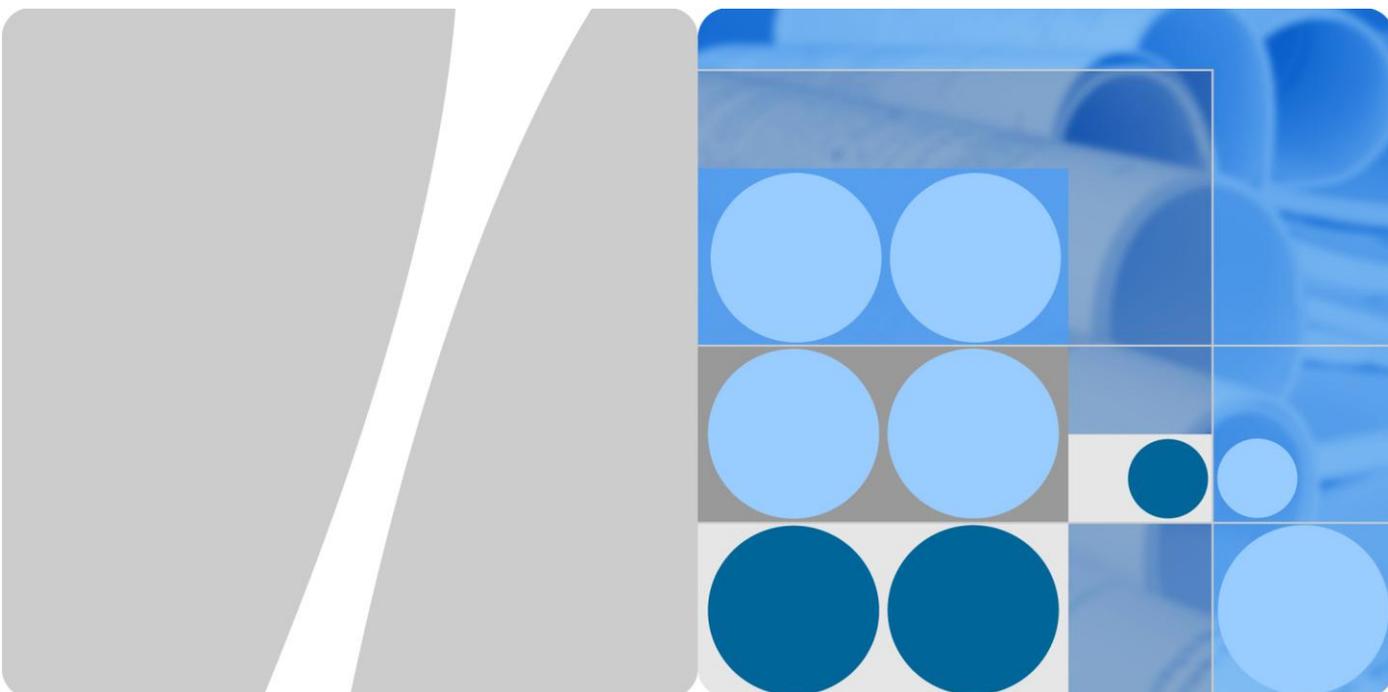


Product Description



HUAWEI E5786s-32a Mobile WiFi
V200R001

Issue 03
Date 2014-04-30

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About This Document

Summary

This document provides information about the major functions, supported services and system architecture.

The following table lists the contents of this document.

Chapter	Details
1 Overview	The supported network modes, basic services and functions, and the appearance of the product.
2 Features	The supported features and technical specifications of the product.
3 Services and Applications	The services and applications of the product.
4 System Architecture	The architecture of the product.
5 Packing List	The items contained in the package of the product.

History

Issue	Details	Date
01	First release.	2014-03-07
02	<ul style="list-style-type: none">● Change “Standard 6-pin SIM card interface” to “Standard Micro 6-pin SIM card interface”;● Modify the Weight from “< 150 g (including the battery)” to “about 145 g (including the battery)”.	2014-04-08
03	<ul style="list-style-type: none">● Change “256 MB NAND flash” to “128 MB NAND flash”.● Add the description about AF18.	2014-04-30

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1 Overview

1.1 Brief Introduction

HUAWEI E5786s-32a Mobile WiFi (hereinafter referred to as the E5786s-32a) 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.

The E5786s-32a supports the following standards:

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

The E5786s-32a provides the following services:

- LTE CA packet data service
- LTE packet data service
- DC-HSPA+ packet data service
- HSPA+ packet data service
- HSPA/UMTS packet data service
- EDGE/GPRS packet data service
- Short Message Service (SMS)

You can connect the E5786s-32a with the USB interface of a computer, or connect the E5786s-32a with the Wi-Fi. In the service area of the LTE/DC-HSPA+/HSPA+/HSPA/UMTS or EDGE/GPRS/GSM network, you can surf the Internet and send/receive messages/emails cordlessly. The E5786s-32a is fast, reliable, and easy to operate. Thus, mobile users can experience many new features and services with the E5786s-32a. These features and services will enable a large number

of users to use the E5786s-32a and the average revenue per user (ARPU) of operators will increase substantially.

Figure 1-1 shows the profile of the E5786s-32a.

Figure 1-1 E5786s-32a profile



1.2 Optional Features

Optional features refer to features that are not supported by the standard version or are disabled by default. These features can be customized according to operator or customer requirements. The E5786s-32a's optional features are as follows:

IPv6/IPv4 dual stack (optional)

2 Features

2.1 Main Features

The E5786s-32a mainly supports the following features:

- LTE FDD CA (DL) data service of up to 300 Mbit/s
- LTE FDD (DL) data service of up to 150 Mbit/s
- LTE FDD (UL) data service of up to 50 Mbit/s
- LTE TDD CA (DL) data service of up to 224 Mbit/s
- LTE TDD (DL) data service of up to 112 Mbit/s
- LTE TDD (UL) data service of up to 20 Mbit/s
- DC-HSPA+ (DL) data service of up to 43.2 Mbit/s
- HSPA+ (DL) data service of up to 21.6 Mbit/s
- HSDPA (DL) data service of up to 14.4 Mbit/s
- HSUPA (UL) data service of up to 5.76 Mbit/s
- UMTS data service of up to 384 kbit/s
- EDGE data service of up to 236.8 kbit/s
- GPRS data service of up to 85.6 kbit/s
- PS domain data service based on LTE/UMTS/GSM
- SMS based on UMTS and GSM
- Built-in LTE/UMTS/GSM and WLAN high gain antenna
- Micro Secure Digital Memory (microSD) Card
- SIM lock
- Dynamic frequency selection (DFS) for 5 GHz Wi-Fi
- Wi-Fi and WPS
- Menu-style LCD UI
- Five-second fast boot
- LTE/3G/Wi-Fi auto offload
- Support for USB-to-Ethernet conversion with the AF18 conversion cable
- Supply power to devices
- Press and Play
- IPv6/IPv4 dual stack (optional)

- Display current SSID and Wi-Fi key on the screen
- Built-in DHCP Server, DNS RELAY and NAT
- Online software upgrade
- Traffic statistic
- Standard Micro USB interface
- TFT-LCD screen
- Windows XP SP3, Windows Vista SP1/SP2, Windows 7, Windows 8, Windows 8.1 (does not support Windows RT), MAC OS X 10.7, 10.8 and 10.9 with latest upgrades

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+/HSPA/UMTS/EDGE/GPRS/GSM	
	WLAN: IEEE 802.11a/b/g/n/ac	
Operating frequency	LTE CA: <ul style="list-style-type: none"> • FDD 2600 MHz + 1800 MHz/1800 MHz + 800 MHz/2600 MHz + 800 MHz /2600 MHz intra-band contiguous/2100 MHz intra-band contiguous/1800 MHz intra-band contiguous • TDD 2600 MHz intra-band contiguous 	
	LTE: <ul style="list-style-type: none"> • FDD 2600/2100/1800/900/850/800 MHz • TDD 2600 MHz 	
	DC-HSPA+/HSPA+/HSPA/UMTS: 2100/1900/900/850 MHz	
	EDGE/GPRS/GSM: 1900/1800/900/850 MHz	
	WLAN: 2.4 GHz, 5 GHz	
Internal memory	128 MB NAND flash and 128 MB DDR SDRAM	
Maximum transmitter power	LTE: Conform to Power Class 3 Definition	
	UMTS: Conform to Power Class 3 Definition	
	WLAN	802.11a: 10 dBm
		802.11b: 12 dBm
	802.11g: 11 dBm	
	802.11n: 10 dBm (2.4 GHz); 10 dBm (5 GHz)	

Item	Specifications	
	802.11ac: 10 dBm	
Receiver sensitivity	LTE: Confirm to 3GPP Requirements	
	UMTS: Confirm to 3GPP Requirements	
	WLAN	802.11a: -65 dBm@54 Mbit/s
		802.11b: -76 dBm@11 Mbit/s
		802.11g: -65 dBm@54 Mbit/s
		802.11n: -64 dBm@65 Mbit/s
802.11ac: -64 dBm@65 Mbit/s		
WLAN speed	802.11a: Up to 54 Mbit/s	
	802.11b: Up to 11 Mbit/s	
	802.11g: Up to 54 Mbit/s	
	802.11n	HT20: Support MCS0–MCS7; Up to 72.2 Mbit/s. Support MCS8–MCS15; Up to 144.4 Mbit/s. HT40: Support MCS0–MCS7; Up to 150 Mbit/s. Support MCS8–MCS15; Up to 300 Mbit/s.
	802.11ac: Up to 867 Mbit/s	
Maximum power consumption	4 W	
Power supply	AC: 100–240 V	
	DC: 5 V, 2 A	
Battery	Type: Li (rechargeable and irremovable)	
	Capacity: 3.7 V, 3000 mAh	
	Maximum working time: 10 hours (depending on the network)	
	Maximum standby time: 500 hours (depending on the network)	
External interfaces	Micro USB interface (supports USB 3.0; to be used with Huawei USB cables when available)	
	Standard microSD card interface	
	Standard Micro 6-pin SIM card interface	
	External main diversity antenna interface	
Screen	TFT-LCD	

Item	Specifications
key-press	Power switch, MENU switch, Reset switch
Antenna	Built-in LTE/UMTS/GSM main antenna
	Built-in LTE/UMTS diversity antenna
	Built-in WLAN antenna
Dimensions (W × D × H)	106.0 mm × 66.0 mm × 15.9 mm
Weight	about 145 g (including the battery)
Temperature	Operating: 0°C to +35°C
	Storage: -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	<ul style="list-style-type: none"> • Writing/Sending/Receiving • Sending/Receiving extra-long messages • Storage: Up to 500 messages can be saved in the internal memory of the E5786s-32a. • New message prompt
Network connection setup	<ul style="list-style-type: none"> • APN management: create, delete and edit • Set up network connection
WLAN setup	<ul style="list-style-type: none"> • SSID broadcasting and hiding • Open system and shared key authentication • ASCII and HEX keys • 64/128-bit WEP encryption • 256-bit WPA2-PSK encryption • WPA2-PSK integrated encryption • AES encryption algorithm • TKIP and AES integrated encryption algorithm • Automatic adjustment of ratios • Display STA status • Turn off Wi-Fi automatically • WLAN MAC filter

Item	Description
Firewall setup	<ul style="list-style-type: none"> • Firewall Switch • LAN IP Filter • Virtual Server • ACL Service • DMZ Service • UPnP Service
NAT setup	<ul style="list-style-type: none"> • CONE NAT • Symmetric NAT • ALG • VPN passthrough
DHCP setup	<ul style="list-style-type: none"> • DHCP server enabling and disabling • Address pool of the DHCP server setup • DHCP lease time setup
Software installation	Automatic installation (Plug and Play)
LTE/3G/Wi-Fi auto offload	<ul style="list-style-type: none"> • Accessing to WAN via LTE/3G or Wi-Fi • Automatic offload between LTE/3G and Wi-Fi
IPv6/IPv4 dual stack (optional)	<ul style="list-style-type: none"> • DHCPv6/v4 server and client • DNSv6/v4 server and client • Display IPv6/v4 WAN address
Other	Network connection settings: <ul style="list-style-type: none"> • Automatic network selection and registration • Manual network selection and registration
	Network status display: signal, operator name, system mode, and so on.
	Selection of network connection types, for example: <ul style="list-style-type: none"> • LTE Only • 3G Only • Auto
	PIN management: activate/deactivate PIN, PIN lock, changing PIN, unblocking by using the PUK.
System requirement	<ul style="list-style-type: none"> • Windows XP SP3, Windows Vista SP1/SP2, Windows 7, Windows 8, Windows 8.1 (does not support Windows RT) • Mac OS X 10.7, 10.8 and 10.9 with latest upgrades • Your computer's hardware system should meet or exceed the recommended system requirements for the installed version of OS

3 Services and Applications

3.1 Data Service

3.1.1 Accessing the Internet Using an LTE, 3G, or 2G Network

Functioning as a Wireless Modem

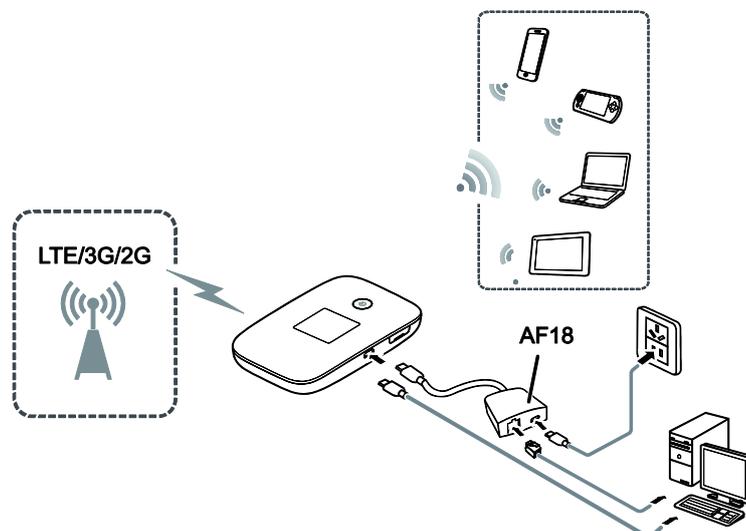
The E5786s-32a can be used as a wireless modem when the Wi-Fi is enabled. You can directly use the default settings (or configure APN on the E5786s-32a Web page) and set up a wireless network connection. Then you can access the Internet.

A maximum of ten wireless users can access the E5786s-32a at the same time. You can set up the WLAN with the access point (AP) function.

Functioning as a USB Modem

After you connect the E5786s-32a and PC with a USB data cable or AF18, you can directly use the default settings (or configure APN on the E5786s-32a Web page) and set up a network connection. Then you can send or receive E-mail, access the network through wireless connection, and download files through wireless data channels.

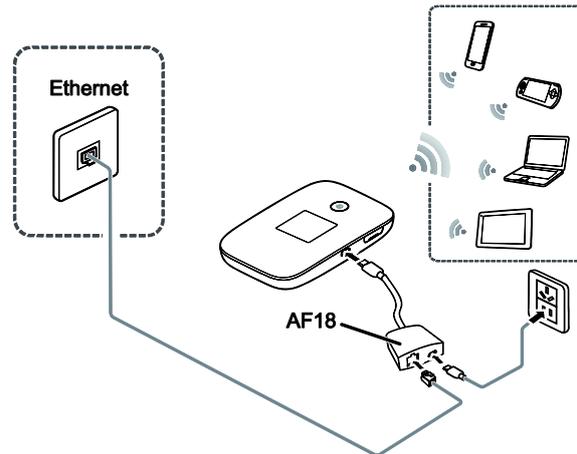
Figure 3-1 Multi-device access via Wi-Fi and USB/AF18 at the same time



3.1.2 Accessing the Internet Using Ethernet

Connect the Mobile Wi-Fi to AF18, and then connect the AF18's network port to the Ethernet port using a network cable. E5786s-32a supports automatic identification of the WAN/LAN port in access mode, and automatic selection of accessing manners of ADSL domestic wideband, DHCP hotel wideband or static IP wideband. You can easily access the Internet using the Ethernet to save your LTE/3G/2G network flow and fee.

Figure 3-2 E5786s-32a access via AF18

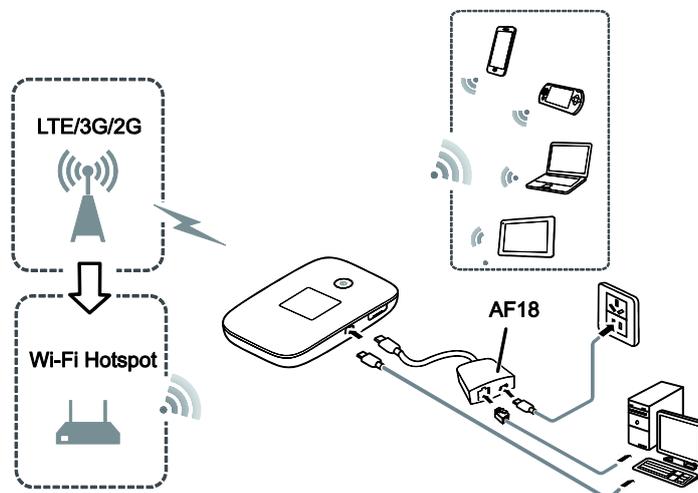


3.1.3 LTE/3G/Wi-Fi Auto Offload

The E5786s-32a allows you to access the Internet via LTE/3G or Wi-Fi. When you are using the E5786s-32a in areas with a Wi-Fi hotspot, for example, an airport, a cafe, a hotel, or your home, the E5786s-32a switches to Wi-Fi connection automatically, saving your LTE/3G network traffic fees.

After the function is enabled, a maximum of nine wireless users can access the E5786s-32a at the same time.

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



3.2 SMS

The E5786s-32a supports message writing/sending/receiving. You can manage messages through the Web page, such as an inbox, an outbox and a draft.

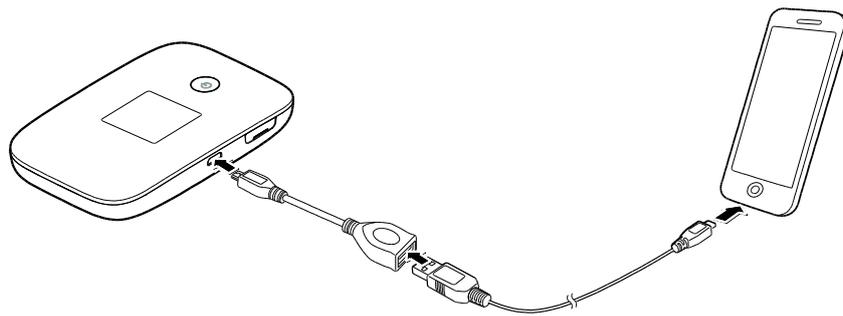
3.3 Sharing Data Stored on the microSD card

After the microSD card is inserted, you can store data on the card or use the Web management page to share data stored on the card.

3.4 Supplying power to devices

You can connect the Mobile WiFi that supports the function of acting as a charger to power supply cable to supply power to a mobile phone, music player, or Bluetooth headset.

Figure 3-1 Charging other device using the power supply cable

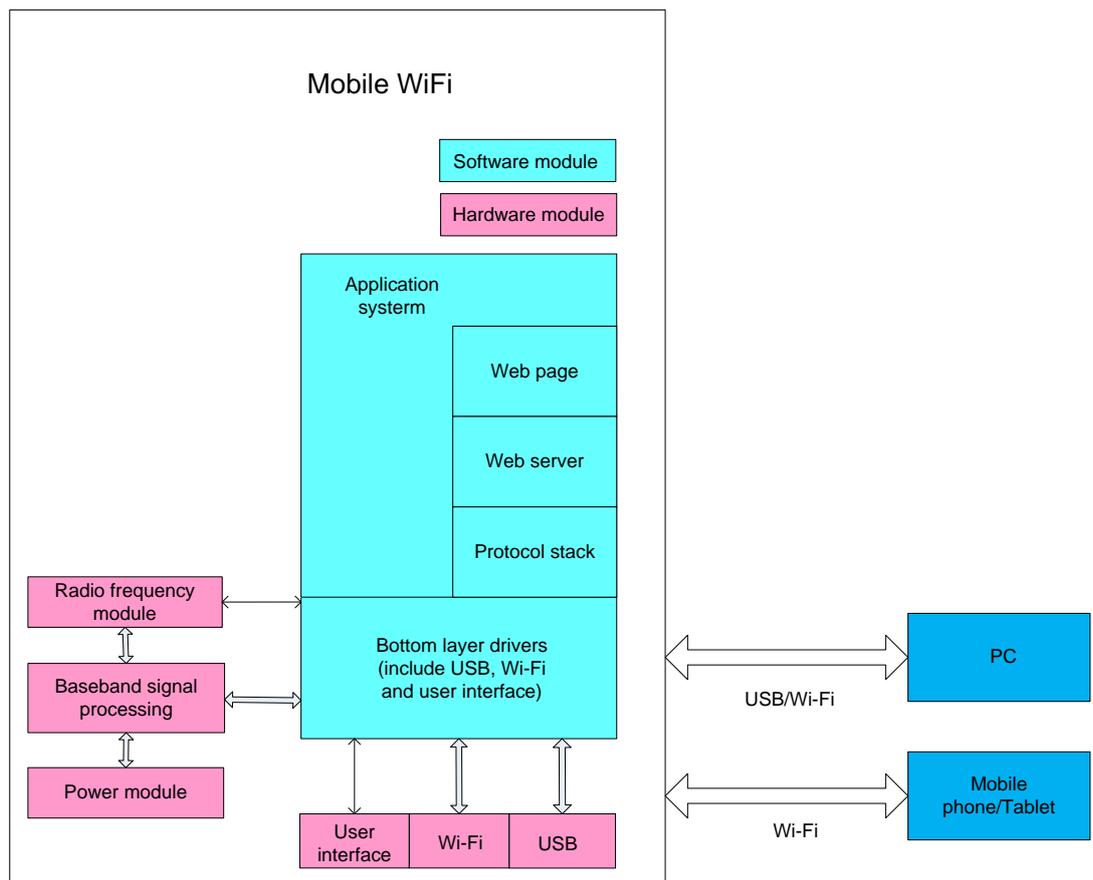


4 System Architecture

4.1 System Architecture

Figure 4-1 shows the system architecture.

Figure 4-1 System architecture



4.2 Functional Modules

1. **Radio frequency module:** It sends/receives radio signals and modulates/demodulates the radio frequency (RF) signals and baseband signals
2. **Baseband signal processing:** It processes LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM baseband digital signals, including:
 - Modulating/Demodulating LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM baseband signals
 - Encoding/Decoding LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM channel
3. **Bottom layer driver:** It drives peripherals, including a USB device, Wi-Fi devices, a screen, buttons, a SIM card and a microSD card.
4. **Protocol stack system:** It processes protocols of LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM and TCP/IP.
5. **Application system:** It provides management system, including SMS, PS domain service, Wi-Fi configuration, network service, Web service and Web page. The user can set management parameters by Web page.
6. **User interface:** It provides human-computer interaction, including a screen and buttons.

5 Packing List

This chapter describes the items contained in the package of the E5786s-32a.

Table 5-1 lists the items contained in the package of the E5786s-32a.

Table 5-1 Packing list of the E5786s-32a

Item	Quantity	Remarks
Mobile WiFi	1	Standard
Rechargeable Battery (irremovable, 3000 mAh)	1	Standard
USB 3.0 Cable (1 m)	1	Standard
Charger	1	Standard
Quick Start	1	Standard
Safety Information	1	Standard
Power Supply Cable	1	Optional
AF18	1	Optional
Warranty Card	1	Optional

A Acronyms and Abbreviations

3G	The Third Generation
ACL	access control list
AES	Advanced Encryption Standard
ALG	application level gateway
APN	access point name
ARPU	average revenue per user
ASCII	American Standard Code for Information Interchange
CA	carrier aggregation
DC-HSPA+	Dual Carrier High Speed Packet Access Plus
DHCP	Dynamic Host Configuration Protocol
DMZ	demilitarized zone
DNS	Domain Name Server
EDGE	Enhanced Data Rates for GSM Evolution
FDD	frequency division duplex
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HSPA+	High Speed Packet Access Plus
HSUPA	High Speed Uplink Packet Access
HSDPA	High Speed Downlink Packet Access
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
LCD	Liquid Crystal Display
LTE	Long Term Evolution

MAC	Medium Access Control
Modem	Modulator Demodulator
NAT	Network Address Translation
OS	Operating System
PC	personal computer
PIN	personal identification number
PnP	Plug and Play
PS	packet switched
PUK	PIN unblocking key
SIM	subscriber identity module
SMS	short messaging service
SOHO	small office home office
SSID	Service Set Identifier
TDD	Time Division Duplex
TFT	Thin Film Transistor
TKIP	Temporal Key Integrity Protocol
UMTS	Universal Mobile Telecommunications System
UPnP	Universal Plug and Play
USB	Universal Serial Bus
VPN	Virtual Private Network
WAN	wireless area network
WEP	wired equivalent privacy
Wi-Fi	Wireless Fidelity
WLAN	wireless local area network
WPA	Wi-Fi Protected Access