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# **CDMA Fixed Wireless Terminal SW1802 User's Manual**

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# 1 Overview

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Changes or modifications not expressly by the party responsible for compliance could void the user's authority to operate the equipment

## 1.1 Definitions and Abbreviations

- IP Telephony: a kind of voice service over IP network
- GSM: Global System for Mobile communications
- CDMA: Code Division Multiple Access
- FXO: Foreign Exchange Office
- FXS: Foreign Exchange Subscriber
- DTMF: Dual-Tone Multi-Frequency
- SMS: Short Message Servicing
- NMS: Network Management System

## 1.2 Equipment Description

SW1802 Fixed Wireless Terminal (Refer to as SW1802 in the following sections) is a device for voice or data communication. It provides wireless access functionality by CDMA network. SW1802 is fit for all kinds of areas and scenarios especially in places where wired network is impossible or hard to reach...

SW1802 is a mono-board device, which can be configured to support CDMA.

The device provides external interfaces as below:

- a) One FXS interface, connect to a telephone set.
- b) One SIM/UIM card slot, for SIM/UIM card installation
- c) One battery slot
- d) One antenna interface
- e) One program interface, special program cable for update terminal
- f) One TTL Internet port, equipped USB-TTL cable for Internet access.



**Figure 1-1 SW1802 Fixed Wireless Terminal**

### 1.3 LED Indicators

9 Light indicators indicate running state:

Type	Label	Color	Meaning
LED	Charge	Yellow	When incoming /outgoing call begin to connect, send polarity charging signal, light on
LED	Power	Green	Light on connect to external power, light off when battery works
LED	Run	Green	Sparks - device under proper operation On or Off - device failed
LED	Phone	Green	On – telephone off hook Off – telephone on hook
LED	Battery	Red	On-battery is exhausted, need rechargeable
LED	Register	Green	Indicates connection status Off – wireless module not started Sparks quickly – network registration not completed Sparks once every 4 seconds – network registration succeeded.
LED	Signal (3 indicators)	Green	Indicates signal intensity of the network. The more the number of the lighted lamp, the stronger the signal intensity of the network Flash—standby or calling, on 1 second, off 4 seconds.

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## 1.4 Back Panel

The back panel of the equipment is shown as in Figure 1-2.

**Figure 1-2 Back Panel**



- a) Power: DC12v power supply socket.
- b) Power switch: DC power switch, push down to switch on the equipment
- c) Phone: RJ11 telephone set socket, connect to telephone set by normal 6P4 phone line
- d) Program: RJ11, special cable for update terminal
- e) Internet(TTL): equipped USB-TTL cable for Internet
- f) Slide switch (Call/Internet): switch system modes between Internet and voice communication (Call).
- g) Antenna socket: for external antenna.

## 2 Functions

### 2.1 Main Functions

Table 4-1 lists the main functions of the equipment. Refer to Chapter 5 for more details.

**Table 2-1 SW1802 Functions**

Functions	Specification	Notes
Telephone set connection	Provides one FXS interface for connecting to a telephone set, for incoming/outgoing call	
Caller ID indication	Support caller ID indication	
CDMA network access	Support CDMA network access	SW1802C
Polarity reverse	Send polarity reverse signal for charge	
Protection	Lock SIM/UIM card, lock PIN etc.	
Keypad NMS	Network management over keypad	

### 2.2 Technical Specifications

- a) Working environment
  - 1) Operation temperature:  $-10^{\circ}\text{C} \sim +55^{\circ}\text{C}$
  - 2) Relative humidity: 10%~95%
  - 3) Air pressure: 86kPa~106kPa
  - 4) Environment noise:  $\leq 60\text{dB(A)}$
- b) Working frequency: CDMA 800Mhz
- c) Frequency stability: better than  $2.5 \times 10^{-6}$
- d) Signal sensitivity: less than  $-103\text{dBm}$
- e) Radiation power:  $<0.2\text{ W}$
- f) Power supply: A.C  $220 \times (1 \pm 15\%) \text{V}$
- g) Caller ID mode: DTMF
- h) Telephone line length: no more than 750m

### 2.3 Dimension

210mm (Length)  $\times$  150mm (Width)  $\times$  44mm (Height).

SW1802 is designed to have beautiful streamline outline, and can be placed horizontally (figure 3-1) or upright (with the help of a fixer stand) in accordance with the office environment.

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## 3 Operation Guide

### 3.1 Package List

The package contains:

- |    |                        |   |
|----|------------------------|---|
| a) | SW-1801EC device       | 1 |
| b) | Power adaptor          | 1 |
| c) | 6P4-6P4 Telephone line | 1 |
| d) | USB-TTL cable(option)  | 1 |
| e) | Program Cable(option)  | 1 |
| f) | Battery(option)        | 1 |
| g) | antenna                | 1 |
| h) | Internet CD(option)    | 1 |

Step 1: Insert SIM/UIM card into socket, Open the back cover, insert the SIM or UIM card, and then restore the back cover. Refer to [Figure 3-1](#), Slide the card holder and open it by lifting it up. Insert the SIM/UIM card into the card holder. Make sure that the cut angle is on the right side and the golden connectors on the SIM/UIM card are facing downwards. Close the card holder and slide it back into its place.

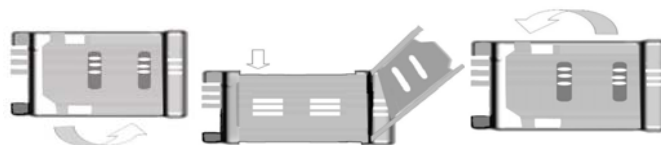
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**Notice:**

The equipment supports only 3.3V SIM cards. Don't use SIM card of any other types.

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**Figure 3-1 SIM/UIM card installation**

Step 2: connect the telephone set

Connect the telephone set and device with the telephone line by inserting the connector into the “Phone” port on the device.

Step 3: Install the antenna.

Step 4: Connect the power adaptor to 220v AC power. Be sure that the AC power has been grounded.

Step 5: Connect the power adaptor to the DC Power socket in the device.

Step 6: Switch on the device. The device may be ready for use after about 15 seconds later. (The registration time may vary according to the network environment in different area.)

Press “#” after finish dialed numbers, can shorten dialing time.

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**Warning:** Many types of telephone sets exist and they always have different electronic characteristics, so its recommended that the telephone set keeps at least 2 meters away from the equipment so as to protect the equipment and the phone set from interfering with each other.

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Outer electromagnetic rays may interfere with the equipment via radiation or conduction. Some protection actions should be taken:

- 1) Use only single-phase 3-line alternating current power socket with the PE line installed well so that the filter circuit in the equipment works normally to filter the interference that come from the electricity network.
- 2) Keep the equipment out of the radio transmitters and radar transmitters with high transmission power and high frequency large current equipments.
- 3) Use electromagnetic shielding methods when necessary. For example use the shielded cables.
- 4) The cables should distribute inside the office room so as to protect the equipment from being damaged by high voltage and current caused by thunder. Distributing the cables outside is strongly discouraged.

## **3.2 Charging Device Connection**

If charging is required, chargeable telephones may be used to connect to the “Phone” socket.

If separate charging device is required, follow the installation guide of the charging device to install it.

## **3.3 Running Status Specification**

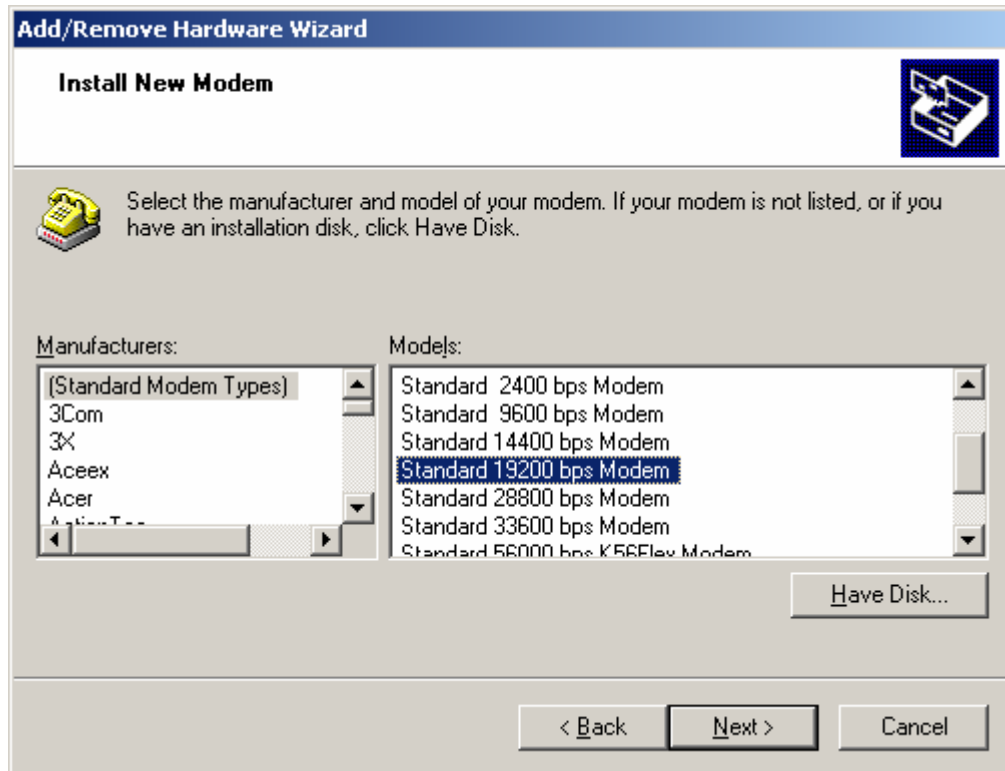
- a) The power LED keeps long time on when connect to external power, off when use battery.
- b) After powered, module initializations, RUN LED quick sparks, 0.25s on 0.25s off; finish initialization, RUN slow flash, 1 second on 1 second off, indicate device is operational.
- c) When un-insert SIM/UIM card or cannot search network, NETWORK LED flash per second, RUN quick flash; when succeeded in registering network, NETWORK flashes per 1.5s off 0.5s on.
- d) The phone indicator indicates the status of telephone connected to the device. On when off hook, off when on hook.
- e) Charge on when a call succeeds and off when call terminated.
- f) If wrong number or prohibited number is dialed, “Du Du” tone will be heard, which means the user should hang up the phone.
- g) “Signal Intensity” indicator includes 3 lamps. Under proper 1s on 4s off, if off over 5s, then network may have problem. There should be at least 2 lamps to keep light for the device to work properly.
- h) Battery LED will on when going too exhausted, which can last around half of one hour, need recharge.



## 4 Internet (CDMA)

### 4.1 Modem Installation

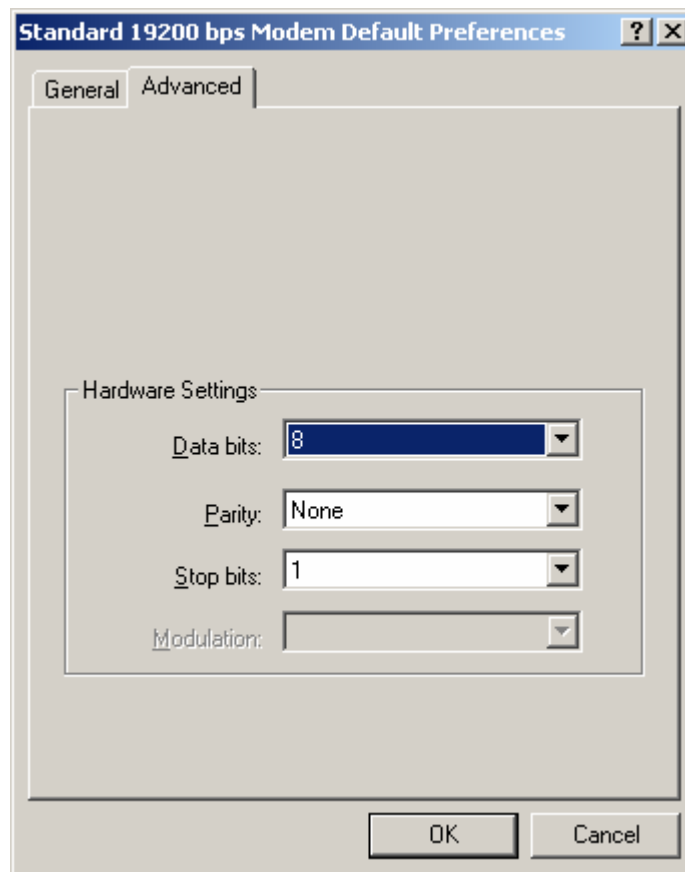
Install standard 192000 bps modem on PC's 9-PIN serial port.



**Figure 4-1 Standard Modem Installation**

Confirm properties of the Modem as Figure 4-2:

- 1) Baud rate: 115200
- 2) Flow control: hardware
- 3) Data bits: 8
- 4) Parity check: N
- 5) Stop bit: 1



**Figure 4-2 Properties setting**

Extra initialization commands should be added in the advanced options dialog shown as in figure 4-3. The command is shown as the following line:

```
AT+CRM=1; +CPS=33; +CMUX=1; +CTA=0
```

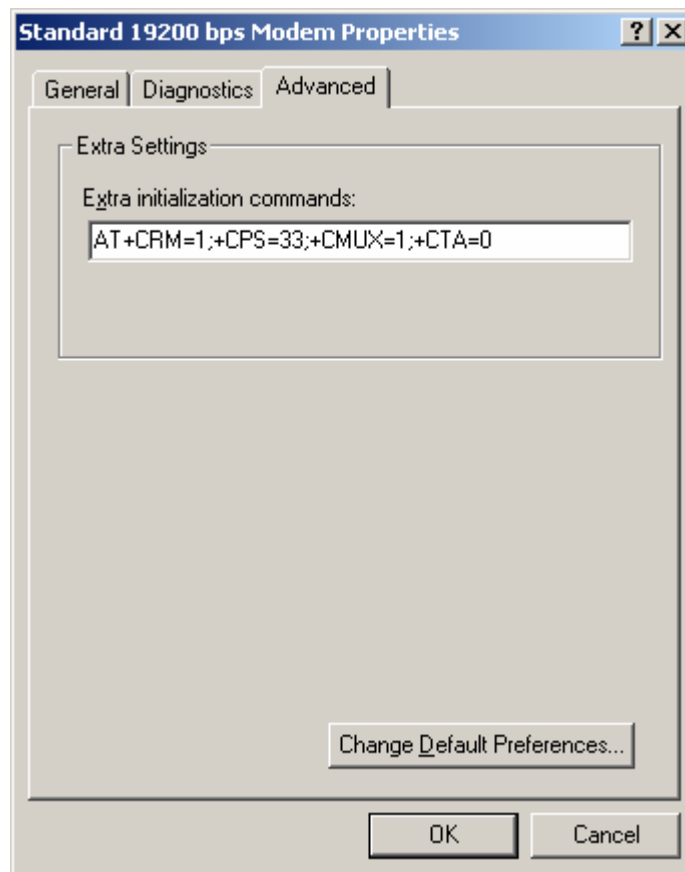
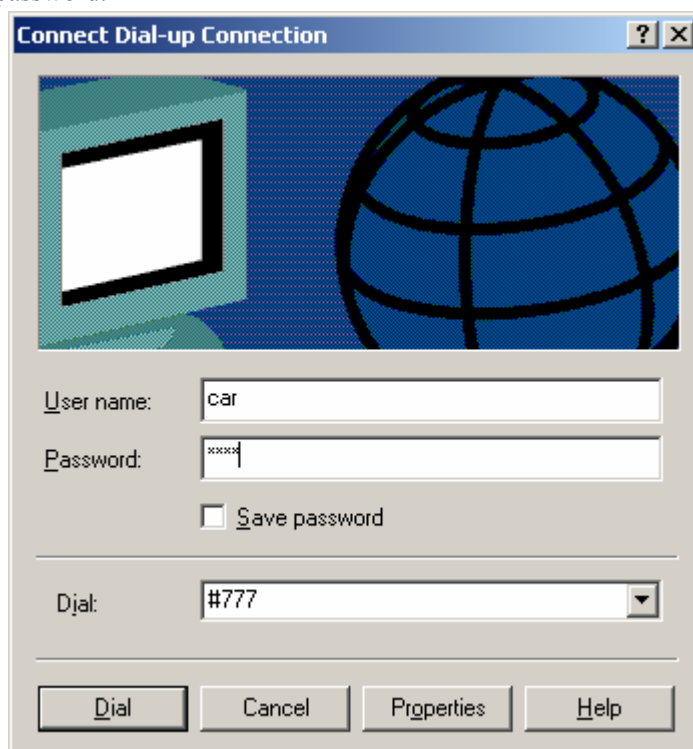


Figure 4-3 Initialization commands

## 4.2 Dial-up connection

Make a new dial-up connection. Dial number: “#77\*”, username and password is card. Make sure max baud rate of the modem is 115200bps. Please consult service provider for local dialed number, username and password.



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#### **Figure 4-4 Connect**

### **4.3 Internet access**

Use equipped USB-TTL cable, connect such cable's USB port to PC's USB port, TTL port connect to terminal's DB9S serial port, slide switch "call/Internet" to Internet, then go next step dial-up connection.

### **4.4 Restore the system mode**

Slide the "Call/Internet" switch to "Call" side then restart the device.

## 5 Keypad configure parameter



**notice:** Keypad configure parameter set need off-hook, then on-hook and exit, parameter will auto save. Indicating tone will inform configure success or failure, if success then releases dialing tone, otherwise release busy tone.



\*-- begin as \*, set; #-- begin as #, cancel, Followed two numbers indicate function code, function code and content or contents are separated by \* X: digital key, 0~9.

**Table 5-1 Keypad configure parameter**

Functions	Parameter command		Specification
	Set	Cancel	
Default parameter	*13#		Set default par.
Send volume	*01*X# *01*send volume value#		X=1-5, from lowest to highest Default is 3
Receive volume	*02*X# *02*receive volume value#		X=1-5, from lowest to highest Default is 3
Voice Charge	*03#	#03#	For CDMA terminal, use Double direction voice detect to judge communication. Set—enable (CDMA terminal default) Cancel—Disable
Transfer DTMF	*04#	#04#	Command module transfer DTMF number(Only for CDMA) Set—transfer DTMF(default) Cancel—no transfer DTMF)
Polarity reverse	*05#	#05#	Send polarity reverse signal for charge Set—send(default) Cancel— no send
Permit incoming call	*06#	#06#	Permit incoming call Set—permit(default) Cancel— not permit
Permit long-distance call	*07#	#07#	Permit dial long-distance call (prefix 0) Set—permit(default) Cancel— not permit
Add IP number for long-distance call	*08#	#08#	Set-add IP number prefix(default) Cancel- not add
Set IP number prefix	*09*XXX# *09*IP#		Set IP number prefix, length from 0-8
Lock Card	*10#	#10#	Lock Card. After start terminal only can use one Card. Set—enable Cancel—disable(default)
Open/Close PIN Code	*11*XXXX# *11*PIN code#	#11*XXXX# #11*PIN code#	PIN code is 4 digital, default is 1234 Set—open PIN code Cancel—close PIN code(default)
Modify PIN Code	*12*XXXX*XXXX*XXXX# *12*old PIN*new PIN#		Modify PIN, PIN code is 4 digital Modify PIN need open PIN first

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## 6 Care and Maintenance

Operation of any radio transmitting equipment, including cellular phones, may interfere with the functionality of inadequately protected medical devices.

Keep the device dry. Precipitation, humidity and liquids contain minerals that will corrode electronic circuits. Don't drop, knock or shake the device.

TV set, telephone set, radio set, PC and other electronic equipments may cause interference with the device's performance.

Wipe the slightly device with a soft dampened cloth. Don't use harsh chemicals, cleaning solvents, or strong detergents to clean the device. Always switch off the device before cleaning.

The device may generate electromagnetic field, don't keep the device in the same place with magnetic storage media such as computer diskettes.

Don't keep the device under strong sunlight to prevent it from being too hot.

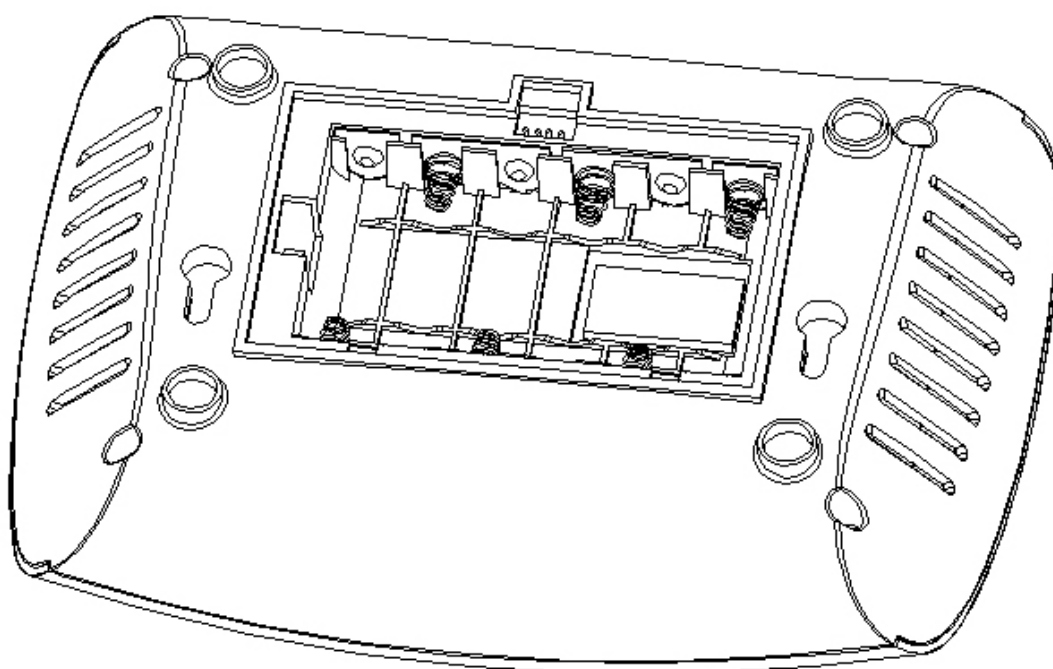
Don't attempt to connect the device with any other unauthorized devices or equipments.

Remember to follow any special regulations in force about the using of wireless telephones in any area.

## 7 Battery

### 7.1.1 Battery insert

Battery slot as Figure 7-1. When change battery terminal shall under off state.



**Figure 7-1 SW-1801EC battery slot**

### 7.1.2 Battery Specification

SW-1801EC use (3.7\*2) V Li battery or (1.2\*6) V Ni-hi battery.

	Li Battery (1600mAh)	Ni-Hi battery (1600mAh)
Max call time	4 hrs	4 hrs
Max standby time	16 hrs	16 hrs
Duration charge to 95 % capacity	Around 5 hrs	Around 5 hrs

- 1) Call/Standby time will be effected by base station signal and administrators' setting parameter. When near base, SW1802 will consume less electricity.
- 2) Battery can recharge several hundred times, capacity will drop off. When call/standby time dropped to half time, need buy new battery.
- 3) SW1802 only can recharge for equipped battery.
- 4) Not use such battery for other application.
- 5) Battery will self-discharge if long time no use.
- 6) Battery need keep under dry and warm environment, keep in indoor condition. Li battery will



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greatly effected when less than 0°C.

- 7) Not make battery short-circuit. Avoid metal thing (such as coin, pin) to insert battery slot.
- 8) Dispose old battery shall avoid pollute environment.

## 8 Troubleshooting

**Table 8-1 Troubleshooting**

Problem	Solution
Failed network registering	a) Check SIM/UIM good insert b) Make sure antenna contact well, or pull antenna outside door
Power LED off	a) Make sure power supply connected to power socket correctly. b) Make sure power adapter is good, use multi-meter when necessary.
Only free call permitted	a) Make sure account balance of the SIM/UIM card is sufficient
Caller or called party hear nothing	a) Make sure phone set works properly, Ensure the connectivity of telephone line cable b) Check network
Bad voice quality	a) Signal intensity insufficient, try moving device position b) Keep the antenna long away form telephone.
Echo when talking	a) Adjust voice volume b) Network quality
No ring tone	a) Try another telephone set b) Measure the ring voltage with a multi-meter.

Sometimes SW1802 may fail in start, RUN LED quick flash. Pleases refer following table for solution.

**Table 8-2 Failed start**

Signal LED	Problem	Solution
○ ○ ●	Switch to Internet side	Pull switch to call side
○ ● ○	Cannot detect Card	Confirm SIM/UIM Card in good installation, Card slot loose or not
○ ● ●	Lock PIN	PIN locked, please unlock PIN, and re-try.
● ○ ○	Lock PIN	PIN locked, need input PUK to unlock
● ○ ●	Lock Card	Disable lock function or change old SIM/UIM Card