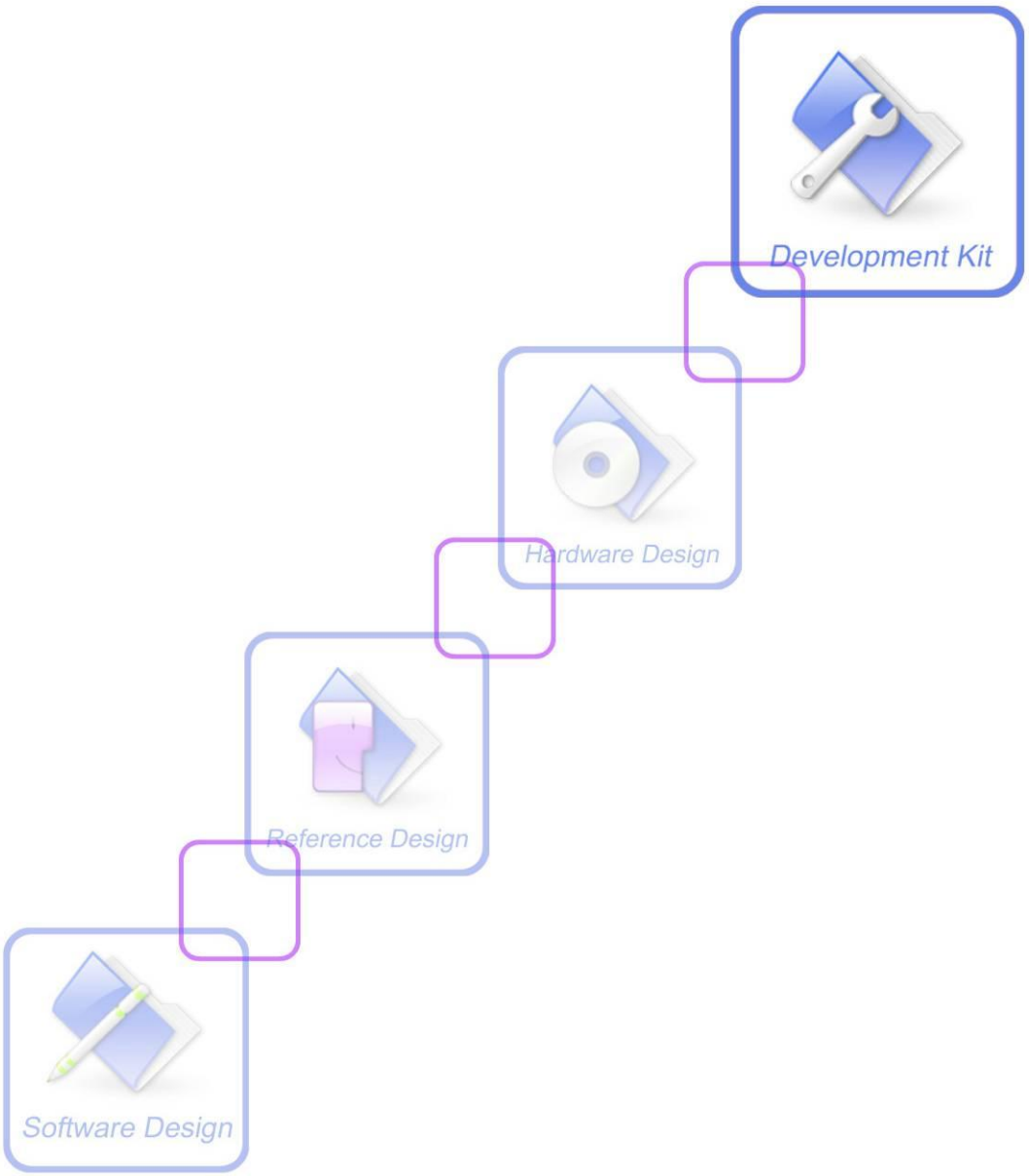
Development Kit Manual

SIM7100x_EVB_User Guide_V1.02



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General Notes

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Version History

Data	Version	Description of change	Author
2015-07-20	V1.01	Origin	Yang Hongliang Li Ya
2016-06-07	V1.02	Add antenna part number and vendor	Ye Haibing

1 Overview

This document gives the usage of SIM7100x EVB, user can get useful information about the SIM7100x EVB quickly through this document.

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

Table 1: SIM7100x EVB Key Features

Feature	Implementation
Power supply	1: DC 5.0V ~9.0V 2: USB 5.0V power supply
Interface	□ UART connector □ USB connector □ USIM card socket □ Micro SD card socket □ POWER on/off button and RESET button □ RF control(Flight mode) switch and UART enable/disable switch □ Three antenna SMAs □ Headset and handset interface □ ADC/ ISINK/IIC/PCM/UART/GPIO/keypads test points

NOTE: For more details about SIM7100x series frequency bands. Please refer to the "SIM7100_Hardware_Design" document.

2 SIM7100x EVB

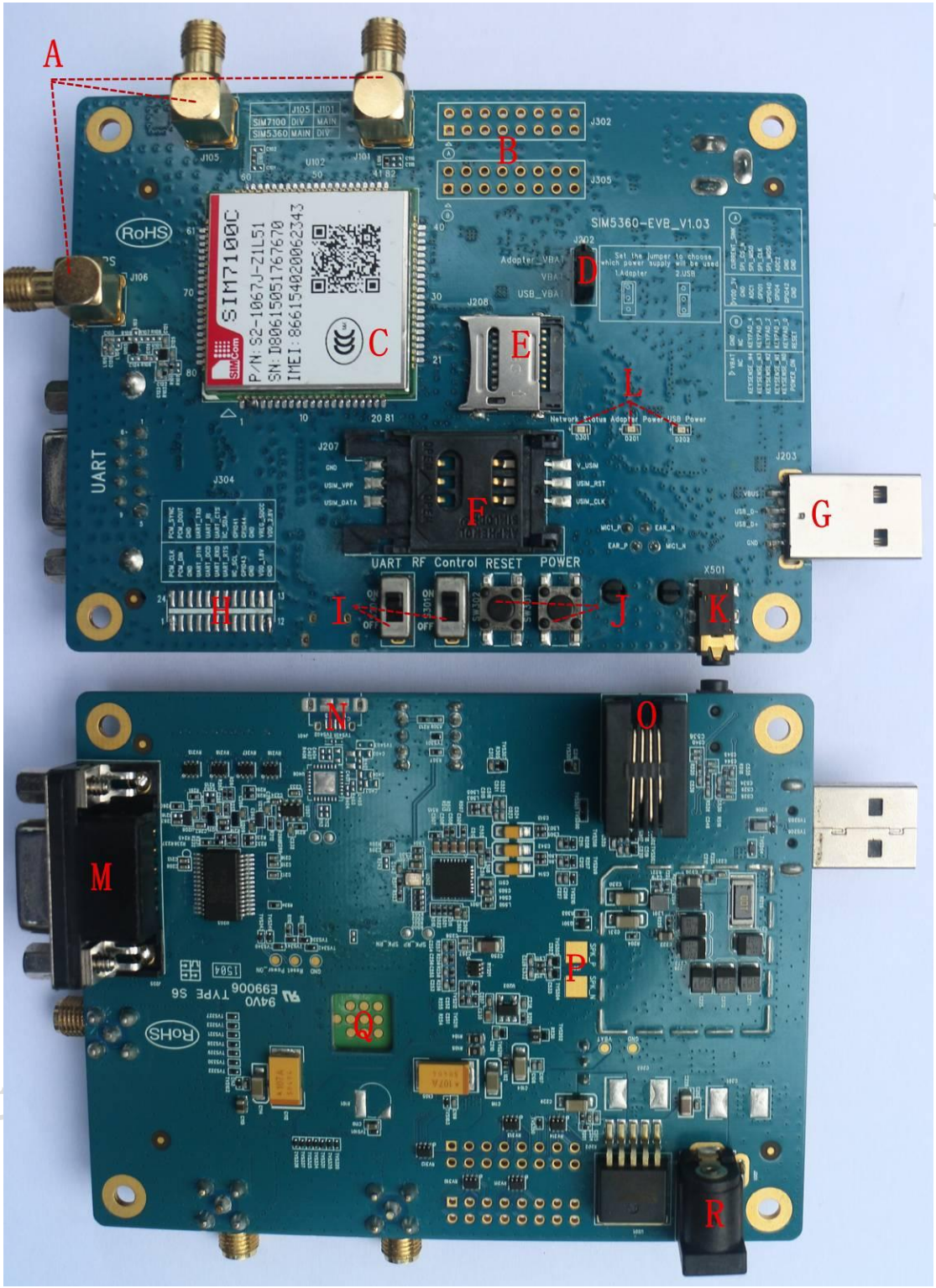


Figure 1: EVB View

A: Main antenna SMA, Diversity antenna SMA, GPS/GLONASS antenna SMA
B: IO interface test points（including GPIO, Keypads, ADC, SPI,ISINK）
C: SIM7100x module
D: Power supply selection jumper
E: Micro SD card socket
F: USIM card socket
G: USB connector
H: IO interface test points（including PCM, UART,GPIO,LDO）
I: UART enable/disable switch, RF enable/disable (flight mode) switch
J: Reset button, Power on/off button
K: Headset connector
L: LED indicators
M: UART connector
N: None
O: Handset connector
P: Speaker test points
Q: JTAG test point
R: Power supply adapter connector

The following figure shows block diagram of SIM7100x EVB.

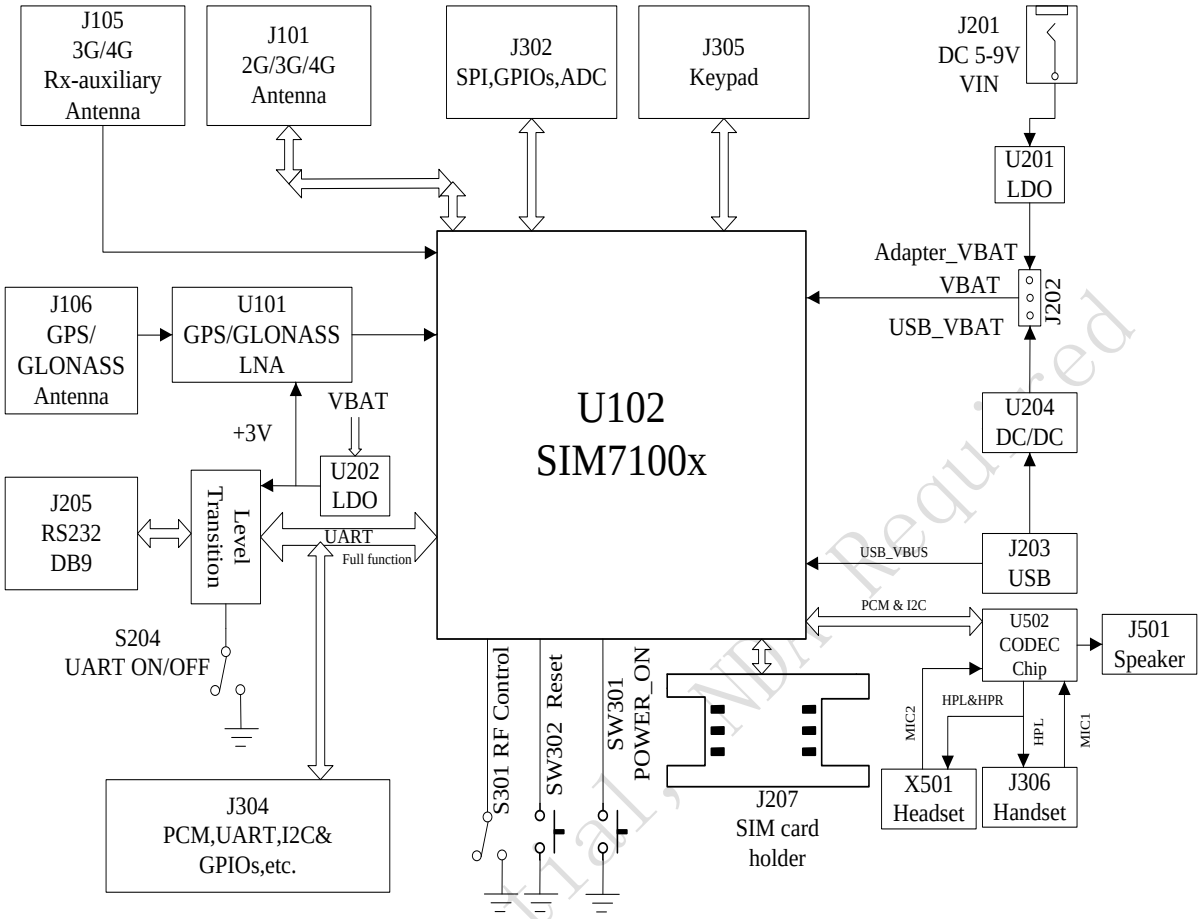


Figure 2: EVB Functional Architecture

All hardware sub-interfaces of SIM7100x EVB are described in detail in following chapters.

3 EVB accessories

Figure 3: EVB Accessories

A: GPS/GLONASS antenna
B and C: Main and Auxiliary antenna
D: USB cable
E: 5V DC adapter
F: USB-UART driver CD
G: USB-UART cable

Table 2: antenna part number and vendor

	Antenna	Part number	Vendor	Contact
A	GPS/GNSS	GPSGLONASS03D-S3-00-A	INPAQ	http://www.inpaqgp.com

	antenna			
B/C	Main/Aux antenna	MF25D	SPEED	http://www.speed-hz.com

At normal circumstance, the EVB and its accessories are equipped as the below figure.

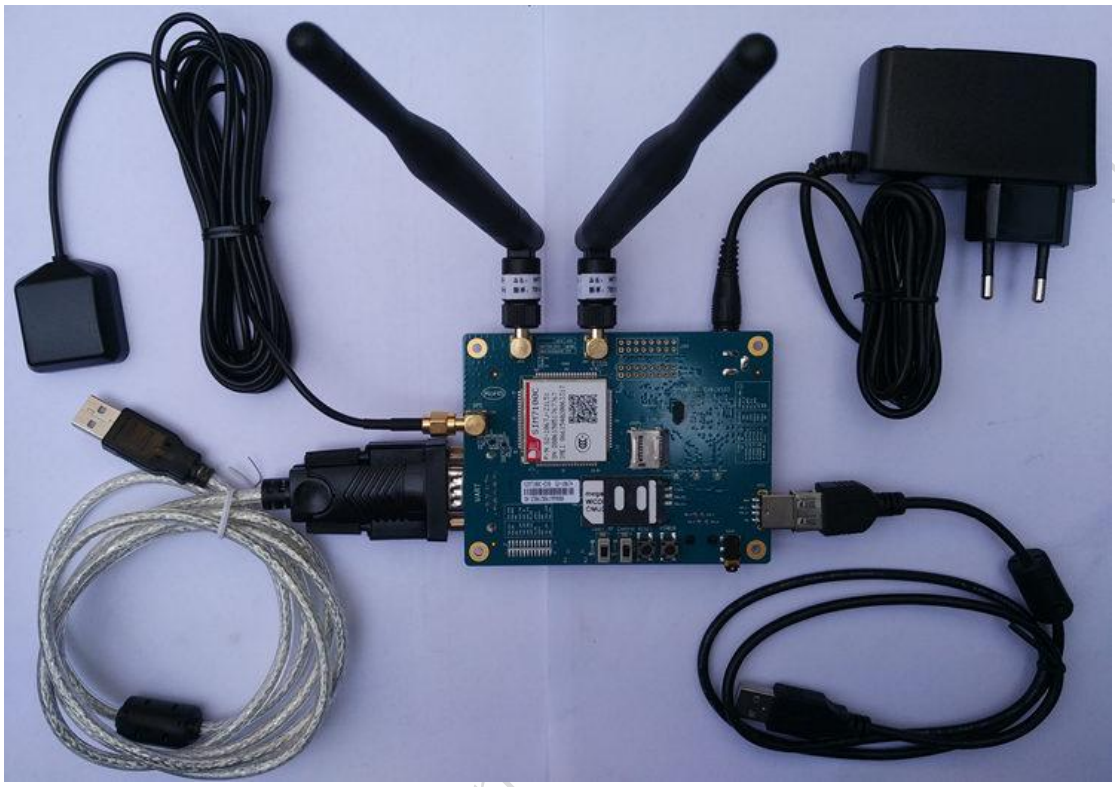


Figure 4: The assembly diagram of the EVB and Accessories

4 EVB Interface

4.1 Power Interface

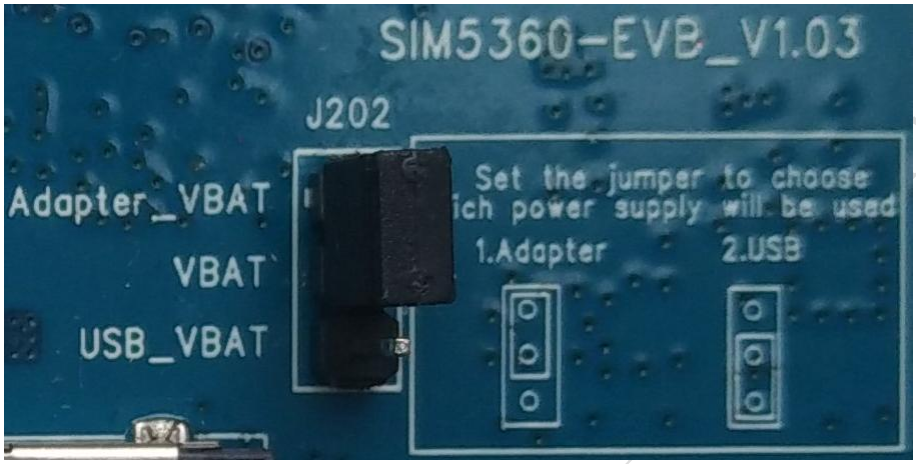
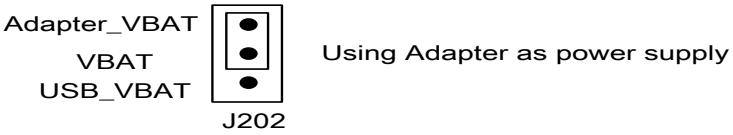


Figure 5: Power Jumper

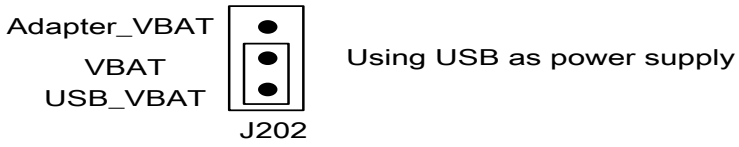
Table 3: The Pin Description of the J202 Jumper

Pin	Signal Name	Description
1	Adapter_VBAT	3.8V/2A form DC 5V
2	VBAT	The power supply for SIM7100x VBAT
3	USB_VBAT	3.8V/0.7A form USB

If user wants to use DC adapter as power supply, Adapter_VBAT should be connected to VBAT on J202 through a jumper as following figure shows.



If user wants to use USB bus as power supply, USB_VBAT should be connected to VBAT on J202 through a jumper as following figure shows.



4.2 Audio Interface

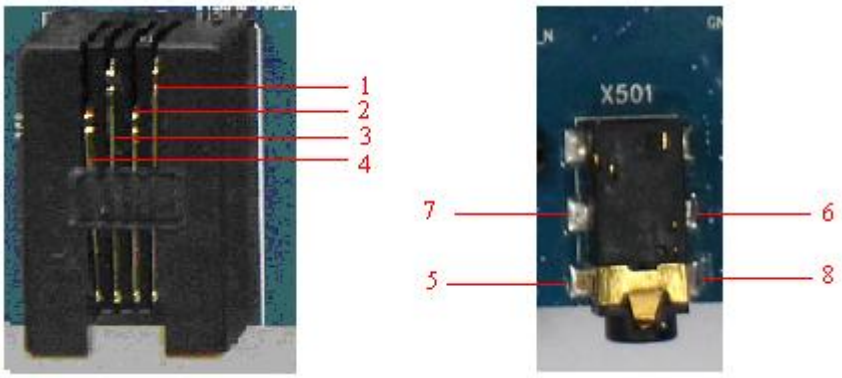


Figure 6: Audio Interface

J306 is the handset interface. X501 is the headset interface.

NOTE: The MIC's polarity must be correct.

Table 4: The Pin Description of the Handset and Headset Interfaces

No.	Signal	Input/Output	Description
1	MIC1_P	I	Positive microphone input
2	EAR_P	O	Positive receiver output
3	EAR_N	O	Negative receiver output
4	MIC1_N	I	Negative microphone input
5	GND		Ground
6	HEADSET_MIC+	I	Headset microphone input
7	HPH_L	O	Positive microphone output
8	HPH_R	O	Negative microphone output

NOTE:

1) Please refer Figure 1.The Pin 1 and Pin 2 of J501 are the SPK_M and SPK_P.

2) Audio cable must be away from the RF antenna, otherwise TDD noise may be occurred.

4.3 USIM card interface

Figure 7: SIM card socket

Table 5: The Pin Description of the SIM Card Socket

Pin	Signal	Input/Output	Description
1	V_USIM	O	USIM Card Power output automatic output on USIM mode，one is 3.0V±10%, another is 1.8V±10%. Current is about 10mA.
2	USIM_RESET	O	USIM Card Reset
3	USIM_CLK	O	USIM Card Clock
4	GND		Ground
5	USIM_VPP		Not connect
6	USIM_DATA	I/O	USIM Card data I/O

4.4 Antenna Interface

Figure 8: Antenna connectors

Table 6: The Description of The Antenna Connectors

Item	Description
J101	Main antenna connector
J105	Auxiliary antenna connector
J106	GPS/GLONASS antenna connector

4.5 RS232 Interface

J205 is 9 pins standard RS232 UART interface. It can be connected to a PC directly.

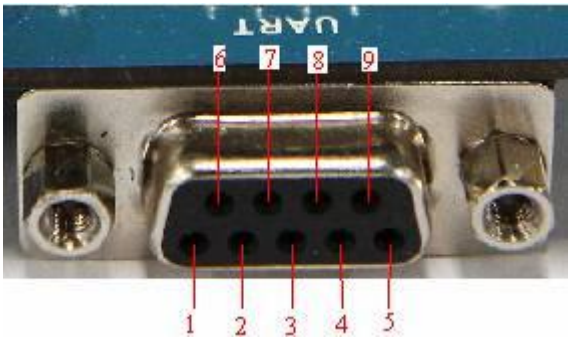


Figure 9: Serial Port

Table 7: Serial Interface

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		Ground
6	NC		NC
7	RTS	I	Request to Send
8	CTS	O	Clear to Send
9	RI	O	Ring Indicator

4.6 Operating Status LED

Figure 10: Status LED

Table 8: The Description of the LED Status

D301 Status	Module Status
Off	Module is not running
On	Module is running, or voice call is connected
800ms On/ Off	Module find the network and registered
200ms On/ Off	Data communication
D201 Status	**Module Status**
Off	5V DC adapter is not connected to EVB.
On	5V DC adapter has be connected to EVB.
D202 Status	**Module Status**
Off	The USB port of the EVB is not connected to USB host.
On	The USB port of the EVB has been connected to USB host.

4.7 USB interface

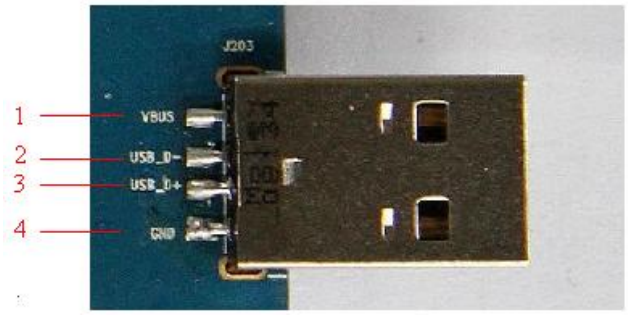


Figure 11: USB Interface

Table 9: USB interface

Pin	Signal	I/O	Description
1	VBUS	I	5V
2	USB_D+	I/O	D+ line
3	USB_D-	I/O	D- line
4	GND		Ground

4.8 Switch interface

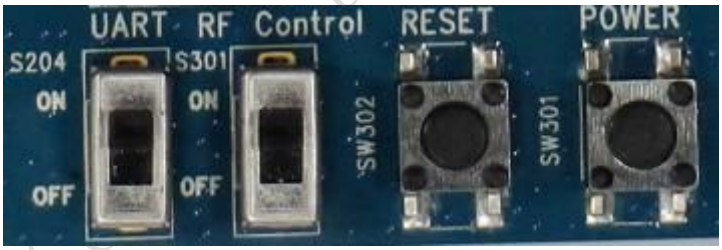


Figure 12: Switch Interface

Table 10: The Description of the Switch status

S204 Status	Description
Off	The RS232 transceiver is closed.
On	The RS232 transceiver is open.
S301 Status	**Description**
Off	The RF circuit of SIM7100x is closed.
On	The RF circuit of SIM7100x is open.

Table 11: The Description of the Button status

Item	Description
SW302	The RESET button.
SW301	The Power on/off button.

4.9 IO interface

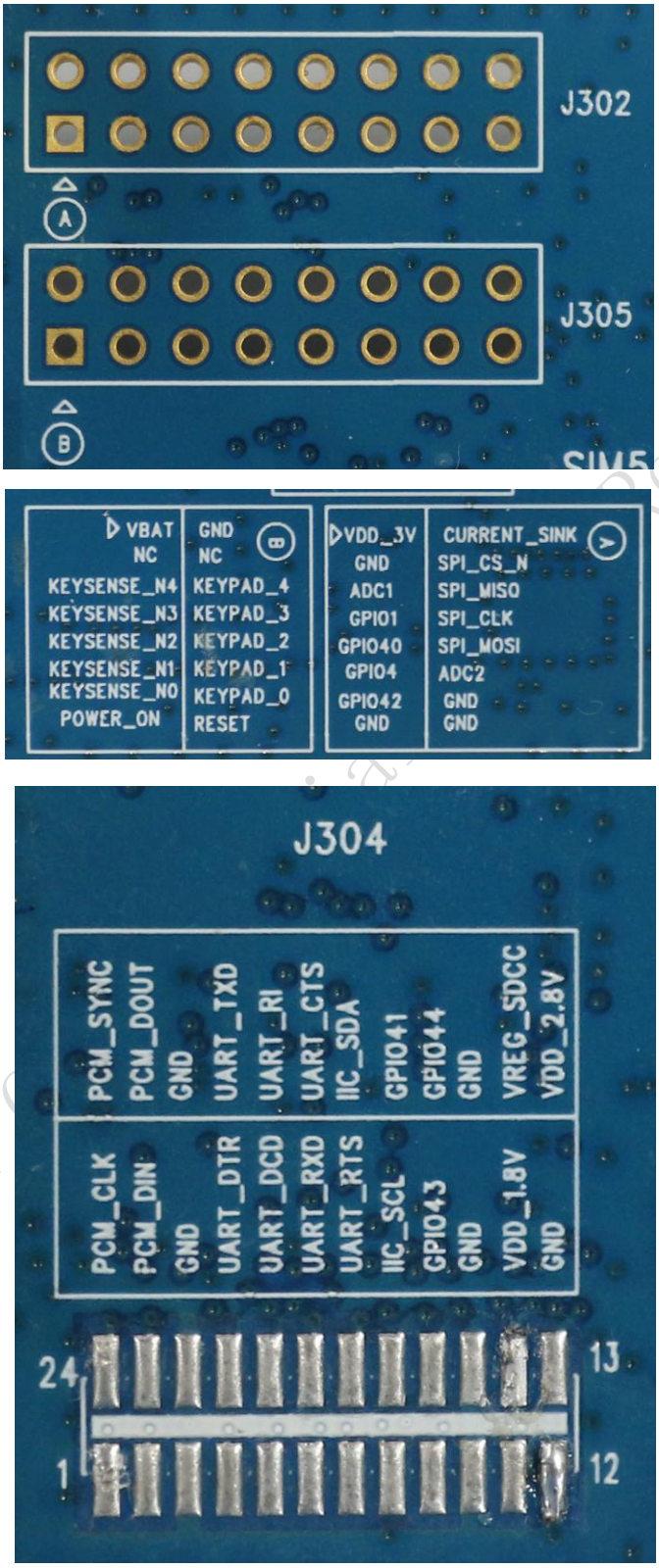


Figure 13: The Test Point of the IO Interface

Table 12: The Pin Description of the J302

J302 PIN	Name	I/O	Description
1	VDD_3V		The test point of the 3V LDO on the EVB board
2	CURRENT_SINK	I	The test point of the ISINK pin.
3	GND		Ground
4	SPI_CS_N	O	The test point of the SPI_CS pin.
5	ADC1	I	The test point of the ADC1 pin.
6	SPI_MISO	I	The test point of the SPI_MISO pin.
7	GPIO1	O	The test point of the NETLIGHT pin.
8	SPI_CLK	O	The test point of the SPI_CLK pin.
9	GPIO40	I/O	The test point of the STATUS pin.
10	SPI_MOSI	O	The test point of the SPI_MOSI pin.
11	GPIO4	I	The test point of the FLIGHTMODE pin.
12	ADC2	I	The test point of the ADC2 pin.
13	GPIO42	I/O	The test point of the USIM_DET pin.
14	GND		Ground
15	GND		Ground
16	GND		Ground

Table 13: The Pin Description of the J304

J304 PIN	Name	I/O	Description
1	PCM_CLK	O	The test point of the PCM_CLK pin.
2	PCM_DIN	I	The test point of the PCM_IN pin.
3	GND		Ground
4	UART_DTR		The test point of the DTR pin.
5	UART_DCD		The test point of the DCD pin.
6	UART_RXD		The test point of the RXD pin.
7	UART_RTS		The test point of the RTS pin.
8	IIC_SCL		The test point of the SCL pin.
9	GPIO43		The test point of the GPIO43 pin.
10	GND		Ground
11	VDD_1V8		The test point of the VDD_1V8 pin.
12	GND		Ground
13	VDD_2.8V		The test point of the 2.8V LDO on the EVB board
14	VREG_SDCC		The test point of the VDD_EXT pin.

15	GND		Ground
16	GPIO44		The test point of the SD1_DET pin.
17	GPIO41		The test point of the GPIO41 pin.
18	IIC_SDA		The test point of the SDA pin.
19	UART_CTS		The test point of the CTS pin.
20	UART_RI		The test point of the RI pin.
21	UART_TXD		The test point of the TXD pin.
22	GND		Ground
23	PCM_DOUT		The test point of the PCM_OUT pin.
24	PCM_SYNC		The test point of the PCM_SYNC pin.

Table 14: The Pin Description of the J305

J305 PIN	Name	I/O	Description
1	VBAT		The test point of the VBAT pin.
2	GND		Ground
3	NC		Not connect
4	NC		Not connect
5	KEYSENSE_ N4	I	The test point of the KBC4 pin.
6	KEYPAD_4	O	The test point of the KBR4 pin.
7	KEYSENSE_ N3	I	The test point of the KBC3 pin.
8	KEYPAD_3	O	The test point of the KBR3 pin.
9	KEYSENSE_ N2	I	The test point of the KBC2 pin.
10	KEYPAD_2	O	The test point of the KBR2 pin.
11	KEYSENSE_ N1	I	The test point of the KBC1 pin.
12	KEYPAD_1	O	The test point of the KBR1 pin.
13	KEYSENSE_N0	I	The test point of the KBC0 pin.
14	KEYPAD_0	O	The test point of the KBR0 pin.
15	POWER_ON	I	The test point of the PWRKEY pin.
16	RESET	I	The test point of the RESET pin.

4.10 SD card interface

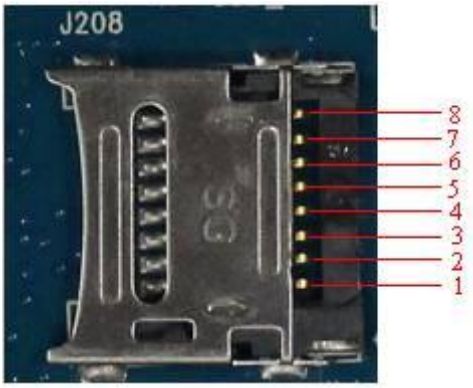


Figure 14: SD card socket

J208 is the Micro SD card socket.

Table 15: Micro SD Card socket

Pin	Signal	Input/Output	Description
1	SD_D2	I/O	Data line 2
2	SD_D3	I/O	Data line 3
3	SD_CMD	O	Command line
4	VREG_SDCC	O	Power supply for SD card
5	SD_CLK	O	Clock line
6	GND		Ground
7	SD_D0	I/O	Data line 0
8	SD_D1	I/O	Data line 1

5 Quickly start

5.1 Running

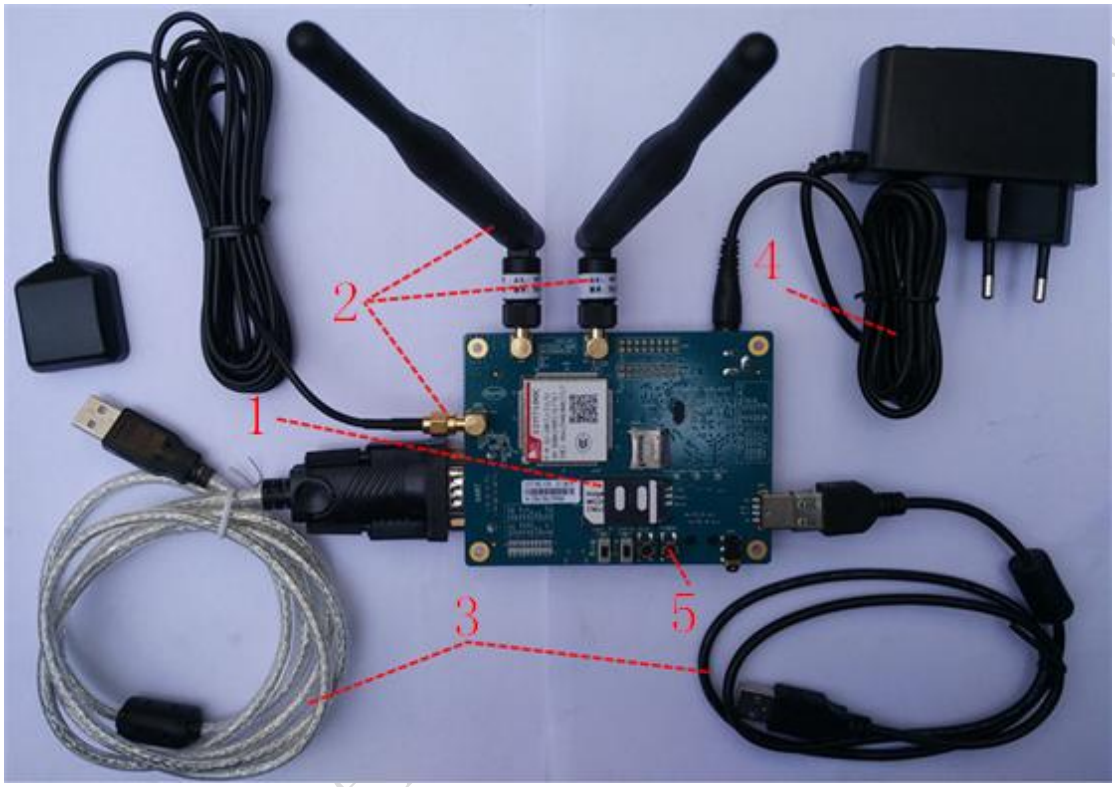


Figure 15: The running steps of the EVB

The running steps of the EVB board are:

1. Insert USIM card to J207.
2. Connect GPS/GLONASS antenna to J106, Main antenna to J101 and Auxiliary antenna to J105.
3. Connect USB cable to J 203, and USB-UART cable to J205.
4. Connect 5V DC adapter to J201 then the D201 LED will be lighted. If using USB power, this step is not needed, but need to pay attention to the J202 jumper for power selection.
5. Push the SW301 button to power on the EVB.
6. Check that the D301 LED is lighted or not, to judge whether SIM7100 is powered up or not.

5.2 Connecting to PC

There are 2 ways to connect the module to PC:

1. Connect the J203 of EVB to PC USB port via USB cable ;
2. Connect the J205 of EVB to PC RS232 port via USB-UART cable or UART cable.

In the first case, the module USB driver needs to be installed, and this driver can be got from our FAE or sale. In the second case, the USB-UART cable driver needs to be installed, and this driver can be got from the CD in the EVB kit.

After Power up and installing the corresponding driver, the HyperTerminal tool can be used to access the SIM7100 via the virtual COM from USB or the physical UART COM.

NOTE: the HyperTerminal in windows2000/XP/Vista can be found at START—accessory—communication menu. Please set the Baud Rate to115200bps for the SIM7100 and the corresponding COM port number, such as COM1 or COM2 etc.

5.4 Download

The "SIM71x0_UpdateTool.exe" tool can be used to download firmware to the SIM7100.

The follow figure shows the download steps:

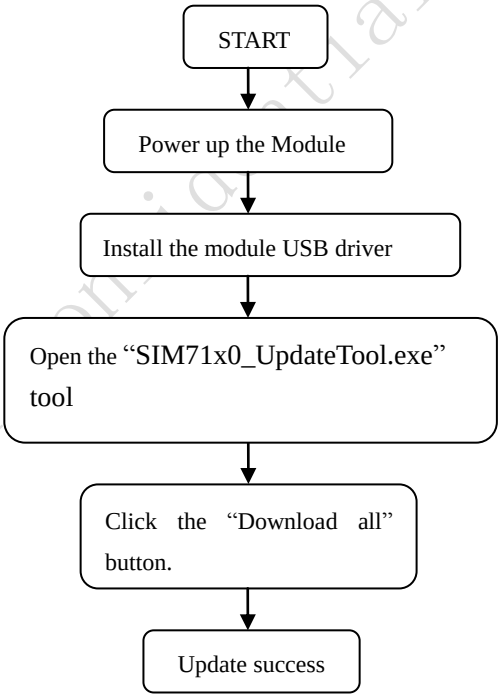


Figure 16: The diagram of USB download

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