NOKIA

Removing UltraSite EDGE BTS

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Contents

1 Statutory information

1.1 CE Marking

Standard	Description
CE 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	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. The product is marked with the CE marking and Notified Body number according to the Directive 1999/5/EC. 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.

2 Overview of removing UltraSite EDGE BTS

2.1 Overview of removing UltraSite EDGE BTS

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 removal tasks have basic knowledge of base station systems and equipment.

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. **Remove the GSM/EDGE units .**
2. **Remove the WCDMA units, if required.**
3. **Remove the IBBU units, if required.**
4. **Remove the power and ground cables .**
5. **Remove the cabinet core units .**
6. *If* Removing an indoor cabinet,

   Then

   Remove the IAKx cabinet core mechanics.
7. *If* Removing an outdoor cabinet,

   Then

   Remove OAKx cabinet core mechanics.
8. **Remove an UltraSite EDGE BTS cabinet core.**
9. **Dispose of all units properly.**

2.2 End of Life (EoL) of UltraSite EDGE BTS

Nokia Networks customers can contract with Nokia for environmentally responsible EoL treatment of obsolete equipment. The purpose is to recover the material and energy content of the obsolete products and to ensure safe treatment of substances that can cause harm to people or the environment, if disposed of untreated. In a life-cycle perspective, EoL treatment can compensate for some of the environmental impacts of the earlier stages of the product's life cycle.

Depending on customer needs, Nokia Networks offers a Recycling Service covering disassembly, transportation, selection of an authorised recycling company, contracts with the recycling company and reporting. The Recycling Service is available per agreement for all Nokia Networks products sold globally. The service can also include third-party products and packaging, if necessary material information is provided by the customer. Product treatment is subcontracted to a local, authorised recycling company. Nokia Networks has set requirements for EoL subcontractors and regularly audits them. Nokia requires that all subcontractors comply with the laws and settlements of local authorities and that they conduct business in an ethical manner.

In order to further facilitate EoL management, Nokia Networks provides information about the materials used in its products and disassembly instructions to recycling companies. This helps in choosing the optimal treatment method and results in minimised waste streams to landfill sites.

2.3 Storage and disposal of UltraSite EDGE BTS units

Before you start

Warning

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

Warning

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

Warning

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

Warning

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

Caution

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

Caution

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

Steps

1. *If* storing an UltraSite EDGE BTS unit

   Then

   Follow these guidelines:

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

c. Insert the appropriate amount of dehydrant into the polyethylene bag, to protect against humidity and corrosion.

Table 1. Dehydrant requirements

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

[a]relative humidity 80%, temperature +20 °C

[b]relative humidity 95%, temperature +35 °C

d. Steam seal the polyethylene bag.

e. Pack the unit individually into a sturdy corrugated board or wood box.

f. Maintain proper storage conditions for the unit.

Table 2. Climatic conditions for storage

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

Table 3. Mechanical conditions for storage

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

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

   Then

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

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

3 Removing GSM/EDGE units of UltraSite EDGE BTS

3.1 Overview of removing units from UltraSite EDGE BTS

Summary

Warning

Potentially lethal voltages!

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

Warning

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

Warning

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

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

Warning

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

Caution

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

Caution

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

Caution

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

Caution

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

Note

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

Steps

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

3.2 Removing GSM/EDGE unit cables of UltraSite EDGE BTS

Before you start

Caution

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

Steps

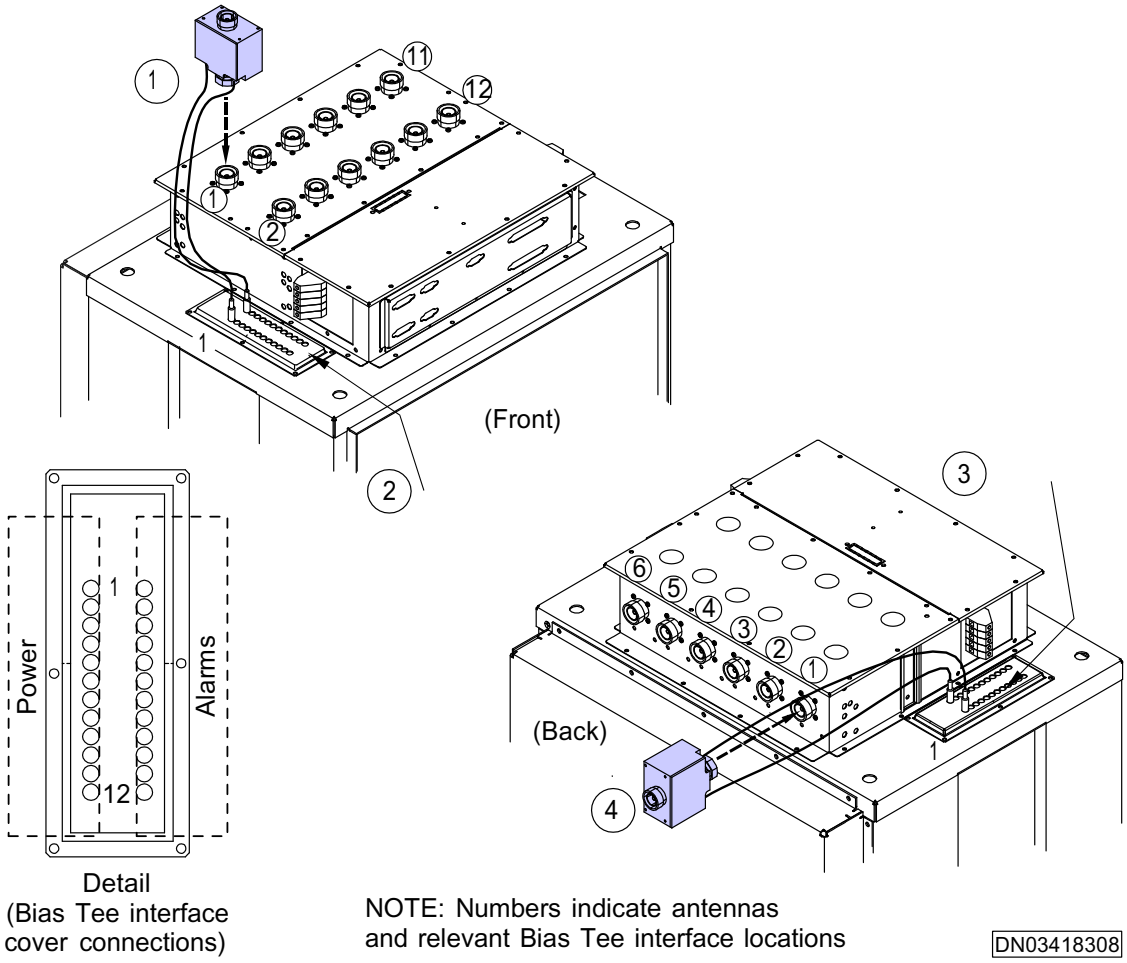
1. **Note the unit's cable configuration.**
2. **Disconnect the unit's cables.**
3. **Ensure that the cables do not become entangled when you slide the unit out of the cabinet.**

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

Before you start

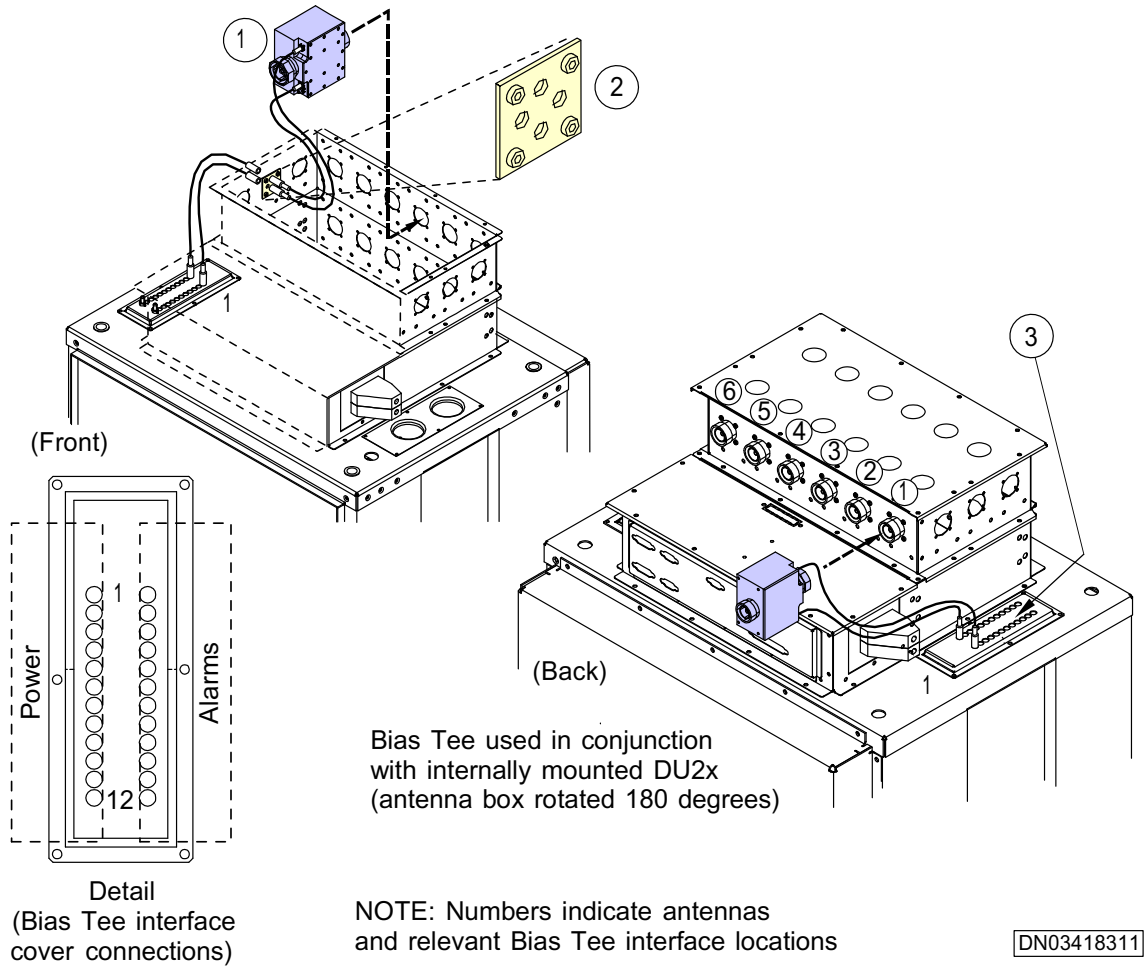
Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



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

Figure 1. BPxx installation in Indoor cabinet



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

Figure 2. BPxx installation in Outdoor cabinet

Steps

1. Block the BCF locally or from the BCS.

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

2. Power down the BTS .

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

   Then

   Remove the BPxx using the following steps:

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

4. *If* you are removing the BPxx unit from inside the OAKx antenna box,

   Then

   Remove the BPxx using the following steps:

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

5. *If* you are removing the BPxx unit from outside the OAKx antenna box,

   Then

   Remove the BPxx using the following steps:

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

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

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

Before you start

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

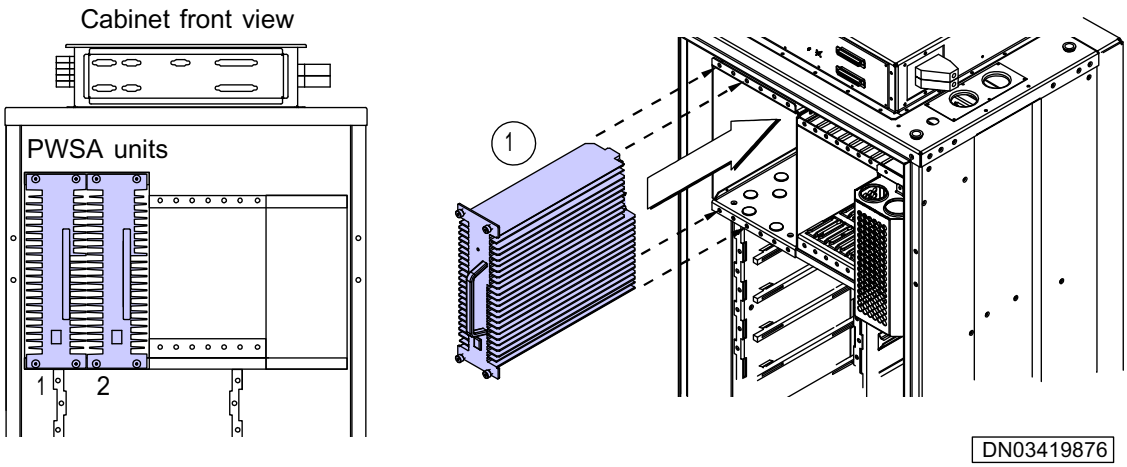
Summary

Warning

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

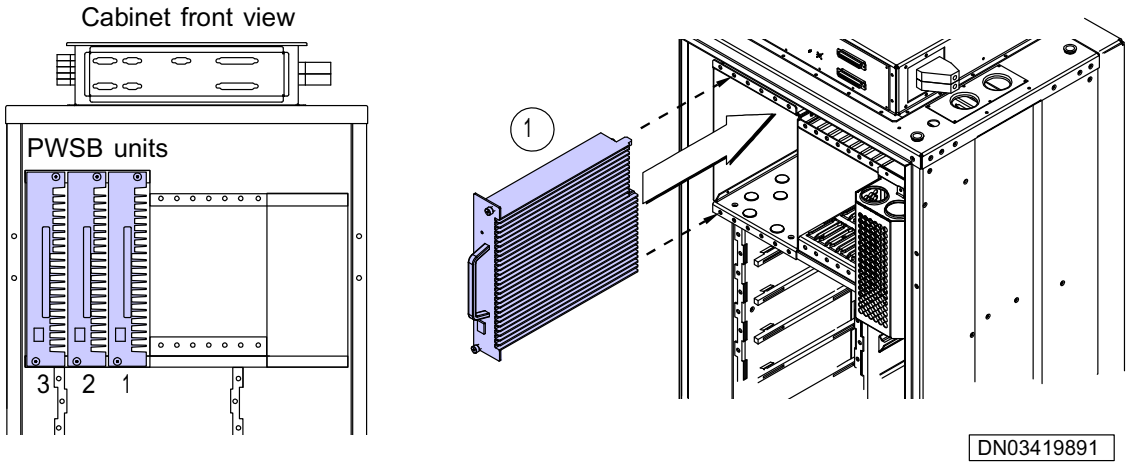
Note

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



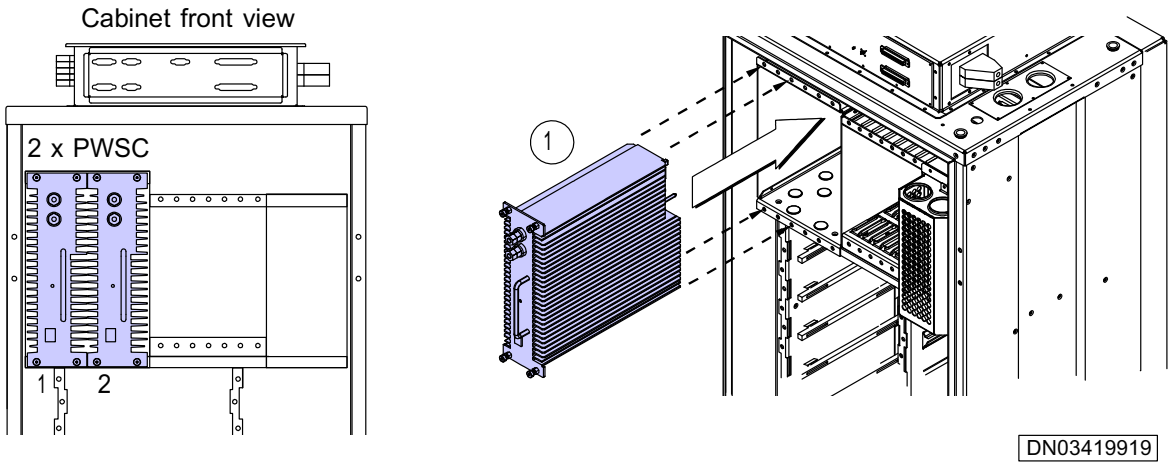
1	PWSA

Figure 3. PWSA unit replacement



1	PWSB

Figure 4. PWSB unit replacement



1	PWSC

Figure 5. PWSC unit replacement

Steps

1. To remove PWSA/PWSB units, complete the following:

a. Turn the PWSA/PWSB unit to be removed to the STAND BY mode.
b. Loosen the PWSx unit retaining screws with a T20 Torx driver.
c. Remove the PWSA/PWSB unit from the cabinet.

2. To remove PWSC units, complete the following:

a. Notify the appropriate personnel and block the BCF.

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

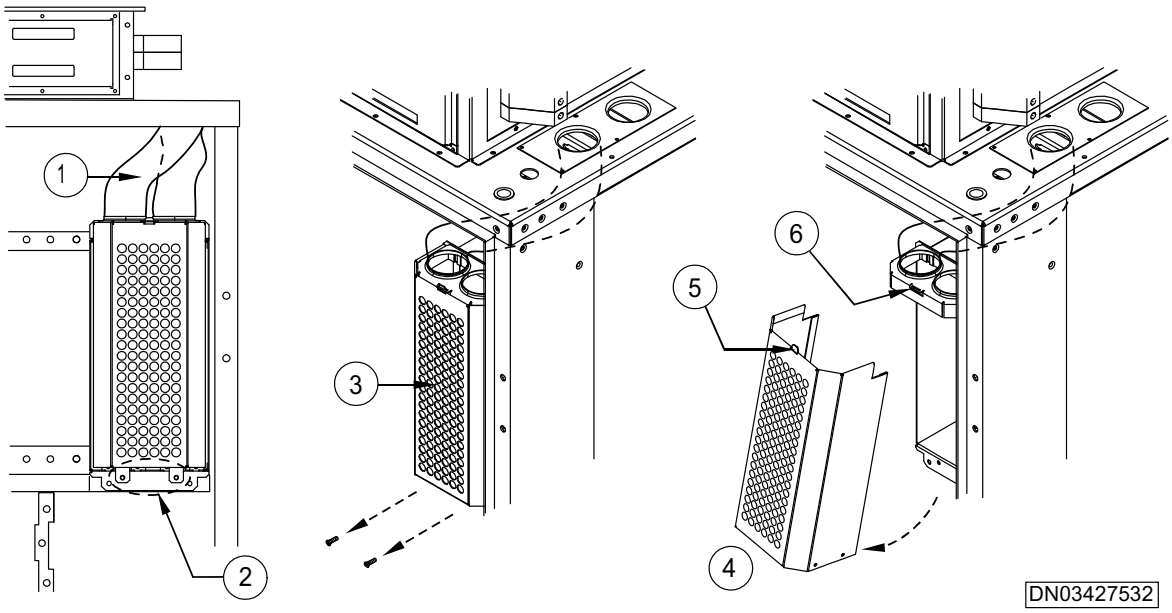
3.5 Removing a Transmission (VXxx) unit from UltraSite EDGE BTS

Before you start

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

Summary

Cabinet front view



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

Figure 6. Transmission unit cover removal

Steps

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

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

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

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

3. **Remove the two screws from the Transmission unit cover.**

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

   Set the cover aside until you reconnect the interface cables.

5. **Disconnect the Transmission unit cables.**

6. **Loosen the upper and lower retaining screws of the unit with a T10 Torx driver.**

7. **Uninstall the unit logically so that all the unit settings are removed from the node.**

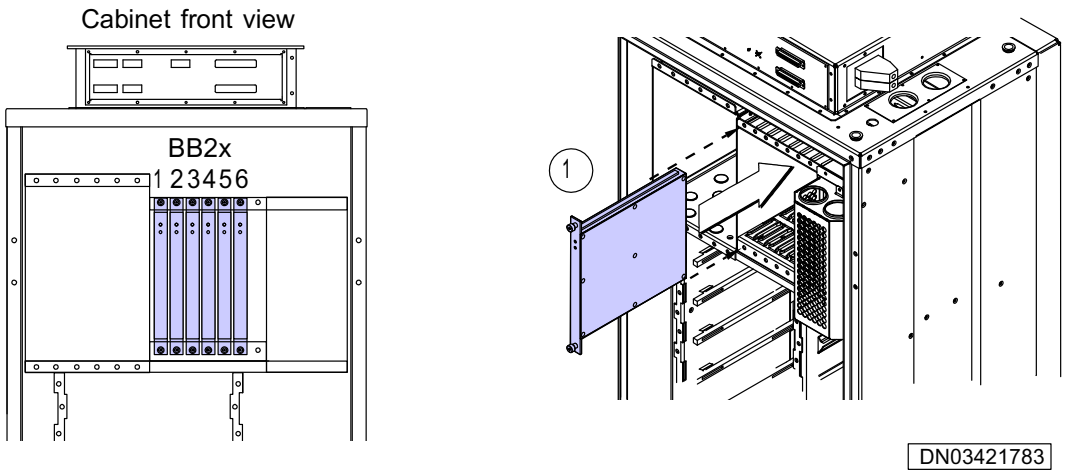
8. **Remove the Transmission unit by pulling the unit out from the front.**

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

Before you start

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

Summary



1	BB2x

Figure 7. BB2x unit installation

Steps

1. Block the TRXs associated with the BB2x

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

Note

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

2. Loosen the upper and lower unit retaining screws.

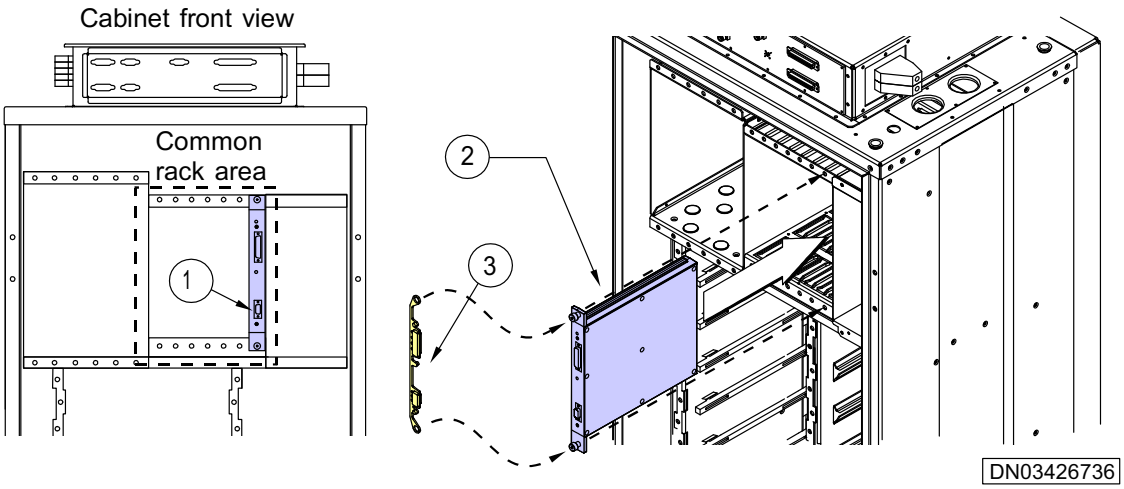
3. Remove the faulty BB2x unit.

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

Before you start

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

Summary



1	BOIx
2	BOIx
3	Rubber cover

Figure 8. BOIx unit replacement

Steps

1. Block the BCF locally or from the BSC.

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

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

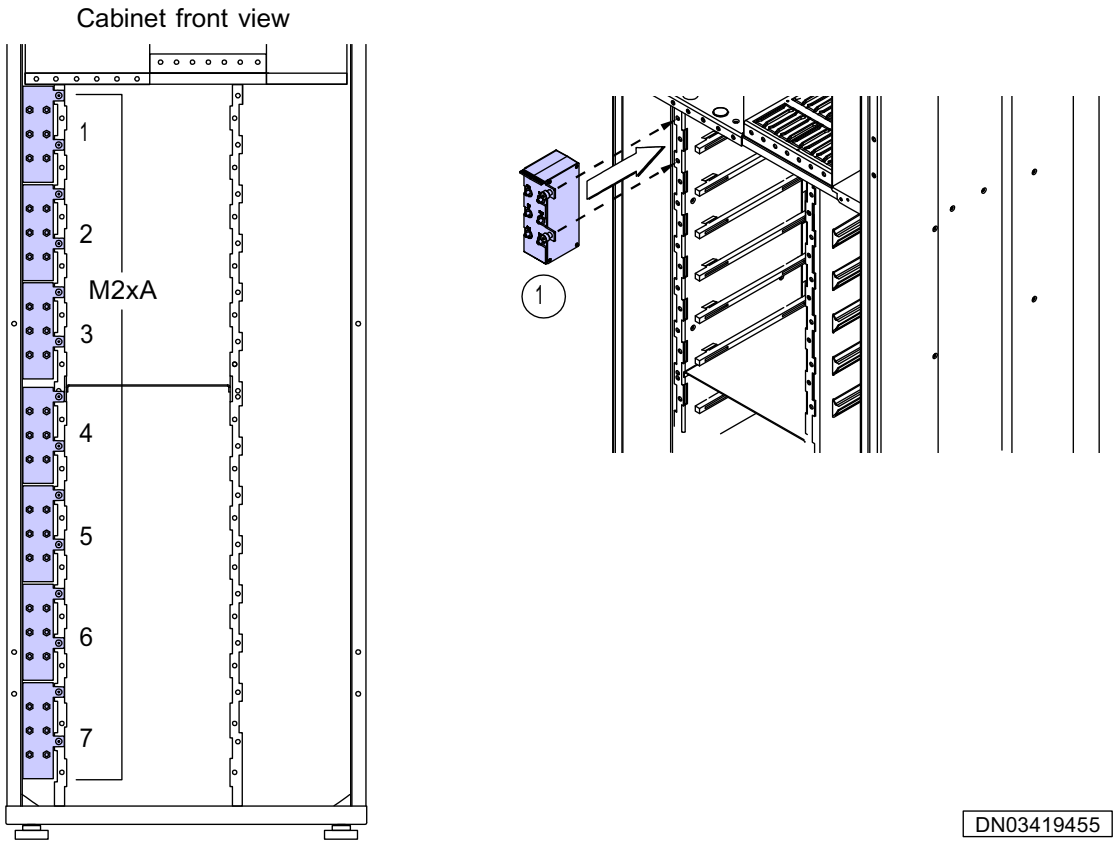
3. **Remove the BOIx unit.**

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

Before you start

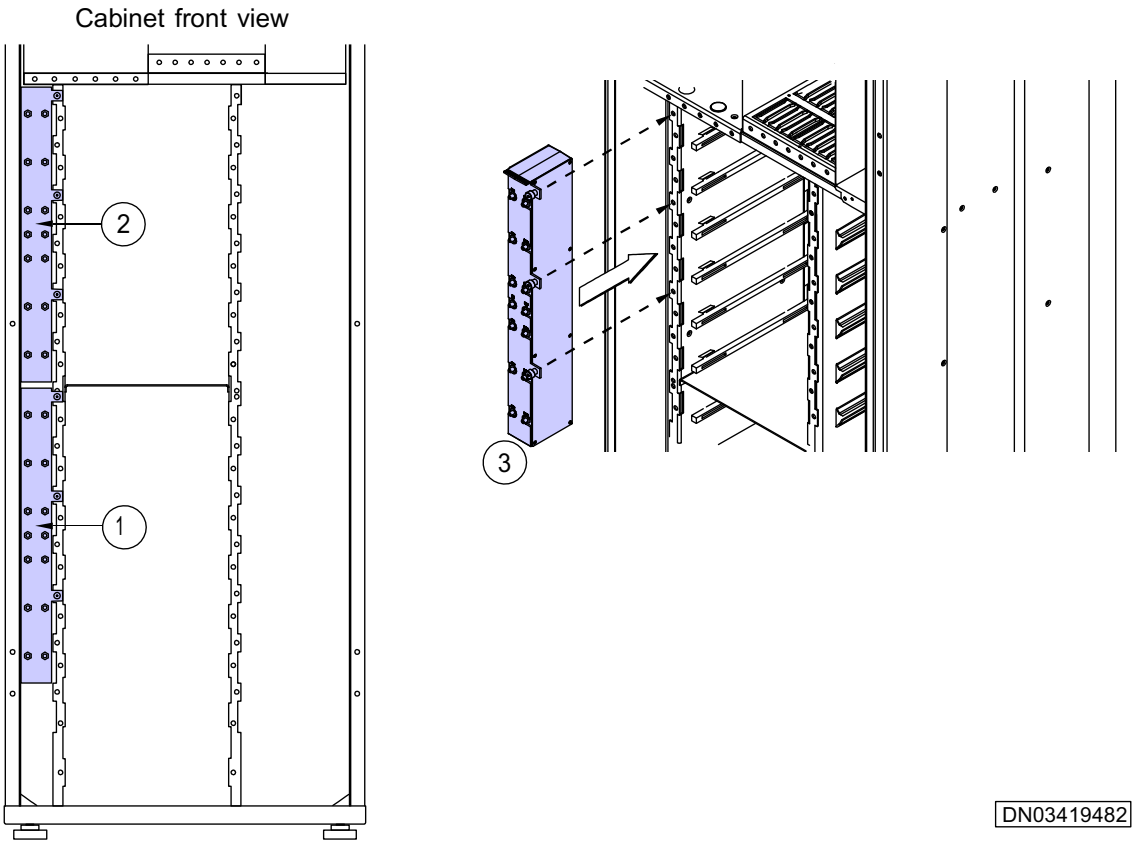
Refer to the *Overview of removing units from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	M2xA

Figure 9. M2xA unit replacement



1	M6xA #2
2	M6xA #1
3	M6xA

Figure 10. M6xA unit replacement

Steps

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

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

2. **Note the unit cable configuration.**

3. **Disconnect the unit cables.**

4. **Loosen the unit retaining screws with a T20 Torx driver.**

5. **Remove the M2xA or M6xA unit.**

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

Before you start

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

Summary

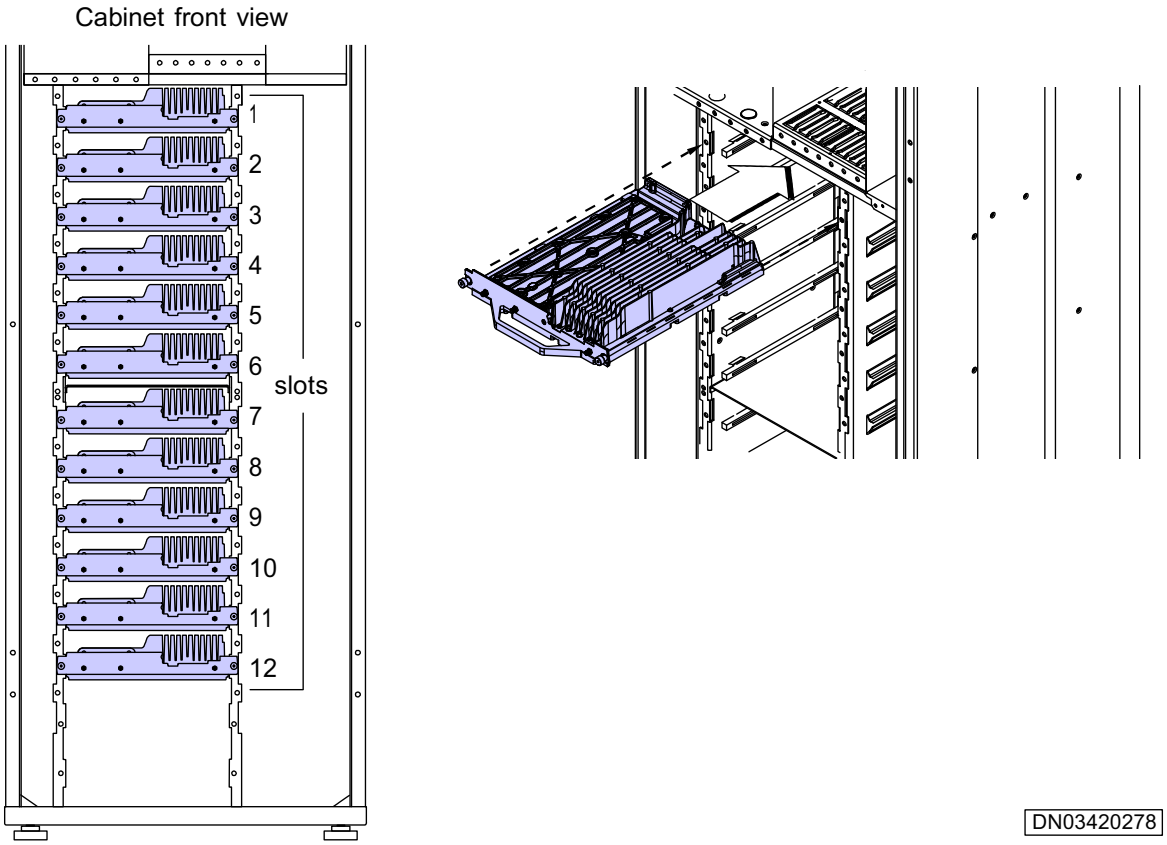


Figure 11. TCxx unit removal

Steps

1. **Block the TRX associated with the TSxx unit.**

   Use Nokia BTS Manager or request TRX lock from the BSC.

2. **Note the TSxx unit cable configuration.**

3. **Disconnect the TSxx unit cables.**

4. **Loosen the unit retaining screws with a T20 Torx driver.**

5. **Remove the TSxx unit.**

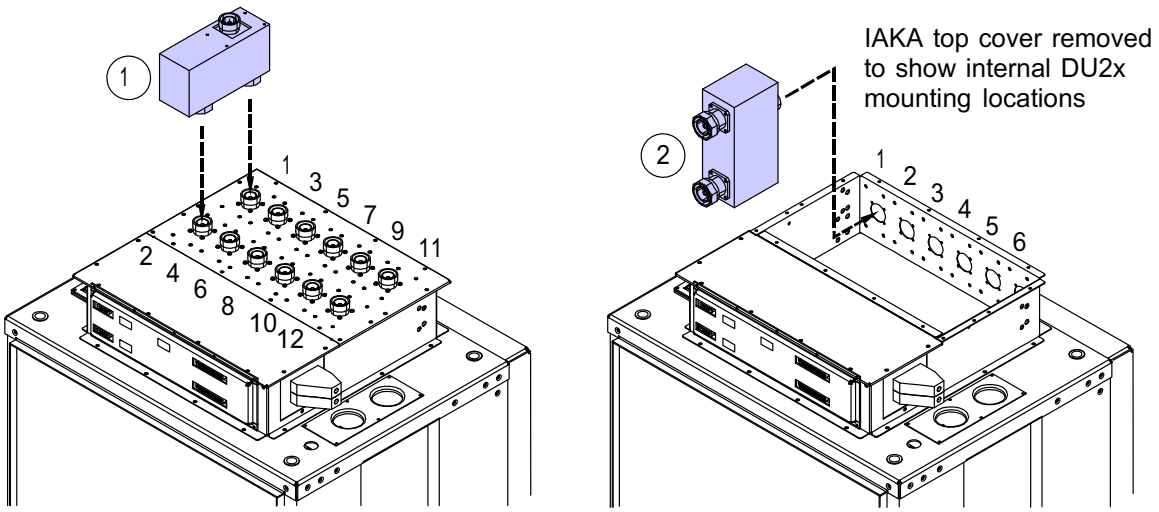
3.10 Removing a Dual Band Diplex Filter (DU2A) unit from UltraSite EDGE BTS

Before you start

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

Summary

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



1	DU2x
2	DU2x

Figure 12. DU2A installation in Indoor cabinet

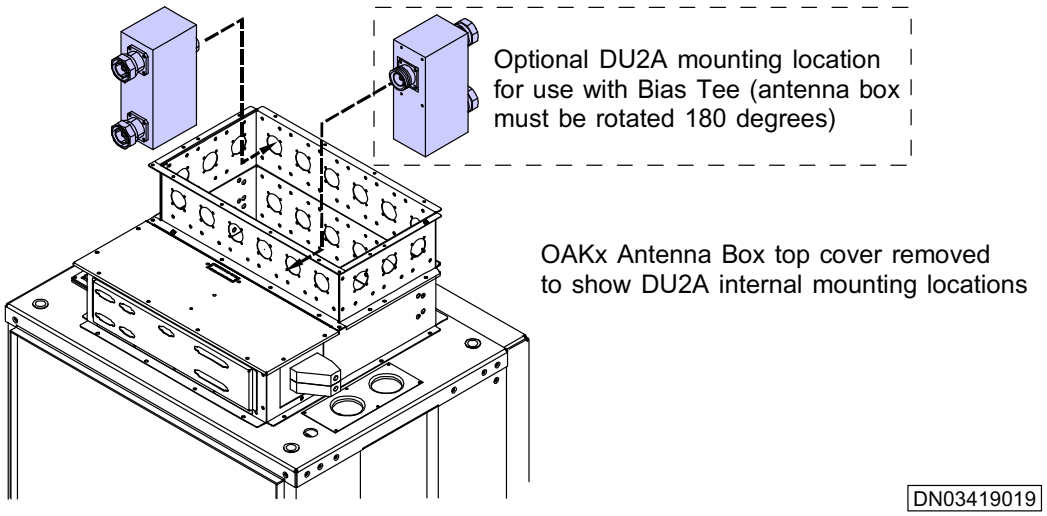


Figure 13. Installation of DU2A to Outdoor cabinet

Steps

1. Block the BCF locally or from the BCS.

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

2. Power down the UltraSite EDGE BTS.

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

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

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

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

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

5. Remove DU2A from the OAKx antenna box.

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

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

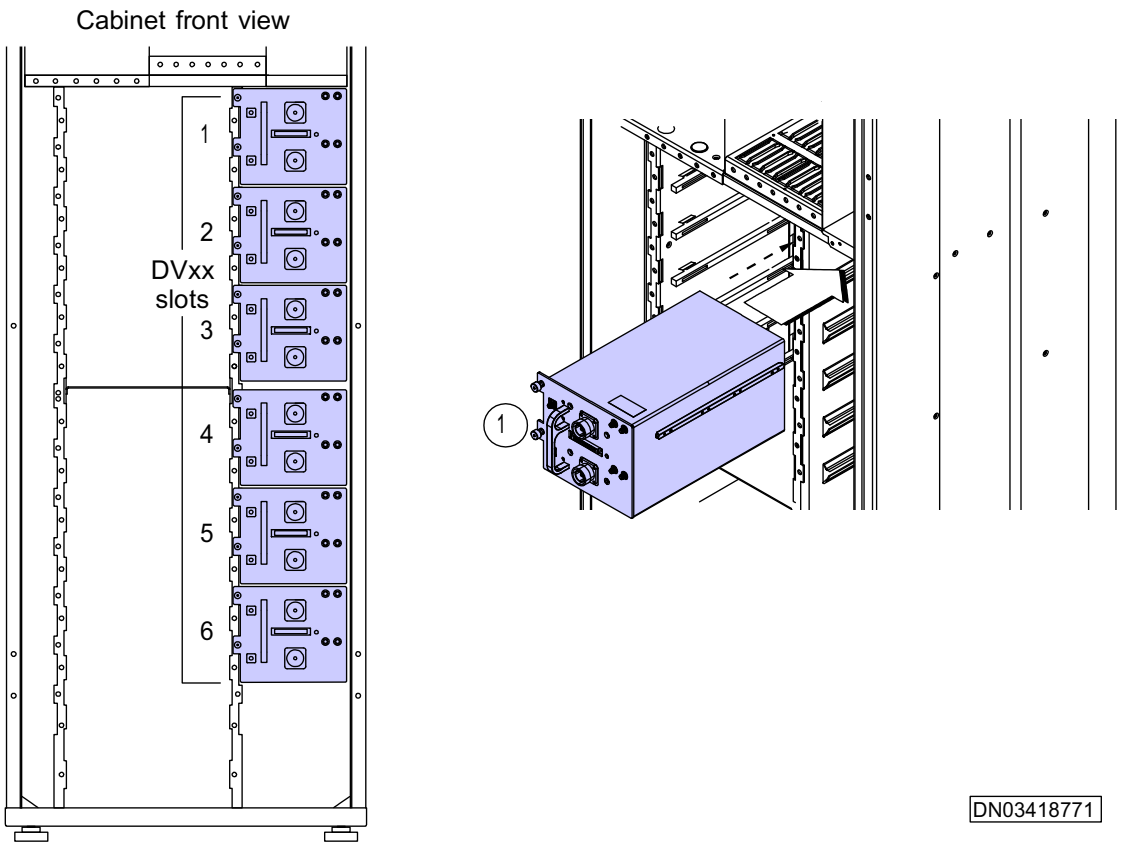
Before you start

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

Summary

Note

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



1	DVxx

Figure 14. DVxx unit replacement

Steps

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

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

2. **Switch the PWSx units to standby mode.**

3. **Note the unit cable configuration.**

4. **Disconnect the unit cables.**

5. **Loosen the unit retaining screws with a T20 Torx driver.**

6. **Remove the DVxx unit.**

3.12 Removing a RTxx unit from UltraSite EDGE BTS

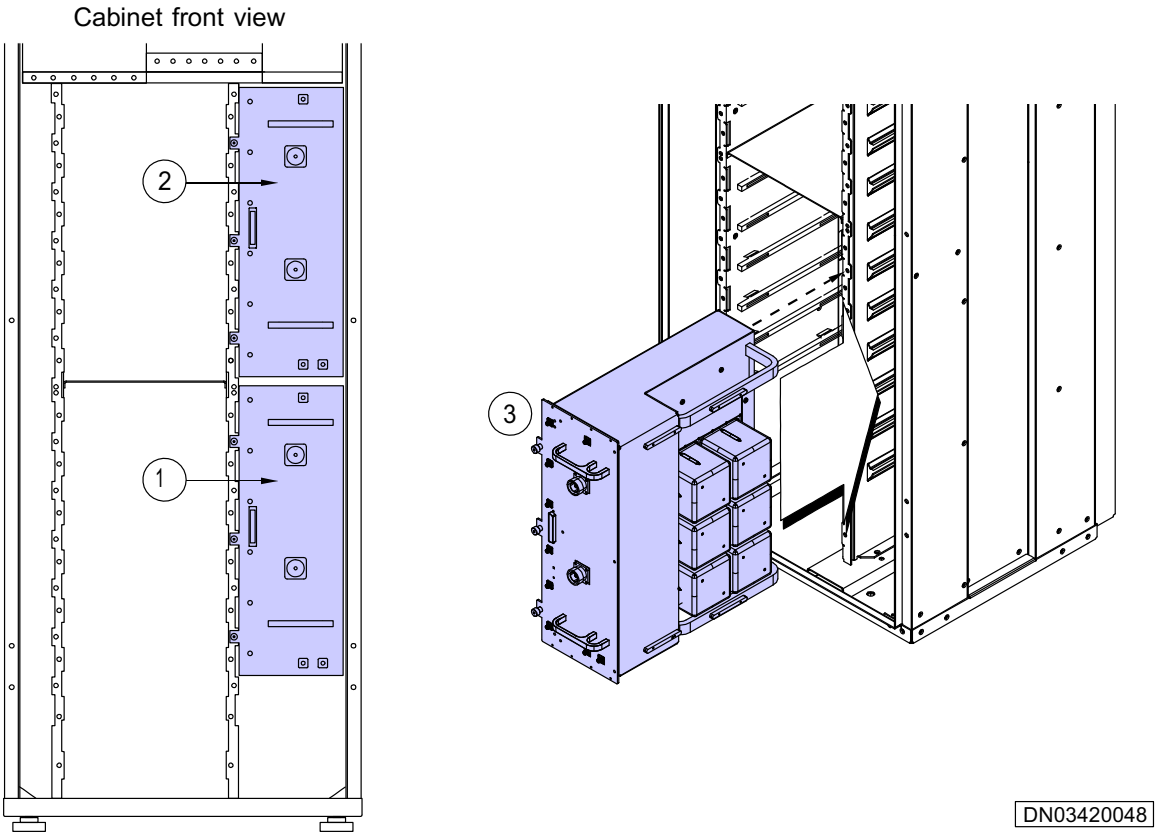
Before you start

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

Summary

Note

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



1	RTxx #2
2	RTxx #1
3	RTxx

Figure 15. RTxx unit replacement

Steps

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

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

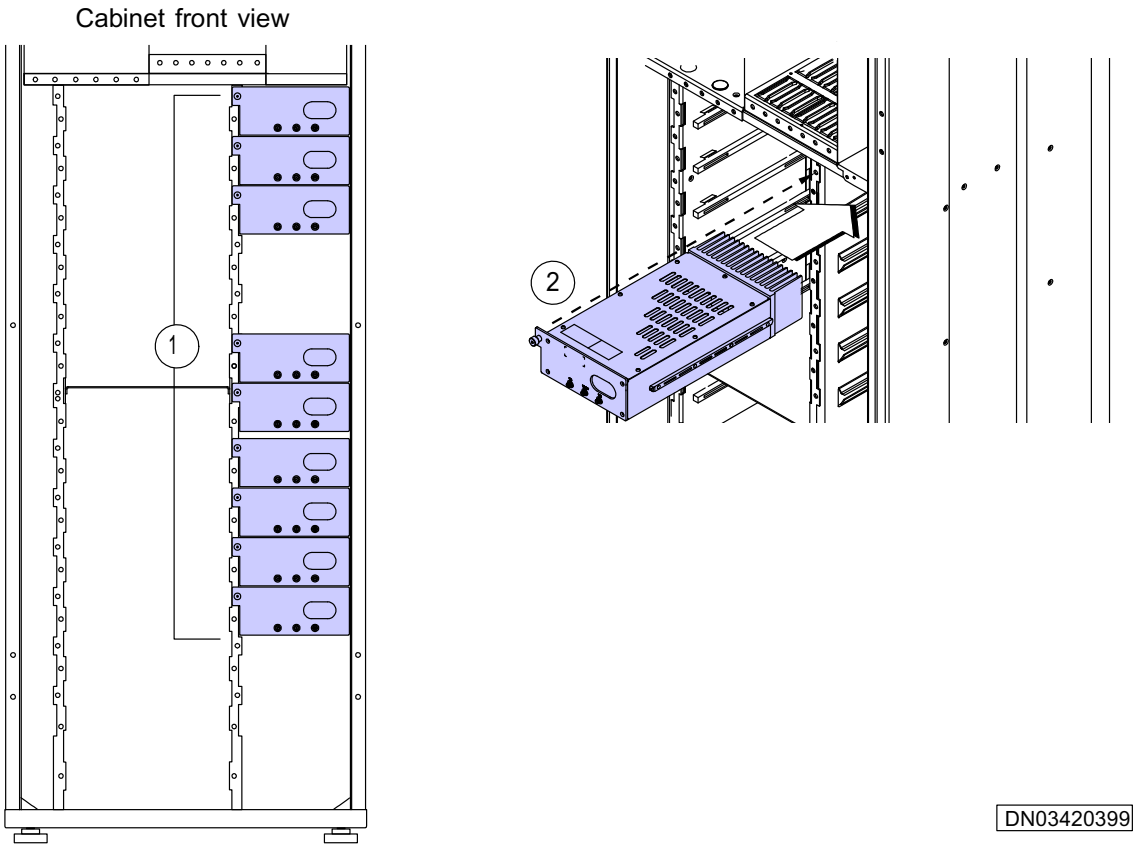
2. **Switch the PWSx units to standby mode.**
3. **Note the unit cable configuration.**
4. **Disconnect the unit cables.**
5. **Loosen the unit retaining screws with a T20 Torx driver.**
6. **Remove the RTxx unit.**

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

Before you start

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

Summary



1	WCxA
2	WCxA

Figure 16. WCxA unit replacement

Steps

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

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

2. **Note the unit cable configuration.**

3. **Disconnect the unit cables.**

4. **Loosen the unit retaining screws with a T20 Torx driver.**

5. **Remove the WCxA unit.**

4 Removing units from UltraSite EDGE BTS with WCDMA upgrade

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

Before you start

Warning

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

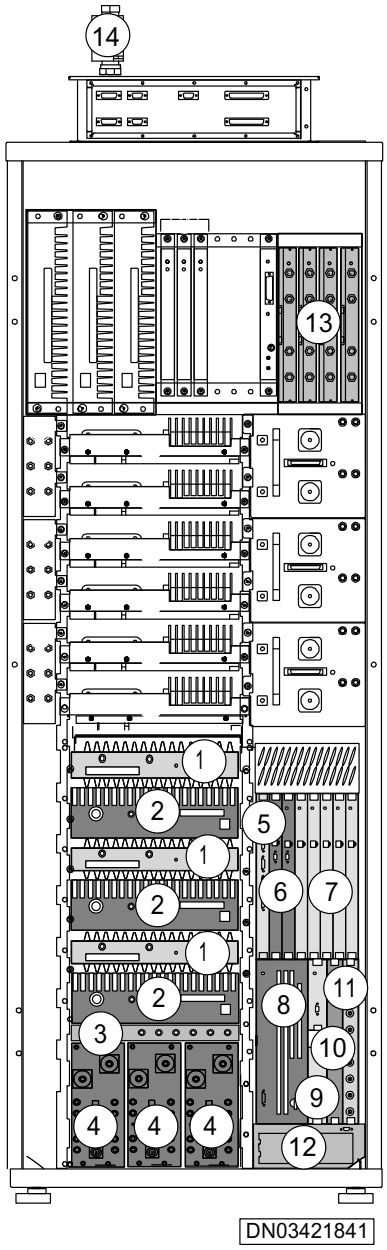
Caution

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

Caution

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

Summary



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

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

Figure 17. UltraSite EDGE BTS with WCDMA units in the lower compartment of the cabinet

Steps

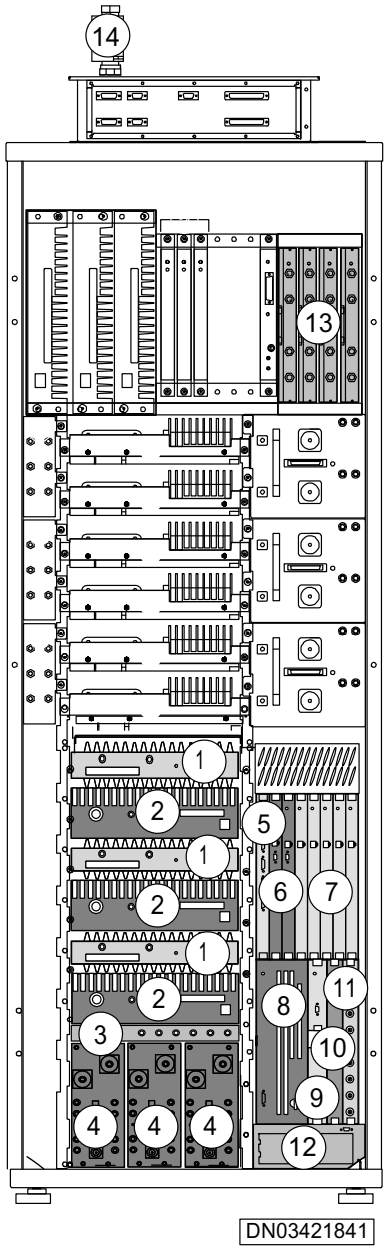
1. **Connect the antistatic wrist strap to UltraSite EDGE BTS**
2. **Remove IFU unit**
3. **Remove AXU unit**
4. **Remove WSC unit**
5. **Remove WSP unit**
6. **Remove WAM unit**
7. **Remove WSM unit**
8. **Remove WIC unit**
9. **Remove WTR unit**
10. **Remove WAF unit**
11. **Remove WMP unit**

4.2 Removing cables from WCDMA units

Before you start

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

Summary



1	WCDMA Transceiver (WTR) unit
2	WCDMA Power Amplifier (WMP) unit
3	WCDMA Input Combiner (WIC) unit
4	WCDMA Antenna Filter (WAF) unit
5	WCDMA Summing and Multiplexing (WSM) unit
6	WCDMA Application Manager (WAM) unit
7	WCDMA Signal Processor (WSP) unit
8	WCDMA Power Supply (WPS) unit
9	WCDMA System Clock (WSC) unit
10	ATM Multiplexer (AXU) unit
11	Interface unit (IFU)
12	WTCA Fan Module
13	Transmission (VXxx) unit
14	Bias Tee (Bias-T or BPxx) unit

Figure 18. UltraSite EDGE BTS with WCDMA units in the lower compartment of the cabinet

Steps

1. **Note the configuration of the WCDMA unit.**
2. **Lock the sector affected by the maintenance work.**
3. **Disconnect the WCDMA unit front cables.**

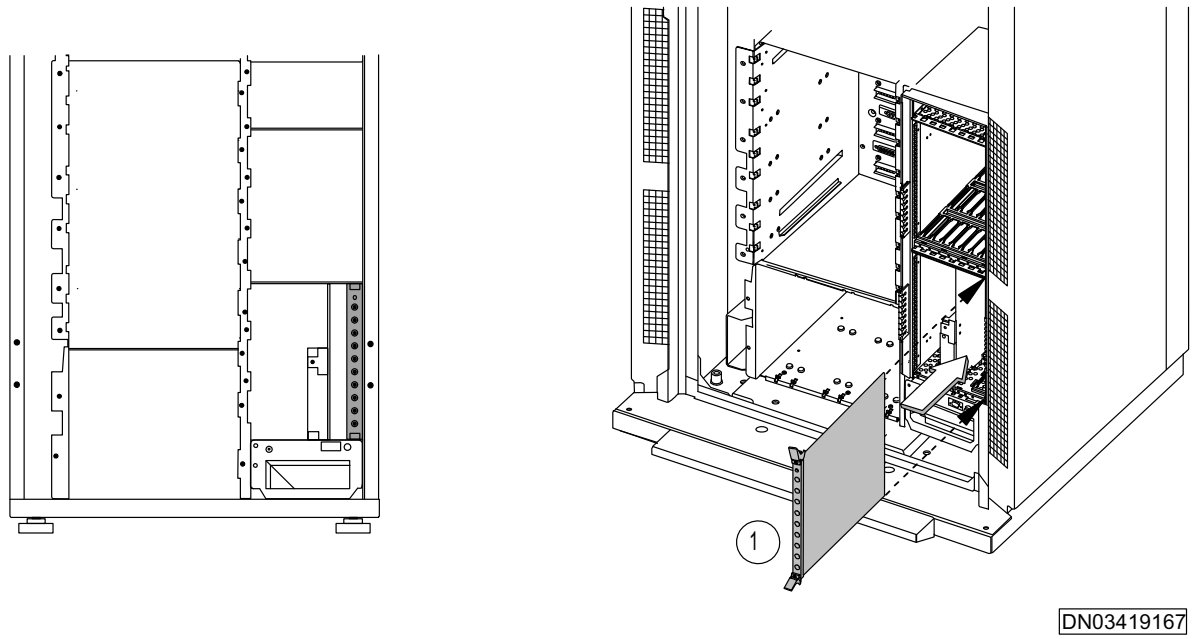
4.3 Removing an Interface (IFU) unit from UltraSite EDGE BTS

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for the IFU (Interface) units.



1	IFUx

Figure 19. IFU replacement

Steps

1. Lock the sector associated with the IFU unit locally or from the RNC.

Lock the sector associated with the IFU unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

3. **Remove the fixing screws of the unit.**

4. **Open the ejectors and carefully remove the unit from the rack.**

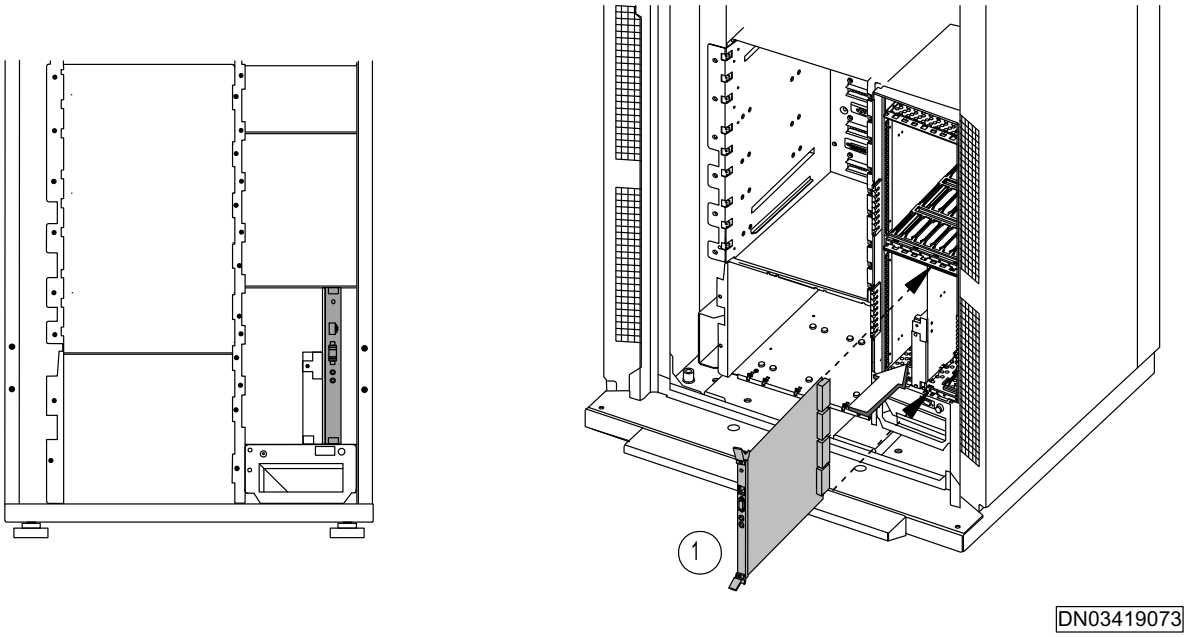
4.4 Removing an AXC-ATM Cross Connect (AXU) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for the AXU (ATM Cross-connect) units.



1AXUx

Figure 20. AXU replacement

Steps

1. **Lock the sector associated with the AXU unit locally or from the RNC.**

   Lock the sector associated with the AXU unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

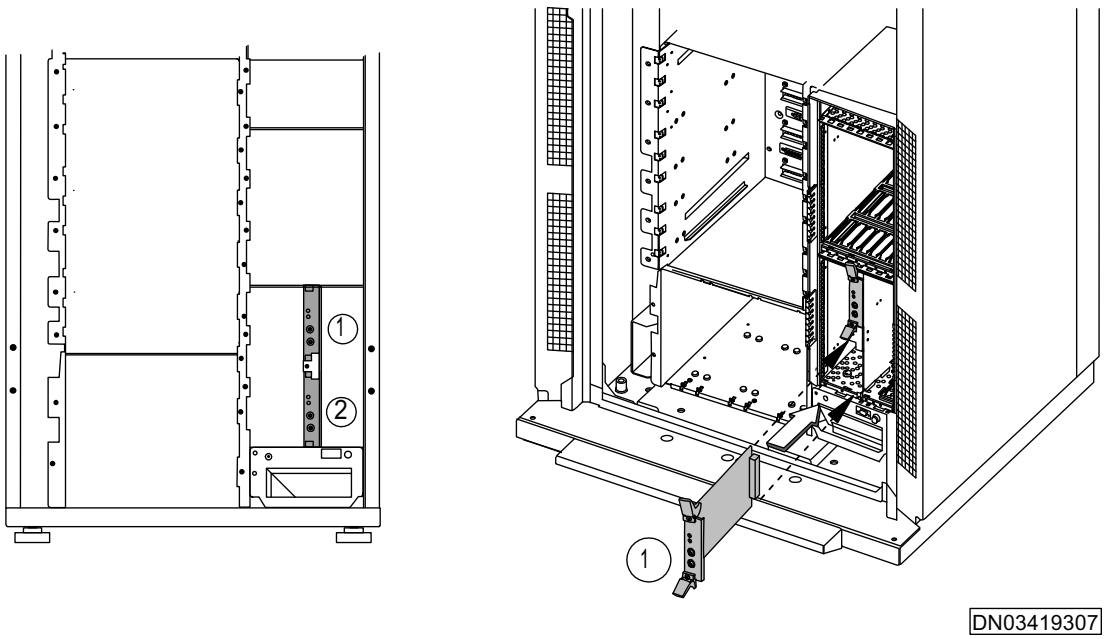
3. **Remove the fixing screws of the unit.**

4. **Open the ejectors and carefully remove the unit from the rack.**

4.5 Removing a WSC unit from UltraSite EDGE BTS

Summary

The cabinet provides one slot for a WSC (WCDMA System Clock) unit and one slot for a redundant WSC.



1	WSCx

Figure 21. WSC replacement

Steps

1. **Lock the sector associated with the WSC unit locally or from the RNC.**

   Lock the sector associated with the WSC unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Remove the fixing screws of the unit.**

3. **Open the ejectors and carefully remove the unit from the rack.**

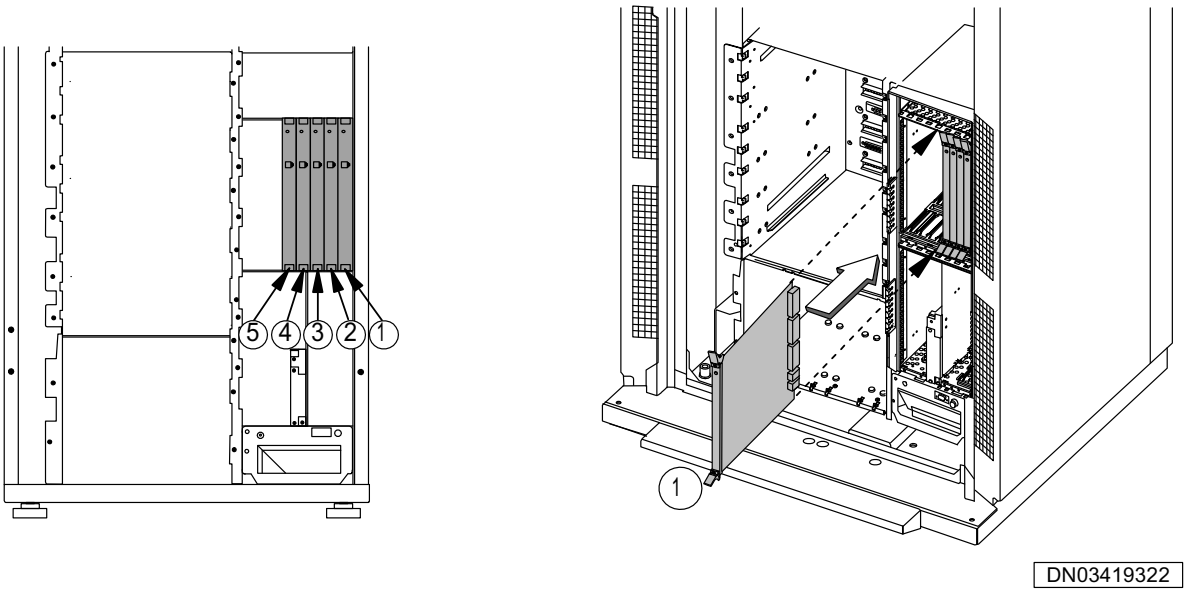
4.6 Removing a Wideband Signal Processor (WSP) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides five slots for WSP (WCDMA Signal Processor) units.



1	WSPx

Figure 22. WSP replacement

Steps

1. **Lock the sector associated with the WSP.**

   Lock the sector associated with the WSP unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Remove the fixing screws of the unit.**

3. **Open the ejectors and carefully remove the unit from the rack.**

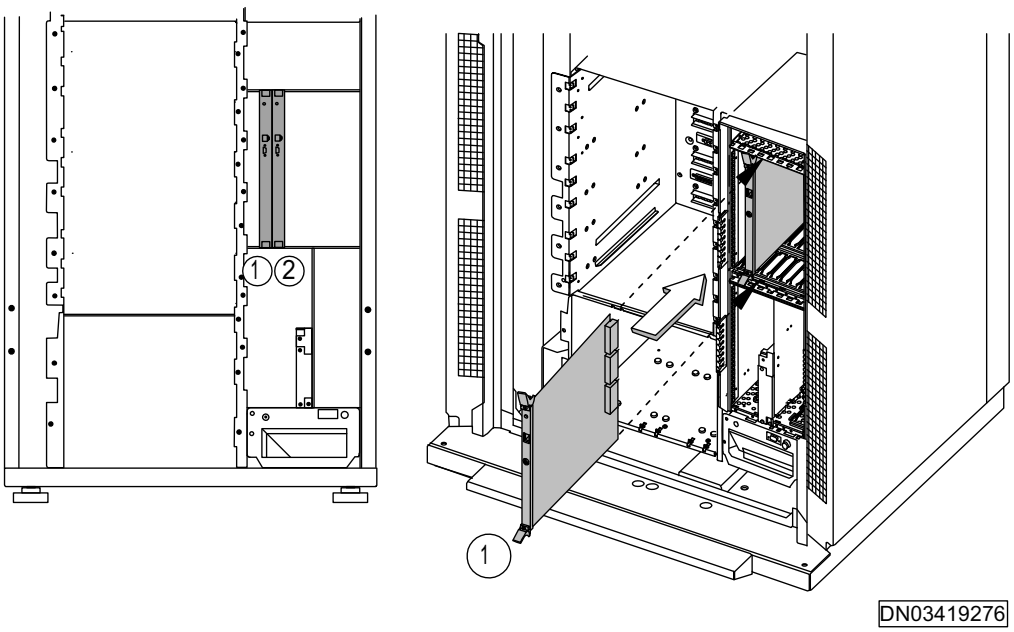
4.7 Removing a Wideband Application Manager (WAM) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides two slots for WAM units.



1	WAMx

Figure 23. WAM replacement

Steps

1. Lock the sector associated with the WAM unit.

Lock the sector associated with the WAM unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Remove the fixing screws of the unit.**

3. **Open the ejectors and carefully remove the unit from the rack.**

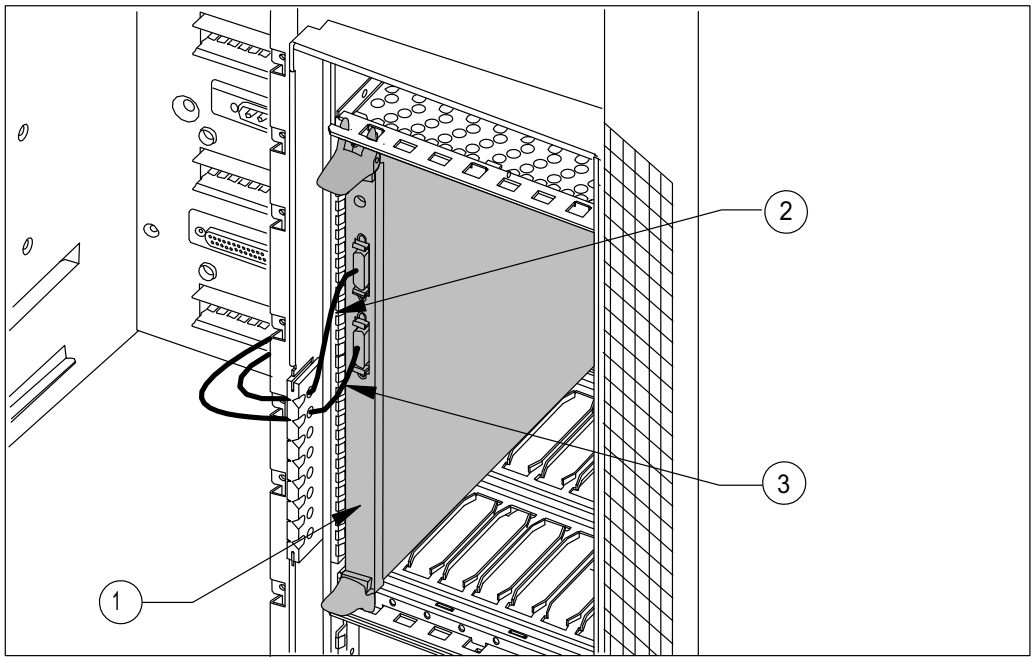
4.8 Removing a Wideband Summing and Multiplexing (WSM) unit from UltraSite EDGE BTS with WCDMA upgrade

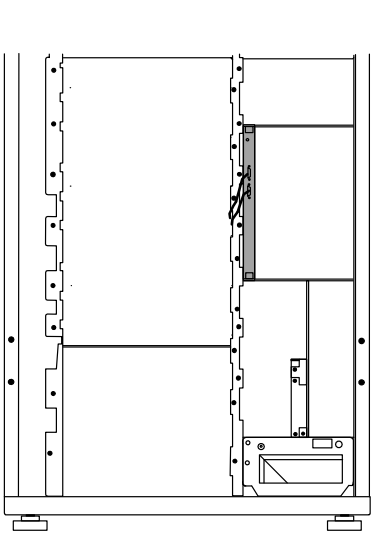
Before you start

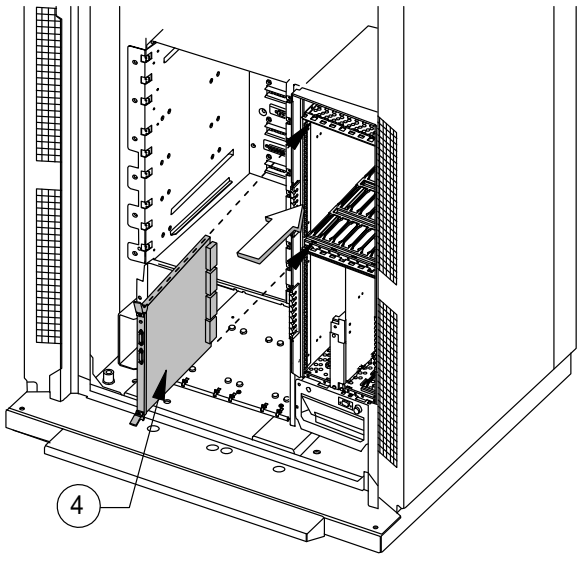
Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides one slot for a WSM unit.







DN03419319

1	WSMx

2	Bus Cable dn994106 from connector X93 in the RF Rack
3	Bus Cable dn994106 from connector X92 in the RF Rack
4	WSMx

Figure 24. WSM replacement

Steps

1. **Lock the sector associated with the WSM unit.**

   Lock the sector associated with the WSM unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

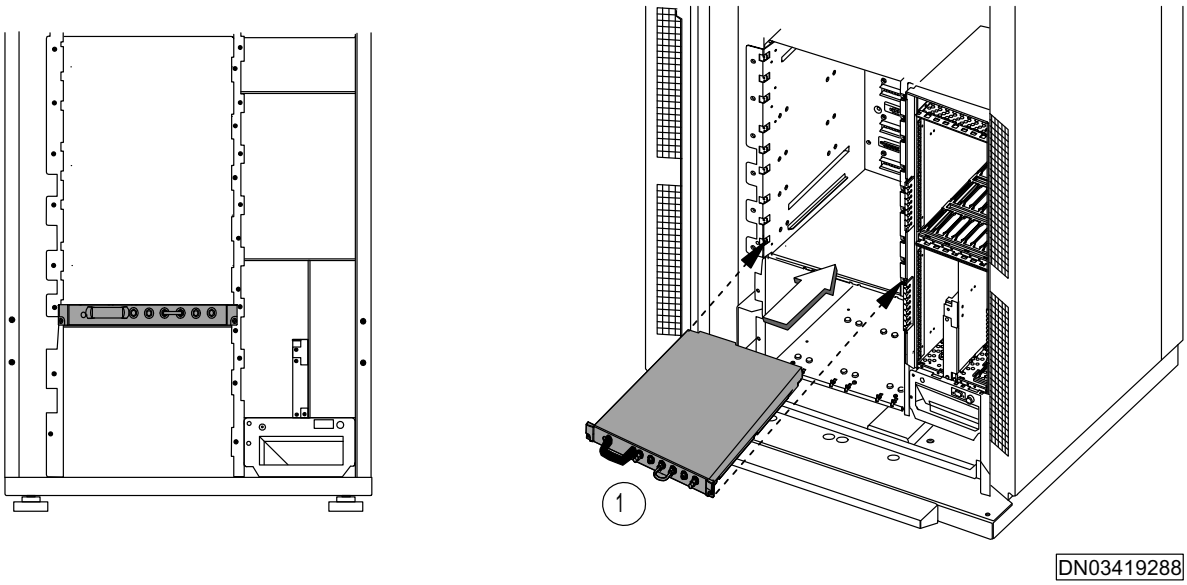
3. **Remove the fixing screws of the unit.**

4. **Open the ejectors and carefully remove the unit from the rack.**

4.9 Removing a Wideband Input Combiner (WIC) unit from UltraSite EDGE BTS with WCDMA upgrade

Summary

The cabinet provides one slot for a WIC unit.



1	WICx

Figure 25. WIC replacement

Steps

1. **Lock the sector associated with the WIC unit.**

   Lock the sector associated with the WIC unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

3. **Remove the fixing screws of the unit.**

4. **Carefully remove the unit from the rack holding from the handle.**

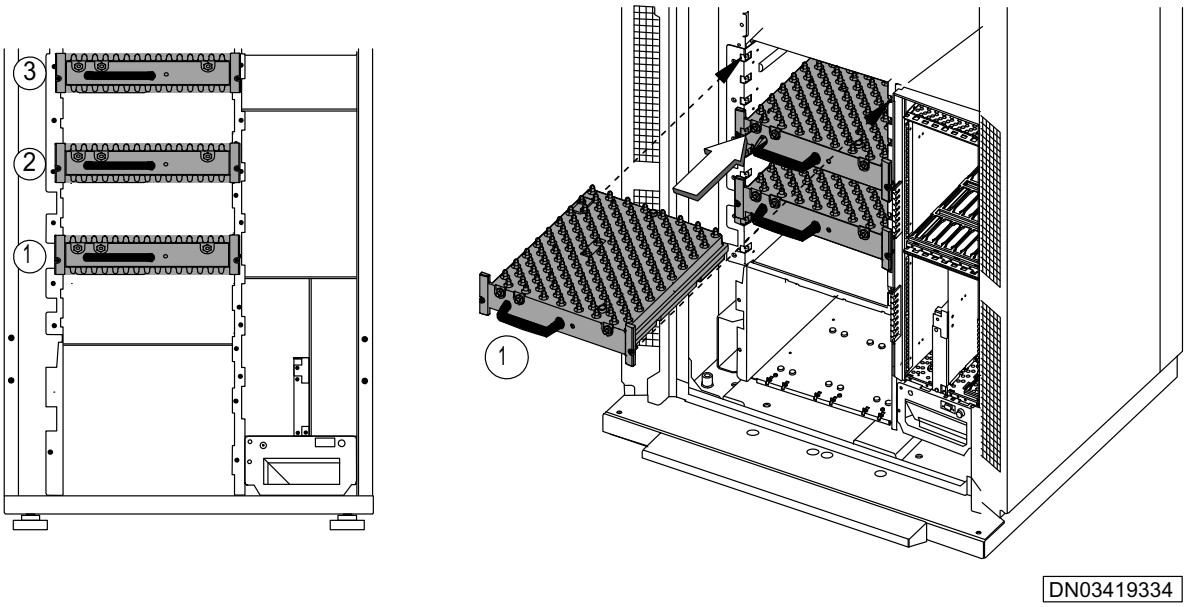
4.10 Removing a Wideband Transmitter and Receiver (WTR) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides three slots for WTR units.



1	WTRx

Figure 26. WTR replacement

Steps

1. Lock the sector associated with the WTR unit.

Lock the sector associated with the WTR unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

3. **Remove the fixing screws of the unit.**

4. **With the handle, carefully remove the unit from the rack holding.**

4.11 Removing a Wideband Power Amplifier (WMP) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the *Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Steps

1. **Unpack the replacement WMP unit from its protective package.**

2. **Check the unit for visible damage.**

3. **Lock the sector associated with the WMP unit.**

   Lock the sector associated with the WMP unit with Nokia WCDMA BTS Manager or request sector lock from the RNC.

4. **Disconnect the WMP unit front cables.**

5. **Remove the WMP unit fixing screws.**

6. **Holding the WMP unit handle, carefully remove the unit from the rack.**

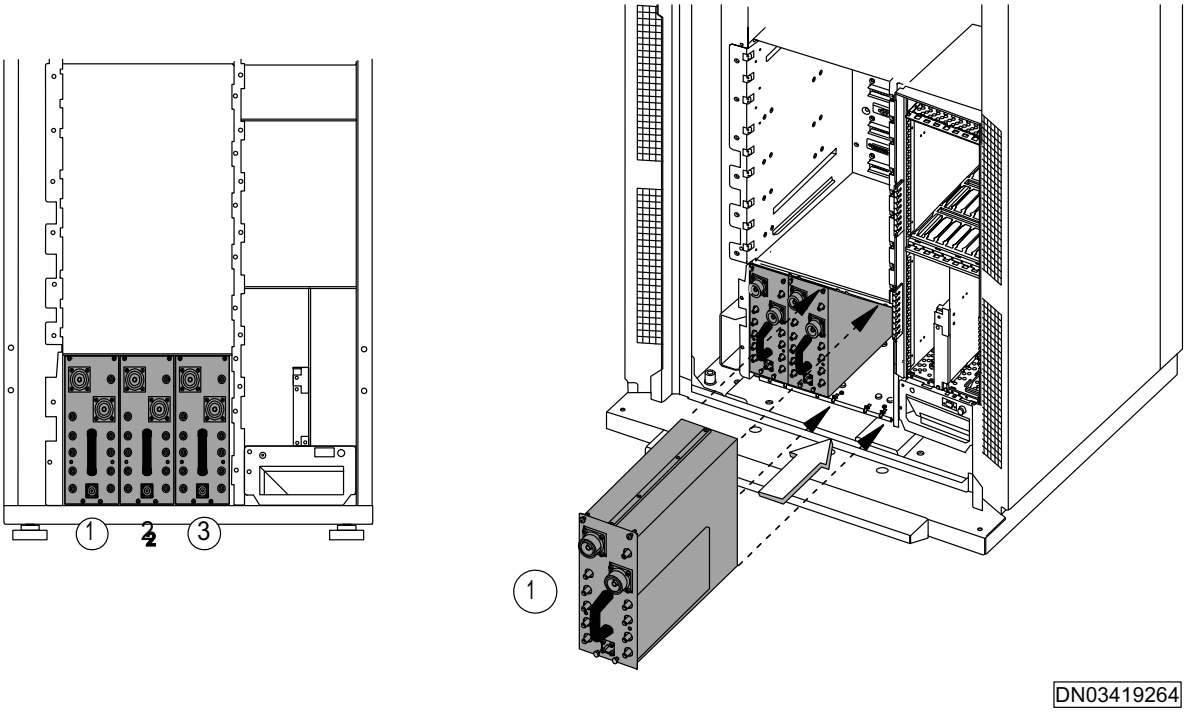
4.12 Removing a Wideband Antenna Filter (WAF) unit from UltraSite EDGE BTS with WCDMA upgrade

Before you start

Refer to the*Overview of removing WCDMA units*. Pay careful attention to all Warnings and Cautions.

Summary

The cabinet provides three slots for WAF units.



1	WAFx

Figure 27. WAF unit replacement

Steps

1. **Lock the sector associated with the WAF unit.**

   Lock the sector associated with the WAF locally with Nokia WCDMA BTS Manager or request sector lock from the RNC.

2. **Disconnect the unit front cables.**

3. **Remove the fixing screws of the unit.**

4. With the handle, carefully remove the unit from the rack holding .

5 Removing units from UltraSite EDGE BTS with IBBU

5.1 Overview of removing units from UltraSite EDGE BTS with IBBU

Summary

Warning

Potentially lethal voltages!

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

Warning

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

Warning

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

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

Warning

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

Caution

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

Caution

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

Caution

Handle the heavy units with care.

Caution

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

Caution

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

Steps

1. **Remove BBAx unit**
2. **Remove BATx unit**
3. **Remove CCUx unit**
4. **Remove ADUx unit**

5.2 Removing a Battery (BBAx) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Summary

Warning

Ensure that the battery circuit breaker is in the OFF position before starting this procedure.

Warning

Never connect or disconnect the battery cable from the ADUx when the other end of the lead is connected to the batteries.

Warning

Always disconnect the positive battery lead before the negative lead.

Warning

As the cabinets are positive earthed, to minimise the risk of short circuits while the battery leads are loose, always connect the negative battery lead before the positive lead.

Steps

1. **Switch the battery circuit breaker to the OFF position.**
2. **Disconnect the lead of the bridging cable connected to the positive terminal of the BBAx unit in the upper battery box.**
3. **Disconnect the remaining lead of the bridging cable from the negative terminal of the BBAx unit in the lower battery box.**
4. **Remove the vent tube from the BBAx units in the battery box you need to remove.**
5. **Remove the two M4 screws securing the battery box to the cabinet shelf.**
6. **Slide the battery box out of the cabinet.**
7. **Disconnect the remaining lead connected to the BBAx unit in the battery box and then route the lead clear of the battery terminals.**
8. **Remove the terminal bridge between the BBAx units.**
9. **Remove the cover plate from the BBAx you are replacing.**
10. **Carefully lift the BBAx unit from the battery box.**

5.3 Removing a 1300 W Rectifier (BATx) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Steps

1. **Remove the two M4 screws on the BATx unit.**
2. **Slide the BATx out of the cabinet.**

5.4 Removing a Cabinet Control (CCUx) unit from the AC/DC Connection (ADUA) unit of UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Steps

1. **Remove the CCUA unit fuse (glass tube) on the front of the ADUx.**
2. **Remove the CCUA unit.**

5.5 Removing an AC/DC Connection (ADUA) unit from UltraSite EDGE BTS with IBBU

Before you start

Refer to the *Overview of removing IBBU units*. Pay careful attention to all Warnings and Cautions.

Summary

Warning

Failure to switch off all AC and DC breakers prior to ADUx removal can result in hazardous voltage discharges.

Steps

1. **Block the BCF locally with Nokia BTSManager or request BCF lock from the BSC.**
2. **Loosen the four M4 screws that secure the ADUx unit cover to the ADUx unit, and remove the cover.**
3. **Switch off all AC and DC breakers on the ADUx.**
4. **Remove the four M4 screws on the ADUx front.**
5. **Slide the ADUx unit out of the cabinet, ensuring that the cables do not become entangled.**
6. **Remove all cables from the ADUx.**

6 Removing cabinet core units from UltraSite EDGE BTS

6.1 Overview of removing cabinet core units, if required.

Before you start

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

Summary

Warning

Be aware of the risk of lethal voltages and electric shock. Before you route AC Filter module cables, make sure the mains power breaker is in the OFF position.

Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.

Warning

Ensure the fan has stopped rotating before removing the cabinet fan cover.

Warning

Do not open a faulty HETA unit. Return HETA unit to Nokia Service.

Warning

Permanently wire Nokia UltraSite EDGE BTS to a disconnect device, such as a circuit breaker.

Warning

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. Turning OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch leaves it in STANDBY mode.

Warning

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

Caution

The power/alarm cable will be damaged if not properly cable tied.

Steps

1. **Remove the +24 VDC filter module, if required.**
2. **Remove the AC filter module, if required.**
3. **Remove the GSM/EDGE unit cooling fan**

4. **Remove the cabinet cooling fan.**
5. **Remove the WCDMA unit cooling fan, if required.**
6. **Remove the GSM/EDGE heater (HETA) unit, if required.**
7. **Remove the WCDMA Heat Exchanger fan, if required.**
8. **Remove the WCDMA Heat Exchanger Cell, if required.**
9. **Remove the lower RFU backplane, if required.**
10. **Remove the WCDMA RF backplane, if required.**
11. **Remove the WCDMA BB rack, if required.**
12. **Remove the WAF rack, if required.**

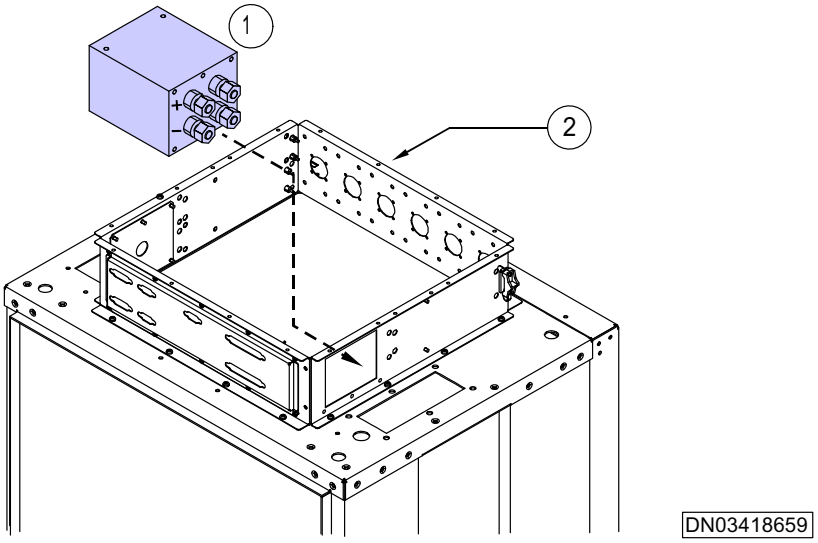
6.2 Removing a +24 VDC filter module from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

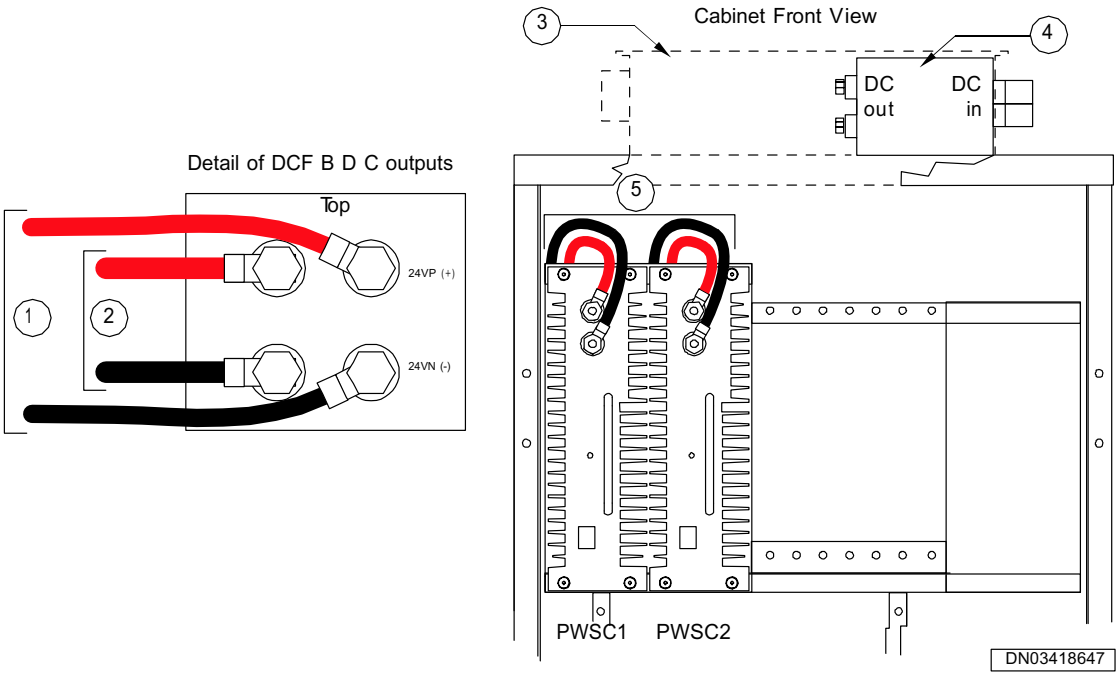
Summary

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



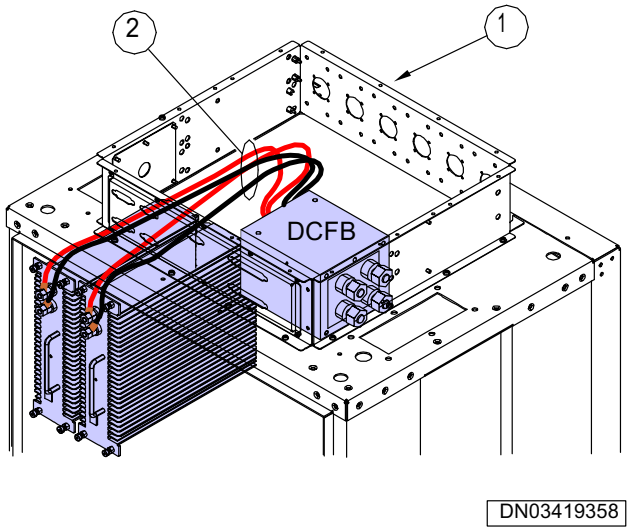
1	DCFB filter
2	Antenna box, top removed

Figure 28. DCFB Filter module removal



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

Figure 29. DCFB Filter module cable routing to PWSC



1	Antenna box, top removed
2	Cable tie

Figure 30. Internal Cabinet cable routing from DCFB to PWSC

Steps

1. **Remove rubber boots from the PWSC input power terminals and the DCFB output power terminals.**

2. **Remove the Red power cable to the (+) input power terminal on the left PWSC unit, if installed.**

3. **Remove the Black power cable to the (-) input power terminal on the left PWSC unit, if installed.**

4. **Remove the opposite ends of the Red and Black power cables from the left positive (+) and negative (-) output terminal pair on the DCFB Filter module.**

5. **Repeat steps 1 through 4 for the right PWSC unit, if installed, using the right output terminal pair on the DCFB Filter module.**

6. **Locate the existing +24 VDC Filter module in the right side of the antenna box.**

7. **Remove any external DC cable that is connected to the input of the DCFB.**

8. **Loosen and remove the four M4 mounting screws in the center and right hand side holes of the DCFB Filter module.**

9. **Remove the DCFB Filter module from the opening on the right side of the antenna box.**

6.3 Removing a -48 VDC filter module from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

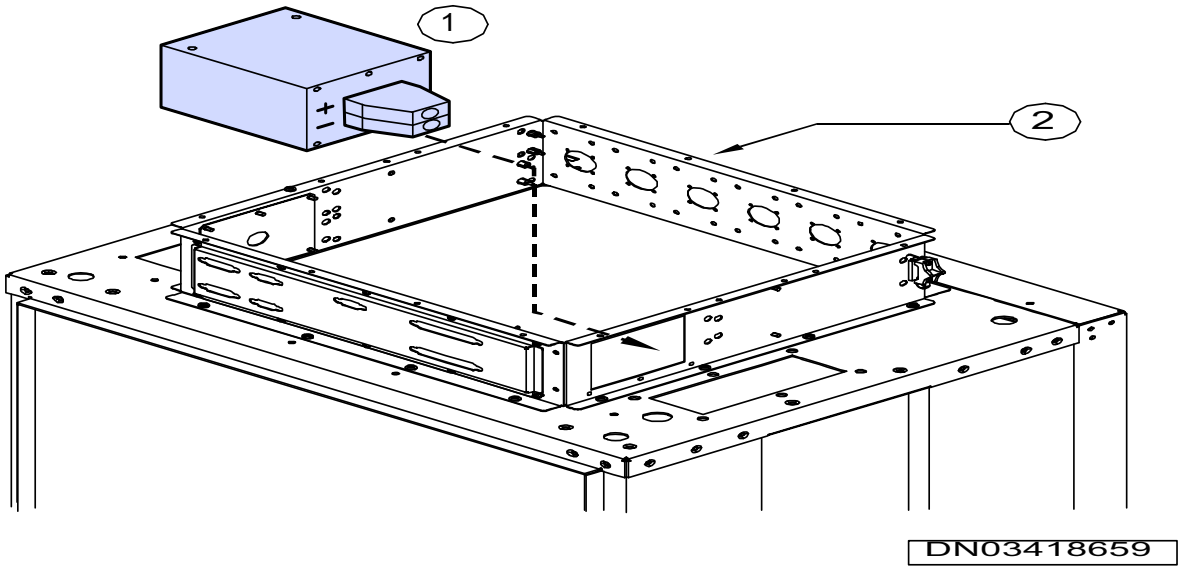
The optional -48 VDC Filter module is required when installing -48 VDC power.

Warning

Disconnect Nokia UltraSite EDGE BTS from the mains power network with a dedicated switch. Turning OFF Nokia UltraSite EDGE BTS using the BTS power supply (PWSx) switch leaves it in STANDBY mode.

Caution

Verify that the cabinet is properly grounded and that mains power breaker is OFF.



1	-48 VDC filter
2	Antenna box, top removed

Figure 31. -48 VDC Filter module removal

Steps

1. **Locate the existing -48 VDC Filter module in the right side of the antenna box.**
2. **Disconnect the the external DC power cables.**
3. **Unplug the internal power cables from terminal J5 inside the cabinet.**
4. **Loosen and remove the six T15 TX Star Tamper proof mounting screws that secure the filter module to the antenna box.**
5. **Remove the unit from the cabinet.**

6.4 Removing / replacing an AC filter unit on UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

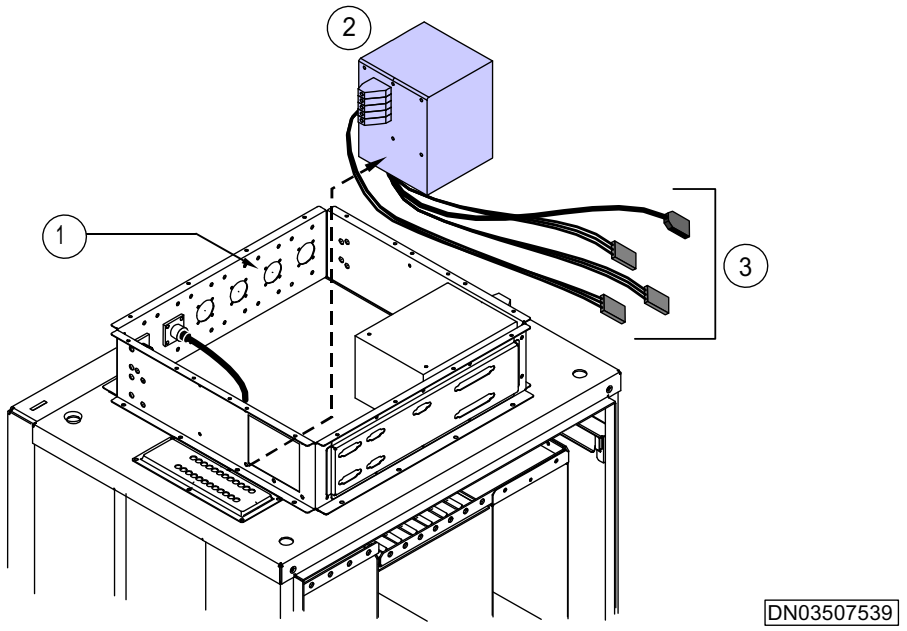
Summary

Warning

Be aware of the risk of lethal voltages and electric shock. Before you route AC filter unit cables, make sure the mains power breaker is in the OFF position.

Note

You need to have a separate plate for covering the hole where the AC filter is removed.



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

Figure 32. AC filter unit removal

Steps

1. **Remove the antenna box top front cover.**

2. **Disconnect the AC supply cables from the AC filter unit terminals L1, L2, L3, N and PE.**

3. **Disconnect the D37 connector inside the antenna box nearest the AC filter unit.**

4. **Disconnect the AC filter output cables rubber boots CONN.1 and CONN.2 and CONN.3.**

5. **Cut cable ties which locked AC cable connectors CONN.1, CONN.2 and CONN.3.**

6. **Disconnect the AC cable connectors CONN.1, CONN.2, CONN.3 and HEATER.**

7. **Loosen and remove the AC filter unit fixing screws (6 pieces).**

8. **Remove the disconnected AC filter unit.**

9. *If* you do not assemble and install a new AC filter unit

   Then

   cover the AC filter hole with an AC filter cover. Order the cover via HWS. You can use the screws from the AC filter fixing.

10. **Assemble the BusBar cable rubber boots.**

6.5 Removing a GSM/EDGE unit cooling fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

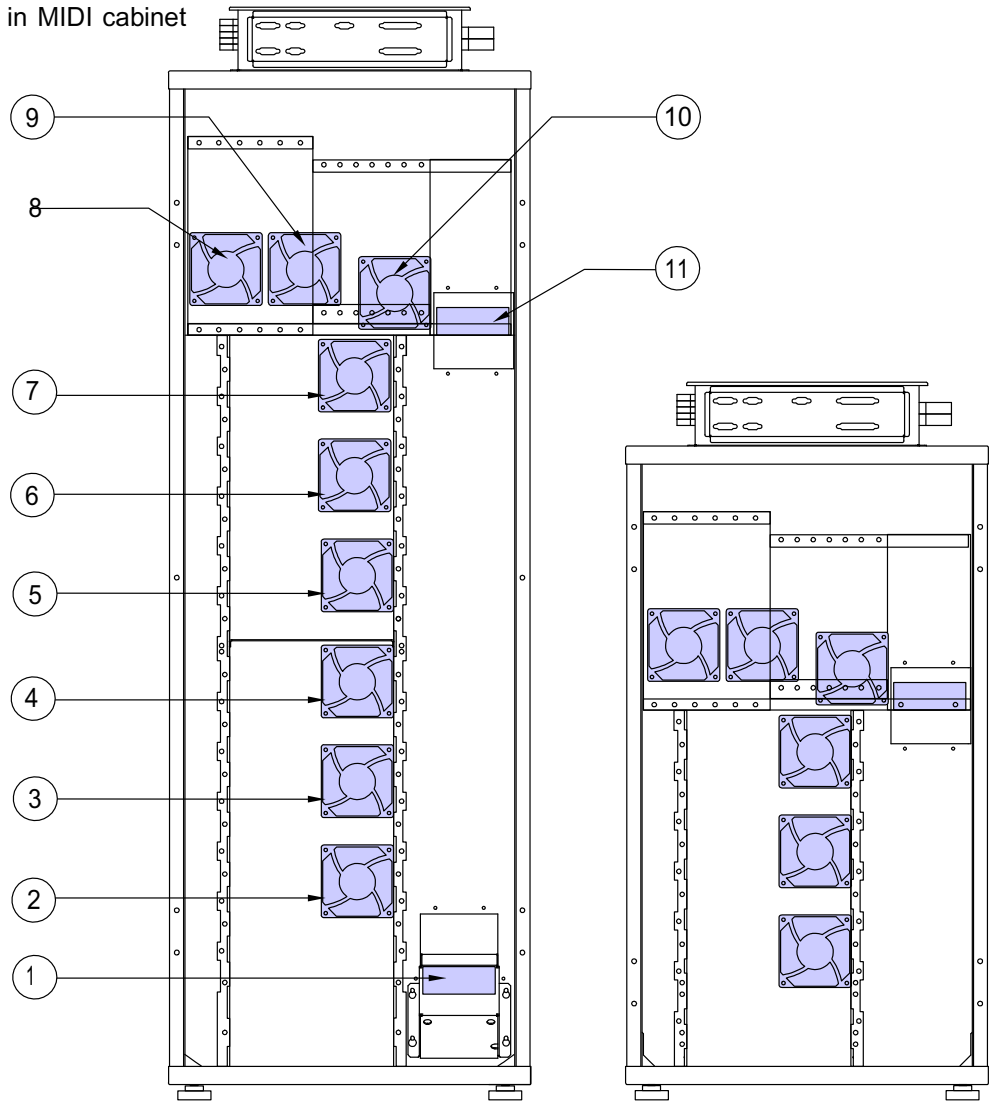
Potentially lethal voltages! Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.

Eleven Unit Cooling fans in the cabinet (seven fans in the Midi cabinet) maintain proper airflow to the Power Supply units, common unit and transmission area, Transceivers and RF filter units. Four screws secure each fan to the cabinet core and two finger screws with moulded connectors secure the power/signal cable.

*Same location in MIDI cabinet



DN03419607

UltraSite cabinet core

UltraSite MIDI cabinet core

1	RF Filter fan 2, horizontal mount (not used in IBBU configurations)
2	TSxx/IBBU fan 6

3	TSxx/IBBU fan 5
4	TSxx/IBBU fan 4
5	TSxx fan 3*
6	TSxx fan 2*
7	TSxx fan 1*
8	Power fan, 1*
9	Power fan, 2*

Figure 33. Unit cooling fan locations

Steps

1. **Notify the appropriate personnel and block the BCF either locally using Nokia BTS Manager or request BCF lock from the BSC.**
2. **Switch the Power Supply units to standby mode.**
3. **Carefully remove the Power Supply units.**
4. **Disconnect the power/signal cable for the fan.**
5. **Remove the four securing screws in the fan box with a T15 Torx driver.**
6. **Remove the fan unit.**

6.6 Removing a cabinet cooling fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

Potentially lethal voltages!

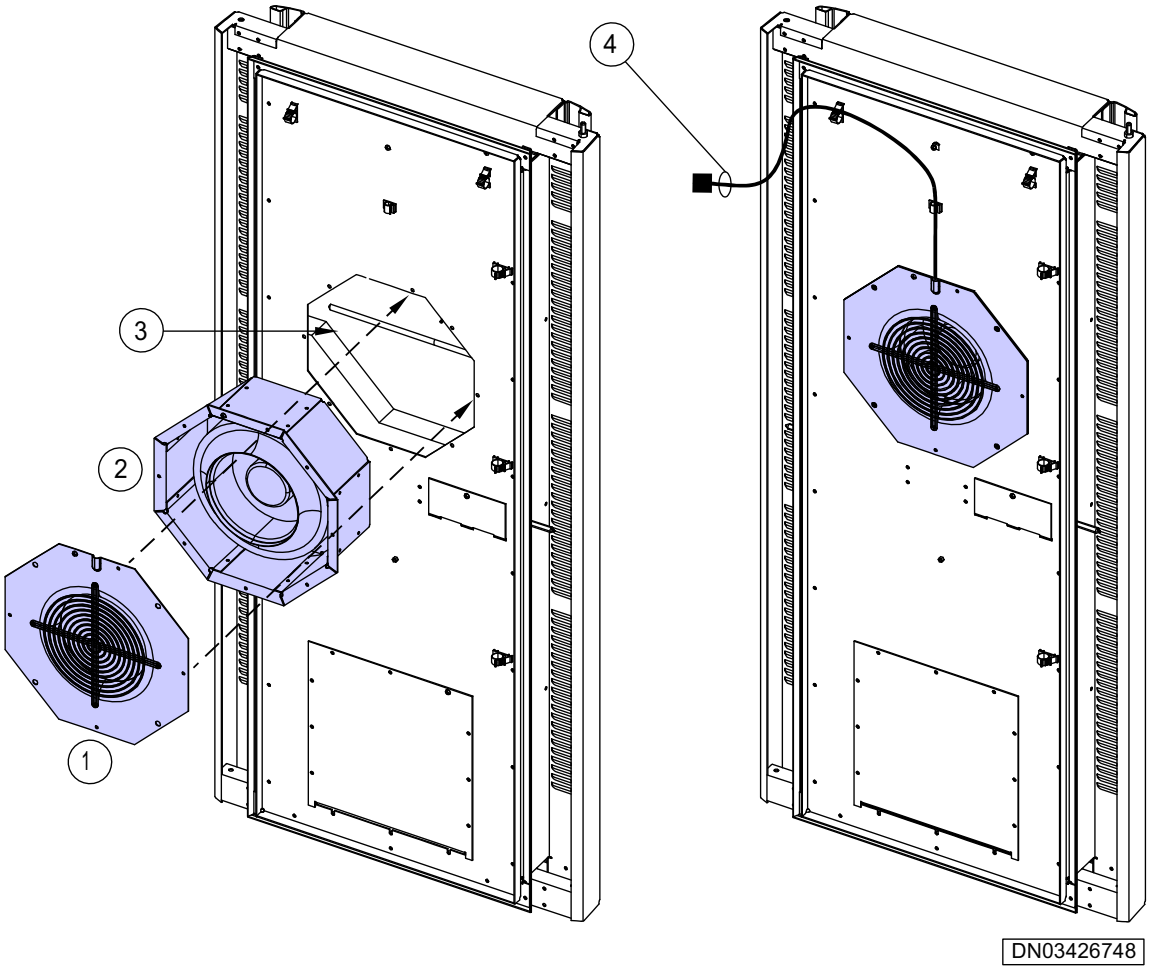
Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

Warning

Disconnect the power/signal cable before you start to remove the fan.

Warning

Ensure that the fan has stopped rotating before you remove the cabinet fan cover.



1	Cabinet fan cover, with finger guard
2	Cabinet fan assembly
3	Location for cabinet fan
4	Wiring to fan power and control door switch

Figure 34. Cabinet Cooling fan removal

Steps

1. Open the cabinet door to access the cabinet fan assembly.

2. **Disconnect the power/alarm cable for the fan and disconnect the cable from the cable clips.**

3. **Remove the five T25 screws that secure the cabinet fan cover to the door and set the cover aside.**

4. **Remove the cable from the cable clip inside the fan box and cut the cable tie.**

5. **Remove the four remaining T25 screws on the back side of the box to remove the cabinet fan.**

6.7 Removing a WCDMA unit cooling fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

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

Warning

When replacing fans within the BTS, the new fans may start operation when the power/signal cable is connected.

Steps

1. **Lock the units for the sector.**

2. **Remove the WCDMA plug-in unit/s (WTR and WMP) directly in front of the fan. Place the unit/s aside on an anti-static mat.**

3. **Disconnect the power/signal cable for the fan with a small flathead screwdriver.**

4. **Remove the four securing screws in the corners of the fan box with a T15 Torx driver.**

5. **Remove the fan unit.**

6.8 Removing a GSM/EDGE heater (HETA) unit from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

Do not open a faulty HETA unit. Return HETA unit to Nokia Service.

Note

If you are installing the HETA unit, install the AC filter unit in addition to any DC filter unit. The AC filter unit does not replace the DC filter unit.

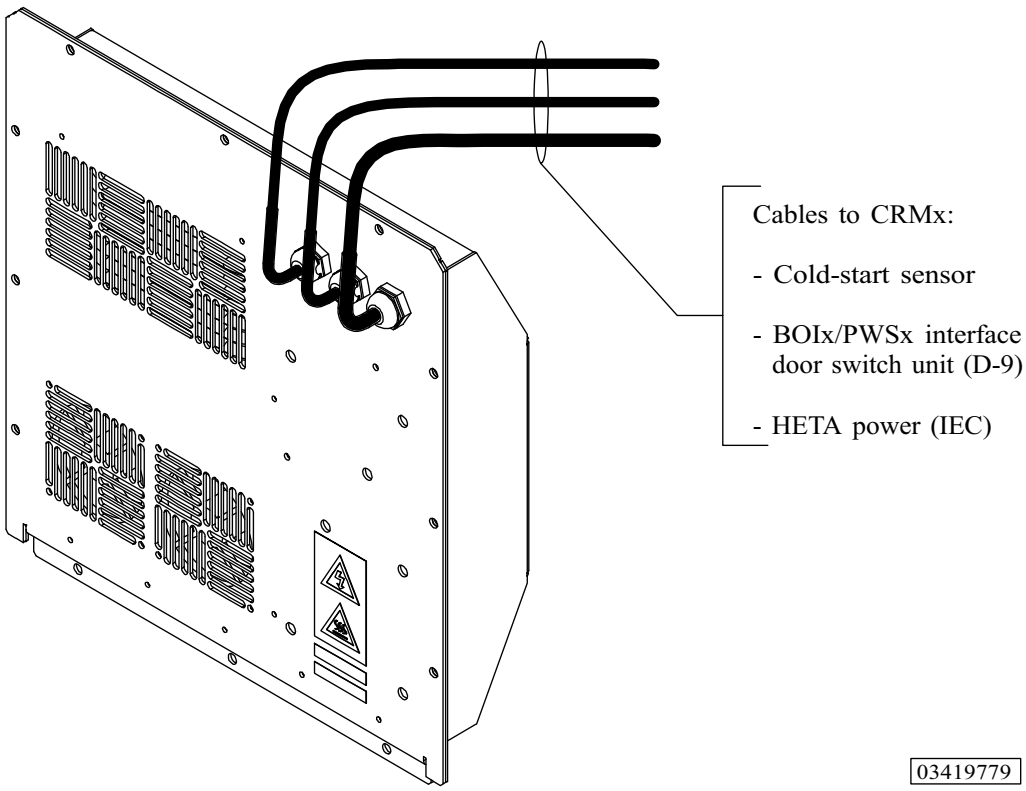
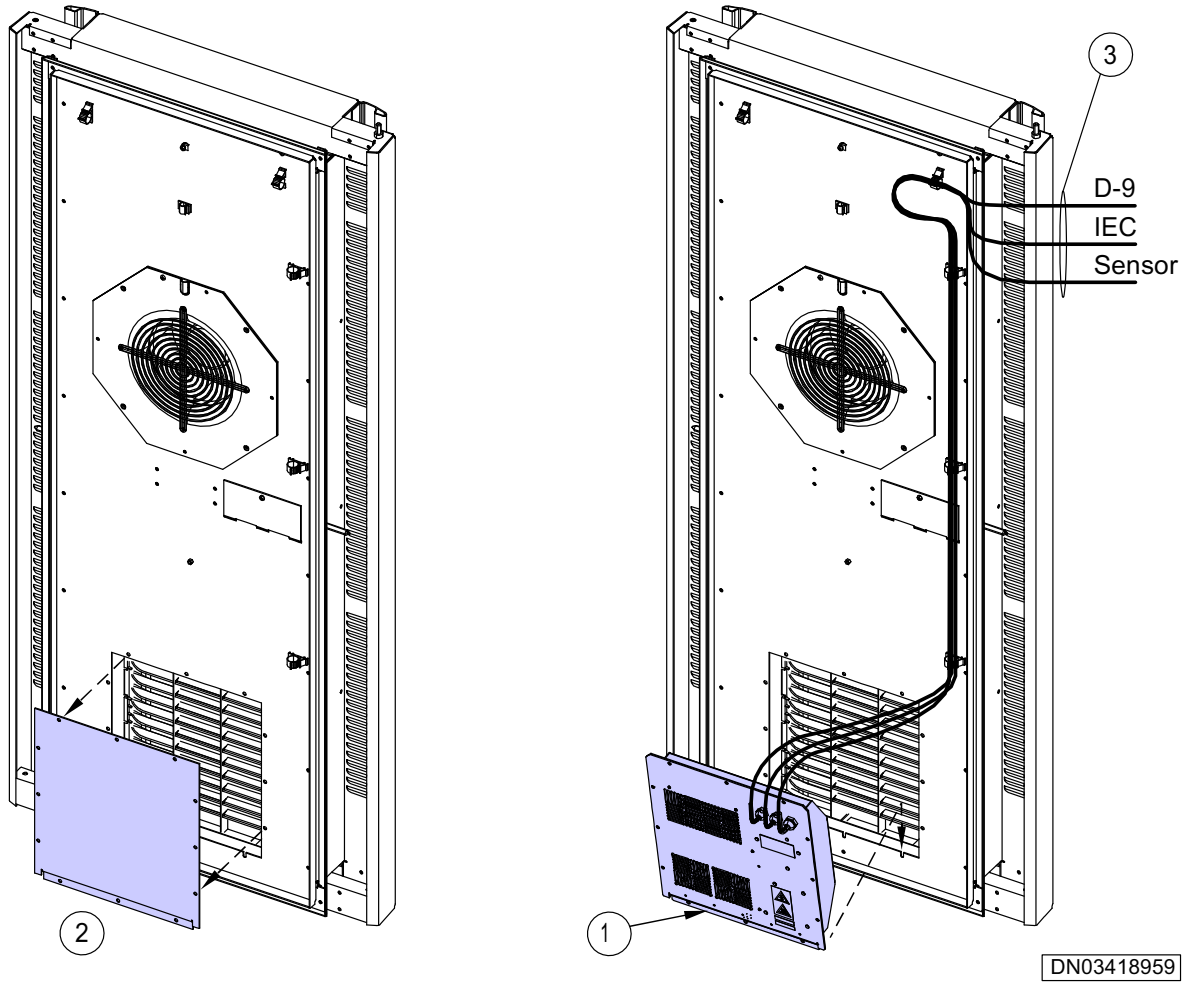
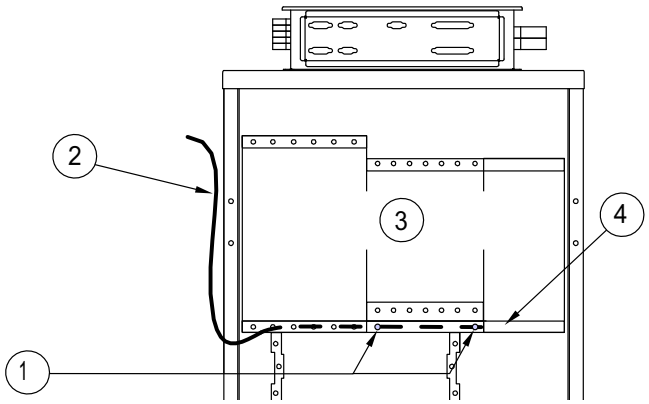


Figure 35. HETA unit cables



1	HETA unit
2	Cover (when HETA unit not used)
3	Wiring to HETA power and control

Figure 36. HETA mounted in OKAx door



1	Cold-start sensor cable from door mounted HETA unit
2	Cold-start sensor cable from door mounted HETA unit
3	Upper rack
4	Front flange

Figure 37. Sensor cable installation

Steps

1. **Disconnect the HETA signaling interface from the door switch box.**
2. **Remove the cold-start temperature sensor cable from the cabinet.**
3. **Disconnect the AC power cable for the HETA.**
4. **Cut any cable ties and remove the cables from the support clips.**
5. **Unscrew the 12 T25 mounting screws.**
6. **Remove the HETA unit.**

6.9 Removing a WCDMA heat exchanger fan from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

Potentially lethal voltages!

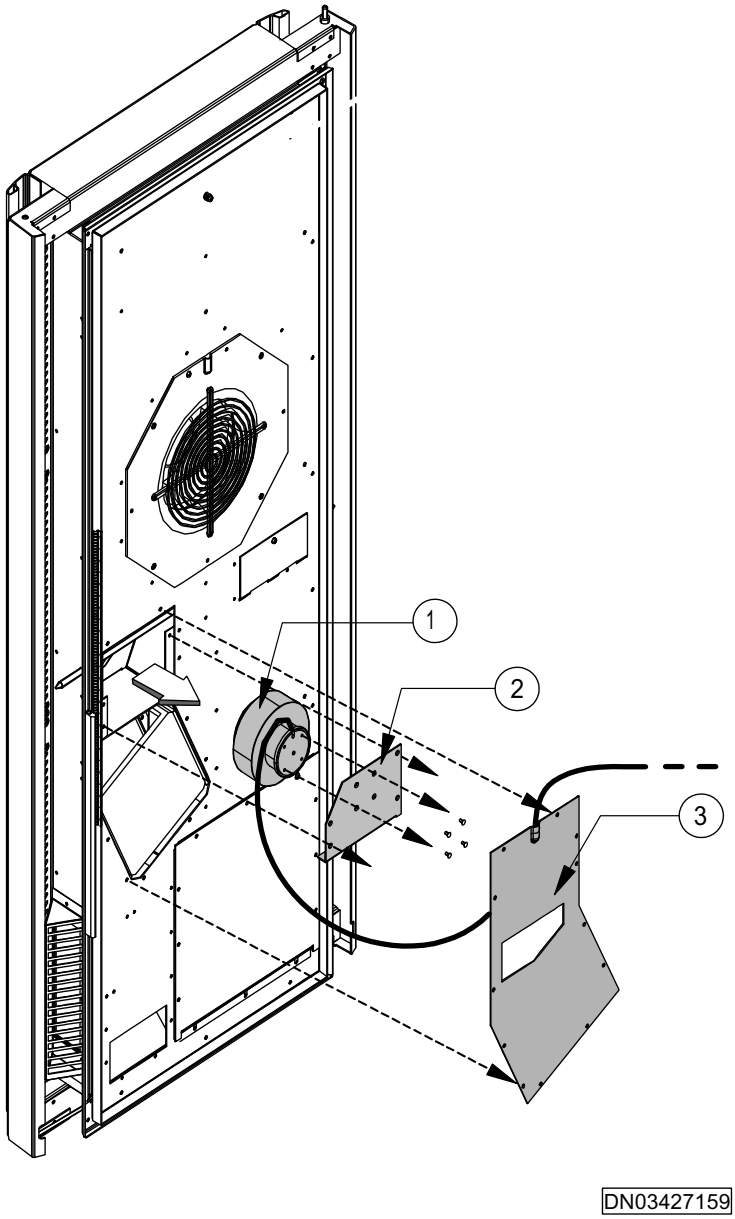
Switch OFF the BTS power from a disconnecting device or circuit breaker before starting the maintenance work whenever the nature of maintenance work causes a risk of electric shocks!

Warning

Disconnect the power/signal cable before you start to remove the fan.

Warning

Ensure that the fan has stopped rotating before you remove the cabinet fan cover.



1	Heat exchanger fan
2	Heat exchanger fan Mounting Plate
3	Heat exchanger Cover Plate

Figure 38. Heat exchanger fan removal

Steps

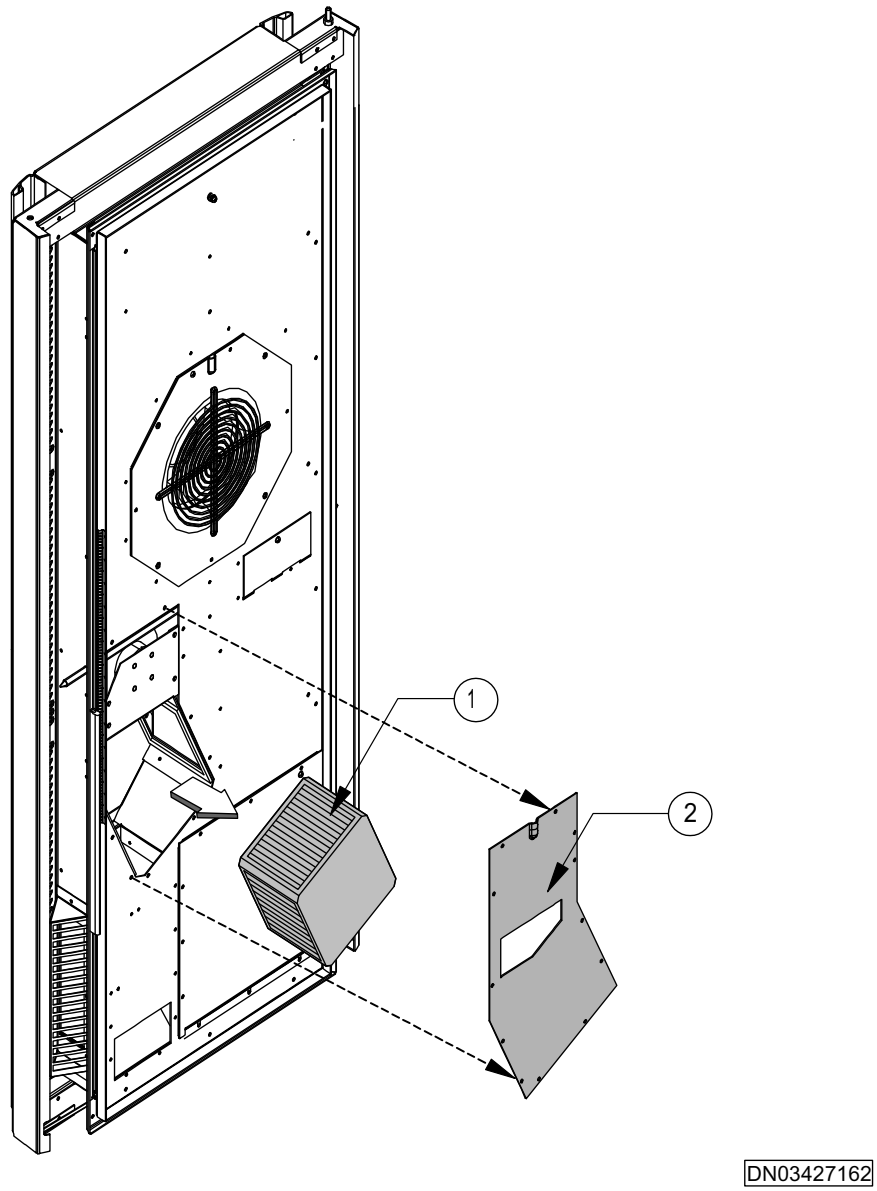
1. **Disconnect the fan control cable from the WTCA fan module.**
2. **Remove the heat exchanger cover plate from the Outdoor cabinet door.**
3. **Loosen the screws in the fan mounting plate and remove the plate and the fan.**
4. **Remove the fan from the mounting plate.**

6.10 Removing a Heat Exchanger Cell from UltraSite EDGE BTS with WCDMA upgrade

Before you start

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

Summary



1	Heat Exchanger Cell
2	Heat Exchanger Cover Plate

Figure 39. Heat Exchanger Cell removal

Steps

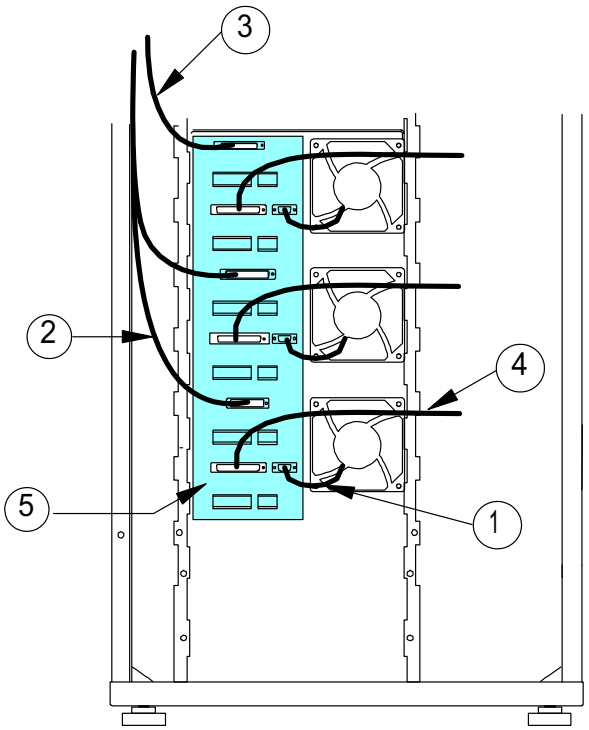
1. **Remove the Heat Exchanger cover plate from the Outdoor cabinet door.**
2. **Grasp of the faulty cell at its sides.**
3. **Remove the cell.**

6.11 Removing a lower RFU backplane from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary



DN03426966

1Unit fan cable (3 pcs) Lower RFU backplane2Power cable (2 pcs)3Bus cable between common backplane and RFU backplane4D-37, Dvxx or RTxx power control cable (3 pcs)5Lower RFU backplane

Figure 40. Disconnecting cables from the lower RFU backplane

Steps

1. **Disconnect the unit fan cables (1 in Figure) connected to the lower RFU backplane.**

Note

Do not remove the unit fans located in the cabinet core.

2. **Disconnect power cables coming from the voltage distribution bar.**
3. **Attach caps over the power cables.**
4. **Bend the cables through the cable entry so that they will not get in the way if installing the WCDMA Upgrade Kit.**
5. **Disconnect the bus cable between the lower RFU backplane and common backplane from the RFU backplane.**
6. **Attach a cap over the bus cable.**
7. **Disconnect the DVxx or RTxx power and control cables from the X5, X14, or X23 connectors on the lower RFU backplane and attach caps over the cable connectors.**
8. **Bend the cables behind the backplane so that they will not get in the way if installing the WCDMA Upgrade Kit.**
9. **Unscrew the screws in the lower RFU backplane cover plate and remove the cover plate.**
10. **Unscrew the screws in the backplane and remove the backplane.**

6.12 Removing a WCDMA RF backplane from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

Warning

Permanently wire UltraSite EDGE BTS to a disconnect device, such as a circuit breaker.

Warning

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

Warning

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

Steps

1. **At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs.**
2. **At the RNC or NetAct, lock the BCF.**
3. **Switch off the power supply from the UltraSite Support (Optional).**
4. **Switch BTS cabinet power off from the WPS unit switches.**

5. **Remove all the plug-in units from the RF rack (WTRs, WMPs and WIC). Place them aside on an anti-static mat.**

6. **Disconnect the unit cooling fan cables from the front of the RF rack backplane with a small flathead screwdriver.**

7. **Unscrew the RF rack mounting screws.**

8. **Carefully pull the RF rack forward so that you have access to the cables and the main busbar at the back.**

9. **Carefully disconnect each cable and the main busbar from the RF rack backplane.**

10. **Take the RF rack out of the BTS.**

11. **Loosen and remove the screws holding the RF front IP shield.**

12. **Remove the RF front IP shield.**

13. **Remove the RF backplane from the RF rack.**

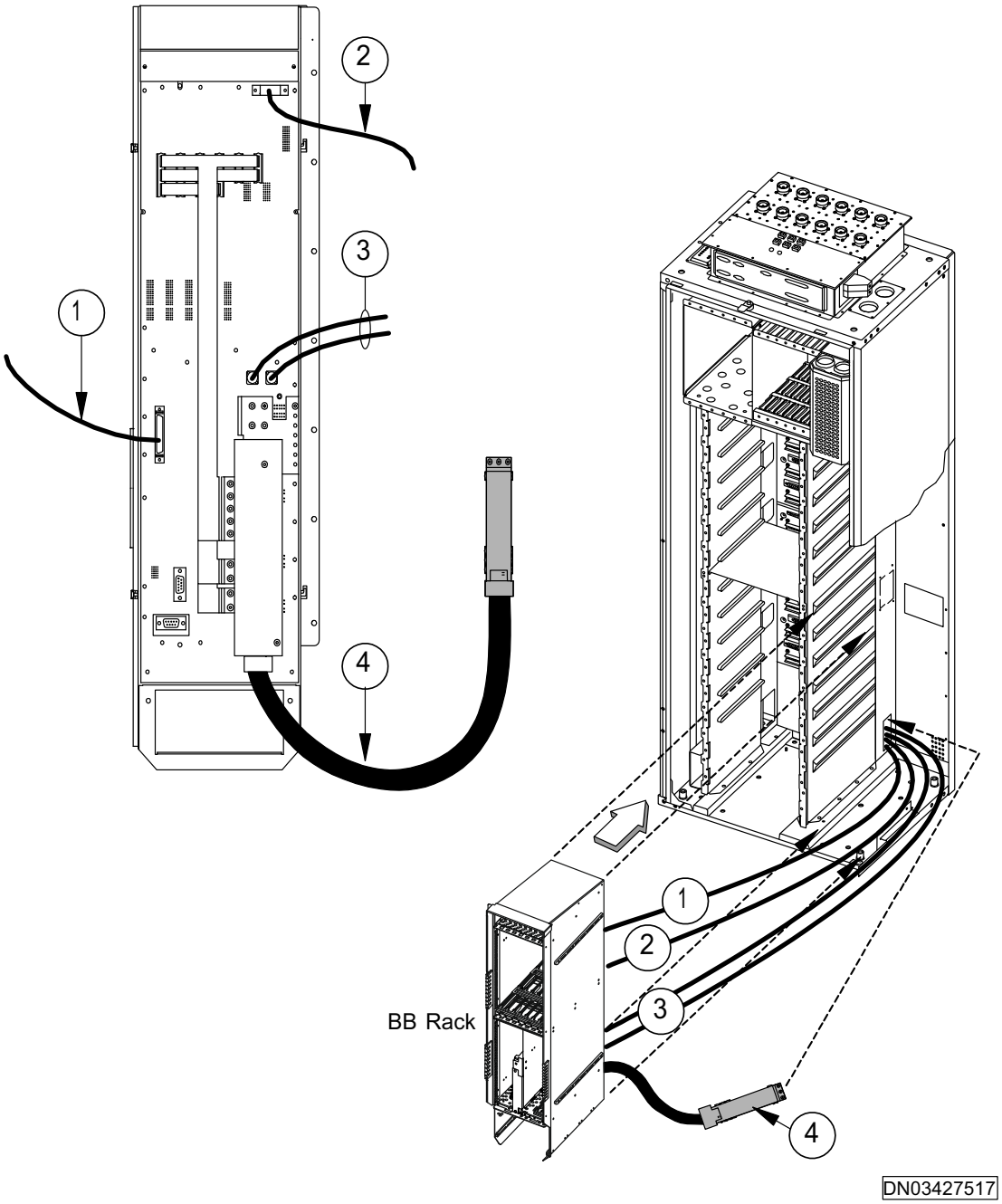
6.13 Removing a WCDMA BB rack from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Summary

BB Rack backplane, back view



1	Bus Cable

2	Bus Cable
3	Chain clock cables
4	Main Busband

Figure 41. Removing the BB rack

Steps

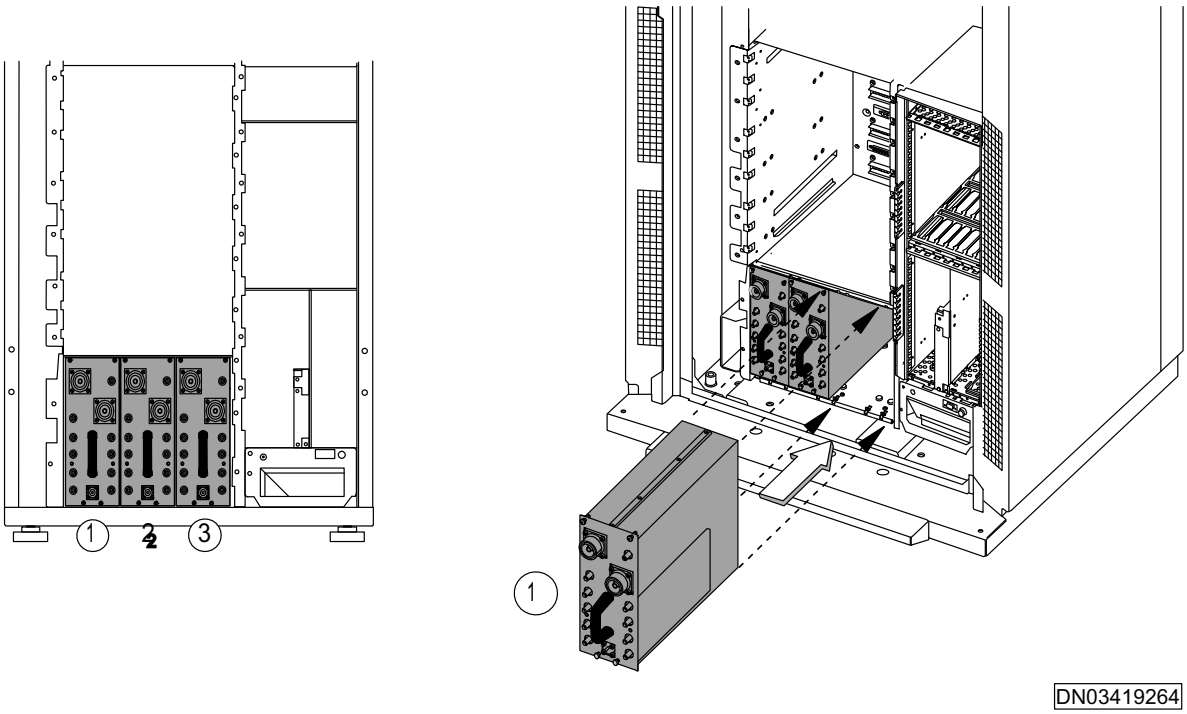
1. **At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs.**
2. **At the RNC or NetAct, lock the BCF.**
3. **Switch off the power supply from the Nokia UltraSite Support (optional).**
4. **On the BTS site, switch BTS power off from the WPS unit switches.**
5. **Remove all the plug-in units in the RF rack.**
6. **Remove the RF rack.**
7. **Remove all plug-in units from the BB rack (WSM, WAM, WSM, WPS, WSC, AXU, IFU, WTCA Fan). Place them aside on an anti-static mat.**
8. **Pull the BB rack carefully forward so that you have access to the cables at the back.**
9. **Carefully disconnect each cable from the RF backplane in any order.**
10. **Take the BB rack out of the BTS.**
11. **Remove the BB backplane from the BB rack.**

6.14 Removing a WAF rack from UltraSite EDGE BTS

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

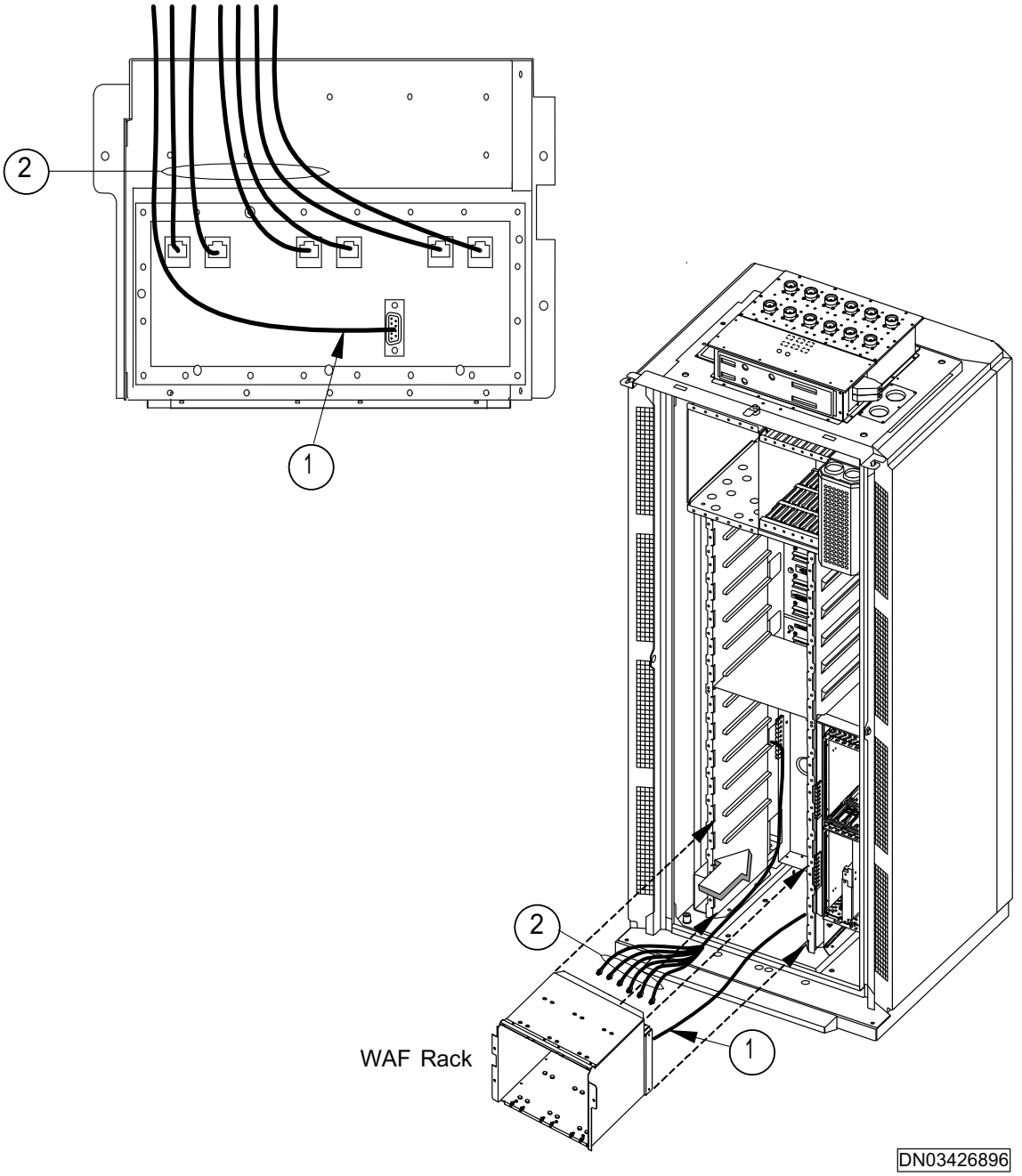
Summary



1	WAFx
2	WAFx
3	WAFx

Figure 42. Removing the WAF units

WAF Rack backplane, back view



1	Baseband cable from WAF rack to RF rack

2 MHA cables

Figure 43. Removing the WAF rack and disconnecting cables to the back of the WAF rack backplane.

Steps

1. **At the RNC or NetAct, reroute the traffic from the WCDMA section of the BTS to the neighbouring BTSs**
2. **At the RNC or NetAct, lock the BCF.**
3. **Switch off the power supply from the Nokia UltraSite Support (Optional)**
4. **On the BTS site, switch BTS power off from the WPS unit switches.**
5. **Remove all the plug-in units in the RF rack.**
6. **Remove the RF rack.**
7. **Remove all the WAF units from the WAF rack. Place them aside on an anti-static mat.**
8. **Unscrew and remove the screws holding the WAF rack.**
9. **Pull the WAF rack carefully forward so that you have access to the cables at the back.**
10. **Carefully disconnect each cable from the WAF rack in any order.**
11. **Take the WAF rack out of the BTS.**
12. **Remove the WAF backplane from the WAF rack.**

7 Removing power and ground cables from UltraSite EDGE BTS

7.1 Overview of removing power and ground cables from UltraSite EDGE BTS

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.

Note

To access cabinet interface connections, remove the cabinet roof from the BTS and replace the roof when all work is complete.

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. **Remove ground cables from UltraSite EDGE BTS.**
2. **Remove AC power cables from UltraSite EDGE BTS.**
3. **Remove DC power cables from UltraSite EDGE BTS.**

7.2 Removing AC power cables from UltraSite EDGE BTS

Before you start

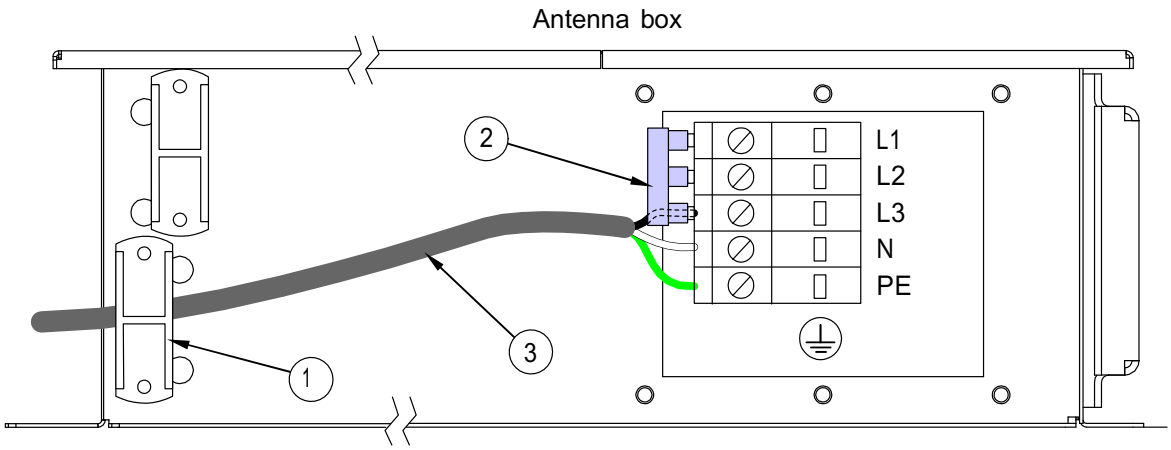
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Note

Depending on the position of the antenna box, you may need to remove the dummy cable entry panel adjacent to the power connector to access the connector screws. As an alternative, you can remove the screws securing the antenna box to the cabinet core and lift the antenna box to access the connector screws.

Summary

The following information describes how to remove single-phase AC power cables for UltraSite EDGE BTS cabinets located within the USA and Canada (two wires with ground) and Europe (one wire with neutral and ground). It also describes how to remove three-phase AC power cables for UltraSite EDGE BTS cabinets located within Europe.

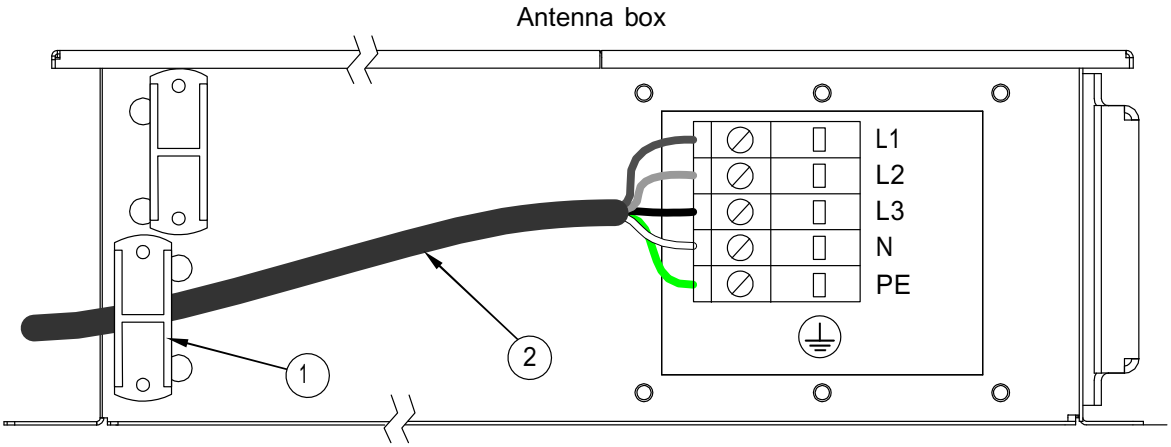


NOTE: Power input wiring must adhere to local codes.
L1, L2, L3 (Shorted), PE = Ground

DN03418592

1	Strain relief
2	Shorting bar
3	AC Power input cable

Figure 44. Single-phase AC power to the BTS (USA, Canada and Europe)



NOTE: Power input wiring must adhere to local codes.
L1 = Phase 1, L2 = Phase 2, L3 = Phase 3,
N = Neutral, PE = Ground

DN03418608

1	Strain relief
2	AC Power input cable

Figure 45. Three-phase AC power to the BTS (Europe)

Steps

1. Power down the UltraSite EDGE BTS.

2. Turn the mains power breaker OFF.

3. *If* you are removing the single-phase AC power cable from the BTS (USA and Canada),

   Then

   Perform the following tasks:

   a. Loosen the screws on the strain relief.
   b. Turn the screw of the N connector to the left to open the connector. Remove the live wire.
   c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.
   d. Turn the screws of the L1 and L2 connectors to the left to open the connectors. Remove the shorting bar from L1, L2 and L3.
   e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
   f. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
   g. Remove the power cable from the strain relief.

4. *If* you are removing the single-phase AC power cable from the BTS (Europe),

   Then

   Perform the following tasks:

   a. Loosen the screws on the strain relief.
   b. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.
   c. Turn the screw of the L3 connector to the left to open the connector. Remove the live wire.

d. Turn the screws of the L1 and L2 connectors to the left to open them. Remove the shorting bar from L1, L2 and L3.
e. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
f. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
g. Remove the power cable from the strain relief.

5. *If* you are removing the three-phase AC power cable from the BTS (Europe),

   Then

   Perform the following tasks:

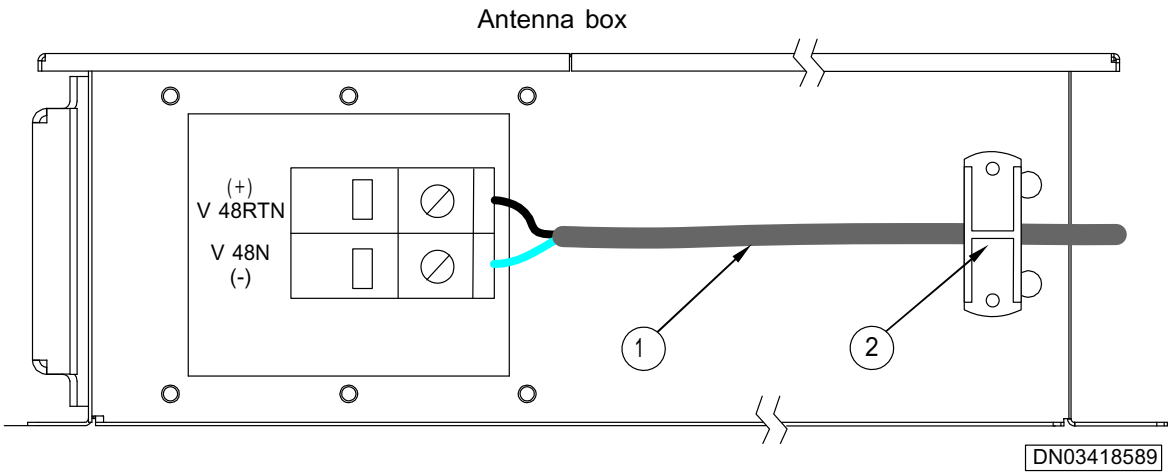
   a. Loosen the screws on the strain relief.
   b. Turn the screws of the L1, L2 and L3 connectors to the left to open them. Remove the three live wires from these connectors.
   c. Turn the screw of the N connector to the left to open the connector. Remove the neutral wire.
   d. Turn the screw of the PE connector to the left to open the connector. Remove the ground wire.
   e. Turn the screws of the L1, L2, L3, N and PE Phoenix connector terminals to the right to close them.
   f. Remove the power cable from the strain relief.

7.3 Removing DC power cables from UltraSite EDGE BTS

Before you start

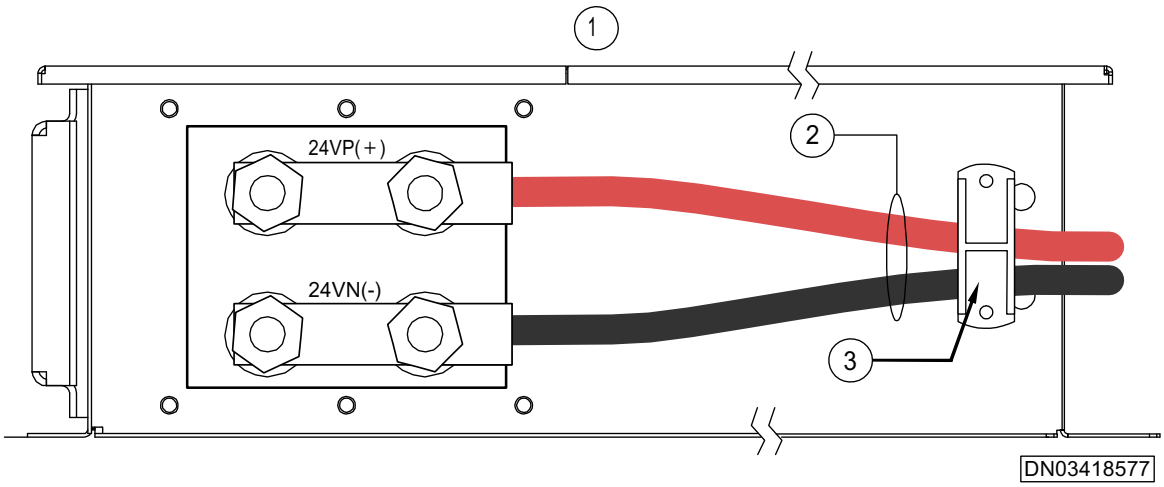
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary



1	DC Power input cable
2	Strain relief

Figure 46. -48 VDC power to the BTS



1	Antenna box

2	DC Power input cables
3	Strain relief

Figure 47. +24 VDC power to the BTS

Steps

1. **Power down the UltraSite EDGE BTS.**
2. **Turn the mains power breaker OFF.**
3. **Loosen the screws on the strain relief.**
4. **Remove the -48 VDC power cables.**
   a. Remove the blue (-) wire from the (-) V 48N connector.
   b. Remove the black (+) wire from the (+) V 48RTN connector.
   c. Turn the screws to the right to close the (+) V 48 RTN and (-) V 48N Phoenix connector terminals of the Filter module.
   d. Remove the power cable from the strain relief on the antenna box.
5. **Remove the +24 VDC power cables.**
   a. Untie the lacing cord binding the positive and negative power cables together.
   b. Loosen and remove the two M4x12 mounting screws and two M4 nuts.
   c. Remove the terminal cover.
   d. Untie the cable from the strain relief bracket.
   e. Loosen the four installed nuts.
   f. Remove the nuts from the +24VN(-) threaded studs of the DCFB and remove the black +24VN(-) cable lug from the studs.
   g. Remove the nuts from the +24VP(+) threaded studs of the DCFB and remove the red +24VP(+) cable lug from the studs.
   h. Remove the cables from the strain relief on the antenna box.

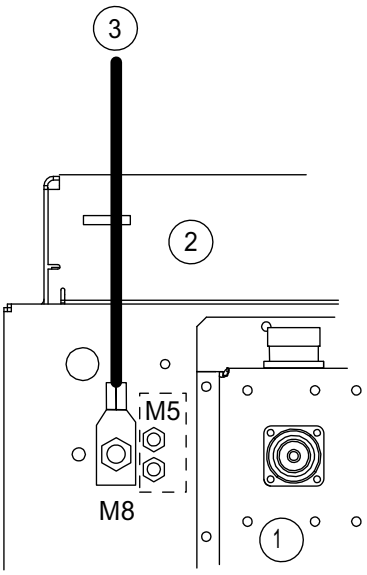
7.4 Removing ground cables from UltraSite EDGE BTS

Before you start

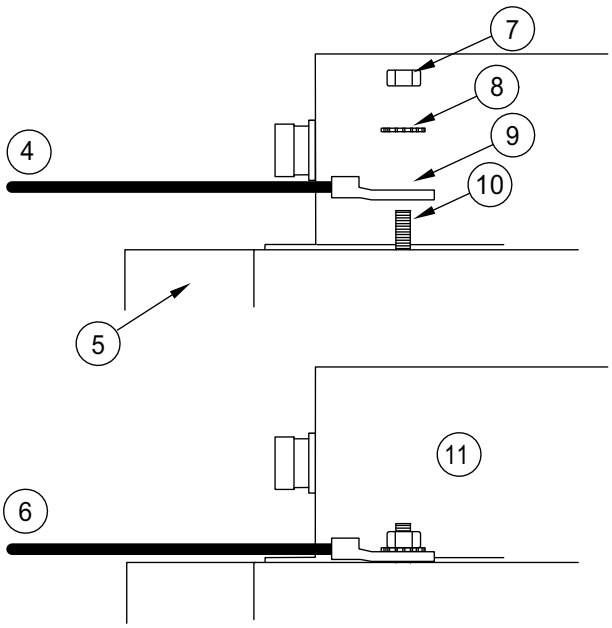
Review the *Overview of removing power and ground cables from UltraSite EDGE BTS*. Pay careful attention to all Warnings and Cautions.

Summary

Top view of cabinet



Side view of cabinet



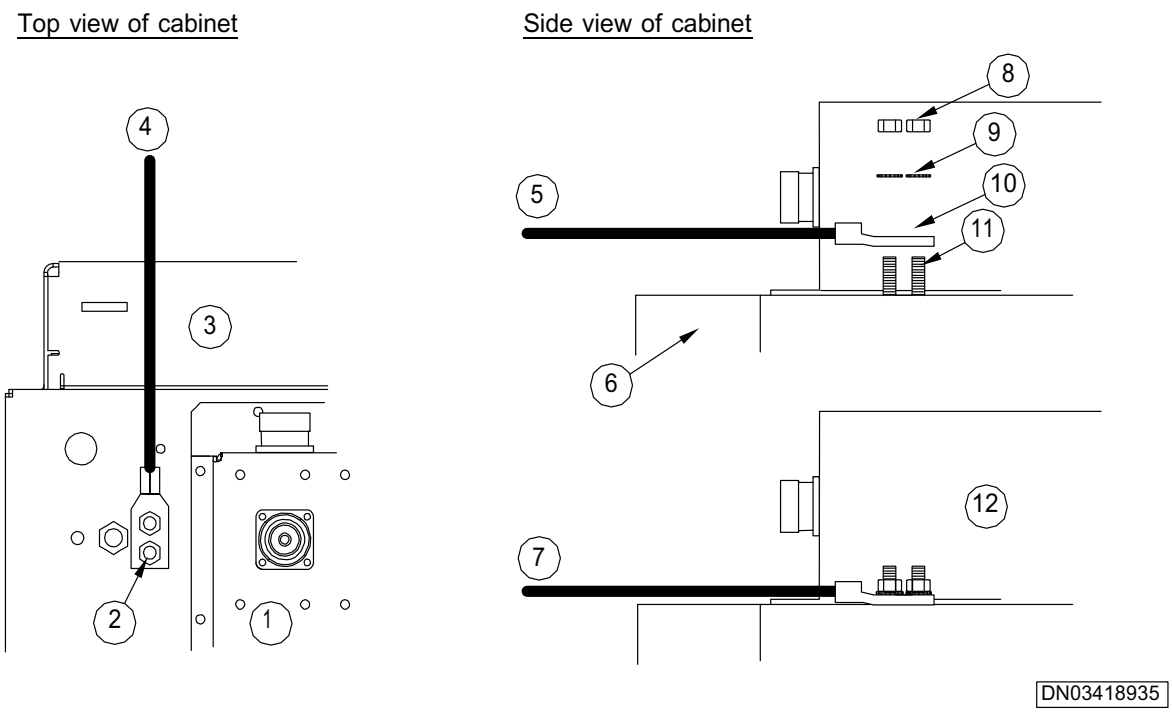
NOTE: M8/M5 studs and nuts are provided to accommodate different types of ground lugs

DN03418923

1	Antenna box
2	ICDM back
3	Cabinet ground cable
4	Cabinet ground cable
5	ICDM back
6	Cabinet ground cable
7	Nut
8	Star washer
9	Ground lug
10	Ground stud

11	Antenna box

Figure 48. Grounding (earthing) the cabinet



1	Antenna box
2	M5 (2 places)
3	IDCM back
4	Cabinet ground cable
5	Cabinet ground cable
6	IDCM back
7	Cabinet ground cable
8	Nut
9	Star washer
10	Ground lug

11	Ground stud
12	Antenna box

Figure 49. Grounding (earthing) the cabinet in NEBS compliant installations

Steps

1. **Power down the UltraSite EDGE BTS.**
2. **Turn the mains power breaker OFF.**
3. **At the top left of the cabinet, loosen the ground nut(s) and remove the ground nut(s) and star washer(s).**
4. **Remove the lug end of the ground cable from the ground connection (s).**
5. **Replace the ground nut(s) and tighten them.**

   See *Torque settings of UltraSite EDGE BTS.*

8 Removing IAKx cabinet core mechanics from indoor UltraSite EDGE BTS

8.1 Overview of removing core mechanics from UltraSite EDGE BTS indoor cabinet

Steps

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

8.2 Removing the door from UltraSite EDGE BTS indoor cabinet

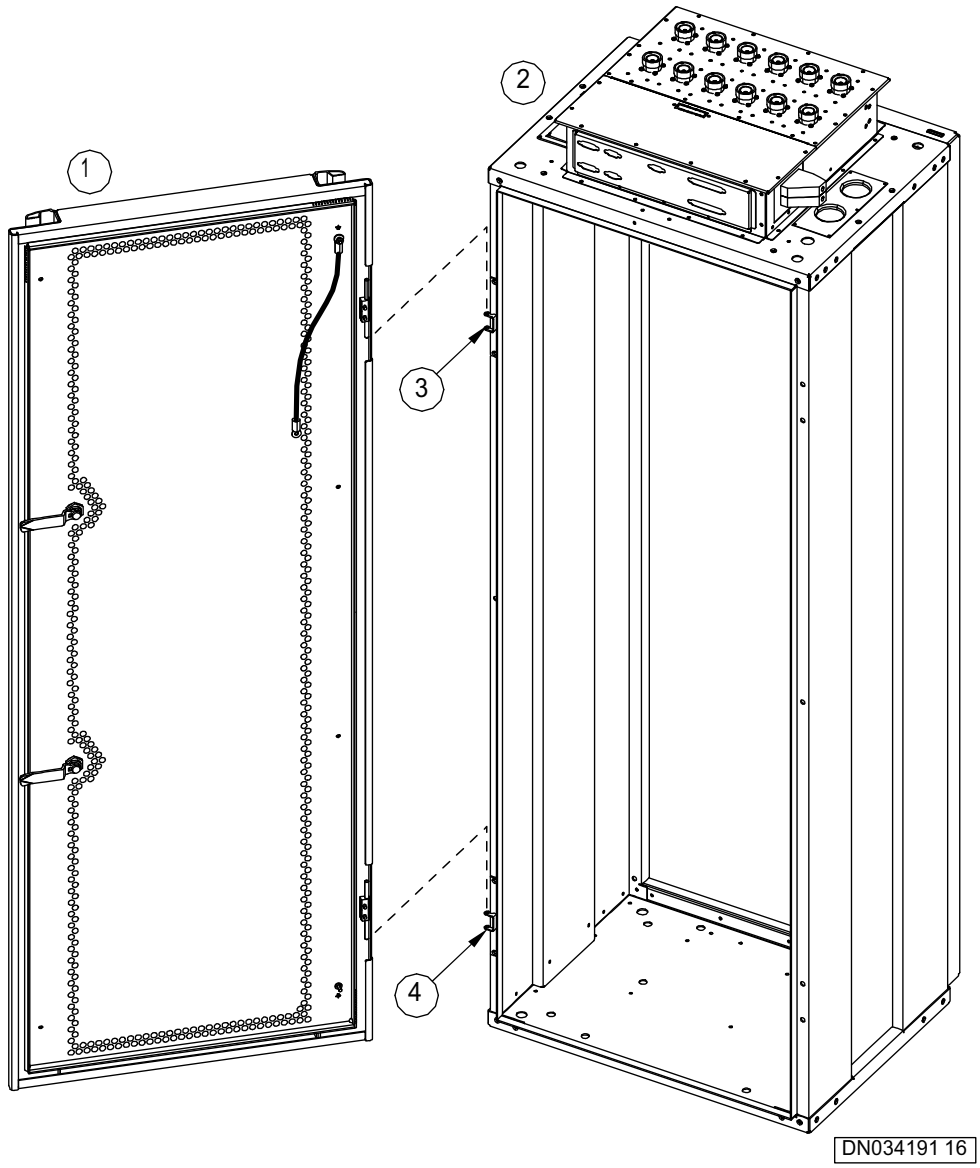
Before you start

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

Summary

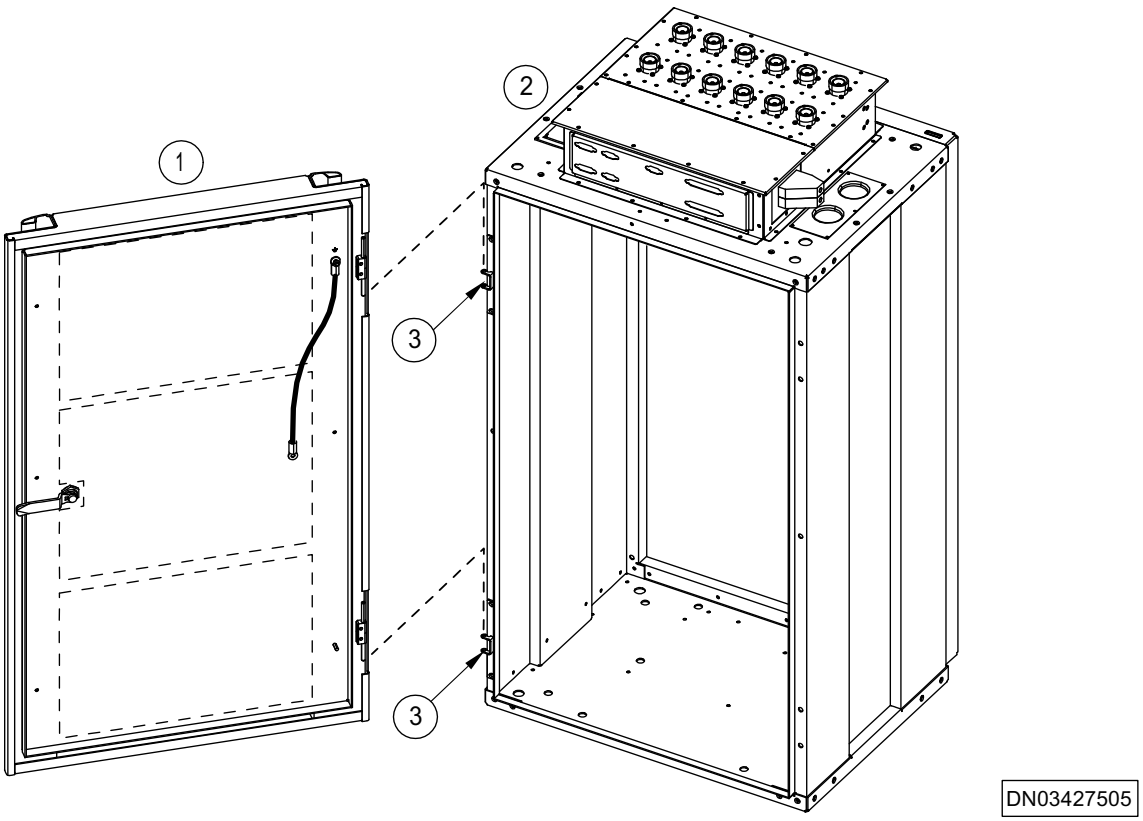
Warning

The OAKx door is heavy. You will need a minimum of two installation personnel to remove the OAKx door.



1Cabinet door2Cabinet core3Hinge4Hinge

Figure 50. Removing the IAKA door



1	Cabinet door
2	Cabinet core
3	Hinge

Figure 51. Removing the IAKC door

Steps

1. Open the door to a 90° angle.

2. **Lift the door and disengage the hinge pins in the sockets on the front of the cabinet core.**

Tip

Disengage the door from the hinges with the door open at a 90° angle.

8.3 Removing the roof from UltraSite EDGE BTS indoor cabinet

Before you start

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

Summary

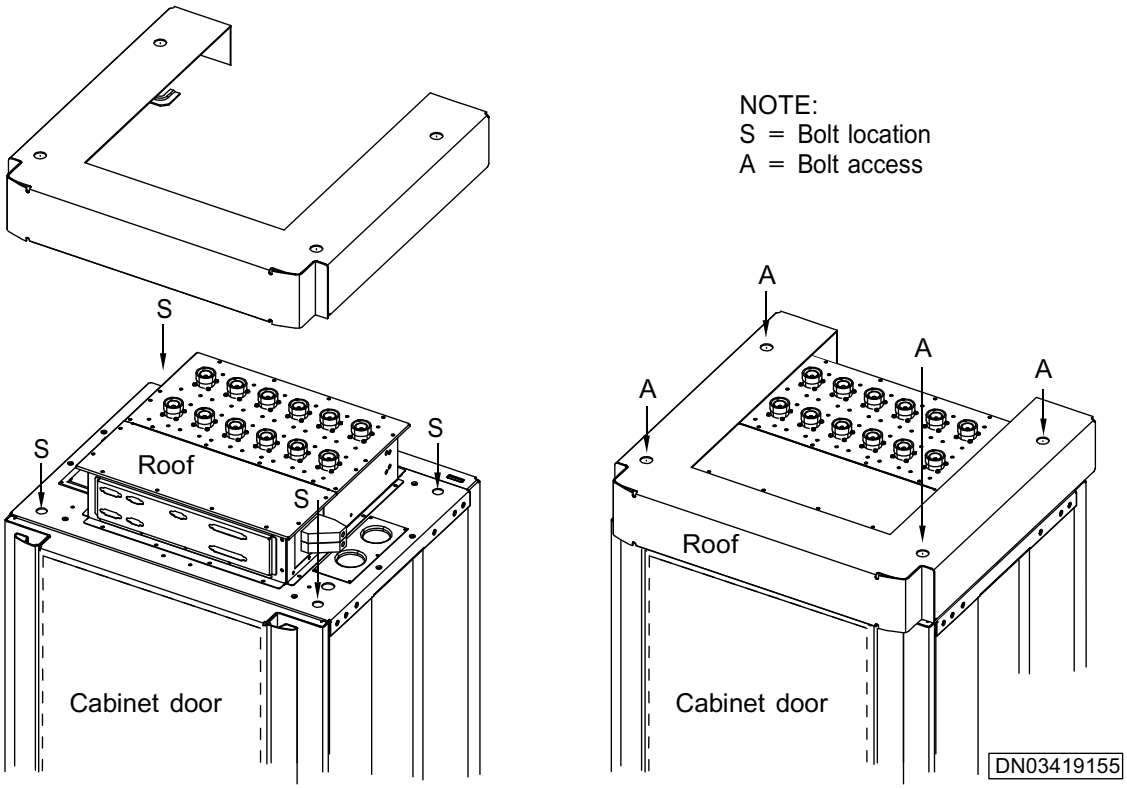


Figure 52. Removing the IAKA roof from the cabinet

Steps

1. **Loosen the four M12 bolts on top of the cabinet core.**
2. **Slide the roof slots off the four M12 bolts installed in the cabinet.**
3. **Remove the four M12 bolts from the roof.**
4. **Slide the roof up and remove the roof.**

8.4 Removing the document holder of UltraSite EDGE BTS indoor cabinet

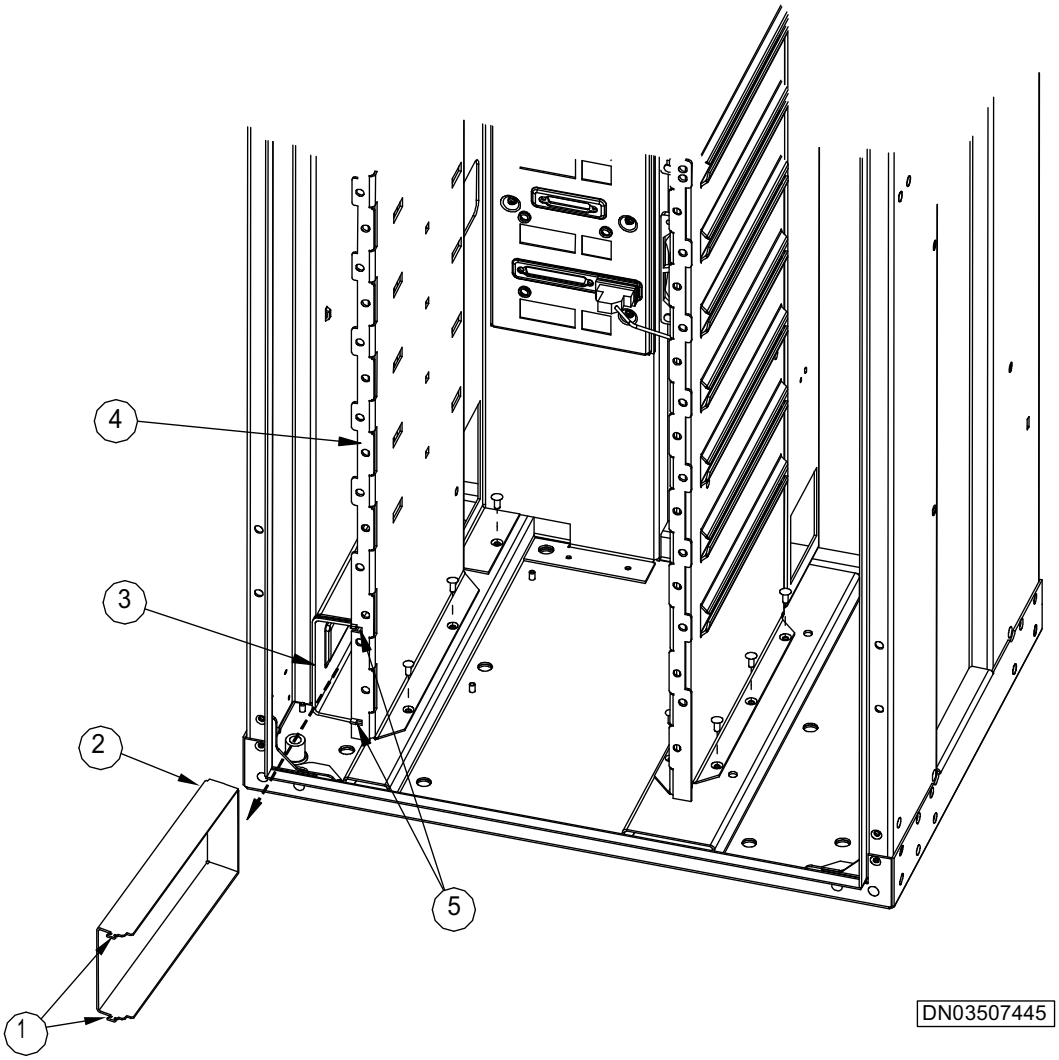
Before you start

Review the *Overview of removing 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.



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 53. Document holder removal from indoor cabinet

Steps

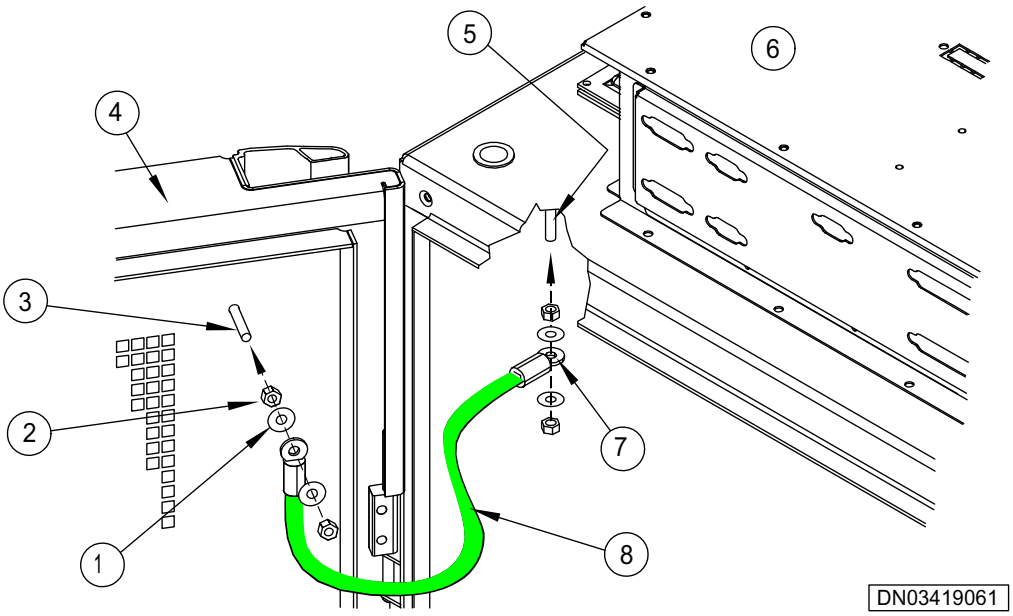
1. **Locate the document holder in the lower left corner of the cabinet between the unit mounting supports.**
2. **Grasp the document holder and unhook the tabs of the document holder from the slots in the right side unit mounting support.**
3. **Slide the document holder between the unit mounting supports.**
4. **Remove the document holder.**

8.5 Removing the door ground strap of UltraSite EDGE BTS indoor cabinet

Before you start

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

Summary



1Lockwasher (4 places)2Lug Nut (4 places)3Door ground stud4Cabinet door5Cabinet ground stud (front corner, behind flange)6Cabinet Core7Lug (two places)8Grounding strap

Figure 54. Removing IAKx door ground

Steps

1. Locate the door ground strap near the top of the unit inside the door.

Note

The ground strap may be located on the left side (default) or the right side inside the door.

2. Remove the outer lockwasher and nut from the door ground lug bolt inside the door

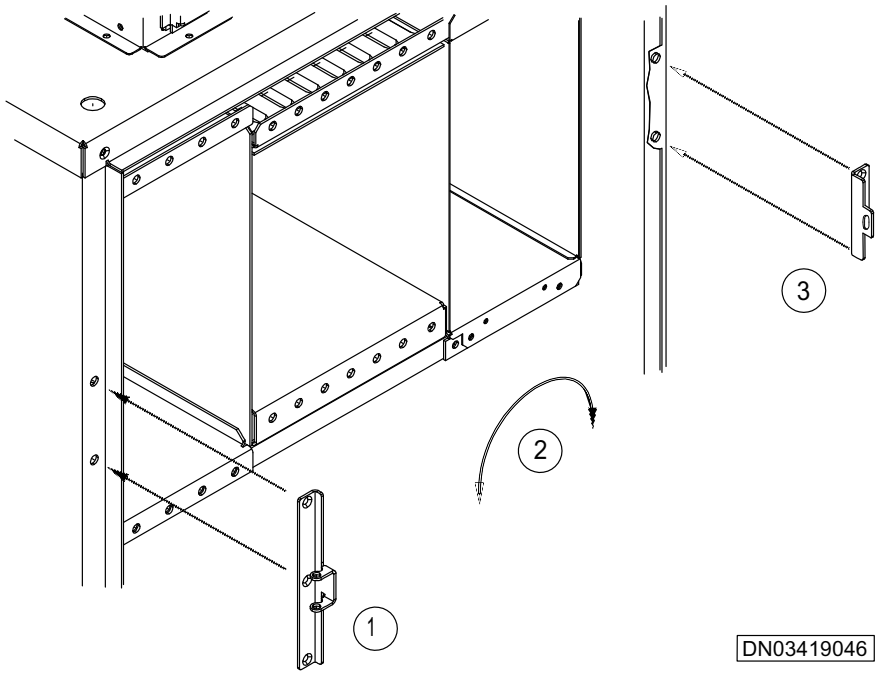
3. Slide the end of the door grounding strap off the lug bolt.

8.6 Removing the optional door lock-plate (ILKA) of UltraSite EDGE BTS indoor cabinet

Before you start

Review the *Overview of removing 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 55. Removing lock bracket (Left hinged door shown)

Steps

1. **Locate the lock-plate (ILKA) on the opposite side of upper hinge of the cabinet.**

   The lock bracket can be found on the right side or the left side of the cabinet.

2. **Loosen and remove screws on lock bracket with a screwdriver.**

3. **Remove the lock bracket.**

8.7 Removing the door switch of UltraSite EDGE BTS indoor cabinet

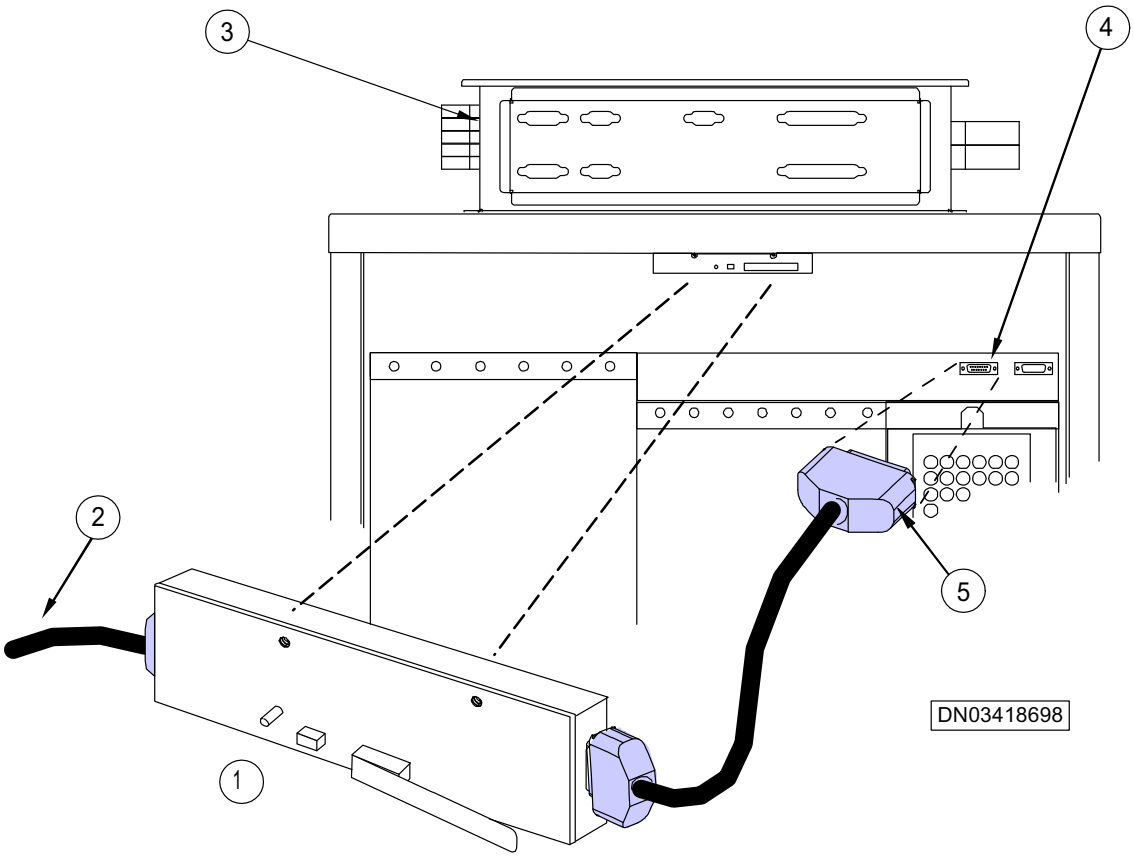
Purpose

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 removing core mechanics from UltraSite BTS EDGE indoor cabinet.*

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 56. Door switch assembly

Steps

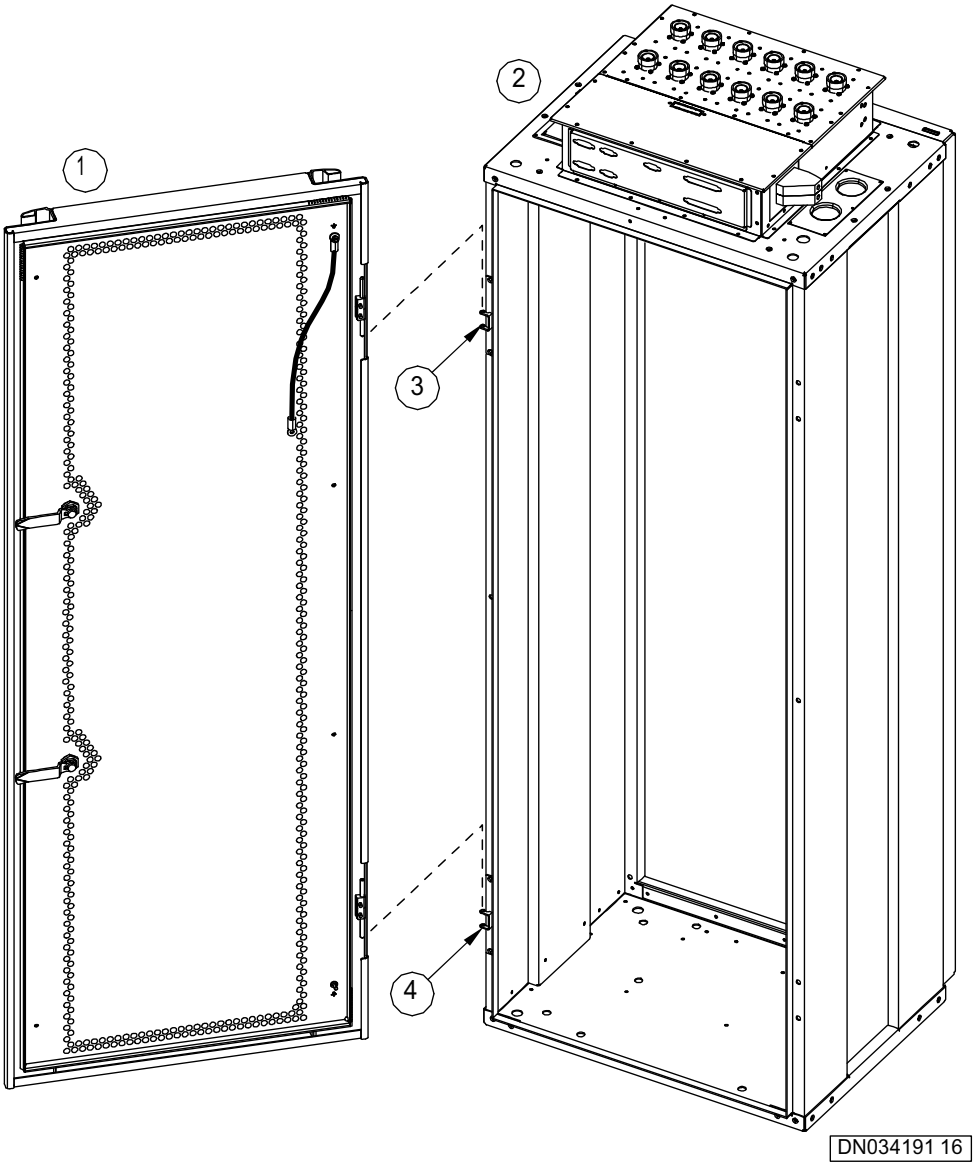
1. **Unplug the cabinet fan connector from the door switch assembly fan receptacle.**
2. **Unplug the door switch connector from the X20 receptacle on the cabinet power and control interface.**
3. **Remove the two threaded studs with the two M5 nuts from the door switch assembly.**
4. **Remove the door switch.**

8.8 Removing the hinges of UltraSite EDGE BTS indoor cabinet

Before you start

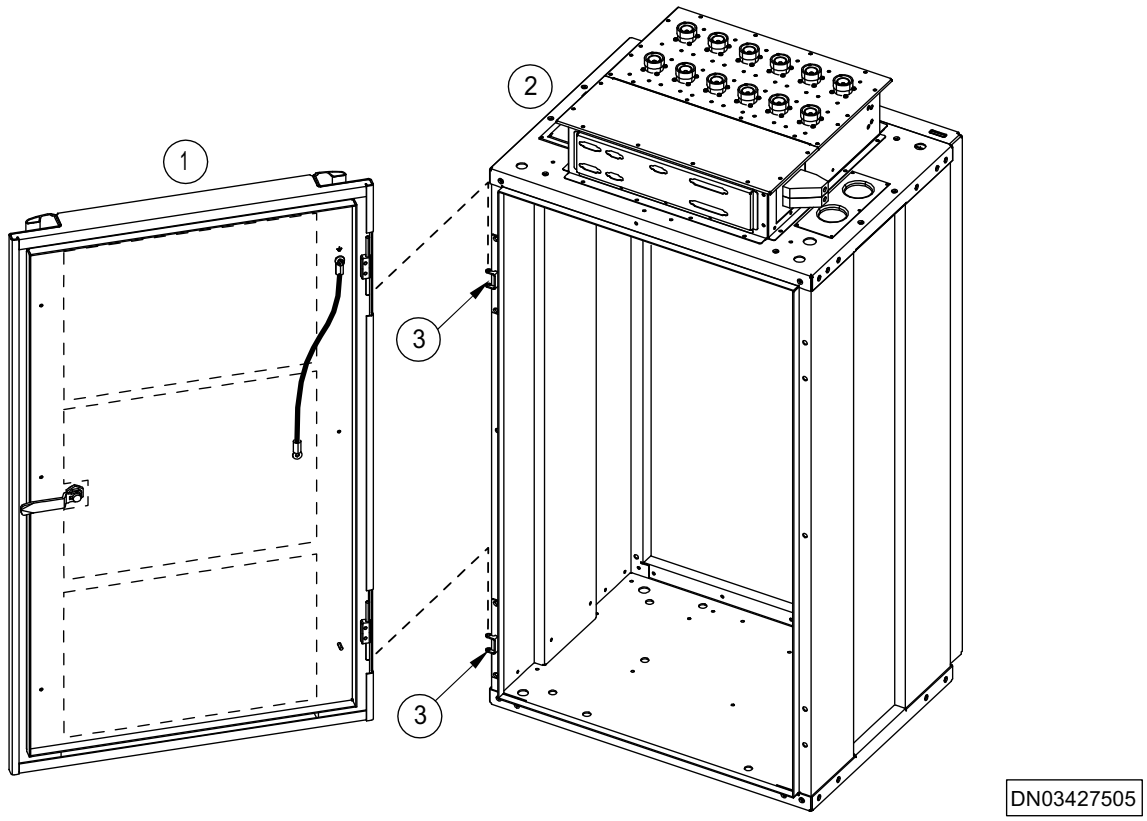
Review the *Overview of removing core mechanics from UltraSite BTS EDGE indoor cabinet.*

Summary



1	Cabinet door
2	Cabinet core
3	Hinge
4	Hinge

Figure 57. Removing cabinet hinges and lock bracket (Left hinged door shown) from IAKA



1	Cabinet door
2	Cabinet core
3	Hinge
4	Hinge

Figure 58. Removing cabinet hinges and lock bracket (Left hinged door shown) from IAKC

Steps

1. Determine whether the door is left (default) or right opening in accordance with the site plan.

2. **Locate the cabinet hinges on the side opposite the lock bracket.**

3. **Remove the screws from the hinges.**

4. **Remove the hinges.**

9 Removing OAKx cabinet core mechanics from UltraSite EDGE BTS

9.1 Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of removing cabinet core units from UltraSite EDGE BTS.* Pay careful attention to all warnings and cautions.

Steps

1. **Remove the document holder.**
2. **Remove the roof.**
3. **Remove the door switch.**
4. **Remove the door grounding strap.**
5. **Remove the door from the cabinet hinges.**
6. **Remove the optional door lock-plate (ILKA) from the cabinet core.**
7. **Remove the Bridge kit of outdoor UltraSite EDGE BTS.**
8. **Remove the door.**
9. **Remove the door hinges from the cabinet core.**
10. **Remove the co-siting Outdoor Application kit.**
11. **Remove the cable entry kit (OEKx).**

12. **Remove the roof support.**

13. **Remove the door frame.**

14. **Remove the back wall.**

15. **Remove the optional Cabinet Filter kit (OFKx).**

16. **Remove the side walls.**

17. **Remove the Antenna box extension.**

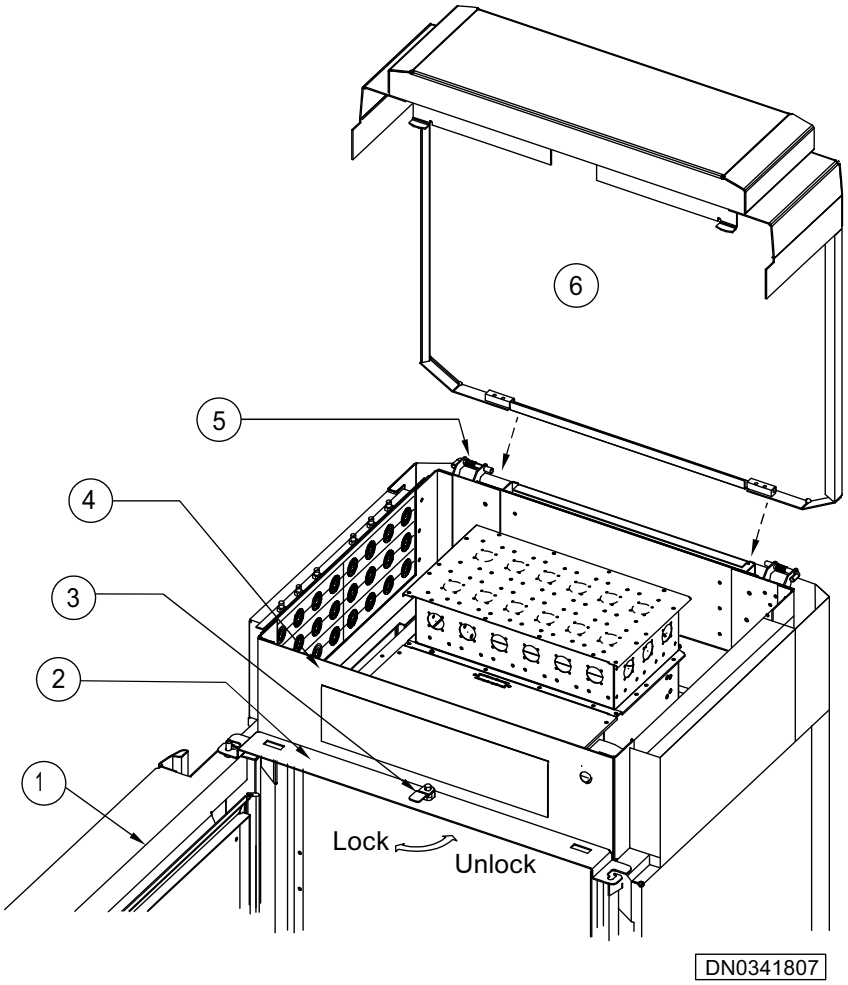
18. **Remove the MIDI to Talk Bridge kit.**

9.2 Removing a roof from the roof support of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of removing core mechanics from Ultrasite EDGE BTS outdoor cabinet.*

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 59. Removing the roof from the roof support assembly

Steps

1. **Unlock the cabinet roof by turning the roof latch on the door frame to the right.**

2. **Detach the roof from the roof support assembly at the spring-loaded hinge pins.**

9.3 Removing a door from UltraSite EDGE BTS outdoor cabinet

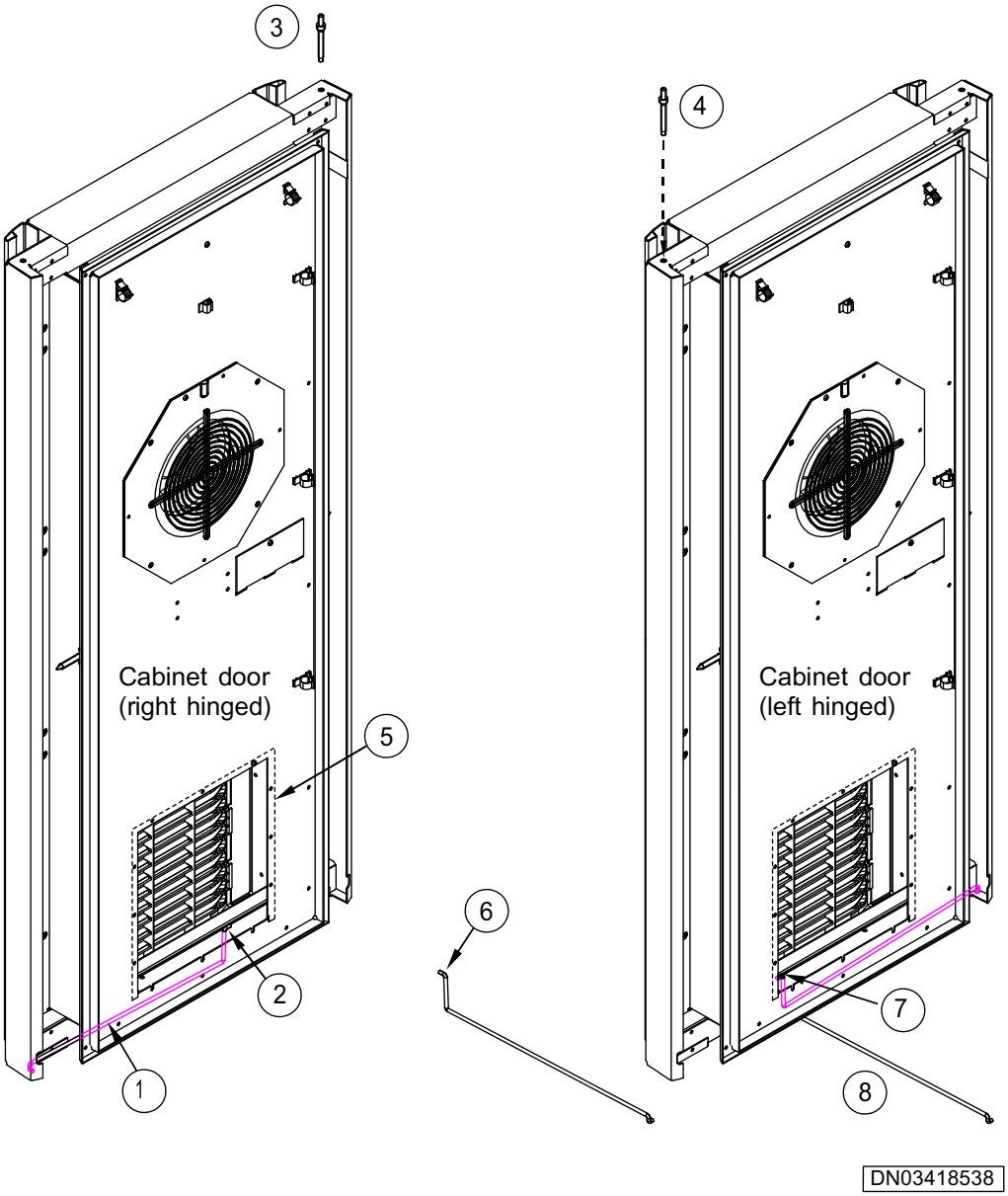
Before you start

Review the *Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet.*

Summary

Note

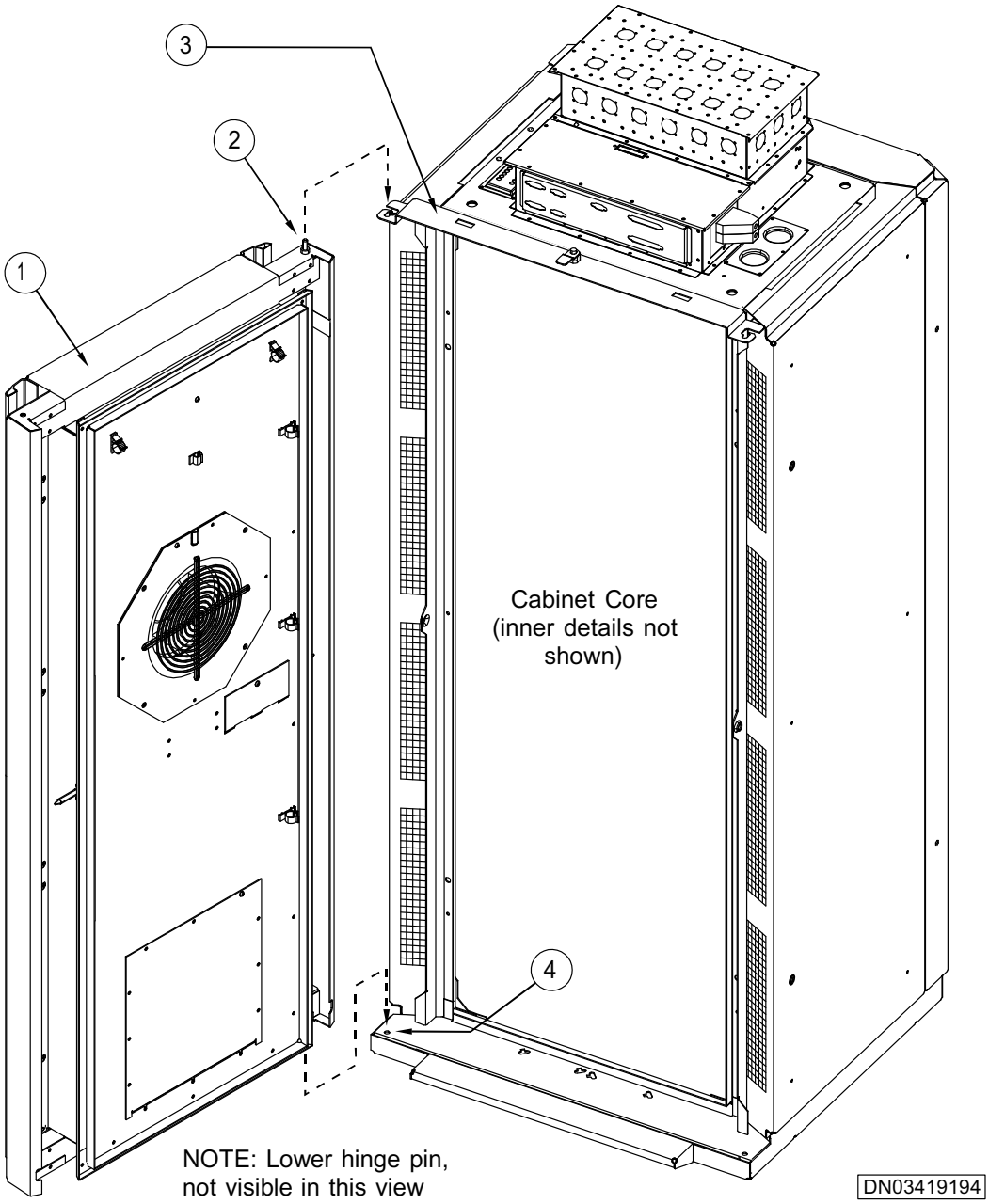
The OAKA door weighs 35 kg (77 lb). A minimum of two installers are required to remove the door.



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

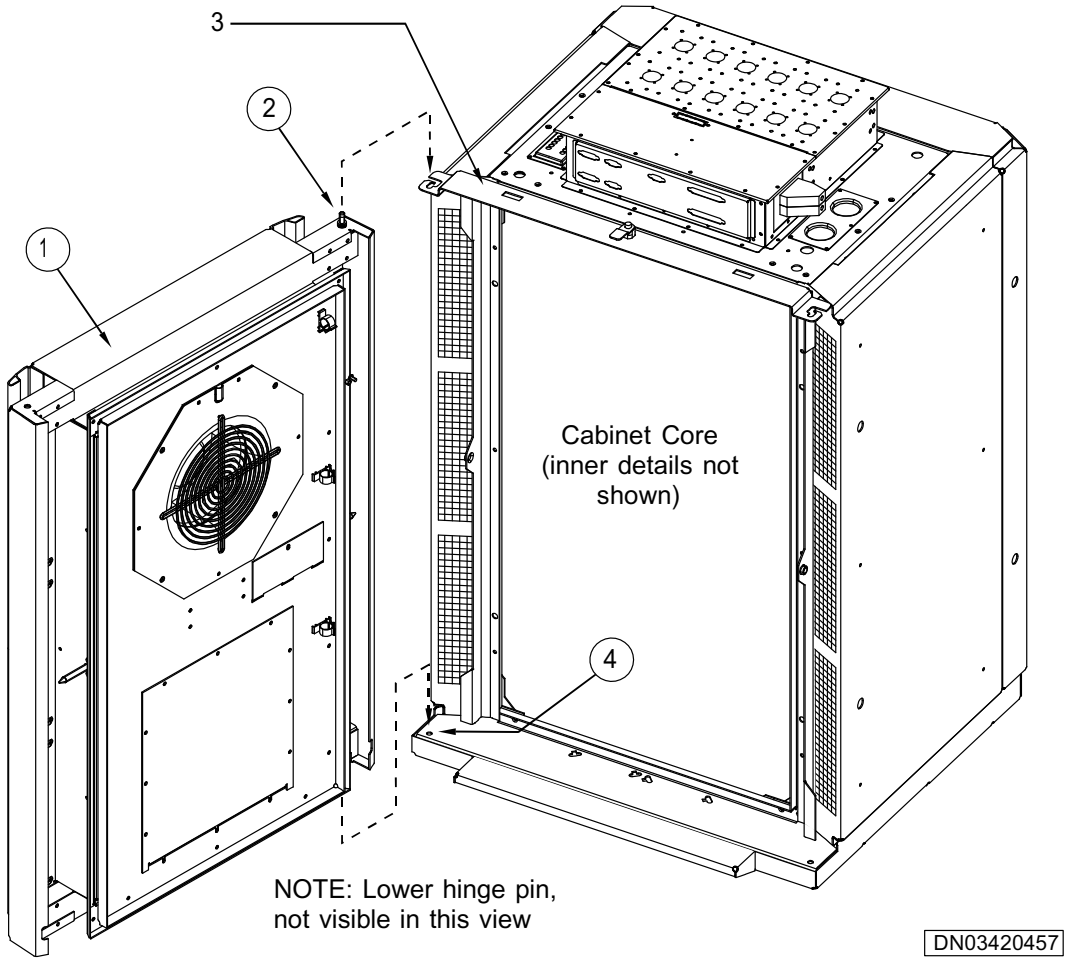
Figure 60. Configuration of OAKA door hinge pins and door stay



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

4	Hole for lower hinge pin

Figure 61. Removing the OAKA door from the cabinet



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

Figure 62. Removing the OAKC door from the cabinet

Steps

1. **Locate the upper and lower hinge pins (upper and lower) and door rod on the door.**

Note

Hinge pins can be installed on the right or left side of the door.

2. **Open the cabinet door.**
3. **Remove the door stay from the bottom of the door.**
4. **Lift and hold the open door up to reduce the tension on the upper and lower hinges.**
5. **With a hammer and long-handle screwdriver, tap out lower hinge pin from the inside.**
6. **Continue to lift the door and slide the lower door hinge pin out of the lower hinge hole in the door frame.**
7. **With a hammer and long-handle screwdriver, tap out the upper hinge pin from the inside.**
8. **Continue to lift and hold the door while you tap out the upper hinge pin from the inside.**
9. **Disengage the upper hinge pin of the door in the slot at the top of the door frame.**
10. **Carefully lower the door until it rests on a flat surface.**

9.4 Removing a roof support from UltraSite EDGE BTS outdoor cabinet

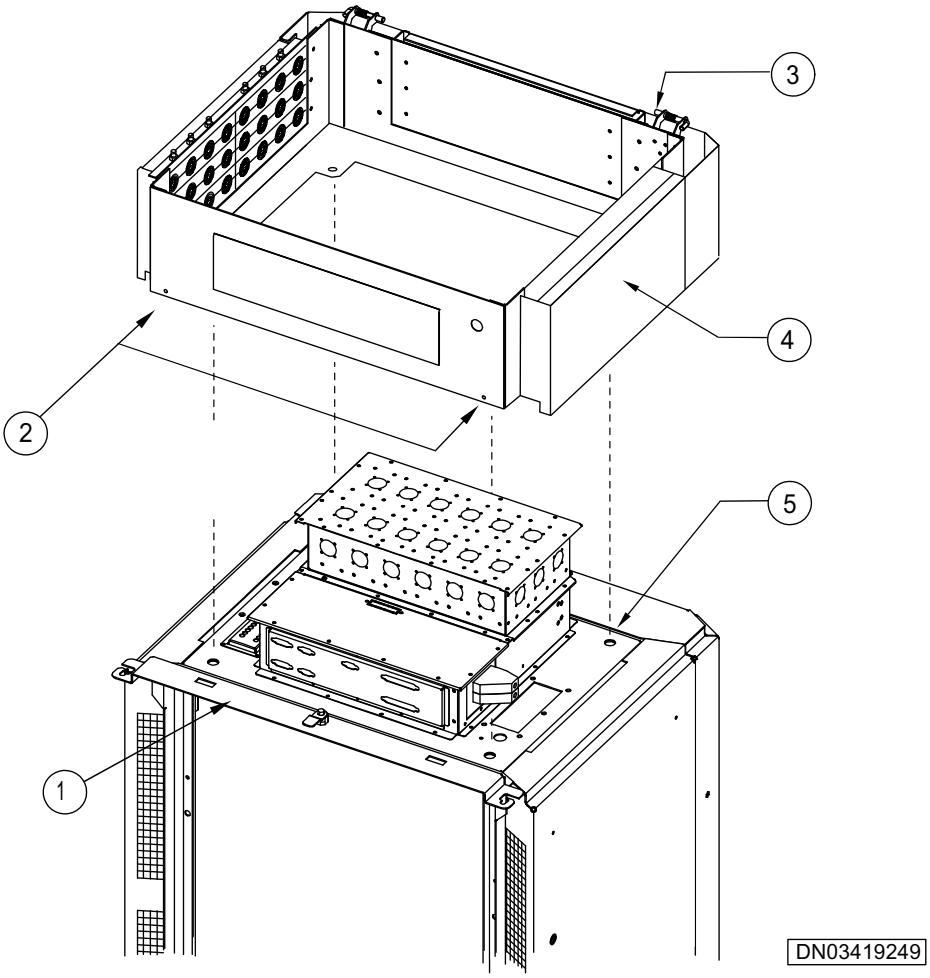
Before you start

Review the *Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet.*

Summary

Note

You can access the roof latch only when the cabinet door is 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 63. Removing the roof support assembly from the cabinet core

Steps

1. **Loosen and remove the two M5 screws from the roof support assembly.**
2. **Loosen and remove the four M12 bolts at the bottom of the roof support assembly.**
3. **Remove the roof support assembly from the top of the cabinet core.**

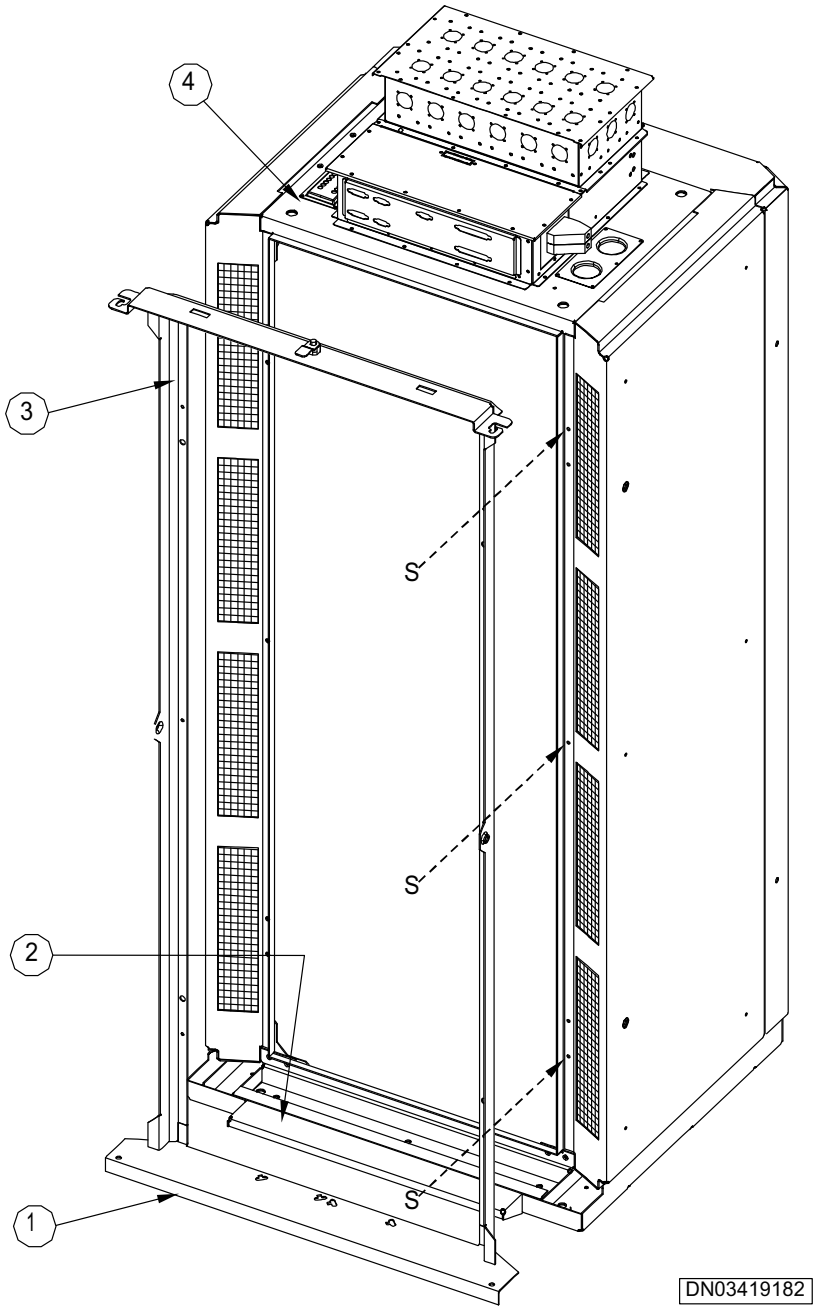
9.5 Removing a door frame from UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet.*

Summary

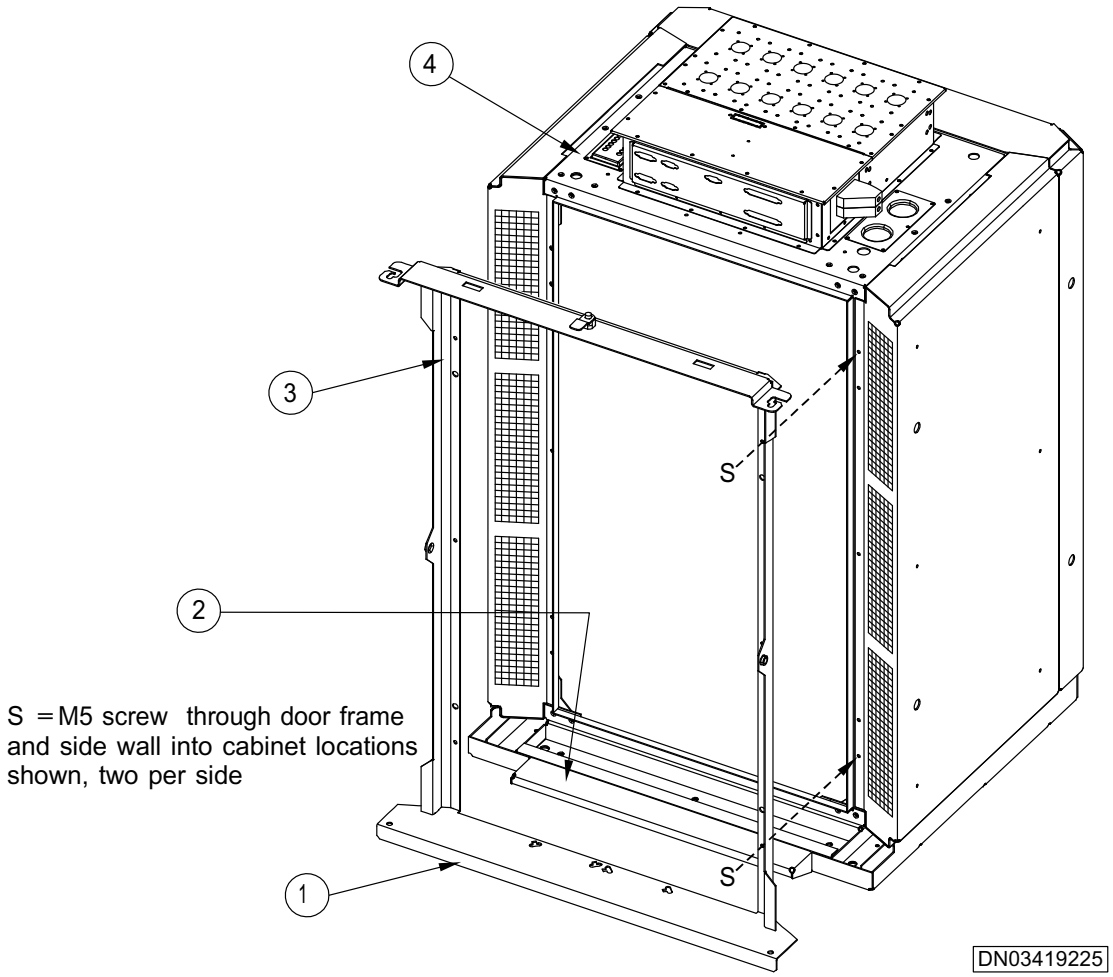
S = M5 screw through door frame and side wall into cabinet locations shown, three per side



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 64. Removing the OAKA door frame from 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 65. Removing the OAKC door frame from the cabinet core

Steps

1. **Loosen all six M5 screws from door frame. There are three on each side.**
2. **Starting at the top of the door frame, tilt the frame away from the cabinet and remove it.**

9.6 Removing a back wall from UltraSite EDGE BTS outdoor cabinet

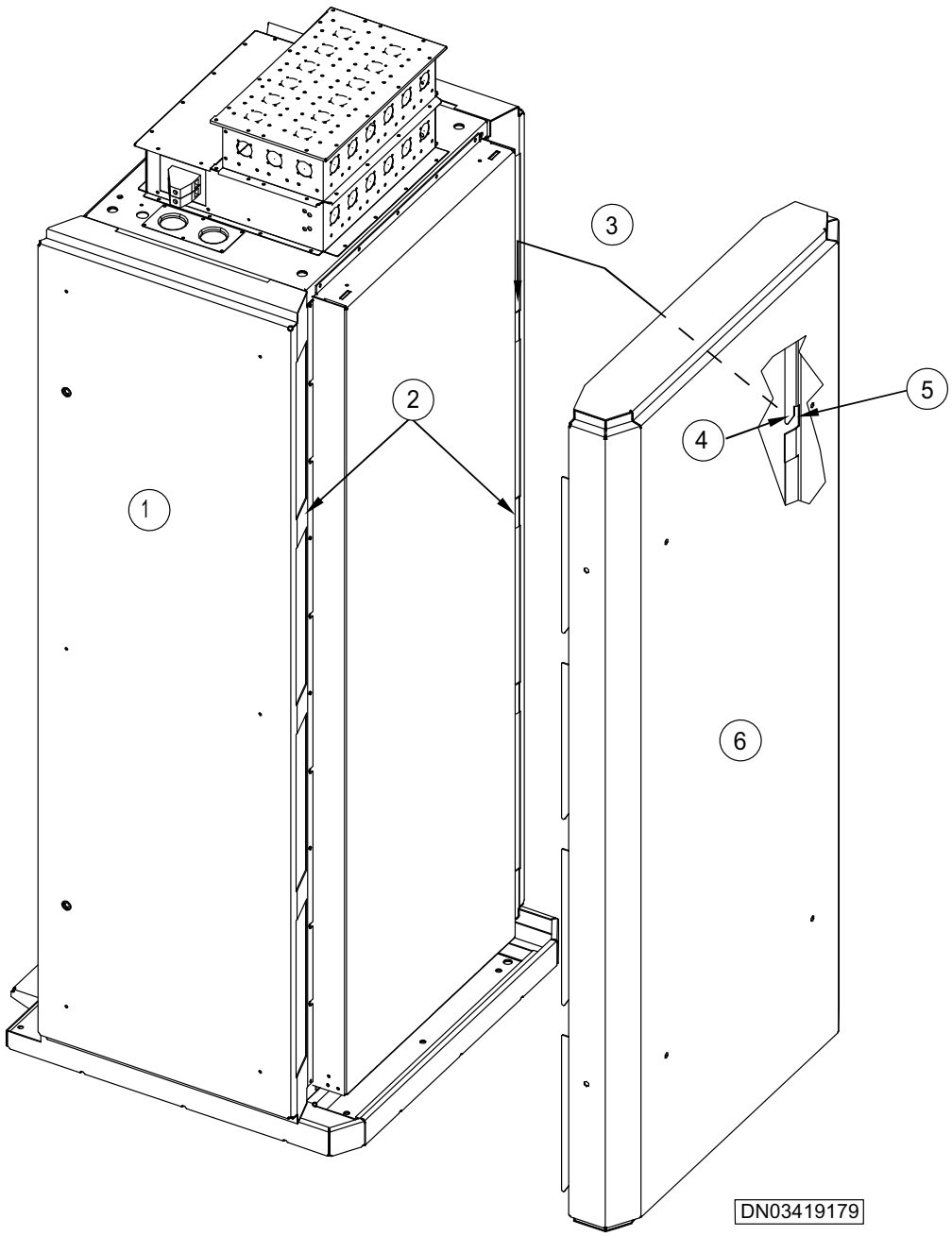
Before you start

Review the *Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet.*

Summary

Warning

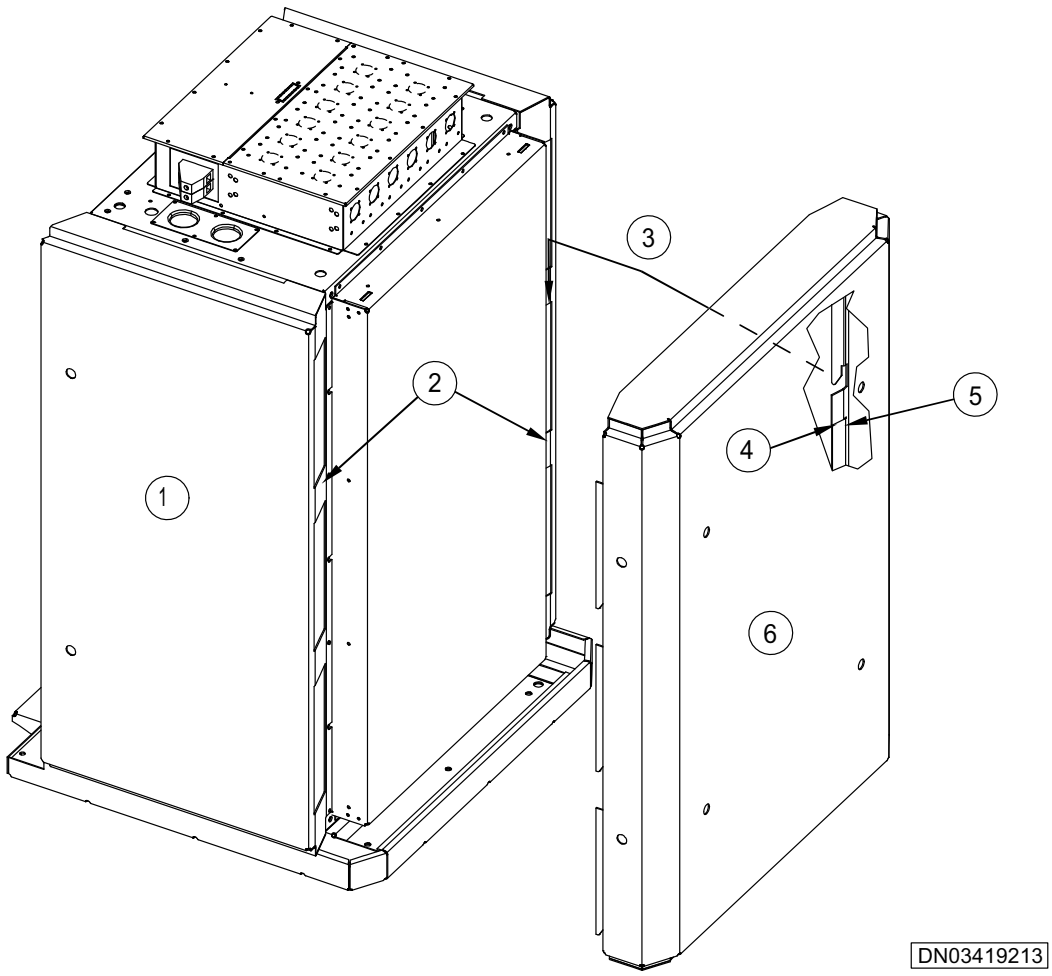
Keep your fingers clear of the metal edges on the top of the cabinet and rear wall when installing the back wall.



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 66. Removing the OAKA back wall from the cabinet core



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 67. Removing the OAKC back wall from the cabinet core

Steps

1. **With the back wall pressed firmly against the cabinet, pull up on the back wall.**

   The metal tabs hook over the struts of the side walls.

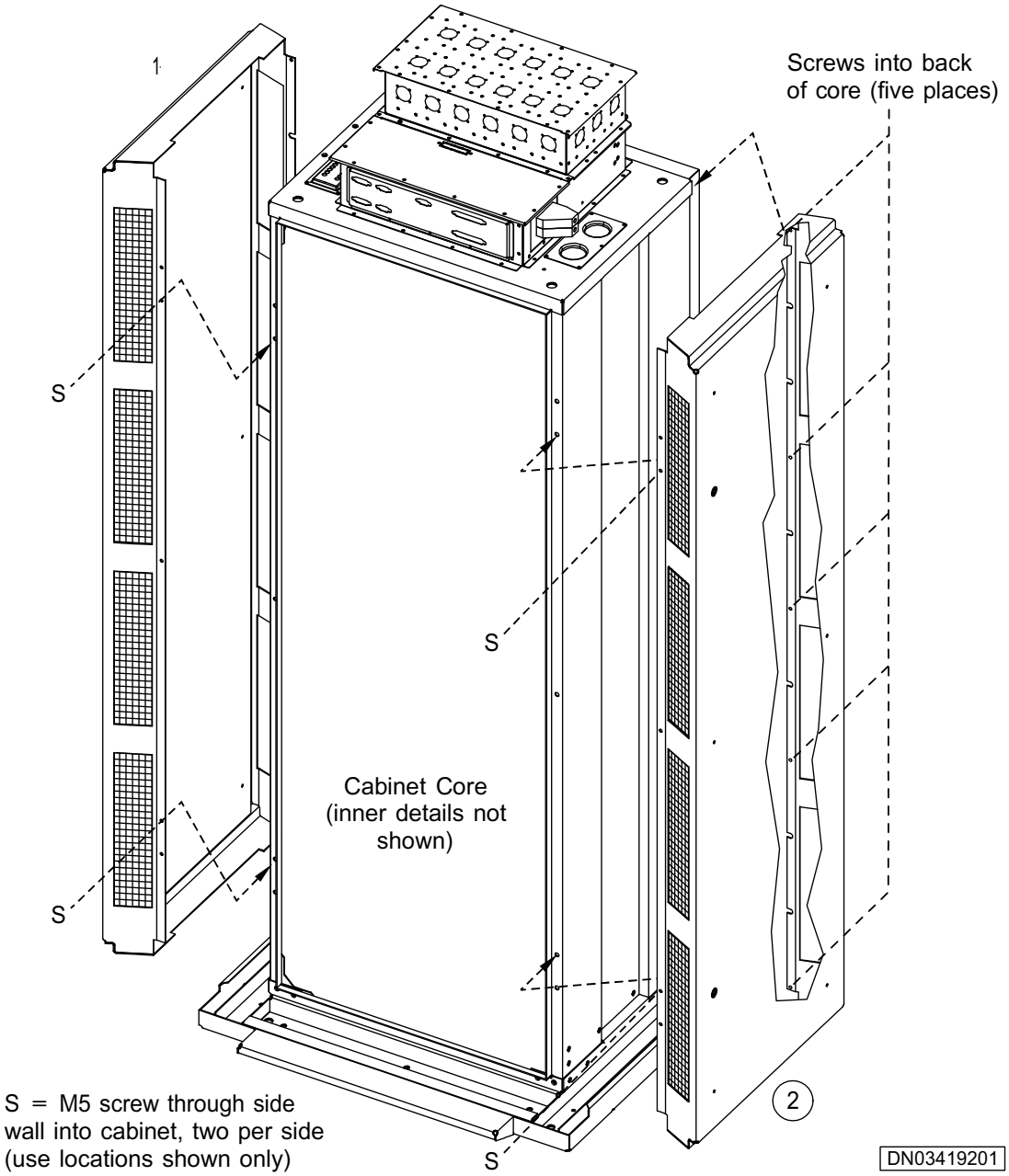
2. **When the metal tabs clear the struts on the side walls, remove the back wall.**

9.7 Removing side walls from UltraSite EDGE BTS outdoor cabinet

Before you start

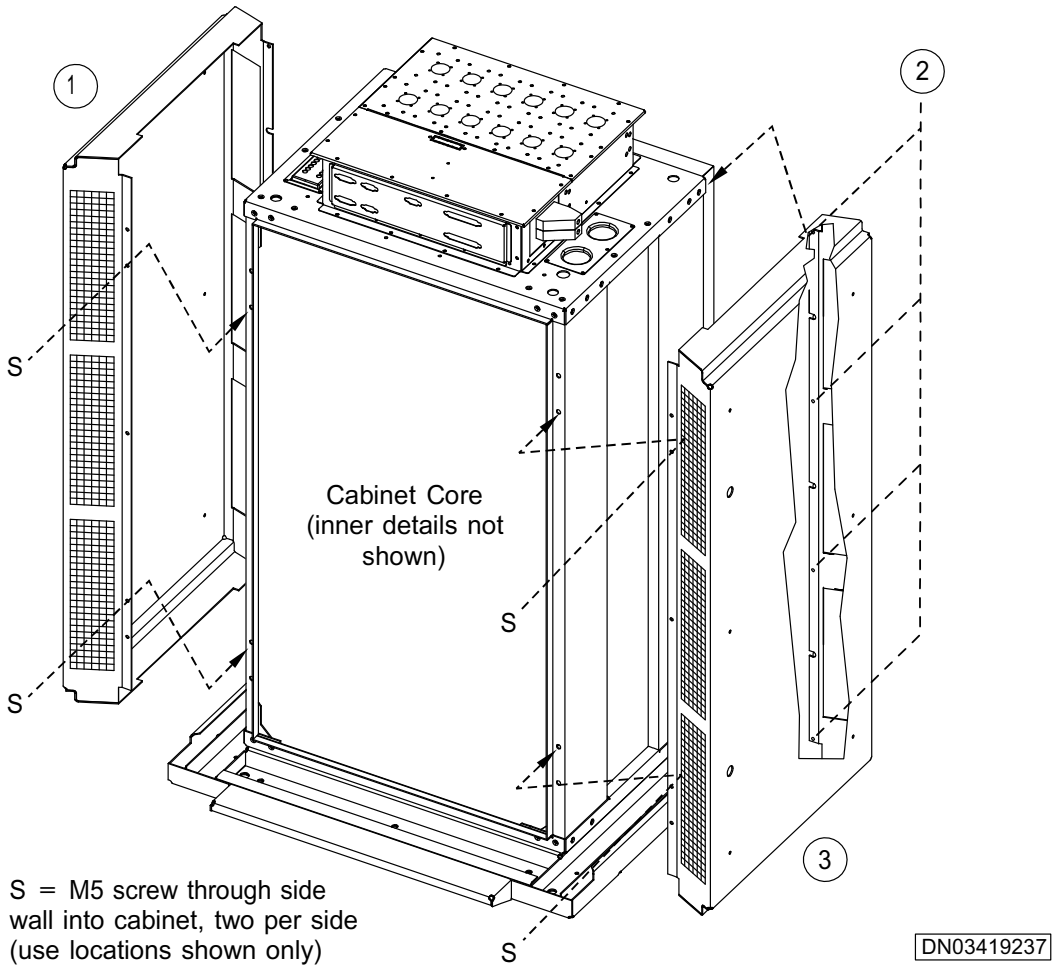
Review the *Overview of removing core mechanics from UltraSite EDGE BTS outdoor cabinet.*

Summary



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

Figure 68. Removing the OAKA side walls from the cabinet core



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

Figure 69. Removing the OAKC side walls from the cabinet core

Steps

1. **Loosen and remove the M5 screws on the front flange of the side wall.**
2. **Loosen and remove the M5 screws along the back edge of the side wall.**
3. **Slide the back wall panel over the rivets in the back of the cabinet core and remove the side wall.**

   The slotted rear flange of the side wall slides over the rivets in the back of the cabinet core.
4. **To remove the remaining side wall from the cabinet core, repeat steps 1 through 3.**

9.8 Removing the document holder of UltraSite EDGE BTS outdoor cabinet

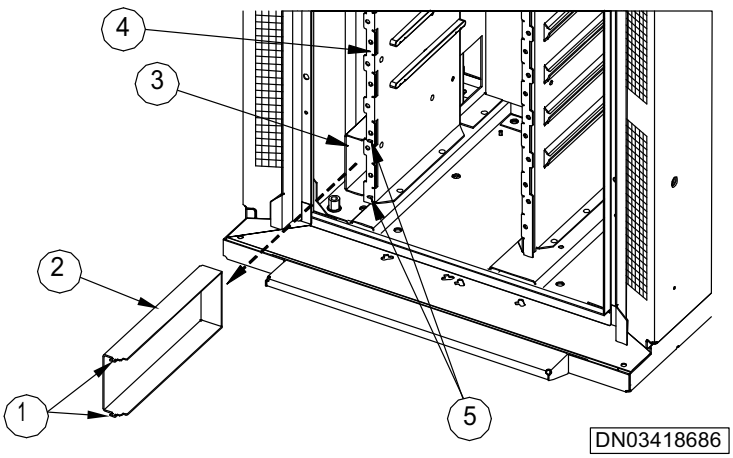
Before you start

Review the *Overview of removing core mechanics from 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.



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 70. Document holder removal

Steps

1. **Locate the document holder in the lower left corner of the cabinet between the unit mounting supports.**
2. **Grasp the document holder and unhook the tabs of the document holder from the slots in the right side unit mounting support.**
3. **Slide the document holder between the unit mounting supports.**
4. **Remove the document holder.**

9.9 Removing the door switch of UltraSite EDGE BTS outdoor cabinet

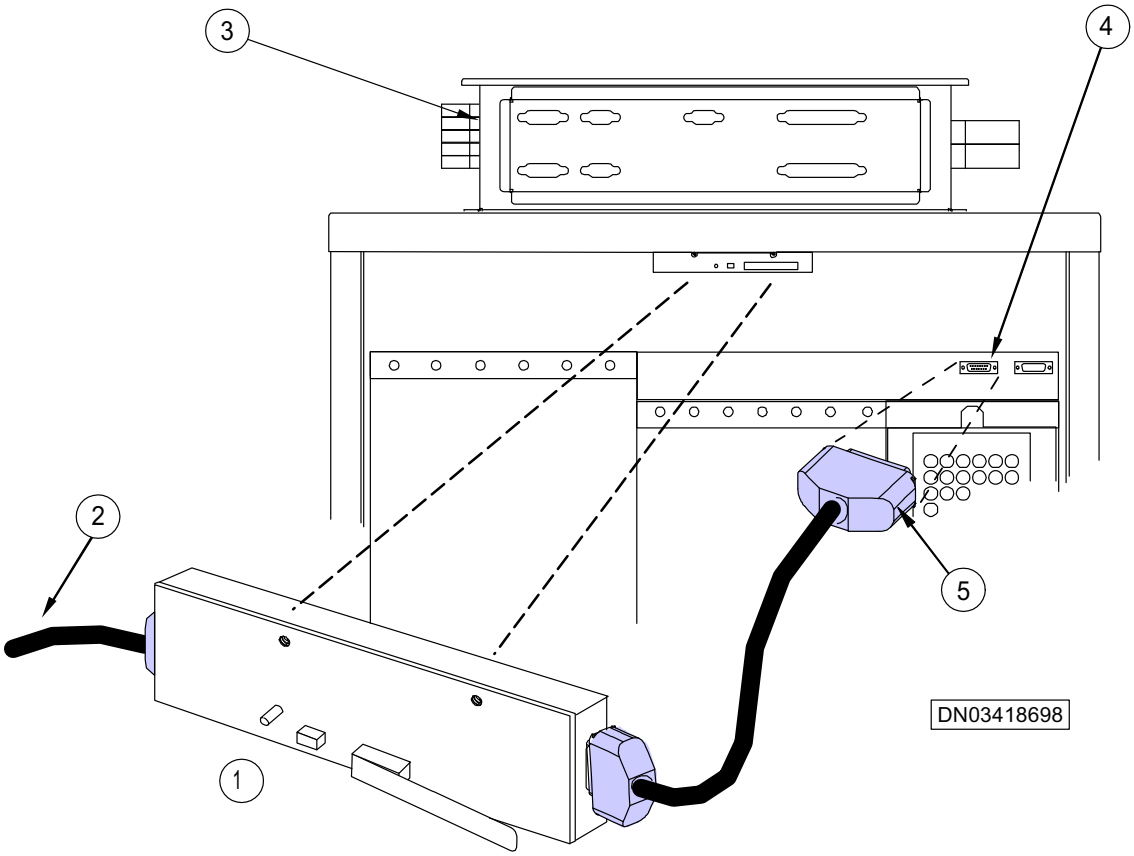
Purpose

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 removing core mechanics from UltraSite BTS EDGE outdoor cabinet.*

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 71. 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.**

9.10 Removing 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.

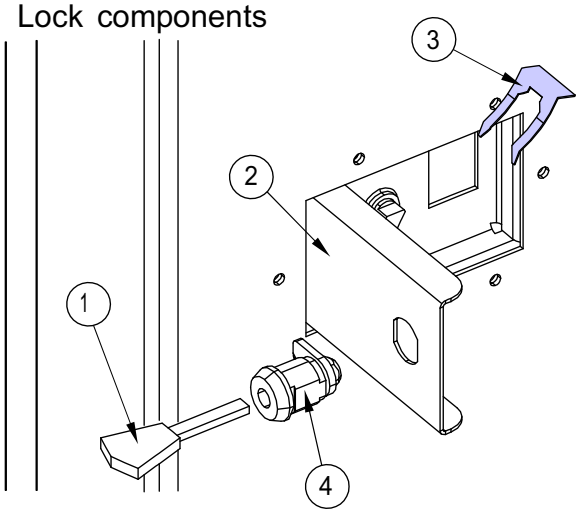
Summary

Note

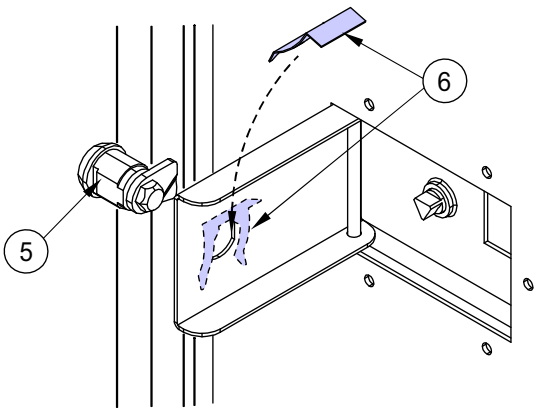
For security reasons, the door lock mechanism is not supplied by Nokia.

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

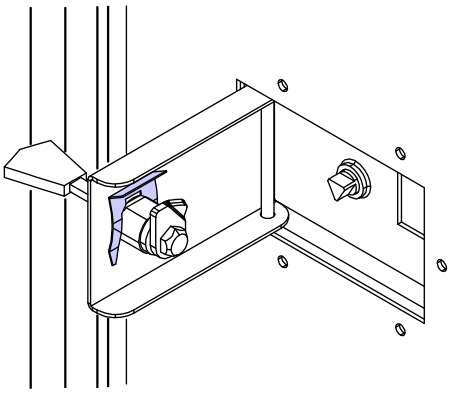
Lock components



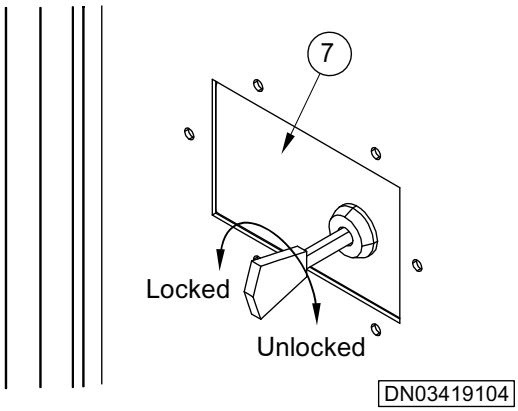
Lock clip installation direction



Lock clip installed



Lock cover closed



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

Figure 72. Removing the door lock mechanism

Steps

1. **With the lock cover open, remove the lock clip.**
2. **Remove the lock from the lock cover.**

9.11 Removing the cable entry kit (OEKx) from UltraSite EDGE BTS outdoor cabinet

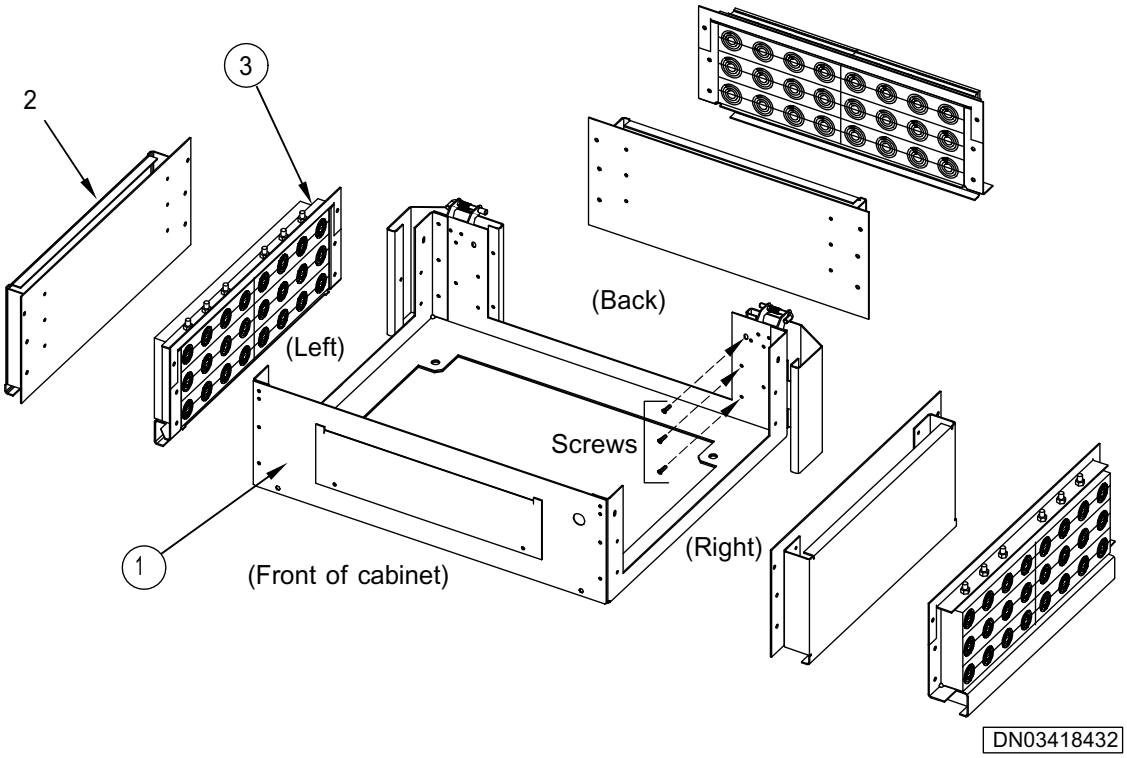
Before you start

Review the *Overview of removing core mechanics from UltraSite BTS EDGE 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 73. Cable entry block removal

Steps

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

5. **Align the mounting holes of the dummy cable entry with the mounting holes in the roof support assembly.**

6. **Replace the six screws and tighten.**

7. **Replace the rubber seal on the roof support assembly.**

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9.12 Removing the door grounding strap of UltraSite EDGE BTS outdoor cabinet

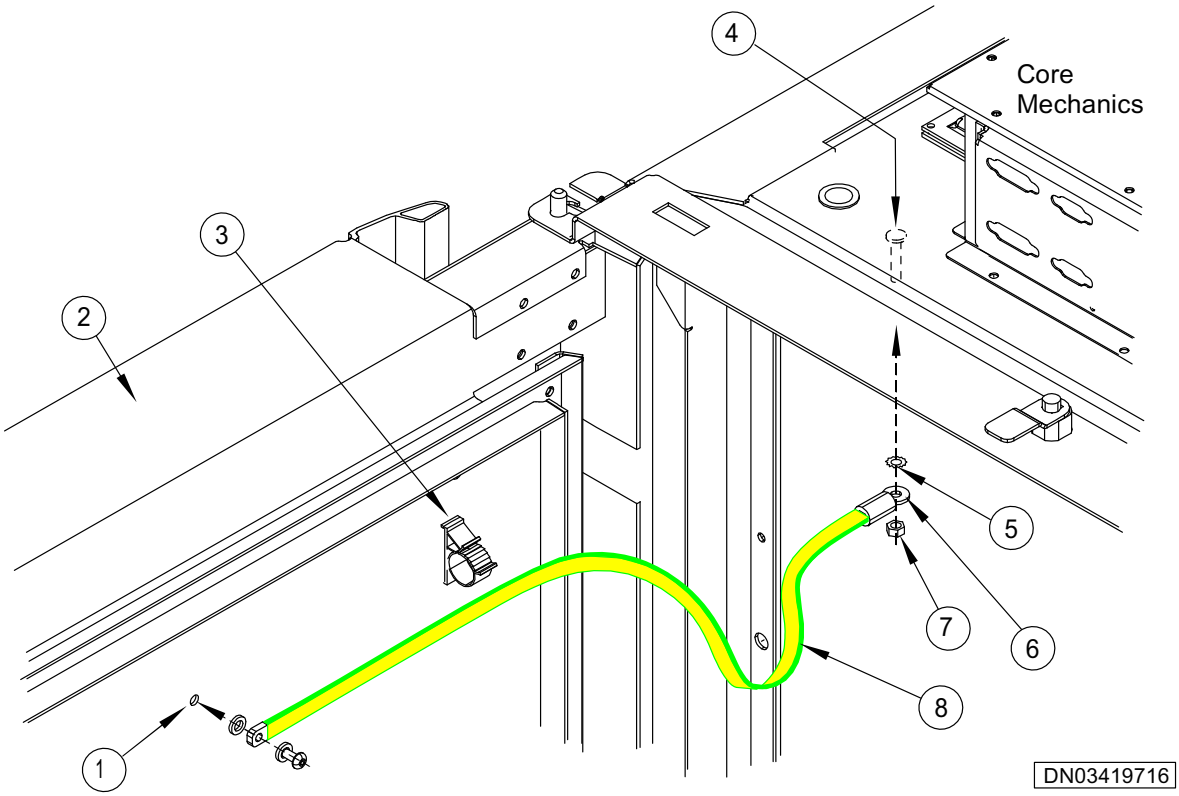
Before you start

Review the *Overview of removing 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.



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 74. Removing OAK door grounding strap

Steps

1. **Loosen and remove the nut from the door cabinet ground stud while holding the star washer in place.**
2. **Slide the end of the door grounding strap lug over the stud.**
3. **Loosen and remove the nut from the cabinet.**
4. **Remove the ground cable from the cabinet and the cabinet door.**

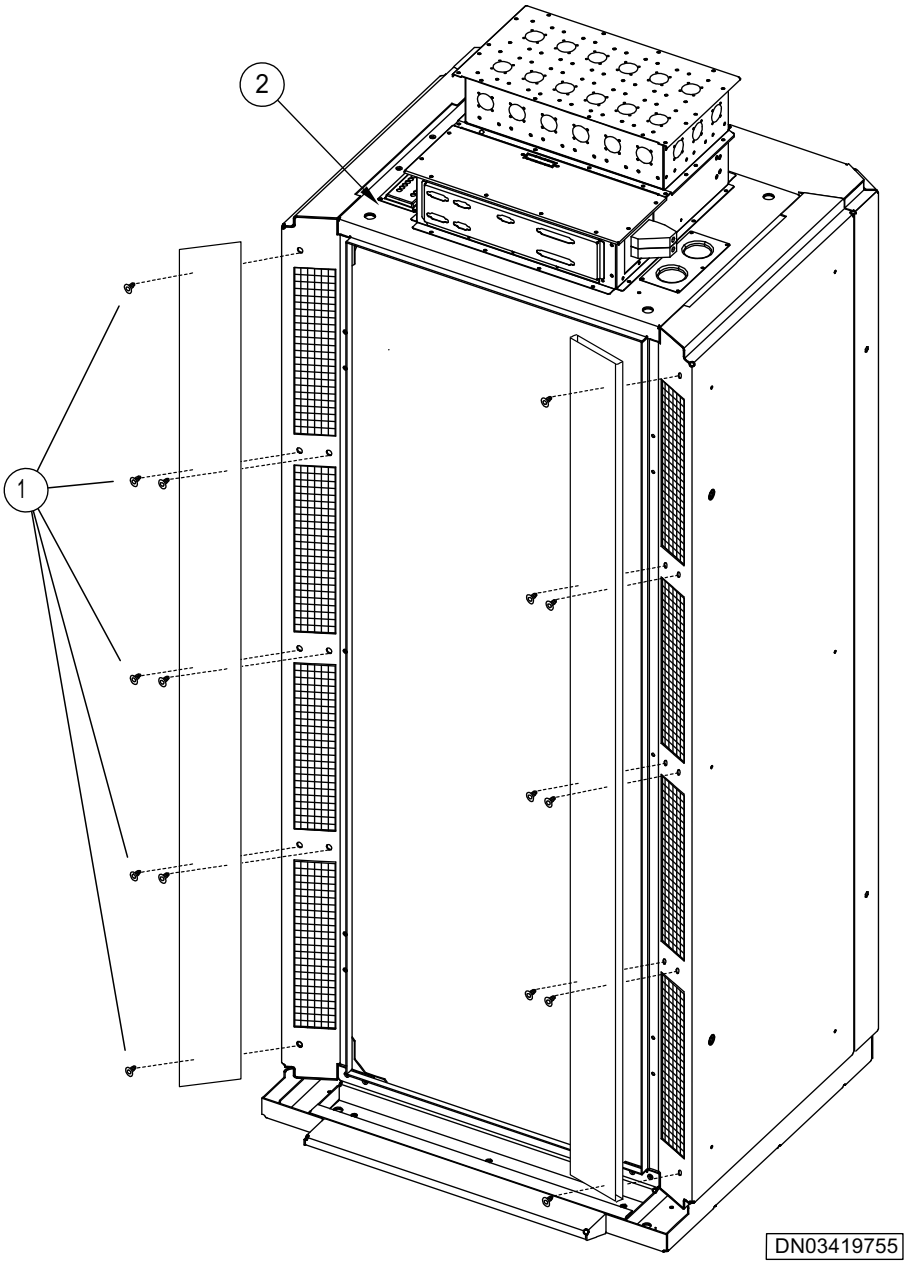
9.13 Removing the cabinet filter kit (OFKx) of UltraSite EDGE BTS outdoor cabinet

Before you start

Review the *Overview of removing core mechanics from 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.



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

Figure 75. Removing OFKx Filter Kit

Steps

1. Remove the self tapping screws from the locations shown.

Note

In newer version cabinets, remove plastic trim fasteners from the locations shown.

2. Remove the filter.

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

10 Removing a UltraSite EDGE BTS cabinet core

10.1 Overview of removing an UltraSite EDGE BTS cabinet core

Before you start

Review the *Overview of removing 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.

Warning

An empty cabinet core weighs a maximum of 70 kg (155 lb). Nokia recommends that a lifting device be used when moving the cabinet core.

Warning

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

Note

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

Steps

1. *If* you are removing an indoor cabinet core from the base,

   Then

   Follow these instructions.

2. *If* you are removing an outdoor cabinet core from the plinth,

   Then

   Follow these instructions.

3. *If* you are removing an OAKx plinth from the base,

   Then

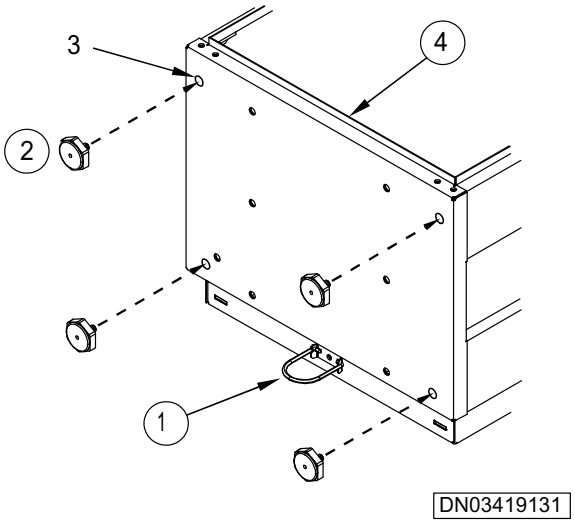
   Follow these instructions.

10.2 Removing an UltraSite EDGE BTS indoor cabinet core from the base

Before you start

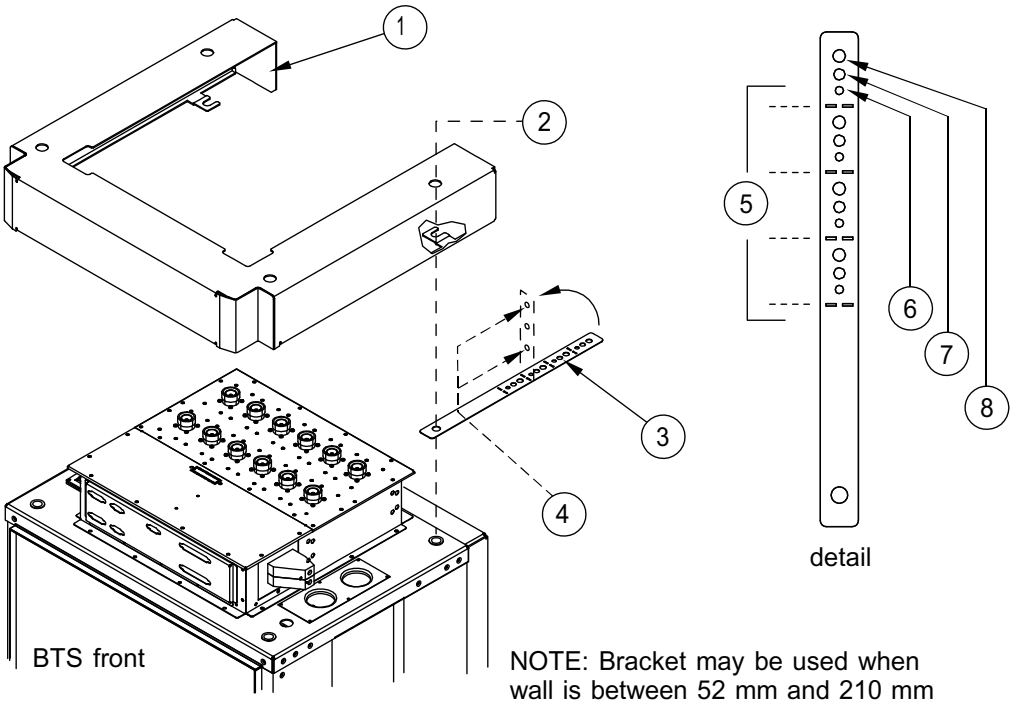
Review the *Overview of removing an UltraSite EDGE BTS cabinet core.* Pay careful attention to all warnings and cautions.

Summary



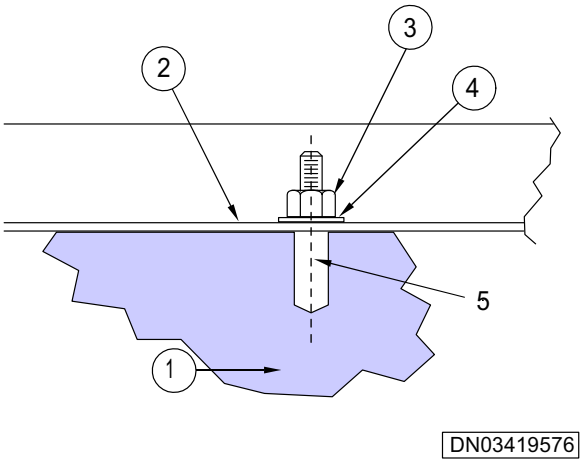
1	Make sure that back stop is angled out of the way
2	Foot (four places)
3	Threaded hole (four places)
4	Cabinet core placed horizontally with front facing upwards

Figure 76. Removing the IAKA feet from the cabinet core



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 77. Removing the wall bracket



1	Mounting base
2	Bottom of cabinet core
3	M10 or M12 nut
4	Washer
5	M10 or M12 anchor bolt

Figure 78. Removing the anchor bolt(s)

Steps

1. *If* the cabinet is attached to the base with a single anchor bolt,

   Then

   Perform the following tasks:

   a. Hold the lower nut under the cabinet floor with an open end wrench while you loosen the upper nut.
   b. Remove upper and lower nuts and the washer and then remove the anchor bolt.
   c. Loosen the four screws holding the feet to the bottom of the cabinet core.
   d. Unscrew the four cabinet feet from the threaded holes.
   e. Reposition the cabinet backstop inward.

f. *Lift the cabinet from the base.*
g. Remove the leveling feet.

2. *If* the cabinet is attached to a wall with a wall bracket,

   Then

   Perform the following tasks:

   a. Loosen and remove the screws from the brackets on each top corner of the cabinet.
   b. Remove the brackets from the cabinet top and replace them with the back corner bolts
   c. Loosen and remove the four screws holding the feet to the bottom of the cabinet core.
   d. Unscrew the four cabinet feet from the threaded holes.
   e. Reposition the cabinet backstop inward.
   f. *Lift the cabinet from the base.*
   g. Remove the leveling feet.

3. *If* the cabinet is in an earthquake zone and attached with anchor bolts,

   Then

   Perform the following tasks:

   a. *Lift the cabinet from the base.*
   b. Loosen and remove the nuts and the washers from the four anchor bolts attached to the base of the cabinet.
   c. Remove the anchor bolts from the anchor holes.

10.3 Removing an UltraSite EDGE BTS outdoor cabinet core from the plinth

Before you start

Review the *Overview of removing an UltraSite EDGE BTS cabinet core.* Pay careful attention to all warnings and cautions.

Summary

Warning

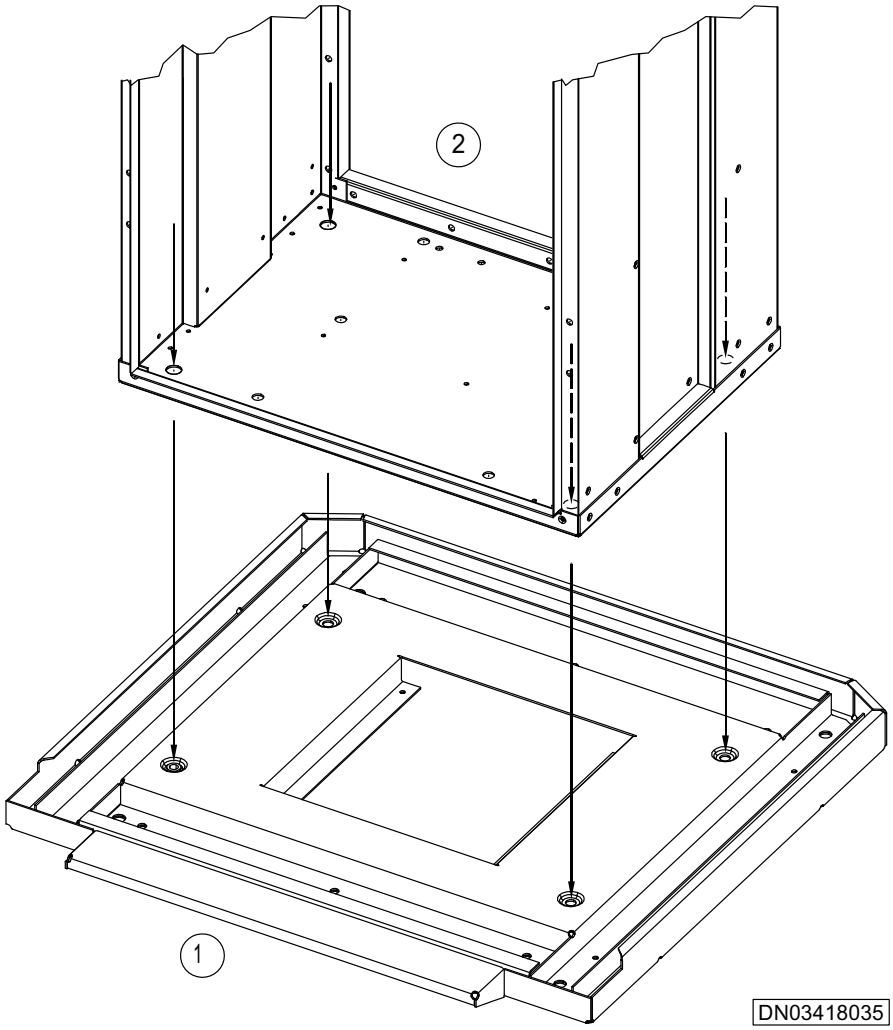
An empty cabinet core weighs a maximum of 70 kg (155 lb). Nokia recommends that a lifting device be used when moving the cabinet core.

Warning

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

Note

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



1	Plinth (Secured to base/slab)
2	Cabinet Core

Figure 79. Removing Outdoor cabinet core from plinth

Steps

1. Loosen the M10 (50 mm) mounting bolts at each corner of the inside bottom of the cabinet core.

2. **Lift the cabinet core.**
3. *If* this is a concrete base,

   Then

   Loosen and remove the four nuts and washers that secure the plinth to the base.
4. *If* a metal mounting frame was used,

   Then

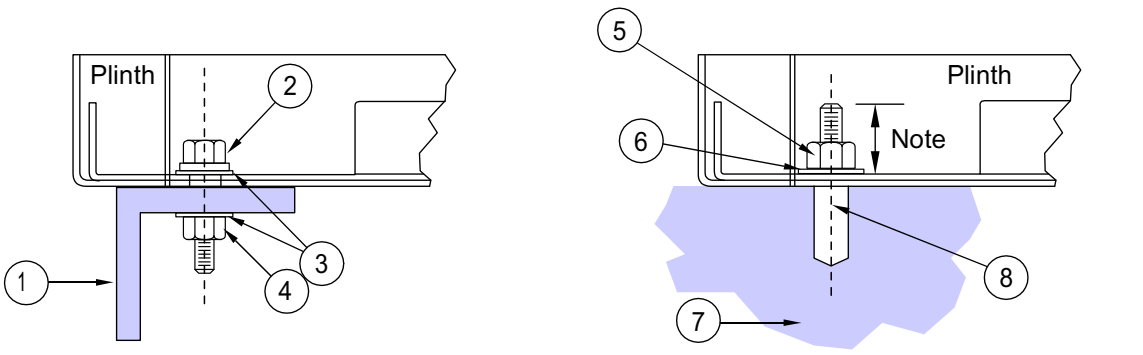
   Loosen and remove the four nuts and eight washers that secure the plinth to the frame.
5. **Remove the four bolts.**
6. **Remove any shims, if found.**
7. **Remove the plinth from the base.**

10.4 Removing an UltraSite EDGE BTS OAKx plinth from the base

Before you start

Review the *Overview of removing an UltraSite EDGE BTS cabinet core.* Pay careful attention to all warnings and cautions.

Summary



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

DN03418047

1	Metal frame
2	M10 or M12 bolt
3	Washers
4	M10 or M12 nut
5	M10 or M12 nut
6	Washers
7	Concrete base
8	M10 or M12 bolt

Figure 80. Removing the plinth from the base

Steps

1. *If* this is a concrete base,

   Then

   Loosen and remove the four nuts and washers that secure the plinth to the base.

2. *If* this is a metal mounting frame installation,

   Then

   Loosen and remove the four nuts and eight washers that secure the plinth to the frame.

3. **Remove the four bolts.**

4. **Remove any shims, if found.**

5. **Remove the plinth from the base.**

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 • BB2A for GSM • BB2E for GSM/EDGE
BCCH	Broadcast Control Channel
BCF	Base Control Function
BER	Bit Error Ratio The ratio of the number of bit errors to the total number of bits transmitted in a given time interval.
BIST	Built-In Self Test A technique that provides a circuit the capability to carry out an implicit test of itself.
BOIx	Base Operations and Interfaces unit
BPxN	Bias Tee without VSWR monitoring • 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 • 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 • 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 Controsl

EC	European Community
EDGE	Enhanced Data rates for Global Evolution
EEC	European Economic Community
EEPROM	Electronically 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 • 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 Specfically, 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 • 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 • 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 A text-based command language with a standardised structure, designed to facilitate direct user control of a system.
MNxx	Masthead Amplifier specific to Nokia UltraSite EDGE Base Station • MNGA for GSM/EDGE 800/900 • MNDA for GSM/EDGE 1800 A band • MNDB for GSM/EDGE 1800 B band

- MNPA for GSM/EDGE 1900 A band
- MNPB for GSM/EDGE 1900 B band
- MNPC for GSM/EDGE 1900 C band

MPT — Ministry of Posts and Telecommunications

Telecommunications regulatory agency of Great Britain.

MS — Mobile Station

User equipment which uses a radio connection, and which can be used in motion or at unspecified points. This is usually a mobile phone.

MSC — Mobile Switching Centre

The mobile network element which performs the switching functions in its area of operation, and controls cooperation with other networks.

MTBF — Mean Time Between Failure

NCRP — National Council on Radiation Protection and Measurements

NCU — Node Control Unit

NEBS — Network Equipment Building Systems

NED — Nokia Electronic Documentation

NMS — Network Management System

O&M — Operation and Maintenance

OAKB — Cable entry kit for BTS co-siting

OAKx — Outdoor Application Kit for Nokia UltraSite EDGE Base Station

- OAKA for UltraSite Outdoor cabinet
- OAKC for UltraSite Midi Outdoor cabinet
- OAKD for UltraSite Midi Outdoor to Talk-family Co-siting

OBKA — Outdoor Bridge Kit

OCXO	Oven Controlled Crystal Oscillator An oscillator in which the crystal and critical circuits are temperature-controlled by an oven.
OEKA	Outdoor (cable) Entry Kit
OFKA	Outdoor Air Filter Kit
OFKC	MIDI Outdoor Air Filter Kit
OMU	Operation and Maintenance Unit
OMUSIG	OMU Signalling
OVP	Over-Voltage Protection
PC	Personal Computer
PCB	Printed Circuit Board
PCM	Pulse Code Modulation
PE	Protective earthing (grounding) See GND and Grounding.
PFC	Power Factor Correction
PLL	Phase-Locked Loop
Point-to-point	Transmission between two fixed points
PSM	Power System Management
PWM	Pulse Width Modulation
PWSx	AC/DC Power Supply unit • 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 • 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 • 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) The direction of transmission in which the mobile station is the transmitting facility and the BTS is the receiving facility.

- 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
Terrestrial Radio Access Network

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.

UPS Uninterruptible Power Supply

VC Virtual Channel

VCO Voltage Controlled Oscillator

An oscillator for which a change in tuning voltage results in a predetermined change in output frequency.

VLL Line-to-Line Voltage

VP Virtual Path

The unidirectional transport of ATM cells belonging to virtual channels that are associated by a common identifier value.

VPCI Virtual Path Connection Identifier

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.

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

- 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

- 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^2C-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.

Sectored 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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