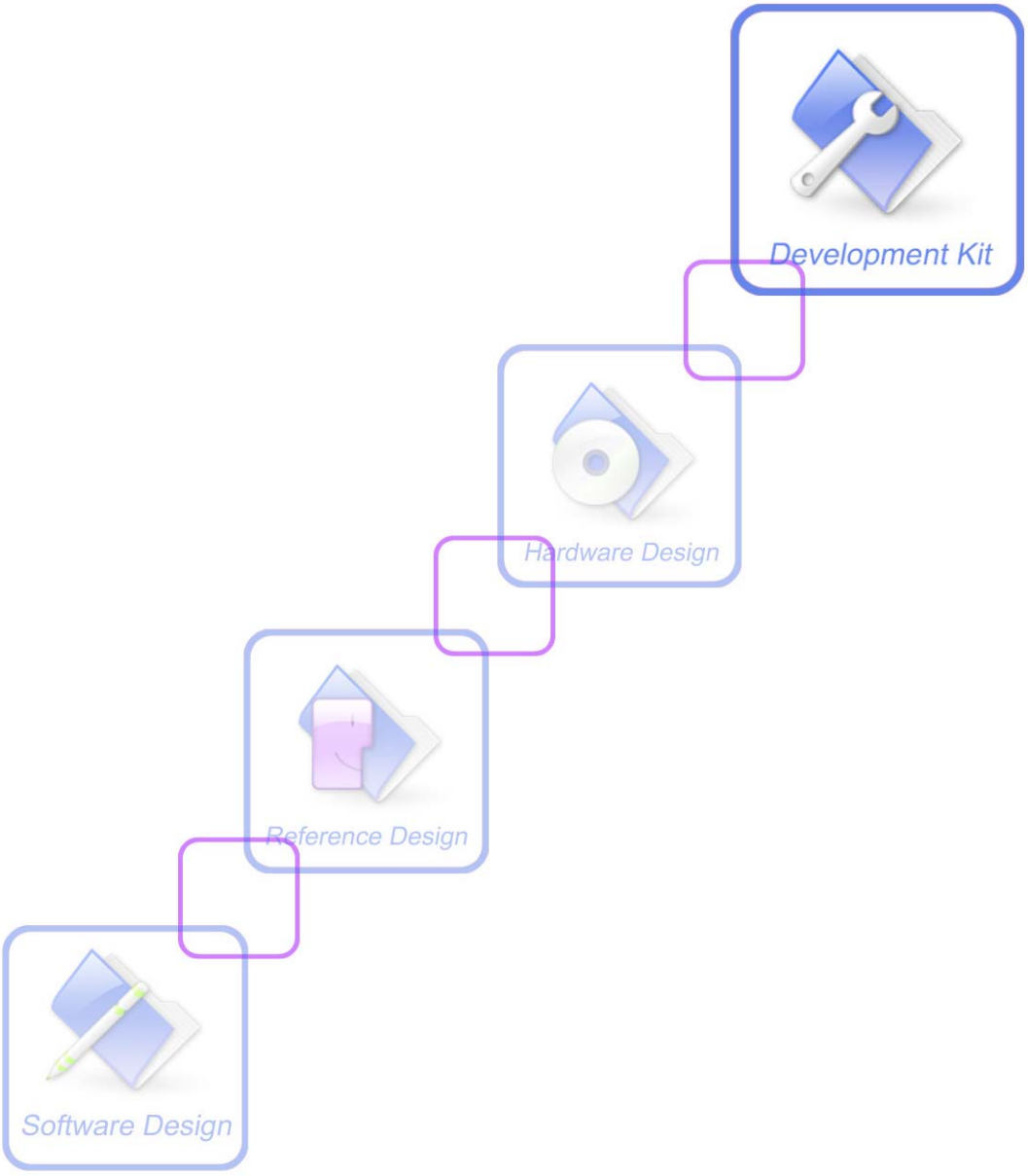
SIM800_EVB kit_
User Guide_V1.00



Document Title:	SIM800 EVB kit User Guide
Version:	1.00
Date:	2014-07-23
Status:	Release
Document Control ID:	SIM800_EVB kit_User Guide_V1.00

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Version History

Data	Version	Description of change	Author
2014-07-23	1.00	Origin	Honggang Ma

SCOPE

This document describes how to use SIM800 EVB to do test; user can get useful info about the SIM800 EVB quickly through this document.

This document is subject to change without notice at any time.

1. SIM800 EVB

SIM800 –EVB can be used to evaluate SIM800 serials module, such as SIM800, SIM808 and SIM800H\L.
This chapter takes SIM800 as the example to introduce SIM800-EVB, to guide customer learn to use SIM800 module conveniently.

The mainly parts of SIM800-EVB are shown as the figure 1 and figure 2.

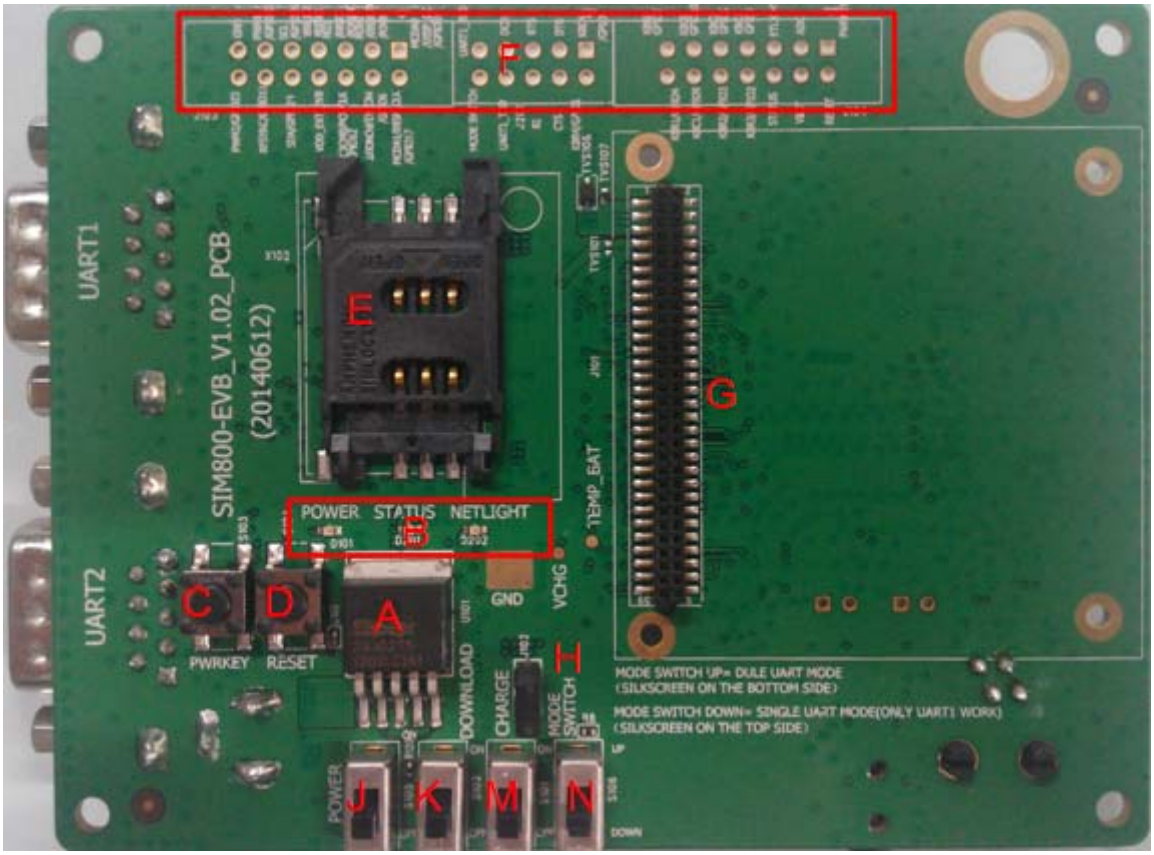

Figure 1: EVB top view

A: LDO (5V input and regulate output is 4.2V)
B: Indicator LED
C: PWRKEY (pull down to turn on module)
D: RESET key (pull down to restart module)
E: SIM card socket
F: Testpoints area (for the single UART version)
G: SIM800-TE interface (the interface compatible with SIM800-TE , SIM800H-TE and SIM808-TE)
H: Jumper (reserved for test)
J: Power switch
K: Download switch
M: Charge switch
N: Mode switch (single UART mode or dual UART mode)

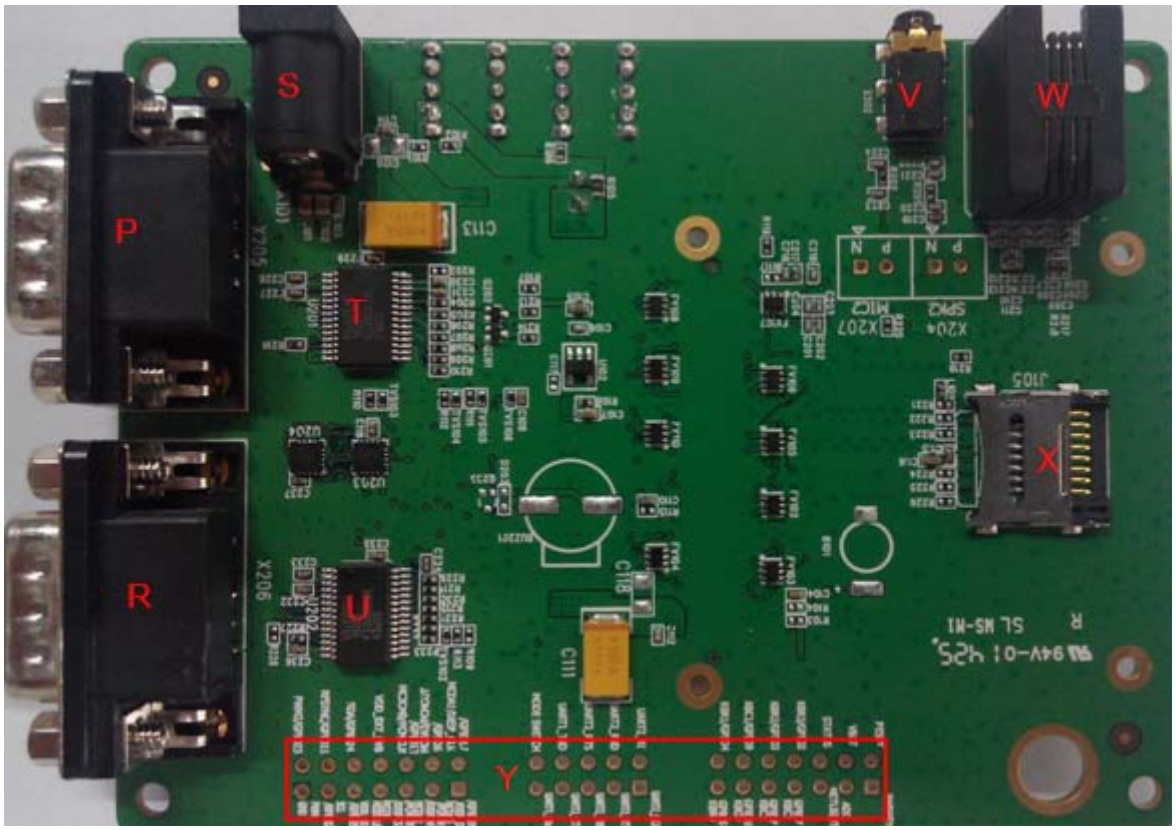

Figure 2: EVB bottom view

P: RS232 to UART2 (male)
R: RS232 to UART1 (male)
S: DC Jack (5V adapter interface)
T, U: RS232 to UART IC
V: Audio jack interface
W: Handset interface
X: TF card holder (4 bit, 2.8V)
Y: Testpoints area (for the dual UART version)

2. SIM800-TE

SIM800-TE is not included in the SIM800 EVB kit, customer should purchase it additionally. The main part of SIM800-TE is illustrated as figure 3.

Figure 3: SIM800-TE overview

A: SMA interface for GSM
B: RF connector for GSM
C: RF connector for Bluetooth
D: SMA interface for Bluetooth
E: SIM800 module
F: Mini USB connector

3. EVB Kit Overview

Figure 4: SIM800-EVB and accessory

A: SIM800 evaluation board
B: 5V adapter
C: RS232 to USB cable
D: driver for the cable
E : Mini gender changer
F : Single end Headset
G : GSM antenna
H : Mini USB cable

4. Key and Switch

SIM800-EVB has two Key buttons and four switches. As the following figure shows.

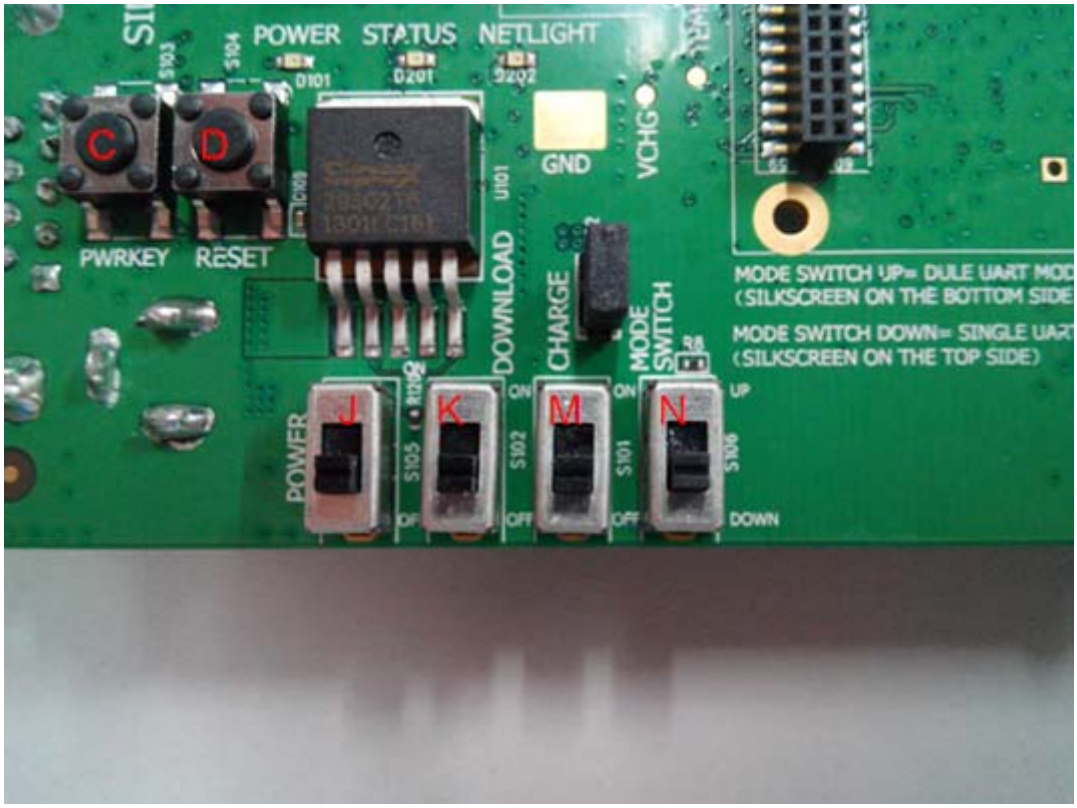

Figure 5: Button and switch

Table 1: Function of button and switch

ID	Reference designator	Name	Action	Function
J	S105	Power	Switch up	VBAT appears
			Switch down	VBAT disappears
K	S102	Download Switch	Switch up	Module enter download mode
			Switch down	No action
M	S101	Charge Switch	Switch up	Module would be charged
			Switch down	No action
N	S106	Mode switch	Switch up	SIM800-EVB applies to dual UART mode module, both UART1 and UART2 can work.

			Switch down	SIM800-EVB applies to single UART mode module, only UART1 can work
C	S103	PWRKEY	Pull down about 1.5S	power on/off module
D	S104	RESET Key	Pull down over 100ms	Restart module

5. Accessory Interface

5.1 Power Interface

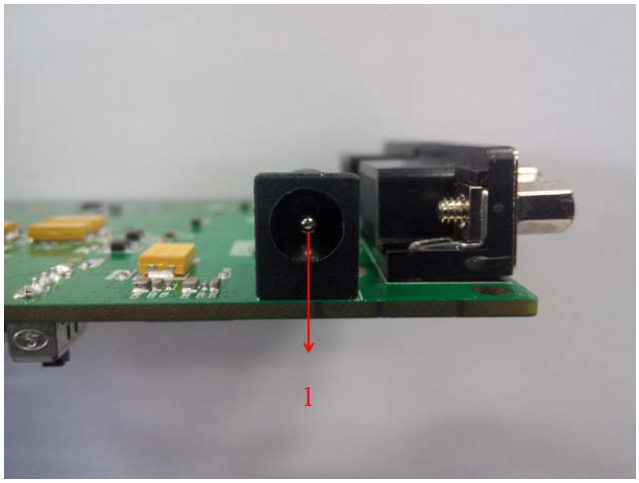

Figure 6: Power interface

Table 2: DC Jack interface

Pin	Signal	I/O	Description
1	Adapter input	I	5V/2.0A DC source input

5.2 Audio Interface

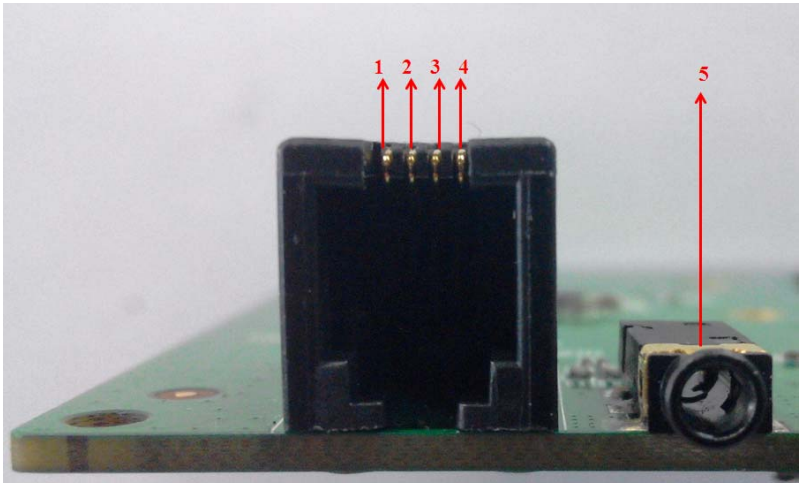

Figure 7: Audio interface

Table 3: Headset interface

Pin	Signal	I/O	Description
1	MICN	I	Negative microphone input
2	SPKN	O	Negative receiver output
3	SPKP	O	Positive microphone input
4	MICP	I	Positive receiver output

Table 4: Earphone interface:

Pin	Signal	I/O	Description
5	MICP& SPKP	I/O	Audio input/output

Note: the two interface actually the same audio channel but the different format.

5.3 SIM Card Interface

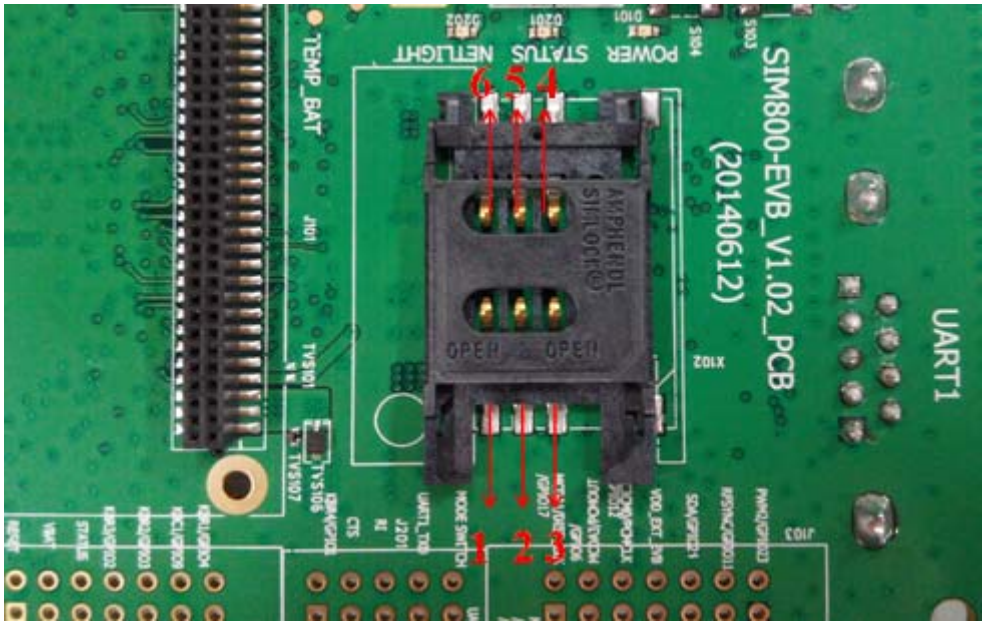

Figure 8: SIM card interface

Table 5: SIM card socket

Pin	Signal	I/O	Description
1	GND	-	Ground
2	SIM_VPP	-	NC
3	SIM_DATA	I/O	External SIM card data signal
4	SIM_CLK	O	External SIM card clock signal
5	SIM_RST	O	External SIM card reset signal
6	SIM_VDD	O	Power source for the external SIM card

5.4 TF Card Interface

SIM800-EVB provides a 4-bit TF card connector, the SD_VDD is 2.8V.

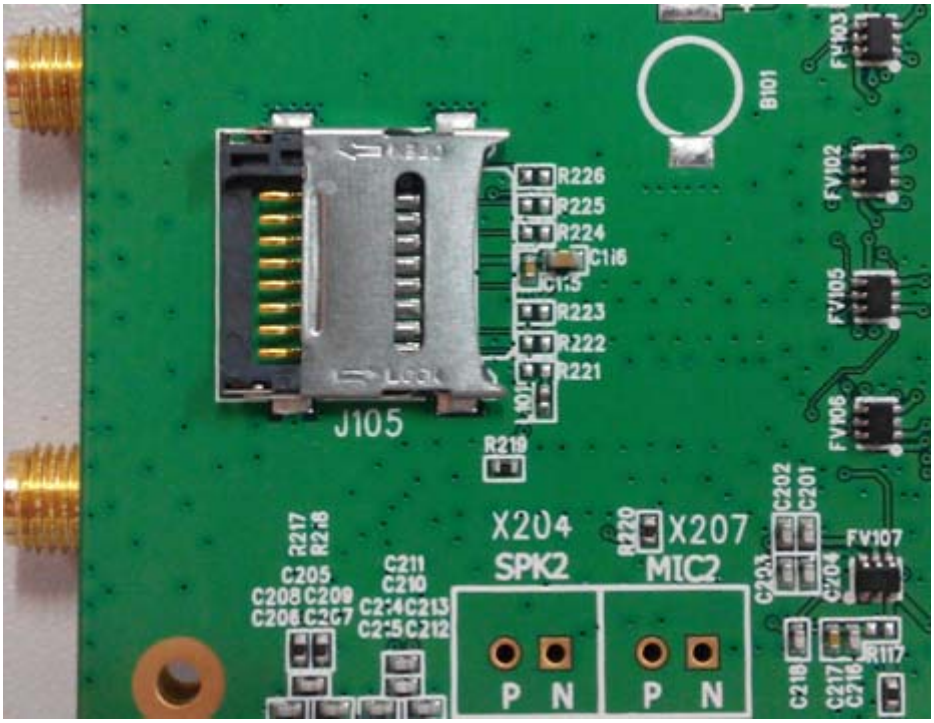

Figure 9: TF card connector

5.5 Antenna Interface

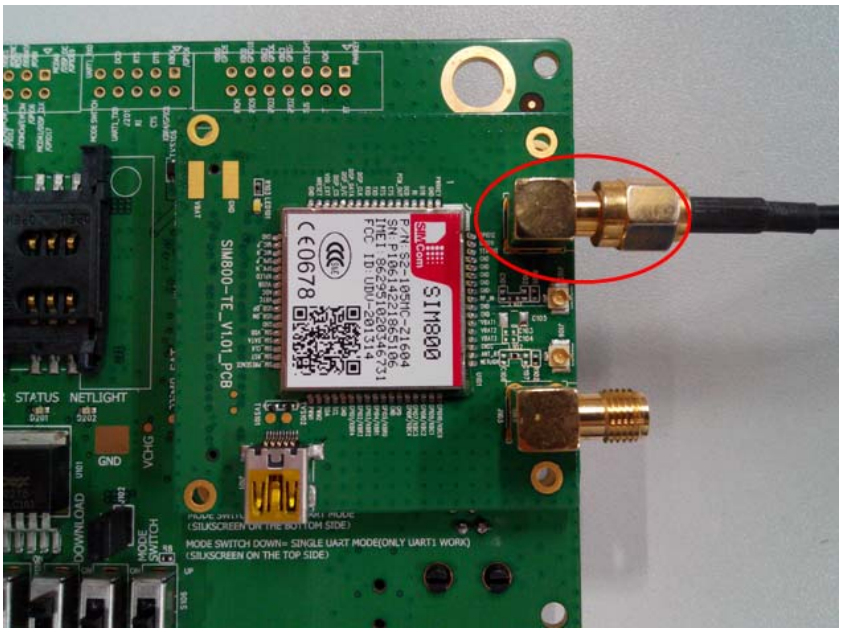

Figure 10: GSM Antenna Interface

5.6 Serial Port Interface

SIM800 has the different software version to support one UART interface or dual UART interface; the following introduction would be separated by the UART function..

5.6.1 One UART Mode

If customer uses SIM800 as one UART interface, customer should switch down S106 first, and at this condition only UART1 work.

The following figure shows the signals on UART1 interface.

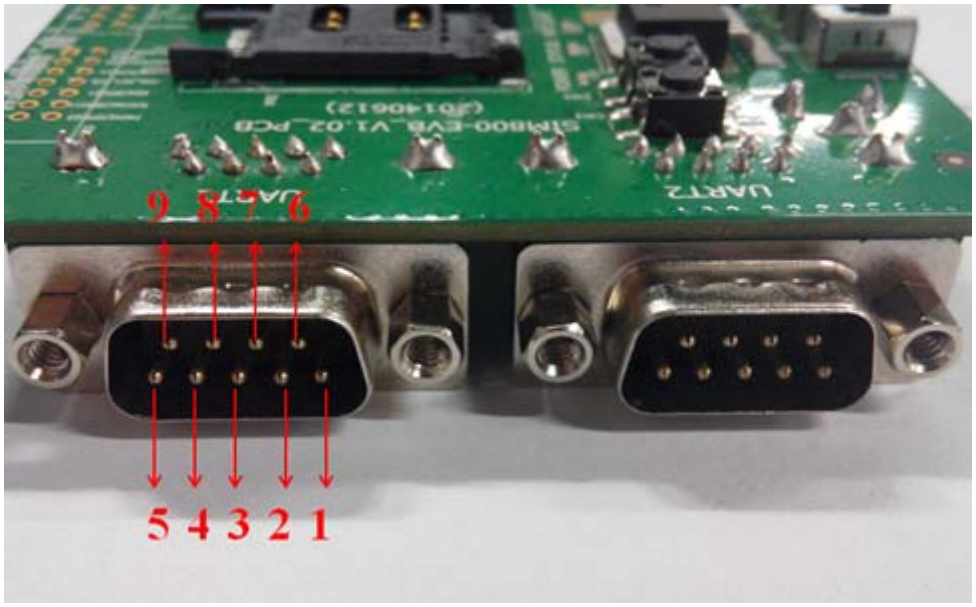

Figure 11: Serial Port (one UART mode)

Table 6: UART1 interface signal (one UART mode)

Pin	Signal	I/O	Description
1	UART1_DCD	O	Data carrier detection
2	UART1_TXD	O	Transmit data
3	UART1_RXD	I	Receive data
4	UART1_DTR	I	Data Terminal Ready
5	UART1_GND		GND
6	-	-	-
7	UART1_RTS	I	Request to Send
8	UART1_CTS	O	Clear to Send
9	UART1_RI	O	Ring Indicator

5.6.2 Dual UART Mode

If customer uses SIM800 as dual UART interface, customer should switch up S106 first, and at this condition both UART1 and UART2 can work, UART1 is the 3-wire, and UART2 is full modem interface , the following figure shows the signals on RS232 interface.

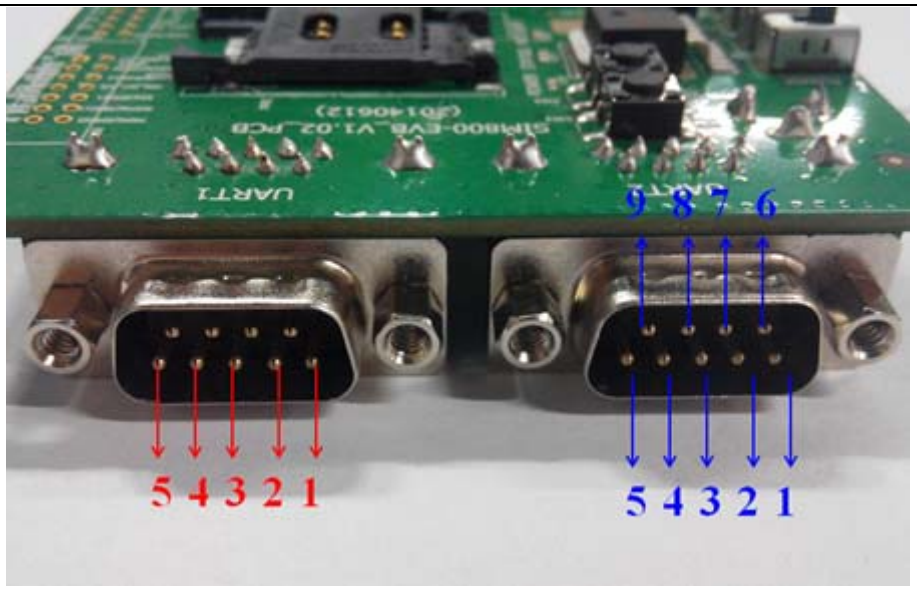

Figure 12: Serial Ports (dual UART mode)

Table 7: UART1 interface signal (dual UART mode)

Pin	Signal	I/O	Description
1	-	-	-
2	UART1 TXD	O	Transmit data
3	UART1 RXD	I	Receive data
4	-	-	-
5	GND		GND

Table 8: UART2 interface signal (dual UART mode)

Pin	Signal	I/O	Description
1	UART2_DCD	O	Data carrier detection
2	UART2_TXD	O	Transmit data
3	UART2_RXD	I	Receive data
4	UART2_DTR	I	Data Terminal Ready
5	GND		Ground
6	-	-	-
7	UART2_RTS	I	Request to Send
8	UART2_ CTS	O	Clear to Send
9	UART2_ RI	O	Ring Indicator

5.7 LED Indicator

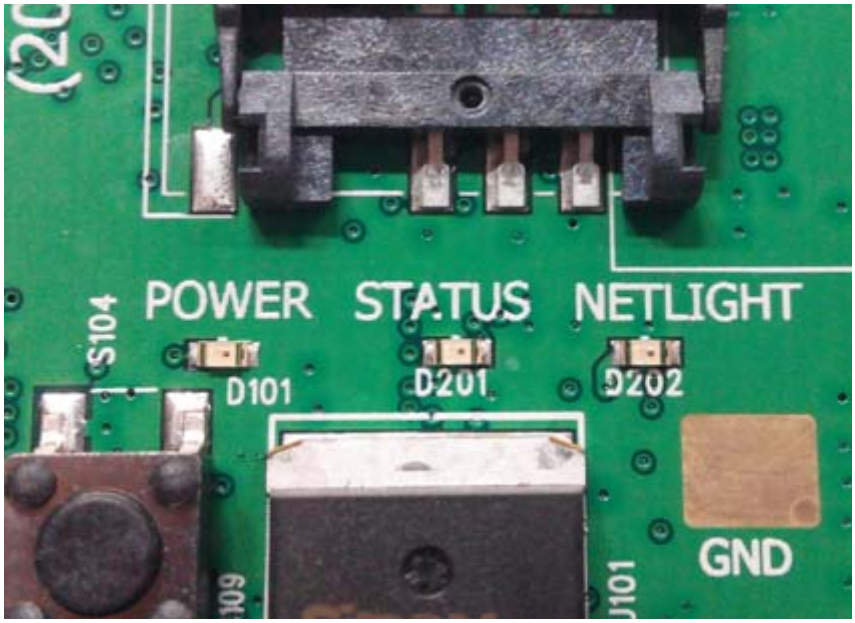

Figure 13: LED Indicator

Table 9: Working state of LED

Ref No.	Name	Function description
D101	VBAT indicator	LED is emitting light：system has the 4.2V power LED is not emitting light: system does not have the 4.2V power
D201	STATUS indicator	LED is emitting light：module turns on LED is not emitting light: module does not turn on
D202	NETLIGHT indicator	Refer to the table 10;

Table 10: Status of the NETLIGHT pin

Status	SIM800 behavior
Off	SIM800 is not running
64ms On/ 800ms Off	SIM800 not registered the network
64ms On/ 3000ms Off	SIM800 registered to the network
64ms On/ 300ms Off	GPRS communication is established

6. Test Interface

This chapter would be introduced by two parts, top side of EVB and bottom side of EVB.

6.1 Testpoints on Top Side (one UART mode)

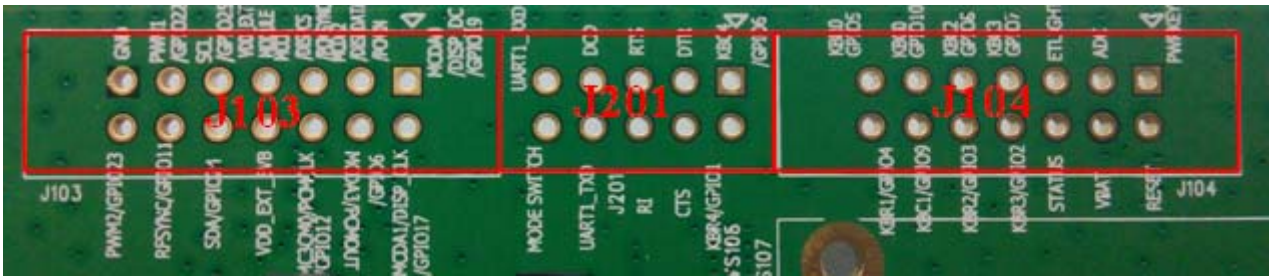

Figure 14: Test interface overview on top side (one UART mode)

6.1.1 Testpoints on J103 on Top Side (one UART mode)

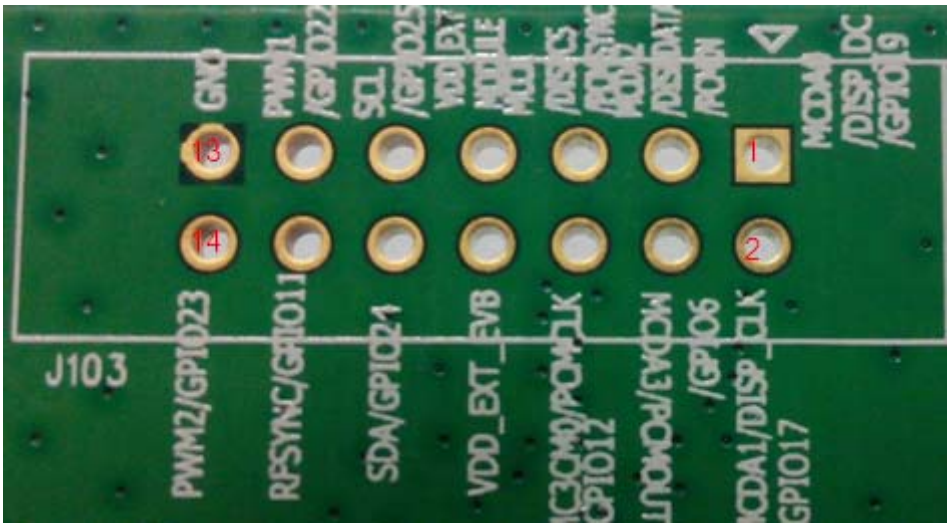

Figure 15: J103 Interface on top side (one UART mode)

Table 11: J103 Interface Pin List on Top Side (one UART mode)

Pin	Signal	I/O	Description
1	GPIO19	I/O	Programmable general purpose input and output.
2	GPIO17	I/O	
3	PCM_IN	I	PCM data input
4	PCM_OUT	O	PCM data output

5	PCM_SYNC	O	PCM synchrony
6	PCM_CLK	O	PCM clock
7	VDD_EXT	O	2.8V output
8	VDD_EXT_EVB	-	This power is provided by EVB, 3V.
9	SCL	O	I2C serial bus clock
10	SDA	I/O	I2C serial bus data
11	PWM0	O	PWM0, multiplex with GPIO22
12	RF_SYNC	O	Transmit synchronization signal
13	GND	-	Ground
14	PWM1	O	PWM1, multiplex with GPIO23

6.1.2 Testpoints on J201 on Top Side (one UART mode)

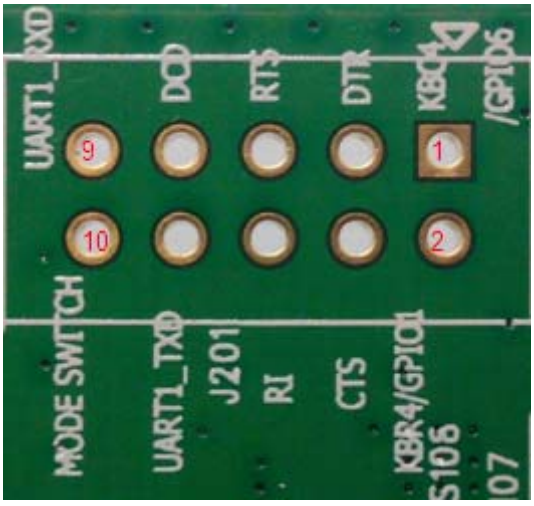

Figure 16: J201 Interface on top side (one UART mode)

Table 12: J201 Interface Pin List on Top Side (one UART mode)

Pin	Signal	I/O	Description
1	KBC4	I	Keypad Column 4
2	KBR4	O	Keypad Row 4
3	DTR	I	Data terminal ready
4	CTS	O	Clear to send
5	RTS	I	Request to send
6	RI	I	Ring indicator
8	DCD	O	Data carrier detect
7	UART1_TXD	O	Transmit data

9	UART1_RXD	I	Receive data
10	Mode switch	-	SIM800-EVB function control switch

6.1.3 Testpoints on J104 on Top Side (one UART mode)

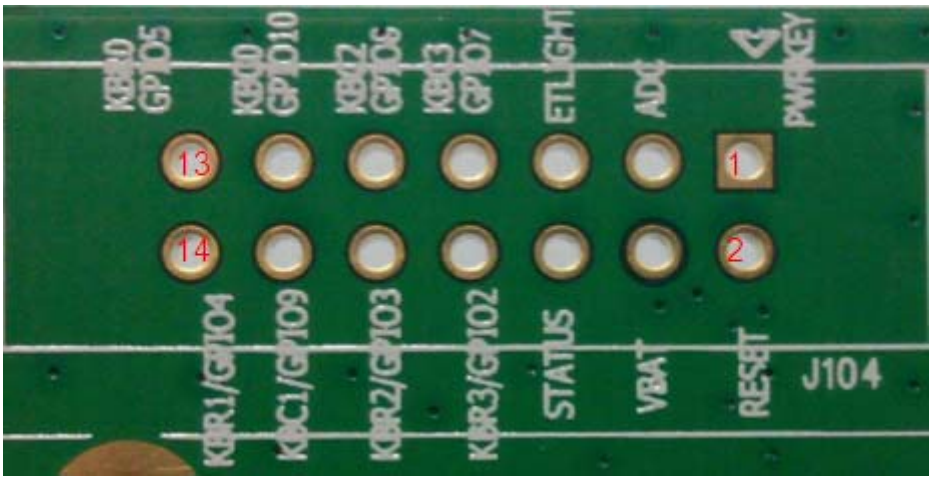

Figure 17: J104 Interface on top side (one UART mode)

Table 13: J104 Interface Pin List on Top Side (one UART mode)

Pin	Signal	I/O	Description
1	PWRKEY	I	PWRKEY
2	RESET	I	RESET
3	ADC	I	ADC
4	VBAT	I	VBAT
5	NETLIGHT	O	NETLIGHT
6	STATUS	O	STATUS
7	KBC3	I	Keypad Column 3
8	KBR3	O	Keypad Row 3
9	KBC2	I	Keypad Column 2
10	KBR2	O	Keypad Row 2
11	KBC0	I	Keypad Column 0
12	KBC1	I	Keypad Column 1
13	KBR0	O	Keypad Row 0
14	KBR1	O	Keypad Row 1

6.2 Testpoints on Bottom Side (dual UART mode)

If customer uses SIM800 as dual UART module, the testpoints on the J201 has a little difference with one UART mode, the testpoints on J103 and J104 are the same with the one UART mode.

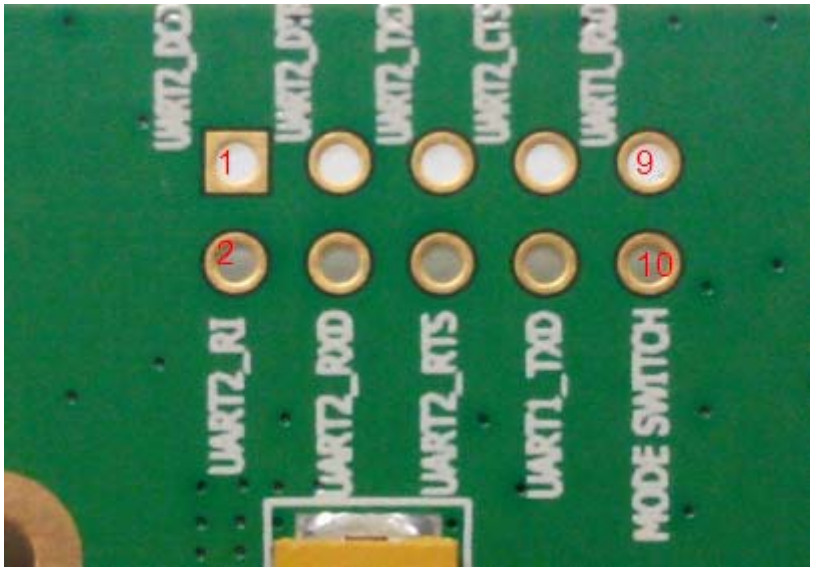

Figure 18: J201 interface on bottom side (dual UART mode)

Table 14: J201 interface pin list on Bottom Side (dual UART mode)

Pin	Signal	I/O	Description
1	UART2_DCD	O	Data carrier detect
2	UART2_RI	I	Ring indicator
3	UART2_DTR	I	Data terminal ready
4	UART2_RXD	I	Receive data
5	UART2_TXD	O	Transmit data
6	UART2_RTS	I	Request to send
7	UART2_CTS	O	Clear to send
8	UART1_TXD	O	Transmit data
9	UART1_RXD	I	Receive data
10	MODE SWITCH	-	MODE SWITCH

7. EVB and Accessory

The EVB and its accessory are equipped as the Figure 21.

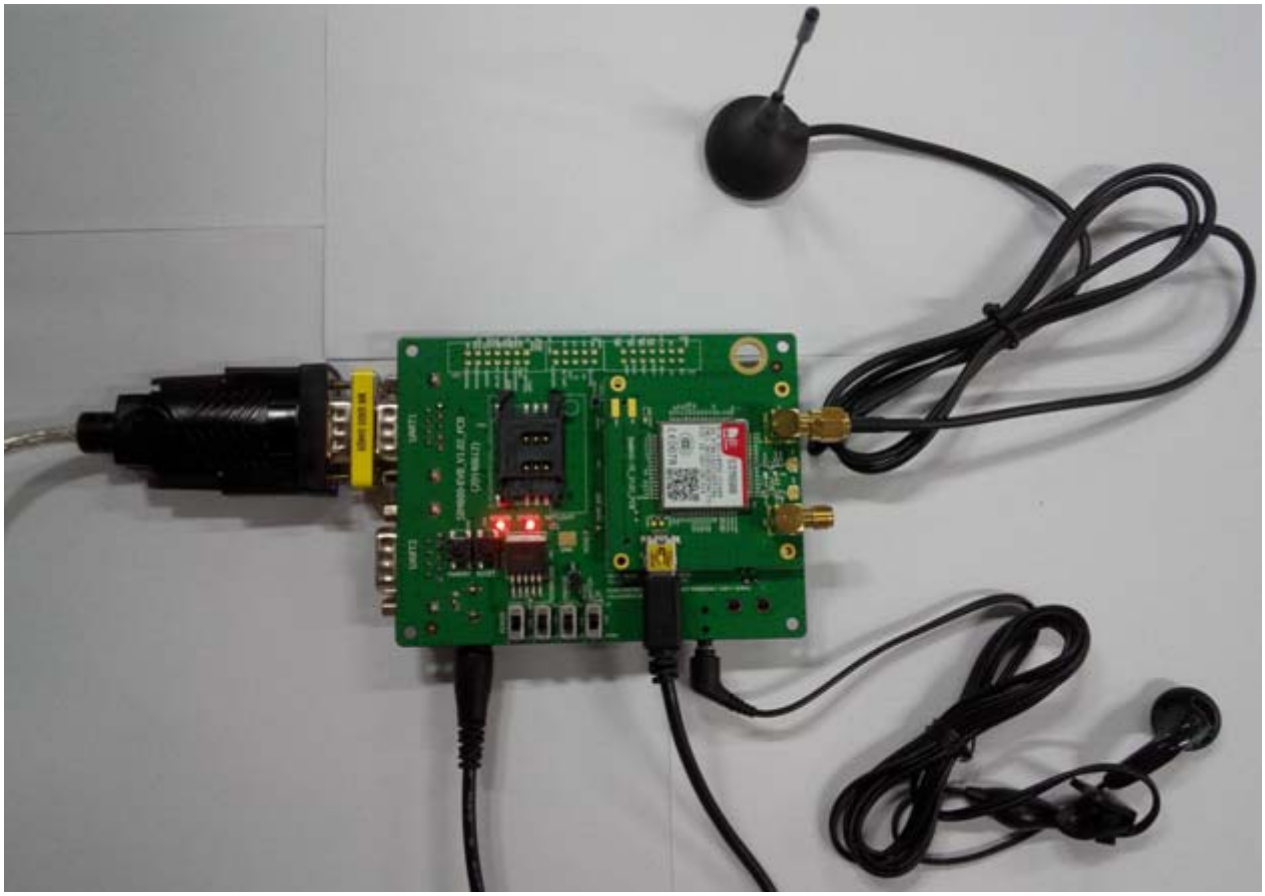

Figure 19: Equipment of SIM800-EVB and accessory

8. Illustration of Communication with Module

8.1 Power on Module

Follow the two steps to turn the module on.

- Connect the SIM800-TE to the 60pins connector on SIM800 EVB, plug in 5V DC adapter, switch S105 to "**ON"** state; keep S101 and S102 at "**OFF"** state,
- Press the PWRKEY for more than 1 second and then release, the module will power on.

8.2 Registering Network and Making a Call

- Connect the antenna to the SIM800-TE, insert SIM card and earphone
- Power on module as the chapter 8.1 described.
- Connect the serial port cable to the UART1 serial port, and Setup the cable driver
- Check the serial port number
  My computer (right click) →Manage → Device Manager → Ports (COM&LPT)

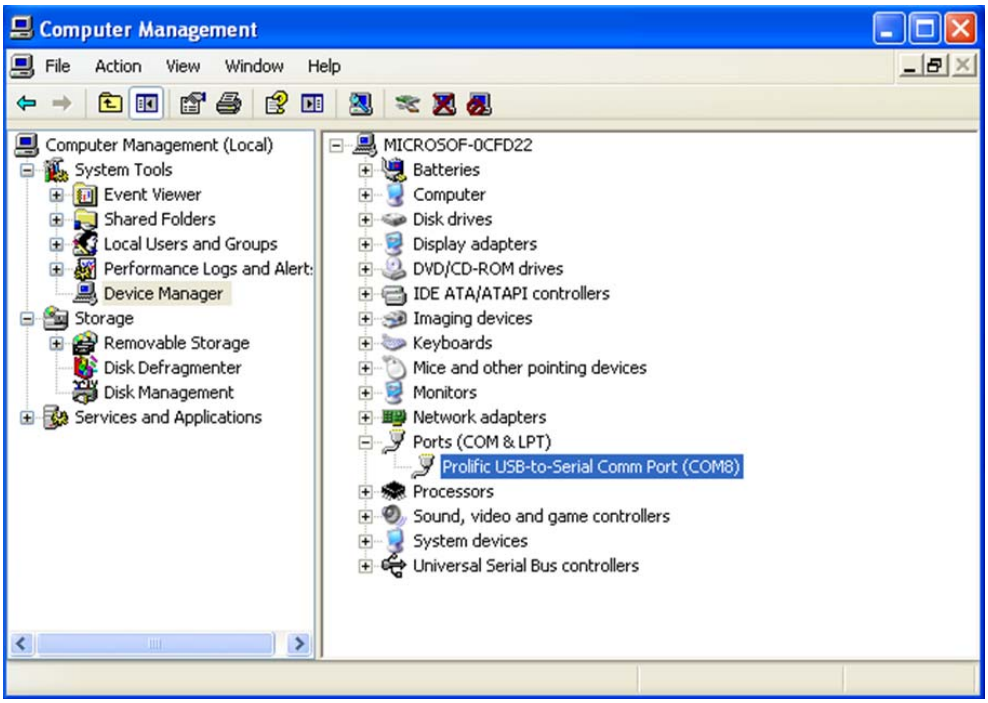

Figure 20: Check the communication port

- Open the HyperTerminal

  START→ All Programs → Accessory →Communication → HyperTerminal.

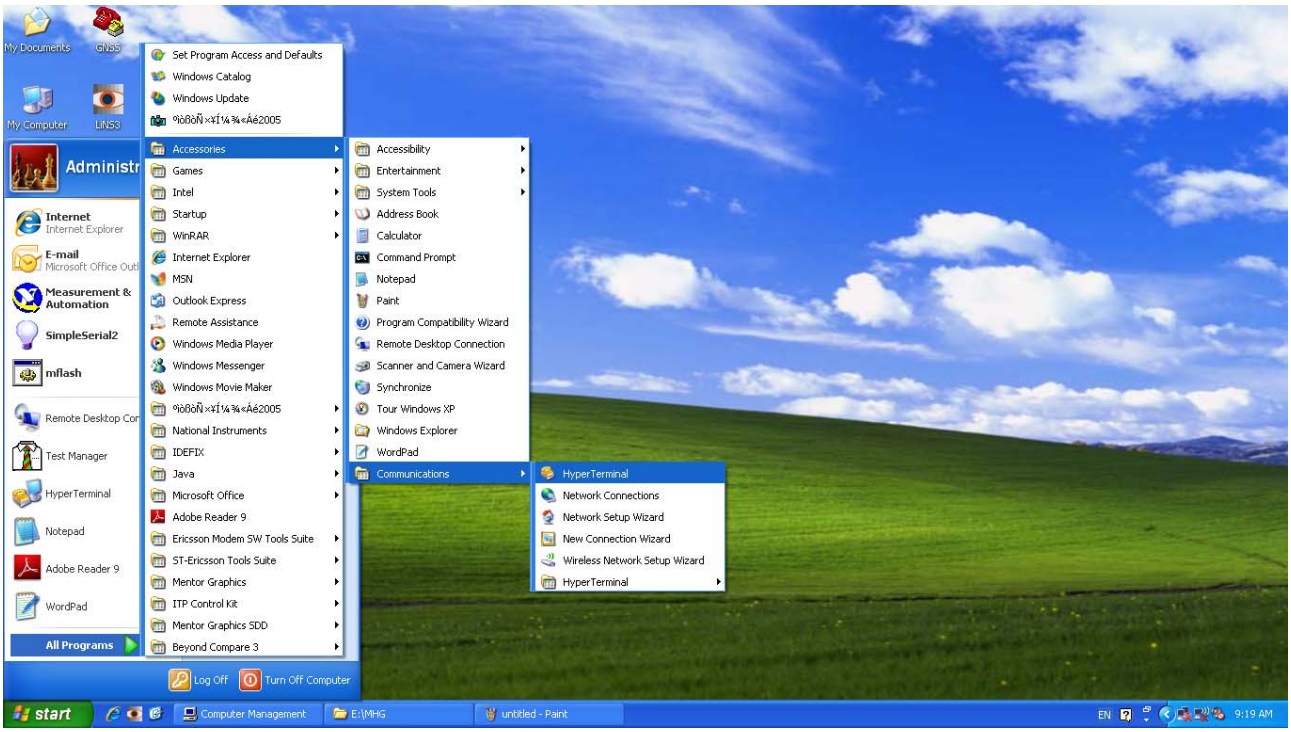

Figure 21: HyperTerminal

- Name the Hyper Terminal

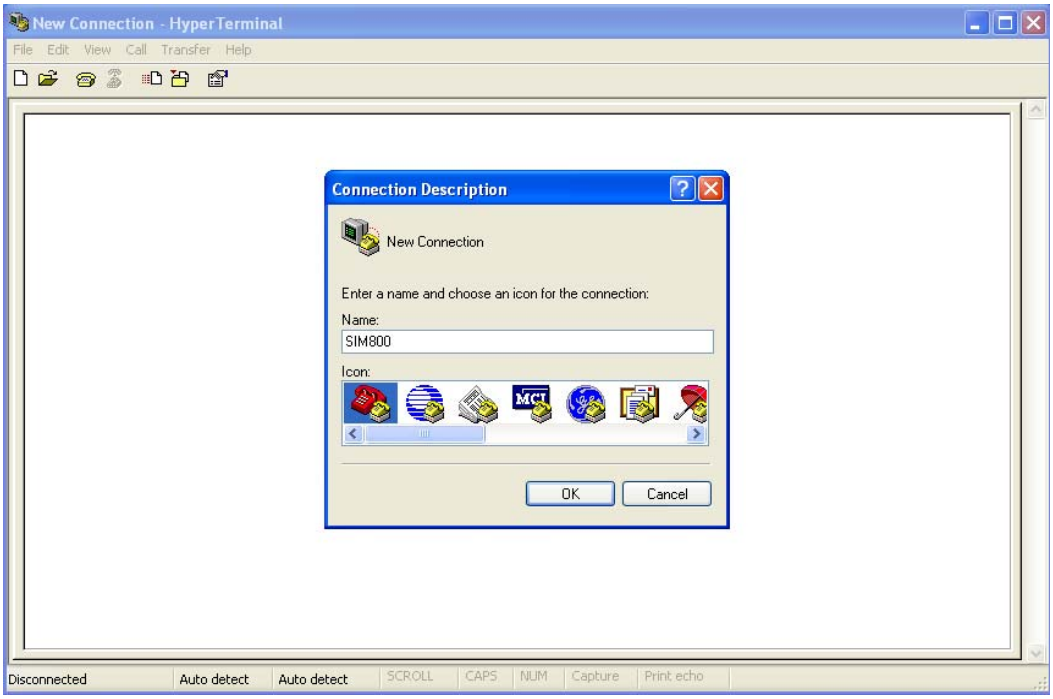

Figure 22: Name the HyperTerminal

- Configure the serial port number

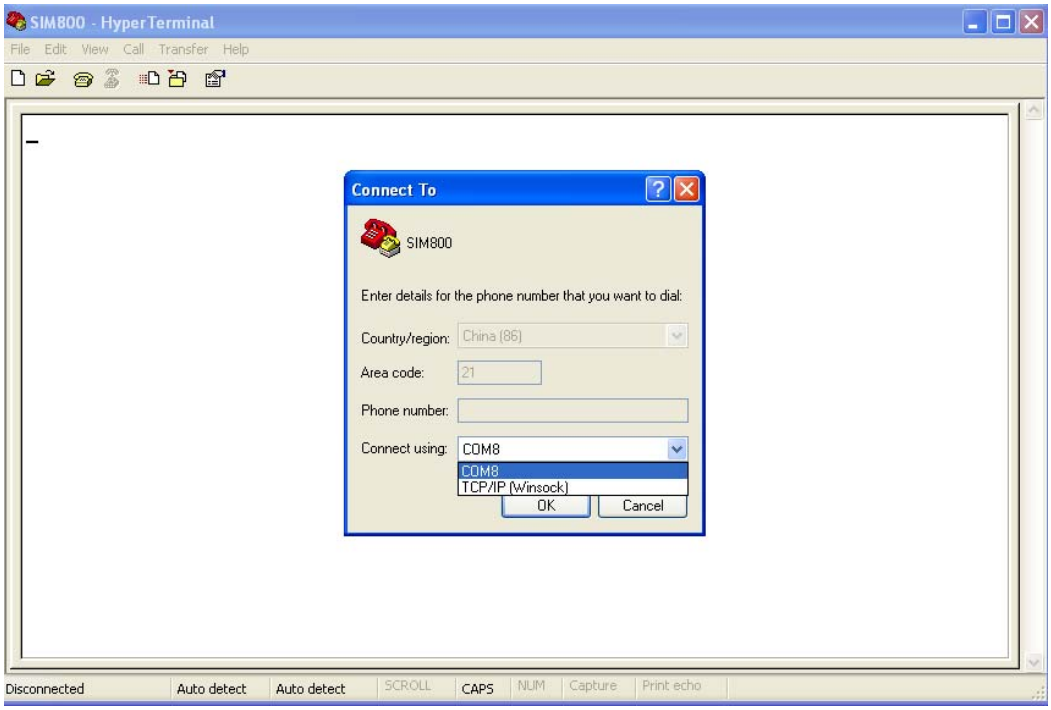

Figure 23: Configure the serial port number

- Set the baud rate and flow control

  User can set the baud rate from 1200bps to 115200bps, and the flow control set to “None”, click OK.

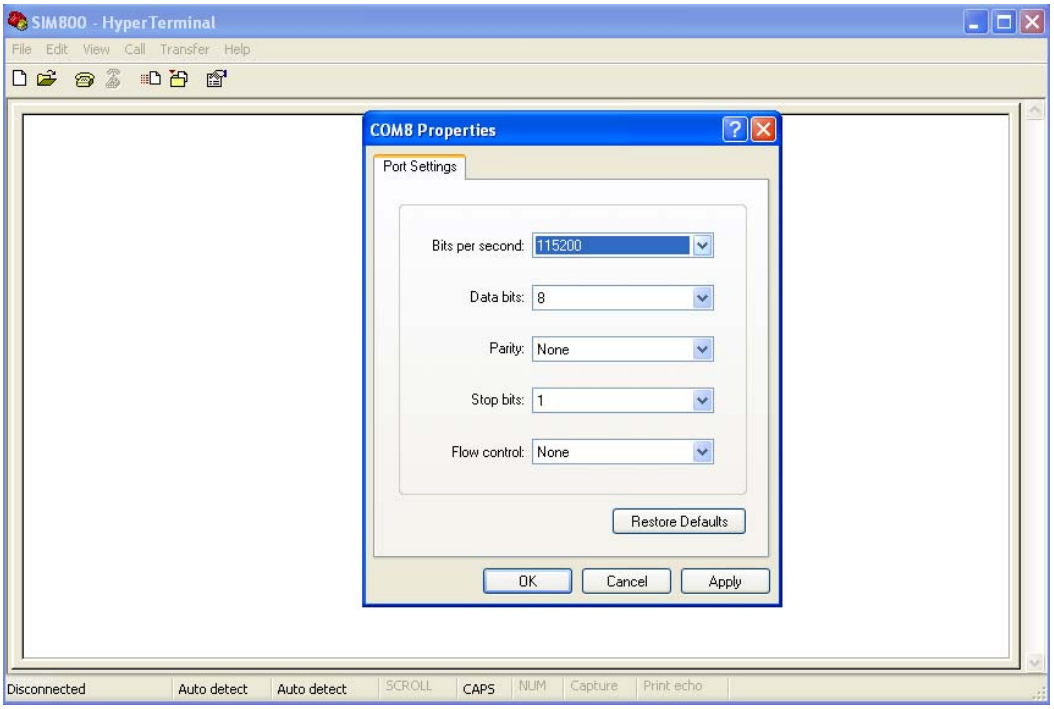

Figure 24: Configure the baudrate

- Connect the module.

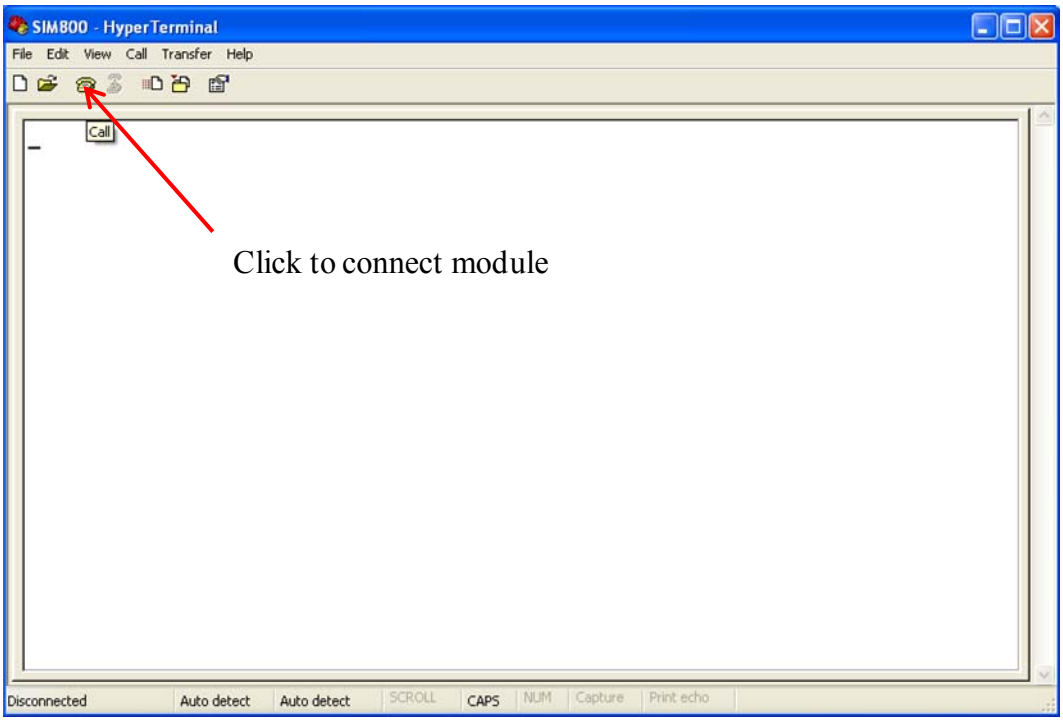

Figure 25: Connect the module

- Communicate with module

When module is powered on with autobauding enabled, user must firstly send "AT" to synchronize the baud rate. The default setting of the module is autobauding, Use AT command to make a call.

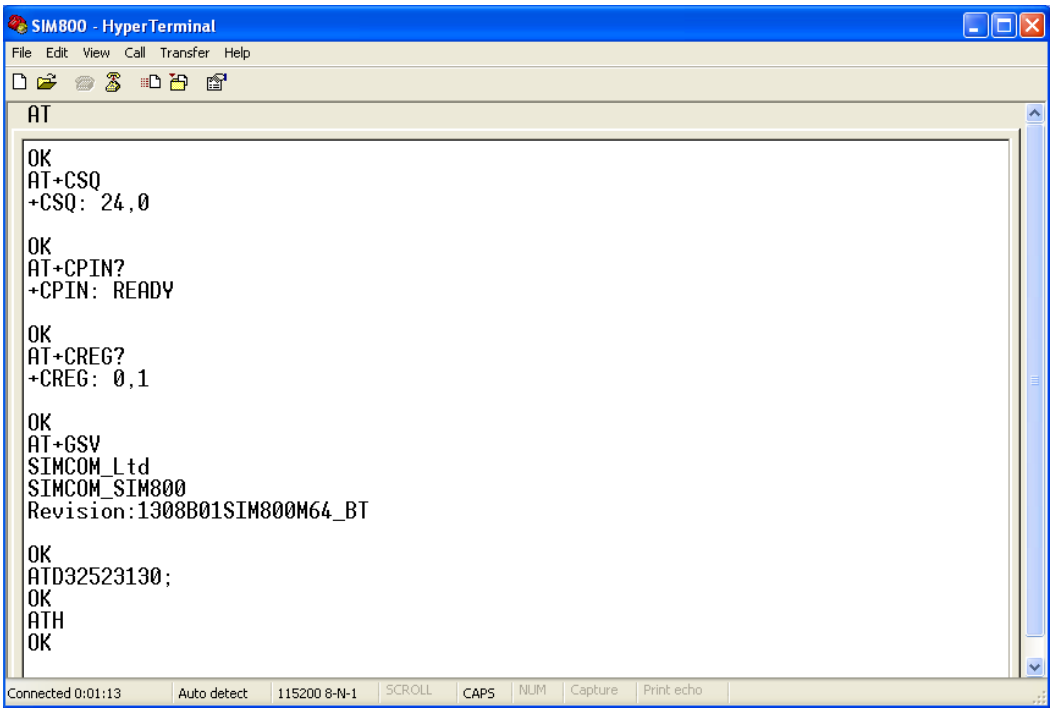

Figure 26: Communication with SIM800 by HyperTerminal

9. Downloading

The software can be downloaded through the UART1 port or USB port; this chapter will introduce these two methods. Customer should use the "SIMCom_SIM800H_EAT_flash_Tool.exe" provided by SIMCom to update the software, if customer choose to update software use USB port, the USB driver should be installed firstly.

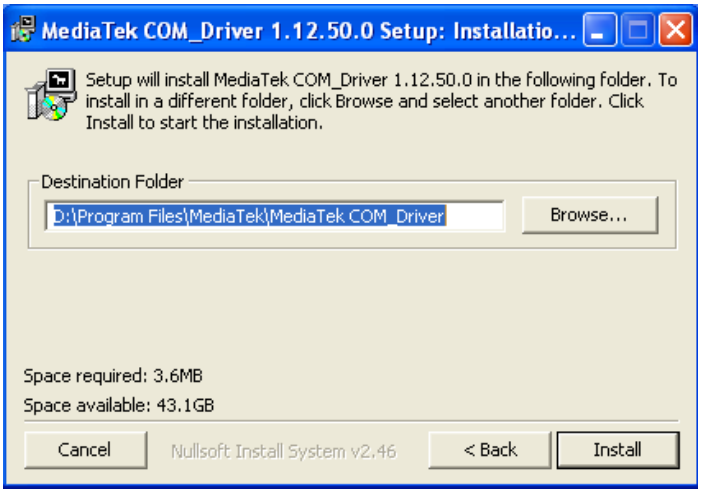

Figure 27: Setup the USB driver

9.1 Update Software Through UART1 Port

Setup the communication with SIM800 module as chapter 8 introductions, and then switch down S105 to power off SIM800 module, and make sure the download switch S102 switch down.

Open the "SIMCom_SIM800H_EAT_flash_Tool.exe", and configure the update method as COM port, and select COM8 (customer should check the COM port number in the device manager)

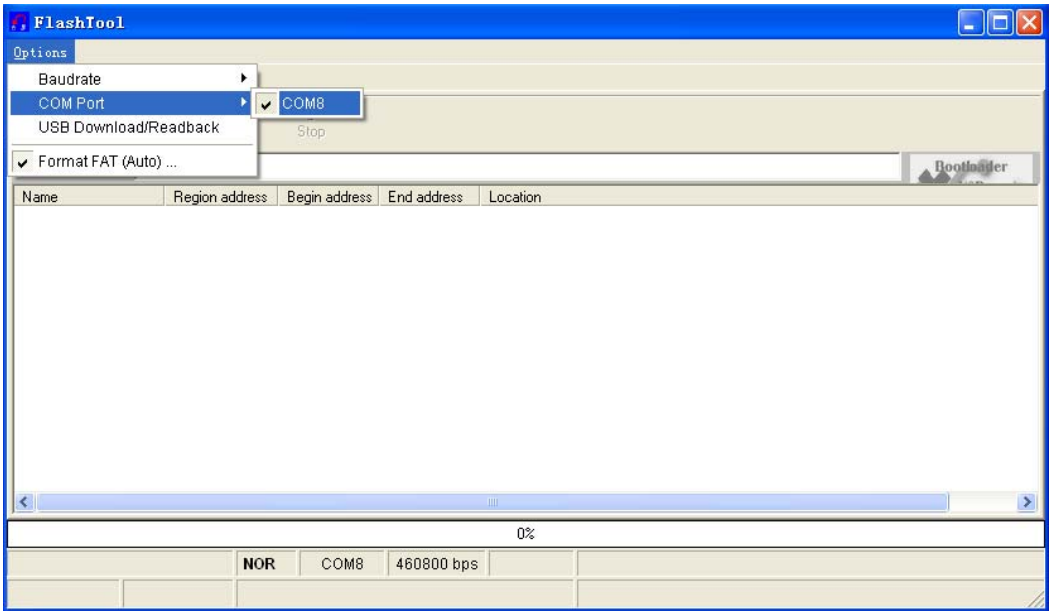

Figure 28: Configure the flash tool

Configure the COM port baudrate to 460800.

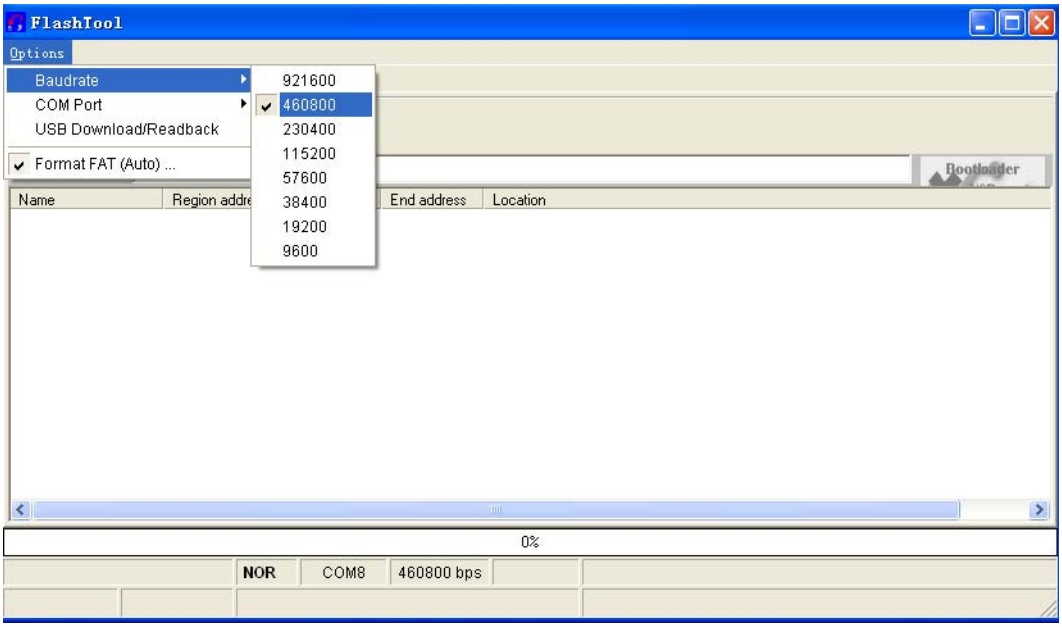

Figure 29: Configure the baudrate

Click “scatter/Config file” button to browse the configure files, and then click “Download” button.

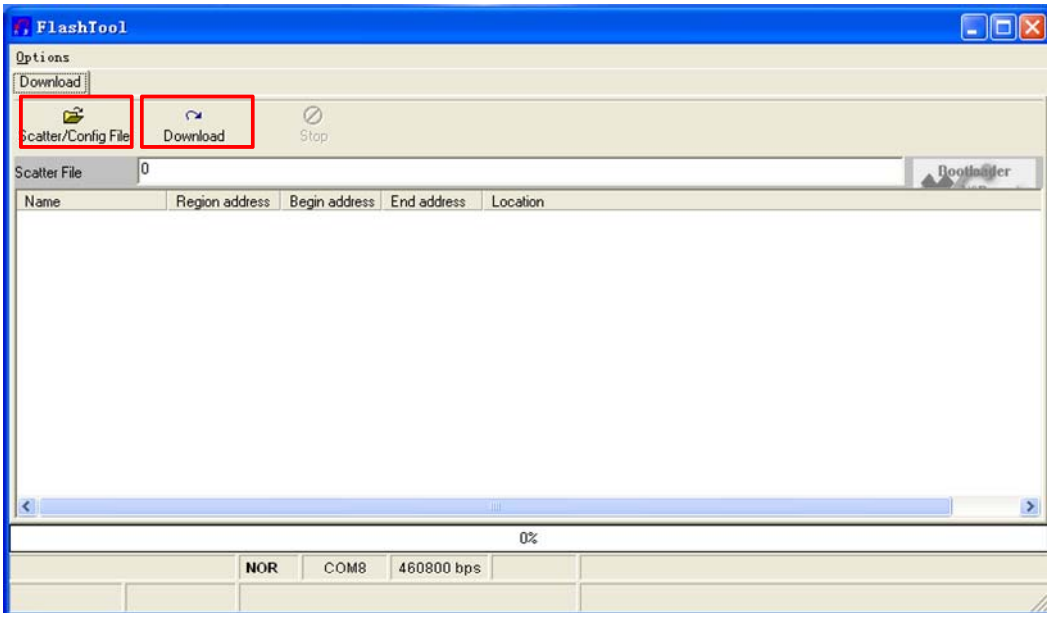

Figure 30: Browse the configure files

After customer click the “Download” button, **then customer should switch S105 up to power the SIM800 module first, and then switch up the “Download” switch S102.** Then the flash tool and the SIM800 module would do a handshake, the module would enter download mode.

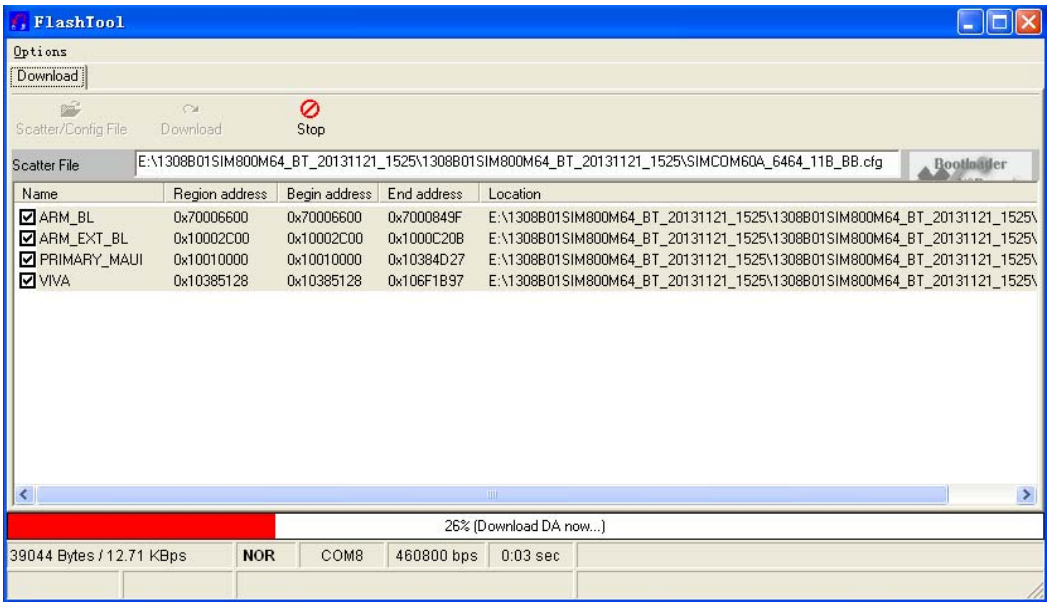

Figure 31: Download DA

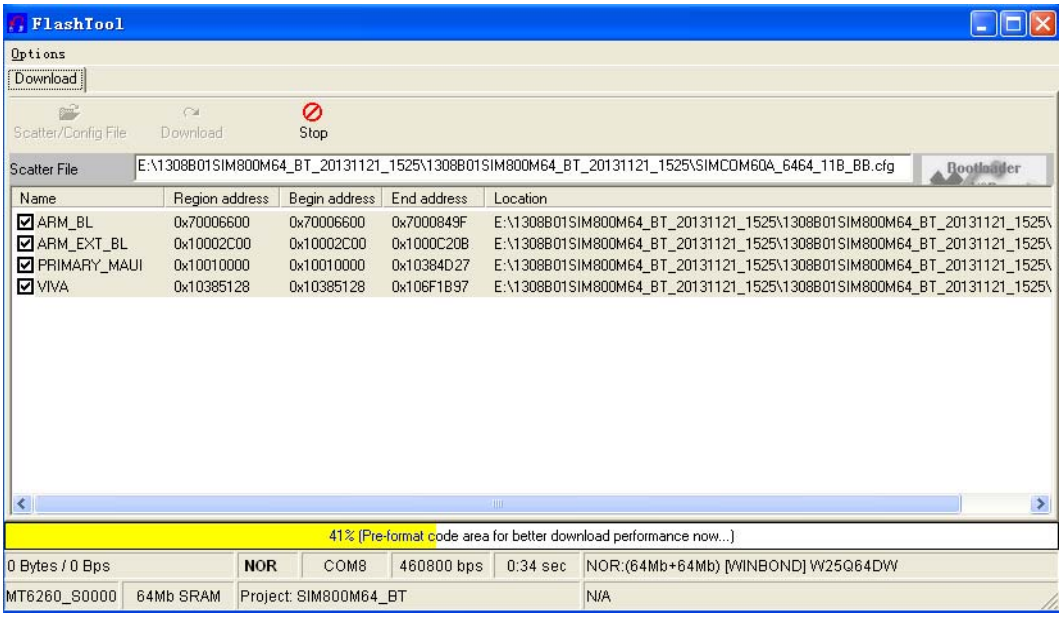

Figure 32: Download Bootloader

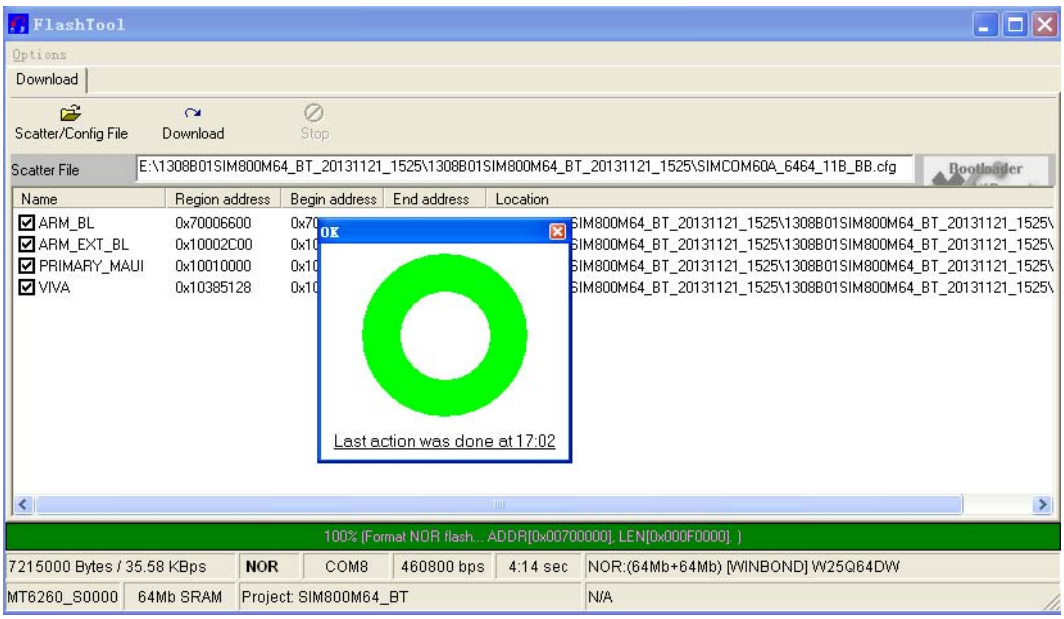

Figure 33: Download finished

9.2 Update Software Through USB Port

It would take less time to update software through USB port, and the only different with update through UART1 port is the "Flash_tool" configuration.

The "Flash_tool" should be configured firstly as the following figure shows, the rest of update steps is the same with UART1 method, customer should pay attention to the handshake action before the module enter download mode.

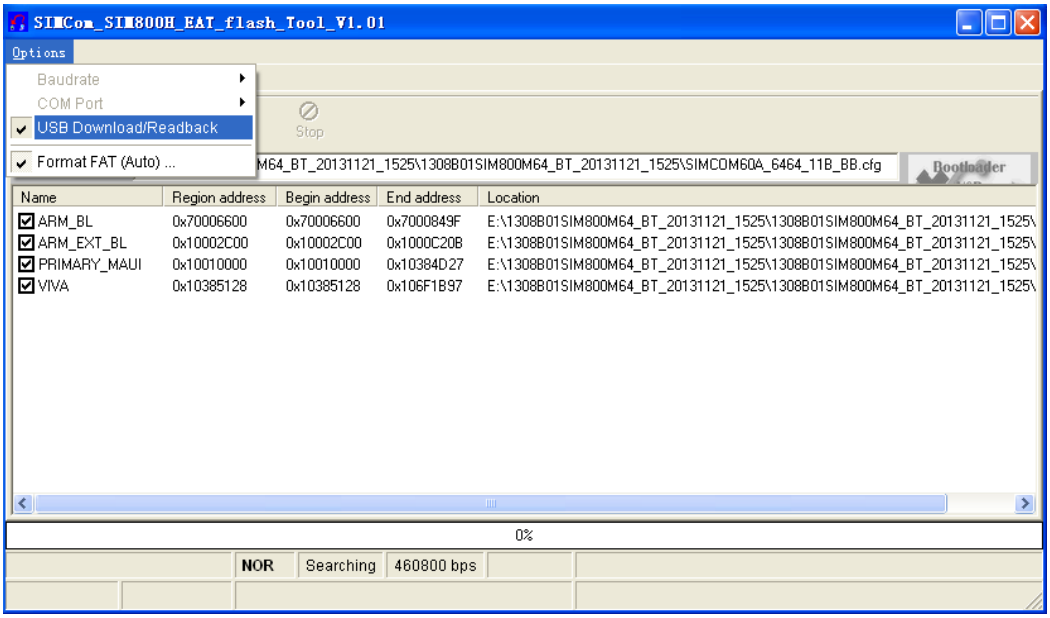

Figure 34: Configure the tool to USB download method

Contact us:

Shanghai SIMCom Wireless Solutions Ltd.

Add: SIM Technology Building，No.633，Jinzhong Road，Changning District，Shanghai P.R. China 200335

Tel: +86 21 3235 3300

Fax: +86 21 3235 3301

URL: www.sim.com/wm