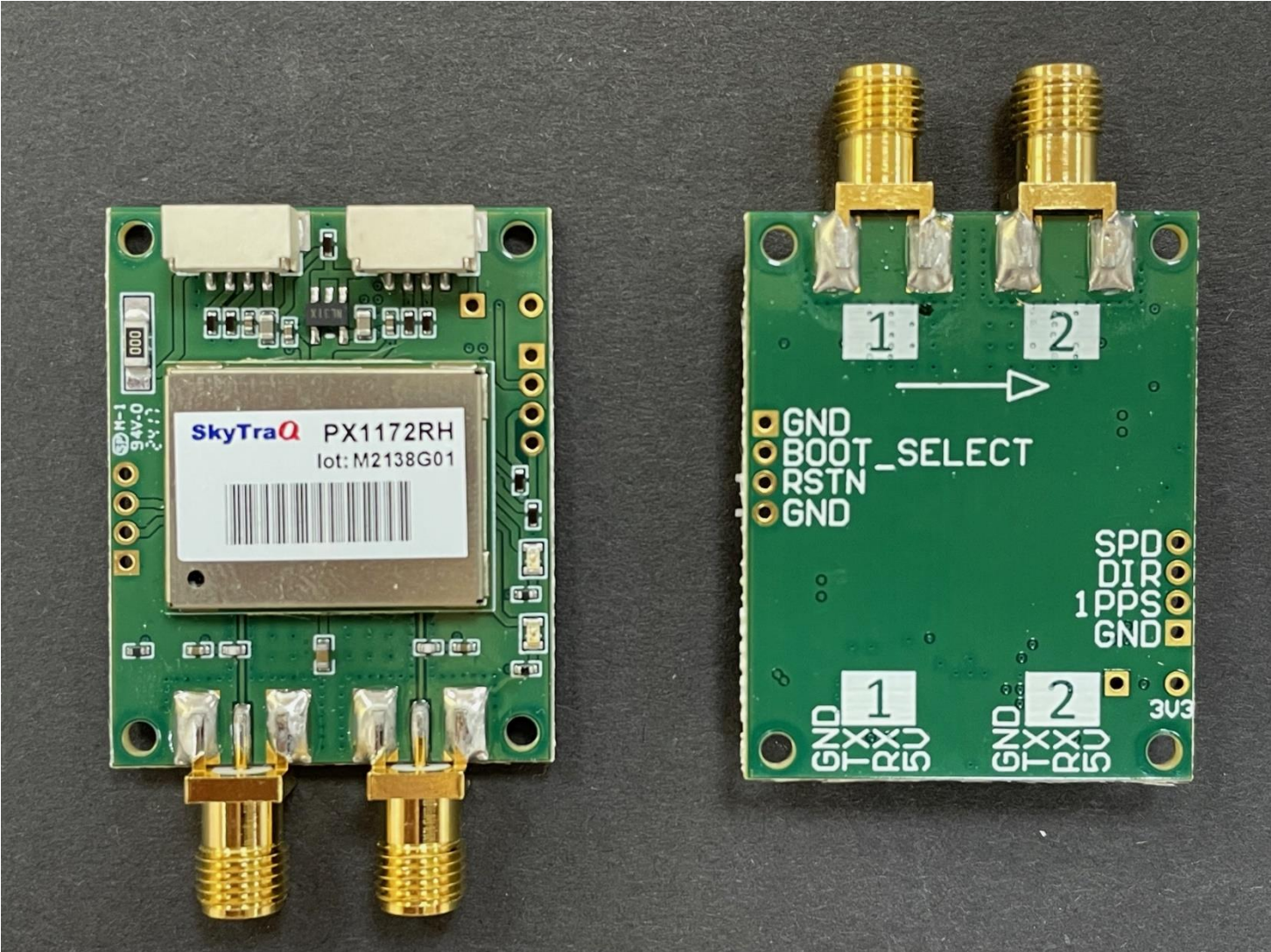


Getting Started with SS1722WC-L1L2 (Small Size PX1172RH Eval. Board)

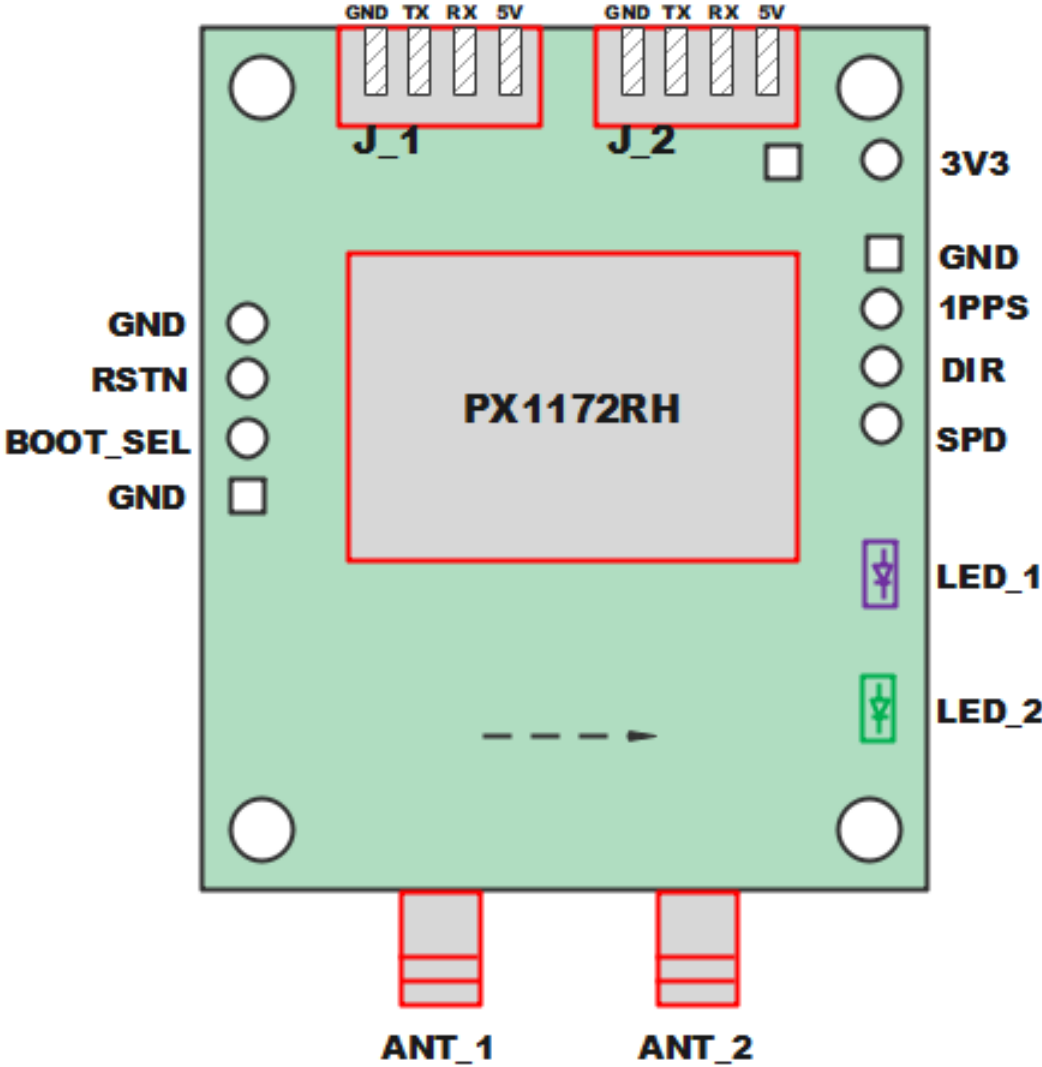
Top/Bottom View of SS1722WC-L1L2



Get Windows GNSS Viewer

- https://navspark.mybigcommerce.com/content/GNSS_Viewer-CustomerRelease.zip
- <http://navspark.mybigcommerce.com/content/GNSSViewerUserGuide.pdf>

Interface of SS1722WC-L1L2 (1/4)



Interface of SS1722WC-L1L2 (2/4)

NAME	DESCRIPTION
J_1	UART port for NMEA output, binary command input, also for updating firmware to B-chip, baud rate is 115,200.
J_2	UART port for updating firmware to R-chip, baud rate is 460,800.
LED_1 / LED_2	Status Indication of current fix situation, see “LED Indication” for detail.
1PPS	One-Pulse-Per-Second (1PPS) time mark output, 3.3V LV-TTL. The rising edge of pulse is synchronized to UTC second when getting 3D position fix. The pulse duration is about 100msec at rate of 1 Hz.
ANT_1 / ANT_2	SMA connector for GNSS antenna, injecting signal to B-chip and R-chip.
DIR	Not used. Leave unconnected.
SPD	Not used. Leave unconnected.
RSTN	External active-low reset input. Only needed when rise time of power supply is very slow or reset controlled by software is desired.
BOOT_SEL	Leave unconnected for normal use. Pull-low for loading firmware into empty or corrupted flash memory from ROM mode.
3V3	3.3V power pin for external use.
GND	Ground.

Interface of SS1722WC-L1L2 (3/4)

NAME	DESCRIPTION
---->	The direction of RTK heading, from ANT_1 antenna to ANT_2 antenna
J1.5V	5V power input for the board
J1.TX	UART serial data output, 3.3V LVTTTL. One full-duplex asynchronous serial UART port is implemented. This UART output is normally used for sending position, time and velocity information from the receiver in NMEA-0183 format at 115200 default baud rate. When idle, this pin output HIGH.
J1.RX	UART serial data input, 3.3V LVTTTL. One full-duplex asynchronous serial UART port is implemented. This UART input is normally for sending commands or information to the receiver in SkyTraq binary protocol at 115200 default baud rate. In the idle condition, this pin should be driven HIGH. If the driving circuitry is powered independently of PX1172RH, ensure that this pin is not driven to HIGH when PX1172RH is put to sleep, or a 10K-ohm series resistor can be added to minimize leakage current. RTCM-SC104 correction data or base station SkyTraq raw measurement data can also be sent to this UART input.
J1.GND	Ground of UART of B-chip

Interface of SS1722WC-L1L2 (4/4)

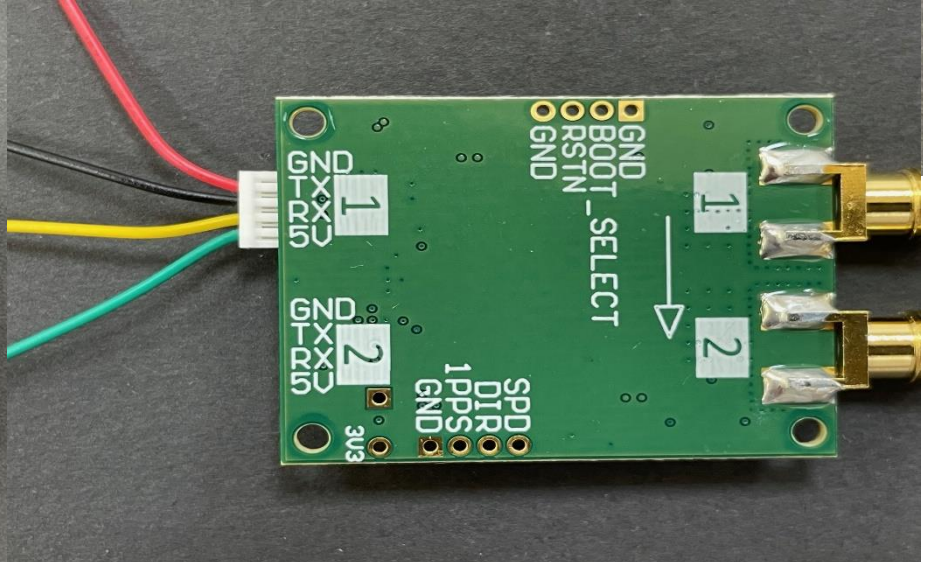
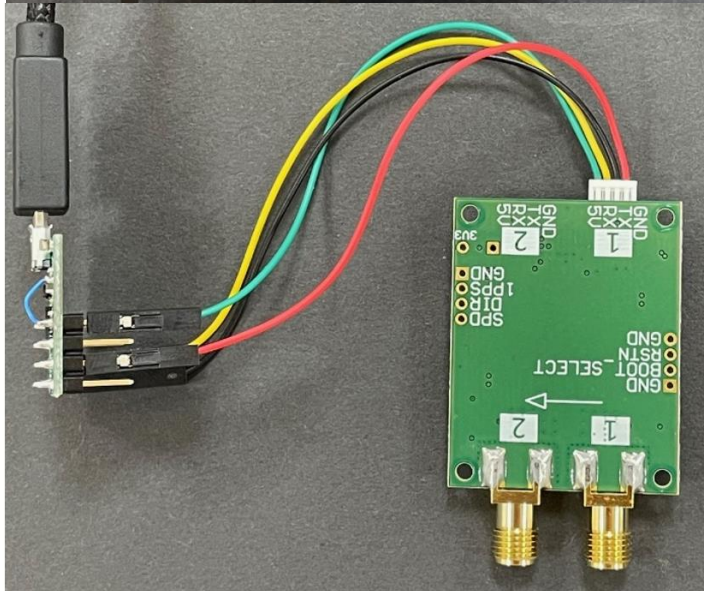
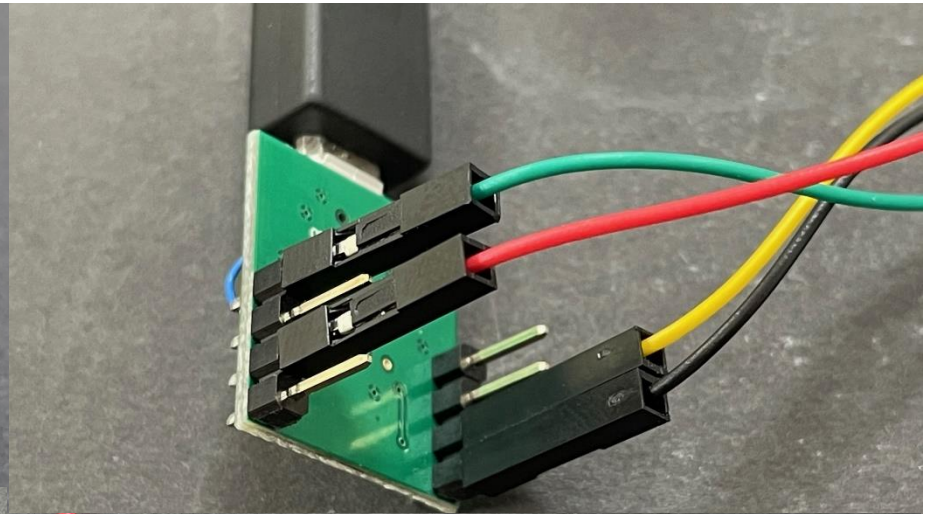
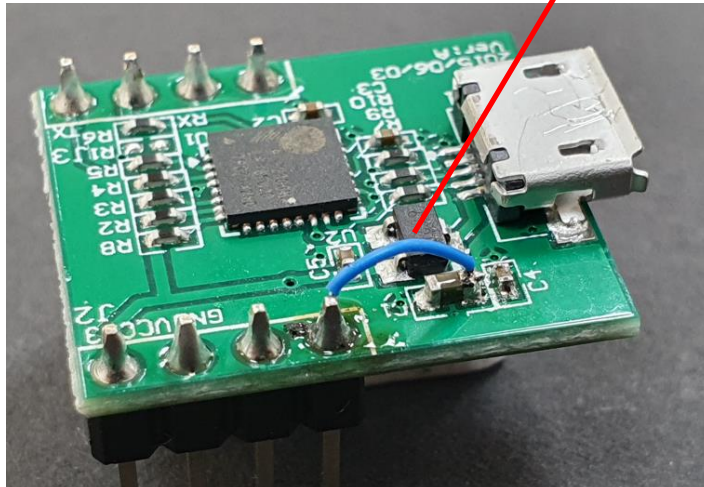
NAME	DESCRIPTION
J2.5V	5V power input for the board
J2.TX	UART serial data output, 3.3V LVTTTL. UART port for firmware updating of R-chip. Default baud rate 460800.
J2.RX	UART serial data input, 3.3V LVTTTL. UART port for firmware updating of R-chip. Default baud rate 460800.
J2.GND	Ground of UART of R-chip

LED Indication

ANT_1	ANT_2	RTCM to J1.RX	Description	LED1	LED2
YES	NO	NO	GNSS positioning, meter level accuracy	OFF	OFF
YES	NO	YES	RTK positioning, centimeter level accuracy	ON/FLASH	OFF
YES	YES	NO	RTK heading, GNSS positioning, meter level accuracy	OFF	ON/FLASH
YES	YES	YES	RTK heading, RTK positioning, centimeter level accuracy	ON/FLASH	ON/FLASH

UART-to-USB bridge

Need to solder a wire from capacitor to header pin to supply 5V if using our UART-to-USB breakout board



SS1722WC-L1L2 Usage (1/2)

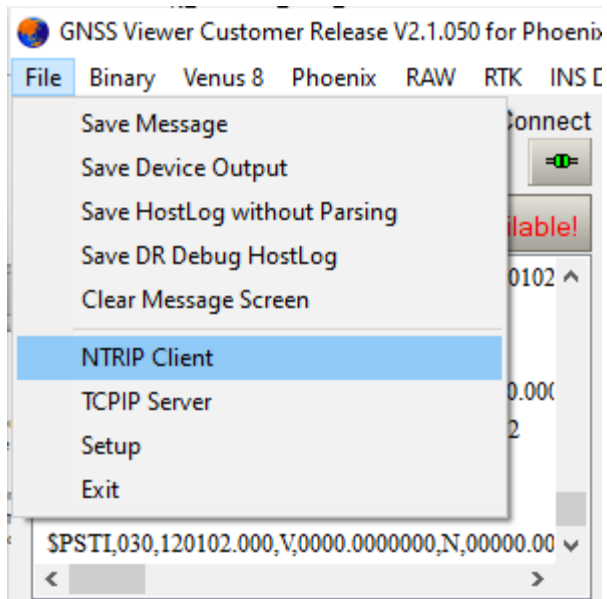
UART_1 UART_2



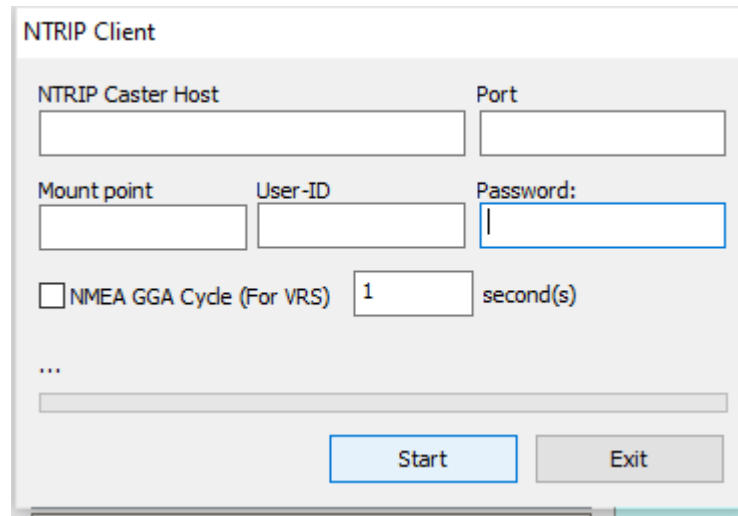
ANT_1 ANT_2

1. Connect two RTK antennas to both ANT_1 and ANT_2 SMA connectors
2. Run GNSS Viewer on Windows laptop
3. Connect UART_1 to Windows laptop using UART-to-USB bridge shown in previous page
4. Connect GNSS Viewer to EVB using 115,200 baud rate

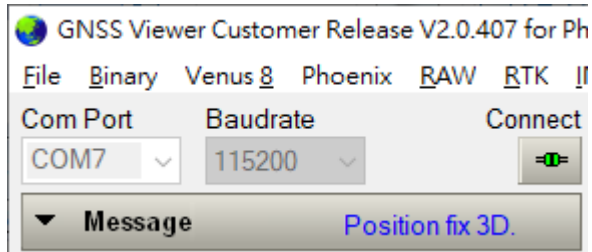
EVB Usage (2/2)



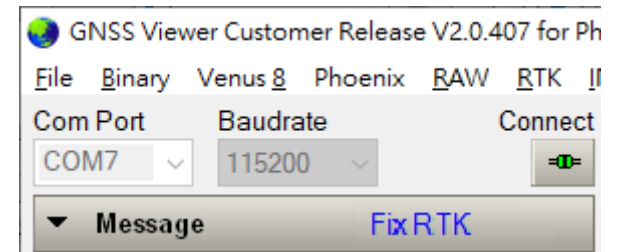
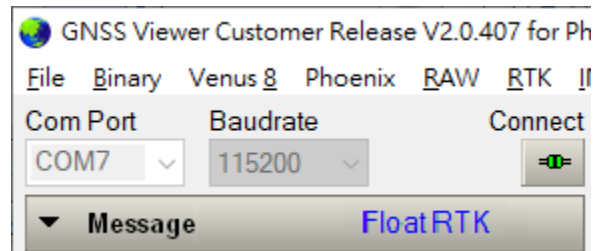
On GNSS Viewer, configure NTRIP Connection Setting



Result on GNSS Viewer



After NTRIP Client getting RTK correction data and SS1722WC-L1L2 receiving signal from antenna outdoors under open sky, the receiver will go from 3D Fix to RTK Float to RTK Fix state.



ANT_1 Antenna RTK Position Fix from RTCM input

GNSS Viewer Customer Release V2.1.165 for Phoenix

File Binary Venus 8 Phoenix RAW RTK INS DR 1PPS Timing Ephemeris AGPS Converter Help

Com Port: COM3
Baudrate: 115200
Connect:

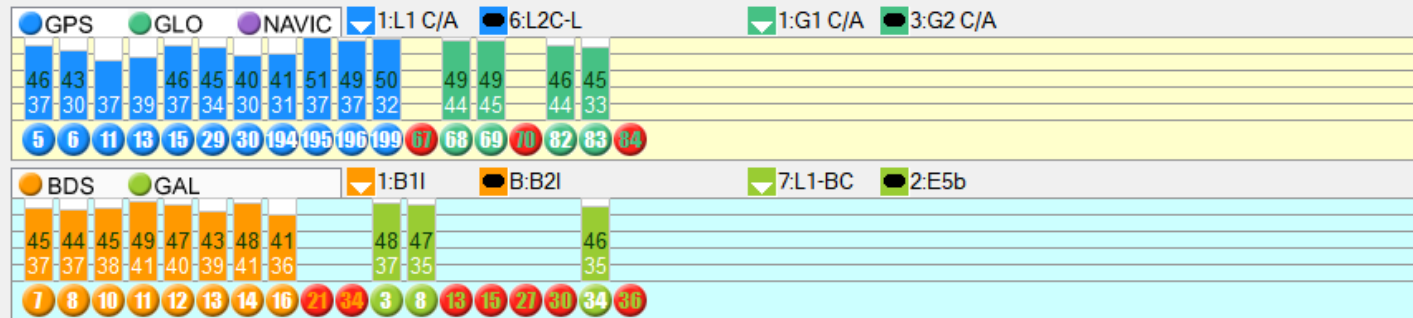
Fix RTK

Information | **RTK Info.** | RTK Info2. | DR Info.

Time	Cycle-Slipped R/B	RTK Age	RTK Ratio	Baseline Length	Baseline Course
06:55:00	1/ 0	1.0	10.0	9.643	349.10
Longitude	Latitude	Ellipsoid H	East-Projection	North-projection	Up-projection
121°0'31.27282" E	24°47'5.47982" N	114.37	-1.819	9.448	0.640

Message

SGAGSV,2,2,08,30,11,212,,36,10,119,,13,08,314,,2,
 SGAGSV,1,1,03,03,81,084,48,34,53,086,46,08,41,2C
 \$GBGSV,3,1,10,34,77,169,,11,75,318,41,14,49,262,-
 \$GBGSV,3,2,10,08,45,332,37,10,44,230,38,13,42,31
 \$GBGSV,3,3,10,21,37,032,,16,20,175,36,1*72
 \$GBGSV,2,1,08,11,75,318,49,14,49,262,48,12,46,14
 \$GBGSV,2,2,08,10,44,230,45,13,42,318,43,07,41,21
 \$GNGLL,2447.0913303,N,12100.5212137,E,065500

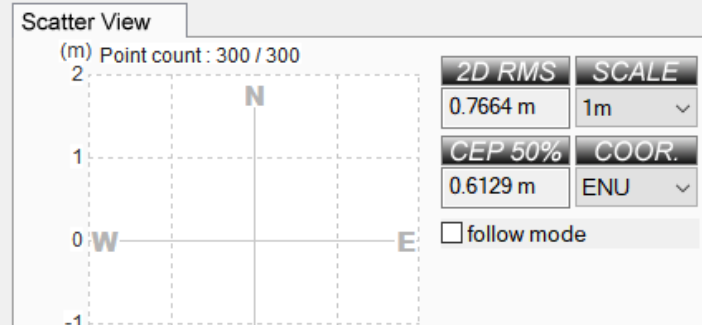


Response

Unable to open COM3! Error code: 5存取

COORDINATE

WGS84_X	EAST
-2984960.384	-2.702
WGS84_Y	NORTH
4966102.669	-4.302



Dual Antenna Moving-Base RTK Fix, Giving RTK Heading + Pitch/Roll Info

GNSS Viewer Customer Release V2.1.165 for Phoenix

File Binary Venus 8 Phoenix RAW RTK INS DR 1PPS Timing Ephemeris AGPS Converter Help

Com Port: COM3 Baudrate: 115200 Connect:

Message: Fix RTK

```

$GNVTG,0.0,0,T,,M,0.0,0,N,0.0,0,K,D*16
$GNZDA,065548.000,19,06,2024,00,00*48
$PSTI,030,065548.000,A,2447.0913279,N,12100.5
$PSTI,032,065548.000,190624,A,R,-1.826,9.444,0,
$PSTI,033,065548.000,190624,2,R,0,G,0,0,...,C,0,0,...
$PSTI,033,065548.000,190624,2,B,0,G,0,0,...,C,0,0,...
$GNTHS,191.64,A*12
$GNHDT,191.64,T*10
    
```

Response: Unable to open COM3! Error code: 5存取

COORDINATE

WGS84_X	EAST
-2984960.383	-2.708
WGS84_Y	NORTH
4966102.679	-4.305
WGS84_Z	UP

Information RTK Info. RTK Info2 DR Info

Time	Time Stamp	True Heading	Heading	Pitch	Roll	RTK Status
06:55:48		191.640	191.640	-16.450	0.000	RTK Fixed

Longitude	Latitude	Ellipsoidal H	East-Projection	North-projection	Up-projection
121°0'31.27257" E	24°47'5.47967" N	114.37	-1.826	9.444	0.640

GPS GLO NAVIC 1:L1 C/A 6:L2C-L 1:G1 C/A 3:G2 C/A

BDS GAL 1:B1I B:B2I 7:L1-BC 2:E5b

Earth View

Scatter View

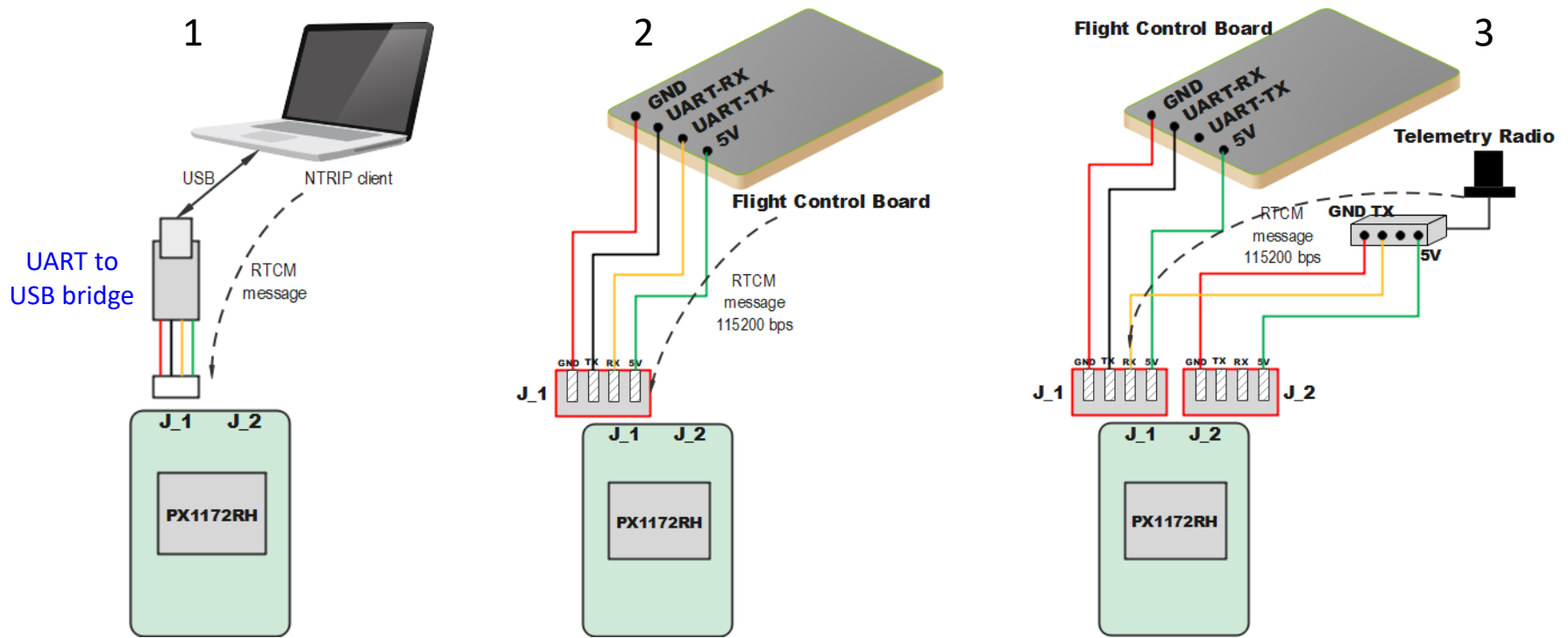
(m) Point count: 300 / 300

2D RMS	SCALE
0.9401 m	1m
CEP 50%	COOR.
0.7763 m	ENU

follow mode

GPS
Glonass

RTCM Correction Data Input Options

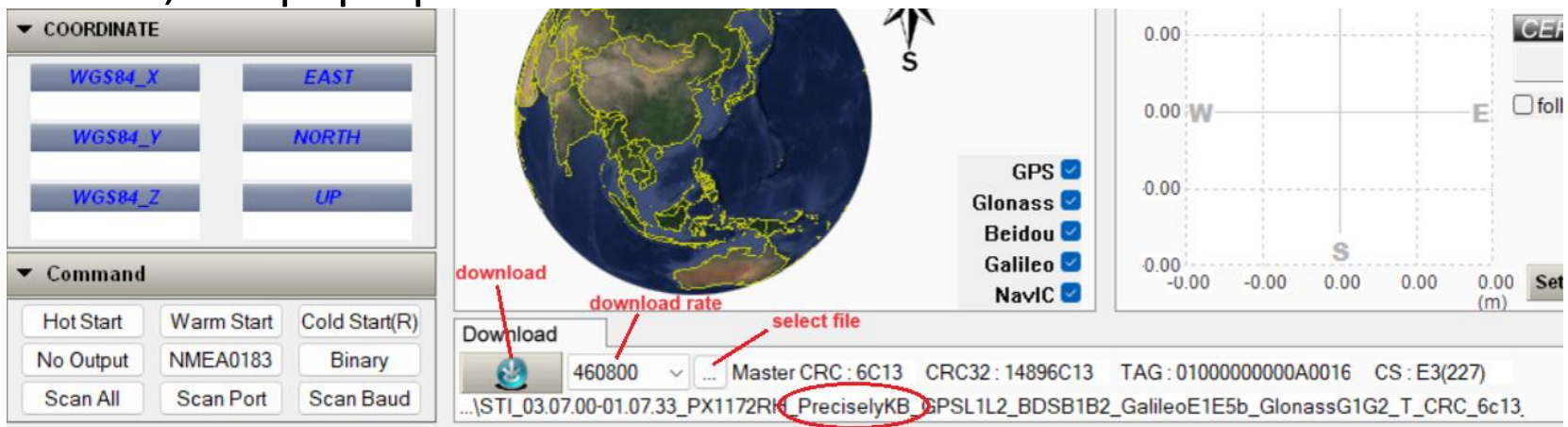


1. Connect SS1722WC-L1L2 to Laptop USB port
2. Connect SS1722WC-L1L2 to Flight Control Board using MAVLink RTCM Injection Protocol
3. Connect SS1722WC-L1L2 to 3rd-party Telemetry Radio

Firmware Update (1/2)

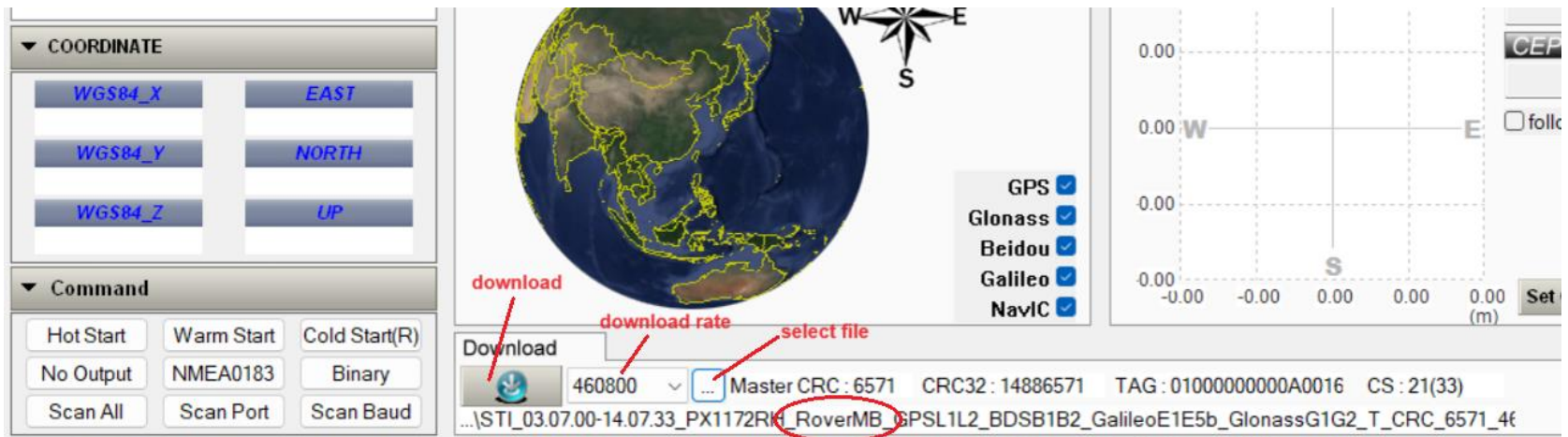
To update firmware to SS1722WC-L1L2:

- 1. Unzip the firmware file, there should have two .bin files.
- 2. Connect UART_1 to a Windows PC running GNSS Viewer using UART-to-USB bridge. Connect GNSS Viewer to the SS1722WC-L1L2 using 115,200 baud rate.
- 3. Select the unzipped .bin file with “PreciselyKB” in filename using the small button on right of the Download button.
- 4. Click the Download button, first boot-loader will be downloaded, and then main firmware will be downloaded. After downloading is done, the pop-up window closes and SS1722WC-L1L2 will reboot.



Firmware Update (2/2)

- 5. Connect UART_2 to a Windows PC running GNSS Viewer using UART-to-USB bridge. Connect GNSS Viewer to the SS1722WC-L1L2 using 460,800 baud rate.
- 6. Select the unzipped .bin file with “RoverMB” in filename using the small button on right of the Download button.
- 7. Click the Download button, first boot-loader will be downloaded, and then main firmware will be downloaded. After downloading is done, the pop-up window closes and X1722WC will reboot.



SS1722WC-L1L2 Schematic

