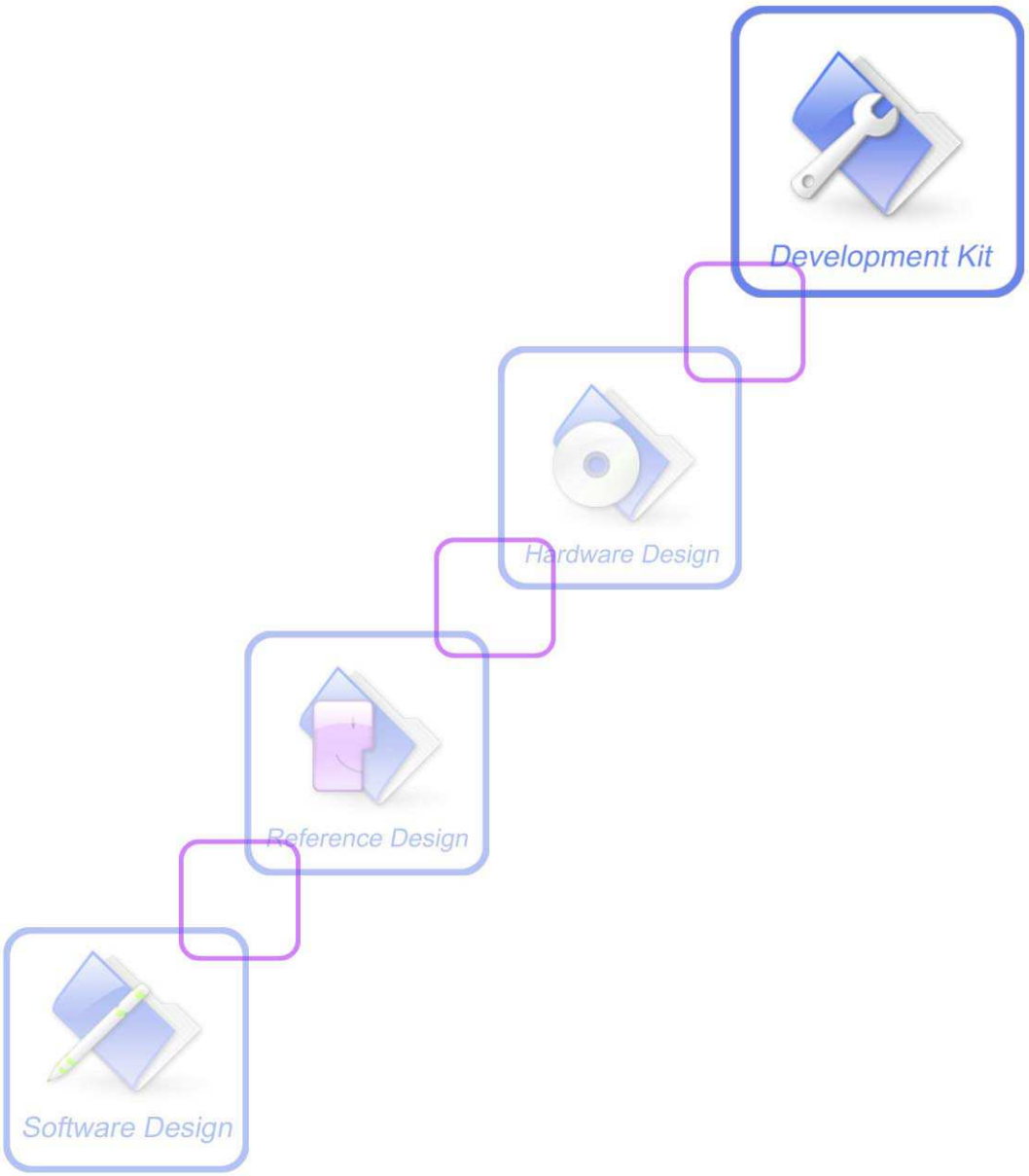
Development Kit Manual

SIM548C-EVB_UGD_V1.01



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Contents

Figure Index

SCOPE

This document give the usage of SIM548C EVB, user can get useful info about the SIM548C EVB quickly through this document. Using SIM548C EVB, user can demo SIM548C module.

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

1 Overview

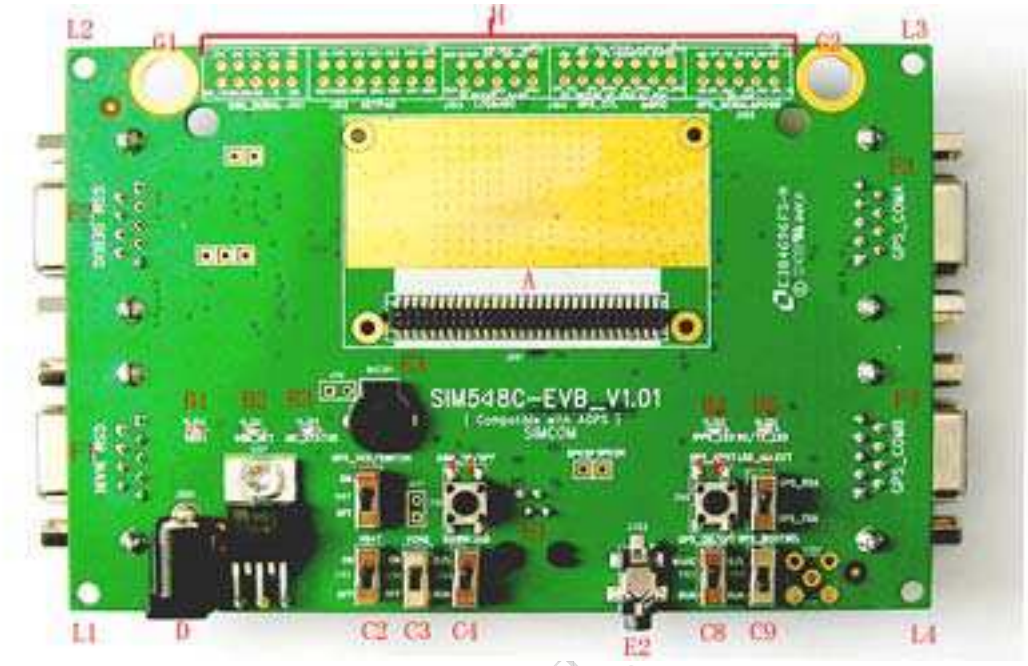


Figure 1: TOP view

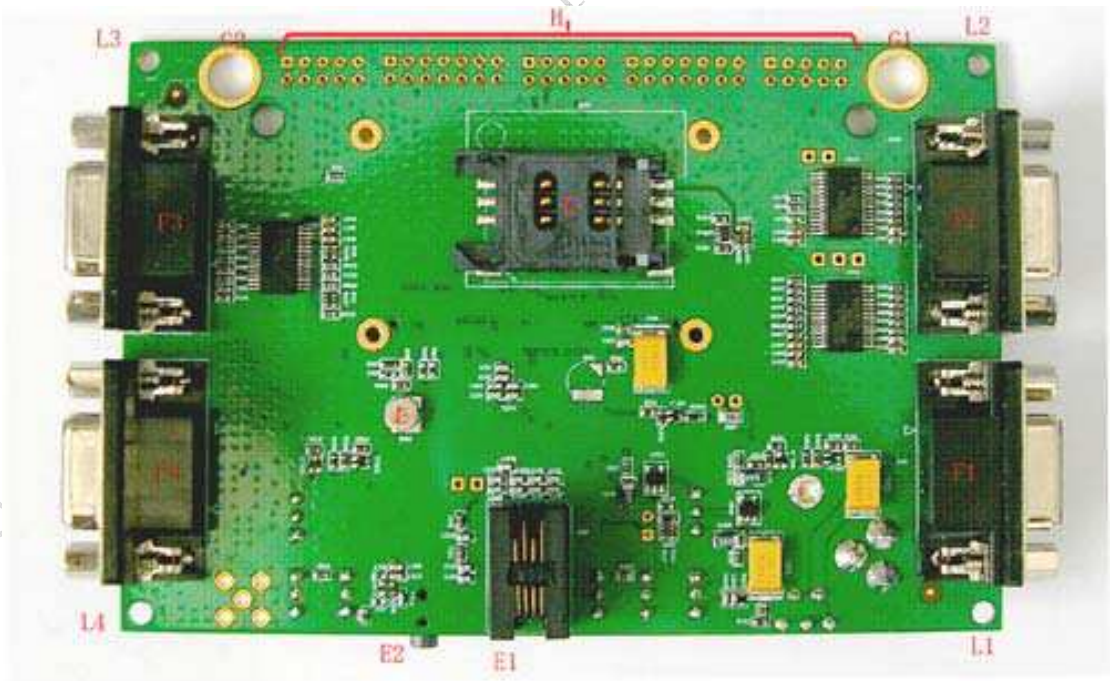


Figure 2: BOTTOM view

A: 60-pin connector, SIM548C module interface

B1-B5: LED indicator

B1: VBAT ON/OFF
B2: GSM net status
B3: The GSM part of the module ON/OFF status
B4: 1PPS output for GPS part
B5: GPS TX/RX status

C1-C9: Key control for various functions
C1: GSM part power-up / power down control (button Z101)
C2: VBAT ON/OFF control (shifter S102)
C3: VCHG ON/OFF control (shifter S105)
C4: GSM part program download control (shifter S101)
C5: GPS part power ON/OFF control (shifter S107)
C6: GPS part reset control (button Z102)
C7: GPS part RX/TX LED status selective shifter (shifter S106)
C8: GPS part wake up control (shifter S103)
C9: GPS part program download control (shifter S104)

D: Power source adapter interface

E1-E3: Audio interface
E1: Handset interface
E2: Headphone interface
E3: Buzzer

F1-F4: Serial ports
F1: Main serial port for downloading, AT command transmitting, data exchanging
F2: Debug serial port
F3: GPS part serial port A
F4: GPS part serial port B

G1-G2: Hole for antenna fixed
G1: Hole for GSM antenna fixed
G2: Hole for GPS antenna fixed

H: Expand port, such as serial ports, display port

I1-I4: Hole for EVB board fixed

K: SIM card connector
L: 3.3V Back-up battery for GPS part

2 EVB accessory

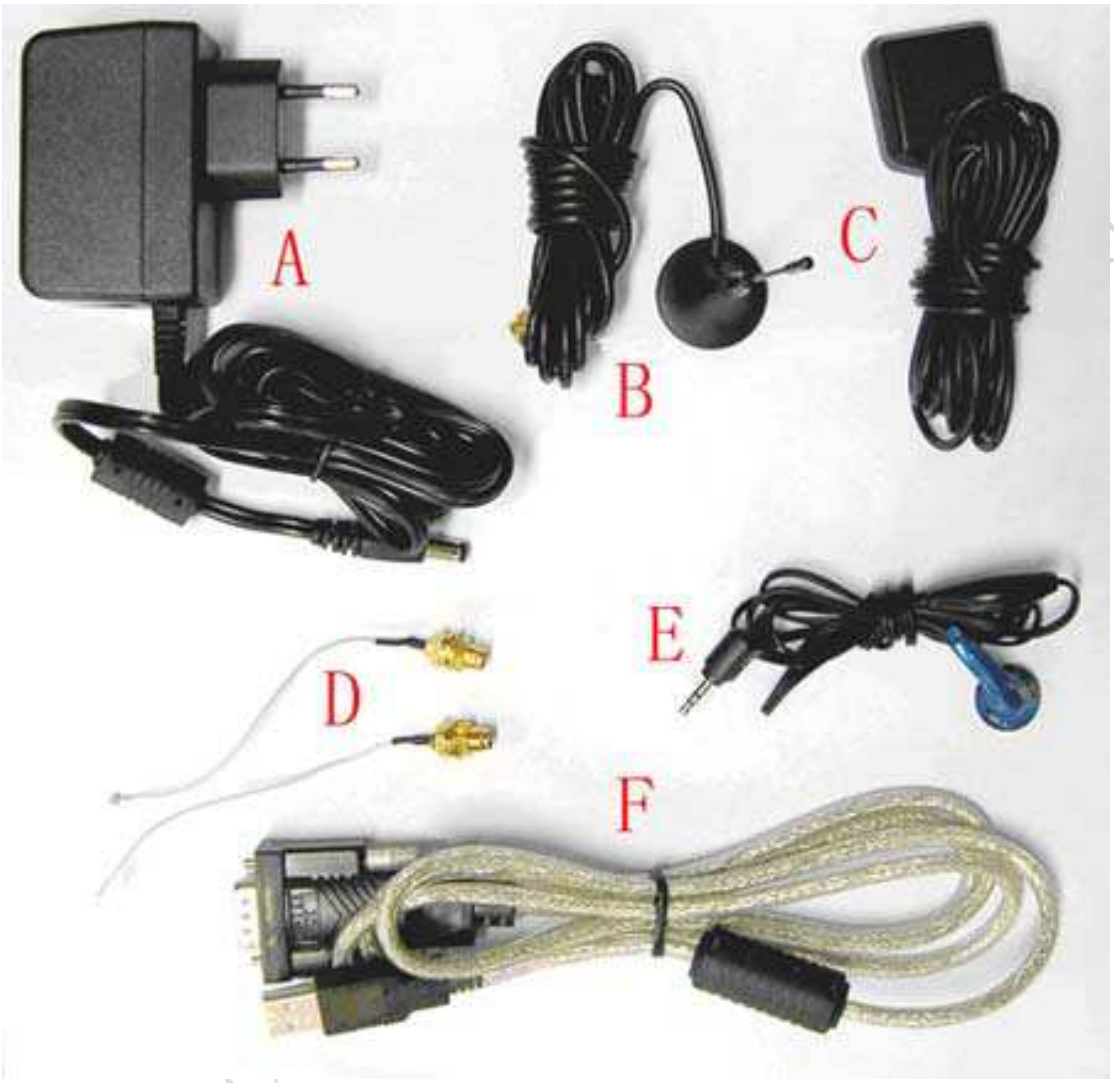


Figure 3: EVB accessory

A: antenna
A: 5V DC source adapter
B: GSM antenna
C: GPS antenna
D: RF cable
E: Earphone
F: USB to serial port line

3 Accessory interface

3.1 Power interface

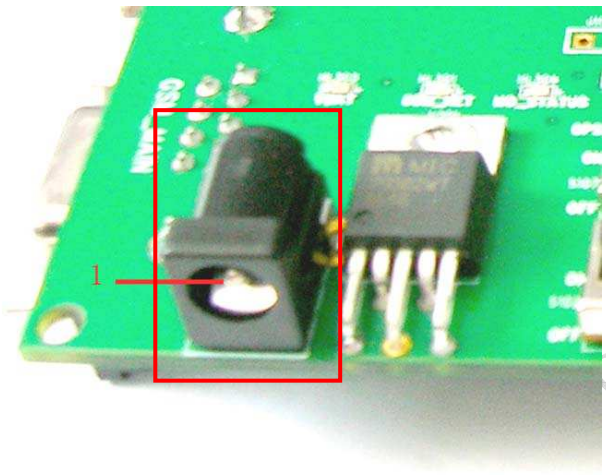


Figure 4: Power interface

Pin	Signal	I/O	Description
1	Adapter input	I	5V/2.5A DC source input

3.2 Audio interface

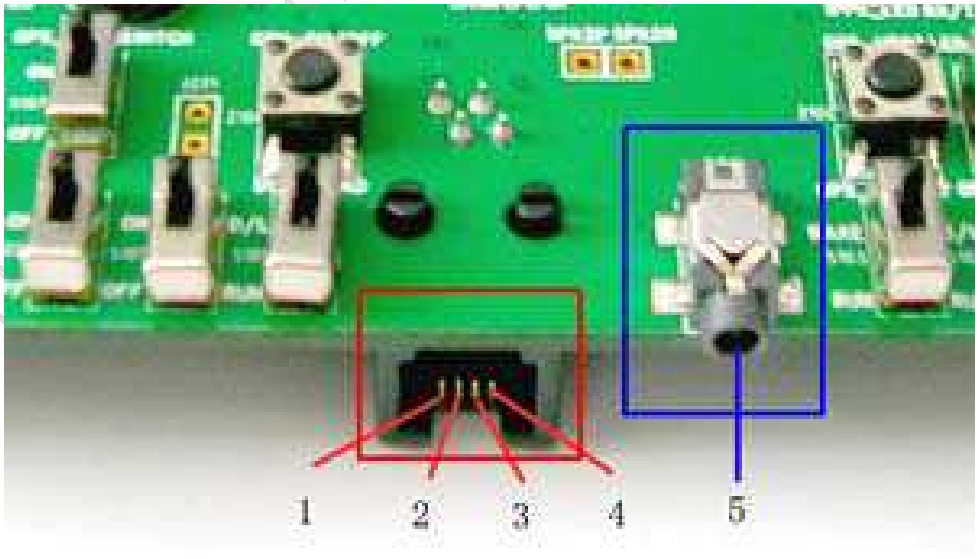


Figure 5: Audio interface

Headset interface:

Pin	Signal	I/O	Description
1	MIC1P	I	Positive microphone input
2	SPK1P	O	Positive microphone input
3	SPK1N	O	Negative microphone input
4	MIC1N	I	Negative microphone input

Headphone interface:

Pin	Signal	Input/Output	Description
5	MIC2P&SPK2P	I/O	Auxiliary positive input and output

3.3 SIM card interface

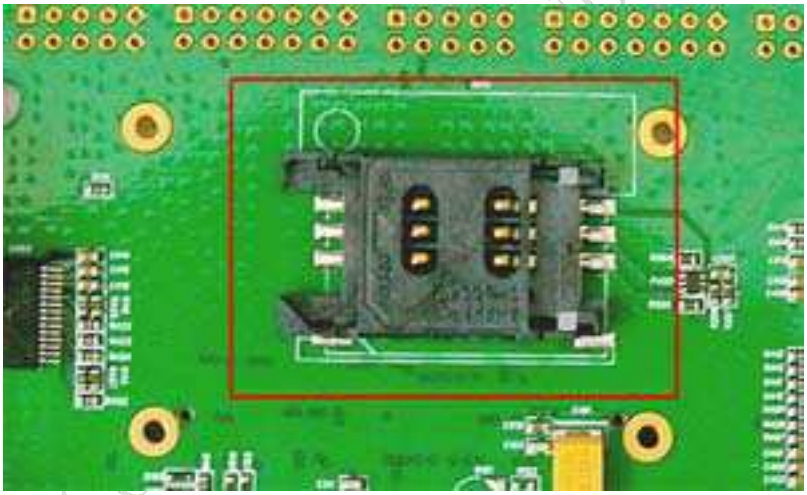


Figure 6: SIM card interface

Note: Please refer to SIM548C User Guide, detailed in Chapter 3.11 SIM interface.

3.4 Antenna interface

3.4.1 GSM antenna interface

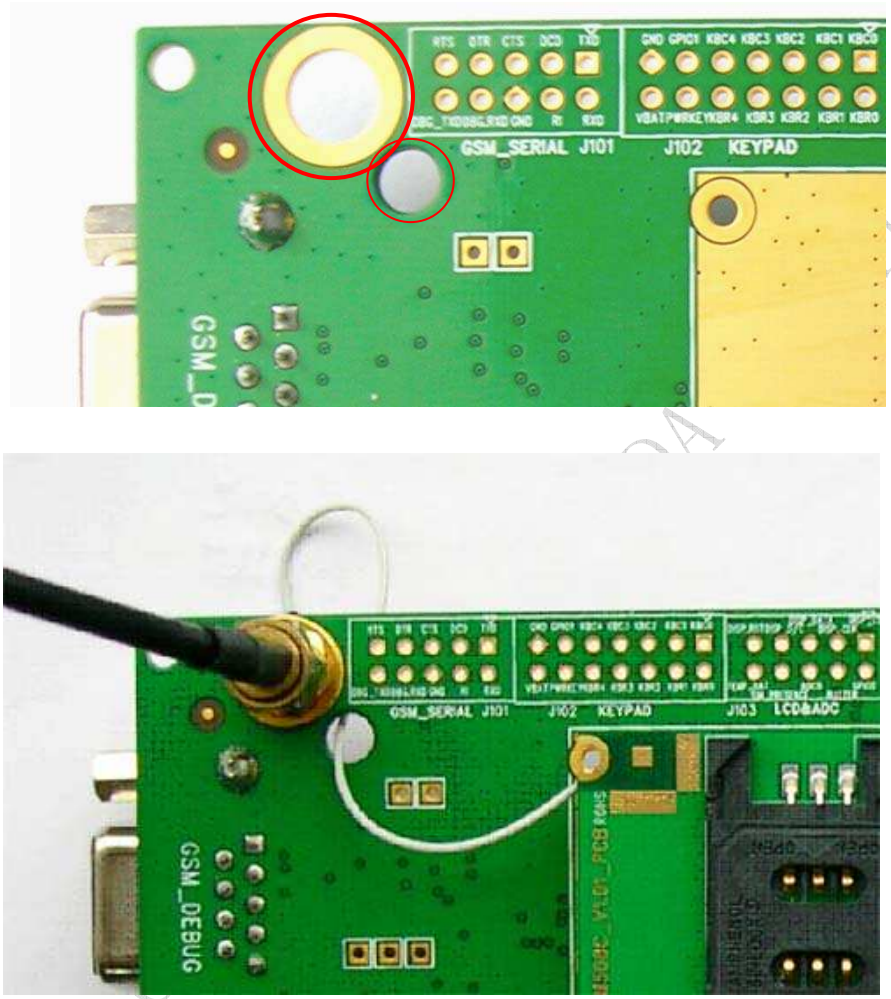


Figure 7: GSM antenna interface

3.4.2 GPS antenna interface

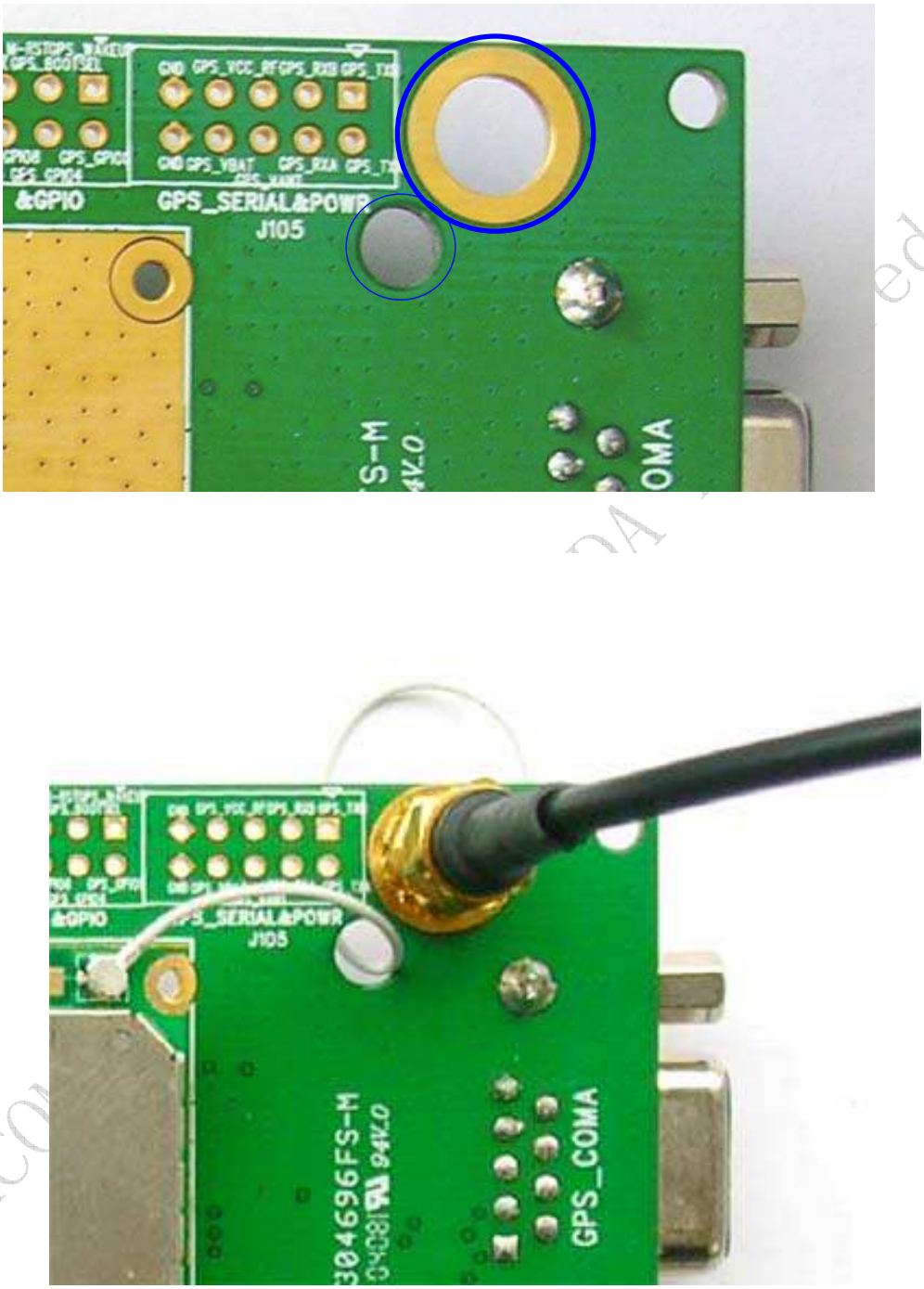


Figure 8: GPS antenna interface

3.5 RS232 interface

3.5.1 GSM part

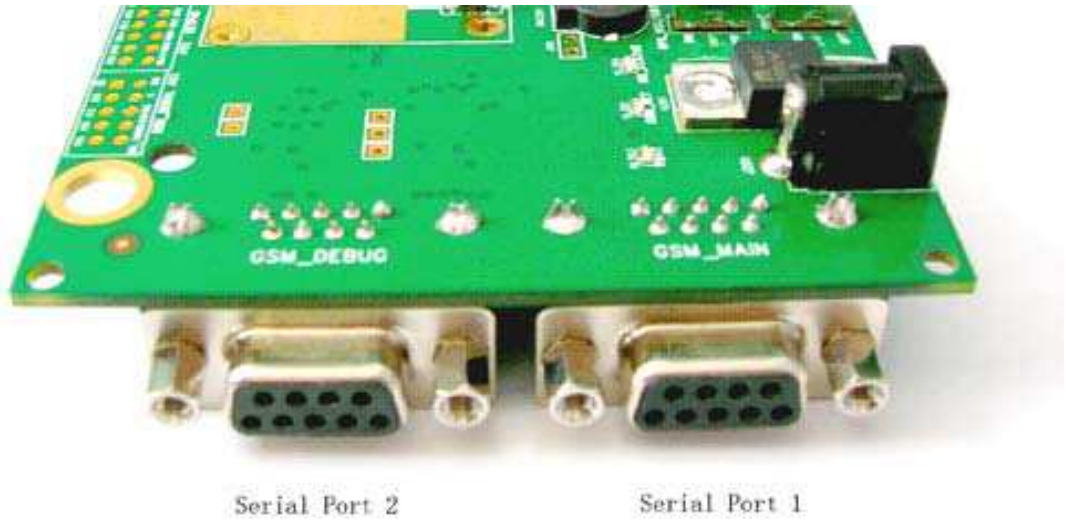


Figure 9: GSM part serial ports

Serial Port 1

Pin	Signal	I/O	Description
1	DCD	O	Data carrier detection
2	TXD	O	Transmit data
3	RXD	I	Receive data
4	DTR	I	Data Terminal Ready
5	GND		GND
7	RTS	I	Request to Send
8	CTS	O	Clear to Send
9	RI	O	Ring Indicator

Serial Port 2

Pin	Signal	I/O	Description
2	DEBUG_TX	O	Transmit data
3	DEBUG_RX	I	Receive data
5	GND		GND

3.5.2 GPS part

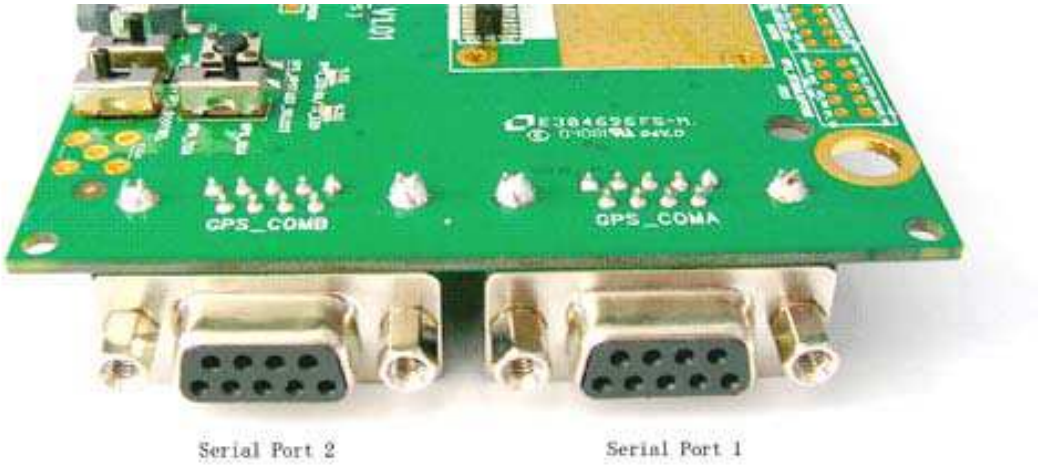


Figure 10: GPS part serial ports

Serial port 1:

Pin	Signal	I/O	Description
2	GPS_TXA	O	Transmit data
3	GPS_RXA	I	Receive data
5	GND		GND

Serial port 2:

Pin	Signal	I/O	Description
2	GPS_TXB	O	Transmit data
3	GPS_RXB	I	Receive data
5	GND		GND

3.6 Operating status LED

3.6.1 GSM part

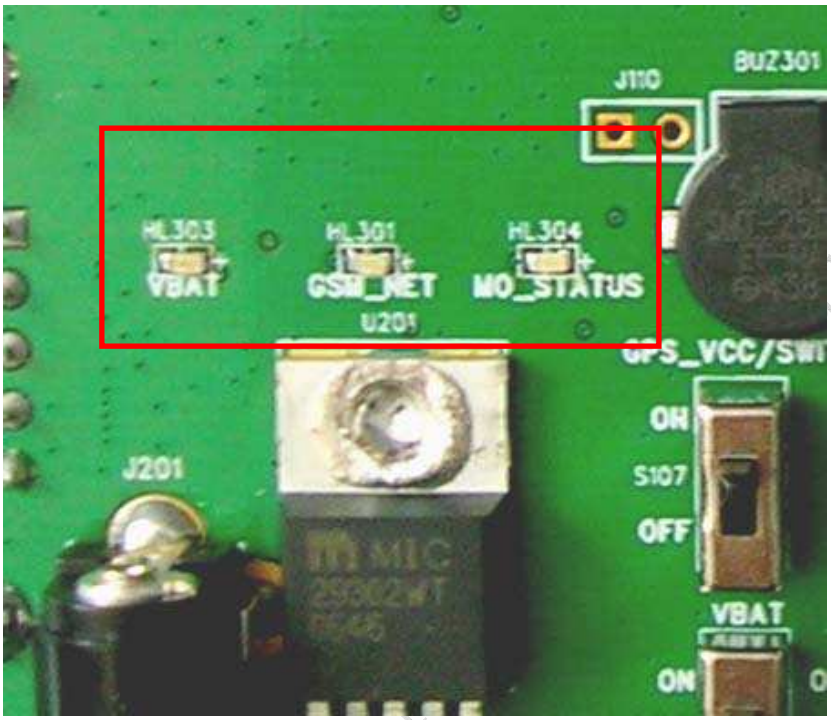


Figure 11: GSM part LED

Name	Description	STATUS
VBAT_LED	VBAT ON/OFF indicator	Bright: VBAT ON; Extinct: VBAT OFF
GSM_NET_LED	GSM_NET status indicator	Blinking at a certain frequency according to various GSM net status
MO_STATUS_LED	GSM part status indicator	Not used, will be configured in our latter software.

3.6.2 GPS part

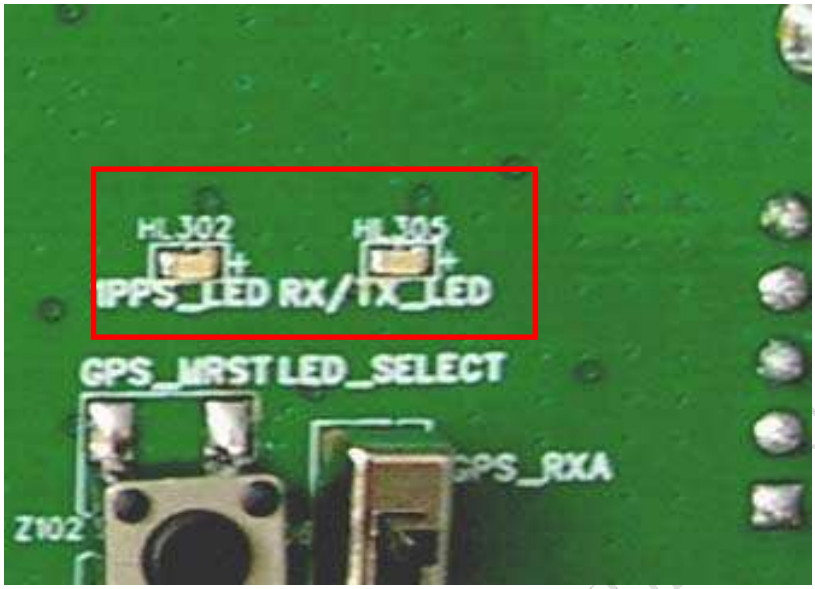


Figure 12: GPS part LED

Name	Description	STATUS
1PPS_LED	1PPS signal indicator	Not used currently
RX/TX_LED	Run or download indicator	Run normally: Blinking at 1Hz Download: Blinking rapidly

4 Test interface

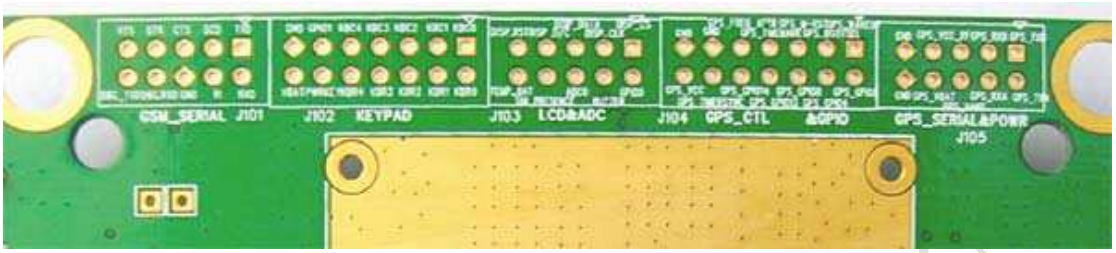


Figure 13: Test interface overview

4.1 GSM serial ports

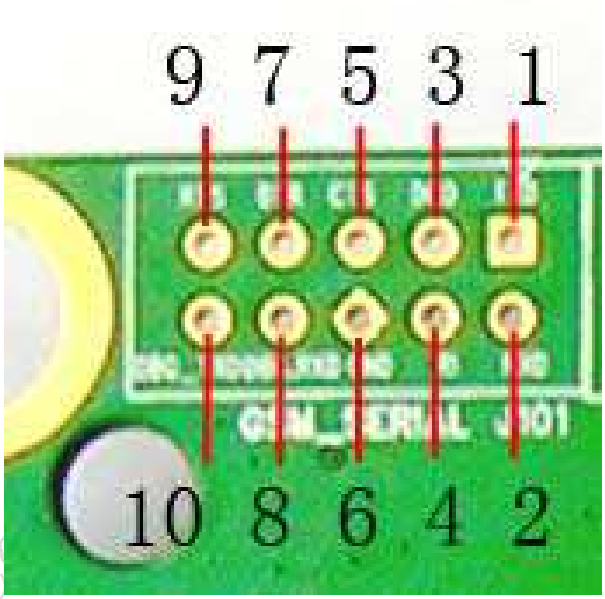


Figure 14: GSM serial ports

Pin	Signal	I/O	Description
1	TXD	O	Transmit data
2	RXD	I	Receive data
3	DCD	O	Data carrier detection
4	RI	O	Ring Indicator
5	CTS	O	Clear to Send
6	GND		GND
7	DTR	I	Data Terminal Ready
8	DEBUG_RX	I	Receive data

9	RTS	I	Request to Send
10	DEBUG_TX	O	Transmit data

4.2 LCD & ADC

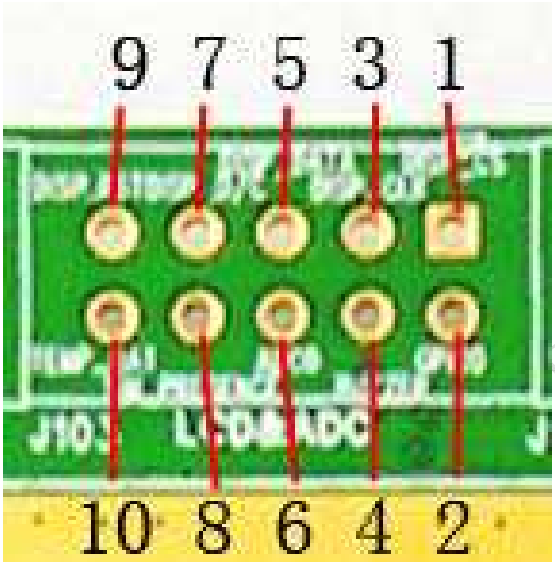


Figure 15: LCD & ADC interface

Pin	Signal	I/O	Description
1	DISP_CS	O	Display enable output
2	NC		
3	DISP_CLK	O	Display clock output
4	BUZZER	O	Buzzer output.
5	DISP_DATA	I/O	Display data line
6	ADC0	I	Adc input
7	DISP_D/C	O	Display data or address select
8	SIM_PRESENCE	I	SIM Card Detection
9	DISP_RESET	O	Display reset outplay
10	TEMP_BAT	I	For measure the batter temperature

4.3 GPS control & I/O

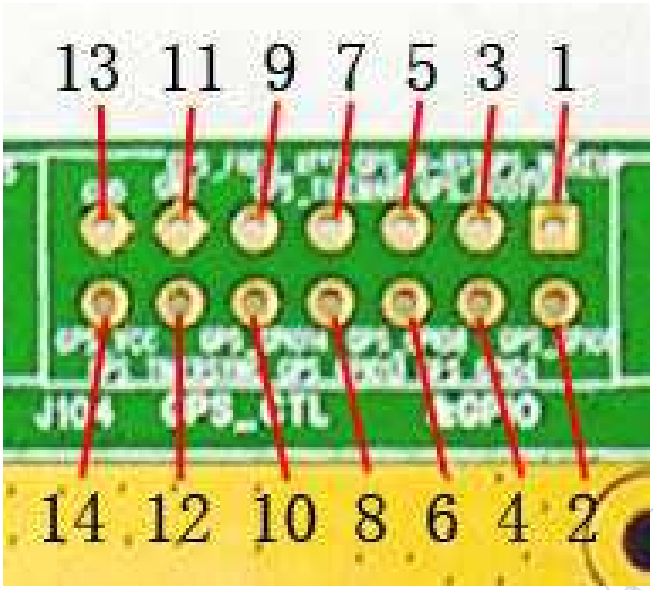


Figure 16: GPS control & I/O interface

Pin	Signal	I/O	Description
1	GPS_WAKEUP	I	GPS WAKEUP key
2	NC		
3	GPS_BOOTSEL	I	For re-programming the Flash, it must be set to High
4	NC		
5	GPS_MRST	I	Reset pin of the GPS part, active low.
6	NC		
7	GPS_TIMEMARK	O	1 PPS timemark output for synchronizing to within 1 microsecond of GPS time.
8	NC		
9	NC		
10	NC		
11	GND		GND
12	NC		
13	GND		GND
14	GPS_VCC	I	GPS part power supply

4.5 GPS serial ports and power

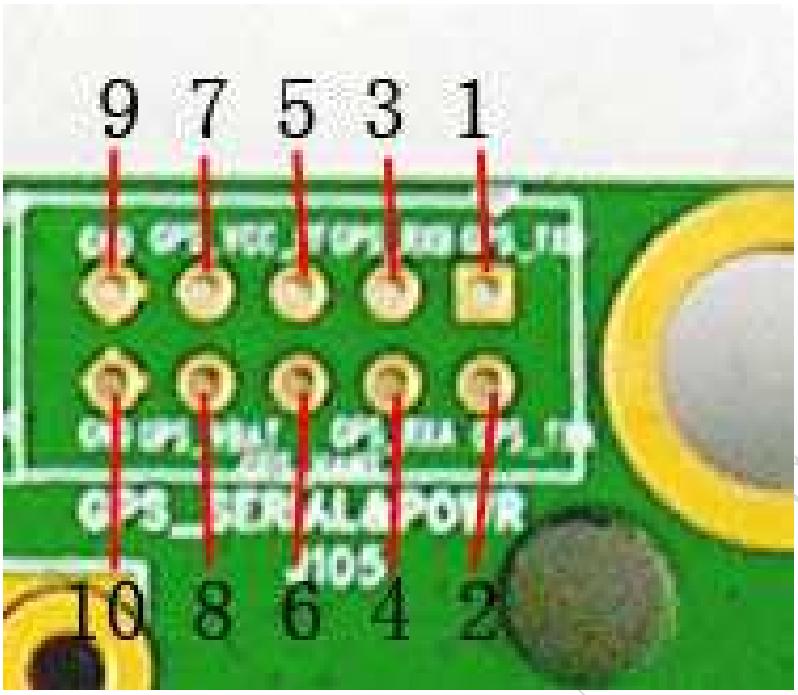


Figure 17: GPS serial ports

Pin	Signal	I/O	Description
1	GPS_TXB	O	GPS serial interface.
2	GPS_TXA	O	
3	GPS_RXB	I	
4	GPS_RXA	I	
5	GPS_VCC_RF	O	Power supply for 3V active antenna.
6	GPS_VANT	I	External DC power supply for an active antenna.
7	GPS_VCC_RF	O	Power supply for 3V active antenna.
8	GPS_VRTC	I	Apply 3V dc for backup RTC & SRAM.
9	GND		GND
10	GND		GND

5 EVB and accessory equipment

At normal circumstance, the EVB and its accessory are equipped as the following figure:

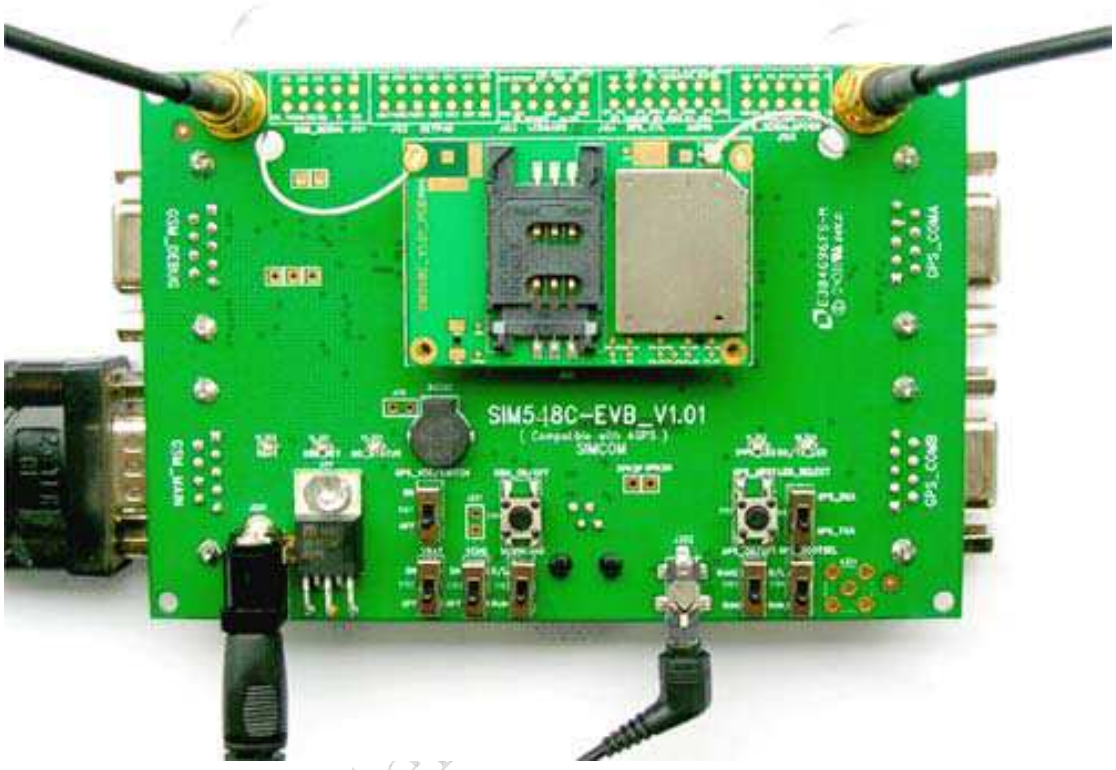


Figure 18: EVB and accessory equipment

6 Illustration

6.1 GSM part

6.1.1 Running

(1) Connect the SIM548C module to the 60pins connector on the SIM548C EVB, insert the 5V direct current source adapter, switch shifter S101 on the RUN state, shifter S102 on the ON state;
(2) Press the GSM_ON/OFF button Z101 for about 2 seconds , then the GSM part of SIM548C begins to run.

You will see the light GSM_NET on the EVB glittering at a certain frequency corresponding to various states, then you can judge whether the EVB and SIM548C is running or not. No function and test can be executed when we have not connected necessary accessories.

6.1.2 Connecting Net and calling

(1) Connect the serial port line to the GSM_MAIN serial port, open the HyperTerminal (AT command windows) on your personal computer, the location of the HyperTerminal in windows2000 is START →accessory→ communication →HyperTerminal. Set the correct baud rate and COM number. The default baud rate of SIM548C is 115200 bps, and the COM number based on which port your serial port line insert in, you should select such as COM1，COM3 or COMx etc.
(2) Connect the GSM antenna to the SIM548C module using an antenna transmit line, insert SIM card into the SIM card interface, insert headphone or handset into its interface.
(3) Act on the step of running which mentioned above, power on the system, typing the AT command in the HyperTerminal, and then the SIM548C module will execute its corresponding function.

6.1.3 Downloading

Connect the serial port line to the GSM_MAIN serial port, connect the direct current source adapter, run the download program and press the START key, then switch shifter S102 on the ON state, shifter S101 on the D/L state, then the download procedure is executing

6.1.4 Turn off

Press the GSM_ON/OFF button Z101 for about 1 second, the GSM part of SIM548C will be

turned off.

6.1.5 Charging

Connect the SIM548C module to the 60pin connector interface and the external battery to charging interface, which have been provided on the EVB. Insert the direct current source adapter; switch shifter S102 on the OFF state, shifter S105 on the ON state, then the SIM548C will go to the charging state.

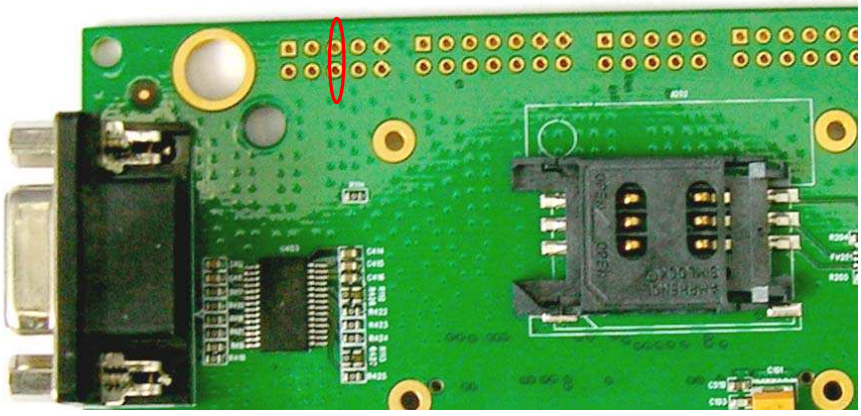
6.2 GPS part

6.1.1 Running:

(1) Connect the module to the 60pins connector on the EVB, insert the 5V direct current source adapter.
(2) Switch shifter S103 & shifter S104 on the RUN state, shifter S106 on the GPS_TXA state.
(3) Switch shifter S102 & shifter S107 on the ON state, then the GPS part of the module begins to run.

You will see the GPS indicator (RX/TX_LED) on the EVB glittering at a 1Hz frequency, then you can judge whether the EVB and the GPS part of the module is running or not. No function and test can be executed when we have not connected necessary accessories.

Notes:
1.Be sure of both shifter S103 and shifter S104 is on RUN state when the GPS part of SIM548C is running normally, otherwise the GPS part of the module will be on a undetermined state.
2. There are two types of GPS antenna:
One is active antenna, if the customer uses the active GPS antenna in the SIM548C-EVB kit to demo GPS, for providing the power to the active GPS antenna, it is necessary to connect GPS_VANT with GPS_RF_VCC, the picture as below:



The other is passive antenna, if the customer want to use passive GPS antenna to demo GPS, there is no need to provide power to the antenna.

6.1.2 Tracking the satellite signals

(1) Connect the serial port line to the GPS_COMA serial port
(2) Connect the GPS antenna to the module using an antenna transmit line
(3) Run the GPS part of the module as 6.1.1 described
(4) Then you will see the information transmitted by the GPS_COMA serial port in our demo tool or through Hyper Terminal (AT Command widow)

6.1.3 Downloading

(1) Connect the serial port line to the GPS_COMA serial port,.
(2) Connect the direct current source adapter
(3) Switch shifter S103 on RUN state and shifter S104 on the D/L state
(4) Switch shifter S102 on the ON state and shifter S106 on the GPS_RXA state. (See note)
(5) Switch shifter S107 on the ON state
(6) Run the download program and press the execute key, and then the download procedure is executing immediately.

Note: Step (4) is only for the judgement while program downloading form the PC side by the glittering of the LED on EVB board, if you don't need this visual indication or you can judge by the response of the download program on the PC side directly, you can jump to step (5) directly。

6.1.4 Turn off and Reset

(1) Turn off: Switch shifter S107 on the OFF state, that will cut the power supply for the GPS part directly, and then the GPS part of the module will be turned off immediately.
(2) Reset: Press the button Z102 and release it lightly, the GPS part of the module will reset immediately, it's necessary when system is running on a emergent state or encountering a unpredictable malfunction and so on .

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