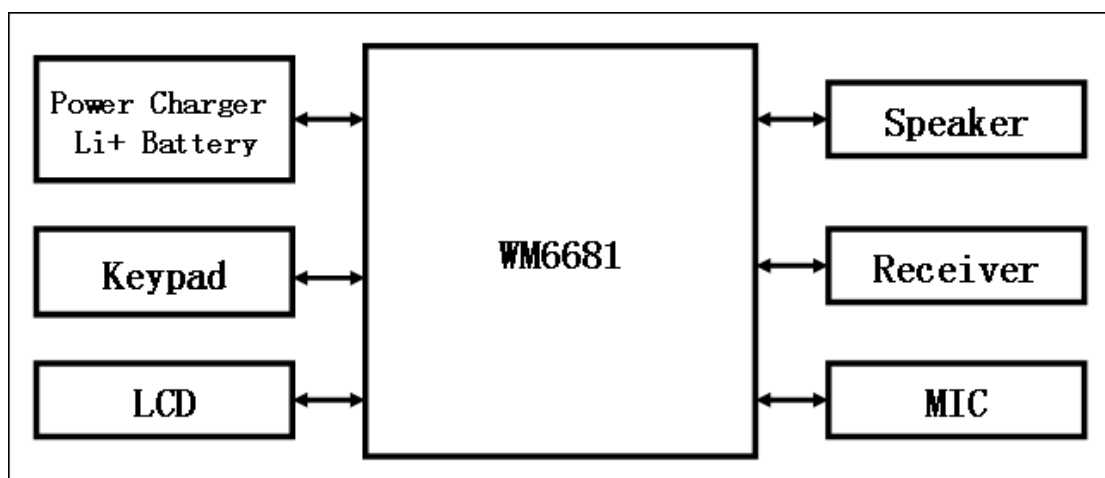# L100 Operational Description

1. Introduction

L100 is a Fixed Wireless Phone. The wireless communication part of the product is based on CDMA2000 1x technology, which was designed in full-compliance to the international standard including its RF standard of IS-98e. The extension circuit for receiver, hand frees speaker, etc.

2. Interface and function display

A. Power Circuit

It includes the battery manage (Li+ type, which voltage ranging from 3.2V to 4.2V), and charger adaptor. The charger adaptor takes AC voltage of 100~240V and output at 5.3V DC for up to 800mA in current. The charger adaptor is AC/DC switching power supply for wide range of input AC voltage.

B WM6681 module

The module is the part of the product, which includes all the RF and base-band circuitries based on CDMA2000 technology. It is designed according to the CDMA standard and in compliance to IS-2000.

C Some external interface

Keypad, LCD，Receiver, MIC and AUDIO amplifier，SPEAKER devices. These external Devices connect with WM6681 module for human interface purposes.

3. Operational description

A. RF signals

The air-interface standard is based on CDMA2000 technology. The RF tranceiver in

the WM6681 module transmits and receive the RF signal at determined by CDMA network, via air-interface protocols. On the TX side, the RF transceiver converts the base-band signal (TX-I/Q signal) generated by base-band chip (CBP5.0 by Via Telecom) to specified RF frequency, and then amplified by RF PA. After the RF Duplexer the signal transmitted by the internal PIFA Antenna, which is connected to the product via two copper pads. On the RX side, the RX signal from the BSC (base station of the network) is received by the antenna, and feeds to RF transceiver after the RF duplexer. After the LNA, the amplified RX signal is down-converted to base-band signals (RX I/Q) and feeds to the base-band chip (CBP5.0). There is an LO circuit, which is used as local oscillator for RF up/down conversion. The LO is used as reference frequency and internally inside the RF transceiver, the proper up/down conversion clocks are generated.

B. Base-band modem.

The modem (modulation/demodulation) is integrated inside base-band chip (CBP5.0), the TX-I/Q signal is generated digitally with proper modulation scheme and than converted by DAC to analog base-band signal. The received RX-I/Q signal is digitized by ADC circuits on CBP5.0, and the digitally demodulated and decoded on CBP5.0 chip.

C. Protocol Stack

The protocol stack in side CBP5.0 is used to process received data from BSC and generate data for sending to BSC. Such operation in all done inside CBP5.0 and compliance with the CDMA standard

D. VC-TCXO.

The 19.2MHz VC-TCXO is used in the module as local frequency source. It is fine-tuned by receiver circuit and digital PLL algorithms. The 19.2MHz is tightly locked to BSC's GPS clock. This ensured the RF transmission frequency accuracy.

E. Audio Operation

From the protocol stack, the digital Audio data (such as QCELP, EVRC) receive from BSC frame-by-frame. The digital audio data is transferred to Voice DSP (VDSP) processor for decoding to PCM audio signal which in turn converted to RX analog voice signal by on-chip codec. The RX analog signal is amplified by on-chip audio driver to drive audio receiver in the handset. For speaker mode, an audio amplifier is used to drive 8ohm loud speaker.

On the TX side, the signal received by Microphone is amplified and digitized by the on-chip CODEC. The TX digital signal is process by VDSP and coded to QCELP or EVRC frames. Coded frame data is then modulated to TX I/Q signal for transmission.

F. Power supply circuit

The AC power is converted to DC 5.3V and feeds to the product. The 5.3V DC is used to charge the battery and in parallel the battery voltage is used by the WM6681 module as the input power (3.2V to 4.2V, depends on the battery charging state). Inside the module, there are several LDOs for generating the voltage for digital power (3.0V and 1.8V), analog power (3.0V) and power used by transceiver and VC-TCXO.

G. Keypad

The keypad is design with Row/Col scan matrix for detecting the key pressing. This is low-frequency and low-voltage design

H. LCD

LCD is mono-color COG design with SPI serial interface to WM6681 module. It also requires the backlight driver circuit which taking power from Battery directly with on/off control circuit.

I. USB interface

The USB interface is used for product maintenance as well as for internet browsing by connecting to a computer.   It is USB1.1 compatible design.   The USB transceiver is built-in to the CBP5.0 chip

J. UIM socket

This is to interface to R-UIM card for certain networks which requires R_UIM support.

K. Antenna

The internal antenna is used for the product. It is a PIFA antenna with shell fragment connector. The radiation pattern of the antenna is horizontal for optimized signal reception.