SIM908 Features

- Quad-band 850/900/1800/1900MHz
- GPRS multi-slot class 10
- GPRS mobile station class B
- Compliant to GSM phase 2/2+
- Class 4 (2 W @ 850/900 MHz)
- Class 1 (1 W @ 1800/1900 MHz)
- Control via AT commands (GSM 07.07, 07.05 and SIM Com enhanced AT Commands)
- SIM application toolkit
- Supply voltage range :
- GPRS: 3.2 ~ 4.8 V
- GPS: 3.0 ~ 4.5V
- Operation temperature : -40 °C to +85 °C**SMS**

● Point-to-point MO and MT

● SMS cell broadcast

● Text and PDU mode

Audio

● Tricodec

Half rate (HR)

Full rate (FR)

Enhanced Full rate (EFR)

● Hands-free operation

● Echo cancellation

GPRS

● GPRS class 8/10: max. 85.6 kbps (downlink)

● PBCCH support

● Coding schemes CS 1, 2, 3, 4

● PPP-stack

CSD

● CSD up to 14.4 kbps

● USSD

● Non transparent mode

GPS

● Receiver type

42-channel

GPS L1 C/A code

High-performance STE engine

● Sensitivity

Tracking: -160 dBm

Cold starts : -143 dBm

● Time-To-First-Fix

Cold starts : 30s (typ.)

Hot starts : 1s (typ.)

● Accuracy

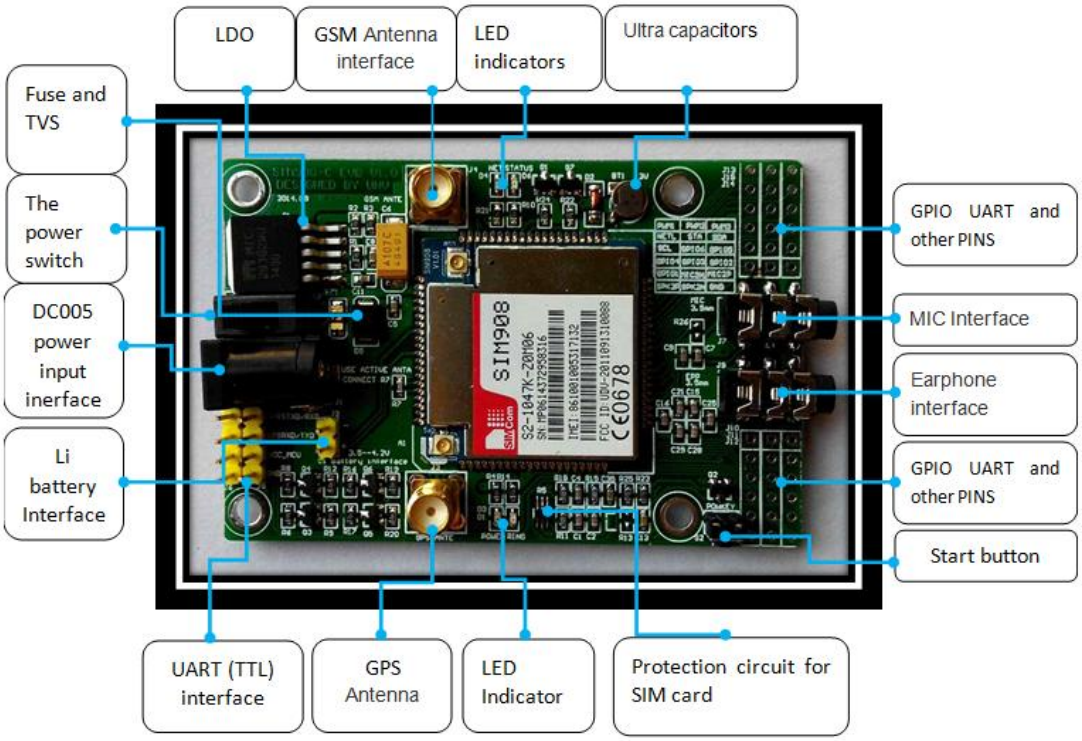
Horizontal position: <2.5m CEP

● Power consumption (GSM engine in idle mode)

Acquisition : 77mA

Tracking : 76mA

What is on Board?



1. **Two power input interface:** DC005 interface and a lithium battery interface.

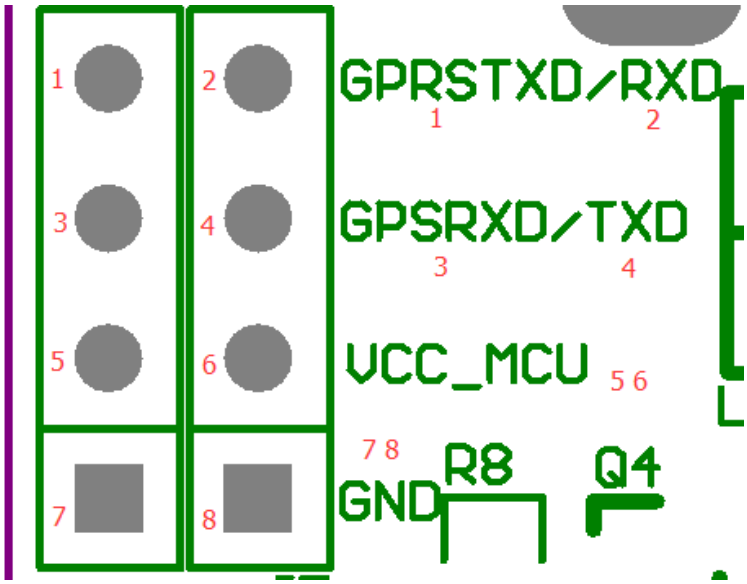
Note that: The range of DC005 voltage input is 5 - 26V, when use the 5V as the power, be sure that the power supply can provide 2A current.The range of voltage of Lithium battery input power is 3.5 - 4.2V.

2. **Switch**: It is used to open / close the input power supply for the module. When in use, please confirm the toggle switched to the OPEN state (near the board inside).
3. **SMA antenna interface:** there is a GSM antenna interface, and a GPS antenna interface onboard.
4. **Start button:** When the board is power on, the LED (PWR) will light up. After a long press (about 2 second) on this button, the other three LEDs will be light. And one of them starts to flash, this suggests that SIM908 is beginning to work now. When the power supply, GSM and GPS antenna and SIM card are connected to

the module correctly, the LED will be flash slowly (3Second de 1second light), that indicates that the module is registered to the network, and you can make a call or do something else.

5. **TTL serial interface:** a GPRS TTL level interface and a GPS TTL level interface. Notice that: When we want to send the AT command, we should connect the GPRS serial to the controller. The GPS TTL interface is just used to receive the NMEA data when the GPS engine is open by AT command; Apart from that the pin of VCC_MCU is used to control the high level of TTL UART, so as to realize to match between 1.25V/3.3V /5V systems. For example, if you want to use the 51 MCU to control this board, the pin of VCC_MCU should be connected the DC5V. And if use the STM32 MCU, the pin of VCC_MCU should be connected the DC3.3V.

The Pins distribution of UART TTL interface is:



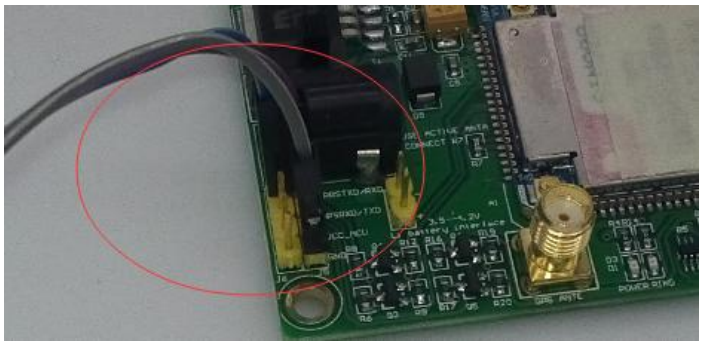
Operation Description:

1. Preparation:

- ✓ SIM908 SHIELD
- ✓ DC9V adapter
- ✓ USB-TTL module or other tools.
- ✓ PC software

2. Hardware configurations

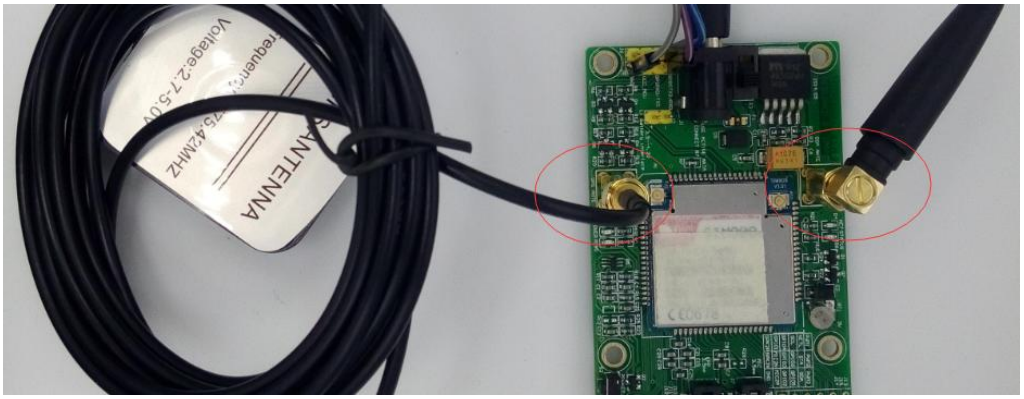
2.1 Connect the USB-TTL to the GPRS UART interface like this:



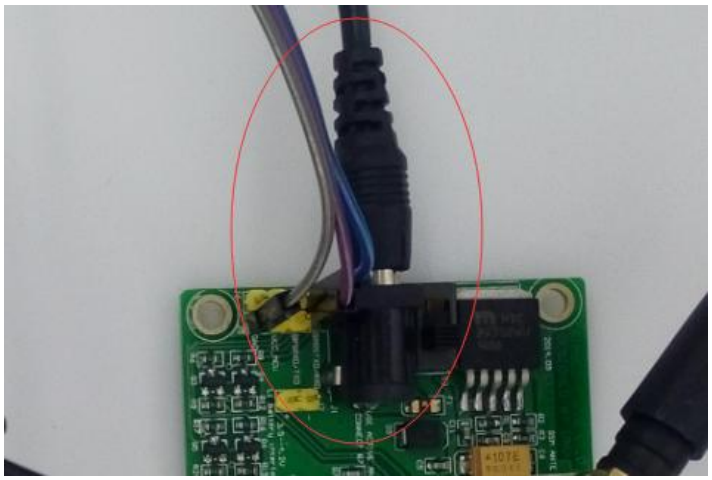
USB-TTL	SIM908
TXD	GPRS RXD
RXD	GPRS TXD
GND	GND

2.2 Insert the valid SIM card to the SIMCARD holder.

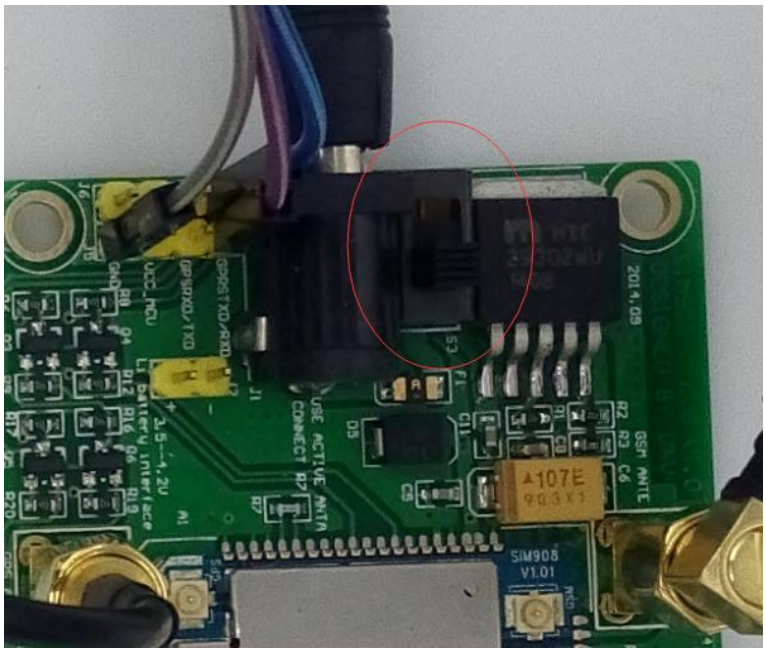
2.3 Connect the GPS antenna and GSM antenna to the board like this:



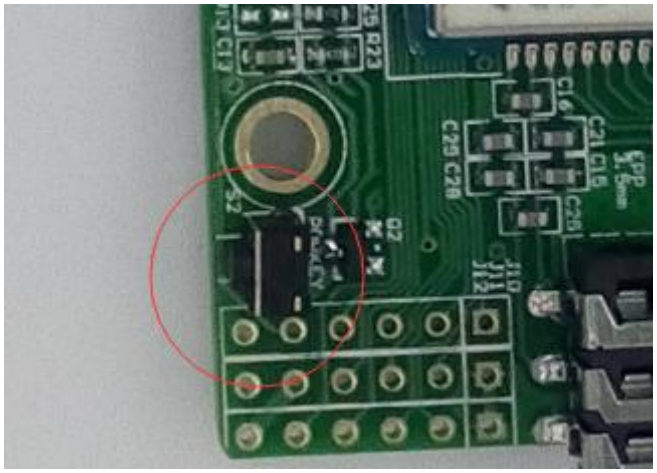
2.4 Connect the power adapter to the DC005 Interface like this:



2.5 Change the switch like this.



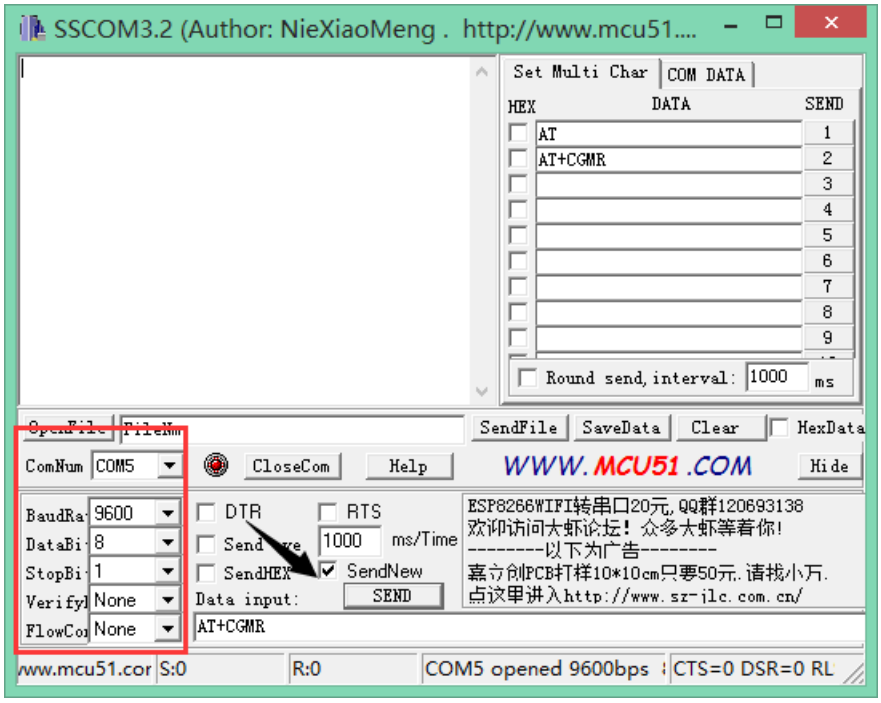
2.6 Press the POWKEY button for 2 second, the SIM908 module will work and the other four LEDs will light.



3. We will illustrate the usage of the module with an example of how to operate under GSM mode in the following section.

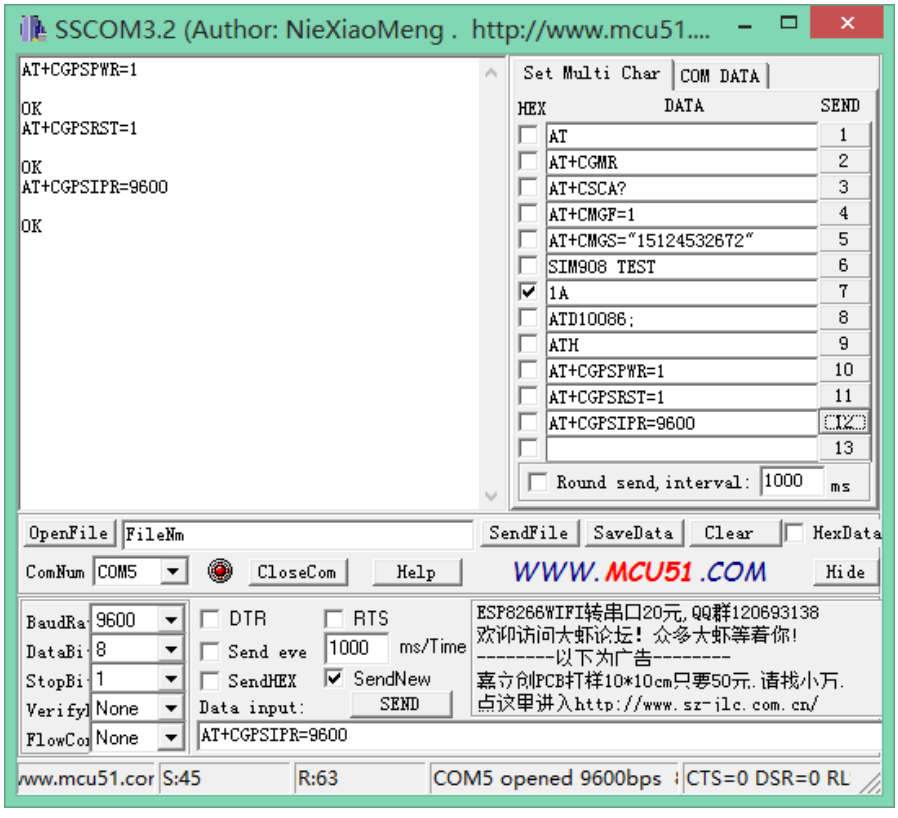
3.1 We should connect the TTL-USB to the ***GPRS*** UART interface and press the POWKEY button for 2 second. When the four LEDs is lighting, it indicates that module is working, we can send AT command to control it.

3.2 Start the ***sscom.exe*** serial tool on PC, and perform operations as followed.



In this example, the ComNum is set to COM5. In practical application, please right click the icon MyComputer->Property->Device Manager, in order to check corresponding port number.

3.3 Fill in the Data input box with AT COMMAND, and click the button Send to transmit the command. The data receive box displays the return values from the corresponding serial port, as following Figure shows.

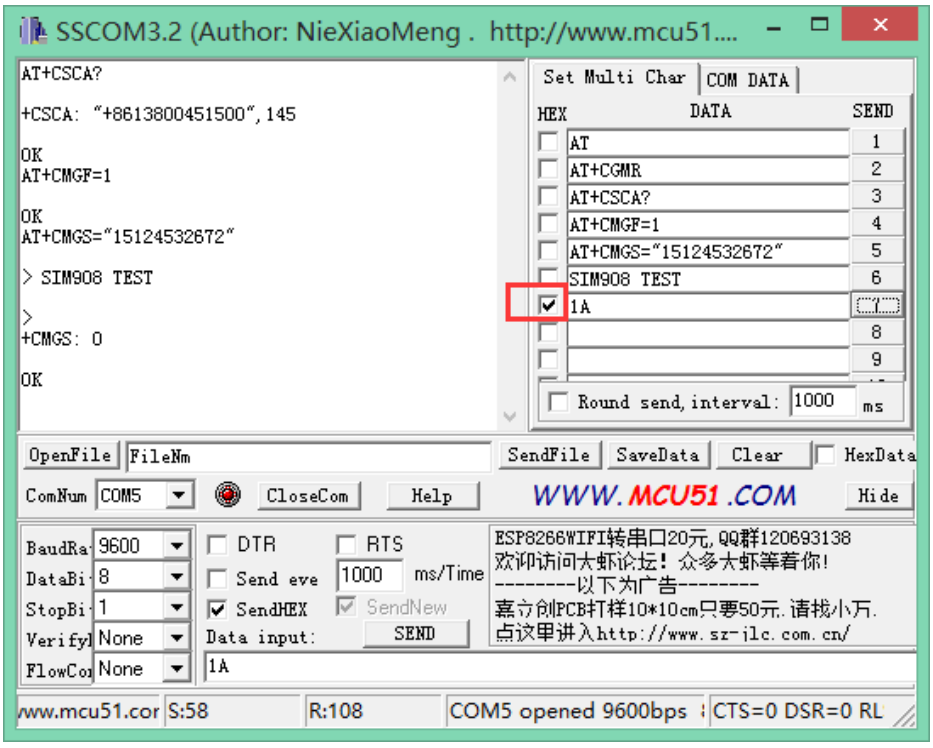


4 GSM debugging

4.1 Connect the USB-TTL to the GPRS UART interface

4.2 Common command descriptions for message transmission

Commands	Descriptions	Return values
AT	Make sure the module is working properly	AT OK
AT+CSCA?	Get the core number of message	+csca:"******"
AT+CMGF=1	Select SMS message format	AT+CMGF=1 OK
AT+CMGS="15124532672"	Set the message transmission number and send SMS message. After receiving the symbol >, the message Hello World!(*) can be sent out	>
SIM908 test	The context of message	SIM908 test
1A	This is a terminator. Before sending it out, you should check the option Send As Hex	
	Send successfully	+CMGS:* OK

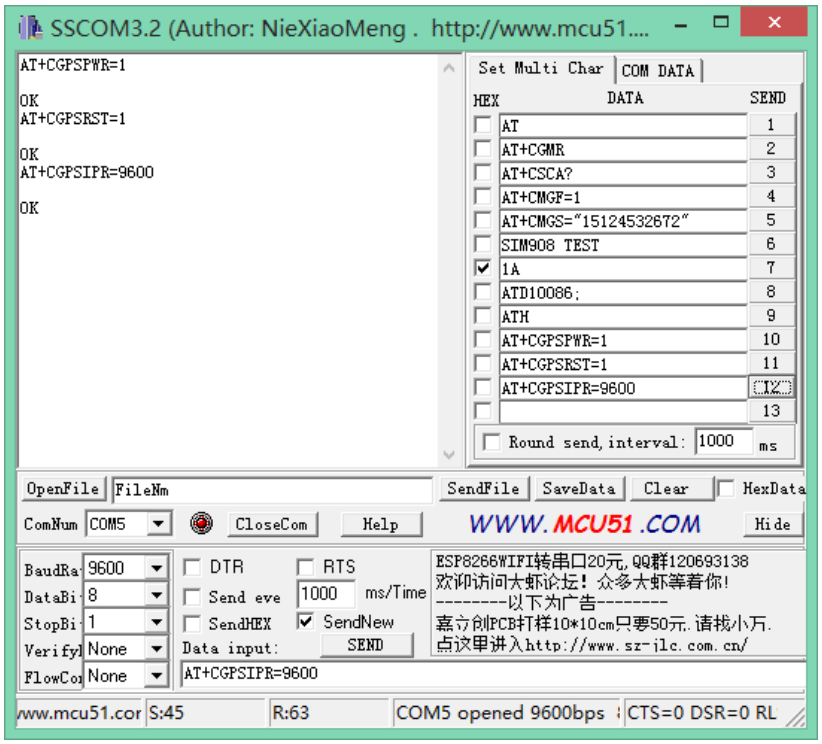


(For more detailed information about AT commands, please refer to SIM908_AT+Command+Manual_V1.01)

5 GPS debugging

5.1 Switching to GPS mode from GSM mode: We should connect the TTL-USB to the *GPRS* UART interface. Send the following commands:

- AT+CGPSPWR=1 (turn on GPS power supply)
- AT+CGPSRST=1 (reset to GPSmode)
- AT+CGPSIPR=9600 (set Baud rate of the module)



5.2 Receive the NMEA0183 GPS data：

We connect the TTL-USB to the GPS UART interface. And we will get the data as the fig.5.2 shows.

Notices:

1. User should send the commands listed above to turn on GPS power supply and reset to GPS mode under GSM mode, before receiving the GPS data. If you connect the USB-TTL module with the GPS UART interface before sending out the commands listed above, it will be invalided. Because you have not turned on the GPS power supply and reset the module to GPS mode.
2. If you do not known what is the NMEA0183 data, please search it on the internet.
3. In the application of GPS function, we can send AT+CGPSINF=* (* represent specific figures, please see the AT instruction set) command to get the GPS information through the ***GPRS*** TTL interface level.

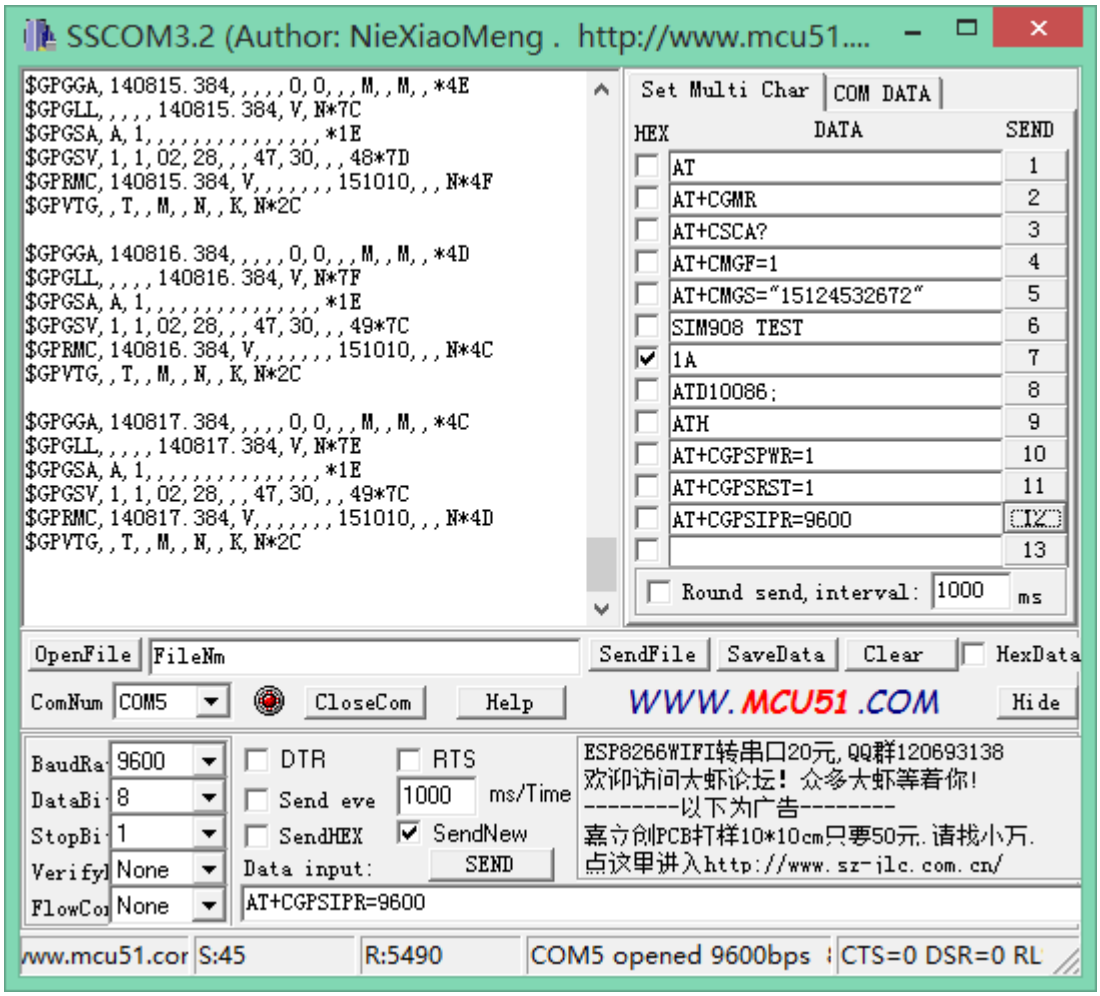


Fig.5.2 Receiving the GPS data

5.2 Checking GPS information with NEMA GPS Demo

1) Start the software NEMA GPS DEMO V2.2, as Figure 7 shows.

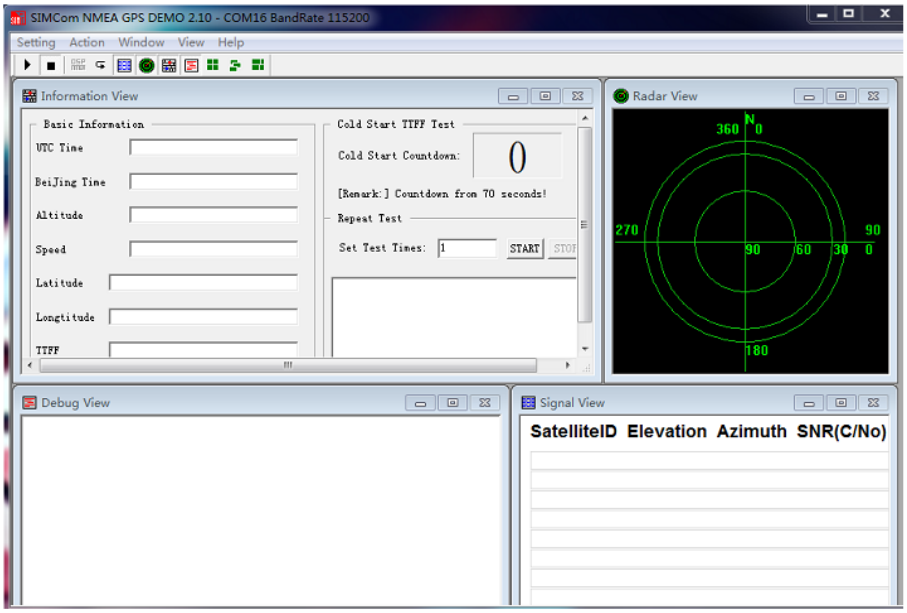


Figure 7: NEMA GPS Demo

2) Open corresponding port: setting->port Setting, and set the port and Baud rate: 9600 (If the Baud rate of the module is modified to a certain value by sending AT+CGPSIPR command, the modified Baud rate should be used in here).

3) Select Action->run. Then, you can see the relative GPS information, as Figure 8 shows.

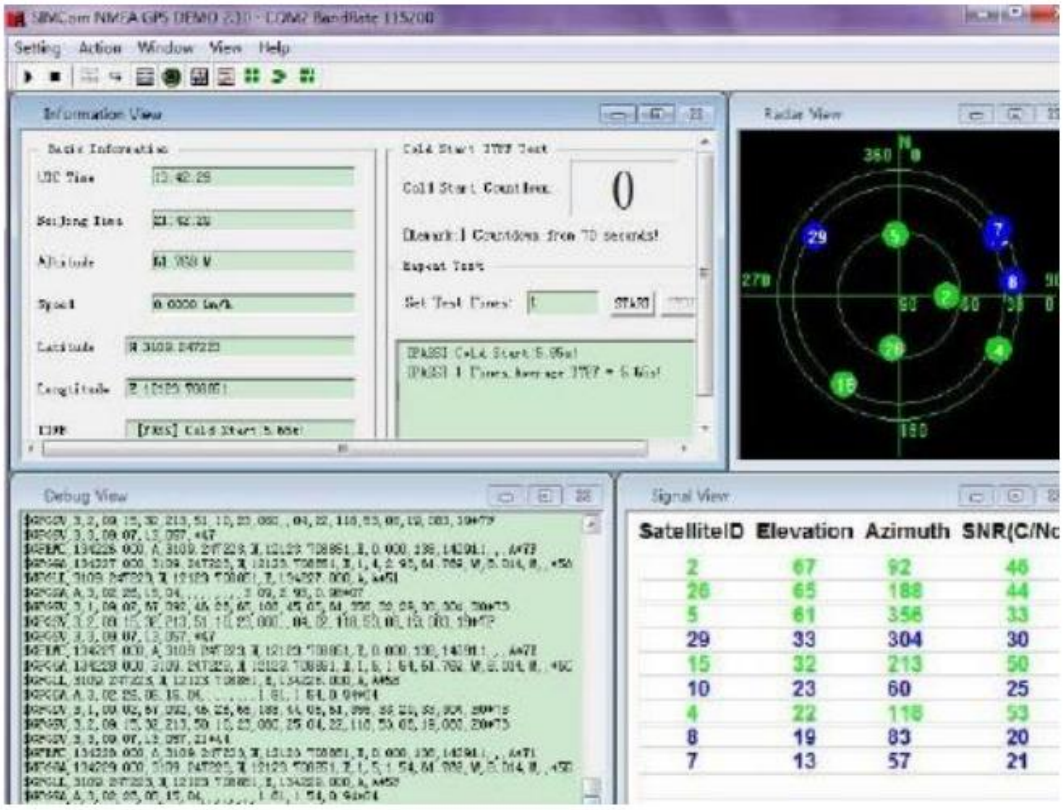


Figure 8: Checking GPS information

5.3 GPS command descriptions

Notices: The commands listed in the Table 6 should be used under GSM mode.

First We should connect the TTL-232/TTL-USB to the GPRS UART interface.

Commands	Descriptions	Common values
AT+CGPSPWR	GPS power control	Value=1, GPS is on
AT+CGPSRST	GPS mode reset	0 is for cold start
AT+CGPSINF	Get current GPS location information	Common value: 32
AT+CGPSOUT	GPS NMEA data output control Set to 255,	GSM_DEBUG is selected as data output pin
AT+CGPSSTATUS	Check GPS status	
AT+CGPSIPR	Set GPS Baud rate	9600

Table 6: GPS command descriptions

(For more detailed information about AT commands, please refer to

SIM908_AT+Command+Manual_V1.01)

6. GPRS debugging

6.1 Selecting GSM serial control port.

First we should connect the TTL-USB to the GPRS UART interface.

1. Configure virtual server on local PC. Virtual server defines the mapping relationships between WAN service port and LAN servers. Any access to this WAN service port will be retargeted to corresponding local network server which is assigned by IP address (For more detailed information, please refer to your router manuals).
2. Set port number: 12345 (it can be set to any number but existing port number. In this example, it is set to 12345).
3. Set PC intranet IP address (To obtain the intranet IP address of your PC, you can run a CMD command on your PC to enter MS-DOS (Win XP) or Command Prompt (Win 7 or higher version OS), and input the command ipconfig to check the IPv4 address. In this example, the intranet IP address of PC is 192.168.1.104.

6.2 GPRS configuration

The GPRS configuration can be performed by sending out following commands sequentially.

Commands	AT command descriptions
AT+CSQ	Signal quality report
AT+CSTT="CMNET"	Set wireless access point to CMNET
AT+CIICR	Bring up wireless connection with GPRS or CSD
AT+CIFSR	Get local IP address
AT+CDNSGIP=www.sim. com	Query the IP address of the given domain name

Table 7: GPRS command configuration

Checking WAN IP address (hereafter “Extranet IP address”) the extranet IP address can be obtained by entering the relative IP address into the search engine directly or inquiring to your network service provider. In this example, the WAN IP address is 222.125.175.28. Then, send out the following commands sequentially, to perform GPRS debugging testing.

Commands	AT command descriptions
AT+CIPSTART=”TCP”,”222.125.175.28”,”12345”	The extranet IP address should be set according to actual condition. In this example, the extranet IP address is 222.125.175.28, and port number is 12345
AT+CIPSEND	Send SMS message. After receiving the symbol >, the message ABCDEF(*)can be sent out
1A	This is a terminator. Before sending it out, you should check the option Send As Hex
AT+CIPCLOSE	Close TCP or UDP connection
AT+CIPSHUT	Deactivate GPRS PDP context
(*)After sending the message ABCDEF, you should check the option Send As Hex, and then send the command 1A to indicate the message to be sent is end. In this case, the message you input will be delivered actually.	

Table 8: GPRS debugging commands

(For more detailed information about AT commands, please refer to SIM908_AT+Command+Manual_V1.01)