User Manual

GlobalTop Technology Inc.

EV-Kit User Manual (Fox series)

Revision: A00

No.16 Nan-ke 9th Rd, Science-Based Industrial Park, Tainan, 741, Taiwan, R.O.C.

Tel: +886-6-5051268 / **Fax**: +886-6-5053381 / **Email**: sales@gtop-tech.com / **Web**: www.gtop-tech.com

Version History

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Caution

- Global Positioning 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 EV-kit were operated inside any infrastructures such as buildings, tunnels, or nearby any huge objects and/or obstruction. The positioning will function again when 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.

- To avoid unexpected E-compass behavior, please do not place EVB in proximity to any magnetic material.

Packing Contents

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

The software and documents will only be delivered by E-mail. Please contact with your dealer.

- USB Cable

- The EV-Kit contains Main Board, GPS Module Board and MEMS sensors Board

- External Antenna

1. Introduction

The main purpose of this EV-Kit is to simplify the evaluation process to our GPS modules and to help testers operate our products with convenience and ease. Fox-Series EV-Kit is suitable for use in combination with selected GlobalTop modules such as Fox-Series **(Fox-1, Fox-2)** and recommended MEMS Sensors.

This device communicates with computer via USB, and must be used in conjunction with Smart GPS Viewer software for data reading, information display, GPS data recording such as satellites' status, time-to-first-fix (TTFF), date and time.

EV-Kit Features：

- Main Board
- A GPS module Board
- A Sensor Board
- USB communication port (main communication port with PC for NEMA code)
- Power LED Indicator (Red)
- 3D Fix LED Indicator (Blue)
- 1PPS LED Indicator (Green)
- Programmable GPIO

2. Function Description

2.1 Hardware overview

The EV-kit is consisted of three boards: the Main board, the MEMS sensor board and GNSS Module board. The MEMS sensor board and GNSS Module board are the daughter boards which are to be mounted onto the Main board as shown below in Figure 1.

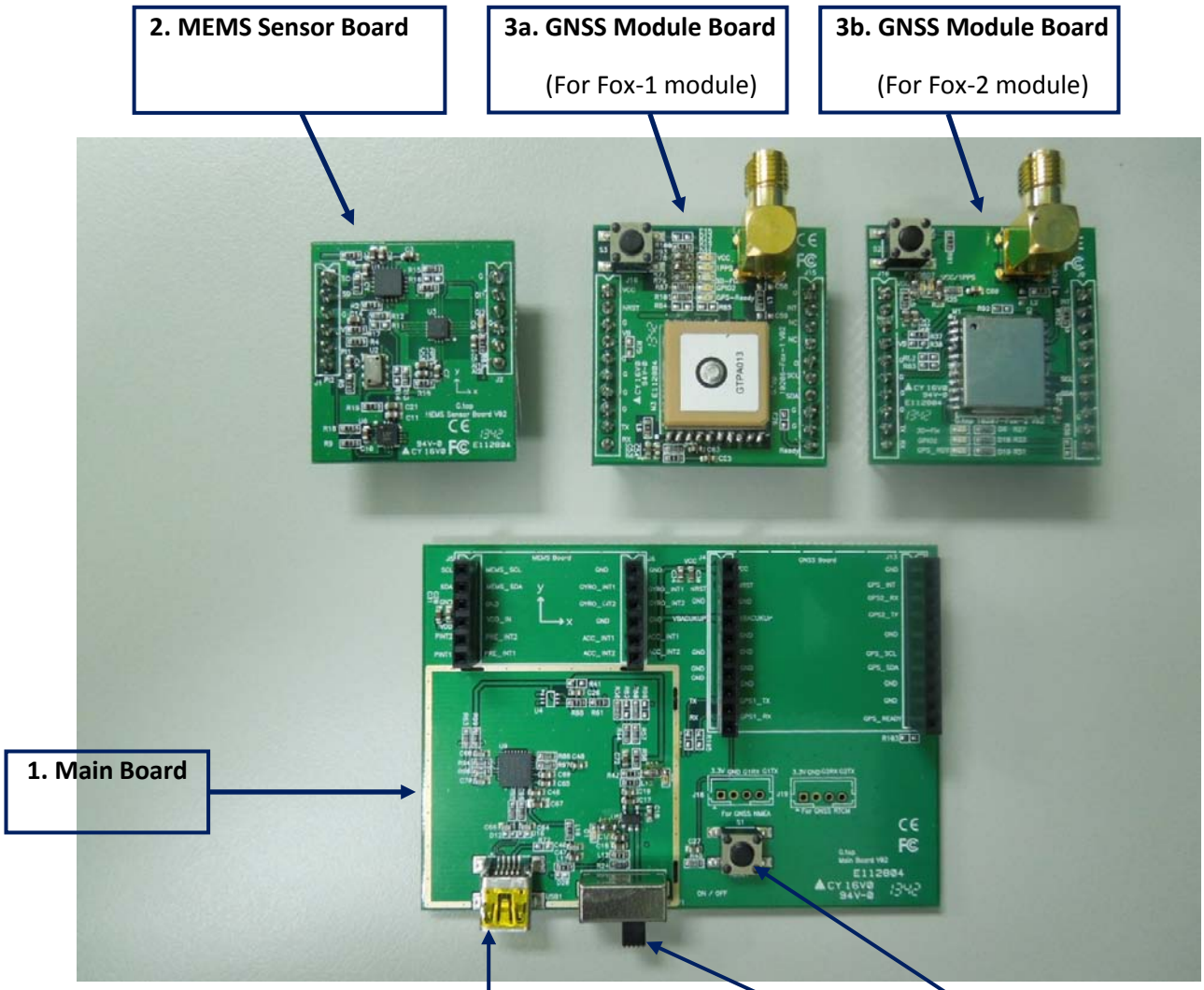


Figure 1. EV-Kit boards

3. Operating Instruction

For Fox-1 user

3.1 Setting Fox-1EV-Kit before Testing

3.1.1 Mounting the boards onto the Main board

Step 1. Install MEMS sensor Board and GNSS Board onto Main Board

- Mount MEMS board on the left hand corner of the main board. Mount Fox-1 board on the right hand side of the main board.
- Ensure that the boards are on the correct placement orientation. Refer to Fig.2

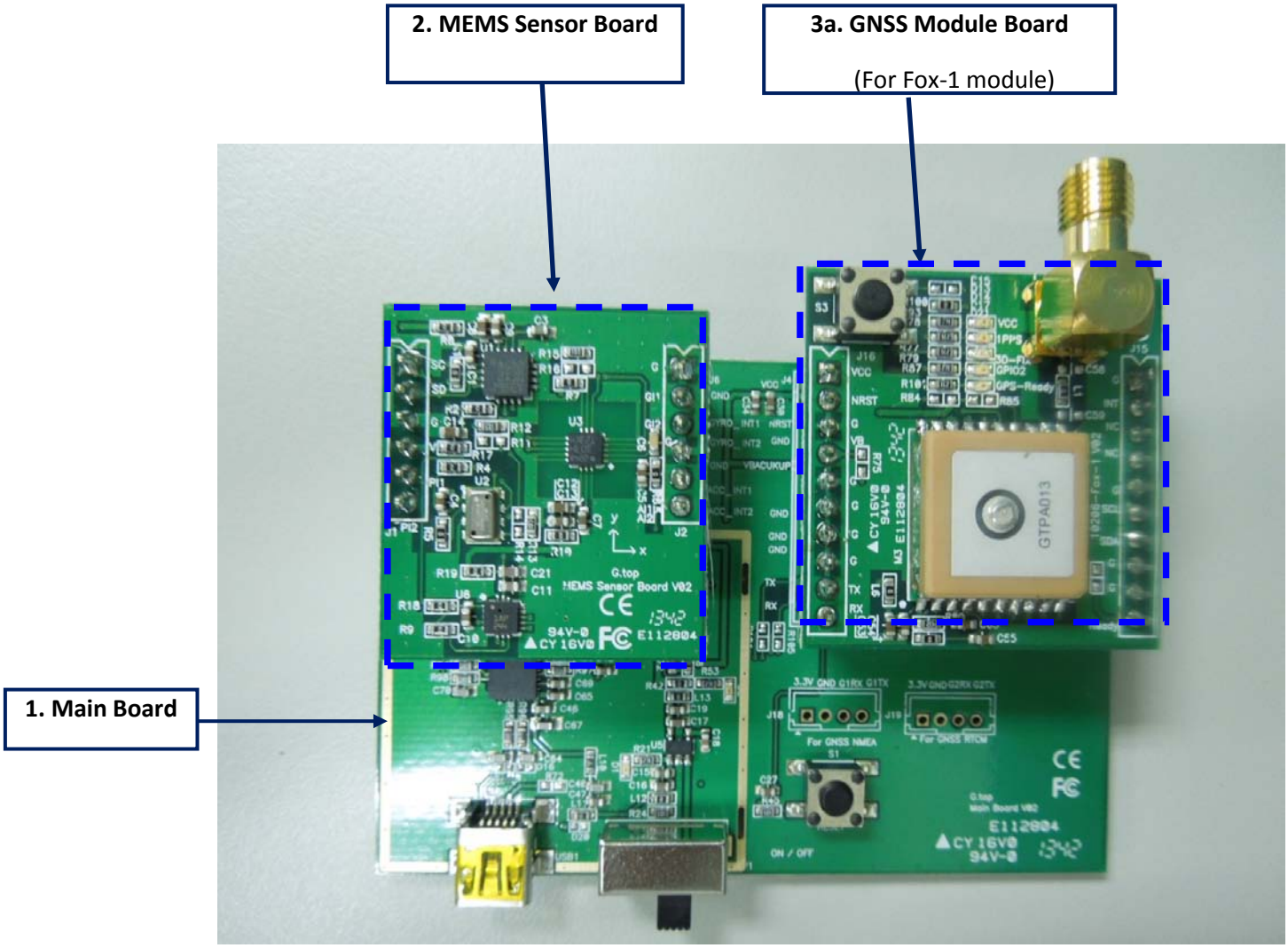


Figure 2. EV-Kit boards

3.1.2 Fox-1Function Testing

➢ Preparation for the power and data communication

Step 1. Connecting USB port

➢ 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.
Power LED Indicator (D1) light will be on.

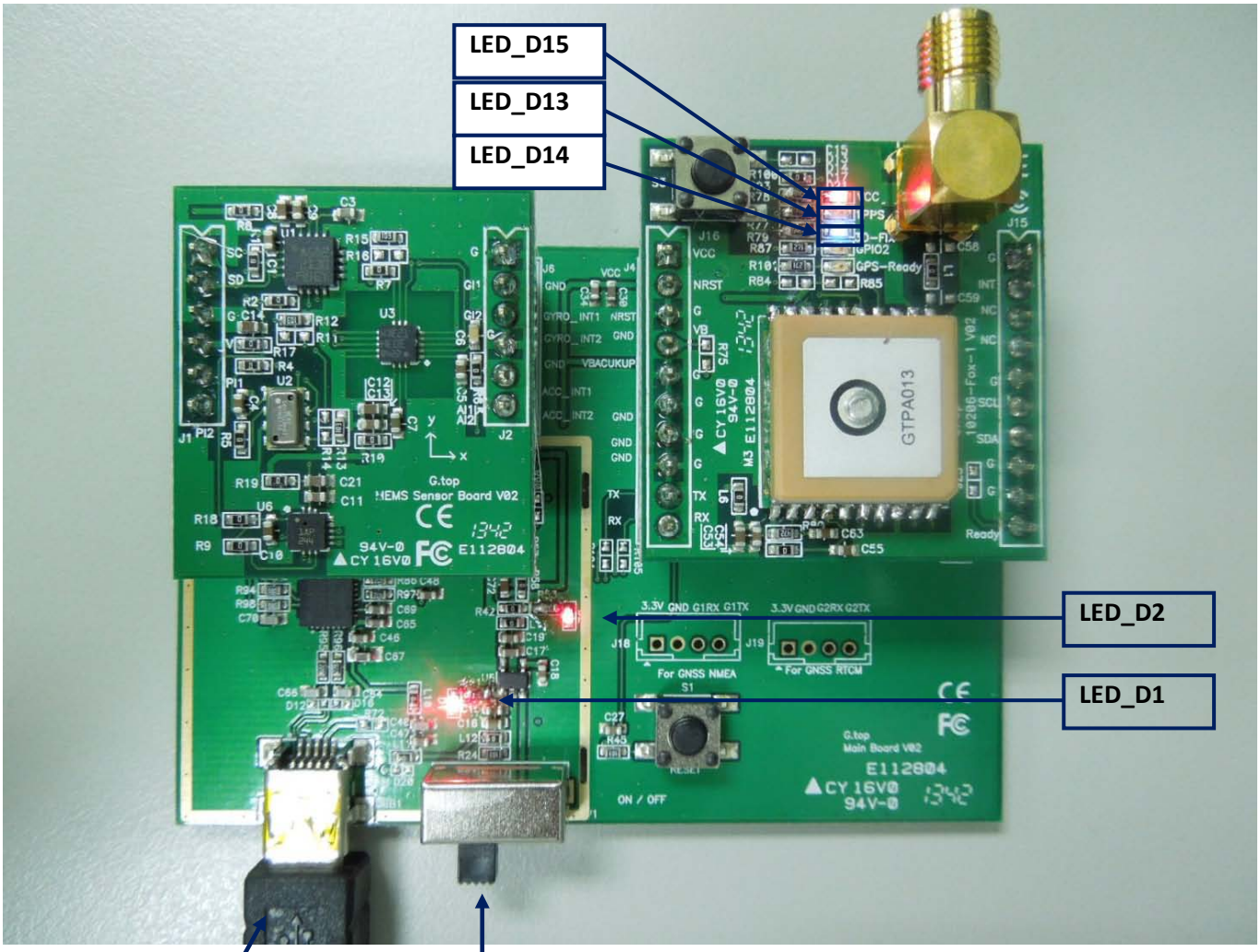


Figure 3. EV-Kit boards

Step 2. Turn on the power

- Turns on power from the **SW1** switch. This will turn on the GNSS Board and MEMS senor board:
  LED indicators –D2 & D15 (red) stay on.

- Before the receiver module gets 3D_FIX:
  LED Indicator (D14) blue starts to flash.

- Once the receiver module gets 3D_FIX:
  LED Indicator (D14) turns off and
  Indicator (D13) green starts to flash.
  **The flashing of D3 is controlled by the 1PPS signal.*

  The 1PPS status can be re-defined, please contact GlobalTop Sales representatives.

For Fox-2 user

3.2 Setting Fox-2EV-Kit before Testing

3.2.1 Mounting the boards onto the Main board

Step 1. Install MEMS sensor Board and GNSS Board onto Main Board

- Mount MEMS board on the left hand corner of the main board. Mount Fox-2 board on the right hand side of the main board.
- Ensure that the boards are on the correct placement orientation. Refer to Fig.3

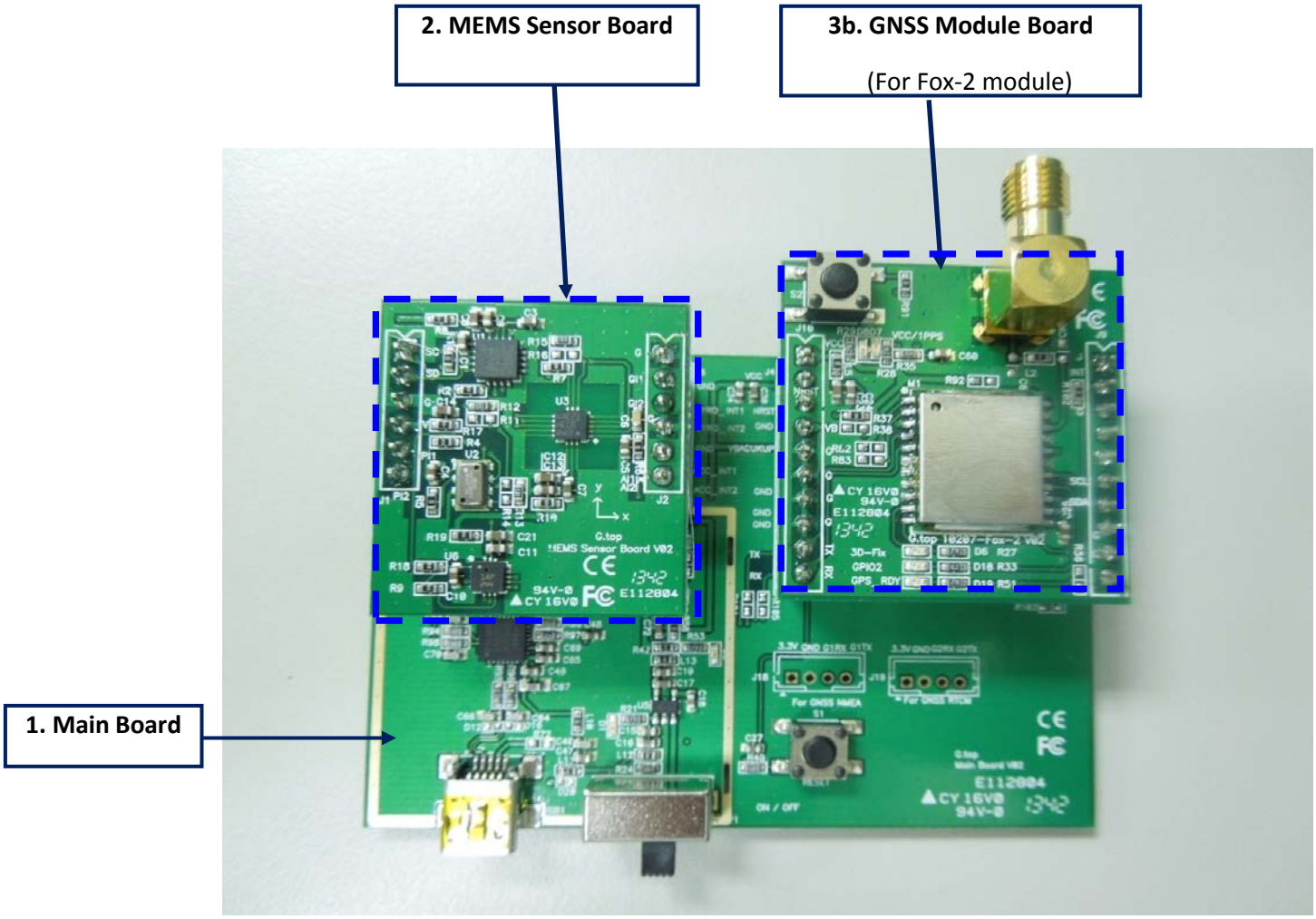


Figure 3. EV-Kit boards

3.2.2 Fox-2Function Testing

➢ Preparation for the power and data communication

Step 1. Connecting USB port and Antenna

- 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.
  Power LED Indicator (D1) light turns on.
- Connect an active/passive antenna to Antenna Connector

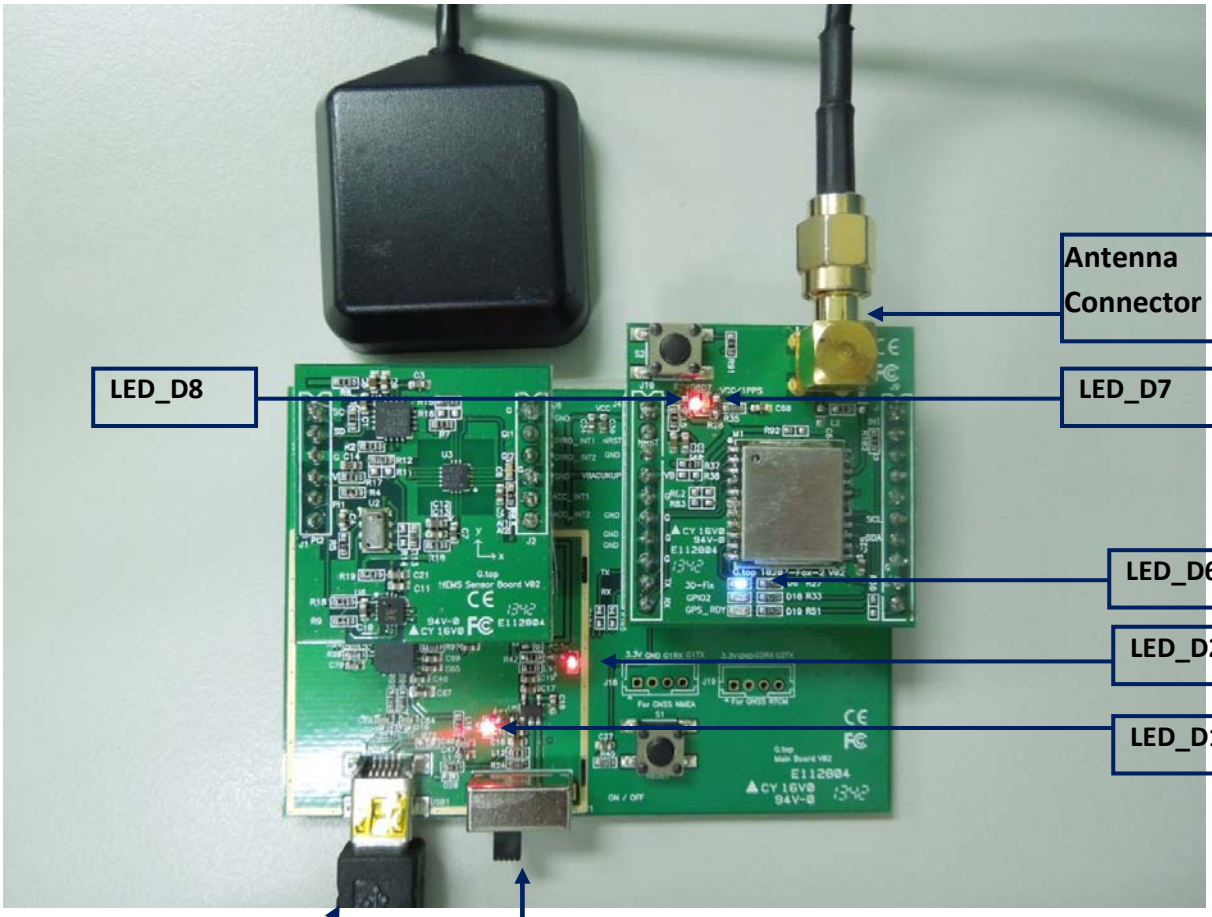


Figure 5. EV-Kit boards

Step 2. Turn on the power

- Turns on power from the **SW1** switch. This will turn on the GNSS Board and MEMS senor board:
  LED indicators –D2 & D8 (red) stay on.

- Before the receiver module gets 3D_FIX:
  LED Indicator (D6) blue starts to flash.

- Once the receiver module gets 3D_FIX:
  LED Indicator (D6) turns off and
  Indicator (D7) green starts to flash.
  **The flashing of D3 is controlled by the 1PPS signal.*

  The 1PPS status can be re-defined, please contact GlobalTop Sales representatives.

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: Smart GPS viewer.exe

Microsoft Framework 3.5 version or latest version.

4.2 USB Driver and Smart GPS Viewer

Please double check if you have the correct USB driver and Smart GPS Viewer before you proceed to the next step. If an incorrect driver is installed, your EV-Kit will not work properly!

- If you have purchased the EV-Kit, please make sure you have downloaded **CP210xVCPInstaller.zip** file 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

- Smart GPS Viewer Download

For Fox-1

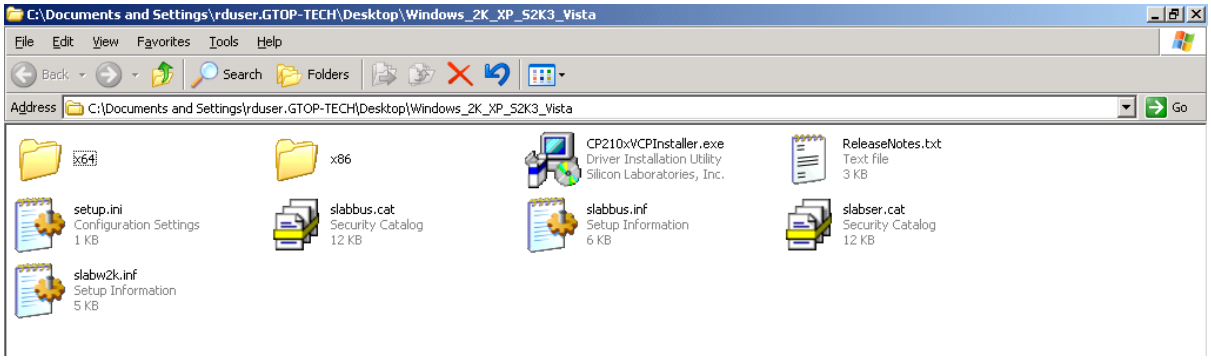
http://www.gtop-tech.com/en/product/Fox-1-Module/GPS_Modules_Fox-1.html

For Fox-2

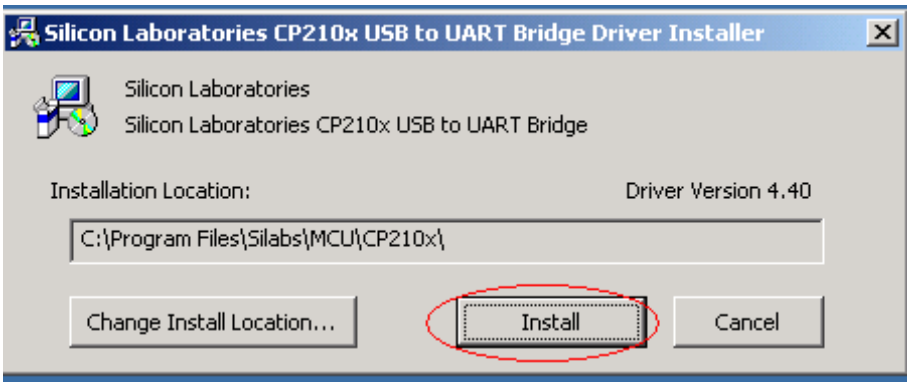
http://www.gtop-tech.com/en/product/Fox-2-Module/GPS_Modules_Fox-2.html

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 shown in the figure below.

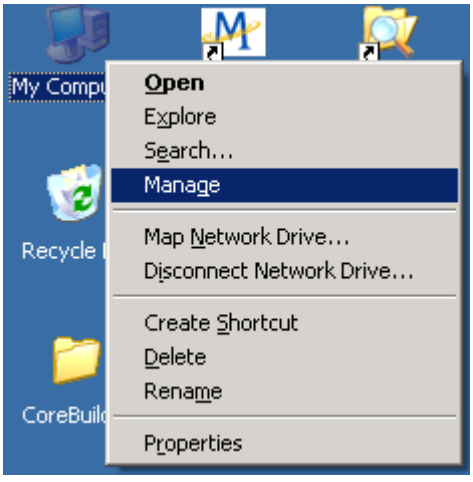


- Click **[Install]** as the figure show below.



- 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 has rebooted and ready, from the desktop right mouse click on **<My Computer>**, and from the drop down menu, select **<Manage>**, as in figure shown below.



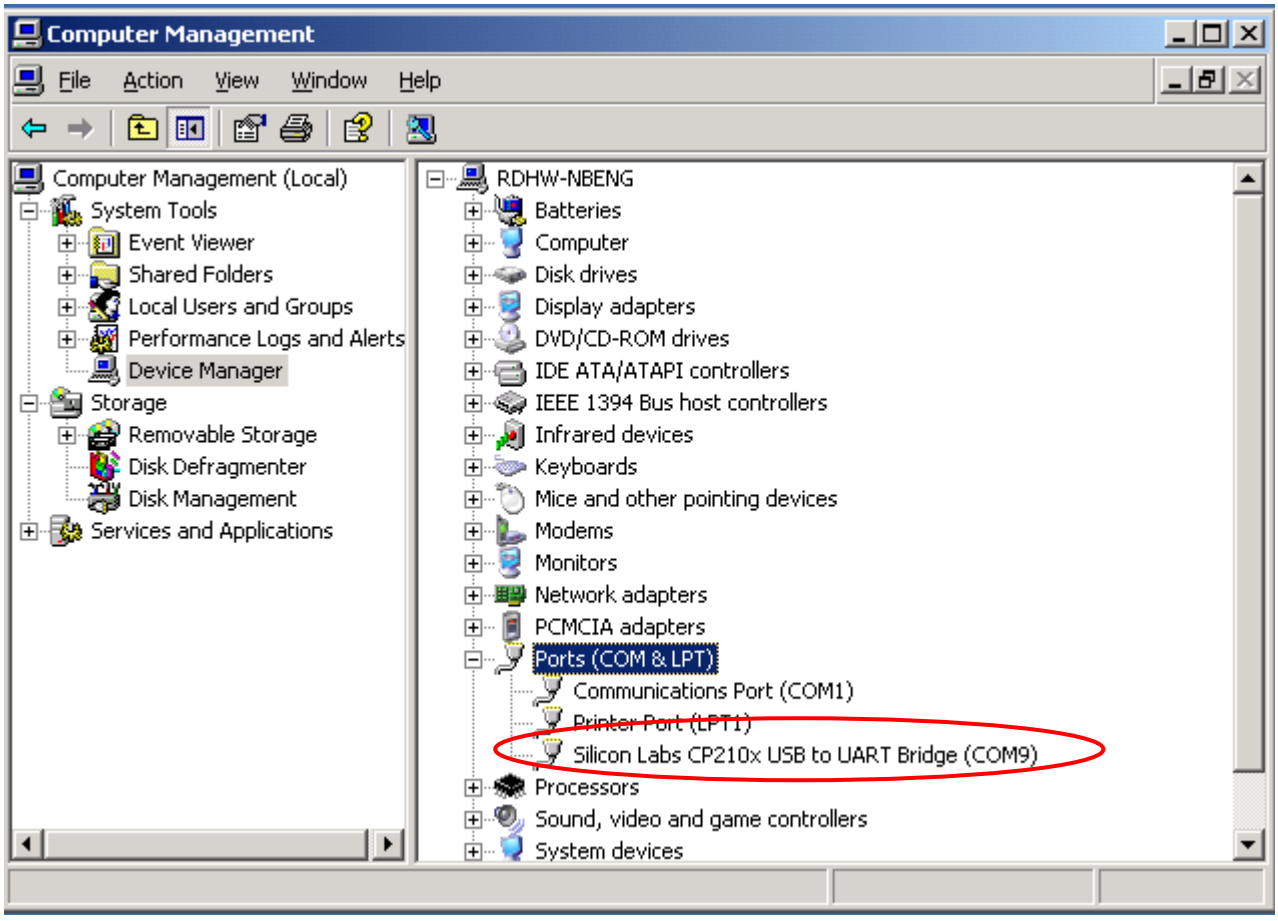
- Click on **<Device Manager>**, and expand the list of **<Ports (COM &LPT)>**. Check to see if a device named **<Silicon Labs CP210x USB to UART Bridge (COM#)>** is present. If yes, then EV-Kit is now ready for use. Refer to the figure below.

  In this example, the virtual COM port "COM9" is assigned to this established connection to the EV-Kit. You will need this information in the later step.

- Install Microsoft Framework 3.5 version or latest version

- Install GPS Viewer Software

- After completed the installation, please go forward to GPS Viewer Software usage section in 4.4.



5. Trouble-shooting

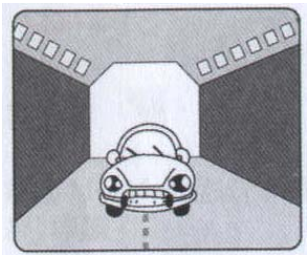
5.1 Problem with Setup

Problem	Possible Cause	Trouble shooting
Cannot find GPS device	USB was not setup properly.	Check to see if the USB connection was connected 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.

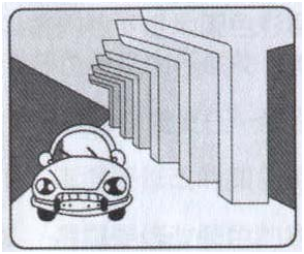
Note: If the above troubleshooting advice does not solve your problems, please send it back to us for testing and repair.

5.2 Concerning Poor GPS Signal

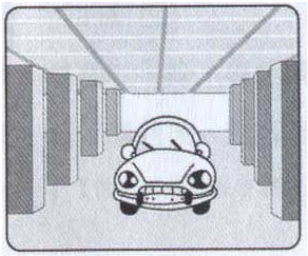
It is possible to have GPS signal reception difficulties under the following situations:



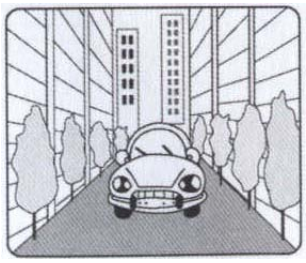
Inside a tunnel, where GPS signal is blocked.



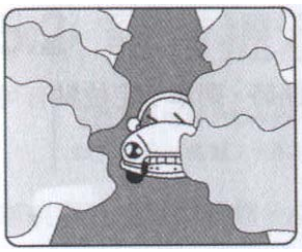
Underneath an infrastructure (like beneath a bridge), where GPS signal is blocked.



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 GNSS 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.