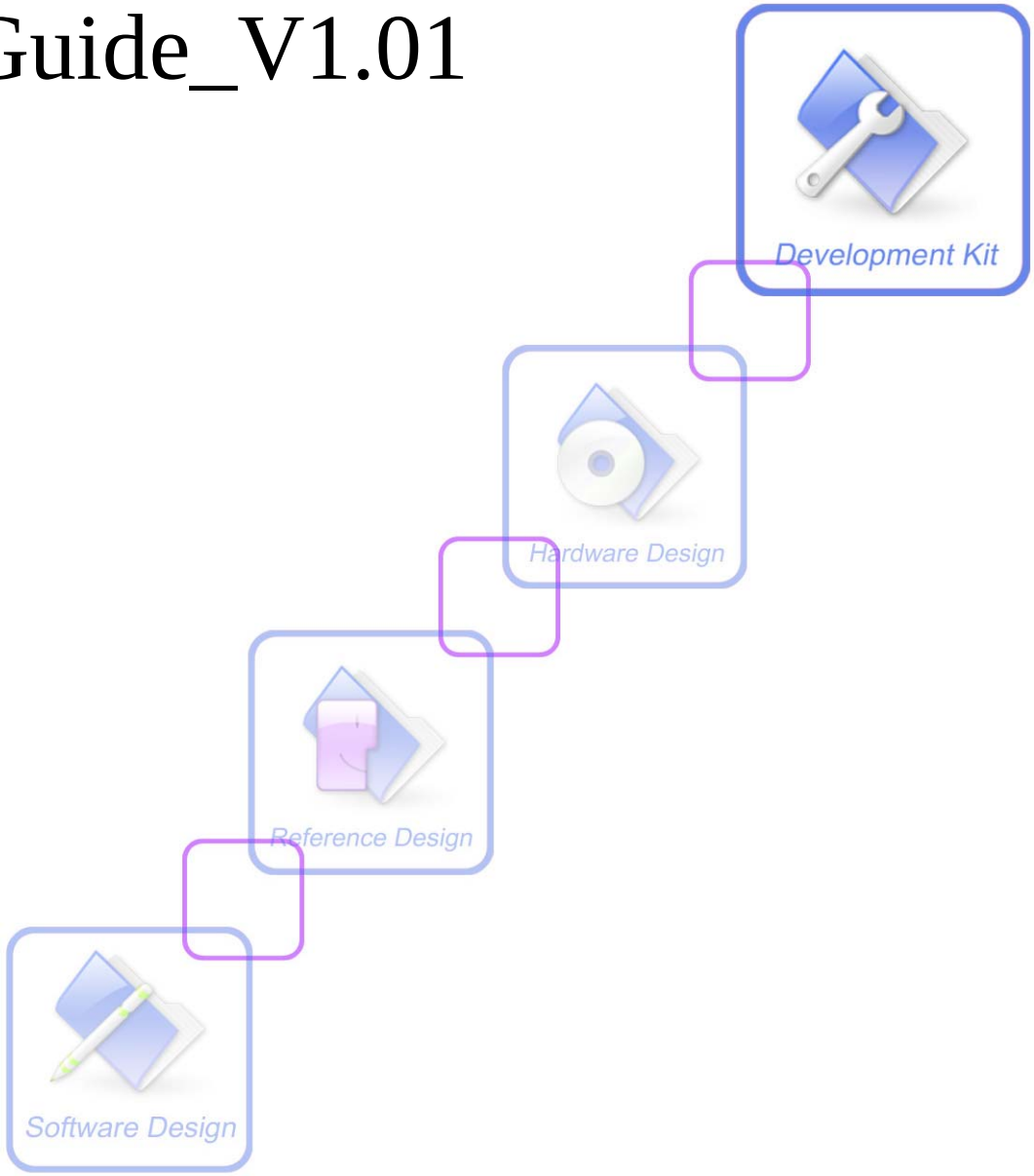
SIM18 _EVB Kit_User Guide_V1.01



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Version History

Data	Version	Description of change	Author
2010-10-18	1.00	Origin	Qiuju.Huang
2010-11-12	2.00	Modify figure 1, 2, 3, 9,17, Add SIM18-EVB Schematics	Sally

1 Introduction

This document give the usage of SIM18 EVB-Kit, user can get useful information about the SIM18 EVB quickly through this document.

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

1.1 Acronyms and abbreviation

Table 1: Acronyms and abbreviations

DC	Direct Current
I/O	Input/Output
LED	Light Emitting Diode
SPI	Serial Peripheral Interface
USB	Universal Serial Bus
UART	Universal Asynchronous Receiver & Transmitter

2 Contents of the SIM18EVB-Kit

SIMCom supplies the SIM18EVB kit to assist the designer, during the developing project phase, to develop applications based upon the GPS modules.

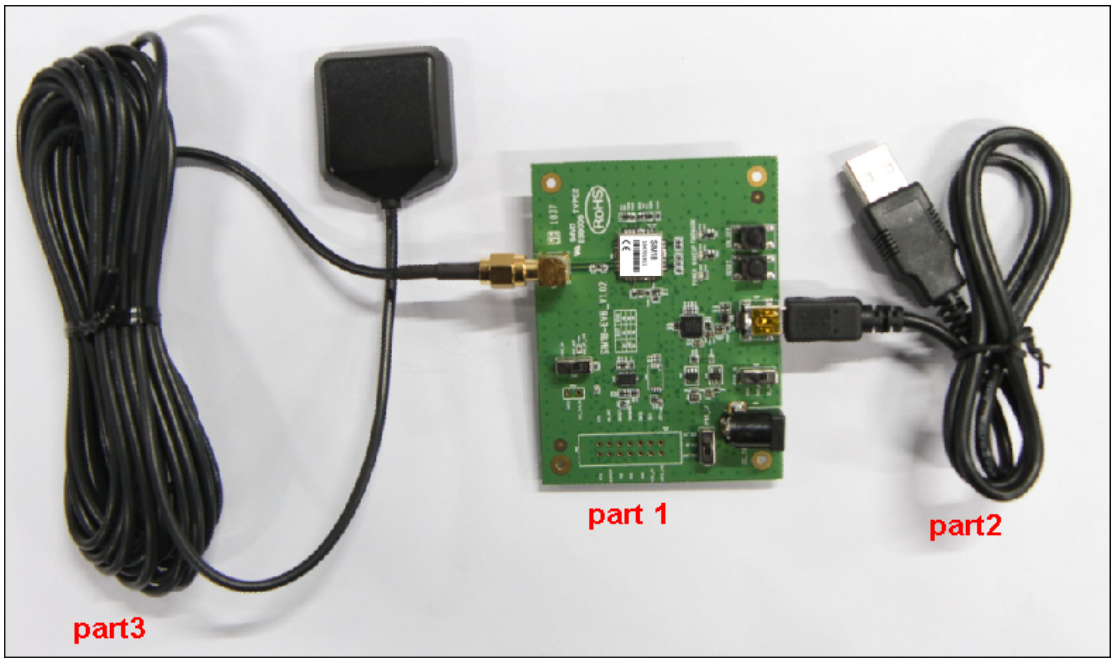


Figure 1: SIM18EVB-KIT Contents

Table 2: Contents of SIM18EVB-kit

Part NO.	Description	Quantity
1	SIM18-EVB (with a SIM18 mounted on)	1
2	USB cable	1
3	Active GPS antenna	1

3 SIM18 EVB Overview

3.1 General Description of SIM18-EVB

The SIM18-EVB includes two function areas: Demo Area and Test Area. In Demo Area, the USB interface is provided for customer easily doing SIM18 field verification. In Test Area, both 1.8V and 3V working domains are provided for customer easily connected SIM18 with their systems. The function areas division is showed in follows:

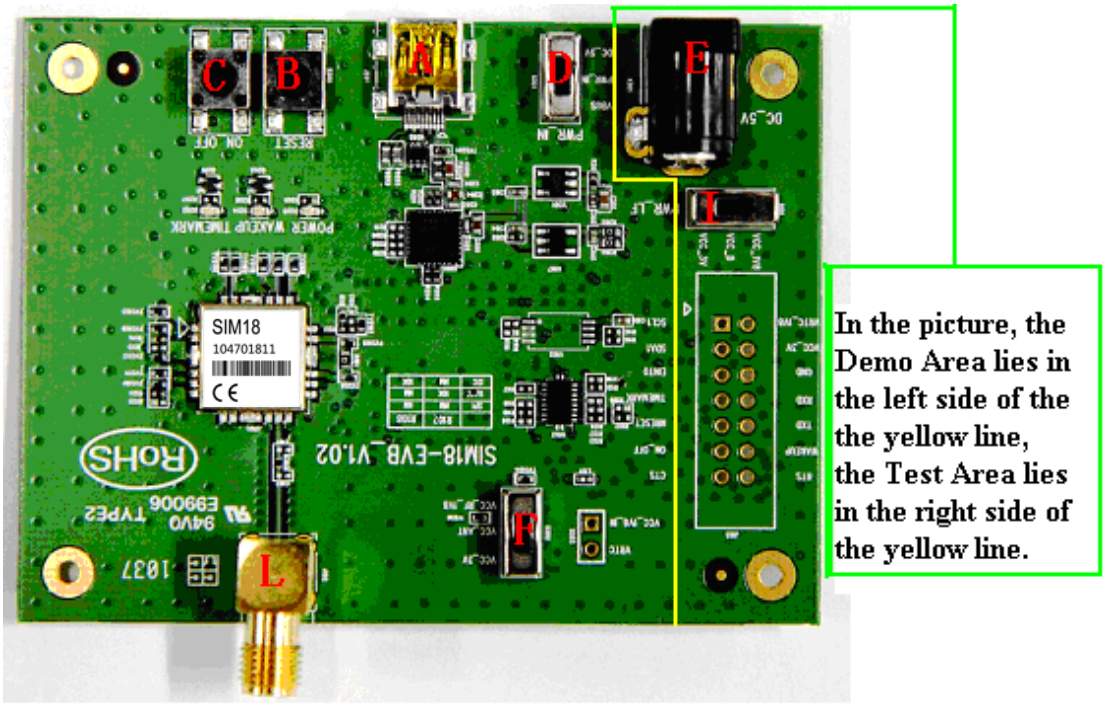


Figure 2: SIM18-EVB Function Areas Division

3.2 Detailed description of SIM18-EVB

The chapter introduces the functions of each component.

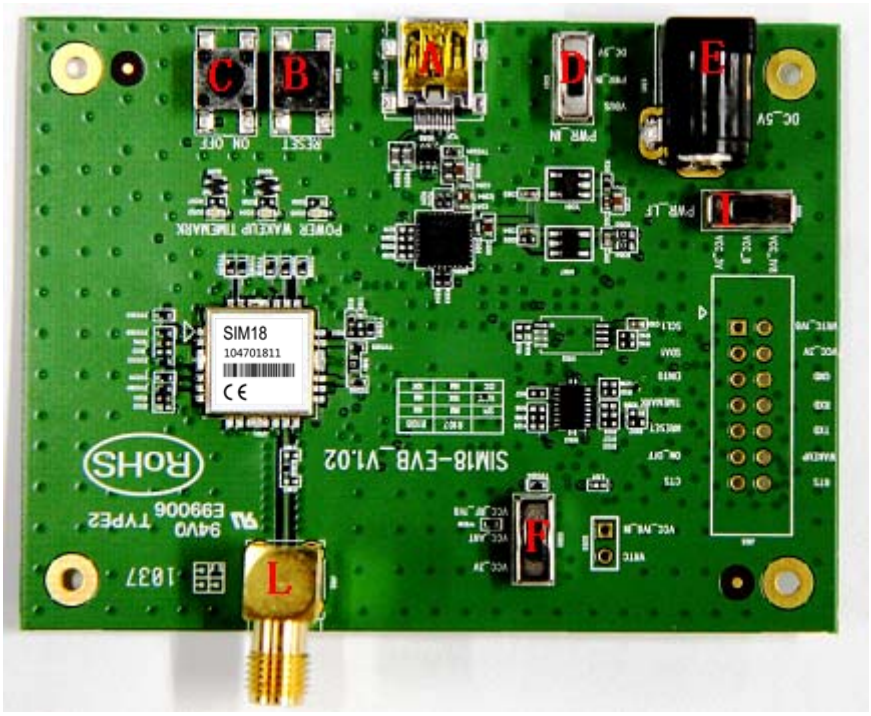


Figure 3: SIM18-EVB componts function

Note: The SIM18 with "S6103601" is SIM18-Z01, please see chapter 2.2 of "SIM18 HD V1.00" for information of SIM18-Z01

A: USB interface, support USB communication with SIM18, and also power the SIM18-EVB.
B: RESET button, pressed to control SIM18-Z01 going into sleep mode.
C: ON_OFF button, pressed to wakeup SIM18-Z01 from sleep mode.
D: S301, select either USB VBUS or DC_5V to be the power source of SIM18-EVB.
E: DC_5V power adapter interface.
F: S302, select power source for either VCC_3V or VCC_RF_1V8 active antenna. When a passive antenna is connected to RF interface, S302 must be unsoldered.
L: RF interface, can connect to active or passive antenna, as well as the GPS test equipment.
I: S101, select either VCC_3V or VCC_1V8 power source for the level shift chip.

3.2.1 USB Interface

There is one Mini-USB interface on SIM18-EVB, which is transferred to UART by a USB to UART chip CP2103 on the EVB board. User need to install CP2103 driver in their PC first, then connect the EVB board to the PC by a USB cable, and set S301 switch be VBUS to power the SIM18-EVB.

Please download the latest CP2103 driver according to the PC's OS from the following link: ***http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx***

Or contact SIMCom support for it.

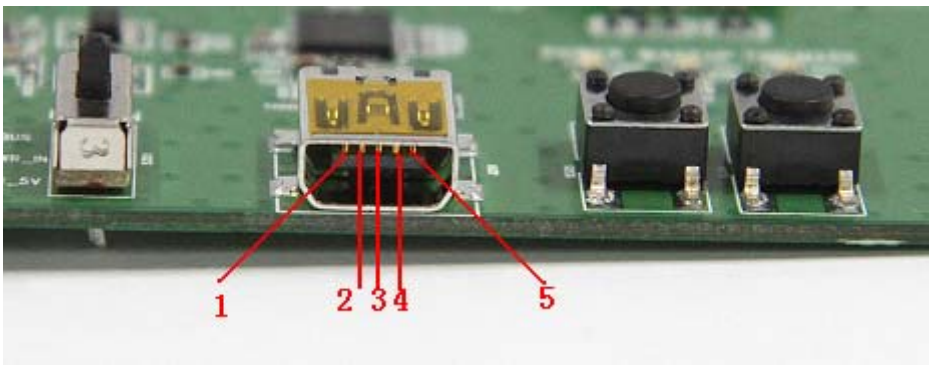


Figure 4: USB interface

Table 3: USB pin definition

Pin	Signal	I/O	Description
1	VBUS	I	5V input
2	D-	IO	Data minus
3	D+	IO	Data plus
4、5	GND		GND

3.2.2 RF Interface

The RF connector is connected to the active GPS antenna for GPS demonstration.

Note: When the RF connector is connected to a passive antenna, S302 switch must be unsoldered.

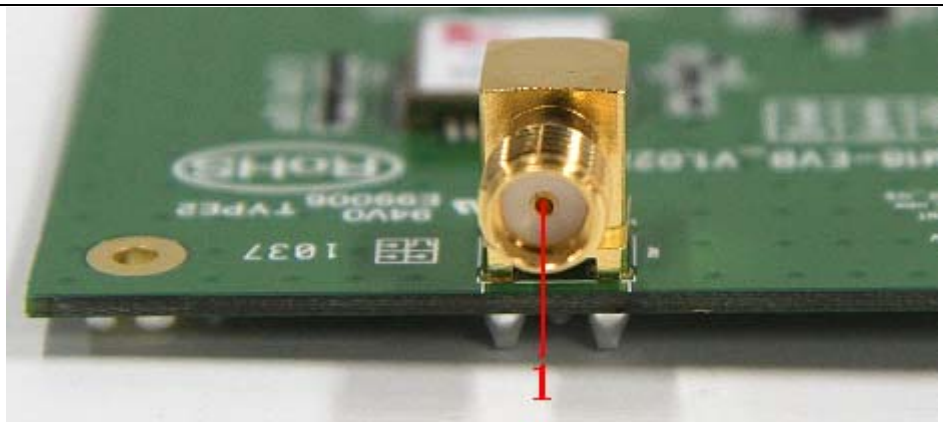


Figure 5: RF interface

Table 4: RF pin definition

Pin	Signal	I/O	Description
1	GPS signal input	I	GPS signal input

3.2.3 Man and Machine Interface

There are three LED indicators, two buttons and test interface on SIM18-EVB.

3.2.3.1 LED indicators and buttons

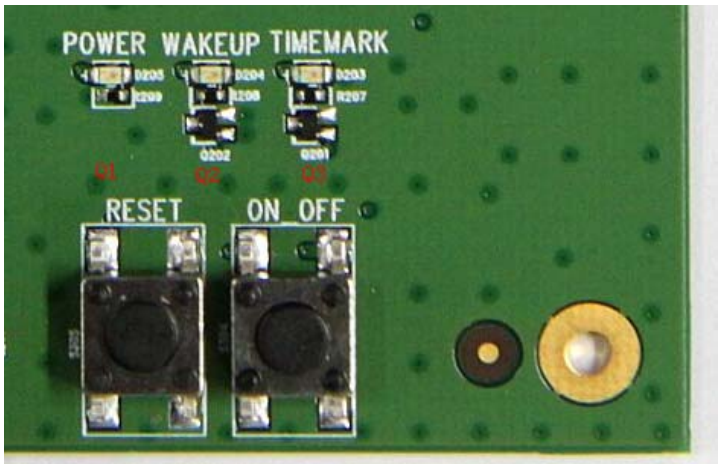


Figure 6: LEDs and Buttons

LED indicators:

- VCC_3V POWER: When SIM18-EVB is powered, the LED is on.
- WAKEUP: When SIM18 in full-on mode, the LED is on, while in sleep or KA mode, the LED is off.
- TIMEMARK: The LED is on after SIM18-Z01 firstly going to full on mode,

Buttons:

- RESET: When RESET button be pressed, SIM18 will go into sleep mode.
- ON_OFF: When ON_OFF button be pressed for about 100ms, SIM18 will wake up from sleep mode.

Working states of status LED are listed in following table:

Table 5: Working state of status LED

Name	Description	STATUS
Q1	POWER ON/OFF indicator	On: power ON Off: power OFF
Q2	WAKEUP status indicator	On: Module runs normally Off: System is powered down or module runs in sleep mode
Q3	TIMEMARK indicator	On: Module runs normally, if ROM firmware patch is added, the LED will blinking at a certain frequency when location is fixed.

3.2.3.2 Test interface

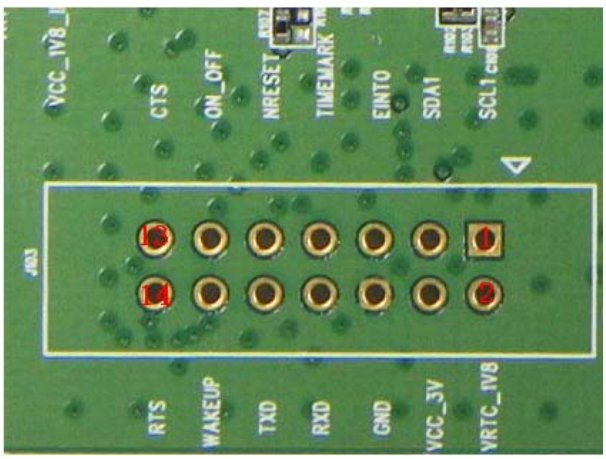


Figure 7: Test interface

Table 6: Test pin definition

Pin	Signal	I/O	Description
1	SCL1	O	I2C clock
2	VRTC	I	1.8V VRTC input
3	SDA1	IO	I2C data
4	VCC_3V	I	VCC_3V input
5	EINT0	I	External interrupt input
6	GND		GND
7	TIMEMARK	O	1PPS output
8	RXD/MOSI/SDA2	I	For UART: receive data For SPI: slave input For I2C: data line
9	NRESET	I	Reset input
10	TXD/MISO/SCL2	O	For UART: transmit data For SPI: slave output For I2C: clock line
11	ON_OFF	I	ON_OFF control input
12	WAKEUP	O	Status indicate
13	CTS/SCLK	I	For UART: CTS signal For SPI: clock input
14	RTS/SCS	O	For UART: RTS signal For SPI: chip select input

Note: all signals in above table are in 3V domain.

3.2.4 DC_5V Interface

If SIM18-EVB board is powered via VCC_5V, the S301 switch should be set to DC_5V.

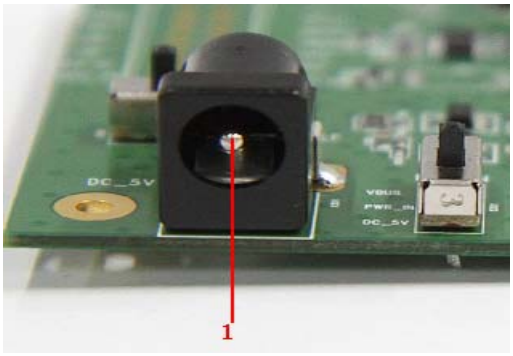


Figure 8: DC_5V interface

Table 7: DC_5V interface

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

4 EVB and accessory equipment

At normal circumstance, the SIM18 EVB and its accessory are equipped as the following figure:

Figure 9: EVB and accessory equipments

5 Illustration

User need to install CP2103 driver in their PC first before using SIM18-EVB.

Please download the latest CP2103 driver according to the PC's OS from the following link: ***http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx***

Or contact SIMCom support for it.

5.1 An example of USB driver installation

Step1.Exectue Setup file (CP210x_VCP_Win_XP_S2K3_Vista_7)

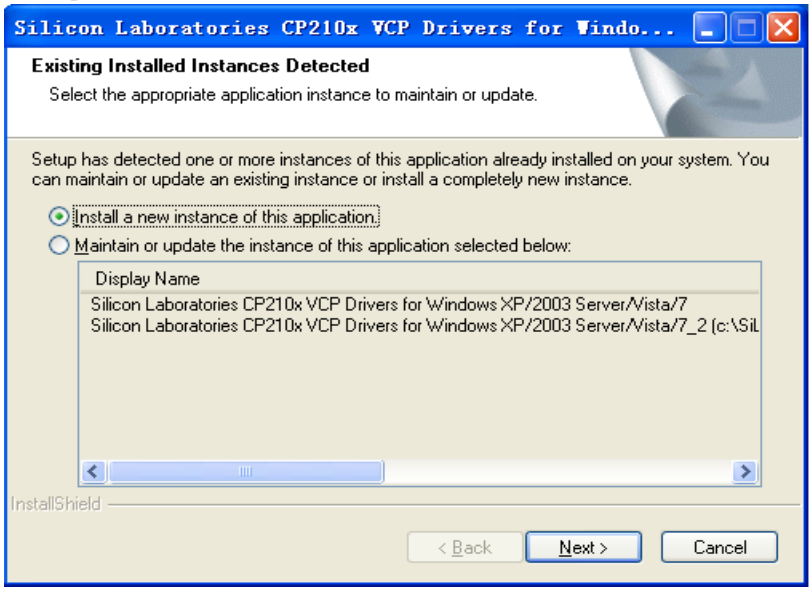


Figure 10: USB driver installation step1

Step2.Select "Next" button

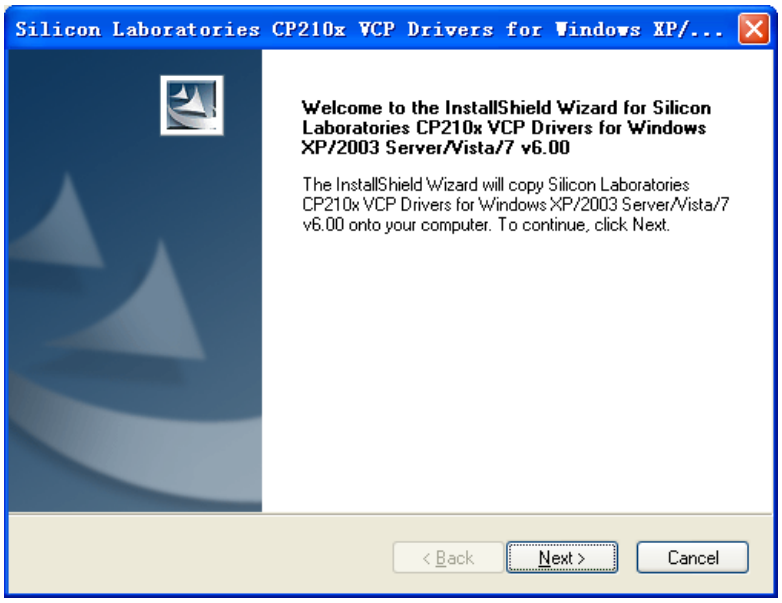


Figure 11: USB driver installition step2

Step3. Accept the license agreement and “Next”

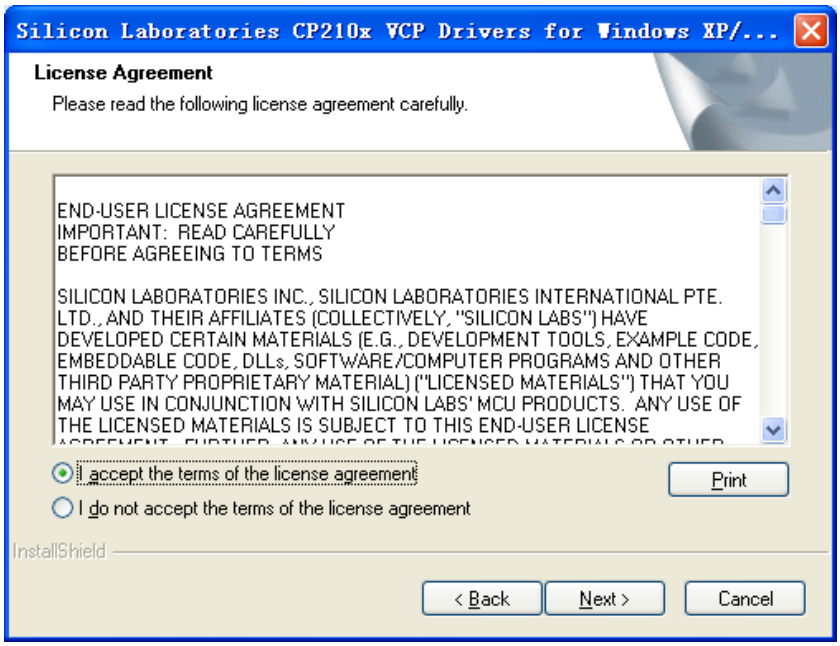


Figure 12: USB driver installation step3

Step4. Choose Driver Destination path

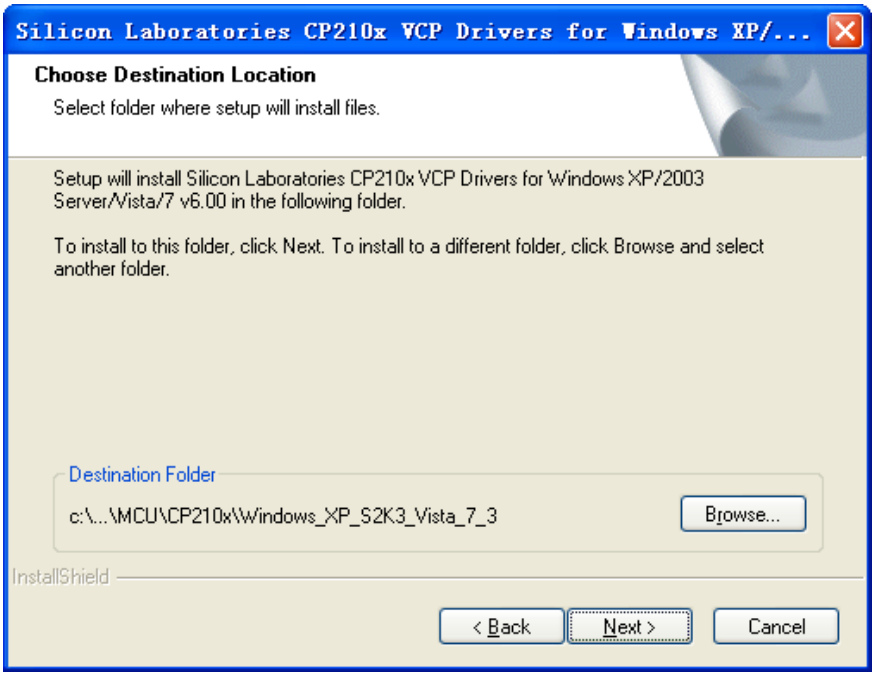


Figure 13: USB driver installation step4

Step5. Confirm Installation, select “Install” button

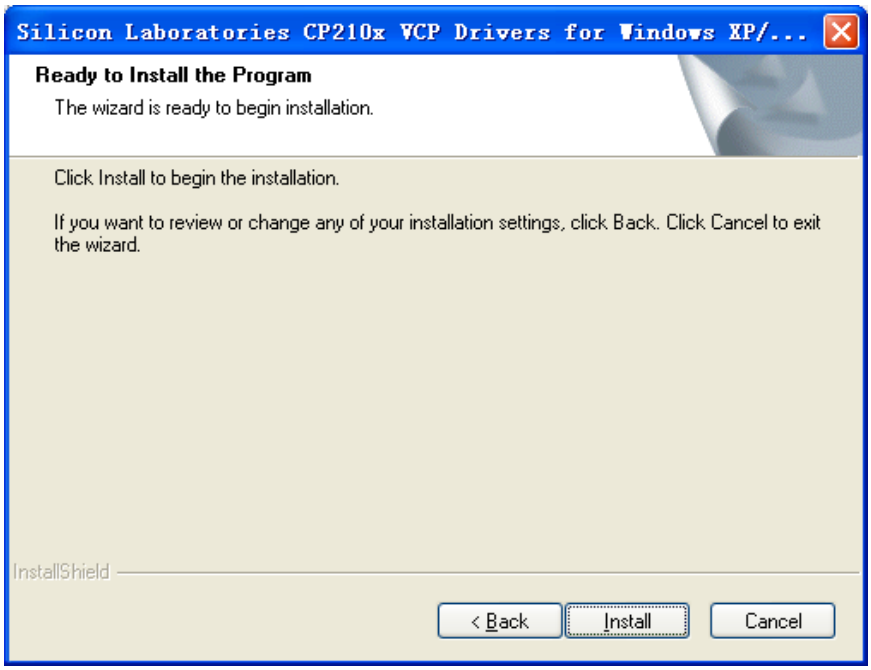


Figure 14: USB driver installition step5

Step6. Launch the CP210x VCP Driver Installer

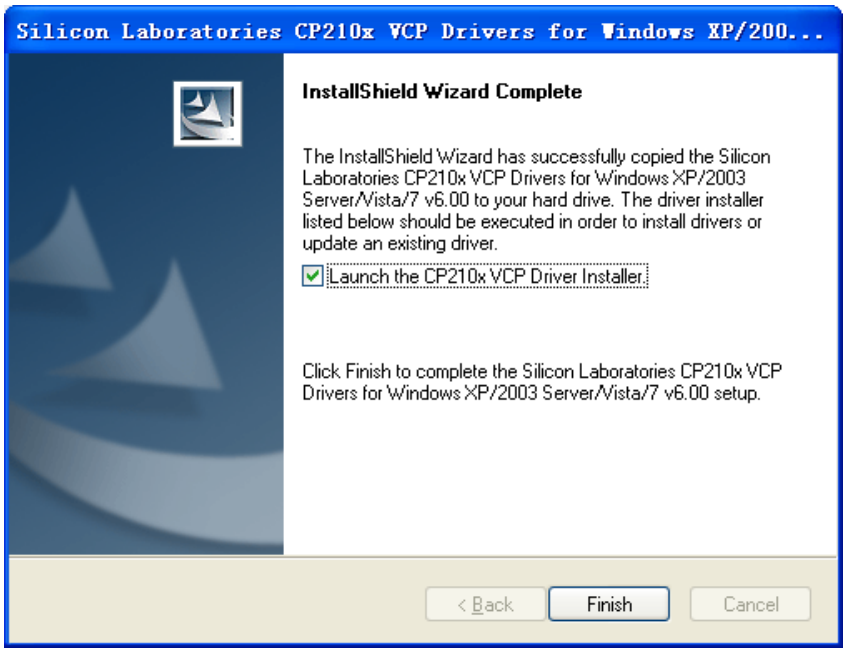


Figure 15: USB driver installition step6

Step7. Select “Install” button

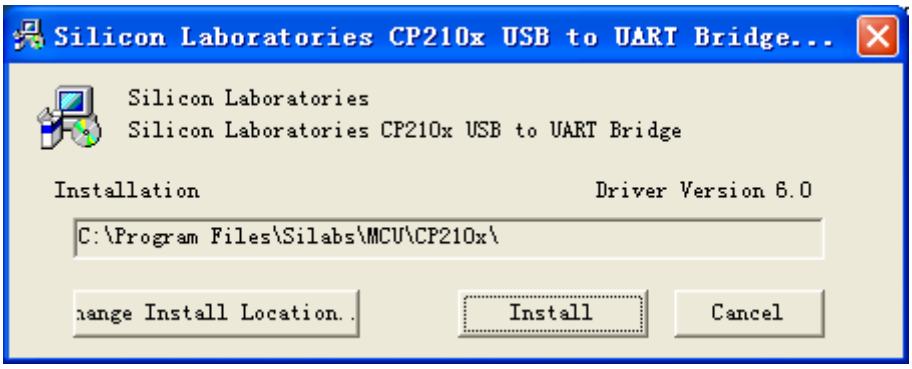


Figure 16: USB driver installation step7

Step8. Installation completed.

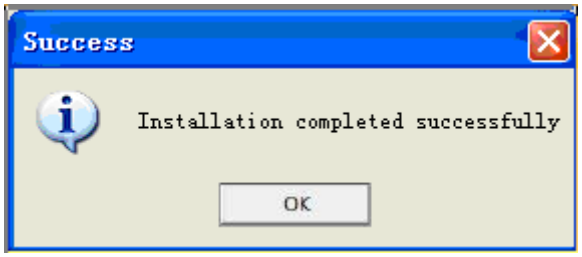


Figure 17: USB driver installation step8

Step9. After completing CP2103 driver installation, connect SIM18-EVB to PC by the

bus cable, and set S301 switch to VBUS, then “Silicon Labs CP210x USB to UART Bridge (COMX)” will appear in the device manager:

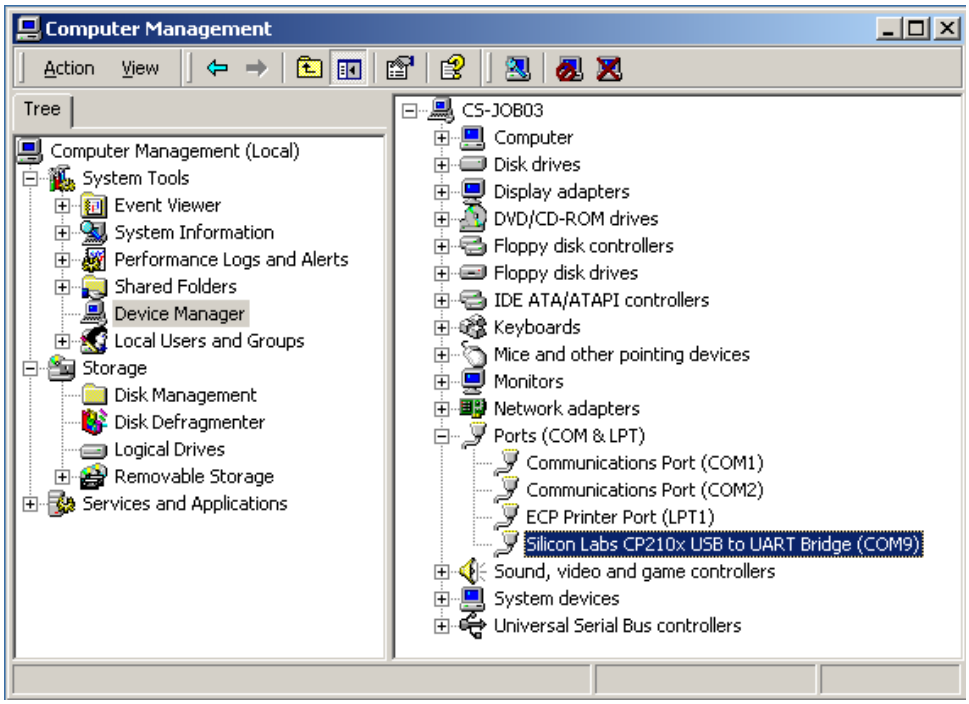


Figure 18: USB driver installation step9

5.2 Connecting and run

After installing CP210x USB to UART Bridge driver, the following operations are:

(1) Connect the active antenna to the RF connector, and set the VCC_ANT S302 switch to VCC_3V, set the PWR_LF S101 switch to VCC_3V.

(2) Connect the SIM18_EVB to PC via the USB cable, and set the PWR_IN S301 switch to VBUS, the POWER led will turn bright.

(3) Press ON_OFF button, the WAKEUP and TIMEMASK leds will be on, this means SIM18 has been running on full on mode.

(4) Use “SIMCom NEMA GPS DEMO TOOL” or other NMEA tools to evaluate SIM18 performance. SIM18 default baud rates in NMEA mode is 4800 baud.

(5) Press nRESET button to control SIM18 going into sleep mode

(6) Set the PWR_IN S301 switch to DC_5V to power off the SIM18-EVB, the POWER led will be off.

Note: Power supply off-time is suggested to be over 10 seconds to next power up in order to clear all internal backup RAM content.

6 SIMCom NMEA GPS DEMO TOOL

Please contact SIMCom support for SIMCom NMEA GPS DEMO tool.

6.1 Port setting

Choose “Setting/Port Setting” option, and then select COM Port the one in device manager and set BaudRate to be 4800.

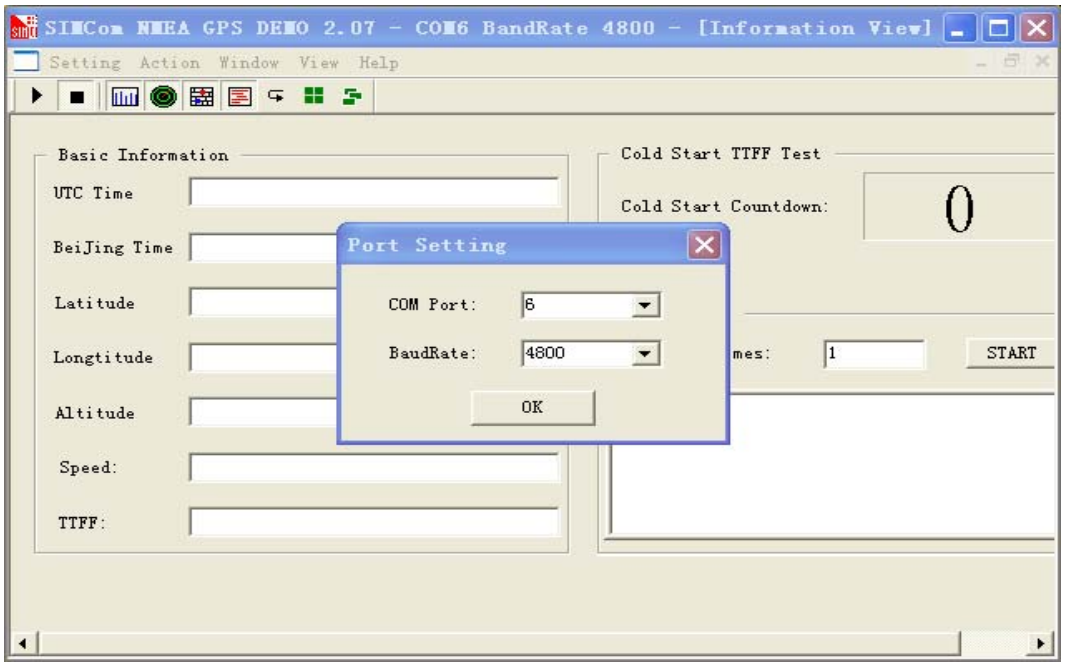


Figure 19: Port setting

6.2 Click to RUN

Choose “Action/Run” option. If the $GPGGA/$GPGSA NMEA sentences appear in Debug View, the SIM18 is acquisiting the GPS signal. (Make sure that the ON_OFF button is pressed before clicking on “RUN” button and the WAKEUP LED on SIM18-EVB is on).

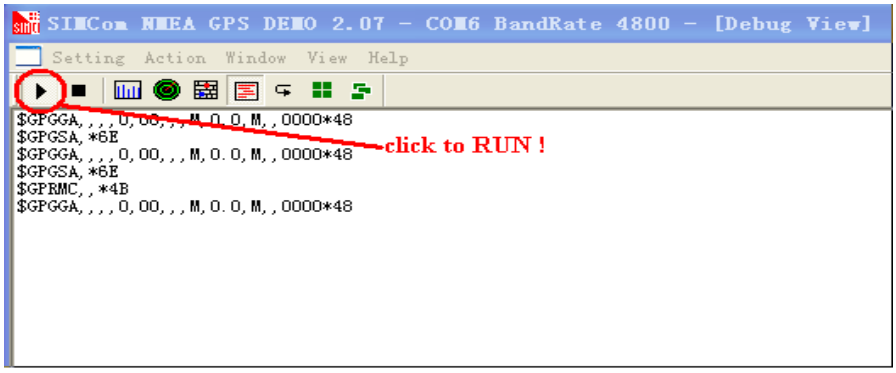


Figure 20: Click to RUN

6.3 Position fixed

After position has been fixed, the GPS information can be viewed in four methods: Radar View, Signal View, Information View and Debug View.

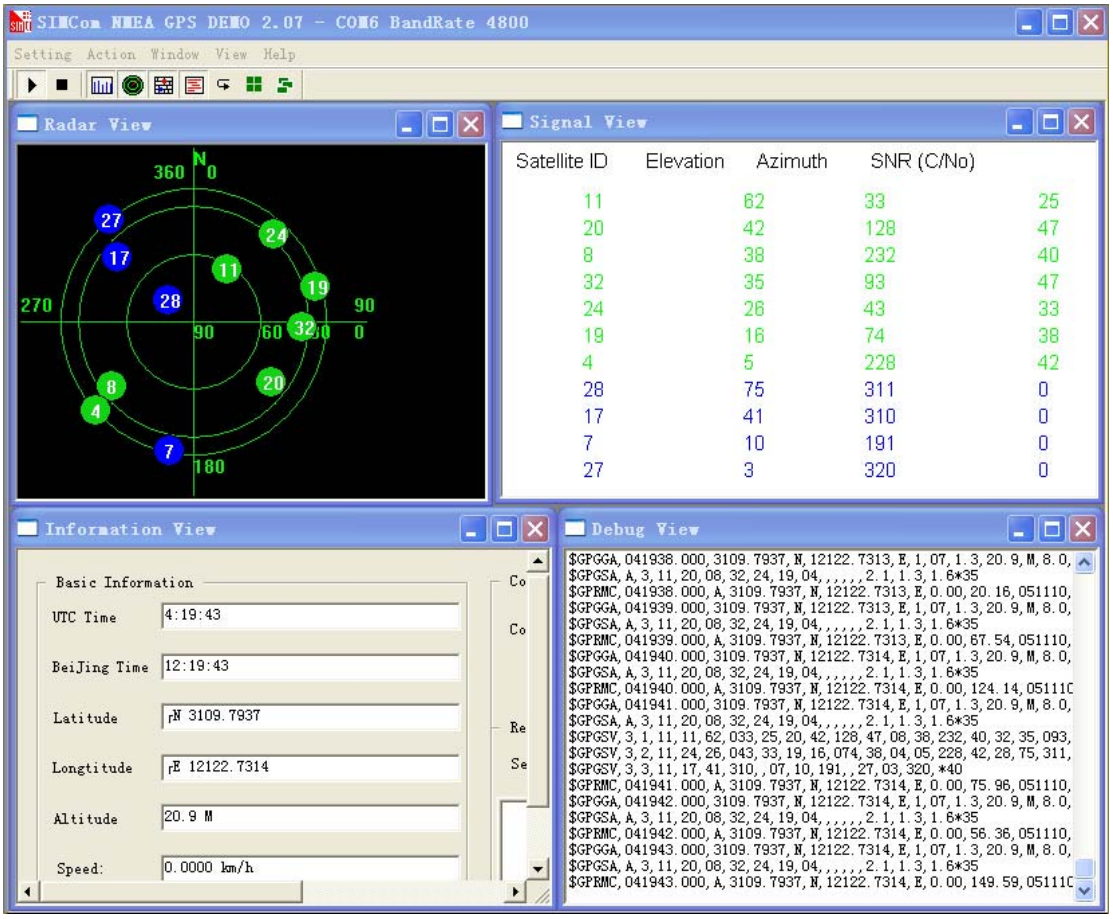


Figure 21: Position fixed

6.4 TTFF Test

SIMCom NMEA DEMO TOOL supports SIM18 TTFF test, user can choose “Action/TTFF” option to test. The TTFF information is shown in the following figure:

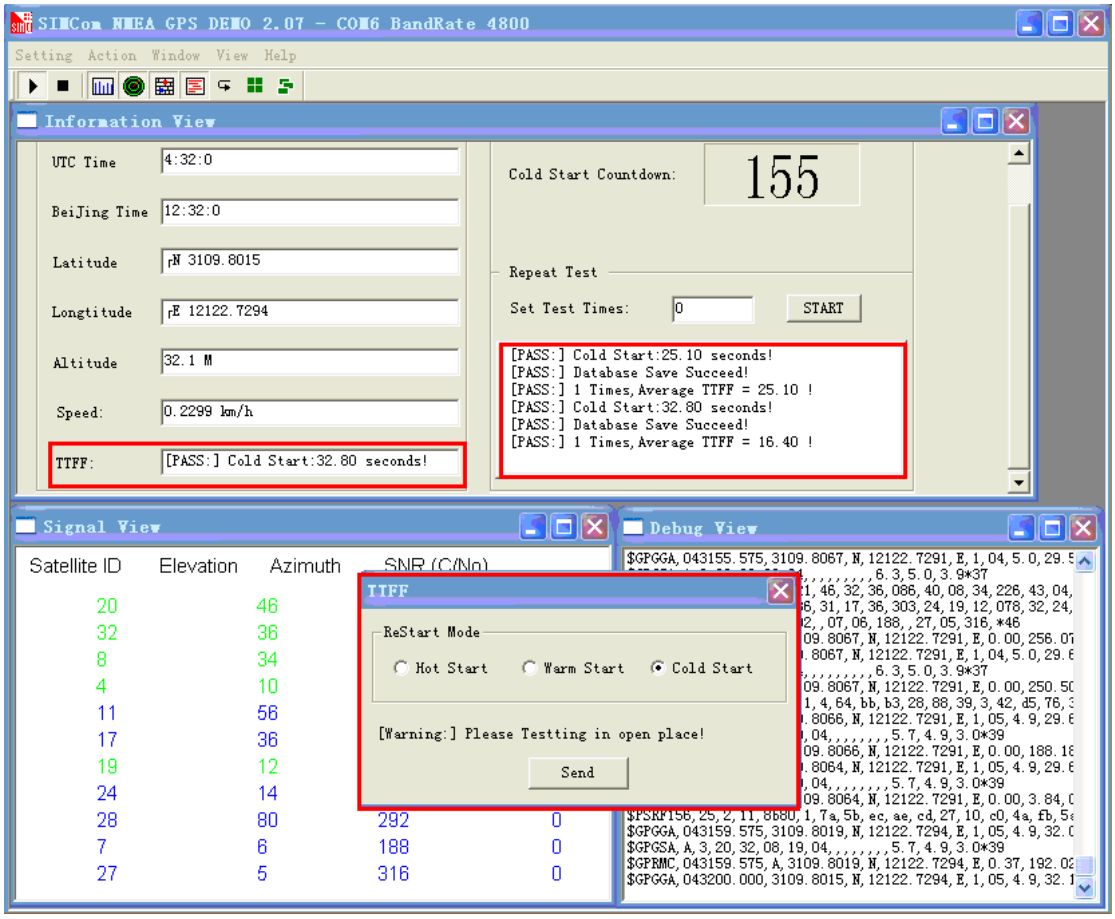
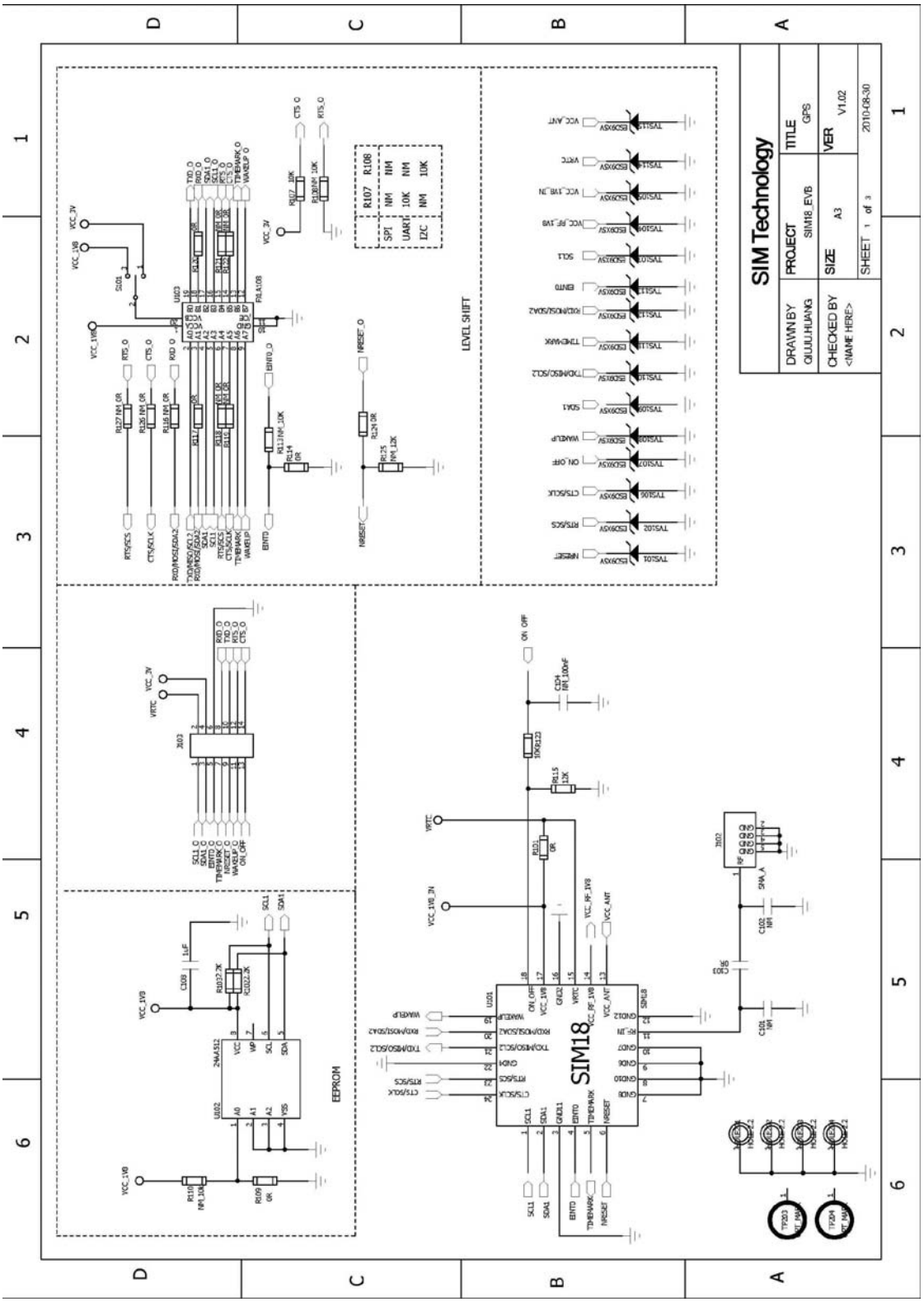
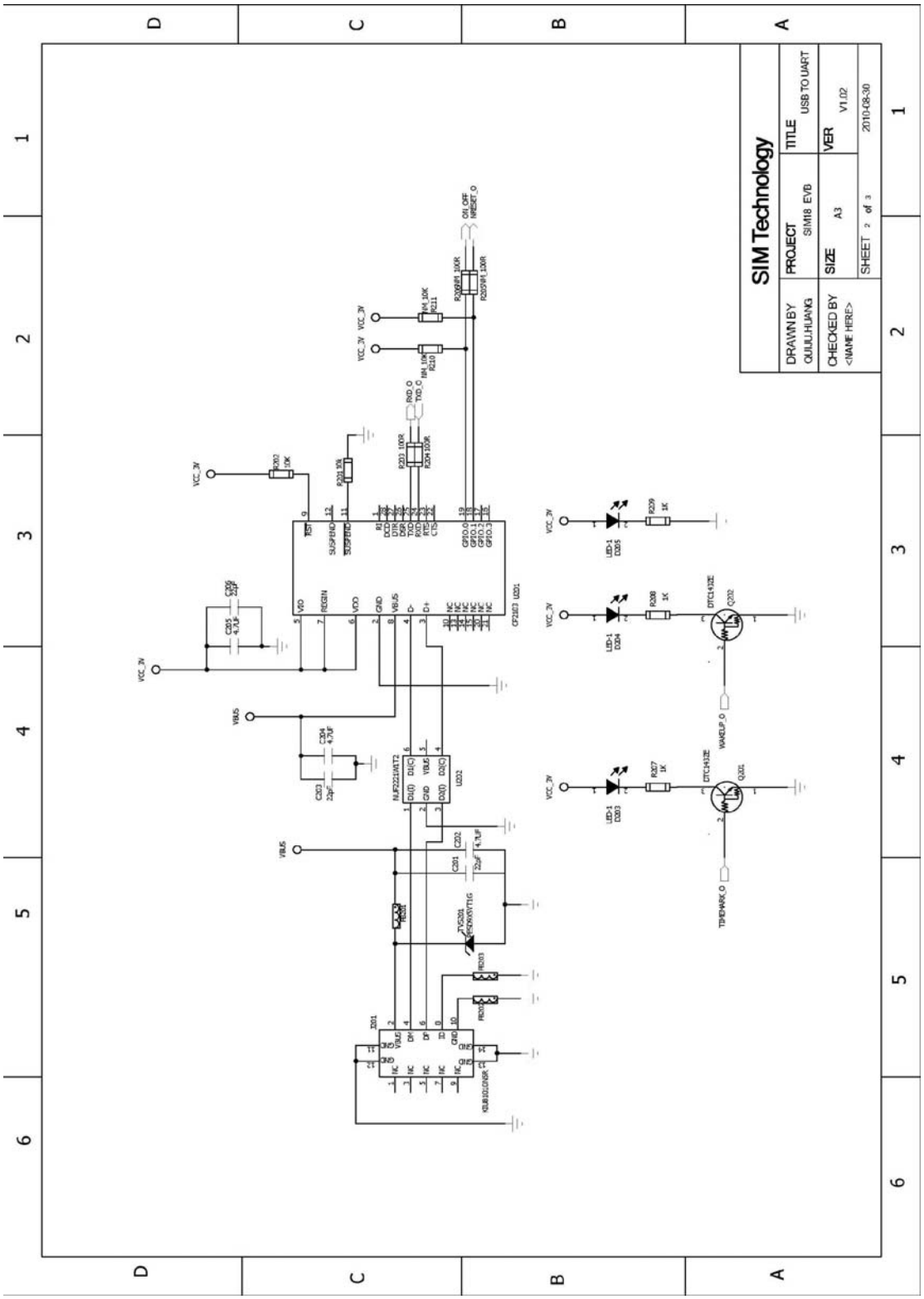


Figure 22: TTFF test

7 SIM18-EVB Schematics

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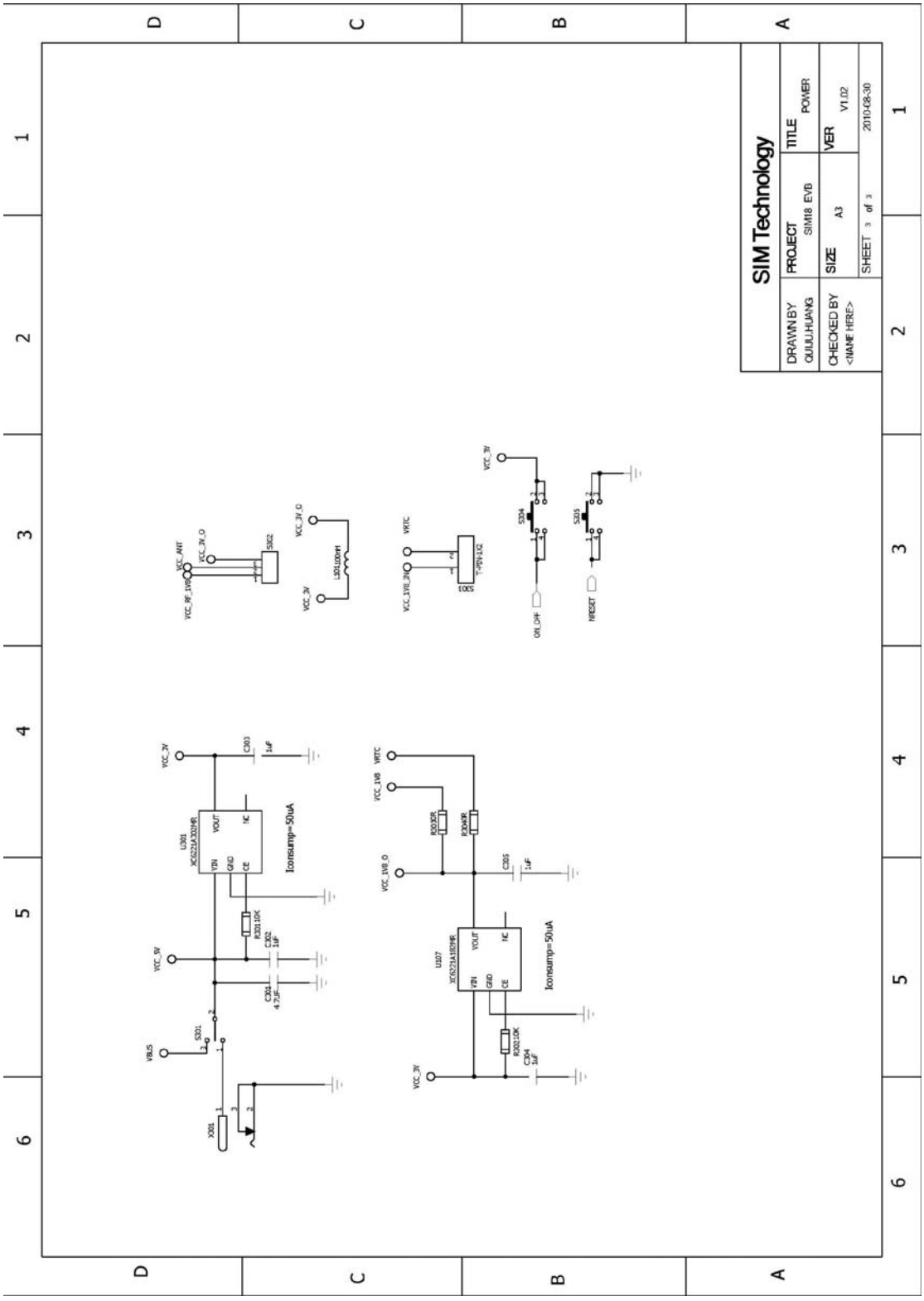
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