RTK Rover

Release Number	Author	Date	Comments
		Feb 4, 2022	RTK Rover Guide

Contents

1. Unboxing

HYFIX's RTK Rover kit contains the following items:

	HYFIX RTK Rover **[1]**
	Dual-band GNSS Antenna **[2]**
	USB Type-C cable **[3]**
	Additional face plates for Raspberry Pi Configuration **[4]**

LED	FUNCTION	STATUS
GREEN	PPS (Pulse Per Second)	BLINKING (1s), antennae detects satellites
ORANGE	Status	SOLID, Rover is connected to power and online

1.1. Box and Contents

1.2. Geodnet NTRIP Account

Each kit comes with a complimentary 30-day Geodnet NTRIP account, enabling users to access corrections from the Geodnet network to use with the Rover.

To receive a Geodnet NTRIP account please send an email / ticket to support@geodnet.com . In the email, please include the rover order number.

1.3. FW Button

Adjacent to the PPS and status indicators, there is a firmware button specifically designated for use during the firmware upgrading or installation process on the device.

2. How to use Rover

2.1. Connect Receiver to PC / Laptop

You can turn on the receiver by connecting it to a computer using the UBC wire. Afterward, you can use the provided QGNSS software to view the data.

Link to QGNSS Software : rtk_rover/QGNSS at main · HYFIX/rtk_rover · GitHub

Please note that this software only works with windows devices.

2.2. Getting Basic Position in QGNSS

Once you have downloaded and opened the QGNSS application, you can now follow these steps to see the rover's basic positioning. Please note that if you want data to appear, the antenna must be connected to the rover.

1. Open device manager on windows and navigate to the Ports (COM & LPT) section. Look for the two USB Serial Ports.
    i. Screenshot of an example:
        1. In this example the two ports are COM26 and COM27. Please note your ports since we will need this information for later.
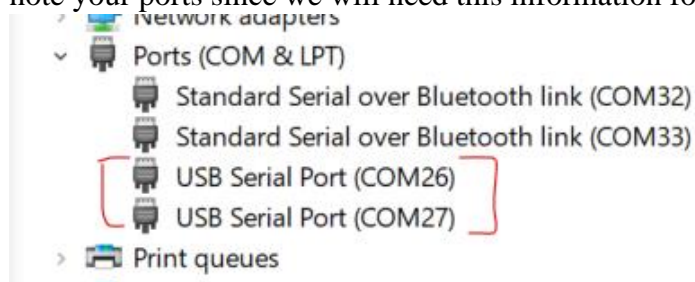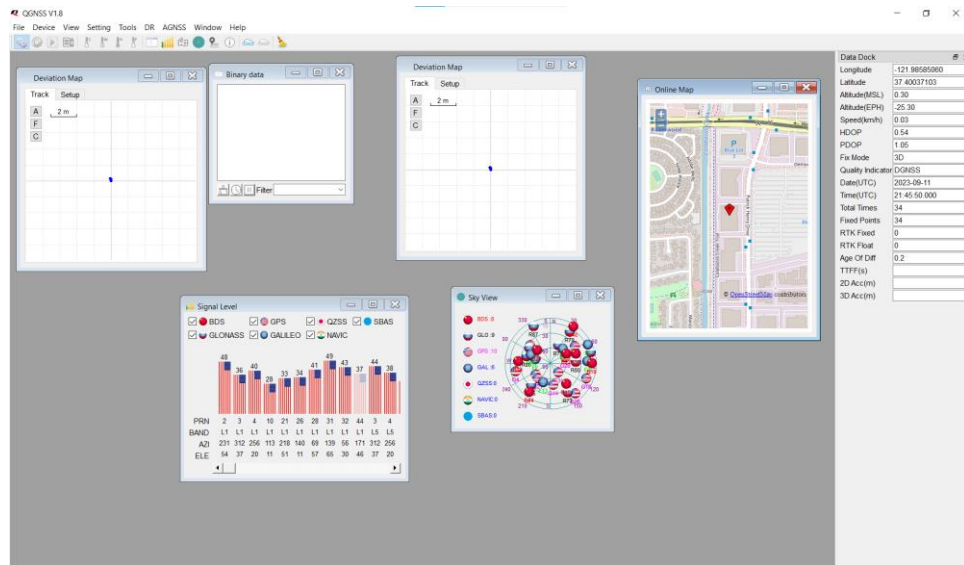

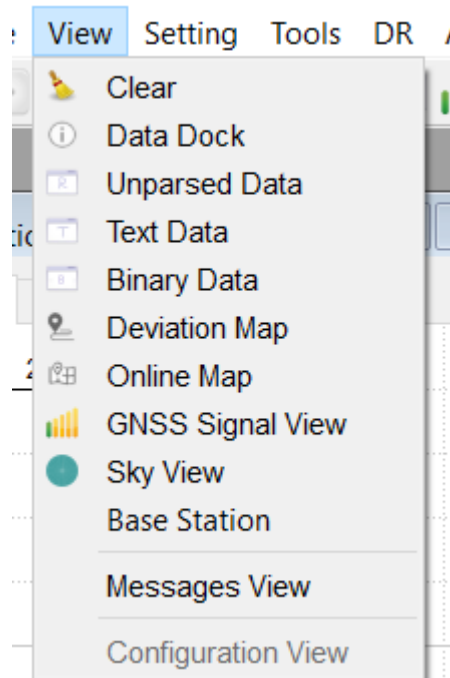2. Open the QGNSS software and navigate to the settings icon which is circled in this screenshot:
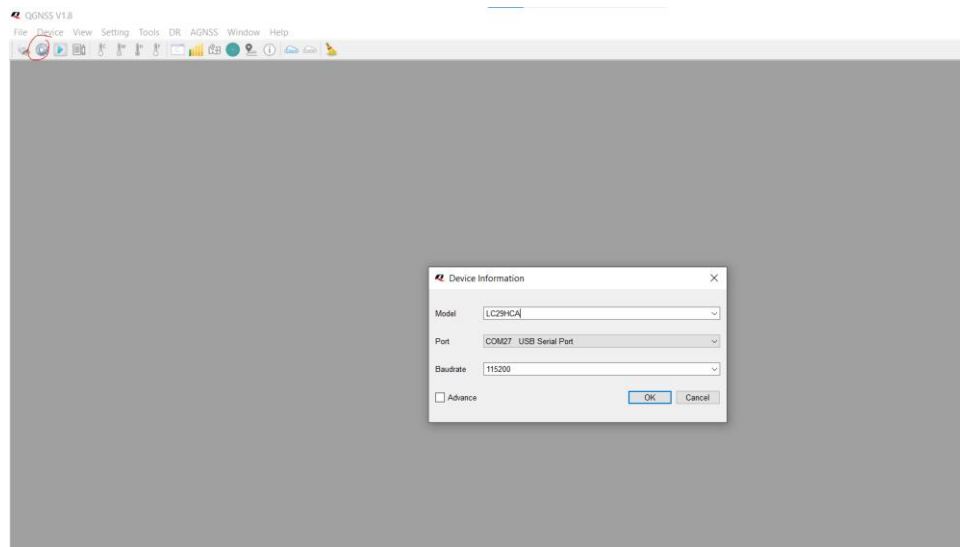
3. Next we will be filling out the pop-up menu that appears.
- Model: Please select LC29HCA
- Port: Please select the highest Port that was found in the earlier step
    - Baud rate: 115200

Then press OK

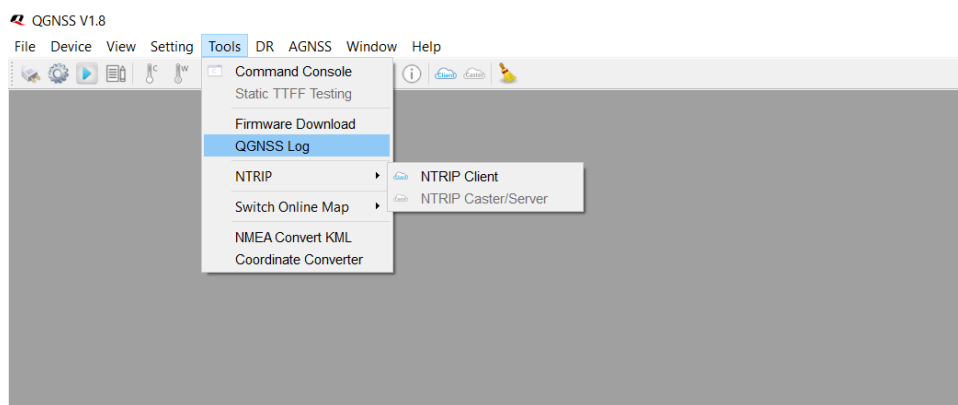4. You will then see data coming through:

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- When you click the view part of the application, it will allow you to show other ways to view the data.
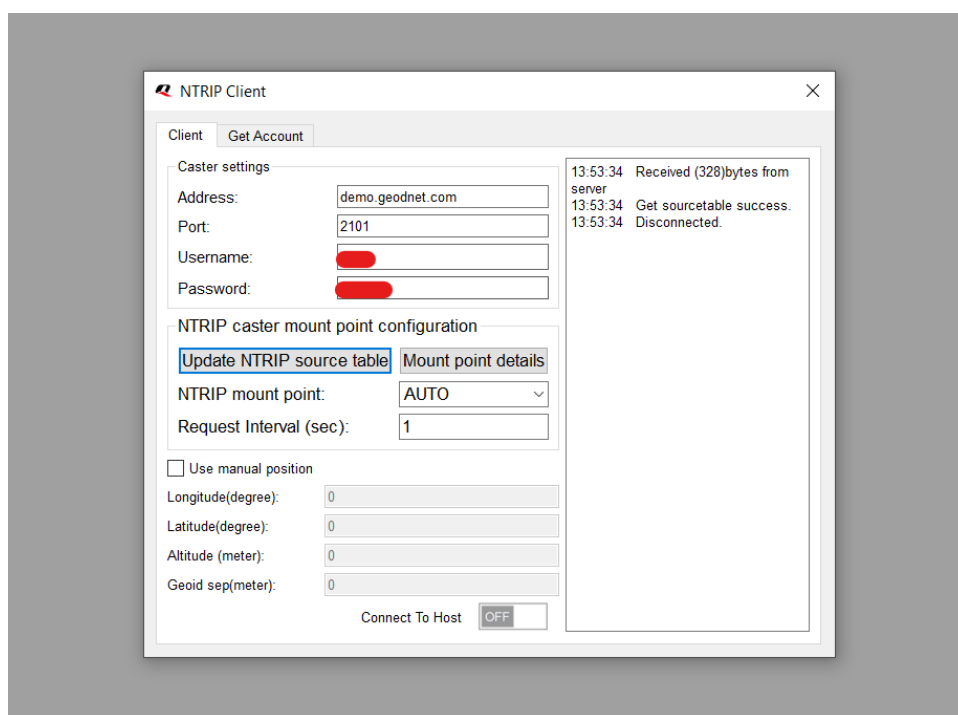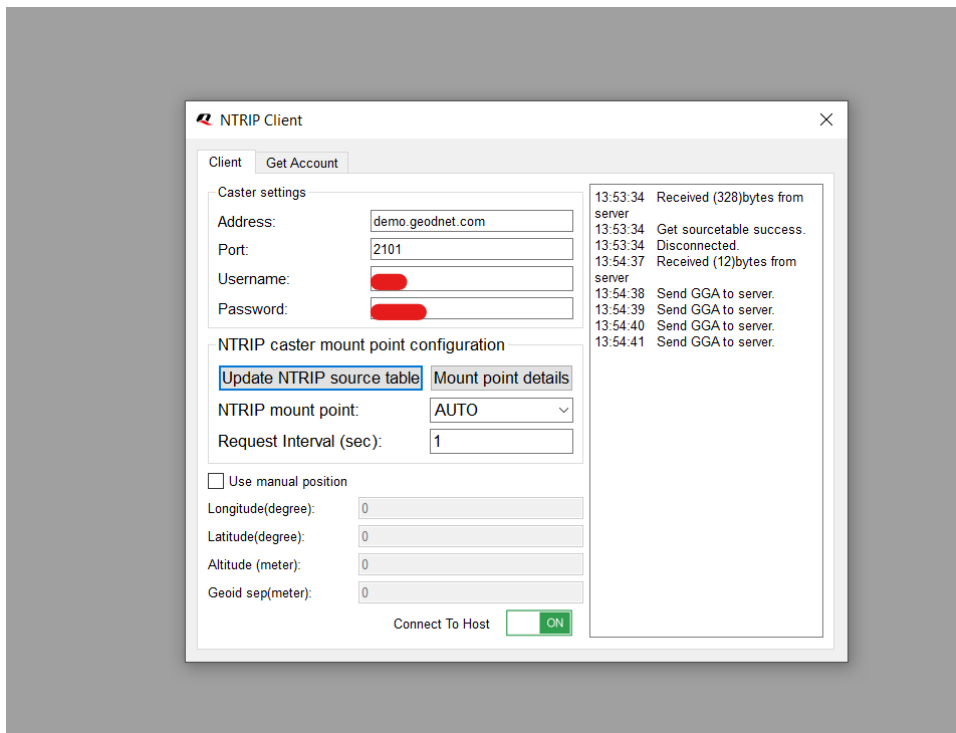

2.3. Enter NTRIP Information

1. Open the QGNSS software and navigate to this part of the application.

2. Enter NTRIP client information in the pop-up menu.

3. Click update NTRIP source table and click connect to host

4. The connection is successful once you see messages on the right-hand side of the picture above.

2.4. Logging Data

1. In terms of logging data, the QGNSS software automatically logs data for you.
2. To access the log files please navigate it to the "file" button and click on "Show Logfile in Explorer"
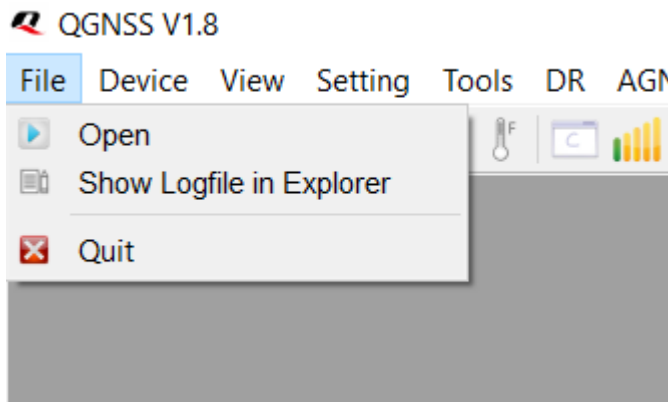
3. A file page will show up that will show the logged data.

2.5. JOSM Application

Download – JOSM (openstreetmap.de)

  JOSM was originally designed for editing maps however, it can be used to view log files generated by the rovers. The different tools and settings of the application can be used to effectively analyze the rover's data and readings.
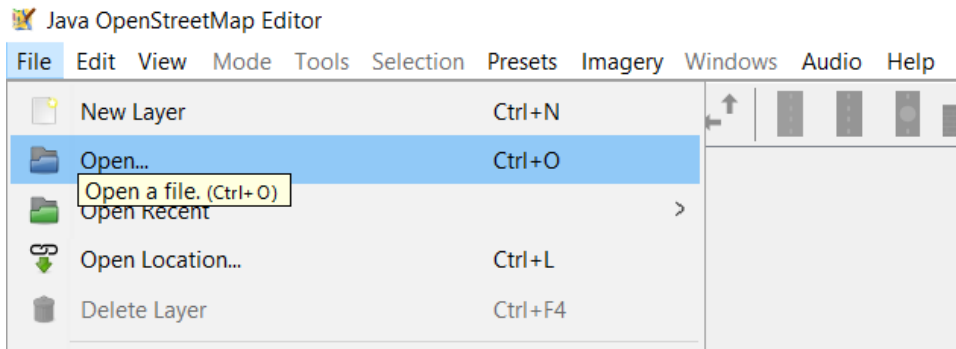
1. Navigate to the file section and click open. This will allow you to choose a log file to open in the application.
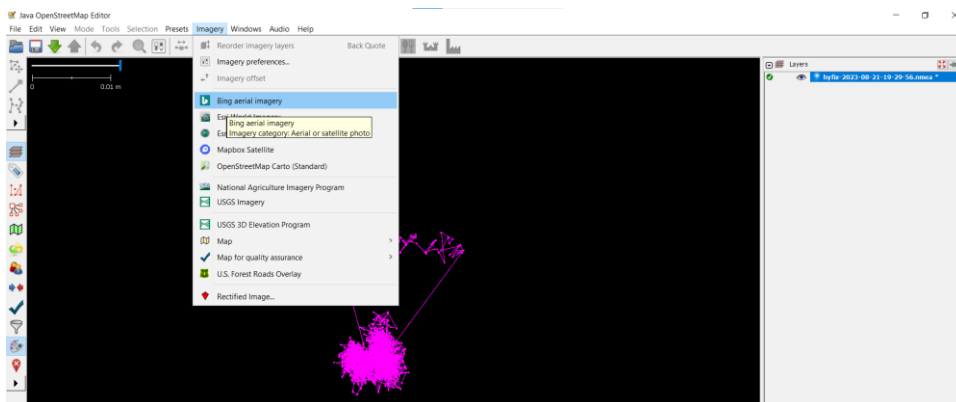
2. Navigate to the Imagery section and click on Bing aerial imagery to visualize the area around the log file's data.
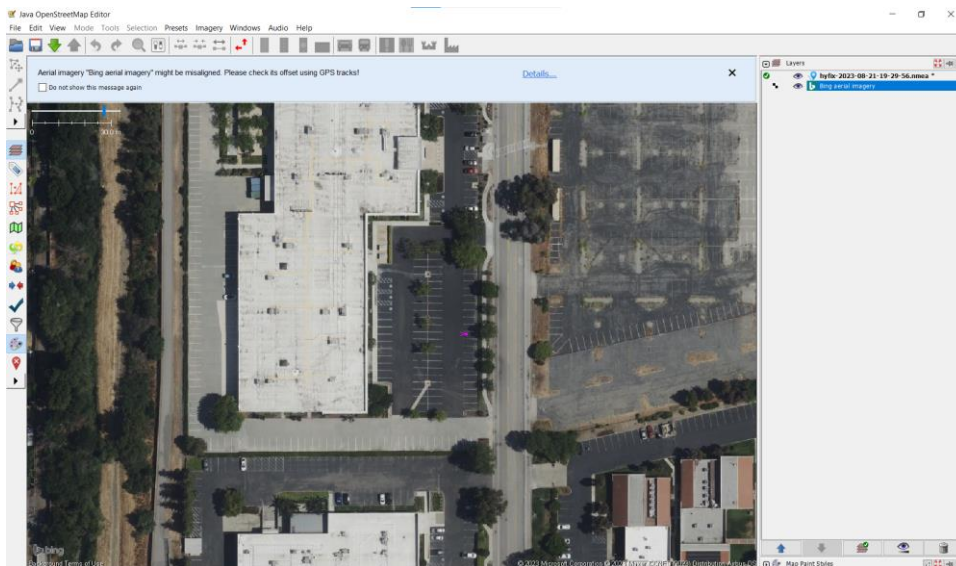
2.6. Configuring the LC29H for RTCM

The LC29H module can achieve impressive accuracy when configured for Real-Time Kinematic (RTK) operation using RTCM correction data. Proper configuration involves enabling RTCM.

We have developed a python script that can be used to enable RTCM.

The script can be downloaded here: https://github.com/HYFIX/rtk_rover

Instructions on how to use script:

- Clone script from our github repository
- Navigate to the location that the script was downloaded in
- Modify the script to utilize the port that is being used
- Run script – python lc29h_script.py

Screenshot Example:

- Navigate to the "PAIR_RTCM_SETOUTPUT_MODE" using arrow keys and hit space then enter.

```
raspberry@raspberrypi: ~

raspberry@raspberrypi:~ $ python lc29h_script.py
\Port is open now

( ) PQTMVERNO
( ) PQTMSAVEPAR
( ) PAIR_ACK
{x} PAIR_RTCM_SET_OUTPUT_MODE
( ) PAIR_RTCM_GET_OUTPUT_MODE
( ) PAIR_RTCM_SET_OUTPUT_EPHEMERIS
( ) EXIT
Enter mode parameter: 0
```

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- Enter 0

```
raspberry@raspberrypi:~ $ python lc29h_script.py
\Port is open now

( ) PQTMVERNO
( ) PQTMSAVEPAR
( ) PAIR_ACK
{x} PAIR_RTCM_SET_OUTPUT_MODE
( ) PAIR_RTCM_GET_OUTPUT_MODE
( ) PAIR_RTCM_SET_OUTPUT_EPHEMERIS
( ) EXIT
Enter mode parameter: 0
Executing PAIR432,0 expecting $PAIR001
$PAIR432,0*23

Executing command . . .
$PAIR001,432,0*3E


Success!
$PAIR001,432,0*3E
```

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- RTCM will be enabled after you see the success message with the outputted response