Product Description

HUAWEI E5785-320a Mobile WiFi
V100R001

Version	01
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Huawei Device Co., Ltd.

Address: No.2 of Xincheng Road Songshan Lake Zone Dongguan, Guangdong 523808
             People's Republic of China

Website: http://consumer.huawei.com/en/

Email: mobile@huawei.com

About This Document

Summary

This document introduces the major functions, supported services, and system architecture of the HUAWEI E5785-320a Mobile WiFi.

The following table lists the contents of this document.

Chapter	Details
1 Overview	Supported network modes, basic services and functions, and the appearance of the product
2 Features	Major features and technical specifications
3 Services and Applications	Supported services
4 System Architecture	System architecture
5 Packaging Box Items	Items contained in the packaging box
6 Appendix	Supported LTE bandwidths

History

Version	Details	Date
01	First release	2022-01-06

Contents

1 Overview

1.1 Introduction

HUAWEI E5785-320a Mobile WiFi (hereinafter referred to as the E5785-320a) is a high-speed packet access mobile hotspot. It is a multi-mode wireless terminal for SOHO (Small Office and Home Office) and business professionals.

It provides users with packet data services and SMS through multiple network modes. You can connect the micro USB port on the E5785-320a to a computer using a micro USB data cable, or connect multiple devices to the E5785-320a over Wi-Fi. In the service area of the network, the E5785-320a allows you to surf the Internet and send/receive messages/emails, providing you with a fast, reliable, and convenient user experience. It also helps carriers improve their average revenue per user (ARPU).

1.2 Optional Features

Optional features refer to features that are not supported on the standard version. These features can be customized according to carrier or customer requirements. The E5785-320a's optional features include the following:

- SIM lock

2 Features

2.1 Main Features

The E5785-320a features:

- LTE Category 7
- LTE FDD CA (DL) packet data service of up to 300 Mbps
- LTE FDD (DL) packet data service of up to 150 Mbps
- LTE FDD CA (UL) packet data service of up to 100 Mbps
- LTE FDD (UL) packet data service of up to 50 Mbps
- LTE TDD CA (DL) packet data service of up to 224 Mbps
- LTE TDD (DL) packet data service of up to 112 Mbps
- LTE TDD CA(UL) packet data service of up to 20 Mbps
- LTE TDD (UL) packet data service of up to 10 Mbps
- DC-HSPA+ (DL) packet data service of up to 42 Mbps
- HSUPA packet data service of up to 5.76 Mbps
- HSPA+ (DL) packet data service of up to 21 Mbps
- HSDPA (DL) packet data service of up to 14.4 Mbps
- UMTS (UL/DL) packet data service of up to 384 Kbps
- SMS based on LTE/UMTS
- Built-in LTE/UMTS and Wi-Fi/WLAN antenna
- 2.4 GHz and 5 GHz Wi-Fi
- LTE/3G/Wi-Fi auto offload
- Menu display
- Compatible with HUAWEI AI Life app
- Plug and Play
- IPv4v6 dual stack
- Built-in DHCP Server, DNS RELAY, and NAT

- Online software upgrade
- Traffic statistics
- WPS
- 1.45 inch LCD display
- Standard Micro USB port

2.2 Technical Specifications

2.2.1 Hardware

Table 2-1 lists the hardware specifications.

Table 2-1 Hardware specifications

Item	Specifications
Technical standard	WAN: LTE/DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS
	Wi-Fi/WLAN: IEEE 802.11a/b/g/n/ac
Operating frequency	LTE : B1/B3/B5/B7/B8/B18/B19/B20/B28/B32/B38/B40/B41/B42 UMTS: B1/B5/B8 LTE UL CA: Intra-Band continuous CA: 3C, 7C, 38C, 40C, 41C LTE DL CA: 1A-3A, 1A-5A, 1A-7A, 1A-8A, 1A-20A, 1A-28A, 3A-5A, 3A-7A, 3A-8A(B3 as PCC), 3A-20A, 3A-28A, 7A-8A(B7 as PCC), 7A-20A, 7A-28A, 8A-38A(B8 as PCC), 20A-32A(B20 as PCC), 20A-38A(B20 as PCC) Intra-Band continuous CA: 1C, 3C, 7C, 38C, 40C, 41C, 42C Intra-Band non-continuous CA: 41A-41A，3A-3A See **Appendix** for supported LTE channel bandwidths
	Wi-Fi/WLAN: 2.4 GHz AP: 5-13 STA: 5-13
	Wi-Fi/WLAN: 5 GHz AP: W52, W56 STA: W52, W53, W56

Item	Specifications	
Memory	RAM: 256MB DDR	
	ROM: 256MB NAND Flash	
Transmit power	LTE: Conforms to Power Class 3 Definition	
	WCDMA/HSPA/HSPA+: Conforms to Power Class 3 Definition	
	Wi-Fi/WLAN 2.4 GHz	802.11b: 14dBm@SISO
		802.11g 6M: 16dBm@SISO
		802.11g 54M: 15.5dBm@SISO
		802.11n MCS0: 16dBm (20MHz) @SISO
		802.11n MCS7: 14.5 dBm (20MHz) @SISO
		802.11n MCS0: 16dBm (40MHz) @SISO
		802.11n MCS7: 14.5 dBm (40MHz) @SISO
	Wi-Fi/WLAN 5 GHz	802.11a 6M: 14.5dBm @SISO
		802.11a 54M: 14.5dBm @SISO
		802.11n MCS0: 14.5dBm(20MHz) 15dBm(40MHz) @SISO
		802.11n MCS7: 14dBm (20/40MHz) @SISO
		802.11ac MCS0: 14.5 dBm (20MHz) 15 dBm (40/80MHz) @SISO
		802.11ac MCS8: 13 dBm (20/40MHz) @SISO
		802.11ac MCS9: 12.5 dBm (80MHz) @SISO
	Note: The value above represents a typical transmit power in Wi-Fi/WLAN mode, and may vary slightly by device.	
Receiver sensitivity	LTE: Conforms to 3GPP	
	WCDMA/HSPA/HSPA+: Conforms to 3GPP	
	Wi-Fi/WLAN 2.4 GHz	802.11b: -87.5dBm@11Mbps
		802.11g: -74dBm@54Mbps
		802.11n20M: -72dBm@mcs7
		802.11n40M: -69dBm@mcs7
	Wi-Fi/WLAN	802.11a: -77dBm@54Mbps

Item	Specifications	
	5 GHz	802.11n 20M: -75.5dBm@mcs7
		802.11n 40M: -72.5dBm@mcs7
		802.11ac 20M: -71dBm@mcs8
		802.11ac 40M: -66.5dBm@mcs9
		802.11ac 80M: -63dBm@mcs9
Wi-Fi/WLAN MIMO	2*2 MIMO	
Wi-Fi/WLAN speed	802.11a: Up to 54 Mbps	
	802.11b: Up to 11 Mbps	
	802.11g: Up to 54 Mbps	

	802.11n:	HT20: Supports MCS0–MCS7; Up to 72.2 Mbps.
		          Supports MCS8–MCS15; Up to 144.4 Mbps.
		HT40: Supports MCS0–MCS7; Up to 150 Mbps.
		          Supports MCS8–MCS15; Up to 300 Mbps.

	802.11ac: Up to 867 Mbps	
Power consumption	<4.5W	
Charger (Optional)	AC: 100–240 V	
	DC: 5 V, 2 A	
Battery	Type: Rechargeable lithium battery (removable)	
	Capacity: 3.8 V, 3000 mAh	
	Maximum working hours: 12 (depending on the network)	
	Maximum standby hours: 700 (depending on the network)	
External ports	Micro USB port	
	Micro-SIM card slot (3FF)	
Display	1.45 inch LCD display	
Buttons	Power button, RESET button, MENU button	
Antenna	Built-in LTE/UMTS main antenna	

Item	Specifications
	Built-in LTE/UMTS diversity antenna
	Built-in Wi-Fi/WLAN antenna
Dimensions (W × D × H)	108 mm x 62 mm x 17.1 mm
Weight	Approximately 127 g (including the battery)
Temperature	Operating temperature: 0°C to 35°C
	Storage temperature: −20°C to +60°C
Humidity	5% to 95% (non-condensing)

2.2.2 Software

Table 2-2 lists the software specifications.

Table 2-2 software specifications

Item	Description
SMS	· Write/send/receive short messages · Send/receive extra-long messages · Storage: Up to 500 messages can be saved in the internal memory of the E5785-320a
Network connection setup	· Create, delete, or edit APN · Set up network connection
Maximum number of Wi-Fi users connected at the same time	· When only the 2.4 GHZ or 5 GHz Wi-Fi network is enabled, the E5785-320a supports the connection of up to 32 wireless devices at the same time
Wi-Fi/WLAN setup	· SSID broadcasting and hiding · None (Open), WPA2-PSK, and WPA/WPA2-PSK encryption · Automatic adjustment of Wi-Fi speed · Display STA status · Turn off Wi-Fi automatically · MAC address filtering · Guest SSID
Firewall setup	· Enable and disable firewall · LAN IP Filtering · Virtual Server · DMZ · UPnP
NAT setup	· CONE NAT · Symmetric NAT · ALG
DHCP setup	· Enable and disable DHCP server · Configure DHCP server address pool · Set DHCP lease time
LTE/3G/Wi-Fi auto offload (Wi-Fi Extender)	· Access WAN via LTE/3G/Wi-Fi

| Item	Description
IPv4v6 dual stack	· DHCPv4v6 server and client · DNSv4v6 server and client · Display IPv4v6 WAN address
Others	Network connection settings: Automatic/manual network selection and registration
	Display network status including signal strength, carrier name, system mode, and so on
	Select network mode
	PIN management: activate/deactivate PIN, verify PIN/PUK, and modify PIN
System requirements	· Windows 7, Windows 8, Windows 8.1, Windows 10 (excluding Windows RT), MAC OS X 10.12, 10.13, 10.14, 10.15, 11.0 and 12.0 · Your computer should also meet the recommended hardware requirements for the operating system installed

3 Services and Applications

3.1 Data Service

3.1.1 Wireless Modem

The E5785-320a can be used as a wireless modem when the Wi-Fi is enabled. You can directly use the default settings (or configure APN on the E5785-320a's web-based management page) to set up a wireless network, after which you will be able to access the Internet.

Figure 3-1 Multi-device access via Wi-Fi and micro USB port at the same time
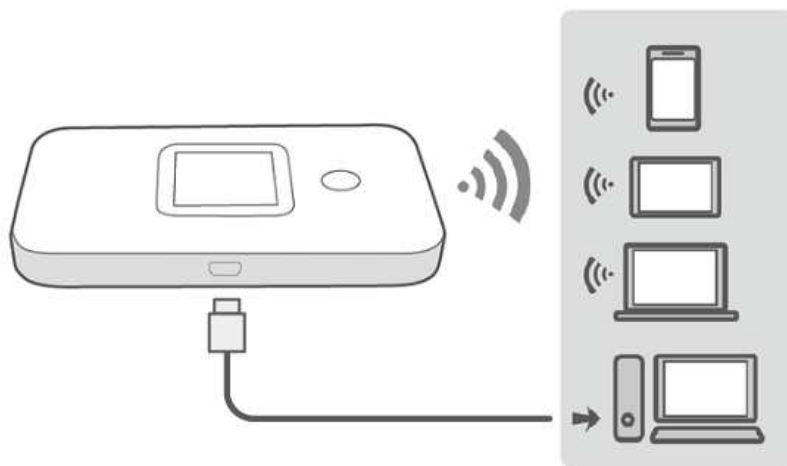
3.1.2 USB Modem

After you connect the E5785-320a and a PC with a USB data cable, enter the IP address in the browser address bar to log in to the E5785-320a's web-based management page. You can directly use the default APN settings (or configure the APN on the page) to set up a network connection, after which you can access the Internet.

Figure 3-2 One-device access via micro USB port
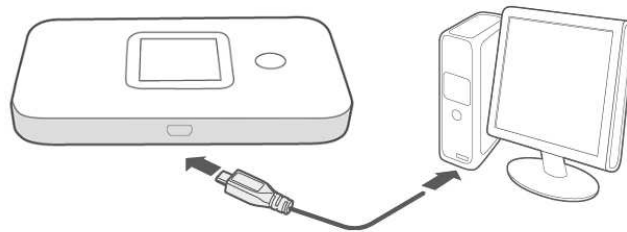
3.1.3 LTE/3G/Wi-Fi Auto Offload

The E5785-320a allows you to access the Internet via LTE, 3G or Wi-Fi. When you are using the E5785-320a in areas with a Wi-Fi hotspot, for example, an airport, a cafe, a hotel, or your home, the E5785-320a switches to the Wi-Fi network automatically to save your LTE/3G network data usage.

Figure 3-3 LTE/3G/Wi-Fi auto offload
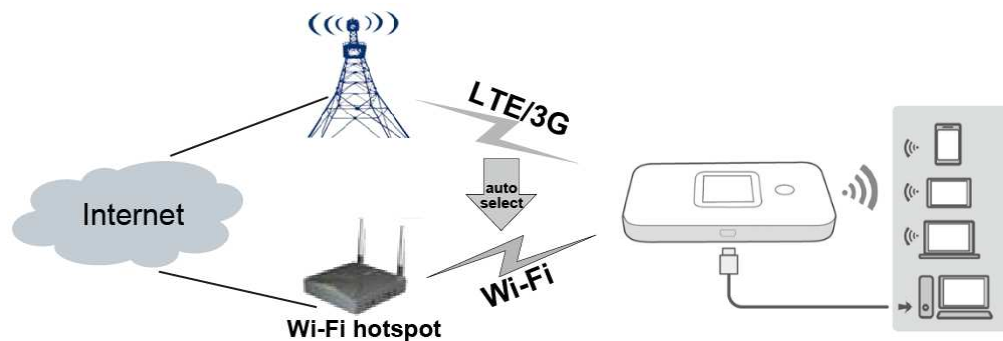
3.2 SMS

The E5785-320a supports message writing/sending/receiving. You can manage messages in the Inbox, Outbox, and Drafts on the E5785-320a's web-based management page.

3.3 Menu Display

The E5785-320a supports menu display in multiple languages. Press the MENU button to enter the menu. Continue to press the MENU button to select a menu and press the Power button to confirm your selection. You can view menu information or configure settings such as:

• LTE/3G/Wi-Fi auto offload

• WPS

Figure 3-4 shows the menu screen (your actual screen may vary).
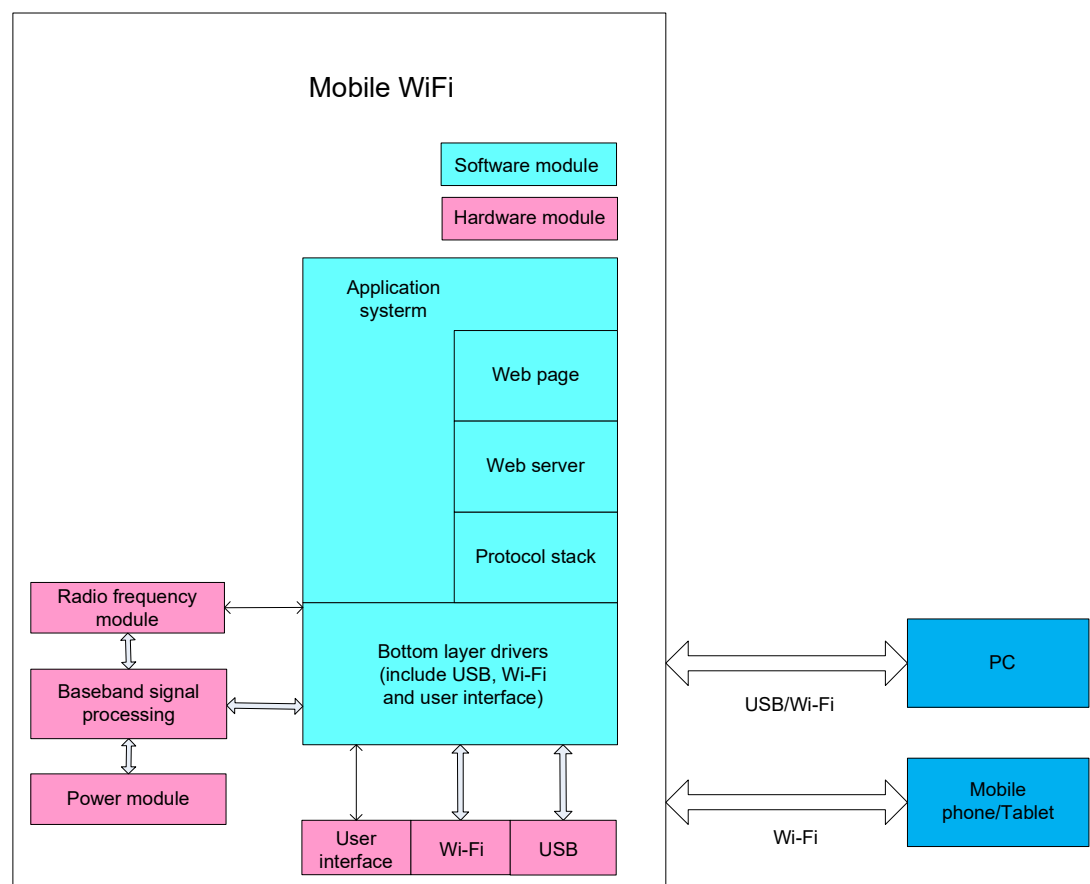
Figure 3-4 Menu
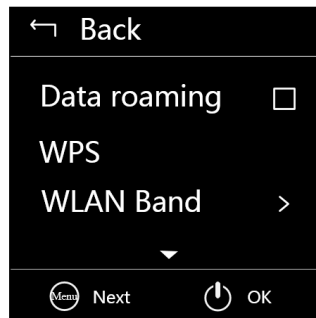
4 System Architecture

4.1 System Architecture

Figure 4-1 shows the system architecture of the E5785-320a

Figure 4-1 System architecture of the E5785-320a

4.2 Functional Modules

1. **Radio frequency module**: Sends/receives radio signals and modulates/demodulates radio signals and baseband signals.

2. **Baseband signal processing module**: Processes LTE FDD/LTE TDD/DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS baseband signals, including:

   - Modulating/demodulating LTE FDD/LTE TDD/DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS baseband signals

   - Encoding/decoding LTE FDD/LTE TDD/DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS channels

3. **Bottom layer driver**: Drives peripherals, including USB devices, Wi-Fi devices, display screen, buttons and SIM cards.

4. **Protocol stack system**: Processes protocols of LTE FDD/LTE TDD/DC-HSPA+/HSPA+/HSUPA/HSDPA/UMTS and TCP/IP.

5. **Application system:** Provides SMS, PS domain service, Wi-Fi configuration, network service, web service and web-based management page. Users can configure system settings on the web-based management page.

6. **User interface:** Provides man-machine interaction, including a display screen and buttons.

5 Packaging Box Items

This chapter describes the items contained in the packaging box of the E5785-320a.

Table 5-1 lists the items contained in the packaging box of the E5785-320a.

Table 5-1 Packaging box items of the E5785-320a

Item	Quantity	Remarks
Mobile WiFi	1	Standard
Rechargeable battery (removable)	1	Standard
USB Cable	1	Standard
Quick Start Guide (Including safety information)	1	Standard
Charger	1	Optional
Warranty Card	1	Optional

6 Appendix

Table 6-1 Shows the LTE bandwidths supported by the E5785-320a.

Band	Bandwidth					
	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
1			√	√	√	√
3	√	√	√	√	√	√
5	√	√	√	√		
7			√	√	√	√
8	√	√	√	√		
18			√	√	√	
19			√	√	√	
20			√	√	√	√
28		√	√	√	√	√
32			√	√	√	√
38			√	√	√	√
40			√	√	√	√
41			√	√	√	√
42			√	√	√	√

7 Acronyms and Abbreviations

Numerics

3G	The Third Generation

A

AES	Advanced Encryption Standard
ALG	Application Level Gateway
APN	Access Point Name
ARPU	Average Revenue Per User
ASCII	American Standard Code for Information Interchange

D

DHCP	Dynamic Host Configuration Protocol
DMZ	Demilitarized Zone
DNS	Domain Name Server

E

EDGE	Enhanced Data Rates for GSM Evolution

F

FDD	Frequency Division Duplex

G

GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications

H

HSPA+	High Speed Packet Access Plus
HSUPA	High Speed Uplink Packet Access
HSDPA	High Speed Downlink Packet Access

I

IEEE   Institute of Electrical and Electronics Engineers

IP   Internet Protocol

L

LCD   Liquid Crystal Display

LTE   Long Term Evolution

M

MAC   Medium Access Control

Modem   Modulator Demodulator

N

NAT   Network Address Translation

O

OS   Operating System

P

PC   Personal Computer

PIN   Personal Identification Number

PnP   Plug and Play

PS   Packet Switched

PUK   PIN unblocking key

S

SIM   Subscriber Identity Module

SMS   Short Messaging Service

SOHO   Small Office Home Office

SSID   Service Set Identifier

T

TDD   Time Division Duplex

TFT   Thin Film Transistor

U

UMTS   Universal Mobile Telecommunications System

UPnP   Universal Plug and Play

USB	Universal Serial Bus
V	
VPN	Virtual Private Network
W	
WAN	Wireless Area Network
WEP	Wired Equivalent Privacy
Wi-Fi	Wireless Fidelity
WLAN	Wireless Local Area Network
WPA	Wi-Fi Protected Access