# SIM28_EVB kit_User Guide_V1.02

Development Kit

Hardware Design

Reference Design

Software Design

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## Version History

| Data | Version | Description of change | Author |
|------|---------|----------------------|--------|
| 2012-03-21 | 1.00 | Origin | MA Honggang |
| 2012-12-20 | 1.01 | Change testing tool to GPS Demo | MA Honggang |
| 2013-03-30 | 1.02 | Change SIM28 EVB to SIM28-TE and SIM68-EVB | MA Honggang |

# 1. Introduction

This document introduces the usage of SIM28 EVB-Kit, User can get useful information about the SIM28 quickly through this document.

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

# 2. EVB Kit and SIM28-TE Overview



**Figure 1: EVB kit and SIM28-TE**

A: SIM68-EVB
B: GPS antenna
C: Mini USB cable
D: RF cable
E: SIM28-TE

Customer should purchase SIM28-TE and SIM28-EVB kit to use this document.
In this document, SIM28 will appear as SIM28-TE, and the evaluation board is SIM68-EVB.
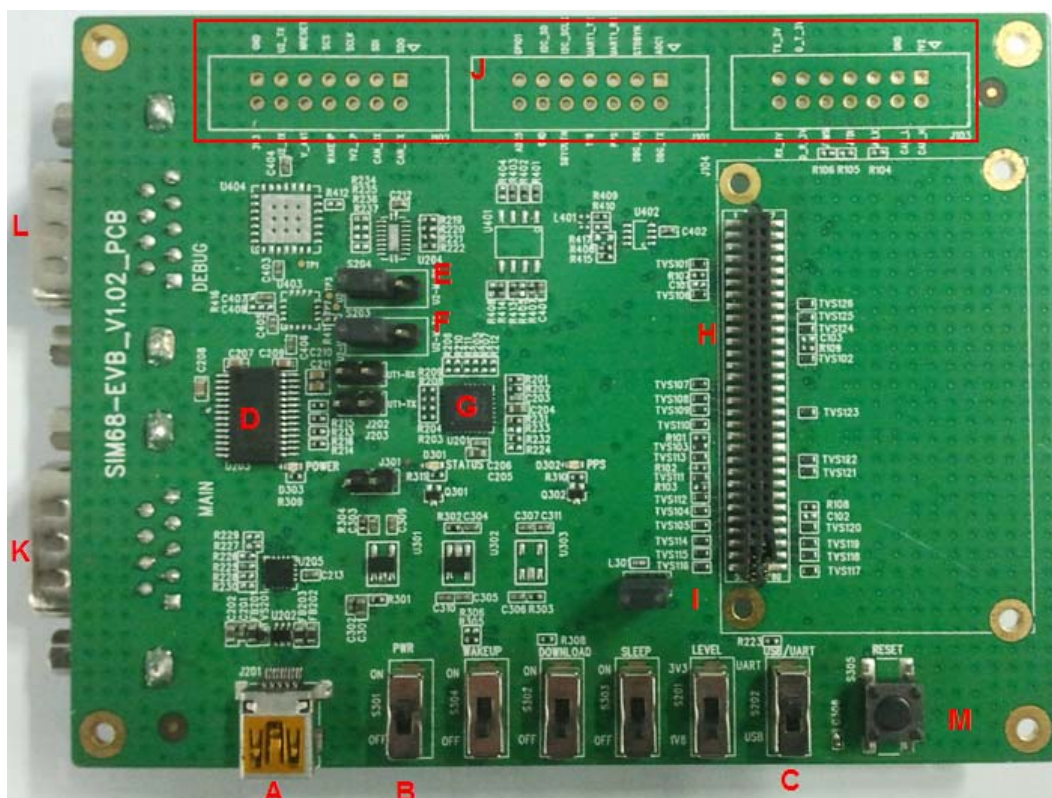At normal circumstance, the SIM28-TE and its accessory are equipped as the figure 2.

**Figure 2: Accssory Equipment**

# 3. SIM68_EVB Overview

## 3.1 Detailed Description of SIM68-EVB

The chapter introduces the functions of each component.

**Figure 3: SIM68-EVB components function**

A: USB interface, support USB communication with SIM28-TE, and also power the system.

B: S301, Power switch, push up to power the EVB and module, push down to power off.

C: S202, NMEA output select. Push up to choose USB port. Push down to close.

D: UART to RS232 transceiver

E, F: Select for receiving NMEA data from A or K. Jump the left and middle needle is select A port, jump the middle and right needle is select K port.

G: UART to USB transceiver.

H: 60 PIN connector for the SIM28-TE

I: J302, the jumper of VANT which is the source of active of antenna.

J: Test point area. (Customer should contact SIMCom if the test point is needed).

K: Main UART port for the NMEA output.

L: Debug UART port, reserved.

M: Reset button (SIM28 not support).

## 3.2 USB Interface

There is one Mini-USB interface on SIM68-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 push S301 up to power the SIM68-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 for support.
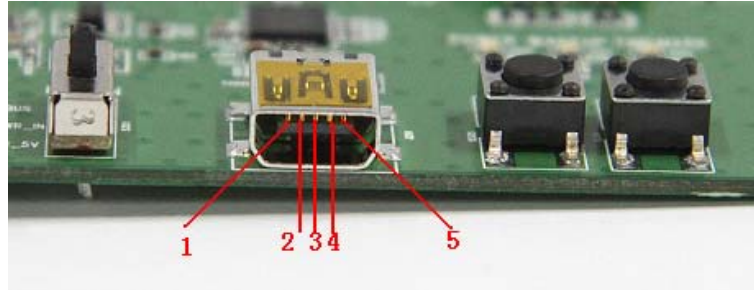


**Figure 4: USB interface**

**Table 1: USB pin definition**

| PIN Number | Signal | I/O | Description |
|------------|--------|-----|-------------|
| 1 | VBUS | I | 5V input |
| 2 | D- | I/O | Data minus |
| 3 | D+ | I/O | Data plus |
| 4,5 | GND | | GND |

# 4. Illustration of Testing

User need to install CP2103 driver in their PC first before using SIM68-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 for support.

## 4.1 An example of USB driver installation

Step1.exectue Setup file (CP210x_VCP_Win_XP_S2K3_Vista_7)
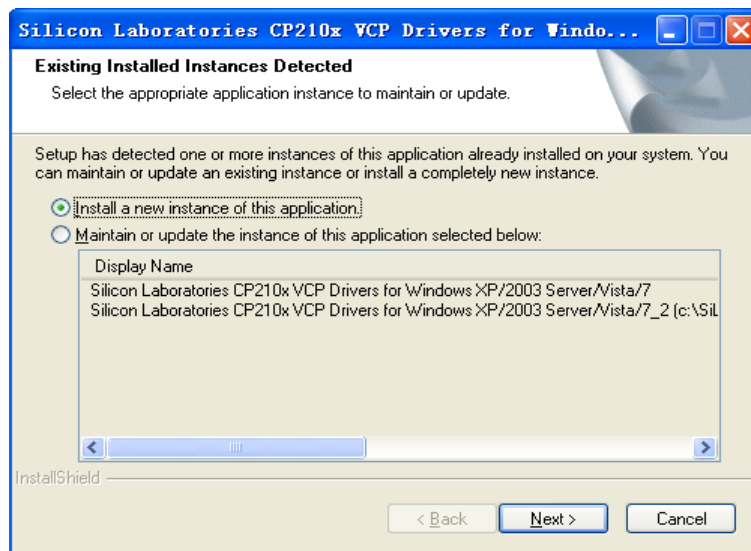


**Figure 5: USB driver installation step1**

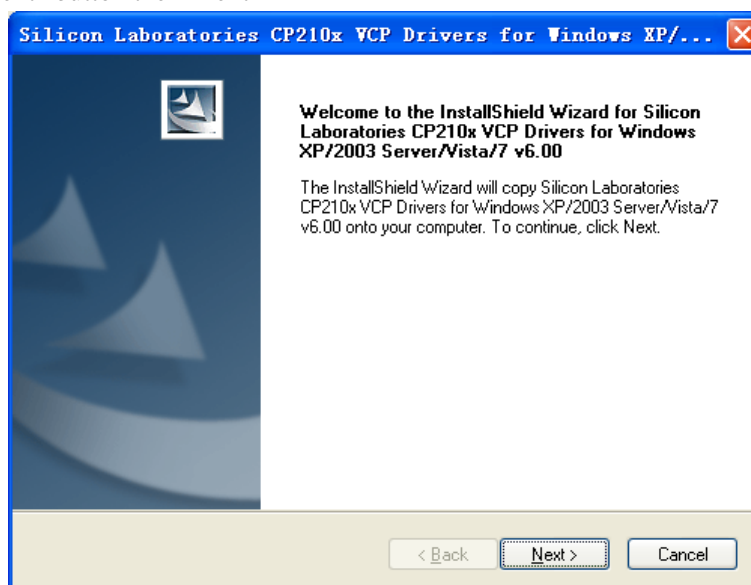Step2.select "next" button then "next"



**Figure 6: USB driver installition step2**

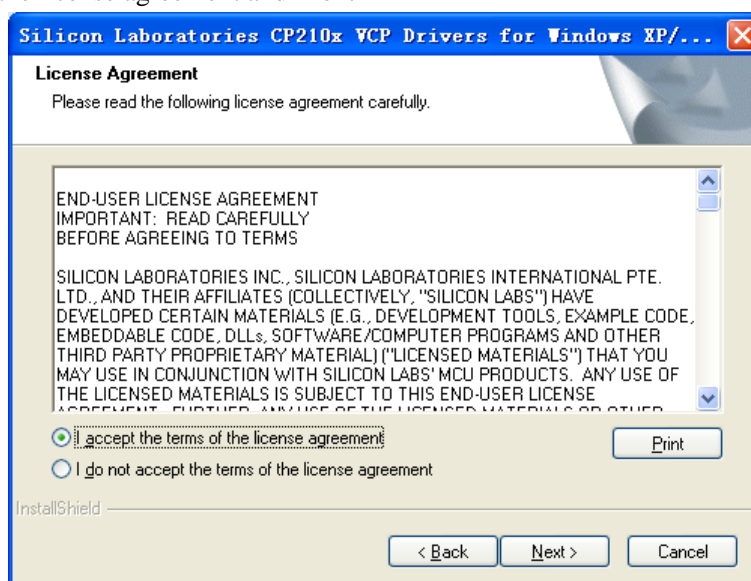Step3. Accept the license agreement and "next"



**Figure 7: USB driver installation step3**

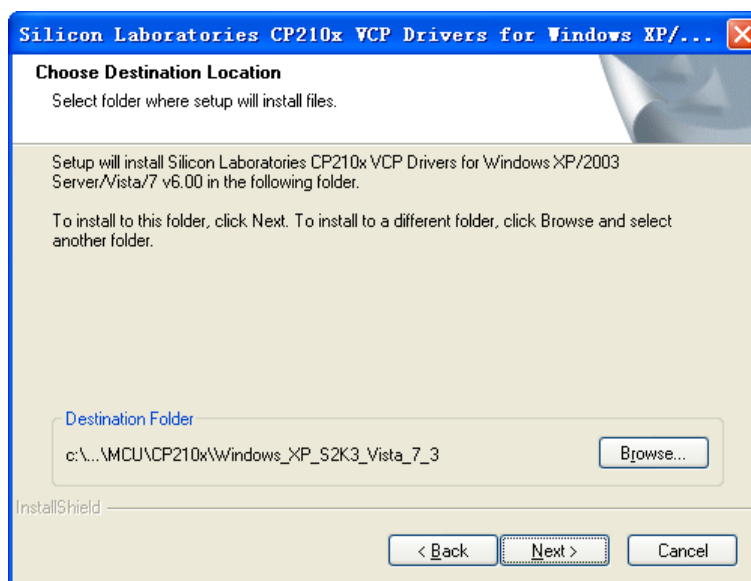Step4. Choose Driver Destination Location



**Figure 8: USB driver installation step4**

Step5. Confirm Installation, select "Install" button
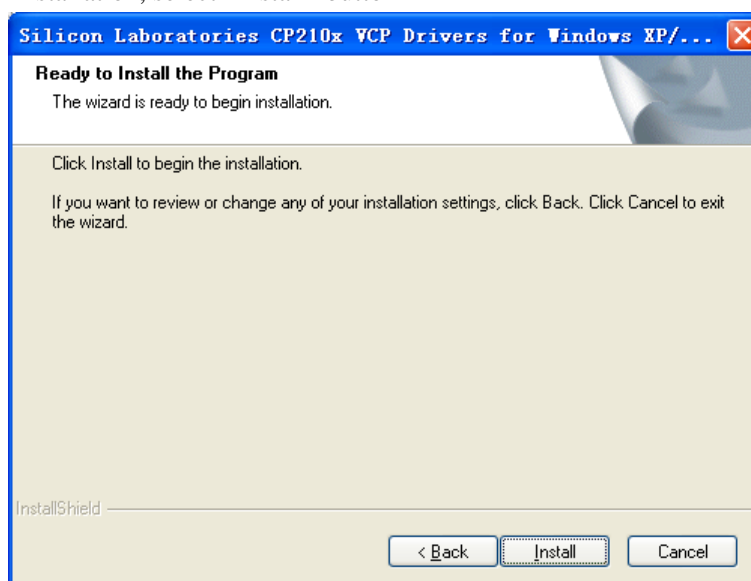


**Figure 9: USB driver installition step5**

Step6. Launch the CP210x VCP Driver Installer



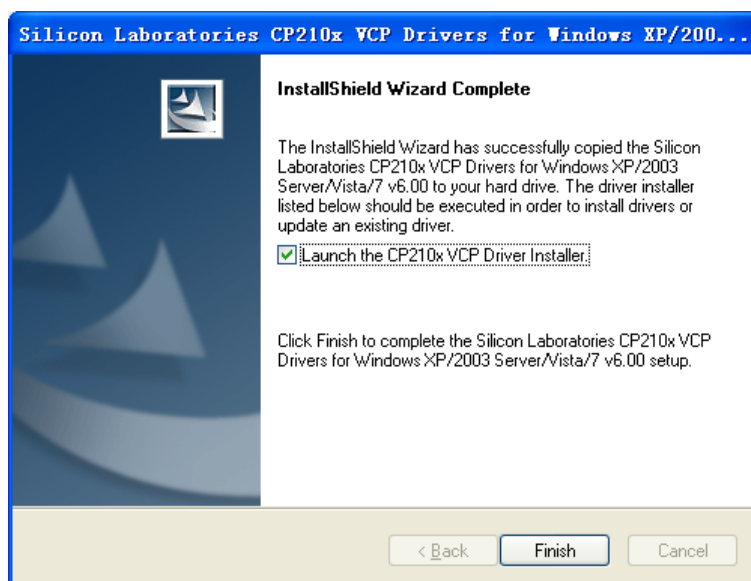**Figure 10: USB driver installition step6**

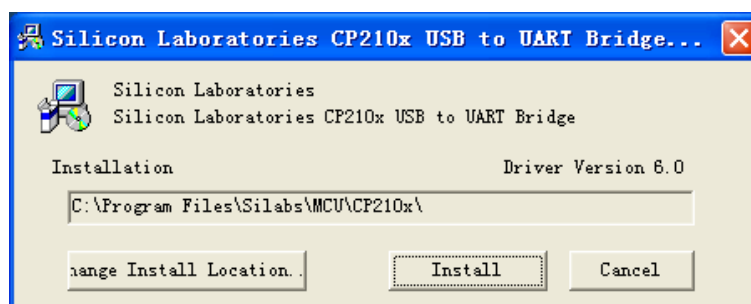Step7. Select "Install" button



**Figure 11: USB driver installation step7**
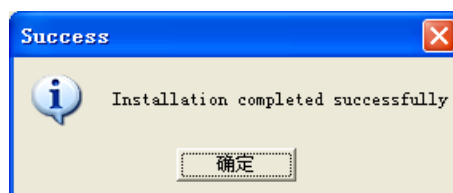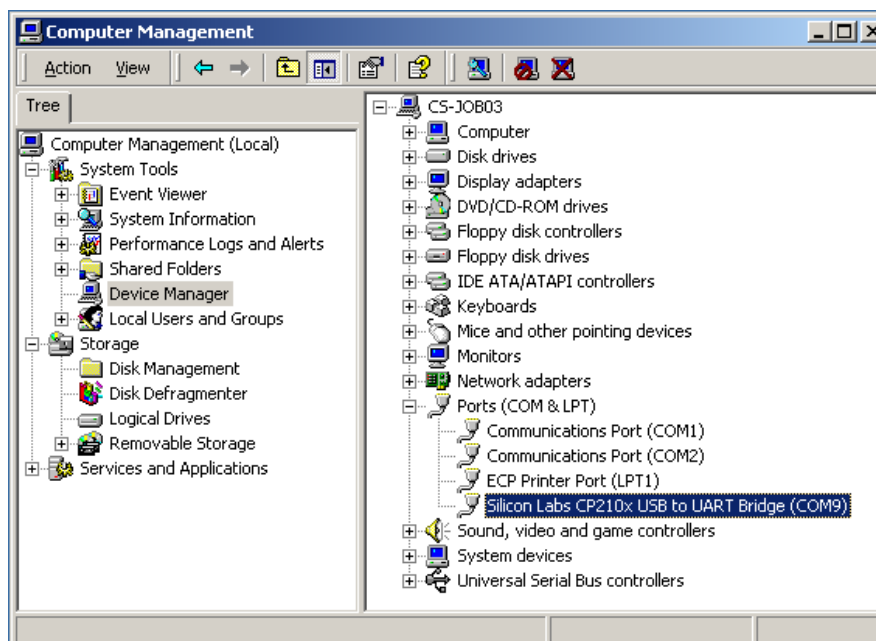
Step8. Installation completed.



**Figure 12: USB driver installation step8**

Step9. After completing CP2103 driver installation, connect SIM68-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 13: USB driver installation step9**

## 4.2 Connecting and Run

To test the SIM28 module, the following operations are needed:

1. Install CP2103 driver.
2. Install GPS test tool.
3. Connect the active antenna to the RF connector, and insert SIM28-TE to module connector.
4. Connect the SIM68-EVB to PC with USB cable.
5. Push up the power switch of S301.
6. Push up the switch of S202 to select UART signal.
7. Open GPS test tool to test.

# 5. SIMCom GPS Testing Tool

This chapter gives a detailed introduction of testing tool "SIMCom GPS Demo". Please contact SIMCom to get the newest version of GPS Testing tool.

## 5.1 Port Setting

In the testing tool interface, open the "setting" window according to the following path:
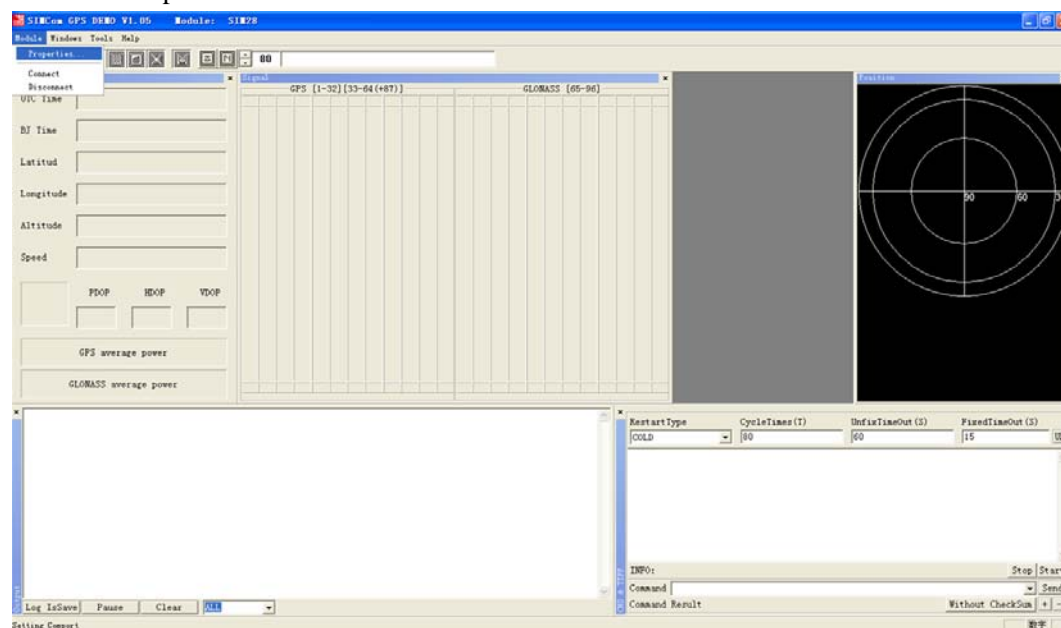
Module-->Properties.
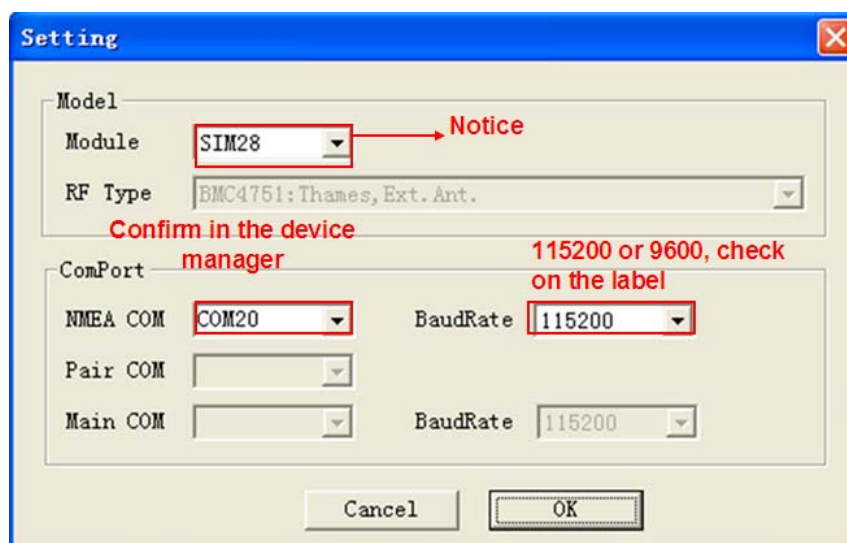


**Figure 14: Testing tool interface**



**Figure 15: Setting Window**

In the "NMEA COM" drop down list choose the corresponding com mentioned before. The baudrate is 115200 or 9600. Then click OK.

## 5.2 Click to RUN

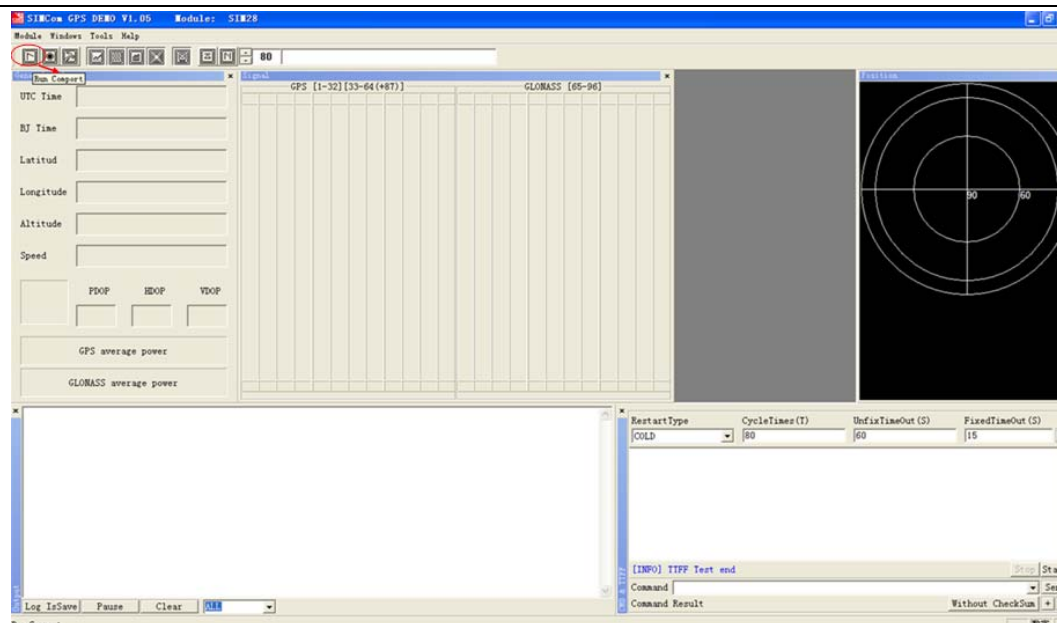Click the button "Run Comport" to run the module.

**Figure 16: Click to Run**

The module will run as the following figure:



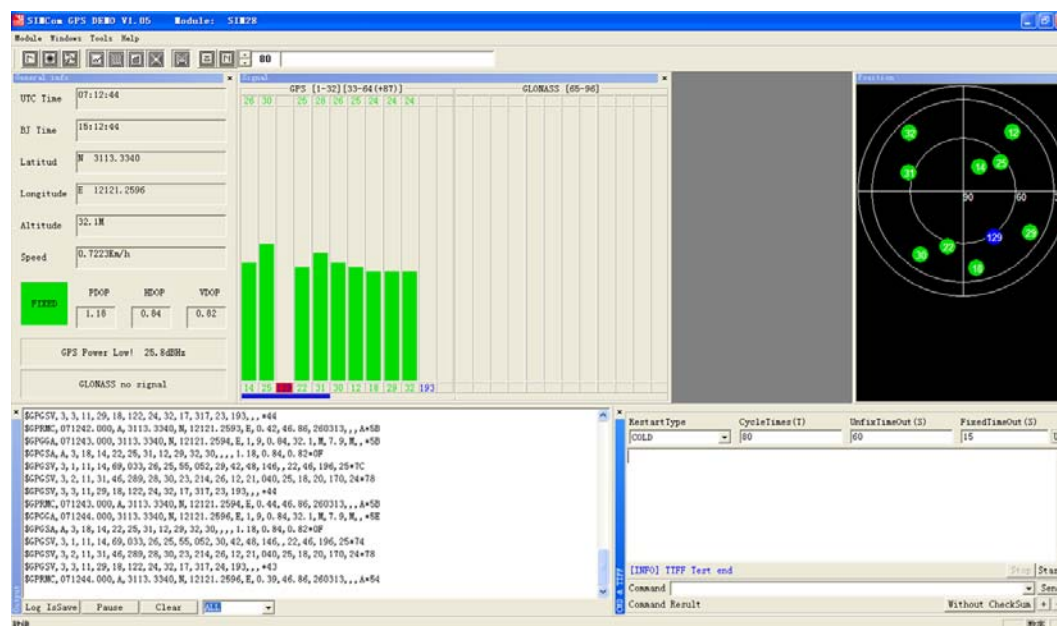**Figure 17: The Module is running**

After position has been fixed, the GPS information can be viewed in the "General info" window. In the "Signal" window, satellite signal has been tracked as showing, GPS on the left side and GLONASS on the right side. The NEMA message can be accessed on the bottom window, and it will be saved as txt file in the GPS testing tool directory, with start time as its name.

## 5.3 TTFF Test

The test configure should be set before each TTFF test. It is in the right bottom of the tool interface.

The restart type (hot, warm or cold) could be selected in the drop down list of "Restart type". Fill in the next three blank ("Cycletimes" for the testing times, "Unfixtimeout" for the max time limit of each test and "Fixedtimeout" for the time waiting before next TTFF test) and press the start button.



**Figure 18: Setting TTFF testing configuration**

The result of each TTFF will be shown in the window, each TTFF shorter than the "UnfixTimeOut" is labeled as Pass.
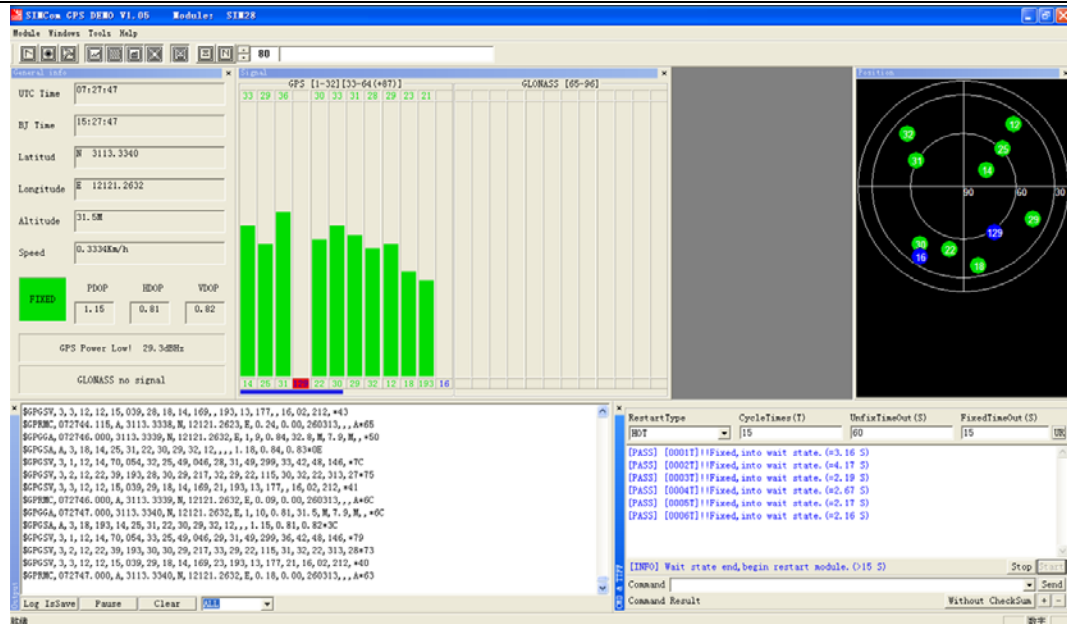
**Figure 19: TTFF Test Result**

## 5.4 PMTK Command Input

SIM28 module supports some kinds of modes that must be enabled by PMTK commands as mentioned in the HD document, GPS Demo provides an access to send PMTK command to module, as the following figure shows, customer can refer to *SIM28@SIM68R@SIM68V_NMEA Messages Specification_V1.01* to get the detailed information of PMTK list that SIM28 supported.
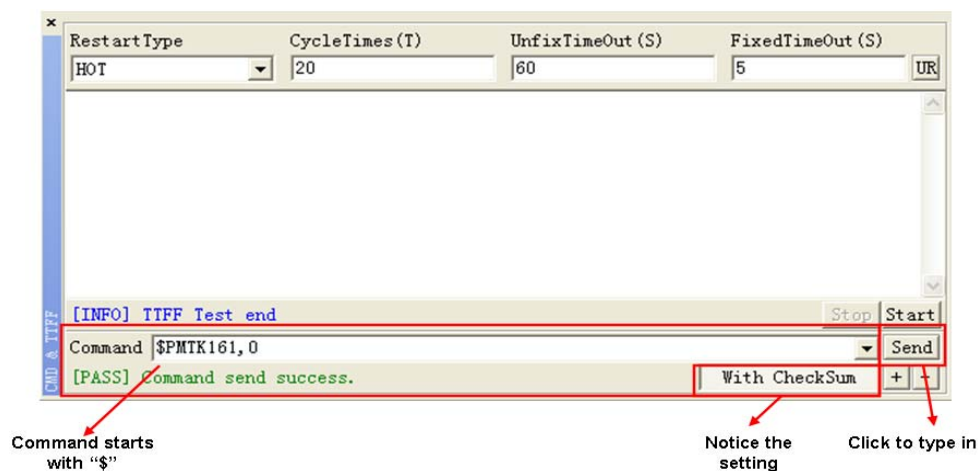


**Figure 20: Command window**

# 6. Firmware Update

To update the SIM28 module software, the following operations are needed:

1. Install the tool of "Power Flash".

2. Connect the SIM68-EVB to PC with USB cable.

3. Setting the jumper "N" and "O" as figure 1 shows.

4. Switch on S202 to select UART signal.

5. Switch on the power switch S301.

Step1. Customer should open the tool Power Flash, the following figure shows the interface of power flash.
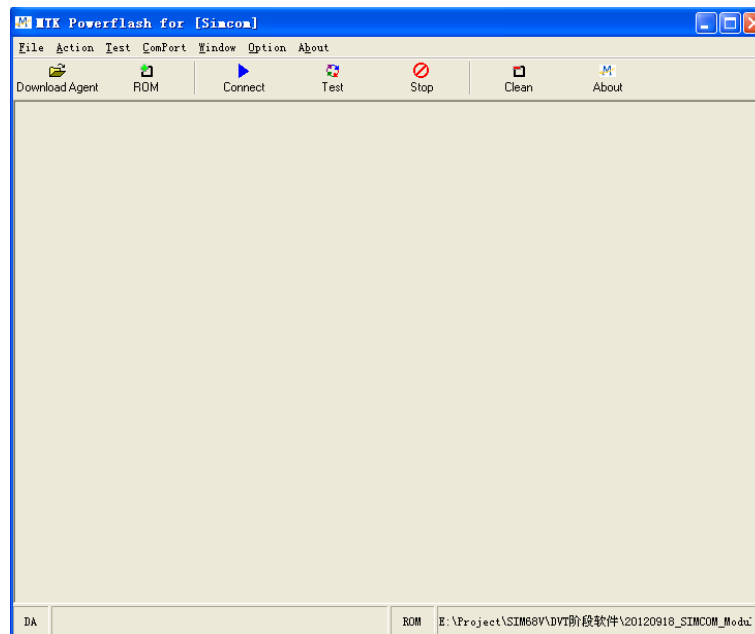


**Figure 21: power flash main UI**

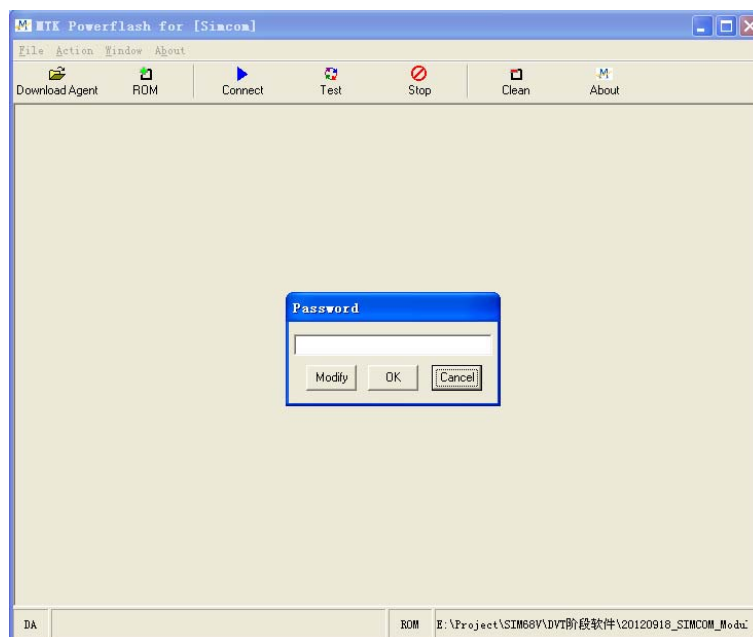Step 2.Using the combination key "CTRL+ALT+T" to set the port, the password is "123456".



**Figure 22: enter code**

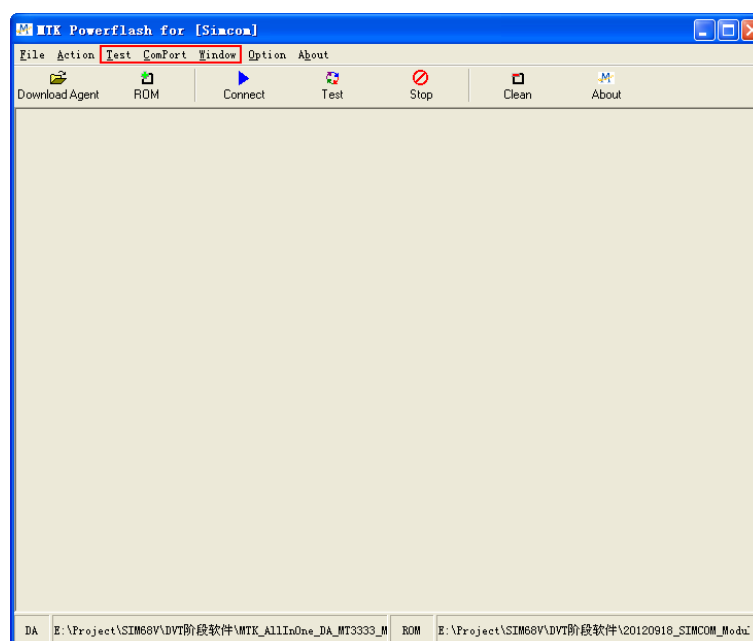Step 3.The window UI has changed.



**Figure 23: the main UI**

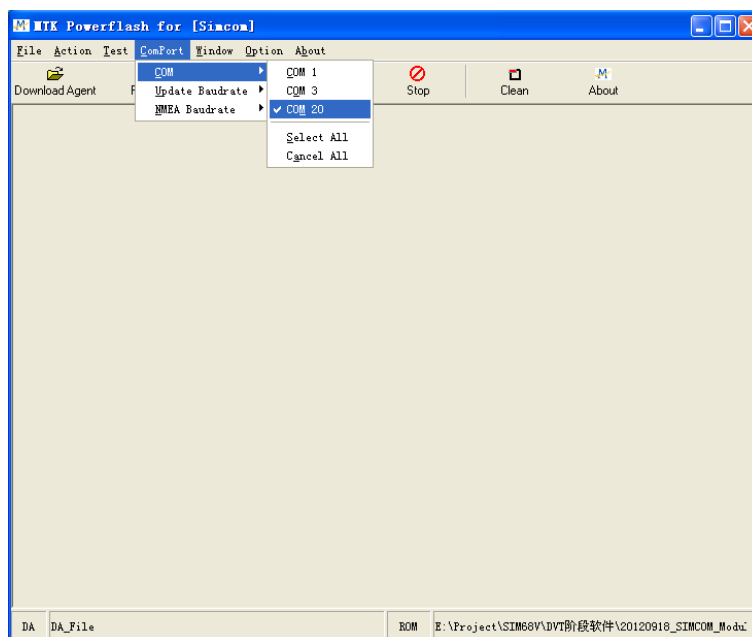Step 4.Setting the number of comport as following figure shows, here is the comport 3.



**Figure 24: setting port**
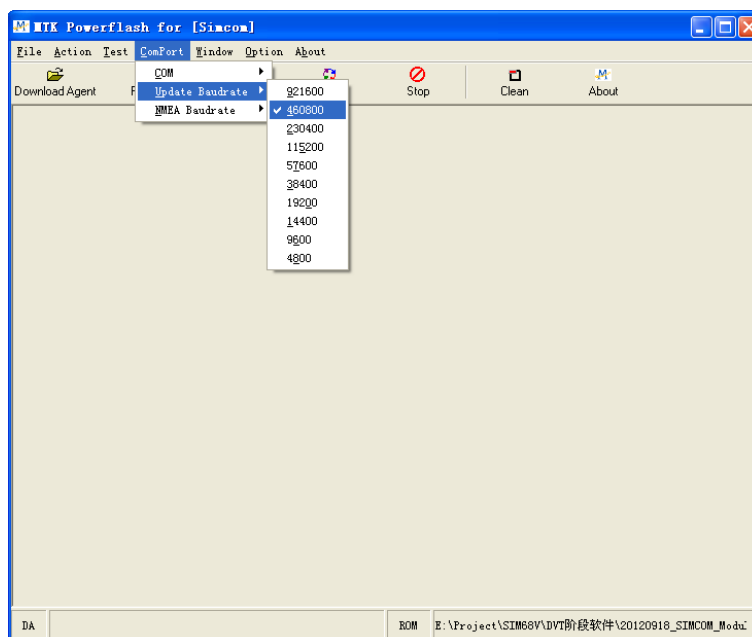
Step 5.Setting the update baudrate as 460800.



**Figure 25: setting baudrate**

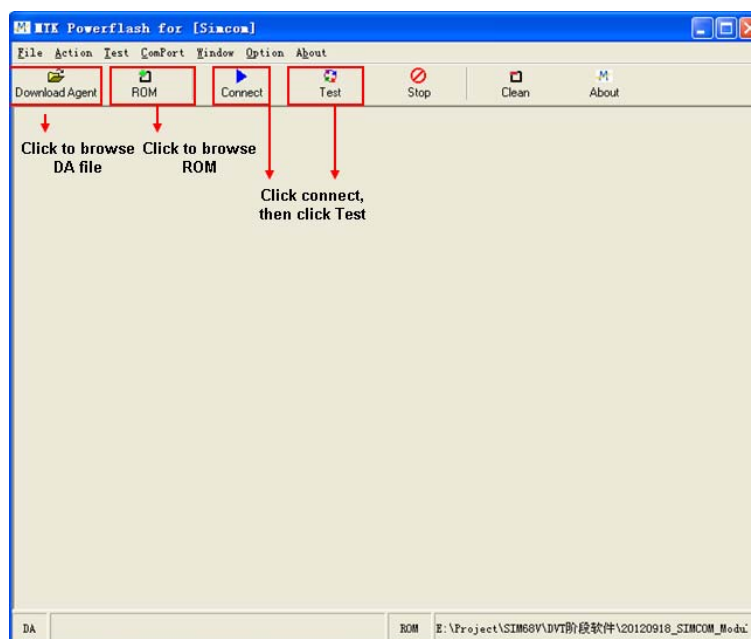Step 6.Load files to the power flash.



**Figure 26: detailed settings**

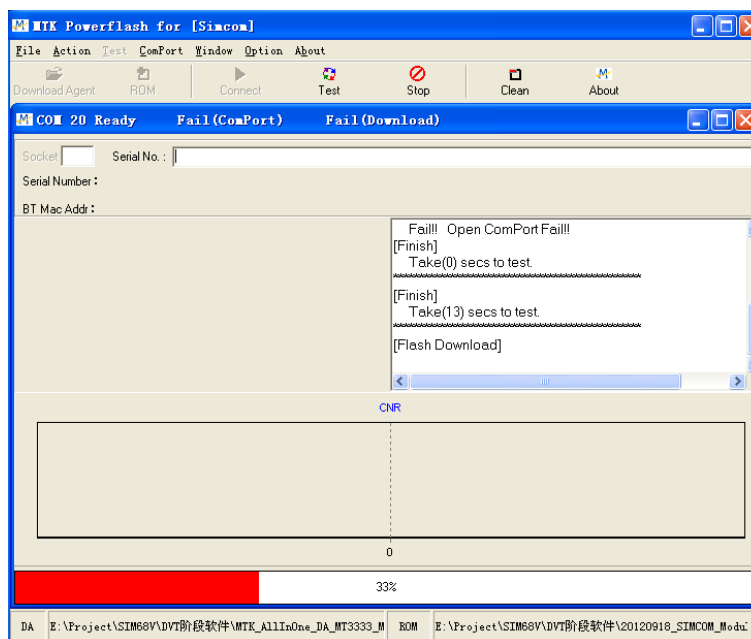Step 7.The DA file is in downloading proceeding.



**Figure 27: DA file in downloading proceeding**

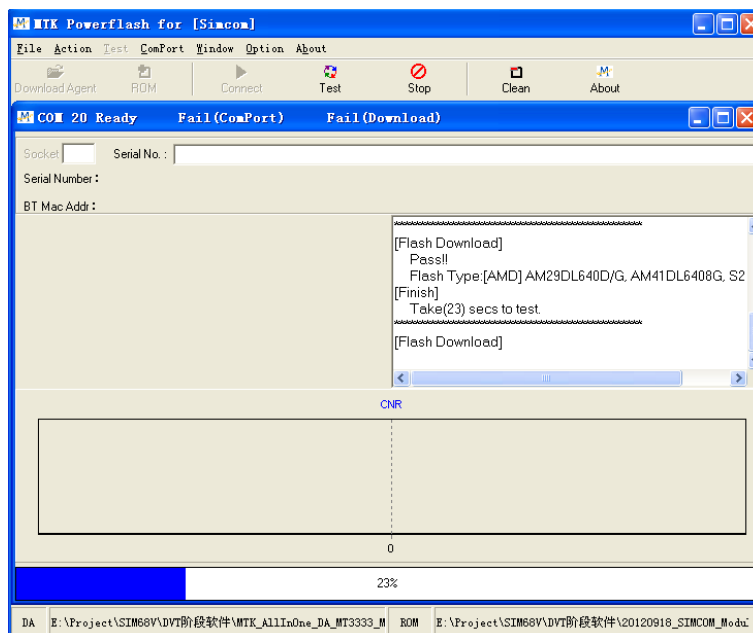Step 8.The ROM is in downloading proceeding.



**Figure 28: ROM file in downloading proceeding**

Step 9.Firmware update succeeds.



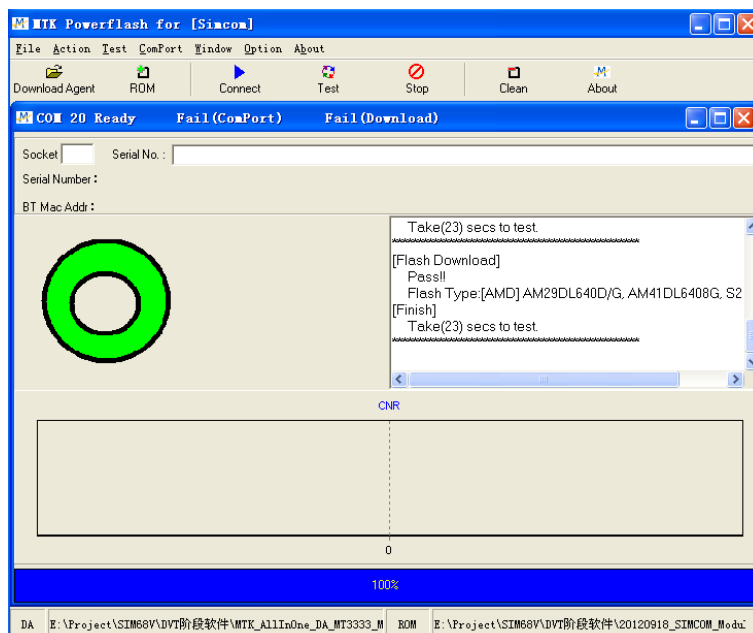**Figure 29: Firmware update succeeds**

# 7 Acronyms and Abbreviation

**Table 2: Acronyms and abbreviations**

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

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