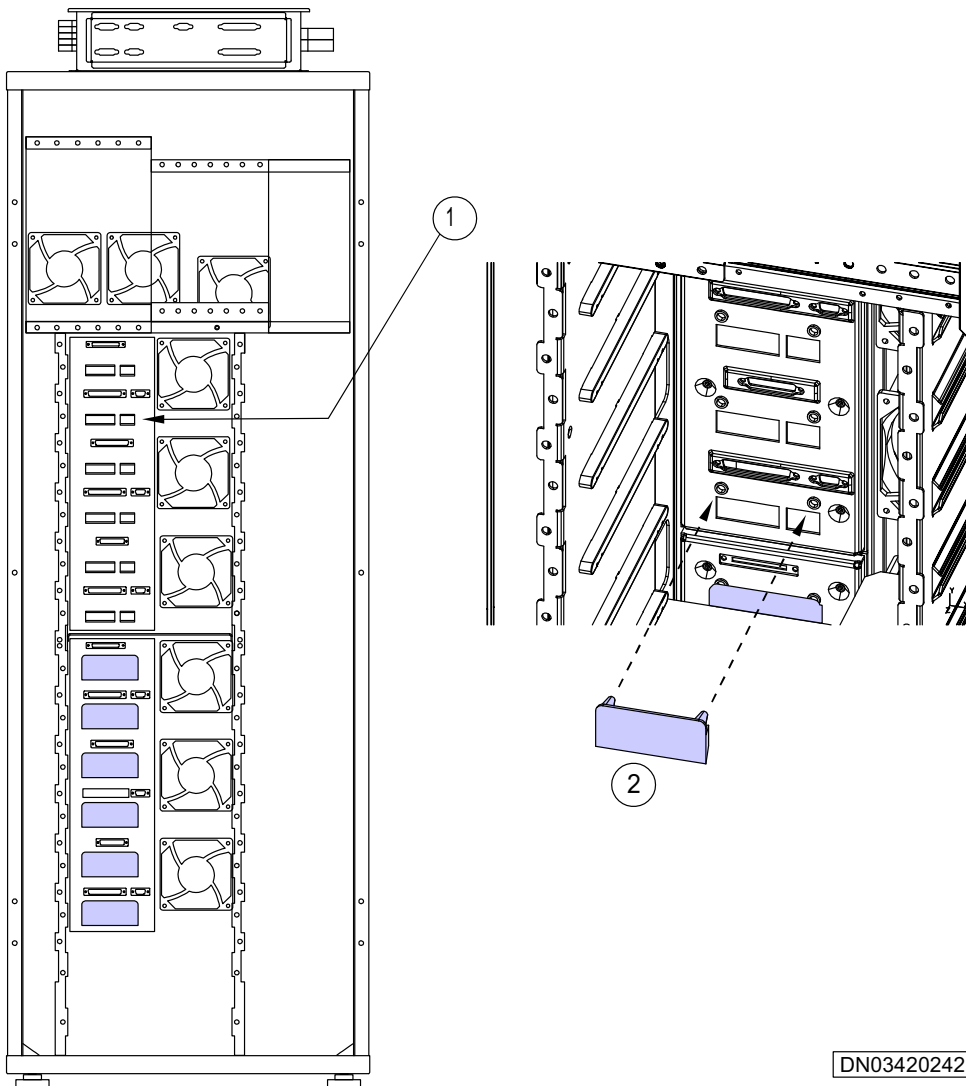
A connector cap is only necessary for outdoor installations.



DN03459851

1	TSxx
---	------

Figure 98. TSxx unit installation



DN03420242

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

Figure 99. 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.

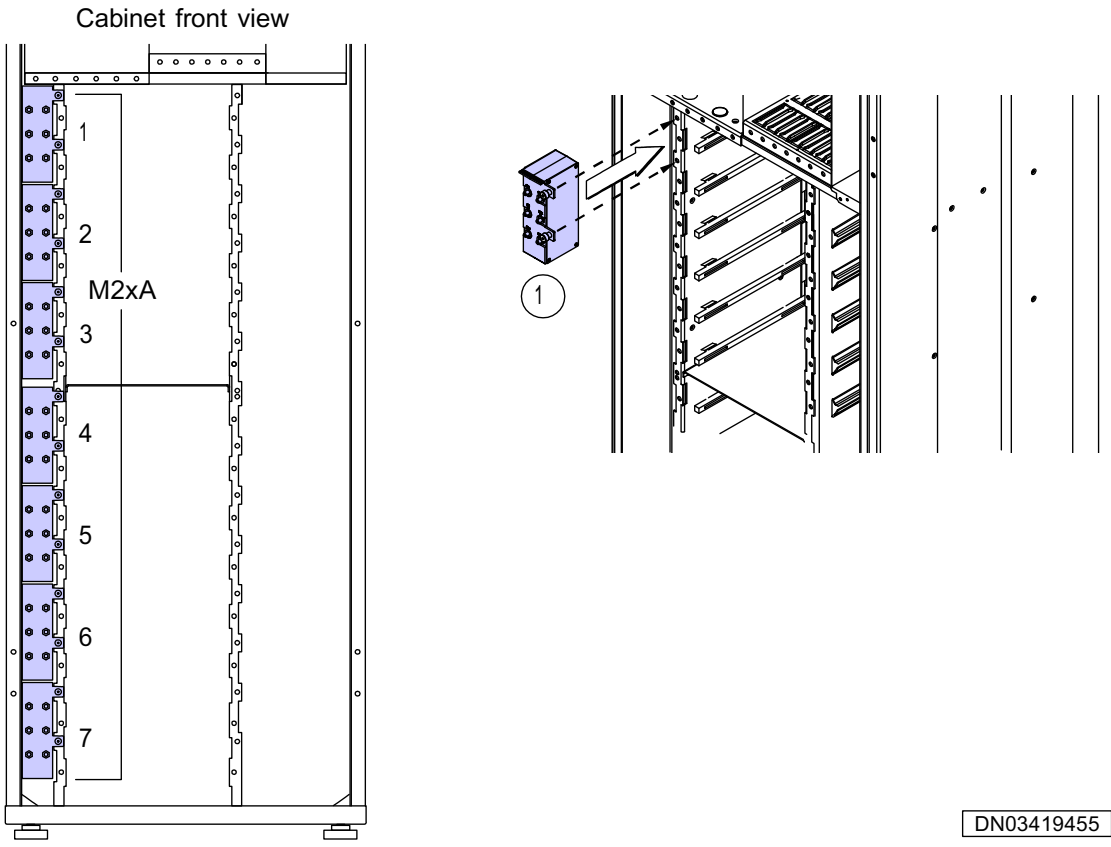
8.7.7 **Installing a Receiver Multicoupler (M2xA or M6xA) unit in UltraSite EDGE BTS**

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.

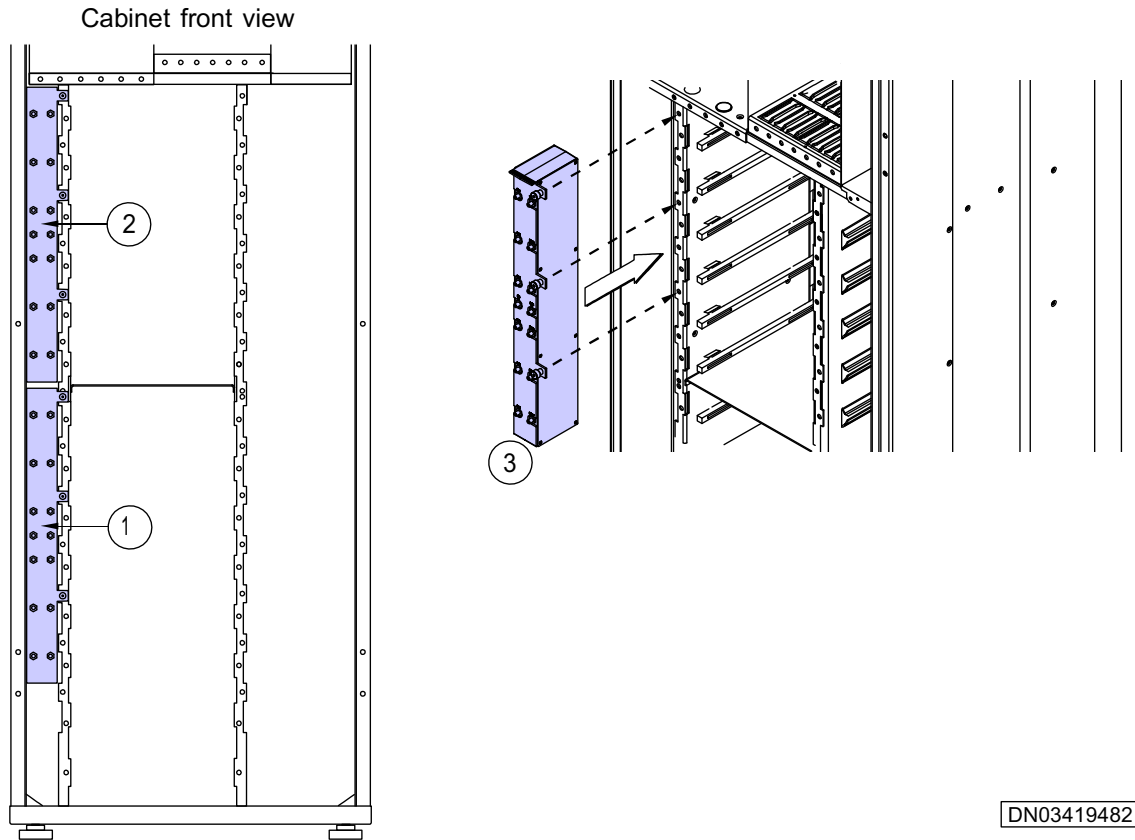
Summary

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



1	M2xA
---	------

Figure 100. M2xA unit installation



1	M6xA #2
2	M6xA #1
3	M6xA

Figure 101. M6xA unit installation



Steps

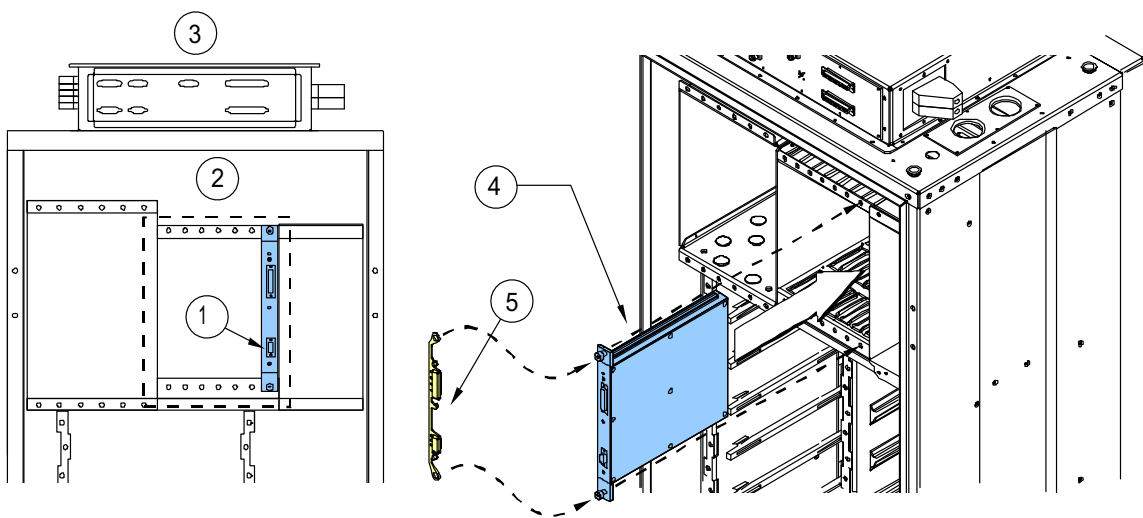
1. **Mount the unit in the left front area of the cabinet.**
2. **Tighten the unit retaining screws. See Torque settings of UltraSite EDGE BTS.**
3. **Repeat steps 1 through 2 for each additional M2xA or M6xA unit.**

8.7.8 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 102. 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* .

8.7.9 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.

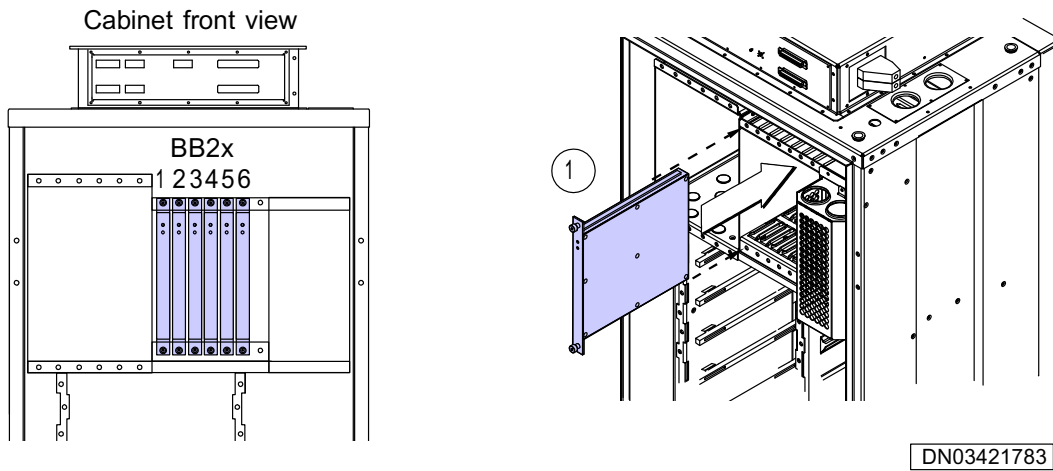
Note

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



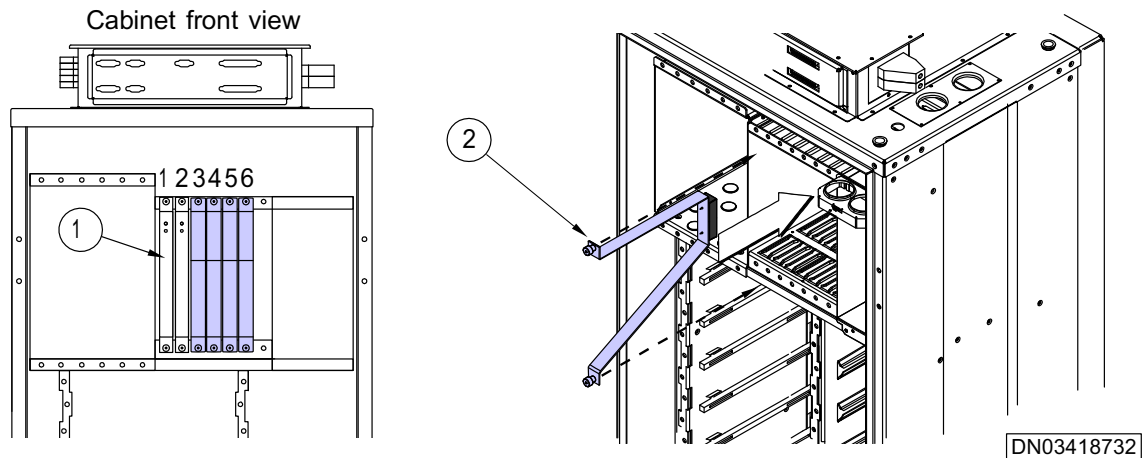
1	BB2x
---	------

Figure 103. 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 104. 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.

8.7.10 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



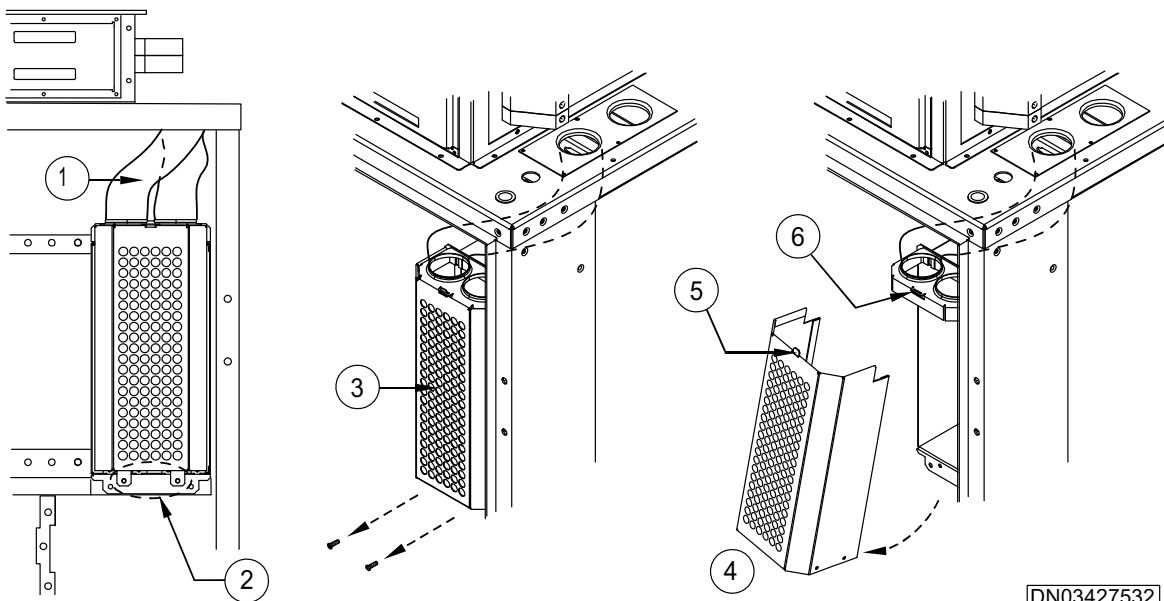
Caution

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.

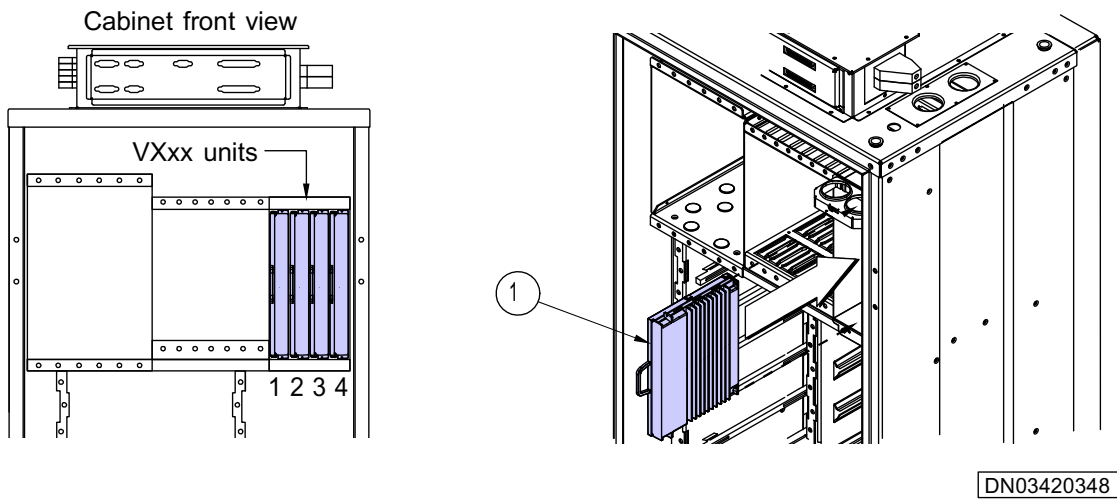
Cabinet front view



1	Cable sleeve
2	Screws
3	Transmission unit cover

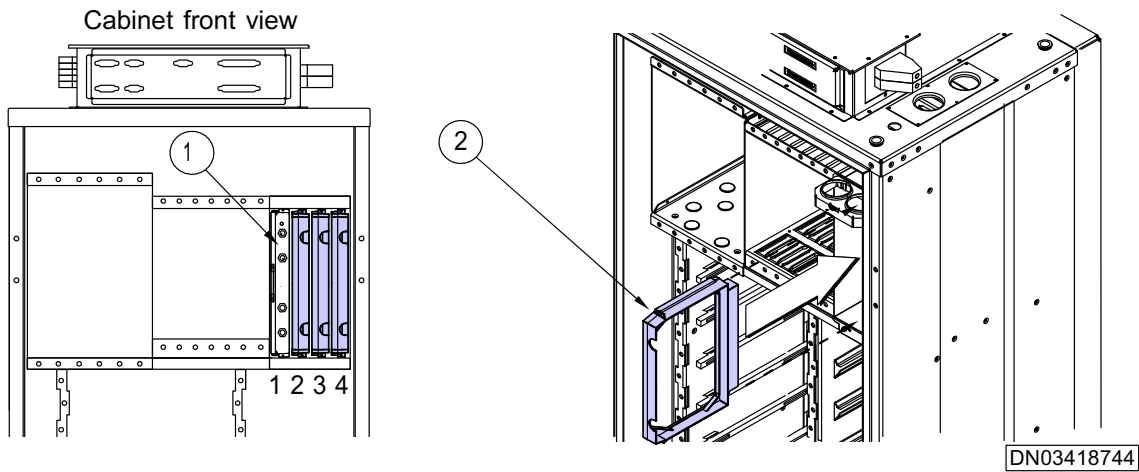
4	Transmission unit cover, removed Screws
5	Tab
6	Slot

Figure 105. Removing VXxx unit cover



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

Figure 106. VXxx unit installation



1	VXxx unit
2	VXxx unit Dummy transmission unit

Figure 107. 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* .

8.7.11 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

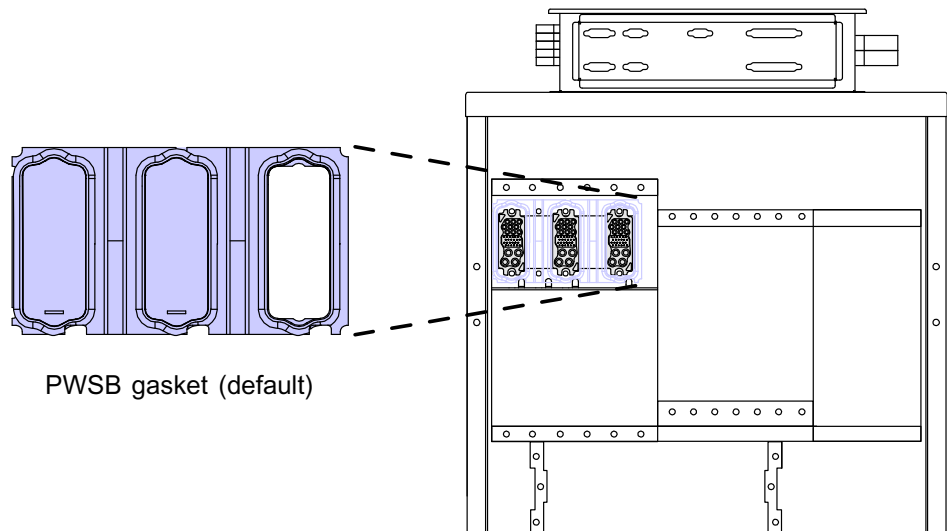
If the DC power cables are reversed during installation, it will blow (open) a fuse in the PWSC Power supply unit. Verify proper polarity before connecting power cables.

Note

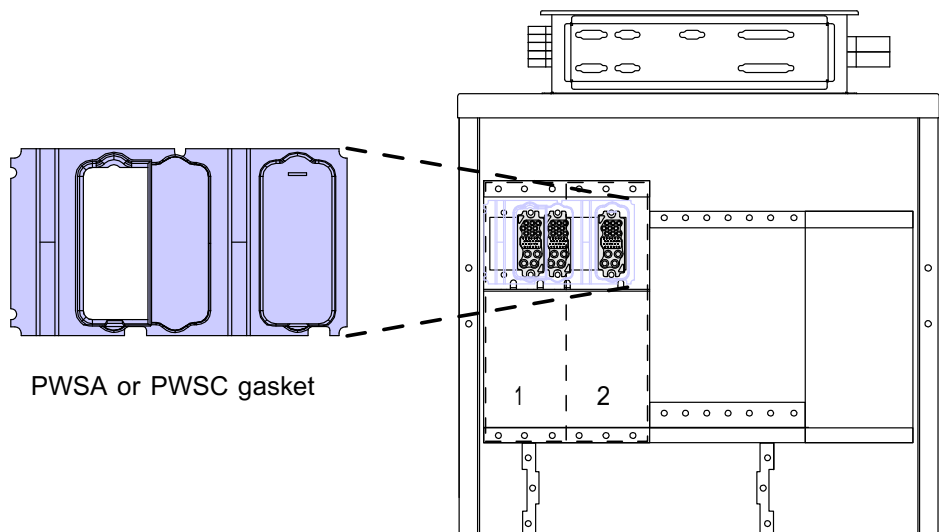
To install optional units, see the following:

**Steps**

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



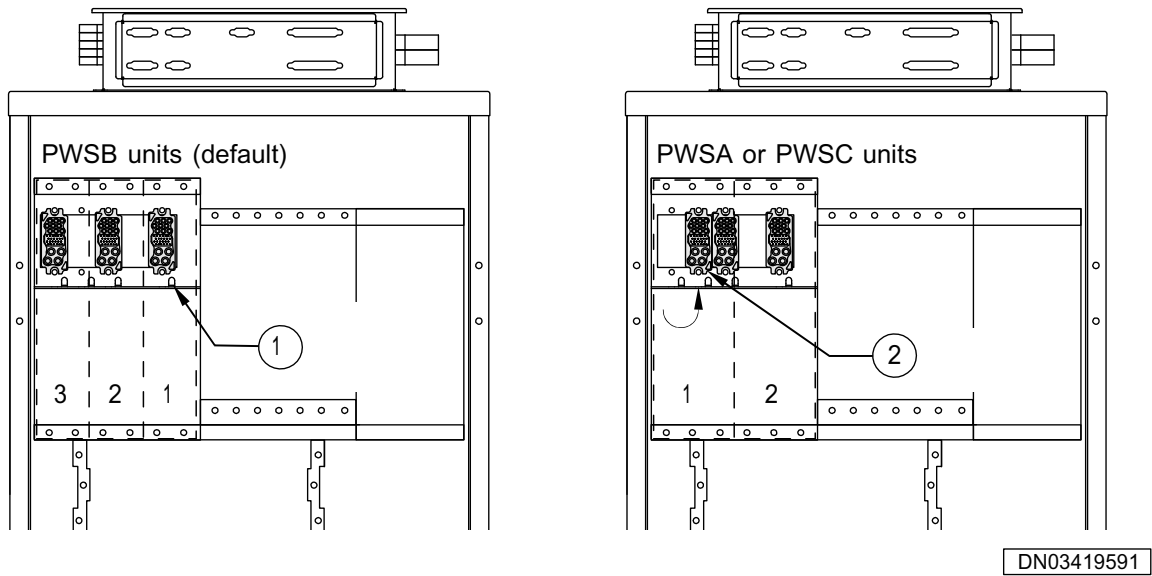
PWSB gasket (default)



PWSA or PWSC gasket

DN03419922

Figure 108. PWSA, PWSB, and PWSC gasket installation



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

Figure 109. Moving the backplane connector to install the PWSA or PWSC

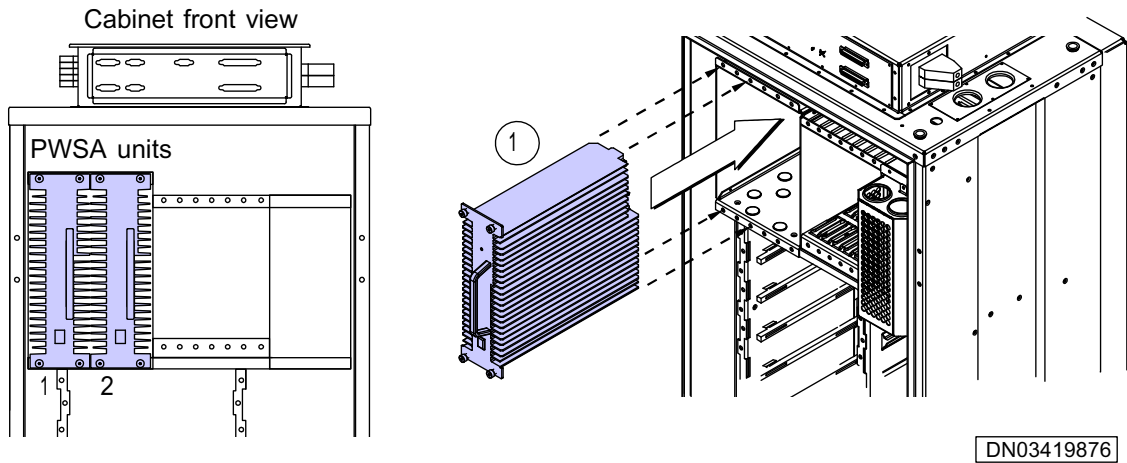
- a. Remove the default PWSB gasket from the connector.
- b. Remove the two screws that secure the far left connector to the backplane.
- c. Slide the connector to the right and align it with the screw holes.
- d. Replace the two screws.
- e. Install the PWSA gasket.

2. Install AC or DC power supply units.



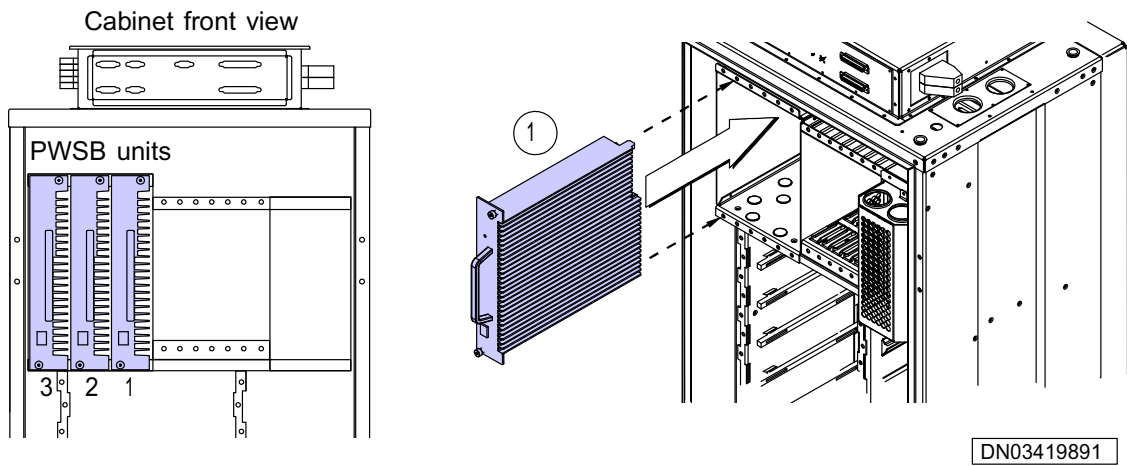
Caution

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



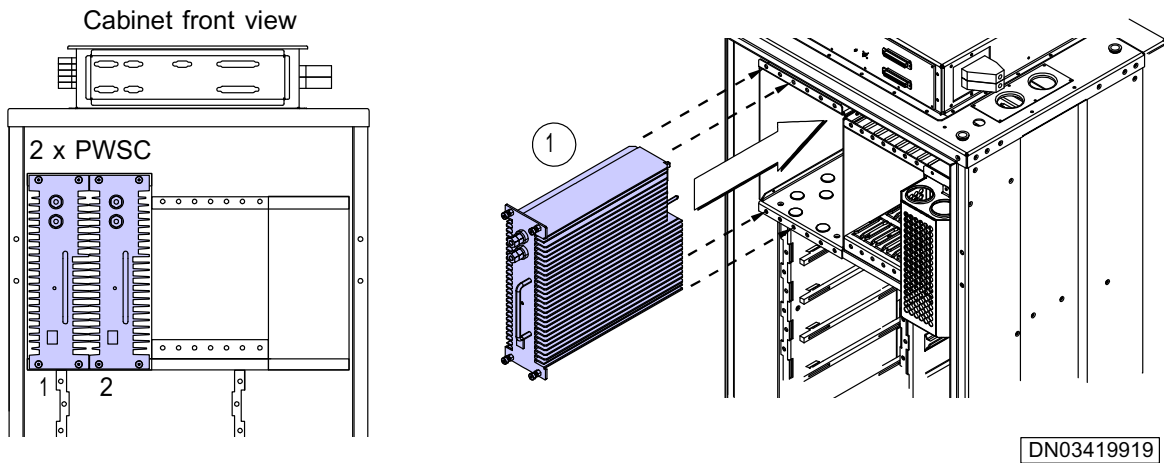
1	PWSA
---	------

Figure 110. PWSA unit installation



1	PWSB
---	------

Figure 111. PWSB unit installation



1	PWSC
---	------

Figure 112. PWSC unit installation

Note

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

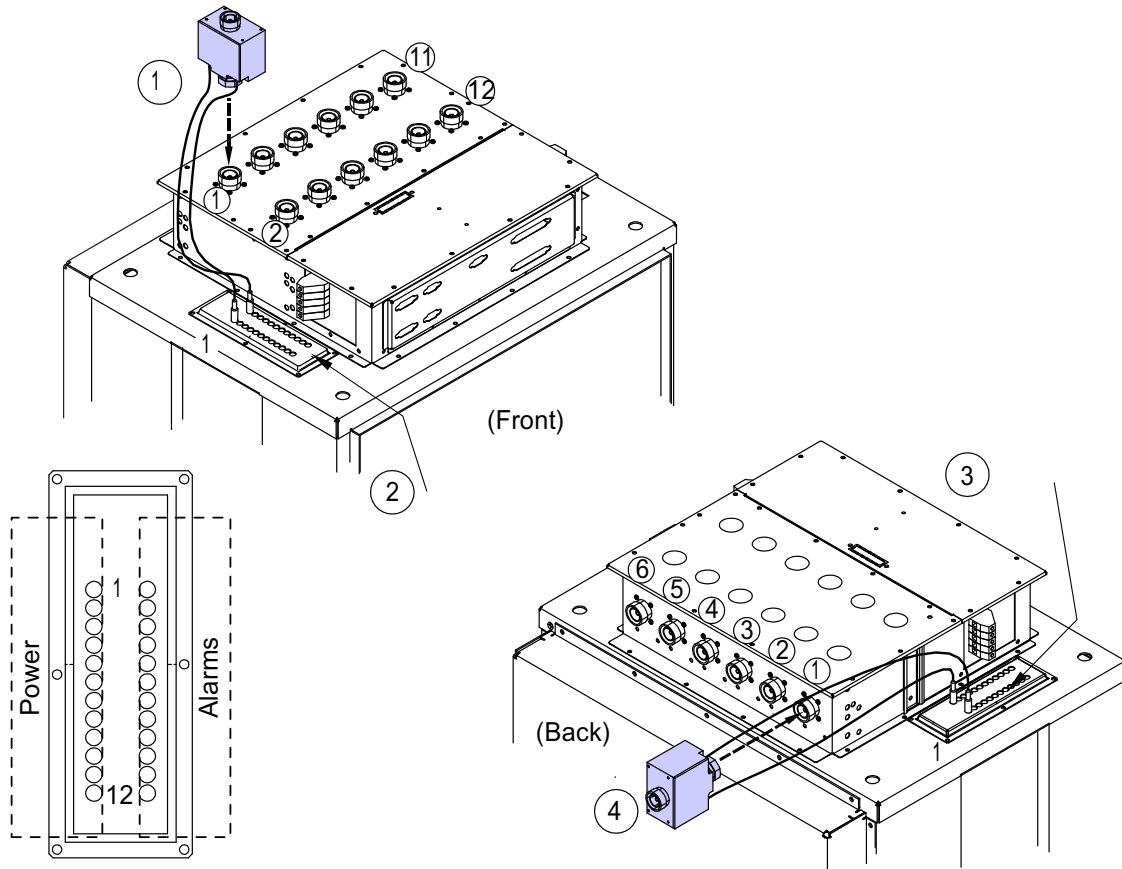
- a. Ensure the power supply switch of the PWSx unit is in STAND BY position.
- b. Slide the PWSx unit into the top left area of the cabinet. Ensure the locating pins are within the cabinet locating holes.
 - Ensure the locating pin for the power supply connector engages with the locating hole in the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

8.7.12 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



Detail
(Bias Tee interface cover connections)

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 113. 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.

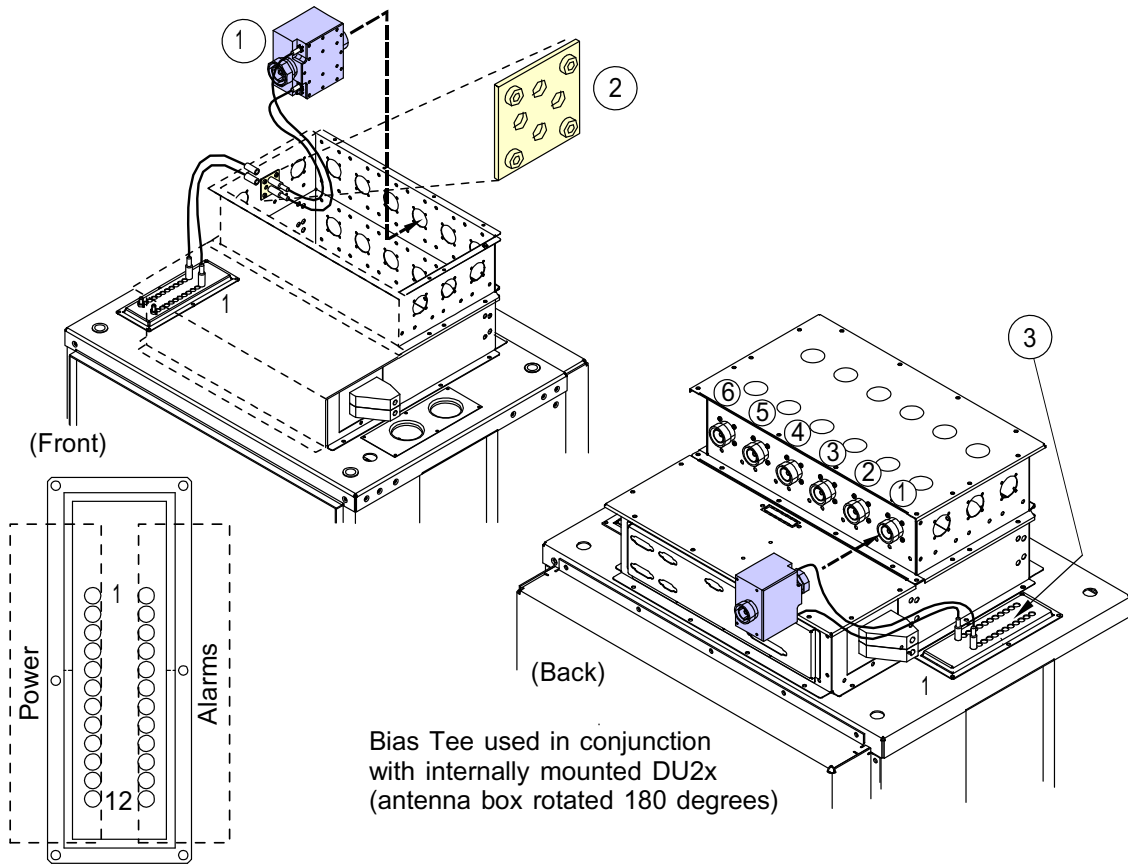
3. **Connect the power supply and antenna monitoring cables from the BPxx unit to the BPxx interface on top of the cabinet.**
4. **Repeat steps 1 through 4 for additional BPxx units.**

8.7.13 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

Detail (Bias Tee interface cover connections)

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

Figure 114. 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.

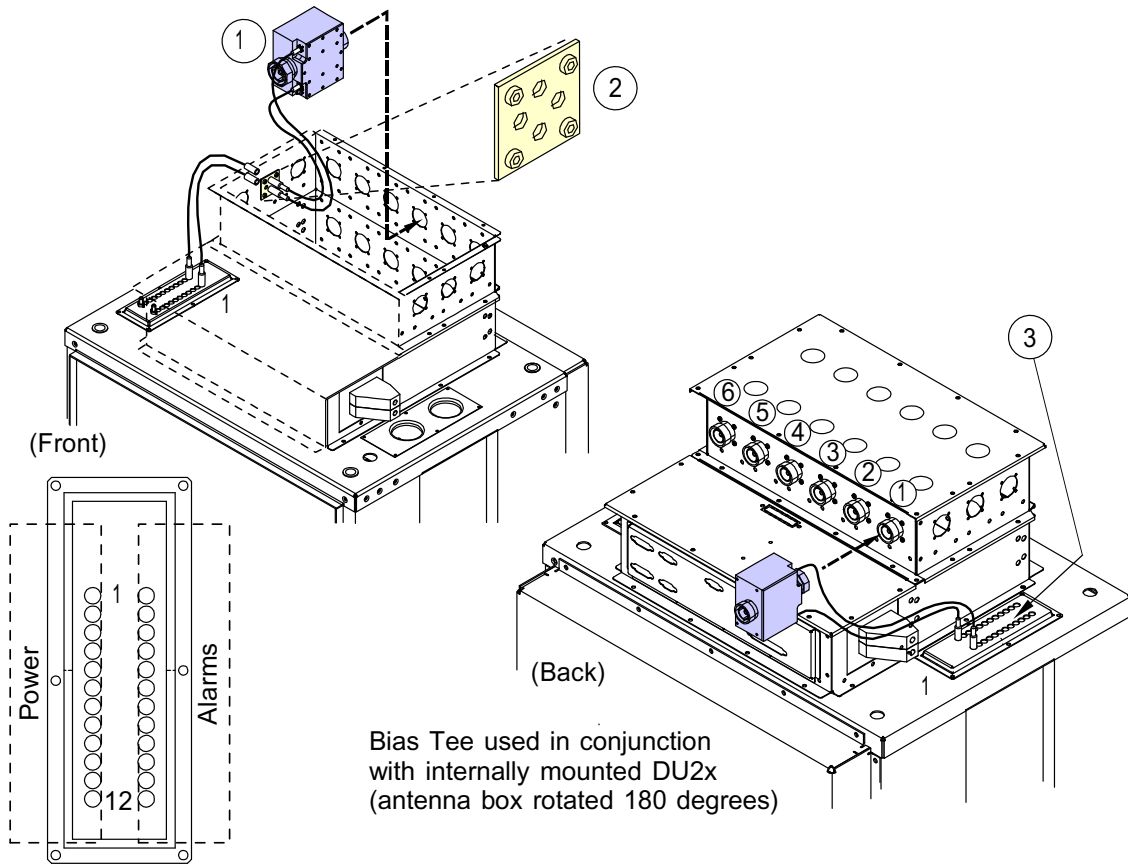
7. **Repeat steps 1 through 6 for additional BPxx units.**

8.7.14 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

Detail
(Bias Tee interface cover connections)

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

Figure 115. 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.**

8.8 Installing WCDMA units of UltraSite EDGE BTS

8.8.1 Overview of installing UltraSite EDGE BTS WCDMA units

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 WCDMA units are installed into the slots in the BTS after the WCDMA Upgrade Kit racks (RF Rack, WAF Rack and BB Rack) and cables have been installed in Nokia UltraSite EDGE BTS.



Warning

Be careful when handling the Power Supply Unit (PWSx) or WCDMA Power Supply Unit (WPS) and power cables. Electrical hazards exist. The power is ON in the GSM/EDGE part of the BTS.

**Caution**

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

Note

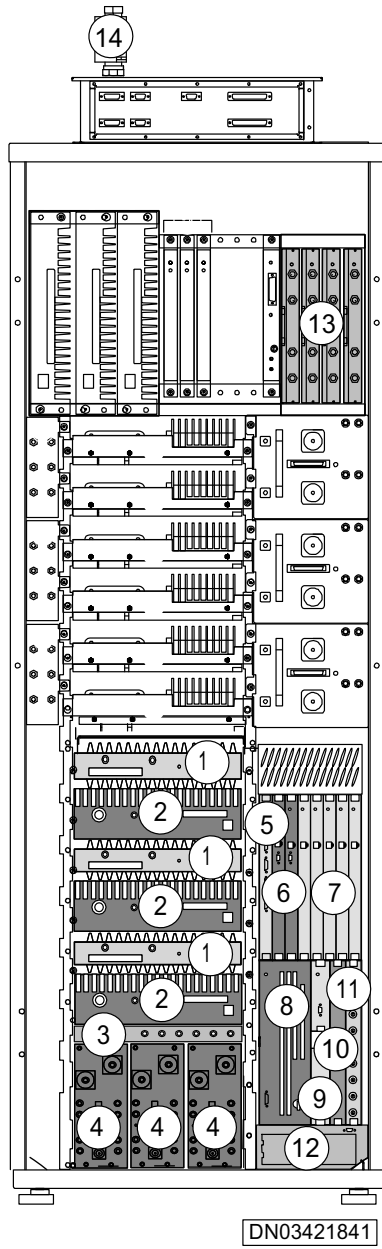
Protect all vacant connectors and slots in the Outdoor cabinet with connector caps and dummy panels.

Note

Ensure all unit mounting screws are properly secured.

Note

Follow applicable procedures for installing *units with handles* and units with ejectors.



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

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

Figure 116. WCDMA unit positions in Nokia UltraSite EDGE BTS



Steps

1. **Install an Antenna Filter (WAF) unit.**
2. **Install a Mini Power Amplifier (WMP) unit.**
3. **Install a Transmitter and Receiver (WTR) unit.**
4. **Install an Input Combiner (WIC) unit.**
5. **Install a Summing and Multiplexing (WSM) unit.**
6. **Install an Application Manager (WAM) unit.**
7. **Install a Signal Processor (WSP) unit.**
8. **Install a System Clock (WSC) unit.**
9. **Install an ATM Cross-connect (AXU) unit.**
10. **Install an Interface (IFU) unit.**
11. **Install a Transmission unit box cover.**
12. **Install a Wideband Power Supply (WPS) unit.**

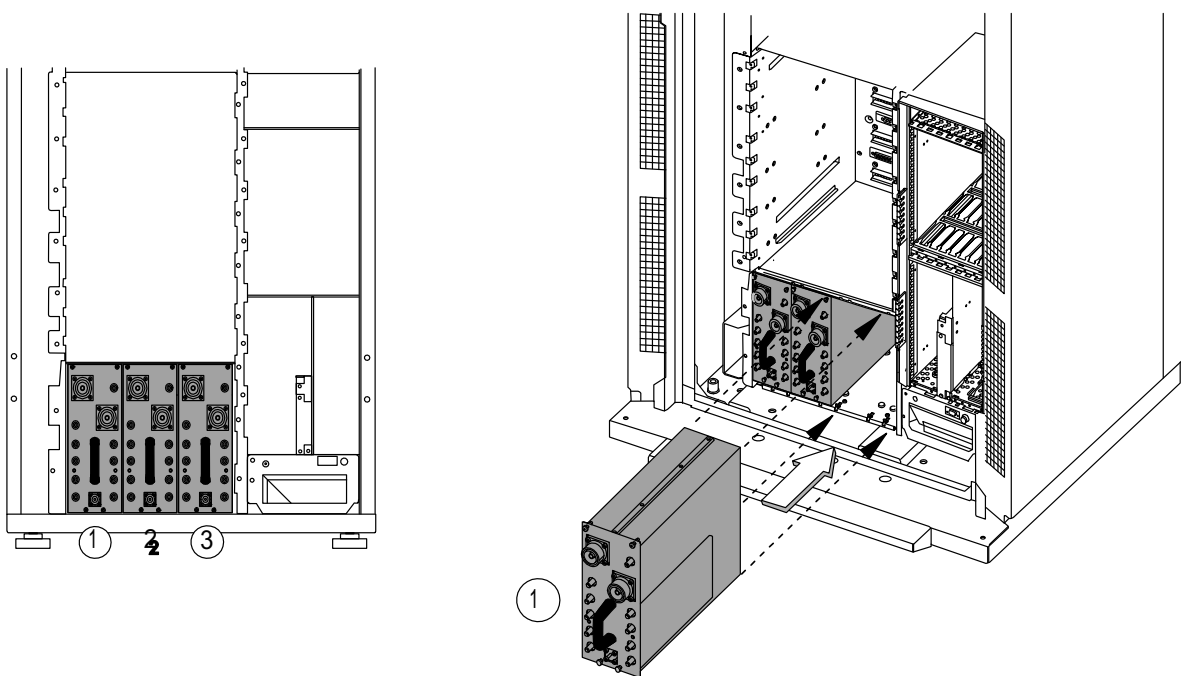
8.8.2 Installing a Wideband Antenna Filter (WAF) unit in UltraSite EDGE BTS with WCDMA upgrade

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 117. 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.**

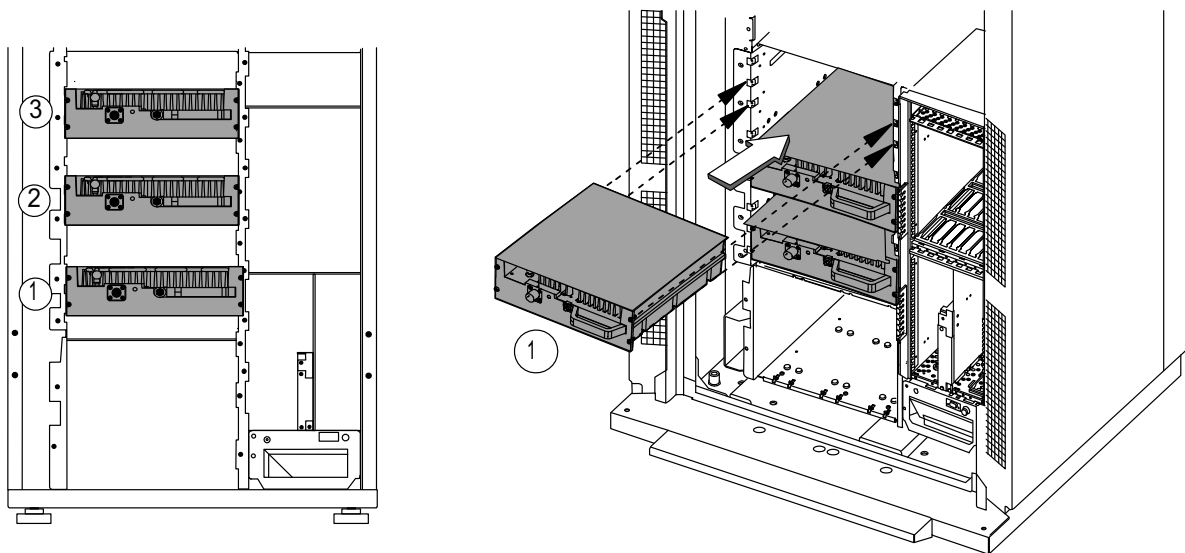
Lifting the unit eases the tightening.

8.8.3 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 118. 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.

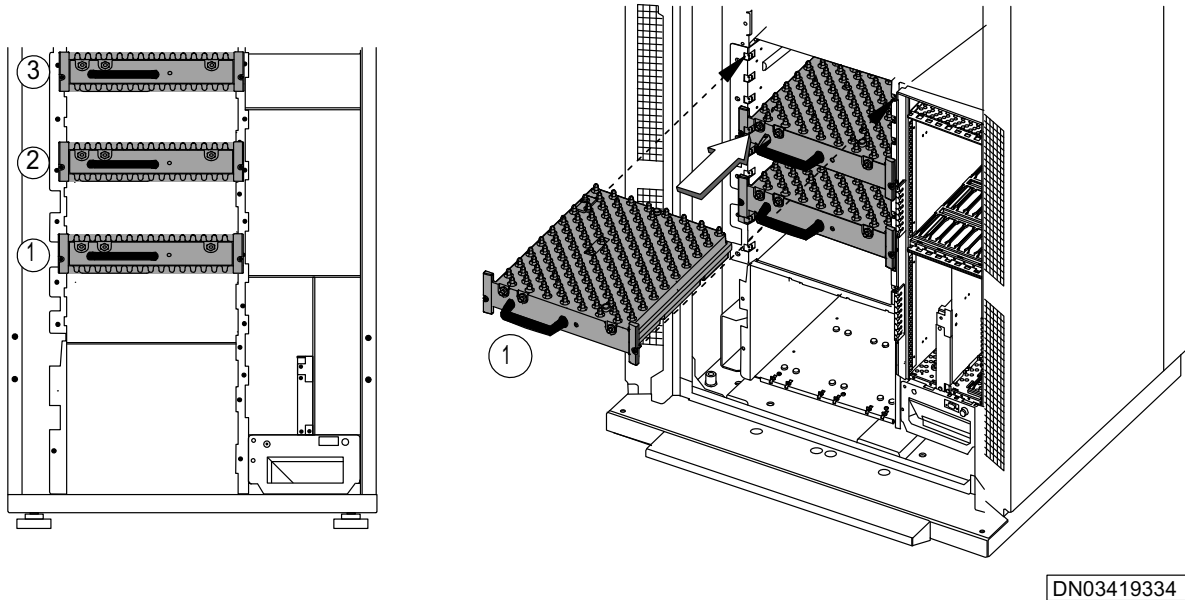
8.8.4 Installing a Wideband Transmitter and Receiver (WTR) unit in UltraSite EDGE BTS with WCDMA upgrade

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.



1	WTRx
---	------

Figure 119. 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.

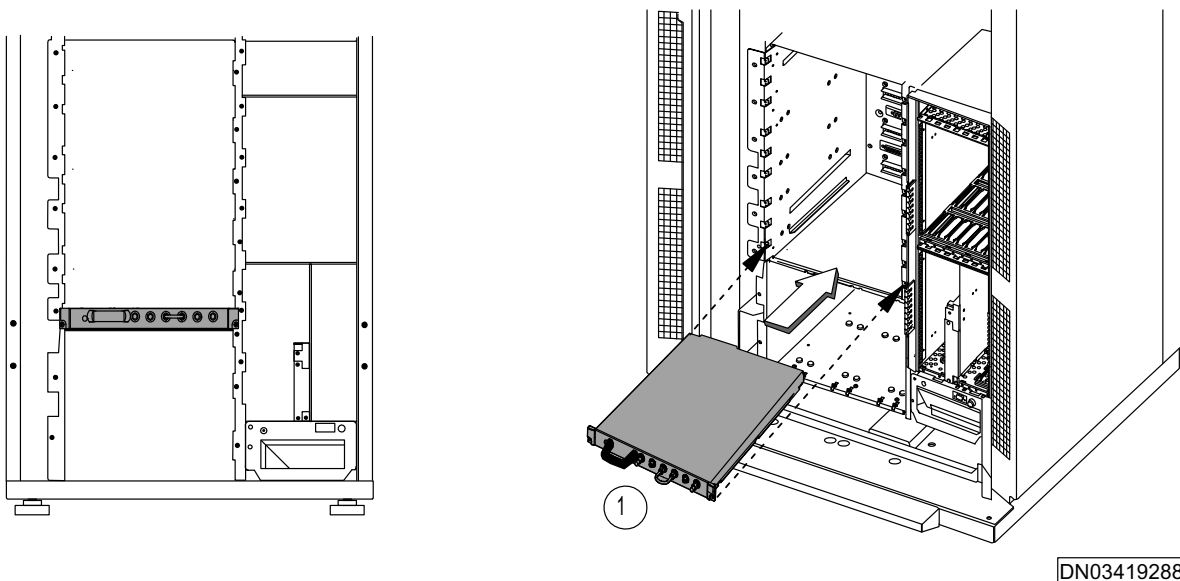
8.8.5 Installing a Wideband Input Combiner (WIC) unit in UltraSite EDGE BTS with WCDMA upgrade

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 120. 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.

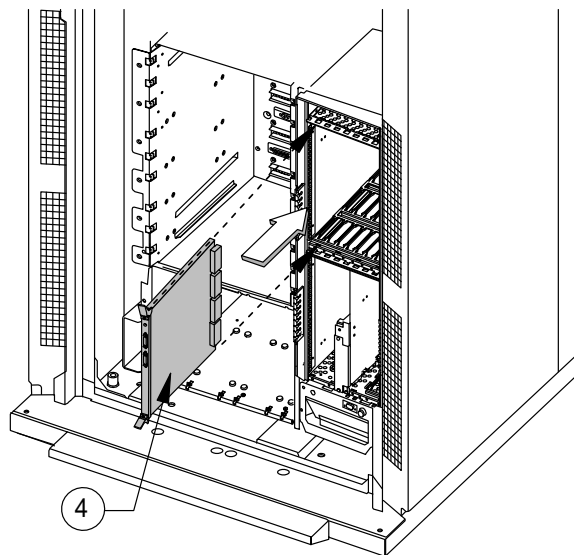
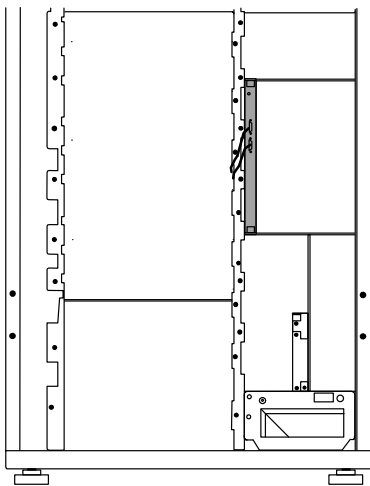
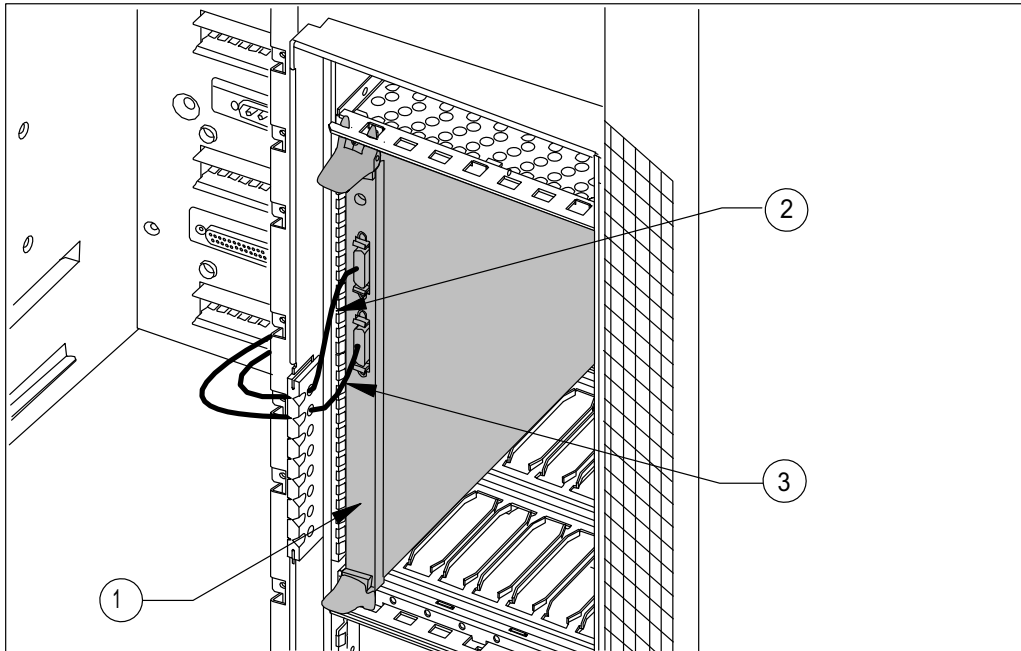
8.8.6 Installing a Wideband Summing and Multiplexing (WSM) unit in UltraSite EDGE BTS with WCDMA upgrade

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 121. 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.**

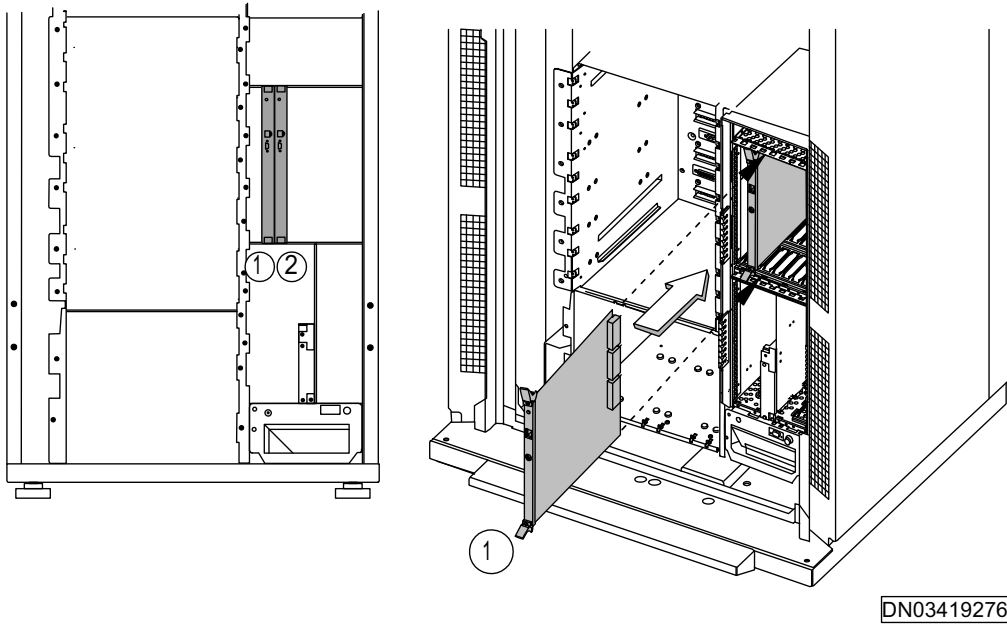
8.8.7 Installing a Wideband Application Manager (WAM) unit in UltraSite EDGE BTS

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.



1	WAMx
---	------

Figure 122. 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.

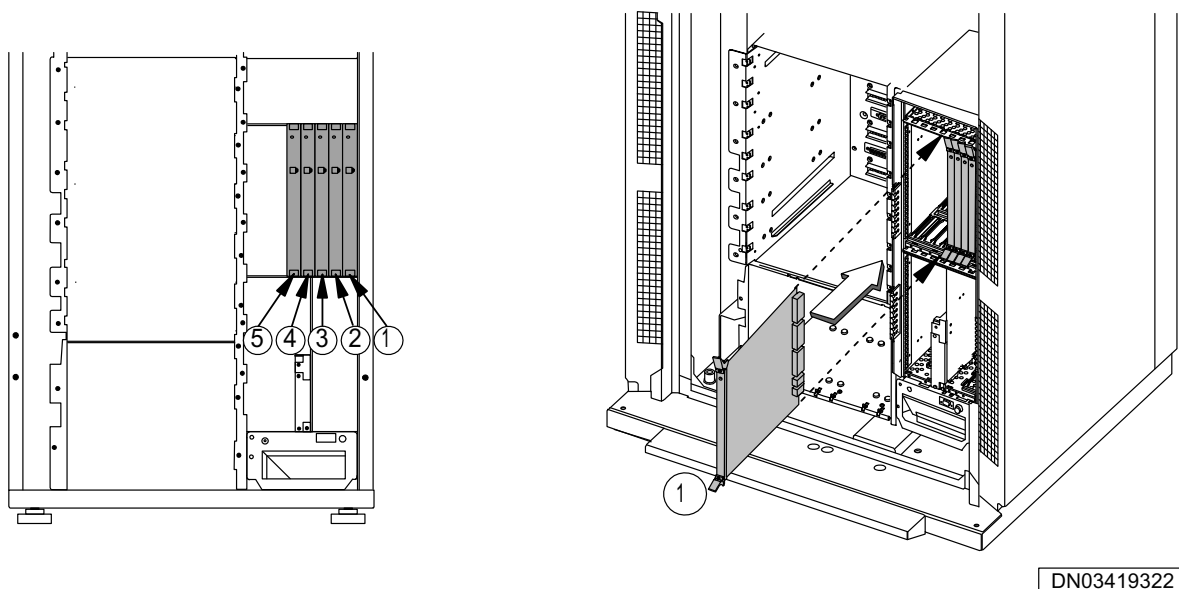
8.8.8 Installing a Wideband Signal Processor (WSP) unit in UltraSite EDGE BTS with WCDMA upgrade

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,-	WSPx
2,-	
3,-	
4,-	
5	

Figure 123. 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.

8.8.9 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.

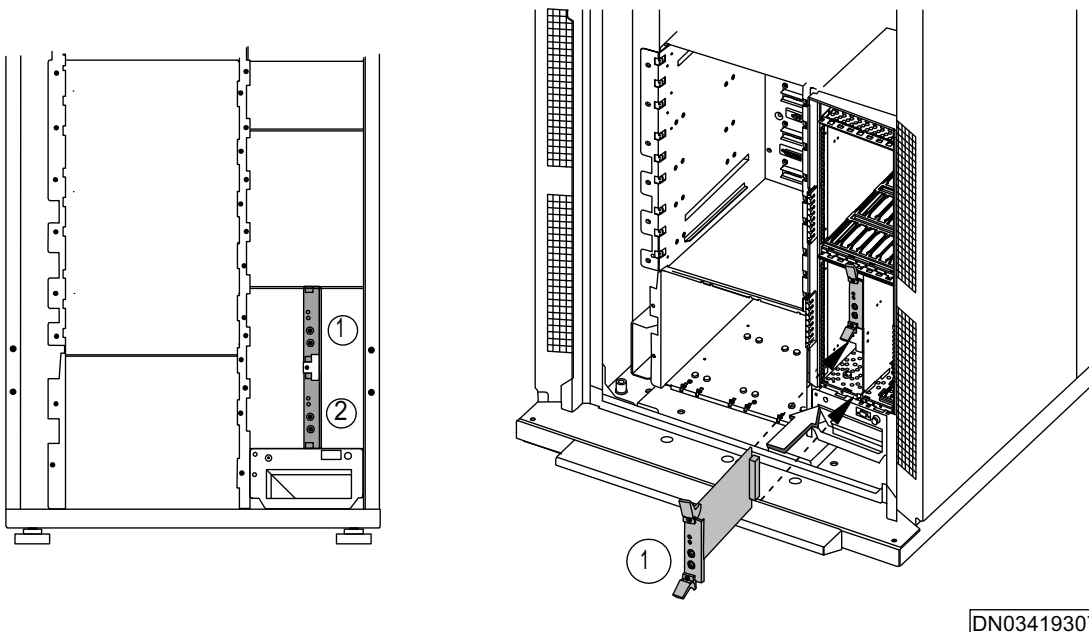




Figure 124. Installing the WSC units



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.

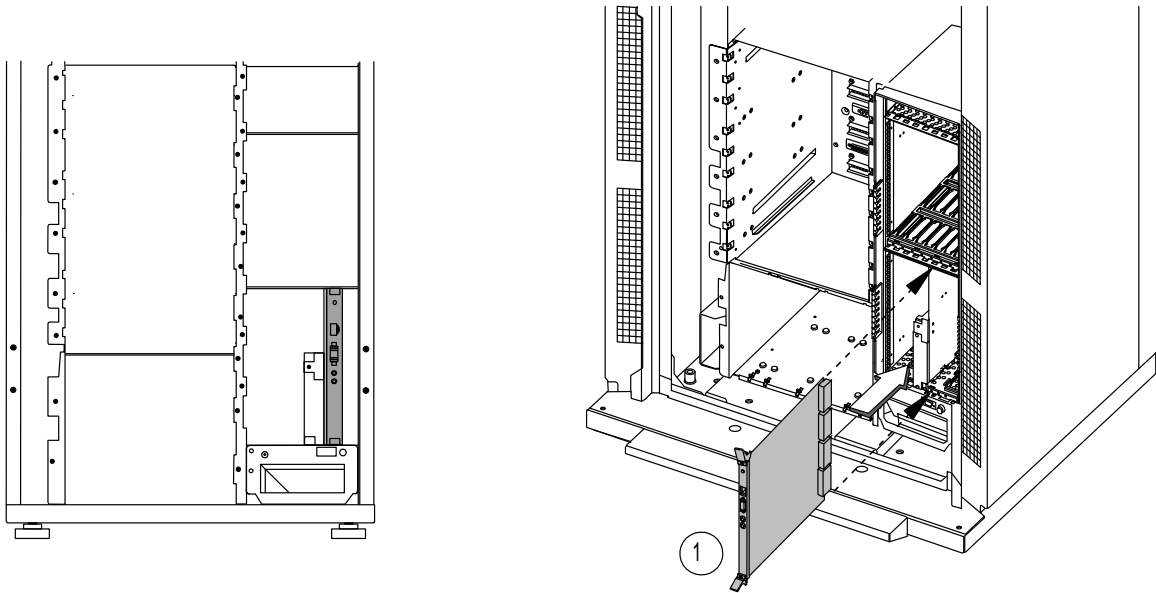
8.8.10 Installing a Wideband AXC-ATM Cross-connect (AXU) unit in UltraSite EDGE BTS with WCDMA upgrade

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

1	AXUx
---	------

Figure 125. 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.

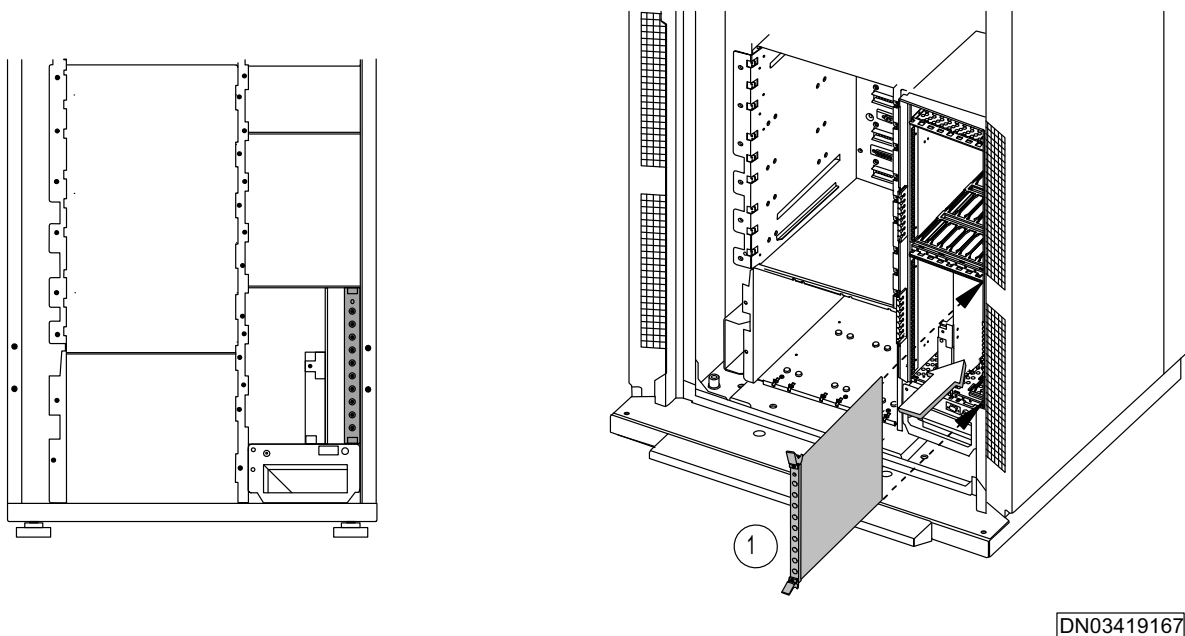
8.8.11 Installing a Wideband Interface (IFU) unit in UltraSite EDGE BTS with WCDMA upgrade

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 126. 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.

8.9 Installing Integrated Battery Backup (IBBU) units of UltraSite EDGE BTS IBBU

8.9.1 Overview of installing UltraSite EDGE BTS IBBU units

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



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 disconnecting the negative cable.

The Integrated Battery Backup (IBBU) consists of the following units in the bottom of Nokia UltraSite EDGE BTS:

- BATA backplane (pre-installed)
- Rectifiers (BATx)
- Batteries (BBAx)
- ADUA (pre-installed with Cabinet Control unit)

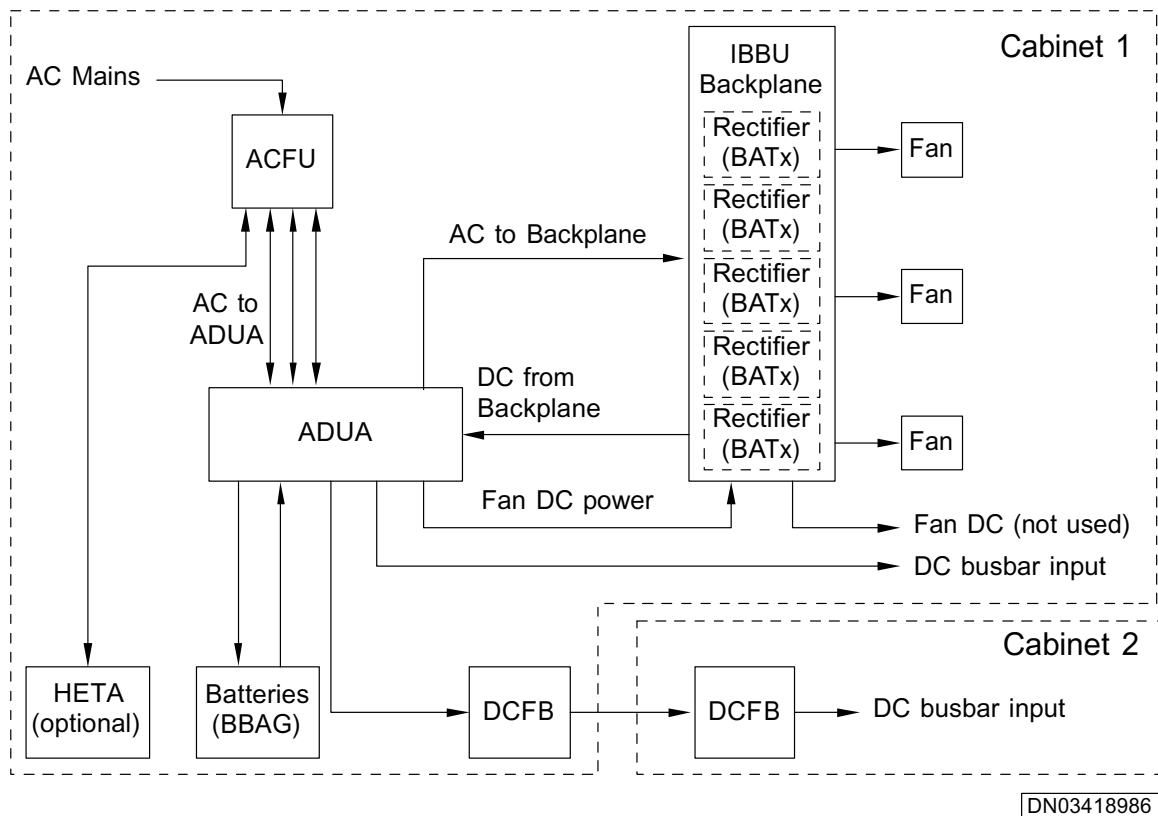
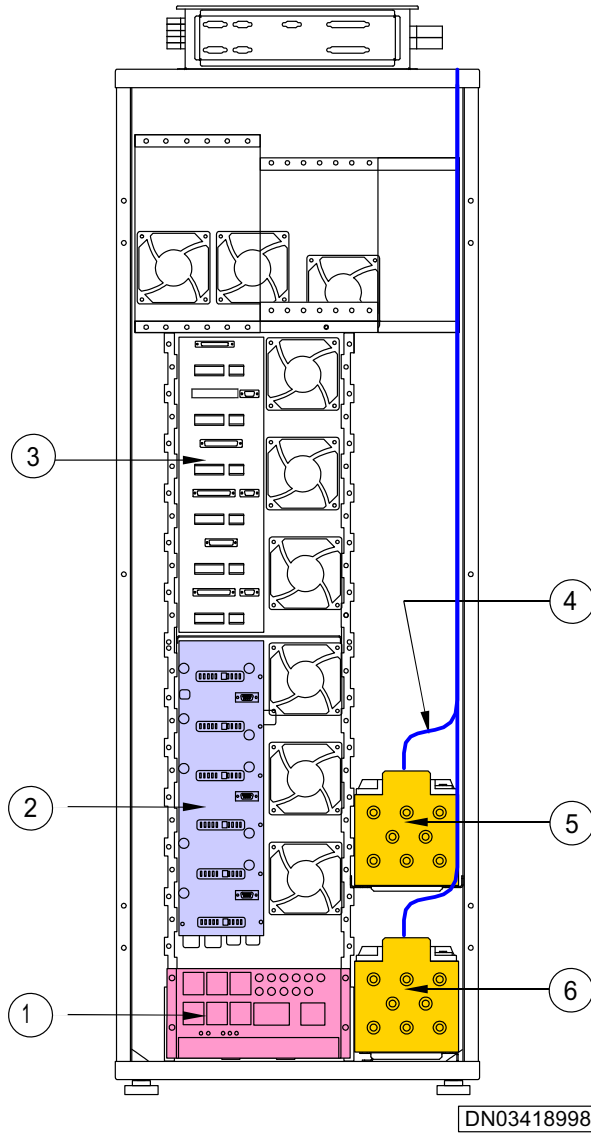


Figure 127. IBBU block diagram



- 1 ADUA (includes CCUA)
- 2 BATA backplane
- 3 TCxx backplane
- 4 Battery vent tube
- 5 Upper battery box

6 Lower battery box

Figure 128. IBBU main components



Steps

1. **Install the rectifiers (BATx).**
2. **Install the batteries (BBAx).**

8.9.2 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.

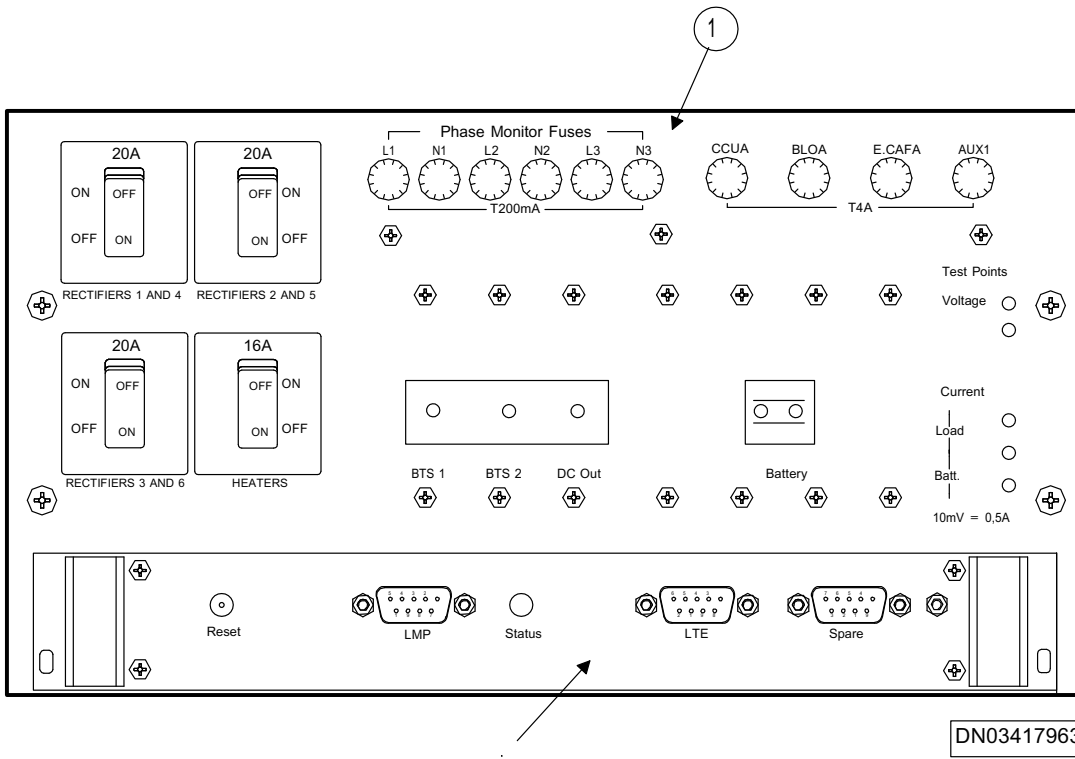
2. Slide the ADUx unit into the cabinet, ensuring that the cables do not become crimped or entangled.
3. Secure the ADUx unit cover with four M4 screws on the ADUx front.

8.9.3 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 129. 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.**

8.9.4 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.

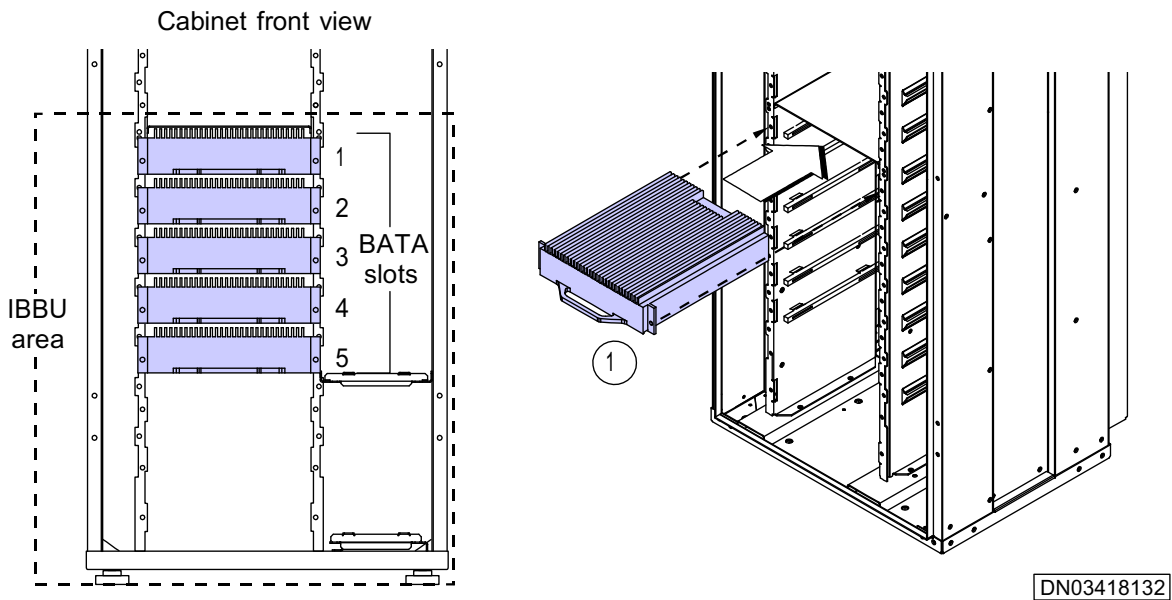
Summary

**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 130. 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.

8.9.5 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.

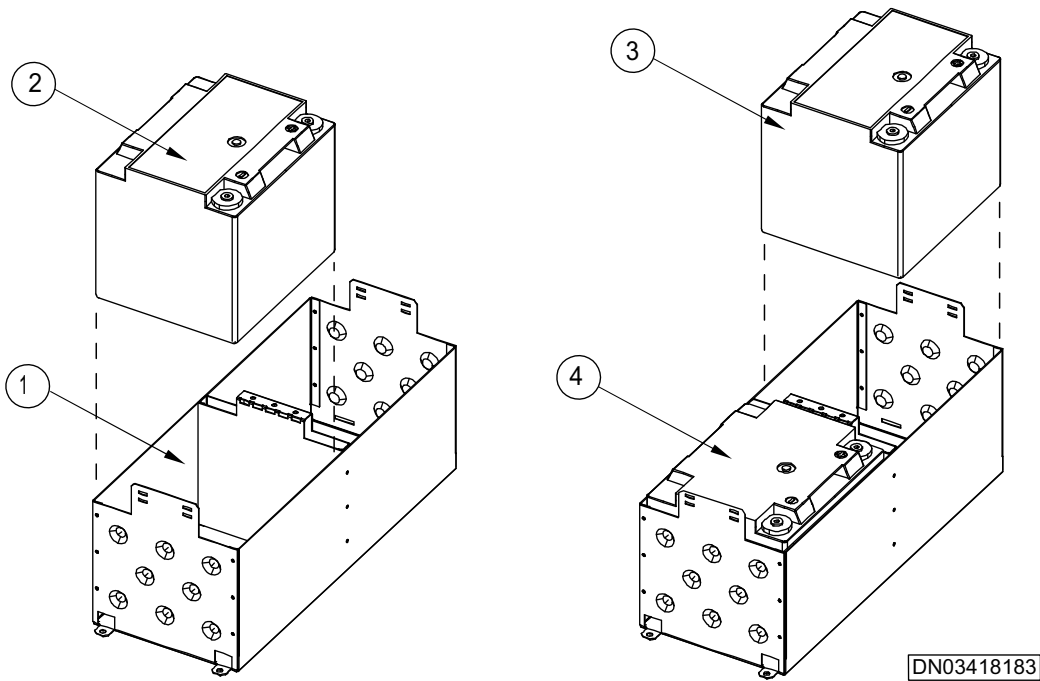
The IBBU configuration requires the installation of two 12V BBAX battery boxes that hold two batteries each. The boxes are located on shelves in the bottom right of the cabinet. During installation, the batteries are connected to the BBAX battery cables, which are attached to the ADUx unit.

**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

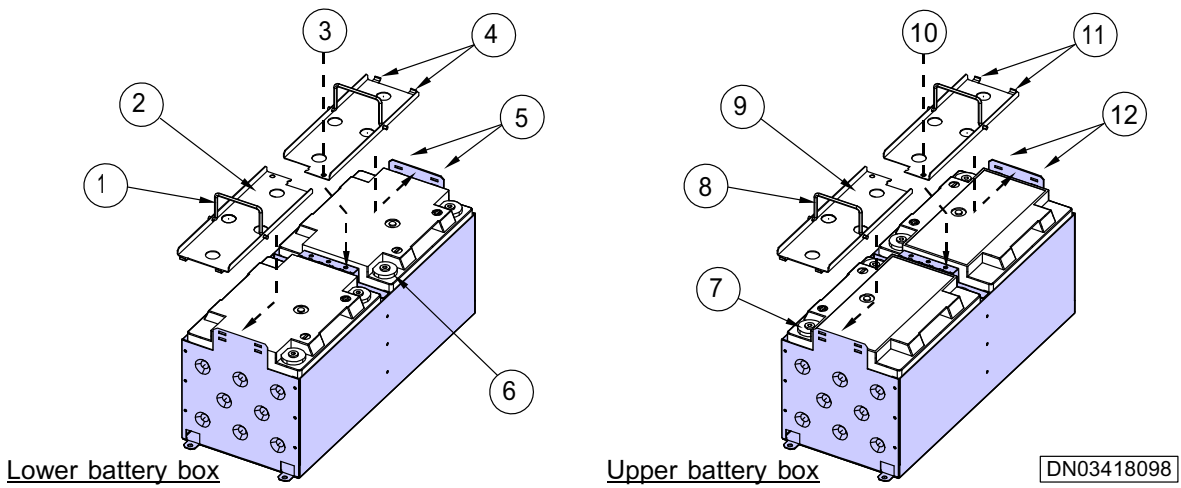
When installing the battery into the lower box, make sure the terminals are on the right side. When installing the battery into the upper box, make sure the terminals are on the left side.



1	Battery box
2	Battery 1
3	Battery 2
4	Battery 1

Figure 131. 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.

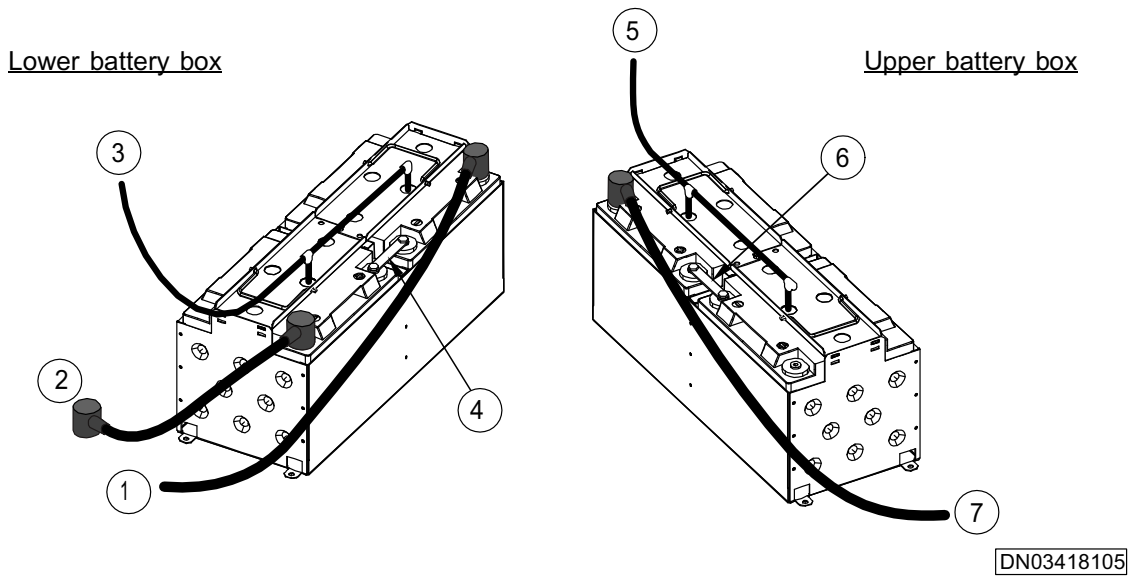


1	Handle
2	Cover plate (two places)
3	Screw (three places)
4	Tabs
5	Slots
6	Terminals
7	Terminals
8	Handle
9	Cover plate (two places)
10	Screw (three places)
11	Tabs
12	Slots

Figure 132. Battery block cover plate installation

- f. Repeat steps 1(a)through 1(e) for the second battery box.

2. Connect the battery cables.



DN03418105

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 (-)

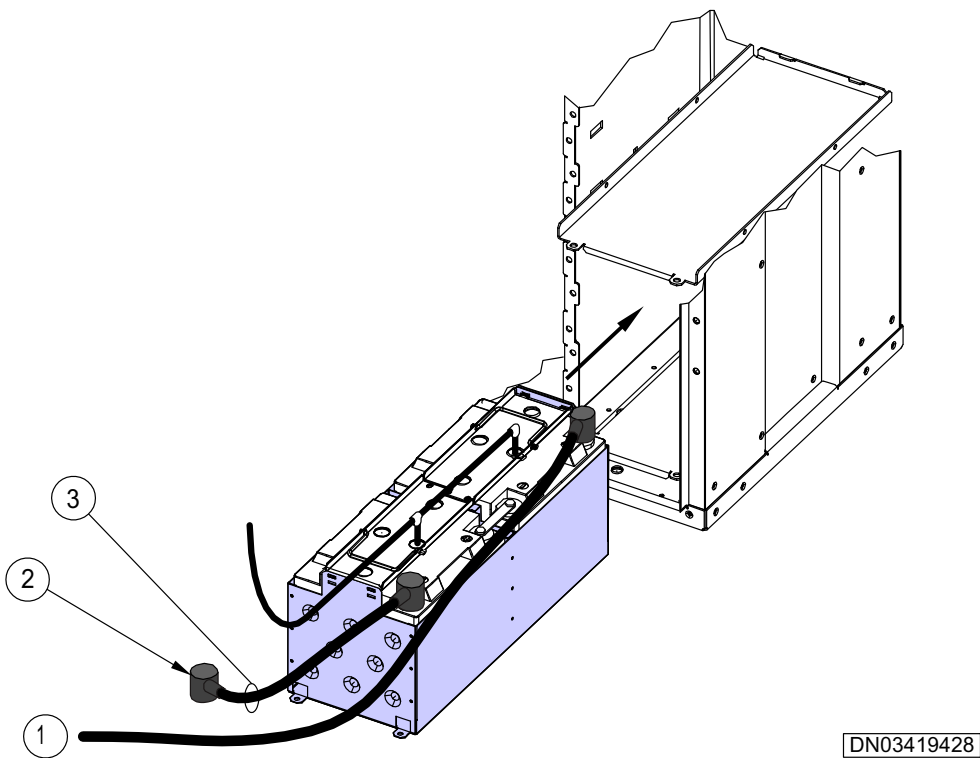
Figure 133. Battery box cable and vent tube installation

- 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.

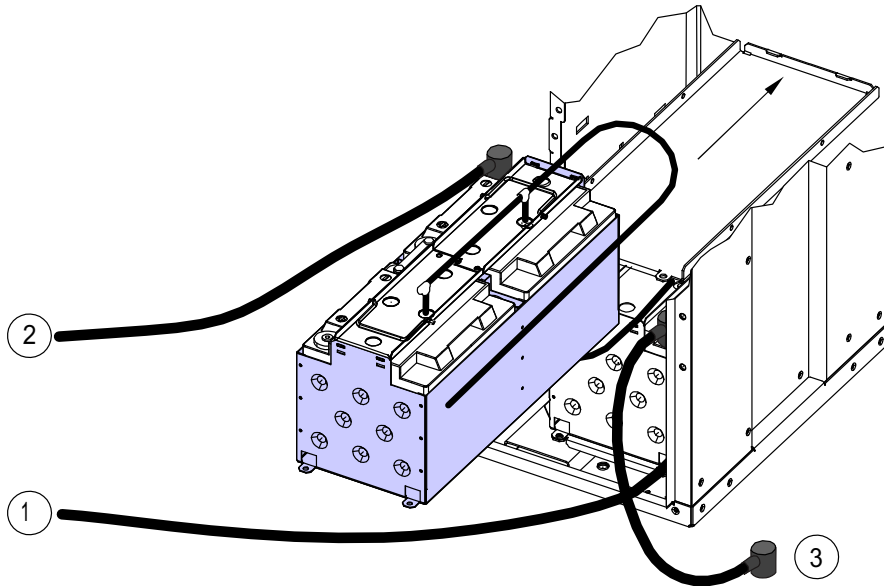
- a. Slide the lower battery box into the cabinet.



1	From ADUA (+)
2	Insulating cover
3	Bridge cable to (+) terminal on upper battery

Figure 134. 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.



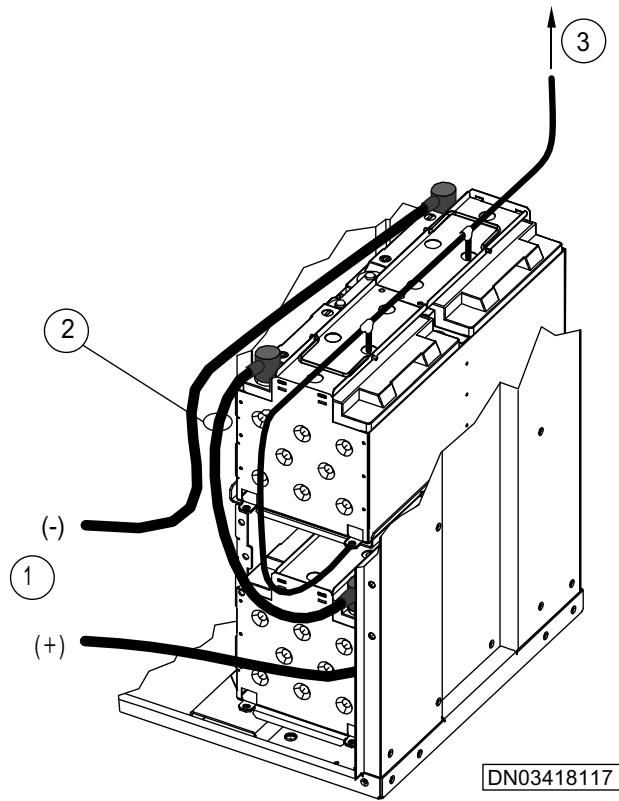
DN03420324

1	From ADUA (+)
2	From ADUA (-)
3	Bridge cable

Figure 135. Upper battery box installation

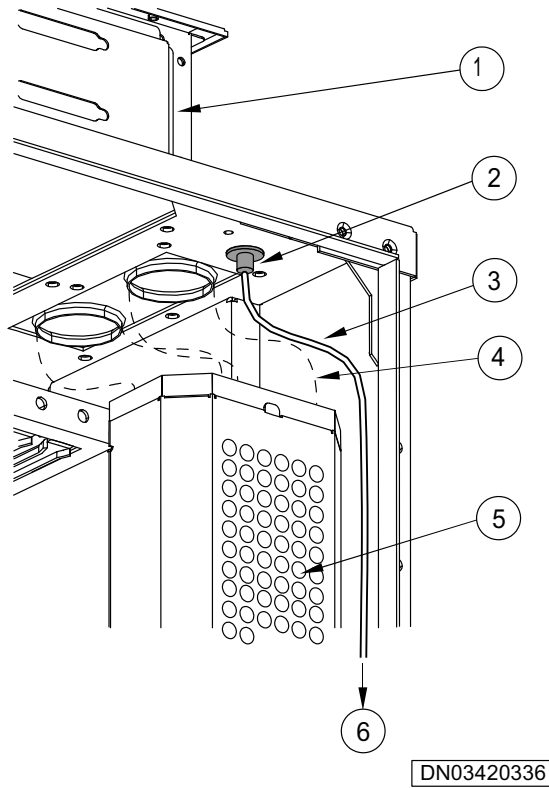
- d. Secure the battery box to the shelf using two M5 screws. See *Torque settings of UltraSite EDGE BTS*.
- 4. Connect the battery boxes.**
- a. Connect the free end of the battery bridge cable to the positive terminal on the front battery of the upper battery box.
 - b. Use an insulated torque wrench 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 136. 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 137. 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.

9 Cabling UltraSite EDGE BTS units

9.1 Cabling GSM/EDGE units of UltraSite EDGE BTS

9.1.1 Overview of cabling GSM/EDGE units of UltraSite EDGE BTS

Summary

The required cable kit accompanies the units in the BTS delivery package.



Warning

Comply with all illustrations of power cable routing.

Note

Except in the case of power cable routing, the installer determines the exact route of the connecting cable. Cable illustrations show one possible path for connecting two ports.

Note

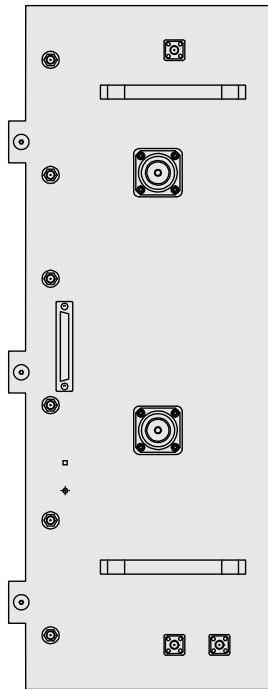
Use tie-wrap or lacing cord to tie cables every metre, when appropriate.

Note

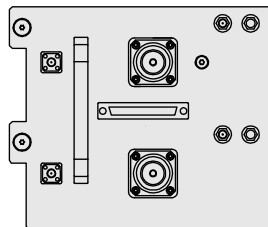
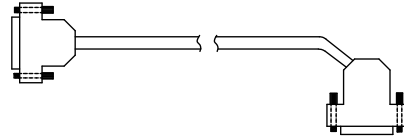
Terminate unused RX outputs and use dust caps for any unused antenna ports.

Table 4. Unit cable kits

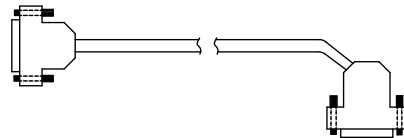
Category	Property	Cable quantity	From unit	To unit
066641x	993857xx (TSxx)	2 each	TSxx	M2xA or M6xA DVxx or RTxx or WCxA
066643x	994081x (M2xA)	2 each	DVxx or RTxx	M2xA
066644x	993856x (M6xA)	2 each	DVxx or RTxx	M6xA
066647x	993747x (WCxA)	1 each	WCxA	WCxA or DVxx
069314x	993935x (Bias Tee)	2 each (Indoor cabinet) 4 each (Outdoor cabinet) 1 - Adaptor plate	Bias Tee Interface Module	BPxx
066646x	993997x (RTxx)	1 each	RTxx	RFU backplane
	993997x (DVxx)	1 each	DVxx	RFU backplane
069313x	993744x (Antenna: 2.0 m)	2 each	DVxx or RTxx	Antenna box
	993936x (Antenna: 1.4 m)	2 each	DVxx or RTxx	Antenna box
	993937x (Antenna: 1.7 m)	2 each	DVxx or RTxx	Antenna box



RTxx to RFU Backplane
 Kit # 066646x.xxx / Part #993997x, quantity one



DVxx to RFU Backplane
 Kit # 066646x.xxx / Part #993997x, quantity one

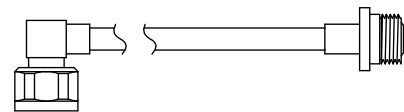


Antenna cable kit

Kit #069313x.xxx

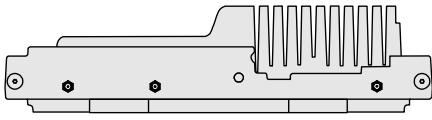
Part:

- #993744X, 2.0m long, quantity two
- #993937X, 1.7m long, quantity two
- #993936X, 1.4m long, quantity two



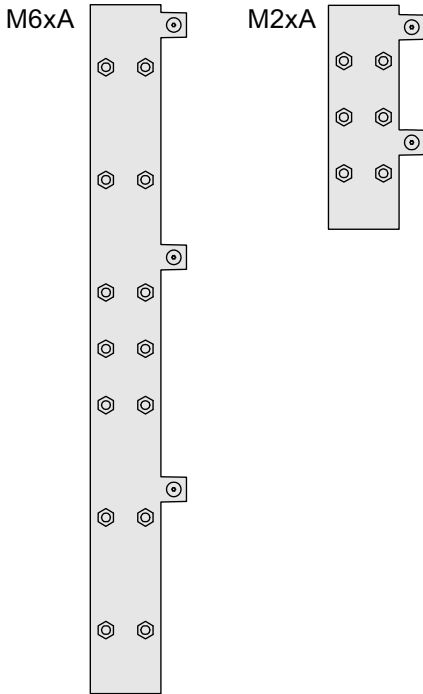
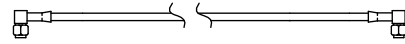
03436211

Figure 138. Plug-in units with cable kits



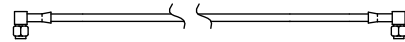
Transceiver to M2xA or M6xA
 Transceiver to DVxx or RTxx or WCxA

Kit #066641x.xxx / Part #993857x, quantity three



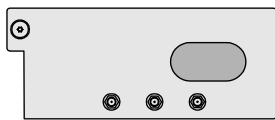
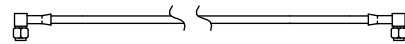
DVxx or RTxx to M6xA

Kit #066643x.xxx / Part #993856x, quantity two



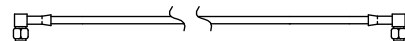
DVxx or RTxx to M2xA

Kit #066644x.xxx / Part #994081x, quantity two



WCxA to WCxA or DVxx (2:1, 4:1 combining

Kit #066647x.xxx / Part #993747x, quantity one



Bias Tee interface to Bias Tee

Kit #069314x.xxx / Part #993935x, quantity one



03436223

Figure 139. Plug-in units with cable kits



Steps

1. **Route antenna cables.**
2. **Route transmission cables.**
3. **Cable a DC filter module to the PWSx unit.**
4. **Cable DVxx and WCxA units with the SXCA kit.**

9.1.2 Cabling a GSM/EDGE antenna in UltraSite EDGE BTS

Before you start

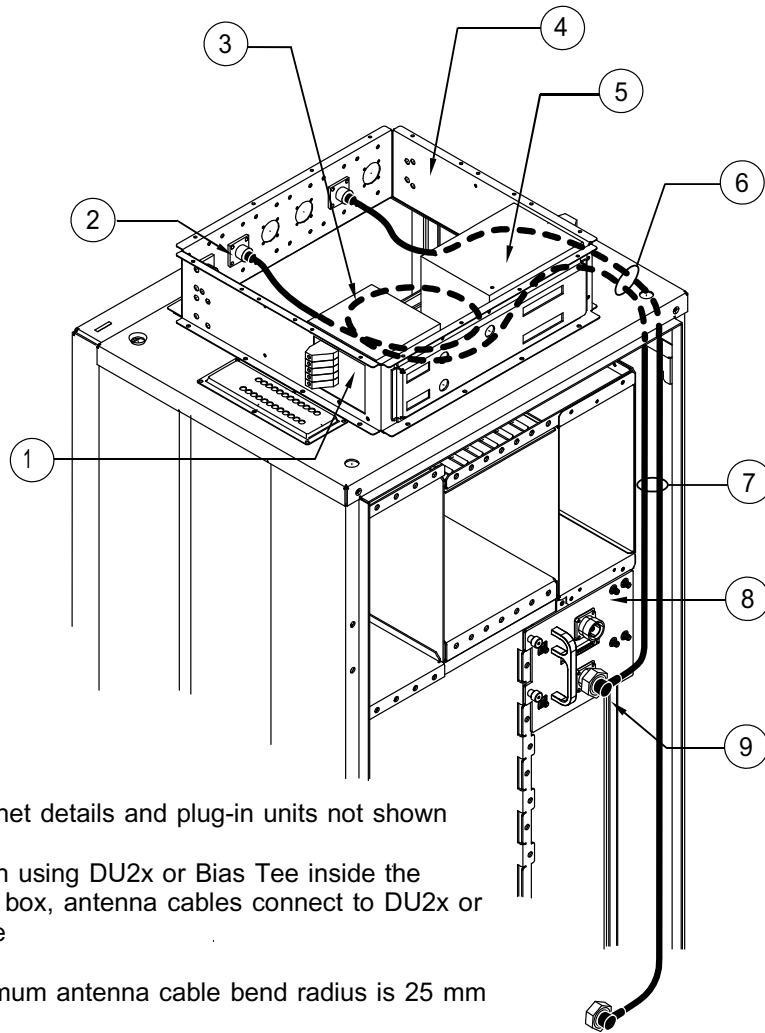
Review the *Overview of cabling GSM/EDGE units of UltraSite EDGE BTS*.

Summary

Note

After you route cables, ensure all antenna cables are tied or secured to the cable retainer plates located in the right side of the cabinet.

For more information on antenna systems, refer to *Nokia UltraSite EDGE Antenna Product Documentation*.



NOTES:

1. Cabinet details and plug-in units not shown
2. When using DU2x or Bias Tee inside the antenna box, antenna cables connect to DU2x or Bias Tee
3. Minimum antenna cable bend radius is 25 mm (1.0 in.)

DN03418892

1	AC PWS filter (optional)
2	Antenna cable connector, female, secured from outside of panel (Note 2)
3	Antenna cable excess length must be looped and stowed to facilitate cable routing in antenna box (Note 3)
4	Antenna box, top removed to show cable routing

5	DC PWS filter
6	Antenna cables routed beneath power supply filters into antenna box
7	Antenna feeds, (maximum 12) 1.4m, 1.7m, 2.0m lengths supplied
8	DVxx (or RTxx)
9	Antenna connector, male

Figure 140. General antenna cable routing in the cabinet



Steps

- 1. Secure the antenna cable connector at the top of the cabinet from outside of panel.**

When using DU2x or Bias Tee inside the antenna box, antenna cables connect to DU2x or Bias Tee.

- 2. Route antenna cables beneath power supply filters into antenna box.**

The supplied antenna feed lengths are 1.4m (4.6 ft), 1.7m (5.6 ft) and 2.0 m (6.6 ft).

- 3. Secure or tie all antenna cables to the cable retainer plates located in the right side of the cabinet.**

- 4. Loop and stow antenna cable excess length.**

Minimum antenna cable bend radius is 25 mm (1.0 in.)

9.1.3 Cabling a GSM/EDGE transmission (VXxx) unit in UltraSite EDGE BTS

Before you start

Review the *Overview of cabling GSM/EDGE units of UltraSite EDGE BTS*.

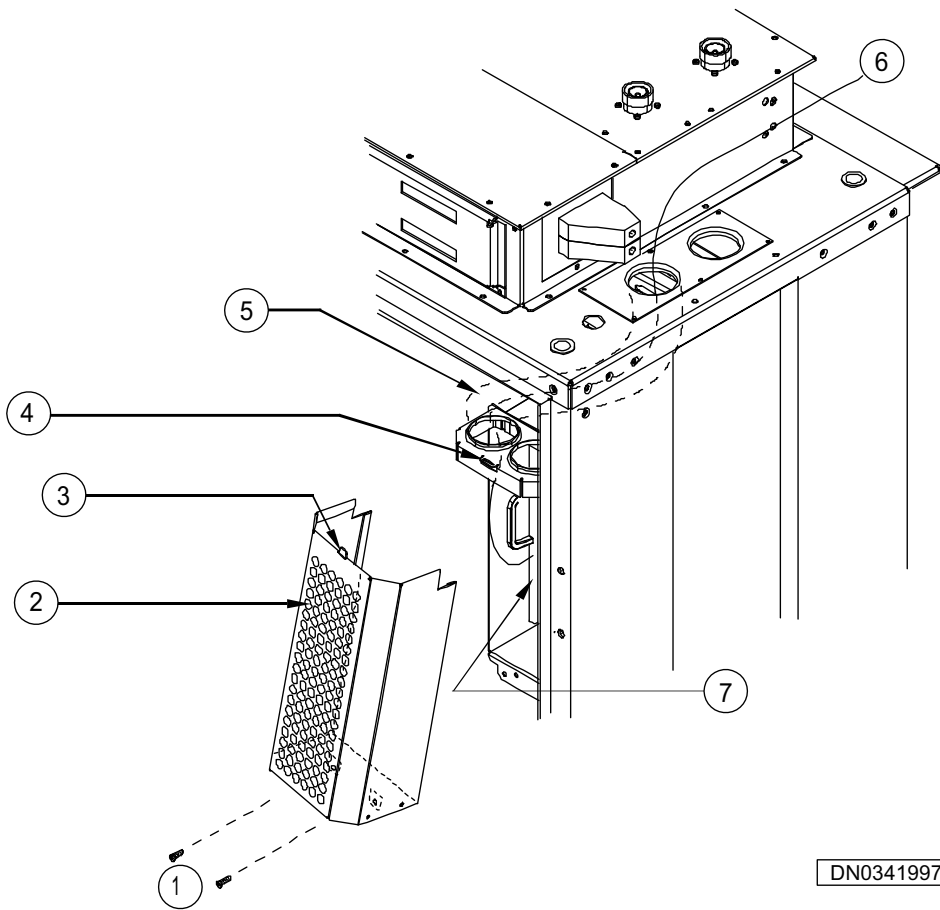
Summary

The Transmission (VXxx) unit connects UltraSite EDGE BTS to the Abis interface through one of the following media:

- radio-link
- wireline

Note

An E1/T1 adapter cable (RJ45 to TQ) is available to connect the Abis cable to the Transmission units (except for FXC E1 and FC E1/T1 units when using the 75 ohm E1). To order the adapter cable, contact your local Nokia representative.



DN03419973

1	Screws (two places)
2	Transmission unit cover

3	Tab
4	Slot in cable entry top
5	EMC mesh sleeve, (allows cable access to transmission units from outside), two places
6	Abis interface cable(s)
7	Transmission unit(s)

Figure 141. Route of the Abis cable with VXxx unit cover removed



Steps

1. **Remove the VXxx unit cover to install the VXxx unit(s) and Abis cable(s).**
2. **Route the Abis cable(s) through the EMC sleeve.**
3. *If you are routing cables to radio transmission units,*
Then
Follow these instructions.
4. *If you are routing cables to wireline transmission units,*
Then
Follow these instructions.

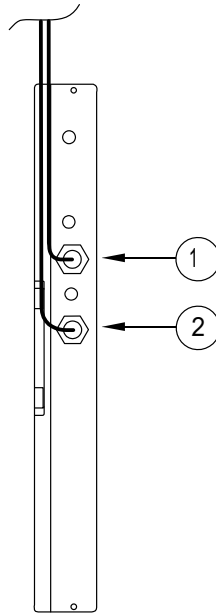
9.1.4 Cabling a GSM/EDGE radio transmission unit of UltraSite EDGE BTS

Before you start

Review *Cabling a GSM/EDGE transmission (VXxx) unit in UltraSite EDGE BTS.*

Summary

The FXC RRI transmission unit includes two Flexbus interfaces for connecting to Nokia FlexiHopper or Nokia MetroHopper outdoor units, or to some other indoor radio unit.



DN03420012

1	RX/TX (Flexbus radio 2)
2	RX/TX (Flexbus radio 1)

Figure 142. Routing the Flexbus cable to FXC RRI unit



Steps

1. **Connect the RX/TX Flexbus cable to the TNC connector on the FXC RRI transmission unit.**
2. **Tighten the connector nut.**

See Torque settings of UltraSite EDGE BTS.

Note

Make sure that the cable connector and shrinking sleeve combination is not too long so that the cable has enough space to bend when you install the cabinet cover.

9.1.5 Cabling a wireline to GSM/EDGE transmission unit in UltraSite EDGE BTS**Before you start**

Review *Cabling a GSM/EDGE transmission (VXxx) unit in UltraSite EDGE BTS*.

Summary

**Caution**

Use either separate 75 Ω RX and TX connectors (BT-43) or one 120/100 Ω TX/RX connector (TQ).

**Caution**

The 75 Ω TX is grounded only when the grounding bridge between the TX and RX connectors is in place (see *Routing cables to the FC E1/T1 unit* figure and the *Routing cables to the FXC E1 unit* figure).

The grounding bridge connects the outmost wires of both connectors. To ground the outmost wire of Rx connector directly, leave the grounding bridge in place. To ground the outmost wire of Rx connector capacitively, remove the grounding bridge. Loosen the connector and pull the grounding bridge off. Store it for future use.

Remember to tighten the connectors properly after the grounding bridge has been removed! The torque is 1.5 Nm (1.11 ft-lb).



Caution

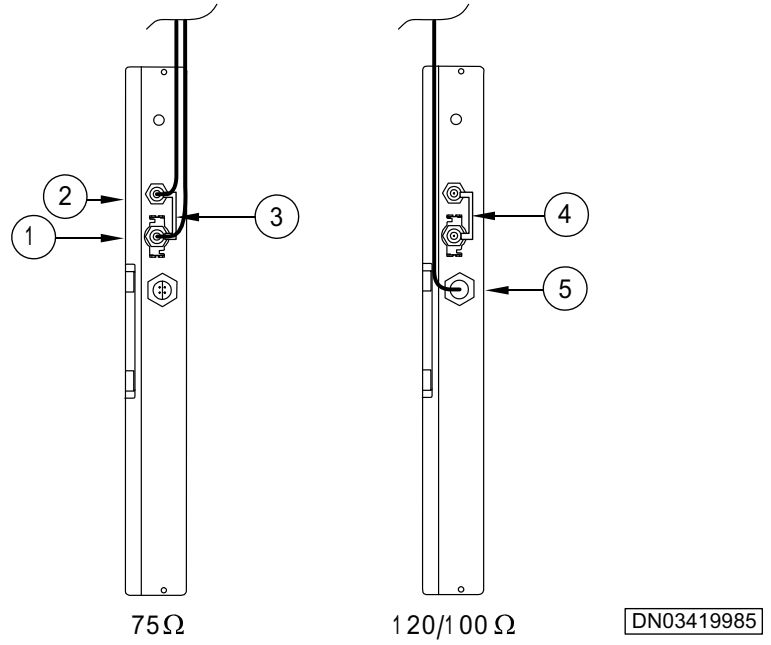
If you remove the grounding bridge, the grounding of the RX connector's outer conductor changes from direct grounding to capacitive.

Note

When routing the cables, make sure that the cable connector and shrinking sleeve combination is not too long so that the cable has enough space to bend when you install the cabinet cover.

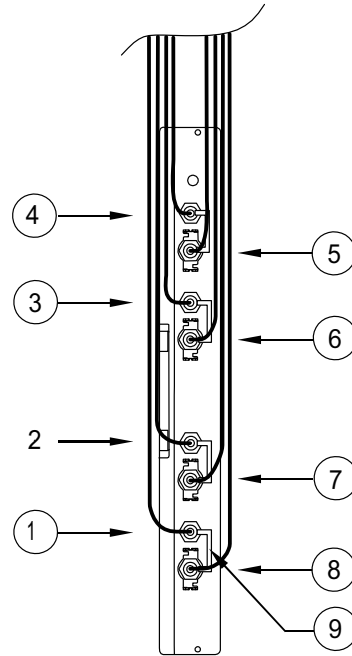
The following wireline transmission units are available with UltraSite EDGE BTS:

- FC E1/T1 unit - includes the following cables:
 - one coaxial 75 Ω TX/RX connector for E1 use
 - one twisted pair 120/100 Ω TX/RX interface connector for either E1 or T1 use
- FXC E1 unit - includes four pairs of 75 Ω connectors (BT-43) for E1 use
- FXC E1/T1 unit - includes four 120/100 Ω TX/RX connectors (TQ) for either E1 or T1 use



1	RX line
2	TX line
3	Grounding bridge
4	Grounding bridge
5	RX/TX line

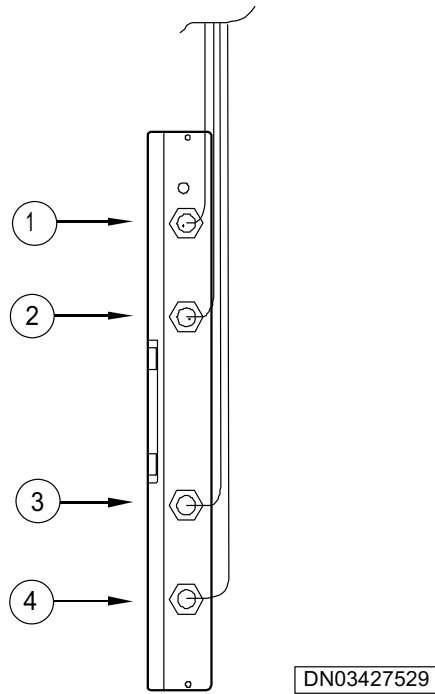
Figure 143. Routing cables to the FC E1/T1 unit



DN03419997

1	TX line, IF4
2	TX line, IF3
3	TX line, IF2
4	TX line, IF1
5	RX line, IF1
6	RX line, IF2
7	RX line, IF3
8	RX line, IF4
9	Grounding bridge (4x)

Figure 144. Routing cables to the FXC E1 unit



1	RX/TX line 1
2	RX/TX line 2
3	RX/TX line 3
4	RX/TX line 4

Figure 145. Routing cables to the FXC E1/T1 unit



Steps

1. *If you are routing cables to the 75 Ω connector on the FC E1/T1 unit,*

Then

Perform these tasks:

- a. If necessary, remove the grounding bridge with a 10 mm spanner (wrench).
- b. Connect the RX cable to the 75 Ω RX connector on the front of the FC E1/ T1 unit.
- c. Connect the TX cable to the 75 Ω TX connector on the front of the FC E1/ T1 unit.
- d. Tighten the connector nut.
See *Torque settings of UltraSite EDGE BTS*.

2. If you are routing cables to the 120/100 Ω connector on the FC E1/T1 unit,
Then

Perform the following tasks:

- a. Connect the TX/RX cable to the 120/100 Ω TX/RX connector on the front of the FC E1/T1 unit.
- b. Tighten the connector nut.
See *Torque settings of UltraSite EDGE BTS*.

3. If you are routing cables to the FXC E1 unit,
Then

Perform the following tasks:

- a. Remove the grounding bridge with a 10 mm spanner (wrench), if necessary.
- b. Connect the RX cable to the 75 Ω RX connector at IF1 on the FXC E1 unit.
- c. Connect the TX cable to the 75 Ω TX connector on IF1.
- d. Repeat steps a to c to connect the remaining IFs.

4. If you are routing cables to the FXC E1/T1 unit,
Then

Perform the following tasks:

- a. Connect the TX/RX cables to the 120/100 Ω TX/RX connectors on the front of the FXC E1/T1 unit.
- b. Tighten each connector nut.
See *Torque settings of UltraSite EDGE BTS*.

9.1.6 Cabling an AC filter module to the IBBU of UltraSite EDGE BTS

Before you start

Review the *Overview of cabling IBBU units of UltraSite EDGE BTS with IBBU*.

Summary



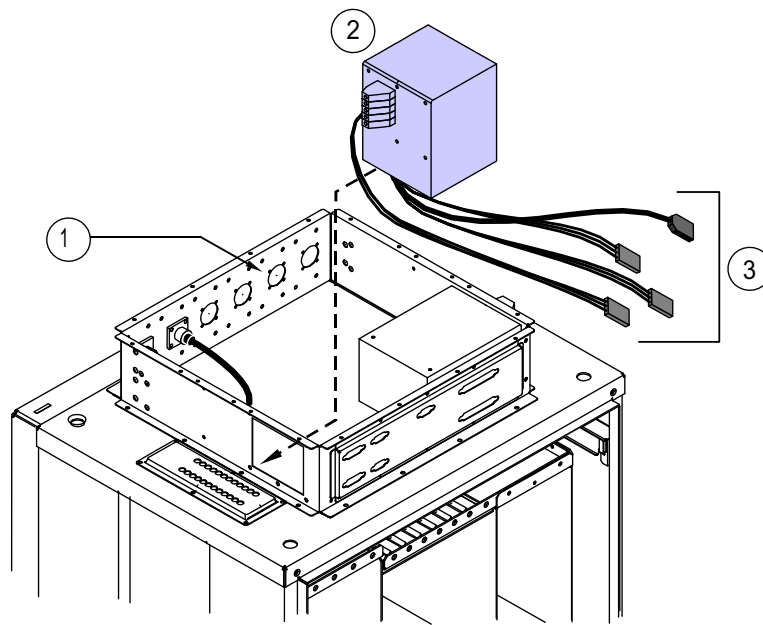
Warning

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.

Note

You can remove the integrated AC filter cover only one time. You cannot replace the AC filter cover if it is removed.

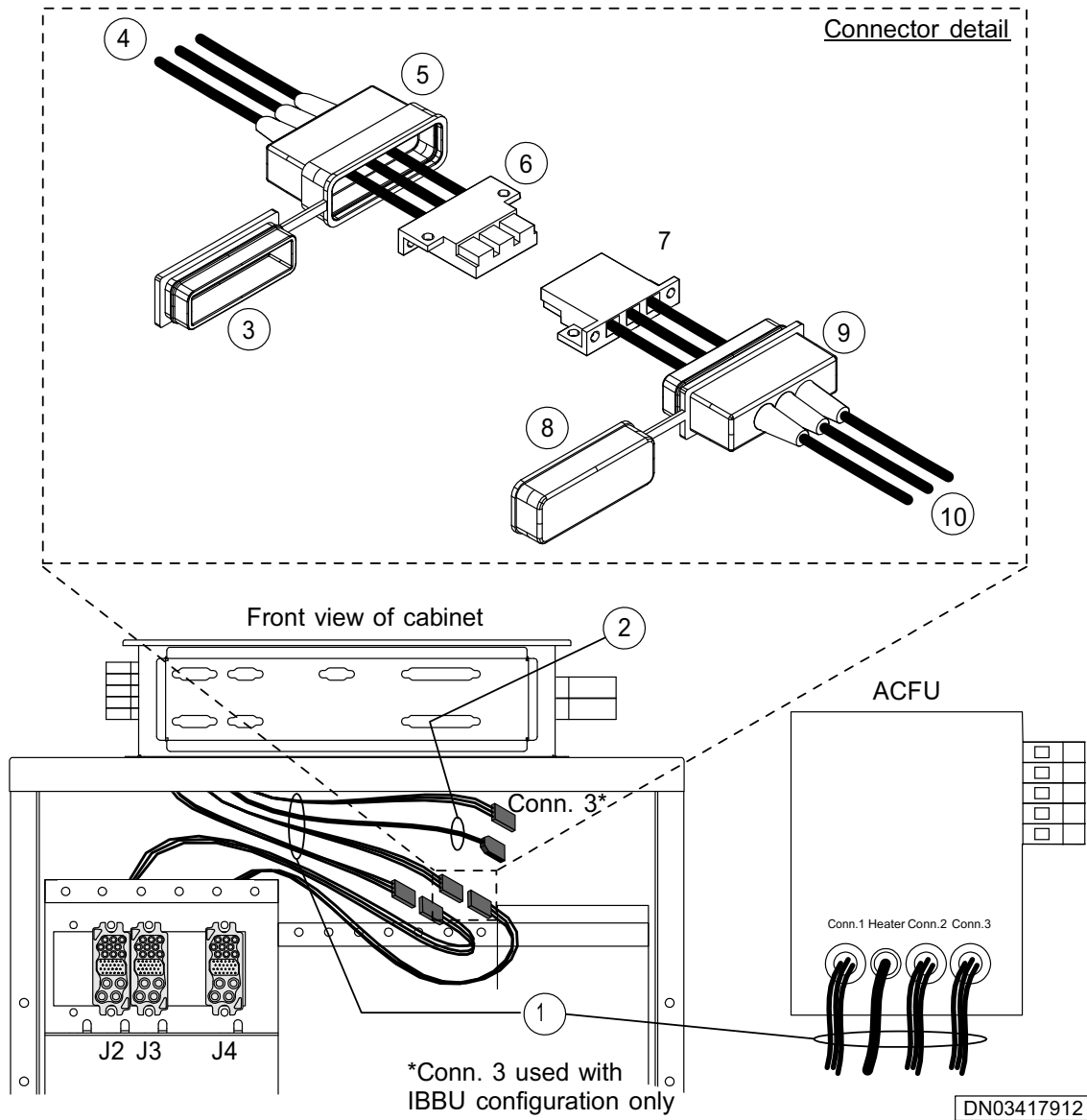
The AC filter module is required when you install PWSA units.



DN03417936

1	Antenna box, top removed
2	ACFU filter
3	ACFU Outputs

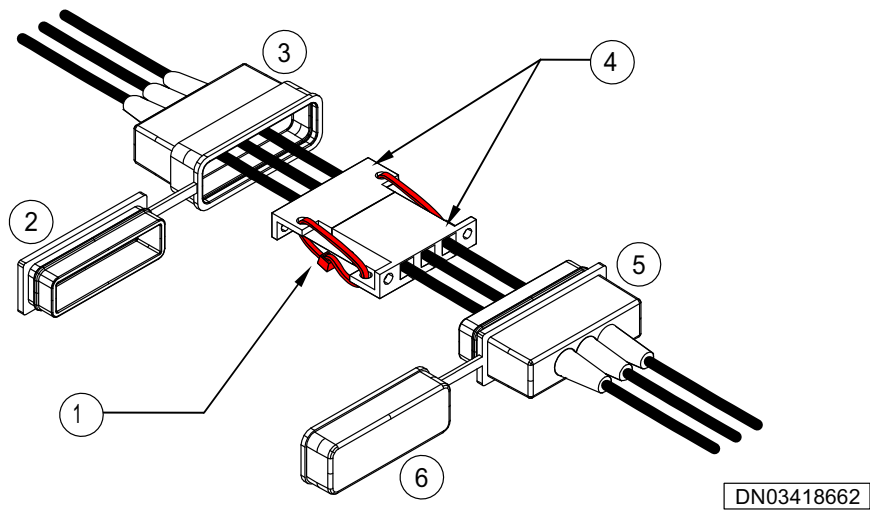
Figure 146. AC filter module installation



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)

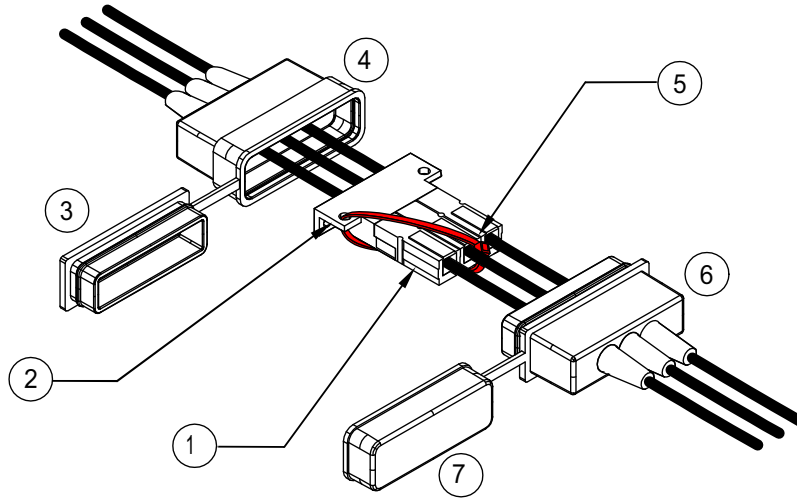
Figure 147. AC filter module cable routing



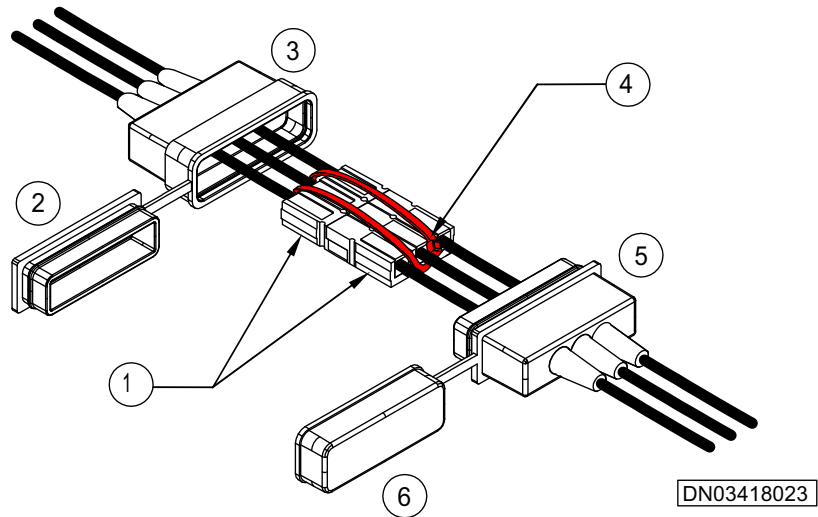
1	Cable tie, two places (Trim cable tie mid-way between connectors)
2	Rubber boot cover
3	Rubber boot
4	Power connectors
5	Rubber boot
6	Rubber boot cover

Figure 148. Default AC filter module cable tie installation

ALTERNATE 1



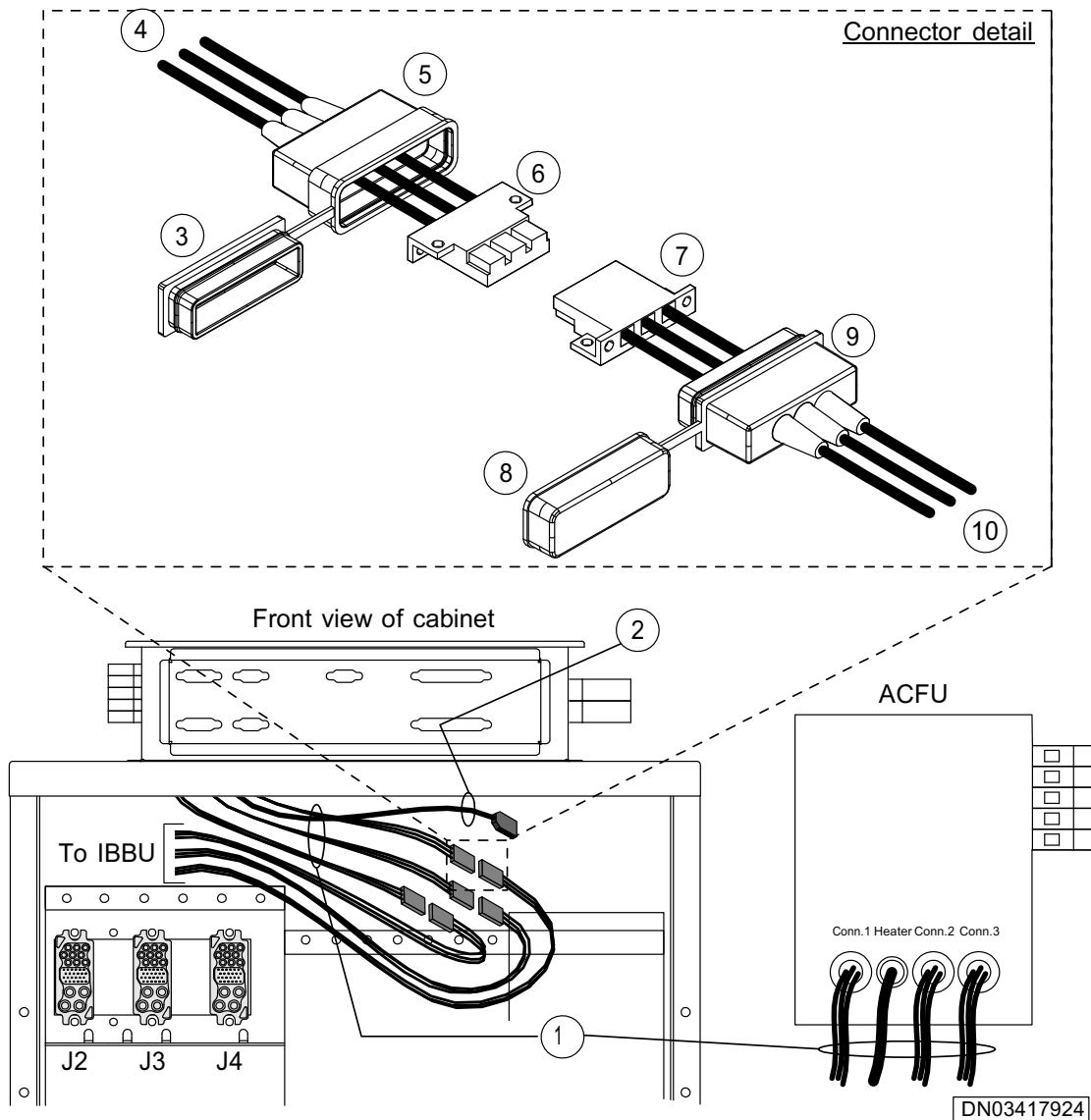
ALTERNATE 2



	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)

	Alternate 1	Alternate 2
5	Cable tie, (Trim cable tie between cables)	Rubber boot
6	Rubber boot	Not applicable
7	Rubber boot cover	Not applicable

Figure 149. Alternate cable tie installations



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 150. AC filter module cables routed to the IBBU



Steps

1. **Install the AC filter module.**
2. **Route AC filter module cables in the cabinet.**

Nokia requires you to route the AC filter module cables when you are installing PWSA. The default setup is PWSB (-48 VDC).

Note

Use connector 3 from the AC filter module for IBBU configurations.

- a. Locate the output cables inside the cabinet that run from the AC filter module 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 module connector 1 to the J4A connector of the ADUx AC cable harness.

- d. Depending on the connector ends, use a cable tie to secure the two connectors.
- e. Secure the rubber boot covers.
- f. Repeat steps a through e for connector 2 from the AC filter module to the J2A cabinet connector.
- g. Connect the Heater connector to the (optional) HETA unit cable, if present.

3. Route AC filter module cables with IBBU.

- a. Locate the output cables inside the cabinet that run from the AC filter module 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 module 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.
- e. Repeat steps b through d for connector 2 to the J2A connector of the cable harness.
- f. Repeat steps b through d 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.

9.1.7 Cabling a DC filter module to the Power Supply (PWSx) unit of UltraSite EDGE BTS

Before you start

Review the *Overview of cabling GSM/EDGE units of UltraSite EDGE BTS*.

Summary



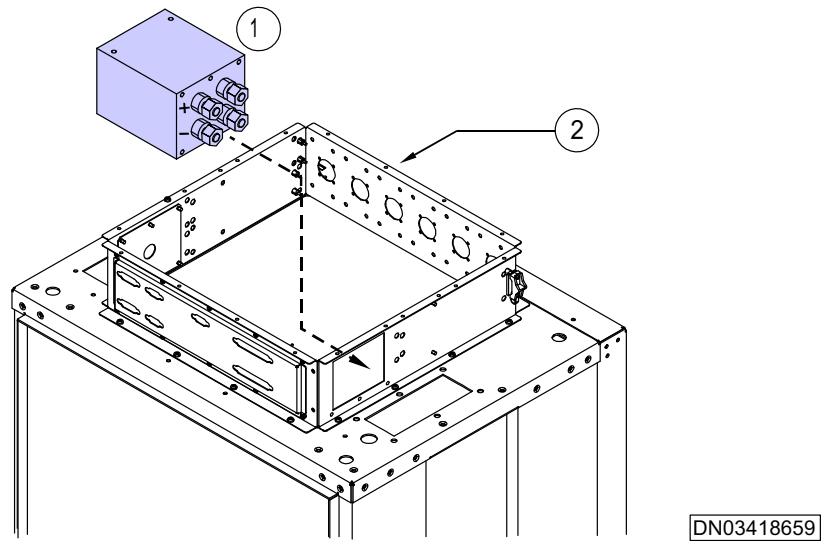
Warning

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

The optional +24 VDC Filter module (DCFB) is required when installing +24 VDC power.

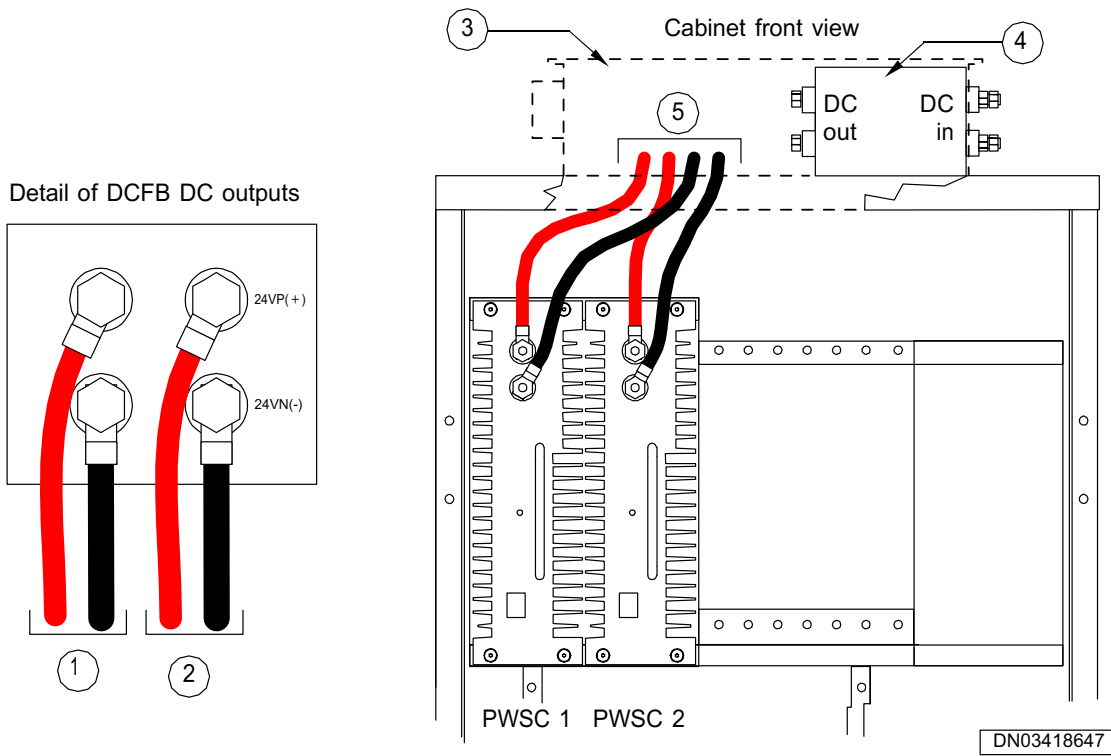
Note

This procedure describes installation of the DCFB Filter module only. For information on connecting input power cables, see *Overview of connecting DC power cables to UltraSite EDGE BTS*.



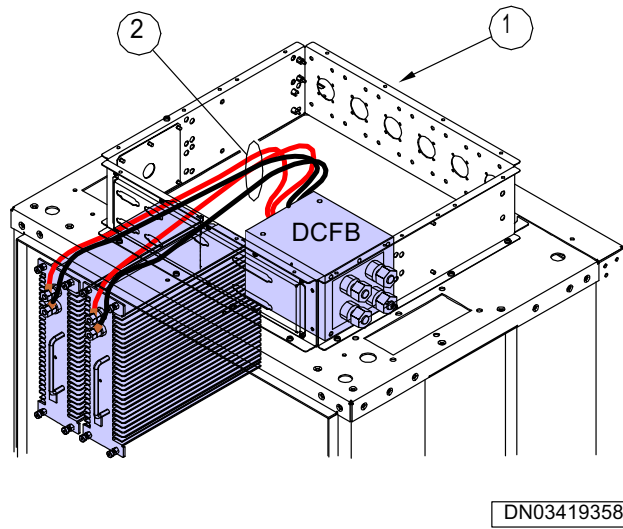
1	DCFB filter
2	Antenna box, top removed

Figure 151. DCFB Filter module installation



1	To PWSC 1
2	To PWSC 2
3	Antenna box
4	DCFB

Figure 152. DCFB Filter module cable routing to PWSC



1	Antenna box, top removed
---	--------------------------

Figure 153. Internal cabinet cable routing from DCFB to PWSC



Steps

1. Install the DCFB Filter module.

- a. Locate the existing -48 VDC Filter module in the right side of the antenna box.
- b. Disconnect the blue and black filter cables from inside the cabinet and secure the caps to the protective boots of each cable.
- c. Remove the mounting screws securing the filter module to the antenna box and remove the unit.
- d. Remove the DCFB Filter module from its protective package and check for visible damage.
- e. 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.

- f. Secure the DCFB Filter module using four M4 mounting screws in the center and right hand side holes of the DCFB.
-

Note

Install the remaining mounting screws after connecting input power to the DCFB. Use the two front M4x8 screws and the two threaded studs to secure the protective cover over the DCFB power input connections.

- g. Recycle the packing material.

2. Connect DCFB Filter module cables to the power supply.

- a. Locate the Red and Black power cable assemblies included as part of the PWKA Installation Kit and remove protective plastic covers from applicable cable ends and DCFB/PWSC connection terminals. One kit is provided for each PWSC power supply unit.
- b. Attach a Red power cable to the (+) input power terminal on the left PWSC unit, if installed. Torque fastener.
See Torque settings of UltraSite EDGE BTS.
- c. Attach a Black power cable to the (-) input power terminal on the left PWSC unit, if installed. Torque fastener.
See Torque settings of UltraSite EDGE BTS.
- d. 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. Torque fasteners.
See Torque settings of UltraSite EDGE BTS.
- e. Install rubber boots in place over the PWSC input power terminals and the DCFB output power terminals. Ensure boots completely cover the terminals.
- f. Repeat steps a through e for the right PWSC unit, if installed, using the right output terminal pair on the DCFB Filter module.

9.1.8 Cabling DVxx and WCxA units with the SXCA kit of UltraSite EDGE BTS

Summary

This procedure describes how to install the SXCA kit for 5+5+5 or larger configurations.

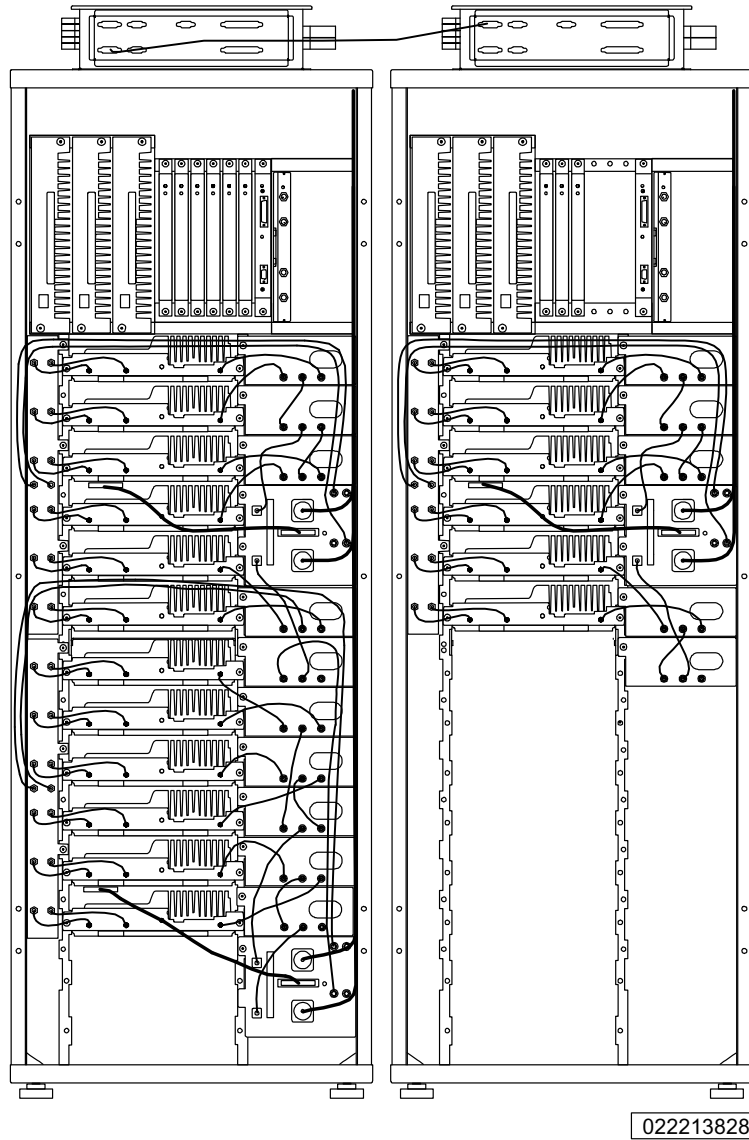


Figure 154. 5+5+5 with SXCA configuration



Steps

1. **Configure units using the figure for reference.**
2. **Install cables.**

Connect intracabinet cables using the cables provided in the SXCA kit for connection between the lower DVxx units and the WCxx units attached to them.

9.2 Installation of UltraSite EDGE BTS BBPA cable upgrade kit

9.2.1 Overview of BBPA kit installation

Purpose

The BBPA kit allows for installation and cabling of units supporting a 2+2+2 configuration with IBBU installed.

Summary

Carry out the steps for BBPA kit installation in the following order.



Steps

1. Removing the upper BTS battery box
2. Installing the BBPA plate
3. Installing the BBAX battery box
4. Installing the BBPA cable kit

9.2.2 Removing the upper BTS battery box

Purpose

This procedure describes how to temporarily remove the upper battery box of the UltraSite EDGE BTS. Removal of the battery box is required for installation of the BBPA kit in the UltraSite EDGE BTS.

When removing the battery box and attached cables, the site must be powered down. Good planning of the work is critical in order to minimise the amount of time that the site is powered down.

Maximum site down-time recommendations are provided by your Nokia Planning Engineer.

Before you start

**Warning**

Risk of lethal voltages and electric shock exists when routing power cables. Verify that mains power breaker is OFF and that the unit is properly grounded before attempting any connections to the unit.

**Warning**

The cabinet is positive earthed (grounded). To minimize the risk of short circuits when the battery leads are free, always disconnect the positive (+) battery lead before the negative (-) battery lead.

**Warning**

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

**Warning**

BTS cabinets may have sharp edges. Exercise caution while working in and around the BTS.

**Caution**

Only use insulated tools when working on or near the batteries.

Check that:

- Sectors associated with the BTS have been blocked.

Blocking and unblocking a TRX

- Power has been removed from the BTS.

Powering down UltraSite EDGE BTS

- All required parts are available for the modification.

Delivery content of UltraSite EDGE BTS BBPA kit transportation package

- All required tools are available for the modification.

Tools requirements for UltraSite EDGE BTS



Steps

1. Turn OFF ADUx

Switch the Battery Circuit Breaker to the OFF position on the ADUx unit.

2. Remove attachment screws

Loosen and remove the two M5x8 Torx screws connecting the top row battery box to the existing IBBU battery support plate. Secure screws for reuse.

3. Disconnect positive cable

Remove and retain the bolt securing the positive (+) terminal to the forward battery in the upper battery box and disconnect the cable.

4. Disconnect negative cable

Carefully slide the battery box forward if necessary, remove and retain the bolt securing the negative (-) terminal to the rear battery in the upper battery box, and disconnect the cable.

5. Remove the batteries

Using the battery support frame handles, carefully slide the upper battery box out of the BTS cabinet and secure in a safe location. Ensure that no metal is allowed to come in contact with the uncovered terminals.

**Caution**

The two IBBU batteries contained in the battery box have significant weight. Lift carefully to prevent injury.

9.2.3 Installing the BBPA plate

Purpose

Following removal of the upper battery box, the existing battery mounting plate is replaced with the BBPA plate to lower the mounting height.

Before you start

Check that:

- The upper battery box has been removed and secured.
- The cables from the lower battery box are properly secured.

**Steps****1. Remove screws**

Remove and retain the attachment screws from the existing IBBU battery mounting plate.

2. Remove the existing IBBU battery mounting plate

Pull forward and up on the existing mounting plate to remove it from the cabinet.

3. Install BBPA battery mounting plate

Place the BBPA battery mounting plate in the first available slot position above the bottom row of batteries. The plate slides tightly into the BTS cabinet slide runners.

4. Attach plate

Using one M3x8 Torx screw, attach the BBPA plate to the BTS cabinet frame. Torque the screw.

9.2.4 Installing the BBAX battery box

Purpose

This procedure describes how to install the upper battery box of the UltraSite EDGE BTS.

Before you start

When installing the battery box and attached cables, the site must to be powered down.



Warning

Risk of lethal voltages and electric shock exist when routing power cables. Verify that mains power breaker is OFF and that the unit is properly grounded before attempting any connections to the unit.



Warning

The cabinet is positive earthed (grounded). To minimize the risk of short circuits when the battery leads are free, always connect the negative (-) battery lead before the positive (+) battery lead.



Warning

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



Warning

BTS cabinets may have sharp edges. Exercise caution while working in and around the BTS.

**Caution**

Only use insulated tools when working on or near the batteries.

Check that:

- BBPA plate is properly installed.

Installing the BBPA plate

- All required tools are available for the modification.

Tools requirements for UltraSite EDGE BTS

**Steps****1. Connect negative cable**

With the battery box placed directly in front of the BTS, route the negative (-) cable from the ADUx over the upper battery box. Using the bolt removed earlier, secure the cable end to the negative (-) terminal of the rear battery in the upper battery box. Torque the contact bolt to 6.8 Nm (5.0 ft lb) and cover the lug termination with the plastic cable boot.

Note

Make sure the cable is routed directly towards the front of the battery box.

2. Install Battery Box

Using the battery support frame handles, carefully slide the upper battery box in the BTS, leaving it slightly forward for installation of the positive (+) cable.

**Caution**

The two IBBU batteries contained in the battery box have significant weight. Lift carefully to prevent injury.

3. Connect positive cable

Route the positive (+) cable from the lower battery box to the upper battery box. Using the bolt removed earlier, secure the cable end to the positive (+) terminal of the front battery in the upper battery box. Torque the contact bolt to 6.8 Nm (5.0 ft lb) and cover the lug termination with the plastic cable boot.

4. Secure the battery box

Slide the battery box fully in the BTS and secure to the new BBPA plate using the two M5x8 Torx screws removed earlier. Torque the screw to 1.0 Nm (0.7 ft lb).



Warning

Do not turn the Circuit Breaker on the ADUx unit ON at this time.

9.2.5 Installing the BBPA cable kit

Purpose

Following installation of the BBPA plate kit, the BTS units are configured for 2 +2+2 IBBU Co-siting. The cables provided in the BBPA RF cable kit allow for installation of three sectors using one WCxA and one DVxA per sector.

Before you start

Check that:

- The appropriate BTS units are installed for support of a 2+2+2 configuration.



Steps

1. *If* An existing configuration is being modified and cables are attached.

Then

Remove cables

Remove the existing cables connecting the TSxA units to the WCxA units.

Else

Continue with step 3

2. *If* An existing configuration is being modified and the current unit configuration is incorrect.

Then

Reconfigure units

Refer to *Overview of installing units of UltraSite EDGE BTS* and install the units as required to support the configuration.

Else

Continue with step 3

3. **Install BBPA RF cables**

Install two each 994559x RF cables between the TSxA units and WCxA units for each sector.

Note

The new BBPA RF cables replace any existing RF cables making the same connections.

4. *If* An existing configuration is being modified.

Then

Reconfigure existing cables

Remove cable connections as required and reconnect to support the configuration.

Else

Continue with step 5

5. **Torque RF cable connections**

Using the appropriate torque wrench, tighten all SMA connector hex nuts to 60 Ncm (5.3 in lb).

6. Power ON ADUx

Following completion of BBPA plate installation, and the steps detailed above, the UltraSite EDGE BTS may be powered up and the Circuit Breaker on the ADUx unit turned to the ON position.

9.3 Cabling WCDMA units of UltraSite EDGE BTS

9.3.1 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

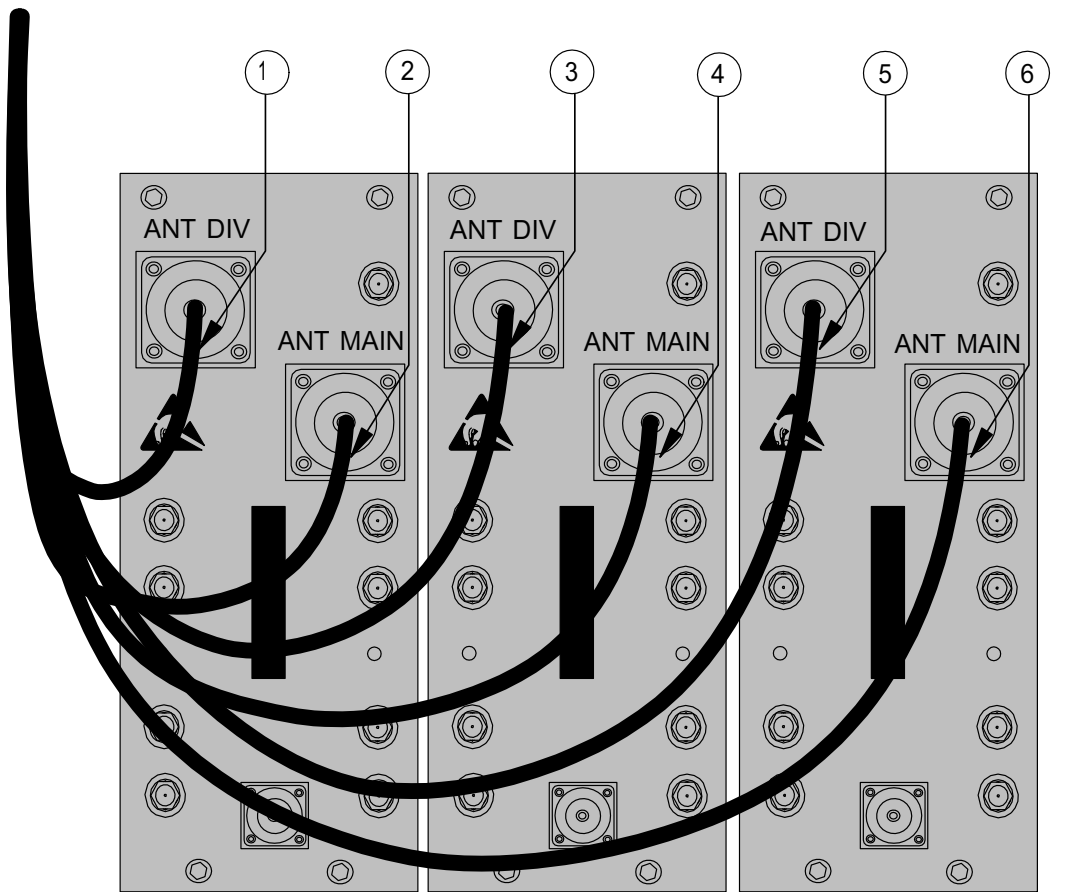
Follow these instructions.

9.3.2 Cabling antenna connections in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of cabling units of UltraSite EDGE BTS with WCDMA upgrade*.

Summary



DN03427014

1	DIV 1
2	MAIN 1
3	DIV 2

4	MAIN 2
5	DIV 3
6	MAIN 3

Figure 155. Antenna cables in 1+1+1 or 2+2+2 configuration



Steps

1. Connect the WCDMA antenna cables to the WAF unit connectors.
2. Tighten each antenna cable.

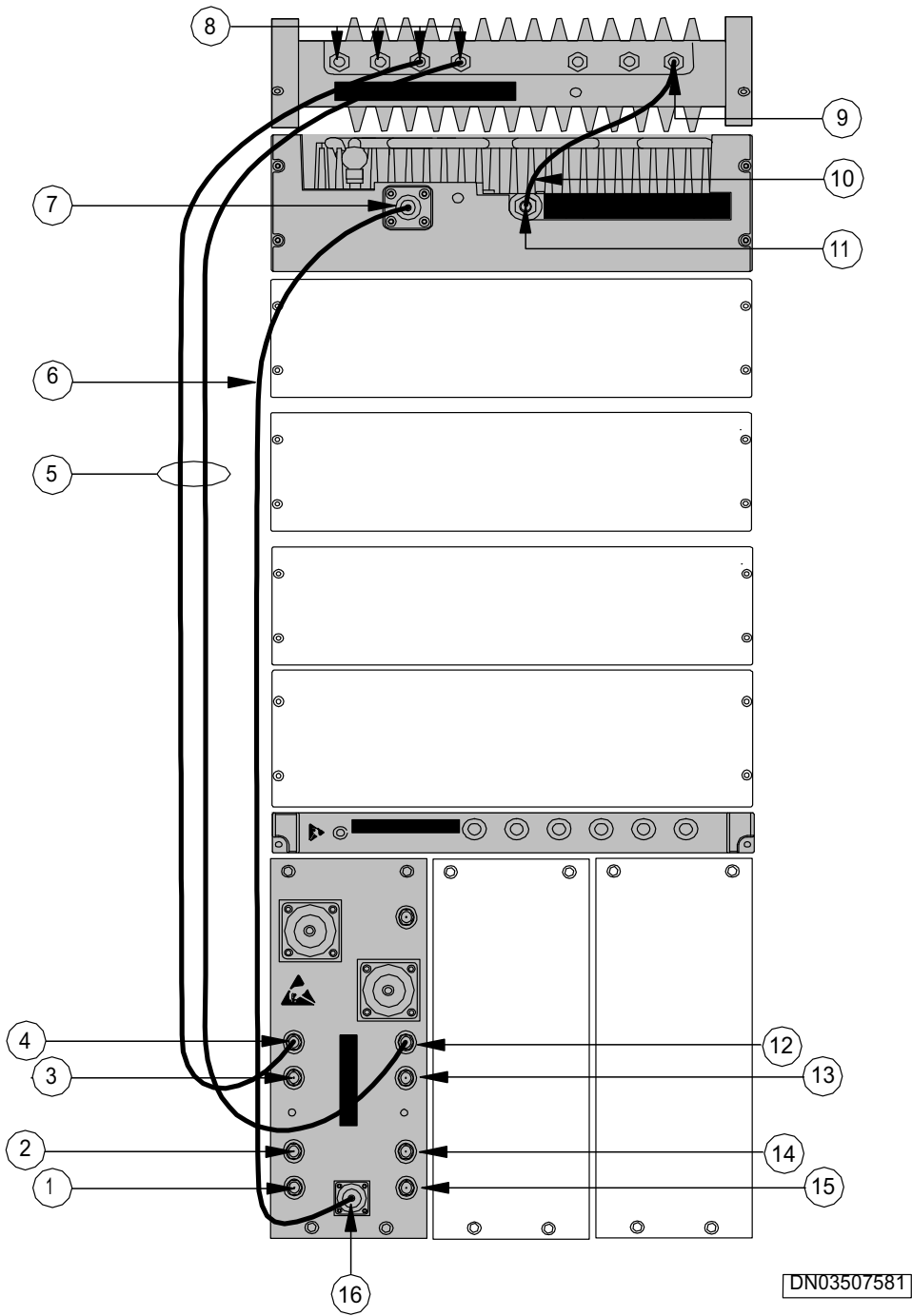
See *Torque settings of UltraSite EDGE BTS*.

9.3.3 Cabling TX/RX connections in UltraSite EDGE BTS with WCDMA upgrade

Before you start

Review the *Overview of cabling units of UltraSite EDGE BTS with WCDMA upgrade*.

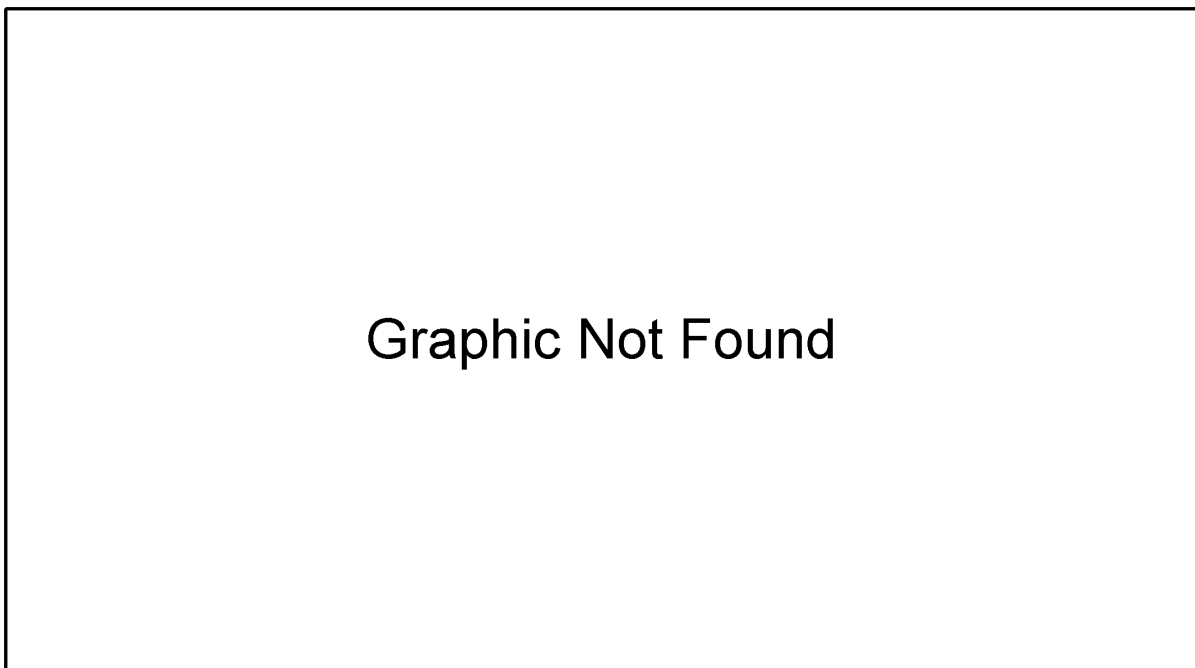
Summary



1	RX DIV4
2	RX DIV3

3	RX DIV2
4	RX DIV1
5	DN994114
6	DN994112
7	RF OUT
8	RXD2, RXM2, RXD1, RXM1
9	TX1
10	DN994117
11	RF IN
12	RX1
13	RX2
14	RX3
15	RX4
16	TX

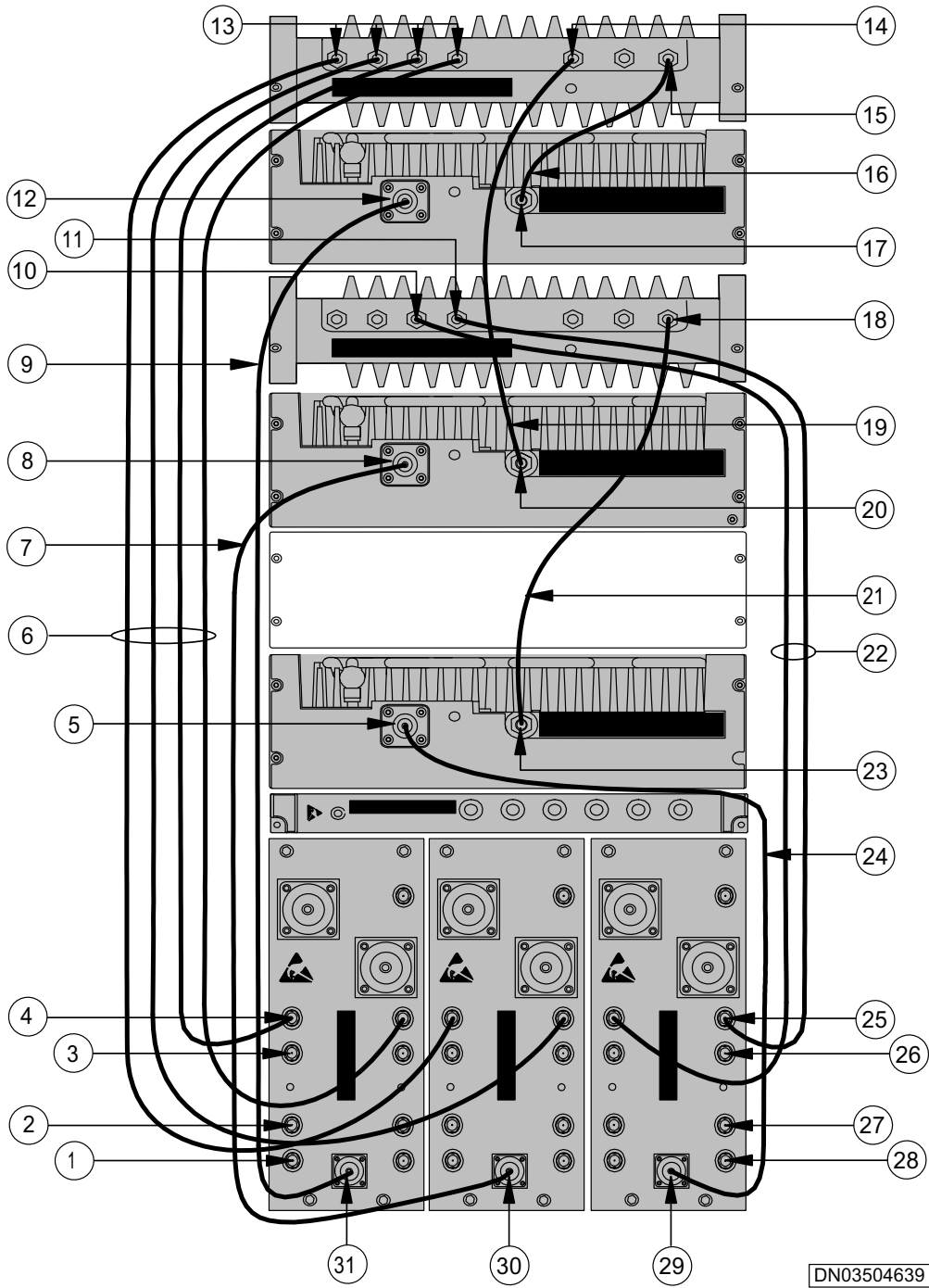
Figure 156. TX and RX cables in 1-carrier omni configuration



1	RX DIV4
2	RX DIV3
3	RX DIV2
4	RX DIV1
5	DN994110
6	RF OUT
7	DN994112
8	DN994114
9	RF OUT
10	RXD2, RXM2, RXD1, RXM1
11	TX2
12	TX1

13	DN994117
14	RF IN
15	DN994264
16	RX1
17	RX2
18	RX3
19	RX4
20	TX
21	TX

Figure 157. TX and RX cables in 1+1 configuration

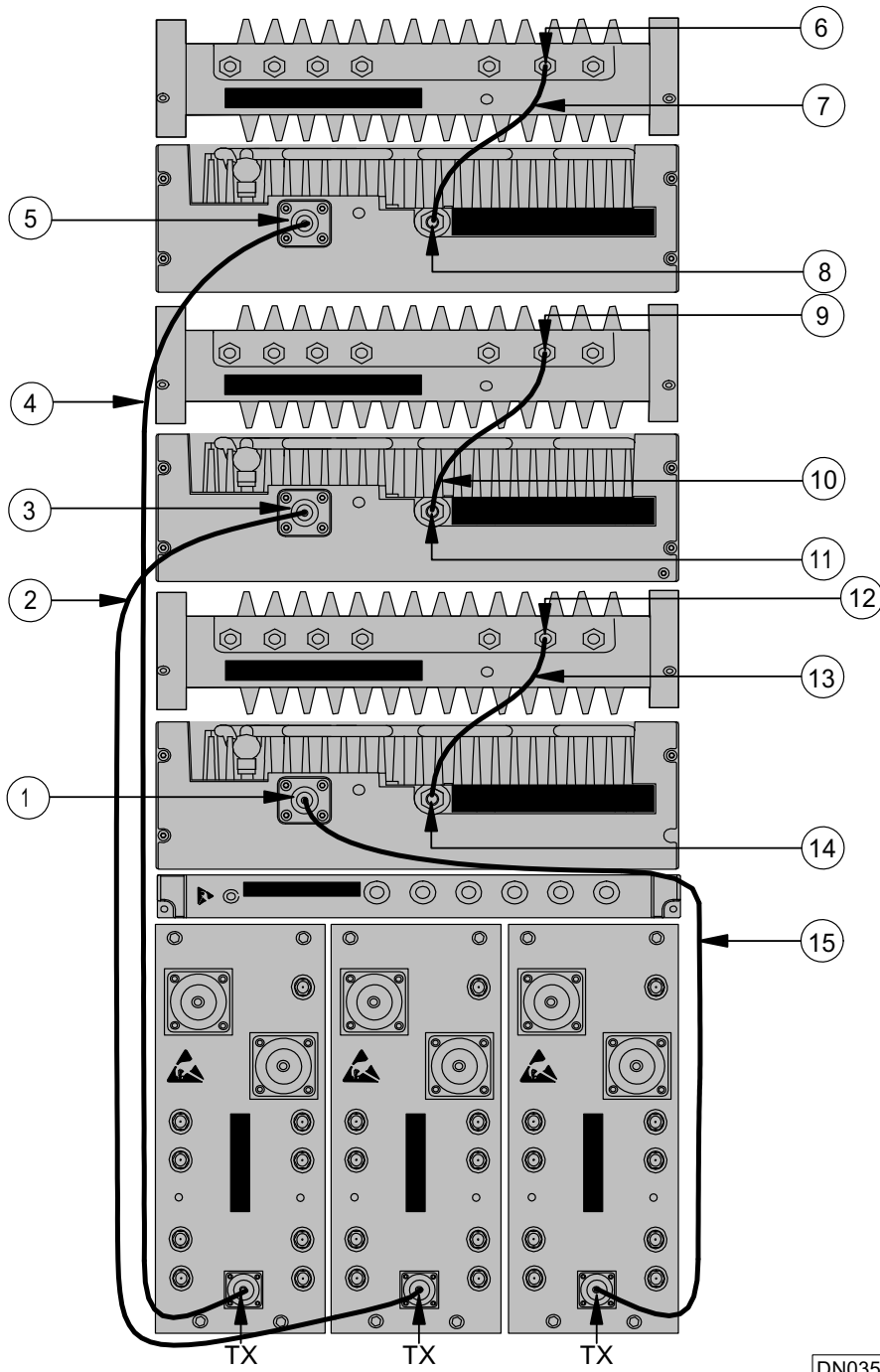


1	RX DIV4
---	---------

2	RX DIV3
3	RX DIV2
4	RX DIV1
5	RF OUT
6	DN994114
7	DN994110
8	RF OUT
9	DN994112
10	RXD1
11	RSM1
12	RF OUT
13	RXD2, RXM2, RXD1, RXM1
14	TX2
15	TX1
16	DN994117
17	RF IN
18	TX1
19	DN994264
20	RF IN
21	DN994264
22	DN994115
23	RF IN
24	DN994111
25	RX1
26	RX2
27	RX3
28	RX4

29	TX
30	TX
31	TX

Figure 158. TX and RX cables in 1+1+1 configuration

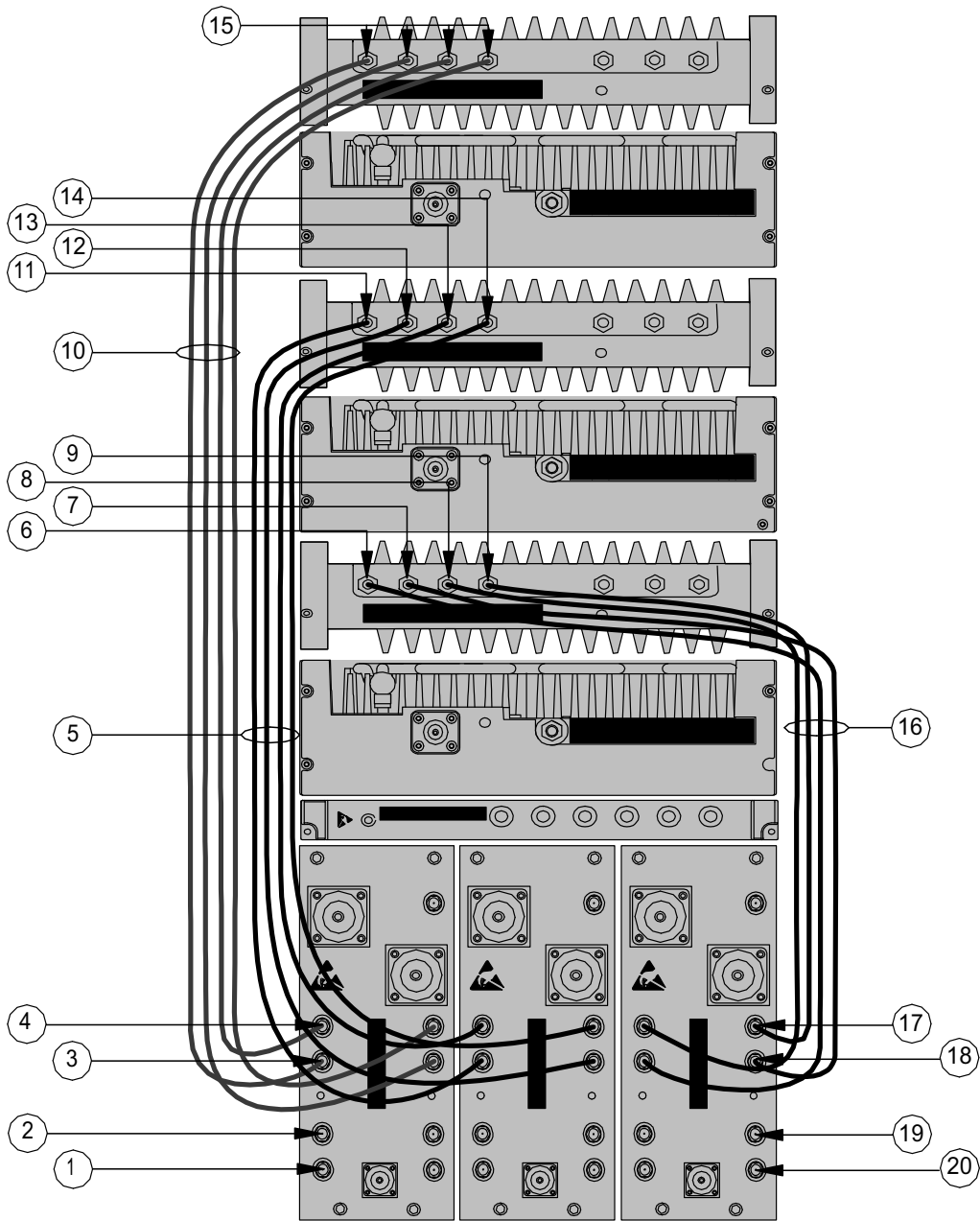


DN03504627

1	RF OUT
---	--------

2	DN994110
3	RF OUT
4	DN994112
5	RF OUT
6	SUMTX
7	DN994117
8	RF IN
9	SUMTX
10	DN994117
11	RF IN
12	SUMTX
13	DN994117
14	RF IN
15	DN994111

Figure 159. TX cables in 2+2+2 configuration



DN03504654

1	RX DIV4
2	RX DIV3
3	RX DIV2

4	RX DIV1
5	DN994115
6	RXD2
7	RXM2
8	RXD1
9	RXM1
10	DN994114
11	RXD2
12	RXM2
13	RXD1
14	RXM1
15	RXD2, RXM2, RXD1, RXM1
23	RX1
24	RX2
25	RX3
26	RX4

Figure 160. RX cables in 2+2+2 configuration



Steps

1. Install the TX cables.

- a. Connect the TX cables between the WAF and WMP units for the particular sectors as illustrated by *1-carrier omni configuration, 1+1 configuration, 1+1+1 configuration or 2+2+2 configuration.*
- b. Tighten the cables.
See *Torque settings of UltraSite EDGE BTS.*

2. Connect the RX cables.

- a. Connect the RX cables between the WAF, WMP and WTR units in the desired configuration, as illustrated by *1-carrier omni configuration, 1+1 configuration, 1+1+1 configuration, or 2+2+2 configuration*.
- b. Tighten the cables.
See *Torque settings of UltraSite EDGE BTS*.

9.3.4 Cabling a transmission (VXxx) unit of UltraSite EDGE BTS with WCDMA upgrade

Before you start

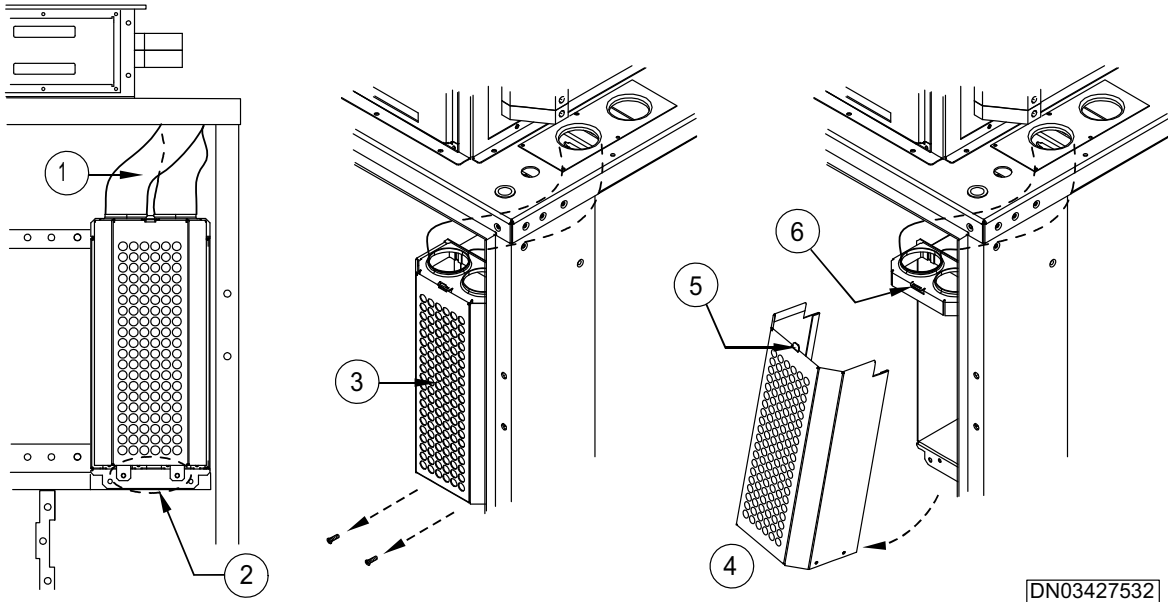
Review the *Overview of cabling units of UltraSite EDGE BTS with WCDMA upgrade*.

Summary

The UltraSite EDGE BTS with WCDMA functionality uses the same VXxx transmission units for both GSM/EGDE and WCDMA transmission. However, the WCDMA transmission requires installing WCDMA transmission cables between the IFU unit in the WCDMA part of the BTS and the VXxx unit in the GSM/EDGE part of the BTS.

Also, this feature requires a new WCDMA Upgrade Kit Transmission unit cover with different mechanics to allow installing the WCDMA transmission cables. Before routing and installing the WCDMA transmission cables, the existing Transmission unit cover needs to be removed.

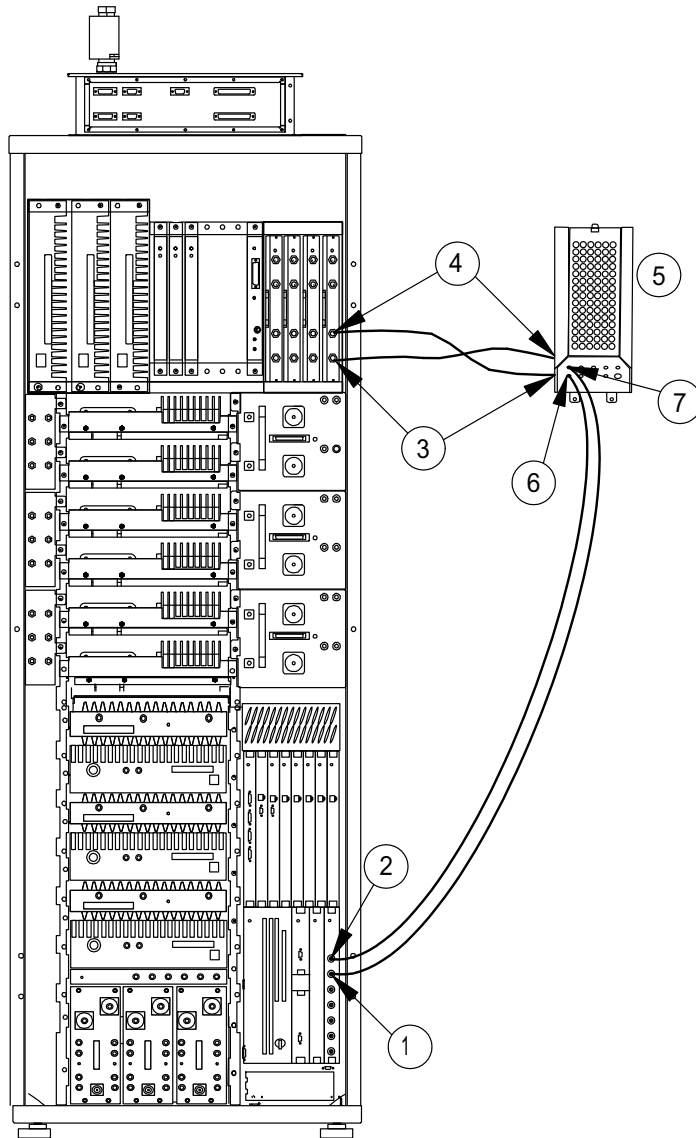
Cabinet front view



DN03427532

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

Figure 161. Transmission unit cover removal



DN03427065

1	RX
2	TX
3	TX
4	RX
5	Transmission unit cover

6	TX
7	RX

Figure 162. Transmission cable connections



Steps

1. **Remove the Transmission unit cover.**
 - a. Remove the two screws from the Transmission unit box.
 - b. Pull the bottom of the Transmission unit cover out from the Transmission unit box, while pulling down to disengage the tab and remove the cover.

2. **Install the transmission cables and WCDMA Upgrade Kit Transmission unit cover.**
 - a. Depending on the desired WCDMA configuration and on the existing GSM/EDGE configuration, install as many additional FXC transmission units (VXxx) as required. For more information, see *Overview of installing GSM/EDGE units of UltraSite EDGE BTS*.
 - b. Check the VXxx unit cross-connections with Nokia BTS Manager to see which VXxx unit RX and TX connectors are available for connection to the IFU unit in the WCDMA section of the BTS.
 - c. Depending on the type of the IFU unit in the WCDMA configuration, connect the transmission cables between the VXxx, the WCDMA Upgrade Kit Transmission unit cover and the IFU unit as listed in the tables below.

Note

To ease connecting cables, hang the WCDMA Upgrade Kit Transmission unit cover from its hook to the common rack.

Note

The connections in the tables are examples of how to connect the transmission cables to the TX and RX connectors. The VXxx and IFUx connections may vary depending on the actual WCDMA BTS configuration.

Note

Nokia recommends that you use eight first connectors (TX1 and RX1 to TX4 and RX4) to make transmission cable connections.

Table 5. Transmission cable connections to 75Ω IFUD unit

IFUD connector	WCDMA Upgrade Kit Transmission unit cover connector	VXxx connector
TX1	TX1	IF1 RX1
RX1	RX1	IF1 TX1
TX2	TX2	IF2 RX2
RX2	RX2	IF2 TX2
TX3	TX3	IF3 RX3
RX3	RX3	IF3 TX3
TX4	TX4	IF4 RX4
RX4	RX4	IF4 TX4

Table 6. Transmission cable connections to 120 Ω IFUA unit

IFUA connector	WCDMA Upgrade Kit Transmission unit cover connector	VXxx connector
IF1	TX/RX1	IF1
IF2	TX/RX2	IF2
IF3	TX/RX3	IF3
IF4	TX/RX4	IF4

- d. Install the Transmission unit cover on the Transmission unit box.

- e. Insert the two screws to the Transmission unit cover and tighten them until the cover is flush on the Transmission unit box.
See Torque settings of UltraSite EDGE BTS.
- f. Insert the cables to the cable block in the BB rack.

9.4 Cabling Integrated Battery Backup (IBBU) units in UltraSite EDGE BTS IBBU

9.4.1 Overview of cabling IBBU units of UltraSite EDGE BTS with IBBU

Summary



Warning

Ensure battery cable lugs do not touch each other during installation.

The IBBU configuration requires the installation of two 12VBBAx battery boxes that hold two batteries each. You connect the batteries to the BBAx battery cables, which are attached to the ADUx unit.

Note

The procedure for cabling the batteries is an integral part of the procedure for installing a BBAx unit in UltraSite EDGE BTS IBBU.

For the complete installation procedure, see *Installing a Battery (BBAx) unit in UltraSite EDGE BTS IBBU*.



Steps

1. **Install the batteries (BBAx).**
2. **Connect the battery cables.**
3. **Install the battery boxes.**
4. **Connect the battery boxes.**

- 5. Cable the AC filter module to the IBBU.**

10 Co-siting UltraSite EDGE BTS

10.1 Co-siting UltraSite EDGE BTS with Talk-family BTS

10.1.1 Overview of UltraSite EDGE BTS co-site with Talk-family BTS installation

Before you start



Caution

Before you begin installation, ensure that the site is prepared and identify any special requirements for installation (for example: two people needed for lifting equipment). For more information, see *Preparing to install UltraSite EDGE BTS co-site, with Talk-family BTS*.

Summary

The following UltraSite EDGE BTS co-site with Talk-family BTS configurations are possible:

- *Talk 222AFE/UltraSite 222DVxx*
- *Talk 444RTC/UltraSite 222DVxx*
- *Talk 444RTC/UltraSite 444RTC*
- *Talk 666RTC/UltraSite 222DVxx WBC 2:1*
- *Talk 666RTC/UltraSite 666RTC*

There are two possible working orders for co-siting a new UltraSite EDGE BTS with an existing BTS, one for co-siting applications where minimising down-time during installation is a consideration and one for co-siting applications where down-time is not relevant.

**Steps**

1. *If minimising down-time is important,*

Then

Install co-site applications with down-time considerations.

2. *If minimising down-time is not relevant,*

Then

Install co-site applications without down-time considerations.

3. **Close the co-site cabinets.**

10.1.2 Closing cabinets of UltraSite EDGE BTS co-site with Talk-family BTS

Before you start

Refer to the *Overview of UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

Summary

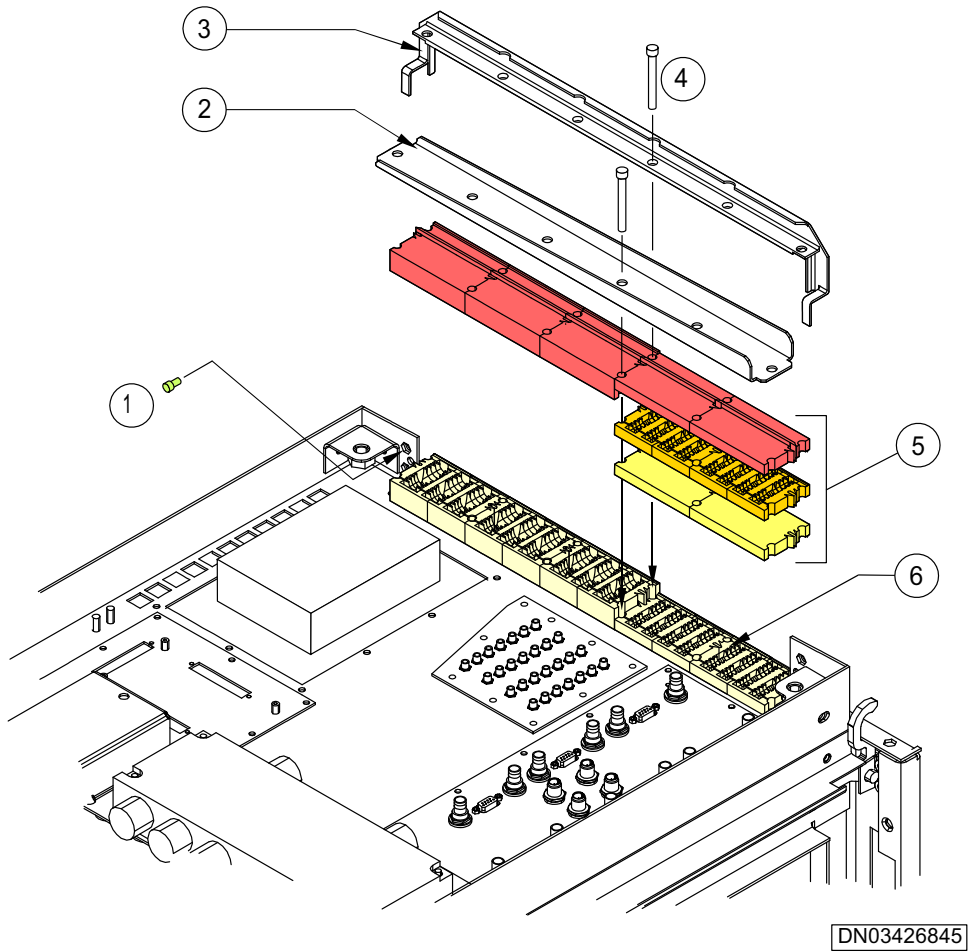
After all of the inter-cabinet cables are routed, you can complete the final installations for the Talk-family and UltraSite EDGE BTS cabinets.

**Steps**

1. **Route cables through the Citytalk cable entry kit.**
2. **Install the upper rubber blocks, brackets, and bolts retained earlier to complete the cable entry kit installation. For cable entry kit installation procedures, see the applicable *Nokia Citytalk GSM xxx BTS User Manual*.**

Note

The upper components were retained during the procedure for *preparing the Talk-family BTS*.



DN03426845

1	Screw (4 places)
2	Inner bracket
3	Outer bracket
4	Bolt, 12 places
5	Rubber block upper components
6	Rubber block lower components

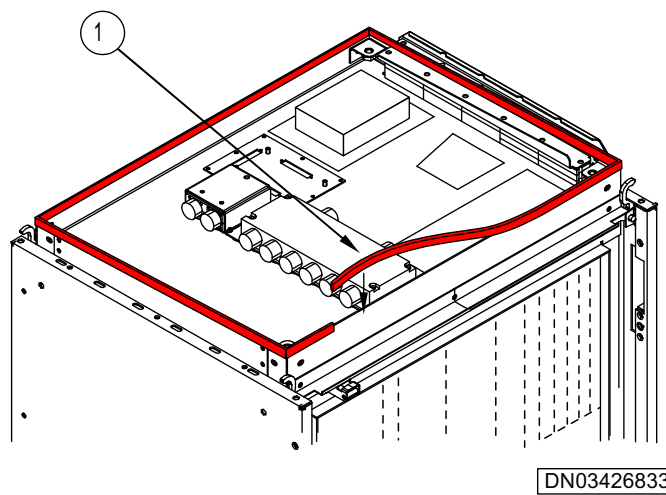
Figure 163. Cable entry

3. Install four screws inside the cabinet top.

Note

To prevent condensation from accumulating inside the cabinet, Nokia requires that all four screws be installed to fill in the holes. Install the screws from the inside of the cabinet for easy removal if maintenance is required.

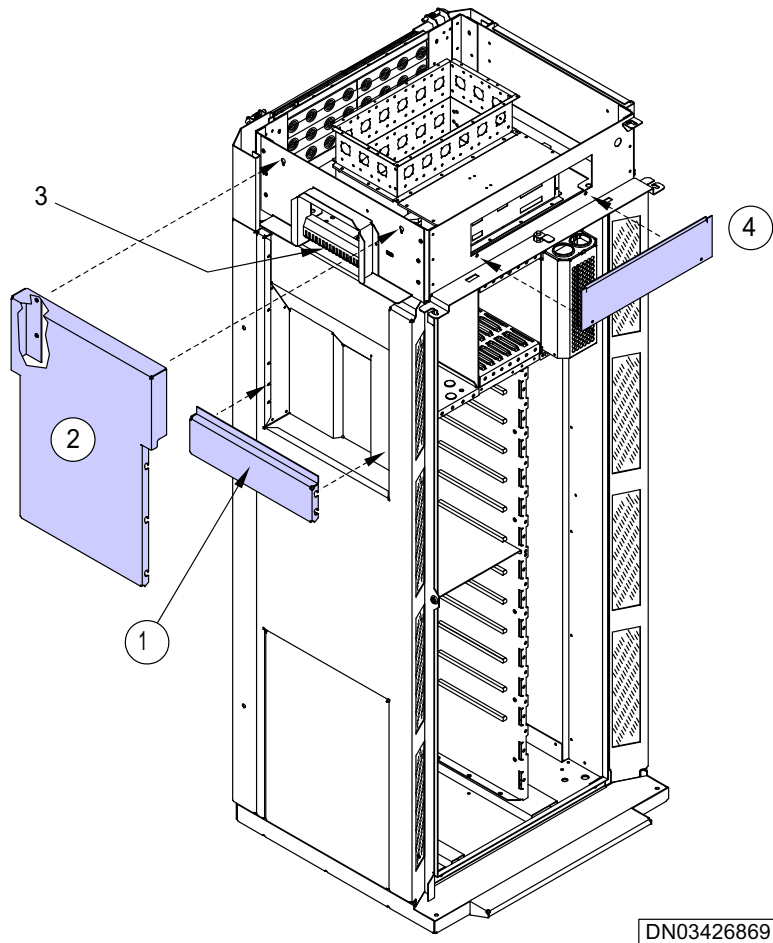
4. Re-install the rubber gasket on the top edge of the Citytalk cabinet.



1	Rubber gasket strip applied along top edge of cabinet
---	---

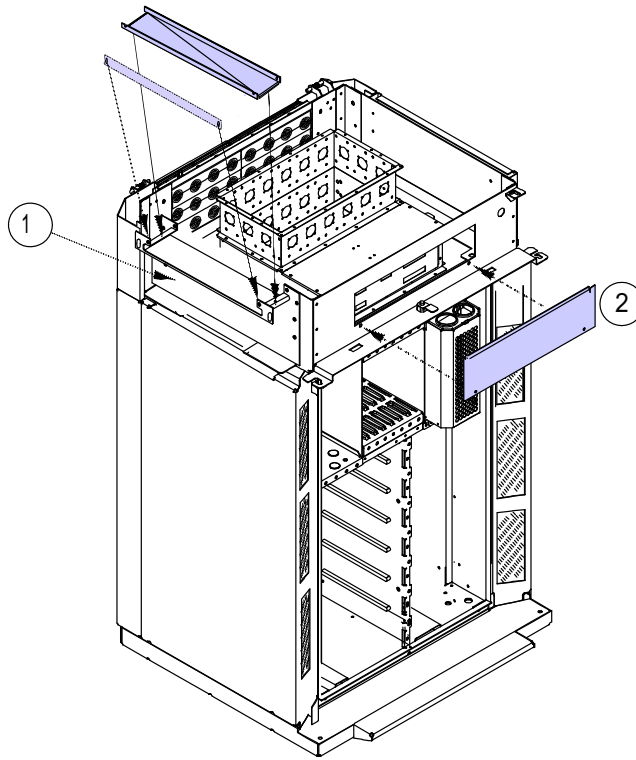
Figure 164. Re-installing the cover seal

5. See the following figures, as applicable, for steps 6 through 8.



1	Trim panel
2	Cover
3	Wiring tie-down points
4	External interface cover panel

Figure 165. UltraSite EDGE BTS final installation



DN03427174

1	MIDI cable entry
2	External interface cover panel

Figure 166. UltraSite EDGE Midi BTS final installation

6. Use cable ties to secure the cables to the wiring tie-down points on the UltraSite co-siting cable entry.
7. Attach the external interface cover panel to the roof assembly.
8. Install the trim panel (if UltraSite BTS installed on Citytalk plinth) and co-siting side wall cover on the UltraSite EDGE BTS.

10.1.3 Installing UltraSite EDGE BTS co-siting with Talk-family BTS with downtime considerations

Before you start

Ensure that the site is ready for co-siting installation. Refer to *Overview of UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Nokia recommends this working order for co-siting Nokia UltraSite EDGE Base Station (BTS) as an upgrade from Talk-family when minimising down-time is relevant.



Steps

1. **Install the UltraSite EDGE BTS cabinet.**

2. **Install antenna connections.**

Refer to *Nokia UltraSite EDGE Antenna Product Documentation* for more information.

3. **Install transmission equipment for the UltraSite BTS.**

4. **Prepare the site support.**

5. **Prepare the UltraSite EDGE BTS to serve traffic.**

6. **Back up HW database and HW info file to the Talk-family BTS.**

7. **Power down the Talk-family BTS.**

8. **Prepare the existing Talk-family BTS for co-siting.**

9. **Install applicable RF diversity cable kit(s).**

10. **Route inter-cabinet cables.**

11. **Power up the Talk-family BTS.**

12. **Commission the Talk-family BTS as clock master.**

Refer to the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual, Commissioning*.

13. Integrate the Talk-family BTS.

Refer to the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual, Commissioning*.

14. Configure BSC to redirect traffic from the UltraSite BTS to the Talk-family BTS.**15. Configure the UltraSite BTS as clock slave.**

Note

Down-time STARTS.

16. Replace the existing site support cabinet with a new support cabinet, if required.

Refer to the applicable Nokia documentation for the site support configuration you are using, for instructions on replacing the existing support cabinet.

17. Power up the site support cabinet(s) and the master BTS.**18. Activate co-site configuration, site reset.**

Note

Down-time ENDS.

19. Verify co-site functionality.**20. After installation, keep some of the packing material for returning units, if necessary. Recycle the remaining material.**

10.1.4 Installing UltraSite EDGE BTS co-siting with Talk-family BTS without downtime considerations

Before you start

Ensure that the site is ready for co-siting installation. Refer to *Overview of UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Nokia recommends this working order for co-siting Nokia UltraSite EDGE Base Station (BTS) as an upgrade from Talk-family when there are no down-time considerations.



Steps

1. **Back up HW database and HW info file to the Talk-family BTS.**
2. **Power down the existing Talk-family BTS and site support cabinets.**



Warning

Verify mains breaker power is OFF.

3. **Prepare the site support.**
4. **Prepare the existing Talk-family BTS for co-siting.**
5. **Install the UltraSite EDGE BTS cabinet.**
6. **Install applicable RF diversity cable kit(s).**
7. **Install antenna connections.**

Refer to *Nokia UltraSite EDGE Antenna Product Documentation* for more information.

Note

To connect antenna jumpers to existing antenna lines, refer to *Preparing for jumper cable installation of UltraSite EDGE BTS co-siting with Talk-family BTS*.

8. Route inter-cabinet cables.
9. Install transmission equipment for the UltraSite BTS.
10. Power up the site support cabinet(s) and the master BTS.
11. Activate co-site configuration, site reset.
12. Verify co-site functionality.
13. Commission the UltraSite BTS.
14. Commission the Talk-family BTSs.

Refer to the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual, Commissioning*.

15. After installation, keep some of the packing material for returning units, if necessary. Recycle the remaining material.

10.2 Modifying Talk-family BTS for synchronisation with UltraSite EDGE BTS

10.2.1 Removing an Abis interface for Talk-family synchronisation with UltraSite EDGE BTS

Before you start

Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.



Steps

1. Remove the roof assembly.
2. Disconnect the external cables to the existing Abis interface on the cabinet top plate.
3. Remove the 12 screws securing the Abis interface to the top plate and lift off the plate.

4. Carefully lift the Abis interface and disconnect the three cables from underneath the Abis interface. Make note of their respective connectors to ensure correct reconnection later.

10.2.2 Configuring a new Abis interface (ABSA) for Talk-family synchronisation with UltraSite EDGE BTS

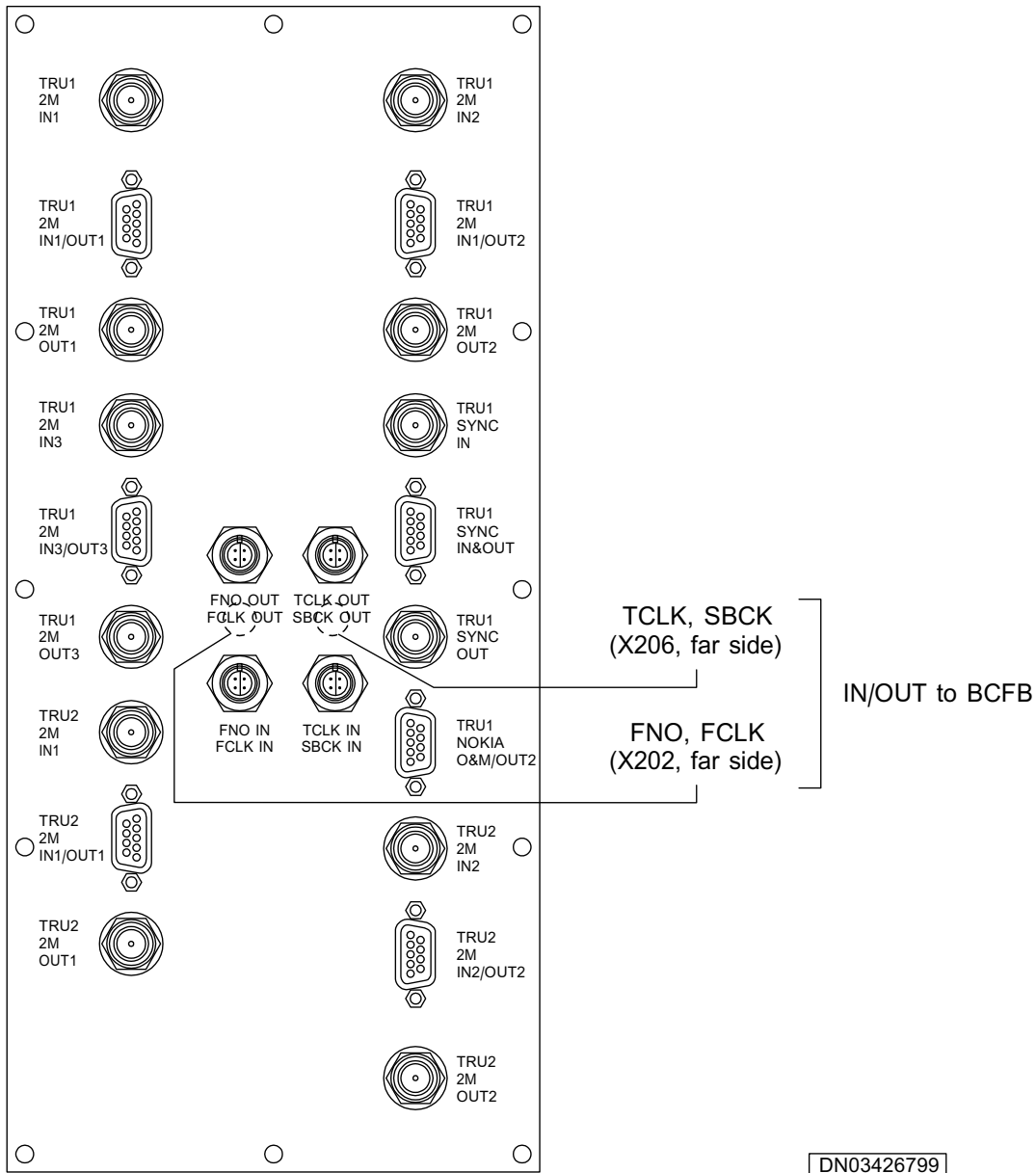
Before you start

Ensure that the site is ready for Abis interface configuration. Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.



Steps

1. Unpack the new Abis interface and check for damage.



DN03426799

Figure 167. Abis interface (ABSA)

2. Determine the appropriate connector grounding.

The TRU 75-ohm RX interface connectors and the sync (TQ) connectors can be grounded at the new Abis interface using one of the following arrangements:

- Capacitance arrangement (factory default) – used when the BTSs are connected to different grounding points.
- Galvanic arrangement – used when the BTSs are connected to the same grounding point.

Grounding can be changed from capacitance to galvanic by rearranging the order of the plastic washers in the connector.

Note

The customer’s requirements determine the grounding arrangement.

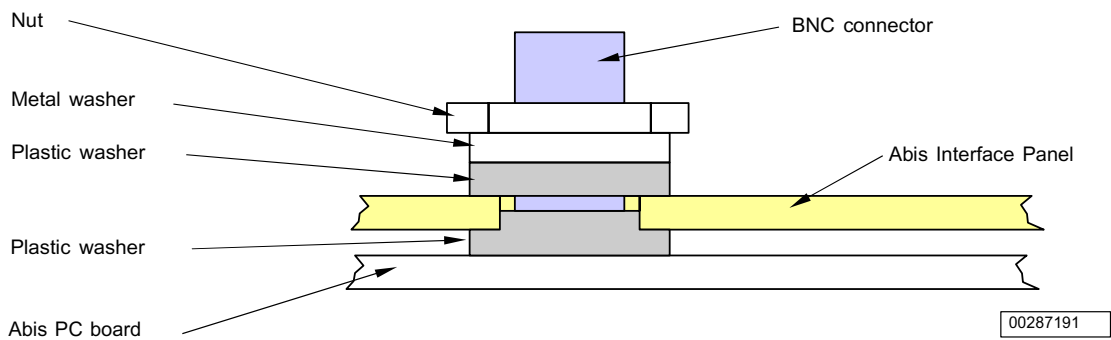


Figure 168. Capacitance grounding of connectors on Abis interface (default)

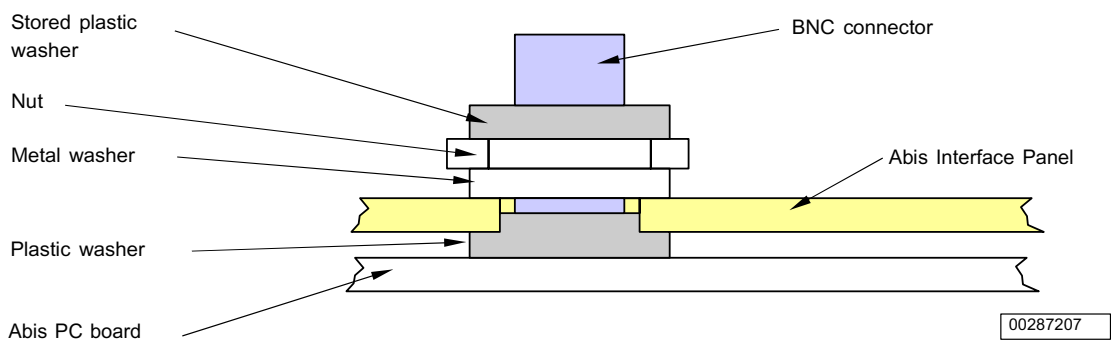


Figure 169. Galvanic grounding of connectors on Abis interface

3. If the default configuration must be changed,
Then

Complete these steps:

- a. Unscrew the nut of the BNC connector shown in *Capacitance grounding of connectors on Abis interface (default)*.
- b. Remove the metal and plastic washers.
- c. Replace the metal washer as shown in *Galvanic grounding of connectors on Abis*.
- d. Reposition and tighten the nut. Store the plastic washer above the nut.

10.2.3 Removing a BCFA unit for Talk-family synchronisation with UltraSite EDGE BTS

Before you start

Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.



Steps

1. **Before removing the BCFA, upload the HW database to MMI to ensure that the same database can be downloaded to the new BCFB. This is assuming the configuration has not changed.**
2. **Disconnect the cables from the BCFA unit front-panel connectors. Make note of their respective connectors to ensure correct connection to the new BCFB unit.**
3. **Unscrew the two retaining screws, and carefully remove the BCFA unit from the cabinet using the lifting handles at the top and bottom of the unit front panel.**

10.2.4 Installing an Abis interface (ABSA) for Talk-family synchronisation with UltraSite EDGE BTS

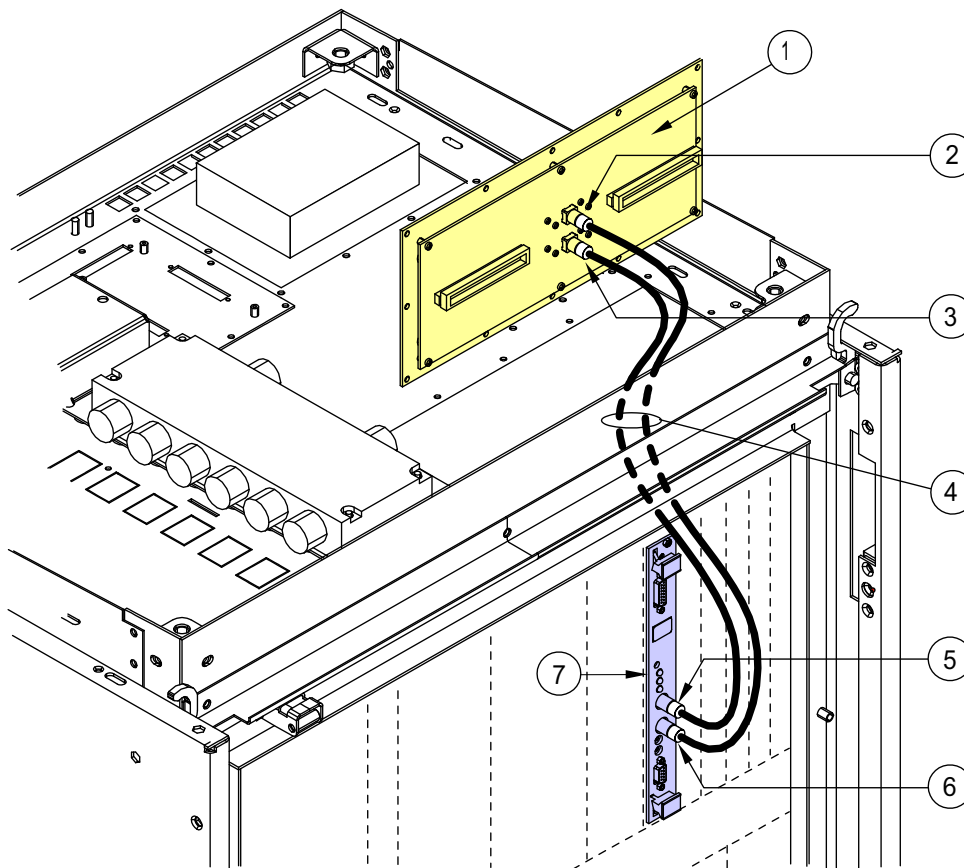
Before you start

Ensure that the site is ready for Abis interface installation. Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

The installation procedures of the new Abis interface panel are the same for both the Citytalk and Intratalk BTS, but the location on the cabinet top plate is different.

Summary

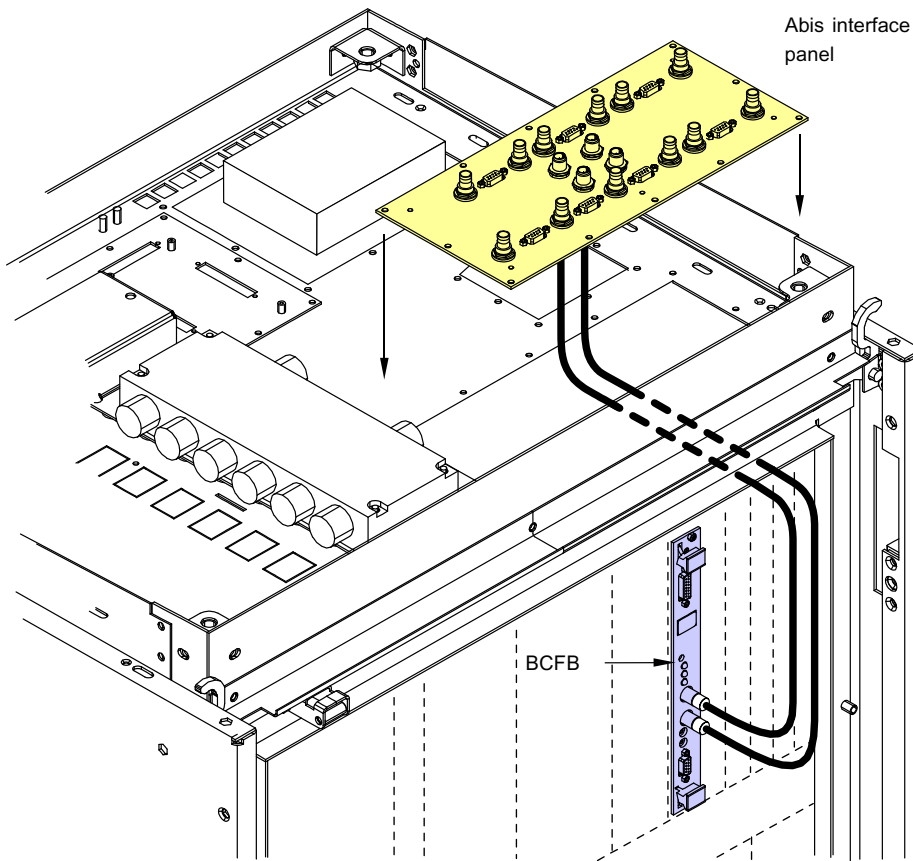


DN03426818

1	Underside of Abis interface
2	X206
3	X202

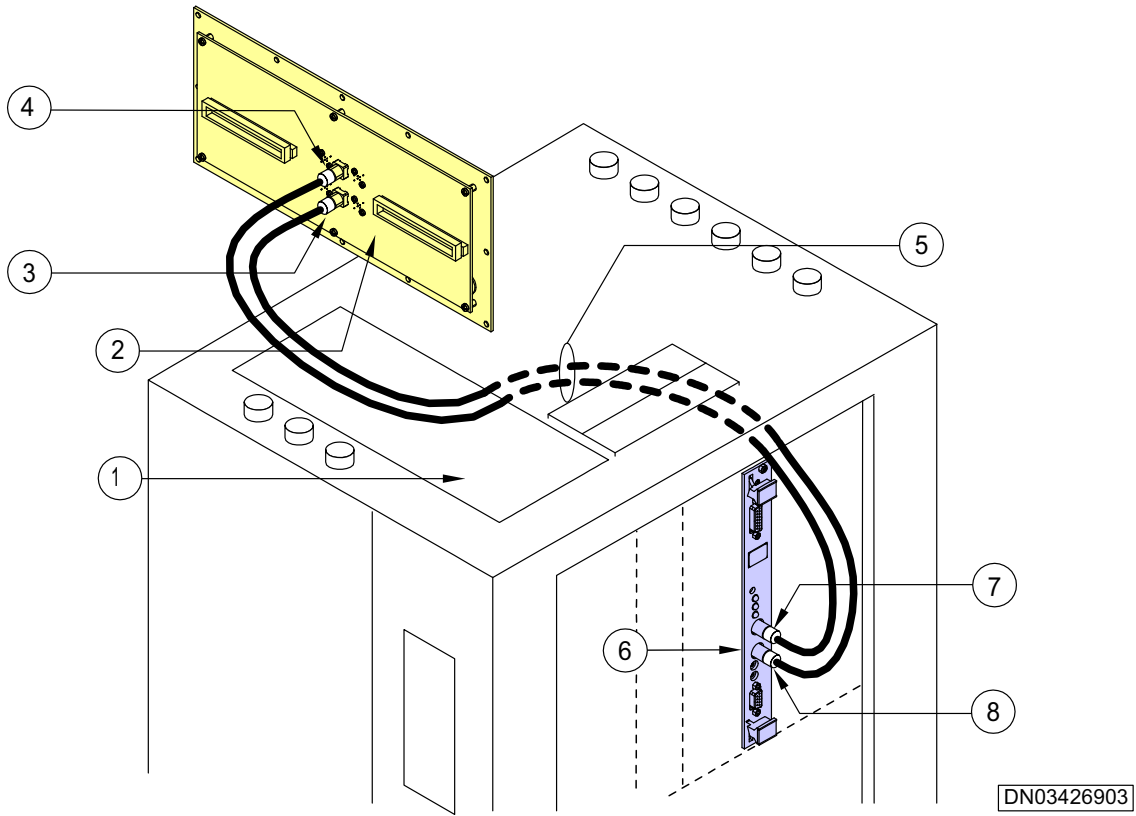
4	Pass cables through top of cabinet
5	FNO, FCLK
6	TCLK, SBCK
7	BCFB

Figure 170. New Abis interface to BCFB unit connections (Citytalk)



00280953

Figure 171. Mounting Abis interface panel (Citytalk)



1	Abis interface location
2	Underside of Abis interface
3	X206
4	X202
5	Pass cables through top of cabinet
6	BCFB
7	FNO, FCLK
8	TCLK, SBCK

Figure 172. New Abis interface to BCFB unit connections (Intratalc)

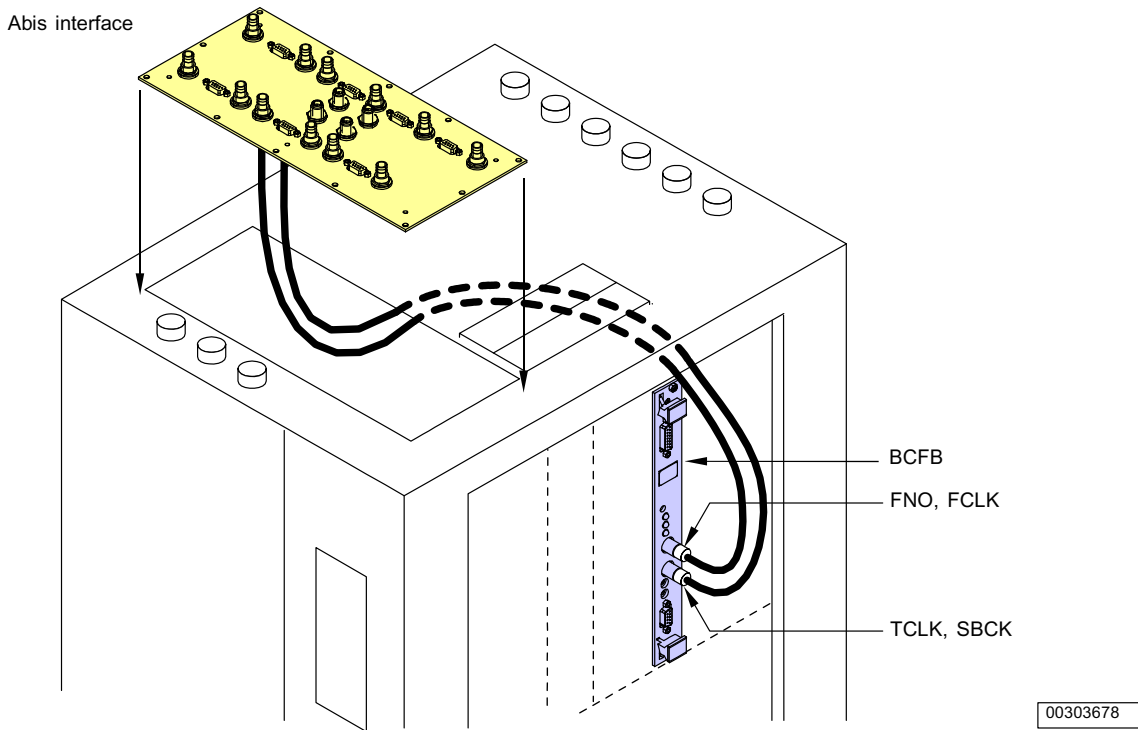


Figure 173. Mounting Abis interface panel (Intrataalk)



Steps

1. **Locate the three cables you removed from the old Abis interface.**
For more information, see *Removing an Abis interface*.
2. **Connect the cables to connectors X1 and X2 on the new Abis Interface. Make sure the orientation and position of the connectors are correct for each connector.**
3. **Connect two new cables (993850) to the bottom of the Abis interface at X202 and X206.**
4. **Mark the other end of each cable with its respective Abis interface connector to help identify the correct connection to the BCFB unit.**
5. **Route the two cables through the top of the cabinet.**
6. **Secure the two new cables to the three existing cables using a wire tie.**

The three existing cables should already be wire-tied together.

7. **Install the new Abis interface on the cabinet top plate and secure with the 12 screws.**

10.2.5 Installing a BCFB unit for Talk-family synchronisation with UltraSite EDGE BTS

Before you start

Ensure that the site is ready for BCFB unit installation. Refer to *Overview of preparing the Talk-family BTS for co-siting with UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



Caution

Handle the BCFB unit with care. Inappropriate handling can damage the LCD display on the front panel. Use the front-panel handles for lifting and pushing the unit into the cabinet.

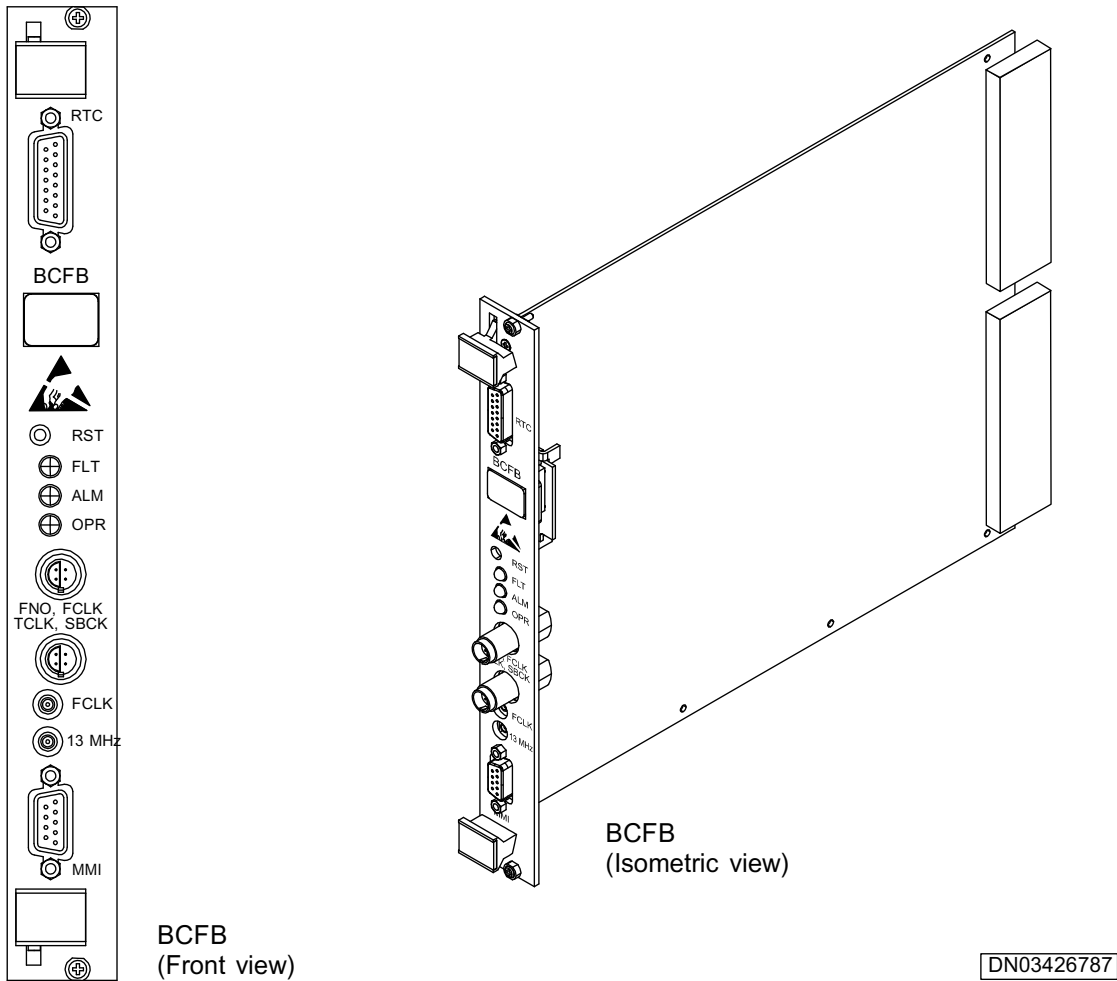


Figure 174. Base Control Function (BCFB) unit



Steps

1. **Unpack the new BCFB unit and check for damage.**
2. **Check the jumper settings and adjust if necessary.**

Note

Set only one BCFB unit as a master. If a BCFB unit will be used in a slave configuration, do not use jumpers on connector X1805.

Note

Pins 9 and 10 on connector X1701 are used for service test purposes only. This jumper must remain in the open position.

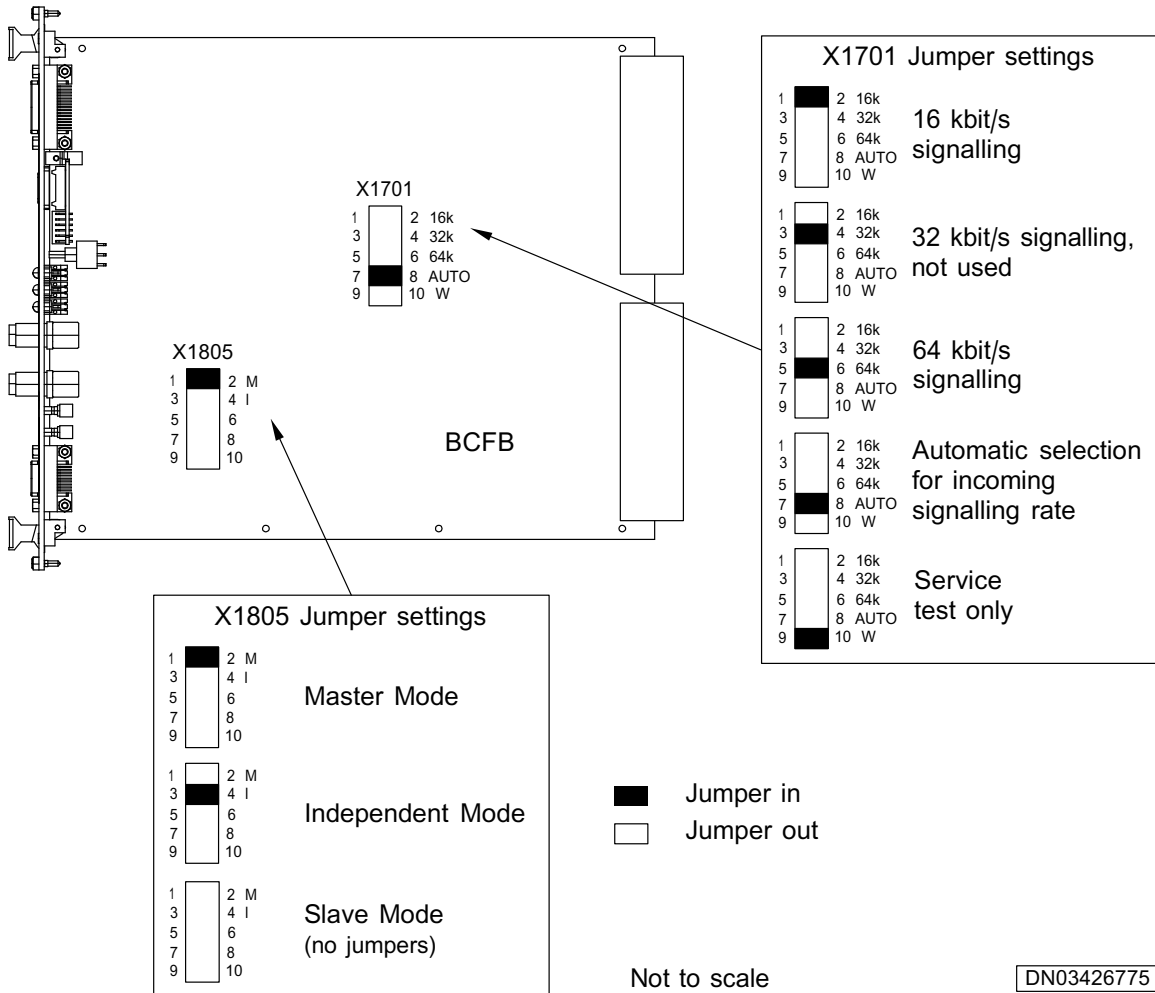


Figure 175. BCFB unit jumper settings

3. Use the lifting handles and carefully install the new BCFB unit into the slot.
4. Fasten the retaining screws on the unit front panel.

5. Locate the cables you removed from the BCFA unit front panel.

For information, see *Removing a BCFA unit*.

6. Connect the cables to the new BCFB unit.

Make sure the orientation and position of the connectors are correct for each connector.

7. Locate the two new cables (993850) previously labelled with their respective Abis interface connectors.

For more information, see *Installing an Abis interface (ABSA)*.

8. Connect the cable labelled X202 to the FNO, FCLK connector, and the cable labelled X206 to the TCLK, SBCK connector on the BCFB unit front panel.

10.3 Installing RF diversity cables kits for UltraSite EDGE BTS co-site with Talk-family BTS

10.3.1 Overview of installing RF diversity cable kits for UltraSite EDGE BTS co-site with Talk-family BTS

Summary

To install RF diversity cable kits for antenna sharing between UltraSite EDGE and Talk-family BTSs, you have to install the applicable cable termination plate.



Steps

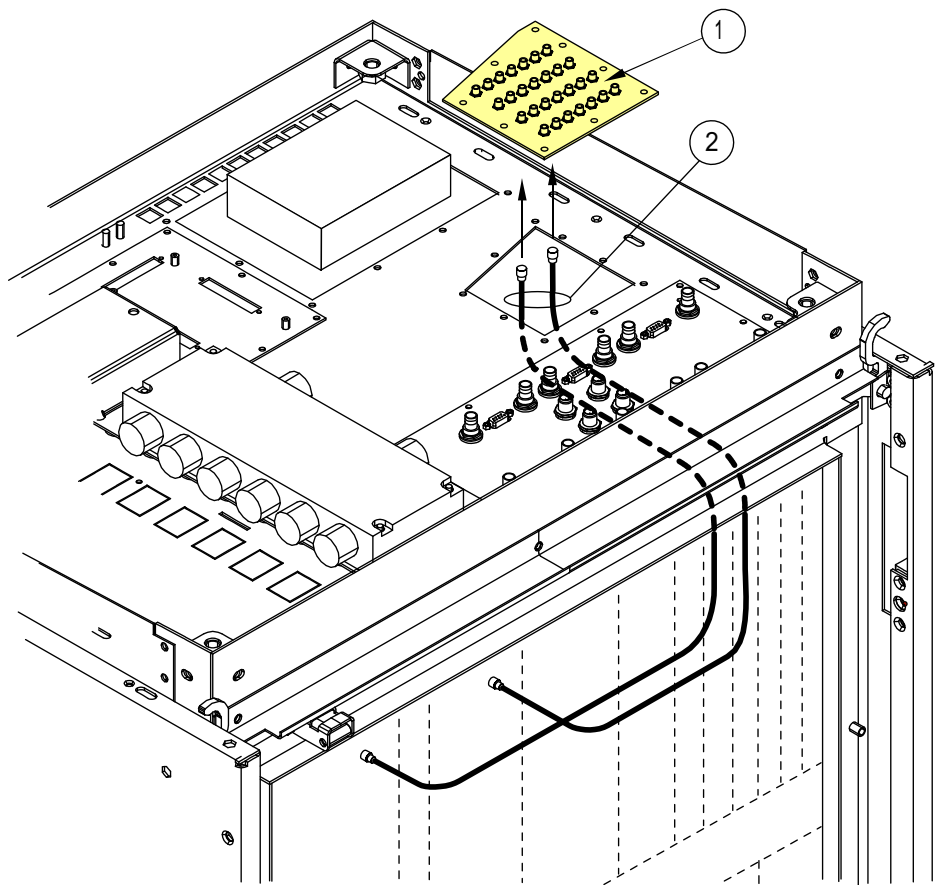
- 1. Install the applicable RF cable termination plate.**
- 2. Install the RF diversity cable kit.**

10.3.2 Installing RF cable termination plate for UltraSite EDGE BTS co-site with Talk-family BTS

Before you start

Ensure that the site is ready for termination plate installation. Refer to *Overview of installing RF diversity cable kits for UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

Summary



DN03426806

1	RF cable termination plate
2	Diversity cables within Talk-family cabinet as required

Figure 176. Mounting the RF cable termination plate for the Talk-family BTS (typical)



Steps

1. **Install the appropriate termination plate at the top of the Talk-family BTS. For ease of cable installation, do not attach the interface panel to the cabinet until the cable routing is complete.**

Note

Store any unused parts.

For more information on the mounting options for the termination plate, refer to *Technical description of UltraSite EDGE BTS co-siting with Talk-family RF diversity kits*.

10.3.3 Installing RF diversity cable kits for UltraSite EDGE BTS co-site with Talk-family BTS

Before you start

Ensure that the site is ready for RF diversity cable kit installation. Refer to *Overview of installing RF diversity cable kits for UltraSite EDGE BTS co-site with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

Note

It may be necessary to remove existing cables in order to install the RF diversity cables. Store any removed cables.

Summary

For a general view of diversity cable and termination plate mounting options, see *Technical description of UltraSite EDGE BTS co-siting with Talk-family RF diversity kits*.

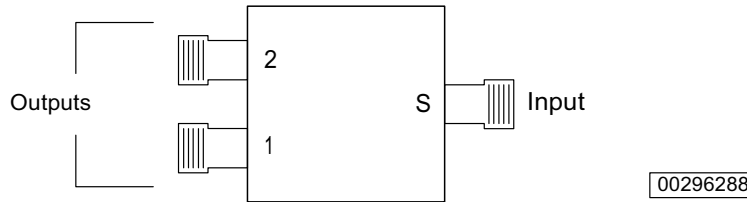


Figure 177. SPKA splitter cable connections - installed inside the UltraSite BTS cabinet in the Talk 444RTC/UltraSite 444RTC co-site configuration



Steps

1. **Review the correct point-to-point connections between the Talk-family and UltraSite EDGE BTS units for the configuration you are using.**

Talk 222AFE/UltraSite 222DVxx

Talk 444RTC/UltraSite 222DVxx

Talk 444RTC/UltraSite 444RTC

Talk 666RTC/UltraSite 222DVxx WBC 2:1

Talk 666RTC/UltraSite 666RTC

2. **Follow these cable routing guidelines.**

- Use cable 993959A to make the inter-cabinet connection between the Talk-family and UltraSite connector panels.
- Use cable 993960A for internal connections in both the Talk-family and UltraSite EDGE BTSs.
- When an SPKA splitter is used, the cable 993960A runs from the termination plate to the splitter IN, and cables 994131XX run from the splitter OUT to the unit connector. Exception to this guideline is the case where the SPKA splitters are used between DVxx and M2xA units in UltraSite BTS cabinet.

10.4 Routing and connection inter-cabinet cables for UltraSite EDGE BTS co-siting with Talk-family BTS

10.4.1 Overview of routing inter-cabinet cables for UltraSite EDGE BTS co-siting with Talk-family BTS

Before you start

Note

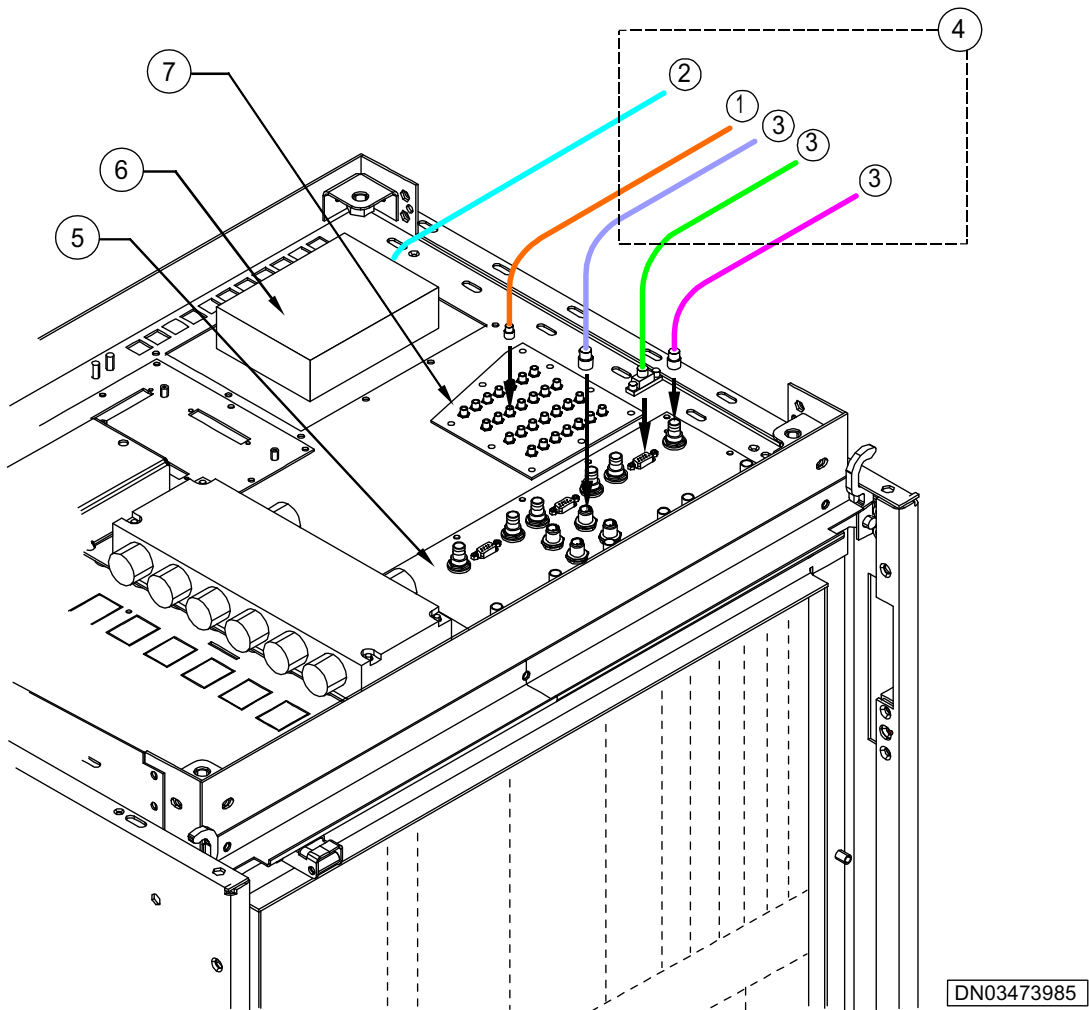
Depending on the configuration, one or more of the following cables may be included:

- power and alarm cables
 - synchronisation cables
 - diversity cables
-

Note

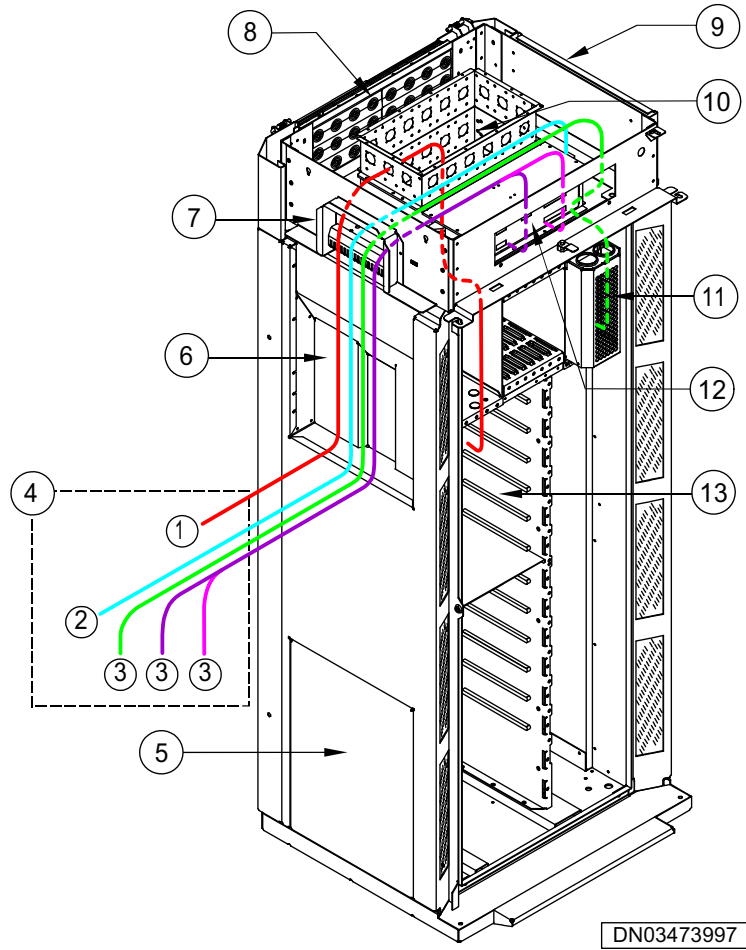
A cable channel is not provided for indoor installations that do not require a weather seal. Use site-supplied cable supports, if necessary.

Summary



4	UltraSite BTS
	1. External diversity
	2. DC power
	3. Abis, Synchronisation, Alarms and Controls, etc.
5	Abis interface
6	Power distribution
7	RF cable termination plate

Figure 178. Co-siting cables from Talk-family (Citytalk) cabinet



4	Talk-family BTS 1. External diversity 2. DC power to UltraSite BTS 3. Abis, Synchronisation, Alarms and Controls, etc.
5	Co-site, dummy cover
6	Co-site, channel
7	Co-site, cable entry
8	UltraSite cable entry
9	Roof support

10	Antenna box
11	Transmission unit(s)
12	External interface panel (at front of antenna box)
13	TSxx units and Multicoupler(s)

Figure 179. Co-siting cables from UltraSite cabinet

Co-siting may involve power, synchronisation, antenna, and diversity cables. This section provides the general cable routing instructions for interface cables between a Talk-family BTS and UltraSite EDGE BTS for power and synchronisation, and for connecting antenna jumpers to existing antenna lines.



Steps

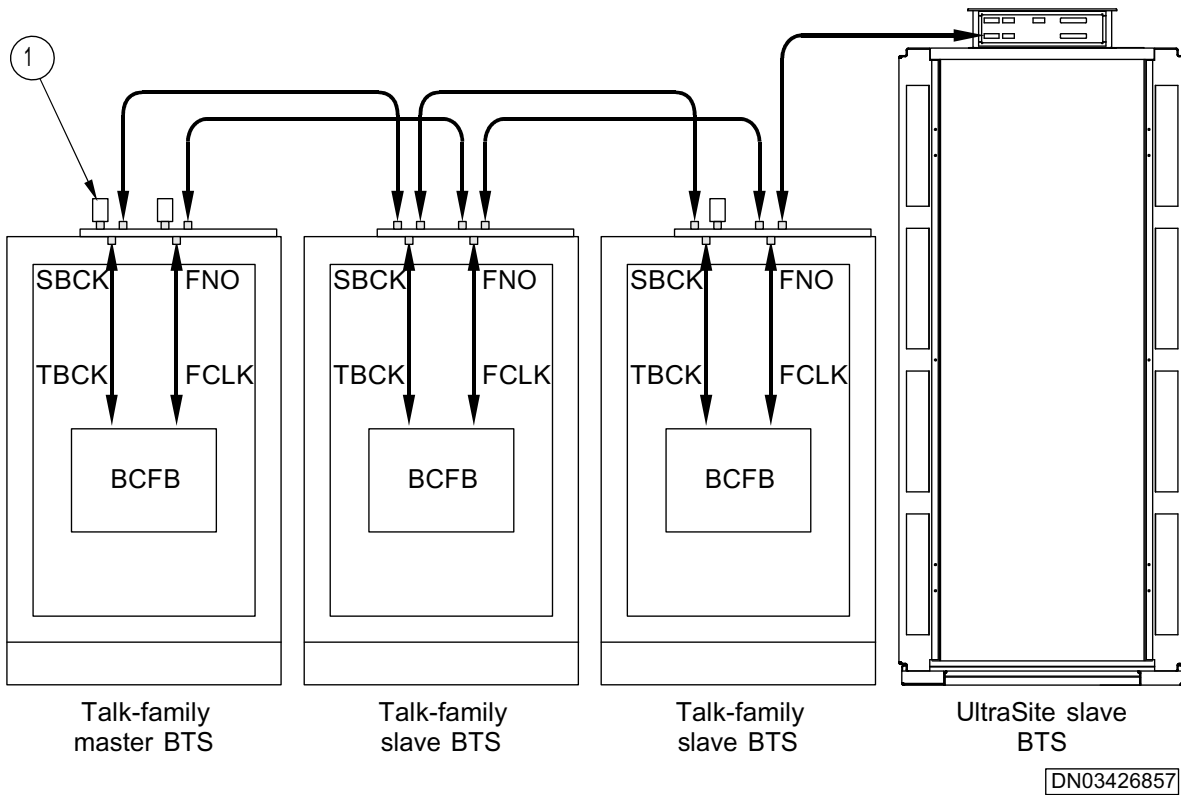
1. **Route DC cables from site support.**
2. **Route synchronisation cables.**
3. **Prepare for jumper cable installation.**

10.4.2 Routing synchronisation cables for UltraSite EDGE BTS co-siting with Talk-family BTS

Before you start

Ensure that the site is ready for synchronisation cable routing. Refer to *Overview of routing inter-cabinet cables*. Pay careful attention to all Warnings and Cautions.

Summary



1	Terminating resistor (3 places)
---	---------------------------------

Figure 180. Synchronisation chain for Talk-family and UltraSite EDGE BTSs



Steps

1. **Set up a Talk-family BTS as the master BTS.**
2. **Arrange all Talk BTSs as shown in the drawing above.**

The *Talk/Talk synchronisation kit* provides cables for transferring clock signals and an Abis interface with connectors for these cables.

Note

When multiple Talk-family BTSs are co-sited with UltraSite EDGE BTS, the BCFA unit must be replaced with a BCFB unit in each Talk-family BTS. In addition, the Abis interface plate must be replaced with the new ABSA in each Talk-family BTS. For more information, see these procedures:

- *Removing an Abis interface*
 - *Installing an ABSA Abis interface*
 - *Removing a BCFA unit*
 - *Installing a BCFB unit*
-

For procedures on how to install inter-cabinet cables for Talk/Talk synchronisation when multiple Talk-family BTSs are used in a co-siting solution, see the applicable *Nokia Citytalk or Intratalk GSM xxx BTS User Manual*.

3. **Connect the UltraSite EDGE BTS, as shown in the drawing above.**

- a. Select the appropriate *UltraSite/Talk synchronisation kit*. The kits differ only in the length of the cables.
- b. Connect the applicable cable from the Abis interface connector labelled FNO/FCLK OUT on the last Talk-family BTS to the UltraSite IFM connector CABINET INPUT.

4. *If co-siting multiple UltraSite EDGE BTSs with the Talk-family BTS*

Then

Follow these instructions to install inter-cabinet cables for UltraSite/ UltraSite synchronisation.

- a. Use the *UltraSite/ UltraSite synchronisation kit* to connect the UltraSite EDGE BTSs.
- b. Install inter-cabinet cables for UltraSite/ UltraSite synchronisation according to *Connecting synchronisation cables to UltraSite EDGE BTS*.

5. **Terminate all unused input/output connectors on the Talk BTSs, using the supplied terminating resistors.**

Note

If one Talk BTS is used as a Master BTS, with one or more UltraSite BTSs as slaves, terminate only the input connectors on the Master Talk BTS.

Note

Two terminating resistors are supplied with each Synchronisation kit. In installations where the Master Talk BTS is connected directly to the UltraSite BTS (i.e. there is no Talk Master/Slave chain), there will be three (3) unused connectors. In this case only one terminating resistor is required and it is fitted to the FNO/ FCLK IN connector. TCLK/SBCK IN/OUT connectors are not used in Talk/UltraSite Synchronisation.

10.4.3 **Preparing for jumper cable installation of UltraSite EDGE BTS co-siting with Talk-family BTS**

Before you start

Refer to *Overview of routing inter-cabinet cables*. Pay careful attention to all Warnings and Cautions.

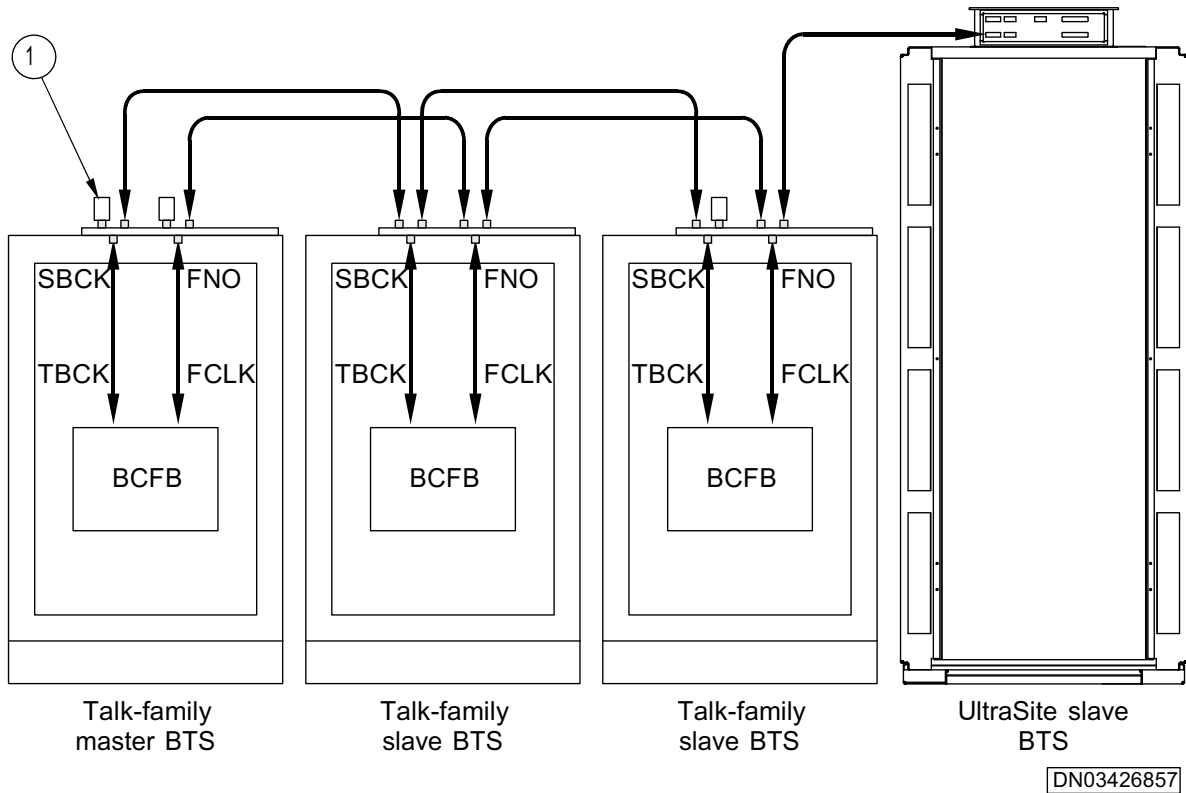
Note

Consider future requirements when planning cable routing.

Note

Consider bending radius/RF performance when selecting a jumper cable. When the inside surface minimum bending radius is 100 mm, only three antenna jumpers can be routed through the co-siting outdoor application side wall. When the inside surface minimum bending radius is 80 mm, the co-siting outdoor application side wall can accommodate a greater number of antenna jumpers.

Summary



1	Terminating resistor (3 places)
---	---------------------------------

Figure 181. Synchronisation chain for Talk-family and UltraSite EDGE BTSs

In outdoor configurations, an antenna jumper cable joins the UltraSite antenna connector to the existing antenna feeder on the Talk-family roof. When the jumper cable is used, the connector cover has to be changed to the jumper cable model. The jumper cable cover MFCA is for 3 pieces. 3/8 inch jumper cable and MFCB is for 9 jumper cables. The jumper cable cover unit (MFCx) contains the following components:

- antenna port cover
- grounding clamps
- screws (for properly grounding the jumper cable to the cabinet)

**Steps**

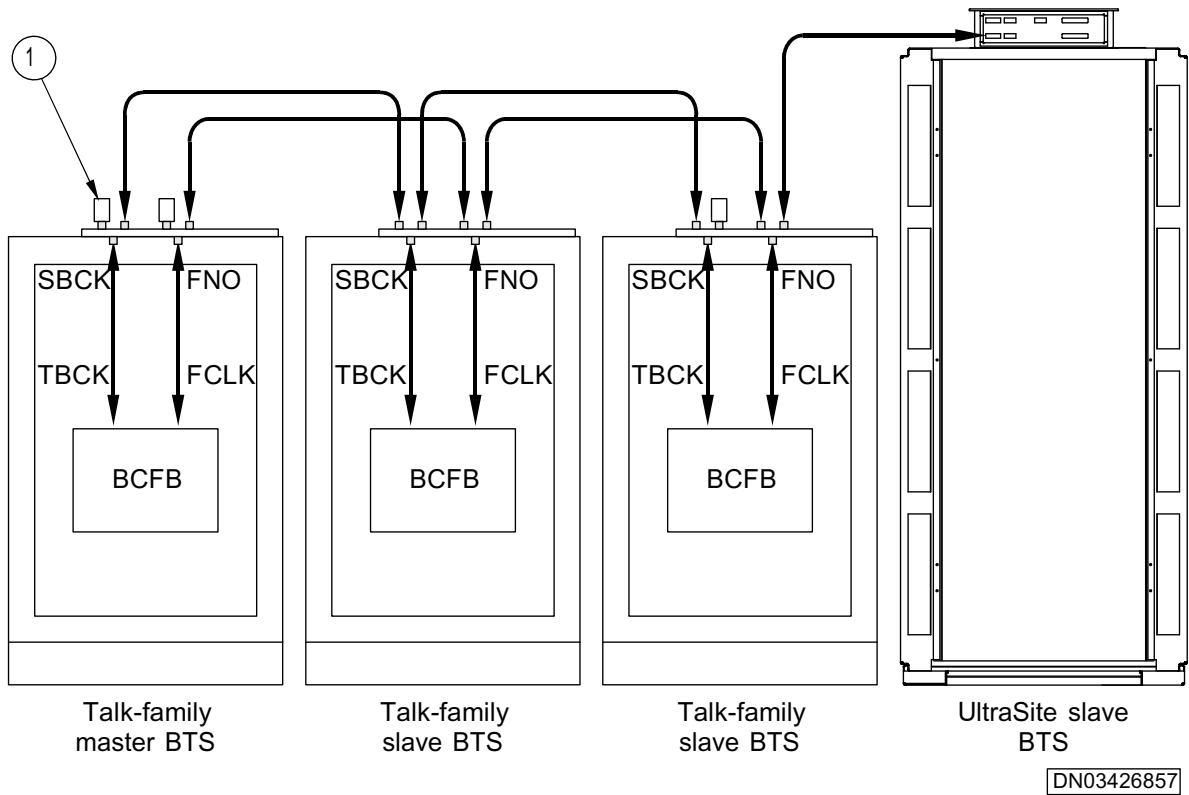
1. **Reorganise the existing Citytalk antenna cables if RF diversity cable termination plates are to be used on the Citytalk cabinet antenna connector box plate.**
2. **Strip the jumper cable plastic shield off at a point directly above the MFCx EMC shielding plate (if using the MFCx) to allow the grounding clamp to properly touch the exposed corrugated copper of the jumper cable.**

**Caution**

Do not damage the EMC shielding that is under the feeder plastic shield.

10.4.4 **Installing MFCA jumper cables and jumper cable cover of UltraSite EDGE BTS co-site with Talk-family BTS**

Summary



1	Terminating resistor (3 places)
---	---------------------------------

Figure 182. Synchronisation chain for Talk-family and UltraSite EDGE BTSs

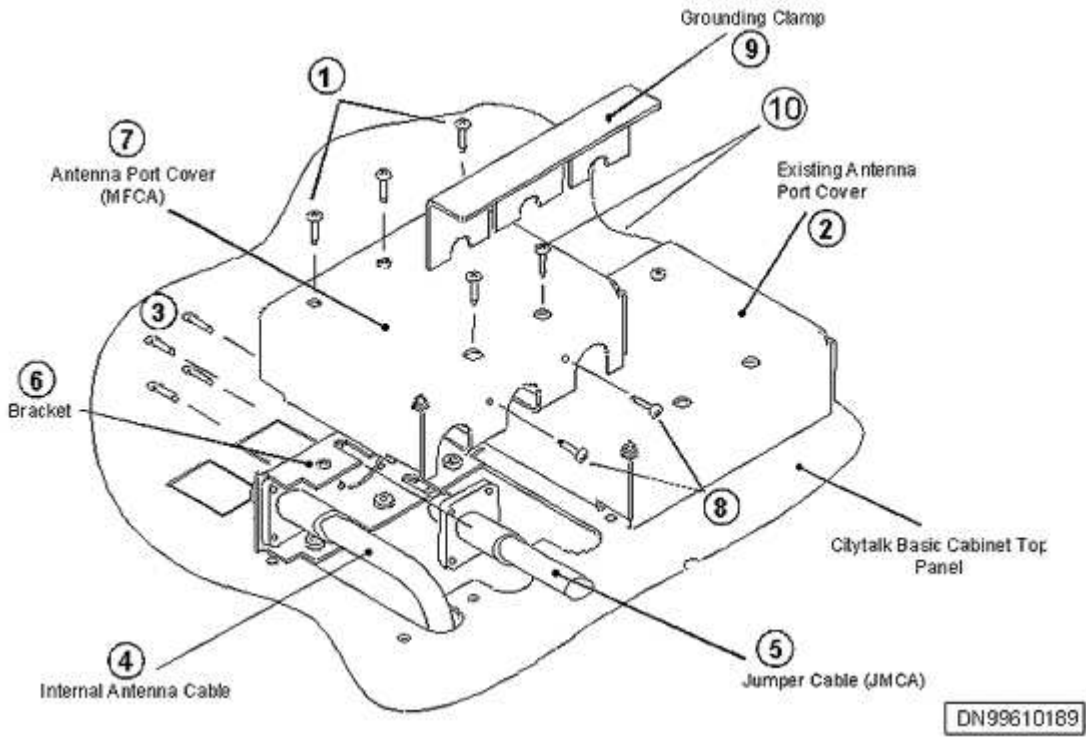
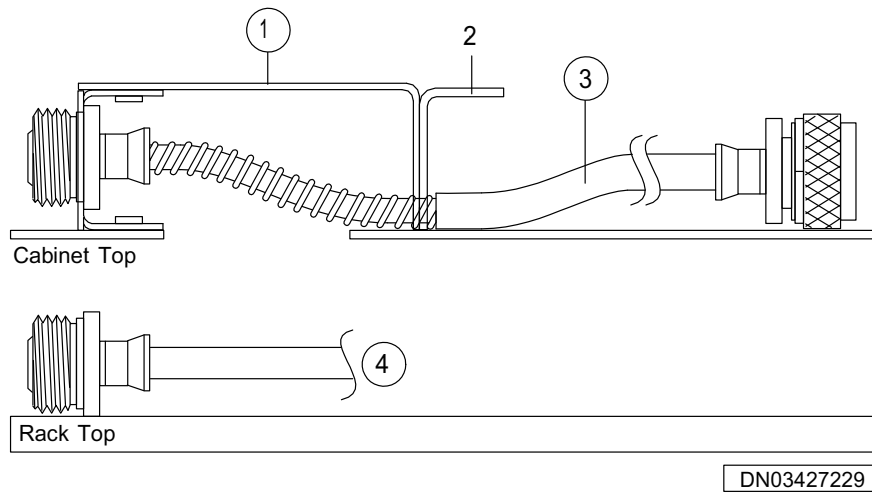


Figure 183. Installing the MCFA



1Antenna Cover Plate for Jumper Cables2Grounding Clip3Jumper Cable4Unused antenna connector

Figure 184. Jumper cable installation



Steps

1. Remove the existing antenna box cover.

- a. Disconnect the antenna feeder from the cabinet antenna connector.
- b. Remove the three M4x6 phillips head screws and washer from the existing antenna port cover. Save the screws for later use with the MFCx.
- c. Loosen (do not remove) the two M4x10 clamping screws from the existing antenna port cover.
- d. Slide the existing antenna port cover backwards and remove it from the cabinet top panel.

Note

Leave enough space between the head of the screw and the port cover side panel to allow the grounding clamp to slide along the side panel.

- e. Remove the four M3x6 phillips head screws from the internal antenna cable. Save the screws for later use with the jumper cable to be installed.
 - f. Remove the selected 7/16 DIN female bulkhead connector of the internal antenna cable from the mounting bracket on the cabinet and feed the internal antenna cable into the cabinet. Ensure the cable is placed properly on the cabinet rack below the antenna connector box.
- #### 2. Insert the new jumper cables into the empty bracket ports on the cabinet.
- #### 3. Secure the 7/16 DIN bulkhead connectors of the jumper cables to the bracket with the M3x6 screws.
- #### 4. Install the new antenna port cover (MFCx).
- a. Slide the cover plate fixing slots under the two M4x10 screws.
 - b. Fix the cover plate with three M4x6 screws and washer above the antenna connector.
 - c. Tighten the two M4x10 screws at the back of the cover plate.

5. **Fasten the two M4x6 screws included with the MFCA unit to the side of the new antenna port cover. Do not tighten.**
-

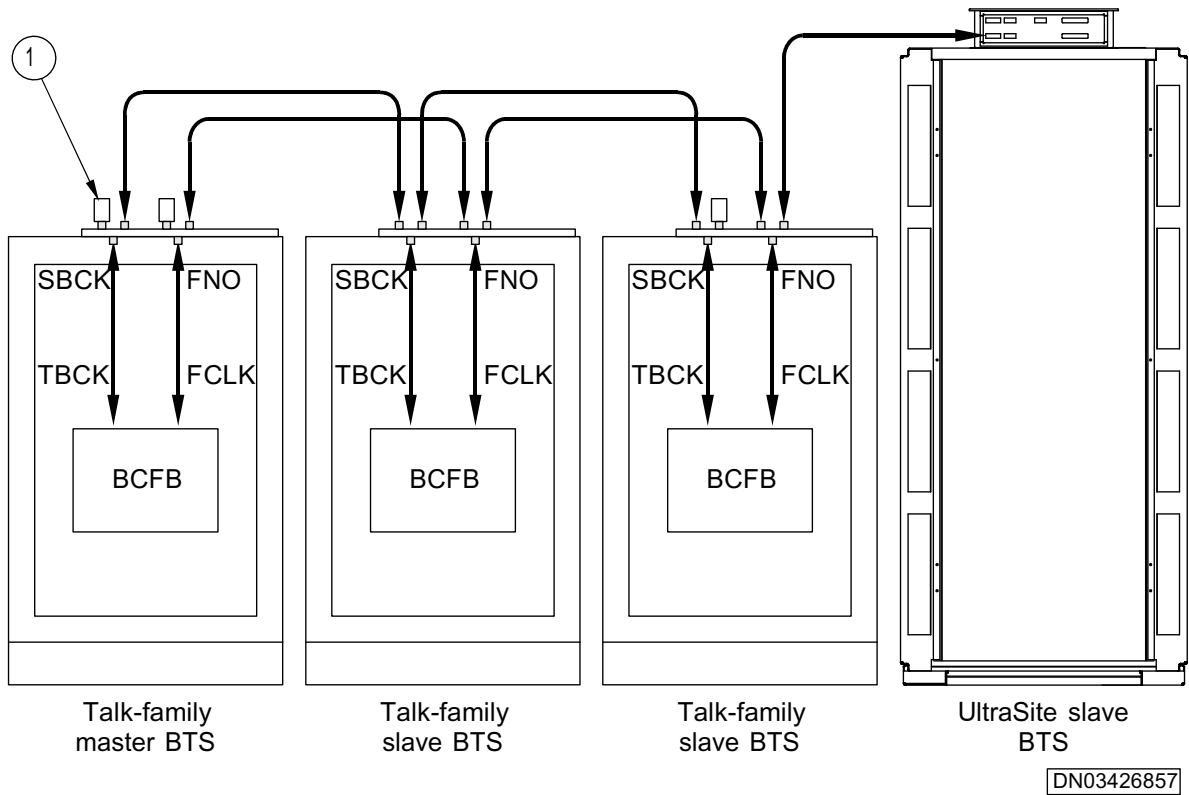
Note

Leave enough space between the head of the screw and the port cover side panel to allow the grounding clamp to slide along the side panel.

6. **Align the cable grounding clamp slots with the two screw shanks.**
7. **Slide the grounding clamp down along the port cover side panel until it touches the exposed corrugated copper of the jumper cable.**
8. **Tighten the two screws to secure the clamp to the port cover.**
9. **Secure the 7/16 DIN male plug end of the jumper cable to the 7/16 DIN female bulkhead antenna connector on the UltraSite cabinet.**

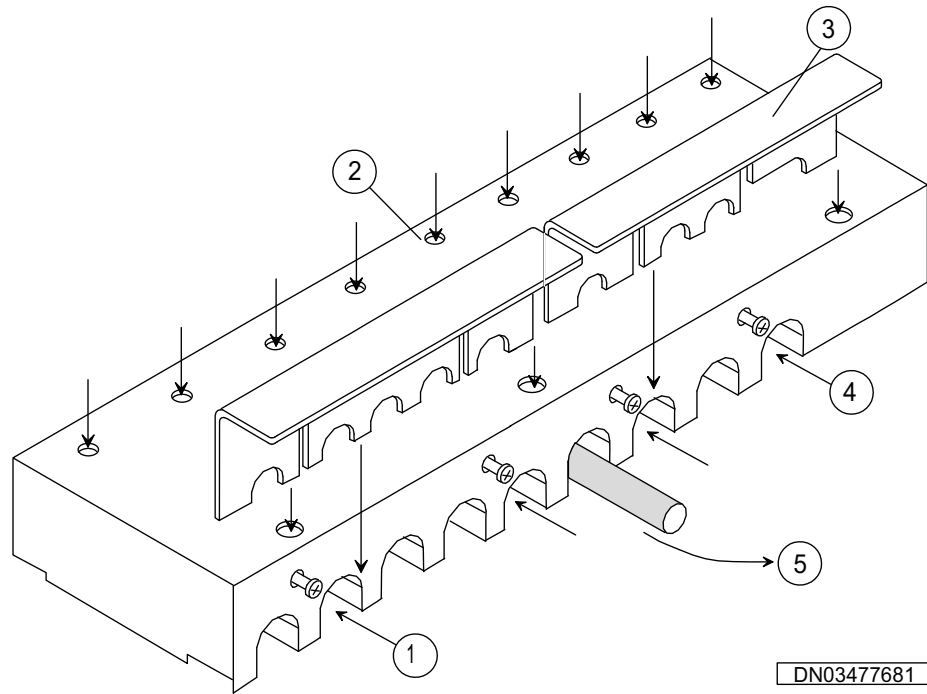
10.4.5 **Installing MFCB jumper cables and jumper cable cover of UltraSite EDGE BTS co-site with Talk-family BTS**

Summary



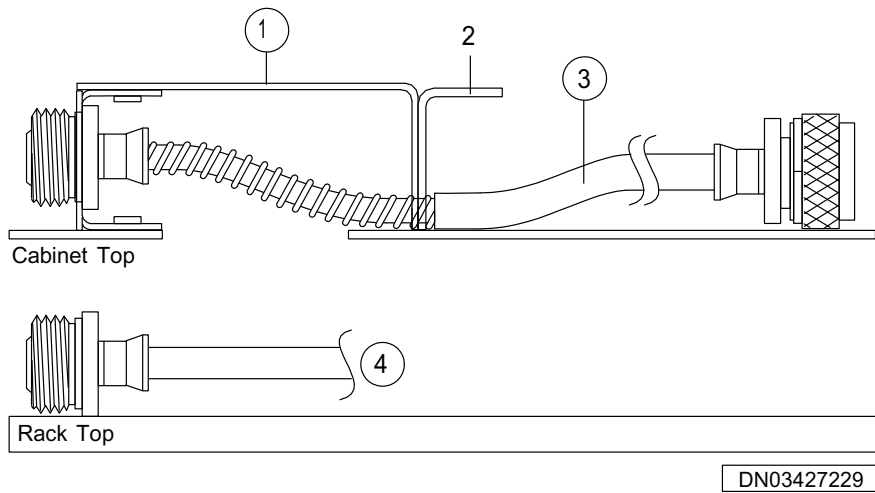
1	Terminating resistor (3 places)
---	---------------------------------

Figure 185. Synchronisation chain for Talk-family and UltraSite EDGE BTSs



1	M4 x 6 (2 pcs)
2	Antenna Cover Plate MFCB for Jumper Cables
3	Grounding Clip
4	M4 x 6 (2 pcs)
5	Jumper Cable to Extension Cabinet

Figure 186. Installation of the MFCB



1	Antenna Cover Plate for Jumper Cables
2	Grounding Clip
3	Jumper Cable
4	Unused antenna connector

Figure 187. Jumper cable installation



Steps

1. **Remove the existing antenna box cover.**
 - a. Disconnect the antenna feeder from the cabinet antenna connector.
 - b. Remove the three M4x6 phillips head screws and washer from the existing antenna port cover. Save the screws for later use with the MFCx.
 - c. Loosen (do not remove) the two M4x10 clamping screws from the existing antenna port cover.
 - d. Slide the existing antenna port cover backwards and remove it from the cabinet top panel.

Note

Leave enough space between the head of the screw and the port cover side panel to allow the grounding clamp to slide along the side panel.

- e. Remove the four M3x6 phillips head screws from the internal antenna cable. Save the screws for later use with the jumper cable to be installed.
 - f. Remove the selected 7/16 DIN female bulkhead connector of the internal antenna cable from the mounting bracket on the cabinet and feed the internal antenna cable into the cabinet. Ensure the cable is placed properly on the cabinet rack below the antenna connector box.
- 2. Insert the jumper cable to the empty antenna connector hole on the cabinet and secure with four M3x6 screws.**
 - 3. Install the new antenna connector cover plate (MFCB).**
 - a. Slide the cover plate fixing slots under three M4x10 screws.
 - b. Fix the cover plate with nine M4x6 screws and washers above the antenna connector.
 - 4. Fit four M4x6 screws to the cable exit side of the jumper cable cover plate. Do not tighten.**
 - 5. Slide the grounding clips under four M4x6 screws.**

Ensure the grounding clip clamps the peeled section of the jumper against the cabinet top.
 - 6. Connect the antenna feeder to the Citytalk cabinet end of the jumper cable.**
 - 7. Connect the jumper cable to the UltraSite cabinet antenna connector.**

10.4.6 Installing antenna jumper cables of UltraSite EDGE BTS co-site with Talk-family BTS without MFCx

Before you start

Ensure that the site is ready for antenna jumper cable installation. Refer to the *Overview of routing inter-cabinet cables for UltraSite EDGE BTS co-siting with Talk-family BTS*. Pay careful attention to all Warnings and Cautions.

**Steps**

1. **Connect the UltraSite antenna jumper cables to the existing antenna feeders outside of both cabinets.**
2. **Route the UltraSite antenna jumper cables through the UltraSite EDGE BTS cable entry kit to the UltraSite cabinet.**

10.4.7 Routing DC cables from site support for UltraSite EDGE BTS co-site with Talk-family BTS

**Steps**

1. **Run the DC cable separately from the site support cabinet to Nokia Talk-family and Nokia UltraSite EDGE cabinets.**
2. **Connect the power cable wires to the terminal blocks on top of each cabinet.**

10.5 Leaving UltraSite EDGE BTS site

**Steps**

1. **Ensure all required installation documentation is available on site.**
2. **Complete the installation checklist including the signature and date.**
3. **Complete the necessary Site Deficiency reports.**
4. **Complete the necessary Fault reports.**
5. **Inform the Installation Manager/Site Manager of work progress.**
6. **Complete the certificate of completion and placing it in the site folder.**

10.6 Checklist for the installation of UltraSite EDGE BTS

Table 7. Installation checklist

Check	Procedural information	Check mark
Complete site planning	<i>Overview of planning UltraSite EDGE BTS</i>	
Plan cabinet configurations (combining options)	<i>Overview of planning an UltraSite EDGE BTS internal configuration</i>	
Prepare site for installation and complete site survey	<i>Overview of preparing to install UltraSite EDGE BTS</i>	
Ensure proper installation tools and equipment are on site	<i>Tools requirements for UltraSite EDGE BTS</i>	
Unpack and inspect cabinet delivery contents for visible damage	<i>Unpacking and inspecting the UltraSite EDGE BTS delivery</i>	
Prepare the base for the indoor cabinet	<i>Preparing the base for installation of the indoor UltraSite EDGE BTS cabinet</i>	
Mount the indoor cabinet to the base using one of the three mounting options	<i>Overview of mounting UltraSite EDGE BTS cabinet indoor</i>	
Inspect the cabinet to ensure it is level		
Install the Indoor Application Kit (IAKx) to the cabinet core	<i>Overview of installing UltraSite EDGE BTS core mechanics</i>	
Prepare the base for OAKA or OAKC installation	<i>Preparing the base for installation of the outdoor UltraSite EDGE BTS cabinet</i>	
Lift and mount the cabinet on the plinth	<i>Overview of mounting the outdoor UltraSite EDGE BTS cabinet</i>	
Install the Outdoor Application kit (OAKA or OAKC) to the cabinet core	<i>Overview of installing outdoor core mechanics to UltraSite EDGE BTS</i>	
Install Cable Entry Kit	<i>Installing the cable entry kit of outdoor UltraSite EDGE BTS roof support</i>	
Install bridge kit for inter-cabinet cable routing (optional)	<i>Installing the Bridge kit of outdoor UltraSite EDGE BTS</i>	
Prepare BTS for cabling	<i>Overview of preparing UltraSite EDGE BTS for cabling</i>	

Table 7. Installation checklist (cont.)

Check	Procedural information	Check mark
Cable BTS	<i>Overview of cabling UltraSite EDGE BTS at a new site</i>	
Connect ground cables	<i>Overview of connecting grounding cables to UltraSite EDGE BTS</i>	
Connect AC power	<i>Overview of connecting AC power cables to UltraSite EDGE BTS</i>	
Connect DC power	<i>Overview of connecting DC power cables to UltraSite EDGE BTS</i>	
Install units	<i>Overview of installing the units of the UltraSite EDGE BTS</i>	
Cable the units	<i>Overview of cabling GSM/EDGE units of UltraSite EDGE BTS</i>	
Configure cabinets to support combining options	<i>Overview of mounting indoor cabinet of UltraSite EDGE BTS</i> <i>Overview of mounting the outdoor cabinet of UltraSite EDGE BTS</i>	
Synchronise cabinets	<i>Connecting synchronisation cables to UltraSite EDGE BTS</i>	
Power on the new BTS site	<i>Powering on a new site for UltraSite EDGE BTS</i>	
Commission the BTS	<i>Overview of commissioning UltraSite EDGE BTS</i>	

11 Glossary

11.1 Glossary for UltraSite EDGE BTS

11.1.1 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 <p>The ratio of the number of bit errors to the total number of bits transmitted in a given time interval.</p>
BIST	Built-In Self Test <p>A technique that provides a circuit the capability to carry out an implicit test of itself.</p>
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	<p>Ministry of Posts and Telecommunications</p> <p>Telecommunications regulatory agency of Great Britain.</p>
MS	<p>Mobile Station</p> <p>User equipment which uses a radio connection, and which can be used in motion or at unspecified points. This is usually a mobile phone.</p>
MSC	<p>Mobile Switching Centre</p> <p>The mobile network element which performs the switching functions in its area of operation, and controls cooperation with other networks.</p>
MTBF	<p>Mean Time Between Failure</p>
NCRP	<p>National Council on Radiation Protection and Measurements</p>
NCU	<p>Node Control Unit</p>
NEBS	<p>Network Equipment Building Systems</p>
NED	<p>Nokia Electronic Documentation</p>
NMS	<p>Network Management System</p>
O&M	<p>Operation and Maintenance</p>
OAKB	<p>Cable entry kit for BTS co-siting</p>
OAKx	<p>Outdoor Application Kit for Nokia UltraSite EDGE Base Station</p> <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	<p>Outdoor Bridge Kit</p>

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

11.1.2 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.

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