



DBS3900 WiMAX

V300R002

Site Maintenance Guide

Issue	01
Date	2009-11-30

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About This Document

Overview

After completing the deployment and acceptance test of the BTS3702E, Huawei conducts routine maintenance to ensure that the BTS3702E operates in its optimum capacity.

The document describes the tasks of the routine hardware maintenance of the BTS3702E, including the maintenance of the power supply system and grounding system, the maintenance of the BTS3702E main equipment, and the maintenance of the cables. In addition, the document provides guidance for the replacement of modules and cables.

Version

The following table lists the product version related to this document.

Product Name	Version
BTS3702E	V300R002

Intended Audience

This document is intended for:

- System engineers
- Site maintenance personnel

Change History

Version	Change History
01(2009-11-25)	This is the initial release.

Organization

1 Preparations for Site Maintenance

The preparations for the maintenance of the BTS3702E site include obtaining site information, selecting maintenance tasks, and preparing maintenance tools and spare parts.

2 Tasks of Routine Hardware Maintenance

The tasks of the routine hardware maintenance of the BTS3702E include the maintenance of the power supply system and grounding system, the maintenance of the main equipment of the BTS3702E, and the maintenance of the cables.

3 Powering On and Powering Off the BTS3702E

When maintaining the BTS3702E, you need to power on and power off the BTS3702E. During power-on, check the power supply voltage of the BTS3702E and the states of the indicators on the BTS3702E. Power off the BTS3702E on a regular basis or in an emergency according to actual requirements.

4 Replacing the BTS3702E Modules

The BTS3702E is an integrated outdoor micro BTS of Huawei WiMAX Micro. Replacing the BTS3702E modules disrupts all services carried by this BTS.

5 Replacing the Optical Modules

The optical module provides an interface for photoelectric conversion, which enables the transmission between the BTS3702E and other equipment through the optical fiber. It is used to connect the ASN-GW or cascading connections between the BTSs. Remove the optical fibers first when replacing the optical modules. This disrupts the transmission signal.

6 Replacing the Power Modules

The power module is used to shift the power level to enable the transmission between the BTS3702E and other equipment through Ethernet cables. It is used to connect the ASN-GW or cascading connections between the BTSs. Remove the Ethernet cables first when replacing the power modules. This disrupts the transmission signal .


7 Replacing the BTS3702E Cables





When the BTS3702E cables are faulty, you need to replace them promptly. The cables that can be replaced are power cables, signal cables, transmission cables, and RF jumpers.

Conventions

Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.

Symbol	Description
 WARNING	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
 CAUTION	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
 TIP	Indicates a tip that may help you solve a problem or save time.
 NOTE	Provides additional information to emphasize or supplement important points of the main text.

General Conventions

The general conventions that may be found in this document are defined as follows.

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
Boldface	Names of files, directories, folders, and users are in boldface . For example, log in as user root .
<i>Italic</i>	Book titles are in <i>italics</i> .
Courier New	Examples of information displayed on the screen are in Courier New.

Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	The keywords of a command line are in boldface .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[]	Items (keywords or arguments) in brackets [] are optional.
{ x y ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[x y ...]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x y ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.

Convention	Description
[x y ...]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
Boldface	Buttons, menus, parameters, tabs, window, and dialog titles are in boldface . For example, click OK .
>	Multi-level menus are in boldface and separated by the ">" signs. For example, choose File > Create > Folder .

Keyboard Operations

The keyboard operations that may be found in this document are defined as follows.

Format	Description
Key	Press the key. For example, press Enter and press Tab .
Key 1+Key 2	Press the keys concurrently. For example, pressing Ctrl+Alt+A means the three keys should be pressed concurrently.
Key 1, Key 2	Press the keys in turn. For example, pressing Alt, A means the two keys should be pressed in turn.

Mouse Operations

The mouse operations that may be found in this document are defined as follows.

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

1 Preparations for Site Maintenance

The preparations for the maintenance of the BTS3702E site include obtaining site information, selecting maintenance tasks, and preparing maintenance tools and spare parts.

Obtaining the Site Information

Before maintaining the BTS3702E site, familiarize yourself with the following information about the BTS:

- Unsolved faults and alarms of the site
- Hardware configuration of the site
- Local environment
- Spare parts

Selecting Maintenance Items

According to the specific condition of the BTS3702E site, you should select proper maintenance tasks, including:

- Maintaining the power supply system and grounding system of the BTS3702E
- Maintaining the BTS3702E main equipment
- Maintaining the cables of the BTS3702E

Arranging for Tools and Spare Parts

Choose the corresponding tools and spare parts according to the site information and maintenance tasks of the BTS3702E.

The site maintenance tools are:

- The frequency test devices include a signal generator, a spectrum analyzer, and corresponding connectors and cables.
- The power test devices are used to test and analyze the output power of the BTS3702E. The power meter is often used.
- The antenna and feeder test equipment is used to locate faults and to measure the standing wave ratio, return loss, and cable insertion loss. The SiteMaster is often used.
- Other materials

- Other tools and materials are the multimeter, ESD wrist strap or gloves, screwdriver, ESD box or bag, dust-free cloth, wrench, tape, diagonal plier, and plier.
- Ethernet cables for commissioning.
- Local maintenance terminal.
- Spare parts.

 **NOTE**

Arrange for the tools and components according to the actual conditions of the specific replacement.

2 Tasks of Routine Hardware Maintenance

About This Chapter

The tasks of the routine hardware maintenance of the BTS3702E include the maintenance of the power supply system and grounding system, the maintenance of the main equipment of the BTS3702E, and the maintenance of the cables.

[2.1 Maintenance of Power Supply System and Grounding System of the BTS3702E](#)

This section describes the maintenance tasks, maintenance frequency, operation guidance, and reference standard of the power supply system and grounding system of the BTS3702E.

[2.2 Maintenance of BTS3702E Main Equipment](#)

The maintenance tasks of the BTS3702E equipment include checking the surface of the equipment, cleanness of the equipment, and indicators.

[2.3 Maintenance of Cables](#)

The maintenance tasks of cables include checking the signal cables, the Ethernet cables, the optical fibers, the connectors, and the sockets.

2.1 Maintenance of Power Supply System and Grounding System of the BTS3702E

This section describes the maintenance tasks, maintenance frequency, operation guidance, and reference standard of the power supply system and grounding system of the BTS3702E.

Table 2-1 lists the maintenance tasks of the power system and grounding system of the BTS3702E.

Table 2-1 Maintenance tasks for the power supply system and grounding system of the BTS3702E

Item	Frequency	Operation	Standard
Power cable	Monthly	Carefully check the connections of power cables.	The power cables are not aging, and there is no corrosion on the joints.
Voltage	Monthly	Measure the voltage of the power supply using a multimeter.	Operating voltage range: -36 V DC to -57 V DC.
PGND cable	Monthly	Check whether the PGND cable and ground bar are connected securely.	The joints are secure and corrosion free.
Earth resistance	Monthly	Measure the earth resistance using an electric earth resistance tester and record the measurement.	The grounding resistance is lower than 10 ohms.

2.2 Maintenance of BTS3702E Main Equipment

The maintenance tasks of the BTS3702E equipment include checking the surface of the equipment, cleanness of the equipment, and indicators.

Table 2-2 lists the maintenance tasks of the BTS3702E.

Table 2-2 Maintenance tasks of the BTS3702E

Item	Frequency	Operation	Standard
Equipment surface	Quarterly	Check whether the surface of the equipment is damaged and whether the label of the equipment is legible.	-
Equipment cleanliness	Quarterly	Check whether the equipment is clean.	-
Indicators	Monthly	Check whether the indicators on the equipment are functional.	For details on the meanings of the indicators, see 3.1 Powering On the BTS3702E .

2.3 Maintenance of Cables

The maintenance tasks of cables include checking the signal cables, the Ethernet cables, the optical fibers, the connectors, and the sockets.

[Table 2-3](#) lists the maintenance items for the cables.

Table 2-3 Maintenance items for cables

Item	Frequency	Operation	Standard
Signal cables	Annually	Carefully check the connection of the signal cables.	<ul style="list-style-type: none"> • The signal cables are reliably connected. • The signal cables are intact. • The cables can be clearly identified through the labels.
Ethernet cables	Annually	Carefully check the connection of the Ethernet cables.	<ul style="list-style-type: none"> • The Ethernet cables are reliably connected. • The Ethernet cables are intact. • The hubs are intact. • The cables can be clearly identified through the labels.

Item	Frequency	Operation	Standard
Optical fibers	Annually	Check the connections of the optical fibers and optical modules.	<ul style="list-style-type: none"> ● The optical fibers are intact and reliably connected. ● The optical modules are clean and connected properly. ● The winding pipes for the optical fiber are intact. ● The cables can be clearly identified through the labels.
RF jumper	Annually	Carefully check the connection of the RF jumper.	<ul style="list-style-type: none"> ● The RF jumpers are intact and reliably connected. ● The waterproof of the RF jumper connections is perfect. ● The cables can be clearly identified through the labels.
Connectors and sockets	Quarterly	Check whether there is any dust or greasy dirt on the insulators of the connectors and sockets.	The insulators are clean.

3 Powering On and Powering Off the BTS3702E

About This Chapter

When maintaining the BTS3702E, you need to power on and power off the BTS3702E. During power-on, check the power supply voltage of the BTS3702E and the states of the indicators on the BTS3702E. Power off the BTS3702E on a regular basis or in an emergency according to actual requirements.

[3.1 Powering On the BTS3702E](#)

The power supply input of the BTS3702E is -48 V DC. After powering on the BTS3702E, determine the working state of the BTS3702E according to the status of the indicators.

[3.2 Powering Off the BTS3702E](#)

You can power off the BTS3702E in a normal situation or in an emergency.

3.1 Powering On the BTS3702E

The power supply input of the BTS3702E is -48 V DC. After powering on the BTS3702E, determine the working state of the BTS3702E according to the status of the indicators.

Prerequisite

- The installation of the hardware and cables of the BTS3702E is finished.
- The range of the power supply input of the BTS3702E is from -36 V DC to -57 V DC.

Context



CAUTION

The BTS3702E must be powered on within 24 hours after being unpacked or after being powered off for maintenance.

Procedure

Step 1 Turn on the power switch of the BTS3702E.



DANGER

After the BTS3702E is powered on, do not look directly at the beam from the optical module without taking the necessary eye-protection measures.

Step 2 Wait for three to five minutes and then check the status of the indicators on modules of the BTS3702E. [Table 3-1](#) lists the meanings of the indicators.

Table 3-1 Meanings of the BTS3702E indicators

Indicator	Color	State	Description
RUN	Green	On	There is power input, but the board is faulty.
		Off	There is no power input, or the board is faulty.
		Blinking at 4 Hz (on for 0.125s and off for 0.125s)	The board is being loaded.
		Blinking at 0.5 Hz (on for 1s and off for 1s)	The board is working properly.

Indicator	Color	State	Description
ALM	Red	On	An alarm is generated, and the board needs to be replaced.
		Blinking at 0.5 Hz (on for 1s and off for 1s)	An alarm is generated, but you cannot determine that the board needs to be replaced. This alarm may be generated by a faulty board or port.
		Off	No fault.
TX_ACT	Green	On	The board is working properly.
		Blinking at 0.5 Hz (on for 1s and off for 1s)	The board is operating, but the antenna port transmits no power.
SFP0	Red and green	Green and on	The link is functional.
		Green and blinking	Data can be transmitted and received over the Ethernet port.
		Red and on	An alarm is generated, indicating that an exception occurs when the optical module receives signals.
		Off	The SFP module is not in position or is powered off.
SFP1	Red and green	Green and on	The link connected to the Ethernet port is functional.
		Green and blinking	Data can be transmitted and received over the Ethernet port.
		Red and on	An alarm is generated, indicating that exception occurs when the optical module receives signals.
		Off	The SFP module is not in position or is powered off.
VSWR	Red	Off	No alarm is generated.
		On	An alarm is generated on only the A port of the antenna subsystem.

Indicator	Color	State	Description
		Blinking at 4 Hz (on for 0.125s and off for 0.125s)	An alarm is generated on both the A and B ports of the antenna subsystem.
		Blinking at 0.5 Hz (on for 1s and off for 1s)	An alarm is generated on only the B port of the antenna subsystem.

Step 3 Proceed with the next step according to the status of the indicator.

If...	Then...
The modules of the BTS3702E work properly.	The power-on procedure is complete.
The BTS3702E is faulty.	Record the faulty status, turn off the power switch, rectify the fault, and then go to Step 1 .

---End

3.2 Powering Off the BTS3702E

You can power off the BTS3702E in a normal situation or in an emergency.

Procedure

Step 1 Determine the method for powering off the BTS3702E according to the actual situation.

If...	Then...
The BTS3702E needs to be powered off when you swap the equipment or anticipate a territorial power outage.	Power off the BTS3702E in a normal situation by referring to Step 2 .
The BTS3702E needs to be powered off in an emergency, such as fire, smoke, or water immersion,	Power off the BTS3702E in an emergency by referring to Step 3 .

Step 2 Set the circuit breaker on the auxiliary power supply equipment of the BTS3702E to OFF.

Step 3 Cut off the external input power supply for the auxiliary power supply equipment of the BTS3702E. If time permits, ensure that the circuit breaker on the auxiliary power supply equipment of the BTS3702E is set to OFF.

---End

4 Replacing the BTS3702E Modules

The BTS3702E is an integrated outdoor micro BTS of Huawei WiMAX Micro. Replacing the BTS3702E modules disrupts all services carried by this BTS.

Prerequisite

- Check the quantity and model of the replaced BTS3702E modules. Prepare the new BTS3702E modules.
- Record the installation position of the BTS3702E modules.
- Record the port positions of all the cables connected to the BTS3702E modules.
- Prepare the tool kit.

Context



CAUTION

Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.



NOTE

See the *BTS3702E Quick Installation Guide* to install new BTS3702E modules.

Procedure

- Step 1** Upload the BTS data configuration file by referring to [Manually Backing Up Configuration Data](#).
- Step 2** Power off the BTS3702E and turn off the power switch of the external power supply of the BTS3702E by referring to [3.2 Powering Off the BTS3702E](#).
- Step 3** Open the cover of the cabling cavity to disconnect all the cables connected to the BTS3702E modules and take insulation measures for the cables.
- Step 4** Move the faulty BTS3702E modules and replace them by new BTS3702E modules.

Step 5 Connect all the cables to the new BTS3702E modules and fix the cover of the cabling cavity.

Step 6 Turn on the power switch of the external power supply of the BTS3702E and power on the BTS3702E by referring to [3.1 Powering On the BTS3702E](#).

Step 7 Replace the ESN number of the BTS by referring to [Detecting BSs Automatically](#).

----End

Later Measures

Check the following items after replacing the faulty BTS3702E modules:

- The BTS3702E modules are correctly installed.
- All the cables are correctly connected.
- The BTS3702E is operational after being powered on.

Contact the local Huawei office to handle the faulty BTS3702E modules.

5 Replacing the Optical Modules

The optical module provides an interface for photoelectric conversion, which enables the transmission between the BTS3702E and other equipment through the optical fiber. It is used to connect the ASN-GW or cascading connections between the BTSs. Remove the optical fibers first when replacing the optical modules. This disrupts the transmission signal.

Prerequisite

- Check the quantity and type of the faulty optical modules and prepare new optical modules.
- Record the installation position and connection points of the faulty optical modules and the optical fibers.
- The required tools and materials are ready. The tools or materials include the ESD wrist strap or ESD gloves, and the ESD box or bag.

Context

- The optical modules are hot-swappable.
- Replacing the BTS3702E optical module involves removing the optical fibers and faulty optical modules, installing the new optical modules, connecting the optical fibers to the optical modules, and recovering the links. The operation takes about five minutes.



CAUTION

- Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.
 - After removing the optical fibers from the optical modules, do not look directly at the optical modules and optical fiber connectors without taking the necessary eye-protection measures.
-

Procedure

- Step 1** Press the latch on the connector of the optical fiber connector, and then remove the connector from the faulty optical module.

- Step 2** Turn the ring-pull on the faulty optical module outwards. Hold the ring-pull and take the faulty optical module out of the slot to remove it from the BTS3702E.
- Step 3** Install the new optical modules in the BTS3702E.
- Step 4** Connect the optical fiber connectors to the new optical modules.
- Step 5** Check whether the transmission signal is recovered according to the indicators.
- End

Postrequisite

Contact the local Huawei office to handle the faulty optical modules.

6 Replacing the Power Modules

The power module is used to shift the power level to enable the transmission between the BTS3702E and other equipment through Ethernet cables. It is used to connect the ASN-GW or cascading connections between the BTSs. Remove the Ethernet cables first when replacing the power modules. This disrupts the transmission signal .

Prerequisite

- Check the quantity and type of the power modules. Prepare the new power modules.
- Record the installation position and connection points of the faulty power modules and the Ethernet cables.
- The required tools or materials are ready. The tools or materials include the ESD wrist strap or ESD gloves, and the ESD box or bag.

Context

- The power modules are hot-swappable.
- Replacing the BTS3702E power module involves removing the Ethernet cables and faulty power modules, installing the new power modules, connecting the Ethernet cables to the power modules, and recovering the links. The operation takes about five minutes.



CAUTION

- Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.
-

Procedure

- Step 1** Remove the Ethernet cables from the faulty power modules.
- Step 2** Turn the ring-pull on the faulty power module outwards. Hold the ring-pull and take the faulty power module out of the port to remove it from the BTS3702E.
- Step 3** Install the new power modules in the BTS3702E.

Step 4 Connect the Ethernet cables to the new power modules.

Step 5 Check whether the transmission signal is recovered according to the indicators.

----**End**

Postrequisite

Contact the local Huawei office to handle the faulty power module.

7 Replacing the BTS3702E Cables

About This Chapter

When the BTS3702E cables are faulty, you need to replace them promptly. The cables that can be replaced are power cables, signal cables, transmission cables, and RF jumpers.

Context

 **NOTE**

Contact Huawei engineers in the following conditions:

- When you want to arrange for devices, cables, and connectors by yourself.
- When you need to shorten the cable with a specified length.

[7.1 Replacing the Power Cables of the BTS3702E](#)

When the power cables of the BTS3702E are faulty, you need to replace them.

[7.2 Replacing the Signal Cables of the BTS3702E](#)

When the signal cables of the BTS3702E are faulty, you need to replace them. The BTS3702E signal cables are monitoring signal cables.

[7.3 Replacing the Transmission Cables of the BTS3702E](#)

The transmission cables of the BTS3702E are optical fibers and Ethernet cables.

[7.4 Replacing the RF Jumpers of the BTS3702E](#)

The RF jumper of the BTS3702E is used to receive and transmit the RF signals. When the faulty RF jumper is confirmed, replace the faulty RF jumper.

7.1 Replacing the Power Cables of the BTS3702E

When the power cables of the BTS3702E are faulty, you need to replace them.

Prerequisite

- The type and model of the faulty power cables are confirmed, and the new power cables are ready and routed according to the specifications.
- The new cables are in good condition.
- The required tools and materials are ready. The tools and materials are the ESD wrist strap or gloves, Phillips screwdriver, flat-head screwdriver, ESD box or bag, and OT terminals.

Context

Replacing the power cables of the BTS3702E may interrupt all the services.

Replacing the power cables involves removing the faulty cables and installing the new cables. This operation takes about five minutes.



CAUTION

Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.

Procedure

- Step 1** Route the new power cables in the same way as the faulty power cables are routed.
- Step 2** For details about how to power off the BTS3702E, see [3.2 Powering Off the BTS3702E](#).
- Step 3** Remove the faulty power cables from the equipment.
- Step 4** Install the new power cables.
- Step 5** Attach engineering labels to the new power cables and ensure that the content on each engineering label is consistent with that on the original label.
- Step 6** Bind the new power cables.
- Step 7** For details about how to power on the BTS3702E, see [3.1 Powering On the BTS3702E](#).

----End

Later Measures

After replacing the faulty power cables, verify that:

The cables are correctly and securely connected.

Contact the local Huawei office to handle the faulty power cables.

7.2 Replacing the Signal Cables of the BTS3702E

When the signal cables of the BTS3702E are faulty, you need to replace them. The BTS3702E signal cables are monitoring signal cables.

Prerequisite

- The types, models, and quantity of the faulty signal cables are confirmed, and the new signal cables are ready.
- The new cables are in good condition.
- The required tools and materials are ready. The tools and materials are the ESD wrist strap or ESD gloves, Phillips screwdriver, flat-head screwdriver, and ESD box or bag.

Context

Replacing the BTS3702E signal cables interrupts the signal transmission carried on the signal cables.

Replacing the signal cables involves removing the faulty cables, installing the new cables, clearing the alarms generated on the BTS3702E, and resuming the services. This operation takes about ten minutes.



CAUTION

Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.

Procedure

- Step 1** Lead the new signal cables to the peer device along the route of the faulty cables.
- Step 2** Remove the faulty signal cables from the equipment.
- Step 3** Connect two ends of new signal cables to the port connected to the faulty signal cables, and then remove the fault signal cables.
- Step 4** Attach an engineering label to each new cable. The content on each engineering label should be the same as that on the replaced cable.
- Step 5** Bind the new signal cables.

----End

Later Measures

Check the following items after replacing the faulty signal cables:

- The cables are correctly and securely connected.
- All related alarms are cleared in the alarm management system.

Contact the local Huawei office to handle the faulty signal cables.

7.3 Replacing the Transmission Cables of the BTS3702E

The transmission cables of the BTS3702E are optical fibers and Ethernet cables.

7.3.1 Replacing the Ethernet Cables

The Ethernet cables are used to transmit the electric signals between the BTS3702E and the ASN-GW, or transmit the electric signals between two cascading BTS3702Es. When the Ethernet cables of the BTS3702C are faulty, you need to replace them.

7.3.2 Replacing the Optical Fibers

The optical fibers are used to transmit the optical signals between the BTS3702E and the ASN-GW, or transmit the optical signals between two cascading BTS3702Es. When the optical fibers of the BTS3702E are faulty, you need to replace them.

7.3.1 Replacing the Ethernet Cables

The Ethernet cables are used to transmit the electric signals between the BTS3702E and the ASN-GW, or transmit the electric signals between two cascading BTS3702Es. When the Ethernet cables of the BTS3702C are faulty, you need to replace them.

Prerequisite

- The quantity and types of the faulty Ethernet cables are confirmed, and new Ethernet cables are ready.
- The new cables are in good condition.
- The installation position of the Ethernet cable is recorded.
- The required tools and materials are ready. The tools and materials are the ESD wrist strap or ESD gloves, and ESD box or bag.

Context

Replacing the Ethernet cables between the BTS3702E and the ASN-GW interrupts all the services carried by the BTS3702E. Replacing the cascading Ethernet cable between two BTS3702Es interrupts all the BTS3702E services except the BTS3702E services between this Ethernet cable and the ASN-GW.

Replacing the Ethernet cables involves removing the faulty cables and installing the new cables. This operation takes about five minutes.



CAUTION

Take proper ESD prevention measures, for example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.

Procedure

- Step 1** Route the new Ethernet cables in the same way as the faulty Ethernet cables are routed.
- Step 2** Remove the faulty Ethernet cables from the power modules. Remove the other connector from the peer device.
- Step 3** Install the new Ethernet cables.
- Step 4** Attach an engineering label to each new cable. The content on each engineering label should be the same as that on the replaced cable.
- Step 5** Arrange and bind the new Ethernet cables.

---End

Later Measures

Check the following items after replacing the faulty Ethernet cables:

- The cables are correctly and securely connected.
- The related transmission alarms are cleared in the alarm management system.

Contact the local Huawei office to handle the faulty Ethernet cables.

7.3.2 Replacing the Optical Fibers

The optical fibers are used to transmit the optical signals between the BTS3702E and the ASN-GW, or transmit the optical signals between two cascading BTS3702Es. When the optical fibers of the BTS3702E are faulty, you need to replace them.

Prerequisite

- The quantity and type of the faulty optical fibers are confirmed, and new optical fibers are ready.
- The new fibers are in good condition.
- The connections of optical fibers are recorded.
- The required tools and materials are ready. The tools and materials include the ESD wrist strap or gloves, ESD box or bag, and dust free cloth.

Context

Replacing the optical fibers between the BTS3702E and the ASN-GW interrupts all the services carried by the BTS3702E. Replacing the cascading optical fiber between two BTS3702Es interrupts all the BTS3702E services except the BTS3702E services between this optical fiber and the ASN-GW.

Replacing the optical fibers involves removing the faulty optical fibers, installing the new optical fibers, clearing the related transmission alarms generated on the BTS3702E, and resuming the services. This operation takes about five minutes.

**CAUTION**

- Take proper ESD prevention measures. For example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.
- Protect your eyes against the laser emitted by the optical fiber that is removed from the optical module.

Procedure

- Step 1** Route the new optical fibers in the same way as the faulty optical fibers are routed.
- Step 2** Press the latch on the LC connector of the faulty optical fiber, and then remove the LC connector from the optical module. Remove the other connector from the peer device.
- Step 3** Plug the LC connector of the new optical fiber into the same optical module according to the label on the optical fiber. Install the other connector on the peer device.
- Step 4** Attach an engineering label to each new optical fiber. The content on each engineering label should be the same as that on the replaced fiber.
- Step 5** Arrange and bind the new optical fibers.

---End

Later Measures

Check the following items after replacing the faulty optical fiber:

- The optical fiber of the correct type is properly connected.
- All related alarms are cleared in the alarm management system.

Contact the local Huawei office to handle the faulty optical fibers.

7.4 Replacing the RF Jumpers of the BTS3702E

The RF jumper of the BTS3702E is used to receive and transmit the RF signals. When the faulty RF jumper is confirmed, replace the faulty RF jumper.

Prerequisite

- Check the quantity and types of the faulty RF jumpers and prepare new RF jumpers.
- The required tools and materials are ready. The tools and materials include the ESD gloves, screwdriver, waterproof tape, insulation tape, and feeder cable cutting tool.

Context

Before replacing the RF jumpers, you must power off the BTS3702E. This disrupts all the services carried by the sectors associated with the BTS3702E.



CAUTION

Take proper ESD prevention measures. For example, wear ESD wrist straps or gloves to prevent boards, modules, and electronic components from being destroyed by static discharge from the human body.



NOTE

See the *BTS3702E Quick Installation Guide* to install new RF jumpers.

Procedure

- Step 1** For details about how to power off the BTS3702E, see [3.2 Powering Off the BTS3702E](#).
- Step 2** Remove the waterproof insulation tapes on the BTS3702E RF port and the antenna RF port.
- Step 3** Remove the faulty RF jumpers from the BTS3702E RF ports.
- Step 4** Remove the faulty RF jumpers from the RF ports on the antenna system.
- Step 5** Fix the connector of the new RF jumpers to the corresponding RF ports on the BTS3701E.
- Step 6** Wrap the joints of the BTS3702E RF ports with a layer of insulating tape. Wind the tape around the joint from top down.
- Step 7** Wrap the insulating tape with three layers of waterproof tape.



NOTE

The tape is wrapped in the following sequence: from top down, from bottom up, and then from top down. For every two adjacent tape layers, the tape on the upper layer overlaps about half the width of the tape on the lower layer.

- Step 8** Wrap the waterproof tape with three layers of insulating tape. For details about how to wrap the insulating tape, see [Step 7](#).
- Step 9** Connect the RF jumpers to the antenna system.
- Step 10** Wrap the joint of the RF ports of the antenna system with the waterproof insulation tape.
- Step 11** Stick the color rings. The new color rings should have the same color as the color rings on the old RF jumpers.
- Step 12** For details about how to power on the BTS3702E, see [3.1 Powering On the BTS3702E](#).

----End

Later Measures

Check the following items after replacing the faulty RF jumpers:

- The cables are correctly and securely connected.
- The BTS3702E is operational after being powered on.

Contact the local Huawei office to handle the faulty RF jumpers.