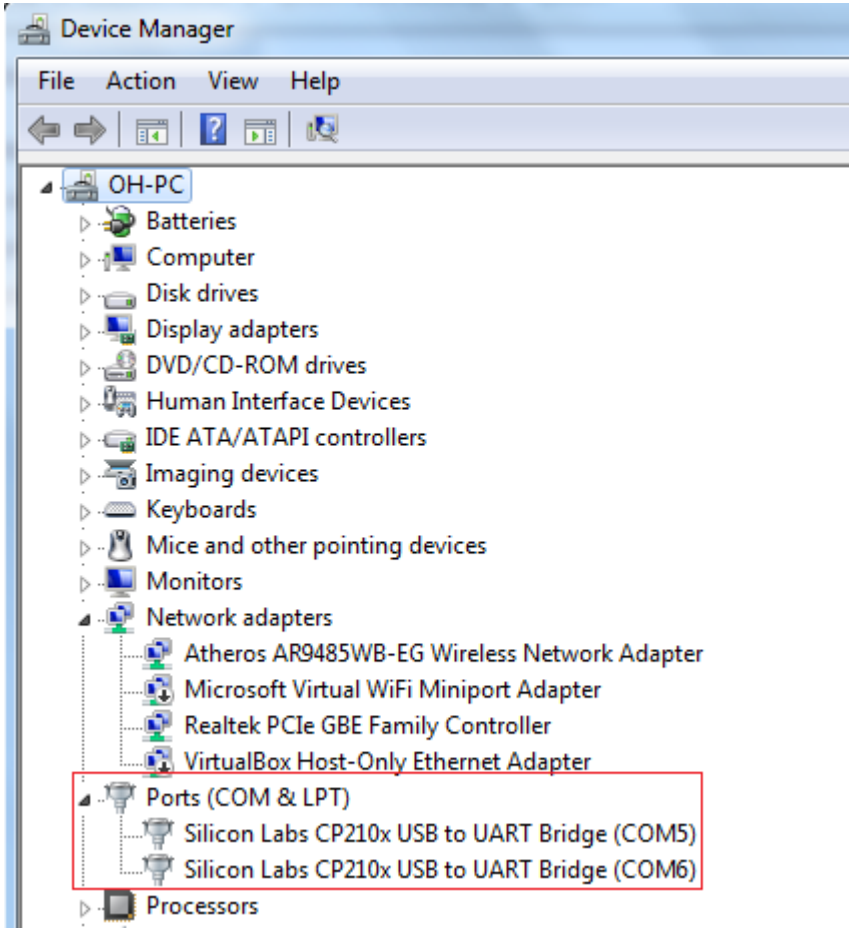
Getting Started with S1216F8-RTK EVB

Install USB Driver from Silicon Lab Site

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

After connecting USB cables, should see 2 COM ports on Device Manager.

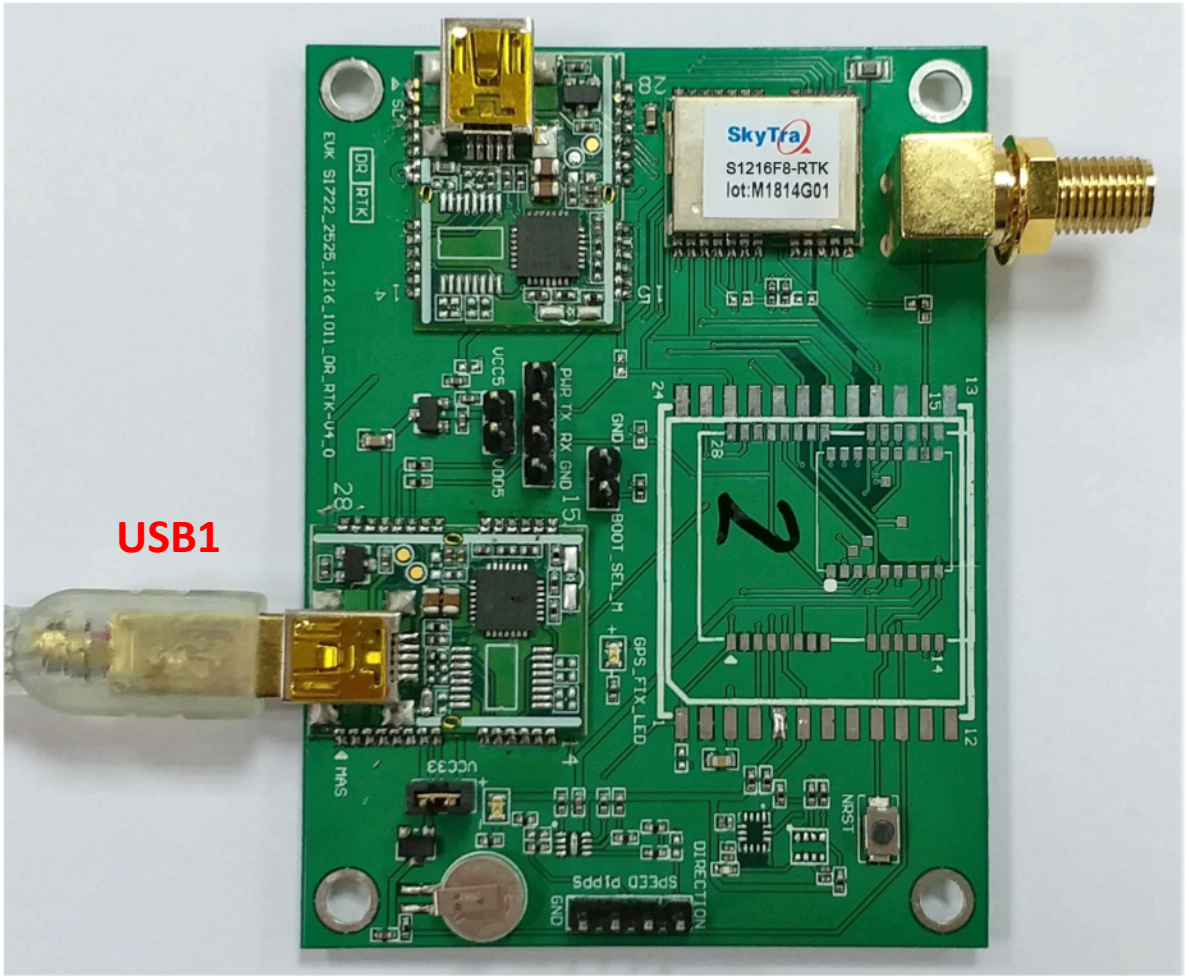
Take note of which physical connection results in which COM port



Get Windows GNSS Viewer

- http://navspark.mybigcommerce.com/content/GNSS_Viewer.zip
- http://navspark.mybigcommerce.com/content/GNSSViewerUserGuide.pdf

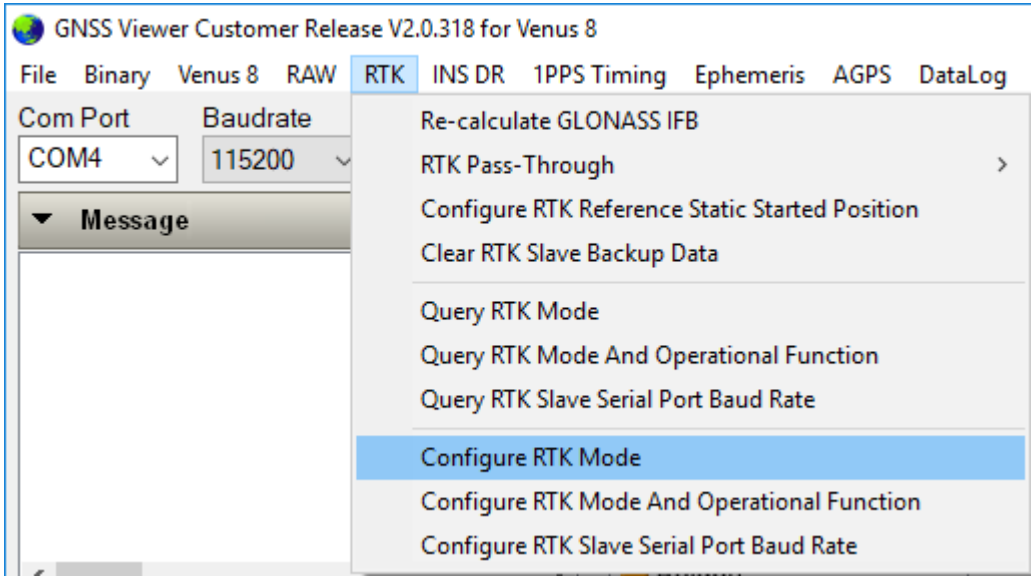
Setup EVB as RTK Base (1/5)

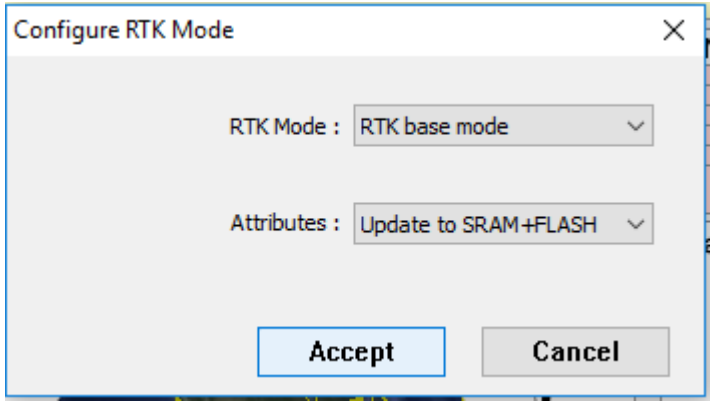


All configuration go through USB1 COM port

Setup EVB as RTK Base (2/5)

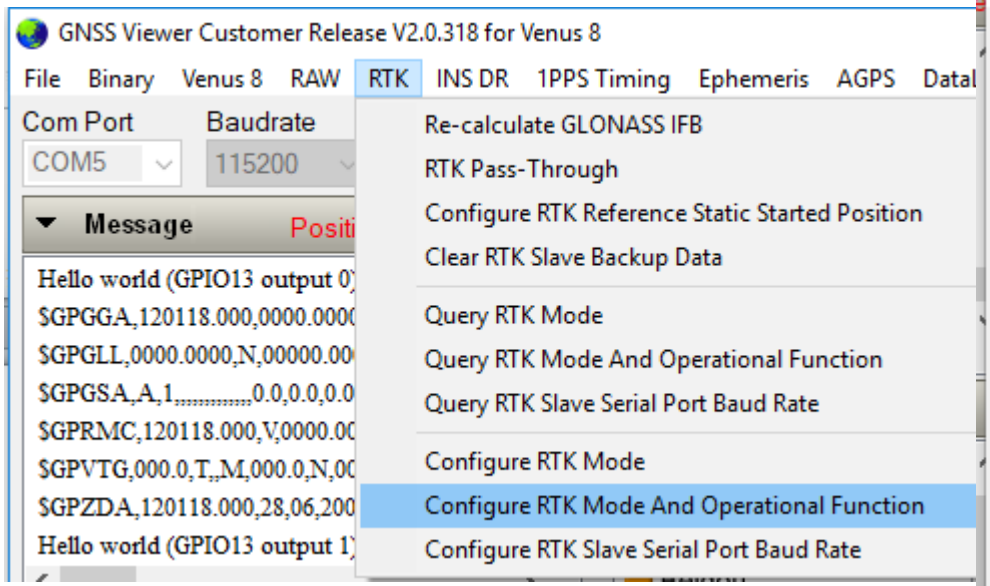
Configure the EVB to function as RTK base

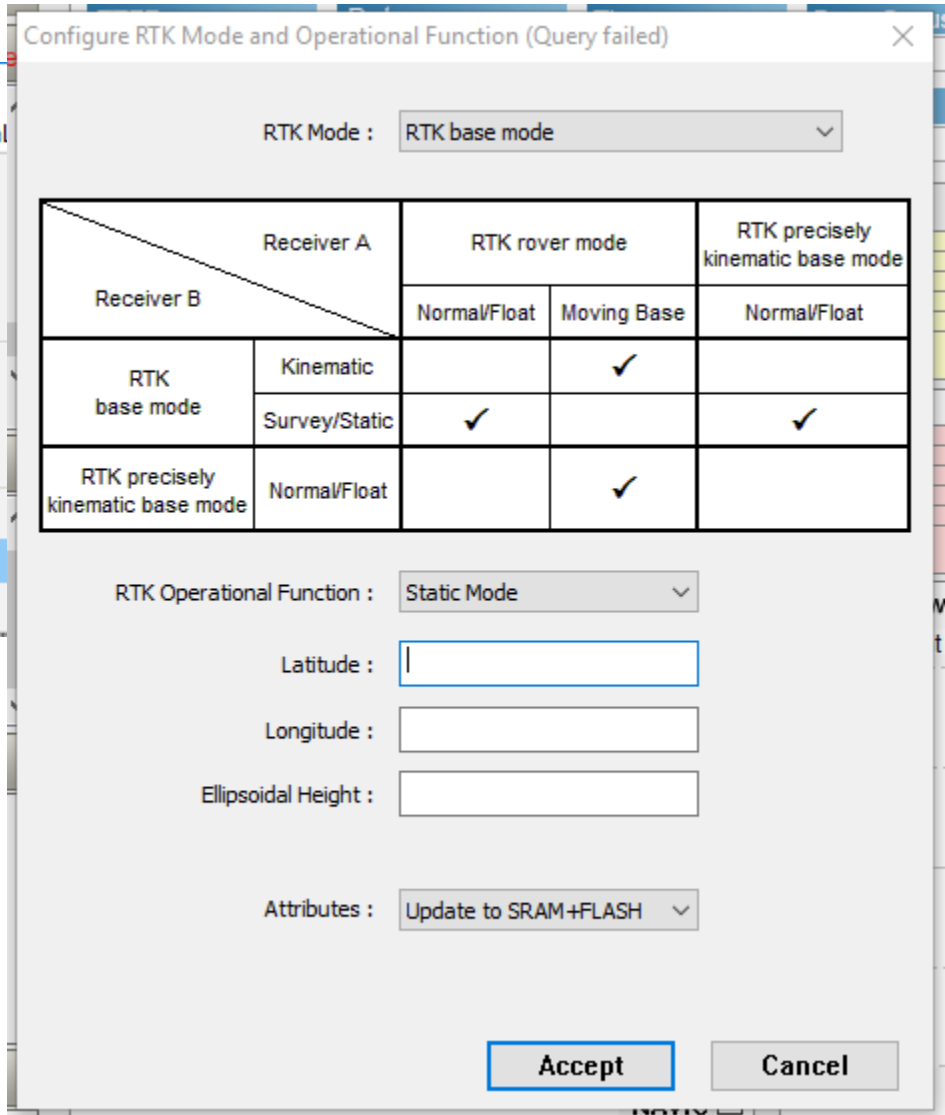




Setup EVB as RTK Base (3/5)

Setup RTK base position: if base antenna position is known



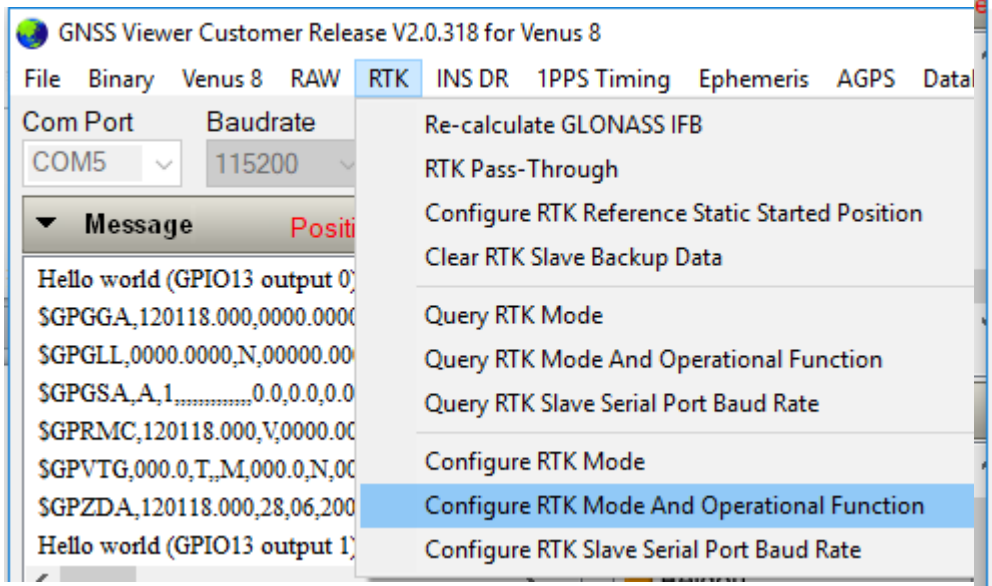


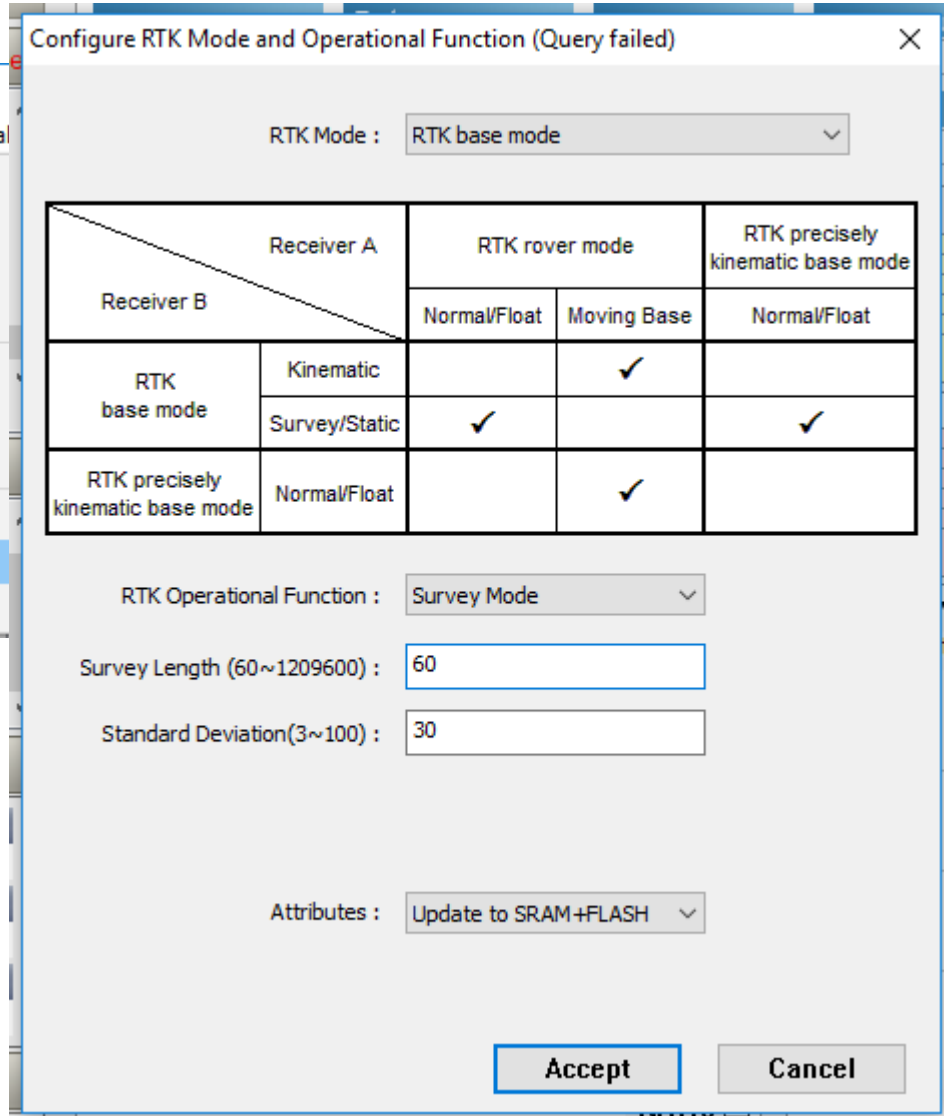
Set the antenna position latitude / longitude / elipsoidal height

elipsoidal height = mean sea level altitude + geodial separation

Setup EVB as RTK Base (4/5)

Setup RTK base position: if base antenna position is not known



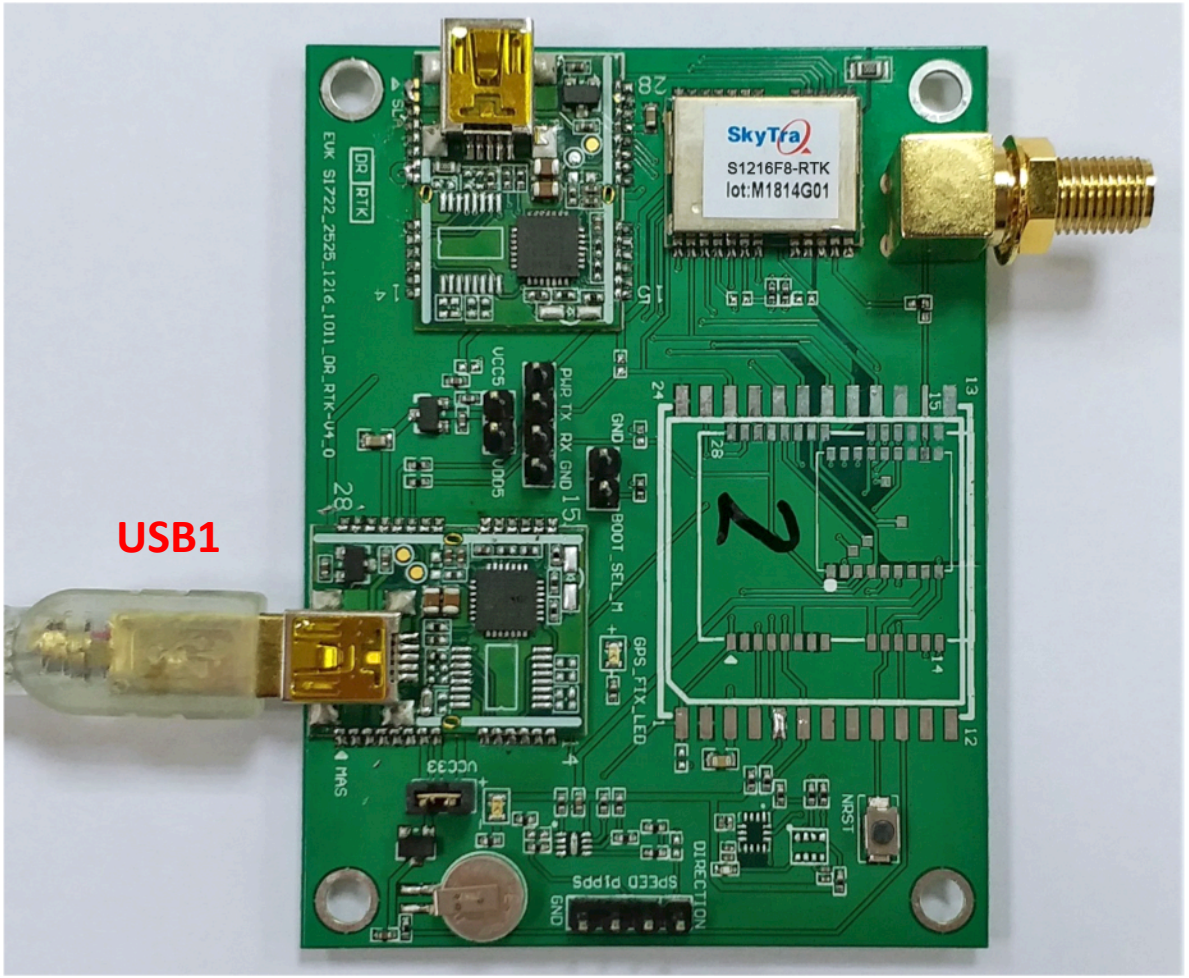


Let it self-survey for 60sec

Setup EVB as Base Station (5/5)

- After it gets position fix and self-surveyed, the base enters into static mode. You should see the blue dot stop drifting around after static mode is entered from scatter plot view, may need to click Set Origin to see it first. Next power on will still start from survey mode, with self-surveyed antenna location at different place unless static mode is chosen and constant position is entered.
- To see what the self-surveyed latitude, longitude, and height values are, from GNSS Viewer RTK → Query RTK Mode And Operational Function
- To use the base at some fixed location, use above steps to self-survey and retrieve surveyed position, then set antenna position using static base mode as described in (3/5)

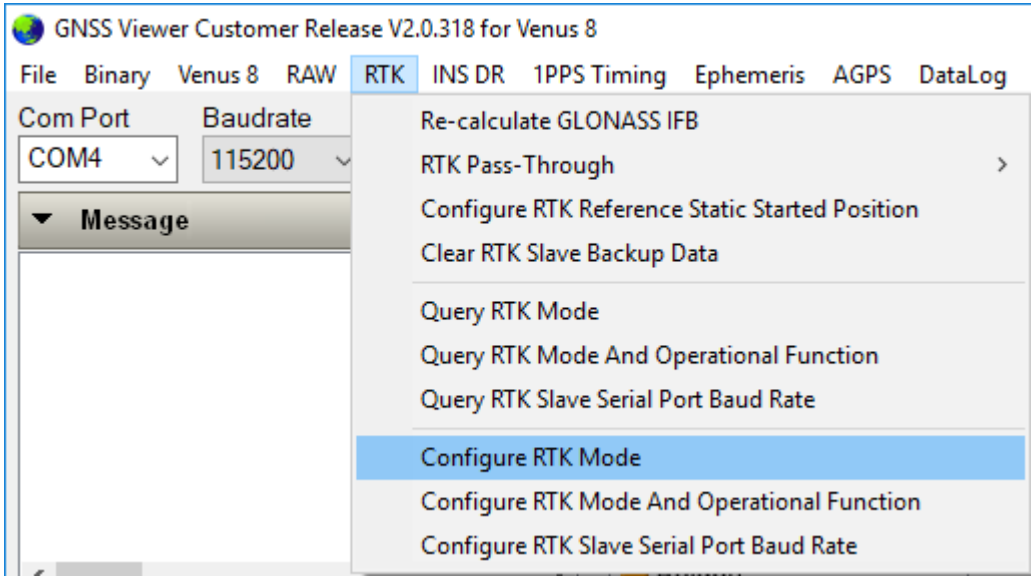
Setup EVB as RTK Rover (1/3)

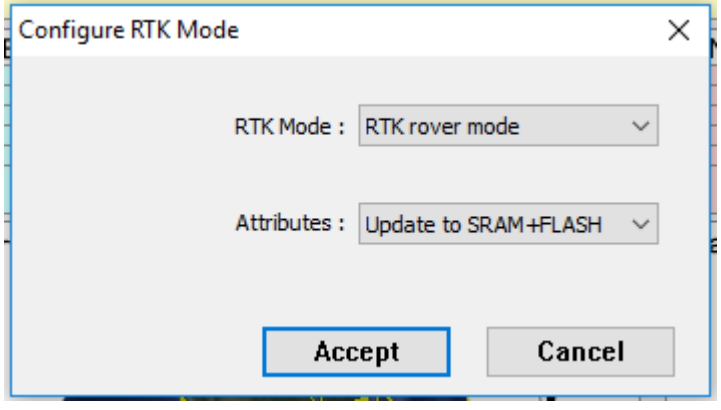


All configuration go through USB1 COM port

Setup EVB as RTK Rover (2/3)

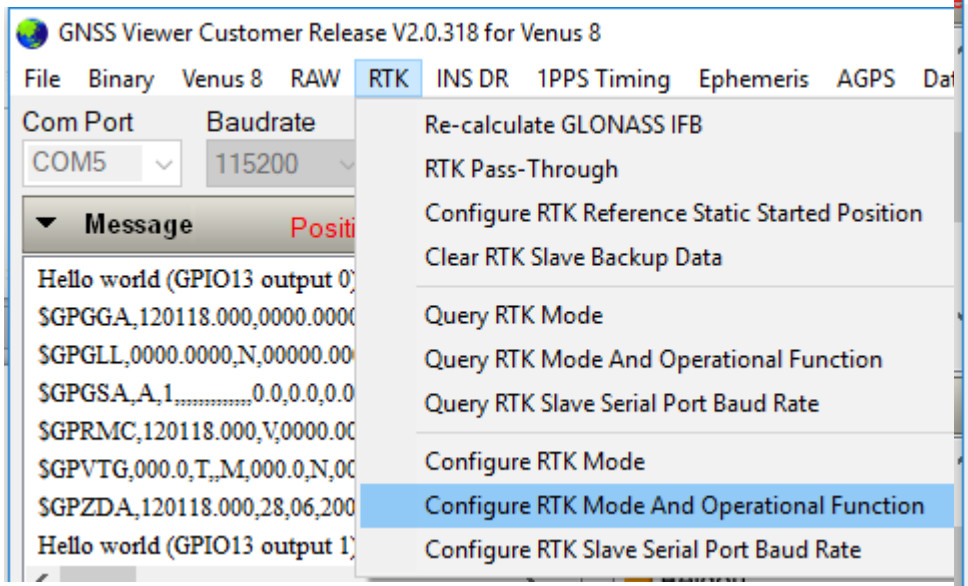
Configure the EVB to function as RTK rover

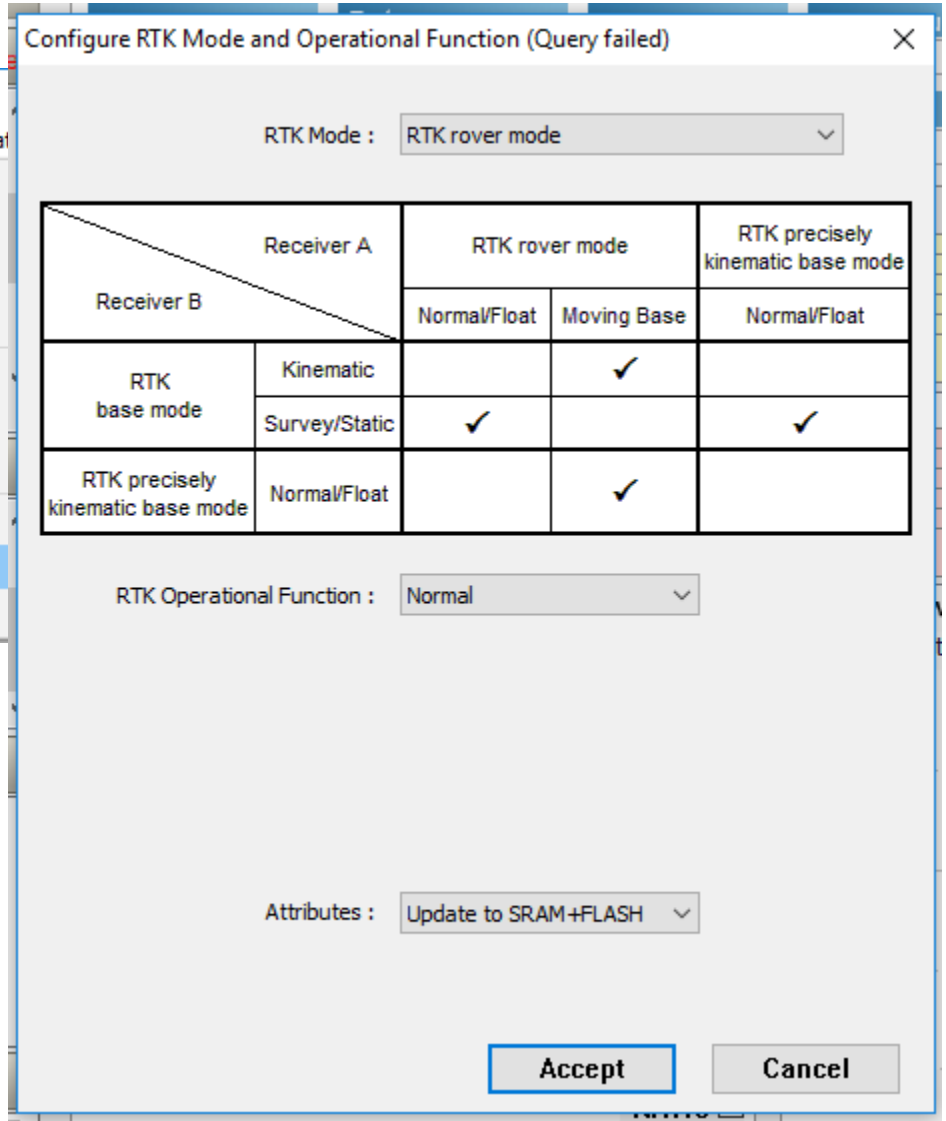




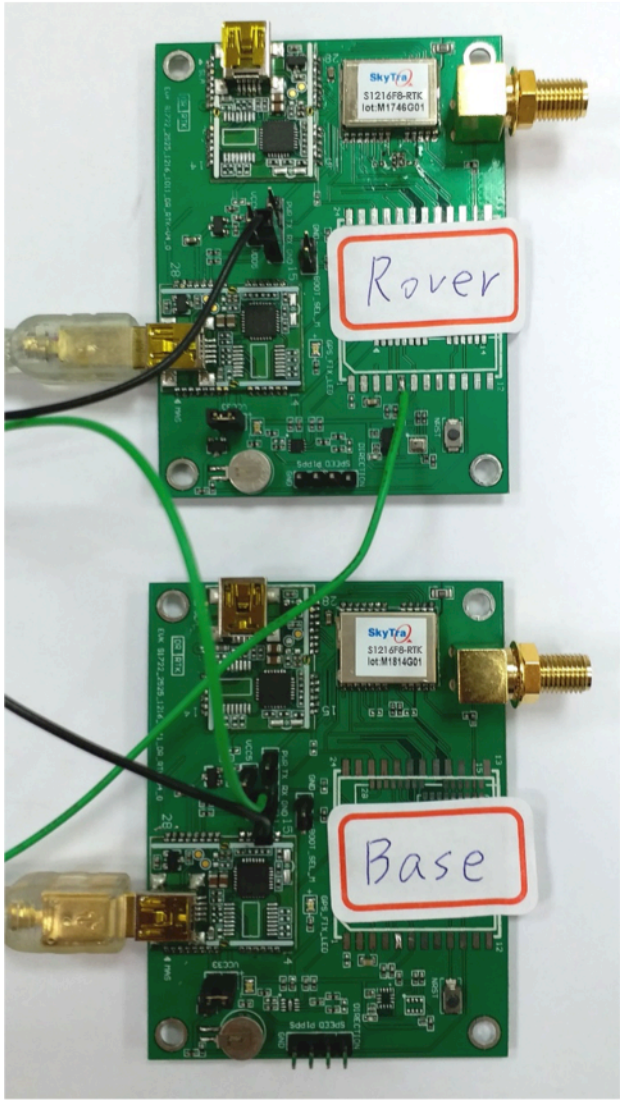
Setup EVB as RTK Rover (3/3)

Configure the RTK rover to function in normal RTK mode





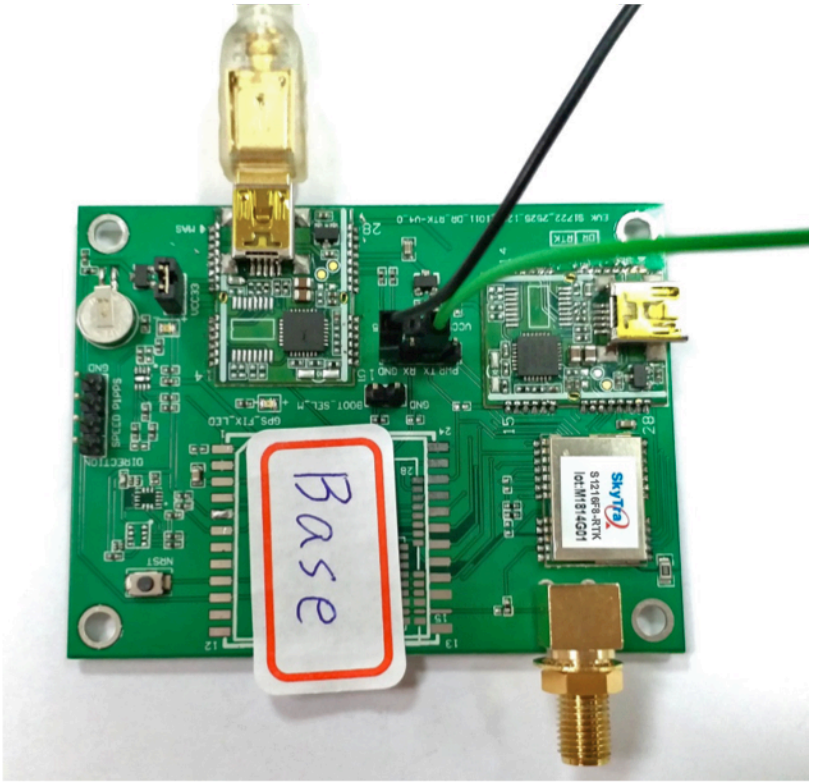
Very Short Baseline Quick Test (1/3)

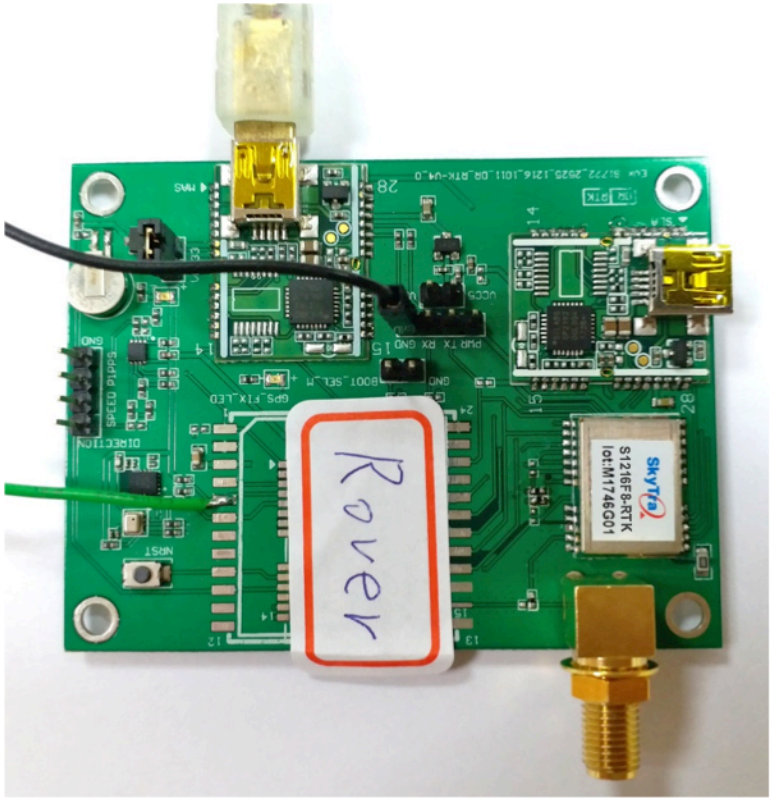


1. Connect ground of base and rover (black wire)
2. Connect base TX1 to rover RX2 (green wire)

S1216F8-RTK rover expect RTK base input data at 115200

Very Short Baseline Quick Test (2/3)

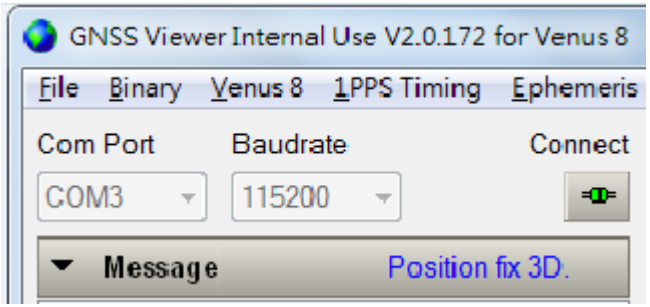


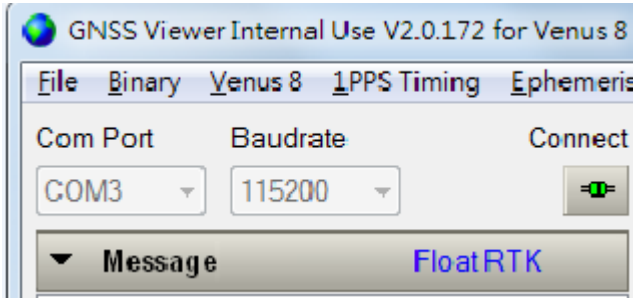


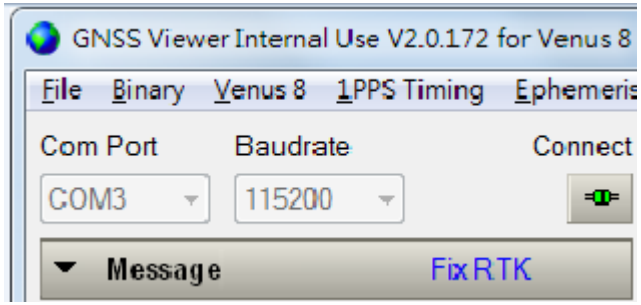
Very Short Baseline Quick Test (3/3)

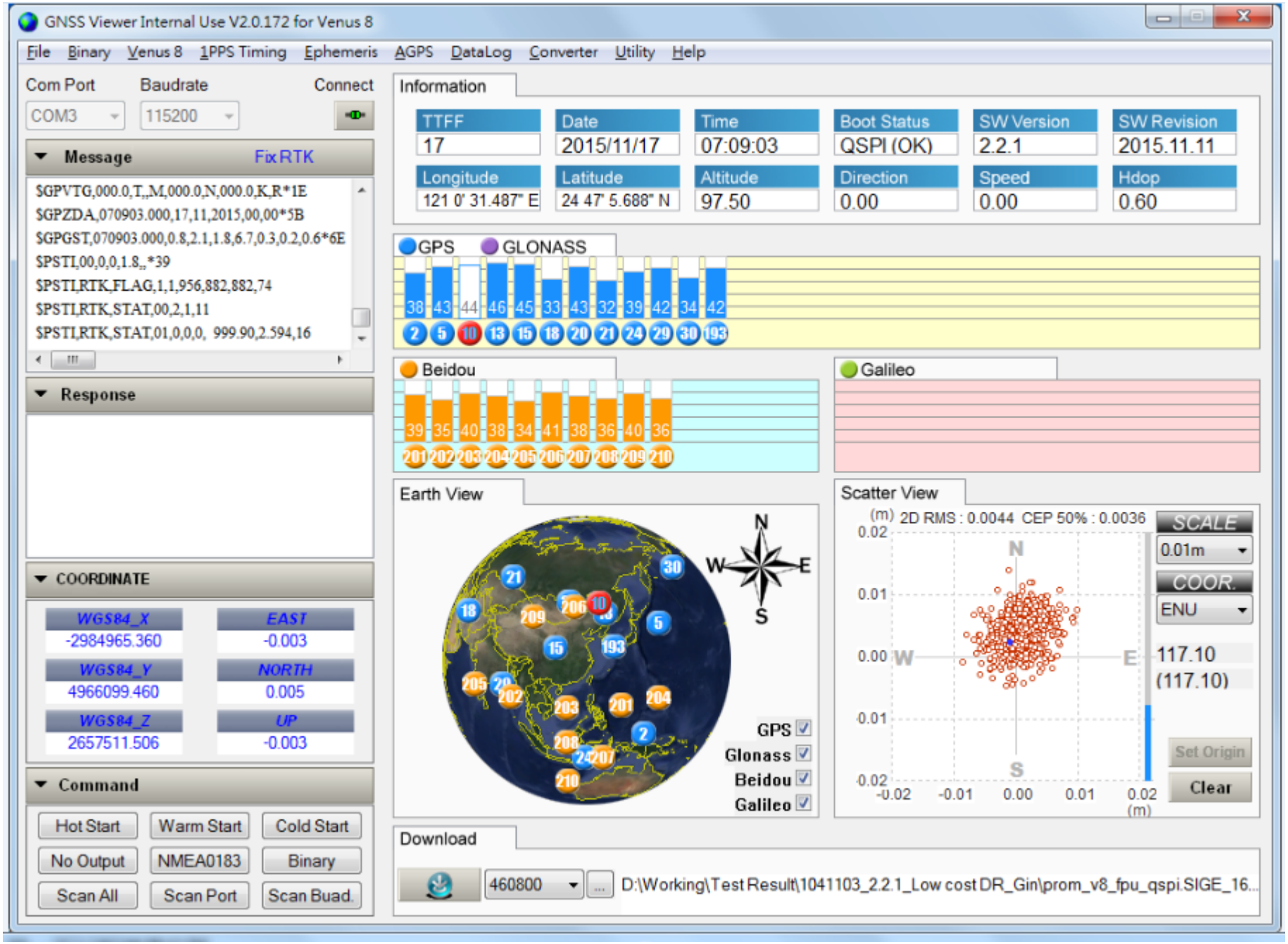
- Make sure antenna is under open sky and receiving signals over 38dB
- Rover should initially have 3D fix, go through float solution, then later have fix solution

Rover Result on GNSS Viewer








GNSS Viewer Internal Use V2.0.172 for Venus 8
File Binary Venus 8 1PPS Timing Ephemeris AGPS DataLog Converter Utility Help
Com Port
COM3
Baudrate
115200
Connect
Message
Fix RTK
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$GPGST,070903.000,0.8,2.1,1.8,6.7,0.3,0.2,0.6*6E
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$PSTI,RTK,STAT,00,2,1,11
$PSTI,RTK,STAT,01,0,0,0, 999.90,2.594,16
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EAST
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WGS84_Y
4966099.460
NORTH
0.005
WGS84_Z
2657511.506
UP
-0.003
Command
Hot Start
Warm Start
Cold Start
No Output
NMEA0183
Binary
Scan All
Scan Port
Scan Buad.
Information
TTFF
17
Date
2015/11/17
Time
07:09:03
Boot Status
QSPI (OK)
SW Version
2.2.1
SW Revision
2015.11.11
Longitude
121 0' 31.487" E
Latitude
24 47' 5.688" N
Altitude
97.50
Direction
0.00
Speed
0.00
Hdop
0.60
GPS
GLONASS
38 43 44 46 45 33 43 32 39 42 34 42
2 5 10 13 15 18 20 21 24 29 30 193
Beidou
39 35 40 38 34 41 38 36 40 36
201 202 203 204 205 206 207 208 209 210
Galileo
Earth View
N
W
E
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GPS
Glonass
Beidou
Galileo
Scatter View
(m)
2D RMS : 0.0044 CEP 50% : 0.0036
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0.00
0.01
0.02
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COOR.
ENU
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(117.10)
Set Origin
Clear
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460800
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What To Do Next

- After getting it to work in very short baseline configuration, you can extend base and rover distance by using
  - Simple radio link using transmitter and receiver
  - 3G or 4G network, using NTRIP Caster to send base station data over Internet, and NTRIP Client software to receive base station data over Internet.