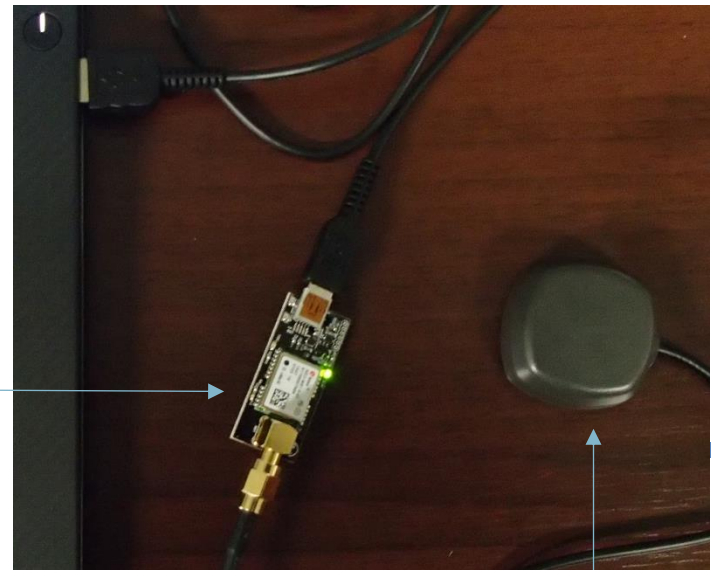




How to use Receiver/Antenna Test Package



uBlox receiver

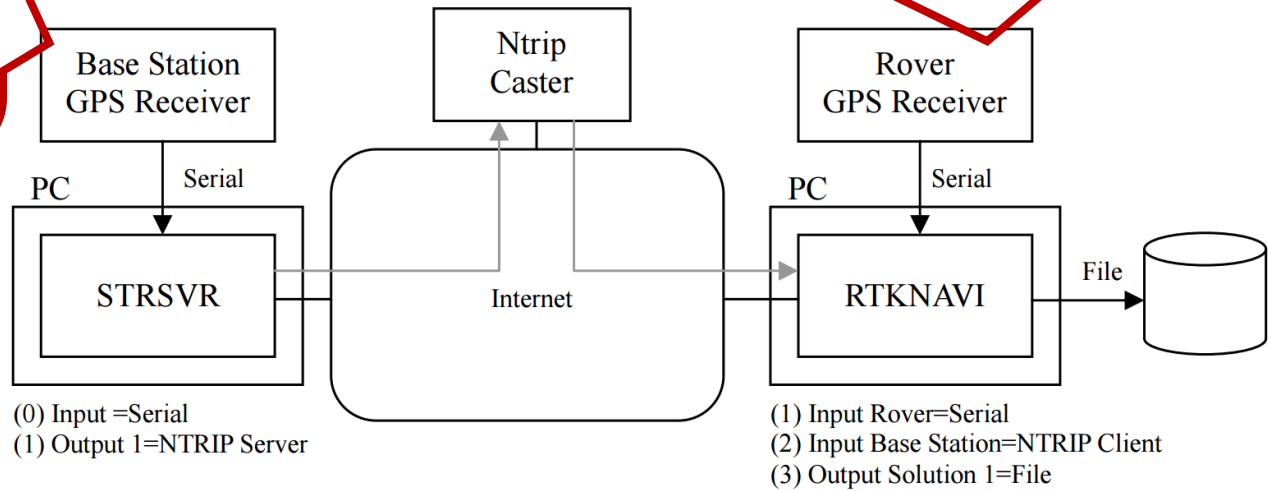
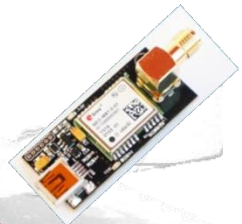
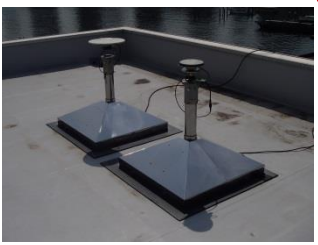


antenna

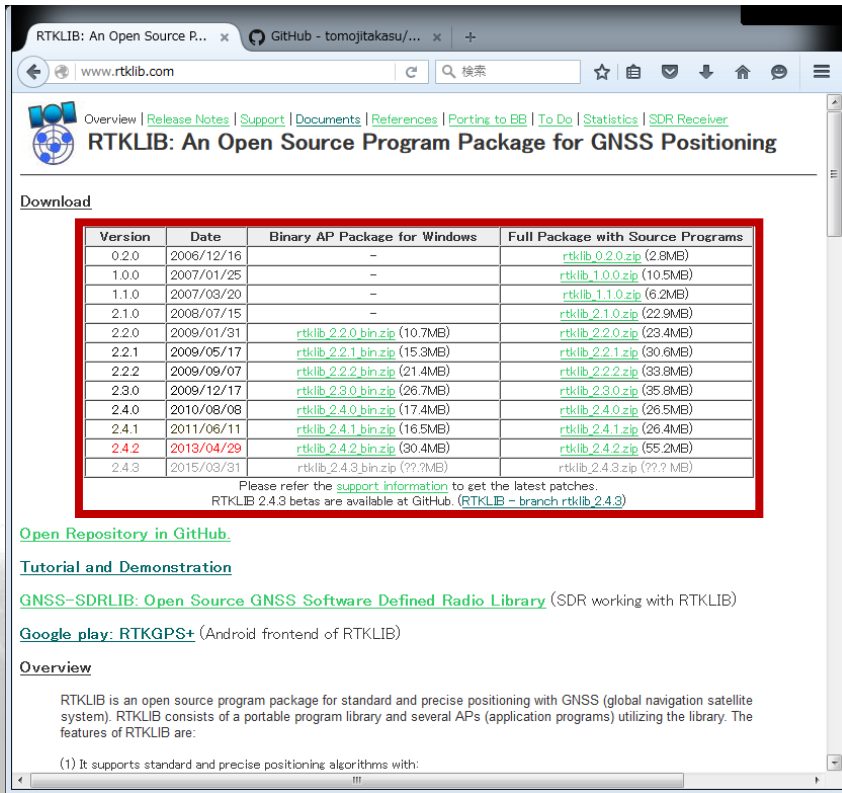
Use Ublox as the reference station



- Reference station uploads raw data
- Ntrip server can distribute the data



Download RTKLIB



RTKLIB: An Open Source Program Package for GNSS Positioning

Download

| Version | Date | Binary AP Package for Windows | Full Package with Source Programs |
|---------|------------|--|---|
| 0.2.0 | 2006/12/16 | - | rtklib_0.2.0.zip (2.8MB) |
| 1.0.0 | 2007/01/25 | - | rtklib_1.0.0.zip (10.5MB) |
| 1.1.0 | 2007/03/20 | - | rtklib_1.1.0.zip (6.2MB) |
| 2.1.0 | 2008/07/15 | - | rtklib_2.1.0.zip (22.9MB) |
| 2.2.0 | 2009/01/31 | rtklib_2.2.0.bin.zip (10.7MB) | rtklib_2.2.0.zip (23.4MB) |
| 2.2.1 | 2009/05/17 | rtklib_2.2.1.bin.zip (15.3MB) | rtklib_2.2.1.zip (30.6MB) |
| 2.2.2 | 2009/09/07 | rtklib_2.2.2.bin.zip (21.4MB) | rtklib_2.2.2.zip (33.8MB) |
| 2.3.0 | 2009/12/17 | rtklib_2.3.0.bin.zip (26.7MB) | rtklib_2.3.0.zip (35.8MB) |
| 2.4.0 | 2010/08/08 | rtklib_2.4.0.bin.zip (17.4MB) | rtklib_2.4.0.zip (26.5MB) |
| 2.4.1 | 2011/06/11 | rtklib_2.4.1.bin.zip (16.5MB) | rtklib_2.4.1.zip (26.4MB) |
| 2.4.2 | 2013/04/29 | rtklib_2.4.2.bin.zip (30.4MB) | rtklib_2.4.2.zip (65.2MB) |
| 2.4.3 | 2015/03/31 | rtklib_2.4.3.bin.zip (???.7MB) | rtklib_2.4.3.zip (???.7 MB) |

Please refer the [support information](#) to get the latest patches.
RTKLIB 2.4.3 betas are available at GitHub. (RTKLIB - branch rtklib_2.4.3)

[Open Repository in GitHub.](#)

[Tutorial and Demonstration](#)

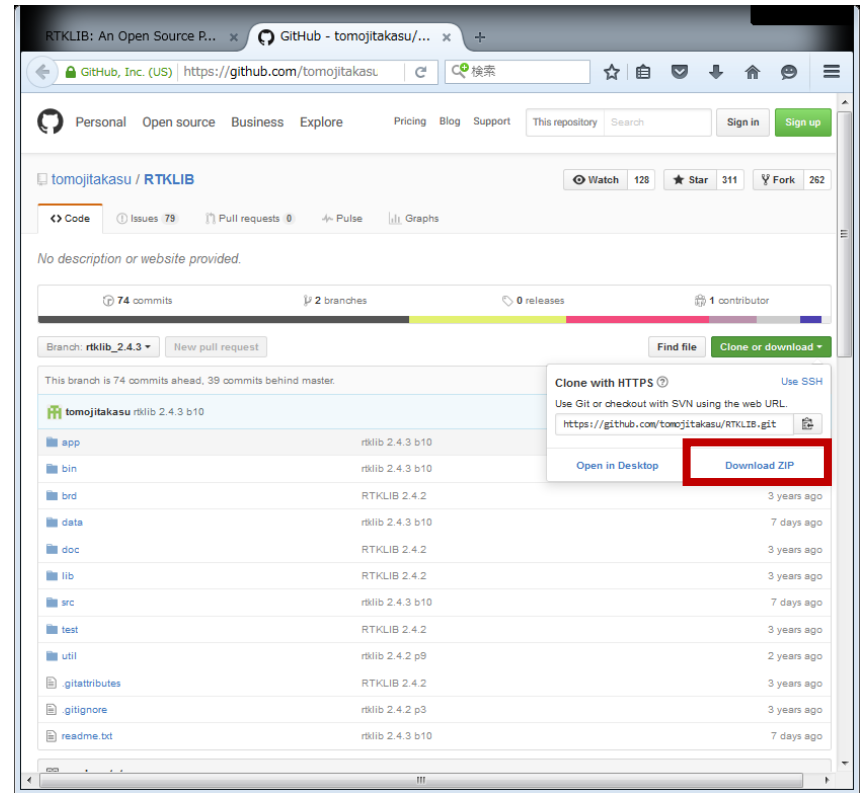
[GNSS-SDRLIB: Open Source GNSS Software Defined Radio Library](#) (SDR working with RTKLIB)

[Google play: RTKGPS+](#) (Android frontend of RTKLIB)

Overview

RTKLIB is an open source program package for standard and precise positioning with GNSS (global navigation satellite system). RTKLIB consists of a portable program library and several APs (application programs) utilizing the library. The features of RTKLIB are:

- (1) It supports standard and precise positioning algorithms with:



tomojitakasu / RTKLIB

74 commits 2 branches 0 releases 1 contributor

Branch: rtklib_2.4.3

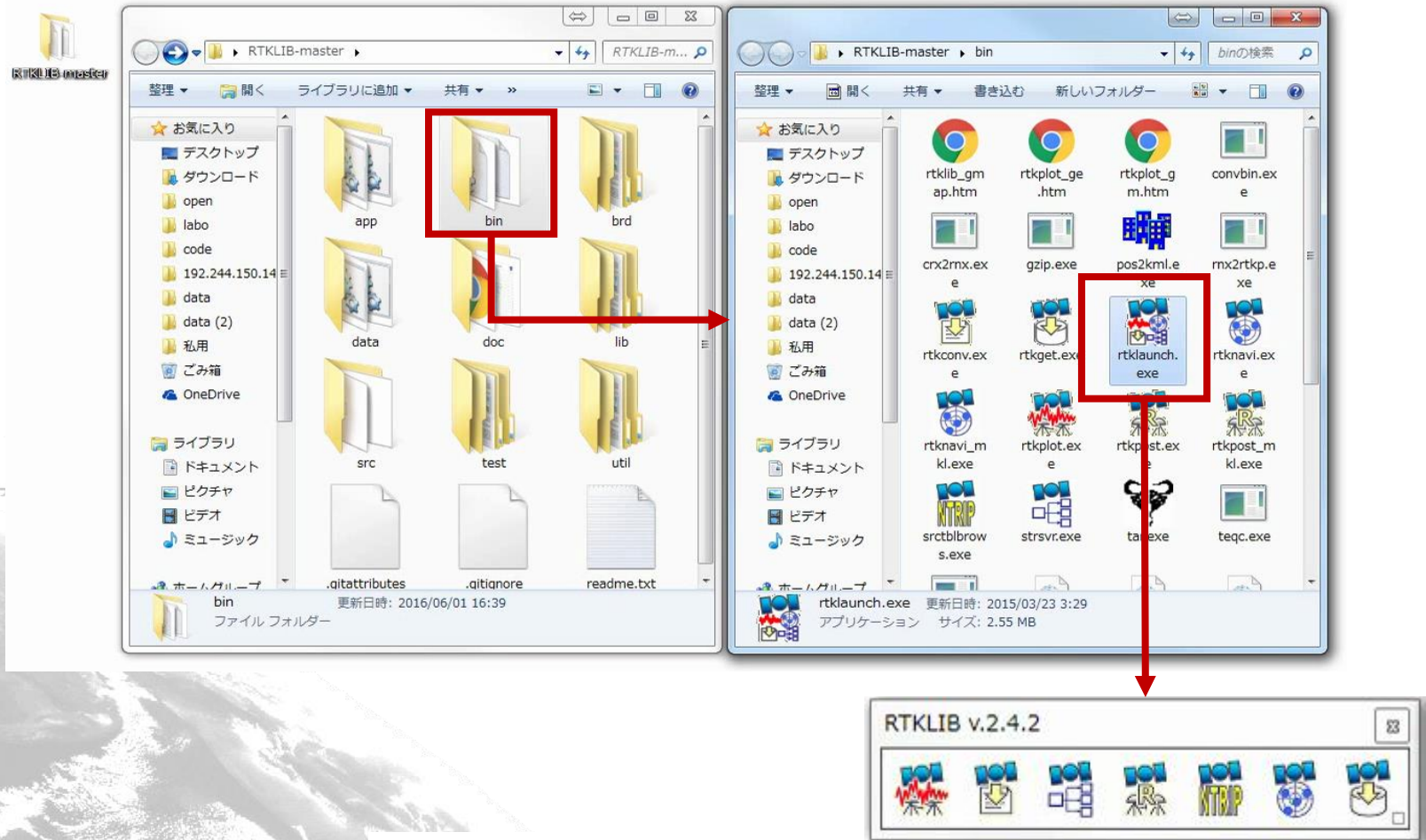
Clone with HTTPS

tomojitakasu rtklib 2.4.3 b10

- app rtklib 2.4.3 b10
- bin rtklib 2.4.3 b10
- brd RTKLIB 2.4.2 3 years ago
- data rtklib 2.4.3 b10 7 days ago
- doc RTKLIB 2.4.2 3 years ago
- lib RTKLIB 2.4.2 3 years ago
- src rtklib 2.4.3 b10 7 days ago
- test RTKLIB 2.4.2 3 years ago
- util rtklib 2.4.2 p9 2 years ago
- gitattributes RTKLIB 2.4.2 3 years ago
- gitignore rtklib 2.4.2 p3 3 years ago
- readme.txt rtklib 2.4.3 b10 7 days ago

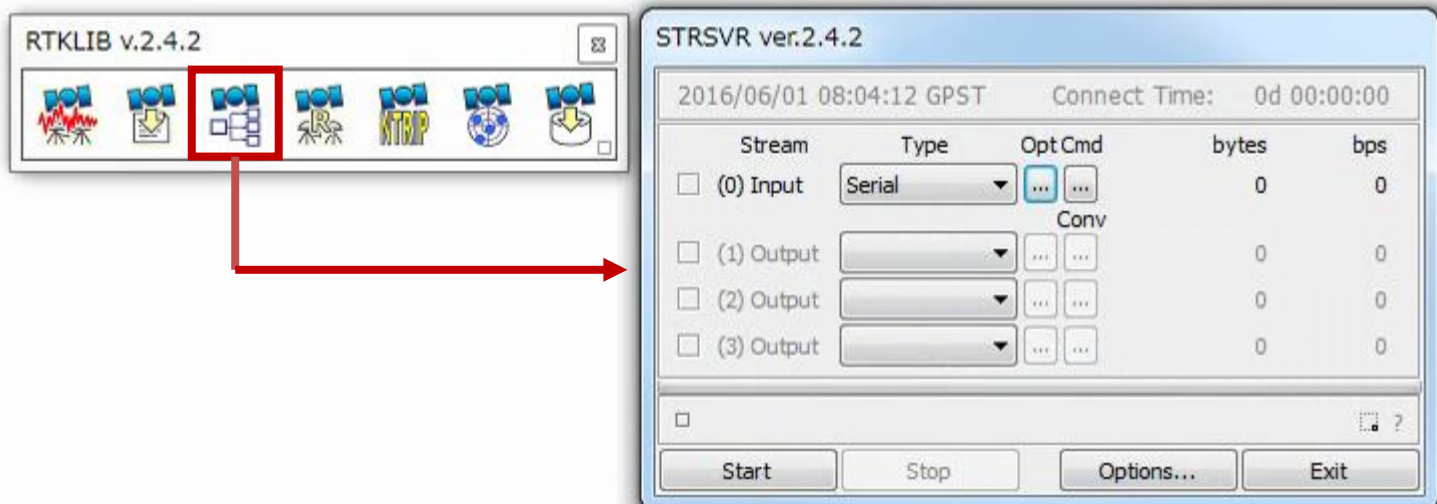
Download ZIP

Start RTKLIB



Start STRSVR

- Click the icon that is the third from the left
- STRSVR is the application for the data streaming server
 - We need to select input and output settings
 - Three output files can be selected for each input file



STRSVR : Setting input and output

- Select input data source

At this time

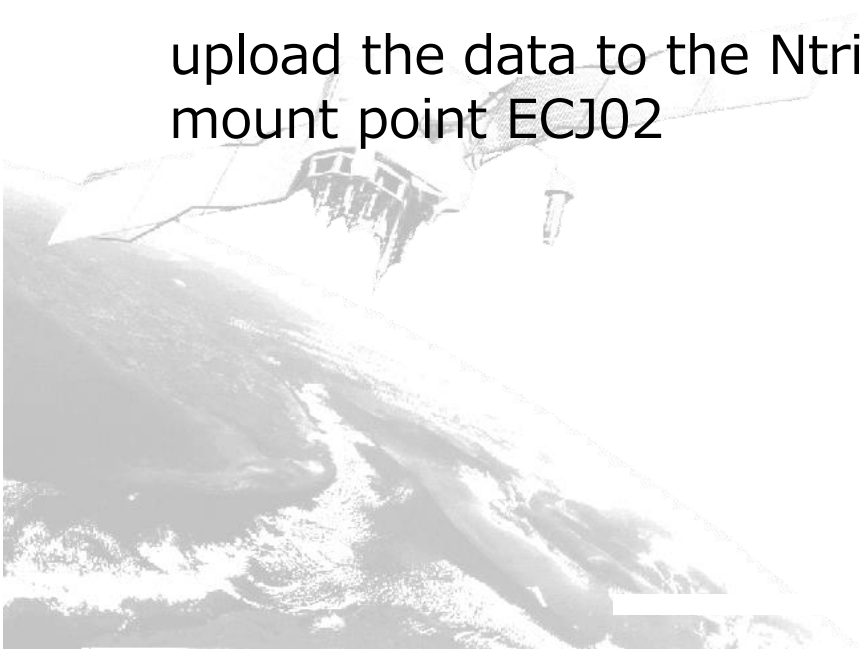
USB serial port from u-blox receiver: port ##, bitrate:115200

- Select the output data destination

– upload the data to the Ntrip caster prepared in advance within the Ntrip server

– At this time

upload the data to the Ntrip caster in the Sakura server as mount point ECJ02



STRSVR : Setting input and output

STRSVR ver.2.4.2

2016/06/01 08:52:56 GPST Connect Time: 0d 00:00:00

| Stream | Type | Opt Cmd | bytes | bps |
|-------------------------------------|--------------|---------|-------|-----|
| <input type="checkbox"/> (0) Input | Serial | ... | 0 | 0 |
| <input type="checkbox"/> (1) Output | NTRIP Server | ... | 0 | 0 |
| <input type="checkbox"/> (2) Output | | ... | 0 | 0 |
| <input type="checkbox"/> (3) Output | | ... | 0 | 0 |

Start Stop Option... Exit

システムとセキュリティ > システム

コンピュータの基本的な情報の表示

Windows Edition
Windows 7 Professional

Copyright © 2009 Microsoft Corporation. All rights reserved.

Service Pack 1
Windows 7 の新しいエディションの追加機能の取得

システム

製造元: Dell
XP: 8500
モデル: ...
評価: ...

プロセッサ: Intel Core i7-2630M

デバイス マネージャー

- GNSS-XPS-PC
- Bluetooth 無線
- DVD/CD-ROM ドライブ
- Intel Soc
- Jungo Connectivity
- WSD 印刷プロバイダー
- イメージング デバイス
- キーボード
- コンピュータ
- サウンド、ビデオ、およびゲーム コントローラー
- システム デバイス
- ディスク ドライブ
- ディスプレイ アダプター
- ネットワーク アダプター
- ヒューマン インターフェイス デバイス
- プロセッサ
- ポータブル デバイス
- ポート (COM と LPT)
- u-blox GNSS Receiver (COM12)
- u-blox GNSS Receiver (COM3)

Serial Options

Port: COM3 Parity: None

Bitrate (bps): 115200 Stop Bits: 1 bit

Byte Size: 8 bits Flow Control: None

OK Cancel

NTRIP Server Options

NTRIP Caster Host: 153.121.59.53 Port: 2101

Mountpoint: ECJ02 User-ID: Password:

String

Ntrip... OK Cancel

STRSVR ver.2.4.2

2016/06/01 08:07:15 GPST Connect Time: 0d 00:00:06

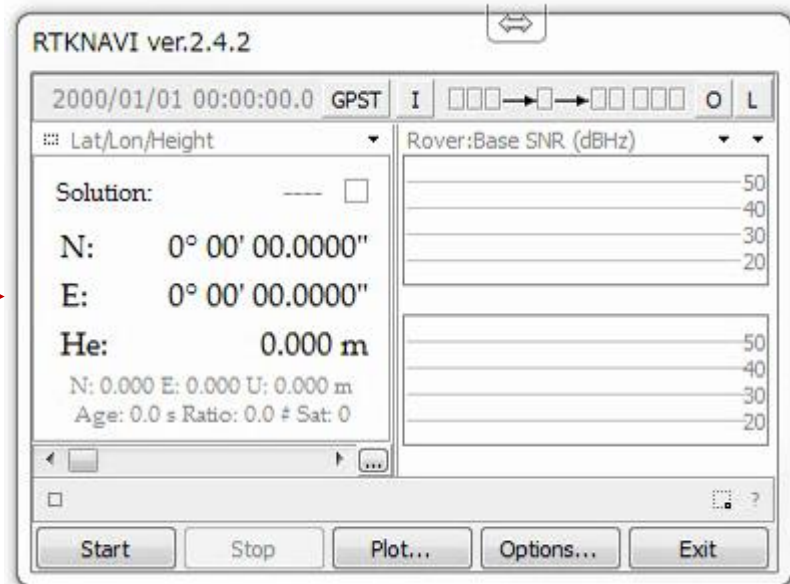
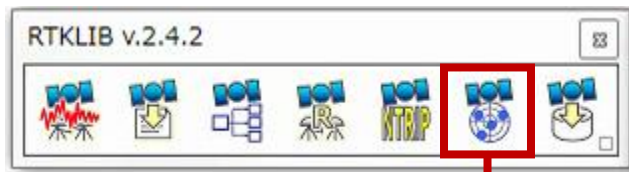
| Stream | Type | Opt Cmd | bytes | bps |
|--|--------------|---------|--------|--------|
| <input checked="" type="checkbox"/> (0) Input | Serial | ... | 46,340 | 55,280 |
| <input checked="" type="checkbox"/> (1) Output | NTRIP Server | ... | 46,340 | 54,732 |
| <input type="checkbox"/> (2) Output | | ... | 0 | 0 |
| <input type="checkbox"/> (3) Output | | ... | 0 | 0 |

(1) 153.121.59.53/ECJ02

Start Stop Options... Exit

Start STRNAVI

- Click the icon that is the second from the right
- STRNAVI is an application for real-time analysis
- It can access logged data



STRNAVI : Setting input

- Select input data source

Select format to match the input data source

At this time, Base: ECJ02, rover: Serial

RTKNAVI ver.2.4.2

2000/01/01 00:00:00.0 GPST I

Lat/Lon/Height

Solution: ---

N: 0° 00' 00.0000"

E: 0° 00' 00.0000"

He: 0.000 m

N: 0.000 E: 0.000 U: 0.000 m

Age: 0.0 s Ratio: 0.0 # Sat: 0

Rover:Base SNR (dBHz)

50

40

30

20

50

40

30

20

Start Stop Plot... Options... Exit

Input Streams

| Input Stream | Type | Opt | Cmd | Format | Opt |
|---|--------|-----|-----|--------|-----|
| <input type="checkbox"/> (1) Rover | Serial | ... | ... | RTCM 2 | ... |
| <input type="checkbox"/> (2) Base Station | Serial | ... | ... | RTCM 2 | ... |
| <input type="checkbox"/> (3) Correction | Serial | ... | ... | RTCM 2 | ... |

Transmit NMEA GPGGA to Base Station

OFF 0.000000000 0.000000000

Input File Paths

Time x1 + 0 s

OK Cancel

RTKNAVI : Setting input

Input Streams

| Input Stream | Type | Opt | Cmd | Format | Opt |
|--|--------------|-----|-----|--------|-----|
| <input checked="" type="checkbox"/> (1) Rover | Serial | ... | ... | u-blox | ... |
| <input checked="" type="checkbox"/> (2) Base Station | NTRIP Client | ... | ... | u-blox | ... |
| <input type="checkbox"/> (3) Correction | Serial | ... | ... | RTCM 2 | ... |

Transmit NMEA GPGGA to Base Station
OFF

Input File Paths

Time x1 + 0 s

OK Cancel

Serial Options

Port COM12 Parity None

Bitrate (bps) 115200 Stop Bits 1 bit

Byte Size 8 bits Flow Control None

OK Cancel

NTRIP Client Options

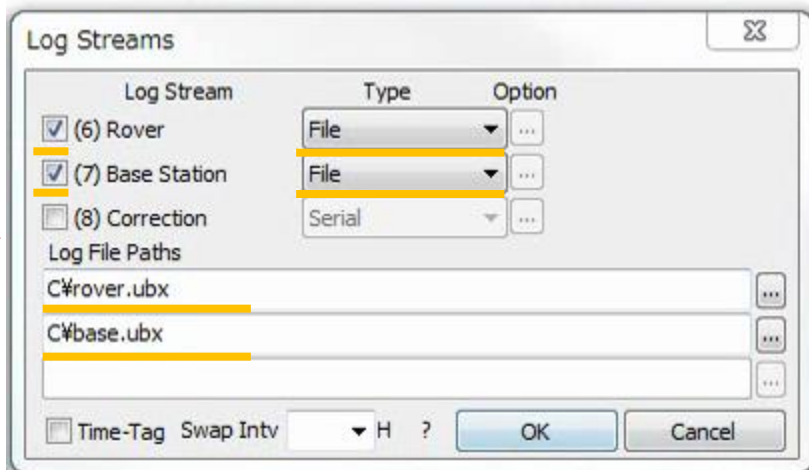
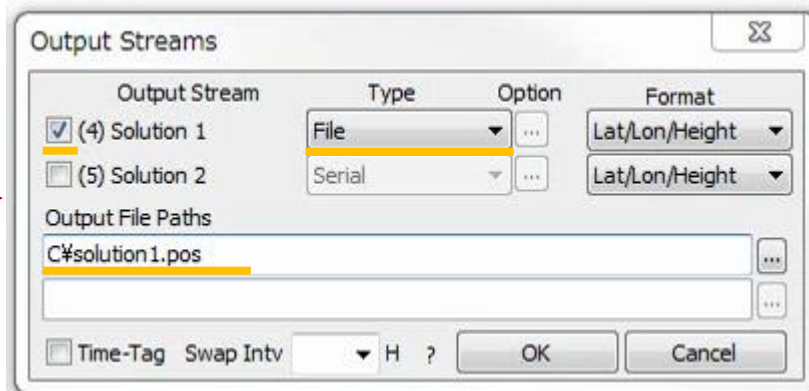
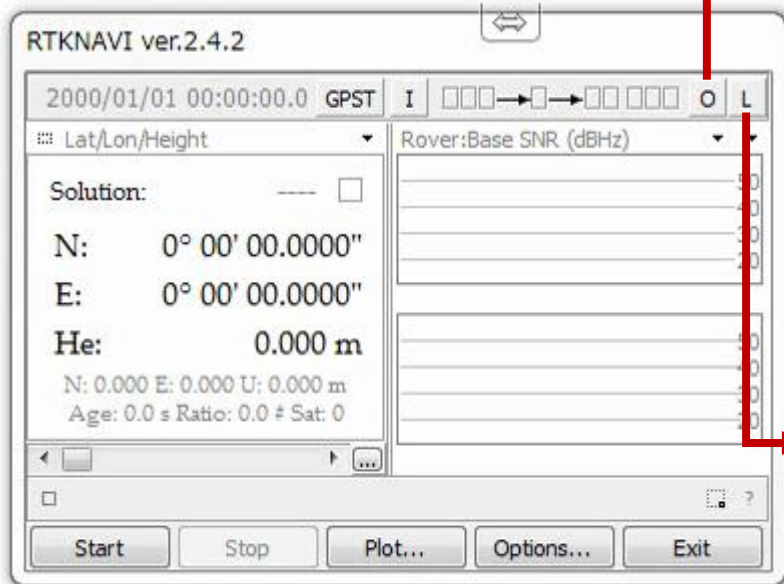
NTRIP Caster Host 153.121.59.53 Port 2101

Mountpoint ECJ02 User-ID gspase Password

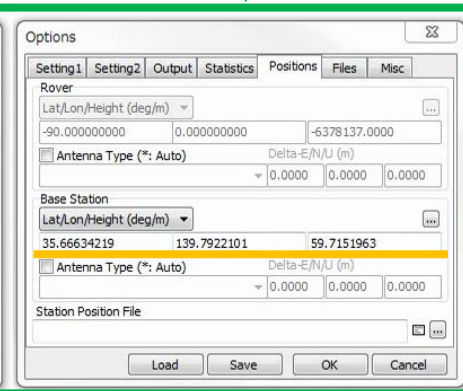
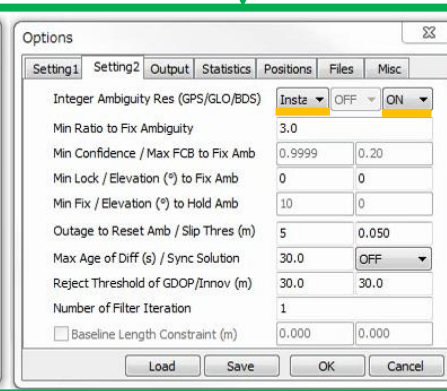
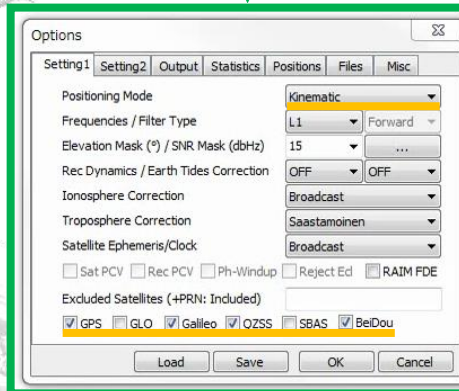
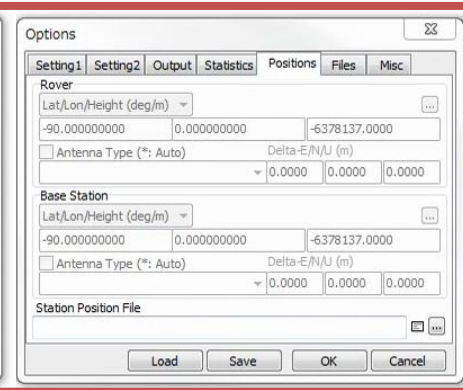
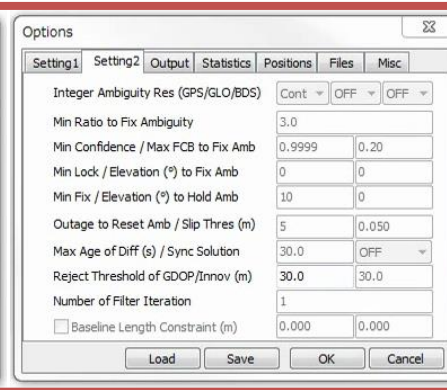
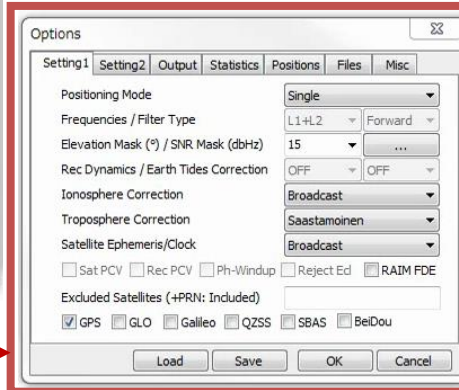
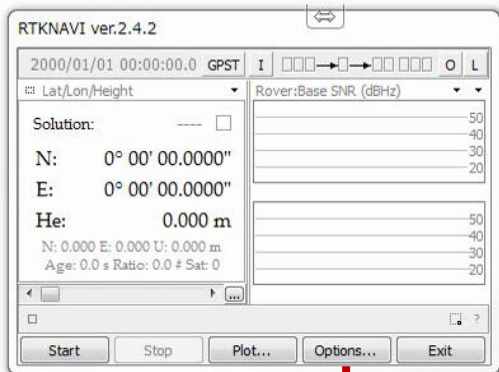
String

Ntrip... OK Cancel

RTKNAVI : Setting output



RTKNAVI : Setting options

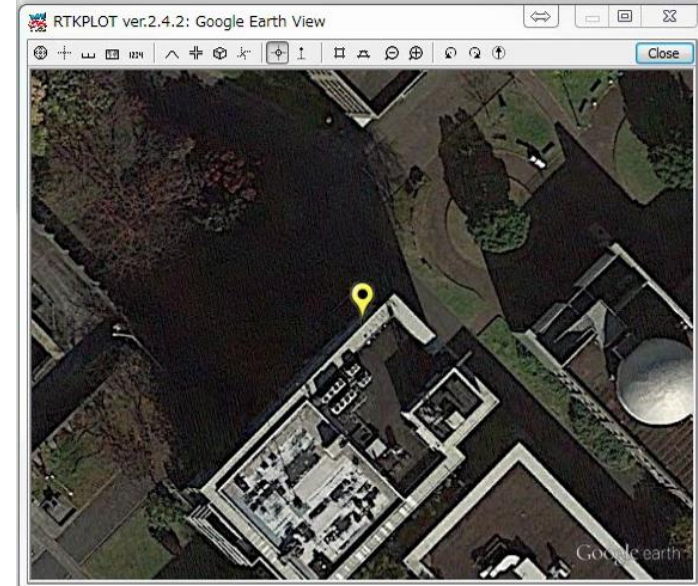
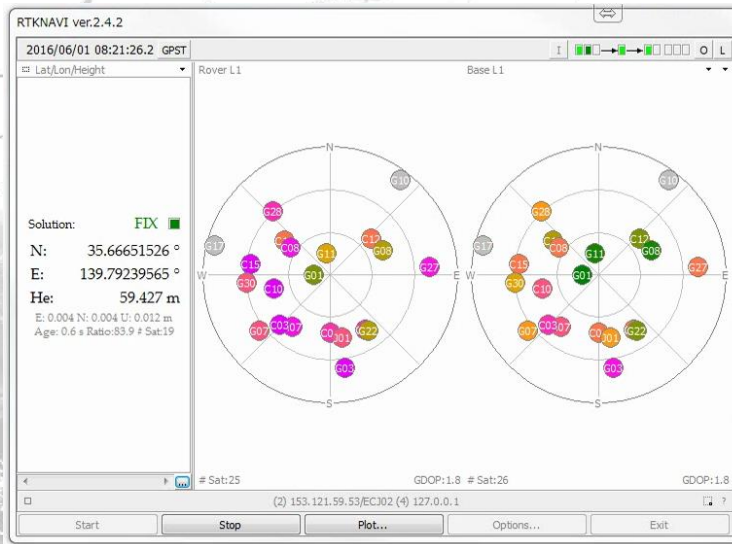
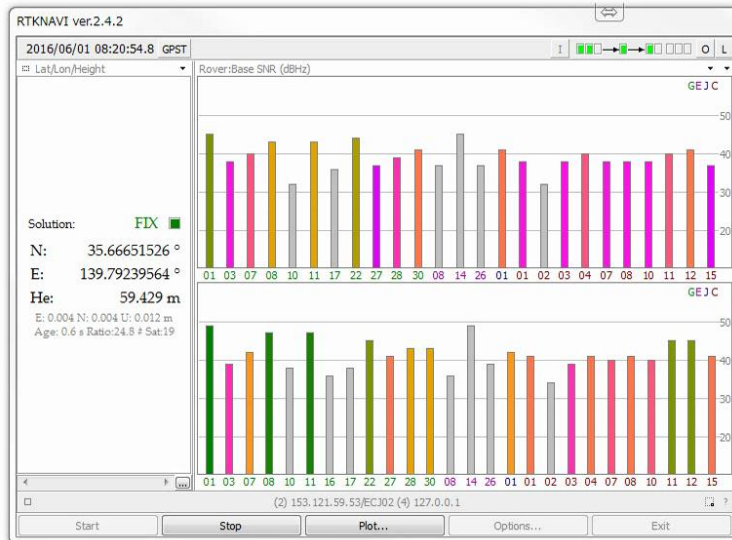


kinematic=RTK
使用衛星群

ARの解き方

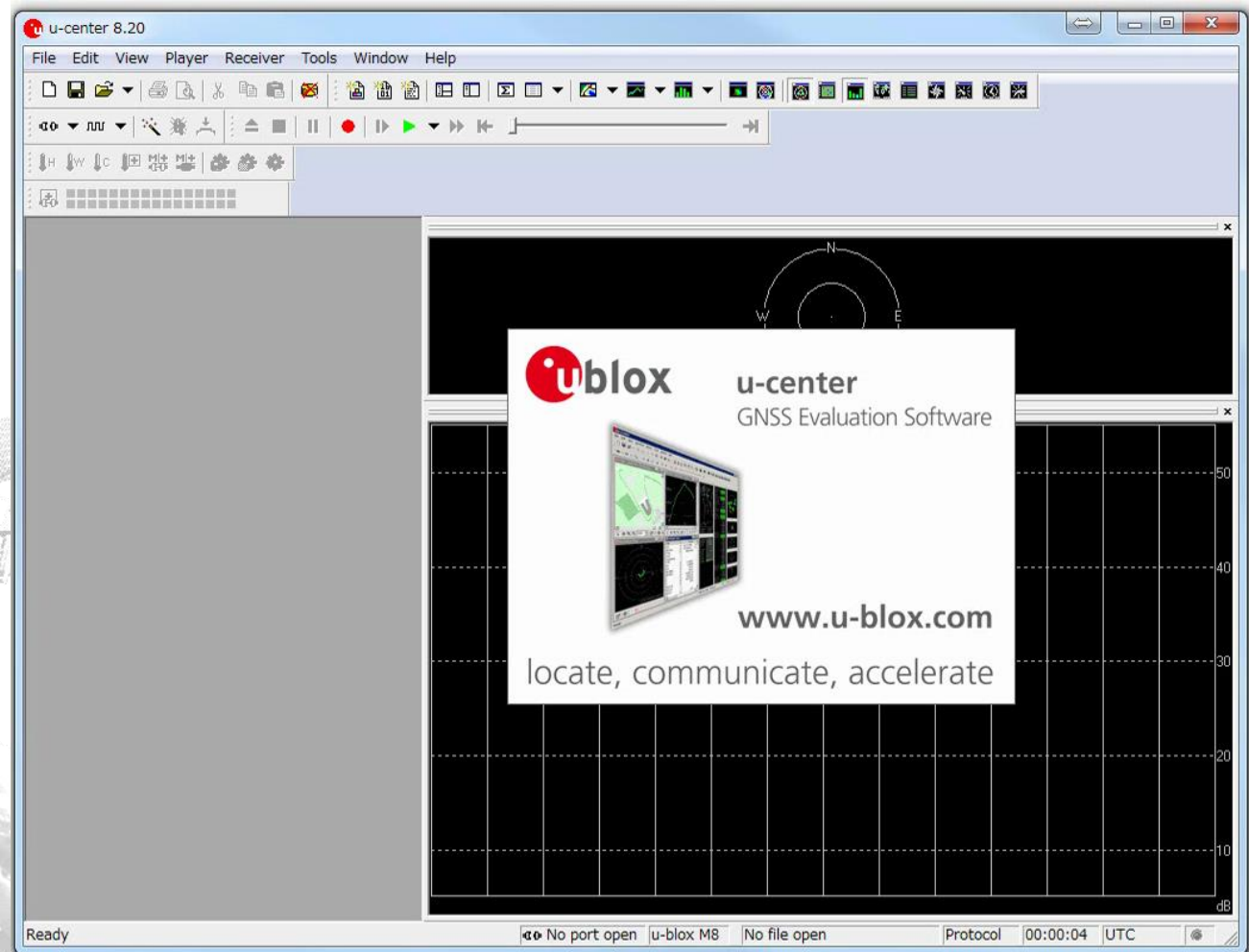
基準局真値入力

RTKNAVI : Processing results



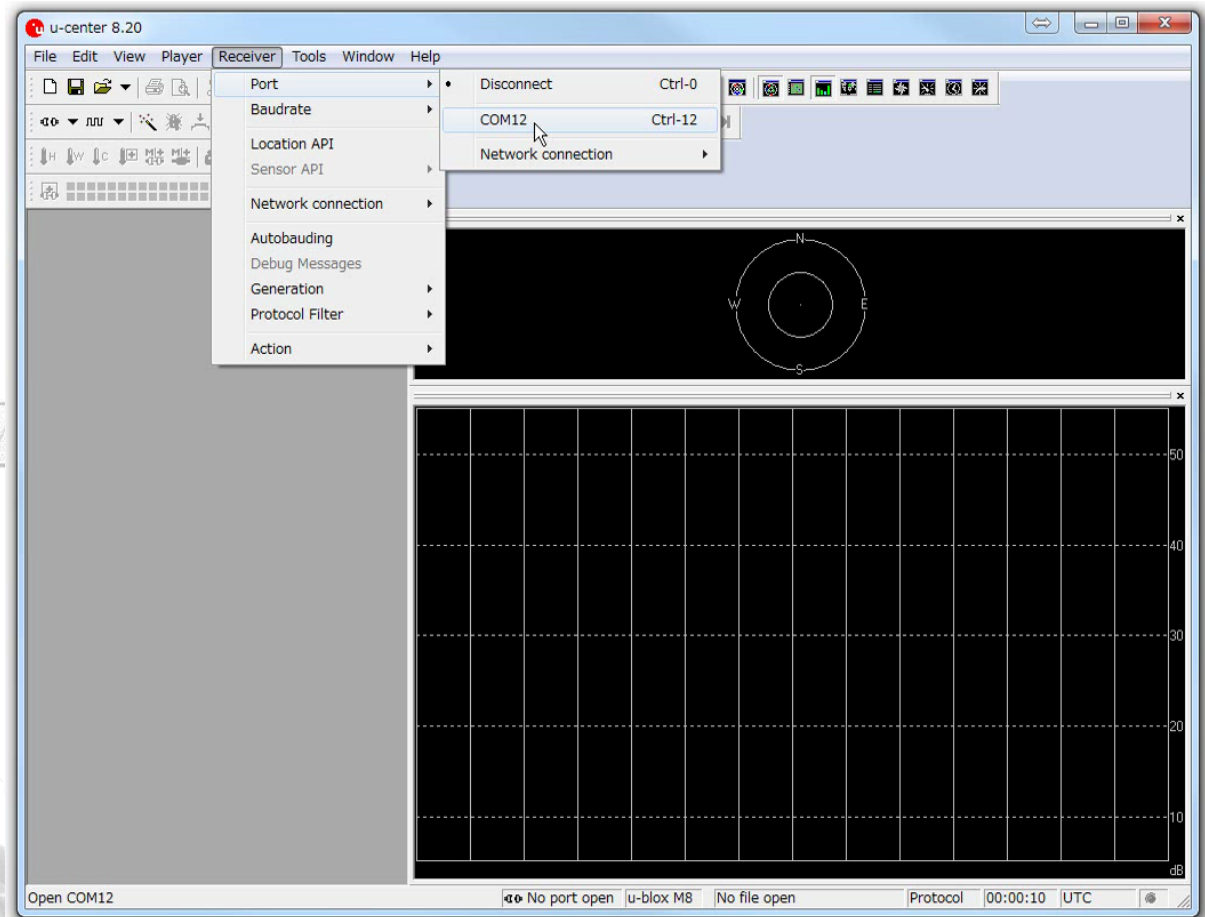
U-center : Receiver configuration settings

- Start U-center ver. 8.20 or later



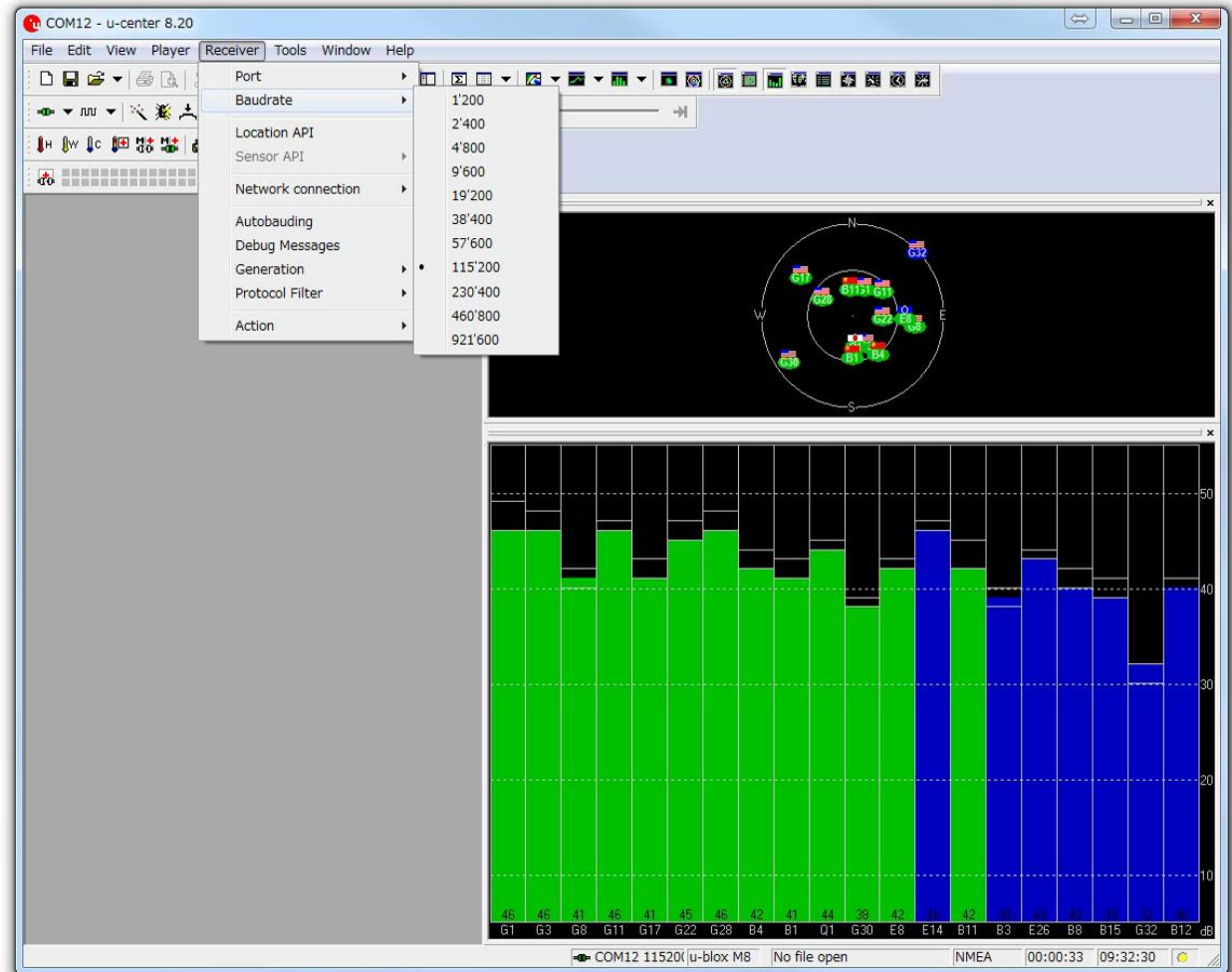
U-center : Receiver configuration settings

- Connecting
Receiver->Port-> Select receiver port number



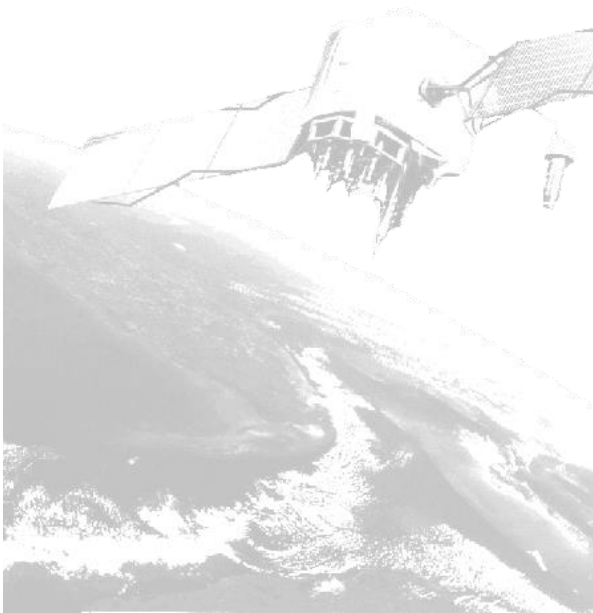
U-center : Receiver configuration settings

- Set USB Baud rate
Receiver->Baudrate (Recommendation: 115200)



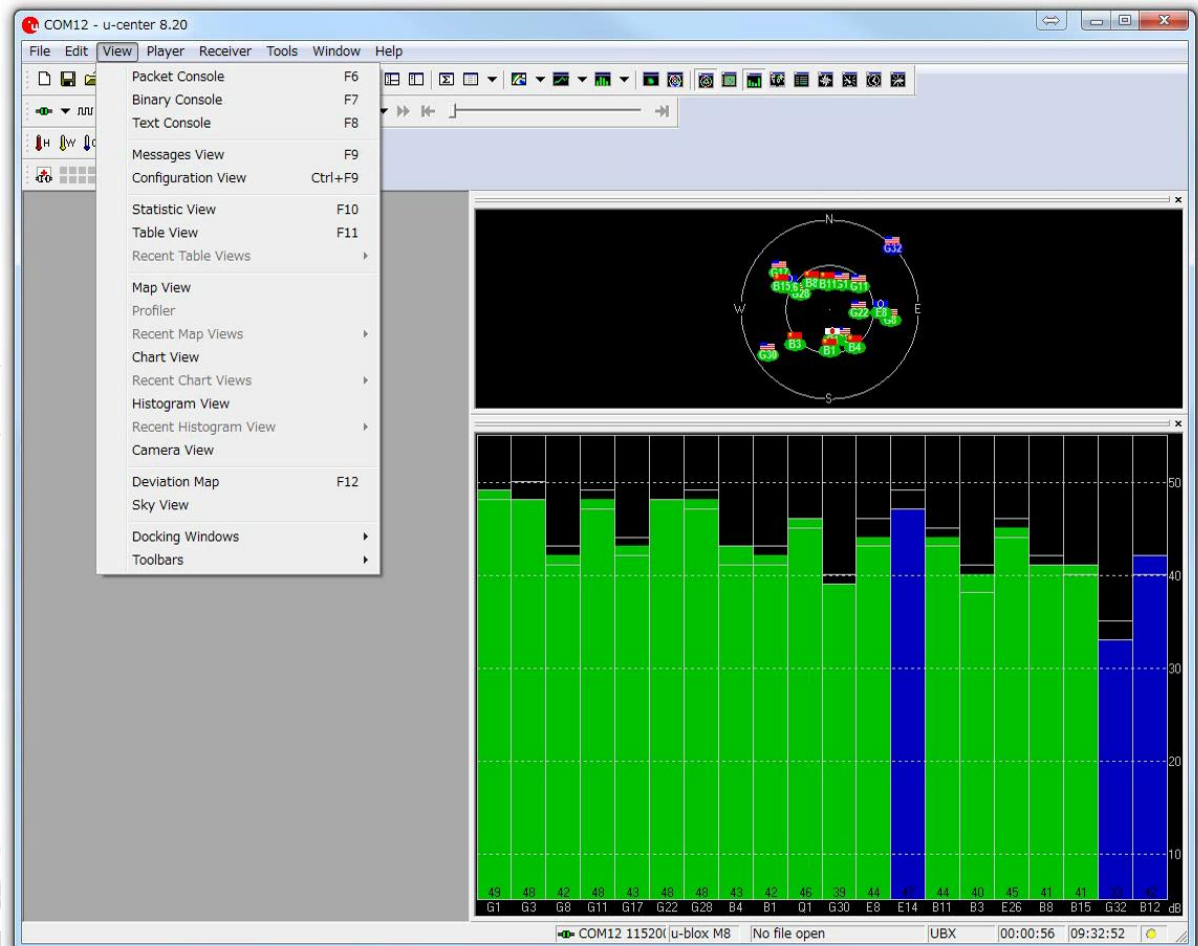
The screenshot displays the u-center 8.20 software interface. The 'Receiver' menu is open, showing the 'Baudrate' option set to 115'200. Other options in the menu include Port, Location API, Sensor API, Network connection, Autobauding, Debug Messages, Generation, Protocol Filter, and Action. The main window shows a circular diagram with various data points and a bar chart at the bottom. The status bar at the bottom indicates 'COM12 115200 (u-blox M8)', 'No file open', 'NMEA', and time '00:00:33'.

| Label | Value |
|----------|--------------------|
| COM12 | 115200 (u-blox M8) |
| File | No file open |
| Protocol | NMEA |
| Time | 00:00:33 |



U-center : Receiver configuration settings

- Set detailed configuration settings
- View->message view (see next slide)



U-center : Receiver configuration settings

- Select satellites
 - UBX->CFG->GNSS
 - Cannot use GLONASS and Beidou at the same time
 - After changing Configuration, click Send

COM12 - u-center 8.20 - [Messages - UBX - CFG (Config) - GNSS (GNSS Config)]

File Edit View Player Receiver Tools Window Help

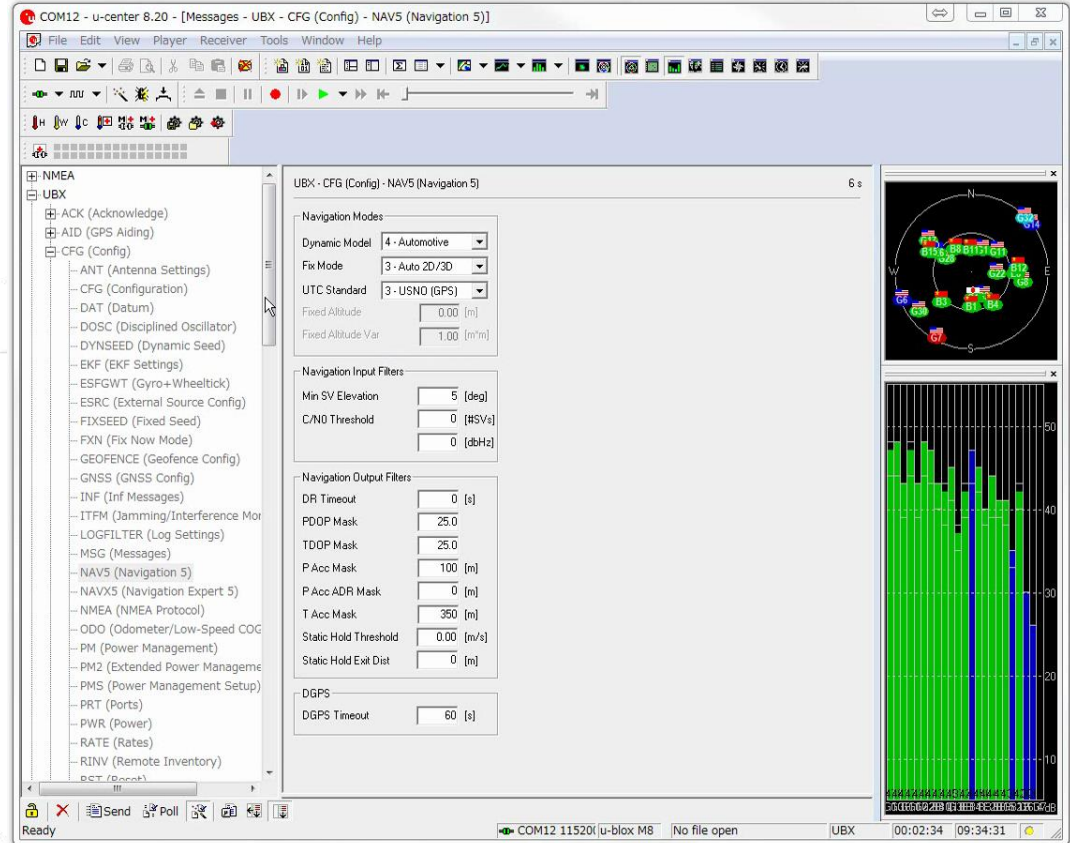
UBX - CFG (Config) - GNSS (GNSS Config)

| GNSS ID | configure | GNSS name | enable | Channels | | Signals |
|---------|-------------------------------------|-----------|-------------------------------------|----------|-----|--|
| | | | | min | max | |
| 0 | <input checked="" type="checkbox"/> | GPS | <input checked="" type="checkbox"/> | 8 | 16 | <input checked="" type="checkbox"/> L1CA |
| 1 | <input checked="" type="checkbox"/> | SBAS | <input type="checkbox"/> | 1 | 3 | <input checked="" type="checkbox"/> L1CA |
| 2 | <input checked="" type="checkbox"/> | Galileo | <input checked="" type="checkbox"/> | 4 | 8 | <input checked="" type="checkbox"/> E1 |
| 3 | <input checked="" type="checkbox"/> | BeiDou | <input checked="" type="checkbox"/> | 8 | 16 | <input checked="" type="checkbox"/> B1 |
| 4 | <input checked="" type="checkbox"/> | IMES | <input checked="" type="checkbox"/> | 0 | 8 | <input checked="" type="checkbox"/> L1CA |
| 5 | <input checked="" type="checkbox"/> | QZSS | <input checked="" type="checkbox"/> | 0 | 3 | <input checked="" type="checkbox"/> L1CA <input type="checkbox"/> L1SAIF |
| 6 | <input checked="" type="checkbox"/> | GLONASS | <input type="checkbox"/> | 8 | 14 | <input checked="" type="checkbox"/> L1OF |
| 7 | | | | | | |

Number of channels available: 32
Number of channels to use: 32 Auto set
For specific SBAS configuration use CFG-SBAS

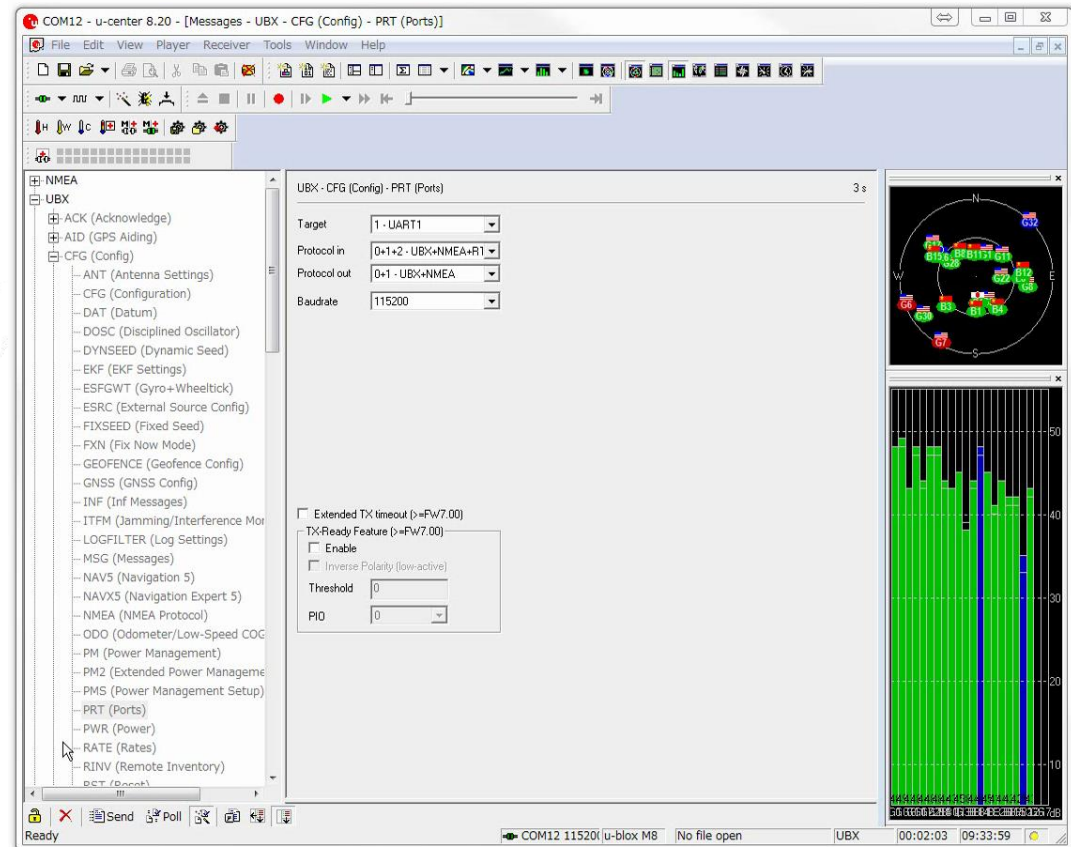
U-center : Receiver configuration settings

- Change NMEA data mode
 - UBX->CFG->NAV5
 - After changing Configuration, click Send



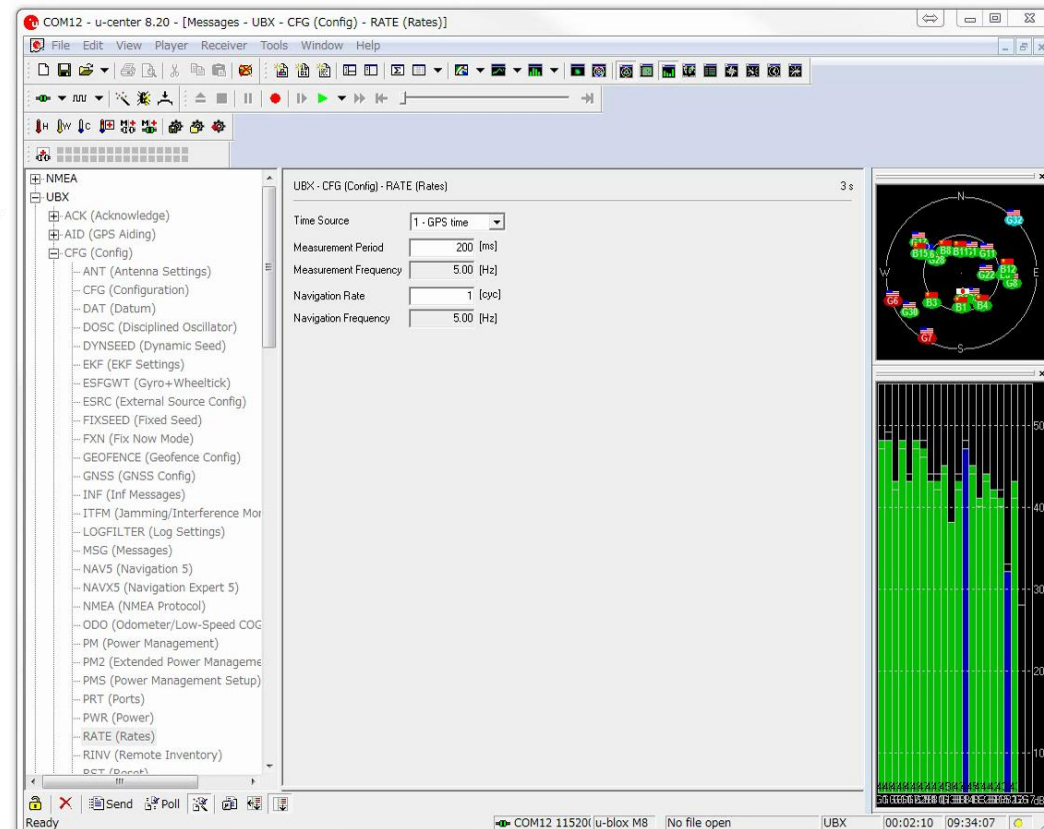
U-center : Receiver configuration settings

- Confirm output of each port
 - UBX->CFG->PRT
 - Baud rate and UART are the same as for USB (ex. 115200)



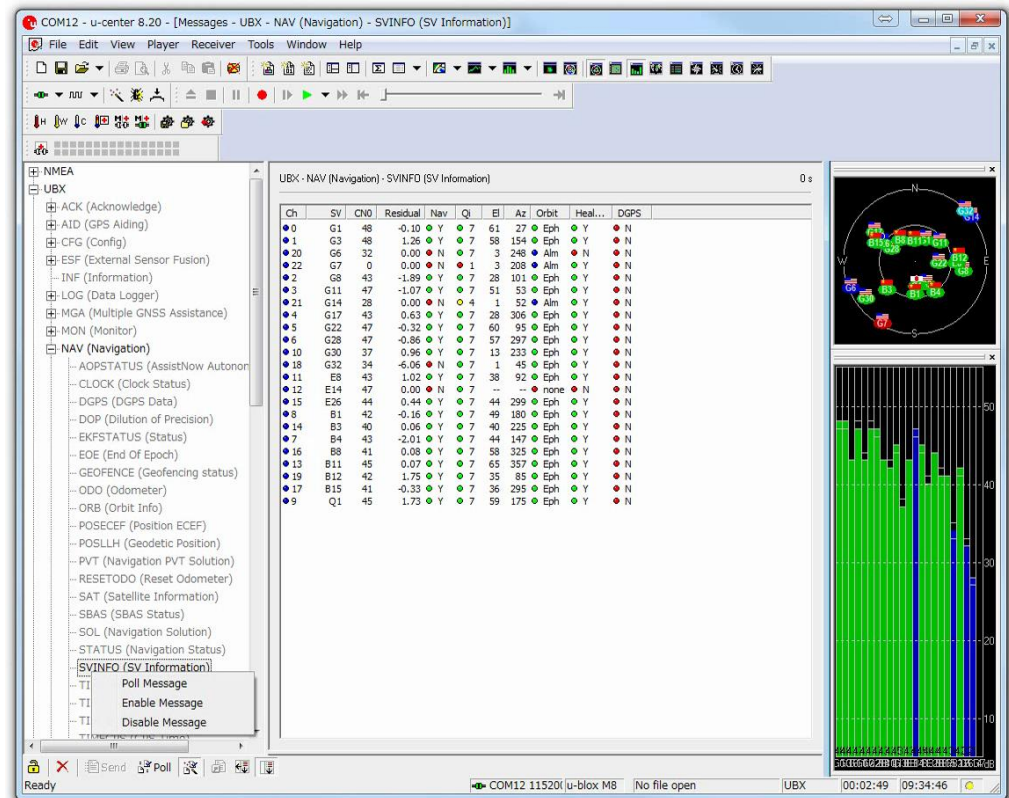
U-center : Receiver configuration settings

- Setting output data interval (data rate)
 - UBX->CFG->RATE
 - (200 ms = 5 Hz)



U-center : Receiver configuration settings

- Output SVINFO (recommended)
 - UBX->NAV->SVINFO
 - Right click SVINFO->Enable SV information Message & Poll Message



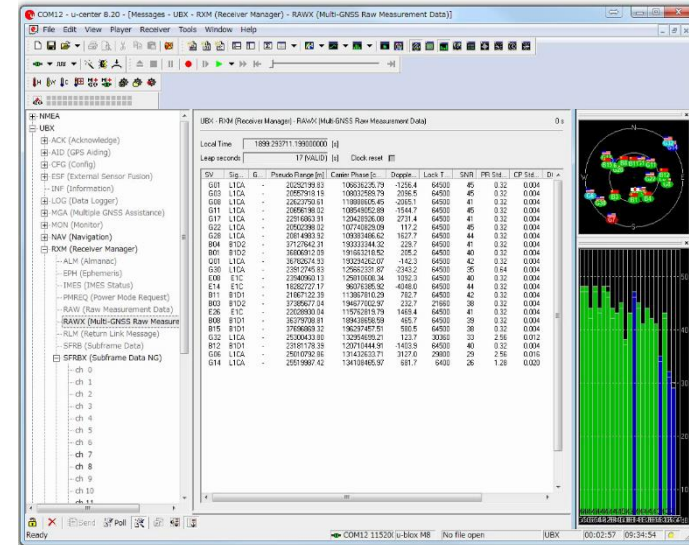
The screenshot shows the U-center software interface with the following components:

- Left Panel (NMEA/UBX Tree):** A tree view showing the configuration hierarchy. The 'NAV (Navigation)' folder is expanded, and 'SVINFO (SV Information)' is selected. A context menu is open over 'SVINFO (SV Information)' with the following options: 'Poll Message', 'Enable Message', and 'Disable Message'. The 'Enable Message' option is highlighted.
- Right Panel (Table):** A table titled 'UBX · NAV (Navigation) · SVINFO (SV Information)' displaying satellite data. The table has columns: Ch, SV, CNO, Residual, Nav, QI, EI, Az, Orbit, Heal..., and DGPS. The data is as follows:

| Ch | SV | CNO | Residual | Nav | QI | EI | Az | Orbit | Heal... | DGPS |
|----|-----|-----|----------|-----|----|----|-----|-------|---------|------|
| 0 | G1 | 48 | -0.10 | Y | 7 | 61 | 27 | Eph | Y | N |
| 1 | G3 | 48 | 1.26 | Y | 7 | 58 | 154 | Eph | Y | N |
| 20 | G6 | 32 | 0.00 | N | 7 | 3 | 248 | Alm | N | N |
| 22 | G7 | 0 | 0.00 | N | 1 | 3 | 208 | Alm | N | N |
| 2 | G8 | 43 | -1.89 | Y | 7 | 28 | 101 | Eph | Y | N |
| 3 | G11 | 47 | -1.07 | Y | 7 | 51 | 53 | Eph | Y | N |
| 21 | G14 | 28 | 0.00 | N | 4 | 1 | 52 | Alm | Y | N |
| 4 | G17 | 43 | 0.63 | Y | 7 | 28 | 306 | Eph | Y | N |
| 5 | G22 | 47 | -0.32 | Y | 7 | 60 | 95 | Eph | Y | N |
| 6 | G28 | 47 | -0.86 | Y | 7 | 57 | 297 | Eph | Y | N |
| 10 | G30 | 37 | 0.96 | Y | 7 | 13 | 233 | Eph | Y | N |
| 18 | G32 | 34 | -6.06 | N | 7 | 1 | 45 | Eph | Y | N |
| 11 | E8 | 43 | 1.02 | Y | 7 | 38 | 92 | Eph | Y | N |
| 12 | E14 | 47 | 0.00 | N | 7 | — | — | none | Y | N |
| 15 | E26 | 44 | 0.44 | Y | 7 | 44 | 299 | Eph | Y | N |
| 8 | B1 | 42 | -0.16 | Y | 7 | 49 | 180 | Eph | Y | N |
| 14 | B3 | 40 | 0.06 | Y | 7 | 40 | 225 | Eph | Y | N |
| 7 | B4 | 43 | -2.01 | Y | 7 | 44 | 147 | Eph | Y | N |
| 16 | B8 | 41 | 0.08 | Y | 7 | 58 | 225 | Eph | Y | N |
| 13 | B11 | 45 | 0.07 | Y | 7 | 65 | 357 | Eph | Y | N |
| 19 | B12 | 42 | 1.75 | Y | 7 | 35 | 85 | Eph | Y | N |
| 17 | B15 | 41 | -0.33 | Y | 7 | 36 | 295 | Eph | Y | N |
| 9 | Q1 | 45 | 1.73 | Y | 7 | 59 | 175 | Eph | Y | N |
- Bottom Right Panel:** A circular constellation diagram showing the positions of the satellites in the sky, with a green bar chart below it representing signal strength or quality over time.
- Top Panel:** A menu bar (File, Edit, View, Player, Receiver, Tools, Window, Help) and a toolbar with various icons for file operations and playback.

U-center : Receiver configuration settings

- Output RAWX (obs file)
 - UBX->RXM->RAWX
 - Right click RAWX
 - Enable Message & Poll Message
- Output SFRBX (nav file)
 - UBX->RXM->SFRBX
 - Right click SFRBX
 - Enable Message & Poll Message
- This data is used by RTKNAVI



U-center : Receiver configuration settings

- Save receiver configuration
- Receiver->Action->Save config
- After setting and saving, Close u-center

