Technical Specifications and

Description

Of

CDMA 1X&GSM Dual Standby

Model—CG601

Version 1.0

24th Jul. 2007

1 Abstract

This document gives brief technical specification & description of our product—CG601

2 Product Features

2.1 General specification

Items	CDMA 1X&GSM Handset	Remark
Protocol	GSM/GPRS/CDMA1X	IS-95A/B Compatible
Chipset	MSM6025/SC6600D5-180G	
Frequency	CDMA: TX: 824MHz～849MHz RX: 869MHz～894MHz GSM: TX: 890 MHz～915 MHz RX:935 MHz～960 MHz TX:1710 MHz～1785MHz RX:1805 MHz～1880 MHz	
LCD	2.2’，176×220 pixel(TFT)	
Backlight	Keypad: White	
Memory	32M BYTE+TF Card	
MultiMedia	MP3/MP4,64Polyphonic	
Camera	1.3 megapixel	
Vibrator	Built-in Vibrator	
Earphone	Support	
Travel Charger	Input: 90-250V～50/60Hz 150mA Output: 5.2V 600mA	
Battery	1000mAh / Li-Ion	
Antenna	Internal	

2.2 Main Functions:

Function	Description	Configure Parameter	Remark
	Missed Calls	Support 20+20	
	Incoming Calls	Support 20+20	
	Outgoing Calls	Support 20+20	
	Refuse Calls	Support 20+20	
	RingTones Number	Support 16	
	Call Waiting	Support	Need Network Support
	Call Forwarding	Support	
	Call Limit	Support	
	Incoming Display	Support	

Talk	Phone Book Capacity	500	Support the Lookup of Surname and Initial
	Incoming, Call details remind	Support	
	Incoming Filter	Configure auto-refusing calls	Blacklist Function
	Incoming Number Grouping Ringing	Family,Friend,Colleague, Schoolmate,User-defined	
	Speed Dialing	Support	
	Auto Re-dial	Re-dial times:10	
	3 Way Calling	Support	
	Direct-dial Extension by using the P key	Support	
Message	Differ Message RingTone	Support	
	Outbox Capacity	300	
	Inbox Capacity	300(Share with Outbox)	
	Phrase Template	10	
	Voice Mail	Support	
	Broadcast Message	Support	
	Chinese Input Solution	Support	
	SMS	Support	
	MMS	Support	
	Auto Re-dial	Not support	
	Message Setting	Support	
	Message Fire Wall	Not support	
Other	Download Ringing,Picture	Support	
	Games	2	Customized
	Screen Dormancy	Support	
	Scene Mode	4	
	Alarm Clock	3 types, User-defined	Support Power Off Alarm
	Power On/Off Alarm	Support	
	Calculator	Support	
	Stop Watch	Not support	
	Flash Disk	Support	
	WAP	Support	
	Mobile QQ	Not support	
	Data Line	Support(Standard Configure)	
	Data Synchronize	Not support	
	AT Instruction Support	Not support	Support When Producing
Mobile Phone Setting	Personal Information Password Protection	Not support	
	Mobile Phone Password Protection	Support	
	Language	Simplified Chinese /English	Customized

2.3 Electric Performance

Items	Design spec.
Mode of Communication	CDMA 1X&GSM
Basic Operating Frequency Range (Edge frequency)	CDMA TX: cell,824 ~ 849MHz； GSM TX: cell, 890 MHz～915 MHz TX:pcs, 1710 MHz～1785MHz
	CDMA RX: cell,869 ~ 894MHz； GSM RX: cell, 935 MHz～960 MHz RX:pcs, 1805 MHz～1880 MHz
CDMA Ratified Operating Frequency Range (Edge frequency)	TX: 824 ~ 835MHz；
	RX: 869 ~ 880MHz；
Frequency Step	Cell: 30kHz;
TX / RX separation	Cell: 45MHz;
Channeling (Center frequency)	TX: 824.64 ~ 848.37MHz； Interval 30KHz, 792 Channels；
	RX: 869.64 ~ 893.37MHz； Interval 30KHz, 792 Channels；
Type of Modulation	TX: OQPSK
	RX: QPSK
Occupied Bandwidth	1.25MHz
Frequency Tolerance	±300Hz
Receive Sensitivity	-104dBm (FER0.5%)
Waveform Quality	0.944
Transmit Time Error	±1μs

2.4 Battery and Charger

Items		Remark
Battery	Type	Li-ion
	Voltage	3.7V (working voltage)
	Capacity	1000mAh
	Standby Time	70hours
	Talking Time	120 minutes
Charger	Type	Travel Charger
	Input Voltage	AC 90V~250V
	Input Frequency	50Hz～60Hz
	Output Voltage	DC 5.2V
	Output Current	600mA

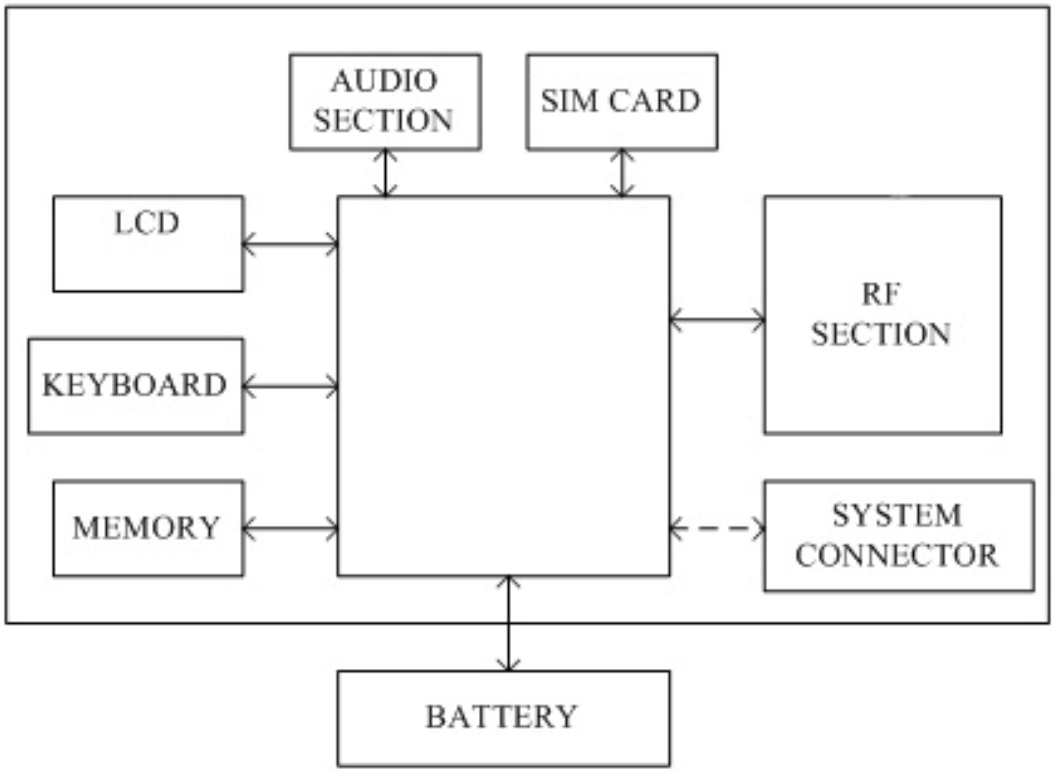
2.5 Environment Specifications

1) Temperature: Working Temperature -30℃ ~ +60℃ Storage Temperature -40℃ ~ +70℃
2) Humidity: 0% ~ 95%
3) atmospheric pressure: 86 ~ 106 kPa

3 Solution of the Product

The CG601 handset hardware uses Qualcomm MSM6025 chipset and Spreadtrum SC6600D5-180G chipset, which consist of baseband (BB) unit and radio frequency (RF) unit in addition of the peripherals and accessories to build a complete mobile terminal hardware. The block diagram shows the main building blocks inside the subsystems: RF unit, BB unit and some accessories.

Following the main building and functional blocks of the block diagram are described.



3.1 Radio Frequency unit

The Radio-unit consists of all receiver, transmitter and high frequency generation and receives sections of the CG601 hardware.

It represents the transition to the air-interface, the Radio-link between the network base station and the mobile terminal.

Radio frequency unit is composed of RFR6122+RFT6122, Si4210-D-GMR,Duplexer, PA, SAW Filter and so on.

The CDMA receive signals are amplified by the RFR6122 LNA then passed through inter-stage bandpass filters before being applied to the RFR6122 downconverter stages.On-chip circuits downconvert the received sign directly from RF to baseband using radioOne ZIF techniques . Generation of the CDMA Rx downconverter LO is fully

integrated within the RFR6122 IC (except the loop filter).

The CDMA transmit path begins with analog baseband signals from the MSM device the drive the RFT6122 IC. Integrated PLL and VCO circuits generate the TX LO used in the quadrature upconverters that translate baseband signals directly to RF. The RFT6122 output driver stages deliver fairly high-level signals that are filtered and applied to the power amplifiers. The power amplifier (PA) outputs are routed to the antenna through the RF fronted circuits.

3.2 Baseband unit

Baseband unit consists of baseband IC, power management IC and memory IC.

Baseband chip uses MSM6025, which is an advanced Baseband Processor. It presents address and data bus line to connect to memory chips, and uses RF interface to control and communicate with RF unit. MSM6025 also presents versatile interfaces to control LCD, keypad, UIM card, MicroSD(T-Flash) card, to provide JTAG signal and GPIOs. MIC input and audio output interfaces are also provided by MSM6025.

PM6500 consists of all voltage supply unit, power on/off management unit, battery charge management unit, USB transceiver and UIM transceiver, system clock and slow clock management unit, LCD and keyboard backlight controller and so on.

Memory uses COMBO FLASH, which consists mainly of the combined memory chip, NAND FLASH and SDRAM into one single IC package.

3.3 Peripherals

Main Display: 2.2’，176×220 pixel(TFT)

Keypad: the Fastap keypad with 23 keys.

Camera: support 1.3 MegaPixel

MicroSD: support up to 1Gbytes capacity and support push&pull function.

4 Software Architecture

CG601handset software architecture consists of foreground application layer, background application layer, and protocol stack. Foreground application layer mainly handles response of keyboard, and displays needed data. Background application layer mainly performs hardware action and controls communication with protocol layer. Protocol stack layer contains functionalities that allow peer to peer exchange with networks.

5 Reference Standards:

- TIA/EIA/IS707.A Data Service Option for Spread Spectrum Systems
- TIA/EIA/IS707.A.2 Data Service Options for Spread Spectrum systems: Radio link Protocol
- TIA/EIA/IS-683 Over-the-Air Service Provisioning of Mobile Stations in Wideband Spectrum Cellular Systems
- 3GPP2 TSG-C4.1 Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations
- 3GPP2 C.S0023-0 Removable User Identity Module for Spread Spectrum Systems
- C.S0024-0 cdma2000 High Rate Packet Data Air Interface Specification
- C.S0033-0 Recommended Minimum Performance Standards for cdma2000 High Rate Packet Data Access Terminal.
- TIA/EIA/IS-2000.1 Introduction to cdma2000 Standards for Spread Spectrum System

- TIA/EIA/IS-2000.2 Physical Layer Standard for cdma2000 Spread Spectrum System
- TIA/EIA/IS-2000.3 Medium Access Control (MAC) Standard for cdma2000 spectrum System
- TIA/EIA/IS-2000.4 Signaling Layer 2 Standard for cdma2000 Spread Spectrum Systems
- TIA/EIA/IS-2000.5 Upper Layer(Layer 3) Signaling Standard for cdma2000 spread Spectrum Systems
- TIA/EIA/IS-2000.6 Analog Signaling Standard for cdma2000 Spread Spectrum Systems