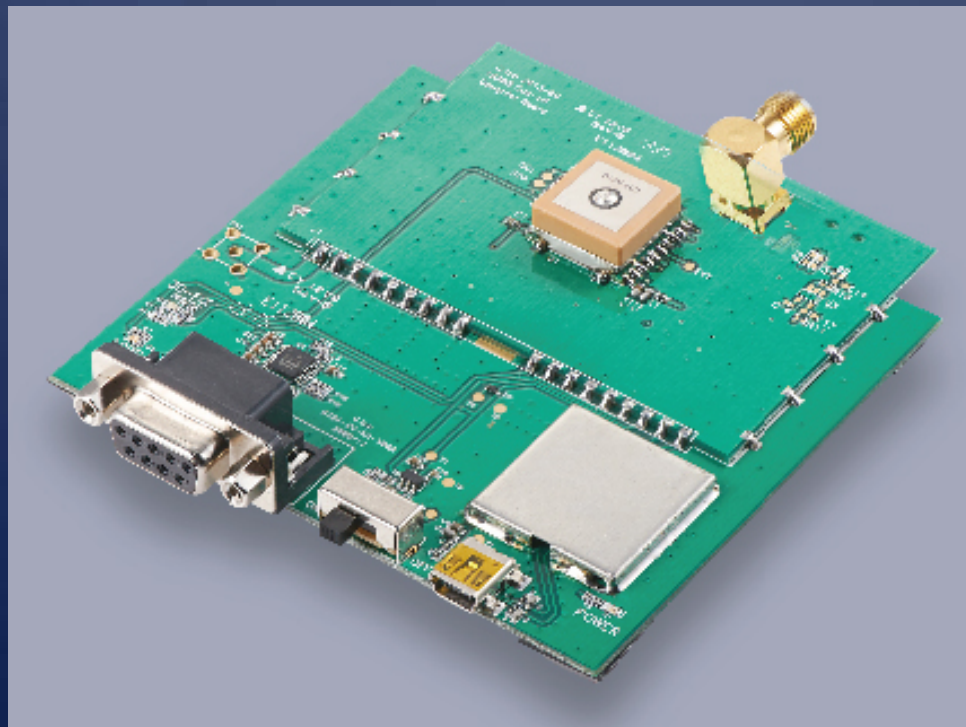




GlobalTop Technology Inc.

EV-Kit User Manual (MT3339 series)

Revision: A03



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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
A03	2016-11-02	Archie Lin	Modifying the sections 4.2 & 4.3 Logo changed to new version

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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: FGPMOPA6C/ 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.

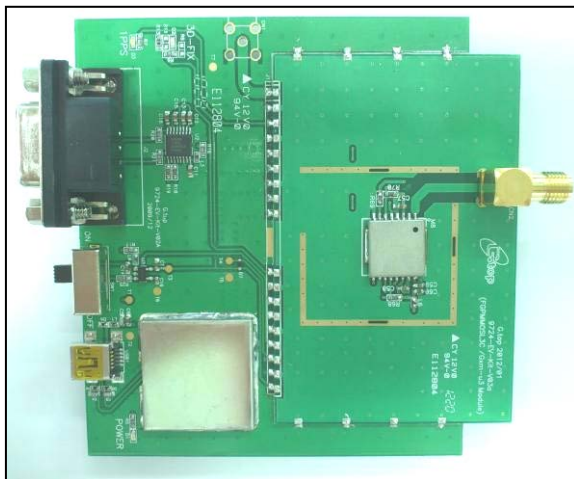
This device can communicate with computer devices via USB, and must be used in conjunction with GPS Viewer software application if you wish to record the all GPS module data such as satellites' status, time-to-first-fix (TTFF), date and time.

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:

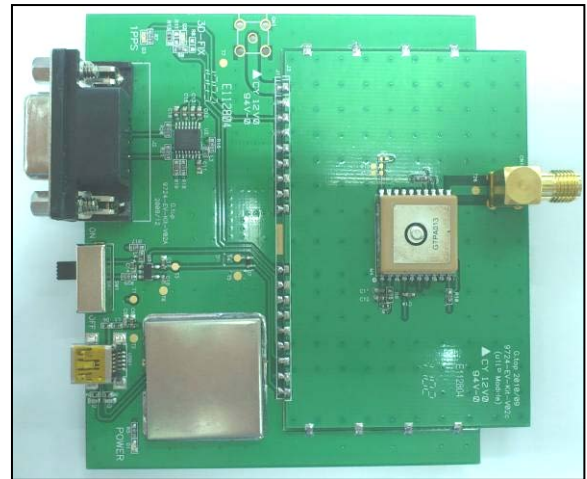
With External Antenna (series 1):

FGPMMOSL3C, Gmm-u2P, Gmm-u1315



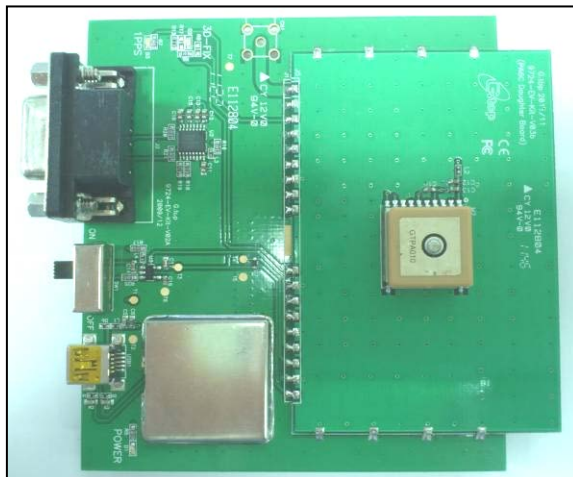
Built-in Switch Antenna input (series 2):

FGPMMOPA6H



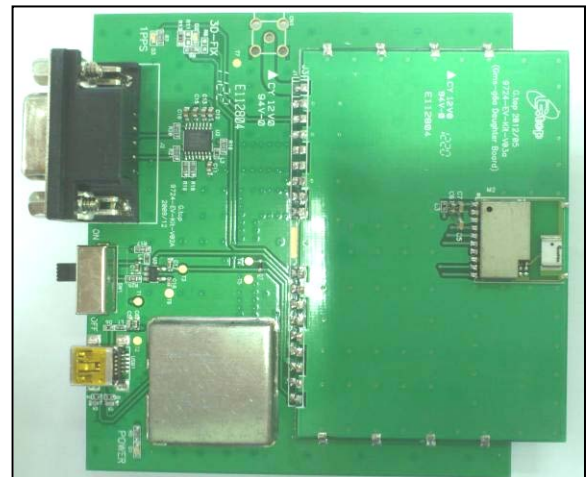
Built-in Patch Antenna (series 3):

FGPMMOPA6C, Gms-hpr



Built-in chip antenna (series 4):

Gms-u6b

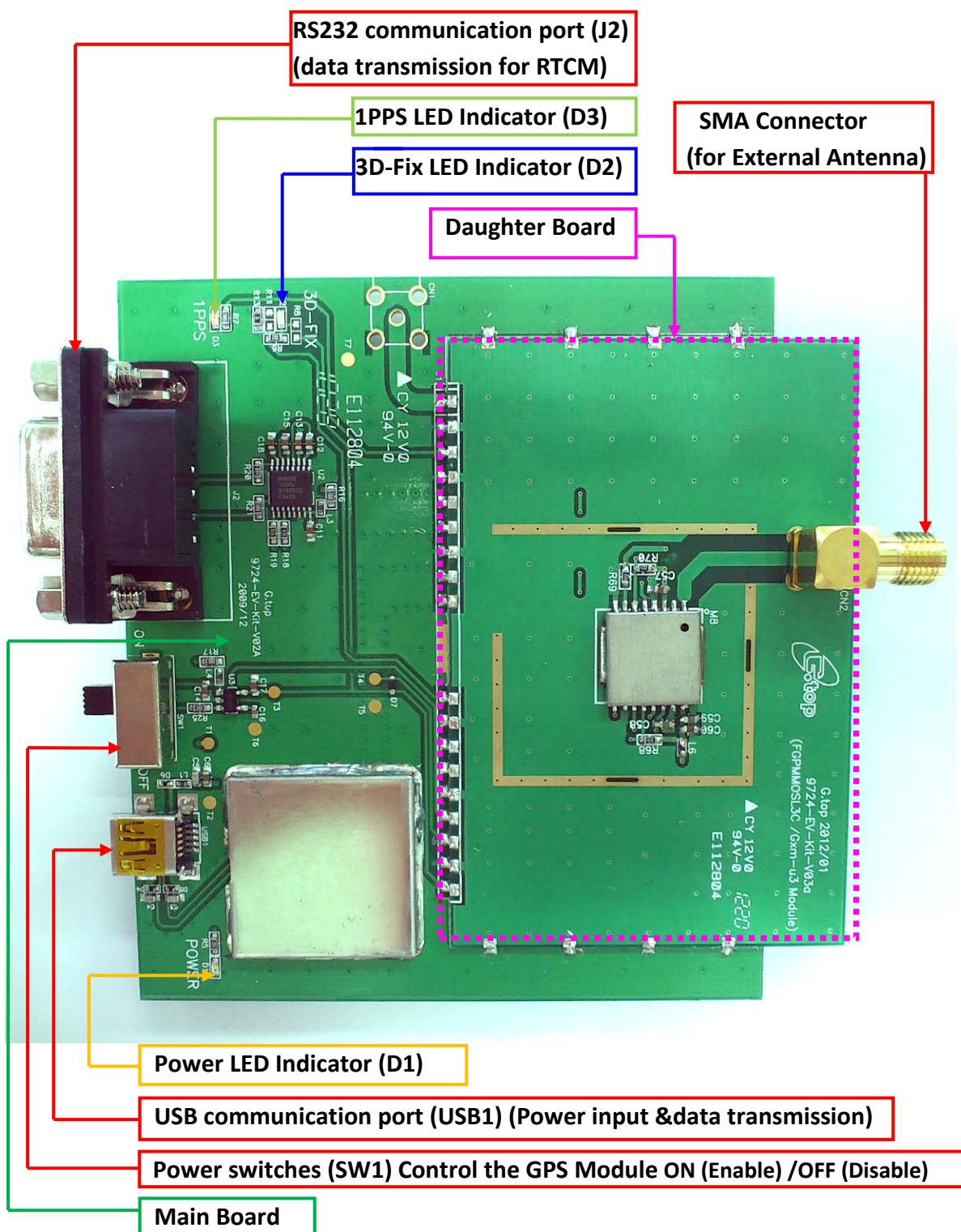


2. Function Description

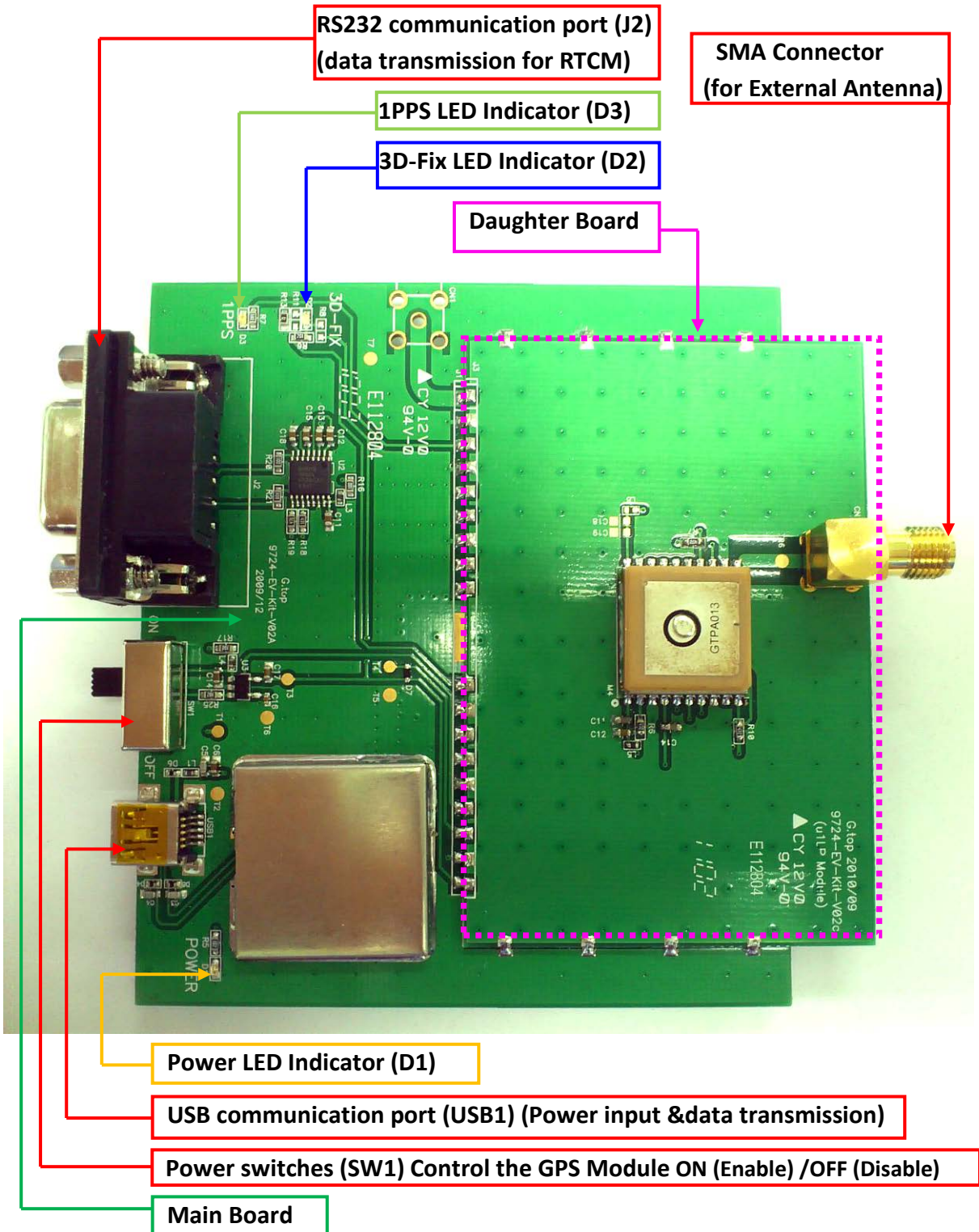
2.1 Hardware overview

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

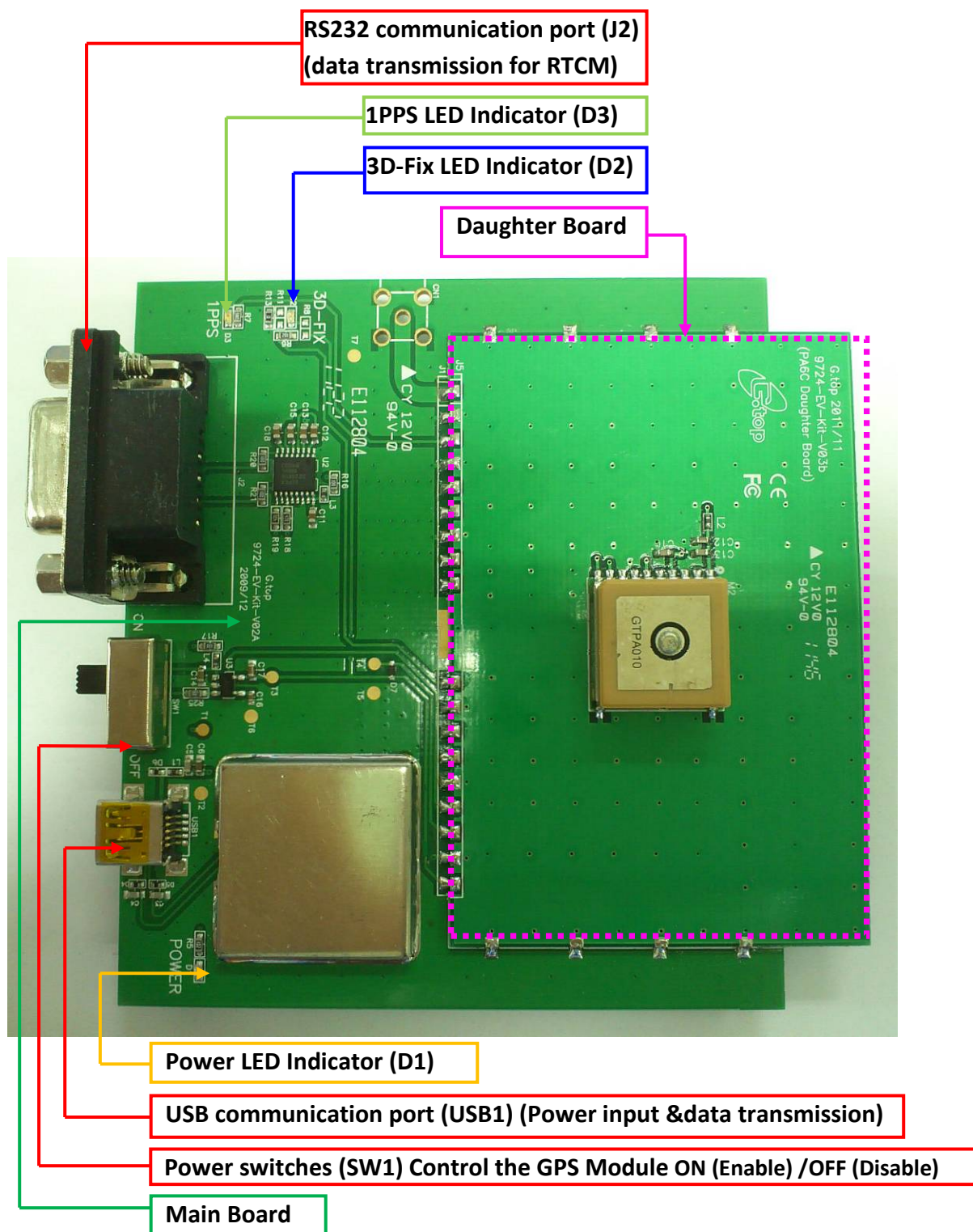
Compatible Models (Series 1): FGPMOSL3C, Gmm-u2P, Gmm-u1315



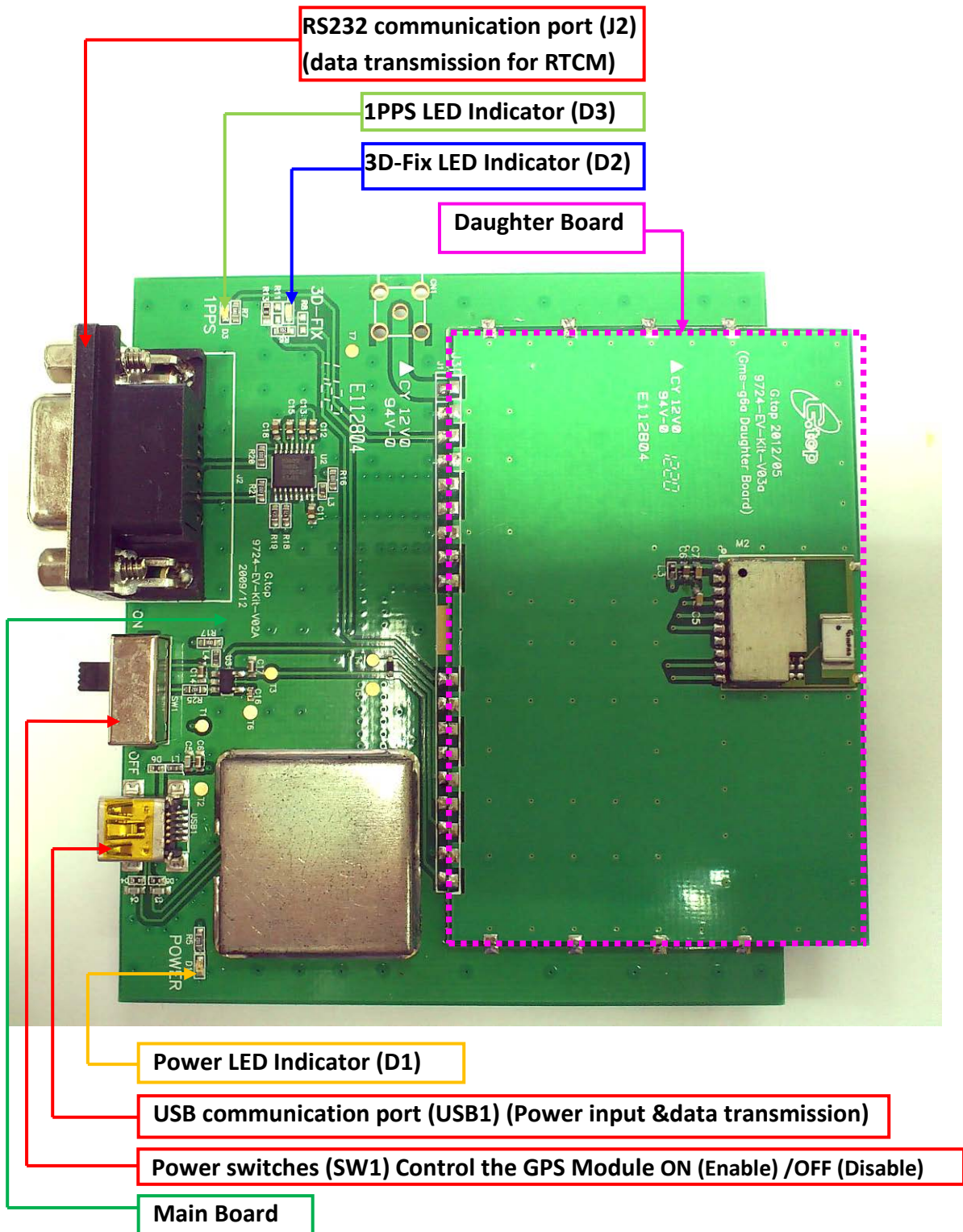
Compatible Model (Series 2): FGPMOPA6H



Compatible Model (Series 3): FGPMOPA6C, Gms-hpr



Compatible Model (series 4): Gms-u6b



3. Operating Instruction

3.1 Function Testing

➤ Preparation for the power and data communication

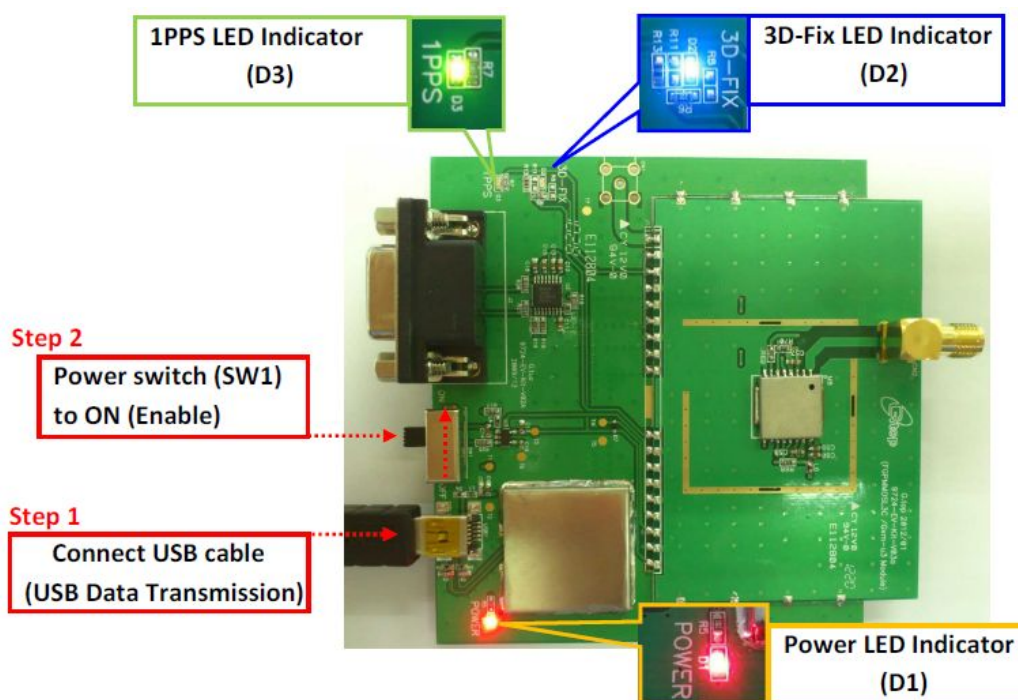
Compatible Model: All series

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 :

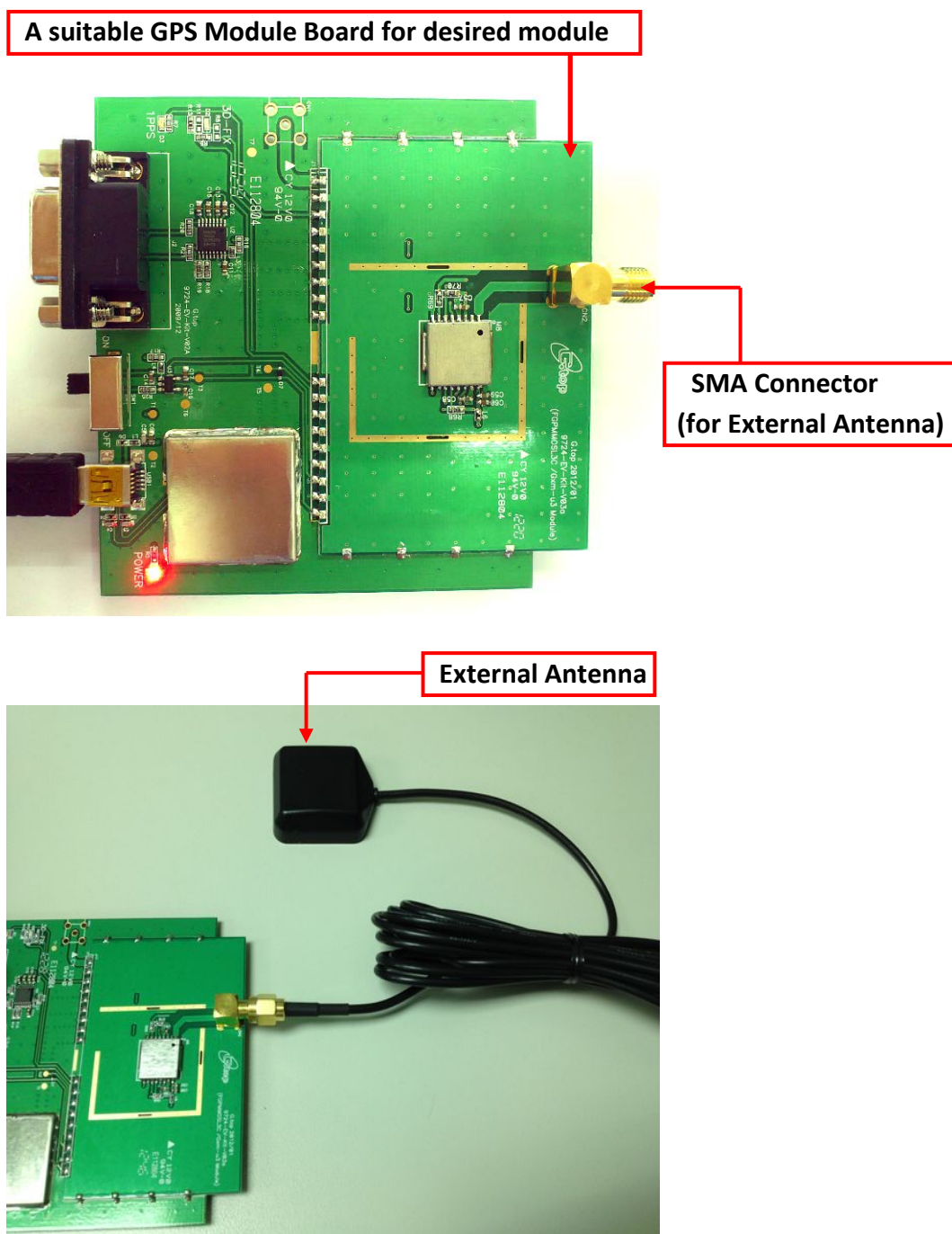
- The Switch turns on the enable of the LDO to supply the power for GPS Module. Please refer to figure shown in below.
- Once Power LED Indicator(D1) lights on and main board enable switch(SW1) on, you can find the initial state:
3D Fix LED Indicator (D2) blue is blinking.
1PPS LED Indicator (D3) green 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): FGPMOSL3C, Gmm-u2P, Gmm-u1315

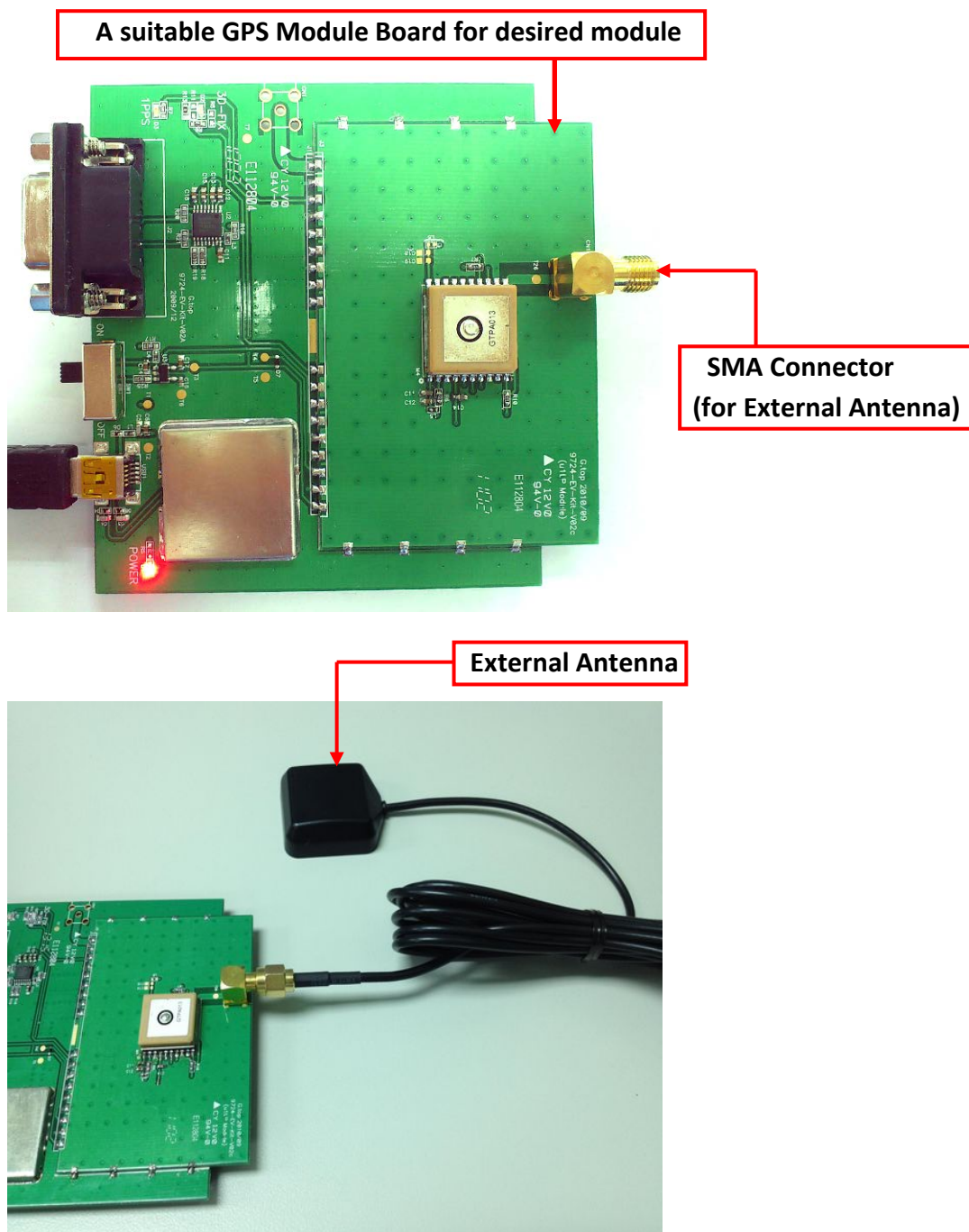


b. Connect External Antenna with GPS Module.

Compatible Model (series 2): FGPMOPA6H

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.

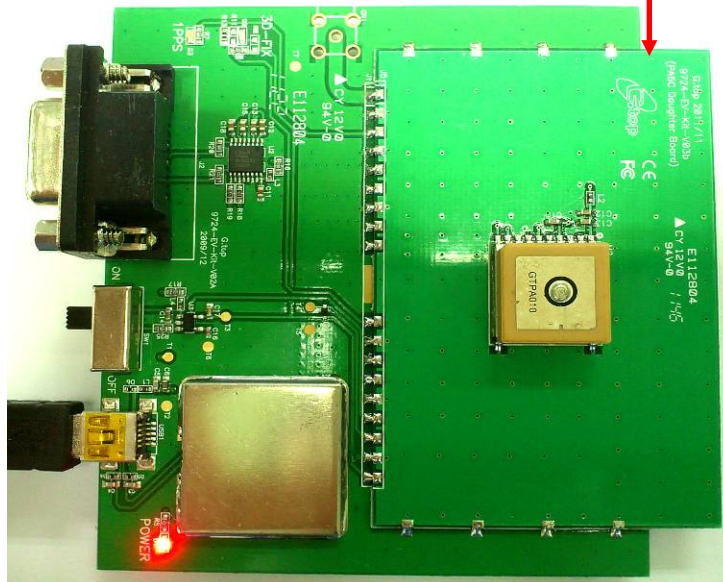
Please be noted, the External Antenna should consume current $I > 3\text{mA}$ that has GPS module detected the External Antenna was connected.



c. Connect Patch Antenna with GPS Module below.

Compatible Model (Series 3): FGPMMPA6C, Gms-hpr

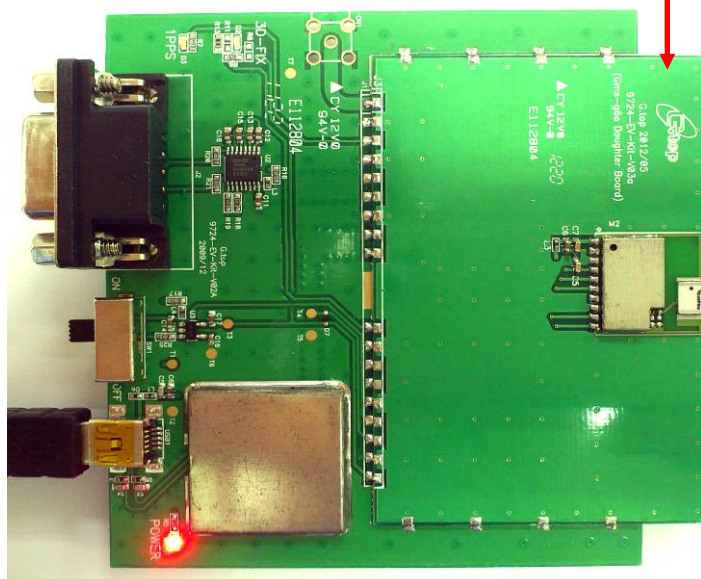
A suitable GPS Module Board for desired module



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

Compatible Model (Series 4): Gms-u6b

A suitable GPS Module Board for desired module



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



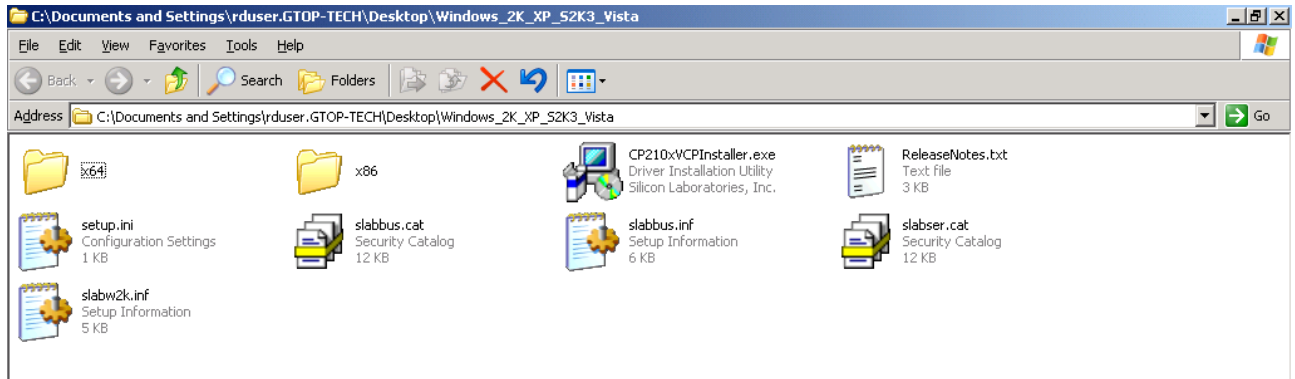
Please check whether you have the correct USB driver before you proceed to next step.
Without correct driver, the EV-Kit will not function.

- You will need **EV-kit USB Driver (CP210xVCP)** and **GPS Viewer.exe** to operate the EV-kit.

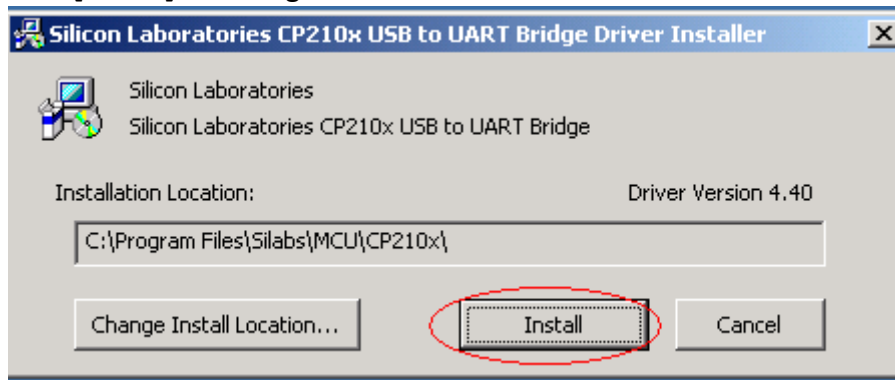
Please contact your distributor or Gtop sales (sales@gtop-tech.com) for these 2 files.

4.3 Install the USB Driver and Microsoft Framework

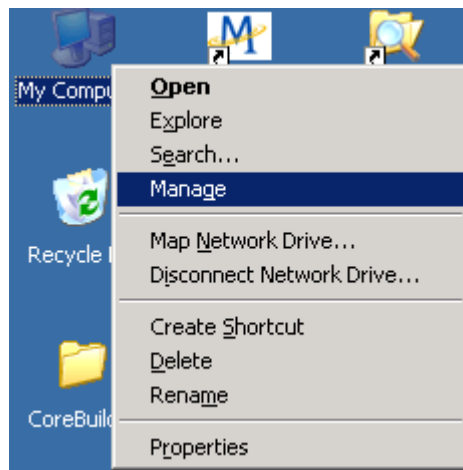
- Double click [CP210x_VCP_Win.exe] to begin driver installation as the figure shows below.



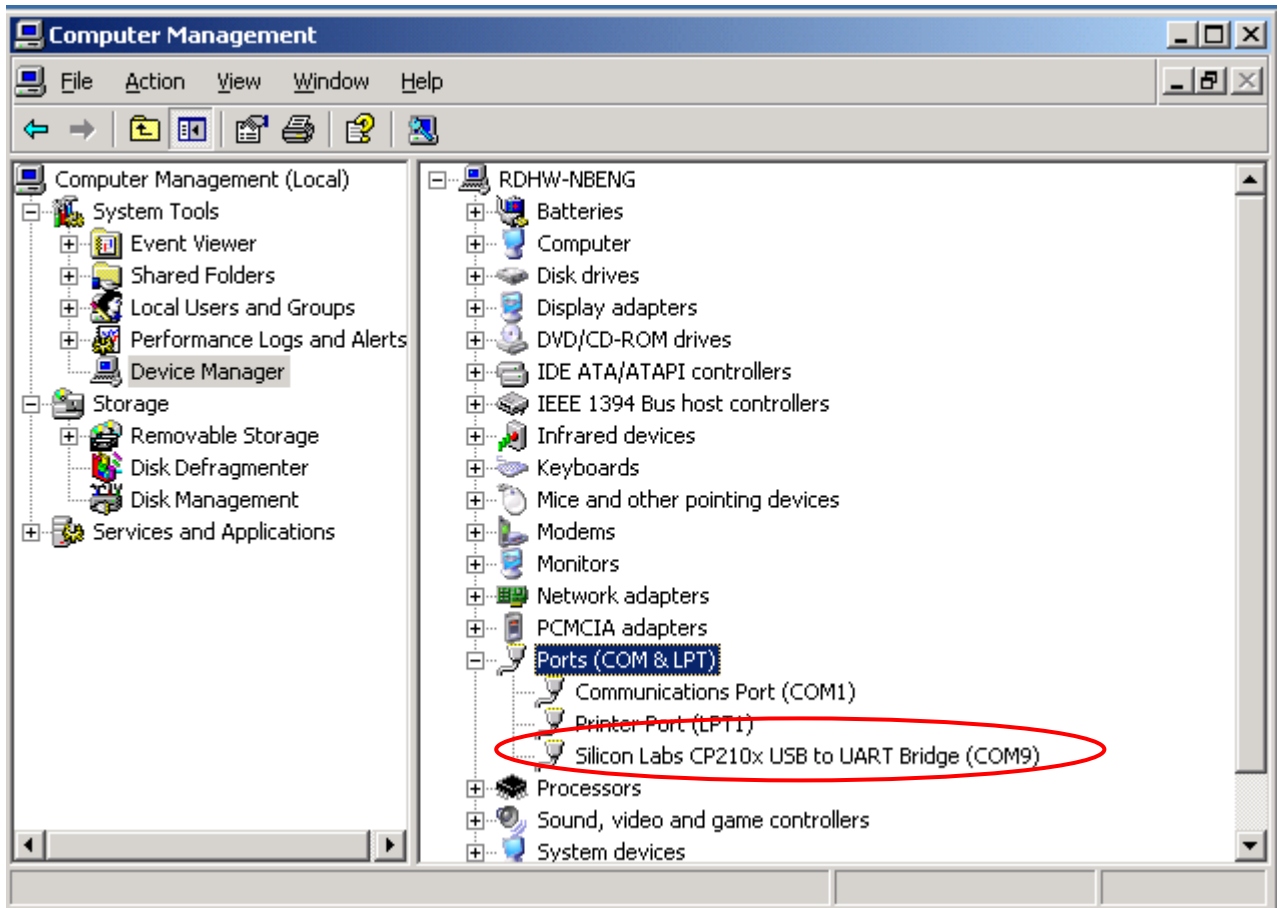
- Click [Install] as the figure shows below.



- After the installation is complete, you may need to restart your computer. Please follow the instructions on screen to restart your computer.
- After the computer restarted, right click <My Computer>, and select <Manage>. Please refer to figure shown 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 shows below.



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

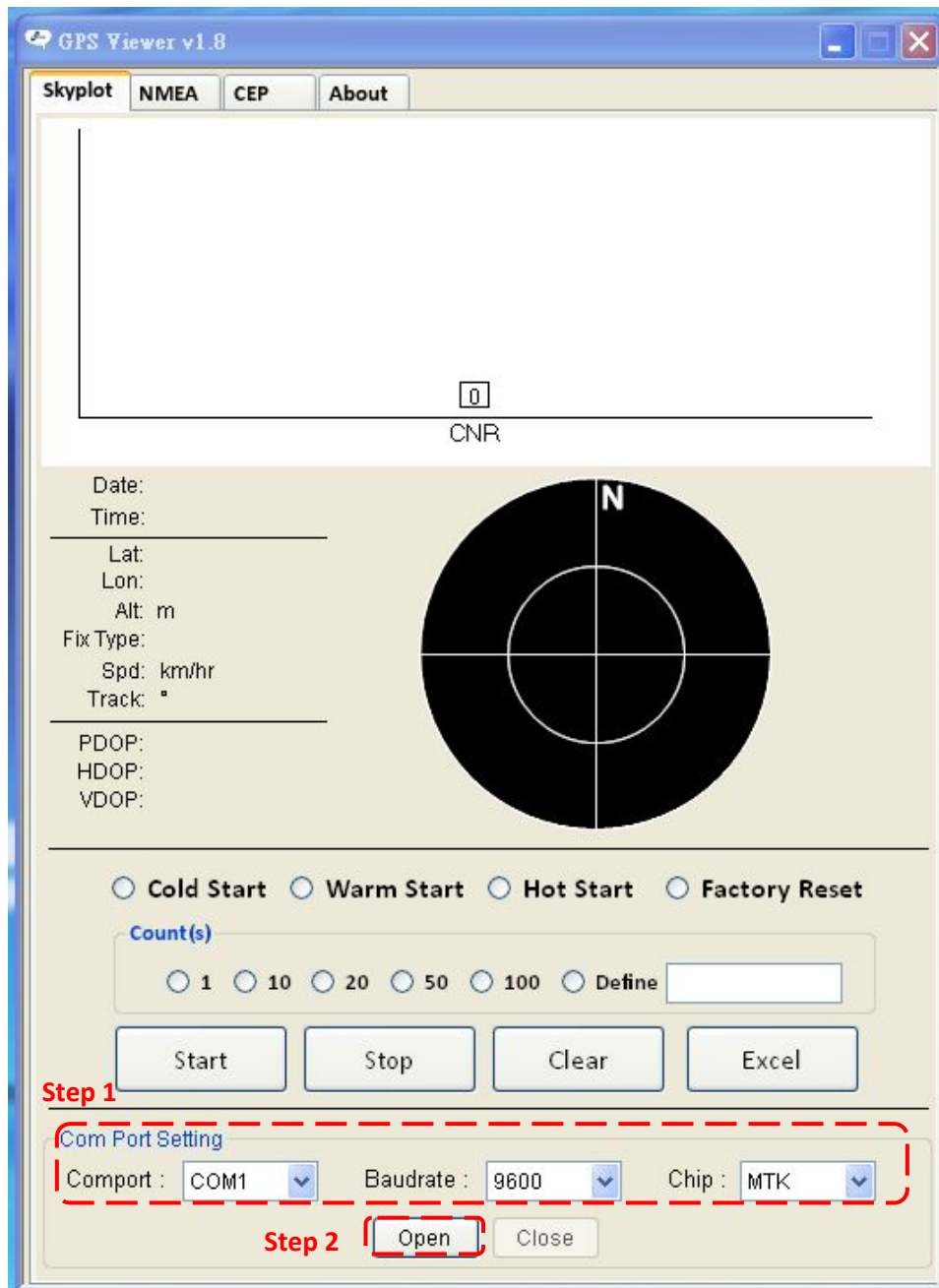
This generated COM Port value must match the COM Port value in the program setting for the application to establish proper communication with EV-Kit.

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

Note: for using GPS Viewer, Microsoft Framework version 3.5 or later is needed.

4.4 Using GPS Viewer

- **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.

Firmware Version

GPS Status

GPS Viewer 1.8 - FW: AXN_3.10_3333_12102201_8004

Skyplot NMEA CEP About

Q193	G05	G10	G02	G04	G17	G12	G13	G25	G09	G07	R83	R69	R68	R82	R84	R70	
	30	46	39	45	22	24	44	21	29	0	0	34	40	32	13	28	31

Date: 2014/01/10
Time: 01:57:05
Lat: N 23.119092°
Lon: E 120.273970°
Alt: 61.300 m
Fix Type: 3D
Spd: 0.02 (km/hr)
Track: 134.67°
PDOP: 1.2
HDOP: 0.9
VDOP: 0.8

Cold Start
 Warm Start
 Hot Start
 Factory Reset

Count(s)
 1
 10
 20
 50
 100
 Define

Start Stop Clear Excel

Com Port Setting
 Comport: COM8 Baudrate: 9600 Chip: MTK
 Open Close

SBAS on by firmware default

View NMEA code

GPS Viewer 1.8 - FW: AXN_3.10_3333_12102201_8004

Skyplot **NMEA** CEP About

NMEA Output Settings
 GLL: 0 RMC: 1 VTG: 1
 GSA: 1 GSV: 5 GGA: 1
 ZDA: 0 MCHN: 0 1 Hz
 Default Query Confirm

Baudrate: 9600 Set

Fix Update Rate: 1 Set Query

DGPS
 SBAS(WAAS/EGNOS/MSAS)
 RTCM
 Disable
 Query Set

Datum: (0) WGS1984 "International" Query Set

Log NMEA
Clear

```

$GPVTG,0.00,T,,M,0.00,N,0.00,K,N*32
$PMTKLOG,0,1,a,31,15,0,0,1,0,0*11
$PMTK001,183,3*3A
$PMTK869,2,1*36
$GPGGA,0.00030.304,,,,,0,0,,M,,*4C
$GPGSA,A,1,,,,,,,,,,,,,*1E
$GPRMC,0.00030.304,V,,,,,0.00,0.00,060180,,,N*46
$GPVTG,0.00,T,,M,0.00,N,0.00,K,N*32
$PMTKLOG,0,1,a,31,15,0,0,1,0,0*11
$PMTK001,183,3*3A
$PMTK869,2,1*36
$GPGGA,0.00031.304,,,,,0,0,,M,,*4D
$GPGSA,A,1,,,,,,,,,,,,,*1E
$GPRMC,0.00031.304,V,,,,,0.00,0.00,060180,,,N*47
  
```

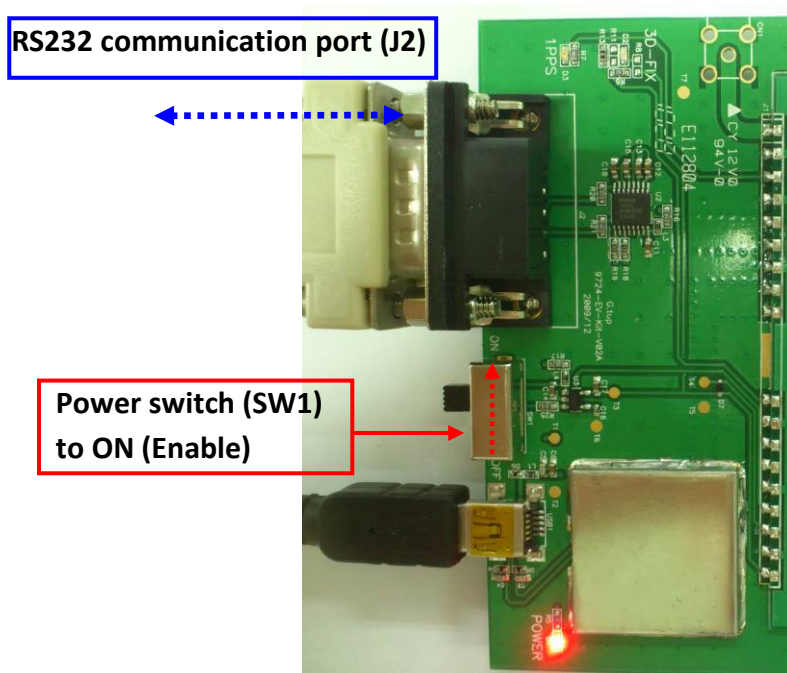
5. RTCM Usage

5.1 RTCM hardware setting

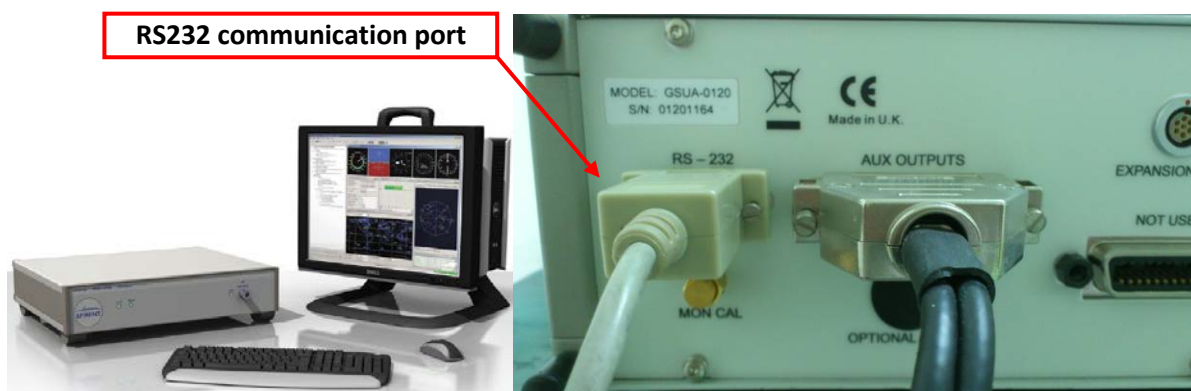
Compatible Model: FGPMOSL3C, Gmm-u2P, Gmm-u1315, FGPMOPA6H

➤ 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.

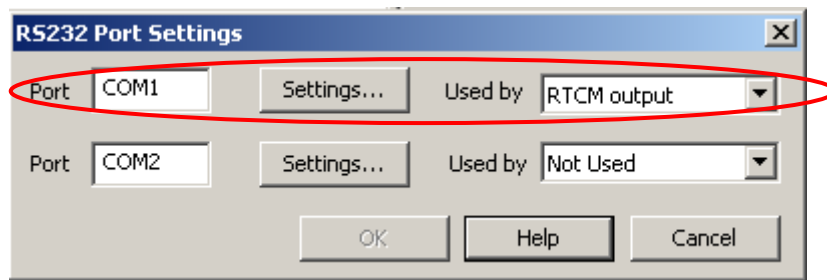
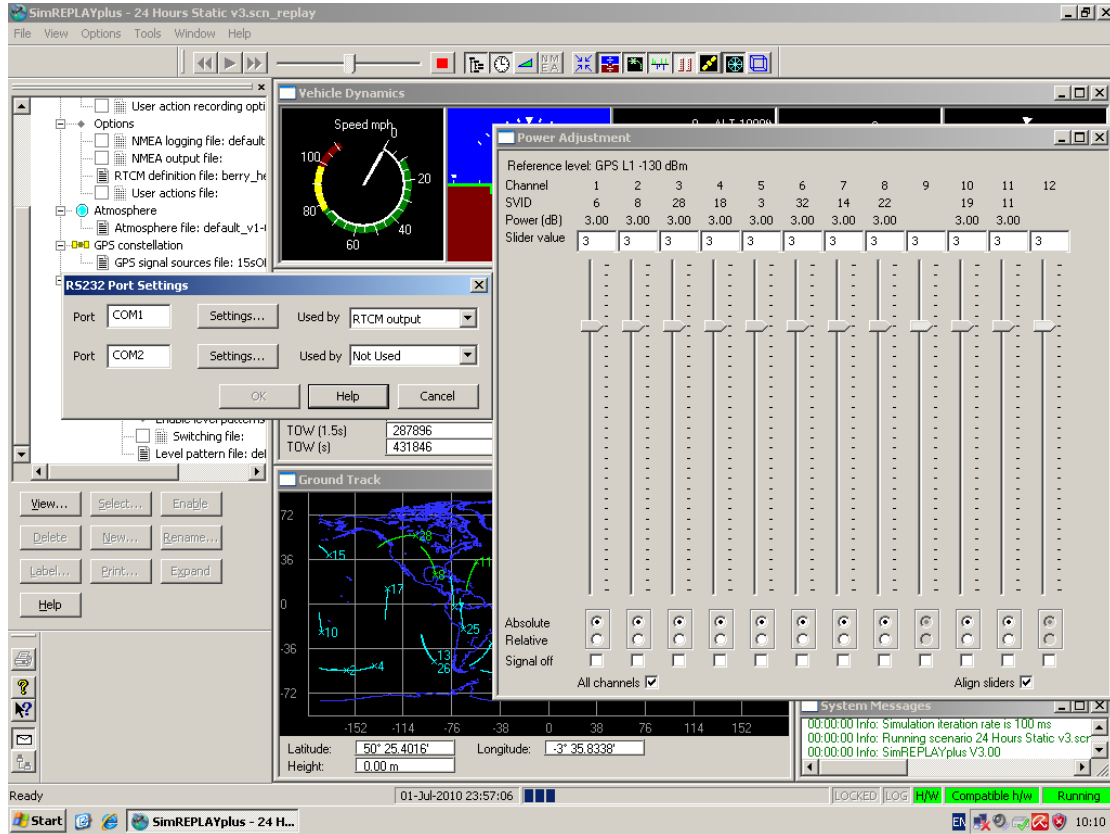


GPS Simulator Hardware set up as below:



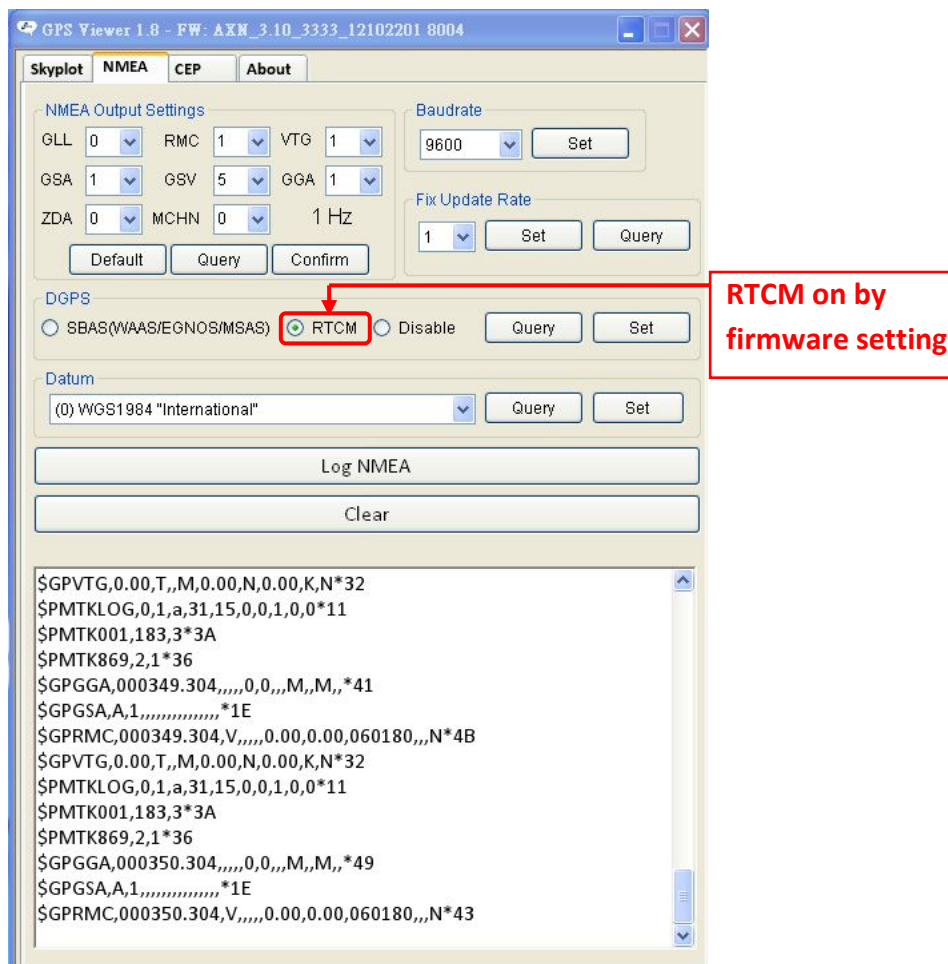
5.2 RTCM software setting

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

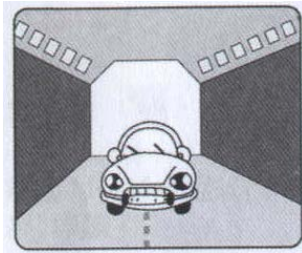
6.1 Problem with Setup

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.

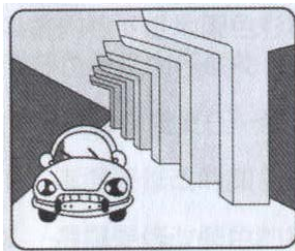
Note: If the above troubleshooting advice does not solve your problems, please send it back to us for testing and repair.

6.2 Concerning Poor GPS Signal

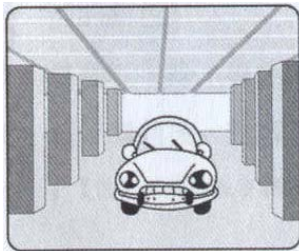
It is possible to have GPS signal reception difficulties under the following situations:



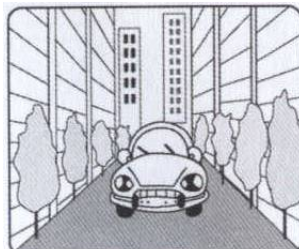
Inside a tunnel, where GPS signal is blocked.



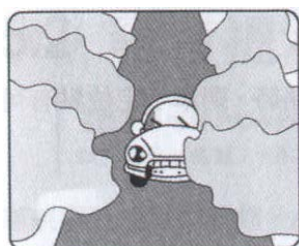
Underneath an infrastructure (like beneath a bridge), where GPS signal is blocked.



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.