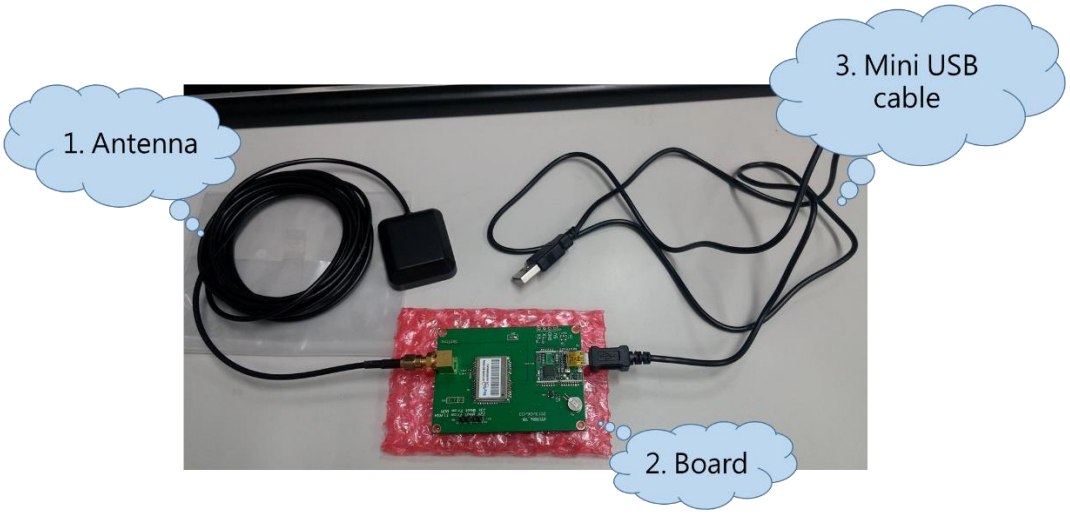
This document will lead you get ephemeris data and receiver data by using the SkyTraq Venus 8 GNSS Receiver. Then process the binary data which is received from the satellites into eph.dat and rcvr.dat.

- **Before start**

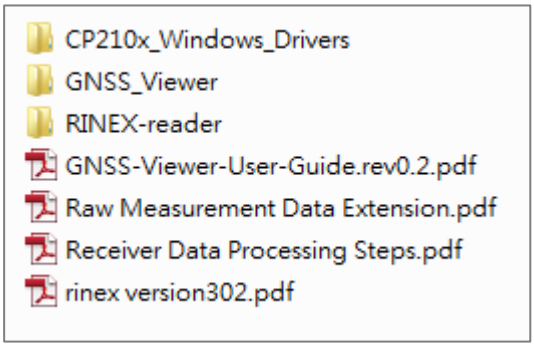
  Make sure you have:

  1. Antenna x1
  2. Board x1
  3. Mini USB cable x1



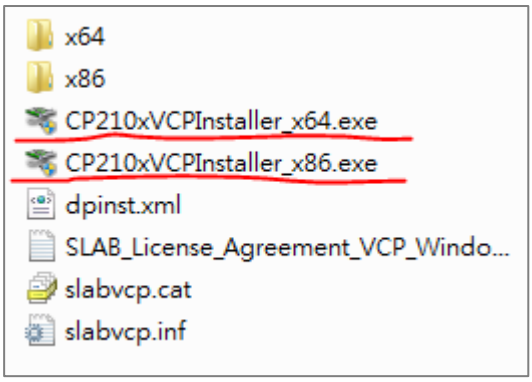
From the compress file which you download from Moodle includes:

1. CP210x_Windows_Drivers (file)
2. GNSS_Viewer (file)
3. RINEX-reader (file)
4. GNSS-Viewer-User-Guide.rev0.2 (.pdf)
5. Raw Measurement Data Extension (.pdf)
6. rinex version302 (.pdf)
7. Receiver Data Processing Steps (.pdf)



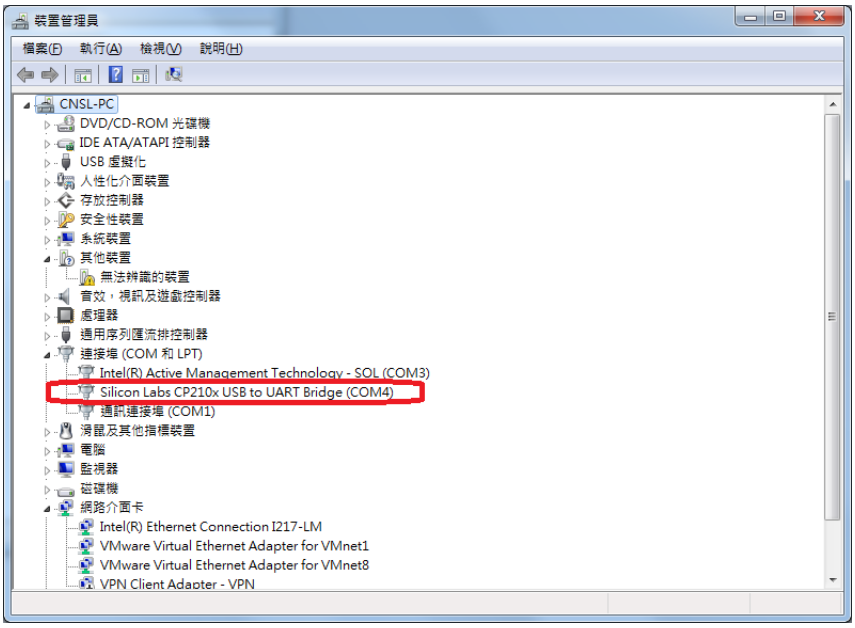
- **Driver installation**

  Because the GNSS device use USB to connect PC, USB driver will need to be installed. In “CP210x_Windows_Drivers” file, run the corresponding execution file. (CP210xVCPInstaller_x64.exe or CP210xVCPInstaller_x86.exe)



- **Connect GNSS Device to PC**

  1. After USB driver installation, connect GNSS device to PC using USB cable. The created virtual COM port number can be seen from the Device Manager.

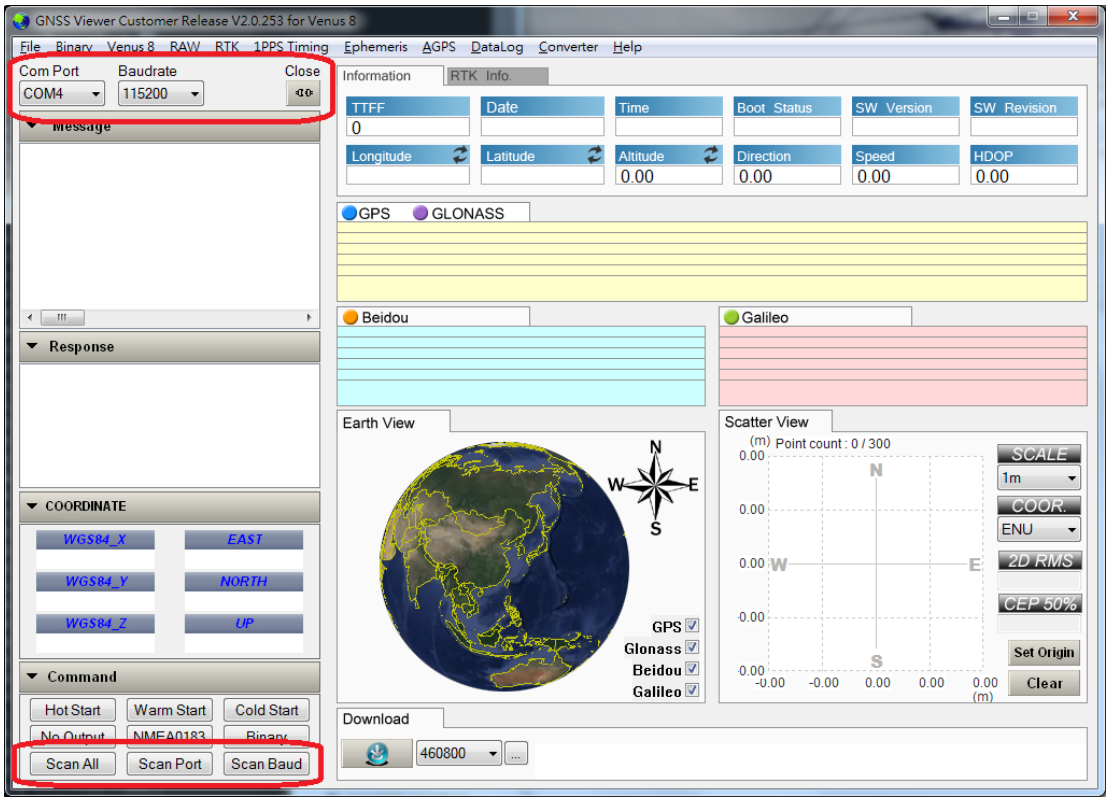


2. Make sure antenna port of the GNSS device has a clear view sky signal.

Now you can start using the GNSS device.

- **Start using GNSS viewer**

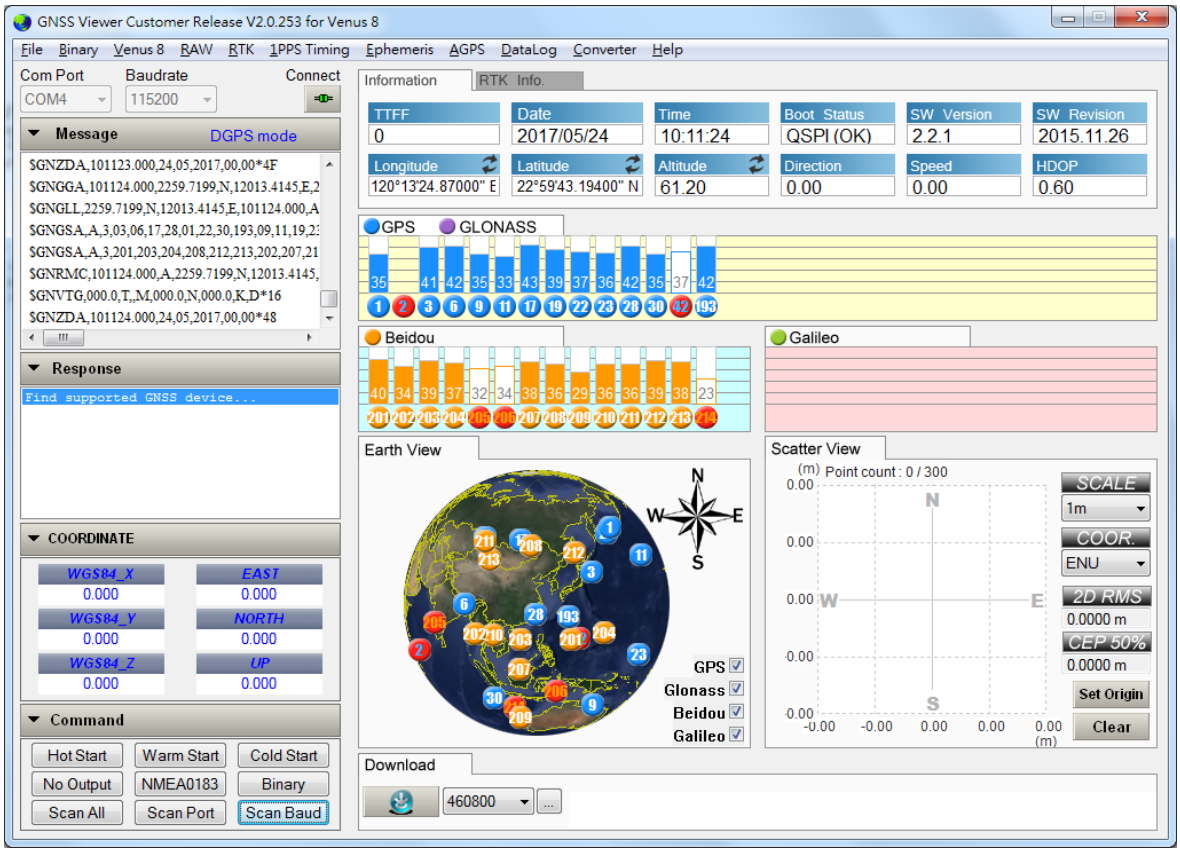
  Start “GNSS_Viewer-CustomerRelease -2.0.253.exe” application, which you can find in “GNSS_Viewer” file. Select COM Port and Baud Rate to operate



1. COM Port and Baud Rate can be selected by clicking the pull-down menu, then click on 

button.
2. If unsure of the COM Port and Baud Rate for the GNSS device, then select “Scan All”
3. If COM Port is known, but unsure of the correct Baud Rate, then select “Scan Baud”
4. If Baud Rate is known, but unsure of the correct COM Port, then select “Scan Port”

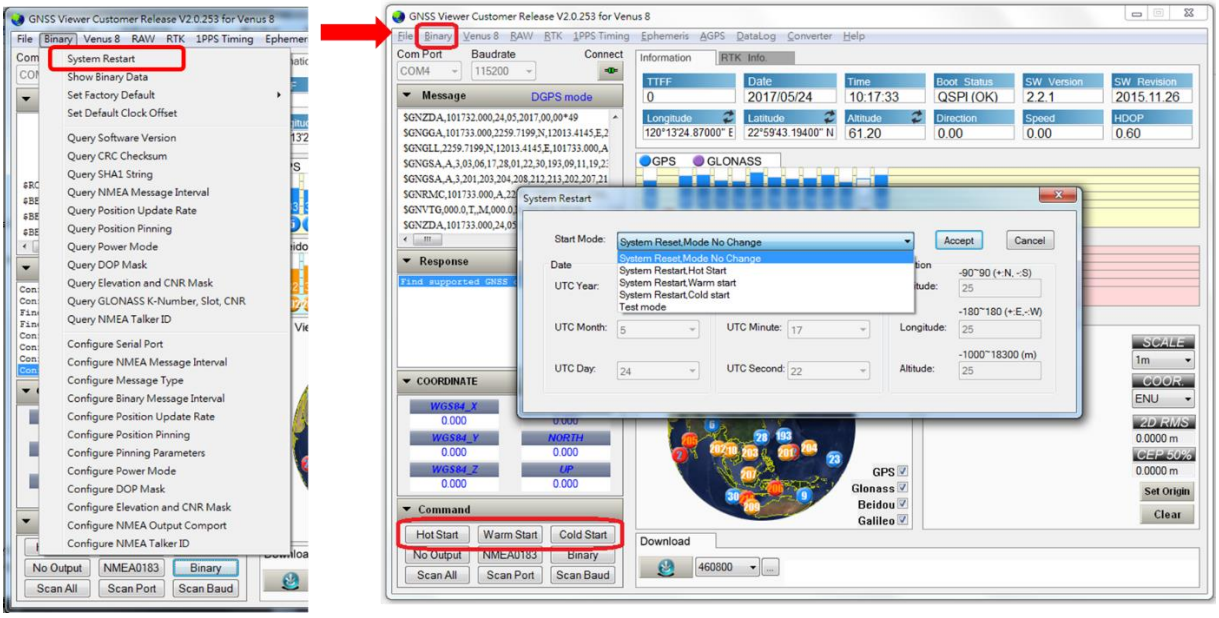
If the connect is succeed, the viewer will show as the figure below:



,which

Satellite Color	Meaning
Solid blue bar	GPS signal used for position fix
Empty blue bar	GPS signal tracked but not used for position fix
Solid orange bar	Beidou signal used for position fix
Empty orange bar	Beidou signal tracked but not used for position fix
Solid purple bar	GLONASS signal used for position fix
Empty purple bar	GLONASS signal tracked but not used for position fix

- **Hot/Warm/Cold Start**



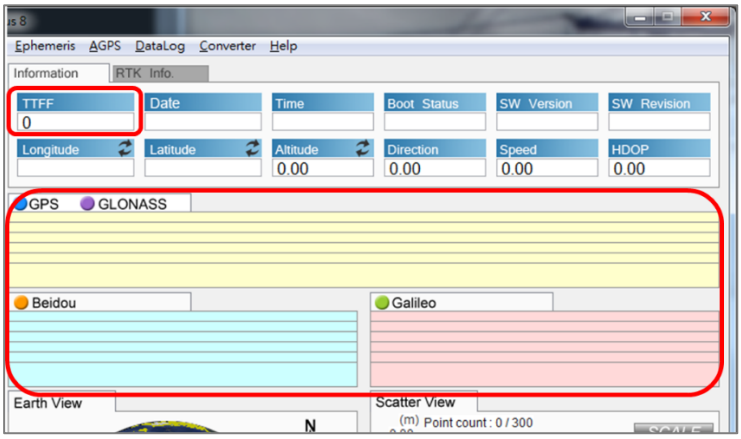
Select start mode by:

1. Binary → System Restart → click the pull-down menu of the Start Mode → select any start mode you prefer → Accept

or

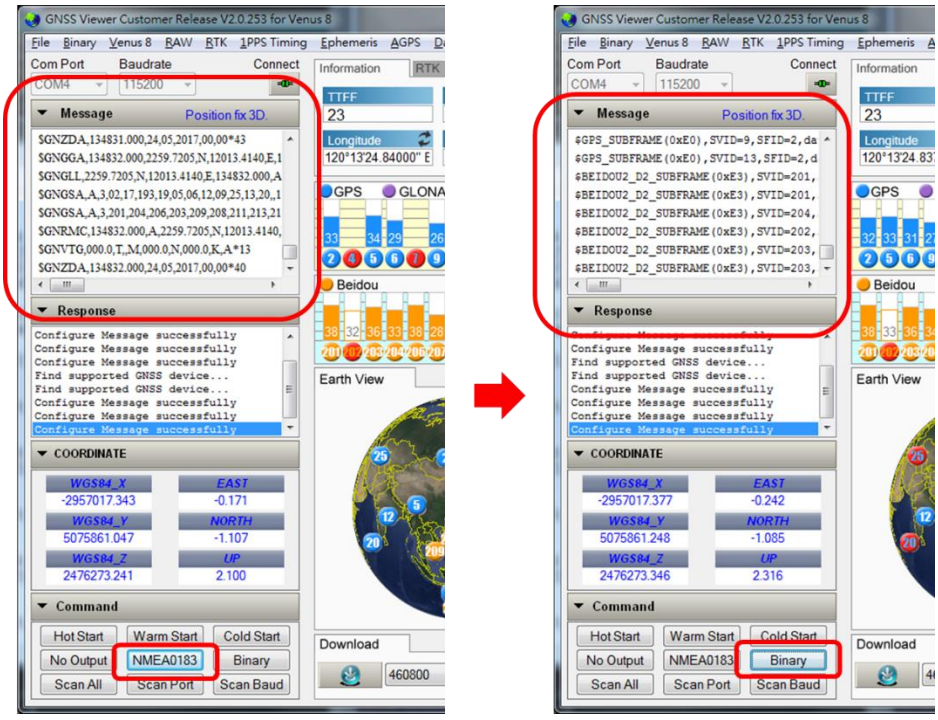
2. Clicking the Hot Start / Warm Start / Cold Start button in the command block.

Satellites and signal bars will be cleaned, and TTFF(Time-to-First-Fix) start to count from zero.

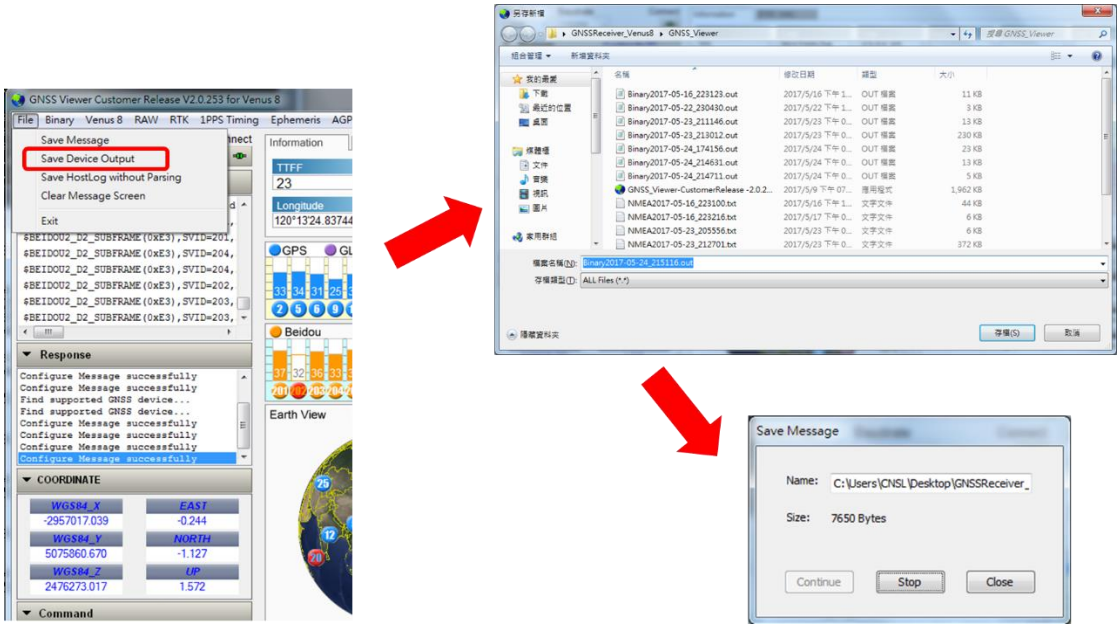


- **Save Binary message**

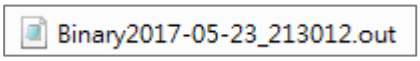
  Click the Binary button in the command block to change the message into binary mode.



Next click File → Save Device Output → choose the save path to the “GNSS_Viewer” file. Then it will start saving binary data into the save path until clicking stop and close.

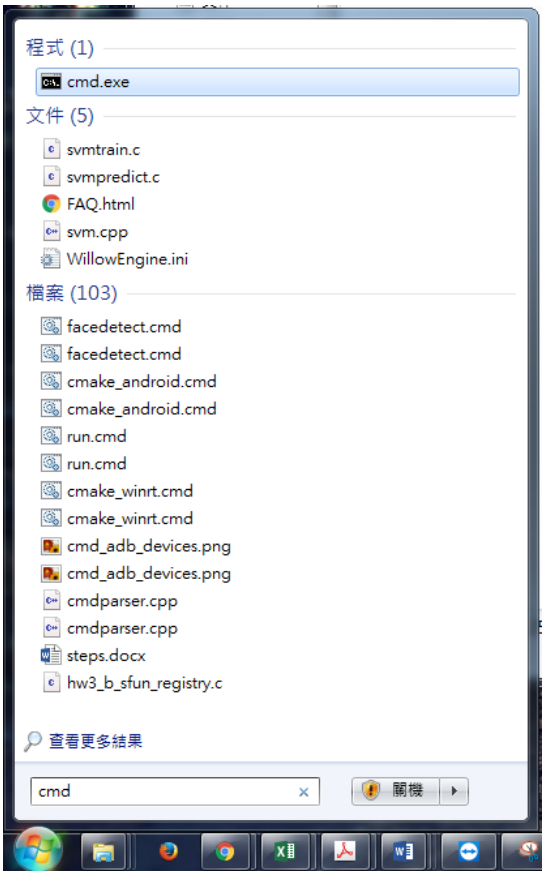


Receiving a (.out) file which is binary type.



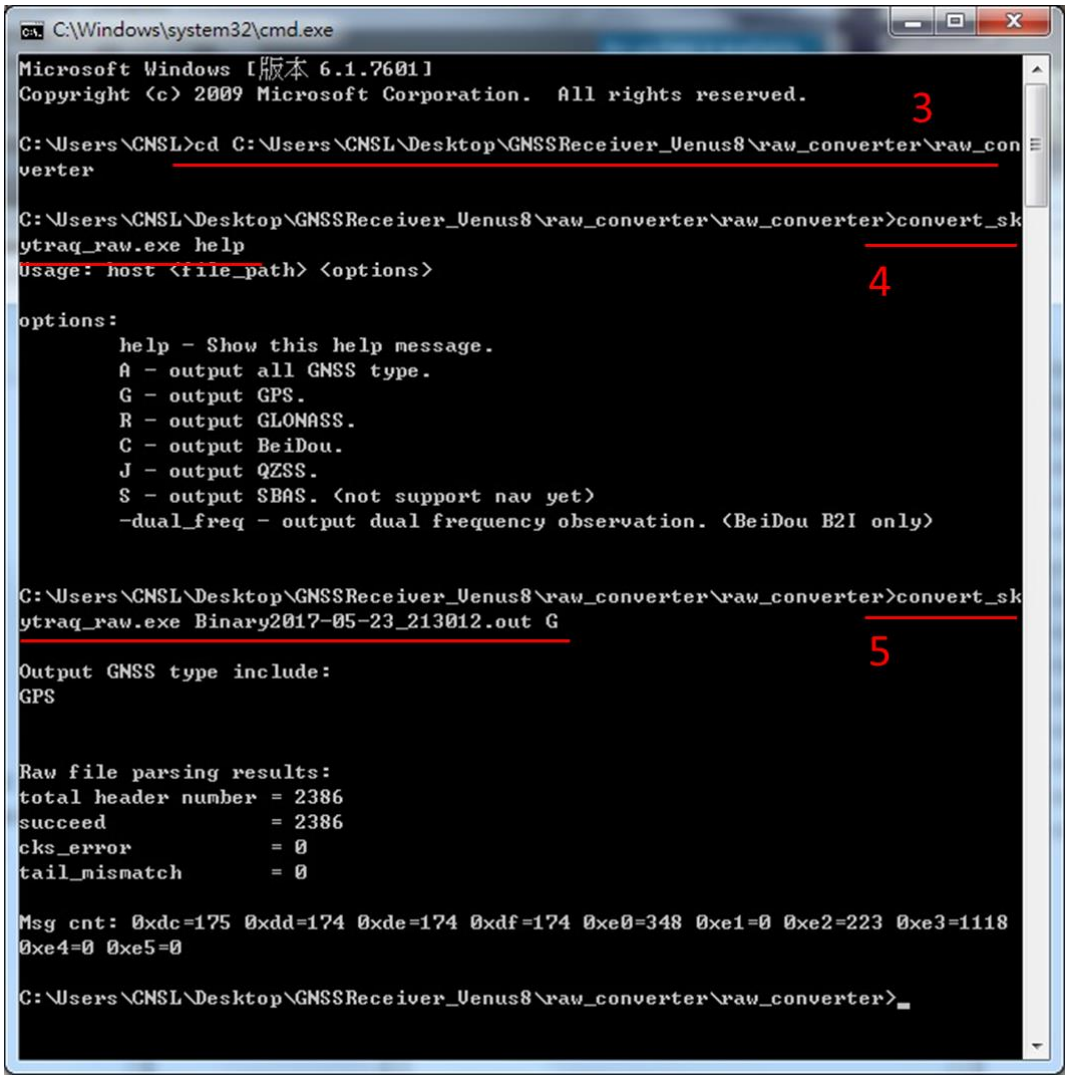
- **Read Binary file**

1. First check do you have “convert_skytraq_raw.exe” in “GNSS_Viewer” file.
2. Open “cmd.exe”

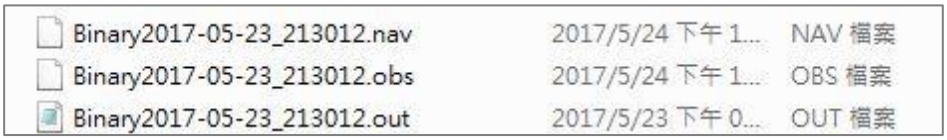


3. Use the command “cd path” to set the path to the file where “convert_skytraq_raw.exe” is.
   (Example >> cd C:\Users\CNSL\Desktop\GNSSReceiver_Venus8\course_use\GPS receiver_course use\GNSS_Viewer)
4. Enter command: convert_skytraq_raw.exe help
5. Enter command: convert_skytraq_raw.exe Binary20XX-XX-XX_XXXXXX.out G
   (Example >> convert_skytraq_raw.exe Binary2017-05-23_213012.out G)

(step3 ~ 5 is shown in the figure below)

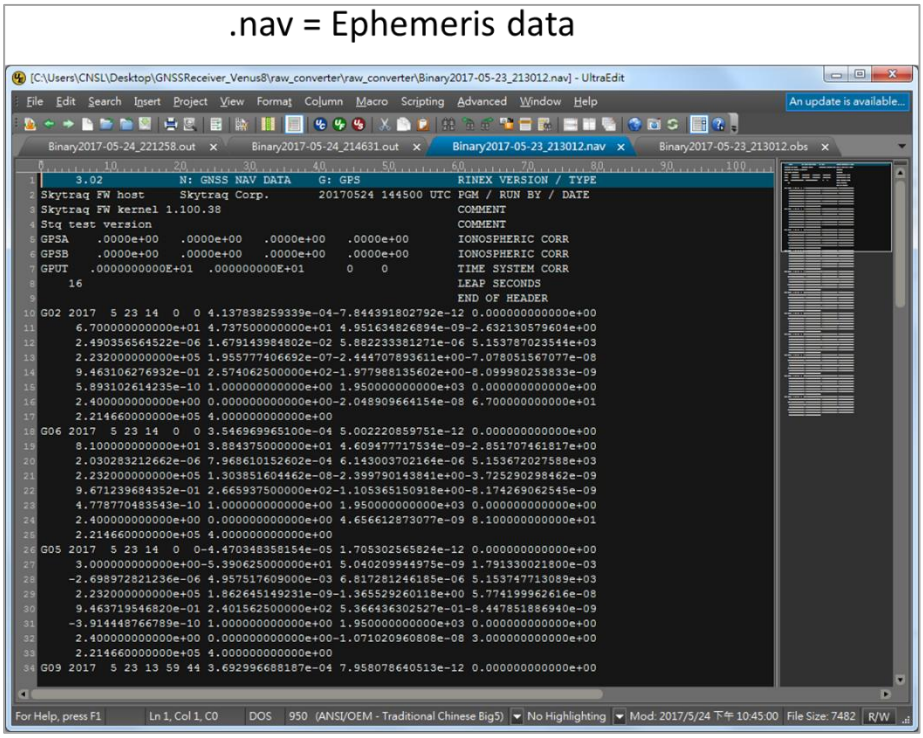


6. Then you can receive 2 output files, which are the navigation file and observation file.

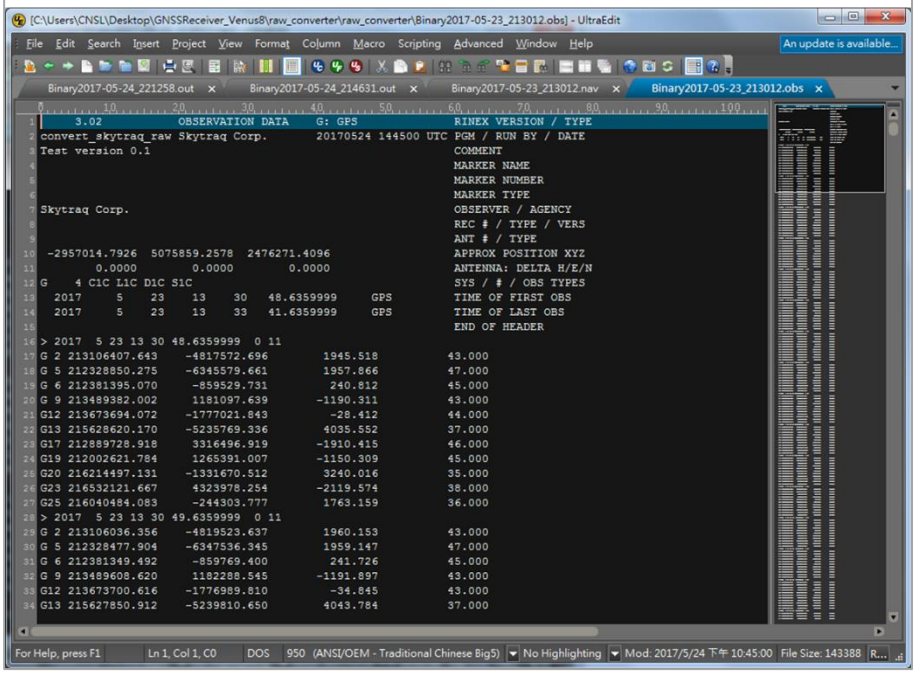


Open the files and can see the information as following:

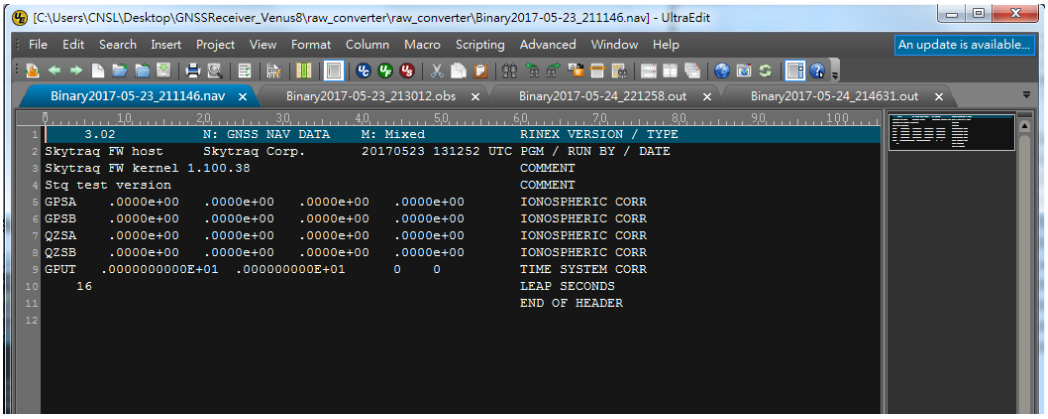
.nav = Ephemeris data



.obs = Receiver data



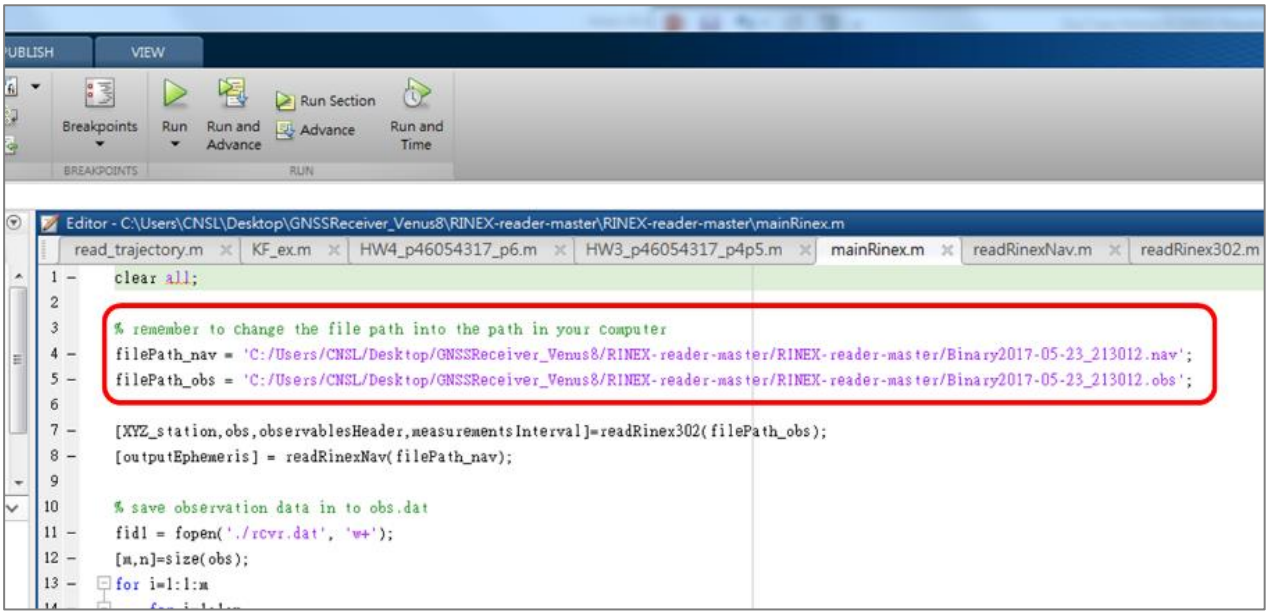
If the information of the navigation file is shown as the figure below, this means that the data receiving time is not long enough. The database are too short to decode. Please repeat the Save Binary Message step and try again Read Binary File step.



- **Get ephemeris data and receiver data in MATLAB**

  (The MATLAB code in RINEX-reader file is download from https://github.com/manromao/RINEX-reader in order to read the data which is save as RINEX 3.02 version.)

  1. Open “mainRinex.m” MATLAB code which you can find in “RINEX-reader” file.
  2. Remember to change the filepath_nav and filepath_obs into the file path in your computer.



  3. Run mainRinex.m, and you will get eph.dat and rcvr.dat in Document\Matlab file.