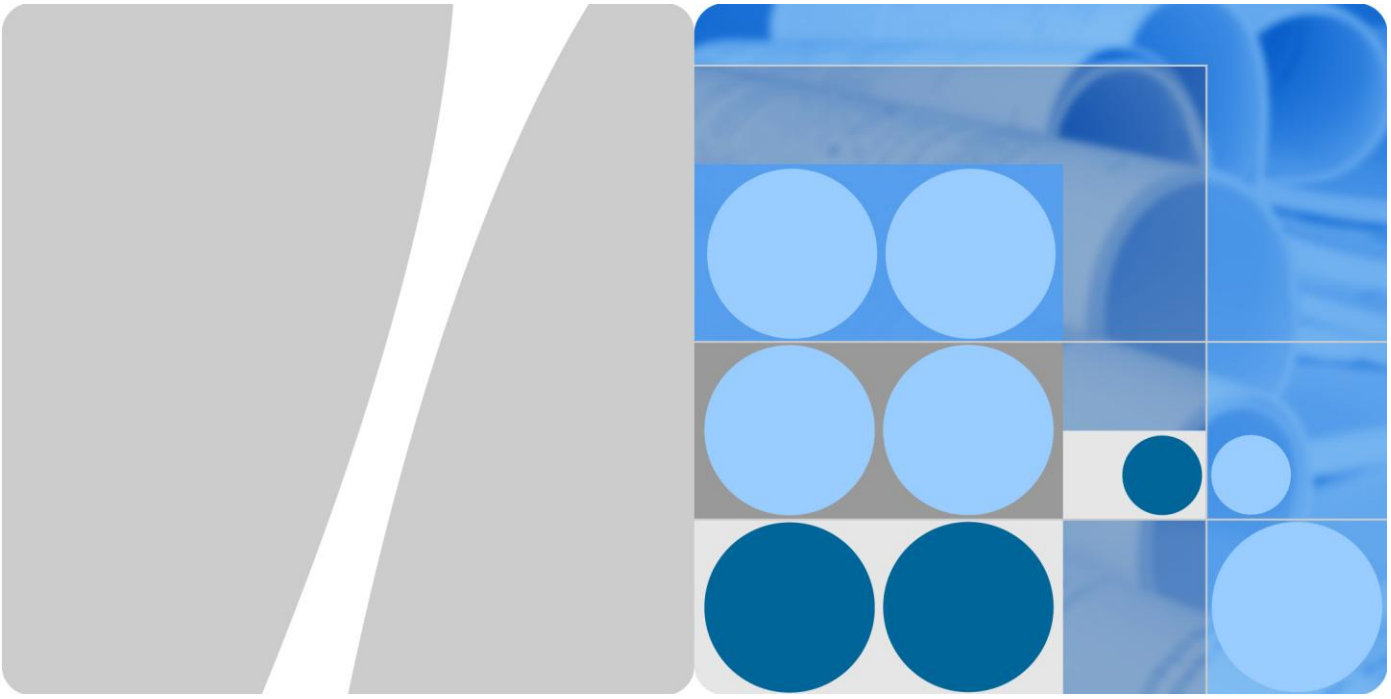
Product Description



HUAWEI E5172As-22 LTE CPE

Issue 03

Date 2013-06-08

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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 Hardware Overview	Describes the specifications of product hardware
3 Interface	Describes the specifications of product interface
4 Data Services	Describes the data services of product
5 Voice Services	Describes the voice services of product
6 Wi-Fi Services	Describes the Wi-Fi services of product
7 Notification Services	Describes the notification services of product
8 Security Services	Describes the security services of product
9 Mobile Network Features	Describes the mobile network feature of product
10 Configuration and Management	Describes the configuration and management of product
11 Packing List	Describes the items contained in the product package

History

Issue	Details	Date
01	Initial formal release	2013-03-20
02	• Change “Battery (Optional)” to “Battery (Optional, for CS voice only)” in section 2.1. • Delete “Mac OS X 10.5” in section 1.3.	2013-05-22
03	Modify the packing list.	2013-06-08

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1 Product Overview

1.1 Introduction

The HUAWEI E5172As-22 (hereinafter referred to as E5172As-22) is an LTE CPE for home and small office users. You can access the Internet through the wireless network.

The E5172As-22 supports the following frequency bands:

- FDD LTE 800/900/1800/2100/2600 MHz, TDD LTE 2600 MHz
- DC-HSPA+/HSPA+/HSPA/UMTS 900/2100 MHz
- EDGE/GPRS/GSM 850/900/1800/1900 MHz

E5172As-22 supports wireless network access, and provides data routing service. The supported service functions are as follows:

- Data service
- Voice service
- Maintenance management function
- Wi-Fi service
- Notification service
- SMS
- User-friendly design of LED indicator

Figure 1-1 shows the profile of the E5172As-22.

Figure 1-1 E5172As-22 profile

1.2 Application scenario

The E5172As-22 supports high-speed Internet access for multiple users in home and small office. It includes advanced data capabilities such as router and switch functionality, and provides the users with multiple possibilities for local area connectivity. Additionally, the E5172As-22 includes high quality voice services via the telephone interfaces.

Figure 1-2 shows the application scenario of the E5172As-22.

Figure 1-2 E5172As-22 application scenario

1.3 Feature summary

The main features of E5172As-22 are listed as follows:

- Downlink FDD LTE packet data service of up to 150 Mbit/s
- Uplink FDD LTE packet data service of up to 50 Mbit/s
- Downlink TDD LTE packet data service of up to 80 Mbit/s (configuration 1)
- Uplink TDD LTE packet data service of up to 20 Mbit/s (configuration 1)
- Downlink TDD LTE packet data service of up to 112 Mbit/s (configuration 2)
- Uplink TDD LTE packet data service of up to 10 Mbit/s (configuration 2)
- Downlink DC-HSPA+ packet data service of up to 42 Mbit/s
- Uplink DC-HSPA+ packet data service of up to 5.76 Mbit/s
- Downlink HSPA+ packet data service of up to 21 Mbit/s
- Uplink HSPA+ packet data service of up to 5.76 Mbit/s
- Downlink HSDPA packet data service of up to 14.4 Mbit/s
- Uplink HSUPA packet data service of up to 5.76 Mbit/s
- Uplink and downlink UMTS packet data service of up to 384 kbit/s
- Uplink and downlink EDGE packet data service of up to 236.8 kbit/s
- Uplink and downlink GPRS packet data service of up to 85.6 kbit/s
- Wireless LAN Access Point IEEE 802.11b/g/n
- One fast Ethernet switch port (RJ45)
- IPv6 Auto configuration, IPv4v6 dual stack

- Protocols-Routing, NAT, ALG, DHCP server and DNS server and route mode
- Security: Firewall, WEP, WPA/WPA2, VPN pass-through (supported in future)
- Support LTE MIMO 1Tx 2Rx, DL 4x2 and 2x2 MIMO supported
- One RJ11 port for CS voice/VoIP (VoIP supported in future)
- CSFB capability, SMS
- User-friendly Web interface and LED indicator
- Remote Management capability with TR-069 (supported in future)
- Windows XP, Windows Vista, Windows 7, Windows 8, Mac OS X 10.6, 10.7, and 10.8

2 Hardware Overview

2.1 Hardware Specifications

Table 2-1 describes hardware specifications of the E5172As-22.

Table 2-1 Hardware specifications of the E5172As-22

Item	Description	
Technical standard	WAN: LTE/UMTS/GSM	
	LAN: IEEE 802.3/802.3u	
	WLAN: IEEE 802.11b/g/n	
Working frequency band	LTE: FDD 800/900/1800/2100/2600 MHz, TDD 2600 MHz	
	UMTS: 900/2100 MHz	
	EDGE/GPRS/GSM: 850/900/1800/1900 MHz	
	WLAN: 2.401–2.483 GHz	
Memory	Flash 512 MB, DDR 256 MB	
Maximum transmit power	LTE	FDD 800 MHz: 22.6 (±2) dBm
		FDD 900 MHz: 22.6 (±2) dBm
		FDD 1800 MHz: 22.5 (±2) dBm
		FDD 2100 MHz: 22.4 (±2) dBm
		FDD 2600 MHz: 22.3 (±2) dBm
		TDD 2600 MHz: 22.3 (±2) dBm
	UMTS	900 MHz: 23.6 (+1/-3) dBm
		2100 MHz: 23.5 (+1/-3) dBm
	WLAN	802.11n: 17 dBm
		802.11g: 17 dBm

Item	Description	
		802.11b: 17 dBm
Receiving sensitivity	LTE	FDD 800 MHz: -94 dBm@10 MHz
		FDD 900 MHz: -94 dBm@10 MHz
		FDD 1800 MHz: -94 dBm@10 MHz
		FDD 2100 MHz: -97 dBm@10 MHz
		FDD 2600 MHz: -95 dBm@10 MHz
		TDD 2600 MHz: -97 dBm@10 MHz
	UMTS	900 MHz: ≤ -108.5 dBm@3.84 MHz
		2100 MHz: ≤ -108.4 dBm@3.84 MHz
	WLAN	802.11n: -64 dBm@65 Mbit/s
		802.11g: -65 dBm@54 Mbit/s
		802.11b: -76 dBm@11 Mbit/s
Power consumption	≤ 15 W (adapter powered)	
AC/DC power supply	AC: 100–240 V, 50/60 Hz	
	DC: 12 V, 2 A	
Battery (Optional, for CS voice only)	Type: Ni-MH battery (rechargeable)	
	Capacity: 3.6 V, 1500 mAh	
	Charge cycles: < 500 times	
	Maximum talk time: 2 hours	
	Maximum standby time: 6 hours	
External interfaces and buttons	1 Ethernet interface	
	1 POTS interface	
	1 Power interface	
	1 USIM card interface	
	1 External antenna interface	
	1 Reset button	
	1 WLAN button	
	1 WPS button	
	1 Power button	

Item	Description
LED indicator	1 Power indicator
	1 WLAN indicator
	1 WPS indicator
	1 LAN indicator
	1 Voice indicator
	1 signal strength indicator
Antenna	Built-in LTE/UMTS/GSM antenna
	Built-out LTE/UMTS antenna (optional)
	Built-in WLAN antenna
Dimensions (H x W x D)	173 mm x 124 mm x 31.5 mm
Weight	About 500 g
Temperature	• Working temperature: 0°C to +40°C • Storage temperature: -20°C to +70°C
Humidity	10% to 95%
Placement	Vertical

2.2 Antenna Specification

2.2.1 Build-in Antenna

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

Table 2-2 GSM/UMTS/LTE antenna specifications

Item	Description
Frequency	790–2690 MHz
Input impedance	50 Ω
Standing wave ratio	< 3.0 (after being matched, All frequency points)
Efficiency	> 50% (790–960 MHz) ; > 60% (1400–2690 MHz)
Gain	> 1 dBi (790–960 MHz); > 0.5 dBi (1400–2690 MHz)
Polarization	Linear polarization

Table 2-3 describes WLAN antenna specifications

Table 2-3 WLAN antenna specifications

Item	Description
Frequency	2400–2483 MHz
Input impedance	50 Ω
Standing wave ratio	< 3
Efficiency	> 50%
Gain	< 2 dBi
Polarization	Linear polarization

2.2.2 Build-out Antenna

Table 2-4 describes 790–2690 MHz build-out antenna specifications

Table 2-4 790–2690 MHz build-out antenna specifications

Item	Description
Frequency	790–2690 MHz
Input impedance	50 Ω
Standing wave ratio	< 3.0 (after being matched, All frequency points)
Efficiency	≥ 50%
Gain	0.5 (±1) dBi
Polarization	Linear polarization

Table 2-5 describes 2600 MHz build-out antenna specifications

Table 2-5 2600 MHz build-out antenna specifications

Item	Description
Frequency	2500–2690 MHz
Input impedance	50 Ω

Item	Description
Standing wave ratio	< 2.0 (after being matched, All frequency points)
Efficiency	≥ 60%
Gain	4 (±0.5) dBi
Polarization	Linear polarization

3 Interface

3.1 Radio Interface

The E5172As-22 supports LTE/DC-HSPA+/HSPA+/HSPA/UMTS/EDGE/GPRS/GSM radio interfaces.

3.1.1 LTE

The E5172As-22 supports FDD LTE 800/900/1800/2100/2600 MHz, TDD 2600 MHz frequency bands.

The LTE interface supports the following characteristics:

- Downlink FDD LTE packet data service of up to 150 Mbit/s
- Uplink FDD LTE packet data service of up to 50 Mbit/s
- Downlink TDD LTE packet data service of up to 80 Mbit/s (configuration 1)
- Uplink TDD LTE packet data service of up to 20 Mbit/s (configuration 1)
- Downlink TDD LTE packet data service of up to 112 Mbit/s (configuration 2)
- Uplink TDD LTE packet data service of up to 10 Mbit/s (configuration 2)

3.1.2 UMTS

The E5172As-22 supports DC-HSPA+/HSPA+/HSPA/UMTS 900/2100 MHz frequency bands.

The UMTS interface supports the following characteristics:

- Downlink DC-HSPA+ packet data service of up to 42 Mbit/s
- Uplink DC-HSPA+ packet data service of up to 5.76 Mbit/s
- Downlink HSPA+ packet data service of up to 21 Mbit/s
- Uplink HSPA+ packet data service of up to 5.76 Mbit/s
- Downlink HSDPA packet data service of up to 14.4 Mbit/s
- Uplink HSUPA packet data service of up to 5.76 Mbit/s
- Uplink and downlink UMTS packet data service of up to 384 kbit/s

3.1.3 GSM/GPRS/EDGE

The E5172As-22 supports GSM/GPRS/EDGE 850/900/1800/1900 MHz frequency bands.

The GPRS/EDGE interface supports the following characteristics:

- Uplink and downlink EDGE packet data service of up to 236.8 kbit/s
- Uplink and downlink GPRS packet data service of up to 85.6 kbit/s

3.2 Wireless interface

The E5172As-22 supports IEEE 802.11b/g/n standard, it can be used as a wireless Ethernet router.

The WLAN interface can be enabled and disabled.

3.3 Fast Ethernet Interface

Figure 3-1 shows the LAN interface of the E5172As-22.

Figure 3-1 E5172As-22 LAN interface

Interface	Type	Function
LAN	1 x RJ45	Connect to computers, switches, or other network devices.

3.4 Telephone Interface

Figure 3-2 shows the TEL interface of the E5172As-22.

Figure 3-2 E5172As-22 TEL interface

Interface	Type	Function
TEL	1 x RJ11	Connect to a telephone.

3.5 USIM Interface

Figure 3-3 shows the USIM interface of the E5172As-22. The USIM interface is under the battery.

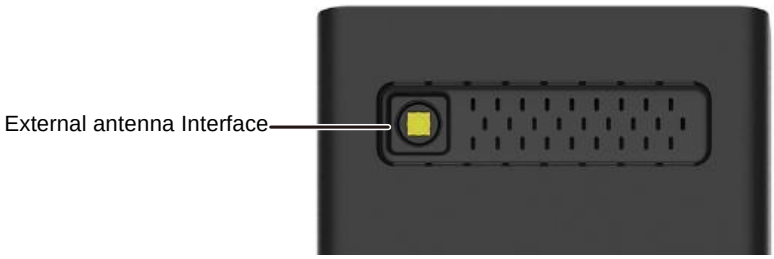
Figure 3-3 E5172As-22 USIM interface

Interface	Type	Function
USIM	USIM card slot	Accommodate a USIM card.

3.6 External Antenna Interface

Figure 3-4 shows the external antenna interface of the E5172As-22.

Figure 3-4 E5172As-22 external antenna interface

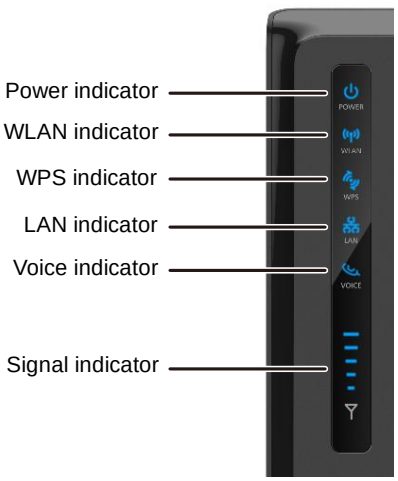


Interface	Type	Function
External antenna	1 x SMA	Connect to an external antenna.

3.7 LED Indicators

Figure 3-5 shows the LED indicators of the E5172As-22.

Figure 3-5 E5172As-22 LED indicators



Indicator	Status	Description
POWER	Steady blue	The power adapter is in use and working properly, or the power adapter is not in use but the battery level is high.
	Alternating blue and pink	The power adapter is not in use or not working properly, and the battery level is low.
	Steady pink	The device is malfunctioning.
	Off	The device is powered off.
WLAN	Steady blue	WLAN function enabled
	Blinking blue	Transmitting data through WLAN
	Off	WLAN function disabled
WPS	Steady blue	WPS function enabled
	Blinking blue	WPS interconnection verification is in progress. This process should not take longer than two minutes.
	Off	WPS function disabled
LAN	Steady blue	The port is connected to a device.
	Blinking blue	Data is being transmitted through the port.
	Off	The port is currently not used.
VOICE	Steady blue	Off-hook condition
	Blinking blue	Incoming call
	Off	On-hook condition
	Steady blue	Indicates network signal strength. Full light indicates strong signal.
	Off	No network signal

4 Data Services

The E5172As-22 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 Small-Size LAN

You can connect the E5172As-22 with a terminal device through the WLAN or one Ethernet interface in the Small Office Home Office (SOHO) to provide data services.

The E5172As-22 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.

4.2 Data Features

Table 4-1 describes data features of the E5172As-22.

Table 4-1 Data features of the E5172As-22

Item	Description
Gateway	Router: Support 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.
	Support ARP
	Support DNS
	Support ICMP
	NAT: • Support NAT, NAPT (compliant with RFC2663, RFC3022 and RFC3027) • Support fragment message identification for normal NAT • Support NAT traverse of SIP

Item	Description
	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 time 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	• Downlink FDD LTE packet data service of up to 150 Mbit/s • Uplink FDD LTE packet data service of up to 50 Mbit/s • Downlink TDD LTE packet data service of up to 80 Mbit/s (configuration 1) • Uplink TDD LTE packet data service of up to 20 Mbit/s (configuration 1) • Downlink TDD LTE packet data service of up to 112 Mbit/s (configuration 2) • Uplink TDD LTE packet data service of up to 10 Mbit/s (configuration 2)
LAN	10 Mbit/s and 100 Mbit/s auto-negotiation
	MDI/MDIX auto-sensing
	IEEE802.3/802.3u is compatible
WLAN	Broadcast and hide the SSID
	Authentication: • Open System and 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
	MAC address authentication: up to 8 MAC address items
	Ratio adjustment: • Automatically • Manually(Except for 802.11n)
	STA management: support limit of access users (up to 32 users)
Dial-up	Support automatic, manual, on demand connect

5 Voice Services

The E5172As-22 provides circuit switched voice services via the telephone line interface with high speech quality.

5.1 CSFB

With circuit-switched fallback, when the E5172As-22 device is operating in LTE (data connection) mode and a call comes in, the LTE network pages the device. The device responds with a special service request message to the network, and the network signals the device to move (fall back) to 2G/3G to accept the incoming call. Similarly for outgoing calls, the same special service request is used to move the device to 2G/3G to place the outgoing call.

5.2 National Profiles

The E5172As-22 supports configure country specific settings for the telephony services. This can be achieved by configuring on the Web UI.

5.3 Voice Codec

The E5172As-22 supports all GSM voice codec, Enhanced Full Rate (EFR), Full Rate (FR), Half Rate (HR), and WCDMA Adaptive Multi-rate (AMR) codec.

5.4 General Telephone Features

The E5172As-22 supports E.164 numbering. E.164 numbers can have a maximum of 15 digits and are usually written with a + prefix.

There are two ways to indicate that the dialed number sequence is complete:

- Dialing the EON (End of Number) key (e.g. #) immediately sends the call.
- An Inter Digit Timer is used to check the dialing process, after this period, no more digits are expected to arrive and an attempt to establish the call is done.

The EON key is configurable as well as the Inter Digit Timer.

The E5172As-22 supports below general telephony features:

- Dial Plan
- Local Call Prefix
- Emergency Calls

5.5 Supplementary Services

Supplementary services can only be used with a DTMF telephone connected to the E5172As-22.

The E5172As-22 supports below supplementary services:

- Call Waiting
- Three-way Calling
- CLIR (Calling Line Identification Restriction)
- Call Forwarding

6 Wi-Fi Services

The E5172As-22 supports IEEE 82.11b/g/n standard, it can be used as a wireless Ethernet router.

The WLAN interface can be enabled and disabled.

6.1 Multi SSID

The E5172As-22 supports multi SSID (Maximum 4). Each SSID can be set to a separate SSID name and encryption method. The factory configurations only enable one SSID and other SSID is turned off by default.

6.2 Country/Region Code

To make sure the E5172As-22 transmits on correct Wi-Fi frequencies according to national regulations, the country code where the device is used must be stated.

The following country codes are currently supported:

Most of world, for example

- Europe (EU)
- United States (US)
- Canada (CA)
- South Africa (ZA)
- Australia (AU)
- New Zealand (NZ)
- Brazil (BR)
- China (CN)
- Japan (JP)
- India (IN)

6.3 Channel Selection

The E5172As-22 supports automatic Wi-Fi channel selection.

The E5172As-22 supports the following Wi-Fi channel to be selected by end-user:

- Channels 1-13: The European and most of world countries are currently following the common European policy (channels 1-13).
- Channels 1-11: The North America countries, such as USA, Canada, Mexico, are currently following the common USA policy (channels 1-11).
- Channels 1-14: In Japan, Channel 14 is valid only for 802.11b, but not be used for 802.11g and 802.11n.

7 Notification Services

E5172As-22 provides the notification service. When the system detects a new version during the operation, detects the fault, or triggers the sensitive business (for example, roaming), it will automatically push the Web popup or send SMS through the browser, to inform the current detection events and operation conditions for the user. After logging in to the E5172As-22 Web server, the user can clearly see the notification items of notification service records and obtain the concise processing guide.

NOTE

If the user can not open the Web browser to perform the http Web access business, the Web popup won't be pushed.

7.1 Upgrade Notification

After E5172As-22 accesses to the network, it will detect the new version every one week 10 minutes after the network access. When it finds that a new firmware version available for upgrade, the system will send the upgrade notification in the following ways:

- If the system detects the new version first after network access, it will immediately notify the user through pushing the Web popup or/and sending SMS.
- If the system periodically detects the new version after network access, it will notify the user through pushing the Web popup or/and sending SMS in a certain time according to the set notification period.

7.2 Roaming Notification

After E5172As-22 accesses to the network, it can detect the roaming state. When it finds that the system enters into the roaming state, the system will send the notification of the roaming entrance and super traffic limit in the following ways:

- If the system detected first after network access is in roaming state and the data traffic surpasses the set limit value, it will immediately notify the user through sending SMS.

- If the system periodically detected after network access is in roaming state, it will notify the user through sending SMS in a certain time according to the set notification period.

7.3 System Exception Notification

With regard to the events influencing the system networking business such as loss coverage or SIM PIN Locked, the system can detect the network signal strength in a real time after E5172As-22 is powered on for operation. When it finds the loss coverage or SIM PIN Locked, it will immediately push and send the notification through the Web popup.

8 Security Services

The E5172As-22 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.

8.1 Firewall Service

The E5172As-22 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.

8.2 User Authentication

The E5172As-22 supports the following user authentication protocols:

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

8.3 PIN Protection

The E5172As-22 supports enable/disable PIN protection.

If the PIN protection is enabled, end-user needs to validate the PIN code each time when restart the CPE and log in to the management page.

9 Mobile Network Features

9.1 LTE Category 4

The E5172As-22 supports LTE category 4 which means up to 150 Mbit/s downlink limit rate through LTE air interface is supported.

9.2 Inter-RAT Capability

The E5172As-22 supports following Inter-RAT capability:

- LTE<-> WCDMA PS handover, Cell resection and Redirection with/without measurements
- LTE<->GSM Cell resection, Redirection with/without measurements, and CCO with/without NACC
- WCDMA<->GSM Cell resection, CS handover, Redirection with/without measurements and CCO with/without NACC

10 Configuration and Management

10.1 Software Update

The E5172As-22 supports following upgrade way:

- Manual software upgrade from HTTP server
- TR-069 remote upgrade (supported in future)

10.2 Remote Management (supported in future)

The E5172As-22 supports remote management using CPE WAN Management Protocol (CWMP) as specified in DSL Forum TR-069 Amendment II.

CWMP defines an application layer protocol for remote management of end-user devices and provides the communication between a CPE and a TR-069 capable Auto Configuration Server (ACS).

The E5172As-22 remote management agent supports remote software image upgrade and a set of configuration and status parameters.

10.3 Backup and Restore Configuration

To preserve the running configuration, a backup copy of all accessible values can be stored in a local file. In case of a system failure or a corrupted configuration, the system can be restored from a backup file.

10.4 Reset to Default Configuration

A reset to default configuration can be done either from the Web UI or by using the physical reset button on the E5172As-22.

10.5 System Log

Logs are mainly used for safely verifying and positioning problems. E5172As-22 has the functions of operation logs and important event logs during system operation, and provides better visualization.

At the same time, the system also records the deep information such as key modules, network security and so on. The information will display for the terminal user, but the user can derive the text for inspection or forward it to the operation maintenance personnel for deep problem analysis via the log deriving function.

Logs have the saving capacity, that is, logs can not be lost even if the device is powered off. The system can record the log entries of approximate two-week information in an unrepeatable way.

10.6 SNTP

The E5172As-22 supports SNTP client to synchronize the device's own time of day setting with a remote NTP server.

10.7 User Interface Parameters

Table 10-1 describes user interface parameters

Table 10-1 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, WPA and WPA2) • Access list (MAC) • Country

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

11 Packing List

Table 11-1 shows the devices and accessories of the E5172As-22.

Table 11-1 Packing list

Description	Quantity	Remarks
E5172As-22 CPE	1	Standard
Power adapter	1	Standard
Ethernet cable	1	Standard
Quick Start Guide	1	Standard
Safety Information	1	Standard
Warranty Card	1	Optional
Battery	1	Optional
External antenna	1	Optional

12 Acronyms and Abbreviations

Abbreviation	Full Spelling
AC	Alternating Current
ARP	Address Resolution Protocol
AP	Access Point
APN	Access Point Name
CPE	Customer Premises Equipment
DC-HSPA+	Dual Carrier High Speed Packet Access Plus
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
DL	Down Link, Downlink
EDGE	Enhanced Data rates for GSM Evolution
FDD	Frequency Division Duplex
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HLR	Home Location Register
HSDPA	High Speed Downlink Packet Access
HSPA	High Speed Packet Access
HSPA+	High Speed Packet Access Plus
HSUPA	High Speed Uplink Packet Access
IP	Internet Protocol
ICMP	Internet Control Message Protocol
LAN	Local Area Network
LED	Light Emitting Diode

Abbreviation	Full Spelling
LTE	The Fourth Generation
NAT	Network Address Translation
RTT	Radio Transmission Technology
SOHO	Small Office Home Office
SMS	Short Messaging Service
SCP	Service Control Point
SDRAM	Synchronous Dynamic Random Access Memory
TDD	Time Division Duplex
TKIP	Temporal Key Integrity Protocol
UMTS	Universal Mobile Telecommunications System
UL	Up Link, Uplink
VoIP	Voice over Internet Protocol
WAN	Wide Area Network
Wi-Fi	Wireless Fidelity
WLAN	wireless local area network
WPS	Wi-Fi Protected Setup