

**HUAWEI B525s-23a LTE CPE**  
**V100R001**  
**Product Description**

**Issue**        02  
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# 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 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	Date	Details
01	2016-06-21	Initial official release.
02	2016-07-27	1.delete B20+ B20 2. revised” H side gain” 3.update B32 Efficiency 4. revised “WLAN 2.4GHz 2.402 GHz~ 2.472 GHz”

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# 1 Product Overview

The HUAWEI B525s-23a LTE CPE (B525s-23a for short) is a wireless gateway that integrates LTE and high-speed Ethernet uplink access, which provides users with flexible and diversified data access and voice services.

## NOTE

The frequency bands of the product are as follows.

### **B525s-23a support:**

- LTE: B1/3/7/8/20/32/38  
FDD: 2100 MHz/1800 MHz/2600 MHz/ 900 MHz/800 MHz/1500 MHz/  
TDD: 2600 MHz  
Intra-band contiguous: B3+B3, B7+B7, B38+B38  
Inter-band: B3+B7, B3+B20, B7+B20, B7+B8, B3+B8, B1+B20, B1+B8,  
B20+B32
- DC-HSPA+/HSPA+/HSPA/UMTS: Band 1/8 2100MHz/900MHz
- EDGE/GPRS/GSM: Band 2/3/5/8 1900MHz/1800MHz/850MHz/900MHz

The B525s-23a supports the following standards:

- LTE (Long Term Evolution)
- DC-HSPA+ (Dual Carrier High Speed Packet Access Plus)
- HSPA+ (High Speed Packet Access Plus)
- HSUPA (High Speed Uplink Packet Access)
- HSDPA (High Speed Downlink Packet Access)
- UMTS (Universal Mobile Telecommunications System)
- EDGE (Enhanced Data Rates for Global Evolution)
- GPRS (General Packet Radio Service)
- GSM (Global System for Mobile Communications)

The B525s-23a supports wired and wireless network access, and provides data routing service.

The B525s-23a provides the following services:

- Data service
- Voice service
- SMS
- Security service
- Local maintenance management function

**Figure 1-1** B525s-23a appearance



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# 2 Features

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The B525s-23a mainly supports the following features:

- Access to LTE wireless networks
- Access to Gigabit Ethernet networks
- High-speed data access
  - LTE FDD: DL 300 Mbit/s, UL 50 Mbit/s
  - LTE TDD: DL 220 Mbit/s, UL 10 Mbit/s
  - DC-HSPA+: DL 42 Mbit/s, UL 5.76 Mbit/s
  - HSPA+: DL 21 Mbit/s (64QAM) / 28 Mbit/s (MIMO), UL 5.76 Mbit/s
  - HSPA: DL 14.4 Mbit/s, UL 5.76 Mbit/s
  - WCDMA PS: 384 kbit/s
  - EDGE: DL 296 kbit/s, UL 236.8 kbit/s
  - GPRS: 85.6 kbit/s
- Complies with wireless 802.11b/g/n standards with data rates up to 300 Mbit/s
- Complies with wireless 802.11a/ac standards with data rates up to 1300 Mbit/s
- SMS
- IPv4 /IPv6 dual stack
- Compatibility with RJ11 telephone ports; can be set to Voice over Internet Protocol (VoIP) voice mode or Circuit Switch (CS) voice mode
- External LTE antenna port
- Support for HUAWEI HiLink App
- WPS 2.0
- HOTA updates
- Built-in DHCP Server, DNS RELAY and NAT
- Security services. Provides instant protection to block potential security risks and intrusion attempts
- Windows 7, Windows 8, Windows 8.1, Windows 10 (does not support Windows RT), MAC OS X 10.7, 10.8, 10.9 and 10.10 with latest upgrades
- User-friendly design of LED indicator. Easy to observe the status of equipment.

# 3 Technical Specifications

## 3.1 Hardware Specifications

**Table 3-1** Technical specifications of the B525s-23a main unit

Item	Description	
Technical standard	WAN	LTE/DC-HSPA+/HSPA+/HSPA/UMTS/EDGE/GPRS/GSM
	LAN	IEEE 802.3/802.3u
	WLAN	IEEE 802.11a/b/g/n/ac
Working frequency band	LTE	<b>B525s-23a support:</b> LTE: B1/3/7/8/20/32/38 FDD: 2100 MHz/1800 MHz/2600 MHz/900 MHz/800 MHz/1500 MHz/ TDD: 2600 MHz Intra-band contiguous: B3+B3, B7+B7, B38+B38 Inter-band: B3+B7, B3+B20, B7+B20, B7+B8, B3+B8, B1+B20, B1+B8, B20+B32
	DC-HSPA+/HSPA+/HSPA/UMTS	Band 1/8 2100 MHz /900 MHz
	EDGE/GPRS/GSM	Band 2/3/5/8 1900 MHz/1800 MHz/850 MHz/900 MHz
	WLAN	<ul style="list-style-type: none"> <li>• 2.4GHz 2.402 GHz~2.472 GHz</li> <li>• 5GHz 5.150GHz~5.350GHz &amp; 5.470GHz~5.725GHz</li> </ul>



Item	Description			
External port	<ul style="list-style-type: none"> <li>• One power adapter port</li> <li>• Three LAN port (RJ45)</li> <li>• One LAN/WAN port (RJ45)</li> <li>• One phone port (RJ11)</li> <li>• Two external LTE antenna ports (SMA-J1.5)</li> <li>• One micro-SIM card slot</li> <li>• One USB 2.0 port (Supports a maximum of 500mA current)</li> </ul>			
Antenna	<ul style="list-style-type: none"> <li>• Built-in LTE/UMTS/GSM primary antenna</li> <li>• Built-in LTE/UMTS secondary antenna</li> <li>• Built-in WLAN 2.4G antenna</li> <li>• Built-in WLAN 5G antenna</li> </ul>			
Indicator	<ul style="list-style-type: none"> <li>• One power indicator</li> <li>• One Internet status indicator</li> <li>• One WLAN/WPS indicator</li> <li>• One LAN indicator</li> <li>• One group of signal strength indicators</li> </ul>			
Button	<ul style="list-style-type: none"> <li>• One Power ON or OFF switch</li> <li>• One WPS button</li> <li>• One Reset button</li> </ul>			
Maximum transmit power	LTE	Conform to 3GPP Power Class 3 Definition		
	WLAN	2.4G	802.11b 16 dBm	
			802.11g 17 dBm	
			802.11n 17 dBm	
		5G	Low band 802.11a 17 dBm 802.11n 16 dBm 802.11ac 16 dBm	
			Middle band 802.11a 17 dBm 802.11n 16 dBm 802.11ac 16 dBm	
High band 802.11a 21 dBm 802.11n 21 dBm 802.11ac 21 dBm				

Item	Description		
Receiving sensitivity	LTE	Conform to 3GPP Definition	
	UMTS	Conform to 3GPP Definition	
	GSM	-104 dBm	
	WLAN	802.11a:	-71 dBm (54 Mbit/s)
		802.11b:	-85 dBm (11 Mbit/s)
		802.11g:	-71 dBm (54 Mbit/s)
		802.11n:	-69 dBm (65 Mbit/s)
802.11ac:		-65 dBm (78 Mbit/s)	
Power consumption	< 20W		
AC/DC power supply	<ul style="list-style-type: none"> <li>AC: 100 V - 240 V</li> <li>DC: 12 V/2 A</li> </ul>		
Dimensions (Maximum)	226mm × 163mm × 52mm		
Weight	About 370g (excluding the power adapter)		
Temperature	<ul style="list-style-type: none"> <li>Working temperature: 0°C to 40°C</li> <li>Storage temperature: -20°C to +70°C</li> </ul>		
Humidity	5% - 95%		

## 3.2 Antenna and Radio Frequency Specifications

**Table 3-2** LTE main diversity antenna specifications

Item	Description
Frequency	703 MHz~960 MHz /1452 MHz~1496 MHz /1710 MHz~2690 MHz
Input impedance	50 Ω
Standing wave ratio	< 3
Efficiency	≥ -4dB@703MHz~960MHz ≥ -4 dB@1452 MHz~1496 MHz
H side gain	≥ 1dBi
Polarization	Linear polarization

**Table 3-3** WLAN 2.4 GHz antenna specifications

Item	Description
Frequency	2.401 GHz~2.495 GHz
Input impedance	50 $\Omega$
Standing wave ratio	< 2
Efficiency	$\geq$ -3dB
H side gain	$\geq$ 1dBi
Polarization	Linear polarization

**Table 3-4** WLAN 5 GHz antenna specifications

Item	Description
Frequency	5.15-5.35GHz / 5.47-5.725GHz
Input impedance	50 $\Omega$
Standing wave ratio	<2
Efficiency	$\geq$ -3dB
H side gain	$\geq$ 1dBi
Polarization	Linear polarization

**Table 3-5** External antenna specifications

 **NOTE**

- The external antenna is an optional accessory. Signals may be weak in some areas; thus, you can choose whether to use the external antenna.
- The external antenna can be used indoor only. Put it near the window when using to get better signal.
- Avoid thunderstorms when using.

Item	Description
Technical standard	LTE/DC-HSPA+/HSPA+/HSPA/WCDMA/EDGE/GPRS/GSM
Frequency	<ul style="list-style-type: none"> <li>• 703 MHz - 960 MHz</li> <li>• 1452 MHz~1496 MHz</li> <li>• 1710 MHz - 2690 MHz</li> </ul>
Input impedance	50 $\Omega$
Standing wave ratio	< 3

Item	Description
H side gain	$\geq 3$ dBi (horizontal level)
Polarization	Linear polarization
Interface standard	SMA-J1.5

## 3.3 Software Specifications

**Table 3-6** Software specifications

Item	Description		
Gateway	Supports the default route: 0.0.0.0.		
	Supports the default gateway address: 192.168.8.1.		
	Supports the Address Resolution Protocol (ARP).		
	Supports the Internet Control Message Protocol (ICMP).		
	Supports the domain name service (DNS).		
	NAT	Supports NAT and Network Address and Port Translation (NAPT), which complies with RFC2663, RFC3022, and RFC3027.	
		Supports CONE NAT.	
		Supports fragmented message identification during common NAT.	
	DHCP server	Enables and disables the DHCP server.	
		Configures DHCP server address pools.	
Sets the lease time.			
VPN client	Support L2TP VPN client (When L2TP vpn client function is enabled, the throughput performance will slow down, the maximum speed can up to 50Mbps (dependent on network environment).)		
SMS	Writing/Sending/Receiving		
	Writing/Sending/Receiving extra-long messages		
Voice(optional)	VoIP	Supports the Session Initiation Protocol (SIP).	
		Supports G.711a/G.711u/G.726 (-24/-32)/G.722 for encoding and decoding.	
	CS voice	Supports CS voice communication over UMTS and GSM networks.	
		Supports the circuit switched fallback (CSFB).	
Firewall	Enables and disables the firewall.		
	Filters LAN MAC addresses.		
	Filters LAN IP addresses.		
	Filters URLs.		

Item	Description	
	Supports demilitarized zone (DMZ).	
	Supports Universal Plug and Play (UPnP).	
	Supports Application Level Gateway (ALG).	
WLAN	Broadcasts and hides service set identifiers (SSIDs).	
	Complies with IEEE 802.11 a/b/g/n/ac.	
	Supports WPS	
	Authentication	Supports OpenSystem authentication.
		Supports encryption using wired equivalent privacy (WEP), Wi-Fi protected access preshared key (WPA /WPA2-PSK), and WPA2-PSK authentication.
		Supports the Advanced Encryption Standard (AES) encryption algorithm.
		Supports the TKIP and AES hybrid encryption algorithm.
	MAC address authentication	Supports the MAC address authentication whitelist.
		Supports the MAC address authentication blacklist.
		Supports a maximum of 10 MAC address entries.
	Supports automatic transmission rate adjustment.	
Station management	Supports station status queries.	
	Supports a maximum of 32+32 connected stations.	
IPv6/IPv4 dual stack	DHCPv6/v4 server and client	
	DNSv6/v4 server and client	
	Display IPv6/v4 WAN address	
HUAWEI HiLink App	View the data traffic usage and SMS.	
	Manage the connected devices.	
	Change CPE's SSID and password.	
System requirements	Operating system: Windows 7, Windows 8, Windows 8.1, Windows 10 (does not support Windows RT), MAC OS X 10.7, 10.8, 10.9 and 10.10 with latest upgrades	
	Hardware configuration: meets the configuration requirements of the operating system.	

# 4 Services and Applications

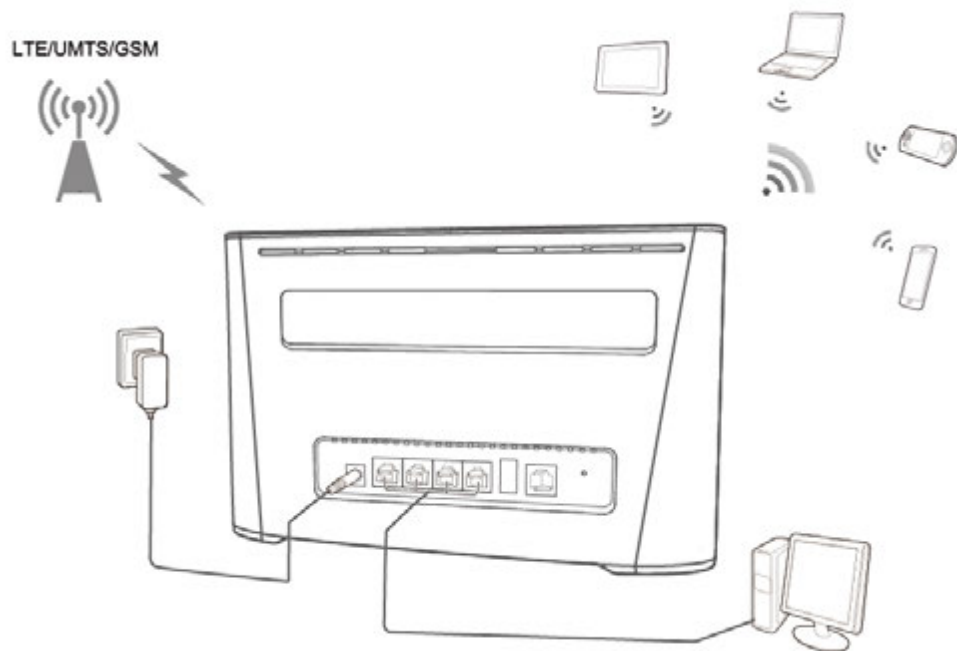
## 4.1 Data Services

The B525s-23a can access the Internet through mobile networks, and Ethernet networks. By connecting to the B525s-23a using Wi-Fi or a network cable, users can get access to high-speed Internet services and establish a local area network (LAN).

### 4.1.1 Accessing the Internet Through a Mobile Network (LTE/UMTS/GSM)

The B525s-23a can access the Internet through mobile networks.

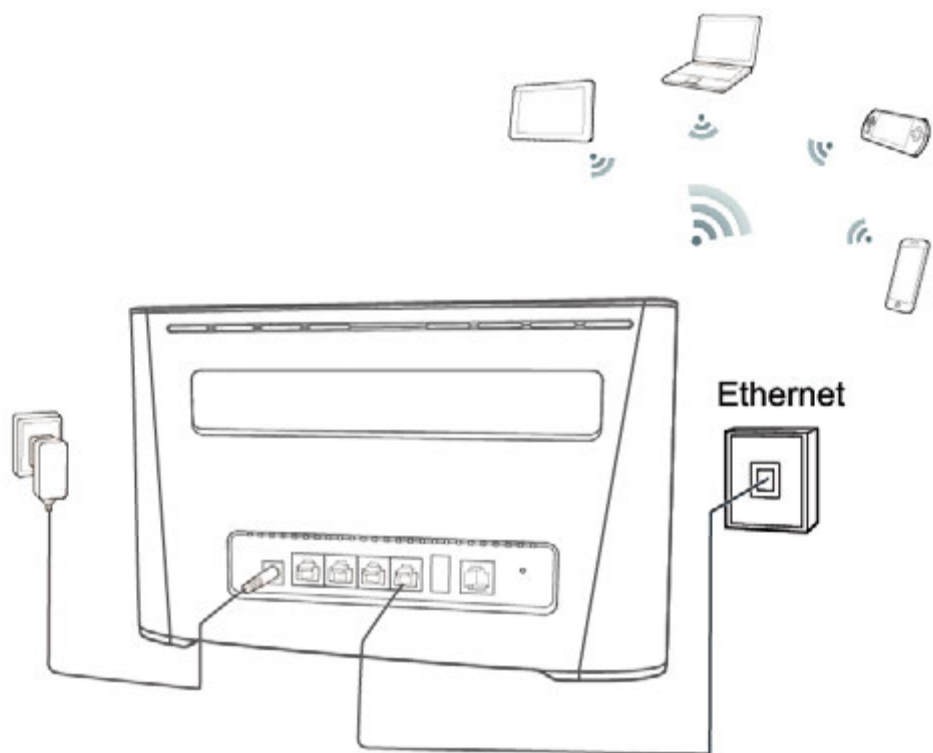
**Figure 4-1** Accessing the Internet through a mobile network



## 4.1.2 Accessing the Internet Through an Ethernet Network

Connect the B525s-23a's LAN/WAN port to a wall-mounted Ethernet port using a network cable.

**Figure 4-2** Accessing the Internet through an Ethernet network

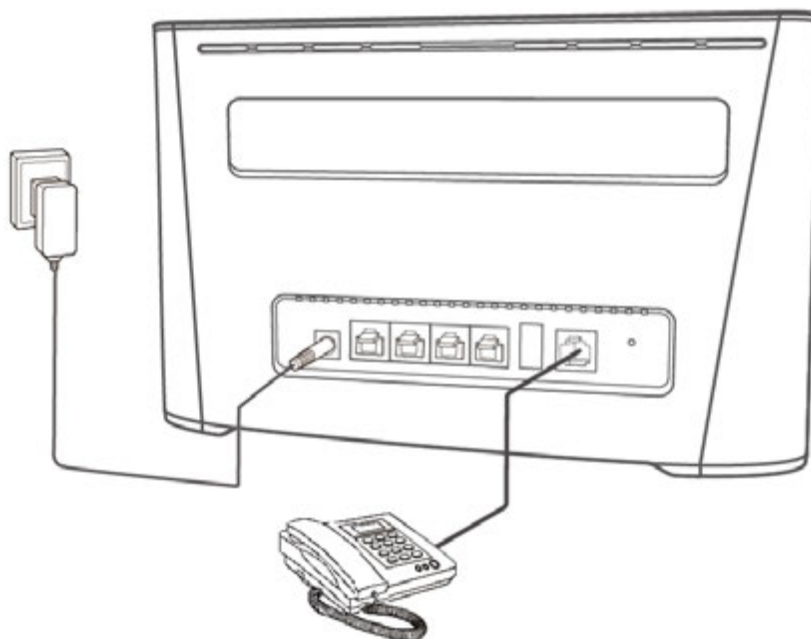


## 4.2 Voice Services

The B525s-23a provides one telephone port that can be connected to telephones for calling.



**Figure 4-3** Connecting telephones to the B525s-23a



## 4.3 SMS

The B525s-23a supports message writing/sending/receiving and group sending (up to 50 contacts at a time). You can manage messages through the Web page, such as inbox, outbox, draft.

## 4.4 Security Service

The B525s-23a supports various security features, such as the firewall, user authentication, and PIN protection, protect users against security threats from the Internet when users are using network services.

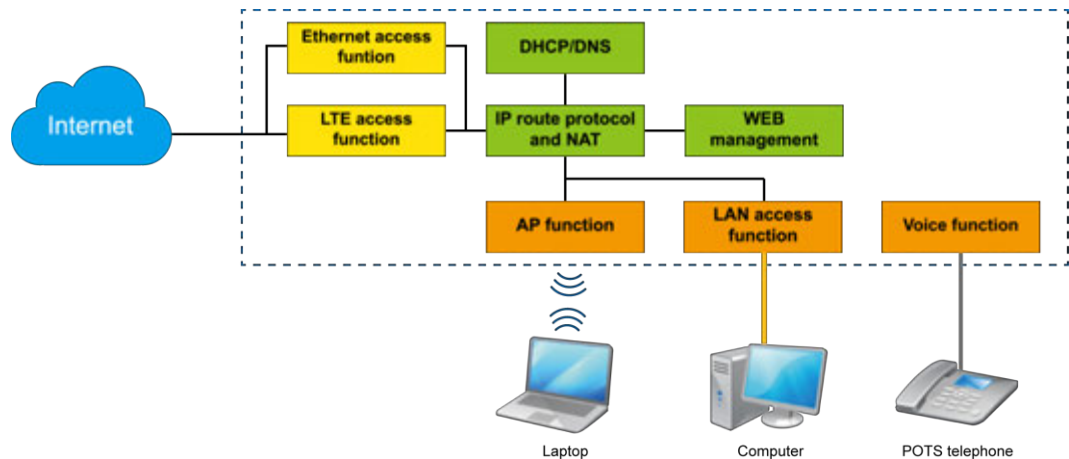
## 4.5 Local management and maintenance

The B525s-23a supports local configuration through the Web page. You can accomplish device management, network configuration and ensure normal and stable performance.

# 5 System Structure

## 5.1 System Architecture Diagram

Figure 5-1 System architecture



## 5.2 Functional Modules

- Mobile network access: The B525s-23a adopts the LTE/UMTS/GSM access technology at the WAN side, can access the wireless broadband packet-based.
- WLAN AP function: 802.11 a/b/g/n/ac compliant WLAN AP interface is provided, used for wireless networking at home. The interface is compliant with the IEEE 802.11 a/b/g/n/ac standard and the WPA/WPA2-PSK/WPA2-PSK/WEP security authentication.
- DHCP/DNS: The DHCP server dynamically allocates IP addresses to PCs. The DNS parses domain names.
- Web management: You can configure, modify and query the configuration information of the B525s-23a.
- Routing and NAT: High-speed routing capability. With the built-in NAT, the B525s-23a, together with wireless broadband packet-based network devices, can provide flexible broadband access solutions and networking schemes.

# 6 Packing List

**Table 6-1** Packing list

Description	Quantity	Remarks
Wireless Gateway	1	Standard
Power supply adapter	1	Standard
Quick Start	1	Standard
Ethernet cable	1	Standard
Warranty card	1	Optional
Phone cable	1	Optional

HUAWEI B525s-23a wireless gateway also provide external antenna as optional for you to choose.

# A Acronyms and Abbreviations

<b>A</b>	
AC	Alternating Current
ARP	Address Resolution Protocol
AP	Access Point
APN	Access Point Name
<b>C</b>	
CPE	Customer Premises Equipment
CS	Circuit Switch
CSFB	Circuit Switched Fallback
<b>D</b>	
DHCP	Dynamic Host Configuration Protocol
DL	Downlink
DNS	Domain Name Server
<b>G</b>	
GE	Gigabit Ethernet
<b>H</b>	
HSPA	High Speed Packet Access
HSPA+	High Speed Packet Access Plus
HSDPA	High Speed Downlink Packet Access
HSUPA	High Speed Uplink Packet Access
<b>I</b>	
IP	Internet Protocol
ICMP	Internet Control Message Protocol

<b>A</b>	
<b>L</b>	
LAN	Local Area Network
LED	Light Emitting Diode
LTE	Long Term Evolution
<b>M</b>	
MCS	Modulation and Coding Scheme
<b>N</b>	
NAT	Network Address Translation
<b>P</b>	
POTS	Plain Old Telephone Service
<b>T</b>	
TKIP	Temporal Key Integrity Protocol
<b>U</b>	
UMTS	Universal Mobile Telecommunications System
UL	Uplink
<b>V</b>	
VoIP	Voice over Internet Protocol
<b>W</b>	
WAN	Wide Area Network
WLAN	Wireless Local Area Network
WCDMA	Wideband Code Division Multiple Access
Wi-Fi	Wireless Fidelity