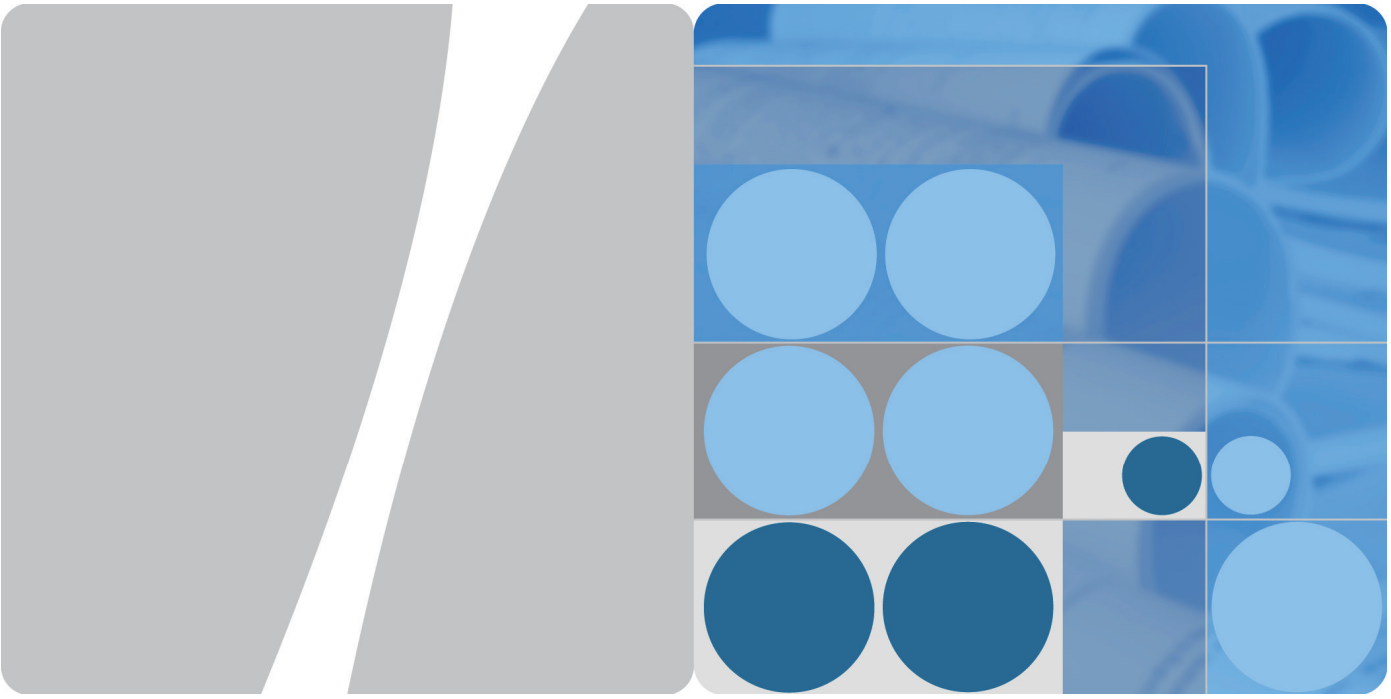
Product Description



HiLink E353 HSPA+ USB Stick
V100R001

Issue 01

Date 2011-1-18

HUAWEI TECHNOLOGIES CO., LTD.

Huawei Technologies Co., Ltd. provides customers with comprehensive technical support and service. Please feel free to contact our local office or company headquarters.

Huawei Technologies Co., Ltd.

Address: Huawei Industrial Base
Bantian, Longgang
Shenzhen 518129
People's Republic of China

Website: http://www.huawei.com

Email: support@huawei.com

About This Document

Summary

This document provides information about the major functions, supported services, system architecture, and technical references of HiLink E353 HSPA+ USB Stick (hereinafter referred to as the HiLink E353).

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 HiLink E353.
2 Features	The supported features and technical specifications of the HiLink E353.
3 Services and Applications	The services and applications of the HiLink E353.
4 System Architecture	The architecture of the HiLink E353.
5 Technical Reference	The technical references of the HiLink E353.
6 Packing List	The items contained in the package of the HiLink E353.
A Acronyms and Abbreviations	The acronyms and abbreviations mentioned in this document.

History

Issue	Details	Date	Author	Approved by
01	Initial draft completed.	2011-1-18	ChenXian	

Contents

1 Overview

The HiLink E353 supports the following standards:

- High-speed packet access plus (HSPA+)
- Universal Mobile Telecommunications System (UMTS)
- Enhanced data rates for global evolution (EDGE)
- General packet radio service (GPRS)
- Global system for mobile communications (GSM)
- Wideband Code Division Multiple Access (WCDMA)

The HiLink E353 provides the following services:

- HSPA+ packet data service
- HSUPA packet data service
- HSDPA/UMTS packet data service
- EDGE/GPRS packet data service

You can connect the HiLink E353 with the USB interface of a computer. In the service area of the HSPA+/UMTS/EDGE/GPRS/GSM network, you can surf the Internet and send/receive emails. The HiLink E353 is fast, reliable, and easy to operate. Thus, mobile users can experience many new features and services with the HiLink E353. These features and services will enable a large number of users to use the HiLink E353 and the average revenue per user (ARPU) of operators will increase substantially.

Figure 1-1 HiLink E353 profile

2 Features

2.1 Main Features

The HiLink E353 mainly supports the following features:

- WCDMA/HSPA/HSPA+ 850/900/1800/1900/2100MHz, GSM/GPRS/EDGE 850/900/1800/1900 MHz;
- Supporting receiving diversity;
- HSPA+ data service of up to 21.6Mbps;
- HSUPA data service of up to 5.76Mbps;
- WCSMA PS domain data service of up to 384Kbps;
- EDGE PS domain data service of up to 236.8Kbps;
- GPRS PS domain data service of up to 85.6Kbps;
- Concurrent service based on PS domain of WCDMA HSUPA/HSPA+PS;
- Micro Secure Digital Memory (Micro SD) Card;
- USB Stick, easy to connect;
- Dual internal antenna;
- Plug-and-Play;
- Standard USB interface（Type A）
- External antenna interface;
- Windows XP SP3、Windows Vista SP1/SP2、Windows 7、Mac OS X 10.5 、10.6 with latest upgrades;
- HiLink features (Driverless, Zero installation, Auto connect)

2.2 Technical Specifications

2.2.1 Hardware

Table 2-1 Hardware specifications

Item	Specifications
Technical standard	GSM/GPRS/EGPRS WCDMA/HSDPA R5, HSUPA R6, HSPA+ R7
Operating frequency	WCDMA/HSPA+/HSPA 2100MHz: 1920MHz~1980 MHz (Uplink)/2110MHz~2170 MHz (Downlink) WCDMA/HSPA+/HSPA 1900MHz: 1850MHz~1910MHz (Uplink)/1930MHz~1990MHz (Downlink) WCDMA/HSPA+/HSPA 1800: 1710MHz~1785MHz (Uplink)/1805MHz~1880 MHz (Downlink) WCDMA/HSPA+/HSPA 900MHz: 880MHz~915MHz (Uplink)/925MHz~960 MHz (Downlink) WCDMA/HSPA+/HSPA 850MHz: 824MHz~849MHz (Uplink)/869MHz~894MHz (Downlink) GSM/GPRS/EDGE 850MHz: 824MHz ~849MHz (Uplink)/869MHz ~894MHz (Downlink) GSM/GPRS/EDGE 900MHz: 880MHz~915MHz (Uplink)/925MHz~960 MHz (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
	SIM/USIM card: standard 6-pin SIM card interface
	External antenna interface
	Micro SD Card Slot
LED	indicating the status of the HiLink E353
Maximum transmitter power	WCDMA/HSPA+ 2100/1900/900/850MHz: 24dBm +1/-3 (Power Class 3)
	GSM/GPRS 850MHz/900MHz: +33dBm (Power Class 4)
	GSM/GPRS 1800MHz/1900MHz: +30dBm (Power Class 1)
	EDGE 850MHz/900MHz+27dBm (Power Class E2)

Item	Specifications
	EDGE 1800MHz/1900MHz: +26dBm (Power Class E2)
Static receiver sensitivity	WCDMA/HSPA+ 2100/1900/900/850MHz: Compliant with 3GPP TS 25.101(R7)
	GSM/GPRS/EDGE 850 MHz/900 MHz/1800 MHz/1900 MHz: Compliant with 3GPP TS 05.05
Maximum power consumption	<3.0W
Power supply	4.75V-5.25V / 500mA (Equal Value), 600mA (Peak Value)
Dimensions (D × W × H)	89mm x 27mm x 12 mm
Weight	<40g
Temperature	• Operating: –10℃ to +45℃ • Storage: –20℃ to +70℃
Humidity	5% to 95%
Notes: 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	

2.2.2 Software Specifications

Table 2-2 Software specifications

Item	Description
Basic specifications	• Driverless • Zero installation • Auto connect, auto reconnect • Display the device information by website
PIN management	PIN unlock
Special SMS reminding	Support the display of unread service messages (Customizing service number required)

Item	Description
Device information display	• Connection status • Signal • Operator name • Network mode • Roam status
System requirement	• Windows XP SP3、Windows Vista SP1/SP2、Windows 7 • MAC OS X 10.5 and 10.6 with latest upgrades
Notes: PIN = personal identification number PUK = PIN unblocking key	

3 Services and Applications

3.1 Packet Data Service

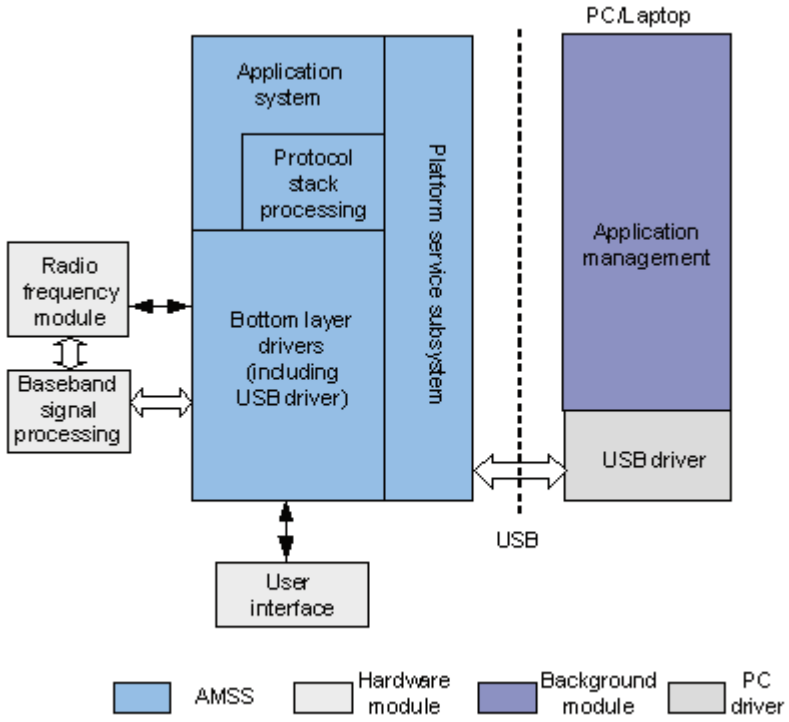
The HiLink E353 supports the data service based on HSPA+/HSUPA/HSDPA/UMTS/EDGE/GPRS

After you connect the HiLink E353 to a PC with the USB interface, the HiLink E353 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.

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 WCDMA/GSM/GPRS baseband digital signals, including:

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

Bottom Layer Driver

It drives peripherals, including USB, Micro-SD, and SIM/USIM card and so on.

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 WCDMA (UMTS)/HSPA/HSPA+/GSM/GPRS/EDGE.

User Interface

It provides interfaces to connect peripherals. Interfaces are for LED, Micro-SD and SIM/USIM.

User Driver within OS

It is used for achieving the interaction between application and device.

Application Management

The application for accessing the network.

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

5.2 Layer 2 Specifications (MAC/RLC)

- MAC Protocol Specification TS 25.321
- RLC Protocol Specification TS 25.322

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

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

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 (SNDCP) 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

- 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. Toolkit (USAT) TS 31.111

6 Packing List

This chapter describes the items contained in the package of the HiLink E353.

Table 6-1 Packing list of the HiLink E353

Item	Quantity	Remarks
HiLink E353 HSPA+ USB Stick	1	Standard
HiLink E353 HSPA+ USB Stick Quick Start	1	Standard
USB external cable	1	Optional
Micro SD 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 Plus
HSUPA	High-Speed Uplink Packet Access
HSDPA	High-Speed Downlink Packet Access
LED	Light Emitting Diode
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