TMC11H

Hardware Description

Issue	01
Date	2020-01-20

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1 TMC11H Hardware Description

Overview

TMC11H cabinets apply to DBS3900, BTS3900A, BTS5900A, BTS3900AL, or DBS5900 base stations. *TMC11H Hardware Description* describes the exteriors, components, and engineering specifications of TMC11H cabinets, as well as specifications of configured customer equipment.

The RF modules for distributed base stations in this document include RRUs and AAUs. The application scenarios, power distribution schemes, cable connections, and cable installation of the RRUs and AAUs are the same. The following uses the RRUs as an example.

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

NOTE

- Unless otherwise specified, in this document, LTE and eNodeB always include FDD, NB-IoT, and TDD. In scenarios where they need to be distinguished, LTE FDD, LTE NB-IoT, and LTE TDD are used. The same rules apply to eNodeB.
- Unless otherwise specified, in this document, NR and gNodeB always include FDD and TDD. In scenarios where they need to be distinguished, NR FDD and NR TDD are used. The same rules apply to gNodeB.
- In this document, "G" is short for GSM, "U" for UMTS, "L" for LTE FDD, "T" for LTE TDD, "M" for LTE NB-IoT, and "N" for NR. In addition, "N (FDD)" is short for NR FDD and "N (TDD)" is short for NR TDD.
- For details about the LampSite solution, see *LampSite Base Station Hardware Description*.
- For details about the power requirements and power distribution schemes of TMC11H cabinets, see corresponding "Power Requirements" and "Power Distribution Schemes" sections in base station model sections.

Product Versions

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

Product Name	Solution Version	Product Version
3900 series base stations	SRAN8.0 and later	V100R008C00 and later

Product Name	Solution Version	Product Version
5900 series base stations		

Unless otherwise specified, cabinets, components, and RATs involved in this document are supported in V100R008C00 and later versions. The following table lists the special cases.

Item	Solution Version	Product Version
• EPU02D • EPU02D-02	SRAN12.1/GBSS19.1/ RAN19.1/eRAN12.1/ eRAN TDD 12.1 and later	V100R012C10 and later
DCDU16D	SRAN15.1/GBSS21.1/ RAN21.1/eRAN15.1/ eRAN TDD 15.1 and later	V100R015C10 and later
EPU02S	SRAN16.0/GBSS22.0/ RAN22.0/eRAN16.0/ eRAN TDD 16.0 and later	V100R016C00 and later
• EPU02B • EPU02S-02	SRAN16.1/GBSS22.1/ RAN22.1/eRAN16.1/ eRAN TDD 16.1 and later	V100R016C10 and later

Intended Audience

This document is intended for:

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

Organization

1.1 Changes in TMC11H Hardware Description
This section describes the changes in *TMC11H Hardware Description*.

1.2 Exteriors of TMC11Hs
A transmission cabinet of 11 U high with heat exchanger (TMC11H) is used for Huawei wireless products outdoors. It supplies DC power to a distributed base station or separated macro base station in outdoor scenarios.

1.3 Components in TMC11Hs
This section describes module and board configurations in TMC11H series cabinets.

1.4 TMC11H Engineering Specifications
This section describes the engineering specifications of TMC11Hs, including input power specifications, equipment specifications, environmental specifications, surge protection specifications of ports, and compliance standards.

1.5 Specifications of Customer Equipment in TMC11Hs
Customer equipment in TMC11Hs must meet the specifications.

1.1 Changes in TMC11H Hardware Description

This section describes the changes in *TMC11H Hardware Description*.

01 (2020-01-20)

This is the first commercial release.

This document is separated from the *3900 & 5900 Series Base Station Hardware Description* document and its content derives from the section "TMC11H Description."

Compared with the section "TMC11H Description" in *3900 & 5900 Series Base Station Hardware Description* of Issue 18 (2019-03-25), this issue does not include any new topics or changes, or exclude any topics.

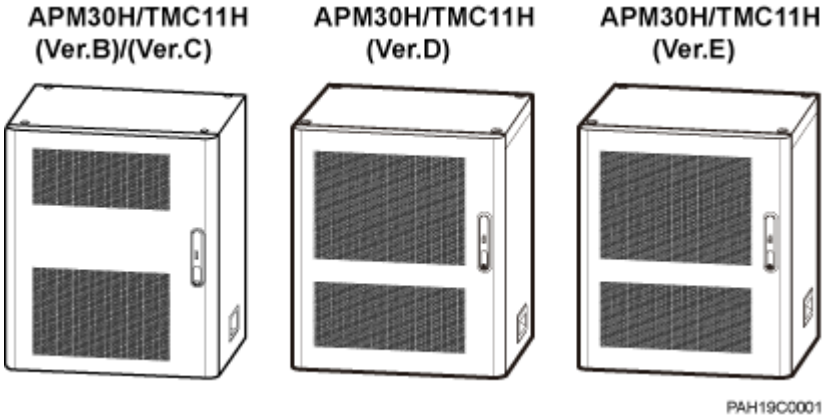
Before the separation, compared with Issue 17 (2018-12-31), Issue 18 (2019-03-25) does not include any new topics or changes, or exclude any topics.

1.2 Exteriors of TMC11Hs

A transmission cabinet of 11 U high with heat exchanger (TMC11H) is used for Huawei wireless products outdoors. It supplies DC power to a distributed base station or separated macro base station in outdoor scenarios.

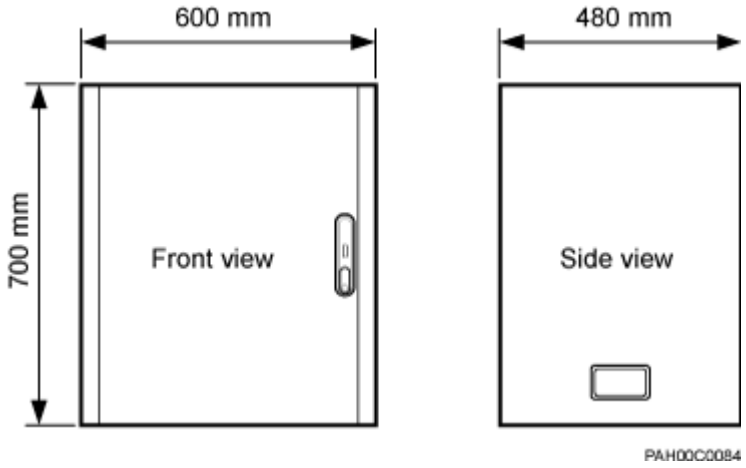
The following figure shows the exteriors of TMC11Hs.

Figure 1-1 Exteriors of TMC11Hs



The following figure shows the dimensions of a TMC11H.

Figure 1-2 Dimensions of a TMC11H (Ver.D), TMC11H (Ver.B), TMC11H (Ver.C), or TMC11H (Ver.E)



1.3 Components in TMC11Hs

This section describes module and board configurations in TMC11H series cabinets.

NOTE

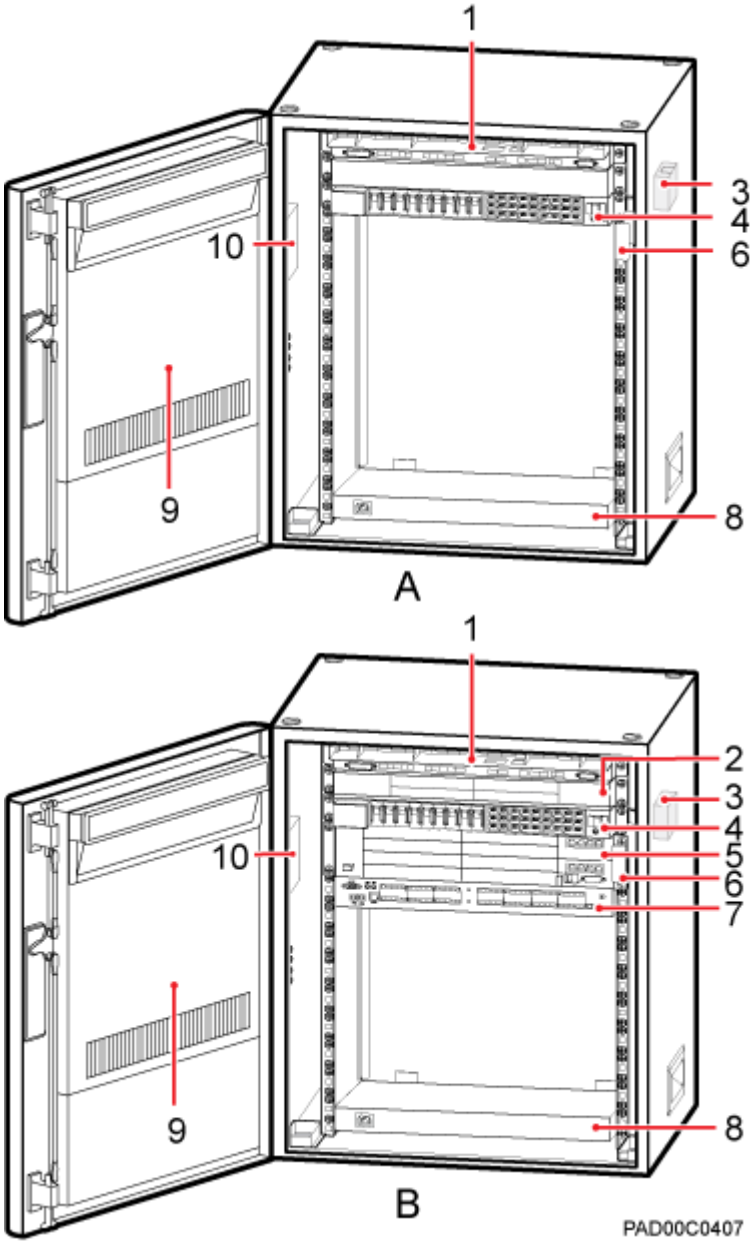
A DCDU16D/EPU02D/EPU02D-02, which is optional, is preferentially installed in the 1 U space below a BBU. If an EMUA/EMUB or heater has been installed in the 1 U space below a BBU, an EPU02D/EPU02D-02/EPU02B/EPU02S/EPU02S-02/DCDU16D should be installed in the 1 U space below the EMUA/EMUB or heater. For EPU02D/EPU02D-02/EPU02B/EPU02S/EPU02S-02 application scenarios, see EPU02D and EPU02D-02, EPU02B, EPU02S-02, and EPU02S. For DCDU16D application scenarios, see DCDU16D.

Components in TMC11H (Ver.B) Cabinets

There are two types of TMC11H (Ver.B) cabinets:

- One type of the cabinets houses only transmission equipment, as shown by illustration **A** in the following figure.
- The other type of the cabinets houses the BBU and is supplied with -48 V DC power, as shown by illustration **B** in the following figure.

Figure 1-3 Components in TMC11H (Ver.B) cabinets



The following table lists the components in TMC11H (Ver.B) cabinets.

Table 1-1 Components in TMC11H (Ver.B) cabinets

No.	Module/ Board	Mandatory /Optional	Maximum Quantity in a Cabinet	Remarks
1	FAN 02A	Mandatory	1	A FAN 02A is configured with the fan, HPMI, and CMUA. The fan assembly dissipates heat from a cabinet.
2	SLPU	Mandatory	2	To provide protection for trunk signals, an SLPU is mandatory and installed in the top 1 U space of the cabinet. It is configured with the UELP or UFLP. To provide protection for monitoring signals, an SLPU is optional and installed in the 1 U space below the BBU. It is configured with two USLP2 boards.
3	ELU	Mandatory	1	An ELU automatically reports the cabinet type to facilitate troubleshooting.
4	DCDU-03B or DCDU-03C	Mandatory	1	A direct current distribution unit-03B (DCDU-03B) or direct current distribution unit-03C (DCDU-03C) distributes DC power to components in a TMC11H. The DCDU-03B or DCDU-03C is 1 U high. ● When a TMC11H is used as a power cabinet in a DBS3900 supplied with -48 V DC power, the TMC11H is configured with a DCDU-03B. ● When a TMC11H is used as a power cabinet in a BTS3900A supplied with -48 V DC power or as a transmission cabinet, the TMC11H is configured with a DCDU-03C.

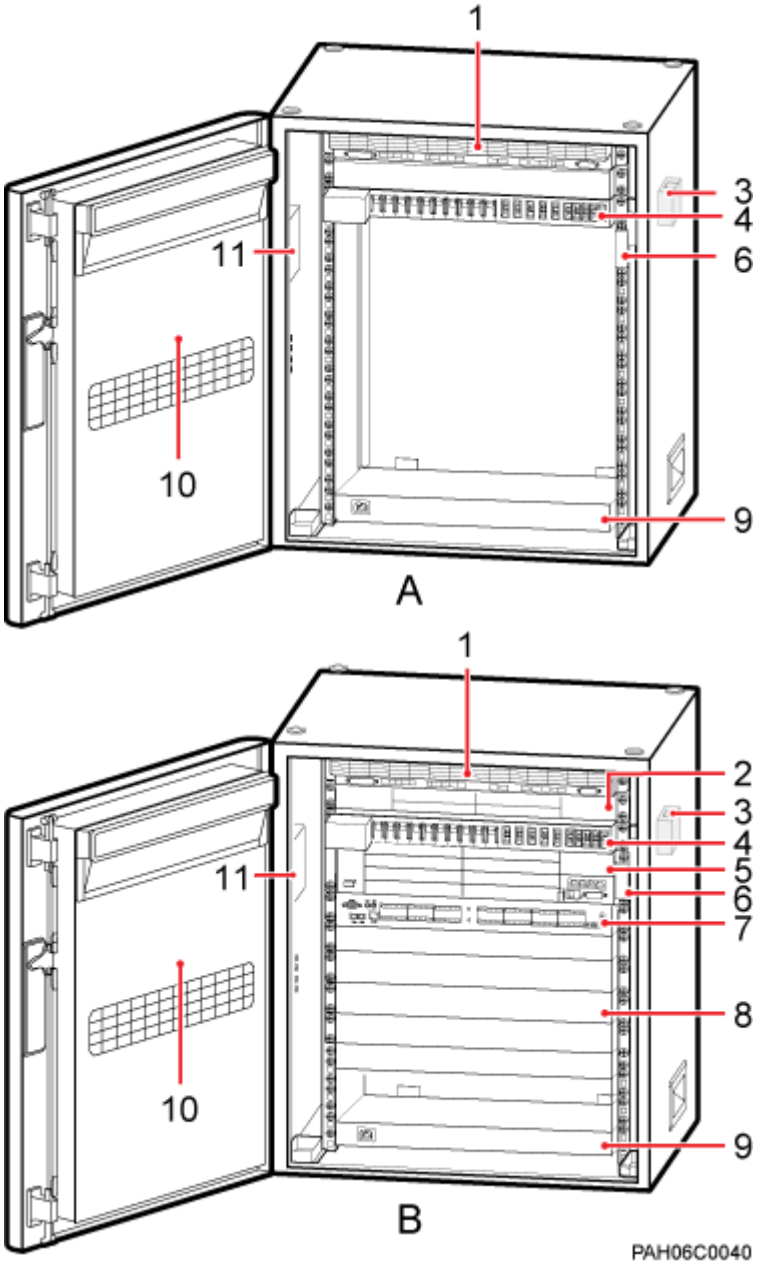
No.	Module/ Board	Mandatory /Optional	Maximum Quantity in a Cabinet	Remarks
5	BBU	Optional	1	A BBU processes baseband signals and enables the base station to interact with the base station controller. For details, see BBU3900 and BBU3910 Hardware Description. The BBU applicable to a TMC11H (Ver.B) is the BBU3900.
6	Door Status Sensor	Mandatory	1	This module monitors whether a cabinet door is open.
7	EMUA/ EMUB	Optional	1	An EMUA or EMUB mainly monitors the environment variables in a cabinet and processes alarms. An EMUA or EMUB must be configured in the 1 U space below the BBU when more than 16 Boolean alarm inputs are required.
8	AC heater	Optional	1	An AC heater ensures that components in a cabinet work within an acceptable temperature range when the ambient temperature is low. It is optional and can be installed in the 1 U space at the bottom of the cabinet as required.
9	Heat exchanger core	Mandatory	1	A heat exchanger core promotes the inner and outer air circulation, and accelerates internal and external air exchanges. This lowers the operating temperature of a cabinet and protects the cabinet from dust.
10	Junction Box	Mandatory	1	When a heater or a heating film is configured, a junction box provides power for the heater or the heating film.

Components in TMC11H (Ver.C) Cabinets

There are two types of TMC11H (Ver.C) cabinets:

- One type of the cabinets houses only transmission equipment, as shown by illustration **A** in the following figure.
- The other type of the cabinets houses the BBU and is supplied with -48 V DC power, as shown by illustration **B** in the following figure.

Figure 1-4 Components in TMC11H (Ver.C) cabinets



The following table lists the components in TMC11H (Ver.C) cabinets.

Table 1-2 Components in TMC11H (Ver.C) cabinets

No.	Module/Board	Mandatory/Optional	Maximum Quantity in a Cabinet	Remarks
1	FAN 02B	Mandatory	1	A FAN 02B is configured with the fan, HPMI, and CMUE. The fan assembly dissipates heat from a cabinet.
2	SLPU	Mandatory	2	To provide protection for trunk signals, an SLPU is mandatory and installed in the top 1 U space of the cabinet. It is configured with the UELP or UFLP. To provide protection for monitoring signals, an SLPU is optional and installed in the 1 U space below the BBU. It is configured with two USLP2 boards.
3	ELU	Mandatory	1	An ELU reports the cabinet type automatically to facilitate troubleshooting.
4	DCDU-11B or DCDU-11C	Mandatory	1	A direct current distribution unit-11B (DCDU-11B) or direct current distribution unit-11C (DCDU-11C) distributes ten DC power outputs to components in a TMC11H. The DCDU-11B or DCDU-11C is 1 U high. ● When a TMC11H is used as a power cabinet in a DBS3900 supplied with -48 V DC power, the TMC11H is configured with a DCDU-11B. ● When a TMC11H is used as a power cabinet in a BTS3900A supplied with -48 V DC power or as a transmission cabinet, the TMC11H is configured with a DCDU-11C.
5	BBU	Optional	1	A BBU processes baseband signals and enables the base station to interact with the base station controller. For details, see BBU3900 and BBU3910 Hardware Description. The BBU applicable to a TMC11H (Ver.C) is the BBU3900.
6	Door Status Sensor	Mandatory	1	This module monitors whether a cabinet door is open.

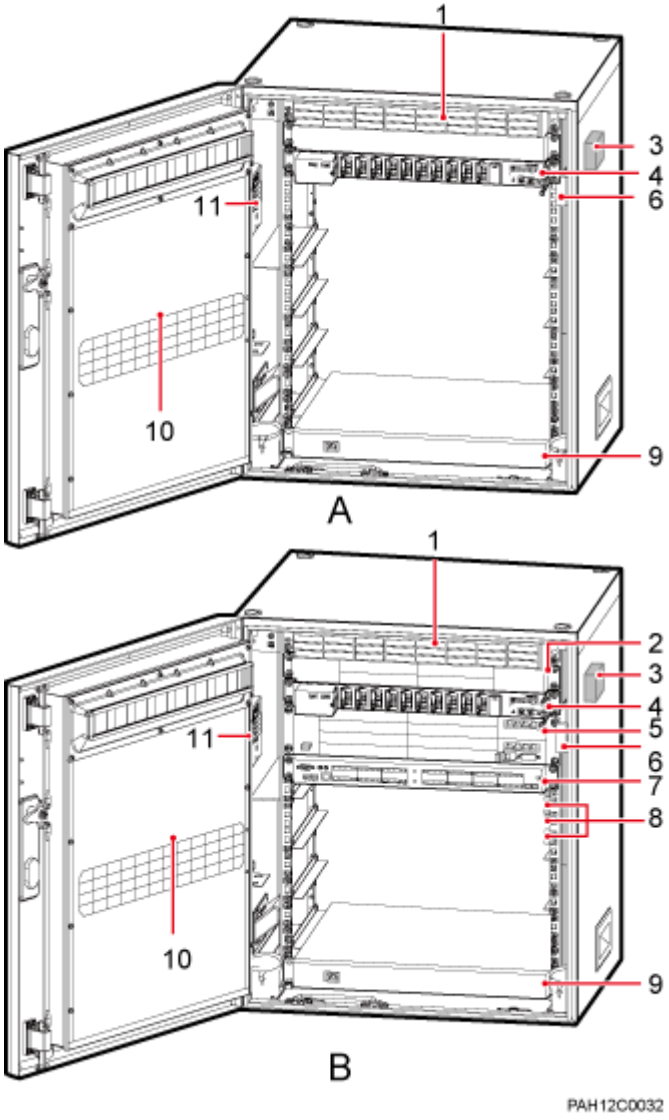
No.	Module/Board	Mandatory/Optional	Maximum Quantity in a Cabinet	Remarks
7	(Optional) EMUA or EMUB	Optional	1	An EMUA/EMUB mainly monitors the environment variables in a cabinet and processes alarms. An EMUA/EMUB must be configured in the 1 U space below the BBU when more than 16 Boolean alarm inputs are required.
8	Filler module	Optional	5	A filler module is a standard plastic component with a height of 1 U. It is configured in the reserved space for customer equipment below the BBU to improve the dissipation capability of a cabinet.
9	AC heater	Optional	1	An AC heater ensures that components in a cabinet work within an acceptable temperature range when the ambient temperature is low. It is optional and can be installed in the 1 U space at the bottom of the cabinet as required.
10	Outer air circulation assembly	Mandatory	1	An outer air circulation assembly includes a heat exchanger core and a fan. ● A heat exchanger core promotes the inner and outer air circulation, and accelerates internal and external air exchanges. This lowers the operating temperature of a cabinet and protects the cabinet from dust. ● The fan dissipates heat from a cabinet.
11	Junction Box	Mandatory	1	When a heater or a heating film is configured, a junction box provides power for the heater or the heating film.

Components in TMC11H (Ver.D) Cabinets

There are two types of TMC11H (Ver.D) cabinets:

- One type of the cabinets houses only transmission equipment, as shown by illustration **A** in the following figure.
- The other type of the cabinets houses the BBU and is supplied with -48 V DC power, as shown by illustration **B** in the following figure.

Figure 1-5 Components in TMC11H (Ver.D) cabinets



The following table lists the components in TMC11H (Ver.D) cabinets.

Table 1-3 Components in TMC11H (Ver.D) cabinets

No.	Module /Board	Mandatory/ Optional	Maximum Quantity in a Cabinet	Remarks
1	FAN 02D	Mandatory	1	A FAN 02D is configured with the CMUEA and dissipates heat from the cabinet.

No.	Module/Board	Mandatory/Optional	Maximum Quantity in a Cabinet	Remarks
2	SLPU	Mandatory	2	• To provide protection for trunk signals, an SLPU is mandatory and installed in the top 1 U space of the cabinet. It is configured with the UELP or UFLP. • To provide protection for monitoring signals, an SLPU is optional and installed in the 1 U space below the BBU. It is configured with two USLP2 boards.
3	ELU	Mandatory	1	An ELU automatically reports the cabinet type to facilitate troubleshooting.
4	DCDU-12B or DCDU-12C	Mandatory	1	A DCDU-12B or DCDU-12C distributes ten DC power outputs to components in a TMC11H. The DCDU-12B or DCDU-12C is 1 U high. • When a TMC11H is used as a power cabinet in a DBS3900 supplied with -48 V DC power, the TMC11H is configured with a DCDU-12B. • When a TMC11H is used as a power cabinet in a BTS3900A supplied with -48 V DC power or as a transmission cabinet, the TMC11H is configured with a DCDU-12C.
5	BBU	Optional	2	A BBU processes baseband signals and enables the base station to interact with the base station controller. For details, see the corresponding BBU hardware description. For example, for the BBU5900, see BBU5900 Hardware Description. The BBUs applicable to a TMC11H (Ver.D) include the BBU5900, BBU3900, and BBU3910.
6	Door Status Sensor	Mandatory	1	This module monitors whether a cabinet door is open.
7	(Optional) EMUA or EMUB	Optional	1	An EMUA/EMUB mainly monitors the environment variables in a cabinet and processes alarms. An EMUA/EMUB must be configured in the 1 U space below the BBU when more than 16 Boolean alarm inputs are required.

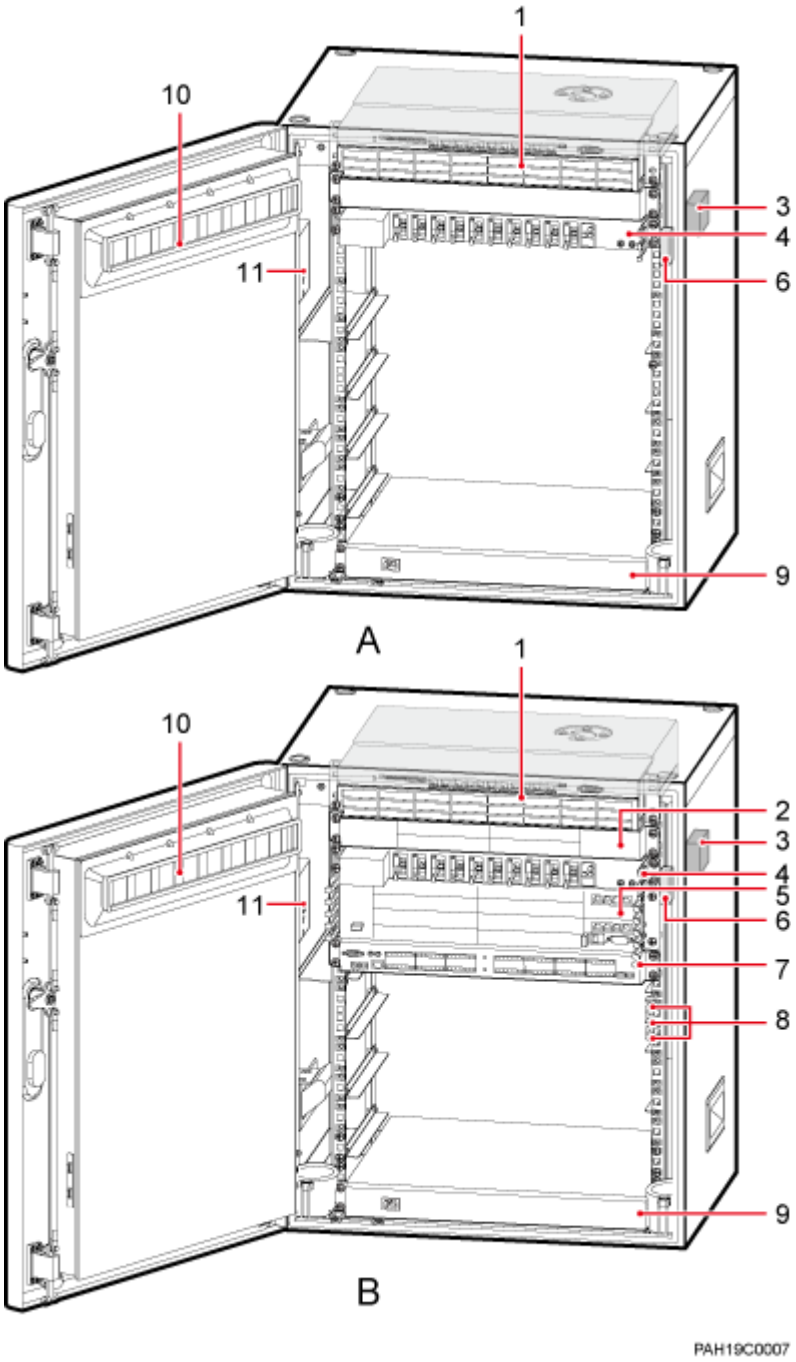
No.	Module /Board	Mandatory/ Optional	Maximum Quantity in a Cabinet	Remarks
8	Air baffle	Mandatory	5	An air baffle is configured in the reserved space for customer equipment below the BBU to improve the dissipation capability of a cabinet.
9	AC heater	Optional	1	An AC heater ensures that components in a cabinet work within an acceptable temperature range when the ambient temperature is low. It is optional and can be installed in the 1 U space at the bottom of the cabinet as required.
10	Outer air circulation assembly	Mandatory	1	An outer air circulation assembly includes a heat exchanger core and a fan. ● A heat exchanger core promotes the inner and outer air circulation, and accelerates internal and external air exchanges. This lowers the operating temperature of a cabinet and protects the cabinet from dust. ● The fan dissipates heat from a cabinet.
11	Junction Box	Mandatory	1	When a heater or a heating film is configured, a junction box provides power for the heater or the heating film.

Components in TMC11H (Ver.E) Cabinets

There are two types of TMC11H (Ver.E) cabinets:

- One type of the cabinets houses only transmission equipment, as shown by illustration **A** in the following figure.
- The other type of the cabinets houses the BBU and is supplied with -48 V DC power, as shown by illustration **B** in the following figure.

Figure 1-6 Components in TMC11H (Ver.E) cabinets



The following table lists the components in TMC11H (Ver.E) cabinets.

Table 1-4 Components in TMC11H (Ver.E) cabinets

No.	Module/Board	Mandatory/Optional	Maximum Quantity in a Cabinet	Remarks
1	FAN 02E/ FAN02H	Mandatory	1	• A FAN 02E is configured with the CCUB and dissipates heat from the cabinet. • A FAN02H is configured with the CCUC and dissipates heat from the cabinet.
2	SLPU	Mandatory	2	• To provide protection for trunk signals, an SLPU is mandatory and installed in the top 1 U space of the cabinet. It is configured with the UELP or UFLP. • To provide protection for monitoring signals, an SLPU is optional and installed in the 1 U space below the BBU. It is configured with two USLP2 boards.
3	ELU	Mandatory	1	An ELU automatically reports the cabinet type to facilitate troubleshooting.
4	DCDU-12B or DCDU-12C	Mandatory	1	A DCDU-12B or DCDU-12C distributes ten DC power outputs to components in a TMC11H. The DCDU-12B or DCDU-12C is 1 U high. • When a TMC11H is used as a power cabinet in a DBS3900 supplied with -48 V DC power or as a transmission cabinet, the TMC11H is configured with a DCDU-12B. • When a TMC11H is used as a power cabinet in a BTS3900A supplied with -48 V DC power, the TMC11H is configured with a DCDU-12C.
5	BBU	Optional	2	A BBU processes baseband signals and enables the base station to interact with the base station controller. For details, see the corresponding BBU hardware description. For example, for the BBU5900, see BBU5900 Hardware Description. The BBUs applicable to a TMC11H (Ver.E) include the BBU5900, BBU3900, and BBU3910.
6	Door status sensor	Mandatory	1	This module monitors whether a cabinet door is open.

No.	Module/Board	Mandatory/Optional	Maximum Quantity in a Cabinet	Remarks
7	(Optional) EMUA or EMUB	Optional	1	An EMUA/EMUB mainly monitors the environment variables in a cabinet and processes alarms. An EMUA/EMUB must be configured in the 1 U space below the BBU when more than 16 Boolean alarm inputs are required.
8	Air baffle	Mandatory	5	An air baffle is configured in the reserved space for customer equipment below the BBU to improve the dissipation capability of a cabinet.
9	AC heater	Optional	1	An AC heater ensures that components in a cabinet work within an acceptable temperature range when the ambient temperature is low. It is optional and can be installed in the 1 U space at the bottom of the cabinet as required.
10	Outer air circulation assembly	Mandatory	1	An outer air circulation assembly includes a heat exchanger core and a fan. • A heat exchanger core promotes the inner and outer air circulation, and accelerates internal and external air exchanges. This lowers the operating temperature of a cabinet and protects the cabinet from dust. • The fan dissipates heat from a cabinet.
11	Junction Box	Mandatory	1	When a heater or a heating film is configured, a junction box provides power for the heater or the heating film.

1.4 TMC11H Engineering Specifications

This section describes the engineering specifications of TMC11Hs, including input power specifications, equipment specifications, environmental specifications, surge protection specifications of ports, and compliance standards.

Input Power Specifications

The following table lists the -48 V DC input power specifications of a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E).

Table 1-5 Input power specifications of a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E)

Item	Power Input Type	Voltage Range
Input power specifications	-48 V DC	-38.4 V DC to -57 V DC

Equipment Specifications

The following table lists the equipment specifications of a TMC11H (Ver.E).

Table 1-6 Equipment specifications of a TMC11H (Ver.E)

Item	Specifications
Dimensions (H x W x D)	• Cabinet: 700 mm x 600 mm x 480 mm (27.56 in. x 23.62 in. x 18.90 in.) • Base: 200 mm x 600 mm x 434 mm (7.87 in. x 23.62 in. x 17.09 in.)
Weight	≤ 47 kg (103.62 lb)[a]
Heat dissipation capability of the cabinet	The maximum heat dissipation capability is 1800 W when the ambient temperature is 50°C (122°F).
a: Total weight of the cabinet: • Including the cabinet frame, outer air circulation component (heat exchanger core and outer air circulation fan), inner air circulation fan assembly, DCDU power distribution box, and cables • Excluding transmission equipment	

The following table lists the equipment specifications of a TMC11H (Ver.D).

Table 1-7 Equipment specifications of a TMC11H (Ver.D)

Item	Specifications
Dimensions (H x W x D)	• Cabinet: 700 mm x 600 mm x 480 mm (27.56 in. x 23.62 in. x 18.90 in.) • Base: 200 mm x 600 mm x 434 mm (7.87 in. x 23.62 in. x 17.09 in.)
Weight	≤ 47 kg (103.62 lb)[a]
Heat dissipation capability of the cabinet	The maximum heat dissipation capability is 1500 W when the ambient temperature is 50°C (122°F).

Item	Specifications
a: Total weight of the cabinet: • Including the cabinet frame, outer air circulation component (heat exchanger core and outer air circulation fan), inner air circulation fan assembly, DCDU power distribution box, and cables • Excluding transmission equipment	

The following table lists the equipment specifications of a TMC11H (Ver.C).

Table 1-8 Equipment specifications of a TMC11H (Ver.C)

Item	Specifications
Dimensions (H x W x D)	• Cabinet: 700 mm x 600 mm x 480 mm (27.56 in. x 23.62 in. x 18.90 in.) • Base: 200 mm x 600 mm x 434 mm (7.87 in. x 23.62 in. x 17.09 in.)
Weight	≤ 47 kg (103.62 lb)[a]
Heat dissipation capability of the cabinet	The maximum heat dissipation capability is 1050 W when the ambient temperature is 50°C (122°F).
a: Total weight of the cabinet: • Including the cabinet frame, outer air circulation component (heat exchanger core and outer air circulation fan), inner air circulation fan assembly, DCDU power distribution box, and cables • Excluding transmission equipment	

The following table lists the equipment specifications of a TMC11H (Ver.B).

Table 1-9 Equipment specifications of a TMC11H (Ver.B)

Item	Specifications
Dimensions (H x W x D)	• Cabinet: 700 mm x 600 mm x 480 mm (27.56 in. x 23.62 in. x 18.90 in.) • Base: 200 mm x 600 mm x 434 mm (7.87 in. x 23.62 in. x 17.09 in.)
Weight	≤ 57 kg (125.66 lb)[a]
Heat dissipation capability of the cabinet	The maximum heat dissipation capability is 700 W when the ambient temperature is 50°C (122°F).

Item	Specifications
a: Total weight of the cabinet: • Including the cabinet frame, outer air circulation component (heat exchanger core and outer air circulation fan), inner air circulation fan assembly, DCDU power distribution box, and cables • Excluding transmission equipment	

Environmental Specifications

The following table lists the environmental specifications of a TMC11H (Ver.E).

Table 1-10 Environmental specifications of a TMC11H (Ver.E)

Item	Specifications
Operating temperature	-40°C to +50°C (-40°F to +122°F) (1120 W/m^2 solar radiation). If the ambient temperature is below -20°C (-4°F), an AC heater is required.
Relative humidity	5% RH to 100% RH
Altitude	≤ 4000 m (13123.36 ft)
Noise sound power level	• Meeting the ETS 300 753 4.1E standard (rural areas) if the heat consumption inside a cabinet is less than or equal to 700 W – ≤ 6.1 bels@+25°C (77°F) – ≤ 6.7 bels@+45°C (113°F) • Meeting the ETS 300 753 4.1E standard (urban areas) if the heat consumption inside a cabinet is greater than 700 W and less than or equal to 1800 W – ≤ 6.6 bels@+25°C (77°F) – ≤ 7.6 bels@+45°C (113°F)
Ingress protection rating	IP55
Storage environment[a]	ETSI EN300019-1-1 V2.1.4 (2003-04) Class 1.2 "Weatherprotected, not temperature-controlled storage locations"
a: Regarding the storage environment: • The validity period is one year. • The product can function properly within the validity period if the storage environment meets the preceding standards.	

The following table lists the environmental specifications of a TMC11H (Ver.C)/ TMC11H (Ver.D).

Table 1-11 Environmental specifications of a TMC11H (Ver.C)/TMC11H (Ver.D)

Item	Specifications
Operating temperature	-40°C to +50°C (-40°F to +122°F) (1120 W/m^2 solar radiation). If the ambient temperature is below -20°C (-4°F), an AC heater is required.
Relative humidity	5% RH to 100% RH
Altitude	≤ 4000 m (13123.36 ft)
Noise sound power level	• Meeting the ETS 300 753 4.1E standard (rural areas) if the heat consumption inside a cabinet is less than or equal to 700 W – ≤ 6.1 bels@+25°C (77°F) – ≤ 6.7 bels@+45°C (113°F) • Meeting the ETS 300 753 4.1E standard (urban areas) if the heat consumption inside a cabinet is greater than 700 W and less than or equal to 1050 W – ≤ 6.6 bels@+25°C (77°F) – ≤ 7.6 bels@+45°C (113°F)
Ingress protection rating	IP55
Storage environment[a]	ETSI EN300019-1-1 V2.1.4 (2003-04) Class 1.2 "Weatherprotected, not temperature-controlled storage locations"
a: Regarding the storage environment: • The validity period is one year. • The product can function properly within the validity period if the storage environment meets the preceding standards.	

The following table lists the environmental specifications of a TMC11H (Ver.B).

Table 1-12 Environmental specifications of a TMC11H (Ver.B)

Item	Specifications
Operating temperature	-40°C to +50°C (-40°F to +122°F) (1120 W/m^2 solar radiation). If the ambient temperature is below -20°C (-4°F), an AC heater is required.
Relative humidity	5% RH to 100% RH
Altitude	≤ 4000 m (13123.36 ft)
Noise sound power level	Meeting the ETS 300 753 4.1E standard (rural areas) if the heat consumption inside a cabinet is less than or equal to 700 W ● ≤ 6.1 bels@+25°C (77°F) ● ≤ 6.7 bels@+45°C (113°F)
Ingress protection rating	IP55
Storage environment[a]	ETSI EN300019-1-1 V2.1.4 (2003-04) Class 1.2 "Weatherprotected, not temperature-controlled storage locations"
a: Regarding the storage environment: ● The validity period is one year. ● The product can function properly within the validity period if the storage environment meets the preceding standards.	

Surge Protection Specifications

The following table lists the surge protection specifications of ports in a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E).

Table 1-13 Surge protection specifications of ports in a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E)

Item	Specifications
Surge protection specifications of ports	Surge: ● Differential mode: 2 kV (1.2/50 μs) ● Common mode: 4 kV (1.2/50 μs) Surge current: ● Differential mode: 10 kA (8/20 μs) ● Common mode: 20 kA (8/20 μs)

Compliance Standards

The following table lists the compliance standards for a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E).

Table 1-14 Compliance standards for a TMC11H (Ver.B)/TMC11H (Ver.C)/TMC11H (Ver.D)/TMC11H (Ver.E)

Item	Standard
Security standards	• IEC/EN/UL 62368-1 • IEC/EN/UL 60950-1 • IEC/EN/UL 60950-22 • GB 4943.1 • GB 4943.22
Operating environment	ETSI EN 300 019-1-4 Class 4.1: "Non-weatherprotected locations"
Transportation environment	ETSI EN 300019-1-2 class 2.3 "Public transportation"
Shockproof protection	• YD5083 • ETSI 300 019-2-3 • GR-63 Zone4 • NTT
EMC[a]	• ETSI EN 300 386 • CISPR 32/EN55032

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/T 2324-2011: Lightning protection requirements and test methods for radio base stations • GB 50689-2011: Code for design of lightning protection and earthing engineering for telecommunication bureaus (stations)
a: If interference exists because the cabinet is installed near antennas or other wireless receivers, you are advised to extend the distance between them or adjust the location and direction of antennas.	

1.5 Specifications of Customer Equipment in TMC11Hs

Customer equipment in TMC11Hs must meet the specifications.

Customer equipment in TMC11Hs must meet the same specifications as the customer equipment in an APM30H. For details, see Specifications of Customer Equipment in Huawei Cabinets.