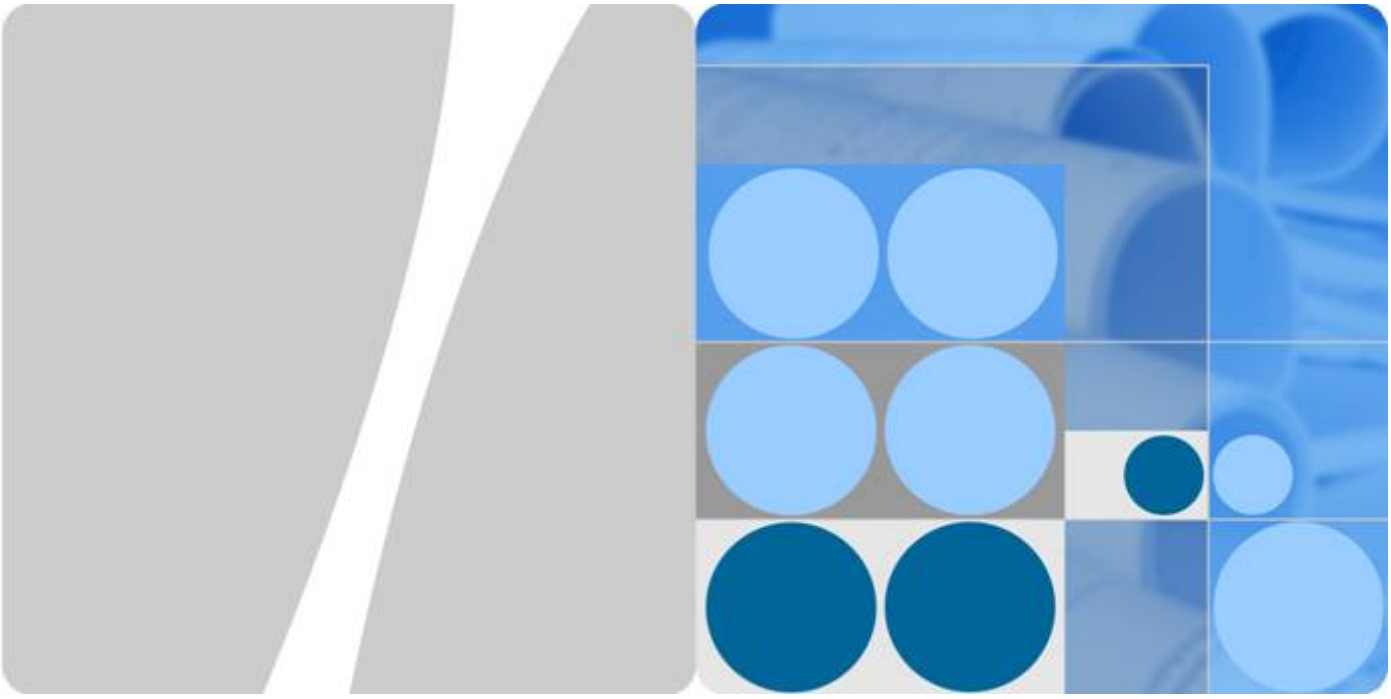

BBU

V100R011C10

Hardware Description

Issue 04

Date 2016-06-25

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About This Document

Overview

A BBU is a baseband unit. This document describes the exteriors and functions of a BBU3900, a BBU3910, and a BBU3910A as well as the configurations, functions, application scenarios, and specifications of boards in the BBU3900, BBU3910, and BBU3910A to help users comprehensively understand the functions of BBUs. The BBU3910A can be a BBU3910A1, BBU3910A2, or BBU3910A3. A BBU3910A can be used only in a DBS3900 (blade site).

The exteriors of components or cables in this document are for reference only. The actual exteriors may be different.

NOTE

Unless otherwise specified, LTE refers to either LTE FDD or LTE TDD, and eNodeB refers to either an LTE FDD eNodeB or an LTE TDD eNodeB in this document. The "L" and "T" in RAT acronyms refer to LTE FDD and LTE TDD, respectively.

Product Version

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

Product Name	Solution Version	Product Version
BTS3900	● SRAN11.1 ● GBSS18.1 ● RAN18.1 ● eRAN11.1	V100R011C10
BTS3900A		
BTS3900L		
BTS3900AL		
DBS3900	● SRAN11.1 ● GBSS18.1 ● RAN18.1 ● eRAN11.1 ● eRAN TDD 11.1	

Product Name	Solution Version	Product Version
DBS3900 LampSite	● SRAN11.1 ● RAN18.1 ● eRAN11.1 ● eRAN TDD 11.1	
BTS3900C	● SRAN11.1 ● RAN18.1	

Intended Audience

This document is intended for:

- Base station installation personnel
- System engineers
- Site maintenance personnel

Organization

1 Changes in BBU Hardware Description

This section describes changes in *BBU Hardware Description* of each version.

2 BBU3900 and BBU3910 Hardware Description

This chapter describes the exteriors, functions, working principles, slot assignment, and boards of a BBU3900 and a BBU3910.

3 BBU3910A Hardware Description

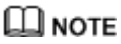
This chapter describes the exterior, working principles, functions, technical specifications, ports, and indicators of a BBU3910A. BBU3910A modules include the following models: BBU3910A1, BBU3910A2, and BBU3910A3. BBU3910A modules of different models have the same exterior, working principles, functions, ports, and indicators but different technical specifications.

Conventions

Symbol Conventions

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

Symbol	Description
	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Symbol	Description
	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

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**.
Italic	Book titles are in *italics*.
`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**.
Italic	Command arguments are in *italics*.
[ ]	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.

Convention	Description
[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.
[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.

Action	Description
Drag	Press and hold the primary mouse button and move the pointer to a certain position.

Contents

1 Changes in BBU Hardware Description

This section describes changes in *BBU Hardware Description* of each version.

04 (2016-06-25)

This is the fourth commercial release.

Compared with 03 (2016-05-31), this issue does not include or exclude any topics.

Compared with 03 (2016-05-31), this issue includes the following changes.

Topic	Change Description
2.6.2 Indicators for Ports	Modified the indicator descriptions for FE/GE port.
3.5 Indicators on a BBU3910A	Modified the indicator descriptions of GE1.
2.7 BBU39000&BBU3910 Engineering Specifications	Modified the heat dissipation capabilities of BBU3910.

03 (2016-05-31)

This is the third commercial release.

Compared with 02 (2016-04-20), this issue does not include or exclude any topics.

Compared with 02 (2016-04-20), this issue includes the following changes.

Topic	Change Description
• **2.3 Boards and Cabinets or Racks Supported by a BBU3900 and a BBU3910** • **2.5.1 UMPT** • **2.5.6 UBBP** • **2.6.2 Indicators for Ports**	Added the description of the UMPTe and UBBPe.

02 (2016-04-20)

This is the second commercial release.

Compared with 01 (2016-03-07), this issue does not include or exclude any topics.

Compared with 01 (2016-03-07), this issue includes the following changes.

Topic	Change Description
• 2.5.1 UMPT • 2.5.6 UBBP • 2.5.7 WBBP • 2.5.8 LBBP	Added a note of the capacity license.
2.5.10 UPEU	Added the configuration compliance of FANc and UPEUc.

01 (2016-03-07)

This is the first commercial release.

Compared with Draft A (2015-12-30), this issue does not include any changes.

Draft A (2015-12-30)

This is a draft.

Compared with Issue 03 (2015-08-30) of V100R010C10, this issue includes the following new topics:

- 2.6 Indicators on BBU Boards and its child topics

Compared with Issue 03 (2015-08-30) of V100R010C10, this issue includes the following changes.

Topic	Change Description
Child topics of 2.5 BBU3900 and BBU3910 Boards	Removed indicator descriptions.
2.5.1 UMPT	Added the description that the FE/GE0 and FE/GE1 ports can be used at the same time.
• BBU Slot Assignment in GSM Base Stations • BBU Slot Assignment in GSM Base Stations • 2.5.3 GTMU	Added the description that the GTMUc supports SingleOM.

Topic	Change Description
● **2.3 Boards and Cabinets or Racks Supported by a BBU3900 and a BBU3910** ● **2.5.3 GTMU**	Added the information of the GTMUc.
● BBU3900 slot assignment – **BBU Slot Assignment in GSM Base Stations** – **BBU Slot Assignment in GU and G*U Base Stations** – **BBU Slot Assignment in GL and G*L Base Stations** – **BBU Slot Assignment in Triple-Mode Base Stations** ● BBU3910 slot assignment – **BBU Slot Assignment in GSM Base Stations** – **BBU Slot Assignment in GU and G*U Base Stations** – **BBU Slot Assignment in GL and G*L Base Stations**	Added the description that the GTMUc is supported in a GSM, a GU, a GL, and a separate-MPT triple-mode base station.
2.5.17 Optical Modules	● Added the description of the single-fiber bidirectional optical module. ● Added the certificate standards and requirements of optical modules.

Compared with Issue 03 (2015-08-30) of V100R010C10, this issue does not exclude any topics.

2 BBU3900 and BBU3910 Hardware Description

About This Chapter

This chapter describes the exteriors, functions, working principles, slot assignment, and boards of a BBU3900 and a BBU3910.

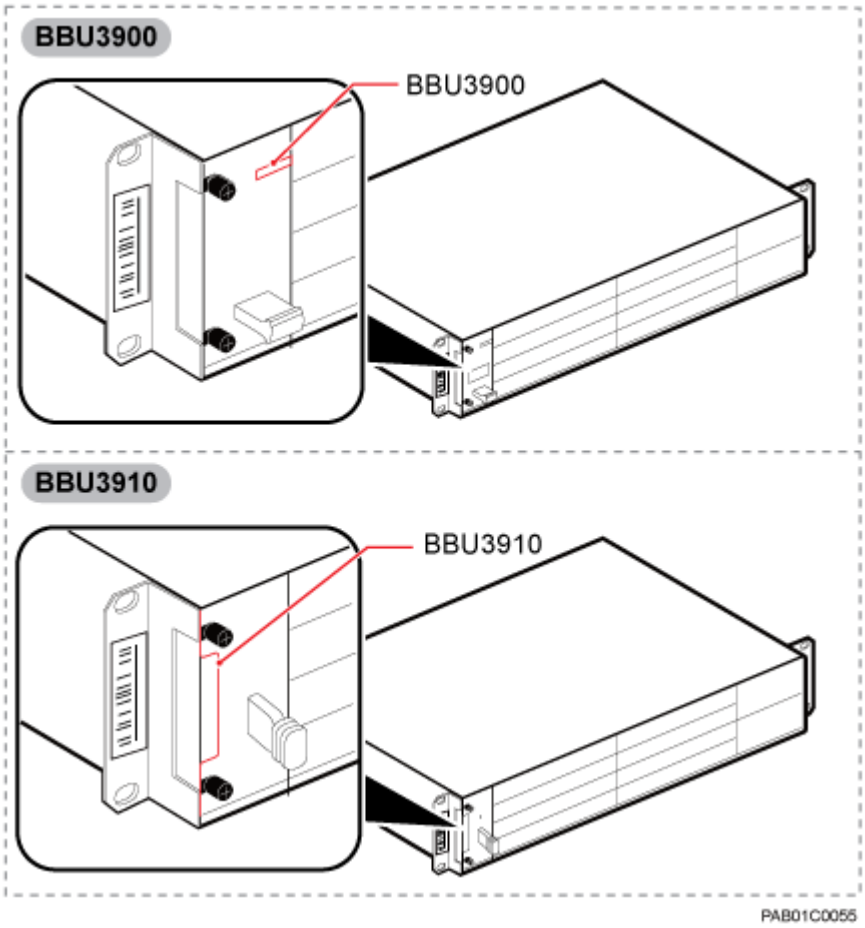
Unless otherwise specified, the BBU refers to both the BBU3900 and BBU3910 in this chapter.

2.1 Exterior of the BBU3900 and BBU3910

A BBU, which has a case structure, is 19 inches wide and 2 U high.

The following figure shows the exterior of a BBU.

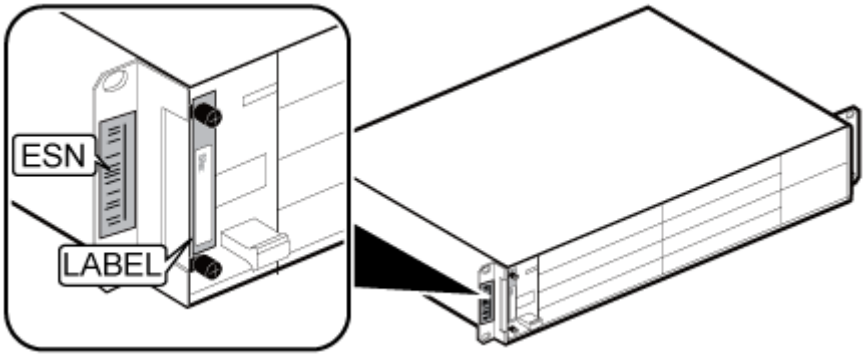
Figure 2-1 Exterior of a BBU



A BBU is labeled with an electronic serial number (ESN). The following figures show the positions of ESNs on BBUs.

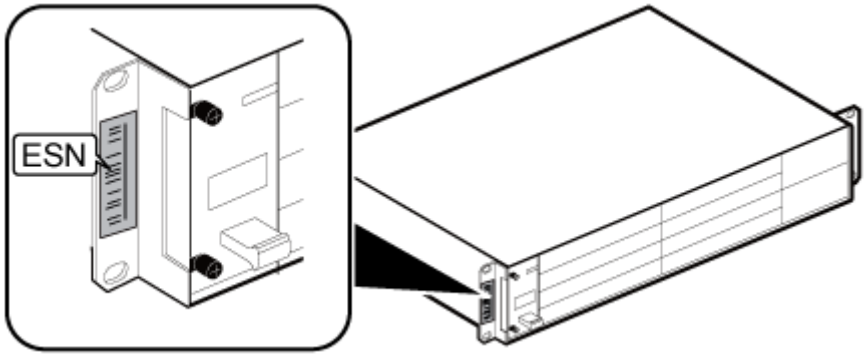
- If there is a label on the FAN unit in a BBU, an ESN is printed on the label and a mounting ear of the BBU, as shown in the following figure.

Figure 2-2 ESN position 1



- If there is no label on the FAN unit in a BBU, an ESN is printed on a mounting ear of the BBU, as shown in the following figure.

Figure 2-3 ESN position 2



NOTE

An ESN is a unique identifier of a device and is used during base station commissioning.

2.2 Working Principles and Functions of a BBU3900 and a BBU3910

A BBU is a baseband unit. It processes baseband signals of a base station.

Working Principle

A BBU consists of the following subsystems: baseband subsystem, power and mechanical subsystem, transmission subsystem, interconnection subsystem, main control subsystem, monitoring subsystem, and clock subsystem. Each subsystem consists of different modules.

- The baseband subsystem consists of the baseband processing unit.
- The power and mechanical subsystem consists of the backplane, fan, and power module.
- The transmission subsystem consists of the main control and transmission unit as well as the transmission extension unit.

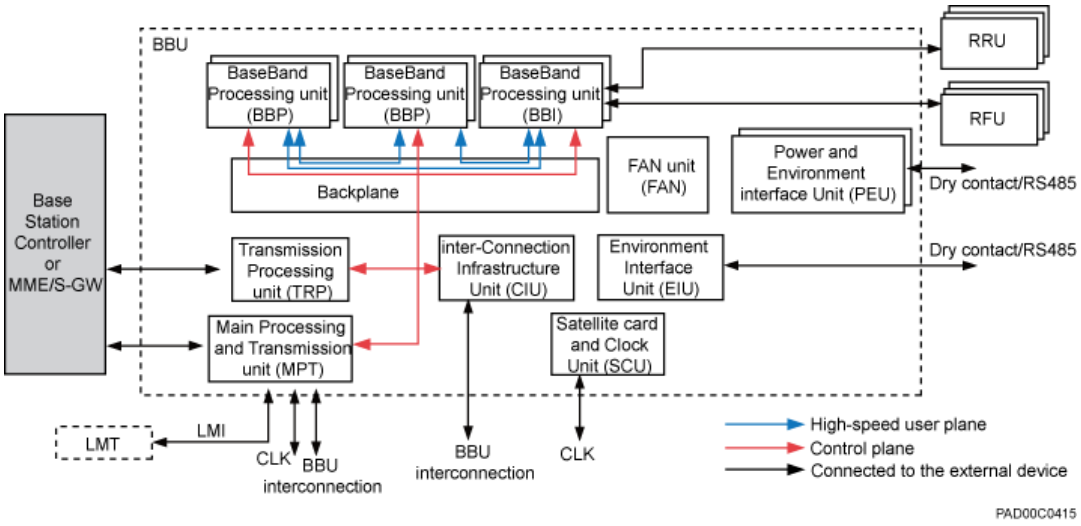
- The interconnection subsystem consists of the main control and transmission unit[a] as well as the infrastructure interconnection unit.
- The main control subsystem consists of the main control and transmission unit.
- The monitoring subsystem consists of the power module and monitoring unit.
- The clock subsystem consists of the main control and transmission unit as well as the satellite card and clock unit.

NOTE

a: In the interconnection subsystem, a UMPT is used as the main control and transmission unit.

The following figure shows the working principles of a BBU.

Figure 2-4 Working principles of a BBU



Function

A BBU performs the following functions:

- Provides ports for connecting to the transmission equipment, RF modules, USB devices[a], external reference clock, and LMT or U2000 to transmit signals, perform automatic software upgrade, receive reference clock signals, and support BBU maintenance on the LMT or U2000.
- Manages the entire base station system. The management involves uplink and downlink data processing, signaling processing, resource management, and operation and maintenance.

NOTE

a: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands. The USB commission port is used for commissioning the base station rather than configuring and exporting information of the base station.

2.3 Boards and Cabinets or Racks Supported by a BBU3900 and a BBU3910

This section describes boards and cabinets or racks supported by different types of BBUs.

Boards Supported by BBUs

The following table describes boards supported by different types of BBUs, regardless of mode and configuration.

Table 2-1 Boards supported by BBUs

Board Type	Board Supported by a BBU3900	Board Supported by a BBU3910
Main control board	● GTMU, GTMUb, or GTMUc ● WMPT ● LMPT ● UMPTa (UMPTa1, UMPTa2, or UMPTa6) ● UMPTb (UMPTb1 or UMPTb2) ● UMPTe (UMPTe1 or UMPTe2)	● GTMUb or GTMUc ● UMPTb (UMPTb1 or UMPTb2) ● UMPTe (UMPTe1 or UMPTe2)
Baseband processing board	● UBBPd (UBBPd1 to UBBPd6, UBBPda, or UBBPd9) ● UBBPe (UBBPe1 to UBBPe6, or UBBPe9) ● WBBP (WBBPa, WBBPb1 to WBBPb4, WBBPd1 to WBBPd3, or WBBPf1 to WBBPf4) ● LBBP (LBBPc, or LBBPd1 to LBBPd4)	● UBBPd (UBBPd1 to UBBPd6, UBBPda, or UBBPd9) ● UBBPe (UBBPe1 to UBBPe6, or UBBPe9)
Transmission extension board	UTRP (UTRP2 to UTRP4, UTRP6, UTRP9, UTRPa, UTRPb4, or UTRPc)	UTRPa or UTRPc
Baseband radio interface board	UBRI or UBRIb	UBRIb
Satellite-card board	USCUb22, USCUb14, or USCUb11	USCUb14 or USCUb11
Fan module	FAN or FANc	FANd or FANe
Power module	UPEUa, UPEUb, or UPEUc	UPEUd

Board Type	Board Supported by a BBU3900	Board Supported by a BBU3910
Environment monitoring unit	UEIU	UEIU
Interconnection board	● UCIU ● UCCU	UCCU

Cabinets or Racks Supported by BBUs

The following table describes the cabinets or racks supported by different types of BBUs.

Table 2-2 Cabinets or racks supported by BBUs

Base Station Type	Cabinet or Rack Supported by a BBU3900	Cabinet or Rack Supported by a BBU3910
BTS3900	BTS3900 (Ver.B), BTS3900 (Ver.C), BTS3900 (Ver.D), BTS3900 (Ver.D_A), or BTS3900 (Ver.D_B) cabinet	BTS3900 (Ver.D), BTS3900 (Ver.D_A), or BTS3900 (Ver.D_B) cabinet
BTS3900L	BTS3900L (Ver.B), BTS3900L (Ver.C), BTS3900L (Ver.D), or BTS3900L (Ver.D_B) cabinet	BTS3900L (Ver.D) or BTS3900L (Ver.D_B) cabinet
BTS3900A	● APM30H (Ver.B), APM30H (Ver.C), APM30H (Ver.D), APM30H (Ver.E), APM30H (Ver.D_C), APM30H (Ver.D_B), APM30H (Ver.D_A2), APM30 (Ver.D_A1), APM30H (Ver.E_B~D), APM30H (Ver.E_A2), or APM30 (Ver.E_A1) ● TMC11H (Ver.B), TMC11H (Ver.C), TMC11H (Ver.D), TMC11H (Ver.E), TMC11H (Ver.D_C), TMC11H (Ver.D_B), TMC11H (Ver.D_A2), TMC (Ver.D_A1), TMC11H (Ver.E_B~D), TMC11H (Ver.E_A2), or TMC (Ver.E_A1)	● APM30H (Ver.D), APM30H, (Ver.E), APM30H (Ver.D_C), APM30H (Ver.D_B), APM30H (Ver.D_A2), APM30 (Ver.D_A1), APM30H (Ver.E_B~D), APM30H (Ver.E_A2), or APM30 (Ver.E_A1) ● TMC11H (Ver.D), TMC11H (Ver.E), TMC11H (Ver.D_C), TMC11H (Ver.D_B), TMC11H (Ver.D_A2), TMC (Ver.D_A1), TMC11H (Ver.E_B~D), TMC11H (Ver.E_A2), or TMC (Ver.E_A1)
BTS3900AL	BTS3900AL (Ver.A) cabinet	BTS3900AL (Ver.A) cabinet
BTS3012(Ver.D_Z)	BTS3012 (Ver.D_Z) cabinet	BTS3012 (Ver.D_Z) cabinet

Base Station Type	Cabinet or Rack Supported by a BBU3900	Cabinet or Rack Supported by a BBU3910
BTS3012AE(Ver.D_Z)	BTS3012AE (Ver.D_Z) cabinet	BTS3012AE (Ver.D_Z) cabinet
DBS3900	● APM30H (Ver.B), APM30H (Ver.C), APM30H (Ver.D), APM30H (Ver.E), APM30H (Ver.D_C), APM30H (Ver.D_B), APM30H (Ver.D_A2), APM30 (Ver.D_A1), APM30H (Ver.E_B~D), APM30H (Ver.E_A2), or APM30 (Ver.E_A1) ● TMC11H (Ver.B), TMC11H (Ver.C), TMC11H (Ver.D), TMC11H (Ver.E), TMC11H (Ver.D_C), TMC11H (Ver.D_B), TMC11H (Ver.D_A2), TMC (Ver.D_A1), TMC11H (Ver.E_B~D), TMC11H (Ver.E_A2), or TMC (Ver.E_A1) ● OMB, OMB (Ver.C), IMB03, INS12, TP48600A, or IBC10	● APM30H (Ver.D), APM30H, (Ver.E), APM30H (Ver.D_C), APM30H (Ver.D_B), APM30H (Ver.D_A2), APM30 (Ver.D_A1), APM30H (Ver.E_B~D), APM30H (Ver.E_A2), or APM30 (Ver.E_A1) ● TMC11H (Ver.D), TMC11H (Ver.E), TMC11H (Ver.D_C), TMC11H (Ver.D_B), TMC11H (Ver.D_A2), TMC (Ver.D_A1), TMC11H (Ver.E_B~D), TMC11H (Ver.E_A2), or TMC (Ver.E_A1) ● OMB (Ver.C) or IMB03
BTS3900C	OMB or OMB (Ver.C)	OMB (Ver.C)

2.4 BBU3900 and BBU3910 Slot Assignment

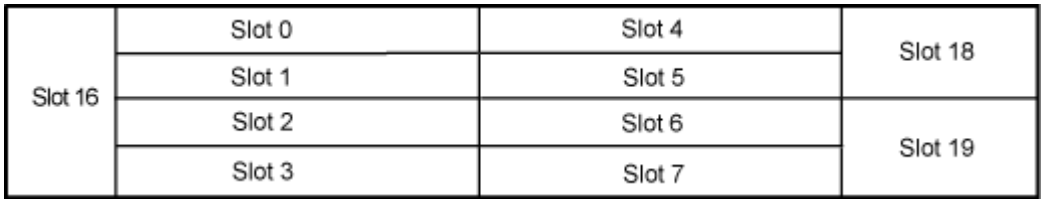
This chapter describes BBU slot distribution, BBU3910 slot assignment, and BBU3900 slot assignment.

2.4.1 BBU3900 and BBU3910 Slot Distribution

This section describes BBU slot distribution.

A BBU has 11 slots. The following figure shows BBU slot distribution.

Figure 2-5 BBU slot distribution



In all scenarios, a FAN, a UPEU, and a UEIU are configured in fixed slots in a BBU. The following table describes the principles for configuring a FAN, a UPEU, and a UEIU.

Table 2-3 Principles for configuring a FAN, a UPEU, and a UEIU

Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)	
Fan unit	FAN	Yes	1	Slot 16	-
Power and environment interface unit	UPEU	Yes	2	Slot 19	Slot 18
Environment monitoring unit	UEIU	No	1	Slot 18	-

2.4.2 BBU3900 Slot Assignment

This section describes the principles for BBU3900 slot assignment.

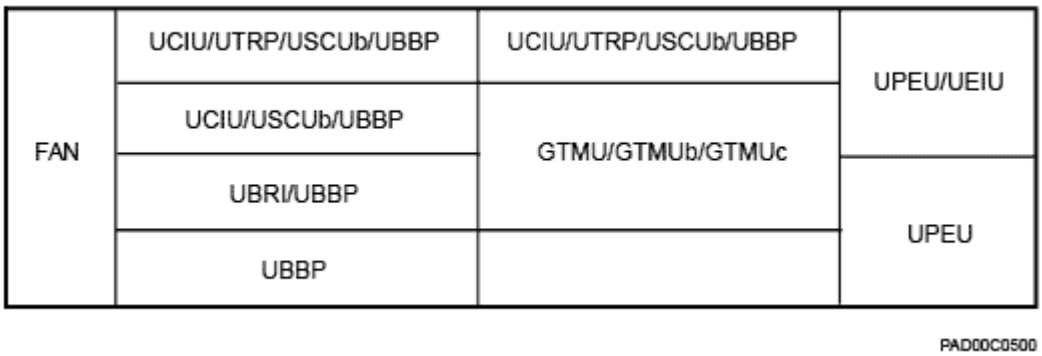
BBU Slot Assignment in GSM Base Stations

This section describes the principles for BBU3900 slot assignment in GSM base stations.

GBTS

The following figure shows the BBU slot assignment in a GBTS.

Figure 2-6 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-4 Principles for BBU slot assignment

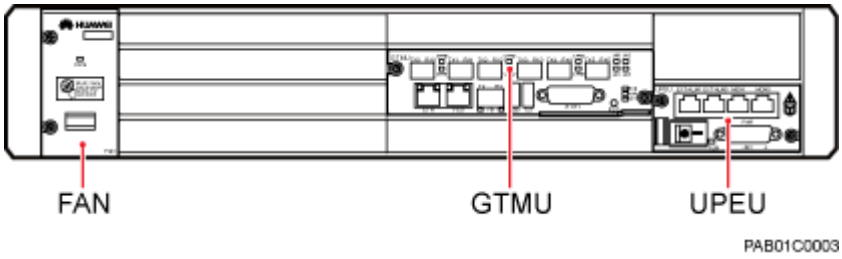
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board	● GTMU ● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-	-
2	Interconnection board	UCIU	No	1	Slot 4	Slot 0	Slot 1	-	-
3	Transmission board	UTRPb4	No	1	Slot 4	Slot 0	-	-	-
4	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-	-
		USCUb14	No	1	Slot 4	Slot 1	Slot 0	-	-
5	Baseband radio interface board	● UBRIb ● UBRI	No	1	Slot 2	-	-	-	-
6	Baseband processing board	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	Slot 3

NOTE

- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In a GBTS, the UBBP_G installed in slot 4 cannot be connected to CPRI cables.

The following figure shows the typical configuration of BBU boards.

Figure 2-7 Typical configuration of BBU boards



eGBTS

The following figure shows the BBU slot assignment in an eGBTS.

Figure 2-8 BBU slot assignment (1)

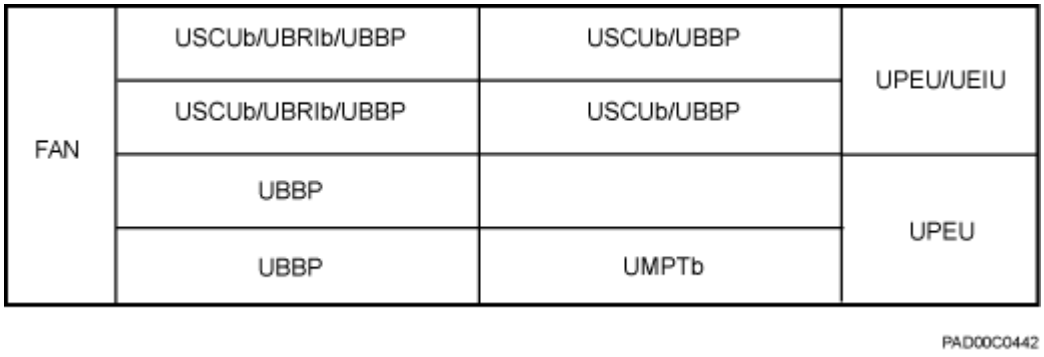
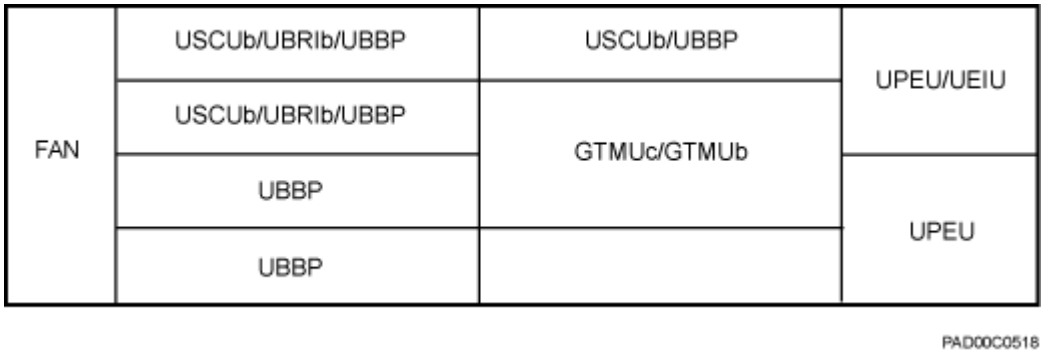


Figure 2-9 BBU slot assignment (2)



The following table describes the principles for BBU slot assignment.

Table 2-5 Principles for BBU slot assignment

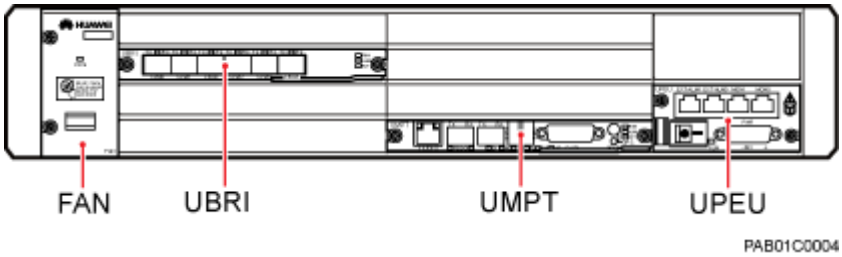
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G	Yes	1	Slot 7	-	-	-	-	-
		● GTMUb ● GTMUc		1	Slot 6	-	-	-	-	-
2	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-	-
		USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
3	Baseband radio interface board	UBRIb	No	2	Slot 1	Slot 0	-	-	-	-
4	Baseband processing board	UBBP_G	No	2	Slot 1	Slot 0	Slot 4	Slot 5	Slot 2	Slot 3

NOTE

- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In an eGBTS, the UBBP_G installed in slot 4 or 5 cannot be connected to CPRI cables.
- When the GTMUc or GTMUb is configured as a main control board, CPRI cables are preferentially connected to the GTMUc or GTMUb, and a maximum of one UBRIb can be configured.

The following figure shows the typical configuration of BBU boards.

Figure 2-10 Typical configuration of BBU boards



BBU Slot Assignment in UMTS Base Stations

This section describes the principles for BBU3900 slot assignment in UMTS base stations.

NOTE

- In a UMTS base station, the UMPT and WMPT cannot be configured in the same BBU.
- The baseband processing board in UMTS mode configured only in slot 3 or 2 can be connected to CPRI cables. The UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3 or 2. The configuration priority of these types of boards is UBBP_U > WBBPf > WBBPd.
- If five or more baseband processing boards work in UMTS mode, ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If slots 2 and 3 are occupied by WBBPa or WBBPb boards, exchange boards to ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3 or 2. A UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3.

Single BBU Scenario

The following figure shows the BBU slot assignment in a UMTS base station.

Figure 2-11 BBU slot assignment

<table>
<tr><td rowspan="4">FAN</td><td>UTRP/USCUb/WBBP/UBBP</td><td>UTRP/USCUb/WBBP/UBBP</td><td rowspan="2">UPEU/UEIU</td></tr>
<tr><td>UTRP/USCUb/WBBP/UBBP</td><td>UTRP/USCUb/WBBP/UBBP</td></tr>
<tr><td>WBBP/UBBP</td><td>UMPT/WMPT</td><td rowspan="2">UPEU</td></tr>
<tr><td>WBBP/UBBP</td><td>UMPT/WMPT</td></tr>
</table>

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The following table describes the principles for BBU slot assignment in a UMTS base station.

Table 2-6 Principles for BBU slot assignment

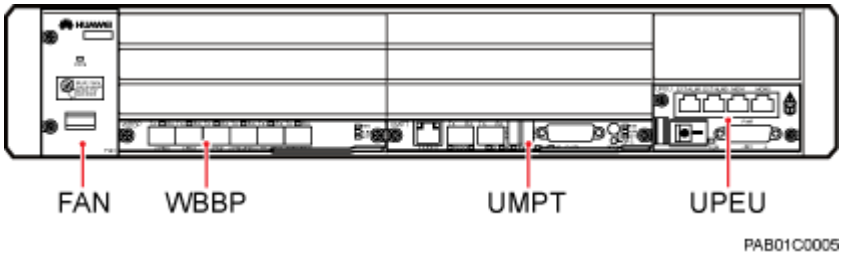
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	● UMPT_U ● WMPT	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-
		● UTRP6 ● UTRP9 ● UTRP2 ● UTRPa ● UTRP3 ● UTRP4	No	2	Slot 4	Slot 5	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-	-
		USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board not providing additional CPRI ports	• UBBP_U • WBBPf • WBBPd • WBBPb • WBBPa	Yes	6	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
	Baseband processing board providing additional CPRI ports	• UBBP_U • WBBPf • WBBPd • WBBPb • WBBPa	Yes	6	Slot 3	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-12 Typical configuration of BBU boards

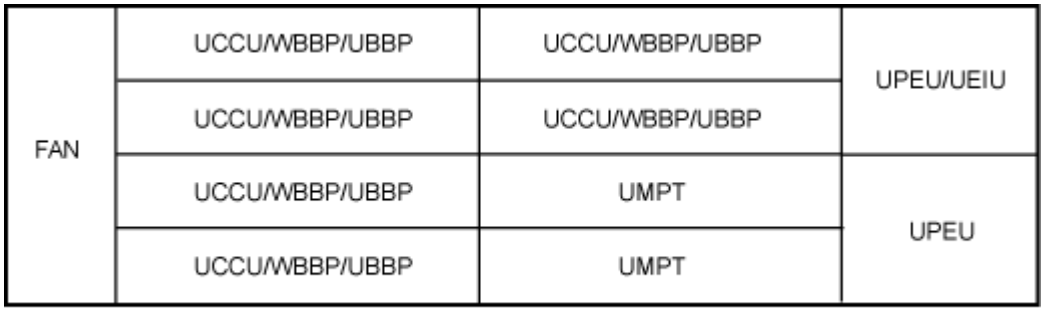


BBU Interconnection Scenario

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from

those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-13 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-7 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 4	Slot 5	Slot 0	Slot 1
3	Baseband processing board	● UBBP_U ● WBBPd ● WBBPf	Yes	6	Slot 3	Slot 2	Slot 4	Slot 5	Slot 0	Slot 1

BBU Slot Assignment in LTE FDD/LTE TDD Base Stations

This section describes the principles for BBU3900 slot assignment in LTE FDD and LTE TDD base stations.

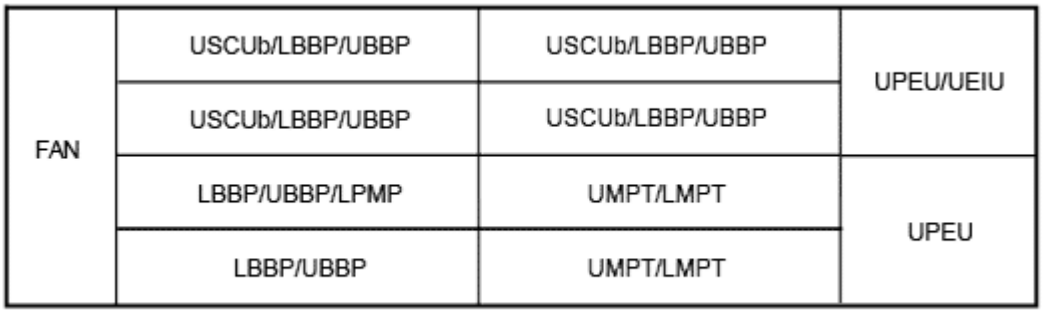
NOTE

- In an LTE FDD or LTE TDD base station, and the UMPT and LMPT are installed in the same BBU, only one board can be used as the main control board.
- An LPMP can be used only in an LTE FDD base station and cannot be used in an LTE TDD base station.

Single BBU Scenario

The principles for BBU slot assignment in an LTE FDD base station are the same as those in an LTE TDD base station. This section uses the BBU slot assignment in an LTE FDD base station as an example. The following figure shows the BBU slot assignment.

Figure 2-14 BBU slot assignment



The following table describes the principles for BBU slot assignment.

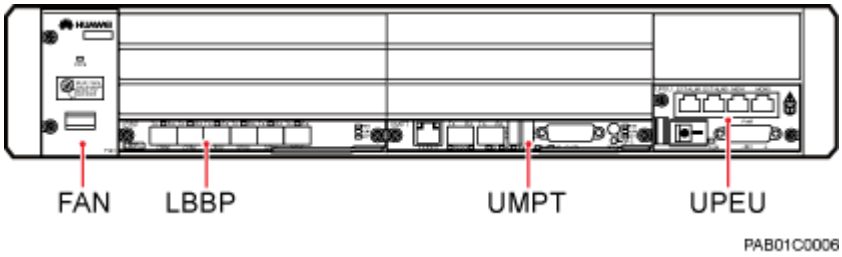
Table 2-8 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in LTE FDD mode	● UMPT_L ● LMPT	Yes	2	Slot 7	Slot 6	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
2	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
3	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
4	Baseband processing board in LTE FDD mode	● UBBP_L ● LBBPd ● LBBPc	Yes	6	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

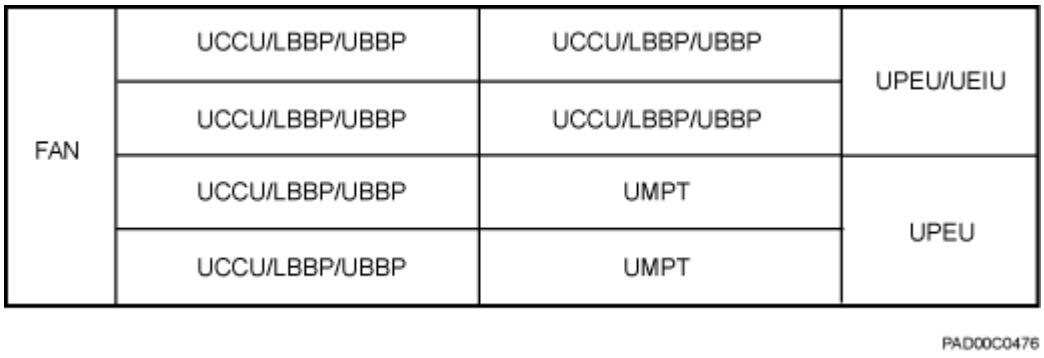
Figure 2-15 Typical configuration of BBU boards



BBU Interconnection Scenario

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-16 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-9 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 4	Slot 5	Slot 0	Slot 1

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Baseband processing board	● UBBP_L ● LBBPd_L	Yes	6	Slot 3	Slot 2	Slot 4	Slot 5	Slot 0	Slot 1

BBU Slot Assignment in GU and G*U Base Stations

This section describes the principles for BBU3900 slot assignment in GU and G*U base stations.

NOTE

- The GU base station is a separate-MPT GSM and UMTS dual-mode base station. In a GU base station, one BBU is configured with two main control boards, of which one works in GSM mode and the other works in UMTS mode.
- The G*U base station is a co-MPT GSM and UMTS dual-mode base station. In a G*U base station, one main control board in a BBU can work in GSM and UMTS dual-mode.

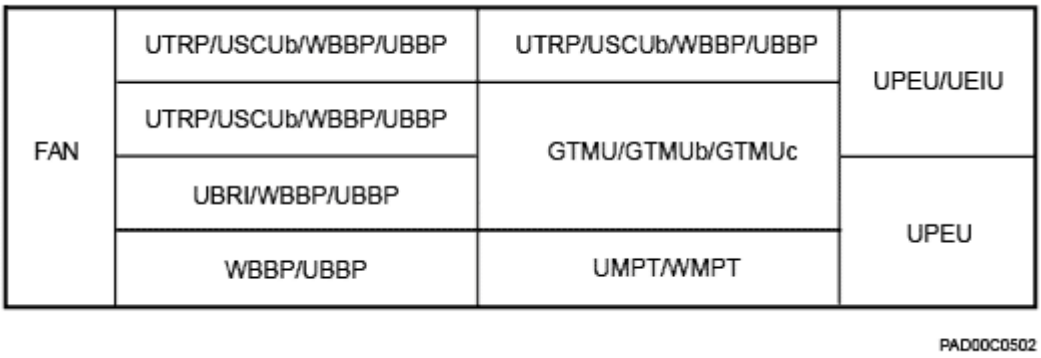
NOTE

- The baseband processing board in UMTS mode configured only in slot 3 or 2 can be connected to CPRI cables. The UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3 or 2. The configuration priority of these types of boards is UBBP_U > WBBPf > WBBPd.
- If five or more baseband processing boards work in UMTS mode, ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If slots 2 and 3 are occupied by WBBPa or WBBPb boards, exchange boards to ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3 or 2. A UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3.
- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In a GBTS, the UBBP_G installed in slot 4 cannot be connected to CPRI cables.

GU Base Station

The following figure shows the BBU slot assignment in a GU base station.

Figure 2-17 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-10 Principles for BBU slot assignment

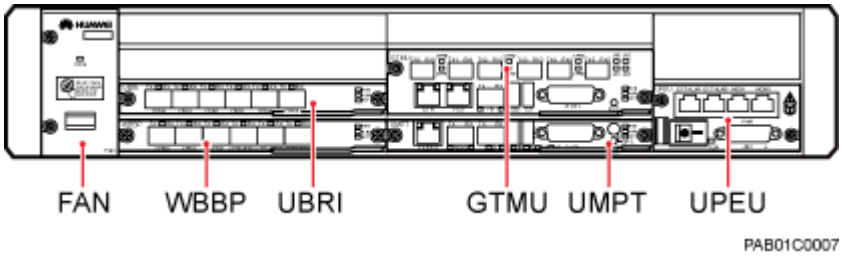
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in GSM mode	● GTMU ● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-	-
2	Main control board in UMTS mode	● UMPT_U ● WMPT	Yes	1	Slot 7	-	-	-	-
3	Transmission board in GSM mode	UTRPb4	No	1	Slot 4	Slot 0	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
4	Transmission board in UMTS mode	UTRPc	No	1	Slot 4	Slot 0	Slot 1	-	-
		● UTRP6 ● UTRP9 ● UTRP2 ● UTRPa ● UTRP3 ● UTRP4	No	2	Slot 4	Slot 0	Slot 1	-	-
5	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-	-
		USCUb14	No	1	Slot 4	Slot 1	Slot 0	-	-
6	Baseband radio interface board in GSM mode	● UBRIb ● UBRI	No	1	Slot 2	-	-	-	-
7	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
8	Baseband processing board in UMTS mode not providing additional CPRI ports	• UBBP_U • WBBPf • WBBPd • WBBPb • WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4
	Baseband processing board in UMTS mode providing additional CPRI ports	• UBBP_U • WBBPf • WBBPd • WBBPb • WBBPa	Yes	5	Slot 3	Slot 2	Slot 0	Slot 1	Slot 4

The following figure shows the typical configuration of BBU boards.

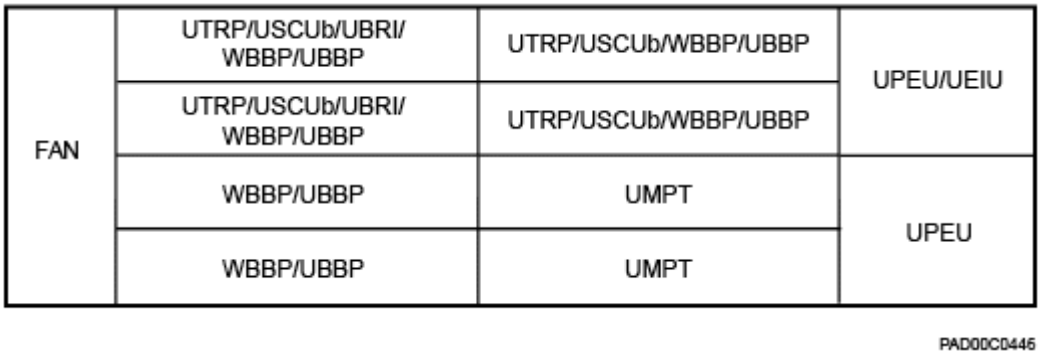
Figure 2-18 Typical configuration of BBU boards



G*U Base Station

The following figure shows the BBU slot assignment in a G*U base station.

Figure 2-19 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-11 Principles for BBU slot assignment

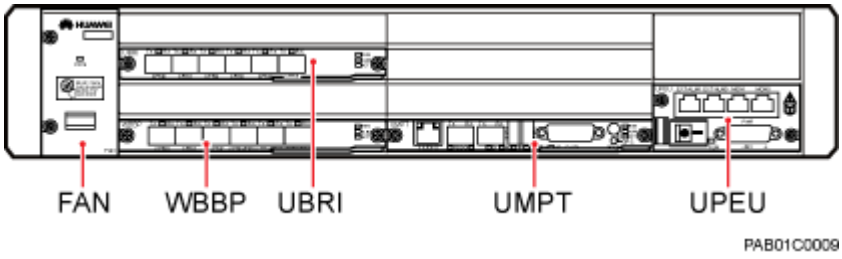
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in G*U mode	UMPT_G*U	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-
3	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-	-
		USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
4	Baseband processing board in multiple modes	UBBP_G*U	No	2	Slot 3	Slot 2	-	-	-	-
5	Baseband radio interface board in GSM mode or multiple modes	● UBRIb ● UBRI	No	2	Slot 1	Slot 0	-	-	-	-
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	Slot 5	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
7	Baseband processing board in UMTS mode	• UBBP_U • WBBPf • WBBPd • WBBPb • WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-20 Typical configuration of BBU boards



BBU Slot Assignment in GL and G*L Base Stations

This section describes the principles for BBU3900 slot assignment in GL and G*L base stations.

NOTE

- The GL base station is a separate-MPT GSM and LTE dual-mode base station. In a GL base station, one BBU is configured with two main control boards, of which one works in GSM mode and the other works in LTE mode.
- The G*L base station is a co-MPT GSM and LTE dual-mode base station. In a G*L base station, one main control board in a BBU work in GSM and LTE modes.

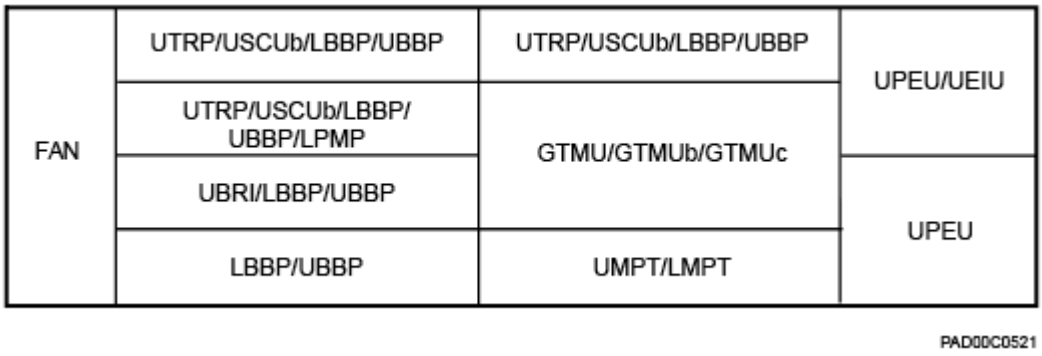
NOTE

- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In a GBTS, the UBBP_G installed in slot 4 cannot be connected to CPRI cables.

GL Base Station

The following figure shows the BBU slot assignment.

Figure 2-21 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-12 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in GSM mode	• GTMU • GTMUb • GTMUc	Yes	1	Slot 6	-	-	-	-

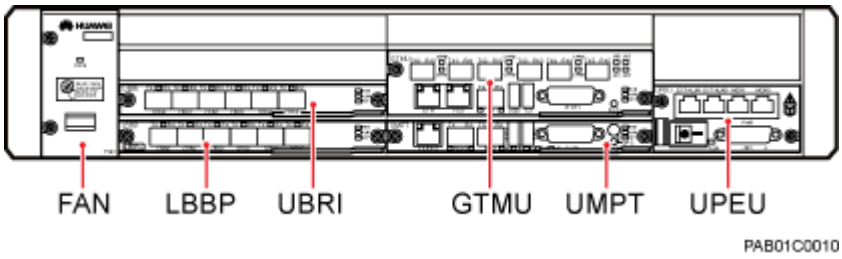
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
2	Main control board in LTE FDD mode	UMPT_L	Yes	1	Slot 7	-	-	-	-
3	Transmission board in GSM mode	UTRPb4	No	1	Slot 4	Slot 0	-	-	-
4	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 4	Slot 1	Slot 0	-	-
5	Baseband radio interface board in GSM mode	● UBRI ● UBRIb	No	1	Slot 2	-	-	-	-
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
7	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-
8	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	4	Slot 0	Slot 3	Slot 2	Slot 4	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
9	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	5	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4

The following figure shows the typical configuration of BBU boards.

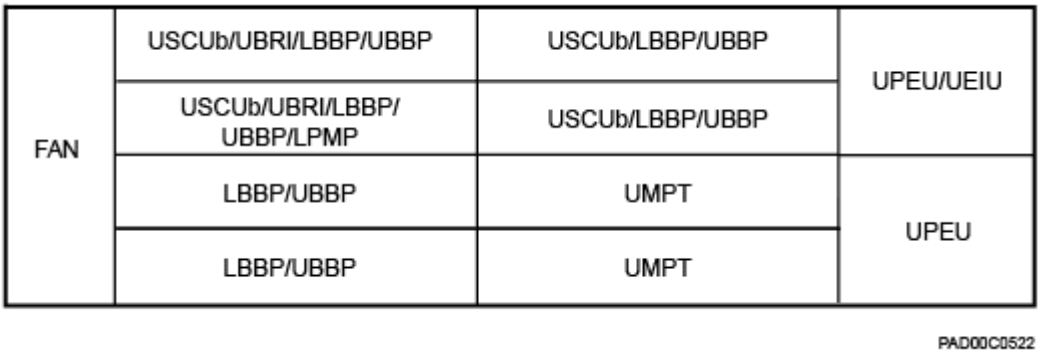
Figure 2-22 Typical configuration of BBU boards



G*L Base Station

The following figure shows the BBU slot assignment.

Figure 2-23 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-13 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in G*L mode	UMPT_G*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

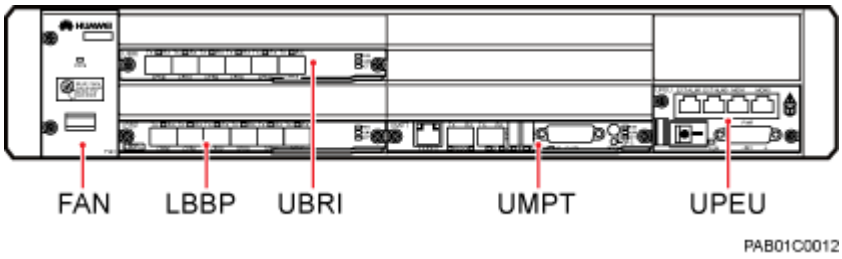
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Baseband processing board in multiple modes	UBBPd_G*L	No	2	Slot 3	Slot 2	-	-	-	-
4	Baseband radio interface board in GSM mode or multiple modes	● UBRIb ● UBRI	No	2	Slot 1	Slot 0	-	-	-	-
5	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	Slot 5	-
6	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
7	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	• UBBP_L • LBBPd • LBBPc	Yes	5	Slot 0	Slot 3	Slot 2	Slot 4	Slot 5	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
8	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	• UBBP_L • LBBPd • LBBPc	Yes	6	Slot 3	Slot 0	Slot 1	Slot 2	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-24 Typical configuration of BBU boards



BBU Slot Assignment in UL/U*L/U*T Base Stations

This section describes the principles for BBU3900 slot assignment in UL, U*L, and U*T base stations.

NOTE

- The UL base station is a separate-MPT GSM and LTE dual-mode base station. In a UL base station, one BBU is configured with two main control boards, of which one works in UMTS mode and the other works in LTE FDD mode.
- The U*L or U*T base station is a co-MPT base station. In a U*L or U*T base station, the main control board in a BBU works in UMTS and LTE FDD modes or in UMTS and LTE TDD modes.

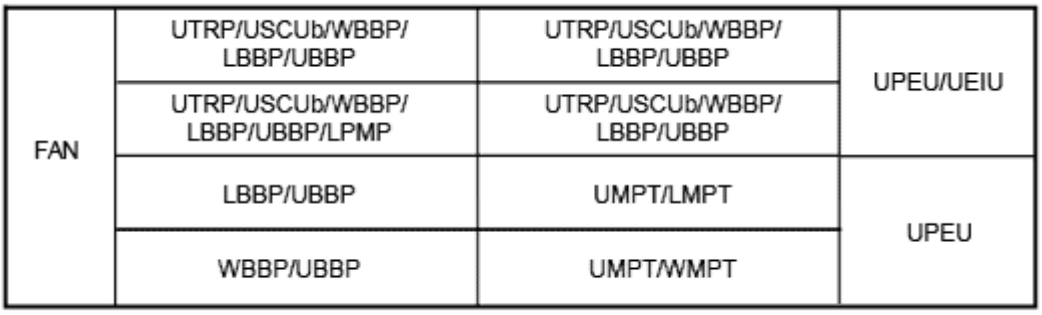
NOTE

- The baseband processing board in UMTS mode configured in only slot 3 can be connected to CPRI cables. A UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3. The configuration priority of these types of boards is UBBP_U > WBBPf > WBBPd.
- If five baseband processing boards work in UMTS mode, ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If slot 3 is occupied by a WBBPa or WBBPb, exchange boards to ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.

UL Base Station

The following figure shows the BBU slot assignment.

Figure 2-25 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-14 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in UMTS mode	• UMPT_U • WMPT	Yes	1	Slot 7	-	-	-	-

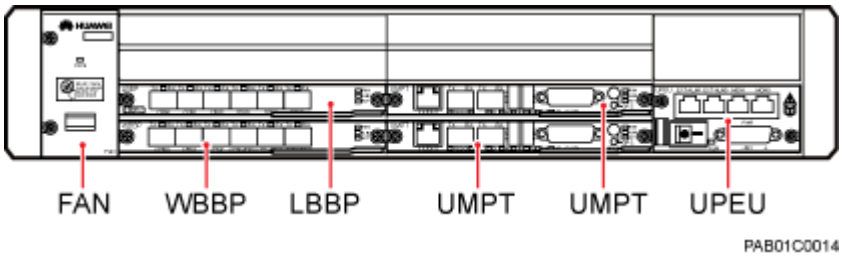
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
2	Main control board in LTE mode	● UMPT_L ● LMPT	Yes	1	Slot 6	-	-	-	-
3	Transmission board in UMTS mode	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-
		● UTRP6 ● UTRP9 ● UTRP2 ● UTRPa ● UTRP3 ● UTRP4	No	2	Slot 4	Slot 5	Slot 0	Slot 1	-
4	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
5	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 4	Slot 5
6	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-
7	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPd ● LBBPc	Yes	4	Slot 0	Slot 2	Slot 4	Slot 5	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
8	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	5	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

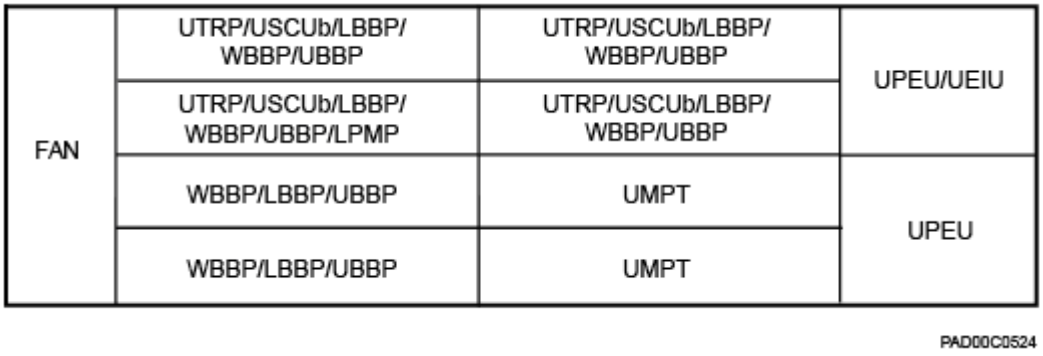
Figure 2-26 Typical configuration of BBU boards



U*L/U*T Base Station

The following figure shows the BBU slot assignment.

Figure 2-27 BBU slot assignment



The principles for the BBU slot assignment in a U*L or U*T base station are the same as those in a U*L base station. The following table descries the principles for BBU slot assignment in a U*L base station.

Table 2-15 Principles for BBU slot assignment

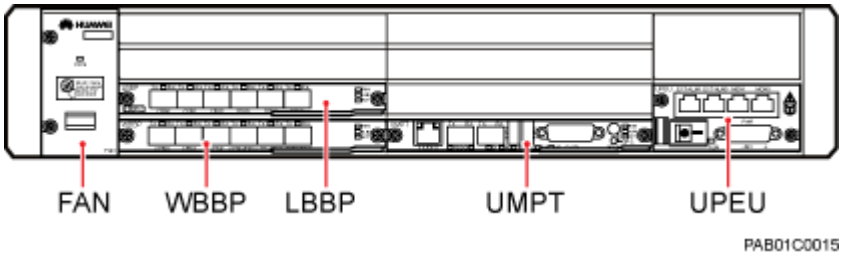
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in U*L mode	UMPT_U*L	Yes	2	Slot 7	Slot 6	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-
3	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
4	Baseband processing board in multiple modes	UBBP_U*L	No	2	Slot 3	Slot 2	-	-	-
5	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 4	Slot 5
6	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
7	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPd ● LBBPc	Yes	4	Slot 0	Slot 2	Slot 4	Slot 5	-
8	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	● UBBP_L ● LBBPd ● LBBPc	Yes	5	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

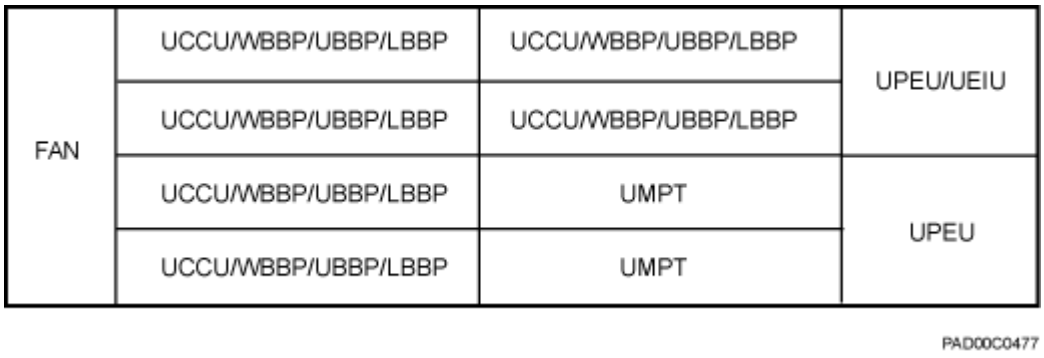
Figure 2-28 Typical configuration of BBU boards



U*L Base Station Using BBU Interconnection

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-29 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-16 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 4	Slot 5	Slot 0	Slot 1

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd	Yes	6	Slot 3	Slot 2	Slot 4	Slot 5	Slot 1	Slot 0
4	Baseband processing board in LTE FDD mode	● UBBP_L ● LBBPd	Yes	6	Slot 3	Slot 2	Slot 4	Slot 5	Slot 1	Slot 0

BBU Slot Assignment in Triple-Mode Base Stations

This section describes the principles for BBU3900 slot assignment in triple-mode base stations.

NOTE

- A GU+L base station is configured with two BBUs, of which one works in GU mode and the other works in LTE mode.
- A G[U*L] base station is configured with one BBU, which works in three modes. The BBU is configured with two main control boards, of which one (GTMU, GTMUb, or GTMUc) works in GSM mode and the other (UMPT) works in UMTS and LTE modes.
- A G*U*L base station is configured with one BBU, which works in three modes sharing the same main control board.

NOTE

- The baseband processing board in UMTS mode configured in only slot 3 can be connected to CPRI cables. A UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3. The configuration priority of these types of boards is UBBP_U > WBBPf > WBBPd.
- If five baseband processing boards work in UMTS mode, ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If slot 3 is occupied by a WBBPa or WBBPb, exchange boards to ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In a GBTS, the UBBP_G installed in slot 4 cannot be connected to CPRI cables.

The following table describes the principles for BBU slot assignment in a triple-mode base station.

Table 2-17 BBU slot assignment

Application Scenario	Description
Separate-MPT triple-mode base station configured with two BBUs ● GU+L base station (BBUs not interconnected) ● GL+U base station (BBUs not interconnected)	● For the BBU slot assignment for the GU mode, see **BBU Slot Assignment in a GU Base Station**. ● For the BBU slot assignment for the LTE mode, see **BBU Slot Assignment in LTE FDD/LTE TDD Base Stations**. ● For the BBU slot assignment for the GL mode, see **BBU Slot Assignment in a GL Base Station**. ● For the BBU slot assignment for the UMTS mode, see **BBU Slot Assignment in UMTS Base Stations**.

Application Scenario	Description
Separate-MPT triple-mode base station configured with two BBUs ● GU+L base station (BBUs interconnected) ● GL+U base station (BBUs interconnected) ● GU+UL (BBUs interconnected)	GU+L base station (BBUs interconnected) ● In a BBU working in GU mode, the slot assignment for boards (except the newly added UCIU) is the same as that in **BBU Slot Assignment in a GU Base Station**. The following table describes the principles for slot assignment for the UCIU. ● In a BBU working in LTE mode, a UMPT must be configured as the main control board. The slot assignment for other boards is the same as that in **BBU Slot Assignment in LTE FDD/LTE TDD Base Stations**. GL+U (BBUs interconnected) ● In a BBU working in GL mode, the slot assignment for boards (except the newly added UCIU) is the same as that in **BBU Slot Assignment in a GL Base Station**. The following table describes the principles for slot assignment for the UCIU. ● In a BBU working in UMTS mode, a UMPT must be configured as the main control board. The slot assignment for other boards is the same as that in **BBU Slot Assignment in UMTS Base Stations**. GU+UL (BBUs interconnected) ● In a BBU working in GU mode, the slot assignment for boards (except the newly added UCIU) is the same as that in **BBU Slot Assignment in a GU Base Station**. The following table describes the principles for slot assignment for the UCIU. ● In a BBU working in UMTS mode, a UMPT must be configured as the main control board. The slot assignment for other boards is the same as that in **BBU Slot Assignment in a UL Base Station**.
Separate-MPT base station configured with one BBU ● G[U*L] base station ● G[U*T] base station ● G[L*T] base station ● U[L*T] base station	● For the BBU slot assignment in a G[U*L] or G[U*T] base station, see **G[U*L]/G[U*T] Base Station**. ● For the BBU slot assignment in a G[L*T] base station, see **G[L*T] Base Station**. ● For the BBU slot assignment in a U[L*T] base station, see **U[L*T] Base Station**.

Application Scenario	Description
Co-MPT base station configured with one BBU ● G*U*L base station ● G*L*T base station	● For the BBU slot assignment in a G*U*L base station, see **G*U*L Base Station**. ● For the BBU slot assignment in a G*L*T or G*L base station, see **BBU Slot Assignment in a G*L Base Station**.
Co-MPT base station configured with two BBUs, both in G*U*L mode	For details, see **G*U*L+G*U*L Base Station Using BBU Interconnection**.

The following figure shows configuration principles for the UCIU.

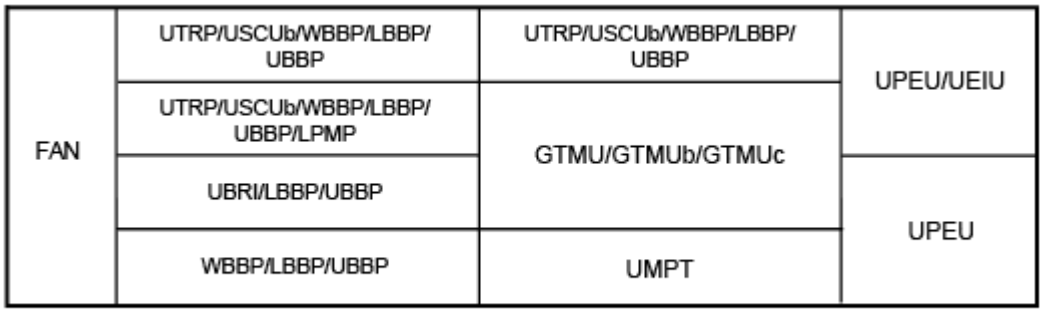
Table 2-18 Configuration principles for the UCIU

Board Type	Board	Mandatory or Not	Maximum Quantity	Slot Assignment Priorities (Descending from Left to Right)		
Interconnection board	UCIU	Yes	1	Slot 4	Slot 0	Slot 1

G[U*L]/G[U*T] Base Station

The following figure shows the BBU slot assignment in a G[U*L] base station. The BBU slot assignment in a G[U*T] base station is the same as that in a G[U*L] base station.

Figure 2-30 BBU slot assignment



The following table describes the principles for BBU slot assignment in a G[U*L] base station. The principles for the BBU slot assignment in a G[U*T] base station are the same as those in a G[U*L] base station.

Table 2-19 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
1	Main control board in GSM mode	● GTMU ● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-
2	Main control board in U*L mode	UMPT_U*L	Yes	1	Slot 7	-	-	-
3	Transmission board in GSM mode	UTRPb4	No	1	Slot 4	Slot 0	-	-
4	Transmission board in UMTS mode	UTRPc	No	1	Slot 4	Slot 0	Slot 1	-
		● UTRP6 ● UTRP9 ● UTRP2 ● UTRPa ● UTRP3 ● UTRP4	No	2	Slot 4	Slot 0	Slot 1	-
5	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-

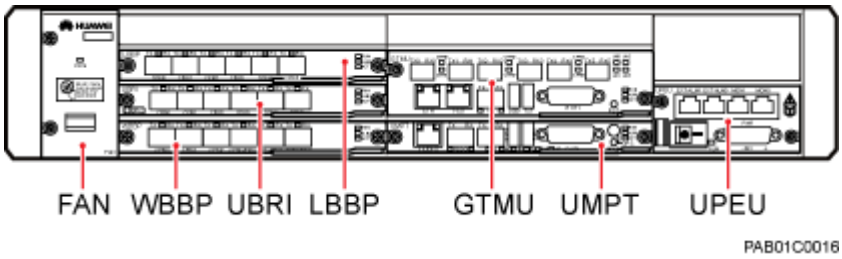
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
		● USCUb14 ● USCUb11	No	1	Slot 4	Slot 1	Slot 0	-
6	Baseband processing board in multiple modes	UBBP_U*L	No	2	Slot 3	Slot 2	-	-
7	Baseband radio interface board in GSM mode or multiple modes	● UBRIb ● UBRI	Yes	1	Slot 2	-	-	-
8	Baseband processing board in GSM mode	UBBP_G	Yes	2	Slot 1	Slot 0	Slot 4	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
9	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	4	Slot 3	Slot 0	Slot 1	Slot 4
10	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-
11	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPd ● LBBPc	Yes	3	Slot 0	Slot 2	Slot 4	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
12	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	• UBBP_L • LBBPd • LBBPc	Yes	4	Slot 2	Slot 0	Slot 1	Slot 4

The following figure shows the typical configuration of BBU boards.

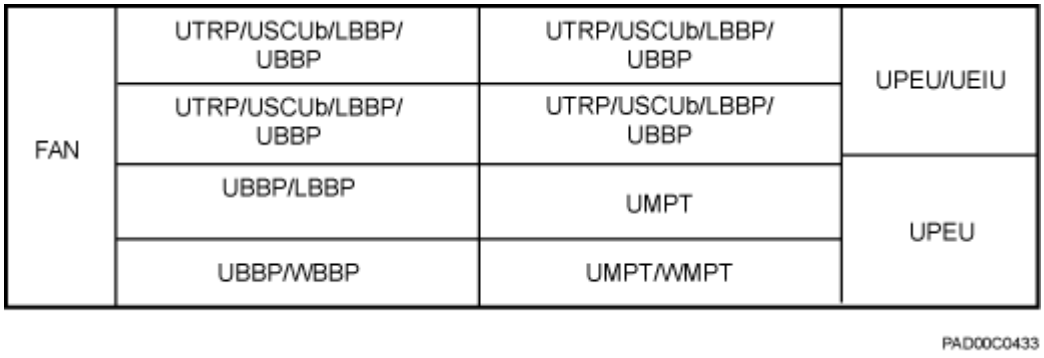
Figure 2-31 Typical configuration of BBU boards



U[L*T] Base Station

The following figure shows the BBU slot assignment in a U[L*T] base station.

Figure 2-32 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-20 Principles for BBU slot assignment

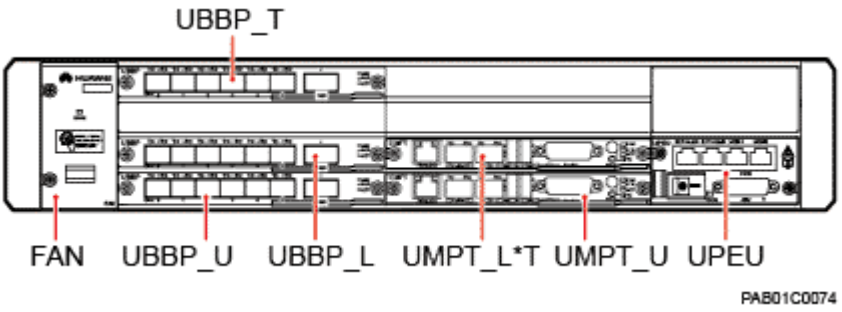
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in UMTS mode	● UMPT_U ● WMPT	Yes	1	Slot 7	-	-	-	-
2	Main control board in L*T mode	UMPT_L*T	Yes	1	Slot 6	-	-	-	-
3	Transmission board in UMTS mode	UTRPc	No	1	Slot 4	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
		● UTRP6 ● UTRP9 ● UTRP2 ● UTRPa ● UTRP3 ● UTRP4	No	2	Slot 4	Slot 0	Slot 1	-	-
4	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
5	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	4	Slot 3	Slot 0	Slot 1	Slot 4	Slot 5
6	Baseband processing board in LTE FDD mode	● UBBP_L ● LBBPd_L	Yes	4	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5
7	Baseband processing board in LTE TDD mode	● UBBP_T ● LBBPd_T	Yes	4	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

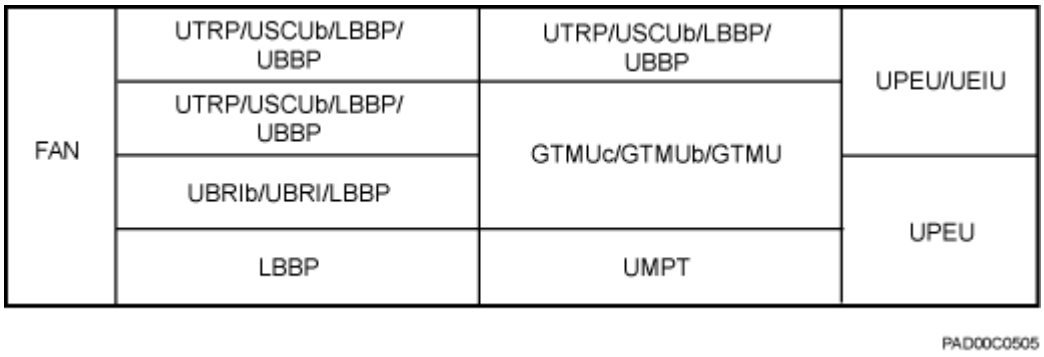
Figure 2-33 Typical configuration of BBU boards



G[L*T] Base Station

The following figure shows the BBU slot assignment in a G[L*T] base station.

Figure 2-34 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-21 Principles for BBU slot assignment

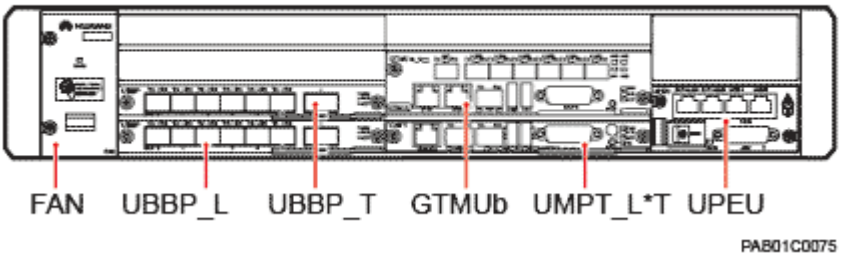
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
1	Main control board in GSM mode	● GTMUc ● GTMUb ● GTMU	Yes	1	Slot 6	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
2	Main control board in L*T mode	UMPT_L*T	Yes	1	Slot 7	-	-	-
3	Transmission board in GSM mode	UTRPb4	No	1	Slot 4	Slot 0	-	-
4	Satellite-card board	USCUb22	No	1	Slot 1	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 4	Slot 1	Slot 0	-
5	Baseband radio interface board in GSM mode	● UBRIb ● UBRI	No	1	Slot 2	-	-	-
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 0	Slot 4	-
7	Baseband processing board in LTE FDD mode	● UBBP_L ● LBBPd_L	Yes	4	Slot 3	Slot 0	Slot 1	Slot 4

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)			
8	Baseband processing board in LTE TDD mode	• UBBP_T • LBBPd_T	Yes	4	Slot 2	Slot 0	Slot 1	Slot 4

The following figure shows the typical configuration of BBU boards.

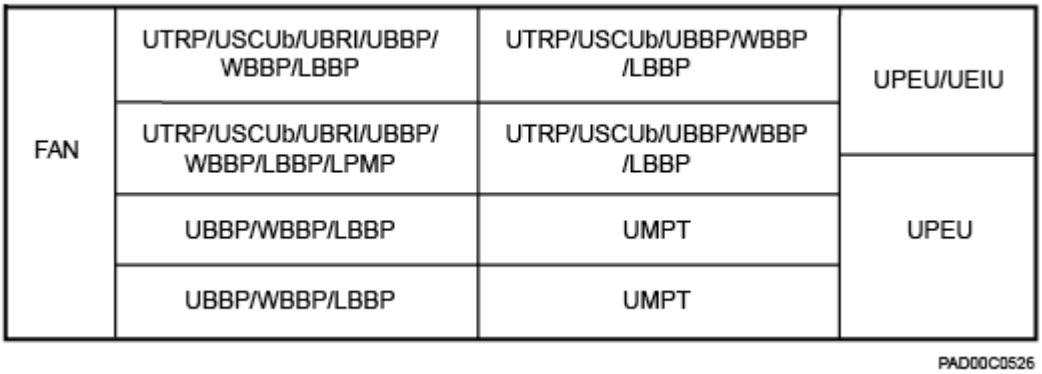
Figure 2-35 Typical configuration of BBU boards



G*U*L Base Station

The following figure shows the BBU slot assignment.

Figure 2-36 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-22 Principles for BBU slot assignment

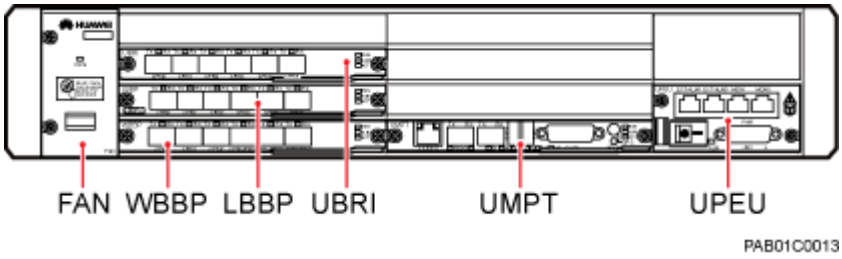
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board	UMPT_G*U*L	Yes	2	Slot 7	Slot 6	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-
3	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-
4	Baseband processing board in multiple modes	UBBP_G*U*L	No	2	Slot 3	Slot 2	-	-	-
5	Baseband radio interface board in GSM mode or multiple modes	● UBRIb ● UBRI	No	2	Slot 1	Slot 0	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 1	Slot 2	Slot 0	Slot 4	Slot 5
7	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 4	Slot 5
8	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
9	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	4	Slot 0	Slot 2	Slot 4	Slot 5	-
10	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	5	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

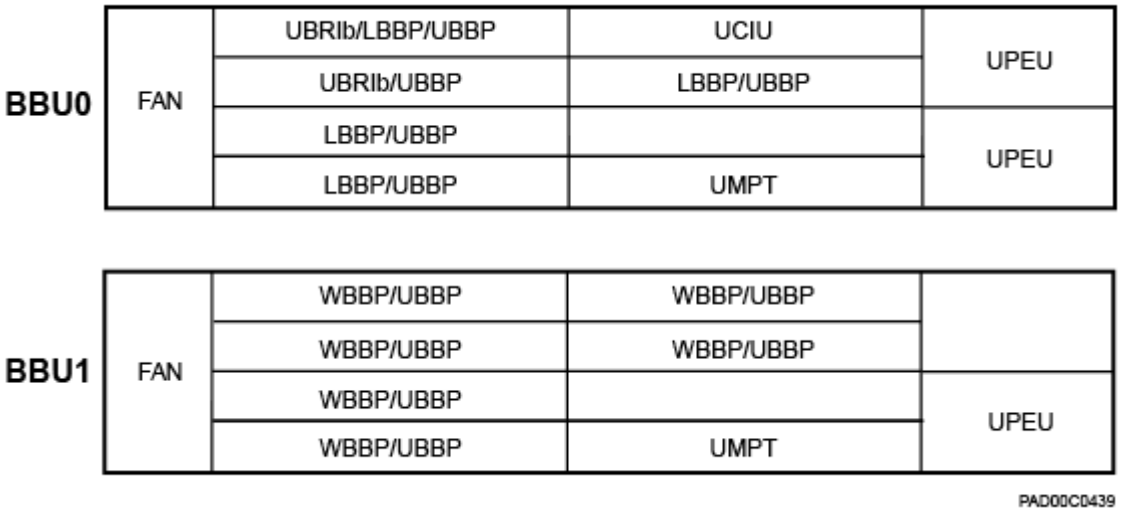
Figure 2-37 Typical configuration of BBU boards



G*U*L+G*U*L Base Station Using BBU Interconnection

The following figure shows the BBU slot assignment in two interconnected BBUs in G*U*L +G*U*L mode.

Figure 2-38 BBU slot assignment in a G*U*L+G*U*L base station Using BBU Interconnection



BBU Slot Assignment in Quadruple-Mode Base Stations

This section describes the principles for BBU3900 slot assignment in quadruple-mode base stations.

NOTE

- The baseband processing board in UMTS mode configured in only slot 3 can be connected to CPRI cables. A UBBP_U, WBBPd, or WBBPf is preferentially configured in slot 3. The configuration priority of these types of boards is UBBP_U > WBBPf > WBBPd.
- If five baseband processing boards work in UMTS mode, ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If slot 3 is occupied by a WBBPa or WBBPb, exchange boards to ensure that a UBBP_U, WBBPd, or WBBPf is configured in slot 3.
- If two or more baseband boards in GSM mode are required, ensure that at least one of the baseband board (UBBPd_G or UBRIb) is installed in slot 1, slot 2, or slot 3.
- In a GBTS, the UBBP_G installed in slot 4 cannot be connected to CPRI cables.

The following table describes the BBU slot assignment in quadruple-mode base stations.

Table 2-23 BBU slot assignment

Application Scenario	Description
Separate-MPT quadruple-mode base station configured with two BBUs: ● GU+L*T base station (UCIU+UMPT)	GU+L*T base station (UCIU+UMPT): ● In a BBU working in GU mode, the slot assignment for boards (except the newly added UCIU) is the same as that in **BBU Slot Assignment in a GU Base Station**. The following table describes the principles for slot assignment for the UCIU. ● For the BBU slot assignment for the L*T mode, see BBU Slot Assignment in an L*T Base Station.
Co-MPT quadruple-mode base station configured with one BBU: G*U*L*T base station	For the BBU slot assignment in a G*U*L*T base station, see **G*U*L*T Base Station**.

The following figure shows configuration principles for the UCIU.

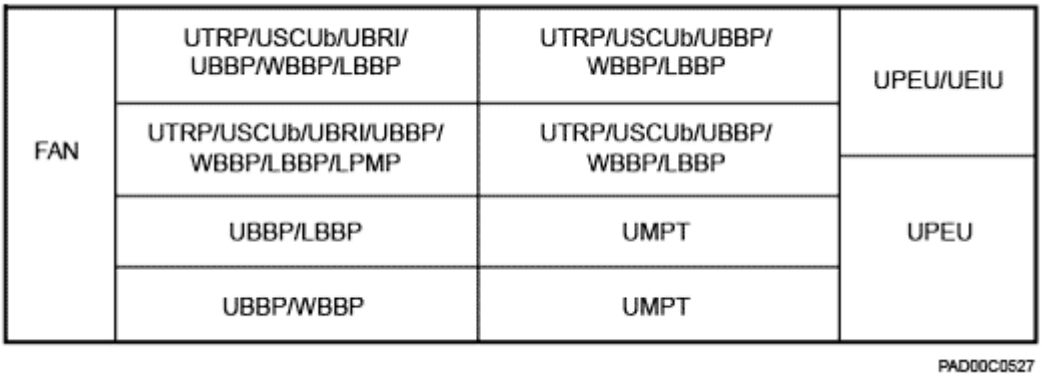
Table 2-24 Configuration principles for the UCIU

Board Type	Board	Mandatory or Not	Maximum Quantity	Slot Assignment Priorities (Descending from Left to Right)		
Interconnection board	UCIU	Yes	1	Slot 4	Slot 0	Slot 1

G*U*L*T Base Station

The following figure shows the BBU slot assignment in a G*U*L*T base station.

Figure 2-39 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-25 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board	UMPT_G*U*L*T	Yes	2	Slot 7	Slot 6	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-
3	Satellite-card board	USCUb22	No	1	Slot 5	Slot 1	-	-	-
		● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-

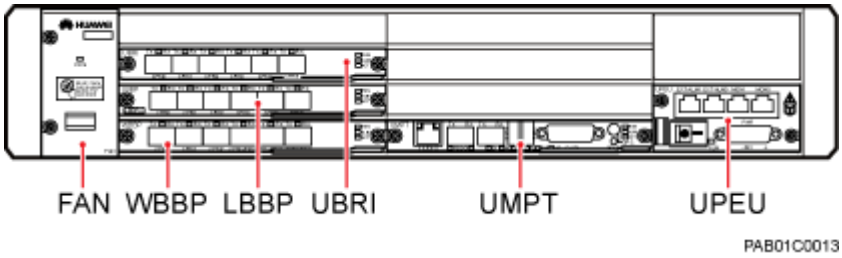
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
4	Baseband processing board in multiple modes	UBBP_G*U*L*T	No	2	Slot 3	Slot 2	-	-	-
5	Baseband radio interface board in GSM mode or multiple modes	● UBRI ● UBRIb	No	2	Slot 1	Slot 0	-	-	-
6	Baseband processing board in UMTS mode	● UBBP_U ● WBBPf ● WBBPd ● WBBPb ● WBBPa	Yes	5	Slot 3	Slot 0	Slot 1	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
7	Interference cancellation board in LTE mode	LPMP	No	1	Slot 1	-	-	-	-
8	Baseband processing board in LTE FDD mode in a scenario where an interference cancellation board is configured	● UBBP_L ● LBBPd_L	Yes	4	Slot 2	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
9	Baseband processing board in LTE FDD mode in a scenario where no interference cancellation board is configured	● UBBP_L ● LBBPc ● LBBPd	Yes	5	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5
10	Baseband processing board in LTE TDD mode	● UBBP_T ● LBBPd_T	Yes	5	Slot 2	Slot 0	Slot 1	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-40 Typical configuration of BBU boards



2.4.3 BBU3910 Slot Assignment

This section describes the principles for BBU3910 slot assignment.

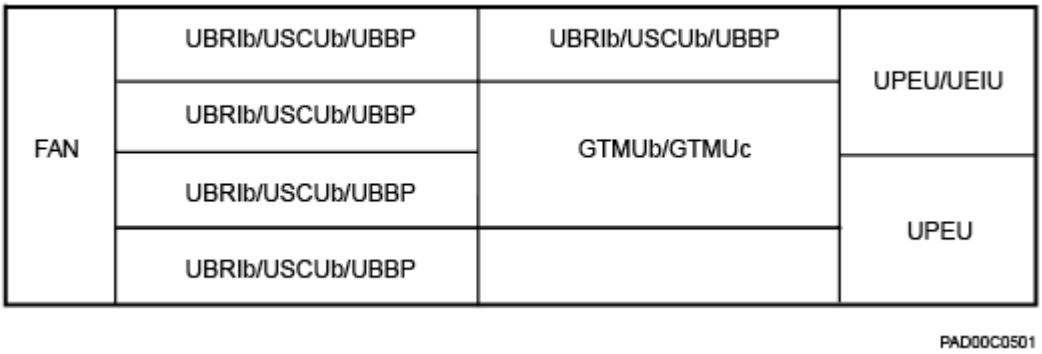
BBU Slot Assignment in GSM Base Stations

This section describes the principles for BBU3910 slot assignment in GSM base stations.

GBTS

The following figure shows the BBU slot assignment in a GBTS.

Figure 2-41 BBU slot assignment



The following table describes the principles for BBU slot assignment.

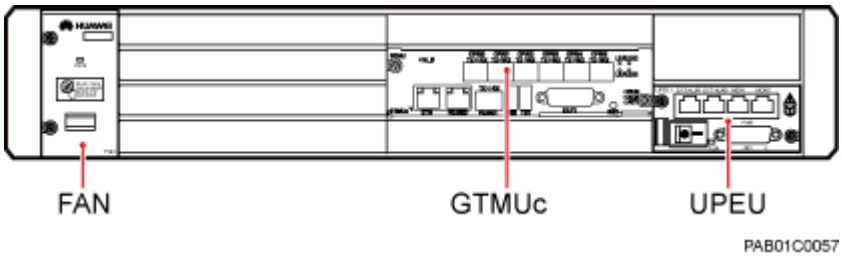
Table 2-26 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board	● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-	-
2	Satellite-card board	USCUb14	No	1	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
3	Baseband processing board	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4
4	Baseband radio interface board	UBRIb	No	1	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4

The following figure shows the typical configuration of BBU boards.

Figure 2-42 Typical configuration of BBU boards



eGBTS

The following figure shows the BBU slot assignment in an eGBTS.

Figure 2-43 BBU slot assignment (1)

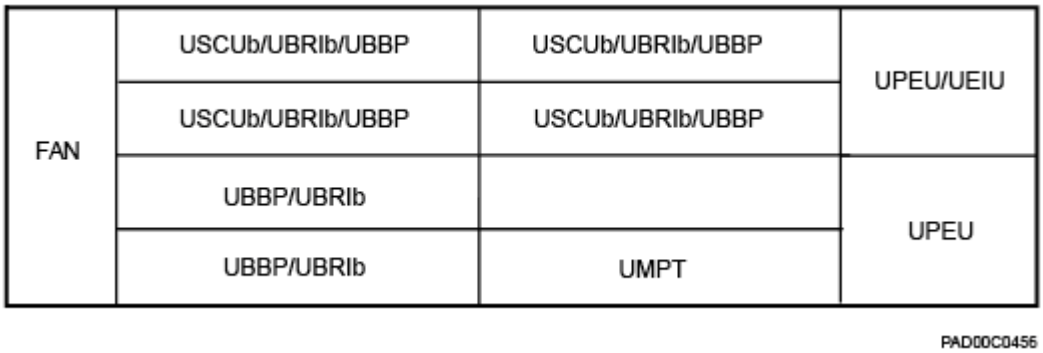
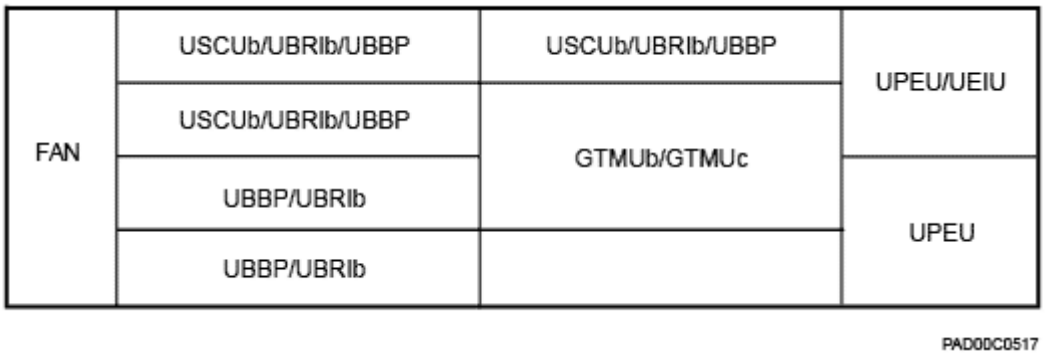


Figure 2-44 BBU slot assignment (2)



The following table describes the principles for BBU slot assignment.

Table 2-27 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G	Yes	1	Slot 7	-	-	-	-	-
		● GTMUb ● GTMUc		1	Slot 6	-	-	-	-	-
2	Satellite-card board	USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
3	Baseband processing board	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

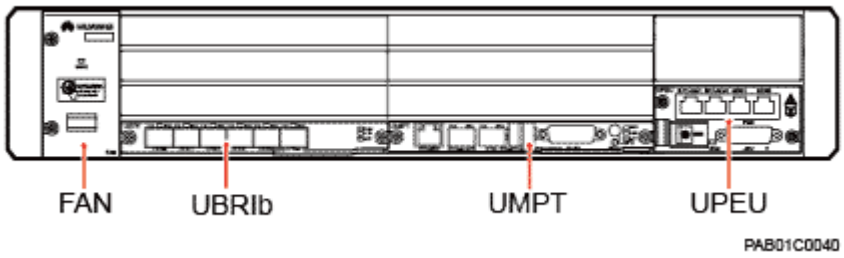
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
4	Baseband radio interface board	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

NOTE

At least one UBBP_G or UBRIb board must be configured in a BBU if a UMPT is used as a main control board.

The following figure shows the typical configuration of BBU boards.

Figure 2-45 Typical configuration of BBU boards



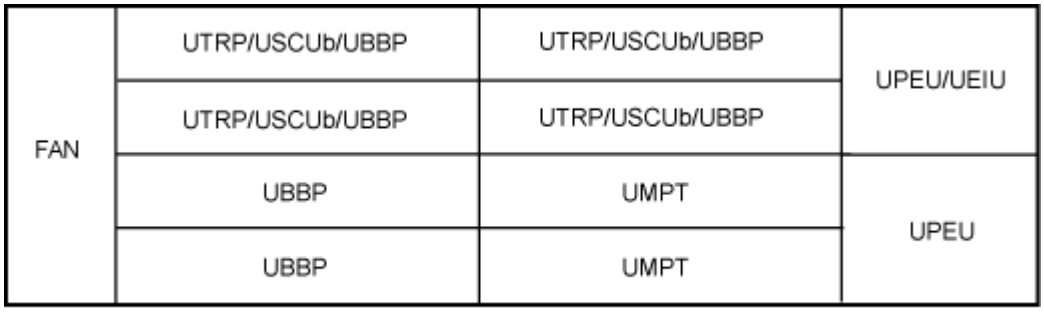
BBU Slot Assignment in UMTS Base Stations

This section describes the principles for BBU3910 slot assignment in UMTS base stations.

Single BBU Scenario

The following figure shows the BBU slot assignment in a UMTS base station.

Figure 2-46 BBU slot assignment



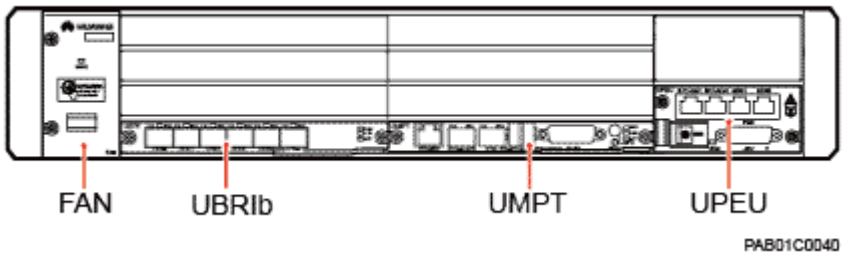
The following table describes the principles for BBU slot assignment in a UMTS base station.

Table 2-28 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 5	Slot 4	Slot 0	Slot 1	-	-
		UTRPa	No	2	Slot 5	Slot 4	Slot 0	Slot 1	-	-
3	Satellite-card board	USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-47 Typical configuration of BBU boards

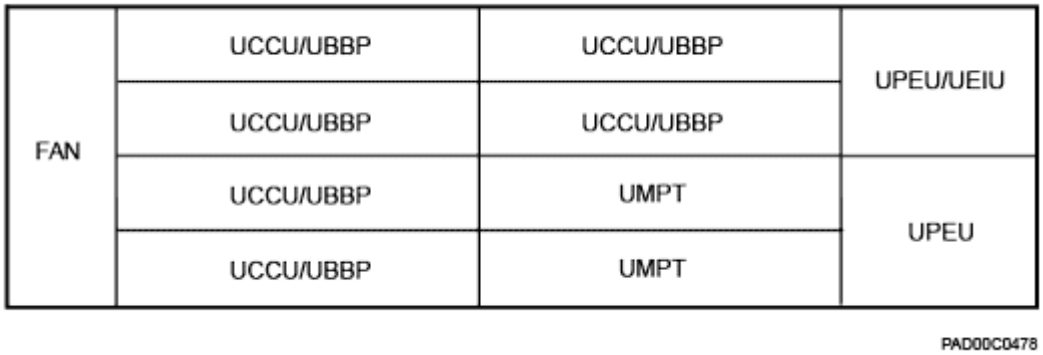


BBU Interconnection Scenario

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from

those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-48 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-29 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
3	Baseband processing board	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

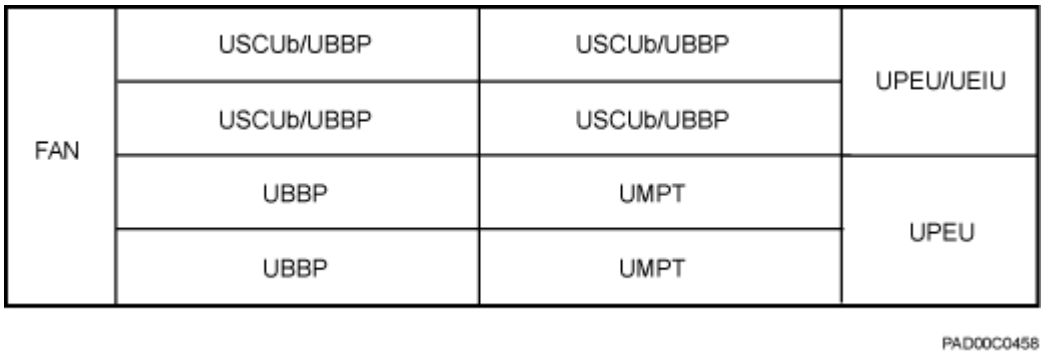
BBU Slot Assignment in LTE FDD/LTE TDD Base Stations

This section describes the principles for BBU3910 slot assignment in LTE FDD and LTE TDD base stations.

Single BBU Scenario

The principles for BBU slot assignment in an LTE FDD base station are the same as those in an LTE TDD base station. This section uses the BBU slot assignment in an LTE FDD base station as an example. The following figure shows the BBU slot assignment.

Figure 2-49 BBU slot assignment



The following table describes the principles for BBU slot assignment.

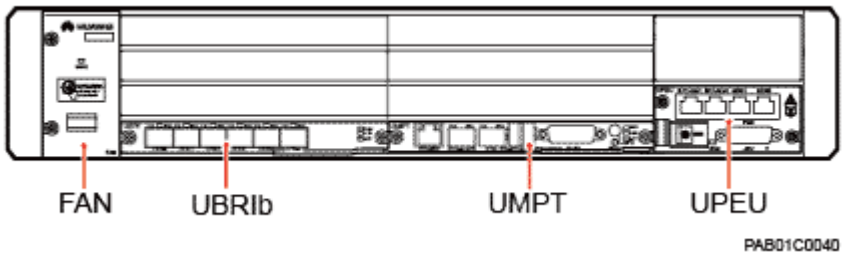
Table 2-30 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in LTE FDD mode	UMPT_L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
4	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

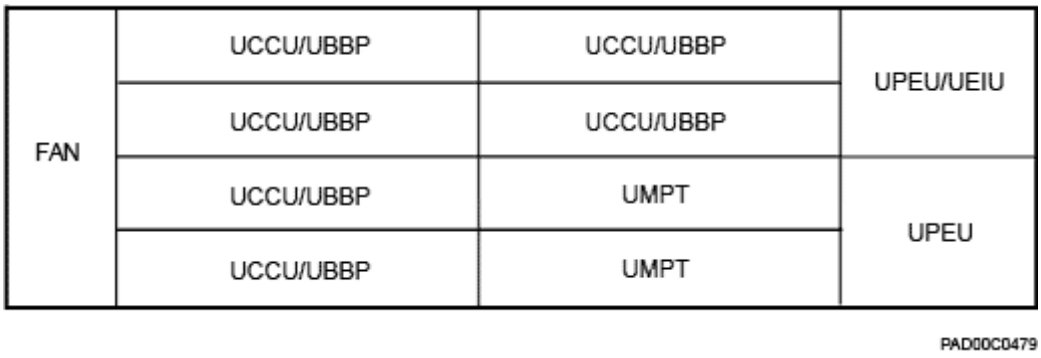
Figure 2-50 Typical configuration of BBU boards



BBU Interconnection Scenario

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-51 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-31 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
3	Baseband processing board	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

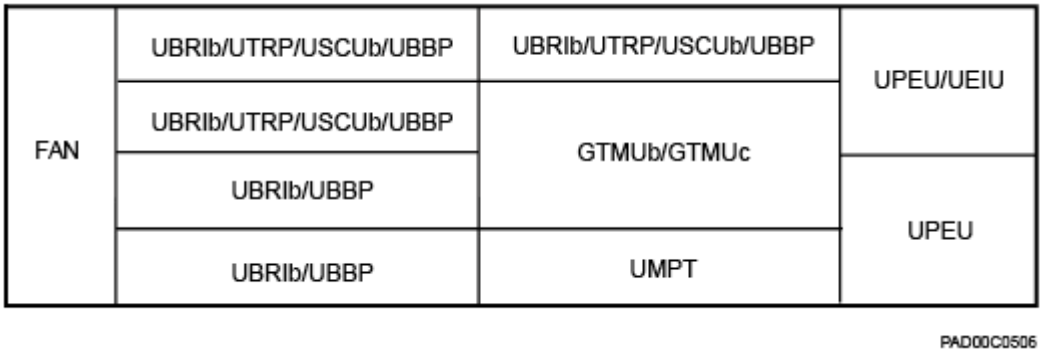
BBU Slot Assignment in GU and G*U Base Stations

This section describes the principles for BBU3910 slot assignment in GU and G*U base stations.

GU Base Station

The following figure shows the BBU slot assignment in a GU base station.

Figure 2-52 BBU slot assignment



The following table describes the principles for BBU slot assignment.

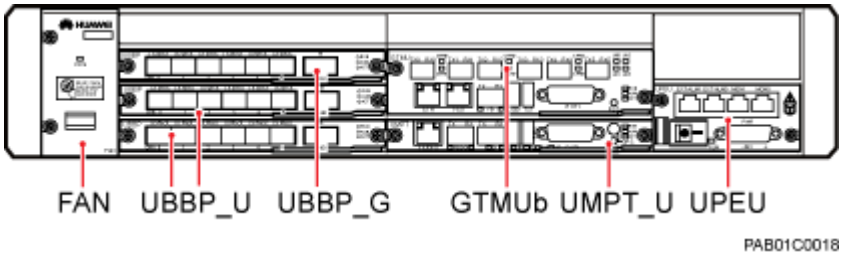
Table 2-32 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in GSM mode	● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-	-
2	Main control board in UMTS mode	UMPT_U	Yes	1	Slot 7	-	-	-	-
3	Transmission board in UMTS mode	UTRPc	No	1	Slot 4	Slot 0	Slot 1	-	-
		UTRPa	No	2	Slot 4	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
4	Satellite-card board	USCUb14	No	1	Slot 4	Slot 1	Slot 0	-	-
5	Baseband processing board in UMTS mode	UBBP_U	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4
7	Baseband radio interface board in GSM mode	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4

The following figure shows the typical configuration of BBU boards.

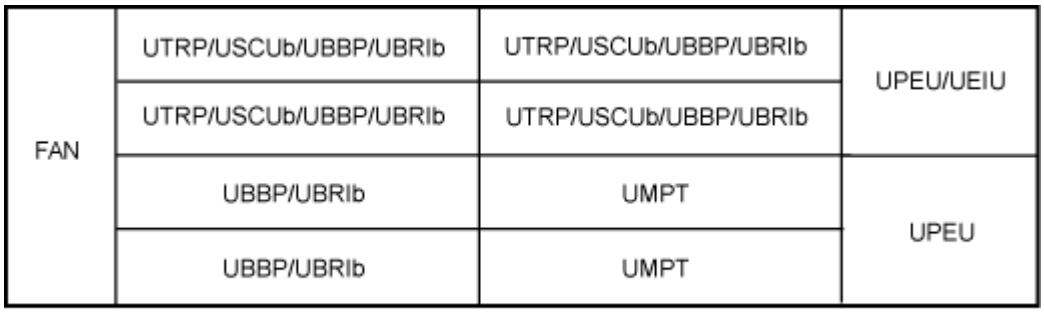
Figure 2-53 Typical configuration of BBU boards



G*U Base Station

The following figure shows the BBU slot assignment in a G*U base station.

Figure 2-54 BBU slot assignment



The following table describes the principles for BBU slot assignment.

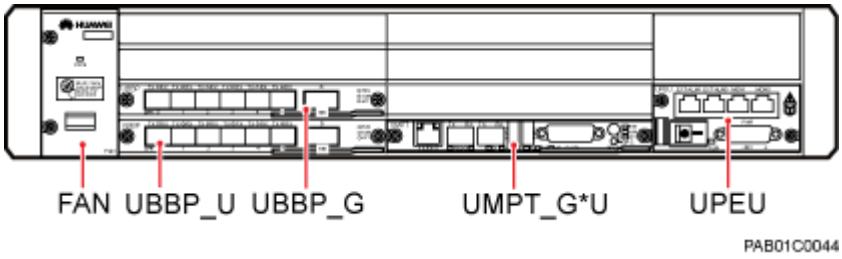
Table 2-33 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in G*U mode	UMPT_G*U	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 5	Slot 4	Slot 0	Slot 1	-	-
		UTRPa	No	2	Slot 5	Slot 4	Slot 0	Slot 1	-	-
3	Satellite-card board	USCUb14	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
4	Baseband processing board in multiple modes	UBBP_G*U	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
5	Baseband processing board in UMTS mode	UBBP_U	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband radio interface board in GSM mode or multiple modes	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-55 Typical configuration of BBU boards



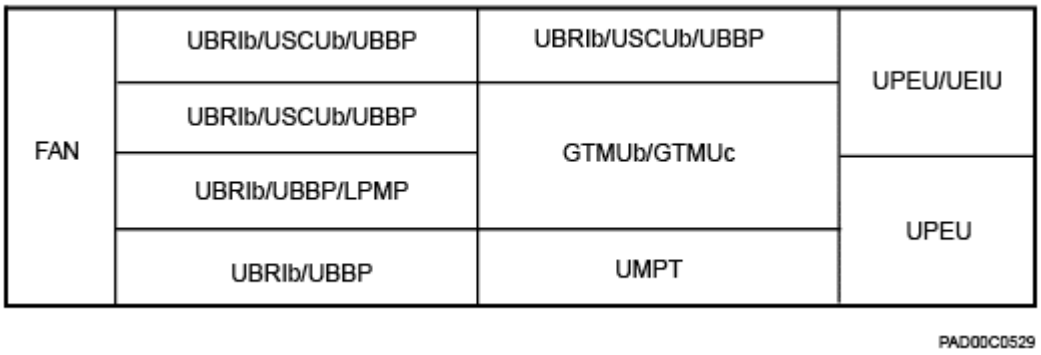
BBU Slot Assignment in GL and G*L Base Stations

This section describes the principles for BBU3910 slot assignment in GL and G*L base stations.

GL Base Station

The following figure shows the BBU slot assignment.

Figure 2-56 BBU slot assignment



The following table describes the principles for BBU slot assignment.

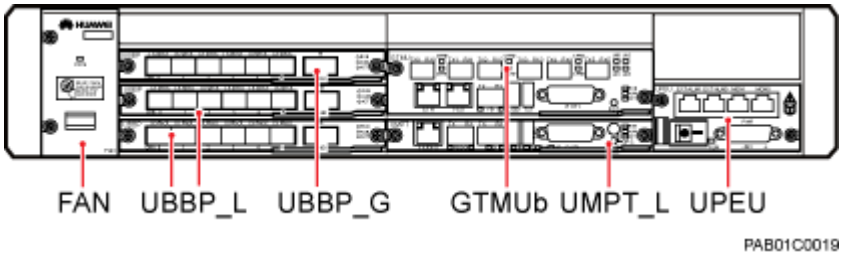
Table 2-34 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
1	Main control board in GSM mode	● GTMUb ● GTMUc	Yes	1	Slot 6	-	-	-	-
2	Main control board in LTE FDD mode	UMPT_L	Yes	1	Slot 7	-	-	-	-
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 4	Slot 1	Slot 0	-	-
4	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-
5	Baseband processing board in LTE mode	UBBP_L	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)				
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4
7	Baseband radio interface board in GSM mode	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4

The following figure shows the typical configuration of BBU boards.

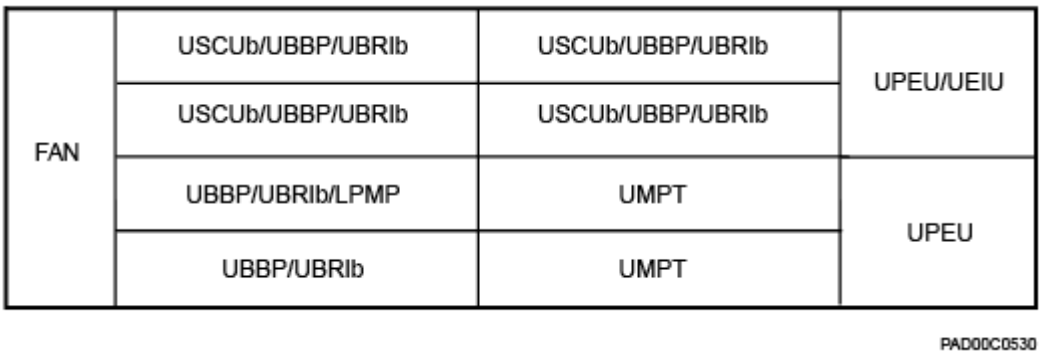
Figure 2-57 Typical configuration of BBU boards



G*L Base Station

The following figure shows the BBU slot assignment.

Figure 2-58 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-35 Principles for BBU slot assignment

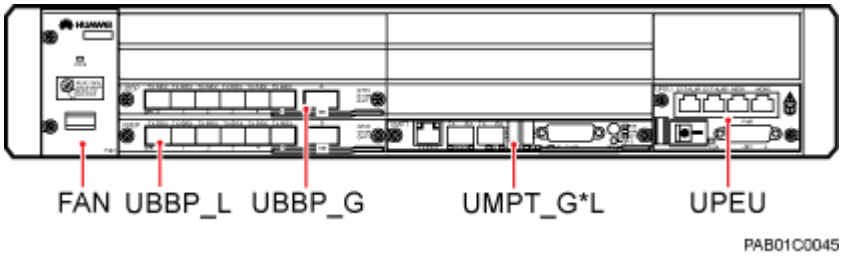
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in G*L mode	UMPT_G*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Baseband processing board in multiple modes	UBBP_G*L	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
4	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
5	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
7	Baseband radio interface board in GSM mode or multiple modes	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-59 Typical configuration of BBU boards



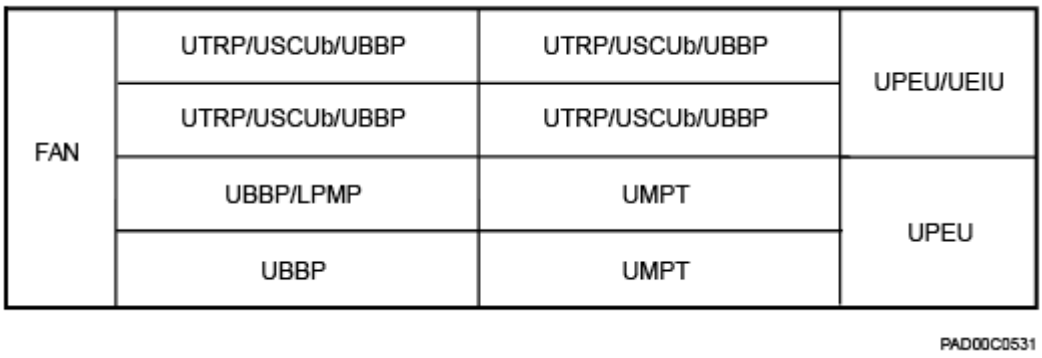
BBU Slot Assignment in UL and U*L Base Stations

This section describes the principles for BBU3910 slot assignment in UL and U*L base stations.

UL Base Station

The following figure shows the BBU slot assignment.

Figure 2-60 BBU slot assignment



The following table describes the principles for BBU slot assignment.

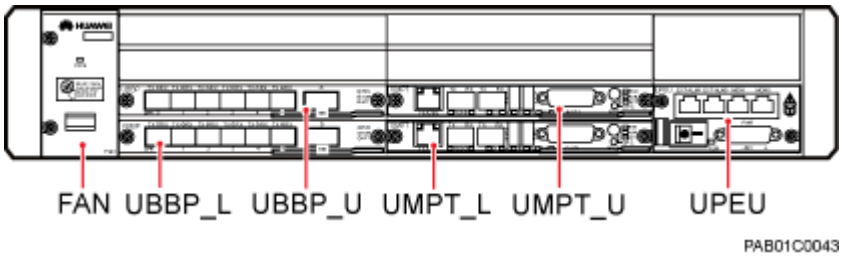
Table 2-36 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in LTE FDD mode	UMPT_L	Yes	1	Slot 7	-	-	-	-	-
2	Main control board in UMTS mode	UMPT_U	Yes	1	Slot 6	-	-	-	-	-
3	Transmission board in UMTS mode	UTRPc	No	1	Slot 5	Slot 4	Slot 0	Slot 1	-	-
		UTRPa	No	2	Slot 5	Slot 4	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
4	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 0	Slot 1	-	-
5	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
6	Baseband processing board in LTE FDD mode	UBBP_L	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband processing board in UMTS mode	UBBP_U	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

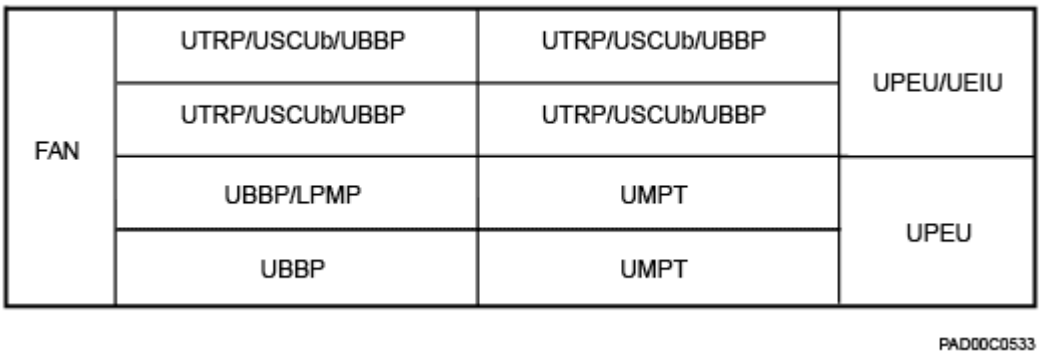
Figure 2-61 Typical configuration of BBU boards



U*L Base Station

The following figure shows the BBU slot assignment.

Figure 2-62 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-37 Principles for BBU slot assignment

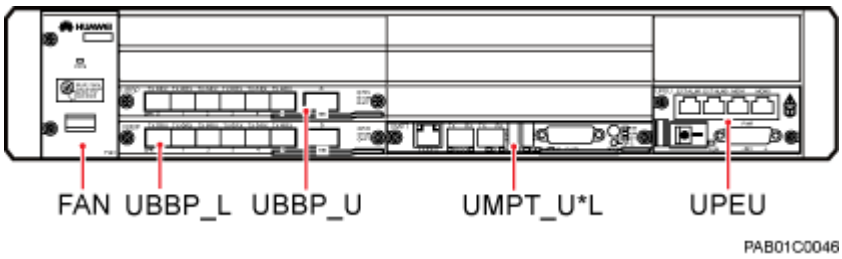
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board in U*L mode	UMPT_U*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board in multiple modes	UBBP_U*L	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
5	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
6	Baseband processing board in LTE FDD mode	UBBP_L	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
7	Baseband processing board in UMTS mode	UBBP_U	Yes	5	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

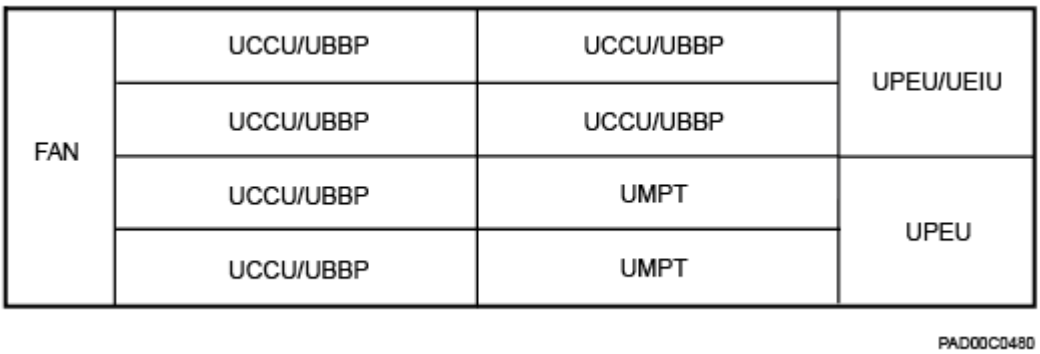
Figure 2-63 Typical configuration of BBU boards



U*L Base Station Using BBU Interconnection

In a scenario where two or more BBUs are connected to universal switching units (USUs) using interconnection signal cables, the principles for BBU slot assignment are different from those in a single BBU scenario. The following figure shows the principles for BBU slot assignment in a BBU interconnection scenario.

Figure 2-64 BBU slot assignment



The following table describes the principles for BBU slot assignment in a BBU interconnection scenario.

Table 2-38 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Interconnection board	UCCU	Yes	1	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
3	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
4	Baseband processing board in UMTS mode	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

BBU Slot Assignment in Triple-Mode Base Stations

This section describes the principles for BBU3910 slot assignment in triple-mode base stations.

The following table describes the BBU slot assignment in a separate-MPT triple-mode base station in various application scenarios.

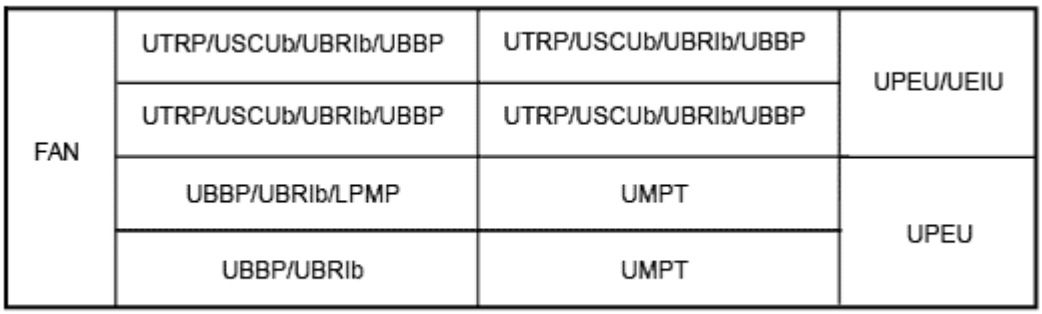
Table 2-39 BBU slot assignment

Application Scenario	Description
Separate-MPT triple-mode base station configured with two BBUs ● GU+L base station (BBUs interconnected) ● GL+U base station (BBUs interconnected)	GU+L base station (BBUs interconnected) ● For the BBU slot assignment for the GU mode, see **BBU Slot Assignment in a GU Base Station**. ● For the BBU slot assignment for the LTE mode, see **BBU Slot Assignment in LTE FDD/LTE TDD Base Stations**. GL+U (BBUs interconnected) ● For the BBU slot assignment for the GL mode, see **BBU Slot Assignment in a GL Base Station**. ● For the BBU slot assignment for the UMTS mode, see **BBU Slot Assignment in UMTS Base Stations**.
Co-MPT triple-mode base station configured with one BBU ● G*U*L base station ● G*U*T base station ● G*L*T base station ● U*L*T base station	For the BBU slot assignment in a G*U*L base station, see **G*U*L Base Station**. For the BBU slot assignment in a G*U*T base station, see **G*U*T Base Station**. For the BBU slot assignment in a G*L*T base station, see **G*L*T Base Station**. For the BBU slot assignment in a U*L*T base station, see **U*L*T Base Station**.

G*U*L Base Station

The following figure shows the BBU slot assignment.

Figure 2-65 BBU slot assignment



The following table describes the principles for BBU slot assignment.

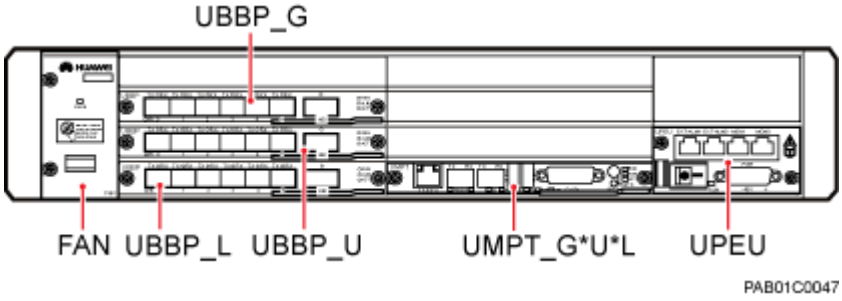
Table 2-40 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G*U*L	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board in multiple modes	UBBP_G*U*L	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
5	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
6	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband processing board in UMTS mode	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
8	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
9	Baseband radio interface board in GSM mode or multiple modes	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

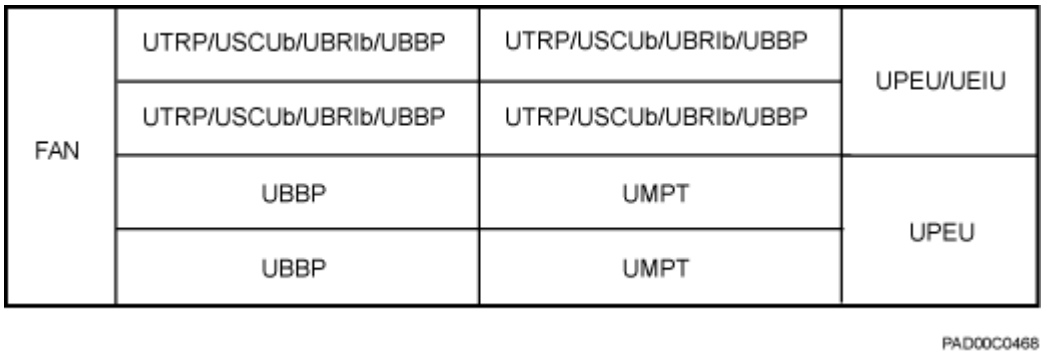
Figure 2-66 Typical configuration of BBU boards



G*U*T Base Station

The following figure shows the BBU slot assignment.

Figure 2-67 BBU slot assignment



The following table describes the principles for BBU slot assignment.

Table 2-41 Principles for BBU slot assignment

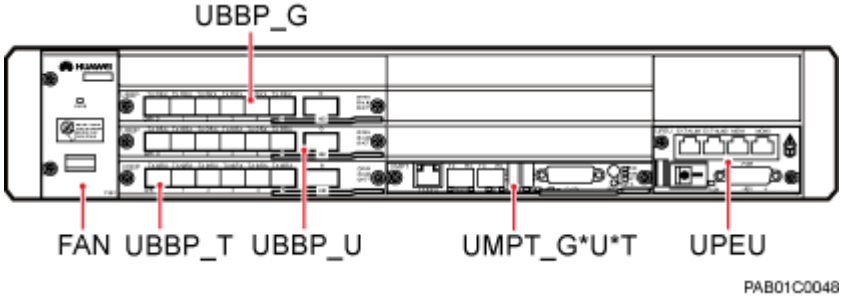
Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G*U*T	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board in LTE TDD mode	UBBP_T	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
5	Baseband processing board in UMTS mode	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
6	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
7	Baseband radio interface board in GSM mode or multiple modes	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

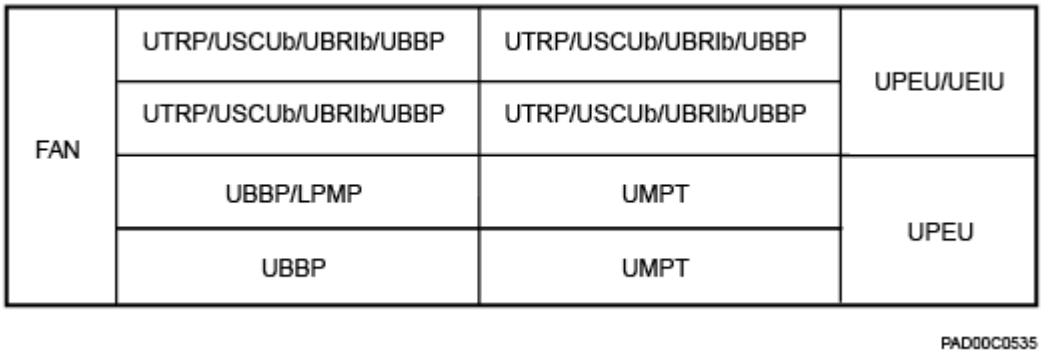
Figure 2-68 Typical configuration of BBU boards



G*L*T Base Station

The following figure shows the BBU slot assignment.

Figure 2-69 BBU slot assignment



The following table describes the principles for BBU slot assignment.

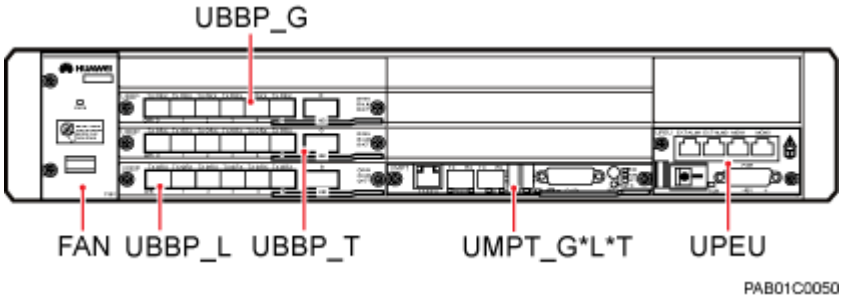
Table 2-42 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G*L*T	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
5	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
6	Baseband processing board in LTE TDD mode	UBBP_T	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
8	Baseband radio interface board in GSM mode or multiple modes	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

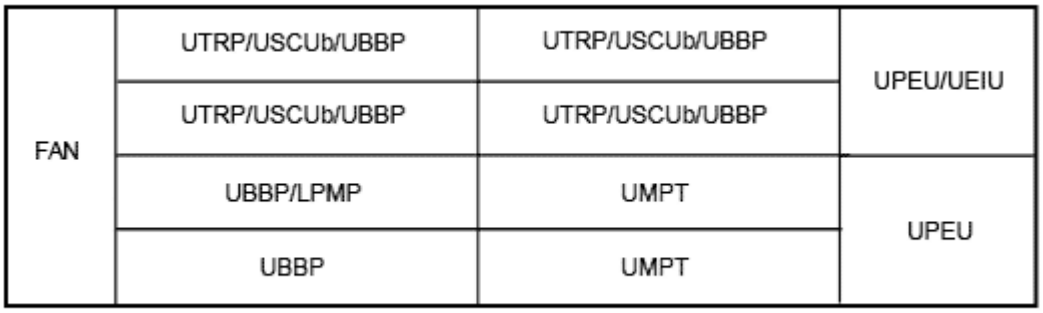
Figure 2-70 Typical configuration of BBU boards



U*L*T Base Station

The following figure shows the BBU slot assignment.

Figure 2-71 BBU slot assignment



The following table describes the principles for BBU slot assignment.

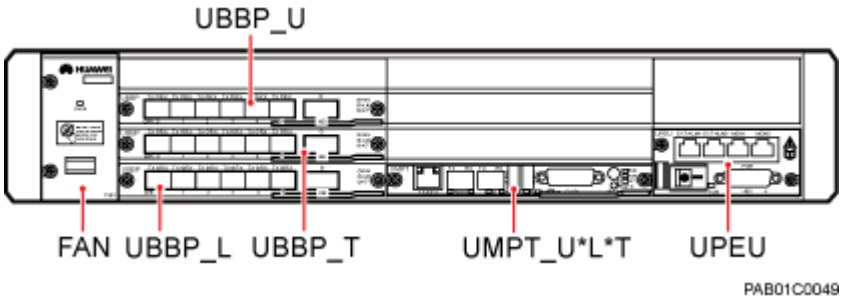
Table 2-43 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_U*L*T	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 4	Slot 5	Slot 0	Slot 1	-	-
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
4	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-
5	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
6	Baseband processing board in LTE TDD mode	UBBP_T	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband processing board in UMTS mode	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-72 Typical configuration of BBU boards



BBU Slot Assignment in Quadruple-Mode Base Stations

This section describes the principles for BBU3910 slot assignment in quadruple-mode base stations.

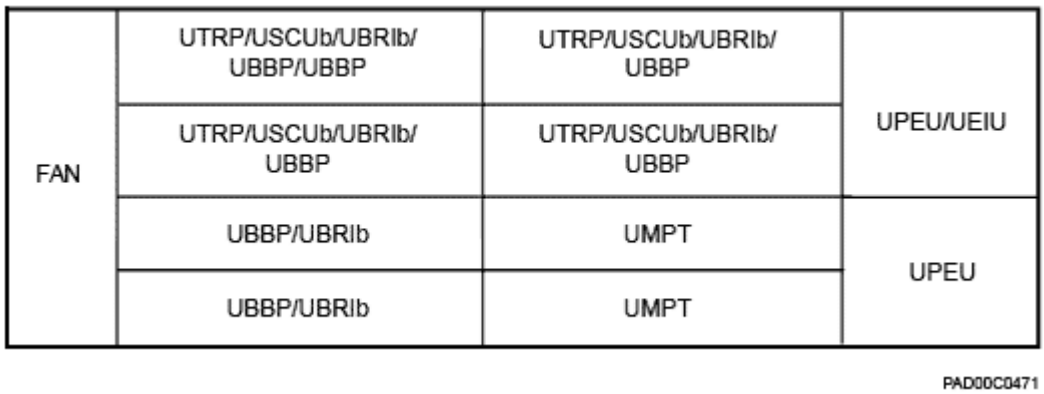
The following table describes the BBU slot assignment in quadruple-mode base stations.

Table 2-44 BBU slot assignment

Application Scenario	Description
Co-MPT quadruple-mode base station configured with one BBU: G*U*L*T base station	The following table describes the principles for BBU slot assignment in a G*U*L*T base station.

The following figure shows the BBU slot assignment in a G*U*L*T base station.

Figure 2-73 BBU slot assignment



The following table describes the principles for BBU slot assignment.

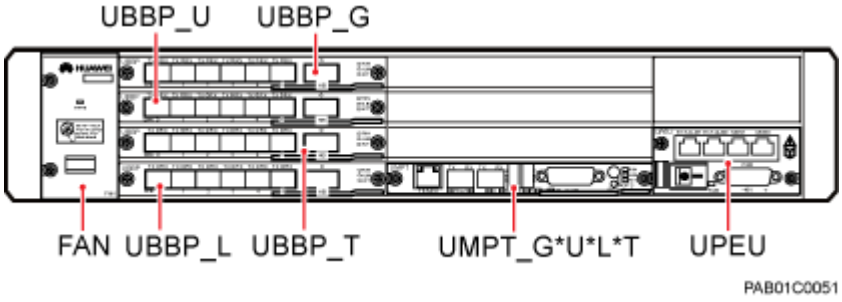
Table 2-45 Principles for BBU slot assignment

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
1	Main control board	UMPT_G*U*L*T	Yes	2	Slot 7	Slot 6	-	-	-	-
2	Transmission board	UTRPc	No	1	Slot 5	Slot 4	Slot 0	Slot 1	-	-
		UTRPa	No	2	Slot 5	Slot 4	Slot 0	Slot 1	-	-
3	Satellite-card board	● USCUb14 ● USCUb11	No	1	Slot 5	Slot 4	Slot 1	Slot 0	-	-
4	Baseband processing board in multiple modes	UBBP_G*U*L*T	No	2	Slot 3	Slot 2	-	-	-	-
5	Interference cancellation board in LTE mode	LPMP	No	1	Slot 2	-	-	-	-	-

Priority	Board Type	Board Name	Mandatory	Maximum Quantity	Slot Assignment Sequence (the Leftmost Slot Has the Highest Priority)					
6	Baseband processing board in LTE FDD mode	UBBP_L	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
7	Baseband processing board in LTE TDD mode	UBBP_T	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
8	Baseband processing board in UMTS mode	UBBP_U	Yes	6	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
9	Baseband processing board in GSM mode	UBBP_G	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5
10	Baseband radio interface board in GSM mode	UBRIb	No	2	Slot 3	Slot 2	Slot 1	Slot 0	Slot 4	Slot 5

The following figure shows the typical configuration of BBU boards.

Figure 2-74 Typical configuration of BBU boards



2.5 BBU3900 and BBU3910 Boards

A BBU includes the following boards: main processing board, baseband processing board, transmission extension board, fan module, power module, monitoring module, clock board with a satellite card, baseband extension board, and infrastructure interconnection board.

2.5.1 UMPT

A UMPT is a universal main processing and transmission unit and can be installed in a BBU3900 or BBU3910.

The following figures show a UMPT panel.

NOTE

On the lower left corner of a board, there is a silkscreen indicating its type.

Figure 2-75 UMPTa/UMPTb panel

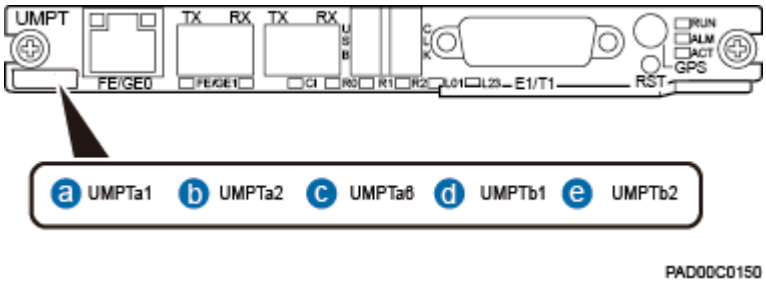
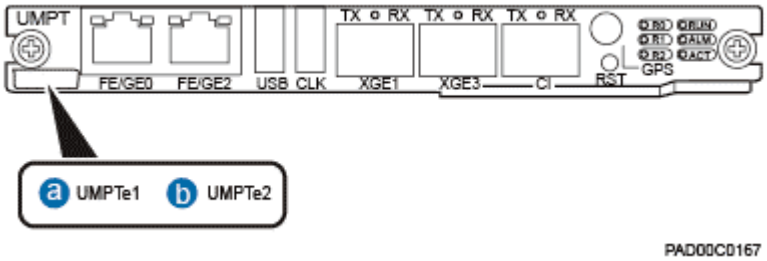


Figure 2-76 UMPTe panel



Specifications

NOTE

A license is required to support board specifications.

The following table lists the transmission port specifications of UMPT boards.

Table 2-46 Transmission port specifications of UMPT boards

Board Name/ Satellite Card Supported	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/ Half-Duplex
● UMPTa1 (without a satellite card) ● UMPTa2 (without a satellite card)	● GSM single mode ● UMTS single mode ● LTE FDD single mode ● Co-MPT multiple modes (including any mode)	ATM over E1/T1[a] or IP over E1/T1	1	Four channels	-
		Transmission over FE/GE electrical ports	1	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full- or half-duplex
		Transmission over FE/GE optical ports	1	100 Mbit/s or 1000 Mbit/s	Full-duplex
● UMPTb1 (without a satellite card) ● UMPTb2 (with a GPS satellite card)	● GSM single mode ● UMTS single mode ● LTE FDD single mode ● LTE TDD single mode	ATM over E1/T1[a] or IP over E1/T1	1	Four channels	-
		Transmission over FE/GE electrical ports	1	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full- or half-duplex

Board Name/ Satellite Card Supported	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/ Half-Duplex
	● Co-MPT multiple modes (including any mode)	Transmission over FE/GE optical ports	1	100 Mbit/s or 1000 Mbit/s	Full-duplex
UMPTa6 (with a GPS satellite card)	● LTE FDD single mode ● LTE TDD single mode	IP over E1/T1	1	Four channels	-
		Transmission over FE/GE electrical ports	1	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full- or half-duplex
		Transmission over FE/GE optical ports	1	100 Mbit/s or 1000 Mbit/s	Full-duplex
● UMPTe1 (without a satellite card) ● UMPTe2 (with a GPS satellite card)	● GSM single mode ● UMTS single mode ● LTE FDD single mode ● LTE TDD single mode ● Co-MPT multiple modes (including any mode)	Transmission over FE/GE electrical ports	2	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full- or half-duplex
		Transmission over FE/GE/ 10GE optical ports	2	1000 Mbit/s or 10,000 Mbit/s	Full-duplex
a: ATM over E1/T1 is supported only in UMTS mode.					

The following table lists the carrier specifications of a UMPT working in GSM mode.

Table 2-47 Carrier specifications of UMPT boards

Board	Applicable Mode	Transmission Mode	Maximum Number of Supported Carriers
UMPTb1 or UMPTb2	GSM	IP over E1/T1 or IP over FE/GE	72
UMPTe	GSM	IP over FE/GE	72

NOTE

If a UMPTa1, UMPTa2, UMPTb1, or UMPTb2 works in UMTS mode, the signaling specifications of the UMPTa1, UMPTa2, UMPTb1, or UMPTb2 depends on the configured baseband processing board. For details, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

The following table lists the signaling specifications of UMPT boards working in LTE FDD mode.

Table 2-48 Signaling specifications

Board	Signaling Specifications (BHCA)[a]
UMPTa1/UMPTa2/UMPTa6	288000
UMPTb1/UMPTb2	360000
UMPTe1/UMPTe2	1620000
a: The BHCA specifications are based on the smart device traffic model.	

NOTE

For details about the datacard traffic model and smart device traffic model, see section "Technical Specifications of the eNodeB FDD" in *3900 Series Base Station Technical Description*.

The following table lists the maximum number of UEs in RRC connected mode supported by UMPT boards working in LTE FDD mode.

Table 2-49 Maximum number of UEs in RRC connected mode

Board	Datacard Traffic Model		Smart Device Traffic Model	
	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
UMPTa1/ UMPTa2/ UMPTa6	10800	10800	1600	1600
UMPTb1/ UMPTb2	10800	10800	2000	2000
UMPTe1/ UMPTe2	14400	14400	9000	9000

The following table lists the signaling specifications of UMPT boards working in LTE TDD mode.

Table 2-50 Signaling specifications

Board	Signaling Specifications (BHCA)
UMPTa6	288000
UMPTb1 or UMPTb2	360000
UMPTe	1440000

The maximum number of data radio bearers (DRBs) supported by a UMPT working in LTE mode is three times the maximum number of UEs in RRC connected mode based on the datacard traffic model.

NOTE

For specifications of the GBTS, eGBTS, eNodeB, or NodeB, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Function

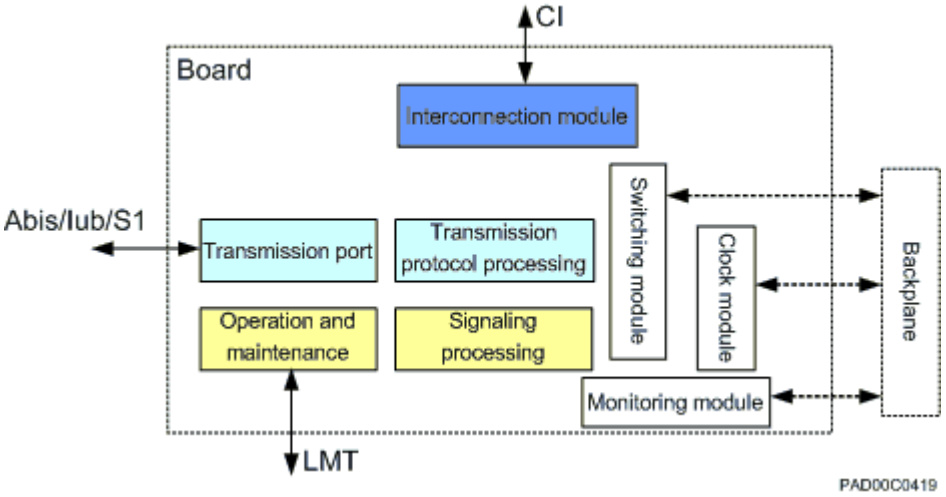
A UMPT performs the following functions:

- Manages configurations and devices, monitors performance, and processes signaling of a base station.
- Processes signaling and manages resources for other boards in the BBU.
- Provides a USB port, transmission ports, and a maintenance port, which are used for automatic software upgrade, signal transmission, and LMT- or U2000-based BBU maintenance.

Working Principle

The following figure shows the working principle of a UMPT.

Figure 2-77 Working principle of a UMPT



Port

The following table describes the ports on a UMPT panel.

Table 2-51 Ports on a UMPT panel

Silkscreen	Connector	Description
E1/T1	DB26 female connector	E1/T1 signal transmission port
● UMPTa or UMPTb: FE/GE0 ● UMPTe: FE/GE0, FE/GE2	RJ45 connector	FE/GE electrical signal transmission port[a] FE/GE electrical ports on a UMPTe provides surge protection. Therefore, no SLPU is required if transmission cables are to be connected to Ethernet electrical ports on an outdoor cabinet.
● UMPTa or UMPTb: FE/GE1 ● UMPTe: XGE1, XGE3	SFP female connector	FE/GE/10GE optical signal transmission port[b]

Silkscreen	Connector	Description
GPS	SMA connector	The GPS ports on the UMPTa1, UMPTa2, and UMPTb1 are reserved. Used for transmitting radio frequency (RF) signals received from the antenna to the satellite card (GPS ports on the UMPTa6, UMPTe, and UMPTb2)
USB[c]	USB connector	Used for the software upgrade of a base station using a USB flash drive. This port also functions as a commissioning Ethernet port[d].
CLK	USB connector	● Used for receiving TOD signals ● Port for clock signal outputs. The clock signals are used for testing.
CI	SFP female connector	Used for BBU interconnection
RST	-	Used for resetting the board
a and b: FE/GE0 and FE/GE1 ports on a UMPT can be used at the same time. c: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands. d: When the USB port functions as a commissioning Ethernet port, ensure that an OM port has been enabled and the user has obtained required authorities for accessing the base station through the OM port before accessing the base station through the USB port.		

DIP Switch

There are two DIP switches on a UMPTa1, UMPTa2, or UMPTa6, which are SW1 and SW2. **Figure 2-78** shows the positions of these DIP switches. There is one DIP switch on a UMPTb1 or UMPTb2, which is SW2. **Figure 2-79** shows the position of this DIP switch. The DIP switch SW2 on a UMPTb series board has the same function and meaning as the DIP switch SW2 on a UMPTa series board.

Figure 2-78 Positions of DIP switches on a UMPTa series board

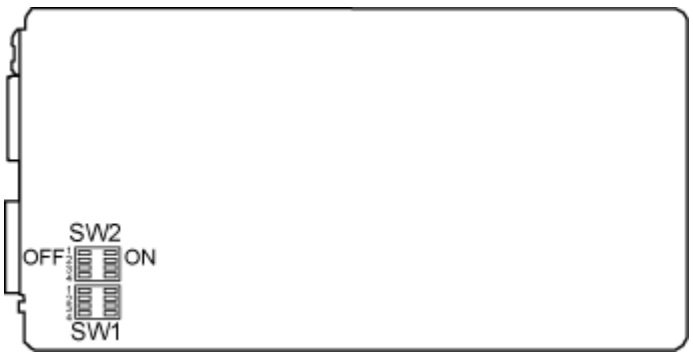


Figure 2-79 Position of the DIP switch on a UMPTb series board

The DIP switches perform the following functions:

- SW1 is used to select the E1/T1 mode.
- SW2 is used to select the grounding mode of E1/T1 reception.

Each DIP switch has four bits. **Table 2-52** and **Table 2-53** describe the bit settings and meanings of the DIP switches.

Table 2-52 DIP switch SW1

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW1	ON	ON	Reserved	Reserved	The E1 resistance is set to 75 ohms.
	OFF	ON			The E1 resistance is set to 120 ohms.
	ON	OFF			The T1 resistance is set to 100 ohms.

Table 2-53 DIP switch SW2

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW2	OFF	OFF	OFF	OFF	Balanced
	ON	ON	ON	ON	Unbalanced

2.5.2 WMPT

A WMPT is a WCDMA main processing and transmission unit and can be installed in a BBU3900.

The following figure shows the exterior of a WMPT panel.

Figure 2-80 Exterior of a WMPT panel

Specifications

The following table lists the transmission port specifications of a WMPT.

Table 2-54 Transmission port specifications of a WMPT

Board	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/Half-Duplex
WMPT	UMTS	ATM over E1/T1 or IP over E1/T1	1	Four channels	Full-duplex
		Transmission over FE optical ports	1	10 Mbit/s or 100 Mbit/s	Full-duplex
		Transmission over FE electrical ports	1	10 Mbit/s or 100 Mbit/s	Full-duplex

NOTE

For combined signaling specifications of a WMPT, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Function

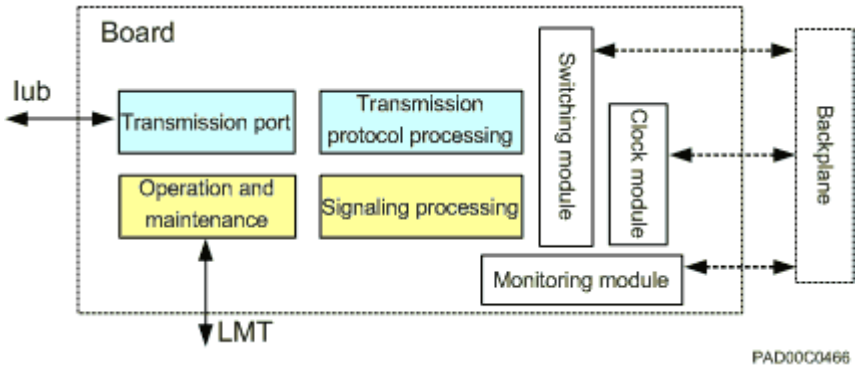
A WMPT performs the following functions:

- Manages configurations and devices, monitors performance, and processes signaling of a base station.
- Processes signaling and manages resources for other boards in the BBU.
- Provides a USB port, transmission ports, and a maintenance port, which are used for automatic software upgrade, signal transmission, and LMT- or U2000-based BBU maintenance.

Working Principle

The following figure shows the working principle of a WMPT.

Figure 2-81 Working principle of a WMPT



Port

The following table describes the ports on a WMPT.

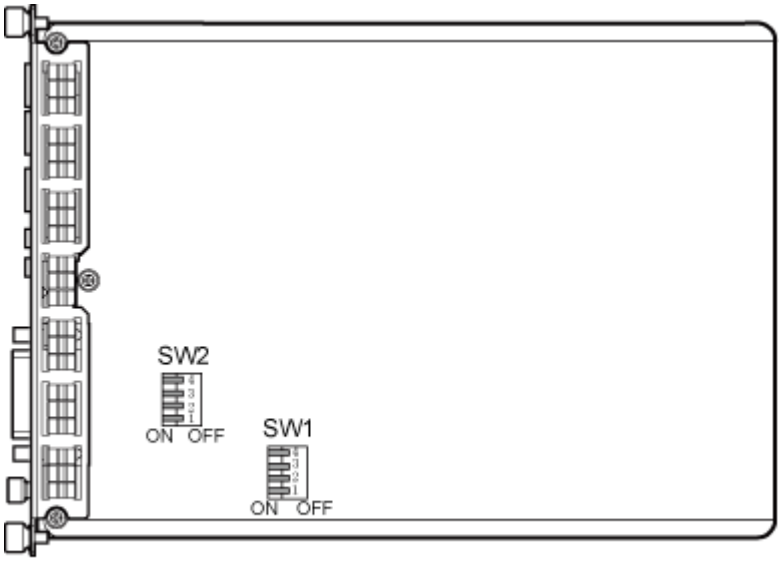
Table 2-55 Ports on a WMPT

Silkscreen	Connector	Description
E1/T1	DB26 female connector	E1/T1 signal transmission port
FE0	RJ45 connector	FE electrical signal transmission port
FE1	SFP female connector	FE optical signal transmission port
GPS	SMA connector	Reserved
ETH[a]	RJ45 connector	Local maintenance and commissioning port
TST[b]	USB connector	Port for clock signal outputs. The clock signals are used for testing.
USB[c]	USB connector	USB loading port
RST	-	Used for resetting the board
a: Before accessing a base station through an ETH port, ensure that an OM port has been enabled and authorities for accessing the base station through the OM port have been obtained. b: The USB commission port is used for commissioning the base station rather than configuring and exporting information of the base station. c: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands.		

DIP Switch

There are two DIP switches on a WMPT, which are SW1 and SW2. The following figure shows the positions of the DIP switches.

Figure 2-82 Positions of the DIP switches on a WMPT



The DIP switches perform the following functions:

- SW1 is used to select the E1/T1 mode.
- SW2 is used to select the grounding mode of E1/T1 reception.

Each DIP switch has four bits. **Table 2-56** and **Table 2-57** describe the bit settings and meanings of the DIP switches.

Table 2-56 DIP switch SW1

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW1	ON	ON	OFF	OFF	T1
	OFF	OFF	ON	ON	The E1 resistance is set to 120 ohms.
	ON	ON	ON	ON	The E1 resistance is set to 75 ohms.
	Miscellaneous				Unavailable

Table 2-57 DIP switch SW2

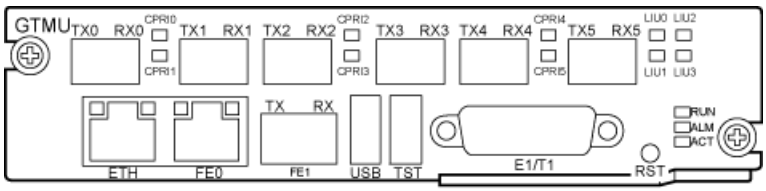
DIP Switch	Bit Setting				Description
	1	2	3	4	
SW2	OFF	OFF	OFF	OFF	Balanced
	ON	ON	ON	ON	Unbalanced
	Miscellaneous				Unavailable

2.5.3 GTMU

A GTMU is a GSM transmission and timing and management unit. A GTMU can be installed in a BBU3900, and a GTMUb or GTMUc can be installed in a BBU3900 or BBU3910.

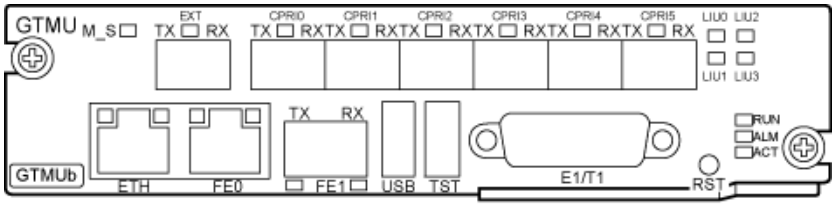
Figure 2-83, **Figure 2-84**, and **Figure 2-85** show a GTMU panel, a GTMUb panel, and a GTMUc panel, respectively.

Figure 2-83 GTMU panel



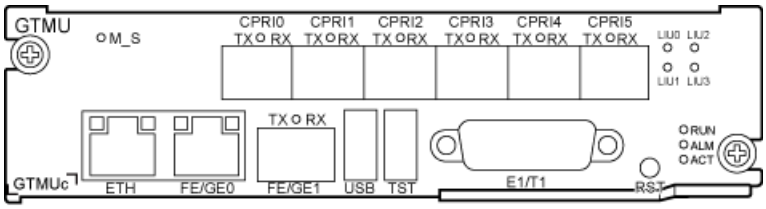
PAD00C0044

Figure 2-84 GTMUb panel



PAD00C0045

Figure 2-85 GTMUc panel



PAD00C0079

Specifications

The GTMU is classified into three types: GTMU, GTMUb, and GTMUc. The following table lists the transmission port specifications of a GTMU, a GTMUb, and a GTMUc.

Table 2-58 Transmission port specifications of GTMU boards

Board	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/Half-Duplex
GTMU, GTMUc, or GTMUb	GSM	TDM over E1/T1 or IP over E1/T1	1	Four channels	Full-duplex
		Transmission over FE optical ports	1	100 Mbit/s	Full-duplex
		Transmission over FE electrical ports	1	10 Mbit/s or 100 Mbit/s	Full-duplex

The following table lists carrier specifications of a GTMU, a GTMUc, and a GTMUb in a LegacyOM base station.

Table 2-59 Carrier specifications of GTMU boards in a LegacyOM base station

Board	Transmission Mode	Maximum Number of Supported Carriers
GTMU	TDM	72
	IP over FE or IP over E1	36
GTMUb or GTMUc	TDM	126
	IP over FE	60
	IP over E1	48

The following table lists carrier specifications of a GTMUb and a GTMUc in a SingleOM base station.

Table 2-60 Carrier specifications of a GTMUb and a GTMUc in a SingleOM base station

Board	Transmission Mode	Maximum Number of Supported Carriers
GTMUb	IP over FE or IP over E1	24
GTMUc	IP over FE or IP over E1	● IP over FE transmission: 72 ● IP over E1 transmission: 48

Function

A GTMU, GTMUc, or GTMUb performs the following functions:

- Manages configurations and devices, monitors performance, and processes signaling of a base station.
- Processes signaling and manages resources for other boards in the BBU.
- Provides a USB port, transmission ports, and a maintenance port, which are used for automatic software upgrade, signal transmission, and LMT- or U2000-based BBU maintenance.
- Provides CPRI ports for communication with RF modules.

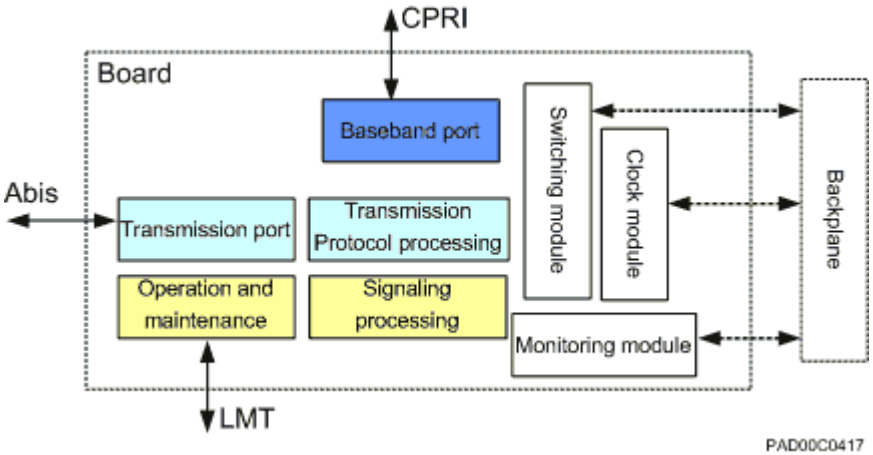
NOTE

When a GBTS configured with a GTMUb or GTMUc is to be evolved to a co-MPT multimode base station, a UMPT is required to serve as the main control board shared by multiple modes. The original GTMUb or GTMUc serves as an interface board, which only provides CPRI ports for communication with RF modules.

Working Principle

The following figure shows the working principle of a GTMU, GTMUc, or GTMUb.

Figure 2-86 Working principle of a GTMU, GTMUc, or GTMUb



Port

The following table describes the ports on GTMU boards.

Table 2-61 Ports on GTMU boards

Silkscreen	Connector	Description
E1/T1	DB26 female connector	E1/T1 signal transmission port
EXT (on a GTMUb)	SFP female connector	Reserved
● FE0 (on the GTMU/ GTMUb) ● FE/GE0 (on a GTMUc)	RJ45 connector	FE electrical signal transmission port
● FE1 (on a GTMU or GTMUb) ● FE/GE1 (on a GTMUc)	DLC connector	FE optical signal transmission port
ETH[a]	RJ45 connector	Local maintenance and commissioning port
TST[b]	USB connector	Port for clock signal outputs. The clock signals are used for testing.
USB[c]	USB connector	USB loading port
CPRI0 to CPRI5	SFP female connector	Data transmission ports connected to RF modules. They support the input and output of optical and electrical transmission signals.
RST	-	Used for resetting the board
a: Before accessing a base station through an ETH port, ensure that an OM port has been enabled and authorities for accessing the base station through the OM port have been obtained. b: The USB commission port is used for commissioning the base station rather than configuring and exporting information of the base station. c: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands.		

The following table describes the specifications of CPRI ports on GTMU boards.

Table 2-62 Specifications of CPRI ports on GTMU boards

Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
GTMU	6	1.25	Star, chain, and ring topologies
GTMUb or GTMUc	6	1.25 or 2.5	Star, chain, and ring topologies

DIP Switch

There are four DIP switches on a GTMU, GTMUc, or GTMUb, which are S1, S2, S4, and S5. **Figure 2-87** and **Figure 2-88** show the positions of the DIP switches on a GTMU and a GTMUb or GTMUc, respectively.

Figure 2-87 Positions of DIP switches on a GTMU

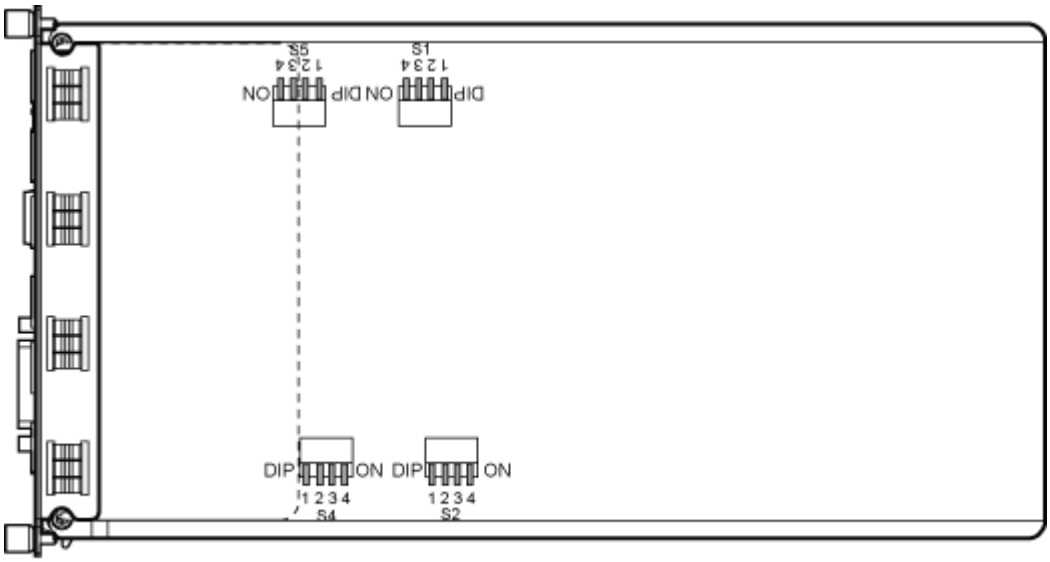
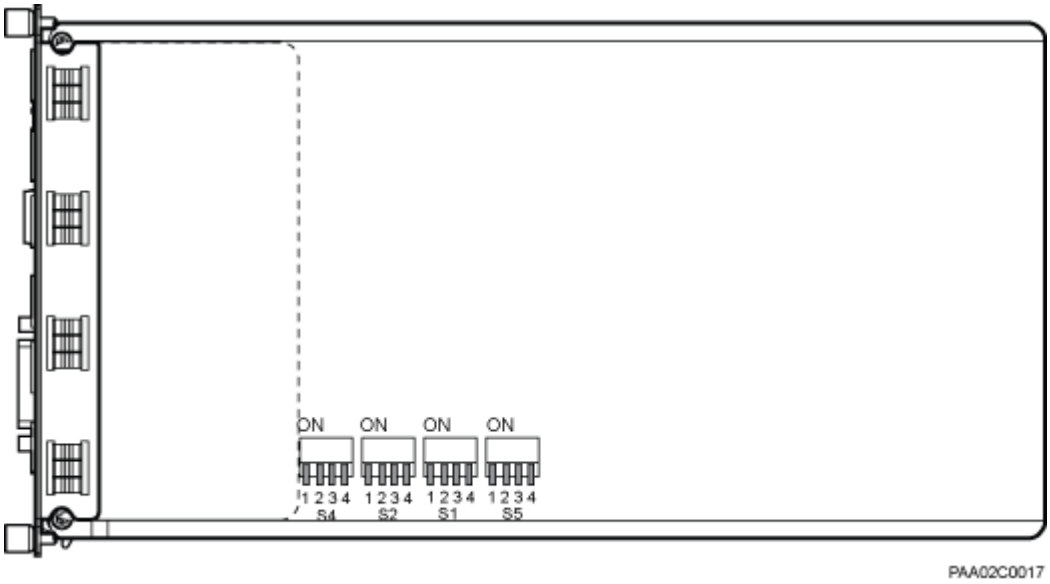


Figure 2-88 Positions of DIP switches on a GTMUb or GTMUc



The DIP switches perform the following functions:

- S1 is used to select the E1/T1 mode.
- S2 is used to select the grounding mode of E1/T1 reception.
- S4 is used to select the E1 bypass.
- S5 is used to set the timeslot when E1 bypass is selected.

Each DIP switch has four bits. **Table 2-63**, **Table 2-64**, **Table 2-65**, and **Table 2-66** describe the bit settings and meanings of the DIP switches.

Table 2-63 DIP switch S1

DIP Switch	Bit Setting				Description
	1	2	3	4	
S1	ON	ON	-	-	The E1 resistance is set to 75 ohms.
	OFF	ON	-	-	The E1 resistance is set to 120 ohms.
	ON	OFF	-	-	The T1 resistance is set to 100 ohms.
	ON	ON	OFF	OFF	The default setting is used.
	Miscellaneous				Unavailable

NOTE

The default settings of bits 3 and 4 of DIP switch S1 are used, and onsite setting is not required. They should be set to OFF by default. If the bits are set to ON, set them to OFF.

Table 2-64 DIP switch S2

DIP Switch	Bit Setting				Description
	1	2	3	4	
S2	OFF	OFF	OFF	OFF	All the bits are set to OFF by default in all modes.
	ON	ON	ON	ON	When the four RX links in E1 75 ohm mode have error bits, all bits of S2 must be set to ON to rectify the faults on the E1 links.
	ON	ON	ON	ON	The default setting is used.
	Miscellaneous				Unavailable

Table 2-65 DIP switch S4

DIP Switch	Bit Setting				Description
	1	2	3	4	
S4	ON	ON	ON	ON	Supporting E1 bypass
	OFF	OFF	OFF	OFF	Not supporting E1 bypass
	ON	ON	ON	ON	The default setting is used.
	Miscellaneous				Unavailable

Table 2-66 DIP switch S5

DIP Switch	Bit Setting				Description
	1	2	3	4	
S5	ON	ON	ON	ON	Not supporting E1 bypass

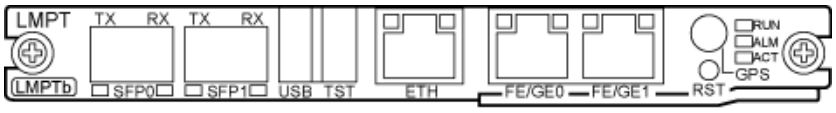
DIP Switch	Bit Setting				Description
	1	2	3	4	
	OFF	ON	ON	OFF	Supporting E1 bypass of one level of cascaded base stations
	ON	OFF	ON	OFF	Supporting E1 bypass of two levels of cascaded base stations
	OFF	OFF	ON	OFF	Supporting E1 bypass of three levels of cascaded base stations
	ON	ON	OFF	OFF	Supporting E1 bypass of four levels of cascaded base stations
	OFF	ON	OFF	OFF	Supporting E1 bypass of five levels of cascaded base stations
	ON	ON	ON	ON	The default setting is used.
	Miscellaneous				Unavailable

2.5.4 LMPT

An LMPT is an LTE main processing and transmission unit and can be installed in a BBU3900.

The following figure shows an LMPT panel.

Figure 2-89 LMPT panel



Specifications

The following table lists the transmission port specifications of an LMPT.

Table 2-67 Transmission port specifications of an LMPT

Board	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/Half-Duplex
LMPT	● LTE FDD ● LTE TDD	Transmission over FE/GE optical ports	2	100 Mbit/s or 1000 Mbit/s	Full-duplex
		Transmission over FE/GE electrical ports	2	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full-duplex

The following table lists the signaling specifications of an LMPT working in LTE FDD mode. The BHCA specifications in the following table are based on the smart device traffic model.

Table 2-68 Signaling specifications of an LMPT working in LTE FDD mode

Board	Signaling Specifications (BHCA)
LMPT	216000

The following table lists the signaling specifications of an LMPT working in LTE TDD mode.

Table 2-69 Signaling specifications of an LMPT working in LTE TDD mode

Board	Signaling Specifications (BHCA)
LMPT	180000

The following table lists the maximum number of UEs in RRC connected mode supported by an LMPT.

Table 2-70 Maximum number of UEs in RRC connected mode

Board	Datacard Traffic Model		Smart Device Traffic Model	
	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
LMPT	5400	5400	1200	1200

The maximum number of data radio bearers (DRBs) supported by an LMPT is three times the maximum number of UEs in RRC connected mode based on the datacard traffic model.

NOTE

For specifications of the eNodeB, see sections "Technical Specifications of the eNodeB FDD" and "Technical Specifications of the eNodeB TDD" in *3900 Series Base Station Technical Description*.

Function

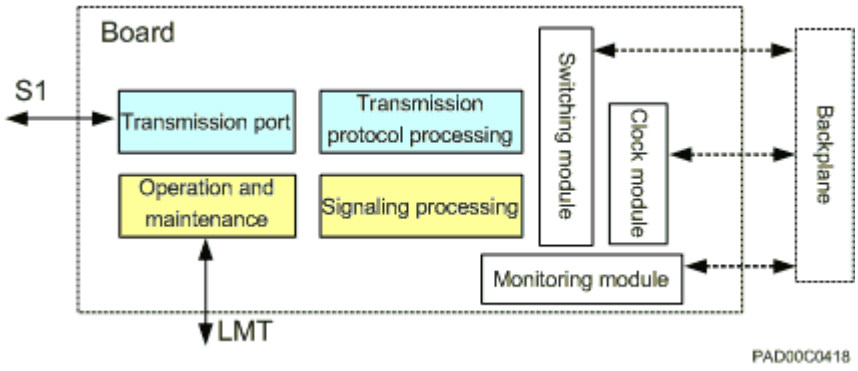
An LMPT performs the following functions:

- Manages configurations and devices, monitors performance, and processes signaling of a base station.
- Processes signaling and manages resources for other boards in the BBU.
- Provides a USB port, transmission ports, and a maintenance port, which are used for automatic software upgrade, signal transmission, and LMT- or U2000-based BBU maintenance.
- Provides the system clock

Working Principle

The following figure shows the working principle of an LMPT.

Figure 2-90 Working principle of an LMPT



Port

The following table describes the ports on an LMPT panel.

Table 2-71 Ports on an LMPT panel

Silkscreen	Connector	Description
FE/GE0 and FE/GE1	RJ45 connector	FE/GE electrical signal transmission port
SFP0 and SFP1	SFP female connector	FE/GE optical signal transmission port

Silkscreen	Connector	Description
GPS	SMA connector	Used for receiving GPS signals
ETH[a]	RJ45 connector	Local maintenance and commissioning port
TST[b]	USB connector	Port for clock signal outputs. The clock signals are used for testing.
USB[c]	USB connector	USB loading port
RST	-	Used for resetting the board
a: Before accessing a base station through an ETH port, ensure that an OM port has been enabled and authorities for accessing the base station through the OM port have been obtained. b: The USB commission port is used for commissioning the base station rather than configuring and exporting information of the base station. c: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands.		

NOTE

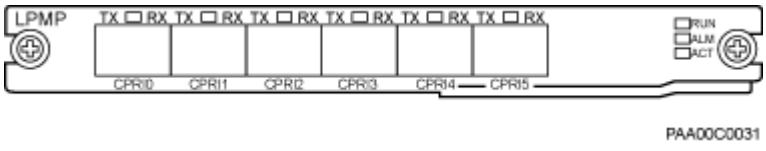
- Either SFP0 or FE/GE0 port on an LMPT is used for one GE input.
- Either SFP1 or FE/GE1 port on the LMPT is used for another GE input.

2.5.5 LPMP

An LPMP is an LTE passive intermodulation (PIM) mitigation processing card and can be installed in a BBU3900 or BBU3910.

The following figure shows an LPMP panel.

Figure 2-91 LPMP panel



Specifications

The following table lists the specifications of an LPMP working in LTE FDD mode.

Table 2-72 Specifications of an LPMP

Board	Number of Cells	Cell Bandwidth	Antenna Configuration
LPMP	6	5 MHz, 10 MHz, 15 MHz, or 20 MHz	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R

Function

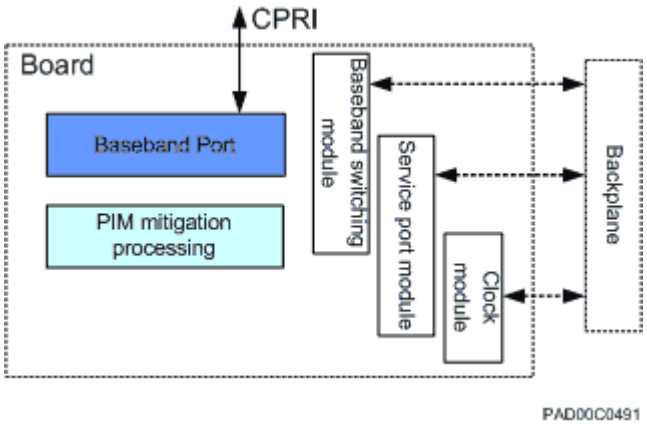
An LPMP performs the following functions:

- Suppresses passive intermodulation interference among LTE carriers.
- Provides CPRI ports for communication with RF modules.

Working Principle

The following figure shows the working principle of an LPMP.

Figure 2-92 Working principle of an LPMP



Port

There are six CPRI ports on an LPMP, but only the first three CPRI ports are used. The following table describes the three CPRI ports.

Table 2-73 Ports on an LPMP

Silkscreen	Connector	Quantity of Ports	Description
CPRI0 to CPRI2	SFP female connector	3	Interconnection data transmission ports connecting to RF modules, which support input and output of optical and electrical transmission signals

The following table lists the specifications of CPRI ports on an LPMP.

Table 2-74 Specifications of CPRI ports on an LPMP

Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
LPMP	3	1.25, 2.5, or 4.9	Star or chain topology

The following table describes the mapping between the CPRI port rate and the number of cells in an LTE FDD scenario.

Table 2-75 Mapping between the CPRI port rate and the number of cells in an LTE FDD scenario

CPRI Port Rate (Gbit/s)	Number of 2x2 MIMO Cells
1.25	● 2 (cell bandwidth = 5 MHz) ● 1 (cell bandwidth ≤ 10 MHz)
2.5	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)
4.9	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)

2.5.6 UBBP

A UBBP is a universal baseband processing unit and can be installed in a BBU3900 or BBU3910.

The following figures show UBBP panels.

NOTE

On the lower left corner of a board, there is a silkscreen indicating its type.

Figure 2-93 UBBPd panel

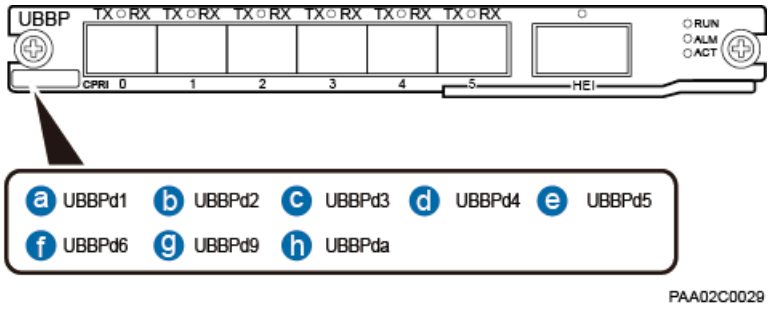
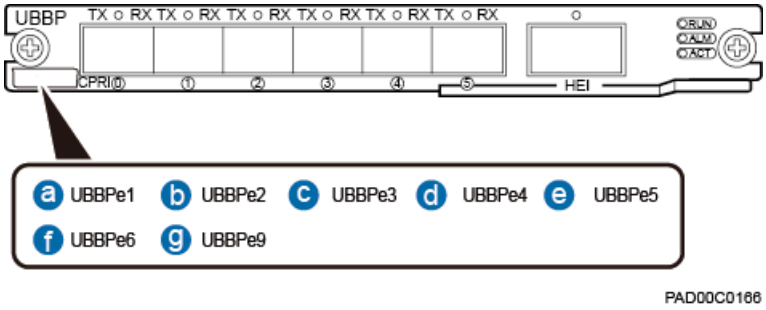


Figure 2-94 UBBPe panel



Specifications

NOTE

A license is required to support board specifications.

The following table lists the types of UBBP boards.

Table 2-76 Types of UBBPd boards

Board	Applicable Mode
● UBBPd1 ● UBBPd2	● GSM ● UMTS ● GU co-BBP
UBBPd3	● GSM ● UMTS ● LTE FDD ● GU co-BBP ● GL co-BBP

Board	Applicable Mode
UBBPd4	● GSM ● UMTS ● LTE FDD ● LTE TDD ● GU co-BBP ● GL co-BBP
UBBPd5	● GSM ● UMTS ● LTE FDD ● GU co-BBP ● GL co-BBP
UBBPd6	● GSM ● UMTS ● LTE FDD ● LTE TDD ● GU co-BBP ● GL co-BBP ● UL co-BBP ● GUL co-BBP
UBBPd9	LTE TDD
UBBPda	LTE FDD

Table 2-77 Types of UBBPe boards

Board	Applicable Mode
UBBPe1	● UMTS ● LTE FDD
UBBPe2	● UMTS ● LTE FDD
UBBPe3	● UMTS ● LTE FDD ● UL co-BBP
UBBPe4 or UBBPe6	● UMTS ● LTE FDD ● LTE TDD ● UL co-BBP

Board	Applicable Mode
UBBPe5	● UMTS ● LTE FDD ● UL co-BBP
UBBPe9	LTE TDD

NOTE

Co-BBP enables one baseband processing board to process baseband signals for multiple modes. Co-BBP is supported only in co-MPT base stations. For co-BBP specifications of UBBP boards working in multiple modes, see Technical Specifications of the Multimode Base Station in *3900 Series Base Station Technical Description*.

Specifications of UBBP boards working in GSM mode

The following table lists the number of carriers supported by UBBP boards working in GSM mode.

Table 2-78 Carrier specifications

Board	Number of 2R Carriers	Number of 4R Carriers
UBBPd1, UBBPd2, UBBPd3, or UBBPd4	24	12
UBBPd5	36	18
UBBPd6	48	24

Specifications of UBBP boards working in UMTS mode

Table 2-79 lists the baseband specifications of UBBP boards working in UMTS mode.

Table 2-79 Baseband specifications

Board	Number of Cells[a]	Number of Uplink CEs	Number of Downlink CEs	Number of HSDPA Codes	Number of HSDPA UEs	Number of HSUPA UEs
UBBPd1	6	384	512	6x15	288	288
UBBPd2	6	512	768	6x15	384	384
UBBPd3	6	384	512	6x15	288	288
UBBPd4	6	512	768	6x15	384	384
UBBPd5	6	768	768	6x15	512	512
UBBPd6	12	1024	1024	12x15	768	768

Board	Number of Cells[a]	Number of Uplink CEs	Number of Downlink CEs	Number of HSDPA Codes	Number of HSDPA UEs	Number of HSUPA UEs
UBBPe1	6	384	512	6x15	288	288
UBBPe2	6	512	768	6x15	384	384
UBBPe3	12	768	768	12x15	512	512
UBBPe4	12	1024	1024	12x15	768	768
UBBPe5	12	1024	1024	12x15	768	768
UBBPe6	12	1024	1024	12x15	768	768
a: indicates the number of 1T2R cells. The quantity of baseband resources consumed by cells varies depending on cell types, and therefore the number of cells supported by a baseband processing board varies depending on cell types. For details, see chapter "Consumption Principles of Baseband Resources" in *NodeB Baseband Resource Management Feature Parameter Description* by choosing **3900 Series Base Station Product Documentation** > **Description** > **Function Description**.						

NOTE

For combined signaling specifications of a board, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Specifications of UBBP boards working in LTE FDD mode

Table 2-80, **Table 2-81**, and **Table 2-82** list the specifications of cells, the maximum number of UEs in RRC connected mode, and maximum uplink and downlink throughput supported by UBBP boards working in LTE FDD mode, respectively. **Table 2-83** lists the signaling specifications supported by UBBP boards working in LTE FDD mode.

Table 2-80 Cell specifications of a UBBP

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
UBBPd3	3	1.4/3/5/10/15/20	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R
UBBPd4	3	1.4/3/5/10/15/20	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R 3x20 MHz 2T4R 3x20 MHz 4T4R

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
UBBPd5	6	1.4/3/5/10/15/20	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R 3x20 MHz 4T4R
UBBPd6	6	1.4/3/5/10/15/20	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R 6x20 MHz 2T4R 6x20 MHz 4T4R
UBBPda	6	1.4/3/5/10/15/20	6x10 MHz 2T4R 6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R
UBBPe1	3	1.4/3/5/10/15/20	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R
UBBPe2	3	1.4/3/5/10/15/20	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R 3x20 MHz 2T4R 3x20 MHz 4T4R
UBBPe3	6	1.4/3/5/10/15/20	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R
UBBPe4	6	1.4/3/5/10/15/20	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R 6x20 MHz 2T4R 6x20 MHz 4T4R
UBBPe5	9	1.4/3/5/10/15/20	9x20 MHz 1T1R 9x20 MHz 1T2R 9x20 MHz 2T2R 9x20 MHz 2T4R 9x20 MHz 4T4R

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
UBBPe6	12	1.4/3/5/10/15/20	12x20 MHz 1T1R 12x20 MHz 1T2R 12x20 MHz 2T2R 12x20 MHz 2T4R 12x20 MHz 4T4R

NOTE

- 1R and 2R cells can be configured together in any forms. In hybrid configuration, the total number of cells cannot exceed the number of 2R cells supported by the eNodeB.
- The UBBPda does not support the hybrid configuration of 1R and 4R cells, or 2R and 4R cells.
- The UBBPd4/UBBPd5 supports hybrid configuration of 1R and 4R cells, or 2R and 4R cells. In hybrid configuration, a maximum of three cells are supported.
- The UBBPd6 supports hybrid configuration of 1R and 4R cells, or 2R and 4R cells. In hybrid configuration, a maximum of six cells are supported.

Table 2-81 Maximum number of UEs in RRC Connected mode supported by the UBBP board

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
UBBPd3/ UBBPd4	1.4 MHz	504	504	504	504
	3 MHz	1080	1080	1080	1080
	5 MHz	1800	1800	1500	1500
	10/15/20 MHz	3600	3600	1500	1500
UBBPd5/ UBBPd6/ UBBPda	1.4 MHz	1008	1008	1008	1008
	3 MHz	2160	2160	2160	2160
	5/10/15/20 MHz	3600	3600	2200	2200
UBBPe1/ UBBPe2	1.4 MHz	504	504	504	504
	3 MHz	1080	1080	1080	1080
	5 MHz	1800	1800	1500	1500

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
	10/15/20 MHz	3600	3600	1500	1500
UBBPe3/ UBBPe4	1.4 MHz	1008	1008	1008	1008
	3 MHz	2160	2160	2160	2160
	5/10/15/20 MHz	3600	3600	2400	2400
UBBPe5	1.4 MHz	1512	1512	1512	1512
	3 MHz	3240	3240	3000	3000
	5/10/15/20 MHz	3600	3600	3000	3000
UBBPe6	1.4 MHz	2016	2016	2016	2016
	3M Hz	4320	4320	3600	3600
	5/10/15/20 MHz	4800	4800	3600	3600

Table 2-82 Throughput

Board	Maximum Downlink Throughput (Mbit/s)	Maximum Uplink Throughput (Mbit/s)
UBBPd3	450	225
UBBPd4	600	225
UBBPd5 or UBBPda	600	300
UBBPd6	1200	600
UBBPe1	450	225
UBBPe2	600	300
UBBPe3	600	300
UBBPe4	1200	600
UBBPe5	1200	600

Board	Maximum Downlink Throughput (Mbit/s)	Maximum Uplink Throughput (Mbit/s)
UBBPe6	2400	1200

Table 2-83 Signaling specifications

Board	Signaling Specifications (BHCA)[a]
UBBPd3/UBBPd4	270000
UBBPd5/UBBPd6/UBBPda	396000
UBBPe1/UBBPe2	324000
UBBPe3/UBBPe4	432000
UBBPe5	540000
UBBPe6	648000
a: The BHCA specifications are based on the smart device traffic model.	

The maximum number of data radio bearers (DRBs) supported by a UBBP is three times the maximum number of UEs in RRC connected mode based on the datacard traffic model.

Specifications of UBBP boards working in LTE TDD mode

Table 2-84, Table 2-85, Table 2-86, and Table 2-87 list the specifications of cells, maximum number of UEs in RRC connected mode, maximum uplink and downlink throughput, and signaling specifications supported by UBBP boards working in LTE TDD mode, respectively.

Table 2-84 Cell specifications of a UBBP

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
UBBPd4	3	5/10/15/20	3x20 MHz 2T2R 3x20 MHz 4T4R
UBBPd6	6	5/10/15/20	6x20 MHz 2T2R 6x20 MHz 4T4R
UBBPd9	3	10/15/20	3x20 MHz 8T8R
UBBPe4	6	5/10/15/20	6x20 MHz 2T2R 6x20 MHz 4T4R
	3	10/15/20	3x20 MHz 8T8R
UBBPe6	12	5/10/15/20	12x20 MHz 2T2R 12x20 MHz 4T4R

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
	6	10/15/20	6x20 MHz 8T8R
UBBPe9	12	5/10/15/20	12x20 MHz 2T2R 12x20 MHz 4T4R
	12	10/15/20	12x20 MHz 8T8R

Table 2-85 Maximum number of UEs in RRC Connected mode supported by the UBBP board

Board	Cell Bandwidth	Maximum Number of UEs in RRC Connected Mode (Datacard Traffic Model)	Maximum Number of UEs in RRC Connected Mode (Smartphone Traffic Model)
UBBPd4	5 MHz	1800	900
	10/15/20 MHz	3600	1500
UBBPd6	5 MHz	1800	1800
	10/15/20 MHz	3600	2200
UBBPd9	10 MHz	3600	1800
	15/20 MHz	3600	2200
UBBPe4	5/10/15/20 MHz	3600	2400
UBBPe6/ UBBPe9	5/10/15/20 MHz	4800	3600

Table 2-86 Throughput

Board	Maximum Downlink Throughput (Mbit/s)	Maximum Uplink Throughput (Mbit/s)
UBBPd4	600	225
UBBPd6	1200	600
UBBPd9	1200	600
UBBPe4	1200	600

Board	Maximum Downlink Throughput (Mbit/s)	Maximum Uplink Throughput (Mbit/s)
UBBPe6	2400	1200
UBBPe9	2400	1200

Table 2-87 Signaling specifications

Board	Signaling Specifications (BHCA)
UBBPd4	270000
UBBPd6 or UBBPd9	396000
UBBPe4	432000
UBBPe6/UBBPe9	648000

NOTE

The signaling specifications for TDD scenarios are the maximum ones for typical scenarios of normal cells.

The maximum number of DRBs supported by a UBBP is three times the maximum number of UEs in RRC connected mode.

NOTE

For specifications of an eNodeB, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Function

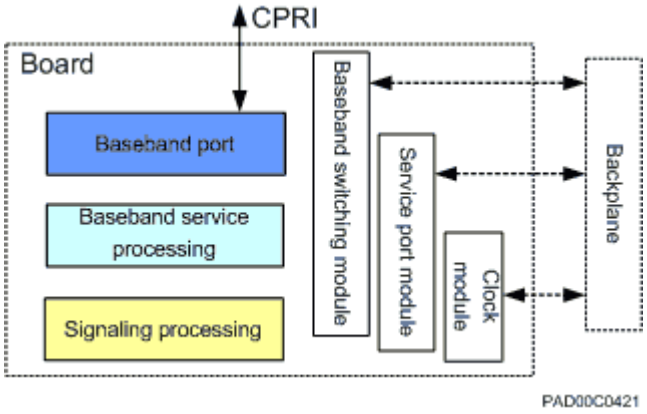
A UBBP performs the following functions:

- Provides CPRI ports for communication with RF modules.
- Processes uplink and downlink baseband signals.
- Supports the multiplex of baseband resources among different modes, thereby implementing multimode concurrency.

Working Principle

The following figure shows the working principle of a UBBP.

Figure 2-95 Working principle of a UBBP



Port

The following table describes the six CPRI ports and one HEI port on a UBBP.

Table 2-88 Ports on a UBBP

Silkscreen	Connector	Quantity of Ports	Description
CPRI0 to CPRI5	SFP female connector	6	They are data transmission ports connecting BBUs to RF modules, and support input and output of optical and electrical signals.
HEI	QSFP connector	1	It interconnects to other baseband processing boards to share baseband resources.

The following table lists the specifications of CPRI ports on a UBBP.

Table 2-89 Specifications of CPRI ports on a UBBP

Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
UBBPd or UBBPe	6	1.25, 2.5, 4.9, 9.8, or 6.144	Star, chain, and ring topologies

The following table lists the mapping between the CPRI port rate and the number of carriers supported by a UBBP working in GSM mode.

Table 2-90 Mapping between the CPRI port rate and the number of carriers

CPRI Port Rate (Gbit/s)	Number of 1T2R Carriers	Number of 2T2R or 1T4R Carriers
1.25	24	12
2.5	48	24
4.9	48	24
9.8	48	24

The following table lists the mapping between the CPRI port rate and the number of cells supported by a UBBP working in UMTS mode.

Table 2-91 Mapping between the CPRI port rate and the number of cells in UMTS scenarios

CPRI Port Rate (Gbit/s)	Number of 1T2R Cells	Number of 2T2R Cells
1.25	4	4*[a]
2.5	8	8*[a]
4.9	16	16*[a]
6.144	24	24*[a]
9.8	32	32*[a]
a: The asterisk (*) in the table indicates that the number of 2T2R cells is halved if the 2T2R cells support the virtual antenna mapping (VAM) function and the two TX antennas used by the VAM function are separately connected to two RF modules carried on different CPRI links.		

The following table lists the mapping between the CPRI port rate and the number of cells supported by a UBBP working in LTE FDD mode.

Table 2-92 Mapping between the CPRI port rate and the number of cells in an LTE FDD scenario

CPRI Port Rate (Gbit/s)	Number of 2T4R or 4T4R Cells	Number of 1T2R or 2T2R Cells	Number of 1T1R Cells
1.25	4x4 MIMO cells are not recommended because the transmission bandwidth of CPRI ports is limited.	● 4 (cell bandwidth ≤ 3 MHz) ● 2 (cell bandwidth ≤ 5 MHz) ● 1 (cell bandwidth ≤ 10 MHz)	● 8 (cell bandwidth ≤ 3 MHz) ● 4 (cell bandwidth ≤ 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)
2.5	1 (cell bandwidth ≤ 10 MHz)	● 4 (cell bandwidth ≤ 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 5 MHz) ● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
4.9	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)
6.144	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 5 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 10 (cell bandwidth ≤ 10 MHz) ● 5 (cell bandwidth = 15 MHz or 20 MHz)
9.8	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)	● 16 (cell bandwidth ≤ 10 MHz) ● 8 (cell bandwidth = 15 MHz or 20 MHz)

The following table lists the mapping between the CPRI port rate and the number of cells supported by a UBBP working in LTE TDD mode.

Table 2-93 Mapping between the CPRI port rate and the number of cells in an LTE TDD scenario

CPRI Port Rate (Gbit/s)	CPRI Compression	Number of 8T8R Cells	Number of 4T4R Cells	Number of 2T2R Cells
2.5	Not in use	None	● 2 (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● None (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)
	In use	None	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
4.9	Not in use	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● None (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)

CPRI Port Rate (Gbit/s)	CPRI Compression	Number of 8T8R Cells	Number of 4T4R Cells	Number of 2T2R Cells
9.8	Not in use	● None (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 16 (cell bandwidth = 5 MHz) ● 8 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz or 15 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 20 MHz)	● None (cell bandwidth = 5 MHz or 15 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 20 MHz)	● None (cell bandwidth = 5 MHz or 15 MHz) ● 12 (cell bandwidth = 10 MHz) ● 8 (cell bandwidth = 20 MHz)

2.5.7 WBBP

A WBBP is a WCDMA baseband processing unit and can be installed in a BBU3900.

Figure 2-96 shows the exterior of a WBBPa panel.

Figure 2-97 shows the exterior of a WBBPb1, WBBPb2, WBBPb3, or WBBPb4 panel.

Figure 2-98 shows the exterior of a WBBPd1, WBBPd2, or WBBPd3 panel.

Figure 2-99 shows the exterior of a WBBPf1, WBBPf2, WBBPf3, or WBBPf4 panel.

NOTE

- There is no label indicating the board type on the lower left corner of a WBBPa.
- On a WBBPb1, a WBBPb2, a WBBPb3, and a WBBPb4, there are silkscreens WBBPb1, WBBPb2, WBBPb3, and WBBPb4, respectively. **Figure 2-97** shows a WBBPb1 panel.
- On a WBBPd1, a WBBPd2, and a WBBPd3, there are silkscreens WBBPd1, WBBPd2, and WBBPd3, respectively. **Figure 2-98** shows a WBBPd1 panel.
- On a WBBPf1, a WBBPf2, a WBBPf3, and a WBBPf4, there are silkscreens WBBPf1, WBBPf2, WBBPf3, and WBBPf4, respectively. **Figure 2-99** shows a WBBPf1 panel.

Figure 2-96 WBBPa panel

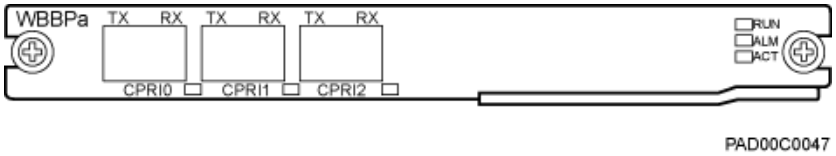


Figure 2-97 WBBPb panel

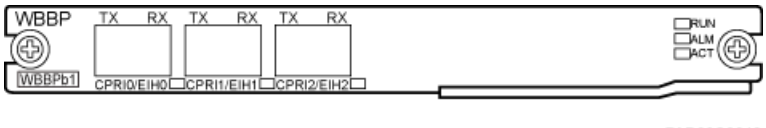
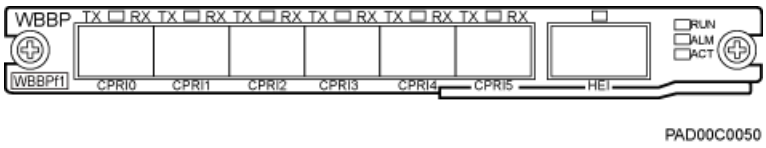


Figure 2-98 WBBPd panel

Figure 2-99 WBBPf panel



Specifications

NOTE

A license is required to support board specifications.

The WBBP is classified into four types, as listed in **Table 2-94**.

NOTE

The baseband processing board in slot 2 or 3 in a BBU3900 can transfer received CPRI data to other boards.

Table 2-94 Specifications of the WBBP

Board	Number of Cells[a]	Number of UL CEs	Number of DL CEs	Number of HSDPA Codes[b]	Number of HSDPA UEs	Number of HSUPA UEs
WBBPa	3	128	256	3x15	96	60
WBBPb1	3	64	64	3x15	64	64
WBBPb2	3	128	128	3x15	128	96

Board	Number of Cells[a]	Number of UL CEs	Number of DL CEs	Number of HSDPA Codes[b]	Number of HSDPA UEs	Number of HSUPA UEs
WBBPb3	6	256	256	6x15	144	96
WBBPb4	6	384	384	6x15	144	96
WBBPd1	6	192	192	6x15	128	96
WBBPd2	6	384	384	6x15	144	144
WBBPd3	6	256	256	6x15	144	96
WBBPf1	6	192	256	6x15	144	144
WBBPf2	6	256	384	6x15	192	192
WBBPf3	6	384	512	6x15	256	256
WBBPf4	6	512	768	6x15	384	384

a: indicates the number of 1T2R cells. The quantity of baseband resources consumed by cells varies depending on cell types, and therefore the number of cells supported by a baseband processing board varies depending on cell types. For details, see chapter "Consumption Principles of Baseband Resources" in *NodeB Baseband Resource Management Feature Parameter Description* by choosing **3900 Series Base Station Product Documentation** > **Description** > **Function Description**.

b: The number of HSDPA codes supported by a WBBPd1 is 6x15, in which 6 is the number of cells and 15 is the number of HSDPA codes supported by each cell.

NOTE

For combined signaling specifications of a board, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

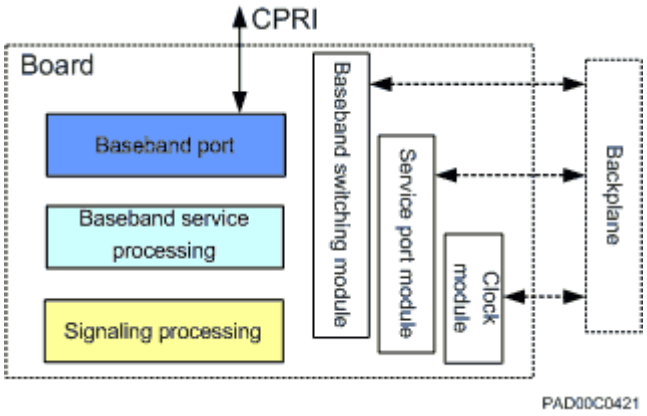
Function

- A WBBP processes uplink and downlink baseband signals.
- A WBBP provides CPRI ports for communication with RF modules.
- A WBBPd supports interference cancellation (IC) within the board.
- When CPRI cables connect RF modules carrying corresponding cells to a WBBPd, the WBBPd installed in slot 2 or 3 supports interference cancellation (IC) of uplink data.
- A WBBPf installed in slot 2 or 3 supports baseband interconnection between BBUs.

Working Principle

The following figure shows the working principle of a WBBP.

Figure 2-100 Working principle of a WBBP



Port

The following table describes the six CPRI ports on WBBPa and WBBPb panels.

Table 2-95 Ports on WBBPa and WBBPb panels

Board Type	Silkscreen	Connector	Description
WBBPa	CPRI0, CPRI1, and CPRI2	SFP female connector	They are data transmission ports connecting BBUs to RF modules, and support input and output of optical and electrical signals.
WBBPb	CPRI0/EIH0, CPRI1/EIH1, and CPRI2/EIH2		

Table 2-96 describes the six CPRI ports on a WBBPd.

Table 2-96 Ports on a WBBPd panel

Silkscreen	Connector	Description
CPRI0, CPRI1, CPRI2, CPRI3/ EIH0, CPRI4/EIH1, and CPRI5/EIH2	SFP female connector	They are data transmission ports connecting BBUs to RF modules, and support input and output of optical and electrical signals.

Table 2-97 describes the six CPRI ports and one HEI port on a WBBPf.

Table 2-97 Ports on the WBBPf panel

Silkscreen	Connector	Description
CPRI0, CPRI1, CPRI2, CPRI3, CPRI4, and CPRI5	SFP female connector	They are data transmission ports connecting BBUs to RF modules, and support input and output of optical and electrical signals.
HEI	QSFP connector	It interconnects to other baseband processing boards to share baseband resources.

The following table lists the specifications of CPRI ports on a WBBP.

Table 2-98 Specifications of CPRI ports on a WBBP

Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
WBBPa	3	1.25	Star, chain, and ring topologies
WBBPb1, WBBPb2, WBBPb3, or WBBPb4	3	1.25/2.5	Star, chain, and ring topologies
WBBPd	6	1.25 or 2.5	Star, chain, and ring topologies
WBBPf	6	1.25, 2.5, 4.9, or 6.144	Star, chain, and ring topologies

CPRI ports with different data rates support different numbers of cells, as listed in the following table.

Table 2-99 Mapping between CPRI data rate and number of cells supported

CPRI Port Rate (Gbit/s)	Number of 1T2R Cells	Number of 2T2R Cells
1.25	4	4*[a]
2.5	8	8*[a]
4.9	16	16*[a]
6.144	24	24*[a]

CPRI Port Rate (Gbit/s)	Number of 1T2R Cells	Number of 2T2R Cells
a: The asterisk (*) in the table indicates that the number of 2T2R cells is halved if the 2T2R cells support the virtual antenna mapping (VAM) function and the two TX antennas used by the VAM function are separately connected to two RF modules carried on different CPRI links.		

NOTE

In a GU dual-mode base station where the GTMU is connected to the WMPT or UMPT through ports on their panels, part of CPRI bandwidth of the UMTS side is reserved for a TX and an RX channel of the GSM side in case that bandwidth on the GSM side is insufficient. As a result, the cell number supported by the UMTS side is reduced.

2.5.8 LBBP

An LBBP is an LTE baseband processing unit and can be installed in a BBU3900.

Figure 2-101 and **Figure 2-102** show two types of LBBP boards.

NOTE

On the lower left corners of an LBBPd1, an LBBPd2, an LBBPd4, and an LBBPd3, there are silkscreens LBBPd1, LBBPd2, LBBPd4, and LBBPd3, respectively. **Figure 2-102** shows an LBBPd1 panel.

Figure 2-101 LBBPc panel

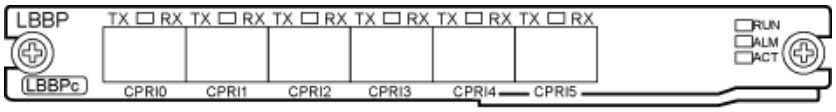
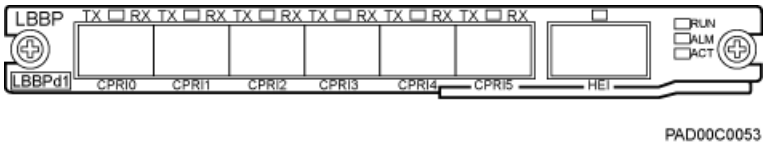


Figure 2-102 LBBPd panel



Specifications

NOTE

A license is required to support board specifications.

The following table lists the types of LBBP boards.

Table 2-100 Types of LBBP boards

Board	Applicable Mode
LBBPc	LTE FDD LTE TDD
LBBPd1	LTE FDD
LBBPd2	LTE FDD LTE TDD
LBBPd3	LTE FDD
LBBPd4	LTE TDD

NOTE

For specifications of an eNodeB, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Specifications of cells

The following table lists the specifications of cells supported by LBBP boards working in LTE FDD mode.

Table 2-101 Specifications of cells supported by LBBP boards working in LTE FDD mode

Board	Number of Cells	Cell Bandwidth	Antenna Configuration
LBBPc	3	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, or 20 MHz	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R
LBBPd1	3	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, or 20 MHz	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R
LBBPd2	3	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, or 20 MHz	3x20 MHz 1T1R 3x20 MHz 1T2R 3x20 MHz 2T2R 3x20 MHz 2T4R 3x20 MHz 4T4R
LBBPd3	6	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, or 20 MHz	6x20 MHz 1T1R 6x20 MHz 1T2R 6x20 MHz 2T2R[a]
a: When a CPRI fiber optic cable is between 20 km (12.43 mi) and 40 km (24.85 mi), an LBBPd3 supports the maximum configuration of 3x20 MHz 2T2R.			

The following table lists the specifications of cells supported by LBBP boards working in LTE TDD mode.

Table 2-102 Cell specifications of an LBBP

Board	Number of Cells	Cell Bandwidth (MHz)	Antenna Configuration
LBBPc	3	5/10/20	1x20 MHz 4T4R 3x10 MHz 2T2R 3x20 MHz 2T2R 3x10 MHz 4T4R
LBBPd2	3	5/10/15/20	3x20 MHz 2T2R 3x20 MHz 4T4R
LBBPd4	3	10/20	3x20 MHz 8T8R

NOTE

- The "Antenna Configuration" column lists the maximum configurations supported by various types of baseband processing boards. A baseband processing board supports the maximum configurations and any configurations that do not exceed the maximum configurations. For example, an LBBPc supports the maximum configuration of 3x10 MHz 4T4R, and therefore supports any of the following configurations: 3x1.4 MHz 4T4R, 3x3 MHz 4T4R, and 3x5 MHz 4T4R.
- Different cells support different antenna configurations as long as an antenna configuration does not exceed the maximum antenna configuration. For example, if an LBBPd2 supports the antenna configuration of 3x20 MHz 2T2R, the three cells deployed on the LBBPc can use the following antenna configurations: 2T2R, 2T2R, and 1T1R.
- An LBBP supports combinations of different types of bandwidth as long as the total bandwidth does not exceed the maximum bandwidth supported by the LBBP. For example, an LBBPc supports the maximum antenna configuration of 3x20 MHz 2T2R, and therefore supports any three of the following antenna configurations: 1.4 MHz 2T2R, 3 MHz 2T2R, 5 MHz 2T2R, 10 MHz 2T2R, 15 MHz 2T2R, and 20 MHz 2T2R.
- 1R and 2R cells can be configured together in any form. In a hybrid configuration, the total number of cells cannot exceed the number of 2R cells supported by a board.
- In LTE FDD mode, an LBBPc, LBBPd1, or LBBPd3 does not support a hybrid configuration of 1R and 4R cells, or 2R and 4R cells.
- In LTE FDD mode, an LBBPd2 supports a hybrid configuration of 1R and 4R cells, or 2R and 4R cells. In a hybrid configuration, a maximum of three cells are supported.
- An LBBP supports CPRI Sharing. For principles and constraints of CPRI Sharing, see *eRAN CPRI Sharing Feature Parameter Description*.

Signaling specifications

The following table lists the signaling specifications of LBBP boards working in LTE FDD mode.

NOTE

The BHCA specifications in the following table are based on the smart device traffic model.

Table 2-103 Signaling specifications of LBBP boards

Board	Signaling Specifications (BHCA)
LBBPc	63000
LBBPd1/LBBPd2	126000
LBBPd3	144000

The following table lists the signaling specifications of LBBP boards working in LTE TDD mode.

NOTE

The signaling specifications for TDD scenarios are the maximum ones for typical scenarios of normal cells.

Maximum number of UEs in RRC connected mode

The following table lists the maximum number of UEs in RRC connected mode supported by LBBP boards working in LTE FDD mode.

Table 2-104 Maximum number of UEs in RRC Connected mode supported by the LBBP board

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
LBBPc	1.4 MHz	504	168	350	168
	3 MHz	1080	360	350	350
	5/10/15/20 MHz	1800	600	350	350
LBBPd1 / LBBPd2	1.4 MHz	504	300	504	300
	3 MHz	1080	1080	700	700
	5 MHz	1800	1200(4)	700	700
	10/15/20 MHz	3600	1200(4)	700	700
LBBPd3	1.4 MHz	1008	600	800	600
	3 MHz	2160	1200(4)	800	800
	5/10/15/20 MHz	3600	1200(4)	800	800

NOTE

(4): During the configuration of the **MaxSyncUserNumPerBbi** parameter, the maximum number of uplink synchronized UEs supported by an LBBPd1, LBBPd2, or LBBPd3 board can reach 3600 when a certain traffic model is used (for example, datacard traffic model). However, user experience and system performance will deteriorate as the number of UEs increases. Therefore, it is recommended that the value of this parameter do not exceed 1200.

The following table lists the maximum number of UEs in RRC connected mode supported by LBBP boards working in LTE TDD mode.

Table 2-105 Maximum number of UEs in RRC Connected mode supported by the LBBP board

Board	Cell Bandwidth	Maximum Number of UEs in RRC Connected Mode (Datacard Traffic Model)	Maximum Number of UEs in RRC Connected Mode (Smartphone Traffic Model)
LBBPc	5 MHz	1800	300
	10 MHz	1800	350
	20 MHz	1800 (2T2R), 1200 (4T4R)	350
LBBPd2	5 MHz	1800	700
	10/15/20 MHz	3600	700
LBBPd4	5 MHz	1800	700
	10/15/20 MHz	3600	700

Maximum number of DRBs

The maximum number of data radio bearers (DRBs) supported by an LBBP is three times the maximum number of UEs in RRC connected mode based on the datacard traffic model.

Maximum throughput

The following table lists the maximum throughput of LBBP boards.

Table 2-106 Maximum throughput of LBBP boards

Board	Maximum Throughput
LBBPc	● Downlink: 300 Mbit/s ● Uplink: 100 Mbit/s

Board	Maximum Throughput
LBBPd1	● Downlink: 450 Mbit/s ● Uplink: 225 Mbit/s
LBBPd2	● Downlink: 600 Mbit/s ● Uplink: 225 Mbit/s
LBBPd3	● Downlink: 600 Mbit/s ● Uplink: 300 Mbit/s
LBBPd4	● Downlink: 600 Mbit/s ● Uplink: 225 Mbit/s

NOTE

The maximum throughput listed in the preceding table is hardware capacities supported by LBBPc and LBBPd boards working LTE TDD mode. The actual uplink and downlink peak throughput depends on uplink-downlink subframe configurations.

Function

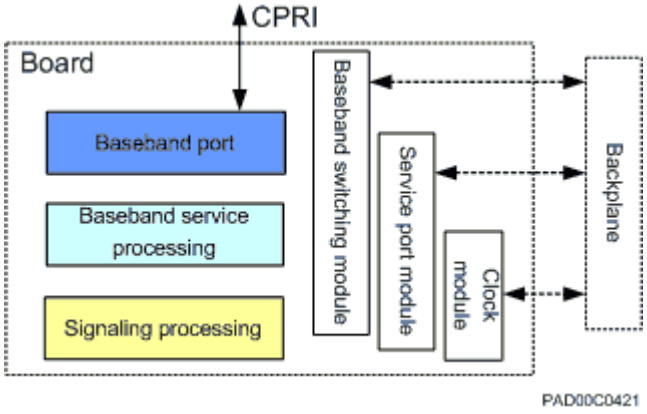
An LBBP performs the following functions:

- Provides CPRI ports for communication with RF modules.
- Processes uplink and downlink baseband signals.

Working Principle

The following figure shows the working principle of an LBBP.

Figure 2-103 Working principle of an LBBP



Port

The following table describes the six CPRI ports on an LBBP.

Table 2-107 Ports on an LBBP

Silkscreen	Connector	Quantity of Ports	Description
CPRI0 to CPRI5	SFP female connector	6	They are data transmission ports connecting BBUs to RF modules, and support input and output of optical and electrical signals.

The following table lists the specifications of CPRI ports on LBBP boards.

Table 2-108 Specifications of CPRI ports on LBBP boards

Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
LBBPc	6	1.25, 2.5, or 4.9	Star, chain, and ring topologies
LBBPd	6	1.25, 2.5, 4.9, 6.144, or 9.8	Star, chain, and ring topologies

CPRI ports with different data rates support different numbers of cells. **Table 2-109** lists the mapping between the CPRI port rate and the number of cells in an LTE FDD scenario. **Table 2-110** lists the mapping between the CPRI port rate and the number of cells in an LTE TDD scenario.

Table 2-109 Mapping between the CPRI port rate and the number of cells in an LTE FDD scenario

CPRI Port Rate (Gbit/s)	Number of 2T4R or 4T4R Cells	Number of 1T2R or 2T2R Cells	Number of 1T1R Cells
1.25	4x4 MIMO cells are not recommended because the transmission bandwidth of CPRI ports is limited.	● 4 (cell bandwidth ≤ 3 MHz) ● 2 (cell bandwidth ≤ 5 MHz) ● 1 (cell bandwidth ≤ 10 MHz)	● 8 (cell bandwidth ≤ 3 MHz) ● 4 (cell bandwidth ≤ 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)

CPRI Port Rate (Gbit/s)	Number of 2T4R or 4T4R Cells	Number of 1T2R or 2T2R Cells	Number of 1T1R Cells
2.5	1 (cell bandwidth ≤ 10 MHz)	● 4 (cell bandwidth ≤ 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 5 MHz) ● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
4.9	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)
6.144	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 5 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 10 (cell bandwidth ≤ 10 MHz) ● 5 (cell bandwidth = 15 MHz or 20 MHz)
9.8	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)	● 16 (cell bandwidth ≤ 10 MHz) ● 8 (cell bandwidth = 15 MHz or 20 MHz)

Table 2-110 Mapping between the CPRI port rate and the number of cells in an LTE TDD scenario

CPRI Port Rate (Gbit/s)	CPRI Compression[a]	Number of 8T8R Cells	Number of 4T4R Cells	Number of 2T2R Cells
2.5	Not in use	None	● 2 (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● None (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)

CPRI Port Rate (Gbit/s)	CPRI Compression[a]	Number of 8T8R Cells	Number of 4T4R Cells	Number of 2T2R Cells
	In use	None	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
4.9	Not in use	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● None (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)
9.8	Not in use	● None (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 16 (cell bandwidth = 5 MHz) ● 8 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)

CPRI Port Rate (Gbit/s)	CPRI Compression[a]	Number of 8T8R Cells	Number of 4T4R Cells	Number of 2T2R Cells
	In use without turning on the CPRI extension switch	● None (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 8 (cell bandwidth = 10 MHz) ● 5 (cell bandwidth = 15 MHz or 20 MHz)
	In use with the CPRI extension switch being turned on	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)	● None (cell bandwidth = 5 MHz) ● 12 (cell bandwidth = 10 MHz) ● 8 (cell bandwidth = 15 MHz or 20 MHz)

a:

- CPRI compression is not supported when a cell bandwidth is 5 MHz.
- An LBBPc does not support CPRI compression.
- If the CPRI extension switch is turned on, carrier specifications supported by an LBBPd with a CPRI port rate of 9.8 Gbit/s are affected only when CPRI compression is used. For details about the CPRI extension switch, see **CPRIEX** in **MOD BBP** or **LST BBP**. When the CPRI extension switch is turned on, only CPRI0, CPRI1, and CPRI2 ports on an LBBPd can be used.

NOTE

The preceding table lists the maximum number of cells and the maximum number of antennas supported by each CPRI link with a corresponding CPRI port rate. In combined RF module scenarios, the CPRI port rate is determined by the actual number of cells and number of antennas carried by each CPRI link.

The following table describes the QSFP port on an LBBPd.

Table 2-111 QSFP port on an LBBPd

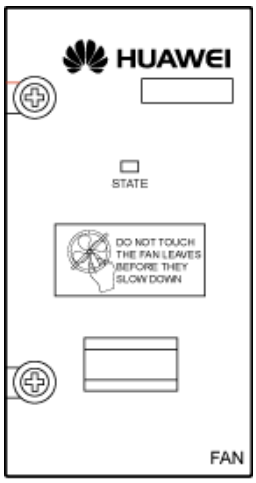
Silkscreen	Connector	Quantity of Ports	Description
HEI	QSFP connector	1	It interconnects to other baseband processing boards to share baseband resources.

2.5.9 FAN

A FAN is a fan module in a BBU3900. A FAN or FANc can be installed only in a BBU3900, and a FANd or FANe can be installed only in a BBU3910.

Fan modules (except FAN) have silkscreens indicating their types on the lower left corners. **Figure 2-104**, **Figure 2-105**, **Figure 2-106**, and **Figure 2-107** show fan modules.

Figure 2-104 FAN panel



PAD00C0055

Figure 2-105 FANc panel

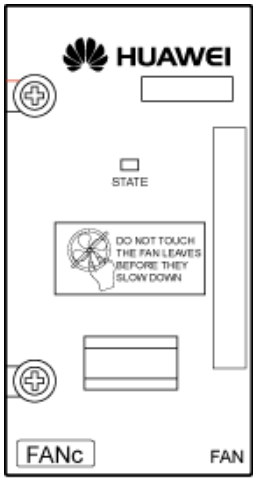


Figure 2-106 FANd panel

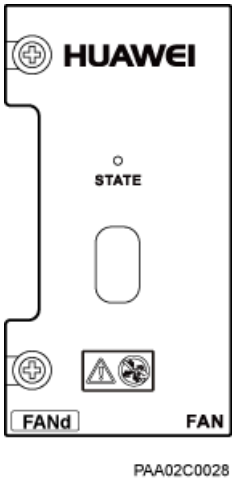
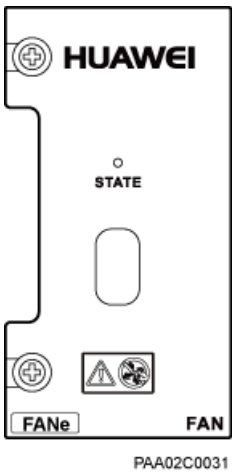


Figure 2-107 FANe panel



Function

A FAN performs the following functions:

- It dissipates heat from other boards in the BBU.
- It controls the speed of fans, monitors the temperature of fans, and reports the status, temperature and in-position signals of fans.
- A FANc, FANd, or FANe provides a read/write electronic label.

2.5.10 UPEU

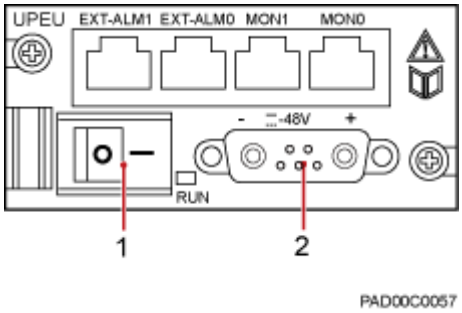
A UPEU is a universal power and environment interface unit. A UPEUd can be installed in a BBU3900 and a UPEUa, UPEUb or UPEUc can be installed only in a BBU3900.

Figure 2-108, **Figure 2-109**, **Figure 2-110**, and **Figure 2-111** show the four types of UPEU boards.

NOTE

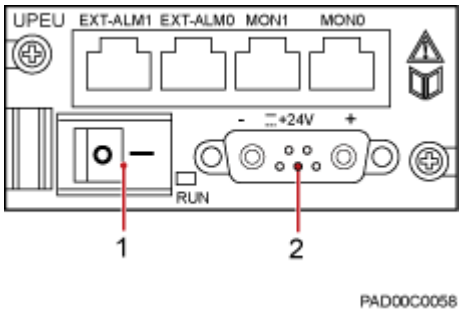
- A UPEUc and a UPEUd have silkscreens UPEUc and UPEUd indicating their board types on them, whereas a UPEUa and a UPEUb do not have such silkscreens indicating their board types. A UPEUa and a UPEUb, however, can be distinguished by silkscreens -48V and +24V on them.
- The silkscreen above a power port is in the "A, B" format. A indicates the rated voltage, and B indicates the rated current. For example, "-48V, 8A".

Figure 2-108 UPEUa panel



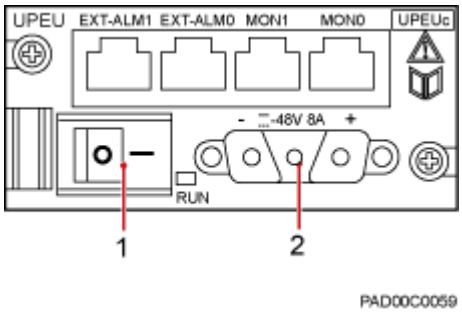
(1) BBU power switch (2) 7W2 connector

Figure 2-109 UPEUb panel



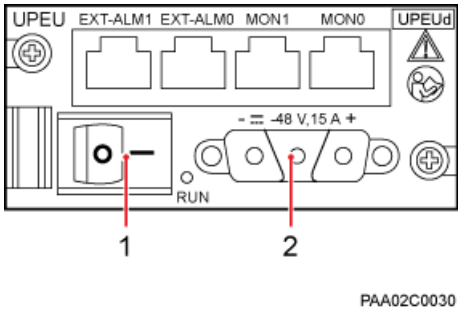
(1) BBU power switch (2) 7W2 connector

Figure 2-110 UPEUc panel



(1) BBU power switch (2) 3V3 connector

Figure 2-111 UPEUd panel



(1) BBU power switch (2) 3V3 connector

Specifications

The following table lists the specifications of a UPEUa, a UPEUc, and a UPEUd.

Table 2-112 Specifications of UPEU boards

Board	Output Power (W)		
	One UPEU	Two UPEU Boards (in Current Equalization Mode)	Two UPEU Boards (1+1 Redundancy Backup Mode)
UPEUa	300	-	300
UPEUb	250	-	250
UPEUc	360	650	360
UPEUd	650	-	650

NOTE

- 1+1 redundancy backup mode: When power required by a BBU does not exceed power provided by a single UPEU, two UPEUs automatically work in 1+1 backup mode and only one UPEU is working at a time.
- Current equalization mode: Only UPEUc boards support this mode. When power required by a BBU exceeds the maximum power provided by a single UPEUc, both UPEUc boards provide power.
- A BBU cannot house two UPEU boards of different types. When power required by a BBU exceeds power specifications of the BBU:
  - If the BBU has been configured with one or two UPEUa boards, replace the boards with two UPEUc boards.
  - If the BBU has been configured with one UPEUc board, add a UPEUc board.
- If two UPEUc boards are configured, output power is large and therefore a FANc must be configured.

Function

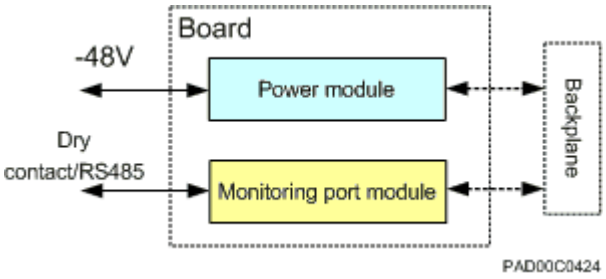
UPEU boards perform the following functions:

- A UPEUa, UPEUc, or UPEUd converts -48 V DC input power into +12 V DC power.
- A UPEUb converts +24 V DC input power into +12 V DC power.
- A UPEU provides two ports with each transmitting one RS485 signal and two ports with each transmitting four Boolean signals. The Boolean signals can only be dry contact or open collector (OC) signals.

Working Principle

The following figure shows the working principle of a UPEU.

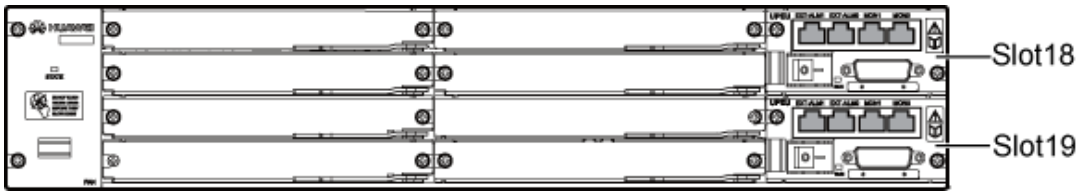
Figure 2-112 Working principle of a UPEU



Port

A UPEU provides two ports with each transmitting one RS485 signal and two ports with each transmitting four Boolean signals. The following figure shows the slots for installing UPEU boards in BBUs.

Figure 2-113 Slots for installing UPEU boards



The following table describes the ports on a UPEU panel.

Table 2-113 Ports on a UPEU panel

Slot	Silkscreen	Connector	Description
Slots 18 and 19	+24V or -48V[a]	3V3 or 7W2 connector	Feeding +24 V or -48 V DC power
	EXT-ALM0	RJ45 connector	Ports for Boolean signal inputs 0 to 3

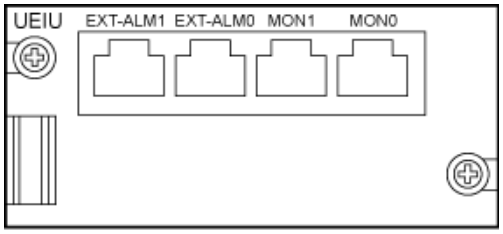
Slot	Silkscreen	Connector	Description
	EXT-ALM1	RJ45 connector	Ports for Boolean signal inputs 4 to 7
	MON0	RJ45 connector	Port for RS485 signal input 0
	MON1	RJ45 connector	Port for RS485 signal input 1
a: The silkscreen is in the "A, B" format. A indicates the rated voltage, and B indicates the rated current. For example, "-48V, 8A".			

2.5.11 UEIU

A UEIU is a universal environment interface unit and can be installed in a BBU3900 or BBU3910.

The following figure shows a UEIU panel.

Figure 2-114 UEIU panel



Function

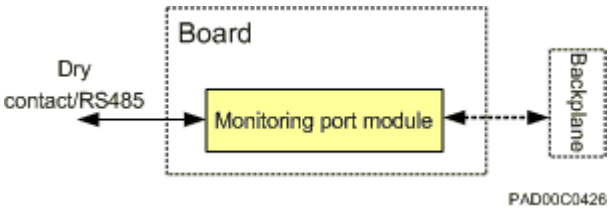
A UEIU performs the following functions:

- Provides two ports with each transmitting one RS485 signal and two ports with each transmitting four Boolean signals. The Boolean signals can only be dry contact or OC signals.
- Reports monitoring and alarm signals from other devices in the cabinet to the main control board.

Working Principle

The following figure shows the working principle of a UEIU.

Figure 2-115 Working principle of a UEIU



Port

The following table describes the ports on a UEIU panel.

Table 2-114 Ports on a UEIU panel

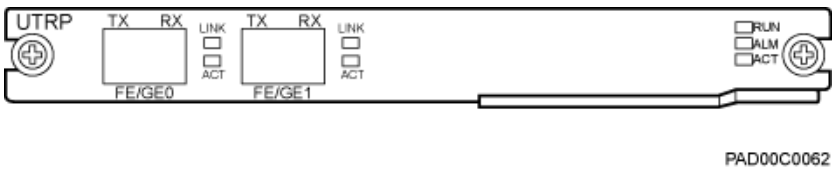
Silkscreen	Connector	Quantity of Ports	Description
EXT-ALM0	RJ45 connector	1	Ports for Boolean signal inputs 0 to 3
EXT-ALM1	RJ45 connector	1	Ports for Boolean signal inputs 4 to 7
MON0	RJ45 connector	1	Port for RS485 signal input 0
MON1	RJ45 connector	1	Port for RS485 signal input 1

2.5.12 UTRP

A UTRP is a universal transmission processing unit. A UTRPa or UTRPc can be configured in a BBU3900 or BBU3910. Other types of UTRP boards can be configured only in a BBU3900.

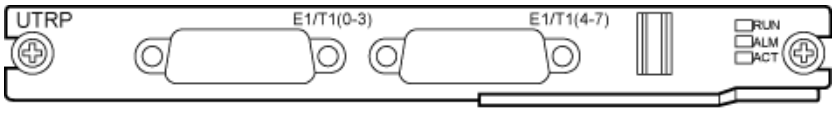
The following figure shows a UTRP2 panel.

Figure 2-116 UTRP2 panel (with two optical ports)



The following figure shows a UTRP3 or UTRP4 panel.

Figure 2-117 UTRP3 or UTRP4 panel (with eight E1/T1 channels)



The following figure shows a UTRPb4 panel in GSM mode.

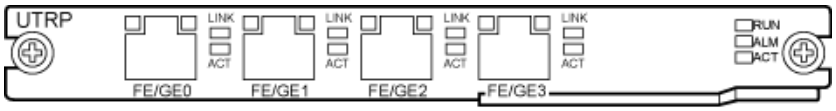
Figure 2-118 UTRPb4 panel (with eight E1/T1 channels)

The following figure shows a UTRP6 panel.

Figure 2-119 UTRP6 panel (with one STM-1 channel)

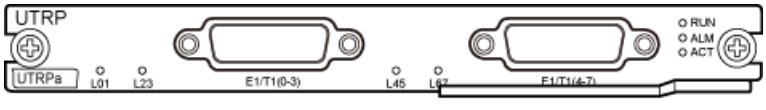
The following figure shows a UTRP9 panel.

Figure 2-120 UTRP9 panel (with four electrical ports)



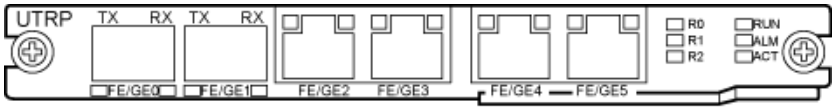
The following figure shows a UTRPa panel.

Figure 2-121 UTRPa panel (with eight E1/T1 channels)



The following figure shows a UTRPc panel.

Figure 2-122 UTRPc panel (with four electrical ports and two optical ports)



Specifications

The following table lists the specifications of UTRP boards.

Table 2-115 Specifications of UTRP boards

Board	Sub-board/ Board Type	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/ Half-Duplex
UTRP2	UEOC	UMTS	Transmission over FE/GE optical ports	2	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full-duplex
UTRP3	UAEC	UMTS	ATM over E1/T1	2	Eight channels	Full-duplex
UTRP4	UIEC	UMTS	IP over E1/T1	2	Eight channels	Full-duplex
UTRPb4	Without a sub-board	GSM	TDM over E1/T1	2	Eight channels	Full-duplex
UTRP6	UUAS	UMTS	STM-1/ OC-3	1	One channel	Full-duplex
UTRP9	UQEC	UMTS	Transmission over FE/GE electrical ports	4	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full-duplex
UTRPa	Without a sub-board	UMTS	ATM over E1/T1 or IP over E1/T1	2	Eight channels	Full-duplex

Board	Sub-board/ Board Type	Applicable Mode	Transmission Mode	Quantity of Ports	Port Capacity	Full/ Half-Duplex
UTRPc	Without a sub-board	UMTS Co-transmission used by multiple modes including UMTS (master mode on a UTRPc)	Transmission over FE/GE electrical ports	4	10 Mbit/s, 100 Mbit/s, or 1000 Mbit/s	Full-duplex
			Transmission over FE/GE optical ports	2	100 Mbit/s or 1000 Mbit/s	Full-duplex

NOTE

For the signaling specifications of a UTRP working in UMTS mode, see section "Technical Specifications of the BBU3900s and BBU3910s" in *3900 Series Base Station Technical Description*.

Function

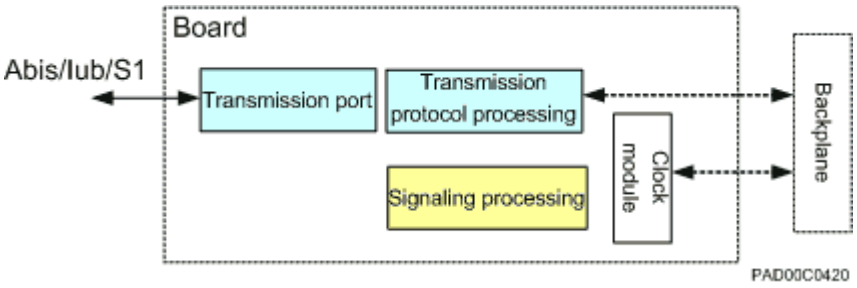
A UTRP performs the following functions:

- Provides E1/T1 transmission port over ATM, TDM or IP.
- Provides electrical and optical transmission ports.
- Supports cold backup.

Working Principle

The following figure shows the working principle of a UTRP.

Figure 2-123 Working principle of a UTRP



Port

The following table describes the ports on a UTRP panel.

Table 2-116 Ports on a UTRP panel

Board	Silkscreen	Connector	Description
UTRP2	FE/GE0 and FE/GE1	SFP female connector	FE/GE optical signal transmission port
UTRP3, UTRP4, UTRPb4, or UTRPa	E1/T1	DB26 female connector	E1/T1 signal transmission port
UTRP6	STM-1/OC-3	SFP female connector	STM-1/OC-3 signal transmission port
UTRP9	FE/GE0 to FE/GE3	RJ45 connector	FE/GE electrical signal transmission port
UTRPc	FE/GE0 and FE/GE1	SFP female connector	FE/GE optical signal transmission port
	FE/GE2 to FE/GE5	RJ45 connector	FE/GE electrical signal transmission port

DIP Switch

There are three DIP switches on a UTRP3, UTRP4, or UTRPb4, and there are two DIP switches on a UTRPa. **Figure 2-124** shows the DIP switches on a UTRP3 or UTRP4. **Figure 2-125** shows the DIP switches on a UTRPb4. **Figure 2-126** shows the DIP switches on a UTRPa.

Figure 2-124 DIP switches on a UTRP3 or UTRP4

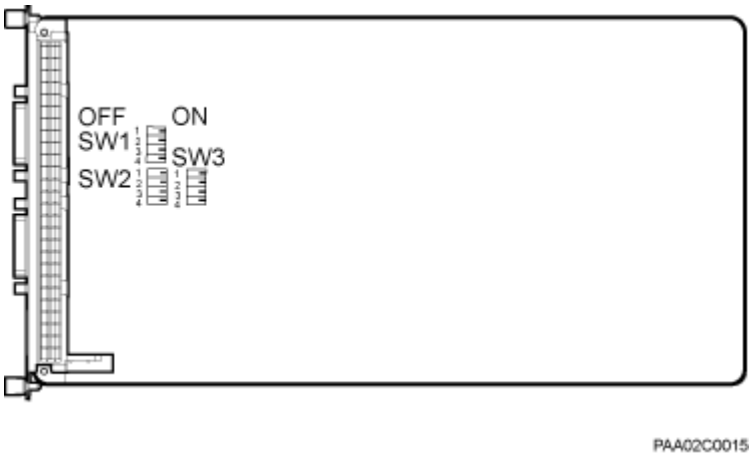


Figure 2-125 DIP switches on a UTRPb4

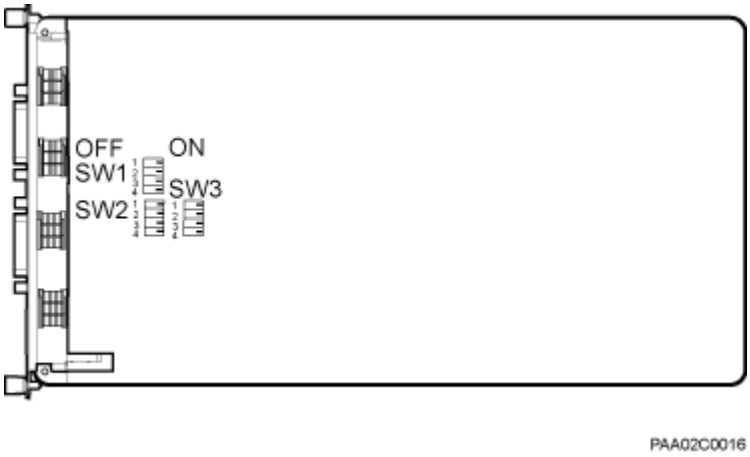
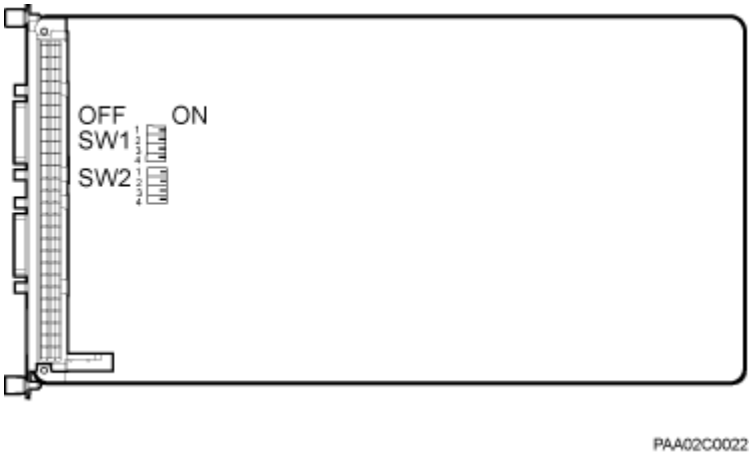


Figure 2-126 DIP switches on a UTRPa



The DIP switches perform the following functions:

- SW1 and SW2 are used to set whether to ground the receiver end of the E1.
- SW3 is used to set the resistance of the E1 signals.

Each DIP switch has four bits. **Table 2-117**, **Table 2-118**, and **Table 2-119** describe the bit settings and meanings of the DIP switches.

Table 2-117 DIP switch SW1

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW1	OFF	OFF	OFF	OFF	Balanced
	ON	ON	ON	ON	Unbalanced

DIP Switch	Bit Setting				Description
	1	2	3	4	
	Miscellaneous				Unavailable

Table 2-118 DIP switch SW2

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW2	OFF	OFF	OFF	OFF	Balanced
	ON	ON	ON	ON	Unbalanced
	Miscellaneous				Unavailable

NOTICE

SW1 and SW2 are set to OFF by default. SW1 corresponds to No.4 to No.7 E1 channels. SW2 corresponds to No.0 to No.3 E1 channels.

Table 2-119 DIP switch SW3

DIP Switch	Bit Setting				Description
	1	2	3	4	
SW3	OFF	OFF	ON	ON	T1
	ON	ON	OFF	OFF	The E1 resistance is set to 120 ohms.
	ON	ON	ON	ON	The E1 resistance is set to 75 ohms.
	Miscellaneous				Unavailable

2.5.13 USCU

A USCU is a universal satellite card and clock unit and can be installed in a BBU3900 or BBU3910.

USCU boards have two types of exteriors, which are shown in **Figure 2-127** and **Figure 2-128**.

NOTE

A USCUb11 and a USCUb14 have labels USCUb11 and USCUb14 indicating their board types on the lower left corners, respectively.

Figure 2-127 USCUb11 or USCUb14 panel

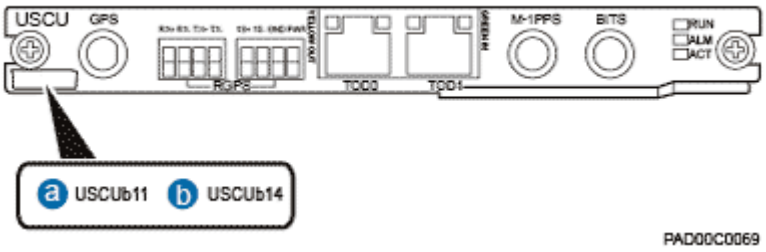
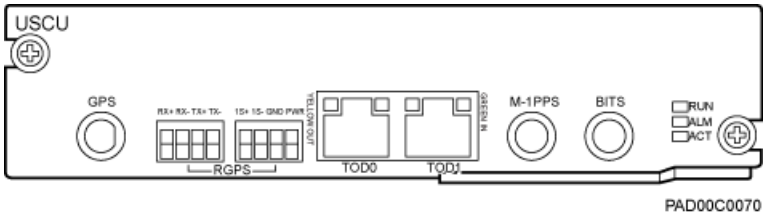


Figure 2-128 USCUb22 panel



Specifications

The following table describes specifications of the three types of USCU boards.

Table 2-120 Specifications of USCU boards

Board	Working Mode	Supported Satellite Card
USCUb11	LTE	None
USCUb14	GSM UMTS LTE	UBLOX single-satellite card
USCUb22	GSM UMTS LTE	Naviors dual-satellite card

Function

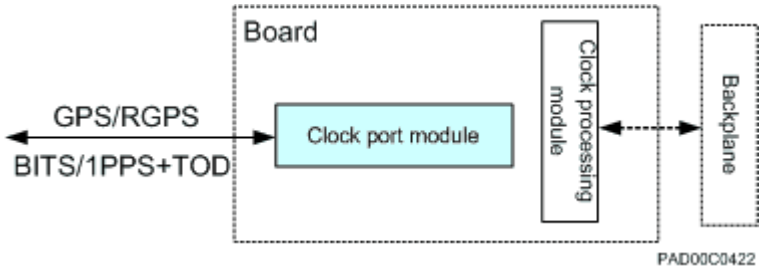
USCU boards perform the following functions:

- A USCUb11 provides ports for communicating with the RGPS (for example, the RGPS on the reused customer equipment) and BITS equipment. It does not support GPS signals.
- A USCUb14 does not support RGPS signals. It contains a UBLOX satellite card.
- A USCUb22 does not support RGPS signals. It uses a Naviors satellite card, which must be purchased locally and installed onsite.

Working Principle

The following figure shows the working principle of a USCU.

Figure 2-129 Working principle of a USCU



Port

The following table describes the ports on a USCU panel.

Table 2-121 Ports on a USCU panel

Silkscreen	Connector	Description
GPS	SMA connector	The GPS ports on a USCUb14 or USCUb22 are used for receiving GPS signals. The GPS port on a USCUb11 is reserved, and it cannot receive GPS signals.
RGPS	PCB welded wiring terminal	The RGPS port on a USCUb11 is used for receiving RGPS signals. The RGPS ports on a USCUb14 or USCUb22 are reserved, and they cannot receive RGPS signals.
TOD0	RJ45 connector	Receives or transmits 1PPS+TOD signals.
TOD1	RJ45 connector	Receives or transmits 1PPS+TOD signals, and receives TOD signals from the M1000.

Silkscreen	Connector	Description
BITS	SMA connector	Receives BITS clock signals, and supports adaptive inputs of 2.048 MHz and 10 MHz reference clock.
M-1PPS	SMA connector	Receives 1PPS signals from the M1000.

2.5.14 UBRI

A UBRI or UBRIb is a universal baseband radio interface board. A UBRIb can be installed in a BBU3900 or BBU3910, and a UBRI can be installed only in a BBU3900.

Figure 2-130 and **Figure 2-131** show the exteriors of a UBRI and a UBRIb.

Figure 2-130 UBRI panel

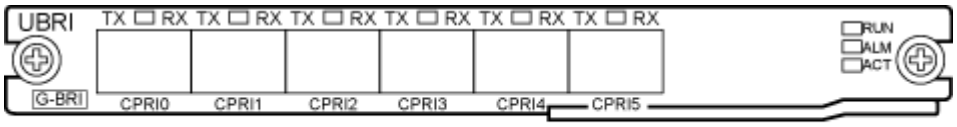
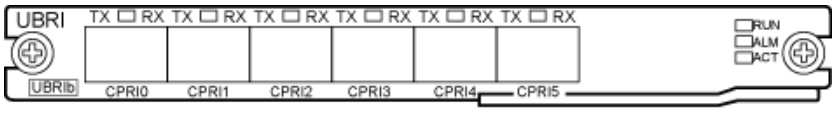


Figure 2-131 UBRIb panel



Specifications

The following table lists the specifications of a UBRI and a UBRIb.

Table 2-122 Specifications of a UBRI and a UBRIb

Board	Applicable Mode
UBRI	GSM
UBRIb	● GSM ● The board is required in a co-MPT base station where supported modes include GSM mode.

Function

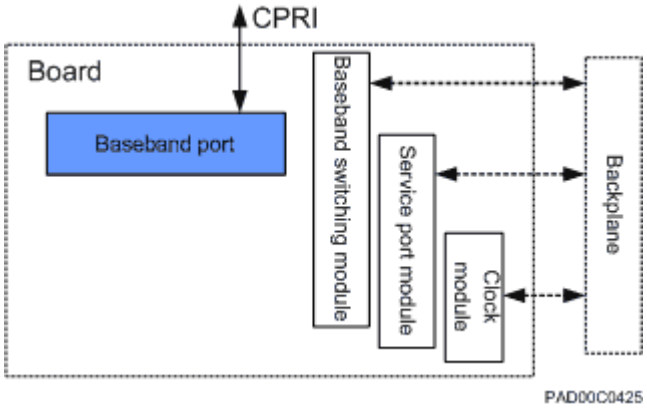
A UBRI or UBRIb performs the following functions:

- A UBRI or UBRIb provides extended CPRI optical or electrical ports.
- When a UBRI or UBRIb is working in GSM mode, RF modules process baseband signals.
- A UBRIb receives CPRI signals in a single-mode or multimode base station.
- A UBRIb only supports single mode in a separate-MPT base station.

Working Principle

The following figure shows the working principle of a UBRI or UBRIb.

Figure 2-132 Working principle of a UBRI or UBRIb



Port

The following table describes the ports on a UBRI or UBRIb.

Table 2-123 Ports on a UBRI or UBRIb

Silkscreen	Connector	Description
CPRI0 to CPRI5	SFP female connector	Connects a BBU to RF modules.

The following table lists specifications of the CPRI ports on a UBRI and a UBRIb.

Table 2-124 Specifications of the CPRI ports on a UBRI and a UBRIb

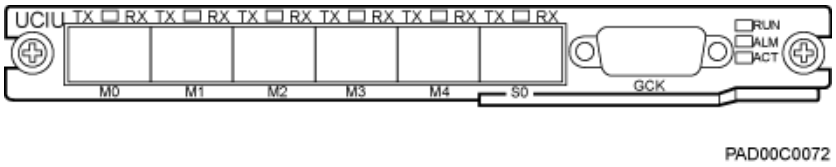
Board	Quantity of CPRI Ports	CPRI Port Rate (Gbit/s)	Topology Type
UBRI	6	1.25 or 2.5	Star, chain, and ring topologies
UBRIb	6	1.25, 2.5, 4.9, 6.144, or 9.8	Star, chain, and ring topologies

2.5.15 UCIU

A UCIU is a universal inter-connection infrastructure unit and can be installed in a BBU3900.

The following figure shows a UCIU panel.

Figure 2-133 UCIU panel



Function

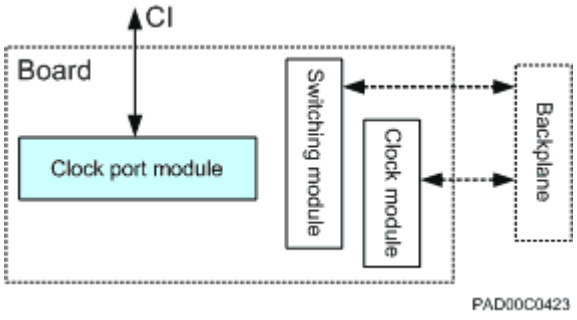
A UCIU performs the following functions:

- Supports single-mode or multimode configuration and management. When in multiple modes, it is shared by multiple modes and can be configured and managed by any mode.
- Interconnects BBUs, and forwards control and synchronization information from one BBU to another.
- Supports co-site of a 3900 series base station and a 3012 series base station.

Working Principle

The following figure shows the working principle of a UCIU.

Figure 2-134 Working principle of a UCIU



Port

The following table describes the ports on a UCIU.

Table 2-125 Ports on a UCIU

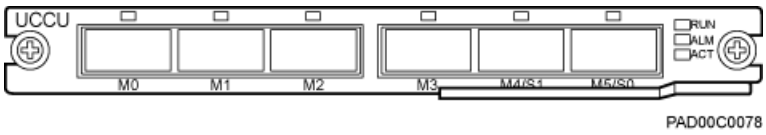
Silkscreen	Connector	Description
M0 to M4	SFP female connector	Primary inter-BBU ports, which connect to the secondary inter-BBU ports.
S0	SFP female connector	Secondary inter-BBU port, which connects to the primary inter-BBU port.
GCK	DB15 connector	Provides reference clock when the base station is combined with a 3012 series base station.

2.5.16 UCCU

A UCCU is a universal inter-connection combo unit and can be installed in a BBU3900 or BBU3910.

The following figure shows a UCCU panel.

Figure 2-135 UCCU panel



Function

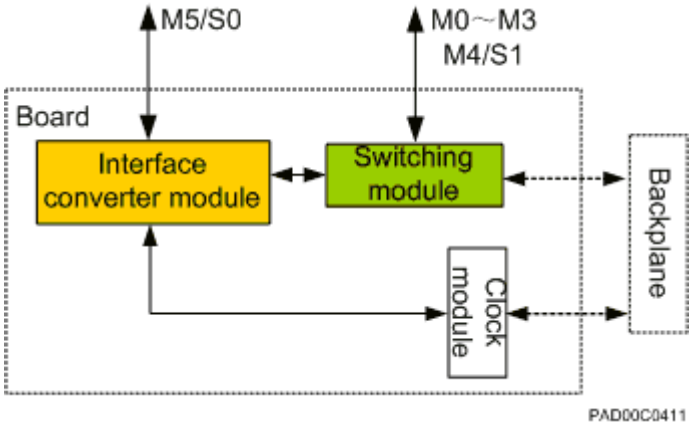
A UCCU performs the following functions:

- Supports interconnection between a BBU and a USU.
- Allows a BBU to exchange data with a USU.

Working Principle

The following figure shows the working principle of a UCCU.

Figure 2-136 Working principle of a UCCU



Port

The following table describes the ports on a UCCU.

Table 2-126 Ports on the UCCU

Silkscreen	Connector	Description
M0 to M3	QSFP connector	Primary interconnection ports, which can be connected to HEI ports on the baseband processing board in a BBU
M4/S1		
M5/S0	QSFP connector	Secondary interconnection port, which can be connected to any of the following remote ports: ● HEI port on the ULPU in a USU3910 ● M5/S0 port on the UCCU in another BBU

2.5.17 Optical Modules

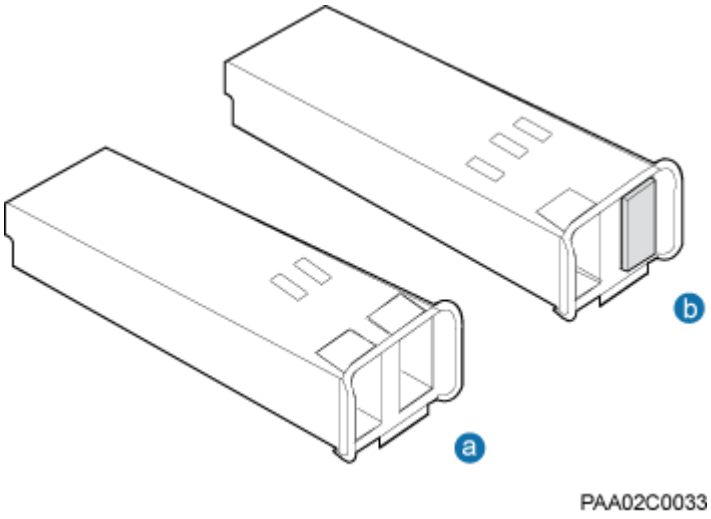
An optical module transmits optical signals between an optical port and a fiber optic cable.

NOTE

- The exteriors of an optical module and the label on an optical module in this section are for reference only. The actual exteriors may be different.
- Boards or RF modules supporting only the 1.25 Gbit/s CPRI port rate, for example, a GTMU or RRU3908 V1, cannot use 10 Gbit/s optical modules.
- A fiber optic cable must use the same type of optical modules on its two ends. If different types of optical modules are used by a fiber optic cable, performance risks may arise, for example, alarms, bit errors, and interrupted links.
- Only Huawei-certified optical modules meeting the following requirements can be used for Huawei wireless devices:
  - Requirements of devices on which optical modules are to be installed
  - Laser safety in the IEC 60825-1 standard
  - General safety in the IEC 60950-1 standard
- For SFP or QSFP optical modules certified and provided by Huawei, see Spare Parts Catalog.

The following figure shows the exteriors of optical modules.

Figure 2-137 Exteriors of optical modules

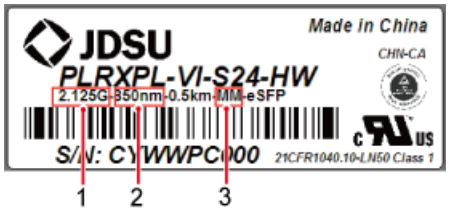


a: Optical module b: Single-fiber bidirectional optical module

Label on an Optical Module

There is a label on each optical module, which provides information such as the rate, wavelength, and transmission mode, as shown in the following figure.

Figure 2-138 Label on an optical module



(1) Rate (2) Wavelength (3) Transmission mode

Optical Module Type

Optical modules can be divided into single- and multimode optical modules, which can be distinguished as follows:

- The puller of a single-mode optical module is blue and the puller of a multimode optical module is black or gray.
- The transmission mode is displayed as "SM" on the label of a single-mode optical module and "MM" on the label of a multimode optical module.

2.6 Indicators on BBU Boards

This chapter describes the indicators on BBU boards.

2.6.1 Status Indicators

This section describes the indicators showing the running status of BBU boards.

The following figure shows the indicator status on BBU boards. The following table describes the meanings of the indicators.

Figure 2-139 Status indicators

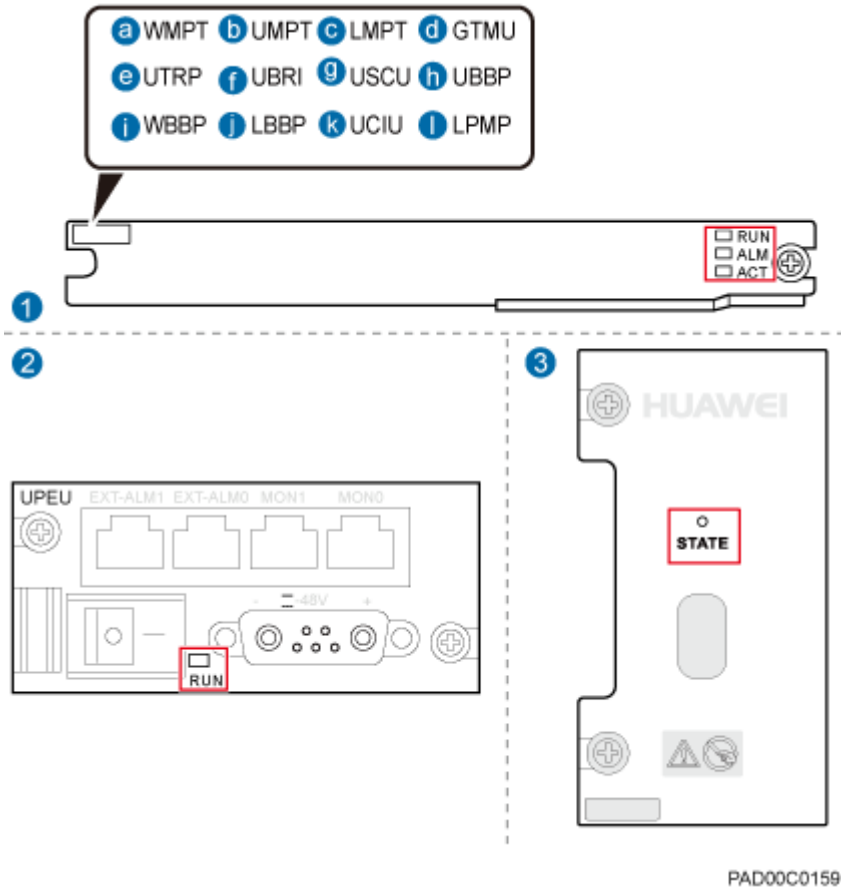


Table 2-127 Meanings of status indicators

Exterior	Silkscreen	Color	Status	Description
See illustration 1.	RUN	Green	Steady on	There is power supply, but the board is faulty.
			Steady off	There is no power supply, or the board is faulty.
			Blinking (on for 1s and off for 1s)	The board is running properly.
			Blinking (on for 0.125s and off for 0.125s)	● The board is being loaded or configured. ● The board is not started.
	ALM	Red	Steady on	An alarm is generated, and the board needs to be replaced.
			Steady off	The board is running properly.

Exterior	Silkscreen	Color	Status	Description
			Blinking (on for 1s and off for 1s)	An alarm is generated, and you need to locate the fault before determining whether to replace the board.
	ACT	Green	Steady on	● Main control board: The board is serving as an active board. ● UTRP working in GSM mode: – Before the configuration takes effect, none or more than one E1 port in GSM mode are functional. – The configuration has taken effect. ● Boards other than main control boards: The boards have been activated and are providing services.
			Steady off	● Main control board: The board is not serving as an active board. ● Boards other than main control boards: The boards have not been activated or are not providing services.
			Blinking (on for 0.125s and off for 0.125s)	● Main control board: The operation and maintenance link (OML) is disconnected. ● UTRP working in GSM mode: Before the configuration takes effect, only one E1 port in GSM mode is functional. ● Boards other than main control boards: N/A
			Blinking (on for 1s and off for 1s)	● UMPT supporting the UMTS single mode or UMPT deployed with multiple modes including UMTS: The board is being tested, for example, going through an RF module voltage standing wave ratio (VSWR) test by using a USB flash drive[a]. ● WBBPf, LBBPd, or UBRIb: The power supply for this board is insufficient. ● Other boards: N/A
			Blinking (In every 4s, the indicator is on for 0.125s and off for 0.125s [eight times] in the first 2s and then off for 2s.)	● UMPT supporting the LTE single mode or UMPT deployed with multiple modes including LTE: – All cells configured for the subrack that houses this board are not activated. – The S1 link is faulty. ● Other boards: N/A

Exterior	Silkscreen	Color	Status	Description
See illustration 2.	RUN	Green	Steady on	The board is running properly.
			Steady off	There is no power supply, or the board is faulty.
See illustration 3.	STATE	Red or green	Blinking green (on for 0.125s and off for 0.125s)	The module is not registered, and no alarm is reported.
			Blinking green (on for 1s and off for 1s)	The module is running properly.
			Blinking red (on for 1s and off for 1s)	The module is reporting alarms.
			Steady off	There is no power supply.

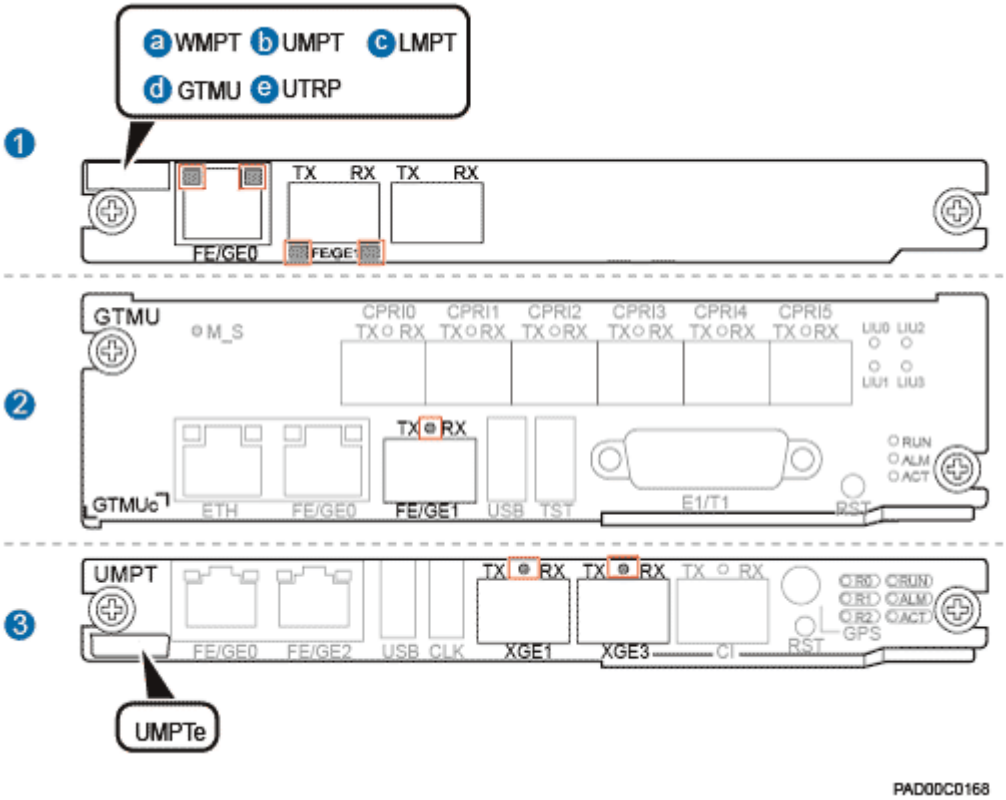
2.6.2 Indicators for Ports

This section describes the indicators indicating the status of links connected to ports on BBU boards.

Indicators for FE/GE Ports

On a main control board or transmission board, the indicator for an FE/GE electrical or optical port is located on either sides of the port or above the port, as shown in the following figure. There is no silkscreen for these indicators.

Figure 2-140 Positions of indicators for FE/GE ports



The following table describes the indicators for FE/GE ports.

Table 2-128 Indicators for FE/GE ports

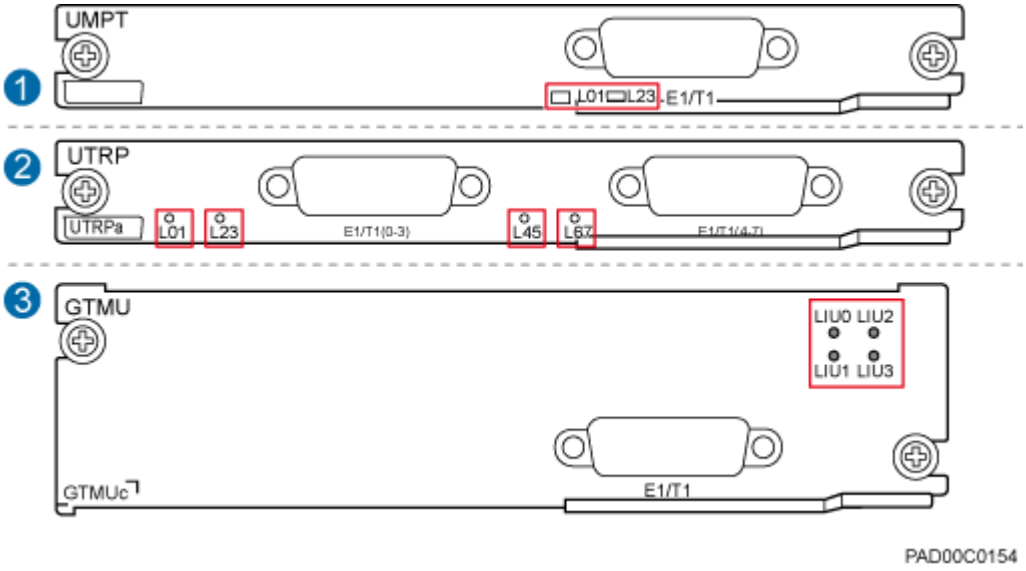
Exterior	Silkscreen	Color	Status	Description
See illustration 1.	LINK	Green	Steady on	The connection is set up successfully.
			Steady off	No connection is set up.
	ACT	Orange	Steady on	Data is being transmitted or received.
			Steady off	No data is being transmitted or received.
See illustration 2 or 3.	TX RX	Red or green	Steady green	The Ethernet link is functioning properly.
			Steady red	The optical module is transmitting or receiving faulty.
			Blinking red (on for 1s and off for 1s)	Ethernet negotiation is faulty.

Exterior	Silkscreen	Color	Status	Description
			Steady off	The SFP module cannot be detected, or the optical module is powered off.

Indicators for E1/T1 Ports

Indicators for an E1/T1 port are located beside the port, as shown in the following figure.

Figure 2-141 Positions of indicators for E1/T1 ports



The indicators for an E1/T1 port indicate the status of links connected to the E1/T1 port. The following table describes these indicators.

Table 2-129 Indicators for E1/T1 ports

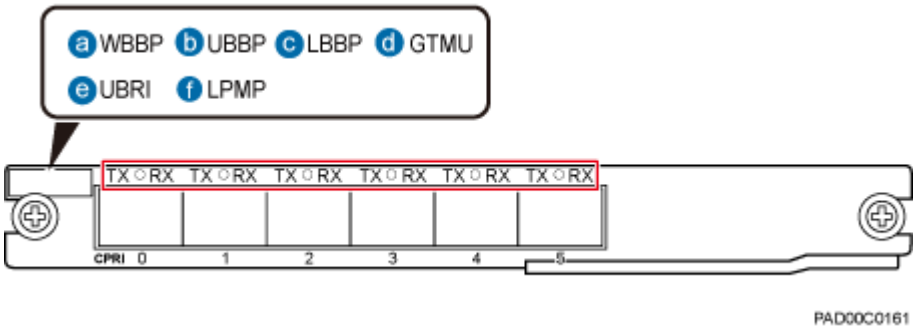
Exterior	Silkscreen	Color	Status	Description
See illustration 1 or 2.	L*xy* (*x* and *y* represents the numbers in the silkscreen.)	Red or green	Steady off	E1/T1 links *x* and *y* are not set up, or LOS alarms are generated on the links.
			Steady green	E1/T1 links *x* and *y* are functioning properly.
			Blinking green (on for 1s and off for 1s)	E1/T1 link *x* is functioning properly, but E1/T1 link *y* is not set up or an LOS alarm is generated on E1/T1 link *y*.

Exterior	Silkscreen	Color	Status	Description
			Blinking green (on for 0.125s and off for 0.125s)	E1/T1 link *y* is functioning properly, but E1/T1 link *x* is not set up or an LOS alarm is generated on E1/T1 link *x*.
			Steady red	Alarms are generated on E1/T1 links *x* and *y*.
			Blinking red (on for 1s and off for 1s)	An alarm is generated on E1/T1 link *x*.
			Blinking red (on for 0.125s and off for 0.125s)	An alarm is generated on E1/T1 link *y*.
See illustration 3.	LIU0 to LIU3	Green	Steady on	An E1/T1 local alarm is generated.
			Blinking (on for 1s and off for 1s)	An E1/T1 remote alarm is generated.
			Steady off	The link is functioning properly.

Indicators for CPRI Ports

Indicators for a CPRI port are above the ports, as shown in the following figure.

Figure 2-142 Positions of indicators for CPRI ports



The indicators for a CPRI port indicate the status of links connected to the CPRI port. The following table describes these indicators.

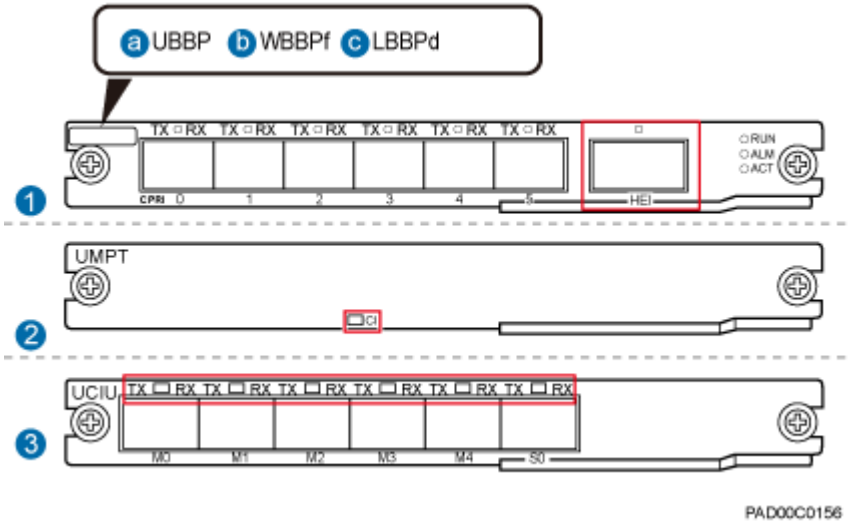
Table 2-130 Indicators for CPRI ports

Silkscreen	Color	Status	Description
TX RX	Red or green	Steady green	The CPRI link is functioning properly.
		Steady red	An optical module fails to transmit or receive signals due to one of the following causes: ● The optical module is faulty. ● The fiber optic cable is broken.
		Blinking red (on for 0.125s and off for 0.125s)	The RF module connected to the CPRI port has a hardware fault.
		Blinking red (on for 1s and off for 1s)	The CPRI link is out of lock due to one of the following causes: ● There is no mutual lock between dual-mode reference clocks. ● The CPRI port rate does not match the rate of the optical module. ● The VSWR alarm is reported on the RF module connected to the CPRI port when the USB flash drive[a] connected to the main control board is under test. (This is only for the baseband processing board working in UMTS mode.)
		Steady off	● The optical module cannot be detected. ● The CPRI electrical cable is not connected.
a: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands.			

Indicators for Interconnection Ports

Indicators for an interconnection port are either above or below the port, as shown in the following figure.

Figure 2-143 Positions of indicators for interconnection ports



The indicators for an interconnection port indicate the status of links connected to the interconnection port. The following table describes these indicators.

Table 2-131 Indicators for interconnection ports

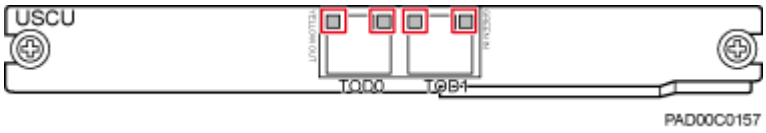
Exterior	Silkscreen	Color	Status	Description
See illustration 1.	HEI[a]	Red or green	Steady green	The interconnection link is functioning properly.
			Steady red	An optical module fails to transmit or receive signals due to one of the following causes: ● The optical module is faulty. ● The fiber optic cable is broken.
			Blinking red (on for 1s and off for 1s)	The interconnection link is out of lock due to one of the following causes: ● Mutual locking between two interconnected BBUs fails. ● The QSFP port rate does not match the rate of the optical module.
			Steady off	The optical module cannot be detected.
See illustration 2.	CI	Red or green	Steady green	The interconnection link is functioning properly.

Exterior	Silkscreen	Color	Status	Description
See illustration 3.	TX RX		Steady red	The optical module fails to transmit or receive signals, or the fiber optic cable is faulty.
			Blinking red (on for 0.125s and off for 0.125s)	Cables are incorrectly connected in one of following manners: ● In the UCIU+UMPT scenario, the S0 port on the UCIU is connected to the CI port on the UMPT. Indicators for all incorrectly connected ports are blinking. ● The ports are connected in a ring topology. Indicators for all incorrectly connected ports are blinking.
			Steady off	The optical module cannot be detected.
a: The HEI port on an LBBPd is reserved.				

Indicators for TOD Ports

On a USCU, indicators for a TOD port are located on both sides of the TOD port, as shown in the following figure.

Figure 2-144 Positions of indicators for TOD ports



The following table describes the indicators for TOD ports.

Table 2-132 Indicators for TOD ports

Silkscreen	Color	Status	Description
TOD*n* (*n* represents the number in the silkscreen.)	Green	Steady on	The port is configured as an input port.
	Orange	Steady on	The port is configured as an output port.

2.6.3 Other Indicators

This section describes other indicators of BBU boards.

Working Mode Indicators

The following figure shows the positions of the working mode indicators, and the following table describes these indicators.

Figure 2-145 Positions of working mode indicators

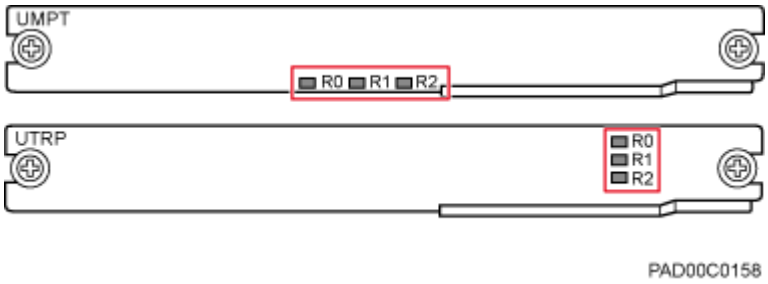


Table 2-133 Working mode indicators

Silkscreen	Color	Status	Description
R0	Red or green	Steady off	The board is not working in GSM mode.
		Steady green	The board is working in GSM mode.
		Blinking green (on for 1s and off for 1s)	Reserved
		Blinking green (on for 0.125s and off for 0.125s)	Reserved
R1	Red or green	Steady off	The board is not working in UMTS mode.
		Steady green	The board is working in UMTS mode.
R2	Red or green	Steady off	The board is not working in LTE mode.
		Steady green	The board is working in LTE mode.

M_S Indicator

The following figure shows the position of the M_S indicator, and the following table describes the indicator.

Figure 2-146 Position of the M_S indicator

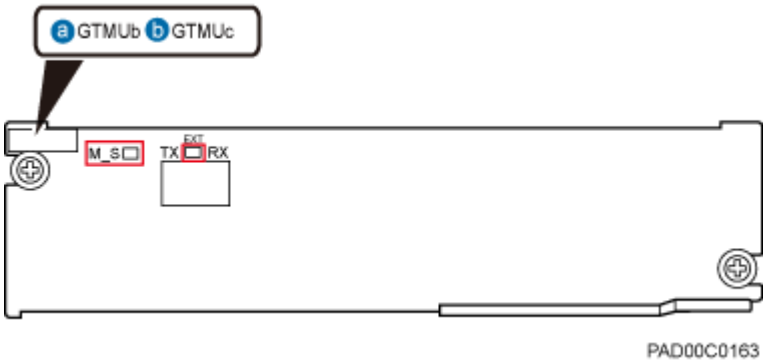


Table 2-134 M_S indicator

Silkscreen	Color	Status	Description
M_S	Green	Steady on	● LegacyOM mode ● Converted mode[a]
		Blinking (on for 1s and off for 1s)	SingleOM mode
a: When the board is in this mode, the ACT indicator on the board is steady off.			

NOTE

The EXT indicator on the upper left of the GTMUb is reserved.

2.7 BBU39000&BBU3910 Engineering Specifications

BBU equipment specifications include the input power specifications, dimensions, weight, heat dissipation capabilities, environmental specifications, and surge protection specifications.

Input Power Specifications

The following table lists the input power specifications of a BBU.

Table 2-135 Input power specifications of a BBU

Type	Input Power	Voltage Range
BBU3900 (configured with the UPEUc)	-48 V DC	-38.4 V DC to -57 V DC

Type	Input Power	Voltage Range
BBU3910 (configured with the UPEUd)	-48 V DC	-38.4 V DC to -57 V DC

Dimensions and Weight

The BBU3900 and BBU3910 have the same dimensions and weight, as provided in the following table.

Table 2-136 Dimensions and weight of a BBU

Item	Specifications
Dimensions (HxWxD)	86 mm x 442 mm x 310 mm
Weight	● ≤ 15 kg (full configuration) ● ≤ 7 kg (typical configuration)

Heat Dissipation Capabilities

The following table lists the heat dissipation capabilities of a BBU.

Table 2-137 Heat dissipation capabilities of a BBU

Type	Configuration	Specifications
BBU3900	FAN	350 W
	FANc	650 W
BBU3910	FANd	1000 W
	FANe	1000 W

Environmental Specifications

The BBU3900 and BBU3910 have the same environmental specifications, as provided in the following table.

Table 2-138 Environment specifications of a BBU

Item	Specifications
Operating temperature	● Long-term operation: -20ºC to +55ºC ● Short-term operation: +55ºC to +60ºC
Relative humidity	5% RH to 95% RH
Ingress Protection (IP) rating	IP20
Atmospheric pressure	70 kPa to 106 kPa
Noise sound power level	ETS 300 753 3.1 ≤ 7.2 bels

Standards

The following table provides the compliance standards for the BBU3900 and BBU3910.

Table 2-139 Compliance standards for a BBU

Item	Standard
Storage environment	ETSI EN300019-1-1 V2.1.4 (2003-04) class1.2 "Weatherprotected, not temperature-controlled storage locations" **NOTE** ● The validity period is one year. ● The product can function properly within the validity period if the storage environment meets the preceding standards.

Item	Standard
Surge protection	● IEC 62305-1 Protection against lightning - Part 1:General principles ● IEC 62305-3 Protection against lightning - Part 3:Physical damage to structures and life hazard ● IEC 62305-4 Protection against lightning - Part 4:Electrical and electronic systems within structures ● ITU-T K.35 Bonding configurations and earthing at remote electronic sites ● ITU-T K.56 Protection of radio base stations against lightning discharges ● ITU-T K.97 Lightning protection of distributed base stations ● ETSI EN 300 253 Environmental Engineering(EE):Earthing and bonding configuration inside telecommunications centers ● YD 2324-2011 Lightning protection requirements and test methods for Radio Base Stations (RBSs) ● GB/T 50689-2011 Code for design of lightning protection and earthing engineering for telecommunication bureaus (stations)

3 BBU3910A Hardware Description

About This Chapter

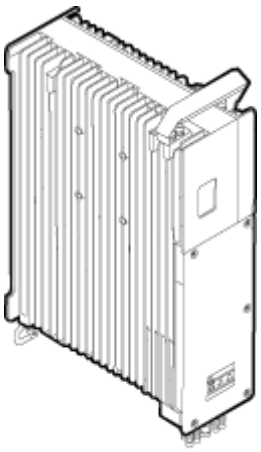
This chapter describes the exterior, working principles, functions, technical specifications, ports, and indicators of a BBU3910A. BBU3910A modules include the following models: BBU3910A1, BBU3910A2, and BBU3910A3. BBU3910A modules of different models have the same exterior, working principles, functions, ports, and indicators but different technical specifications.

3.1 Exterior of a BBU3910A

BBU3910A is an outdoor BBU, which integrates main control and transmission functions.

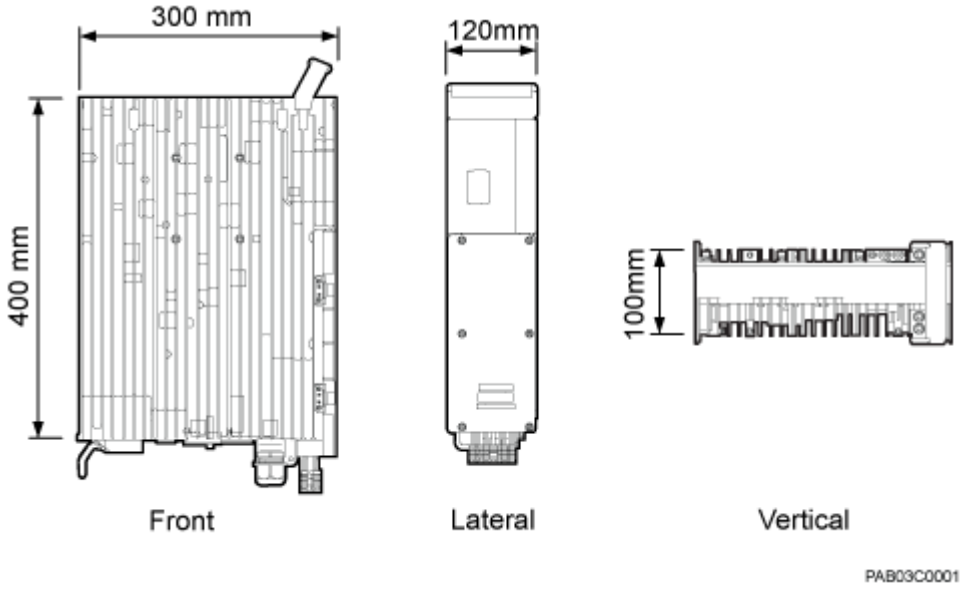
The following figure shows the exterior of a BBU3910A.

Figure 3-1 Exterior of a BBU3910A



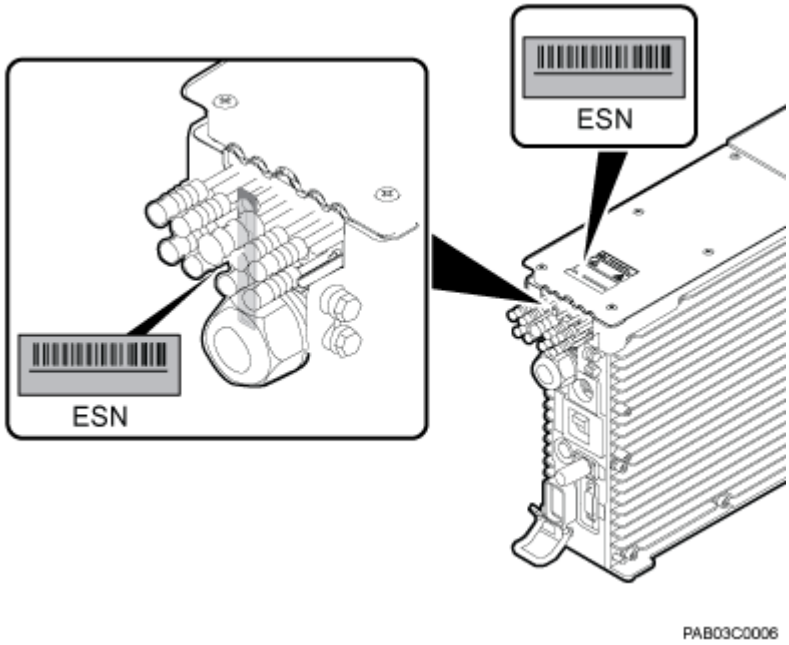
The following figure shows the dimensions of a BBU3910A.

Figure 3-2 Dimensions of a BBU3910A



An electronic serial number (ESN) is a unique identifier of a network element (NE) and is used during base station commissioning. An ESN is printed on a label. The following figure shows the position of the label on a BBU3910A.

Figure 3-3 Position of an ESN label



3.2 Working Principles and Functions of the BBU3910A

A BBU3910A is a multimode digital unit that processes signals of a base station.

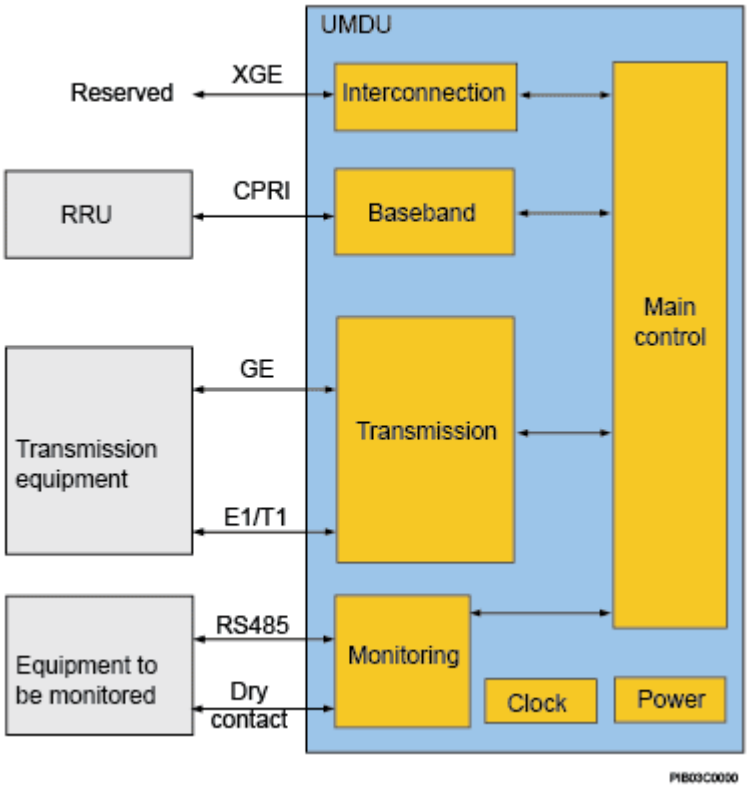
Working Principle

The BBU3910A houses a universal multimode digital unit (UMDU), which provides the following modules: main control module, transmission module, power module, clock module, baseband module, interconnection module (reserved), and monitoring module. The following figure shows the working principles of the UMDU.

NOTE

The UMDU and BBU3910A work as a whole. Therefore, when a UMDU becomes faulty, you need to replace the whole BBU3910A.

Figure 3-4 Working principles of the UMDU in a BBU3910A



Function

The BBU3910A performs the following functions in a base station:

- Provides ports for connecting to the transmission equipment, RF modules, USB devices[a], external reference clock, and LMT or U2000 to transmit signals, perform automatic software upgrade, receive reference clock signals, and support BBU maintenance on the LMT or U2000.
- Manages the entire base station system. The management involves the uplink and downlink data processing, signaling processing, resource management, and operation and maintenance.

NOTE

a: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands. The USB commissioning port is used for commissioning a base station rather than configuring and exporting information of the base station.

3.3 BBU3910A Technical Specifications

This section describes the technical specifications of a BBU3910A, including capacity specifications, signaling specifications, specifications of CPRI ports, transmission port specifications, and engineering specifications.

Capacity Specifications

Table 3-1 provides the capacity specifications of a BBU3910A working in GSM mode.

Table 3-1 Capacity specifications of a BBU3910A working in GSM mode

Module	Specifications
BBU3910A1	A single site supports a maximum of 12 cells and each cell supports a maximum of 24 TRXs. ● IP over FE transmission: 72 TRXs ● IP over E1 transmission: 48 TRXs
BBU3910A2	
BBU3910A3	

Table 3-2 provides the capacity specifications of a BBU3910A working in UMTS mode.

Table 3-2 Capacity specifications of a BBU3910A working in UMTS mode

Module	Number of 2R Cells	Uplink CE	Downlink CE	Number of HSDPA Codes	Number of HSDPA UEs	Number of HSUPA UEs
BBU3910A1	6	512	512	12 x 15	384	384
BBU3910A2	6	768	768	12x15	512	512
BBU3910A3	12	1024	1024	12 x 15	768	768

Table 3-3 provides the capacity specifications of a BBU3910A working in LTE FDD mode.

Table 3-3 Capacity specifications of a BBU3910A working in LTE FDD mode

Module	Maximum Number of Cells per BBU	Maximum Throughput per eNodeB FDD (Packet Size: 550 Bytes)	Maximum Number of UEs in RRC Connected Mode per eNodeB FDD	Maximum Number of DRBs per eNodeB FDD
BBU3910A1	3 cells (2T2R/2T4R/4T4R, 20 MHz)	Sum of uplink and downlink data rates at the MAC layer: 825 Mbit/s	● Datacard traffic model: 3600 ● Smartphone traffic model: 1500	10800

Module	Maximum Number of Cells per BBU	Maximum Throughput per eNodeB FDD (Packet Size: 550 Bytes)	Maximum Number of UEs in RRC Connected Mode per eNodeB FDD	Maximum Number of DRBs per eNodeB FDD
BBU3910A2	6 cells (2T2R/2T4R, 20 MHz) 3 cells (4T4R, 20 MHz)	Sum of uplink and downlink data rates at the MAC layer: 900 Mbit/s	● Datacard traffic model: 3600 ● Smartphone traffic model: 2200	
BBU3910A3	6 cells (2T2R/2T4R/4T4R, 20 MHz)	Sum of uplink and downlink data rates at the MAC layer: 1800 Mbit/s	● Datacard traffic model: 3600 ● Smartphone traffic model: 2200	

NOTE

- The BBU3910A1 does not support hybrid configuration of 2R and 4R cells.
- The BBU3910A2 supports hybrid configuration of 2R and 4R cells. In this configuration, a maximum of three cells are supported.
- The BBU3910A3 supports hybrid configuration of 2R and 4R cells. In this configuration, a maximum of three 2R cells and three 4R cells are supported.

The maximum number of UEs in RRC Connected mode supported by a BBU3910A working in LTE FDD mode varies depending on the cell bandwidth, as listed in **Table 3-4**.

Table 3-4 Maximum number of UEs in RRC Connected mode supported by a BBU3910A

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
BBU3910A1	1.4 MHz	504	504	504	504
	3 MHz	1080	1080	1080	1080
	5 MHz	1800	1800	1500	1500

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs	Maximum Number of UEs in RRC Connected Mode	Maximum Number of Uplink Synchronized UEs
	10 MHz, 15 MHz, or 20 MHz	3600	3600	1500	1500
BBU3910A 2/ BBU3910A 3	1.4 MHz	1008	1008	1008	1008
	3 MHz	2160	2160	2160	2160
	5 MHz, 10 MHz, 15 MHz, or 20 MHz	3600	3600	2200	2200

Table 3-5 lists the maximum number of UEs in RRC Connected mode per cell supported by a BBU3910A working in LTE FDD mode.

Table 3-5 Maximum number of UEs in RRC Connected mode per cell supported by a BBU3910A

Cell Bandwidth	Maximum Number of UEs in RRC Connected Mode per Cell	Maximum Number of Uplink Synchronized UEs per Cell
1.4 MHz	168	168
3 MHz	360	360
5 MHz	600	600
10 MHz, 15 MHz, or 20 MHz	1200	1200

The maximum number of DRBs per UE supported by an eNodeB FDD is 8.

For the uplink and downlink throughput per UE and per cell supported by an eNodeB FDD, see Throughput in Technical Specifications of the eNodeB FDD.

Table 3-6 provides the capacity specifications of a BBU3910A working in LTE TDD mode.

Table 3-6 Capacity specifications of a BBU3910A working in LTE TDD mode

Module	Maximum Number of Cells per BBU	Maximum Throughput per eNodeB TDD (Packet Size: 550 Bytes)	Maximum Number of UEs in RRC Connected Mode per eNodeB TDD	Maximum Number of DRBs per eNodeB TDD
BBU3910A1	3 ● 4T4R beamforming: 10 MHz, 15 MHz, or 20 MHz cell bandwidth ● DL 2x2 MIMO: 10 MHz, 15 MHz, or 20 MHz cell bandwidth ● DL 4x4 MIMO: 10 MHz, 15 MHz, or 20 MHz cell bandwidth	Sum of uplink and downlink data rates at the MAC layer: 825 Mbit/s	● Datacard traffic model: 3600 ● Smartphone traffic model: 1500	10800
BBU3910A3	6 ● 4T4R beamforming: 10 MHz, 15 MHz, or 20 MHz cell bandwidth ● DL 2x2 MIMO: 10 MHz, 15 MHz, or 20 MHz cell bandwidth ● DL 4x4 MIMO: 10 MHz, 15 MHz, or 20 MHz cell bandwidth	Sum of uplink and downlink data rates at the MAC layer: 1800 Mbit/s	● Datacard traffic model: 3600 ● Smartphone traffic model: 2200	

The maximum number of UEs in RRC Connected mode supported by a BBU3910A working in LTE TDD mode varies depending on the cell bandwidth, as listed in **Table 3-7**.

Table 3-7 Maximum number of UEs in RRC Connected mode supported by a BBU3910A working in LTE TDD mode

Board	Cell Bandwidth	Datacard Traffic Model		Smartphone Traffic Model	
		Maximum Number of UEs in RRC Connected Mode per Cell	Maximum Number of UEs in RRC Connected Mode per eNodeB	Maximum Number of UEs in RRC Connected Mode per Cell	Maximum Number of UEs in RRC Connected Mode per eNodeB
BBU3910A1	5 MHz	600	1800	300	450
	10 MHz	1200	3600	600	900
	15 MHz	1200	3600	900	1350
	20 MHz	1200	3600	1200	1500
BBU3910A3	5 MHz	600	1800	300	900
	10 MHz	1200	3600	600	1800
	15 MHz	1200	3600	900	2200
	20 MHz	1200	3600	1200	2200

For the uplink and downlink throughput per cell and per UE supported by an eNodeB TDD, see Throughput in Technical Specifications of the eNodeB TDD.

Table 3-8 provides the capacity specifications of a BBU3910A working in multiple modes.

Table 3-8 Capacity specifications of a BBU3910A working in multiple modes

Module	GU Scenario	GL Scenario	UL Scenario	GUL Scenario
BBU3910A 1	GSM G16/16/16 + UMTS 3x2 UMTS: 512 CEs in the uplink and 768 CEs in the downlink	GSM G16/16/16 + LTE FDD 3x20 MHz LTE FDD: 4T4R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 900 Mbit/s	UMTS 3x2 + LTE FDD 3x20 MHz ● UMTS: 256 CEs in the uplink and 384 CEs in the downlink ● LTE FDD: 2T2R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 450 Mbit/s	Not supported
BBU3910A 2	GSM G16/16/16 + UMTS 3x2 UMTS: 768 CEs in the uplink and 768 CEs in the downlink	GSM G16/16/16 + LTE FDD 3x20 MHz LTE FDD: 4T4R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 900 Mbit/s	UMTS 3x2 + LTE FDD 3x20 MHz ● UMTS: 384 CEs in the uplink and 512 CEs in the downlink ● LTE FDD: 2T2R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 450 Mbit/s	Not supported

Module	GU Scenario	GL Scenario	UL Scenario	GUL Scenario
BBU3910A 3	GSM G16/16/16 + UMTS 3x4 UMTS: 1024 CEs in the uplink, 1024 CEs in the downlink	GSM G16/16/16 + LTE FDD 6x20 MHz LTE FDD: 4T4R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 900 Mbit/s	UMTS 3x2 + LTE FDD 3 3x20 MHz ● UMTS: 512 CEs in the uplink and 768 CEs in the downlink ● LTE FDD: 4T4R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 600 Mbit/s	GSM G16/16/16(1) + UMTS 3x2 + LTE FDD 3x20 MHz ● UMTS: 512 CEs in the uplink and 768 CEs in the downlink ● LTE FDD: 4T4R; sum of uplink and downlink data rates at the MAC layer per eNodeB: 600 Mbit/s

NOTE

(1): If GSM is configured with 48 TRXs (S16/16/16), each TRX can be configured with one Standalone Dedicated Control Channel (SDCCH) only; if GSM is configured with 24 TRXs (S8/8/8), each TRX can be configured three SDCCHs.

Signaling Specifications

Table 3-9 provides the signaling specifications of a BBU3910A working in a single mode.

Table 3-9 Capacity specifications of a BBU3910A working in a single mode

Module	GSM Scenario	UMTS Scenario	LTE FDD Scenario	LTE TDD Scenario
BBU3910A 1	● IP Over E1: 48 TRXs ● IP Over FE: 72 TRXs	500 CNBAPS	270000 BHCA	270000 BHCA
BBU3910A 2	● IP Over E1: 48 TRXs ● IP Over FE: 72 TRXs	500 CNBAPS	396000 BHCA	Not supported

Module	GSM Scenario	UMTS Scenario	LTE FDD Scenario	LTE TDD Scenario
BBU3910A3	• IP Over E1: 48 TRXs • IP Over FE: 72 TRXs	600 CNBAPS	396000 BHCA	396000 BHCA

Table 3-10 provides the signaling specifications of a BBU3910A working in multiple modes.

Table 3-10 Signaling specifications of a BBU3910A working in multiple modes

Module	GU Scenario	GL Scenario	UL Scenario	GUL Scenario
BBU3910A1	GSM 48 TRX + UMTS 200 CNBAPS	GSM 48 TRX + LTE 110000 BHCA	UMTS 200 CNBAPS + LTE 110000 BHCA	Not supported
BBU3910A2	GSM 48 TRX + UMTS 200 CNBAPS	GSM 48 TRX + LTE 220000 BHCA	UMTS 200 CNBAPS + LTE 110000 BHCA	Not supported
BBU3910A3	GSM 48 TRX + UMTS 300 CNBAPS	GSM 48 TRX + LTE 220000 BHCA	UMTS 300 CNBAPS + LTE 110000 BHCA	GSM 36 TRX + UMTS 300 CNBAPS + LTE 110000 BHCA

Specifications of CPRI Ports

Table 3-11 provides specifications of CPRI ports on a BBU3910A.

Table 3-11 Specifications of CPRI ports on a BBU3910A

Module	Quantity of CPRI Ports	CPRI Data Rate (Gbit/s)	Topology
BBU3910A1/ BBU3910A2/ BBU3910A3	6	1.25/2.5/4.9/6.144/9.8	Star, chain, or ring

CPRI ports with different data rates support different numbers of TRXs or cells, as listed in Table 3-12.

Table 3-12 Mapping between the CPRI port rate and the number of TRXs/cells (GSM, UMTS, LTE FDD)

CPRI Data Rate (Gbit/s)	GSM		UMTS		LTE FDD	
	Number of 1T2R TRXs	Number of 2T2R or 1T4R TRXs	Number of 1T2R Cells	Number of 2T2R Cells	Number of 2T4R or 4T4R Cells	Number of 1T2R or 2T2R Cells
1.25	24	12	4	4(2)	4x4 MIMO cells are not recommended because the transmission bandwidth of the CPRI ports is limited.	● 4 (cell bandwidth ≤ 3 MHz) ● 2 (cell bandwidth ≤ 5 MHz) ● 1 (cell bandwidth ≤ 10 MHz)
2.5	48	24	8	8(2)	1 (cell bandwidth ≤ 10 MHz)	● 4 (cell bandwidth ≤ 5 MHz) ● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)
4.9	48	24	16	16(2)	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
6.144	—	—	24	24(2)	● 2 (cell bandwidth ≤ 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)

CPRI Data Rate (Gbit/s)	GSM		UMTS		LTE FDD	
	Number of 1T2R TRXs	Number of 2T2R or 1T4R TRXs	Number of 1T2R Cells	Number of 2T2R Cells	Number of 2T4R or 4T4R Cells	Number of 1T2R or 2T2R Cells
9.8	48	24	32	32(2)	● 4 (cell bandwidth ≤ 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth ≤ 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)

NOTE

(2): The number of 2T2R cells is halved if two TX antennas enabled with the virtual antenna mapping (VAM) function are separately connected to two RF modules carried on different CPRI links.

CPRI ports with different data rates support different numbers of LTE TDD cells, as listed in **Table 3-13**.

Table 3-13 Mapping between the CPRI port rate and the number of cells (LTE TDD)

CPRI Data Rate (Gbit/s)	CPRI Compression(3)	Number of 4T4R Cells	Number of 2T2R Cells
2.5	Not in use	● 2 (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● None (cell bandwidth = 15 MHz or 20 MHz)	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz) ● 1 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz) ● 1 (cell bandwidth = 20 MHz)	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz) ● 2 (cell bandwidth = 20 MHz)

CPRI Data Rate (Gbit/s)	CPRI Compression(3)	Number of 4T4R Cells	Number of 2T2R Cells
4.9	Not in use	● 4 (cell bandwidth = 5 MHz) ● 2 (cell bandwidth = 10 MHz) ● 1 (cell bandwidth = 15 MHz or 20 MHz)	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz) ● 3 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz) ● 2 (cell bandwidth = 20 MHz)	● None (cell bandwidth = 5 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz) ● 4 (cell bandwidth = 20 MHz)
9.8	Not in use	● 8 (cell bandwidth = 5 MHz) ● 4 (cell bandwidth = 10 MHz) ● 2 (cell bandwidth = 15 MHz or 20 MHz)	● 16 (cell bandwidth = 5 MHz) ● 8 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz or 20 MHz)
	In use	● None (cell bandwidth = 5 MHz or 15 MHz) ● 6 (cell bandwidth = 10 MHz) ● 4 (cell bandwidth = 15 MHz) ● 4 (cell bandwidth = 20 MHz)	● None (cell bandwidth = 5 MHz) ● 12 (cell bandwidth = 10 MHz) ● 8 (cell bandwidth = 15 MHz) ● 8 (cell bandwidth = 20 MHz)

NOTE

(3): CPRI compression is not supported when the cell bandwidth is 5 MHz.

Transmission Port

Table 3-14 provides specifications of transmission ports on a BBU3910A.

Table 3-14 Transmission port

Module	Transmission Port Type	Quantity of Ports
BBU3910A1/BBU3910A2/ BBU3910A3	E1/T1 port	4 (4 E1s/T1s)
	FE/GE electrical port	1
	FE/GE optical port	1

Equipment Specifications

Table 3-15 lists the input power specifications of a BBU3910A.

Table 3-15 Input power specifications

Module	Input Power	Voltage Range
BBU3910A1/BBU3910A2/ BBU3910A3	-48 V DC	-38.4 V DC to -57 V DC

Table 3-16 lists the dimensions and weight of a BBU3910A.

Table 3-16 Dimensions and weight of a BBU3910A

Module	Dimensions (HxWxD)	Weight
BBU3910A1/BBU3910A2/ BBU3910A3	400 mm x 300 mm x 100 mm	≤ 12 kg

Table 3-17 provides the heat dissipation capabilities of a BBU3910A.

Table 3-17 Heat dissipation capabilities of a BBU3910A

Module	Specifications
BBU3910A1/BBU3910A2/BBU3910A3	150 W

Table 3-18 lists the environmental specifications of a BBU3910A.

Table 3-18 Environmental specifications

Item	Specifications
Operating temperature	Without solar radiation: -40°C to +55°C
Relative humidity	5% RH to 100% RH

Item	Specifications
Atmospheric pressure	60 kPa to 106 kPa

Table 3-19 lists the surge protection specifications for ports on a BBU3910A.

NOTE

- Unless otherwise specified, the surge protection specifications depend on the surge waveform of 8/20 μs.
- All the surge current items, unless otherwise specified as **Maximum discharge current**, refer to **Nominal discharge current**.

Table 3-19 Surge protection specifications for ports on a BBU3910A

Port	Surge Protection Mode	Surge Protection Specifications
-48 V DC port	Surge current	20 kA

Table 3-20 lists the compliance standards for a BBU3910A.

Table 3-20 Compliance standards for a BBU3910A

Item	Standard
Security standards	● IEC 60950-1:2005 (2nd Edition) + A1:2009 + National & Group Differences per CB Bulletin *Information technology equipment -Safety Part1:General requirements* ● IEC 60950-22:2005 (1st Edition) + National & Group Differences per CB Bulletin *Information technology equipment - Safety - Part 22:Equipment installed outdoors* ● IEC 60215(1987)+A1:1990+A2:1993 + National & Group Differences per CB Bulletin *Safety requirement for radio transmitting equipment*
Ingress Protection (IP) rating	IP65
Operating environment	ETS 300 019-1-4 Class 4.1
Storage environment	ETSI EN300019-1-1 V2.1.4 (2003-04) class1.2 "Weatherprotected, not temperature-controlled storage locations" **NOTE** ● The validity period is one year. ● The product can function properly within the validity period if the storage environment meets the preceding standards.

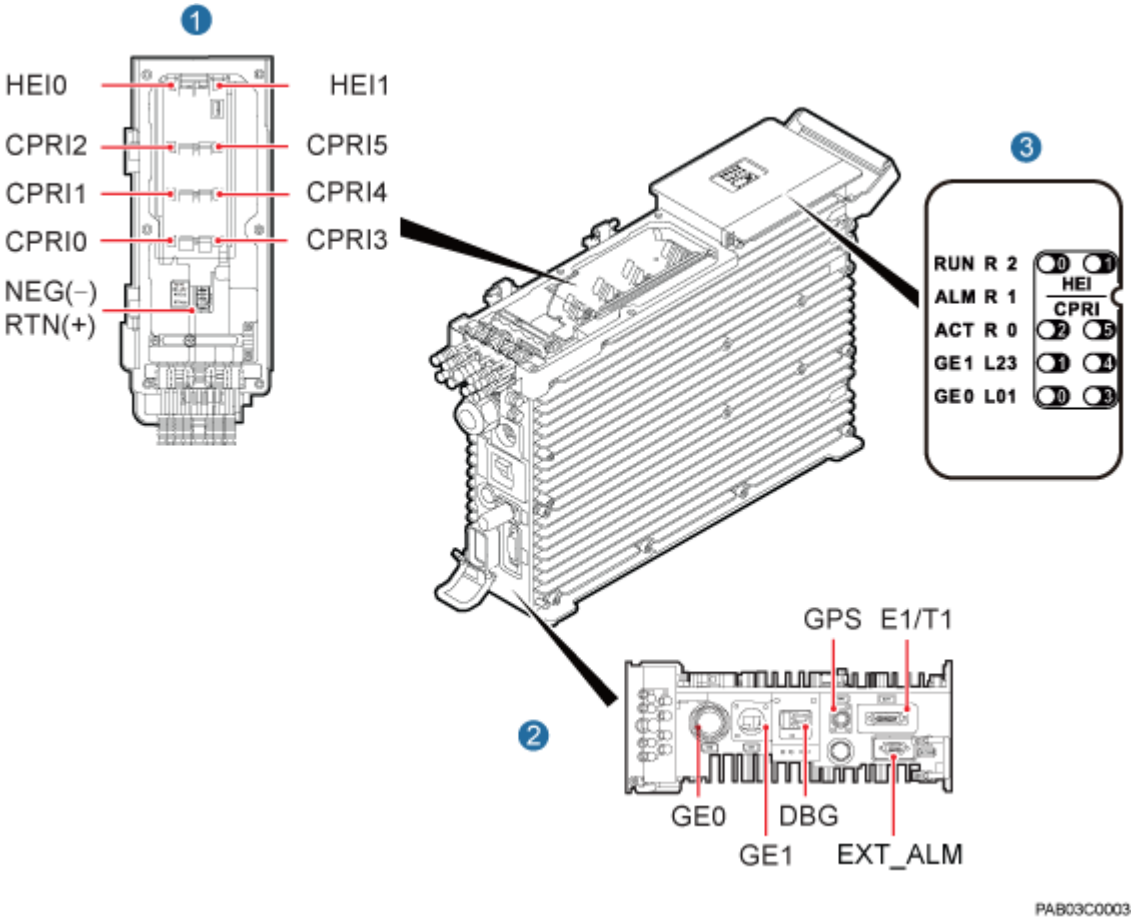
Item	Standard
Transportation environment	EUROPEAN ETS 300 019-1-2 Class 2.3 "PUBLIC transportation"
Anti-earthquake performance	● IEC 60068-2-57:Environmental testing -Part 2-57:Tests -Test Ff:Vibration -Time-history method ● ETSI EN 300019-1-4: "Earthquake" ● YD5083:Interim Provisions for Test of Anti-seismic Performances of Telecommunications Equipment (telecom industry standard in People's Republic of China) ● NEBS GR63 zone4
Protection standards	● GB50689-2011, YD2324-2011 ● ITU-T K.21/44
EMC	● R&TTE Directive 1999/5/EC ● EN 55022 CLASS B ● ETSI EN 301 489-01 ● ETSI EN 301 489-23(WCDMA/LTE) ● FCC part 15 CLASS B
Surge protection	● IEC 62305-1 Protection against lightning - Part 1:General principles ● IEC 62305-3 Protection against lightning - Part 3:Physical damage to structures and life hazard ● IEC 62305-4 Protection against lightning - Part 4:Electrical and electronic systems within structures ● ITU-T K.35 Bonding configurations and earthing at remote electronic sites ● ITU-T K.56 Protection of radio base stations against lightning discharges ● ITU-T K.97 Lightning protection of distributed base stations ● ETSI EN 300 253 Environmental Engineering(EE):Earthing and bonding configuration inside telecommunications centers ● YD 2324-2011 Lightning protection requirements and test methods for Radio Base Stations (RBSs) ● GB/T 50689-2011 Code for design of lightning protection and earthing engineering for telecommunication bureaus (stations)

3.4 Ports on a BBU3910A

This section describes ports on BBU3910A panels, including a bottom panel, a cabling cavity panel, and an indicator panel.

The following figure shows the ports on BBU3910A panels.

Figure 3-5 Ports on BBU3910A panels



The following table describes the ports and indicators on BBU3910A panels.

Table 3-21 Ports and indicators on BBU3910A panels

Item	Silkscreen	Connector	Description
(1) Ports on the cabling cavity panel	HEI0	QSFP connector	Reserved (for interconnection between BBU3910As)
	HEI1	QSFP connector	Reserved (for interconnection between BBU3910As)
	CPRI0 to CPRI5	SFP connector	Data transmission ports connecting the BBU to RF modules. They support the input and output of optical transmission signals.
	NEG(-)	EPC4 connector	Input port for -48 V DC power supplied to the BBU3910A
	RTN(+)		
(2) Ports on	GE0	RJ45 connector	GE electrical signal transmission port

Item	Silkscreen	Connector	Description
the bottom panel	GE1	SFP connector	GE optical signal transmission port
	DBG	USB connector	● Used for the software upgrade of a base station using a USB flash drive. ● Used as a local maintenance port when connecting to a WLAN adapter. ● Port for clock signal outputs. The clock signals are used for testing.
		RJ45 connector	Commissioning port, which is connected to the LMT for commissioning a base station
	EXT_ALM	DB15 female connector	Port for monitoring environmental alarms, which transmits one channel of RS485 signals or six channels of dry contact inputs and one channel of dry contact output
	E1/T1	DB26 female connector	E1/T1 signal transmission port
	GPS	Type N female connector	GPS port for forwarding RF signals from the antenna to the satellite card
(3) Indicators	● RUN ● ALM ● ACT ● GE0, GE1 ● R0, R1, R2 ● L01, L23 ● HEI0, HEI1 ● CPRI0, CPRI1, CPRI2, CPRI3, CPRI4, and CPRI5	-	For details, see **3.5 Indicators on a BBU3910A**.

3.5 Indicators on a BBU3910A

There are 18 indicators on a BBU3910A. They indicate the running status of the BBU3910A.

For the positions of indicators on a BBU3910A, see **3.4 Ports on a BBU3910A**.

The following table describes the indicators on a BBU3910A.

Table 3-22 Indicators on a BBU3910A

Silkscreen	Color	Status	Description
RUN	Green	Steady on	There is power supply.
		Steady off	● There is no power supply. ● The board is faulty.
		Blinking (on for 1s and off for 1s)	The board is running properly.
		Blinking (on for 0.125s and off for 0.125s)	● The board is being loaded or configured. ● The board is not started.
ALM	Red	Steady on	An alarm is generated, and the board needs to be replaced.
		Steady off	The board is running properly.
		Blinking (on for 1s and off for 1s)	An alarm is generated, and you need to locate the fault before determining whether to replace the board.
ACT	Green	Steady on	● The board is serving as an active board. ● The board has been activated and is providing services.
		Steady off	● The board is not serving as an active board. ● The board has not been activated or is not providing any services.
		Blinking (on for 0.125s and off for 0.125s)	The operation and maintenance link (OML) is disconnected.
		Blinking (on for 1s and off for 1s)	The board is being tested, for example, going through an RRU voltage standing wave ratio (VSWR) test by using a USB flash drive. **NOTE** Only the BBU3910A working in UMTS mode has this indicator status.
		Blinking (In every 4s, the indicator is on for 0.125s and off for 0.125s [eight times] in the first 2s and then off for 2s.)	● All cells configured for the subrack that houses this board are not activated. ● The S1 link is faulty. **NOTE** Only the BBU3910A working in LTE mode has this indicator status.
GE0	Green	Steady on	The Ethernet link is functioning properly.

Silkscreen	Color	Status	Description
		Steady off	The network cable is not connected.
GE1	Red or green	Steady green	The Ethernet link is functioning properly.
		Steady red	The optical module is transmitting or receiving faulty.
		Blinking red (on for 1s and off for 1s)	Ethernet negotiation is faulty.
		Steady off	The SFP module cannot be detected, or the optical module is powered off.
R0	Red or green	Steady off	The board is not working in GSM mode.
		Steady green	The board is working in GSM mode.
R1	Red or green	Steady off	The board is not working in UMTS mode.
		Steady green	The board is working in UMTS mode.
R2	Red or green	Steady off	The board is not working in LTE mode.
		Steady green	The board is working in LTE mode.
L01	Red or green	Steady off	Links 0 and 1 are not set up, or LOS alarms are generated on the links.
		Steady green	Links 0 and 1 are functioning properly.
		Blinking green (on for 1s and off for 1s)	Link 0 is functioning properly, but link 1 is not set up or an LOS alarm is generated on link 1.
		Blinking green (on for 0.125s and off for 0.125s)	Link 1 is functioning properly, but link 0 is not set up or an LOS alarm is generated on link 0.
		Steady red	Alarms are generated on links 0 and 1.
		Blinking red (on for 1s and off for 1s)	An alarm is generated on link 0.
		Blinking red (on for 0.125s and off for 0.125s)	An alarm is generated on link 1.
L23	Red or green	Steady off	Links 2 and 3 are not set up, or LOS alarms are generated on the links.
		Steady green	Links 2 and 3 are functioning properly.

Silkscreen	Color	Status	Description
		Blinking green (on for 1s and off for 1s)	Link 2 is functioning properly, but link 3 is not set up or an LOS alarm is generated on link 3.
		Blinking green (on for 0.125s and off for 0.125s)	Link 3 is functioning properly, but link 2 is not set up or an LOS alarm is generated on link 2.
		Steady red	Alarms are generated on links 2 and 3.
		Blinking red (on for 1s and off for 1s)	An alarm is generated on link 2.
		Blinking red (on for 0.125s and off for 0.125s)	An alarm is generated on link 3.
HEI0	Red or green	-	Reserved
HEI1			
CPRI0 to CPRI5	Red or green	Steady green	The CPRI link is functioning properly.
		Steady red	An optical module fails to transmit or receive signals due to one of the following causes: ● The optical module is faulty. ● The fiber optic cable is broken.
		Blinking red (on for 0.125s and off for 0.125s)	The RF module connected to the CPRI port has a hardware fault.
		Blinking red (on for 1s and off for 1s)	The CPRI link is out of lock due to one of the following causes: ● There is no mutual lock between dual-mode reference clocks. ● The CPRI port rate does not match the rate of the optical module. ● VSWR alarms are reported on the RF module connected to the CPRI port when a VSWR test is conducted using a USB flash drive[a].
		Steady off	● The optical module cannot be detected. ● The CPRI electrical cable is not connected.

Silkscreen	Color	Status	Description
a: The security of the USB port is ensured by encryption, and the USB port can be shut down using commands.			