

10 Replacing the Parts of the Antenna System

About This Chapter

The parts of the antenna system are antennas, TMA, and feeders.

[10.1 Replacing the BTS Antenna](#)

Before replacing BTS3012AE antenna, you need to switch off the corresponding TMA. Switching off the TMA disrupts all the services of the cells covered by the antenna.

[10.2 Replacing the TMA](#)

The Tower Mounted Amplifier (TMA) is installed on the tower. Replacing the TMA disrupts all the services provided by the cells associated with the TMA.

[10.3 Replacing the Feeder](#)

The feeder of the antenna system is used to transmit RF signals. Replacing the feeder disrupts all the services provided by the cells associated with the feeder.

10.1 Replacing the BTS Antenna

Before replacing BTS3012AE antenna, you need to switch off the corresponding TMA. Switching off the TMA disrupts all the services of the cells covered by the antenna.

Prerequisite

- You have confirmed the types, models, and number of faulty antennas.
- New antennas are ready and in good conditions.
- You have arranged the required tools, including a radio analyzer, paper knife, wrench, compass, and angle square.
- You have checked the labels on all the cables and marked the installation positions.
- You have tested the Voltage Standing Wave Ratio (VSWR) using a radio analyzer and adjusted the positions and angles of antennas.
- If the antenna to be replaced is a directional antenna, you have measured the pitch angle and the azimuth angle and compared them with the history record to ensure that the related engineering parameters are correct. You have updated the engineering parameter record.

Context

NOTE

The replacement of an antenna takes about 30 to 40 minutes.

Because the position and direction of the antenna affect its VSWR, adjust the position and direction during the test. The normal VSWR is smaller than or equal to 1.5.

- If the VSWR is greater than 1.5 in any position or direction, infer that the antenna or the connector is faulty. Check the antenna and test the VSWR again.
- If the VSWR is greater than 1.5 only in some positions or directions, the antenna may be not faulty. Install the antenna and then test its VSWR again. If the VSWR is still greater than 1.5, the antenna must be faulty. You need to replace it.

Procedure

Step 1 **Change the management state of the BTS.** Set the management state of the related cell to LOCKED.

Step 2 **Hoist the antenna.**

Step 3 Use a paper knife to cut a few rifts on the waterproof clay near the joint between the antenna and the jumper. Be careful not to cut the connectors and cables. Remove the clay with fingers or a paper knife. Remove the jumper.

Step 4 Remove the faulty antenna.

If...	Then...
The faulty antenna is an omni-directional antenna	Loosen the antenna fixing clip and remove the antenna.

If...	Then...
The faulty antenna is a directional antenna	Remove the antenna with the antenna fixing clip. Remove the fixing clip and install it on the new antenna.

Step 5 [Install the new antenna.](#)

Step 6 Connect the jumper to the antenna according to the marked installation positions.

Step 7 Use a radio analyzer to measure the VSWR at the jumper interface to the antenna on the top of the cabinet. If the VSWR is equal to or greater than 1.5, check the connection between the jumper and the antenna.

Step 8 [Change the management state of the BTS.](#) Set the management state of the related cell to UNLOCKED.

Step 9 [Attach engineering labels of the antenna system](#) on the connection between the antenna and the jumper.



NOTE

If the replacement is successful, waterproof the connectors.

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Postrequisite

After replacing the antenna, verify the following:

1. The omni-directional antenna is vertical and the perpendicularity error is smaller than 2°.
2. The top of the omni-directional antenna jacket is equal to or slightly higher than that of the antenna bracket.
3. The azimuth angle error of the directional antenna is not greater than 5° and the pitch angle error is not greater than 0.5°.
4. The VSWR measured with the radio analyzer at the jumper interface to the antenna is smaller than 1.5.
5. The related alarms on the Site Maintenance Terminal System are cleared.

Contact Huawei local office to handle the faulty antenna.

10.2 Replacing the TMA

The Tower Mounted Amplifier (TMA) is installed on the tower. Replacing the TMA disrupts all the services provided by the cells associated with the TMA.

Prerequisite

- You have confirmed the types, models, and number of faulty TMAs.
- You have arranged the required tools, including a radio analyzer, paper knife, screwdriver, wrench, and two 50 ohm match load of N type connectors.
- New TMAs are ready and in good condition. The VSWR error meets the requirement.

Procedure

- Step 1** [Change the management state of the BTS](#). Set the management state of the related cells to LOCKED.
- Step 2** Hoist the TMA.
- Step 3** Use a paper knife to cut a few rifts on the waterproof clay near the joint between the jumper and the TMA. Be careful not to cut the connectors and cables. Remove the clay with fingers or a paper knife, and remove the jumper.
- Step 4** Remove the faulty TMA.
1. If the TMA is fixed on a steel tower or pole by a steel fastening bracket, loosen the bolts at one end of the fastening bracket. Then pull out the other end from the gap under the bolt to free the TMA.
 2. If the TMA is fixed on the wall surface with expansion bolts, unscrew the bolts and remove the spring washers, flat washers, and TMA.
- Step 5** [Install a new TMA](#).



CAUTION

The removed expansion bolt cannot be used again. You need to use a new expansion bolt to install the TMA.

- Step 6** Connect jumpers to the new TMA.
- Step 7** Use a radio analyzer to measure the VSWR at the jumper interface to the TMA on the top of the cabinet. If the VSWR is equal to or greater than 1.5, check the connection between the jumper and the antenna.
- Step 8** [Change the management state of the BTS](#). Set the management state of the related cells to UNLOCKED.
- Step 9** Waterproof the joints between the TMA and the jumpers. For details, refer to [Labeling the Antenna System](#).

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Postrequisite

After replacing the TMA, verify the following:

1. The connectors of the TMA are correctly installed.
2. The VSWR measured with the radio analyzer at the jumper interface to the TMA is smaller than 1.5.
3. The related alarms (such as TMA related alarm and transmission channel related alarm) on the Site Maintenance Terminal System or the OMC are cleared.

Contact Huawei local office to handle the faulty TMA.

10.3 Replacing the Feeder

The feeder of the antenna system is used to transmit RF signals. Replacing the feeder disrupts all the services provided by the cells associated with the feeder.

Prerequisite

- You have confirmed the types and number of faulty feeders.
- New feeders are ready.
- Tools including a paper knife are ready.

Procedure

- Step 1** [Change the management state of the BTS](#). Set the management state of the related cells to LOCKED.
- Step 2** Use a paper knife to cut a few rifts on the waterproof clay near the joint between the feeder and other parts. Be careful not to cut the connectors and cables. Remove the clay with fingers or a paper knife, and remove the feeder.
- Step 3** [Connect the new feeder](#) to antenna parts according to the marked installation positions.
- Step 4** [Change the management state of the BTS](#). Set the management state of the related cells to UNLOCKED.
- Step 5** Attach labels to the joints between feeders and parts. For details, refer to [Labeling the Antenna System](#).



NOTE

If the replacement is successful, waterproof the connectors.

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Postrequisite

Confirm that all the connectors are securely installed.

Contact Huawei local office to handle the faulty antenna.