9 Configuration Requirements for the BTS

About This Chapter

This topic describes the configuration requirements for the BTS.

NOTE

When configuring the BTS, adhere to the following requirements listed in order of priority:

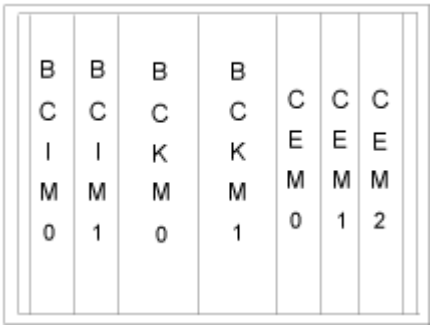
1. Use the smallest possible number of trunks.
2. Use the smallest possible number of antennas.

9.1 Configuration Principles for the Baseband Boards

This topic describes the configuration principles for the baseband boards, namely, the BCIM, the BCKM, the CCPM, and the CECM.

The baseband subrack is the core of the baseband system. **Figure 9-1** shows the full configuration of the baseband subrack.

Figure 9-1 Full configuration of the baseband subrack



BCIM Configuration

When one BCIM is configured, it provides a maximum of eight E1/T1 links or two FE links. In practice, you can adjust the BCIM configuration according to the capacity requirements and service types.

CAUTION

The QC52BCIM supports only four E1/T1 links.

When configuring BCIM links, refer to the following typical configurations:

- For the S (1/1/1) configuration, configure one E1/T1 link for CDMA2000 1X services and two E1/T1 links for CDMA2000 1xEV-DO services.
- For the S (2/2/2) configuration, configure two E1/T1 link for CDMA2000 1X services and three E1/T1 links for CDMA2000 1xEV-DO services.
- For the S(4/4/4) configuration, configure four E1/T1 links for CDMA2000 1X services and six E1/T1 links for CDMA2000 1xEV-DO services.

The above data applies to the CDMA2000 1X or the CDMA2000 1xEV-DO system. For the IS-95 system, the numbers of links can be halved.

When transmission resources are scarce, you can use the fractional ATM function of the QC54BCIM to provide the BTS3606AC with specific timeslots of an E1/T1 system.

BCKM Configuration

The baseband subrack can be configured with a maximum of two BCKMs, which work in active/standby mode. When the active BCKM is faulty, the standby BCKM is automatically switched over to function as the active BCKM.

CAUTION

The BCKM is configured with either a GPS satellite receiver or a GPS/GLONASS satellite receiver. Ensure that the satellite receiver of the BCKM matches the satellite synchronization antenna.

CCPM Configuration

The baseband subrack can be configured with a maximum of three CCPMs.

The CCPM reverses two SPF ports and supports hot-swappable optical modules. Three types of optical modules can be used, and the maximum single-level distances of these types of optical modules are 10 km [6.21 mi.], 40 km [24.86 mi.], and 70 km [43.50 mi.] respectively. The modules used can be of the same type or of different types. The CCPM has two models, namely the QCK2CCPM and the QCK3CCPM.

- The QCK2CCPM can be configured with a maximum of four CSM5000 chips. The mapping relations between the channel processing capability and the number of chips are as follows:
  - A CCPM with one CSM5000 chip can process 32 reverse channels and 64 forward channels.
  - A CCPM with two CSM5000 chips can process 64 reverse channels and 128 forward channels.
  - A CCPM with three CSM5000 chips can process 96 reverse channels and 192 forward channels.
  - A CCPM with four CSM5000 chips can process 128 reverse channels and 256 forward channels.
- A QCK3CCPM is configured with one CSM6700 chip and can process 256 reverse channels and 285 forward channels.

Generally, if the capacity requirements are met, redundant configuration is not necessary. The system automatically masks faulty CCPMs and CECMs. In such cases, the system capacity decreases, but the BTS continues to function properly.

CECM Configuration

The baseband subrack can be configured with a maximum of three CECMs.

The CECM reverses two SPF ports and supports hot-swappable optical modules. Three types of optical modules can be configured in a mixed way, and the maximum single-level distances of these types of optical modules are 10 km [6.21 mi.], 40 km [24.86 mi.], and 70 km [43.50 mi.] respectively. The CECM is configured with one CSM6800 chip, which can process 192 reverse channels.

9.2 Configuration Requirements of the RF Modules

The topic describes the configuration requirements of the STDM and the SPAM in the RF subsystem.

The RF subrack is the core of the RF subsystem. **Figure 9-2** shows the full configuration of the RF subsystem.

Figure 9-2 Full configuration of the RF subsystem

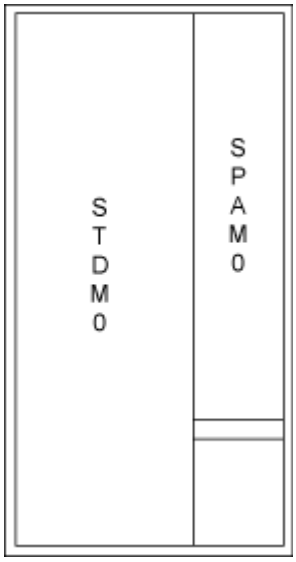
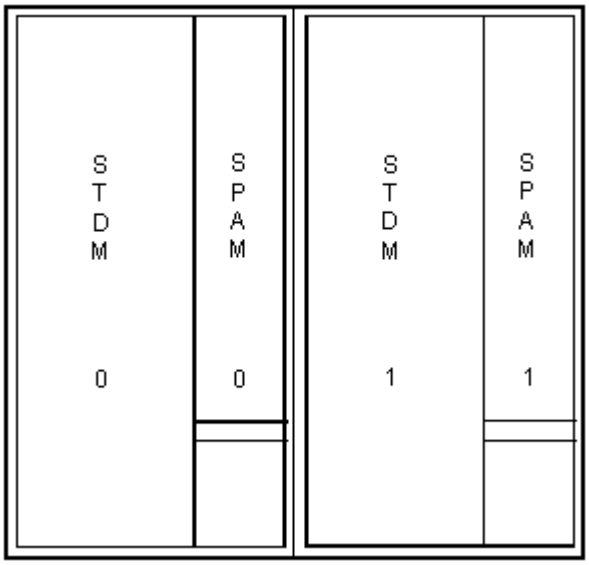


Figure 9-3 shows the full configuration of the RF subsystem with the extended RF subrack.

Figure 9-3 Full configuration of the RF subsystem with the extended RF subrack



STDM Configuration

The RF subrack is configured with one STDM, which consists of two submodules, namely, the STRM and the SDFU.

When the extended RF subrack is configured, a maximum of two STDMs can be configured.

The STDM supports a maximum of six sector carriers.

SPAM Configuration

The RF subrack is configured with one SPAM. The SPAM supports a maximum of six sector carriers.

When the extended RF subrack is configured, a maximum of two SPAMs can be configured.

Cabinet-Top Output Power

A group of the STDM and the SPAM supports a maximum of six sector carriers, and the maximum cabinet-top output power per sector is 40 W.

When the extended RF subrack is configured, the BTS3606C supports a maximum of 12 sector carriers, and the maximum cabinet-top output power per sector is 40 W.

9.3 Configuration Requirements for the Power Modules

This topic describes the configuration requirements of the power modules. The power subrack of the BTS is used to hold SPSUs and supports the N+1 backup mode.

9.4 Configuration Requirements of the RF Antennas

This topic describes the general requirements for the cofiguration of RF antennas. In practice, choose antennas according to the actual network planning solution.

The general guideline is as follows:

- For omni-directional cells, use omni-directional antennas.
- For directional cells, use directional bi-polarization antennas or directional uni-polarization antennas according to the actual situation.
- For a large coverage area, use antennas with a great amount of gain (for omni-directional cells or directional cells).
- For sector antenna configuration, use directional antennas or omni-directional antennas according to the sector design in the network planning solution.
- For omni-directional cells, use two omni-directional uni-polarization antennas that work in duplex mode.

9.5 Configuration Requirements of the Satellite Synchronization Antennas

This topic describes the configuration requirements of the satellite synchronization antennas.

Generally, one BTS is configured with one satellite synchronization antenna.

If improved systrem reliability is required, configure two BCKMs for one BTS3606C. In such cases, you must configure one satellite synchronization antenna for each BCKM.

If one of the two satellite synchronization antennas is faulty, the standby BCKM is switched over to function as the active BCKM, and its satellite synchronization antenna starts to receive synchronization signals.

9.6 Typical Configurations of the BTS

This topic describes the typical configurations of the BTS. The BTS supports the 450 MHz and 800 MHz band classes, and the typical configurations are the O (1) configuration, the S (2/2/2) configuration, and the S (4/4/4) configuration.

O (1) Configuration

In the O (1) configuration, the BTS is configured with the following components:

- Baseband boards: one BCKM, one BCIM, and one CCPM or CECM
- Power modules: a maximum of five power modules, working in N+1 backup mode
- RF antennas: two omni-directional antennas
- RF modules: one STDM and one SPAM

S (2/2/2) Configuration

In the S (2/2/2) configuration, the BTS is configured with the following components:

- Baseband boards: one BCIM, one or two BCKMs, and several CCPMs or CECMs (configured according to the network planning solution)
- Power modules: a maximum of five power modules, working in N+1 backup mode
- RF antennas: for each sector, two directional uni-polarization antennas or one directional bi-polarization antenna
- RF modules: one STDM and one SPAM

S (4/4/4) Configuration

In the S (4/4/4) configuration, the BTS is configured with the following components:

- Baseband boards: one or two BCIMs, one or two BCKMs, and several CCPMs or CECMs (configured according to the network planning solution)
- Power modules: a maximum of five power modules, working in N+1 backup mode
- RF antennas: for each sector, two directional uni-polarization antennas or one directional bi-polarization antenna
- RF modules: two STDMs and two SPAMs

9.7 Frequency Point Configuration Supporting CDMA2000 1X and CDMA2000 1xEV-DO Services

This topic describes the frequency point configuration supporting CDMA2000 1X and CDMA2000 1xEV-DO services.

NOTE

Each carrier corresponds to a frequency point, but one frequency point may correspond to multiple carriers.

In a multi-carrier configuration, a group of RF modules is configured with multiple carriers (two at most).

CDMA2000 1X and CDMA2000 1xEV-DO services must be carried by different carriers. In a multi-carrier configuration, each group of RF modules are configured with multiple carriers, and there is interference between these carriers. Therefore, the configuration of frequency points must meet the following requirements:

- When configuring multiple frequency points for an RF module, refer to relevant protocols to set proper spacing between any two of the frequency points.
- When configuring CDMA2000 1X and CDMA2000 1xEV-DO services, ensure that any frequency point configured for CDMA2000 1X services does not neighbor any frequency point configured for CDMA2000 1xEV-DO services.

NOTE

If a frequency point for CDMA2000 1xEV-DO services has to be configured between two frequency points configured for CDMA2000 1X services, contact Huawei technical support engineers.