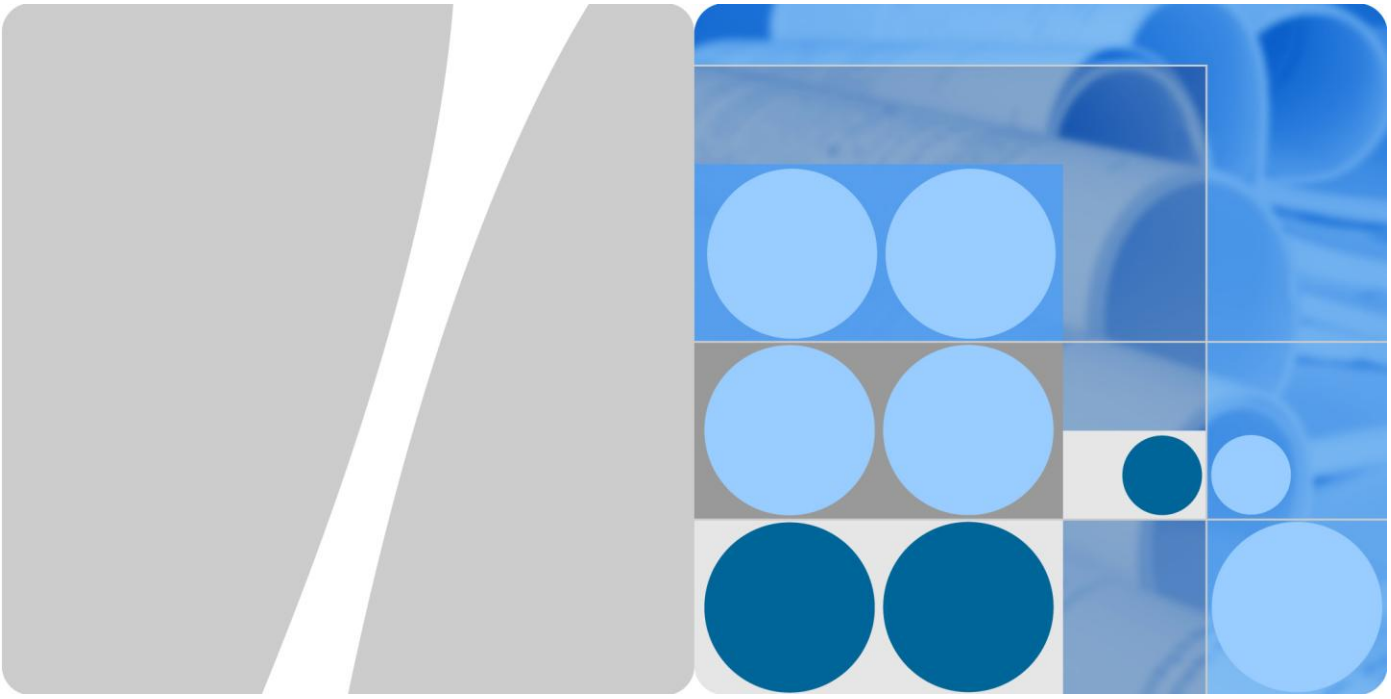
Product Description



HUAWEI B593u-12 LTE CPE

Issue 03

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Some features of the product and its accessories described herein rely on the software installed, capacities and settings of local network, and may not be activated or may be limited by local network operators or network service providers, thus the descriptions herein may not exactly match the product or its accessories you purchase.

About This Document

Summary

This document provides information for product features, main functions and services, technical specifications and technical references.

This document includes:

Chapter	Details
1 Product Overview	Describes the appearance and main services of product
2 Features	Describes the product features
3 Technical Specifications	Describes the specifications of product hardware, software and user interface
4 Services and Applications	Describes the main functions and applications
5 System Structure	Describes the product system structure
6 Technical References	Describes Standards and Communication Protocols of the Products
7 Packing List	Describes the devices and accessories of the product

NOTE

The document is an invitation to offer but not an offer. It is intended to describe the general features and functions of products. The features and functions of certain products vary with requirements of customers.

History

Issue	Details	Date	Author	Approved by
01	Initial formal release	2011-05-03	Lishuang	Zhangwei
02	To add the review comments	2011-06-15	wuzhiqing	Zhangwei
03	To add build-out antenna comments	2011-08-02	wuzhiqing	Zhangwei

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1 Product Overview

The HUAWEI B593u-12 (hereinafter referred to as B593u-12) is a LTE wireless gateway for family users and enterprise users. You can access the Internet through the wired or wireless network.

B593u-12 supports the following standards:

Long Term Evolution (LTE) Release 8

WCDMA/HSDPA R5

HSUPA R6

HSPA+ R7

DC-HSPA+ R8

GSM/GPRS/EGPRS R99

B593u-12 supports wired and wireless network access, and provides data routing service .The supported service functions are as follows:

- Data service
- VOIP service
- Security Service
- Local maintenance management function

2 Features

The main features of B593u-12 are listed as follows:

- Support network environments. The B593u-12 supports LTE FDD Band 7(2600MHz)/Band 1(2100MHz)/Band 3(1800MHz)/Band 8(900MHz)/Band 20(DD800MHz)、UMTS FDD Band8(900 MHz)/Band 1(2100MHz)、GSM 850 MHz /900 MHz /1800 MHz /1900MHz.
- High speed experience. Supports maximum throughput of 100 Mbit/s in the downlink and 50 Mbit/s in the uplink.
- Built-in DHCP Server and NAT. Provides high-speed routing capability.
- Comprehensive and robust security services. Provides instant protection to block potential security risks and intrusion attempts.
- Supports Windows XP, Windows Vista，linux，MAC. Compatible with Browser include Internet Explorer, Firefox, Chrome, Safari.
- Intuitionist and convenient Web-based management.
- TR069-Based Device management.
- Voice over IP
- Ultrathin and artful appearance.
- Built-in LTE and WLAN high gain antenna. Ensured performance and easy portability. It is optional to select an external antenna, which is to ensure the normal use when the signal strength is weak.
- User-friendly design of LED indicator. Easy to observe the status of equipment.

3 Technical Specifications

3.1 Hardware Specifications

Table 3-1 describes technical specifications of the B593u-12.

Table 3-1 Technical specifications of the B593u-12

Item	Description	
Technical standard	WAN: LTE 3GPP Release 8 WCDMA/HSDPA R5 HSUPA R6 HSPA+ R7 DC-HSPA+ R8 GSM/GPRS/EGPRS R99	
	LAN: IEEE 802.3/802.3u	
	WLAN: IEEE 802.11b/g/n	
Working frequency band	LTE	B1: 1920 MHz ~1980 MHz (UL)/ 2110 MHz ~2170 MHz (DL) B3: 1710 MHz ~1785 MHz (UL)/ 1805 MHz ~1880 MHz (DL) B7: 2500 MHz ~2570 MHz (UL)/ 2620 MHz ~2690 MHz (DL) B8: 880 MHz ~915 MHz (UL)/ 925 MHz ~960 MHz (DL) B20: 832 MHz ~862 MHz (UL)/ 791 MHz ~821 MHz (DL)
	UMTS	900/2100MHz
	GSM/EDGE	850/900/1800/1900MHz
	WLAN	2.401 GHz ~ 2.483 GHz

Item	Description	
External interface	• 4 Ethernet interface (RJ45): 10/100Base-TX • 2 POTS interface (RJ11) • 2 USB interface • 1 Power interface • 1 Reset button • 1 WLAN button • 1 WPS button • 2 External antenna interface (SMA) • 1 SIM card slot	
LED indicator	• One Power indicator • One WLAN indicator • One WPS indicator • Two TEL indicator • One MODE indicator • One indicator for signal strength • One LINK/ACTIVE indicator for each Ethernet Interface	
Maximum transmit power	LTE	23dBm(± 2dB)
	UMTS	+24dBm(+1/-3dB)
	GSM	GSM: Power Class 4@GSM 850 Power Class 4@GSM 900 Power Class 1@DCS 1800 Power Class 1@PCS 1900
	WLAN	802.11n: 11dBm(±2dB) 802.11g: 13dBm(±2 dB) 802.11b: 15dBm(±2 dB)
Receiving sensitivity	LTE	Band 1: -97dBm/10MHz Band 3 : -94dBm/10MHz; -92.2dBm/15MHz; -91dBm/20MHz Band 7: -95dBm/10MHz; -92dBm/20MHz Band 8: -94dBm/10MHz; Band 20: -94dBm/10MHz;

Item	Description	
	UMTS	• Band 1: • Ior ≤ -106.7dBm/3.84Mhz • Band 8: • Ior ≤ -105.7dBm/3.84Mhz
	GSM	• ≤-102dBm/200KHz (GSM850) • ≤-102dBm/200KHz (GSM900) • ≤-102dBm/200KHz(DCS1800) • ≤-102dBm/200KHz(PCS1800)
	WLAN	• -64 dBm@65Mbit/s, typical for 802.11n • -65 dBm@54Mbit/s, typical for 802.11g • -76 dBm@11Mbit/s, typical for 802.11b
Power consumption	<20 W	
AC/DC power supply	• AC: 100 V–240 V, 50/60 Hz • DC: 12 V, 2 A	
Dimensions (W×D×H)	190mm ×35mm ×176 mm	
Weight	About 500g (The power supply adapter is not included)	
Temperature	• Working temperature: 0℃~ +40℃ • Storage temperature: -40℃ ~ +70℃	
Humidity	5% ~ 95%	
Placement	Vertical	

3.2 Antenna Specifications

3.2.1 Build-in Antenna

Table 3-2 describes GSM/UMTS/LTE main antenna specifications

Table 3-2 GSM/UMTS/LTE antenna specifications

Item	Description
Frequency	698MHz～2690MHz
Input impedance	50 Ω

Item	Description
Standing wave ratio	< 3.0 (after being matched, All frequency points)
efficiency	≥ 50%
Gain	2dBi
Polarization	Linear polarization

Table 3-3 describes WLAN antenna specifications

Table 3-3 WLAN antenna specifications

Item	Description
Frequency	2.4 GHz ~ 2.483 GHz
Input impedance	50 Ω
Standing wave ratio	< 3
efficiency	≥50%
Gain	2dBi
Polarization	Linear polarization

3.2.2 Build-out Antenna

Table 3-2 describes DD800MHz build-out antenna specifications

Table 3-4 DD800MHz build-out antenna specifications

Item	Description
Frequency	790 MHz ~862 MHz
Input impedance	50 Ω
Standing wave ratio	< 3.0 (after being matched, All frequency points)
efficiency	≥ 60%
Gain	2.5dBi
Polarization	Linear polarization

Table 3-2 describes 2600MHz build-out antenna specifications

Table 3-5 2600MHz build-out antenna specifications

Item	Description
Frequency	2500 MHz ~2690 MHz
Input impedance	50 Ω
Standing wave ratio	< 2.0 (after being matched, All frequency points)
efficiency	≥ 60%
Gain	4.5dBi
Polarization	Linear polarization

Table 3-2 describes Europe 5-band build-out antenna specifications

Table 3-6 Europe 5-band build-out antenna specifications

Item	Description
Frequency	790 MHz ~2690 MHz
Input impedance	50 Ω
Standing wave ratio	< 3.0 (after being matched, All frequency points)
efficiency	≥ 50%
Gain	3dBi
Polarization	Linear polarization

3.3 Software Specifications

Table 3-7 describes software specifications

Table 3-7 Software specifications

Item	Description
Gateway	Router: • Supports the default routing (the routing address is 0.0.0.0). You can set the WAN connection to the default routing to generate default routing table items
	Supports ARP
	Supports DNS
	Supports ICMP

Item	Description
	NAT: • Supports NAT, NAPT (compliant with RFC2663, RFC3022 and RFC3027) • Supports fragment message identification for normal NAT • Supports NAT traverse of SIP, FTP, MSN and NetMeeting
	DHCP Server: • The default IP addresses of the DHCP server is from 192.168.1.2 to 192.168.1.254. The default gateway address is 192.168.1.1 • The default DHCP lease is 24 hours • The DHCP Server can be enabled or disabled • The address pool of the DHCP server can be configured. • The lease can be configured • The IP address status can be displayed, such as the host name, MAC address, IP address, and remaining lease • Support static IP reserve.
Data service	LTE : DL 100Mbit/s, UL 50Mbit/s
	WLAN:802.11b/g/n
VOIP	Voice over IP
Firewall	• Firewall Switch • LAN MAC Filter • IP Filter • URL Filter • SPI filter • DMZ • Port Forward • Service Access Control
LAN	10Mbit/s and 100Mbit/s auto-negotiation
	MDI/MDIX auto-sensing
	IEEE802.3/802.3u is compatible
WLAN	SSID broadcast and hiding is supported.
	Authentication: • Open System authentication • Shared Key authentication • 64/128-digit WEP encryption • 256-digit WPA-PSK/ WPA2-PSK encryption • TKIP ciphering algorithm • AES ciphering algorithm • TKIP and AES ciphering algorithm synchronously

Item	Description
	MAC address authentication: • Up to 16 MAC address items.
	Ratio adjustment: • Automatically • Manually(Except for 802.11n)
	STA management: • Supports limit of access users (up to 32 users)
Access Device Management	Management access device
Upgrade	Auto http upgrade and TR069 upgrade and local upgrade
SIM	PIN Management, SIM card Authentication
Dial-up	Support automatic, manual connect
Configuration import and export	Encryption backup current settings and restore the backup settings
SNTP	Support DST(Daylight Saving Time)
Maintenance	Export current diagnosis results and operation logs
System requirement	CPU: Pentium 500 MHz or above Memory: 128 MB RAM or above Hard disk: 50 MB free disk space OS: Windows XP/Windows Vista/Windows 7/Linux/Mac Display resolution: 800 × 600 or above (1024 × 768 is recommended) Internet Explorer: IE7.0,8.0/firefox3.6/safari5.0/opera10/chrome8 or above

3.4 User Interface Parameters

Table 3-8 describes user interface parameters

Table 3-8 User interface parameters

Item	Description	
Gateway	Parameter configuration	LAN: • DHCP • IP address
		WLAN: • Wireless status • SSID • Mode (802.11 b/g/n) • Channel • Hidden SSID • Tx Rate • Authentication (Open System and Shared Key) • Security (WEP and WPA and WPA2) • Access list (MAC) • Country
		WAN: • WAN connection profile, such as user name, password, APN • Network searching mode • Frequency band type • dial-up connection type
		Firewall: • Firewall Switch • LAN MAC Filter • IP Filter • SPI filter • URL Filter • DMZ • Port Forward • Service Access Control
	Status	• Signal strength • Network type • Network connection status • SIM card status • Operator name, system mode, and so on

Item	Description	
	Other functions	Network connection settings: • Automatic network registration • Manual network registration
		Selection of network connection types: LTE
		PIN management: Enable/Disable PIN verification

4 Services and Applications

4.1 Data Services

The B593u-12 supports the high-speed data service. It is used for LTE wireless broadband network access. You can send and receive emails, surf the Internet.

4.1.1 Small-Size LAN

You can connect the B593u-12 with a terminal device through the WLAN or one Ethernet interface in the Small Office Home Office (SOHO) to provide data services.

The B593u-12 also supports the external concentrator, Ethernet switch, or router. To form a LAN with multiple PCs, you can extend the Ethernet interfaces through the concentrator or Ethernet switch.

4.1.2 Data Service

After the parameters are correctly configured on the Web management interface, the B593u-12 creates normal data service in automatic, manual mode, according to the dial-up type.

The B593u-12 supports three connection types, such as the automatic, manual types.

- For the automatic type, the B593u-12 creates the data service connection automatically after the B593u-12 is normally started, if the network and the SIM card are available.
- For the manual type, you need to log in to the webpage and dial the number manually to create a connection after the B593u-12 is normally started, if the network and the SIM card are available. If you want to disconnect from the network, you needs to disconnect it manually.

4.2 Voice service

4.3 Security Service

The B593u-12 supports comprehensive and robust security services: Firewall function and PIN protection mechanisms. These features together allow users to connect their

computers to the Internet and simultaneously protect their computers from the security threats of the Internet.

4.3.1 Firewall Service

The B593u-12 supports the following firewall services:

- Firewall Switch: Enable or disable the firewall on the network connection.
- LAN MAC Filter: Specify the Media Access Control (MAC) address to restrict network access.
- LAN IP Filter: Block specific IP address so that they cannot be accessed from computers in the local network.
- URL Filter: Block computers in the local network to access specific URL.

4.3.2 User Authentication

The CPE supports the following user authentication protocols:

- No Encryption
- WEP
- WPA-PSK
- WPA2-PSK

4.3.3 PIN protection

If the PIN code protection is enabled, you need to validate the PIN code each time when you restart the CPE and log in to the management page.

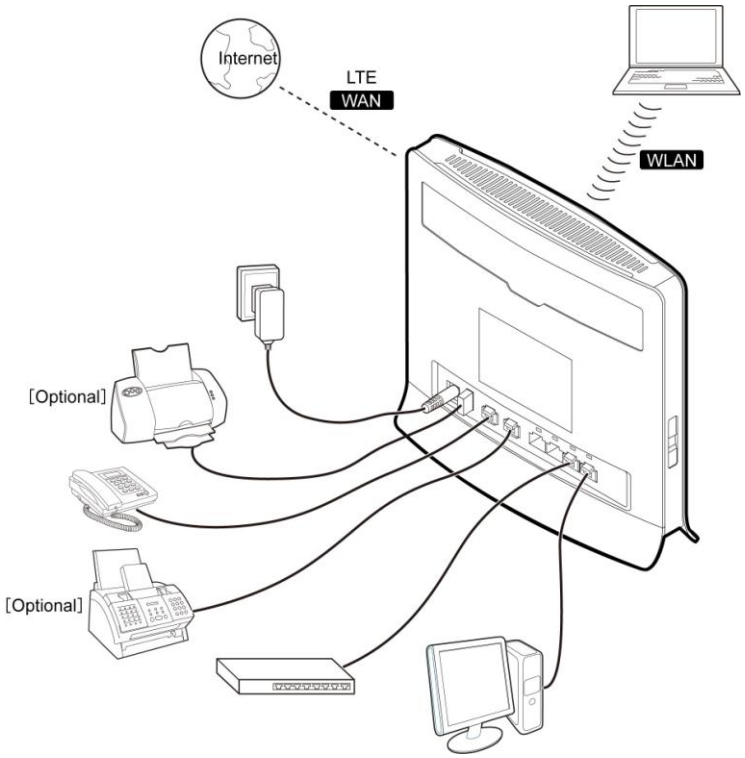
4.4 Local management and maintenance

The B593u-12 supports local configuration to accomplish device management, network configuration and ensure normal and stable performance.

5 System Structure

Figure 5-1 shows the system architecture.

Figure 5-1 System architecture



The following describes modules shown in Figure 5-1

- LTE access function: The B593u-12 adopts the LTE/UMTS/EDGE access technology at the WAN side. The B593u-12 can access the LTEU/MTS/EDGE broadband packet-based network through the dial-up.
- LAN access function: One 10/100Mbit/s high-speed Ethernet interfaces are provided at the LAN side. The B593u-12 provides the switching function for local networking and sharing of broadband network when it is connected to terminal devices.

- AP function: An 802.11 b/g/n-compliant WLAN AP interface is provided, used for wireless networking at home. The interface is compliant with the IEEE802.11 b/g/n standard and the WPA-PSK /WPA2-PSK/WEP security authentication.
- DHCP/DNS: The DHCP server dynamically allocates IP addresses to PCs. The DNS server parses domain names.
- WEB management: You can configure, modify and query the configuration information of the B593u-12.
- IP route protocol and NAT: High-speed routing capability. With the built-in NAT, the B593u-12, together with LTE terminals, can provide flexible broadband access solutions and networking schemes.
- VoIP function: Voice over IP.
- Optional function: Print and Fax.

6 Technical References

6.1 Standards and Communication Protocols

6.1.1 Standards and Communication Protocols of the Products

Table 6-1 Standards and communication protocols of the DATACOM products

Item	Description
Physical layer	RFC894
ARP	RFC826
IP	RFC791, RFC1122, RFC1071, RFC1141, RFC1624, RFC792, RFC950, RFC1256
ICMP	RFC792, RFC950, RFC1256
TCP	RFC793
UDP	RFC768
DHCP	RFC1531, RFC1533
NAT	RFC1631

6.1.2 Standards and Communication Protocols of the Wireless Uu Interface

FDD-LTE R8 2009Q4

WCDMA/HSDPA R5

HSUPA R6

HSPA+ R7

DC-HSPA+ R8

GSM/GPRS/EGPRS R99

7 Packing List

Table 7-1 shows the devices and accessories of the B593u-12.

Table 7-1 Packing list

Description	Quantity	Remarks
B593u-12 CPE	1	Standard
Power Adapter	1	Standard
Quick Start Guide	1	Standard
1.5m Ethernet Cable	1	Standard
17cm USB Cable	1	Standard
External Antenna	2	Optional

A Acronyms and Abbreviations

Abbreviation	Full Spelling
AC	Alternating Current
ARP	Address Resolution Protocol
AP	Access Point
APN	Access Point Name
CPE	Customer Premises Equipment
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
DL	Down Link, Downlink
HLR	Home Location Register
IP	Internet Protocol
ICMP	Internet Control Message Protocol
LAN	Local Area Network
LED	Light Emitting Diode
LTE	The Fourth Generation
NAT	Network Address Translation
RTT	Radio Transmission Technology
SOHO	Small Office Home Office
SCP	Service Control Point
SDRAM	Synchronous Dynamic Random Access Memory
TKIP	Temporal Key Integrity Protocol
UMTS	Universal Mobile Telecommunications System
UL	Up Link, Uplink

Abbreviation	Full Spelling
WAN	Wide Area Network
Wi-Fi	Wireless Fidelity