User Manual

GlobalTop Technology Inc.

EV-Kit User Manual (MT3339 series)

Revision: A02

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Version History

Title:	EV-Kit User Manual (MT3339 series)		
Subtitle:	**GPS Module**		
Doc Type:	**Datasheet**		
Revision	**Date**	**Author**	**Description**
A00	2012-09-04	Yingjie	Preliminary
A01	2014-01-13	Delano	Modify web-side link for software tool of GPS Viewer. Add Gms-hpr module.
A02	2014-04-03	Dylan	Add Gmm-u1315 Module

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Caution

- Global position system (GPS) is the property of American Ministry of National Defense; they are fully responsible for the preciseness and maintenance of the system. Any changes they have implemented to the system in the future may enhance or deteriorate the effectiveness and performance of the received GPS data.

- The GPS signal might be cut-off or become seriously weakened if you operate EV-kit inside any infrastructures such as buildings, tunnels, or nearby any huge objects and/or obstruction. The kit has not malfunctioned and will operate properly again once it receives clear GPS signals (works best under open sky).

- To avoid damaging the intricate electronic components and circuitry, please do not place EV-Kit directly under the sun for long periods of time.

Packing Contents

- User Manual / Software Application Program
  - CP210X USB Bridge VCP driver
  - GPS Viewer tool with user manual
  - EV-Kit user manual

Note: This information will be delivered by E-mail. Please contact with your dealer.

- USB Cable
- EV-Kit with Main Board and GPS Module
- External Antenna

(Not included on models: FGPMMOPA6C/ Gms-hpr/ Gms-u6b)

1. Introduction

The main purpose of this EV-Kit is to simplify the evaluation process to GPS modules and to help testers operate our products with convenience and ease.

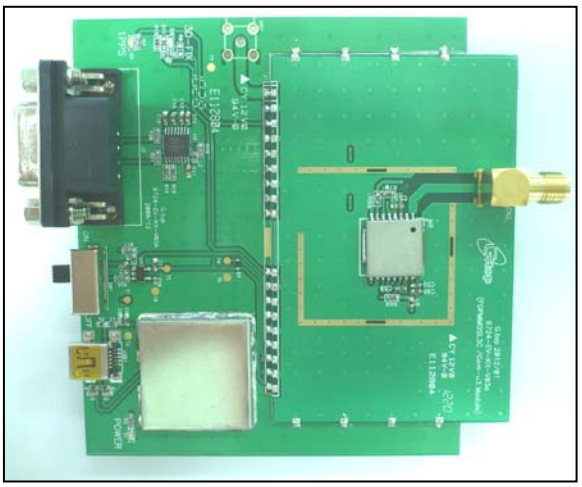
This device can communicate with computer devices via USB, and must be used in conjunction with GPS Viewer software application if you wish to record the all GPS module data such as satellites' status, time-to-first-fix (TTFF), date and time.

If you would to evaluate RTCM function, it will show you how to connect GPS simulator with the e EV-kit via RS232 (DB-9 Connector).

The EV-Kit was dividing to **4 series** base on the various modules listed below:

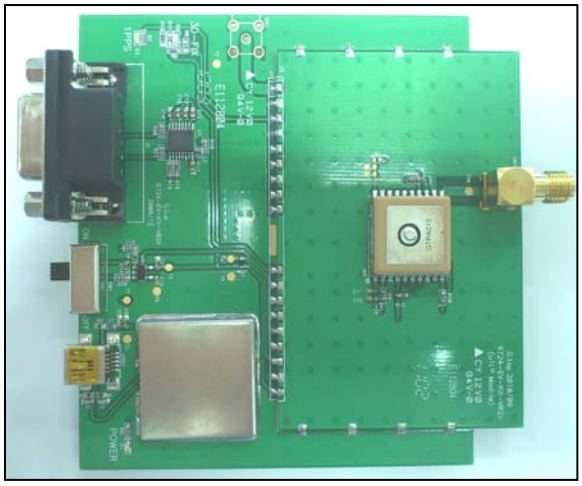
With External Antenna (series 1):

FGPMMOSL3C, Gmm-u2P, Gmm-u1315



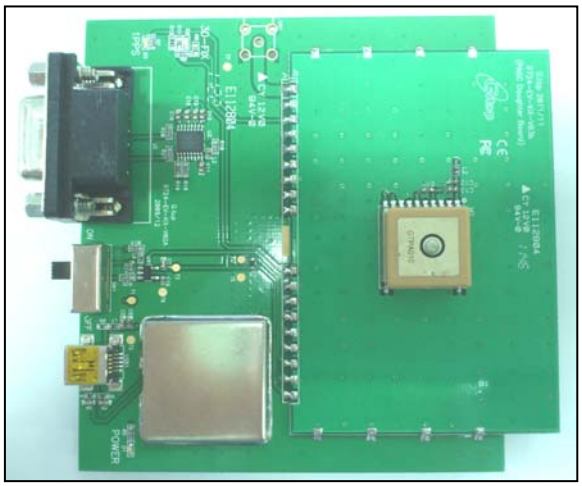
Built-in Switch Antenna input (series 2):

FGPMMOPA6H



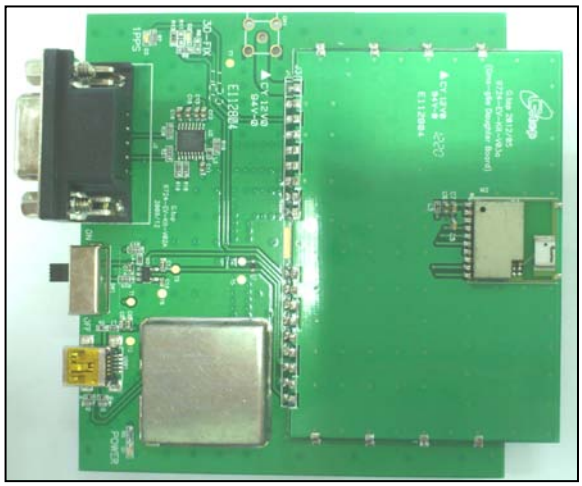
Built-in Patch Antenna (series 3):

FGPMMOPA6C, Gms-hpr



Built-in chip antenna (series 4):

Gms-u6b

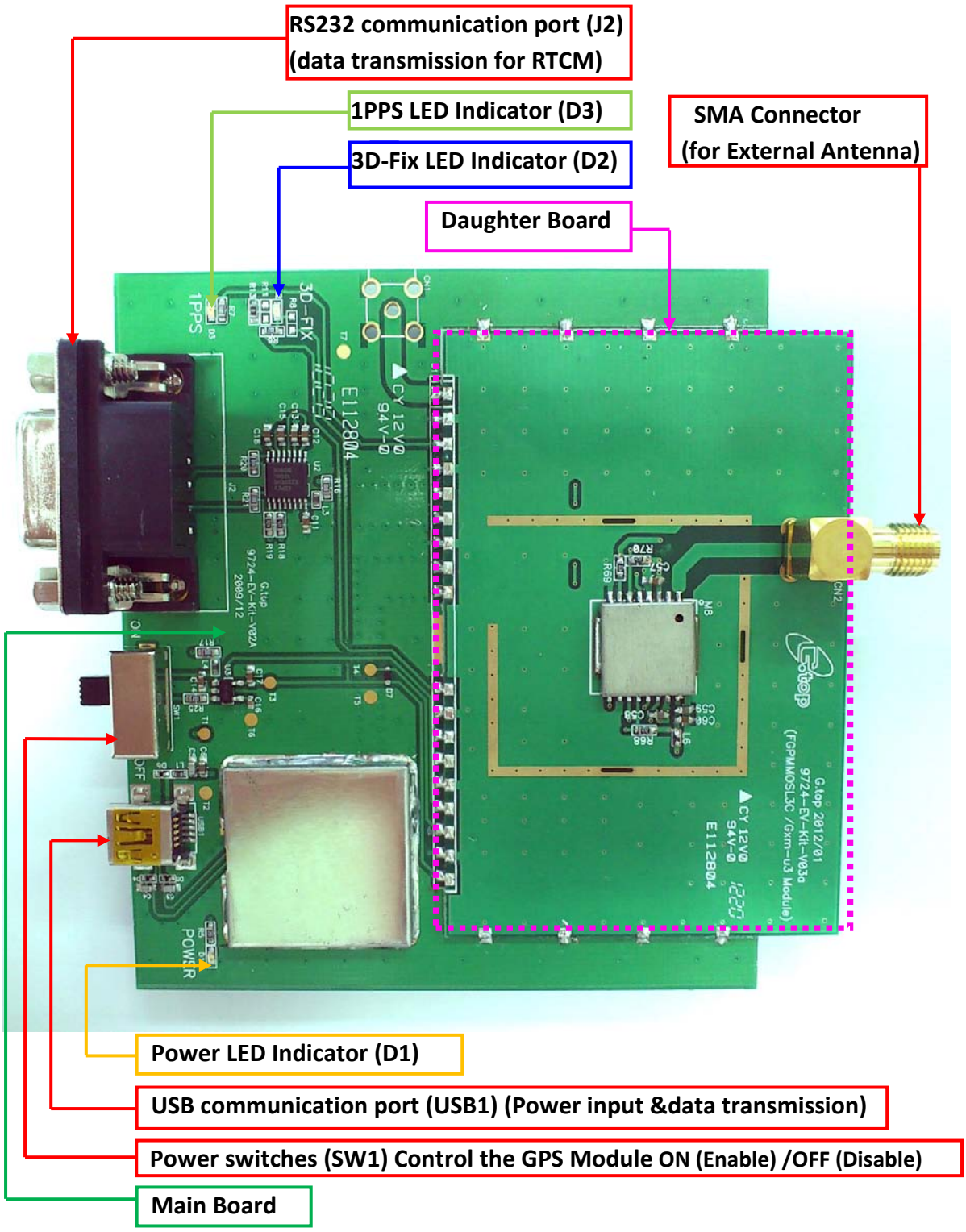


2. Function Description

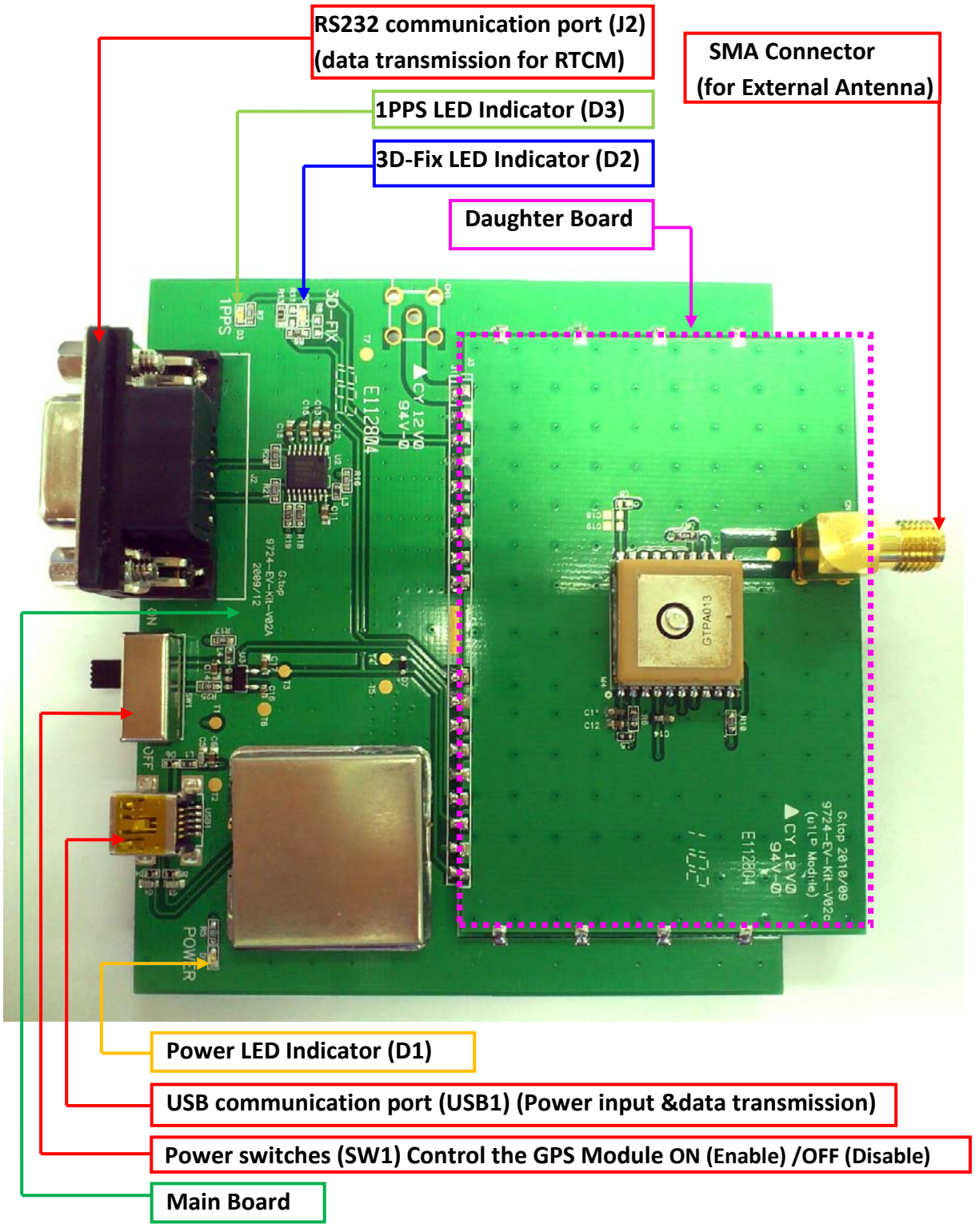
2.1 Hardware overview

The EV-Kit device description as the figure show as below:

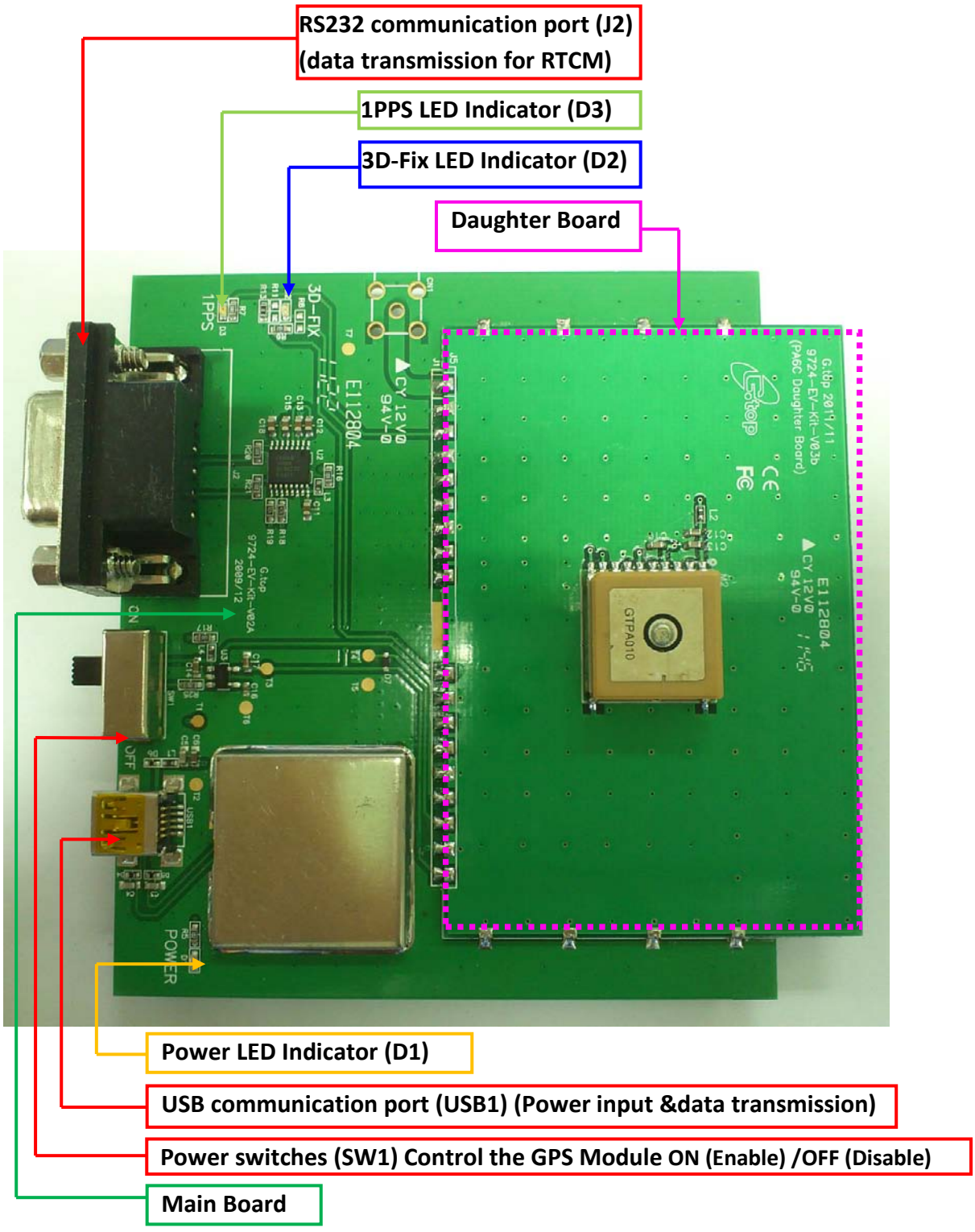
Compatible Models (Series 1): FGPMMOSL3C, Gmm-u2P, Gmm-u1315



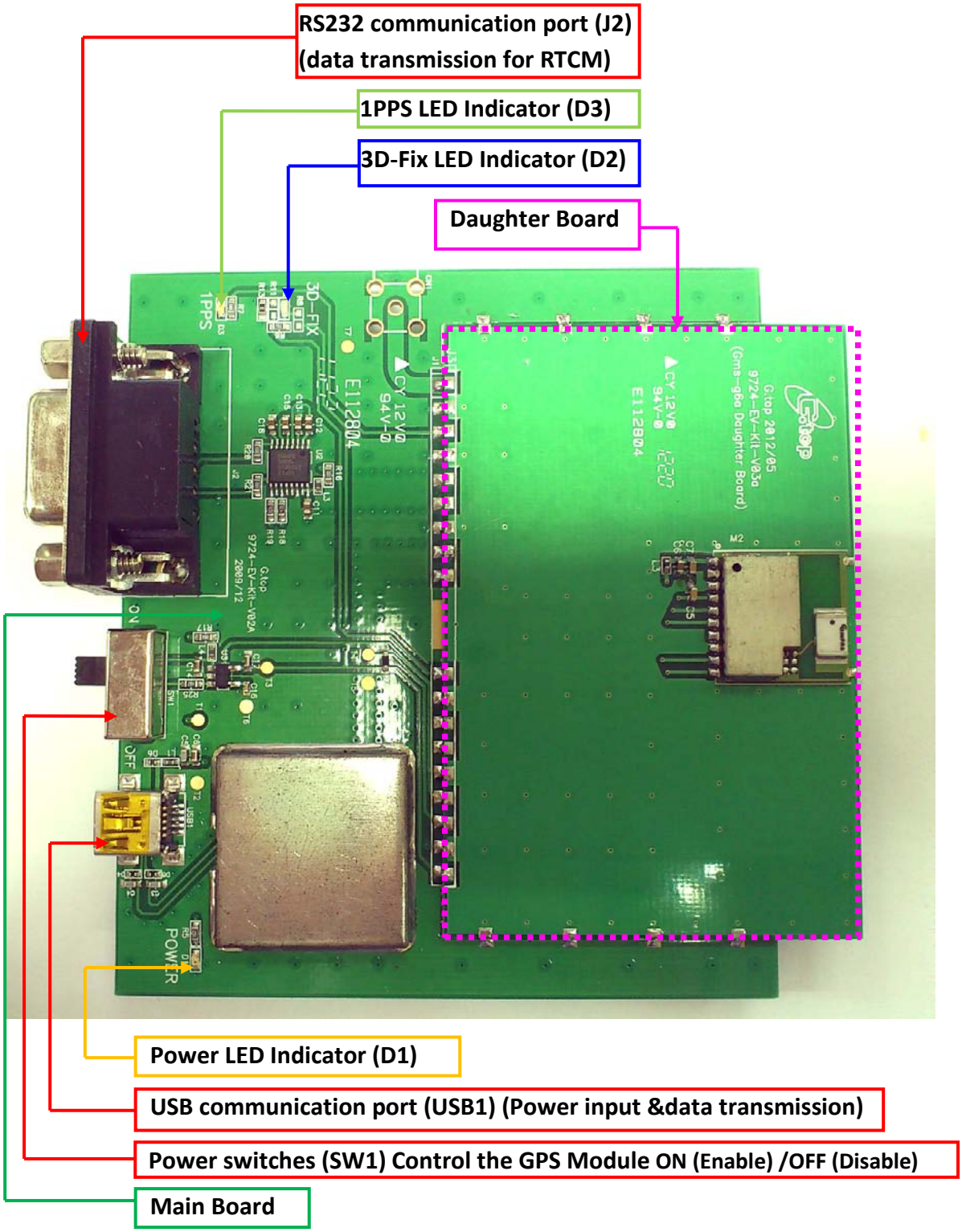
Compatible Model (Series 2): FGPMMOPA6H



Compatible Model (Series 3): FGPMMOPA6C, Gms-hpr



Compatible Model (series 4): Gms-u6b



3. Operating Instruction

3.1 Function Testing

➢ Preparation for the power and data communication

Compatible Model: All series

Step 1, connect USB port with PC：

- Connect the USB cable between PC and EV-Kit. The USB cable is used to power the EV-Kit and to transfer communication data with PC.
  Make sure Power LED Indicator (D1) light is lighted on.

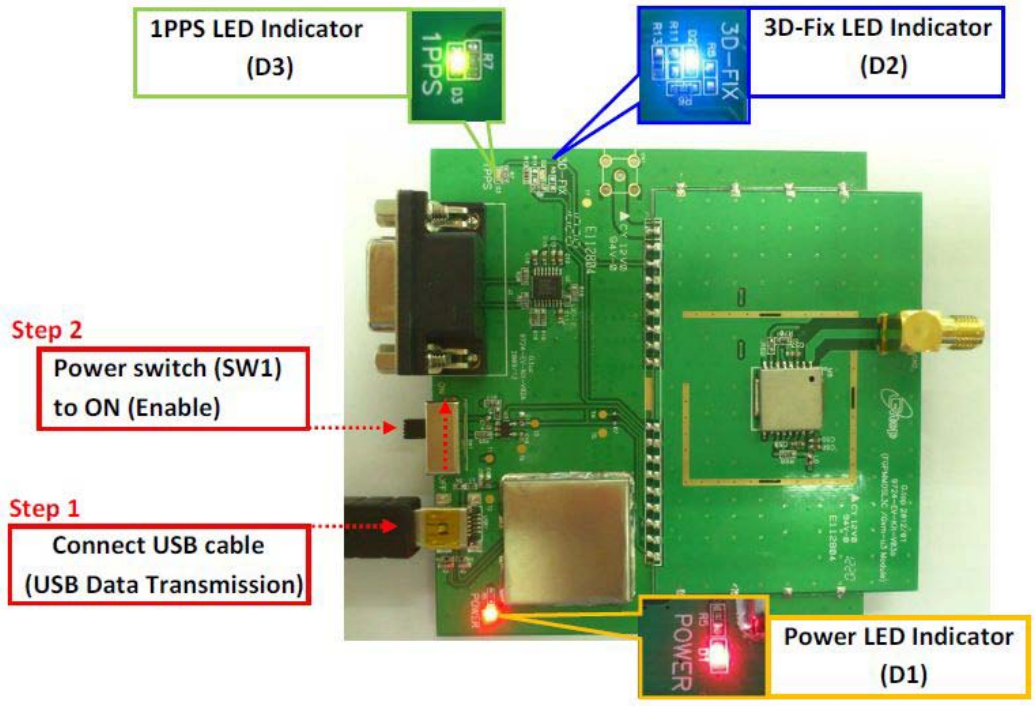
Step 2, Turn on the power for GPS module：

- The Switch turns on the enable of the LDO to supply the power for GPS Module. Please refer to figure shown in below.

- Once Power LED Indicator(D1) lights on and main board enable switch(SW1) on, you can find the initial state:
  3D Fix LED Indicator (D2) blue is blinking.
  1PPS LED Indicator (D3) green is off.

- Once the module getting FIX the
  3D Fix LED Indicator (D2) blue is off.
  1PPS LED Indicator (D3) green is blinking.

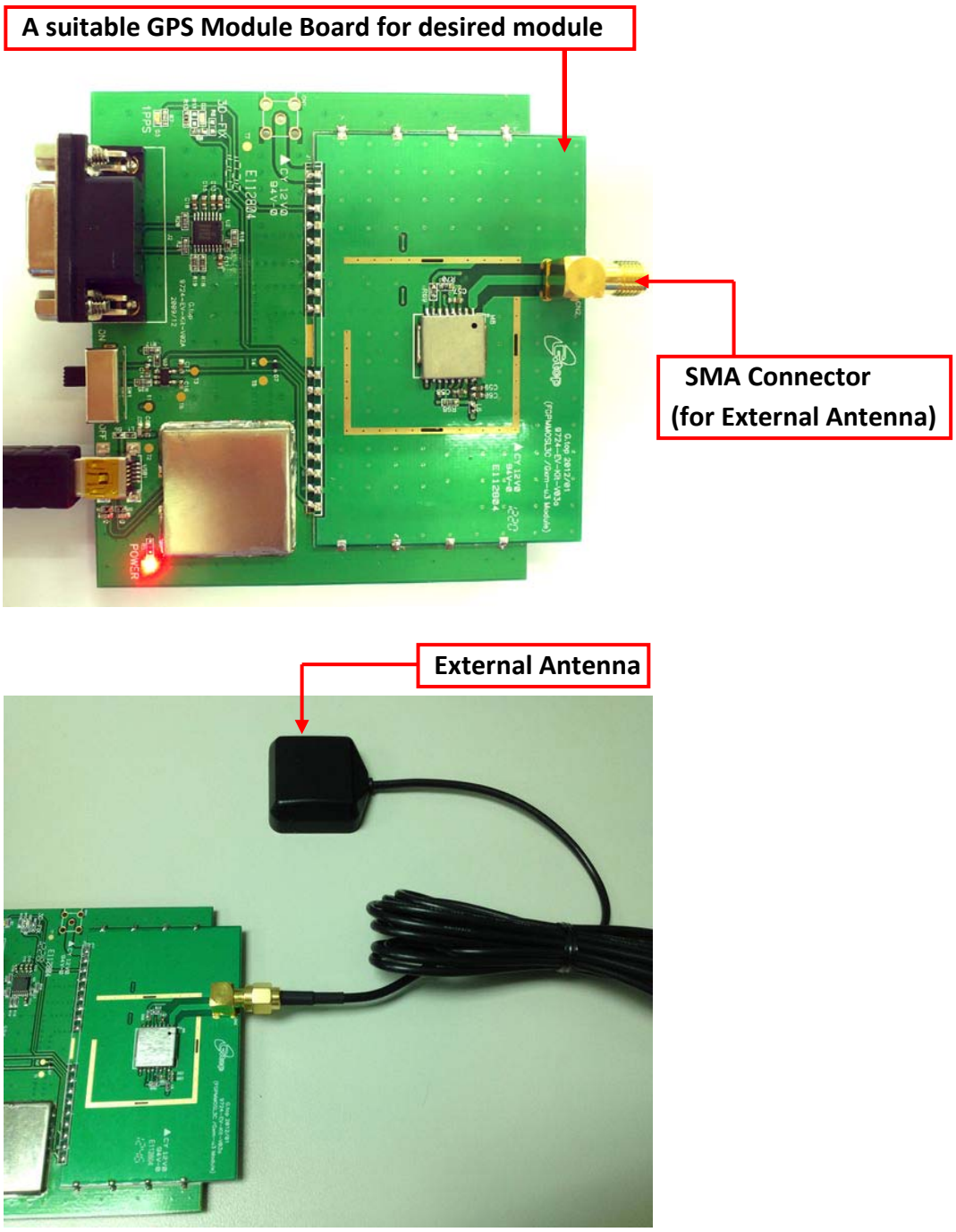
- Both 3D fix and 1PPS status can be re-defined, please contact GlobalTop customization service.



3.2 Application for the various RF reception

a. Using External Antenna with GPS Module as model below

Compatible Model (series1): FGPMMOSL3C, Gmm-u2P, Gmm-u1315

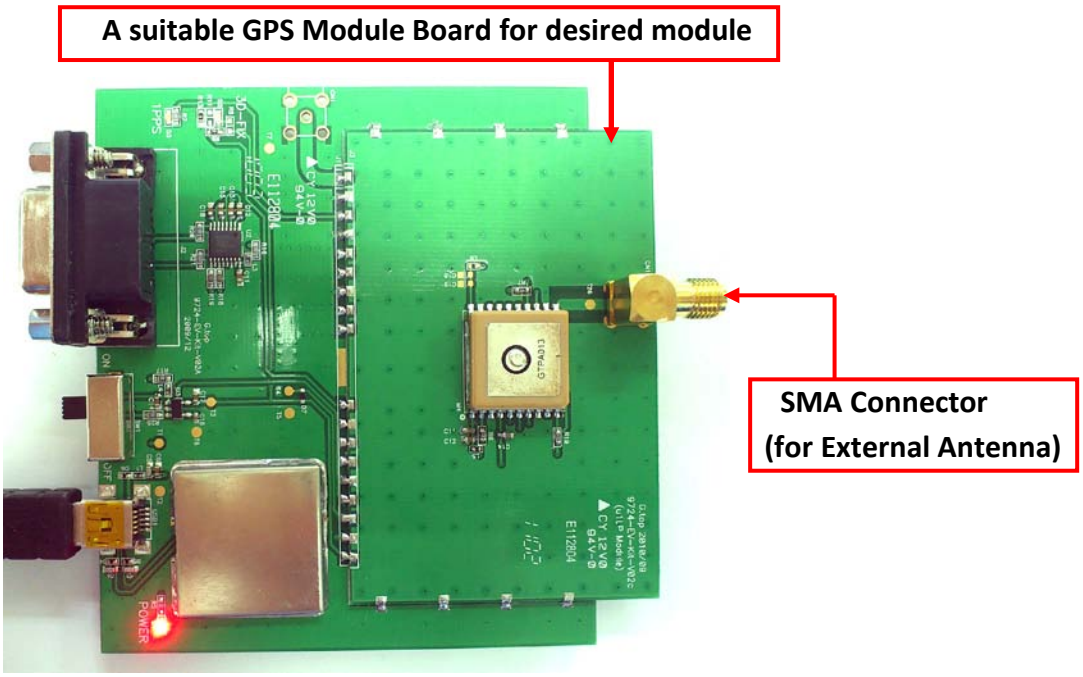


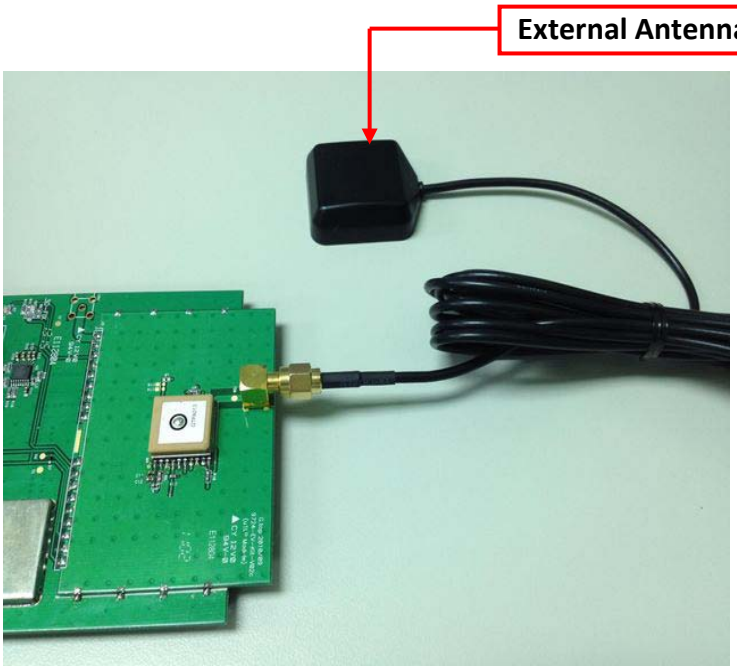
b. Connect External Antenna with GPS Module.

Compatible Model (series 2): FGPMMOPA6H

As soon as customer connects an External Antenna, the internal RF switch will wire the RF signal from External Antenna. If leave it NC, it will auto-switch to built-in Patch Antenna.

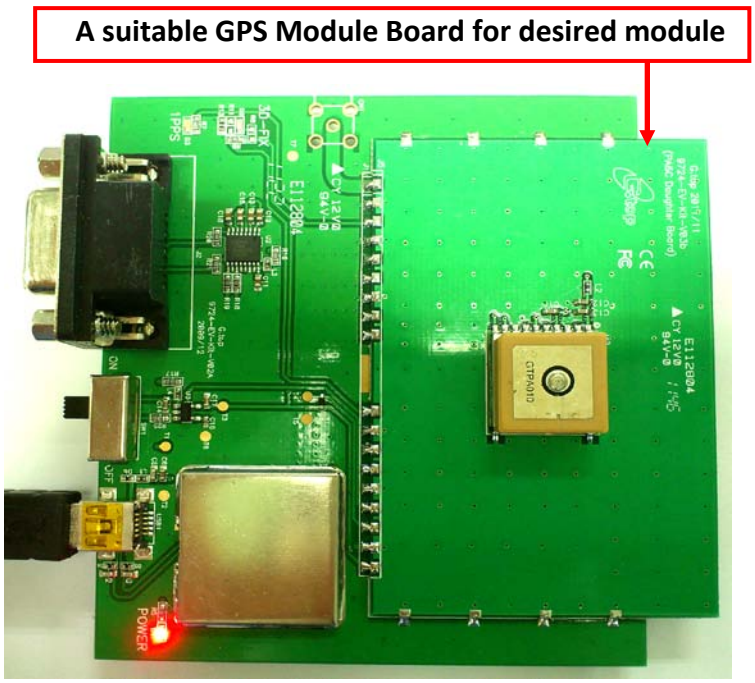
Please be noted, the External Antenna should consume current I>3mA that has GPS module detected the External Antenna was connected.





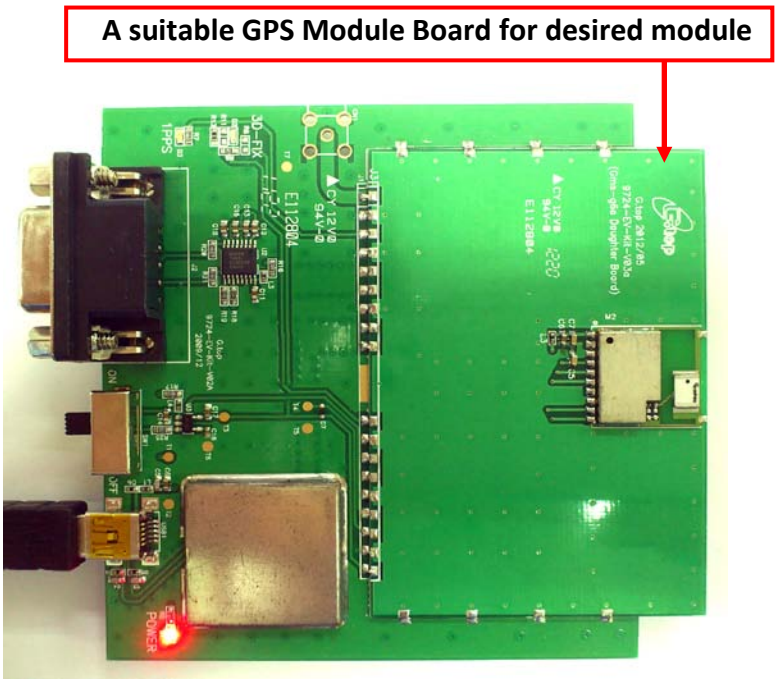
c. Connect Patch Antenna with GPS Module below.

Compatible Model (Series 3): FGPMMOPA6C, Gms-hpr



d. Using Chip Antenna with GPS Module as model below.

Compatible Model (Series 4): Gms-u6b



4. Software Usage

4.1 System requirement

PC：IBM, Pentium or above or compatible PC。

Operation system：Windows 7/XP/2003/Vista

USB driver: CP210xVCPInstaller.zip

GPS Viewer: GPS Viewer.exe

4.2 USB Driver and GPS Viewer

Please check whether you have the correct USB driver before you proceed to the next step. If incorrect driver is installed, your EV-Kit will not function!

- If you have purchased the EV-Kit for use with GPS Module, please make sure you have **[CP210xVCPInstaller.zip]** installation file in the package, and proceed to the next section**: [4.3 Install the USB Driver].**

- EV-kit USB Driver Download

From Silicon Labs Web-side (CP210x USB to UART Bridge VCP Drivers)

http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx

or From Gtop connect to Silicon Labs Web-side

http://www.gtop-tech.com/en/product/GNSS-EVB-Standalone-Module/GPS_Evaluation_Kit_23.html

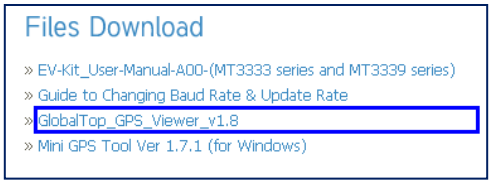
- GPS Viewer.exe Download

For standalone module evaluation kit:

http://www.gtop-tech.com/en/product/GNSS-EVB-Standalone-Module/GPS_Evaluation_Kit_23.html

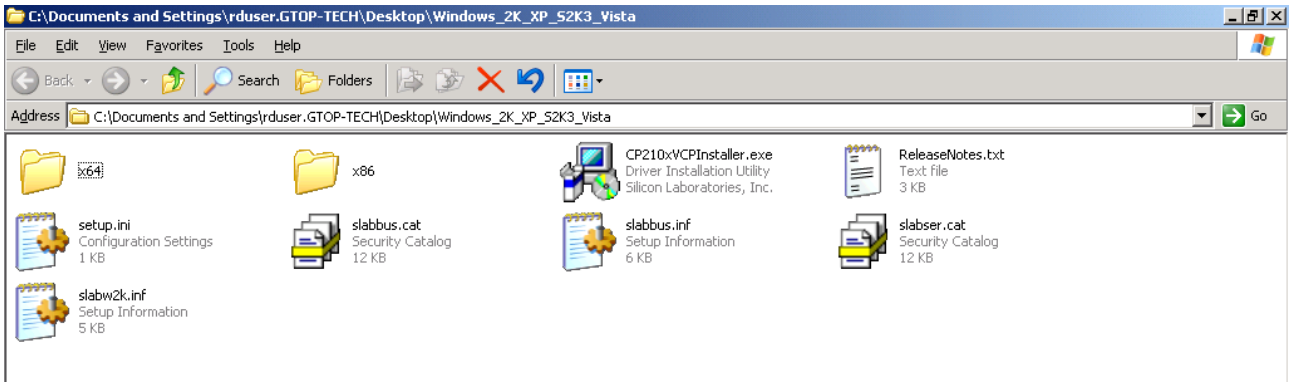
For antenna module evaluation kit:

http://www.gtop-tech.com/en/product/GNSS-EVB-Patch-Module/GPS_Evaluation_Kit_22.html

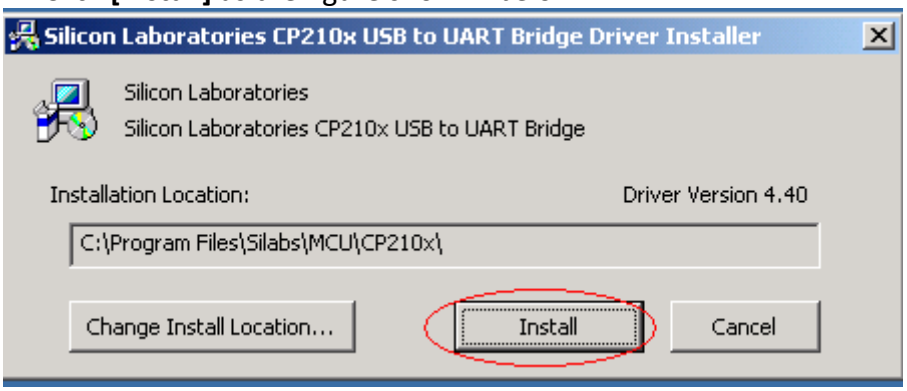


4.3 Install the USB Driver and Microsoft Framework

- Please extract the file **[CP210xVCPInstaller.zip]** and double click **[CP210xVCPInstaller.exe]** to begin driver installation as the figure show in below.

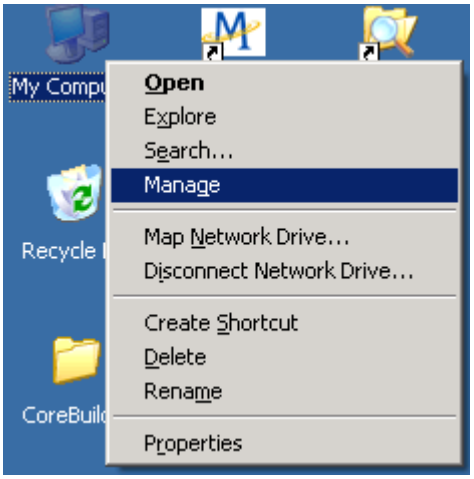


- Click **[Install]** as the figure show in below.

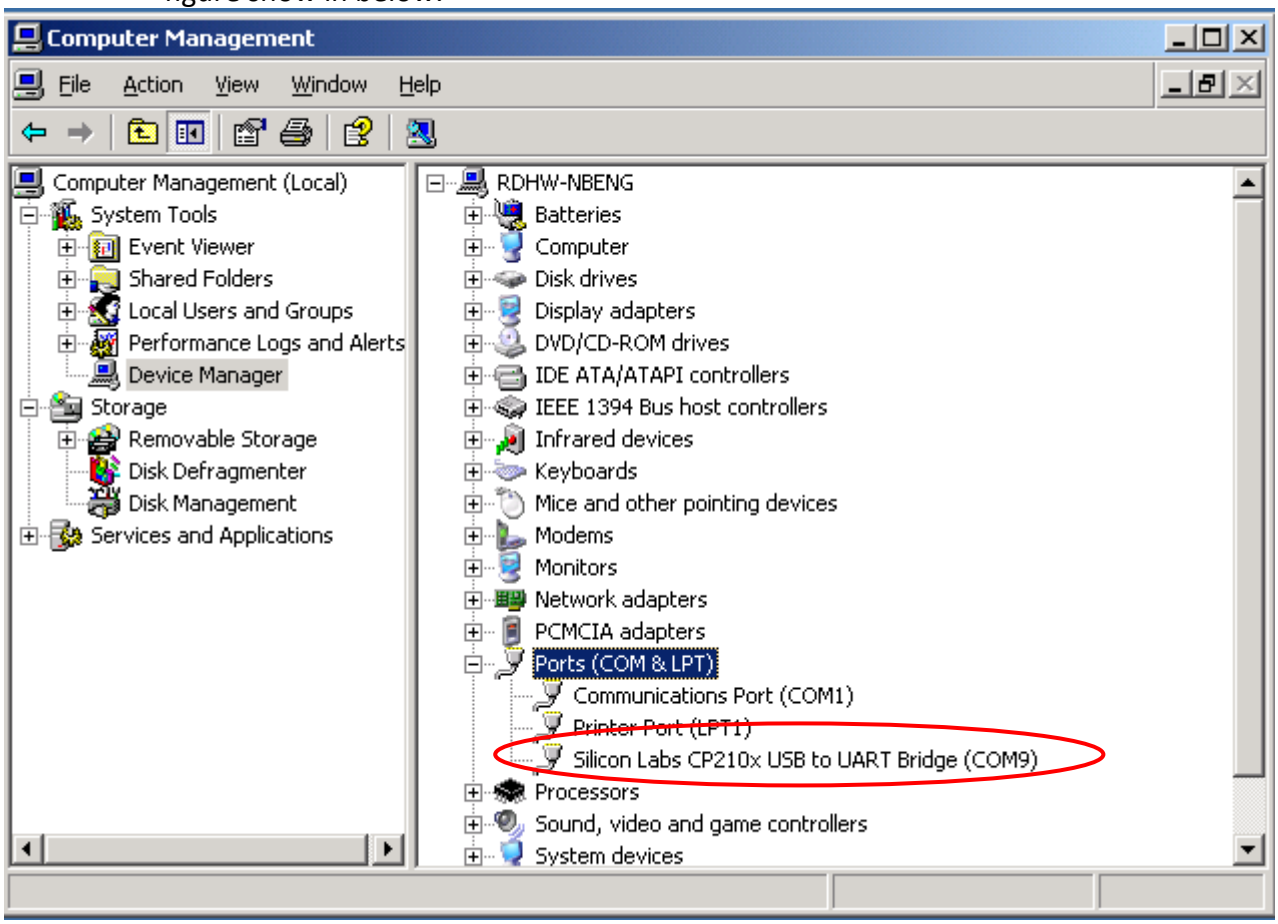


- After the installation is complete, you may need to restart your computer, please follow the instructions on screen to restart your computer.

After the power is on, right click **<My Computer>**, and select **<Manage>,** please refer to figure shown in below.



- Left click **<Device Manager>**, and select **<Ports (COM &LPT)>**. Check to see if a device named **<Silicon Labs CP210x USB to UART Bridge (COM#)>** is present. If yes, then EV-Kit is now setup and ready for use, please refer to the figure show in below.



COM9 in this example represents the virtual COM Port number generated for the USB connection to EV-Kit.

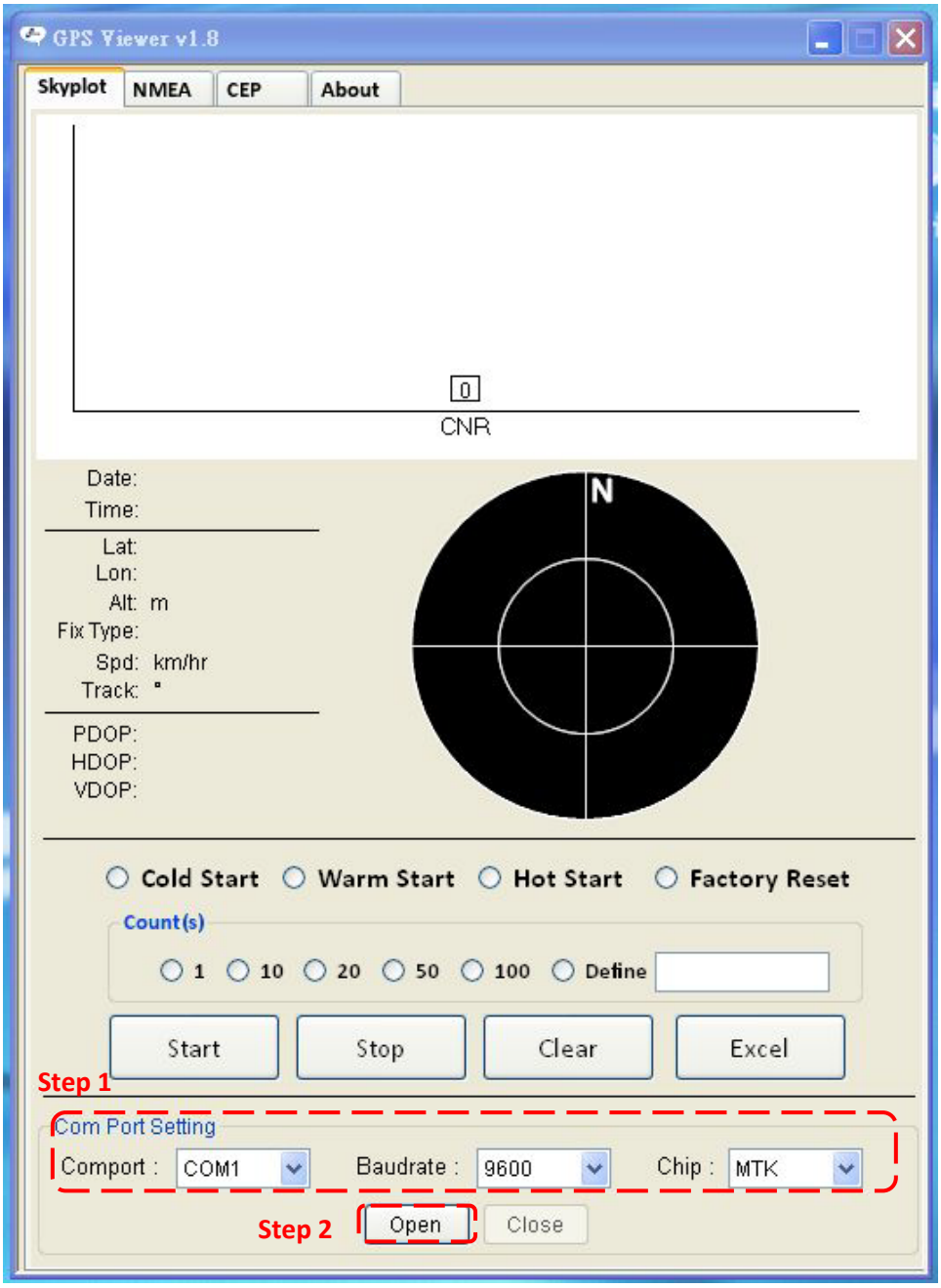
This generated COM Port value must match the COM Port value in the program setting for the application to establish proper communication with EV-Kit.

After complete installation, please go forward to [4.4 GPS Viewer Software usage].

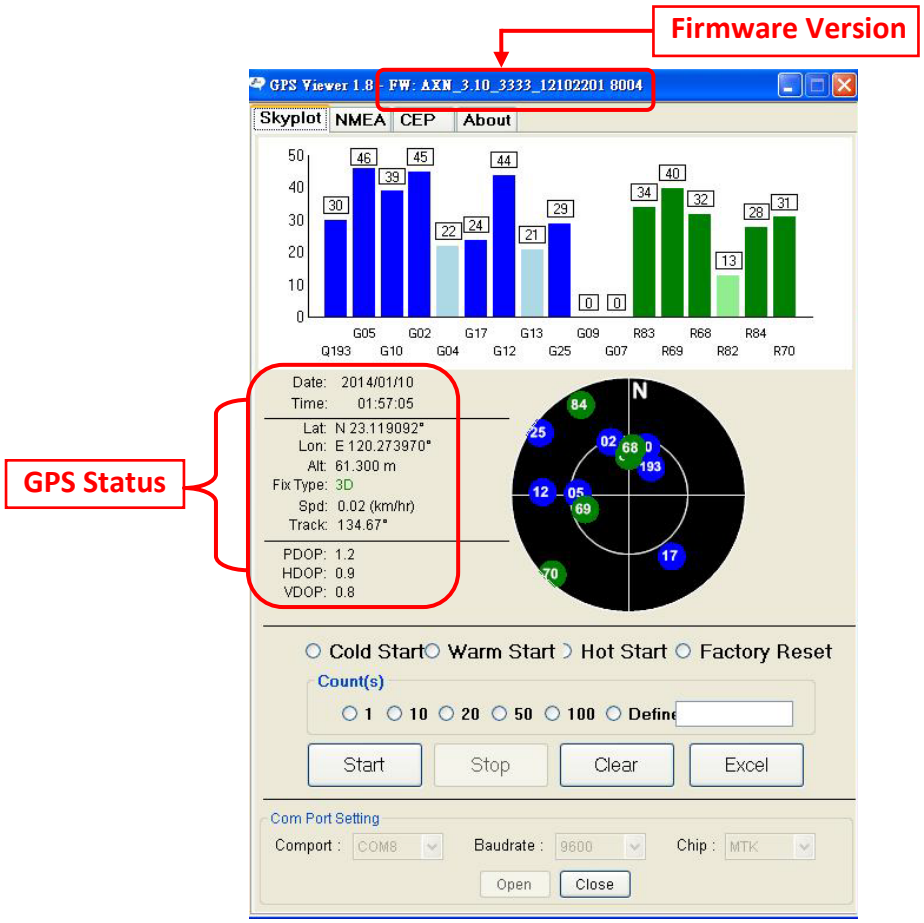
And need to install Microsoft Framework 3.5 version or latest version.

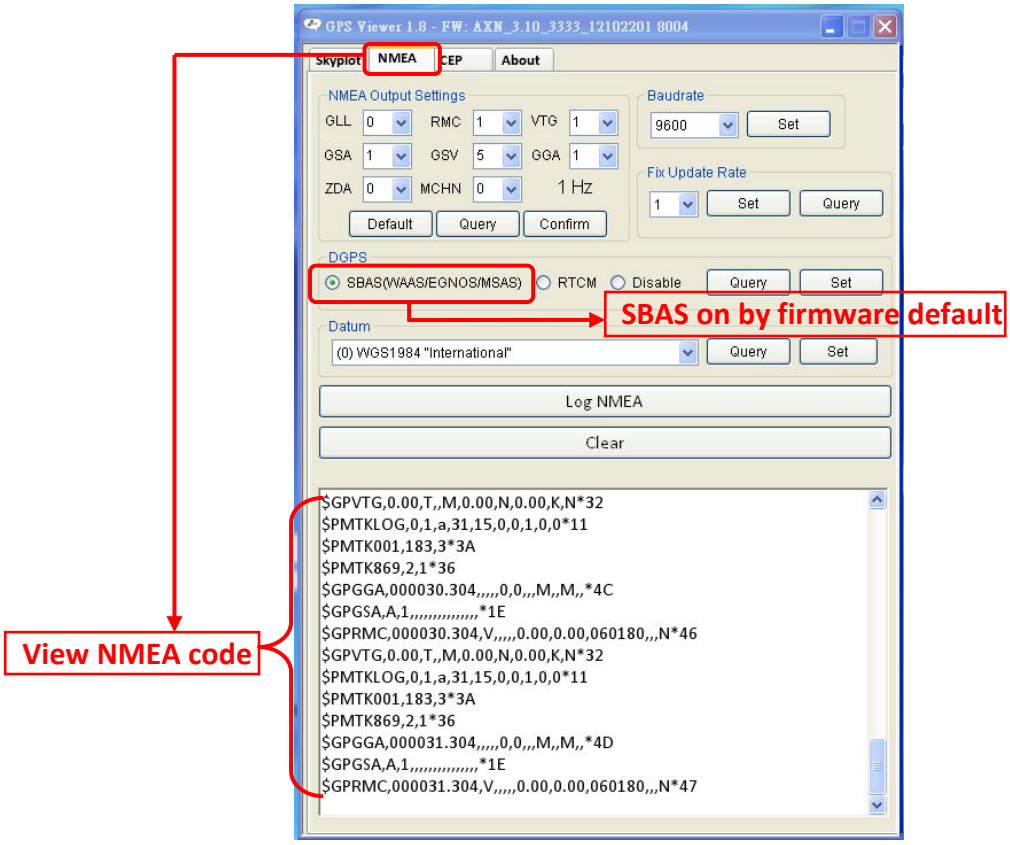
4.4 GPS Viewer Software usage

- **Open GPS Viewer software before PC need to install Microsoft Framework 3.5 version or latest version.**
- Double click **< GPS Viewer.exe>** to start the application, the main screen of the program shown in below.
- Select the appropriate <**COM Port**> < **Baud Rate** > and < **Chip** > value. Please refer to figure shown in below.



- Finally click **<Open>**. Please refer to figure shown in below.





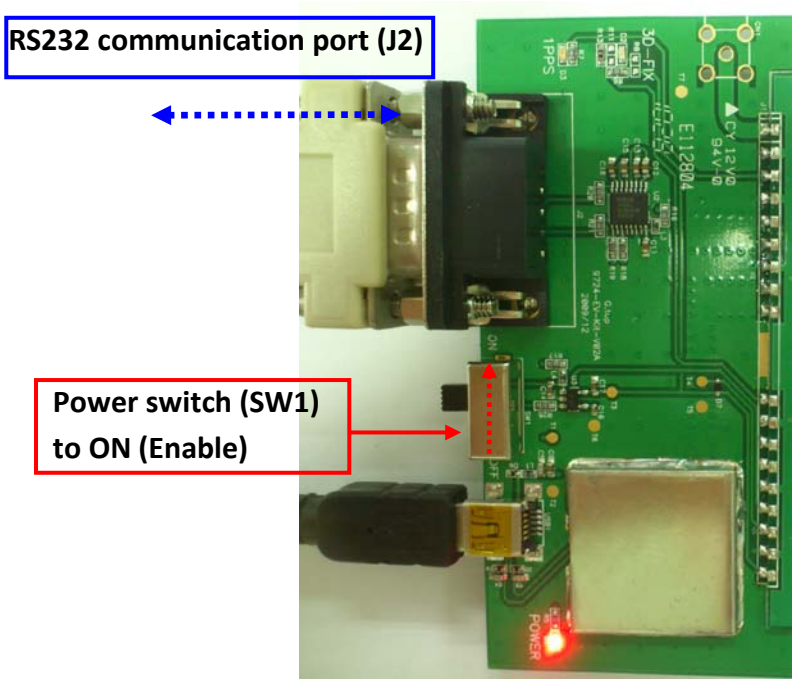
5. RTCM Usage

5.1 RTCM hardware setting

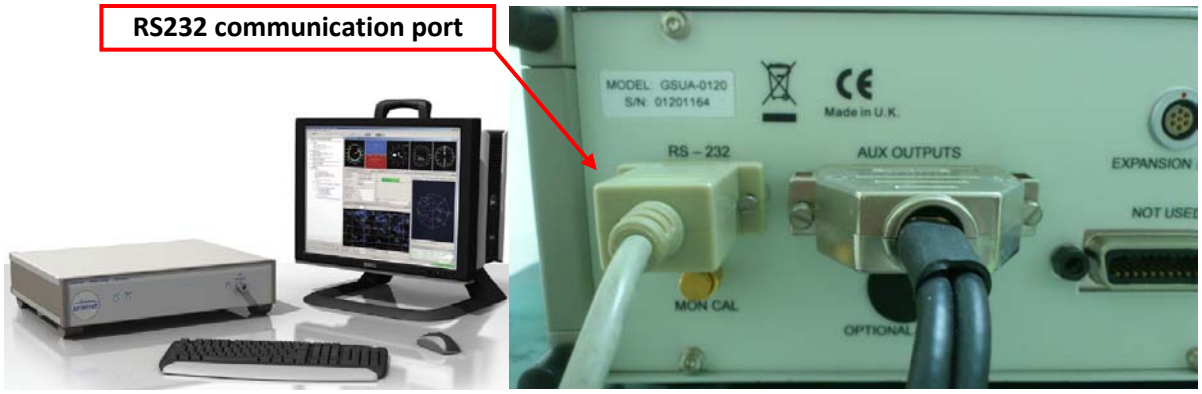
Compatible Model: FGPMMOSL3C, Gmm-u2P, Gmm-u1315, FGPMMOPA6H

➢ Getting the RTCM data via RS232port：

➢ Connect the RS232 cable between GPS simulator and EV-Kit. The RS232 cable is used to the EV-Kit RS232 port (J2) and to GPS simulator or other RTCM serve as the figure show in below.

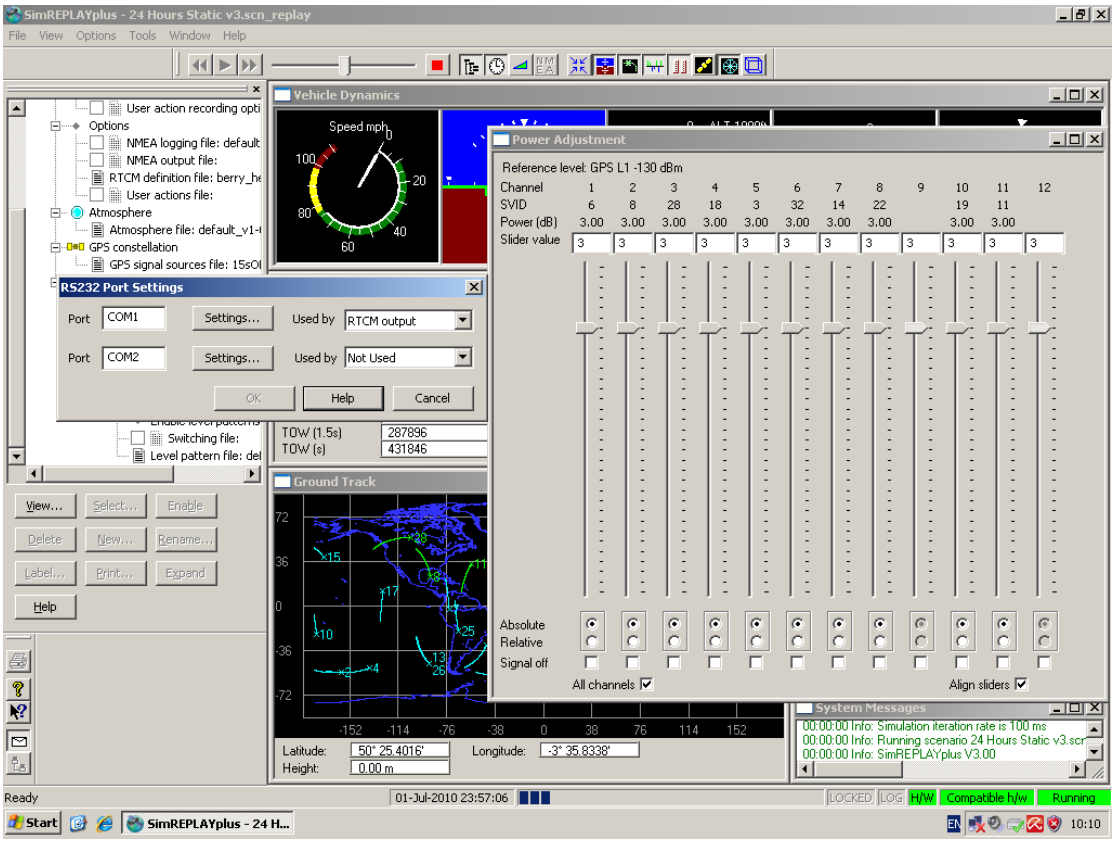


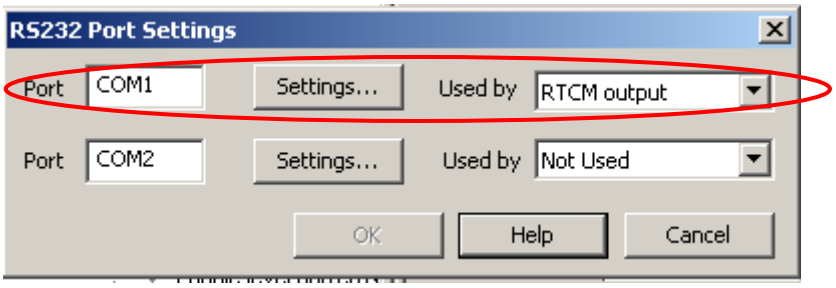
GPS Simulator Hardware set up as below:



5.2 RTCM software setting

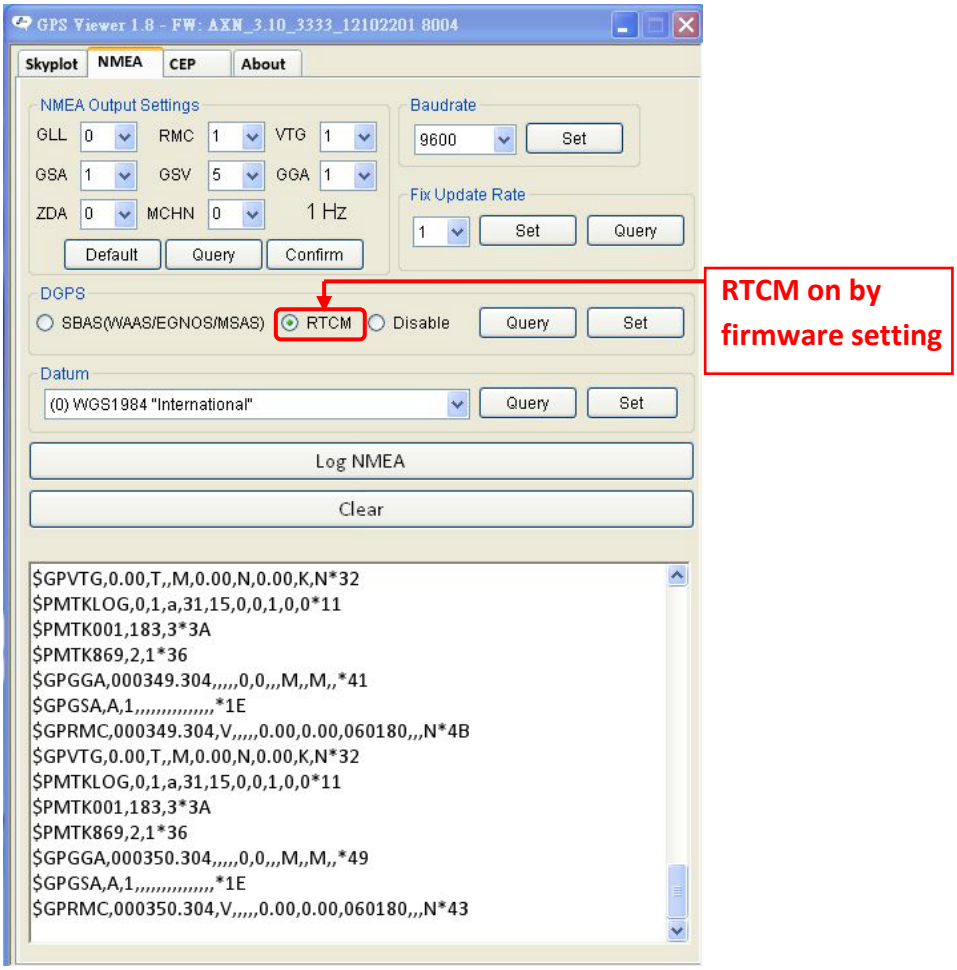
GPS Simulator software set up as below:





(If customer gets RTCM data from third party, please contact the third party for more details.)

- Please execute GPS Viewer Software to check RTCM function of GPS Module if enable.
- GlobalTop GPS module has default setting RTCM disable If RTCM enable need, please check firmware feasibility or contact GlobalTop.



- Please check RTCM function enable by NMEA output sentences as below.

$GPRMC,064951.000,A,2307.1256,N,12016.4438,E,0.03,165.48,260406,3.05,W,D*2C

$GPVTG,165.48,T,,M,0.03,N,0.06,K,D*37

D = Differential mode(DGPS)

6. Trouble-shooting

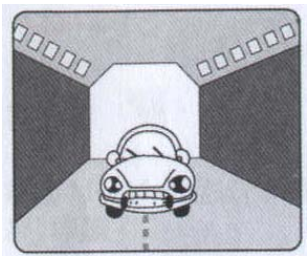
6.1 Problem with Setup

Problem	Possible Cause	Trouble shooting
Cannot find GPS device	USB was not setup properly.	Check to see if EV-Kit was setup properly, and make sure that the device is receiving enough power through the USB cable (Red LED should light up continuously).
No NMEA data or GPS signals	(1) USB was not setup properly. (2) COM Port or Baud rate value is incorrect.	(1) Check to see if the USB connector to PC or EV-Kit is tightly connected. (2) Double check to see if the proper COM Port and Baud rate value was selected.
Poor GPS Signal Reception	(1) If it is used inside a vehicle, the anti-sunscreen film on the windshield may interfere and weaken the GPS signal reception. (2)When the vehicle is traveling through an area with dense overhead canopy: such as forest, buildings, open tunnels etc.	For both problems, please connect the external antenna to the EV-Kit, and place the antenna on the roof top to improve signal reception.

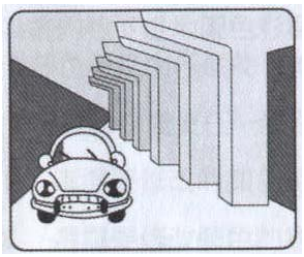
Note: If the above troubleshooting advice does not solve your problems, please send it back to us for testing and repair.

6.2 Concerning Poor GPS Signal

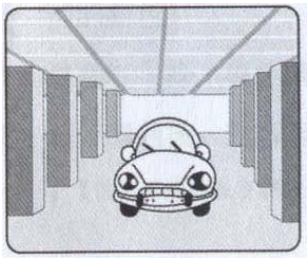
It is possible to have GPS signal reception difficulties under the following situations:



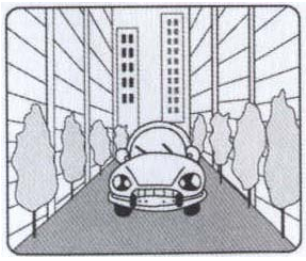
Inside a tunnel, where GPS signal is blocked.



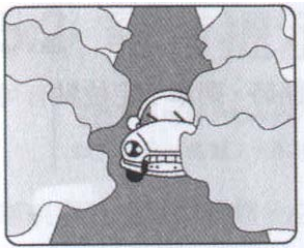
Underneath an infrastructure (like beneath a bridge), where GPS signal is blocked.



Inside a building, where GPS signal is blocked.



Next to tall buildings, where GPS signal is weakened.



Underneath forests or any other kinds of canopy where GPS signal is weakened.

- If you use EV-Kit inside a car with anti-sunlight windshield film, the GPS signal will be severely degraded, and may result in no GPS reception.
- GPS satellite is a property of United States Army. Sometimes they will tune-down the accuracy for unknown reasons. In such cases, the GPS position may not be as accurate.