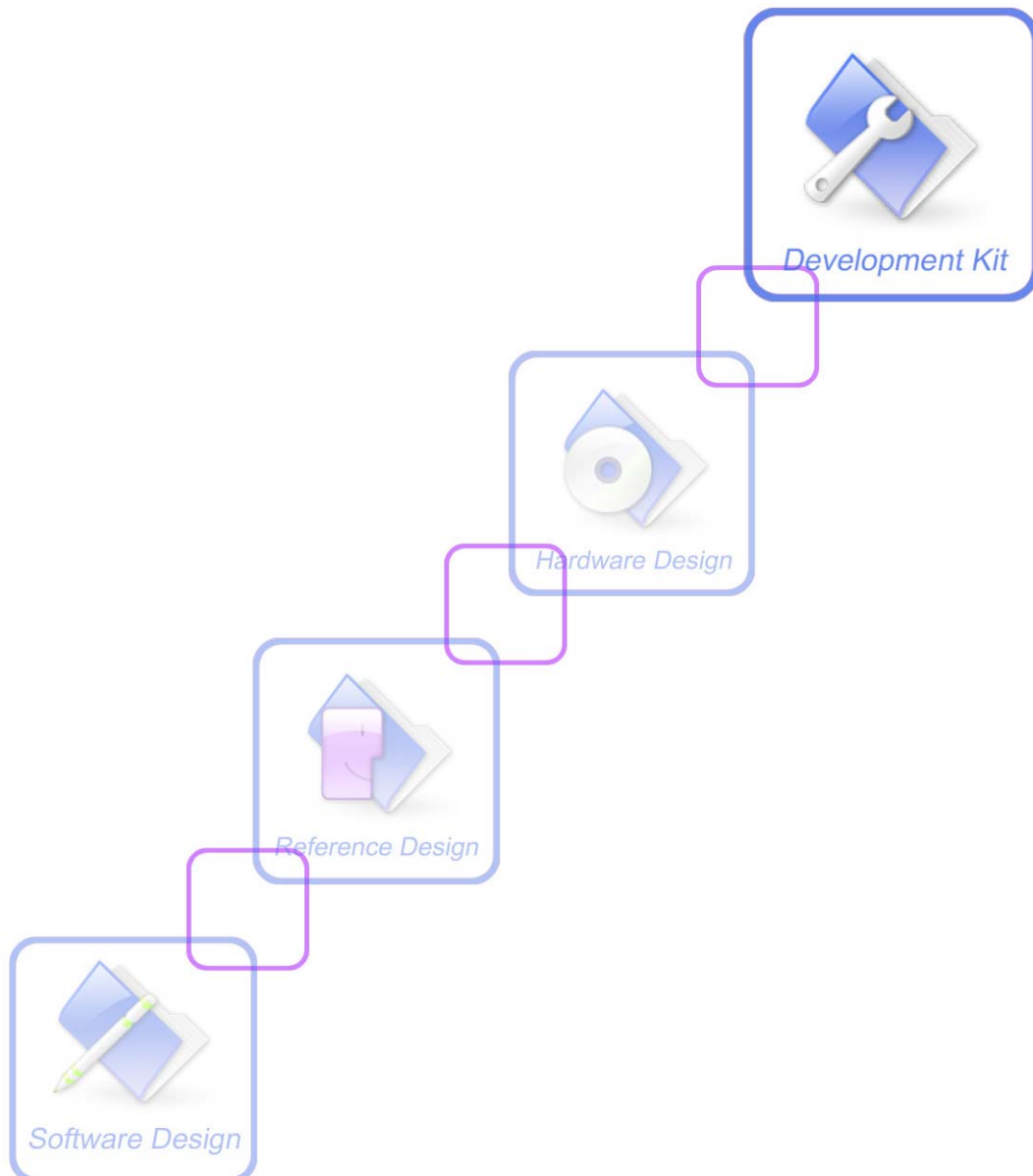




A company of SIM Tech

SIM5320_EVB kit_User Guide_V1.01



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Version History

| Data | Version | Description of change | Author |
|------------|---------|-----------------------|---------|
| 2011-04-02 | 1.01 | Origin | 3G Team |
| | | | |
| | | | |

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1 Overview

This document gives the usage of SIM5320 EVB, user can get useful information about the SIM5320 EVB quickly through this document. All the functions of the SIM5320 can be used by this board.

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

Table 1:SIM5320 EVB Key features

| Feature | Implementation |
|--------------|--|
| Power supply | 1: DC 6.0V~9.0V 2: USB 5.0V power supply |
| functions | <input type="checkbox"/> UART interface <input type="checkbox"/> USB2.0 interface <input type="checkbox"/> SIMCARD interface <input type="checkbox"/> I2C interface <input type="checkbox"/> Audio interface <input type="checkbox"/> ADC interface <input type="checkbox"/> POWER_ON key/Reset key <input type="checkbox"/> RF enable/disable (flight mode) switch <input type="checkbox"/> UART Control switch |

2 SIM5320 EVB

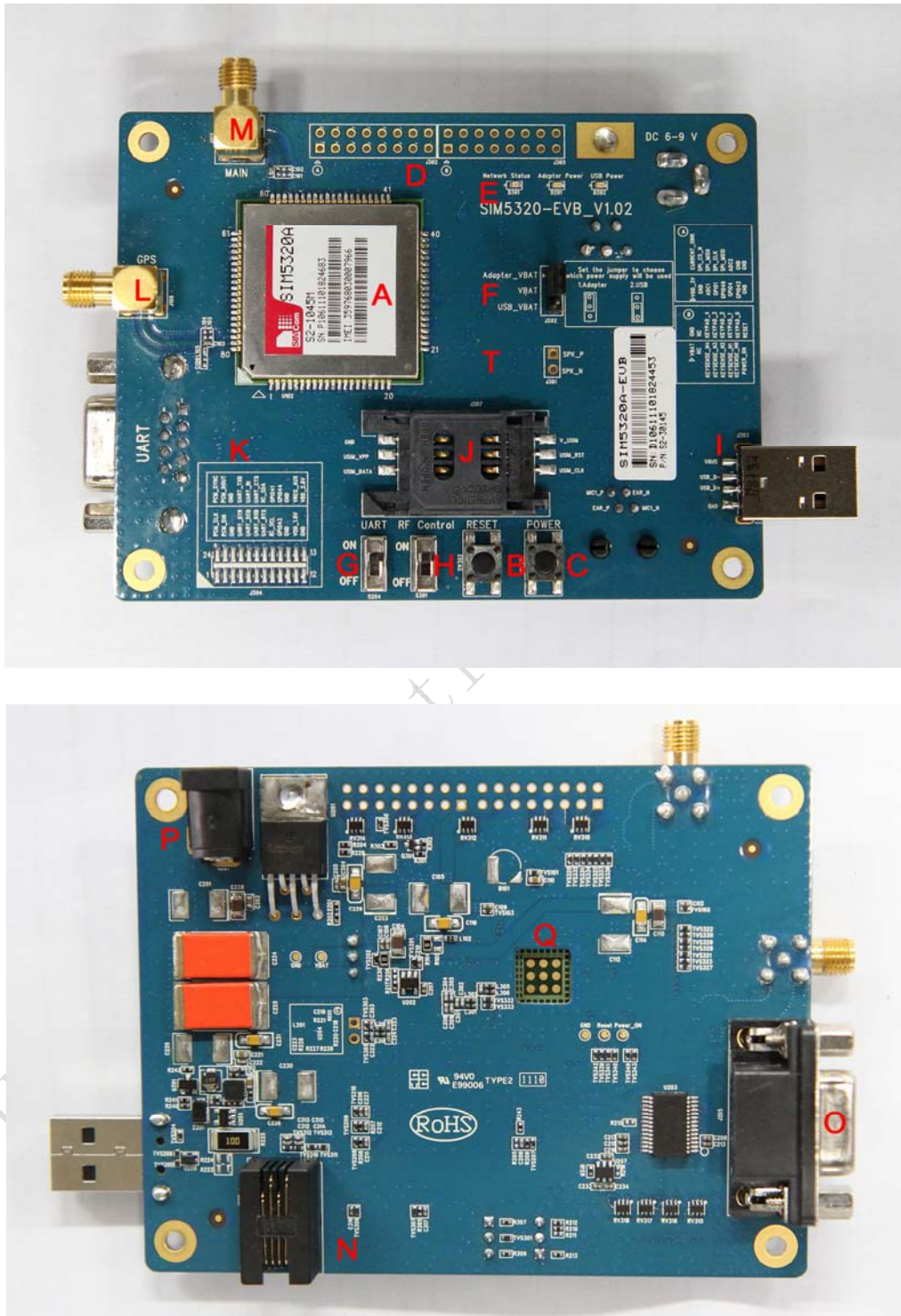


Figure 1: EVB view

- A: SIM5320 module
- B: Reset keypad
- C: Power on/off keypad
- D: IO interface 1 (including GPIO, ADC, SPI, etc)
- E: LED indicator (including network status, operating status)
- F: Power supply selection jumper
- G: UART enable/disable switch
- H: RF enable/disable (flight mode) switch
- I: USB connector
- J: SIM card socket
- K: IO interface 2 (including PCM, GPIO, UART, I2C, etc)
- L: GPS antenna SMA
- M: Main antenna SMA
- N: Audio jack
- O: UART connector
- P: Adapter connector
- Q: SIM5320 JTAG test point
- T: Speaker interface

All hardware Sub-interfaces included in SIM5320 EVB are described in detail in following chapters.

3 EVB accessories



Figure 2: EVB accessory

- A: USB to UART cable
- B: RF antenna
- C: USB cable
- D: 6V DC adapter
- E: GPS antenna

4 Accessory Interface

4.1 Power Interface

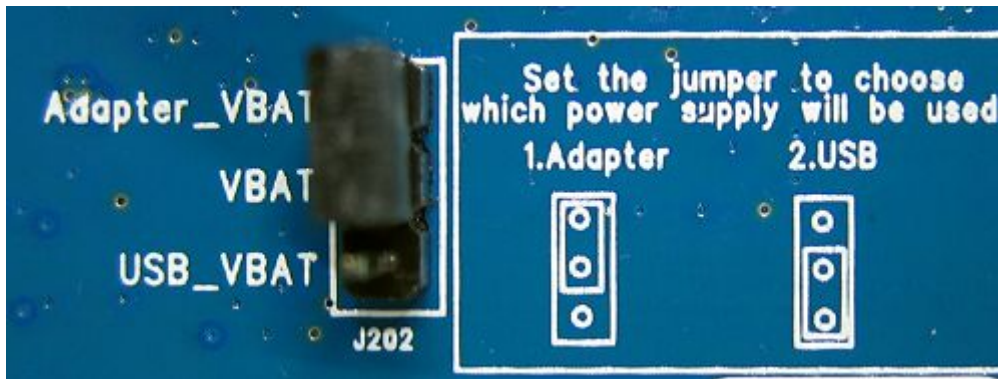


Figure 3: Power selection jumper

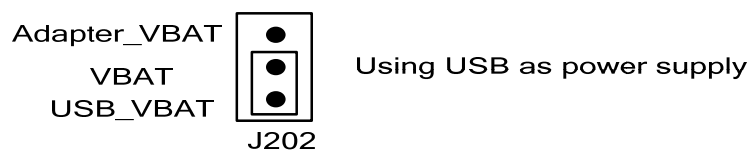
Table 2: Power supply

| Signal | Input/Output | Description |
|--------------|--------------|---------------------------|
| Adapter_VBAT | O | 3.8V/2A DC source input |
| USB_VBAT | O | 3.8V/0.5A DC source input |
| VBAT | I | DC source input |

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.



This board could be powered by USB bus. User should connect the USB pin. USB_VBAT is the USB power out. If user wants to use USB VBUS to power up the module, please connect connector VBAT with connector USB_VBAT as following figure shows and disconnect Adapter_VBAT.



4.2 Audio Interface

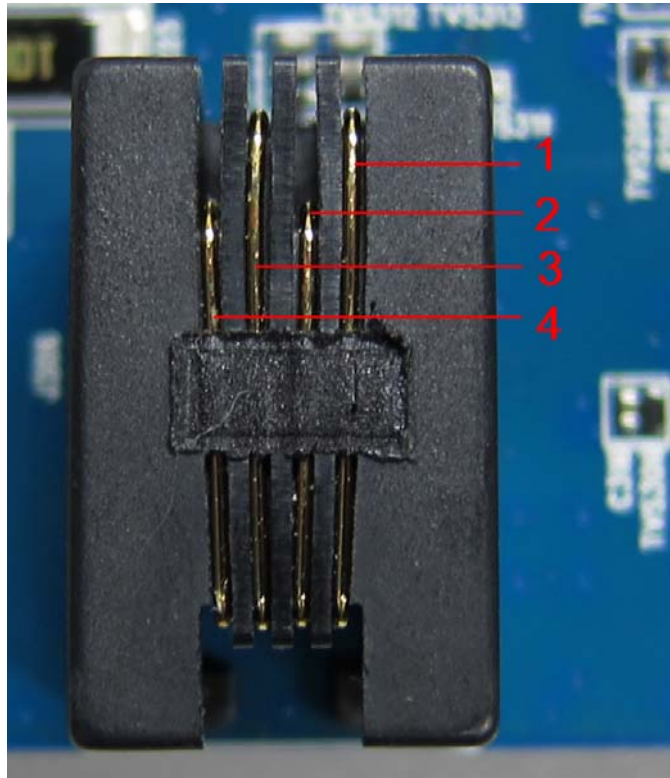


Figure 4: Audio Interface

J306 is the handset interface.

NOTE: The MIC's polarity must be correct.

Table 3: Earphone interface

| Pin | Signal | Input/Output | Description |
|-----|---------|--------------|---------------------------|
| 1 | MIC1P | I | Positive microphone input |
| 2 | EAR1Q_P | O | Positive receiver output |
| 3 | EAR1Q_N | O | Negative receiver output |
| 4 | MIC1N | I | Negative microphone input |

Speaker interface:

Please refer Figure 1. Pin 1 and Pin 2 is the SPK_M and SPK_P on J301.

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

4.3 SIM card interface

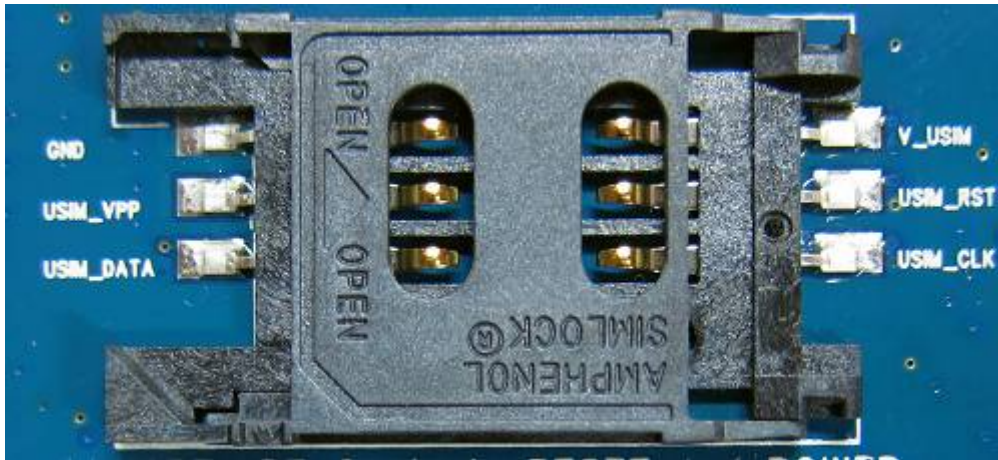


Figure 5: SIM card socket

Table 4: 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 | SIM_VPP | O | V_USIM |
| 6 | USIM_DATA | I/O | USIM Card data I/O |

4.4 Antenna Interface

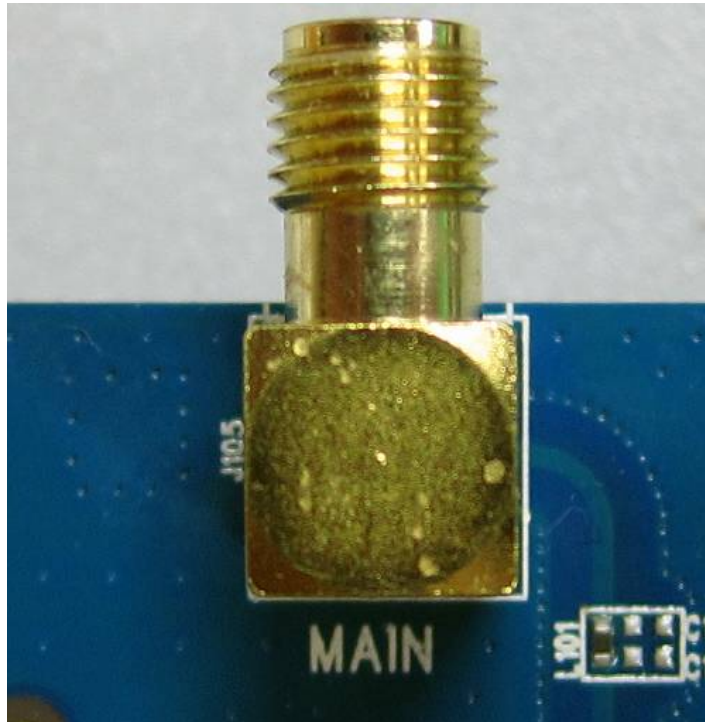


Figure 6: Main Antenna connector

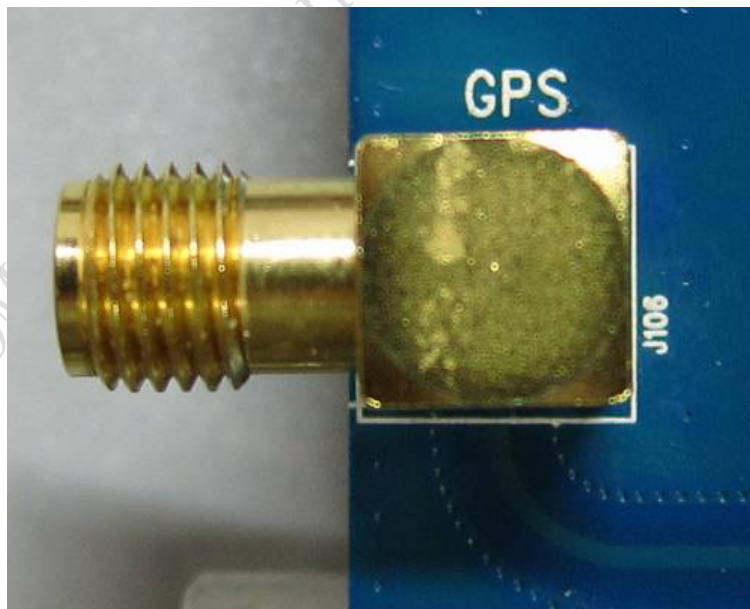


Figure 7: GPS Antenna connector

4.5 RS232 Interface

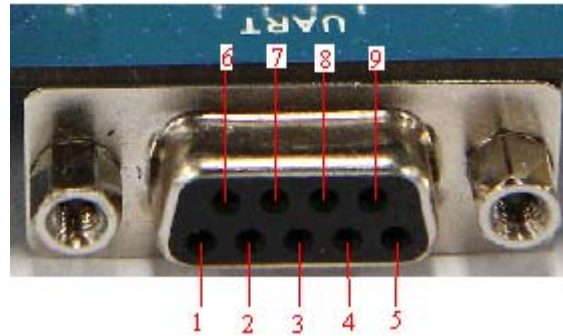


Figure 8: Serial Port

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

Table 5: 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 9: Status LED

Table 6: Network status LED

| 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 |

| LED | I/O | Description |
|------|-----|-------------------------|
| D201 | O | ADAPTER power indicator |
| D202 | O | USB power indicator |

4.7 USB interface

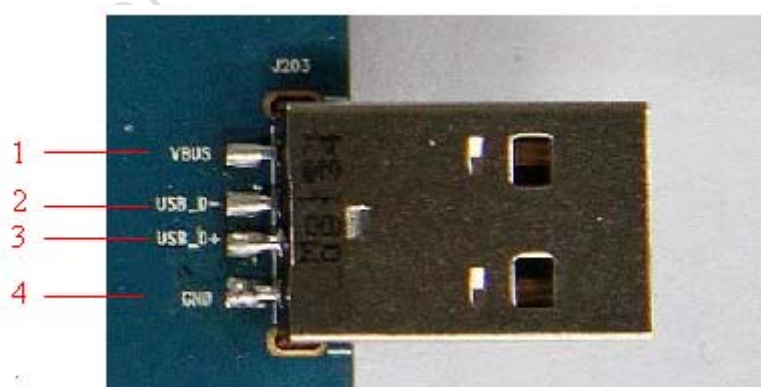


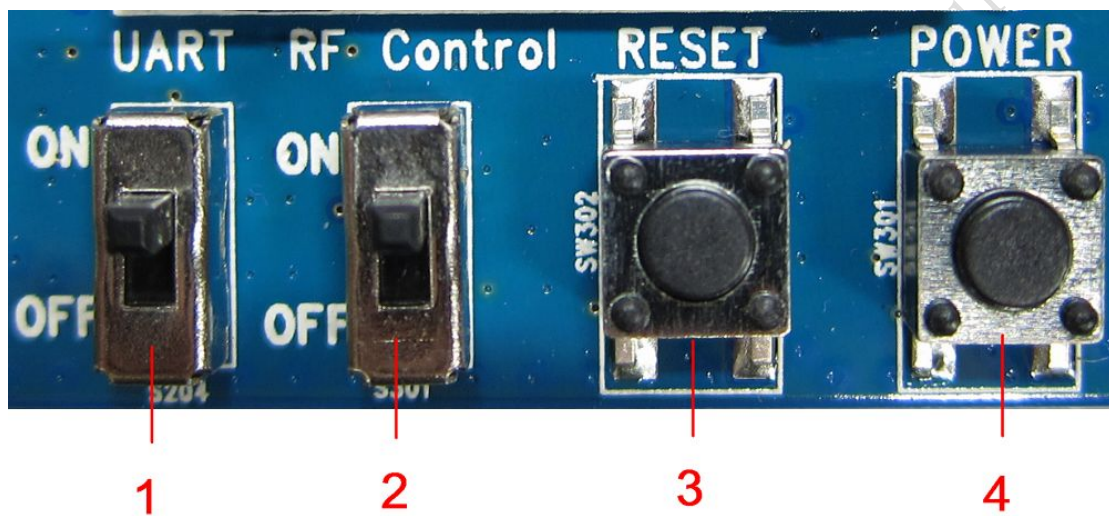
Figure 10: USB Interface

It is a normal 4Pin USB connector.

Table 7: USB interface

| Pin | Signal | I/O | Description |
|-----|----------|-----|-------------|
| 1 | USB_VBUS | I | 5V |
| 2 | USB_DM | I/O | D+ line |
| 3 | USB_DP | I/O | D- line |
| 4 | GND | | Ground |

4.8 Switch interface


Figure 11: Switch Interface
Table 8: Switch interface

| Switch | Signal | I/O | Description |
|--------|---------------------|-----|---|
| 1 | RS232 chip SHUTDOWN | I | UART switch |
| 2 | GPIO4 | I | RF switch (S301) ON : Normal mode OFF : Flight mode |
| 3 | RESET | I | Reset the module |
| 4 | PWRER_ON | I | Power on the module |

4.9 IO interface

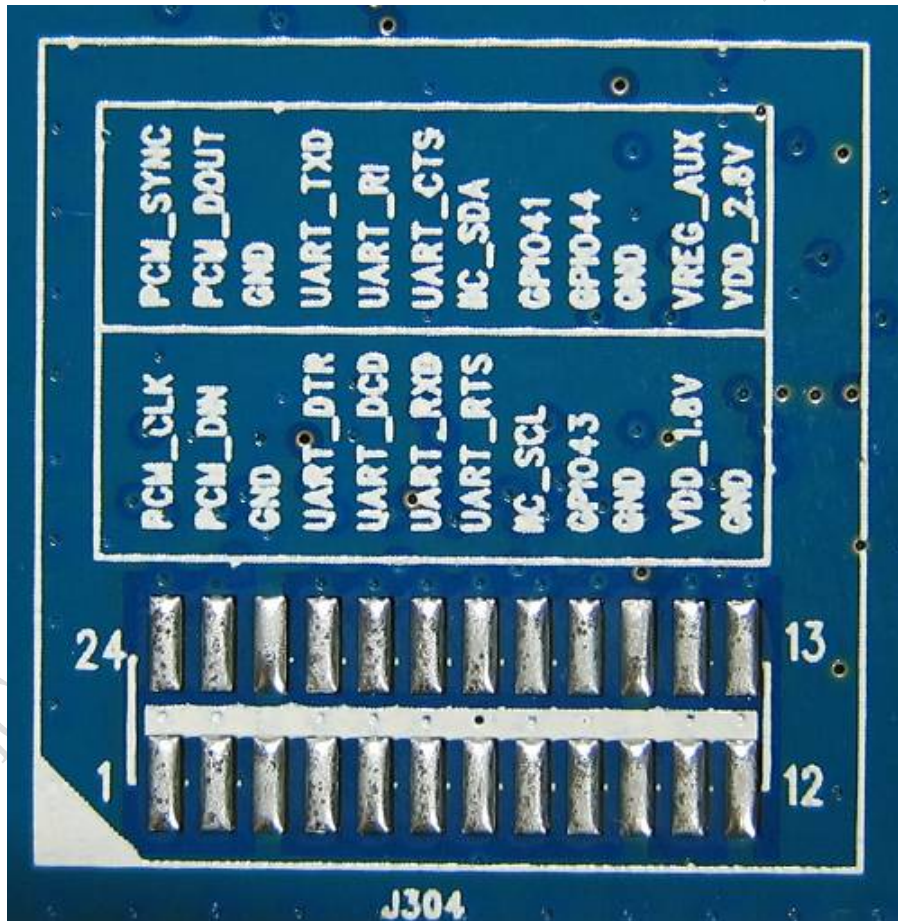
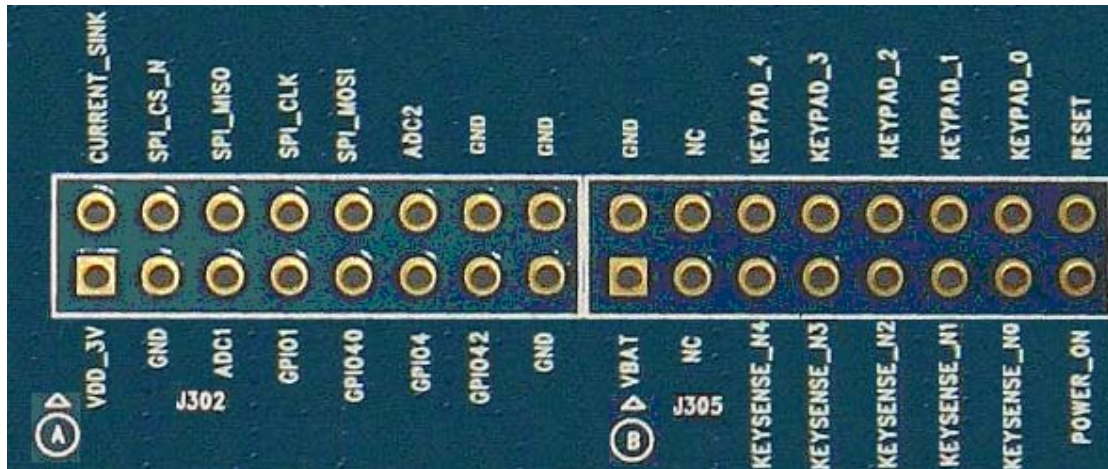


Figure 12: IO Interface

Table 9: IO interface

| Signal | I/O | Description |
|----------------|-----|--|
| GPIO40 | I/O | GPIO |
| POWER_ON | I | Power on the module |
| RESET | I | Reset the module |
| GPIO41 | I/O | GPIO |
| GPIO43 | I/O | GPIO |
| GPIO44 | I/O | GPIO |
| VDD_3V | O | 3V power supply |
| CURRENT_SINK | I | Current sink source |
| ADC1 | I | ADC |
| GPIO1 | O | Network status |
| GPIO4 | I | RF control switch |
| GPIO42 | I/O | GPIO |
| SPI_CS_N | O | SPI Chip selection |
| SPI_MISO | I | SPI Master input Slave output |
| SPI_MOSI | O | SPI Master output Slave input |
| ADC2 | I | ADC |
| KEYSENSE_N0 | I | Bit 0 for sensing key press on pad matrix |
| KEYSENSE_N1 | I | Bit 1 for sensing key press on pad matrix |
| KEYSENSE_N2 | I | Bit 2 for sensing key press on pad matrix |
| KEYSENSE_N3 | I | Bit 3 for sensing key press on pad matrix |
| KEYSENSE_N4 | I | Bit 4 for sensing key press on pad matrix |
| KEYPAD_0 | O | Bit 0 drive to the pad matrix |
| KEYPAD_1 | O | Bit 1 drive to the pad matrix |
| KEYPAD_2 | O | Bit 2 drive to the pad matrix |
| KEYPAD_3 | O | Bit 3 drive to the pad matrix |
| KEYPAD_4 | O | Bit 4 drive to the pad matrix |
| I2C_SDA | I/O | I2C data |
| I2C_SCL | O | I2C clock |
| PCM_DIN/GPIO0 | I | General input pin for module wake up interrupt. It also can be multiplexed as the PCM_DIN pin. |
| PCM_SYNC/GPIO2 | I | General input pin. It also can be multiplexed as the PCM_SYNC pin. |
| PCM_CLK/GPIO3 | O | General output pin. It also can be multiplexed as the PCM_CLK pin. |
| PCM_DOUT/GPIO5 | O | General output pin. It also can be multiplexed as the PCM_DOUT pin. |

5 EVB and accessories

The EVB and its accessories are assembled as the figure below.



Figure 13: EVB and accessories

6 Quickly start

6.1 Running

There are two ways to provide power supply to SIM5320 module: one is to use the 6V power supply provided in the EVB kit; the other is to use USB port of personal computer.

- (1) When user use the power supply, if user insert 6V DC source adapter, user should connect ADAPTER_VBAT pin and VBAT pin on the EVB board; then insert a valued SIM card and check if the antenna is connected, and make sure that RF control switch is set to ON; finally press the on/off switch for about 1 second, and then SIM5320 module will begin running.
- (2) Another option is to use USB port of Computer as power supply. To do so, user need to connect USB_VBAT pin and VBAT pin on the EVB board, and make sure that RF control switch is set to ON. Firstly insert the sim card and connect the antenna, then connect the PC with USB-to-USB cable and press the Power_ON button for one second, then SIM5320 will start running.

User can see the light on the EVB flashing at a certain frequency about 1.25Hz. By the state, user can judge whether the EVB and SIM5320 is running or not. No function and test can be executed if user has not connected necessary accessories.

NOTE: This EVB board supports USB power supply when user connects USB_VBAT and VBAT together.

6.2 Installing Driver

There are 3 ways to connect the module to user's computer and communicate via HyperTerminal:

- (1) Using USB-TO-USB cable;
- (2) Using UART-TO-USB cable;
- (3) Using UART-TO-UART cable.

In the first case, user need install the module USB driver, which can be got from our FAE or sales; For the UART to USB driver, user may get it from the CD in the EVB kit; If user use UART to UART cable, there are certain points to be noticed. One can use UART to UART cable in EVB kit, if the customers want to use their own UART to UART cable, please make sure that the pin sequences of it is same as those of cable in EVB kit, pin sequences of which are shown in Figure 9.

6.3 Connecting Net and calling

Once user installs the driver, user can follow steps below to connect to Network.

(1) When user use a UART-UART cable, user need to connect the serial port line to the serial port, open the HyperTerminal (AT command windows) on user's Personal computer. The location of the HyperTerminal in windows2000/XP/Vista can be found from START→accessory→communication→HyperTerminal. Please set the correct Baud Rate and COM port number, the Baud Rate of SIM5320 is 115200, and the COM port number is based on which UART port user's serial port line is inserted, user should select the port such as COM1 or COM2 etc.

(2) Connect the antenna to the SIM5320 module using an antenna transmit line, insert SIM card into the SIM card holder, and insert handset into its sockets.

(3) Follow the steps of running which has been mentioned above in Sector 5.1, power on the system, type the AT command from the HyperTerminal, and then the SIM5320 module will execute its corresponding function. For example, if user type "AT", then it should respond "OK"; if user type "ATI", it should display product identification information.

(4) If user want to use USB to USB cable, user need to connect the cable to USB port of the module and the computer, then follow step 1~3.

(5) If user use UART to USB cable, user need to connect the cable to module serial port and the USB port of the computer, then follow step 1~3.

6.4 Downloading

Connect the USB port line to the USB port, connect the direct current source adapter, run the download program, and choose the correct image, please follow the QDL downloading menu for the operation. Update procedure is described in the figure below.

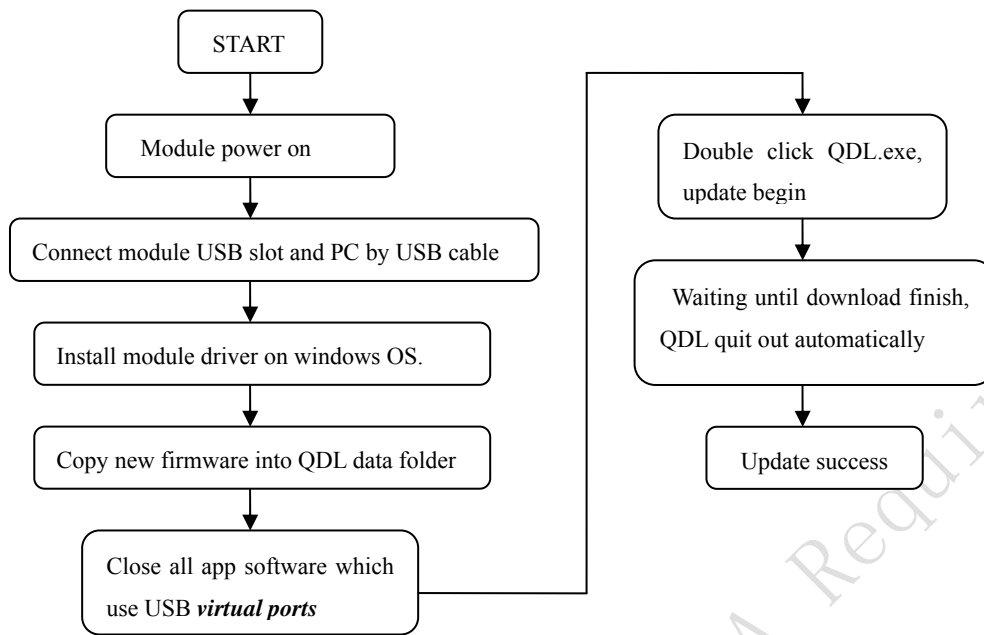


Figure 14: USB interface update procedure

6.5 Turning off

Press the POWER_ON for about 1 second, SIM5320 module will be turned off.

NOTE: If user uses USB to power on the module, just disconnect the USB cable to turn off.

6.6 Measuring the current consumption

User can measure SIM5320 current consumption in the sleep mode on our EVB. User need to follow steps.

- (1) Remove the jumper from J202, and provide a 3.8V DC power supply (such as: Agilent 66319B) for VBAT on SIM5320 EVB;
- (2) Install a SIM card and a RF antenna;
- (3) Shutdown UART by S204;
- (4) Remove the USB cable;
- (5) Power on SIM5320;

SIM5320 will enter sleep mode automatically. User can measure SIM5320 current consumption. Test report is described in the figure below.

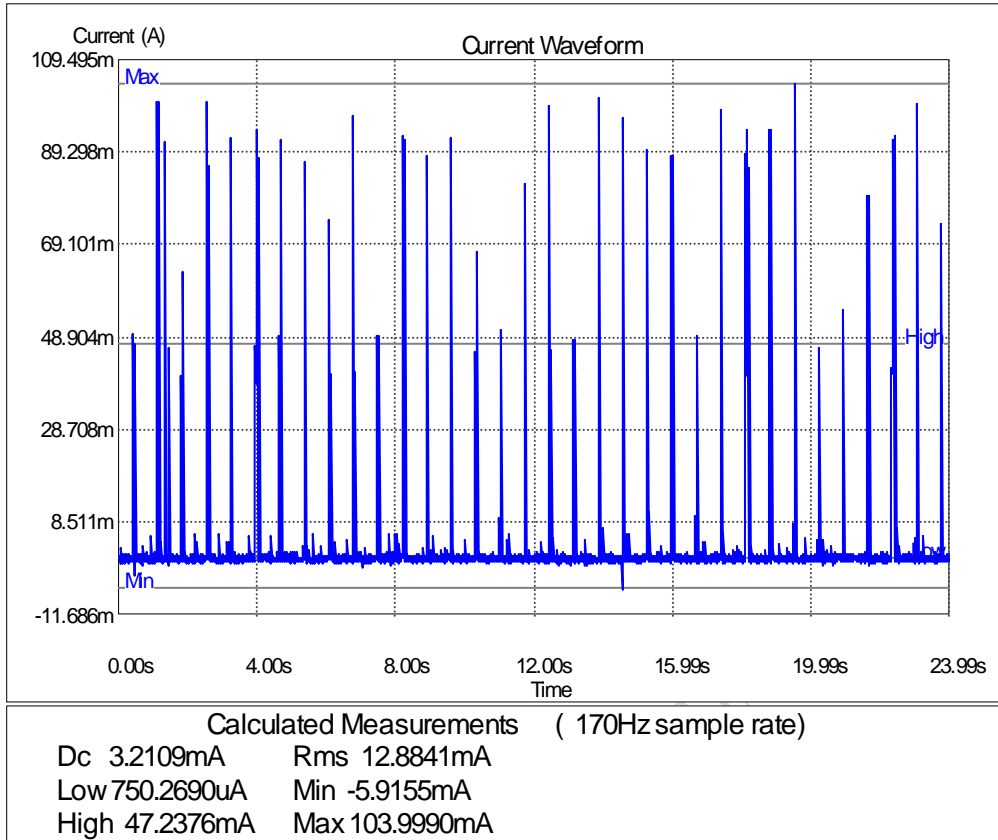


Figure 15: current consumption in the sleep mode

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