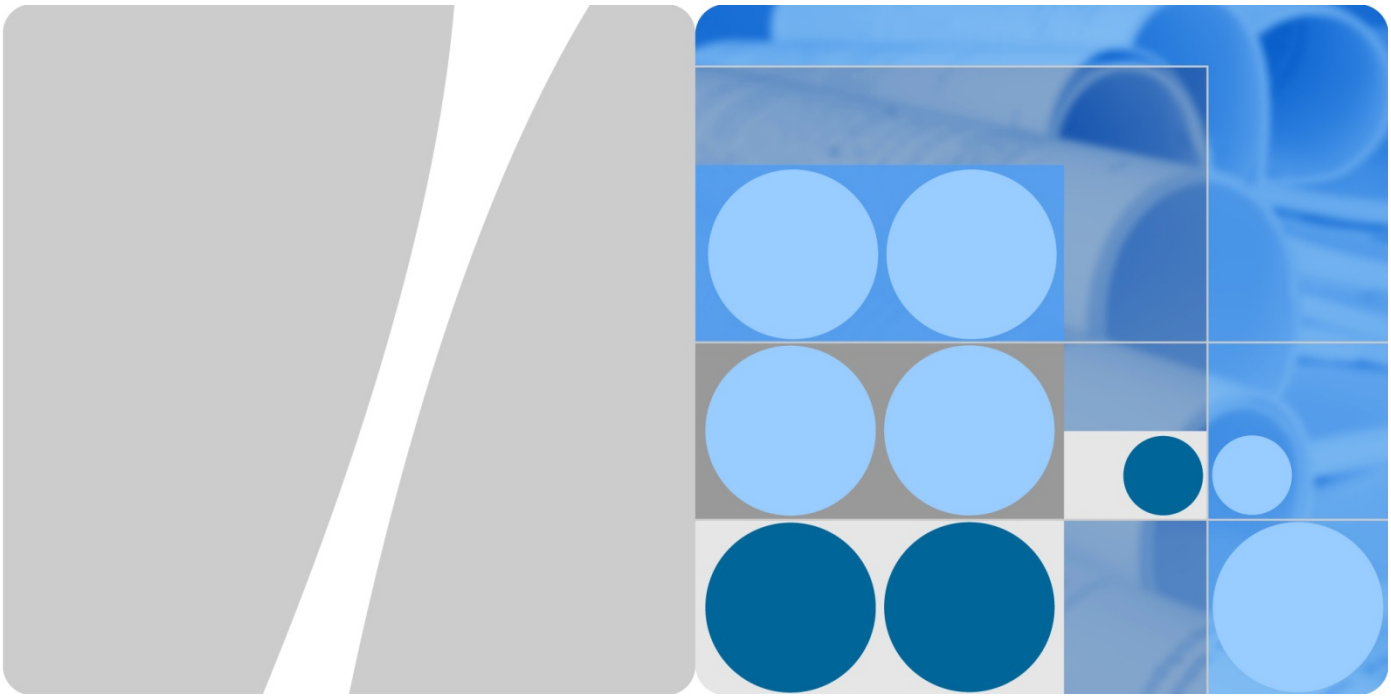
Product Description



MS2131i-8 HSPA+ USB Stick
V100R001

Issue 01

Date 2014-07-14

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About This Document

Summary

This document provides information about the major functions, supported services, system architecture, and technical references of MS2131i-8 HSPA+ USB Stick (hereinafter referred to as the MS2131i-8).

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 MS2131i-8.
2 Features	The supported features and technical specifications of the MS2131i-8.
3 Services and Applications	The services and applications of the MS2131i-8.
4 System Architecture	The architecture of the MS2131i-8.
5 Technical Reference	The technical references of the MS2131i-8.
6 Packing List	The items contained in the package of the MS2131i-8.
A Acronyms and Abbreviations	The acronyms and abbreviations mentioned in this document.

History

Issue	Details	Date
01	Initial draft completed.	2014-07-14

Contents

1 Overview

MS2131i-8 HSPA+ USB Stick (hereinafter referred to as the MS2131i-8) is a high-speed packet access plus (HSPA+) universal serial bus (USB) modem.

The MS2131i-8 supports the following standards:

- HSPA+（High Speed Packet Access Plus）
- HSUPA（High Speed Uplink Packet Access）
- HSDPA（High Speed Downlink Packet Access）
- WCDMA (Wideband Code Division Multiple Access)
- EDGE（Enhanced Data Rates for Global Evolution）
- GPRS（General Packet Radio Service）
- GSM（Global System for Mobile Communications）

The MS2131i-8 provides the following services:

- HSPA+ packet data service of up to 21.6 Mbit/s
- EDGE/GPRS packet data service of up to 236.8 bit/s
- WCDMA/GSM Short Message Service (SMS)

In the service area of the HSPA+/ WCDMA /EDGE/GPRS/GSM network, you can surf the Internet and send/receive messages/emails cordlessly. The MS2131i-8 is fast, reliable, and easy to operate. Thus, mobile users can experience many new features and services with the MS2131i-8. These features and services will enable a large number of users to use the MS2131i-8 and the average revenue per user (ARPU) of operators will increase substantially.

Figure 1-1 shows the profile of the MS2131i-8.

Figure 1-1 MS2131i-8 profile

2 Features

2.1 Main Features

The MS2131i-8 mainly supports the following features:

- Equalizer and receive diversity
- HSPA+ data service of up to 21.6 Mbit/s
- HSUPA data service of up to 5.76 Mbit/s
- WCDMA PS domain data service of up to 384 bit/s
- EDGE packet data service of up to 236.8 bit/s
- GPRS packet data service of up to 85.6 bit/s
- SMS based on CS/PS domain of GSM and WCDMA
- Dual internal antenna
- USSD
- Standard USB interface(Type A)
- Online software upgrade
- Remotely manage the device via SMS

2.2 Technical Specifications

2.2.1 Hardware

Table 2-1 lists the hardware specifications.

Table 2-1 Hardware specifications

Item	Specifications
Technical standard	HSPA+/HSDPA/ HSUPA/ WCDMA: R7 GSM/GPRS/EGRPS: R99
Operating frequency	HSPA+/ HSDPA/ HSUPA/ WCDMA: B1/ B2/ B5/ B8 EDGE/ GPRS/ GSM: B2/ B3/ B8/ B5
External interfaces	USB interface: supporting USB 2.0 high speed
	SIM/USIM card: standard 6-pin SIM card interface
Internal memory	128MB Flash
Maximum transmitter power	HSPA+/HSUPA/HSDPA/WCDMA：+24dBm (Power Class 3)
	GSM/GPRS 850/900MHz: +33dBm (Power Class 4)
	GSM/GPRS 1800MHz/1900MHz：+30dBm (Power Class 1)
	EDGE 850M/900MHz：+27dBm (Power Class E2)
	EDGE 1800MHz/1900MHz：+26dBm (Power Class E2)
Static receiver sensitivity	WCDMA/HSPA/HSPA+: Compliant with 3GPP TS 25.101(R7)
	EDGE/GPRS/GSM 850/900/1800/1900 MHz: Compliant with 3GPP TS 34.121
Maximum power consumption	＜3.0 W
Power supply	5V / 500mA
LED	indicating the status of the MS2131i-8
Antenna	Built-in UMTS/GSM main antenna
	Built-in UMTS diversity antenna
Dimensions (D × W × H)	84.9 mm x 27mm x 12.3 mm
Weight	<35g
Temperature	• Operating: –20℃ to +55℃ • Storage: –40℃ to +70℃

Item	Specifications
Humidity	• Operating: 5% to 95% • Storage: 5% to 95%
Notes: 3GPP = The 3rd Generation Partnership Project LED = light-emitting diode SIM = subscriber identity module TS = technical specification USIM = UMTS subscriber identity module	

2.2.2 Software

Table 2-2 lists the dashboard specifications.

Table 2-2 Dashboard specifications

Item	Description
Network connection setup	• APN management: edit by SMS. • Set up network connection.
Other	Network connection settings: • Automatic network selection and registration • Manual network selection and registration
	Selection of network connection types, for example: • 3G preferred

3 Services and Applications

3.1 Packet Data Service

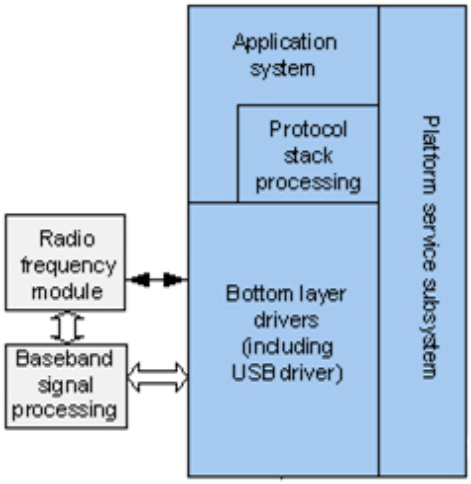
The MS2131i-8 supports the PS domain data service based on HSPA+/HSUPA/HSDPA/ WCDMA/EDGE/GPRS. You can access the network through wireless connection.

4 System Architecture

4.1 System Architecture

Figure 4-1 shows the 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 HSAP+/UMTS/EDGE/GPRS/GSM baseband digital signals, including:

- 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, 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 HSPA+/UMTS/EDGE/GPRS/GSM.

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 MS2131i-8.

Table 6-1 lists the items contained in the package of the MS2131i-8.

Table 6-1 Packing list of the MS2131i-8

Item	Quantity	Remarks
MS2131i-8 HSPA+ USB Stick	1	Standard
MS2131i-8 HSPA+ USB Stick safety information	1	Standard

A Acronyms and Abbreviations

3G	The Third Generation
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
HSDPA	High Speed Downlink Packet Access
IC	Integrated Circuit
IP	Internet Protocol
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