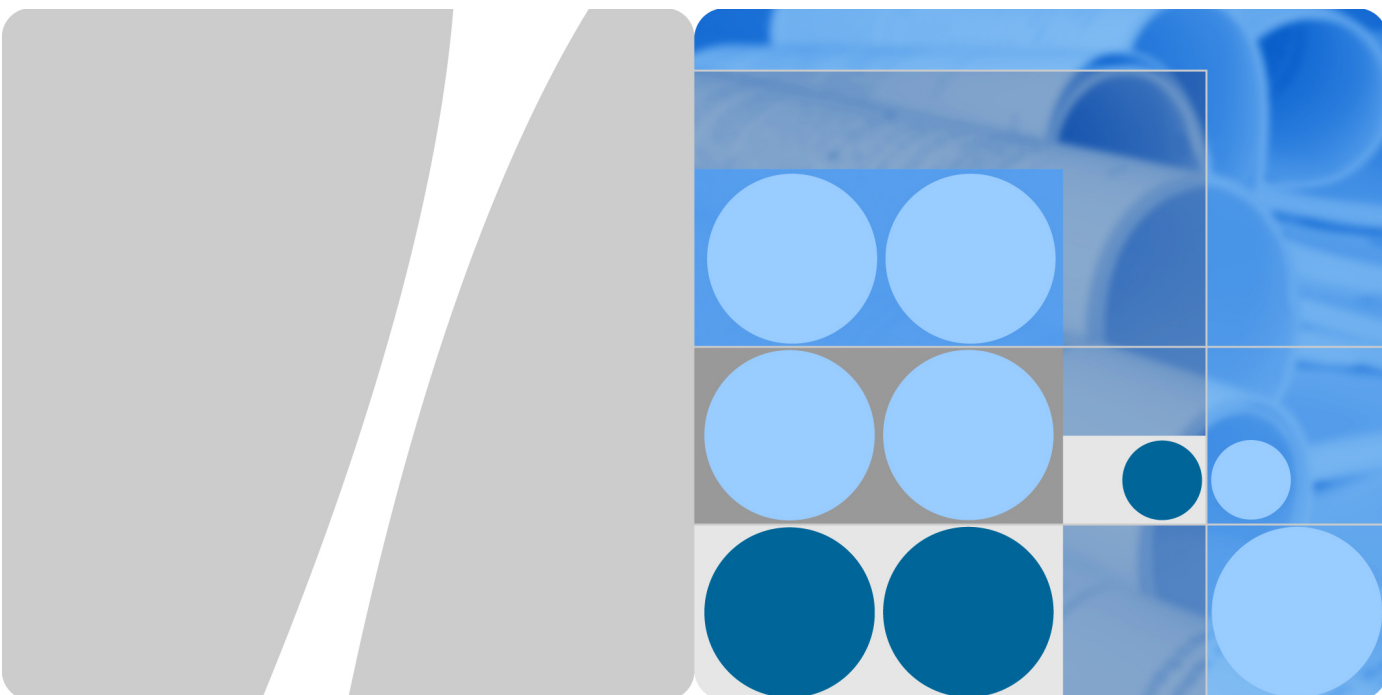


Product Description



HUAWEI E3372 LTE USB Stick

Issue 02
Date 2015-01-19

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About This Document

Summary

This document provides information about the major functions, supported services, system architecture, and technical references of HUAWEI E3372 LTE USB Stick (hereinafter referred to as the E3372).

The following table lists the contents of this document.

Chapter	Describes
1 Overview	The supported network modes, basic services and functions, and the appearance of the E3372.
2 Features	The supported features and technical specifications of the E3372.
3 Services and Applications	The services and applications of the E3372.
4 System Architecture	The architecture of the E3372.
5 Technical Reference	The technical references of the E3372.
6 Packing List	The items contained in the package of the E3372.

History

Issue	Details	Date	Author
01	Initial draft completed.	2014-08-05	Luoqinghua/00167774
02	Revised the ID picture on page 6	2015-01-19	Luoqinghua/00167774

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1 Overview

HUAWEI E3372 LTE USB Stick (hereinafter referred to as the E3372) as a high speed network access terminal product. It is a multi-mode wireless terminal for SOHO (Small Office and Home Office) and business professionals, in order to meet the requirement from different operators, the sub-products E3372h-153, E3372h-210, E3372h-510 and E3372h-607 are included, which support different frequency bands, the detailed as below:

E3372h-153:

- LTE FDD: Band1(2100MHz)/Band3(1800MHz)/Band7(2600MHz)/Band8(900MHz)/Band20(800MHz)
- DC-HSPA+/HSPA+/HSPA/UMTS: Band1(2100MHz)/Band8(900MHz)
- EDGE/GPRS/GSM: 850MHz/900MHz/1800MHz/1900MHz

E3372h-210:

- LTE FDD: Band1(2100MHz)/Band3(1800MHz)/Band7(2600MHz)/Band8(900MHz)/Band20(800MHz)
- LTE TDD: Band38(2600MHz)
- DC-HSPA+/HSPA+/HSPA/UMTS: Band1(2100MHz)/Band8(900MHz)
- EDGE/GPRS/GSM: 850MHz/900MHz/1800MHz/1900MHz

E3372h-510:

- LTE FDD: Band1(2100MHz)/Band2(1900MHz)/Band4(AWS)/Band5(850MHz)/Band7(2600MHz)/Band28(700MHz)
- DC-HSPA+/HSPA+/HSPA/UMTS: Band1(2100MHz)/Band2(1900MHz)/Band4(AWS)/Band5(850MHz)
- EDGE/GPRS/GSM: 850MHz/900MHz/1800MHz/1900MHz

E3372h-607:

- LTE FDD: Band1(2100MHz)/Band3(1800MHz)/Band7(2600MHz)/Band8(900MHz)/Band28(700MHz)
- LTE TDD: Band40/(2300MHz)
- DC-HSPA+/HSPA+/HSPA/UMTS: Band1(2100MHz)/Band8(900MHz)
- EDGE/GPRS/GSM: 850MHz/900MHz/1800MHz/1900MHz

The E3372 supports the following standards:

- Long Term Evolution (LTE)

- Dual Cell 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 E3372 provides the following services:

- LTE FDD packet data service
- DC-HSPA+ packet data service
- HSPA+ packet data service
- HSDPA packet data service
- HSUPA packet data service
- UMTS packet data service
- EDGE/GPRS packet data service
- LTE Short Message Service (SMS) over SGs

You can connect the E3372 with the USB interface of a computer. In the service area of the LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM network, you can surf the Internet and send/receive messages/emails cordlessly. The E3372 is fast, reliable, and easy to operate. Thus, mobile users can experience many new features and services with the E3372. These features and services will enable a large number of users to use the E3372 and the average revenue per user (ARPU) of operators will increase substantially.

Figure 1-1 shows the profile of the E3372.

Figure 1-1 E3372 profile



2 Features

2.1 Main Features

The E3372 mainly supports the following features:

- LTE FDD bandwidth: Band1(2100MHz)/Band2(1900MHz)/Band3(1800MHz)/Band4 AWS/Band7(2600MHz)/Band20(800MHz)/Band28(700MHz): 5MHz/10MHz/15MHz/20MHz, Band5(850MHz)/Band8(900MHz): 5MHz/10MHz
- LTE FDD: DL 150Mbit/s/UL 50Mbit/s @20MHz bandwidth Cat.4
- LTE TDD bandwidth: Band38(2600MHz)/Band40/(2300MHz) 5MHz/10MHz/15MHz/20MHz
- LTE TDD DL 82Mbit/s /UL 20Mbit/s @20MHz bandwidth (Uplink-downlink configuration 1, 2:2)
- LTE TDD DL 112Mbit/s /UL 10Mbit/s @20MHz bandwidth (Uplink-downlink configuration 2, 1:3)
- DC-HSPA+ data service of up to 43.2Mbit/s
- HSPA+ data service of up to 21.6Mbit/s (64QAM)
- HSDPA data service of up to 14.4Mbit/s
- HSUPA data service of up to 5.76Mbit/s
- WCDMA data service of up to 384kbit/s
- EDGE packet data service of up to 236.8kbit/s on downlink with MSC12
- GPRS packet data service of up to 85.6kbit/s on downlink with MSC12
- LTE 2*2 MIMO
- LTE/UMTS/GSM SMS over SGs service
- Support PnP, Plug and Play
- Automatic installation
- microSD card Slot
- 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
- HiLink Version of E3372 support the following features:Driverfree, WebUI, Auto connect

Technical Specifications

2.1.1 Hardware

Table 2-1 Hardware specifications

Item	Specifications
Technical standard	LTE Rel 9 WCDMA Rel '99 plus Rel 5 HSDPA, Rel 6 HSUPA, Rel 7 HSPA+(cat 14), Rel 8 DC-HSPA+(cat 24) GSM/GPRS/EDGE Rel 99
Operating frequency	LTE FDD 700MHz 703MHz~748MHz(Uplink)/758MHz~803MHz(Downlink) LTE FDD DD800MHz: 832MHz~862MHz(Uplink)/791MHz~821MHz(Downlink) LTE FDD/DC-HSPA+/HSPA+/HSPA/UMTS 850MHz: 824MHz~849MHz(Uplink)/869MHz~894MHz(Downlink) LTE FDD/DC-HSPA+/HSPA+/HSPA/UMTS AWS 1710MHz~1755MHz(Uplink)/2110MHz~2155MHz(Downlink) LTE FDD 1800MHz: 1710MHz~1785 MHz(Uplink)/1805MHz~1880MHz(Downlink) LTE FDD/DC-HSPA+/HSPA+/HSPA/UMTS 1900MHz: 1850MHz~1910MHz(Uplink)/1930MHz~1990MHz(Downlink) LTE FDD 2600MHz: 2500MHz~2570MHz(Uplink)/2620MHz~2690MHz(Downlink) LTE FDD/DC-HSPA+/HSPA+/HSPA/UMTS 2100MHz: 1920MHz~1980MHz(Uplink)/2110MHz~2170MHz(Downlink) LTE FDD/DC-HSPA+/HSPA+/HSPA/UMTS 900MHz: 880~915MHz(Uplink)/925~960MHz(Downlink) LTE TDD 2300MHz: 2300MHz~2400MHz(Uplink/Downlink) LTE TDD 2600MHz: 2570MHz~2620MHz(Uplink/Downlink) GSM/GPRS/EDGE 850MHz: 824MHz~849MHz(Uplink)/869MHz~894MHz(Downlink) GSM/GPRS/EDGE 900MHz: 880MHz~915MHz(Uplink)/925MHz~960MHz(Downlink) GSM/GPRS/EDGE 1800MHz: 1710MHz~1785MHz(Uplink)/1805MHz~1880MHz(Downlink) GSM/GPRS/EDGE 1900MHz: 1850MHz~1910MHz(Uplink)/1930MHz~1990MHz(Downlink)
External interfaces	USB 2.0 High Speed (Type A) standard 6-pin SIM card interface

Item	Specifications
	microSD card Slot
	External antenna interface
LED	Indicating the status of the E3372
Maximum transmitter power	LTE FDD: Power Class 3 (23dBm)
	WCDMA/HSPA/HSPA+/DC-HSPA+: Power Class 3 (24dBm)
	GSM/GPRS 850/900MHz: +33dBm (Power Class 4)
	GSM/GPRS 1800/1900MHz: +30dBm (Power Class 1)
	EDGE 850/900MHz: +27dBm (Power Class E2)
	EDGE 1800/1900MHz: +26 dBm (Power Class E2)
Static receiver sensitivity	LTE FDD: Accorded with 3GPP TS 36.101(R9)
	WCDMA/HSPA/HSPA+/DC-HSPA+: Compliant with 3GPP TS 25.101(R8)
	GSM/GPRS/EDGE: Compliant with 3GPP TS 05.05 (R99)
Maximum power consumption	<3.5W
Power supply	5V/500mA
Dimensions (D × W × H)	88mm x 28mm x 11.5mm
Weight	< 50g
Temperature	<ul style="list-style-type: none"> • Operating: –10°C to +40°C • Storage: –20°C to +70°C
Humidity	5% to 95%
Notes: LTE = Long Term Evolution 3GPP = The 3rd Generation Partnership Project EGPRS = enhanced GPRS LED = light-emitting diode MSC = mobile switching center SIM = subscriber identity module TS = technical specification USIM = UMTS subscriber identity module	

2.1.2 Software Specification

The HiLink version of E3372 does not need dashboard and all interaction with user are through WebUI.

Table 2-2 HiLink version software specifications

Item	Description
Basic specifications	<ul style="list-style-type: none"> • Driverfree • WebUI • Auto connect, auto reconnect • Display the device information by website
PIN management	PIN unlock
SMS	Support SMS read and send
Device information display	<ul style="list-style-type: none"> • Connection status • Signal • Operator name • Network mode • Roam status
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 • Display resolution: 800 × 600 or above
Notes: PIN = personal identification number PUK = PIN unblocking key	

The normal version of E3372 need dashboard on PC. The following table takes Windows dashboard as an example.

Table 2-3 Dashboard specifications

Item	Description
SMS	Writing/Sending/Receiving
	Sending/Receiving extra-long messages
	Group sending
	Storage
	Sorting
	New message prompt (visual prompt/audio prompt)

Item	Description
Flow display and statistics (data services)	Current connection: <ul style="list-style-type: none"> • Duration • Send/Receive flow • Send/Receive rate
	Traffic statistics
Phonebook	Capacity: It depends on the SIM/USIM card capacity or the hard disk space.
	Messages can be sent from the phonebook.
	Importing/Exporting: Import/Export contacts between the SIM/USIM card and a laptop or a file of supported formats.
Network connection setup	<ul style="list-style-type: none"> • APN management • Set up network connection
Software installation	Automatic installation
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.
	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 • Display resolution: 800 × 600 or above
Notes: PIN = personal identification number PUK = PIN unblocking key	

3 Services and Applications

3.1 Packet Data Service

The E3372 supports the PS domain data service based on LTE/DC-HSPA+/HSPA+/UMTS/EDGE/GPRS

After you connect the E3372 to a PC with the USB interface,

- The normal version of E3372 driver and the client software are installed on the PC automatically. Dual APN is supported in LTE mode. A default APN will be used at initial attach to LTE. The other APN is use like normal APN in 2G/3G. You can configure APN through the E3372 application (or directly use the default settings) and set up a network connection;
- The HiLink E3372 will connect the network automatically.

Then you can send or receive E-mail, access the network through wireless connection, and download files through wireless data channels.

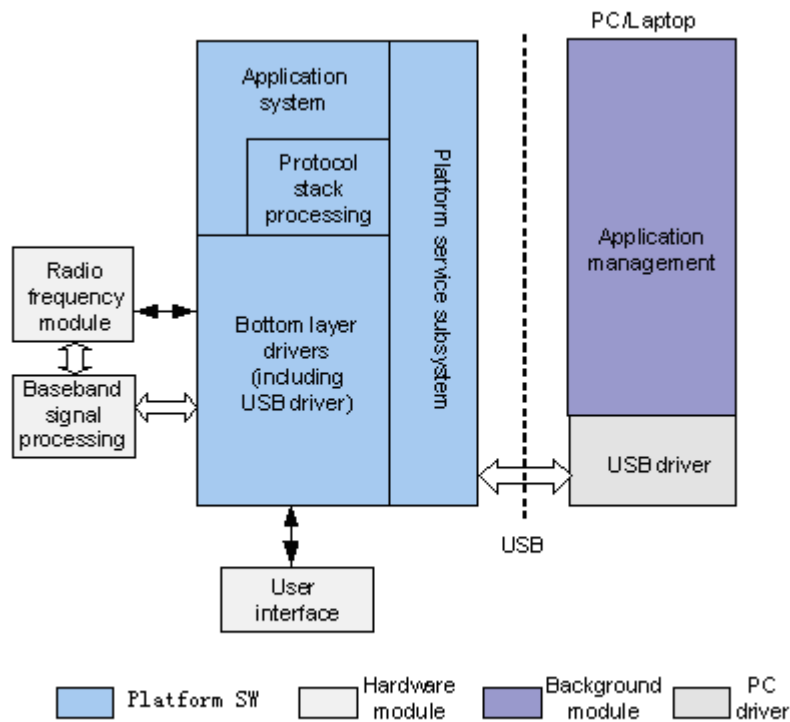
3.2 SMS

The E3372 supports message writing/sending/receiving and group sending on GSM/EGDE/UMTS network. In LTE network supporting SMS over SGs, you can also send/receive messages on LTE. You can manage messages through the dashboard, such as sorting the messages by telephone number or time.

4 System Architecture

4.1 System Architecture

Figure 4-1 System architecture



4.2 Functional Modules

Radio Frequency Module

It sends/receives radio signals and modulates/demodulates the radio frequency (RF) signals and baseband signals.

Baseband Signal Processing

It processes LTE/ DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM baseband digital signals, including:

- Modulating/Demodulating LTE baseband signals
- Modulating/Demodulating HSPA+/UMTS baseband signals
- Modulating/Demodulating EDGE/GPRS/GSM baseband signals
- Encoding/Decoding HSPA+/UMTS channel
- Encoding/Decoding EDGE/GPRS/GSM channel

Bottom Layer Driver

It drives peripherals, including USB, LED, microSD and SIM/USIM.

Platform Service Subsystem

It initializes programs, diagnoses the running of the system, downloads data and serves as a watchdog.

Protocol Stack System

It processes protocols of LTE/ DC-HSPA+/HSPA+/UMTS/EDGE/GPRS/GSM.

Application System

It sends laptop commands to the bottom layer protocol for processing and returns the value to the laptop.

Existing applications include the following:

- Call management
- Message management
- CS/PS domain service management

User Interface

It provides interfaces to connect peripherals. Interfaces are for LED microSD and SIM/USIM.

Application Management

Through the application window, you can set the parameters of the E3372 and operate the E3372.

5 Technical Reference

5.1 Layer 1 Specifications (Physical)

- Examples of Channel Coding and Multiplexing TR 25.944
- Physical Layer–General Description TS 25.201
- Physical Channels and Mapping of Transport Channels onto Physical Channels (FDD) TS 25.211
- Multiplexing and Channel Coding (FDD) TS 25.212
- Spreading and Modulation (FDD) TS 25.213
- Physical Layer–Procedures (FDD) TS 25.214
- Physical Layer–Measurements (FDD) TS 25.215
- 3GPP HSDPA overall description 25.308
- 3GPP UE radio access capabilities 25.306
- LTE Physical Layer - General Description 36.201
- E-UTRAN Physical Channels and Modulation 36.211
- E-UTRAN Multiplexing and channel coding 36.212
- E-UTRAN Physical layer procedures 36.213
- E-UTRAN Physical layer – Measurements 36.214
- E-UTRAN Services provided by the physical layer 36.302

5.2 Layer 2 Specifications (MAC/RLC)

- MAC Protocol Specification TS 25.321
- RLC Protocol Specification TS 25.322
- E-UTRAN Layer 2 – Measurements 36.314
- E-UTRAN Medium Access Control (MAC) protocol specification 36.321
- E-UTRAN Radio Link Control (RLC) protocol specification 36.322
- E-UTRAN Packet Data Convergence Protocol (PDCP) specification 36.323

5.3 Layer 3 Specifications (RRC)

- UE Interlayer Procedures in Connected Mode TS 25.303
- UE Procedures in Idle Mode TS 25.304
- RRC Protocol Specification TS 25.331
- E-UTRAN Radio Resource Control (RRC) Protocol specification 36.331
- E-UTRAN User Equipment (UE) procedures in idle mode 36.304

5.4 Layer 3 NAS/Core Network (MM/CM)

- Architectural Requirements for Release 1999 TS 23.121
- NAS Functions Related to Mobile Station (MS) in Idle Mode TS 23.122
- Mobile Radio Interface Signaling Layer 3–General Aspects TS 24.007
- Mobile Radio Interface Layer 3 Specification–Core Network TS 24.008
- PP SMS Support on Mobile Radio Interface TS24.011
- Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS) 24.301

5.5 GSM Protocol Specifications

- Mobile Radio Interface Layer 3 Specification, Radio Resource Control Protocol TS 04.18
- Mobile Station–Base Station System (MS–BSS) interface; Data Link (DL) Layer Specification TS 04.06
- Digital Cellular Telecommunications System (Phase 2+); Multiplexing and Multiple Access on the Radio Path TS 05.02
- Technical Specification Group GERAN; Channel coding TS 05.03
- Digital Cellular Telecommunications System (Phase 2+); Radio Subsystem Link Control TS 05.08
- Digital Cellular Telecommunications System (Phase 2+); Radio Subsystem Synchronization TS 05.10

5.6 GPRS Protocol Specifications

- Overall Description of the GPRS Radio Interface; stage 2 TS 3.64
- Mobile Radio Interface Layer 3 Specification TS 04.08
- Mobile Radio Interface Layer 3 Specification: Radio Resource Control Protocol TS 04.18
- General Packet Radio Service (GPRS): Mobile Station (MS)–Base Station System (BSS) interface; Radio Link Control/Medium Access Control (RLC/MAC) protocol TS 04.60
- Mobile Station–Serving GPRS Support Node (MS–SGSN) Logical Link Control (LLC) Layer Specification TS 04.64

- Mobile Station–Serving GPRS Support Node (MS–SGSN); Subnetwork Dependent Convergence Protocol (SNDCCP) TS 04.65
- Multiplexing and Multiple Access on the Radio Path TS 05.02
- Channel Coding TS 05.03
- Modulation TS 05.04
- Radio Transmission and Reception TS 05.05
- General Packet Radio Service (GPRS); Stage 1 TS 22.060
- Mobile Execution Environment (MexE) TS 23.057
- General Packet Radio Service (GPRS) Service description; stage 2 TS 23.060

5.7 General Specifications

- UE Capability Requirements TR 21.904
- UE Radio Access Capabilities TR 25.926
- Vocabulary TR 25.990
- Radio Interface Protocol Architecture TS 25.301
- Services Provided by the Physical Layer TS 25.302
- Synchronization in UTRAN Stage 2 TS 25.402

5.8 Performance/Test Specifications

- User Equipment (UE) Conformance Specification; Radio transmission and reception TS 36.521
- User Equipment (UE) conformance specification; Part 1: Protocol conformance specification TS 36.523-1
- UE Radio Transmission and Reception (FDD) TS 25.101
- Common Test Environments for User Equipment (UE) TS 34.108
- Special Conformance Testing Functions TS 34.109
- Terminal Conformance Specification TS 34.121
- User Equipment (UE) Conformance Specification; Part 1: Protocol Conformance TS 34.123-1
- User Equipment (UE) Conformance Specification; Part 2: Protocol Conformance TS 34.123-2

5.9 SIM Specifications

- SIM and IC Card Requirements TS 21.111
- 3rd Gen. Partnership Proj Tech. Spec. Group Terminals; SIM App.

3rd Generation Partnership Project .Technical Specification Group Core Network and Terminals ;Characteristics of the Universal Subscriber Identity Module (USIM) application TS 31.102

5.10 Safety & Health Specifications

- Safety Standards: EN 60950-1:2006+A11:2009
- Health Standards: EN 62311:2008 / EN 62209-2:2010
- RF spectrum Standards: EN 301 511,v9.0.2 / EN 301 908-1,v4.2.1 / EN 301 908-2,v4.2.1 / EN 301 908-13,v4.2.1

6 Packing List

This chapter describes the items contained in the package of the E3372.

Table 6-1 lists the items contained in the package of the E3372.

Table 6-1 Packing list of the E3372

Item	Quantity	Remarks
HUAWEI E3372 LTE USB Stick	1	Standard
HUAWEI E3372 LTE USB Stick Quick Start	1	Standard
Safety Information	1	Standard
USB external cable	1	Optional
microSD Card	1	Optional

A Acronyms and Abbreviations

3GPP	3rd Generation Partnership Project
APN	Access Point Name
ARPU	Average Revenue Per User
BSS	Base Station Subsystem
CM	Connection Management
CS domain	Circuit Switched domain
EDGE	Enhanced Data Rates for GSM Evolution
EGPRS	Enhanced GPRS
FDD	Frequency Division Duplex
GERAN	GSM/EDGE Radio Access Network
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HSPA+	High-Speed Packet Access
HSUPA	High-Speed Uplink Packet Access
HSDPA	High-Speed Downlink Packet Access
LED	Light Emitting Diode
LTE	Long Term Evolution
MAC	Medium Access Control
MexE	Mobile Execution Environment
MM	Mobility Management
Modem	Modulator Demodulator
MS	Mobile Station
MSC	Mobile Switching Center

NAS	Non-Access Stratum
OS	Operating System
PC/SC	Personal Computer/Smart Card
PIN	Personal Identification Number
PnP	Plug and Play
PP	Point-to-Point
PS domain	Packet Switched domain
PUK	PIN Unblocking Key
RF	Radio Frequency
RLC	Radio Link Control
RRC	Radio Resource Control
SGSN	Serving GPRS Support Node
SIM	Subscriber Identity Module
SMS	Short Messaging Service
SNDCP	Subnetwork Dependent Convergence Protocol
TR	Technical Report
TS	Technical Specification
UE	User Equipment
UMTS	Universal Mobile Telecommunications System
USAT	USIM Application Toolkit
USB	Universal Serial Bus
USIM	UMTS Subscriber Identity Module
UTRAN	UMTS Terrestrial Radio Access Network
WCDMA	Wideband Code Division Multiple Access