



GBSS8.1 BTS3900(A)

Product Description

Issue	01
Date	2008-09-23

Huawei Technologies Co., Ltd. provides customers with comprehensive technical support and service. For any assistance, please contact our local office or company headquarters.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: <http://www.huawei.com>

Email: support@huawei.com

Copyright © Huawei Technologies Co., Ltd. 2008. All rights reserved.

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

Trademarks and Permissions

and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd. All other trademarks and trade names mentioned in this document are the property of their respective holders.

Notice

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute the warranty of any kind, express or implied.

Contents

1 Introduction.....	5
1.1 Overview	5
1.2 Advantages	6
2 System Architecture.....	7
2.1 Overview	7
2.2 BBU3900	7
2.2.1 Appearance of the BBU3900	7
2.2.2 Ports on the BBU3900	8
2.3 RFU	9
2.3.1 Appearance of the DRFU	9
2.3.2 Ports on the DRFU	10
2.3.3 Appearance of the GRFU	10
2.3.4 Ports on the GRFU	11
2.4 GATM	11
2.4.1 Appearance of the GATM	11
2.4.2 Ports on the GATM	12
2.5 BTS3900(A) Cabinets	12
2.5.1 BTS3900 Cabinet.....	12
2.5.2 RFC	13
2.5.3 APM30	14
2.5.4 BBC	15
2.5.5 TMC	15
3 Products and Applications	16
3.1 Typical Application Scenarios.....	16
3.2 Portfolio and Application of Fourth-Generation BTSs.....	18
4 Technical Specifications	19
4.1 Technical Specifications of the BTS3900 GSM.....	19
4.2 Technical Specifications of the BTS3900A GSM	22
5 Abbreviations	25

1 Introduction

1.1 Overview

In rapidly changing mobile communication field, there is utter most need for continuous improvement in the products. The growing trend of mobile communications comprises a series of evolution, from GSM to EDGE to EDGE+, and from WCDMA to HSPA to HSPA+ and LTE. To follow the trend, the network operators need to increase the CAPEX and optimize the OPEX to keep up with the changing technologies, and the operators currently focus on the same question such as: how to develop the multiple network systems into a more cost-effective one? The solution is to move towards the convergence of multi-mode networks.

With customer-oriented and innovative, Huawei takes the lead in developing the fourth-generation BTSs, which will outclass other base stations to benefit operators with future-oriented mobile networks. The fourth-generation BTSs of Huawei are represented by the indoor macro BTS3900 GSM and the outdoor macro BTS3900A GSM (hereinafter referred to as BTS3900 and BTS3900A respectively).

The BTS3900 and BTS3900A consist of only two types of basic modules. Flexible combinations of basic modules and cabinets diversify Huawei products. As shown in Figure 1-1, the BTS3900 and BTS3900A are characterized by compact dimensions, high integration, low power consumption, and fast deployment.

Figure 1-1 BTS3900 and BTS3900A



1.2 Advantages

Simple Structure and Multi-Mode Convergence

The BTS3900 and BTS3900A have only two types of basic modules. The simplified structure reduces spare parts and saves maintenance cost. The basic modules combined with different cabinets also increase the variety of installation modes, such as separate mode and stack mode. The BTS3900 and BTS3900A can support multiple network modes by sharing one cabinet or using the same transmission and network management, thus achieving the convergence of multi-mode networks.

Broadband Service and Enhanced User Experience

The BTS3900 and BTS3900A have considerable improvement in baseband processing capability and internal bandwidth expansion, and support MCS-9 services at all timeslot levels on the air interface. As the Abis interface supports IP transport, the transmission bandwidth expands enormously, which also guarantees user experience.

Low Power Consumption

Thanks to the advanced hardware designs, for example, multi-carrier PA, as well as a series of software power saving technologies, the power consumption of the BTS3900 and BTS3900A is greatly reduced, which is especially meaningful for establishing an environment friendly network.

Smooth Evolution and Reduced CAPEX

The BTS3900 and BTS3900A support smooth evolution to EDGE+. During the evolution, all the hardware can be reused. The BTS3900 and BTS3900A can also support multiple network modes by adding RF modules, which helps operators to reduce CAPEX.

2 System Architecture

2.1 Overview

The BTS3900 and BTS3900A have the modular design. They have two types of basic modules: Base Band control Unit (BBU3900) and Radio Filter Unit (RFU), which are connected through high-speed Common Public Radio Interface (CPRI) ports. The GSM Antenna and TMA Control module (GATM), an optional module tailored to the needs of different scenarios, is used to control the TMA and RET antenna.

The BTS3900 cabinet is an indoor macro cabinet, and the BTS3900A cabinets are applied outdoors, which include the outdoor Radio Frequency Cabinet (RFC), Advanced Power Module (APM30), Battery Backup Cabinet (BBC), and Transmission Cabinet (TMC).

2.2 BBU3900

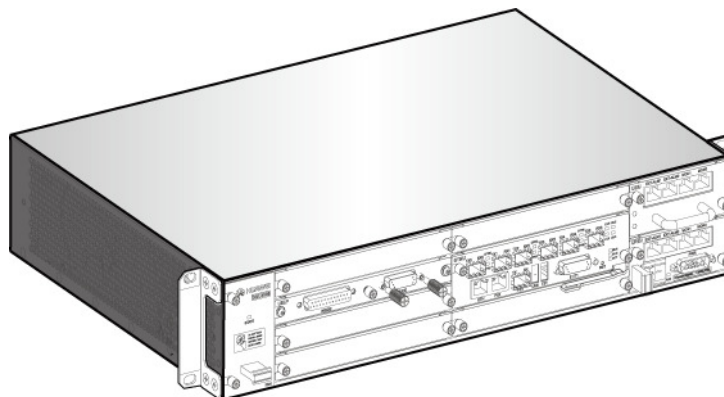
Is a baseband control unit, responsible for the interaction between the BTS and the BSC. The BBU3900 performs the following functions:

- Performs signal interaction between the BTS and the BSC
- Provides the system clock
- Manages the entire BTS system in terms of Operation and Maintenance (OM) and signal processing
- Provides an OM channel connected to the LMT (or M2000)

2.2.1 Appearance of the BBU3900

The BBU3900, which has a case structure, can be installed in a confined space of 19 inch wide and 2 U high, such as the indoor wall, stairways, storerooms, or outdoor cabinet in the operational or functional network. Figure 2-1 shows the BBU3900.

Figure 2-1 BBU3900

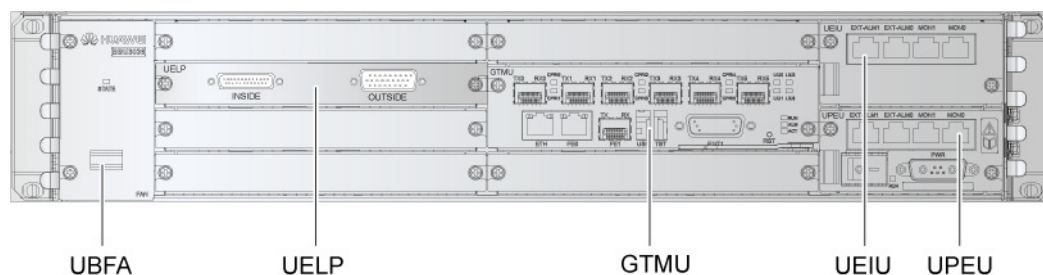


The following boards and module are mandatory for the BBU3900:

- Main control board (GTMU)
- FAN unit (UBFA)
- Power module (UPEU)

The optional boards of the BBU3900 are the Universal E1/T1 Lightning Protection Unit (UELP) and Universal Environment Interface Unit (UEIU). Figure 2-2 shows the panel of the BBU3900.

Figure 2-2 Panel of the BBU3900



2.2.2 Ports on the BBU3900

Table 2-1 Ports on the mandatory boards of the BBU3900

Board	Port	Quantity	Remarks
GTMU	CPRI	6	For communication with the RF module
	E1/T1	1	Supporting four E1s
	ETH	1	For local maintenance and commissioning
	FE0	1	Electrical port for IP transport over the Abis interface
	FE1	1	Optical port for IP transport over the Abis interface
	TST	1	For testing the clock
	USB	1	Reserved port
UPEU	PWR	1	Power supply port
	MON0	1	Supporting one RS485 signal
	MON1	1	Supporting one RS485 signal
	EXT-ALM0	1	Supporting four dry contact alarms
	EXT-ALM1	1	Supporting four dry contact alarms

Table 2-2 Ports on the optional boards of the BBU3900

Board	Port	Quantity	Remarks
UELP	INSIDE	1	E1 transfer transmission port
	OUTSIDE	1	E1 transmission ports
UEIU	MON0	1	Supporting one RS485 signal
	MON1	1	Supporting one RS485 signal
	EXT-ALM0	1	Supporting four dry contact alarms
	EXT-ALM1	1	Supporting four dry contact alarms

2.3 RFU

The RFU performs the following functions:

- Modulation and demodulation between baseband signals and RF signals
- Data processing
- Combines and divides signals

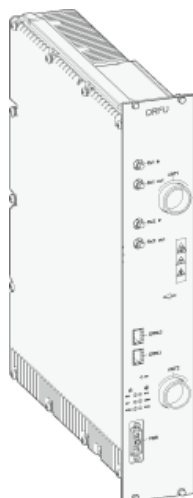
The RFU has the following two types:

- Double Radio Filter Unit (DRFU): supports a maximum of two carriers for small- or medium-capacity system.
- GSM Radio Filter Unit (GRFU): supports a maximum of six carriers for large-capacity system.

The DRFU and GRFU can share one cabinet or one cell to facilitate flexible capacity expansion.

2.3.1 Appearance of the DRFU

The DRFU, known as the RF module, adopts the double-transceiver technology and resides in the BTS3900 or BTS3900A. Figure 2-3 shows the DRFU.

Figure 2-3 DRFU


2.3.2 Ports on the DRFU

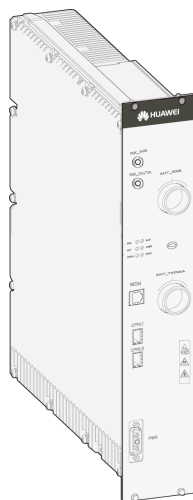
Table 2-3 Ports on the DRFU

Port	Quantity	Remarks
ANT1	1	Antenna connector, used to connect the antenna system
ANT2	1	
CPRI0	1	Connected to the lower-level DRFU in the cascading configuration
CPRI1	1	Connected to the BBU directly, or connected to the upper-level DRFU in the cascading configuration
PWR	1	Power supply port
RX1 in	1	Input port for diversity signals in antenna channel 1
RX1 out	1	Output port for diversity signals in antenna channel 1
RX2 in	1	Input port for diversity signals in antenna channel 2
RX2 out	1	Output port for diversity signals in antenna channel 2

2.3.3 Appearance of the GRFU

The GRFU, also an RF module, adopts the multi-carrier technology and resides in the BTS3900 or BTS3900A. Figure 2-4 shows the GRFU.

Figure 2-4 GRFU



2.3.4 Ports on the GRFU

Table 2-4 Ports on the GRFU

Port	Quantity	Remarks
ANT_TX/RXA	1	Antenna connector, used to connect the antenna system
ANT_RXB	1	
CPRI0	1	Connected to the BBU directly, or connected to the upper-level GRFU in the cascading configuration
CPRI1	1	Connected to the lower-level GRFU in the cascading configuration
MON	1	Monitoring port
PWR	1	Power supply port
RX_INB	1	Input port for diversity signals in the antenna channel
RX_OUTA	1	Output port for diversity signals in the antenna channel

2.4 GATM

The GATM controls the antenna and TMA. As an optional module, the GATM is configured when the DRFU is installed in the cabinet.

2.4.1 Appearance of the GATM

The GATM resides in the BTS3900 or BTS3900A. Figure 2-5 shows the GATM.

Figure 2-5 GATM


2.4.2 Ports on the GATM

Table 2-5 Ports on the GATM

Port	Quantity	Remarks
ANT0, ANT2, ANT4	3	Providing power for the TMA and transmitting control signals for the RET antenna
ANT1, ANT3, ANT5	3	Providing power for the TMA
COM1	1	Connected to the BBU3900
COM2	1	Providing the extended RS485 port
-48V	1	Power supply port

2.5 BTS3900(A) Cabinets

2.5.1 BTS3900 Cabinet

The BTS3900 cabinet, an indoor macro cabinet, contains the BBU3900 and RFUs. A single BTS3900 cabinet accommodates a maximum of six RFU. The BTS3900 cabinet supports the following functions:

- Power distribution and surge protection
- -48 V DC power input
- +24 V DC and 220 V AC power inputs if configured with different power modules

Figure 2-6, Figure 2-7, and Figure 2-8 show the internal structure of the indoor macro cabinets with different power inputs.

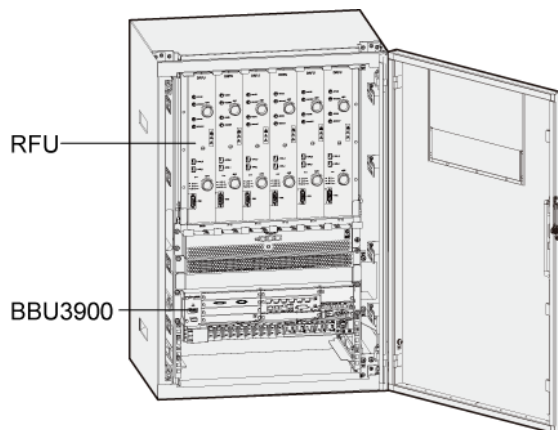
Figure 2-6 -48 V DC BTS3900 cabinet


Figure 2-7 +24 V DC BTS3900 cabinet

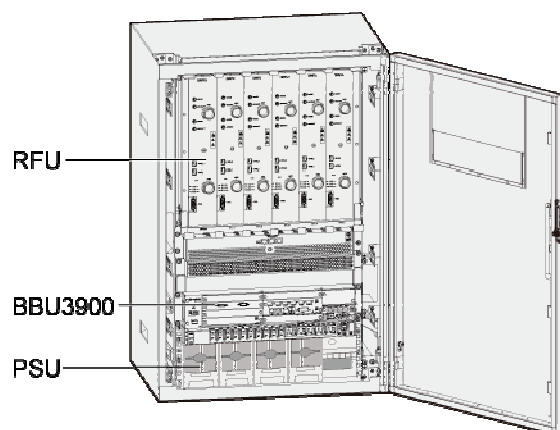
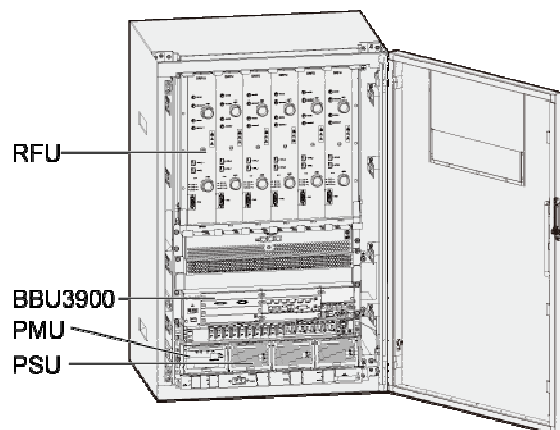


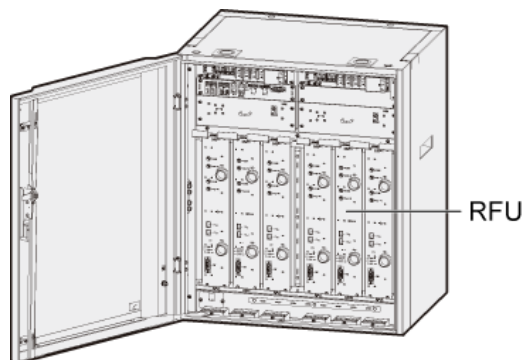
Figure 2-8 220 V AC BTS3900 cabinet



2.5.2 RFC

The RFC houses RFUs. In addition, the RFC provides the functions such as power distribution and surge protection. The RFC works in direct-ventilation mode to dissipate heat, and it can be configured with a maximum of six RFU. Figure 2-9 shows the internal structure of the RFC.

Figure 2-9 Internal structure of the RFC



2.5.3 APM30

The APM30 supplies –48 V DC power and backup power to the outdoor macro BTS and provides installation space for the BBU3900 and other devices, and it dissipates heat by using the breathable film and fans. The APM30 is compact and lightweight. In the meantime, it can be equipped with built-in 24 Ah batteries. The APM30H, which can be configured in the areas of poor air quality, dissipates heat based on the heat exchanger system and two air circulation fans. Figure 2-10 shows the internal structure of the APM30(H).

Figure 2-10 Internal structure of the APM30(H)

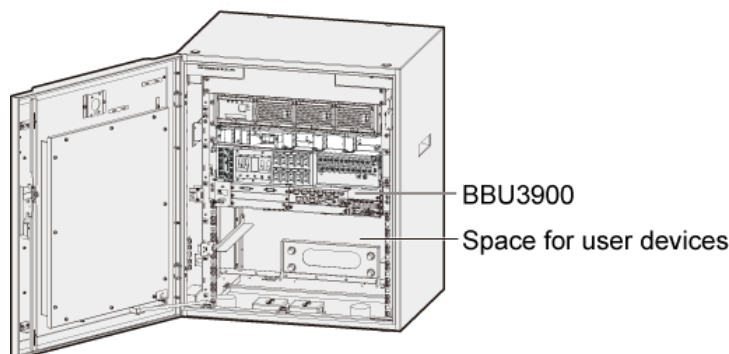


Table 2-6 Technical specifications of the APM30(H)

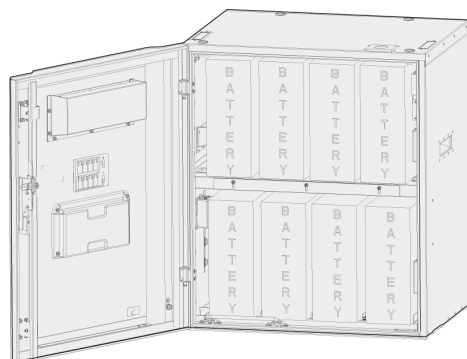
Item		Specification
Engineering specifications	Dimensions (H x W x D)	700 mm x 600 mm x 480 mm (excluding the base)
	Weight (excluding batteries and user devices)	• APM30: < 65 kg • APM30H: < 76.5 kg
	Working temperature	–40℃ to +50℃ (with the sun shield) The AC heat exchanger is required if the temperature is below –20℃.
	Relative humidity	5% RH to 100% RH
AC input	Input voltage	176 V AC to 290 V AC
	Frequency	45 Hz to 65 Hz
DC output	Output voltage	–48 V DC
	Quantity of DC outputs	• 30 A: 4 • 12 A: 2 • 4 A: 4
Installation space	With the –48 V 24 Ah built-in battery group	Providing 3 U space for installation
	Without built-in batteries	Providing 5 U space for installation

2.5.4 BBC

The BBC is installed if the long-time power backup is required. Small sized and easy to transport, the BBC can be applied outdoors, and it works in direct-ventilation mode to dissipate heat.

The BBC supports the maximum DC backup power of $-48\text{ V } 184\text{ Ah}$ with the support of built-in batteries. Figure 2-11 shows the internal structure of the BBC.

Figure 2-11 Internal structure of the BBC

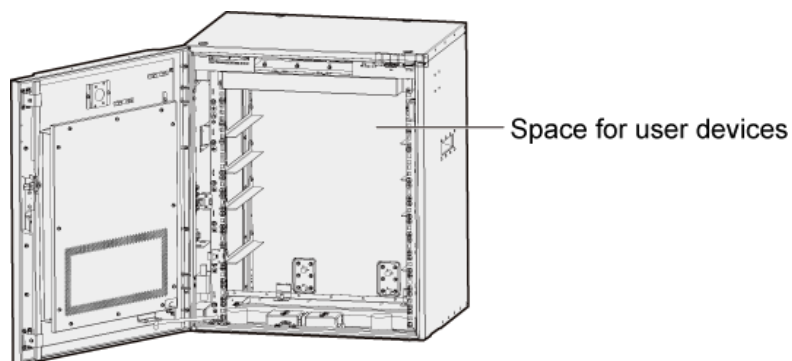


2.5.5 TMC

The TMC is configured if more transmission space is required. Small sized and easy to transport, the TMC can be installed outdoors, and it dissipates heat by using the breathable film and fans. The BBU3900 can be installed in the TMC.

The TMC provides a space of 11 U for installing user devices. Figure 2-12 shows the internal structure of the TMC.

Figure 2-12 Internal structure of the TMC

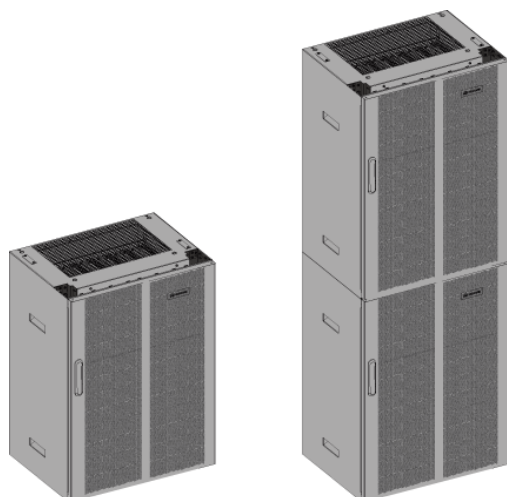


3 Products and Applications

3.1 Typical Application Scenarios

BTS3900 can be installed for indoor installation scenarios. -48 V BTS3900 cabinet can be installed stacked on top of another -48 V BTS3900 cabinet, Figure 3-1 shows the single BTS3900 and two BTS3900s in stack mode. Renowned as the most compact indoor macro BTS, the BTS3900 has large capacity, high scalability, and small footprint, and supports GSM+UMTS dual-mode application.

Figure 3-1 BTS3900



For the outdoor centralized installation scenarios, the outdoor macro BTS (BTS3900A) can be installed. The RFU is installed in the RFC, and the BBU3900 is installed in the APM30 or TMC. Table 3-1 describes the typical configuration of the BTS3900A. Figure 3-2, Figure 3-3, and Figure 3-4 show the product portfolio of APM30+RFC, TMC+RFC, APM30+RFC+BBC, and APM30+ RFC +TMC+BBC.

Table 3-1 Typical configuration BTS3900A

Configuration	Description
APM30+RFC	DRFU(S444)/GRFU(S121212): power backup (24 Ah) for 20 minutes
TMC+RFC	Providing installation space for user devices and no backup power The site supplies DC power.
APM30+RFC+B BC	DRFU(S444)/ GRFU(S121212): power backup (184 Ah) for 5 hours

Configuration	Description
APM30+RFC+T MC+BBC	DRFU(S444)/ GRFU(S121212): power backup (184 Ah) for 4 hours (if the power consumption of the TMC is less than 200 W)

Figure 3-2 APM30+RFC

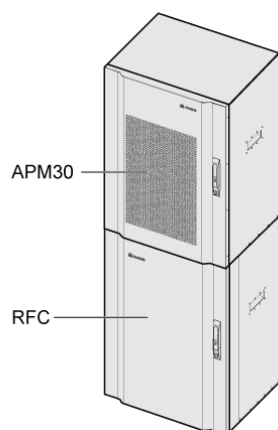


Figure 3-3 TMC+RFC

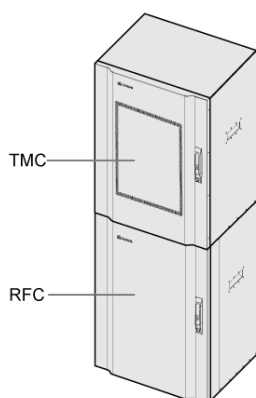


Figure 3-4 APM30+RFC+BBC

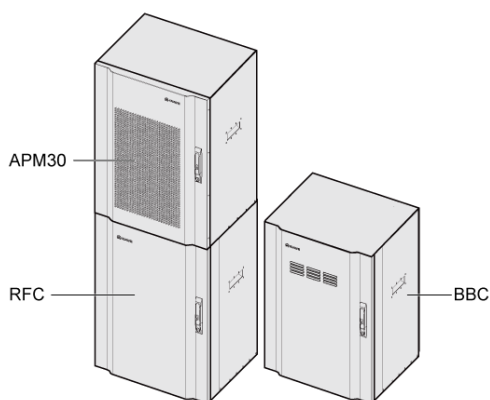
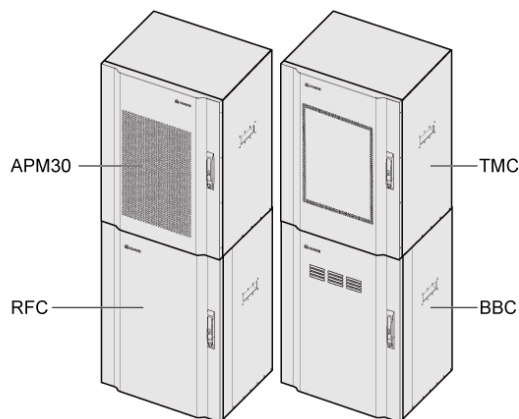


Figure 3-5 APM30+RFC+TMC+BBC

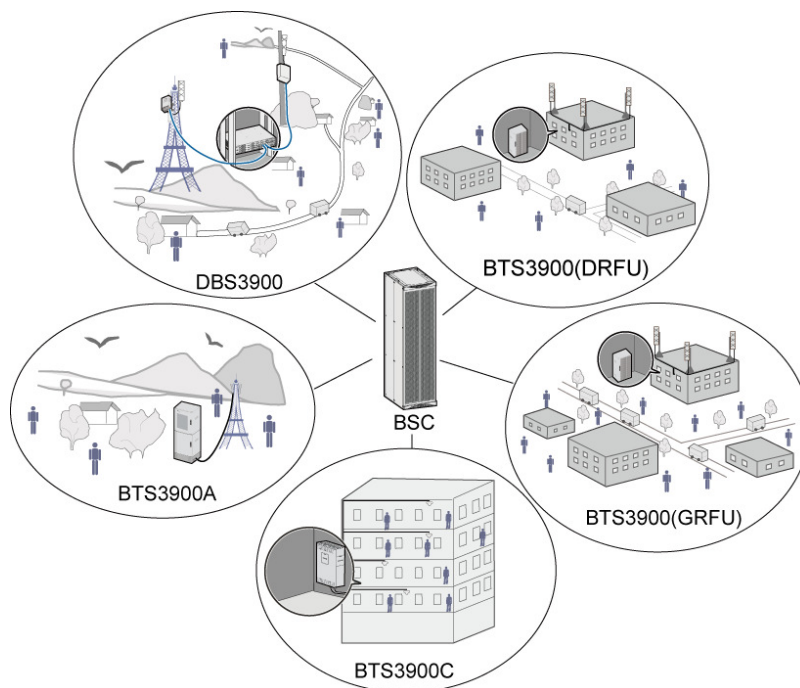


3.2 Portfolio and Application of Fourth-Generation BTSs

By providing various product forms of fourth-generation BTSs to cater the demand for network deployments in different scenarios, Huawei provides operators with a comprehensive total network solution. The Huawei fourth-generation BTSs consist of the indoor macro BTS (BTS3900), outdoor macro BTS (BTS3900A), distributed BTS (DBS3900), and micro BTS (BTS3900C).

The BTS3900 applies to indoor installation scenarios where population density is high, traffic is large, lease expense of equipment rooms is high, and space is limited. The BTS3900A applies to outdoor installation scenarios in urban, suburb, and rural areas where large-capacity coverage is required. The DBS3900 applies to outdoor scenarios where wide coverage is required and site construction is difficult. The BTS3900C applies to coverage indoors and in hotspot areas. Figure 3-6 shows the applications of the Huawei fourth-generation BTSs.

Figure 3-6 Portfolio and application of fourth-generation BTSs



4 Technical Specifications

4.1 Technical Specifications of the BTS3900 GSM

Table 4-1 Technical specifications of the BTS3900 GSM

Item	Specification			
Supported frequency band	Frequency band		RX frequency band (MHz)	TX frequency band (MHz)
	DRFU	EGSM 900 M	880 to 915	925 to 960
		PGSM 900 M	890 to 915	935 to 960
		GSM 1,800 M	1,710 to 1,785	1,805 to 1,880
	GRFU	PGSM 900 M	890 to 915	935 to 960
		GSM 1,800 M	1,710 to 1,755	1,805 to 1,850
			1,740 to 1,785	1,835 to 1,880
Capacity	DRFU configured	- A single cabinet supports a maximum of 12 carriers, and a single cell supports a maximum of 24 carriers. - A single site supports a maximum of 36 carriers and a maximum configuration of S12/12/12.		
	GRFU configured	- A single cabinet supports a maximum of 36 carriers, and a single cell supports a maximum of 24 carriers. - A single site supports a maximum of 72 carriers and a maximum configuration of S24/24/24.		
Output power	Item	900 MHz (GMSK/8PSK)	1,800 MHz (GMSK/8PSK)	
	DRFU	- Uncombined: 45 W/30 W - Combined: 20 W/14 W - PBT: 71 W/47 W		- Uncombined: 40 W/26 W - Combined: 18 W/12 W - PBT: 63 W/42 W
	GRFU	3 TRX: 31 W/20 W 4 TRX: 27 W/18 W 5 TRX: 18 W/12 W 6 TRX: 16 W/11 W		3 TRX: 31 W/20 W 4 TRX: 27 W/18 W 5 TRX: 18 W/12 W 6 TRX: 16 W/11 W
Receiver	Item	Receive independency	Two-way receive diversity	Four-way receive diversity

Item	Specification							
specification	DRFU		−113 dBm		−116 dBm		−118.5 dBm	
	GRFU		−113 dBm		−116 dBm		TBD	
Power consumption	Configuration			TOC (W)		Typical power consumption (W)		Maximum power consumption (W)
	DRFU	900 MHz	S2/2/2	45	750		1,110	
			S4/4/4	20	1,130		2,060	
		1,800 MHz	S2/2/2	40	740		1,090	
			S4/4/4	18	1,130		2,010	
	Configuration		900 MHz			1800 MHz		
			Typical power consumption (W)		Maximum power consumption (W)	Typical power consumption (W)	Maximum power consumption (W)	
	GRFU	S3/3/3	880	1,400	930	1,500		
		S4/4/4	830	1,400	890	1,500		
		S5/5/5	720	1,190	770	1,270		
		S6/6/6	720	1,190	780	1,270		
Transmission ports	Four E1s/T1s, one FE electrical port, and one FE optical port							
Dimensions (H x W x D)	900 mm x 600 mm x 450 mm							
Weight	Empty cabinet:57 kg Cabinet in full configuration:142 kg							
Input power	−48V DC; Voltage range: −38.4 V DC to −57 V DC +24V DC; Voltage range: +21.6 V DC to +29 V DC 110V AC; Voltage range: 90 V AC to 135 V AC 220V AC; Voltage range: 176 V AC to 290 V AC							
Temperature	−20□ to +55□							
Relative humidity	5% RH to 95% RH							
Air pressure	70 kPa to 106 kPa							

Item	Specification
Storage environment	EUROPEAN ETS 300 019-1-1 Class 1.2 "not temperature-controlled storage"
Transport environment	EUROPEAN ETS 300 019-1-2 Class 2.3 "PUBLIC transportation"
RF Specification	3GPP TS 45.005 multicarrier BTS class 2 requirement
EMC	The BTS3900 meets to the Electromagnetic Compatibility (EMC) requirements and complies with the following standards: • CISPR 22(2003): limits and methods of measurement of radio disturbance characteristics of information" • CISPR 24(1998-09+ A1:2001 A2:2003): Information Technology Equipment - Immunity characteristics - Limits and methods measurement • IEC61000-4-2: Electromagnetic compatibility(EMC) Part 2: Testing and measurement techniques Section 2: Electrostatic discharge immunity test Basic EMC Publication • IEC61000-4-3: Electromagnetic compatibility; Part 3: Testing and measurement techniques Section 3 radio frequency electromagnetic fields; immunity test. • IEC61000-4-4: Electromagnetic compatibility(EMC) Part 4: Testing and measurement techniques Section 4: Electrical fast transient/burst immunity test Basic EMC publication • IEC61000-4-5: Electromagnetic compatibility(EMC) Part 5: Testing and measurement techniques Section 5: Surge immunity test • IEC61000-4-6: Electromagnetic compatibility: Part 6: Testing and measurement techniques: Section 6 conducted disturbances induced by radio-frequency fields; immunity test • IEC61000-4-29: Electromagnetic compatibility: Part 29: Testing and measurement techniques and voltage variations on d.c. Input power port immunity test • ETSI 301 489-1 V1.5.1 (2004): Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements • FCC 47CFR Part15 (2006): Federal Communication Committee - part 15 - radio frequency device
Availability	≥ 99.9994%
MTBF	DRFU: 161, 000 hours GRFU: 167, 000 hours
MTTR	≤ 1 hour

4.2 Technical Specifications of the BTS3900A GSM

Table 4-2 Technical specifications of the BTS3900A GSM

Item	Specification			
Supported frequency band	Frequency band		RX frequency band (MHz)	TX frequency band (MHz)
	DRFU	EGSM 900 M	880 to 915	925 to 960
		PGSM 900 M	890 to 915	935 to 960
		GSM 1,800 M	1,710 to 1,785	1,805 to 1,880
	GRFU	PGSM 900 M	890 to 915	935 to 960
		GSM 1,800 M	1,710 to 1,755	1,805 to 1,850
			1,740 to 1,785	1,835 to 1,880
Capacity	DRFU configured	- A single cabinet supports a maximum of 12 carriers, and a single cell supports a maximum of 24 carriers. - A single site supports a maximum of 36 carriers and a maximum configuration of S12/12/12.		
	GRFU configured	- A single cabinet supports a maximum of 36 carriers, and a single cell supports a maximum of 24 carriers. - A single site supports a maximum of 72 carriers and a maximum configuration of S24/24/24.		
Output power	Item	900 MHz (GMSK/8PSK)		1800 MHz (GMSK/8PSK)
	DRFU	- Uncombined: 45 W/30 W - Combined: 20 W/14 W - PBT: 71 W/47 W		- Uncombined: 40 W/26 W - Combined: 18 W/12 W - PBT: 63 W/42 W
	GRFU	3 TRX: 31 W/20 W 4 TRX: 27 W/18 W 5 TRX: 18 W/12 W 6 TRX: 16 W/11 W		3 TRX: 31 W/20 W 4 TRX: 27 W/18 W 5 TRX: 18 W/12 W 6 TRX: 16 W/11 W
Receiver specification	Item	Receive independency	Two-way receive diversity	Four-way receive diversity
	DRFU	-113 dBm	-116 dBm	-118.5 dBm
	GRFU	-113 dBm	-116 dBm	TBD
Power consumption	Configuration	TOC (W)	Typical power consumption (W)	Maximum power consumption (W)

Item	Specification						
	DRFU	900 MHz	S2/2/2	45	840		1,300
			S4/4/4	20	1,270		2,350
		1,800 MHz	S2/2/2	40	830		1,270
			S4/4/4	18	1,270		2,300
	Configuration		900 MHz			1,800 MHz	
			Typical power consumption (W)	Maximum power consumption (W)	Typical power consumption (W)	Maximum power consumption (W)	
	GRFU	S3/3/3	980	1,620		1,050	1,730
		S4/4/4	940	1,620		1,000	1,730
		S5/5/5	810	1,390		870	1,480
		S6/6/6	810	1,390		870	1,480
	Note: 220 V, without battery						
Transmission ports	Four E1s/T1s, one FE electrical port, and one FE optical port						
Dimensions (H x W x D)	700 mm x 600 mm x 480 mm						
Weight	Empty cabinet: 58 kg Cabinet in full configuration: 130 kg						
Input power	-48 V DC; voltage range: -38.4 V DC to -57 V DC +24 V DC; voltage range: +21.6 V DC to +29 V DC 110 V AC; voltage range: 90 V AC to 135 V AC 220 V AC; voltage range: 176 V AC to 290 V AC						
Temperature	-40□ to +55□						
Relative humidity	5% RH to 100% RH						
Air pressure	70 kPa to 106 kPa						
Storage environment	EUROPEAN ETS 300 019-1-1 Class 1.2 "not temperature-controlled storage"						
Transport environment	EUROPEAN ETS 300 019-1-2 Class 2.3 "PUBLIC transportation"						

Item	Specification
RF Specification	3GPP TS 45.005 multicarrier BTS class 2 requirement
EMC	The BTS3900A meets to the Electromagnetic Compatibility (EMC) requirements and complies with the following standards: • CISPR 22(2003): limits and methods of measurement of radio disturbance characteristics of information" • CISPR 24(1998-09+ A1:2001 A2:2003): Information Technology Equipment - Immunity characteristics - Limits and methods measurement • IEC61000-4-2: Electromagnetic compatibility(EMC) Part 2: Testing and measurement techniques Section 2: Electrostatic discharge immunity test Basic EMC Publication • IEC61000-4-3: Electromagnetic compatibility; Part 3: Testing and measurement techniques Section 3 radio frequency electromagnetic fields; immunity test. • IEC61000-4-4: Electromagnetic compatibility(EMC) Part 4: Testing and measurement techniques Section 4: Electrical fast transient/burst immunity test Basic EMC publication • IEC61000-4-5: Electromagnetic compatibility(EMC) Part 5: Testing and measurement techniques Section 5: Surge immunity test • IEC61000-4-6: Electromagnetic compatibility;Part 6: Testing and measurement techniques: Section 6 conducted disturbances induced by radio-frequency fields;immunity test • IEC61000-4-29: Electromagnetic compatibility;Part 29: Testing and measurement techniques and voltage variations on d.c. Input power port immunity test • ETSI 301 489-1 V1.5.1 (2004): Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements • FCC 47CFR Part15 (2006): Federal Communication Committee - part 15 - radio frequency device
Availability	$\geq 99.9991\%$
MTBF	DRFU: 106, 000 hours GRFU: 109, 000 hours
MTTR	≤ 1 hour

5 Abbreviations

Abbreviation	Full Name
APM	Advanced Power Module
BBC	Battery Backup Cabinet
BBU	BaseBand control Unit
CPRI	Common Public Radio Interface
DRFU	Double Radio Filter Unit
GATM	GSM Antenna and TMA control Module
GRFU	GSM Radio Filter Unit
GTMU	GSM Transmission &Timing & Management Unit for BBU
LTE	Long Term Evolution
MTBF	Mean Time Between Failures
MTTR	Mean Time To Recovery
PMU	Power and Environment Monitoring Unit
PSU	Power Supply Unit
RFC	Radio Frequency Cabinet
RFU	Radio Filter Unit
TMC	Transmission Cabinet
TOC	Transmit Power at the Top Of Cabinet
UBFA	Universal BBU Fan unit type A
UEIU	Universal Environment Interface Unit
UELP	Universal E1/T1 Lightning Protection unit
UPEU	Universal Power and Environment interface Unit

Please click the following link to feedback your comments on this documents, helping us to improve the materials quality. Thank you in advance!

您宝贵意见和客观评价，资料进步的指南针和加油站

您对该资料的评价是：

很好 (Very Good Material)

好 (Good Material)

一般 (General Material)

差 (Bad Material)

注意：该页胶片请在将资料传递给客户时删除！