



NetView

Software Manual

Version 2.0

Last Revised December 15, 2015

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Preface

Thank you for using this product. The materials available in this Manual (the “Manual”) have been prepared by JAVAD GNSS, Inc. (“JAVAD GNSS”) for owners of JAVAD GNSS products. It is designed to assist owners with the use of NetView and its use is subject to these terms and conditions (the “Terms and Conditions”).

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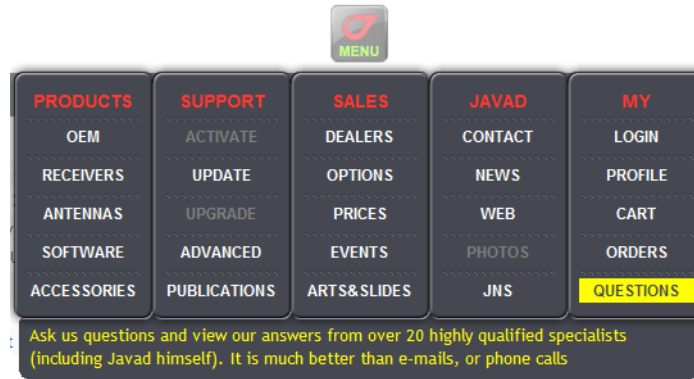
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Screen Captures

This manual includes sample screen captures. Your actual screen can look slightly different from the sample screen due to the receiver you have connected, operating system used and settings you have specified. This is normal and not a cause for concern.

Technical Assistance

If you have a problem and cannot find the information you need in the product documentation, contact your local dealer. Alternatively, request technical support using the JAVAD GNSS World Wide Web site at: www.javad.com



To contact JAVAD GNSS Customer Support use the QUESTIONS button available on the www.javad.com

Getting STARTED

NetView is a Windows application for controlling navigation receivers developed and manufactured by JAVAD GNSS. Before you start using NetView, you should become familiar with its functions and learn how to install, launch, exit, and uninstall the program.

NetView software provides the following functionality:

- Directly connect to the receiver(s), using one of the following interfaces: serial, USB, TCP/IP (through the Ethernet ports or WiFi adapter), Secure TCP/IP (SSL/TSL), Bluetooth, CAN (Kvaser CAN Interface).
- Slots to store the most frequently used connection settings.
- Displaying of the total number and the status of all visible and tracked satellites.
- Displaying the receiver current position and time in real time.
- Real time satellites mapping. Satellite sky plots and orientation plots.
- Clear NVRAM, receiver reset, return to the initial parameter values, init file system, reset RTK.
- Create receiver, parameters and options reports.
- Update firmware direct from the JAVAD GNSS website by the user request. (Support is available starting with firmware version 3.2.1).
- Display of the current receiver options and loading of Option Authorization Files into the receiver.
- Setup of various parameters of receiver.
- Start and stop file recording, deleting files, downloading files using file manager.
- Manual mode terminals allow sending commands with prompt tip and view receiver response. Limited terminal supports a TCL script language to automate the “common” receiver control tasks.
- Collecting and display GNSS and Radio Spectra.
- Connecting to multiple receivers.
- Support for multiple connections to the receiver for optimized simultaneous work.

Setting up NetView

System requirements

- Check that you have the following required (or recommended) items before installing and using NetView.
- PC-compatible with Intel® Pentium® 1.2 GHz or faster¹.
- 100 MB free disk space.
- 512 MB RAM or more (1024 MB recommended).
- 32-bit or 64-bit operating system such as MS Windows NT, 2000, XP, Windows Server 2003, Windows Server 2008, VISTA, Windows 7, Windows 8, Windows 10.
- Color monitor at 800x600 screen resolution.

Installing NetView

NetView is available from the JAVAD GNSS website. If downloading the program from the website, extract the program files into a folder on your hard drive.

Navigate to the location of the NetView program and double-click the *Setup.exe*. The installation process will be started. Click *Install* to install the software. Click *Don't Install* to quit.

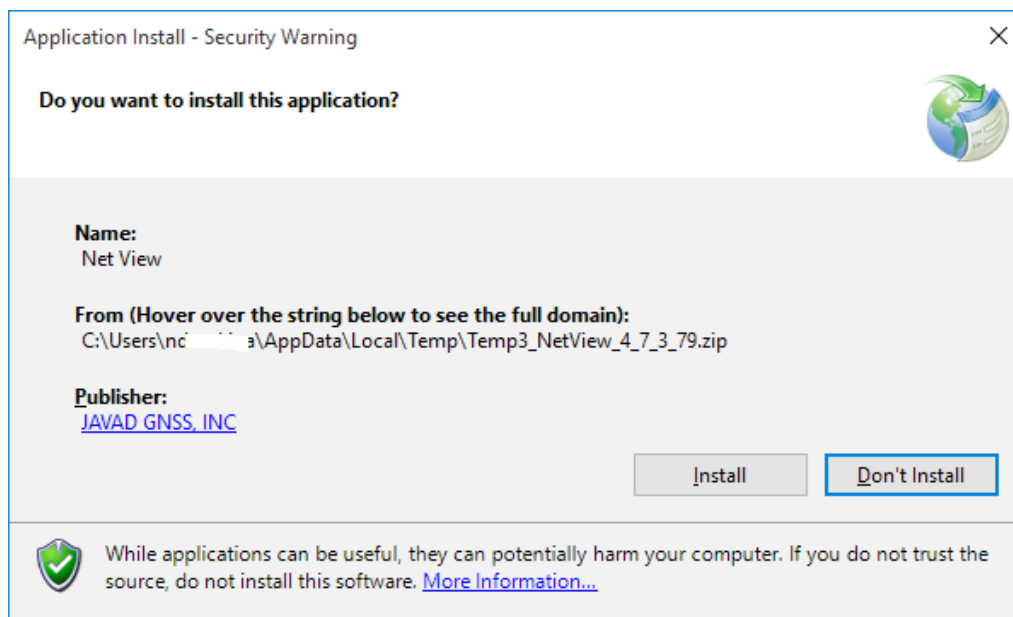


Figure 1. Installation

Uninstalling NetView

To uninstall NetView use the *Add and Remove Programs* from the *Control Panel*.

Open the *Control Panel*, then *Add or Remove Programs* tool. Find *NetView*, and click *Change/Remove*.

¹ Processor speed, RAM and disk space depends on the number of concurrent receivers

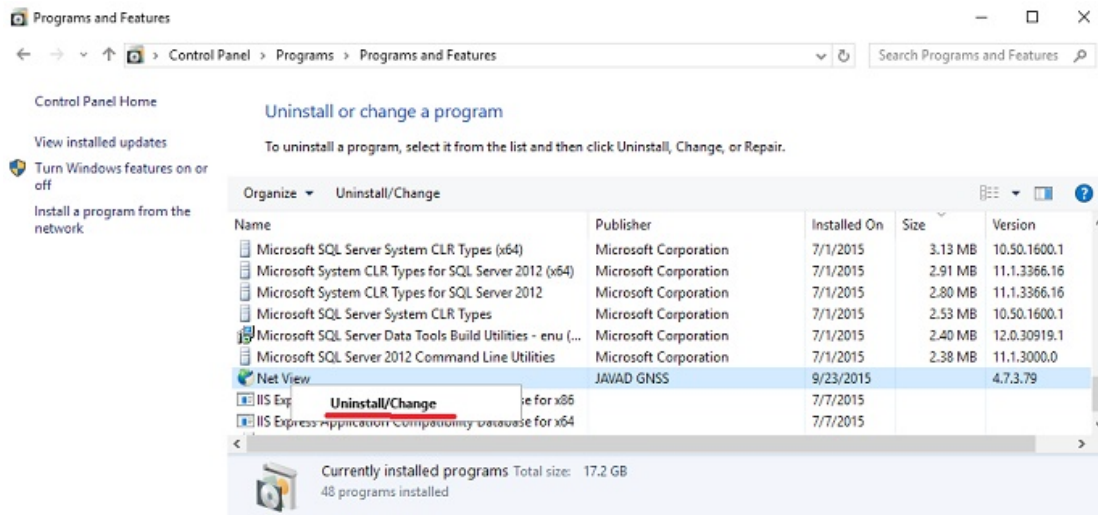


Figure 2. Uninstall

NetView will be uninstalled.

Updating NetView

NetView checks updates automatically after closing. If a new version is available, the user will be prompted of updating when next start.

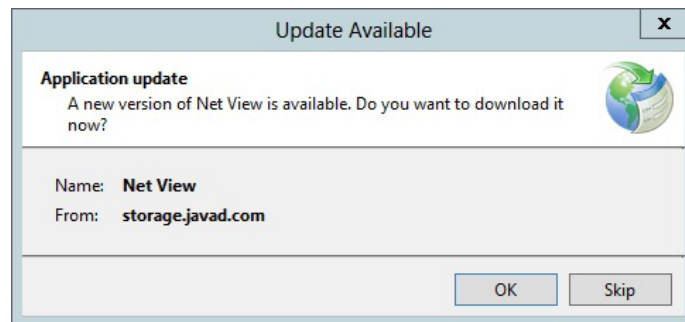


Figure 3. Update

Getting Connected

Starting NetView

NetView can be launched, as any other Windows program, for example, with the *Start* ▶ *All Programs* ▶ *JAVAD GNSS* ▶ *NetView*.

Once *NetView* is launched, the *Start* window appears.

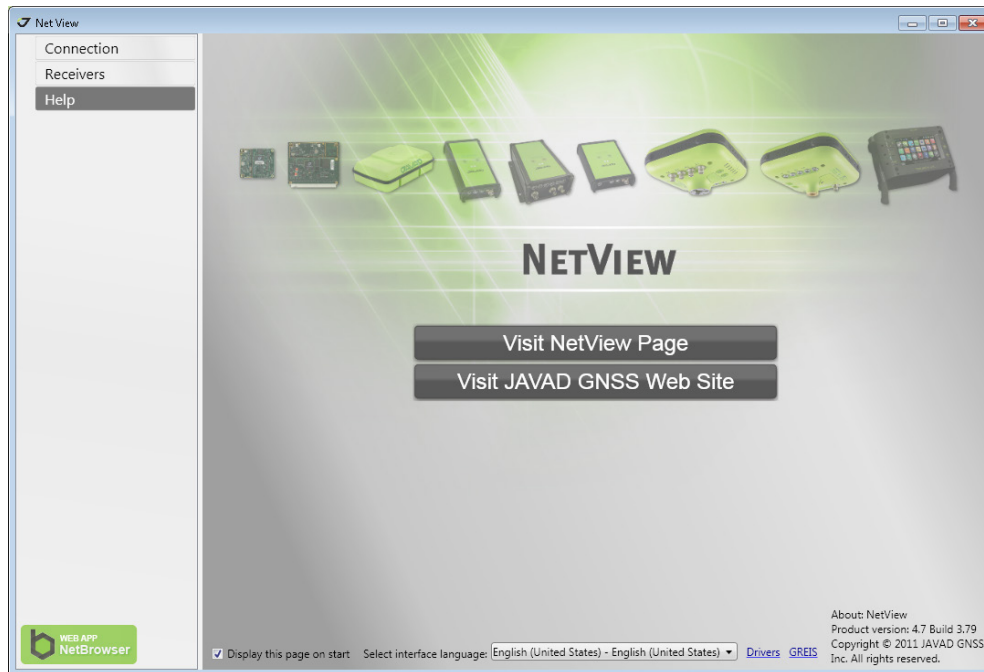


Figure 4. Start Window

- *Visit NetView page* - opens software page on JAVAD GNSS web site
- *WEB APP NetBrowser* - opens netbrowser page (new software for the receivers managing)
- *Display this page on start* – if “off” *NetView* opens *Connection Tab* when starting.
- *Select interface language*- change the language of the user interface. (*English, Polish* or *Russian*).
- *Drivres* – link to the page contains firmware, software and drivers (Updates [3])
- *GREIS* – link to the page contains Greis Manual (GNSS Receiver External Interface Specification [2]).

Start window can also be opened by selecting *Help* tab.

Establishing connection

Select *Connection* Tab and set connection parameters.

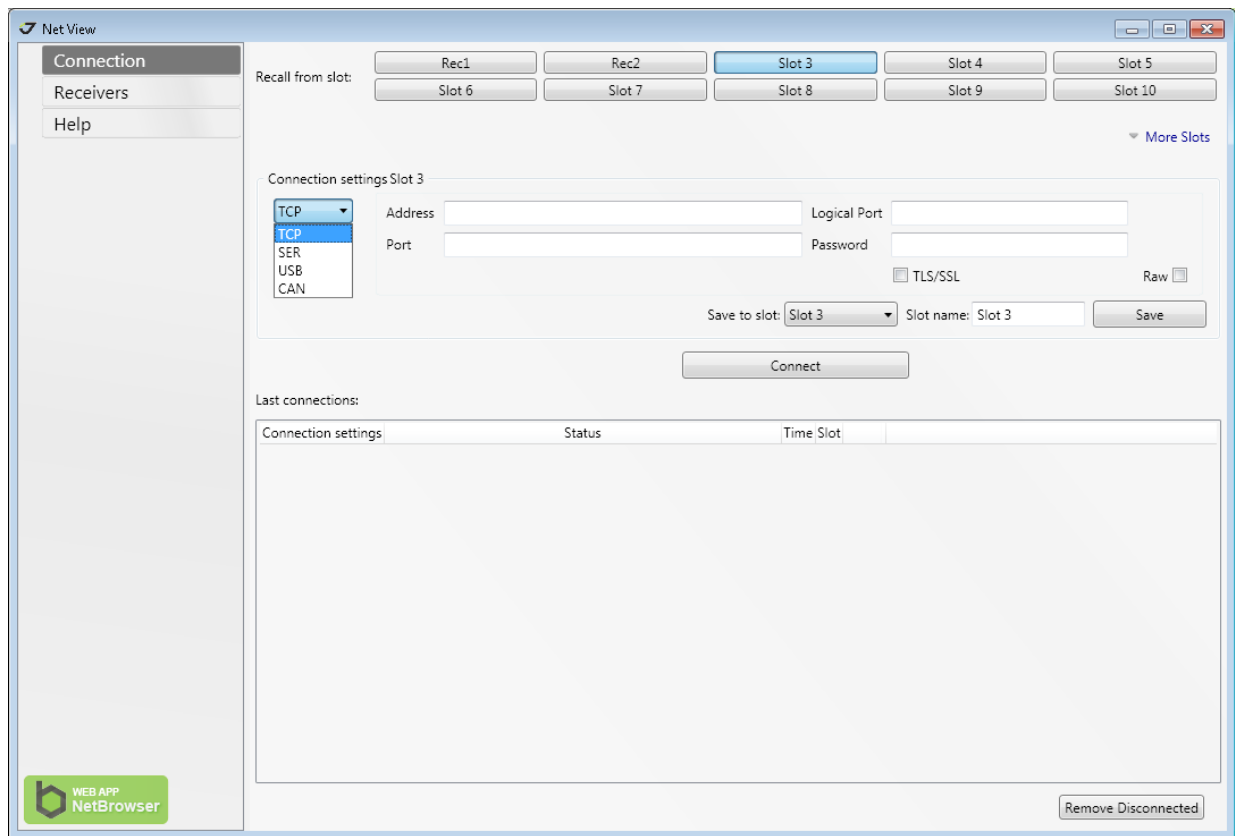


Figure 5. Connection Windows

Select from the drop-down list a connection type to establish connection between your computer and JAVAD GNSS receiver via one of the following communication interfaces:

- TCP – used to connect your computer and remote receiver;
- SER - via serial ports;
- USB – via USB ports;
- CAN - via CAN ports;

If you plan to use such type of connection in the future, click on *Save to Slot* button. The connection settings will be saved. You can use as many connection slots as you'd like. To increase slots number click *More Slots* button.

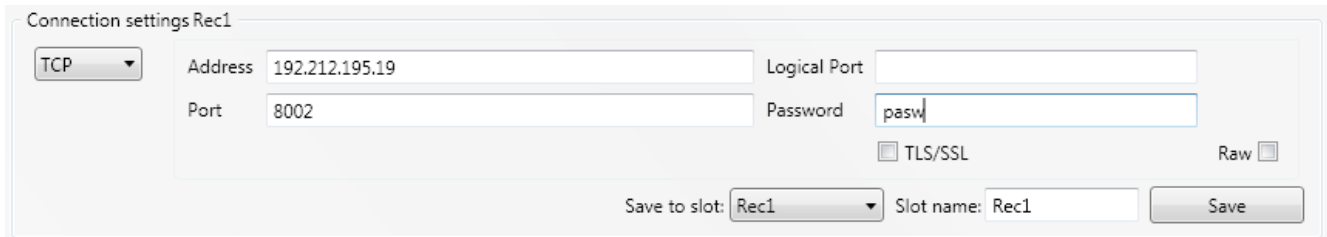
Note: The number of the slots does not limit the number of receivers that can be connected. The amount of receivers is limited only by the performance of your computer.

Click *Connect* button to establish the connection. The result can be seen in the table *Last Connections*. If your connection settings are correct, a new receiver will be added in the left navigation bar.

Please see below the detailed description of the each communication interface settings.

TCP connection

TCP connection allows establishing bidirectional connections to receiver which is configured as TCP server (see [2] Network Servers Parameter) via LAN (local area network), WLAN (wireless LAN) or Internet.



The screenshot shows a dialog box titled "Connection settings Rec1". It contains several input fields: a dropdown menu set to "TCP", an "Address" field with "192.212.195.19", a "Port" field with "8002", a "Logical Port" field which is empty, and a "Password" field with "pasw". There are checkboxes for "TLS/SSL" (unchecked) and "Raw" (unchecked). At the bottom, there are fields for "Save to slot:" (set to "Rec1") and "Slot name:" (set to "Rec1"), along with a "Save" button.

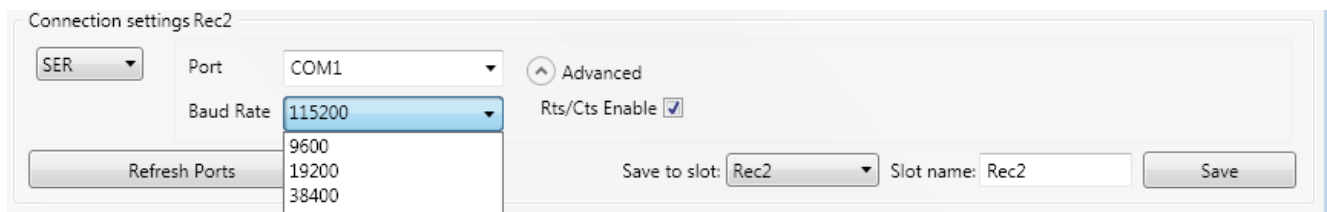
Figure 6. TCP connection settings

- *Address* - Host name or IP address of the receiver;
- *Port* - TCP port of the receiver. This is the port on which the receiver listens for telnet-like connections. The receiver allows up to five simultaneous telnet-like connections.
- *Logical port* - one of the five logical port mapping (a, b, c, d, e). If the value is empty, then the connection is established with the first free logical port;
- *Password* - an arbitrary sequence of characters (if the receiver is configured to bypass the login/password authentication you may simply leave this field blank)
- *TLS/SSL* - Enables/disables the encrypting with cryptographic protocols that provide communications security over the Internet. This parameter should correspond with the receiver settings.
- *Raw* - Connection without authorization. It is used to connect via serial adapters.

Serial connection

To establish a connection between your computer and the receiver using serial ports, follow the steps:

1. Connect one of the available receiver port (usually A) to a communication port on the computer using a Receiver-to-Computer RS-232 serial cable.
2. Supply power to the receiver and computer and then turn them on.



The screenshot shows a dialog box titled "Connection settings Rec2". It contains a dropdown menu set to "SER", a "Port" dropdown menu set to "COM1", and a "Baud Rate" dropdown menu set to "115200". There is a "Refresh Ports" button and a list of other baud rates: 9600, 19200, 38400, and 57600. There is an "Advanced" section with a checked "Rts/Cts Enable" checkbox. At the bottom, there are fields for "Save to slot:" (set to "Rec2") and "Slot name:" (set to "Rec2"), along with a "Save" button.

Figure 7. Serial port connection settings

Set the following parameters:

- *Port* – Select from drop-down. If needful port is absent in the list click *Refresh Ports* button
- *Baud Rate* – specifies how fast data is sent over a serial line. *NetView* may not work well on the lowest rates. The rates higher than 115200 speeds must be enabled in OAF.
- *Advanced* → *Rts/Cts* – transfer flow control parameter (request to send/ clear to send).

USB connection

Note: Before connecting a USB equipped JAVAD GNSS receiver with PC USB port, make sure that the USB Port option enabled in the receiver and the JAVAD GNSS USB driver installed on the computer. The drivers are available on the JAVAD GNSS website

update page [3].

Installing Driver

The driver installation procedure varies slightly depending on the operating system used. In general, the installation procedure is the following:

1. Visit the JAVAD GNSS website. Download the USB driver.
2. Unpack the archive into a separate, empty folder.
3. Run jgnssusb_x64L.exe or jgnssusb_x86L.exe depends on PC Operating System Type.
4. Connect the receiver to the computer through the supplied USB cable. Turn the receiver on.
5. Windows will automatically detect the new hardware device. Follow the on-screen instructions to finish installation process.

After the driver is successfully installed, you will be able to connect the receiver with the computer via USB ports.

If the receiver is equipped by the built-in USB to RS232 FTDI converter the virtual serial port will be created. In this case connect to receiver as described in “Serial connection” on page 12.

Otherwise just select the appropriate identifier from the drop-down list. If there is no needful port in the list, click *Refresh Ports* button.

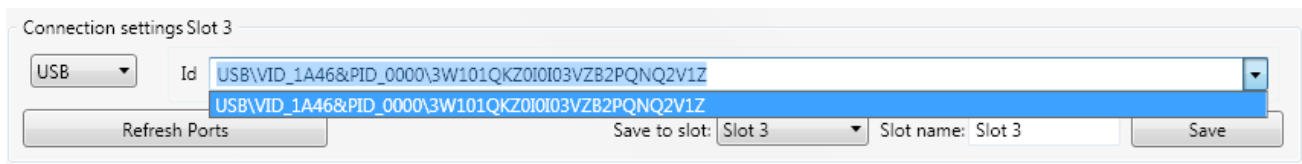


Figure 8. USB connection settings

CAN connection

Note: Before connecting a CAN equipped JAVAD GNSS receiver with PC make sure that the CAN Port option is enabled in the receiver.

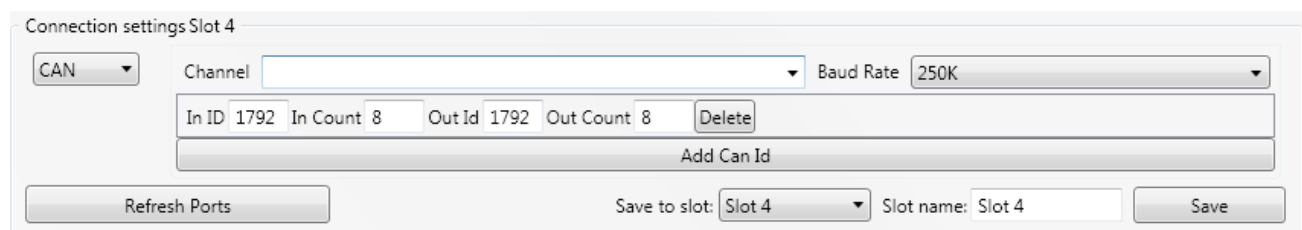


Figure 9. CAN connection settings

Set the following parameters before establishing the *CAN* connection

- *Channel* - allows selecting channel;
- *Baud rate* - data transfer rate;
- *In ID*, *In Count* – first Standard Identifier (SID) of the input CAN messages and range of in SIDs
- *Out Id*, *Out Count* – first Standard Identifiers (SIDs) of the CAN messages generated by the receiver and the range of out SIDs.

Connection via CAN allows connecting multiple receivers, which are in the same CAN network. In this case, the incoming (In) and outgoing (Out) identifiers should not overlap the ranges. To add a new CAN SIDs, click *Add Can Id* button. To delete existing SIDs, click *Delete* button in the appropriate line.

All devices are in one of CAN networks operate at one speed. The software supports only Kvaser (<http://kvaser.com>) adapters [6].

Closing NetView

To disconnect from the receiver, click the *Disconnect* button on the receiver page or in the connections list on the *Connection* tab or just close the NetView.

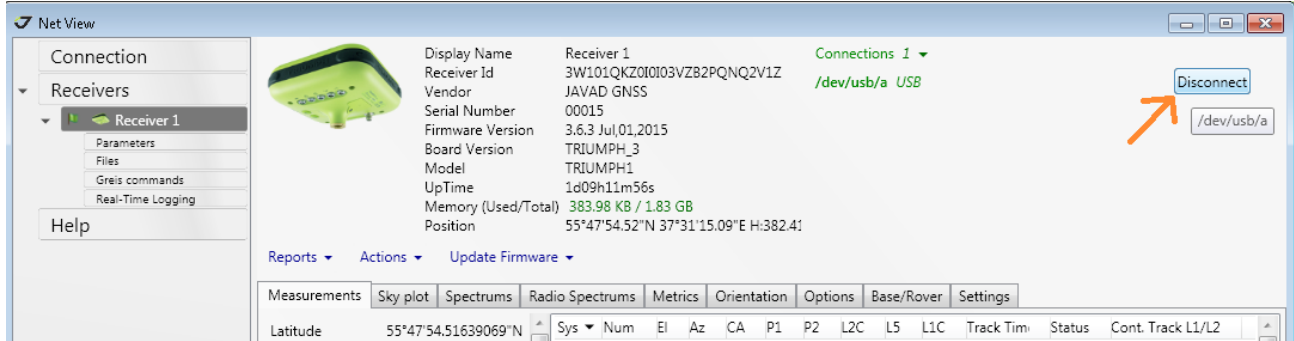


Figure 10. Disconnecting using the receiver page

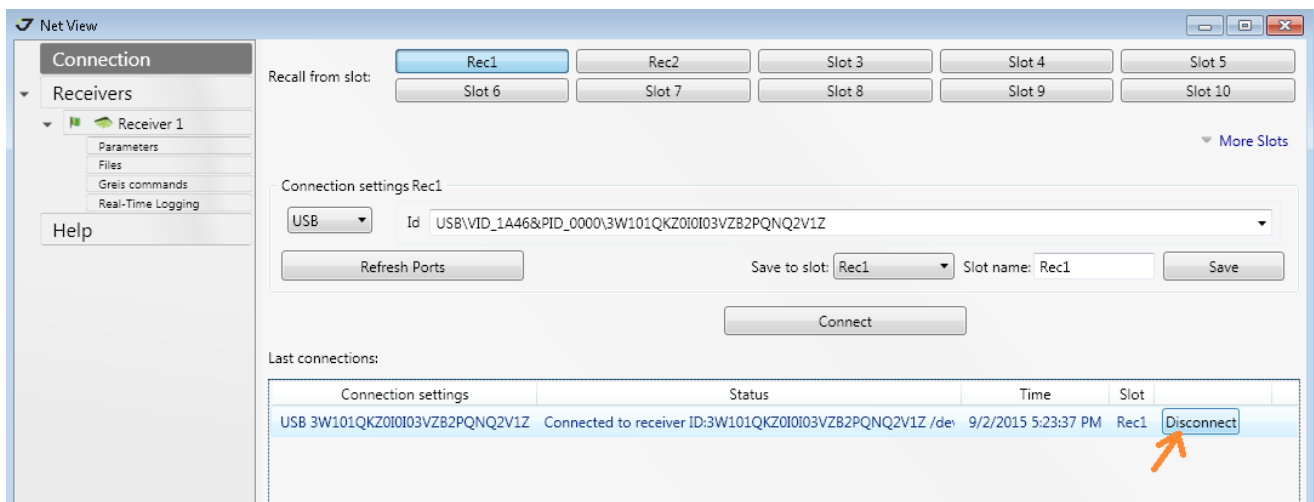


Figure 11. Disconnecting using the Connection tab

If the receiver has not been disconnected by the time the program is terminated, the connection will be automatically broken before NetView is closed

Note: It is strongly recommended to close the connection with the receiver prior to switching the receiver off and disconnecting the cable.

OPERATION AND MONITORING

Connect to the receiver as described in “Getting Connected” on page 9.

There is a navigation bar in the left pane of the program window. This pane is arranged as a tree, and the nodes can be expanded by mouse click. Clicking on the elements of the navigation pane on the right pane a page with relevant content appears. In this case, the active element remains selected. To see the table of the available receives, click *Receivers* node.

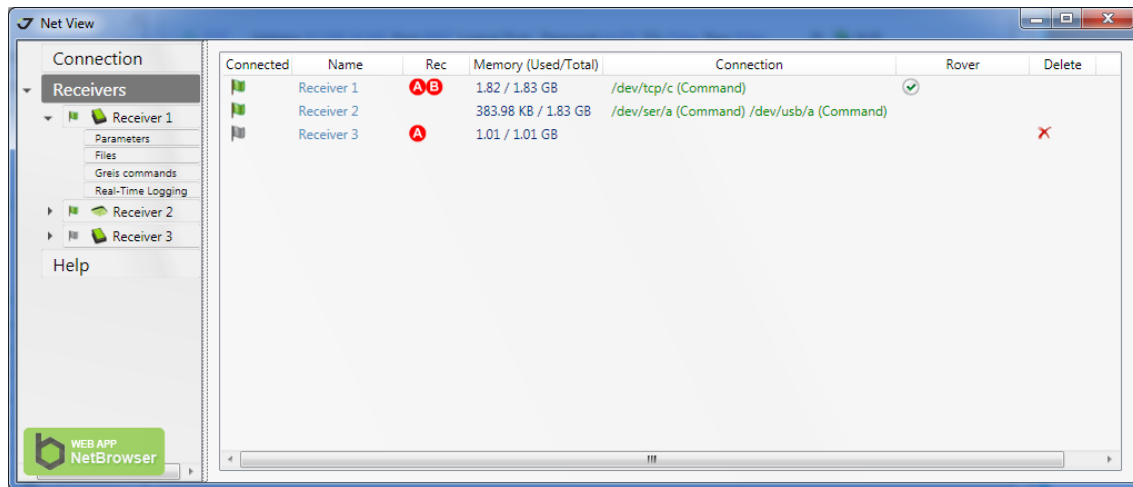


Figure 12. Receivers tab

On the right pane the following information about each receiver is displayed:

- *Connected* - green flag indicates that the receiver is now connected and available.
- *Name* - the name of the receiver.
- *Rec* - the current files, which are logging.
- *Memory (Used/Total)* - receiver memory capacity.
- *Connection* - active connections. The color means connection status (green – monitoring, blue – file transferring, red – exclusive in manual mode);
- *Rover* – rover status, if receiver is configured as a rover using *NetView*;
- *Delete* button – a disconnected receiver can be deleted. It disappears from the receiver list (tree) and is removed from the *NetView* database.

Each receiver node on the navigation pane contains the following sub-nodes, clicking on it opening the corresponding window:

- *Parameters* – graphic interface for the configuring of the receiver;
- *Files* – operations with the files in receiver memory;
- *Greis Commands* – manual mode terminal for the GREIS commands entering (see [2]);
- *Real-Time Logging* – logging *jps* or *rtcm* data to the PC memory.

These pages allow controlling the different aspects of receiver functionality and will be detailed described below.

Click on the receiver's root node to select the main page. This page shows the appearance of the receiver, its characteristics, and available connections, contains menu for generating the reports, perform initialization actions, and update firmware and set of the tabs for monitoring the measurements such as: *Measurements*, *Sky plot*, *Spectra*, *Radio Spectra*, *Metrics*, *Orientation*, *Options*, and *Settings*.



Figure 13. Receiver 3 main page

Receiver Info

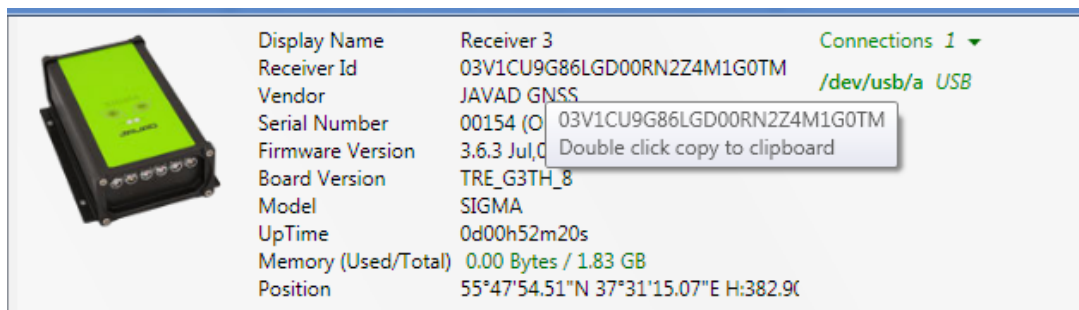


Figure 14. Receiver info

Receiver window provides the following information:

- Image of the receiver.
- *Display Name* – name set on the tab Settings (by default “Receiver” + sequence number).
- *Receiver Id* - a piece of text uniquely identifying your receiver.
- *Vendor* – JAVAD GNSS.
- *Serial Number* - Serial number assigned to the receiver on the factory.
- *Firmware Version*.
- *Board Version*.
- *Model* - The model of the receiver, e.g., *SIGMA*.
- *UpTime* - Time elapsed since last receiver reboot.
- *Memory (Used/Total)* – Used /Available Memory.

- *Position* – current receiver position.
- *Connections* – amount and type of connections. The connection used to transfer file is shown in blue. And if the connection is captured by manual mode it is red and not used.

Every parameter can be copied to clipboard by double clicking.

Reports

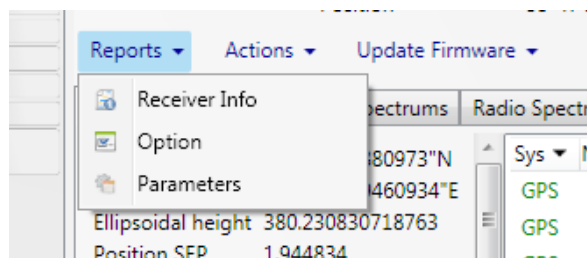


Figure 15. Reports

The following reports on the receiver can be generated:

- *Receiver Info* – receiver characteristics, position and satellites table (*Receiver Info* described above and content of *Measurements* tab)
- *Options* – receiver characteristics and list of options with current statuses (*Receiver Info* and content of *Options* tab)
- *Parameters* – receiver characteristics and list of all the parameters with values.

Select the desired report from the *Reports Menu* and the location for report saving in the *Save File Dialog* which will be opened. The report will be created and saved in a text file.

Actions

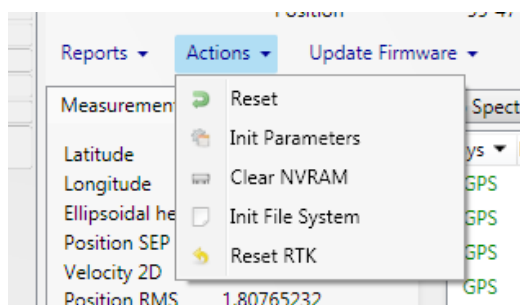


Figure 16. Actions

Initialization of the receiver can be performed using the following actions from the menu *Actions*:

- *Reset* – reset (reboot) the receiver. From a functional point of view, the reset is equivalent to turning the power off and then back on.
- *Init Parameters* – Set all the receiver parameters to their default values.
- *Clear NVRAM* – Clear NVRAM and reboot receiver. All the data stored in the NVRAM (almanacs, ephemeris, etc.) will be lost, all the parameters will be set to their default values after reboot.
- *Init File System* - Initialize the file system (i.e., reformat the underlying medium). All files stored in the

receiver will be lost. The operation can take some time depends of the memory size. Its progress is shown in the bottom status bar.

- *Reset RTK* - Reset RTK engine.

Update Firmware

Receiver’s firmware can be updated from a file or via Internet.

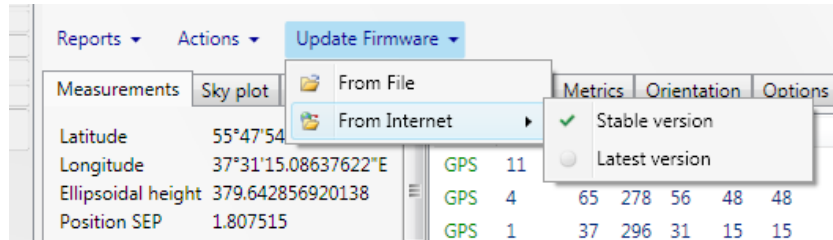


Figure 17. Update Firmware

Updating from a file

Select *From File* menu item and select the firmware file using *Open File* dialog window. If the firmware is suitable to the receiver model and has the newer version, file uploading will be started. Otherwise the warning will be shown.

Updating from the Internet

Select *From Internet* ▶ *Stable version* to load the last stable firmware or ▶ *Last version* to load the last available firmware. Both versions are available on JAVAD website [3].

After the firmware file is downloaded from the site, the file uploading will be started.

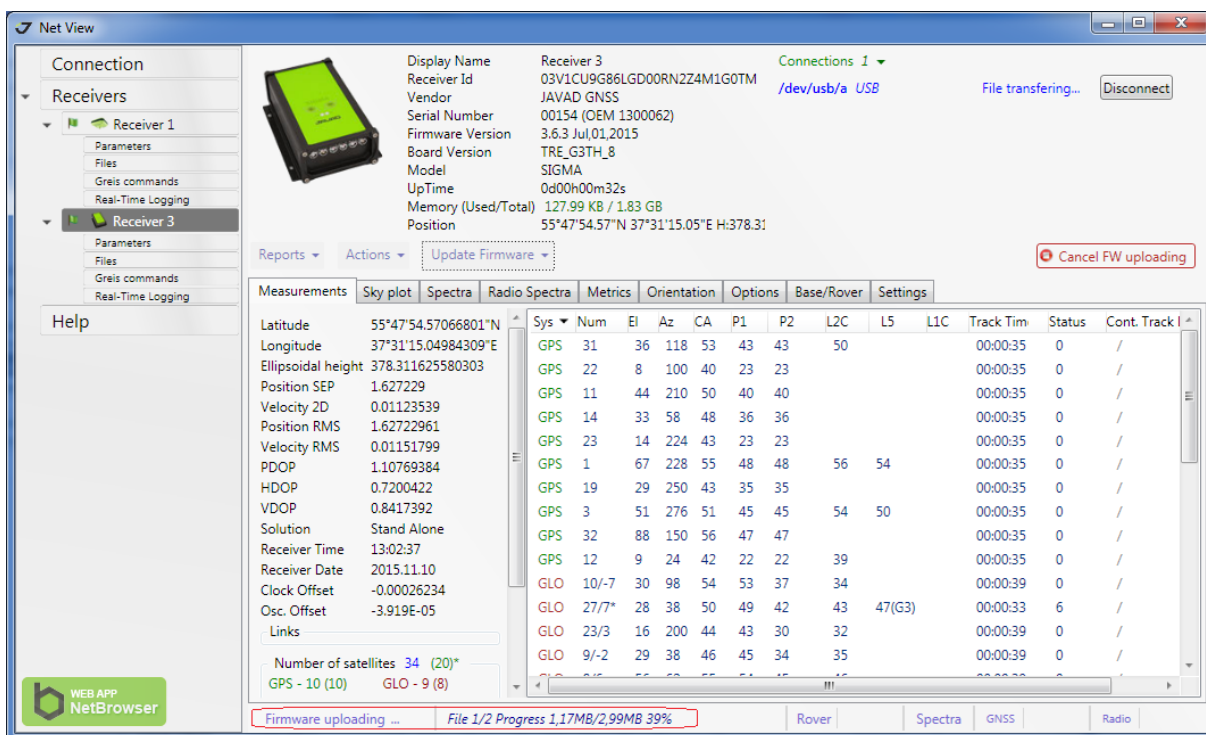


Figure 18. Firmware updating

The status bar at the bottom of the window shows the process progress. After every part of the firmware uploaded receiver reboots and reconnects.

To cancel the firmware updating, click the *Cancel FW updating* button.

Measurements

Measurements tab displays the basic tracking information (parameters) for the locked satellites. It shows the receiver target point current position, receiver coordinates and the time-frequency parameters describing the behavior of the receiver's local oscillator.

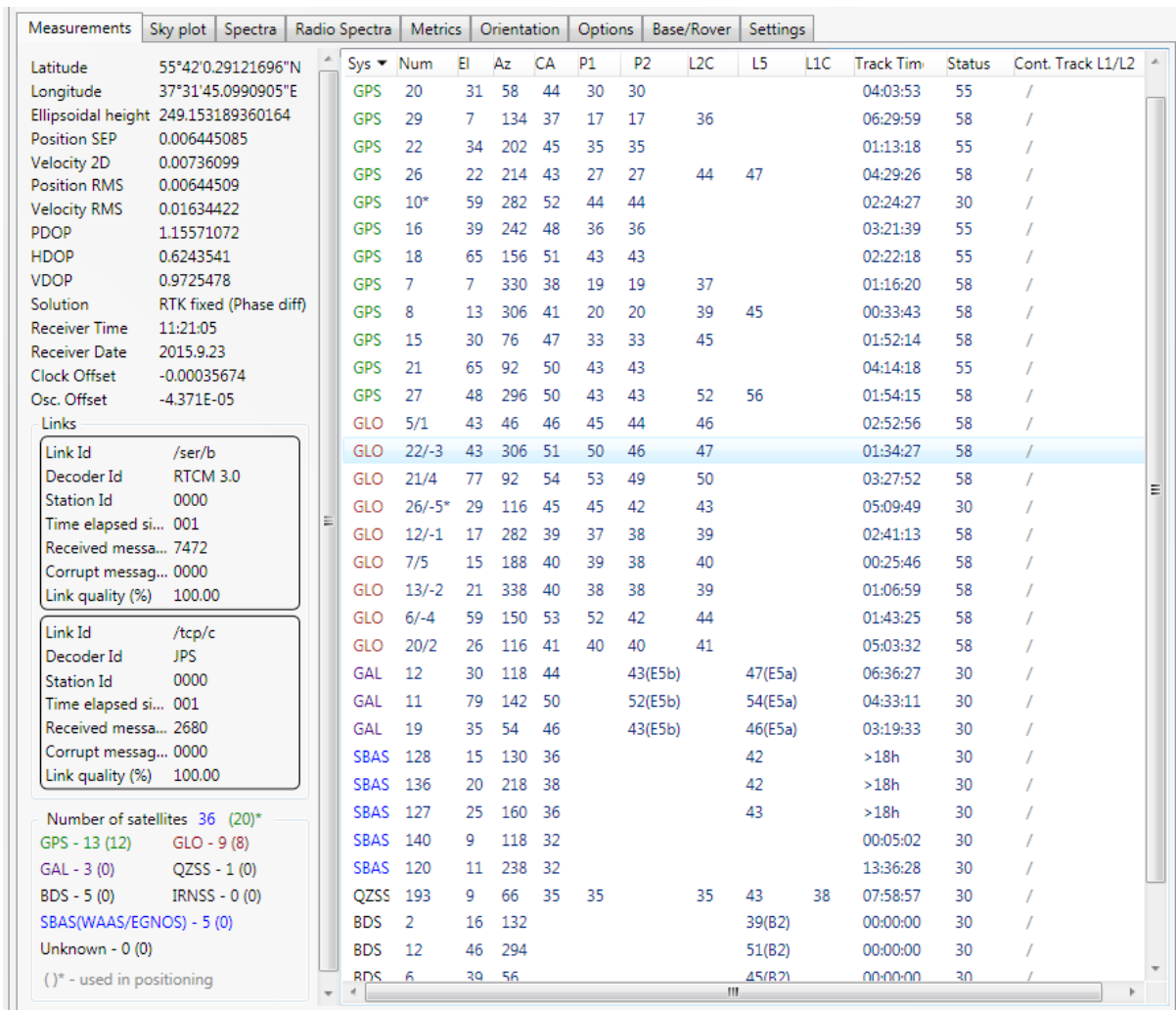


Figure 19. Measurements

Navigation information

- *Latitude, Longitude, Ellipsoidal height* - geodetic coordinates²
- *Position SEP* - Spherical Error Probable
- *Velocity 2D* - Geodetic Velocity (m/s).
- *Position RMS* - position RMS error³ (m).

2 These geodetic coordinates are computed in WGS 84 regardless of the current value of /par/pos/datum/cur.

3 More precisely, this is the square root of the trace of the position error variance-covariance

- *Velocity RMS* - velocity RMS error (m/s).
 - *PDOP* - Position dilution of precision.
 - *HDOP* - Horizontal dilution of precision.
 - *VDOP* - Vertical dilution of precision.
 - *Solution type* - Standalone / DGPS /RTK float / RTK fixed
 - *Receiver time* shows the receiver's current time within day. This value is taken from the message [~~]. For more information about [~~].
- Note:** Currently the message [~~] reports the time within day in the GPS time scale only.
- *Receiver date* - the “date” part of the full receiver time representation (*[RD]* message).
 - *Clock offset* - describes the time derivative of ($T_{rr} - Tr$), where Tr designates the receiver time, T_{rr} designates the receiver reference time. This parameter is obtained from the *[TO]* message and is expressed in seconds.
 - *Osc. Offset* is derived from the message *[DO]* and it is expressed in ppt. The parameter describes the difference between the *VCO* nominal and quiescent frequencies.

For detailed description of the messages used for navigation information see [2]: Chapter 3. Receiver Messages.

Links

The *Links* group displays the status of the data links associated with the corresponding serial ports/modem.

For each link the following fields are shown:+

- *Link Id* - Corresponding stream;
- *Decoder Id* – RTCM / RTCM 3.0 / CMR / JPS / SISNeT;
- *Station Id* – Reference station identifier;
- *Time elapsed since...* - Time [in seconds] elapsed since receiving last message (maximum value = 999). Estimated with an accuracy of ± 1 second;
- *Received messages* - Number of received messages (between 0001 and 9999). If no message has been received, this data field contains zero;
- *Corrupt messages* - Number of corrupt messages (between 0001 and 9999). If no corrupt messages have been detected, this data field is set to zero;
- *Link quality (%)* - Data link quality in percent (0-100).

Number of satellites

Number of satellites field shows:

- The total number of the locked satellites.
- The number of the locked satellites for each satellite system.
- The number of satellites used in the position calculating (in parentheses)

Satellite table

Parameter	Description
Sys	Satellite System: GPS GLO - GLONASS GAL - GALILEO SBAS QZSS BDS - BeiDou (COMPASS) IRNSS Satellite systems are marked by different colors
Num	SV PRN SV PRN / SV Frequency Number for GLONASS. If the character “*” is shown next to PRN in the column, this means that almanac data are unavailable for the corresponding satellite
EL	Elevation angle in degrees.
AZ	Azimuth in degrees
CA	Signal-to-noise ratio [dB*Hz] C/A – GPS, QZSS L1 - SBAS E1 (B + C) – GALILEO CA/L1- GLONASS B1-1 - BeiDou (COMPASS)
P1	Signal-to-noise ratio [dB*Hz] P1 – GPS, GLONASS SAIF - QZSS E5 – GALILEO
P2	Signal-to-noise ratio [dB*Hz] P2 – GPS, GLONASS LEX (P + D) - QZSS E5B (I + Q) – GALILEO
L2C	Signal-to-noise ratio [dB*Hz] L2C – GPS, QZSS E6 (B + C) – GALILEO CA/L2- GLONASS B3 - BeiDou (COMPASS)
L5	Signal-to-noise ratio [dB*Hz] L5(I + Q) – GPS, QZSS L5 - SBAS E5A (I + Q) – GALILEO L3 (I + Q) – GLONASS B2 - BeiDou (COMPASS)
L1C	Signal-to-noise ratio [dB*Hz] <i>L1C (I + Q)</i> – GPS, QZSS
Track Time	Time elapsed since the last loss-of-lock in the C/A channel for the corresponding satellite. This time is given in HH:mm:ss.
Status	Satellite navigation status. For a complete description of the satellite navigation status structure, see [2]: Table 3-4. Satellite Navigation Status.

Table 1 Tracking Parameters

Sky plot

The *Sky Plot* tab shows a graphic representation of the satellites' positions in the sky.

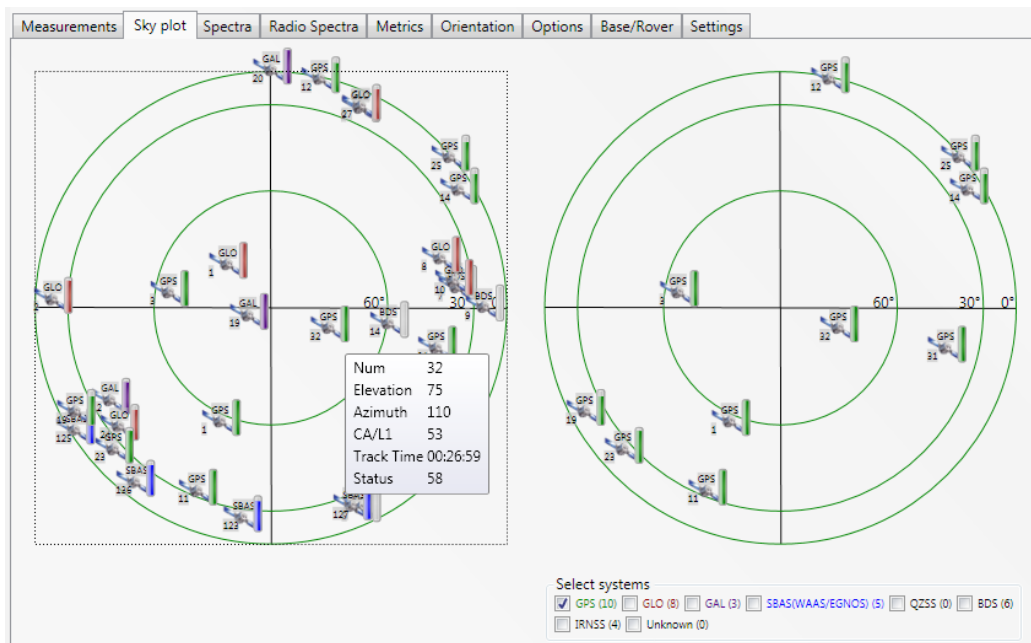


Figure 20. Sky Plot tab

Each concentric circle represents the elevation angle above the horizon. The outermost circle corresponds to 0 degrees above the horizon. The center of the sky plot represents 90 degrees above the horizon.

The satellite markers for different systems are shown by the different colors. The degree of filling of marker reflects the value of the signal-to-noise ratio. The satellite info is shown when mouse is over it.

The flags on the right allow the user to select the desired system to be displayed on the right plot.

Spectra

The *Spectra* tab allows collecting, display and store measurements of GNSS interference.

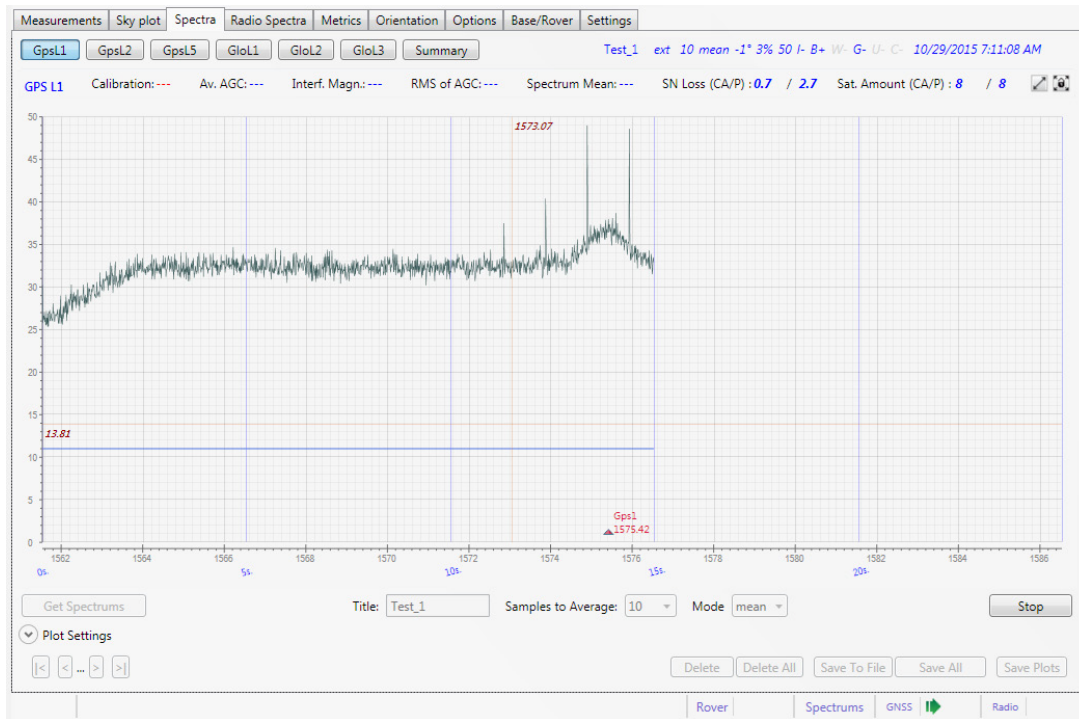


Figure 21. GNSS-spectra for SIGMA receiver in process (GpsL1)

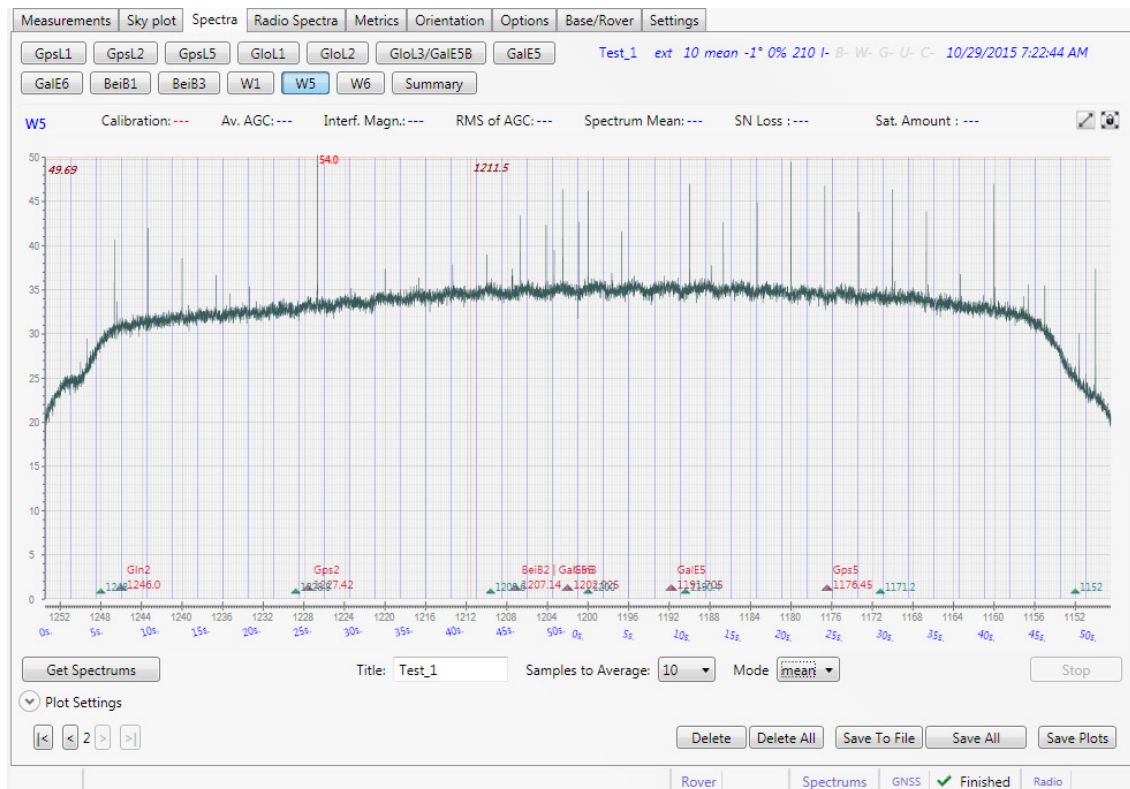


Figure 22. GNSS-spectra for TRE-3 finished (W5)

The number of spectra depends on the receiver type and is equal to the number of RF bands implemented in the receiver.

The data about interference is collected simultaneously for all GNSS bands (max 13):

- GPS L1, GPS L2, GPS L5,
- GLO L1, GLO L2,
- GLO L3/Gal E5B,
- Gal E5, Gal E6,
- Bei B1, Bei B2, Bei B3,
- W1, W5, W6.

Use the buttons to switch between the bands.

All previously made measurements are available, to see them use the navigation buttons in left bottom corner.

The following data can be displayed on the graphs:

- Black line - shows the spectrum output.
- Blue line - shows the value of the system voltage (AGC)
- X axis - the carrier frequency in MHz. For each GNSS band the values are different.
- X axis - time in seconds (blue numbers)
- Y axis - amplitude, dB.
- Red triangle - mid frequency.

Above the graph the values of calibration and statistical data are shown.

Red numbers at the top of the graph are the signatures to the points of the spectrum, which amplitude exceeds 50 dB.

Note: The option SPEC must be activated for spectra obtaining.

Collecting spectra

To receive the current measurements of the interference

1. Enter the Title;
2. Specify the Samples to Average - Time Interval of Incoherent Spectrum Data Accumulation;
3. Specify the *Mode(mean, min, max)* - Spectrum Averaging Mode;
4. Click *Get Spectrums*.

The construction of graph begins. The status of the process will be shown in the status bar filed *Spectra | GNSS*. Collecting can be interrupted by clicking the *Stop* button.

Operation with plots

- *Zoom* - select region by mouse right button or turn the mouse wheel to zoom plot.
- *Pan* - left mouse button move the graph.
- *X axis* – completely, *Y axis* 0-50 – top left button
- *X axis* – completely, *Y* completely – top right button
- *Plot in separate window* - double click.

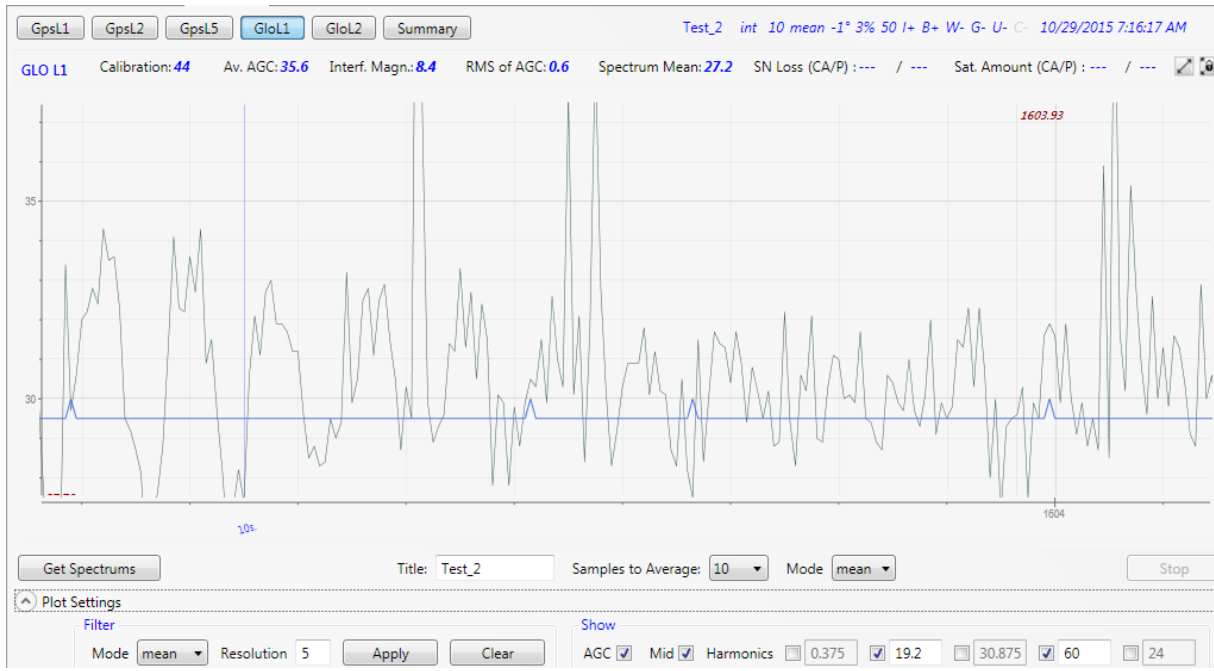


Figure 23. GNSS-spectra plot zooming and panning

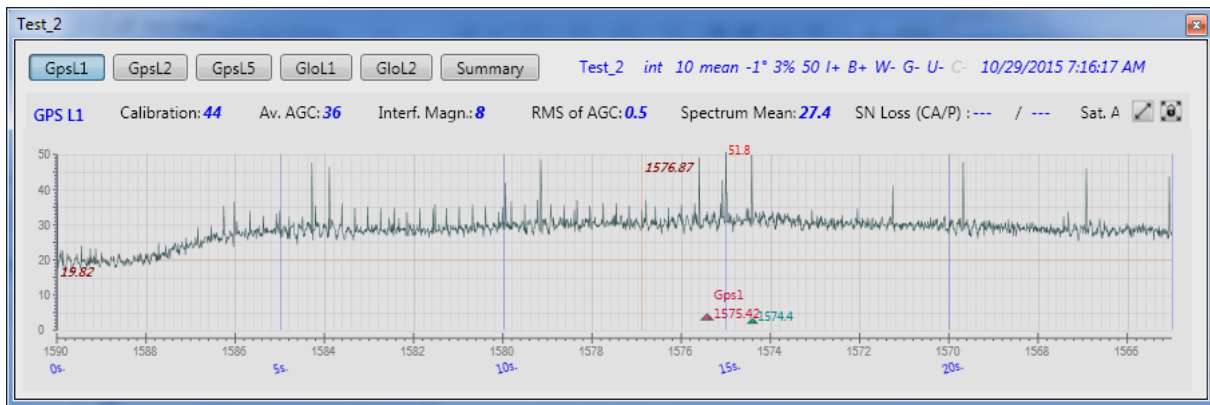


Figure 24. GNSS-spectra plot in separate window

To analyze the different aspects of the interference, the plots can be processed. Expand the *Plot Settings* group, specify processing settings and click *Apply* button.

Plot Settings are the following:

- *Filter* allows roughening plot using different mode,
- *Show* shows/hides AGC line, Middle Frequency and additional harmonics.

Click *Clear* button to return to the original plot.

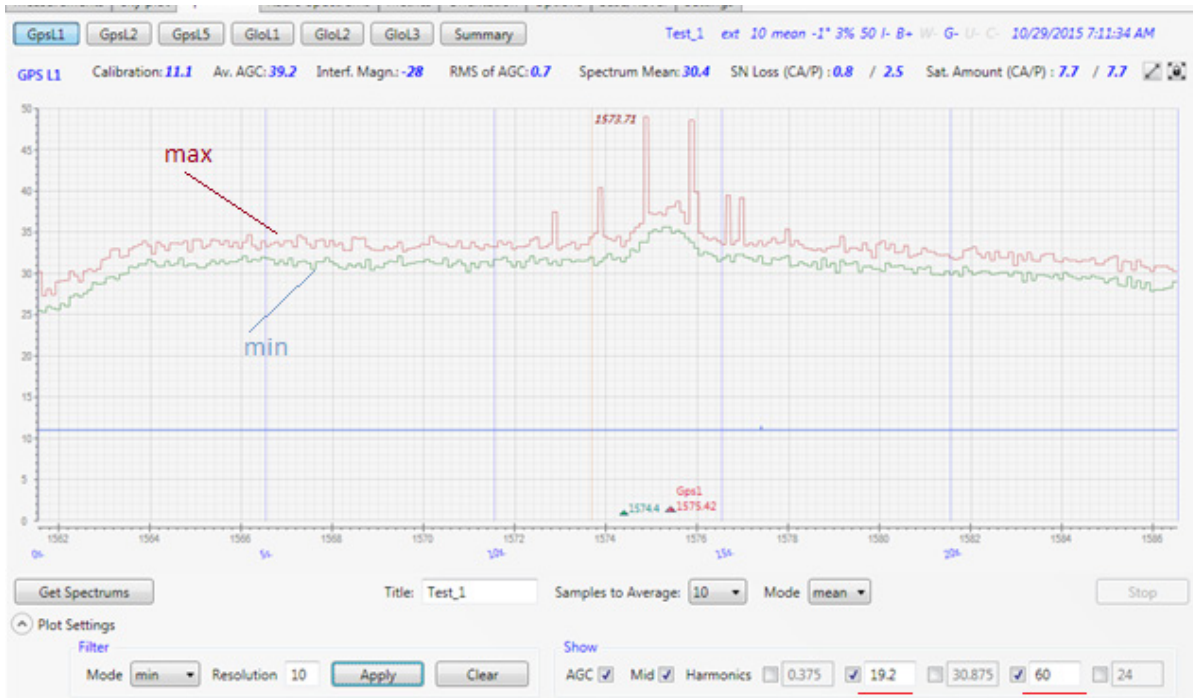


Figure 25. GNSS-spectra plot min and max filters, AGC, Mid and Harmonics 19.2 and 60

Statistics and additional data

Above the graph the statistics and calibration data are displayed:

- *Calibration* - AGC calibration
- *Av Agc* - mean value of AGC divided by 2 for each of RF bands for the time interval the spectrum has been measured over.
- *Inter Magnitude* - interference magnitude, calculated from the average values and calibration of AGC.
- *RMS of Magnitude* - RMS value of AGC for each of RF bands for the time interval the spectrum has been measured over.
- *Spectrum mean* - spectrum value for each of RF bands for the time interval the spectrum has been measured over.
- *SN Loss* – average loss in signal /noise ratio.
- *Sat Amount* - the average number of satellites for CA and P codes.

Click *Summary* button, to see the statistics collected for the all bands.

Band	Calibration	Average AGC	Interference Magnitude	RMS of AGC	Spectrum Mean	SN Loss	SN Loss (P)	Satellites	Satellites (P)
GPS L1	11.1	39.2	-28	0.7	30.4	0.8	2.5	7.7	7.7
GPS L2	2.2	37.2	-35	0.7	30.4	0.8	2.5	7.7	7.7
GPS L5	0.3	39.9	-39.6	0.7	30.3	0.8	2.5	7.7	7.7
GLO L1	444.4	39.1	405.3	0.7	30.3	2.3	1	6.7	6.7
GLO L2	5.5	33.2	-27.6	2.2	30.4	2.3	1	6.7	6.7
GLO L3	-20	37.6	-57.6	0.6	30.4	---	---	---	---

Figure 26. GNSS Spectra Summary

In the upper right corner is shown the receiver status during the spectrum measuring.

It lists the following:

- Name of the test
- Position the antenna
- The number of measurements for averaging
- Elevation mask
- ASIC frequency
- AGC
- I - Anti-Jamming mode (+ enabled; - off)
- Status of communication module (gray if the module is not) + enabled; - off:
 - *B* - Bluetooth
 - *W* - Wi-Fi
 - *G* - GSM
 - *U* - UHF / FH
 - *C* - Communication Board (for TVS)
- Time

Saving and deleting

You can save the spectra with additional information or only plots and delete them. To save or delete the spectra, use the buttons in the right bottom:

- *Delete* - Deletes the current spectrum plots (all bands).
- *Delete all* - Deletes all existing plots for the receiver.
- *Save to file* – Saves the spectra for all bands with the additional information to the special file.
- *Save all* – Saves all spectra to the selected folder.
- *Save Plots* – Saves the plots (all bands) as png-files to the selected folder.

Radio Spectra

The *Radio Spectra* tab allows collecting, display and store measurements of radio interference.

To start spectrum values collecting select *Modem Driver* and click the *Start* button. Receiver automatically detects modem (*UHF* or *FH*) and gets spectrum from modem cyclically until *Stop* button press.

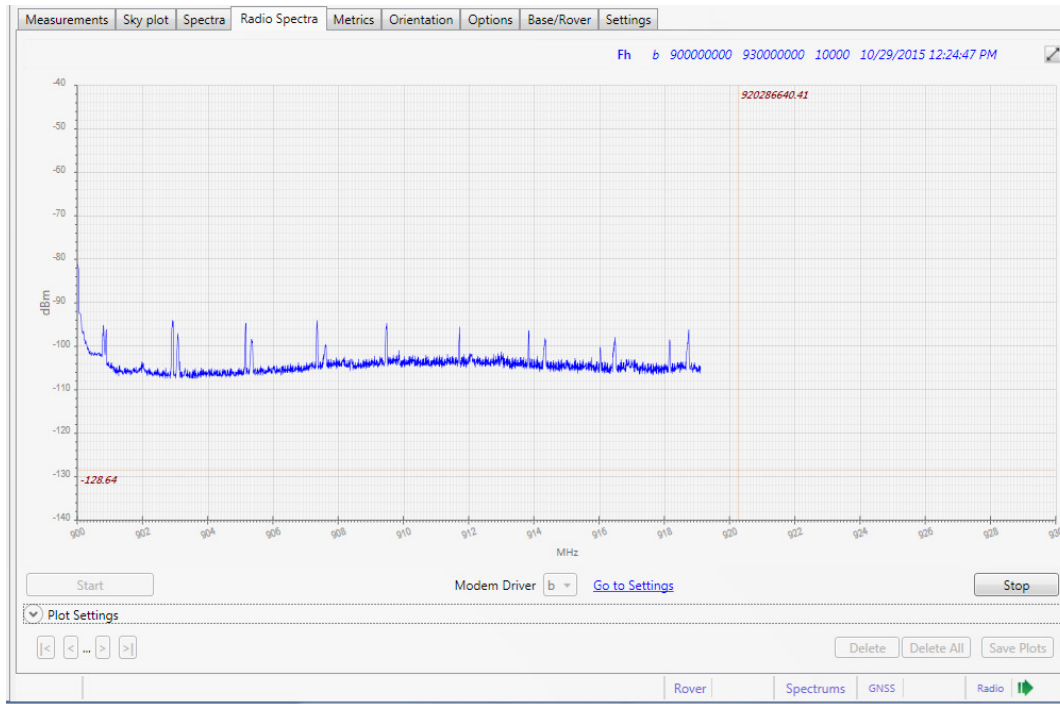


Figure 27. Radio-spectrum (Fh) collecting

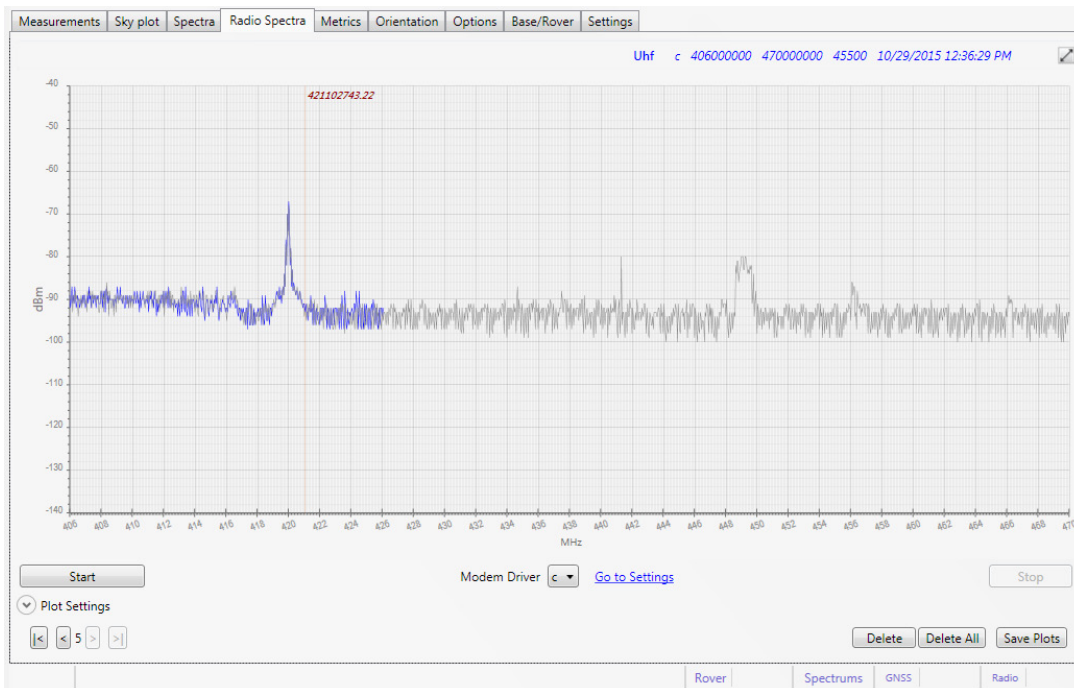


Figure 28. Radio-spectrum (Uhf) stopped

The status of the process is shown in the status bar field *Spectra* | *Radio*.

All previously made measurements are available. To see them, use the navigation buttons in left bottom corner.

The following data can be displayed on the plots:

- *Blue line* - shows the current spectrum output.
- *Gray line* - shows the value from the previous pass
- *X axis* - the frequency in MHz.
- *Y axis* – RSSI (Received Signal Strength Indication), dBm.

Above the graph the following parameters of the scanning are shown:

- *Modem Type* – Uhf, Fh
- *Modem Driver* – a, b, c, d
- *Start Frequency*
- *Stop Frequency*
- *Frequency Step*

Select *Modem Driver* from the drop-down below the plot and click link *Go to Settings*, to change scanning parameters. Corresponding tab of *Parameters* will be opened. After the parameter is set and applied, click link *Go to Spectrum* to return.

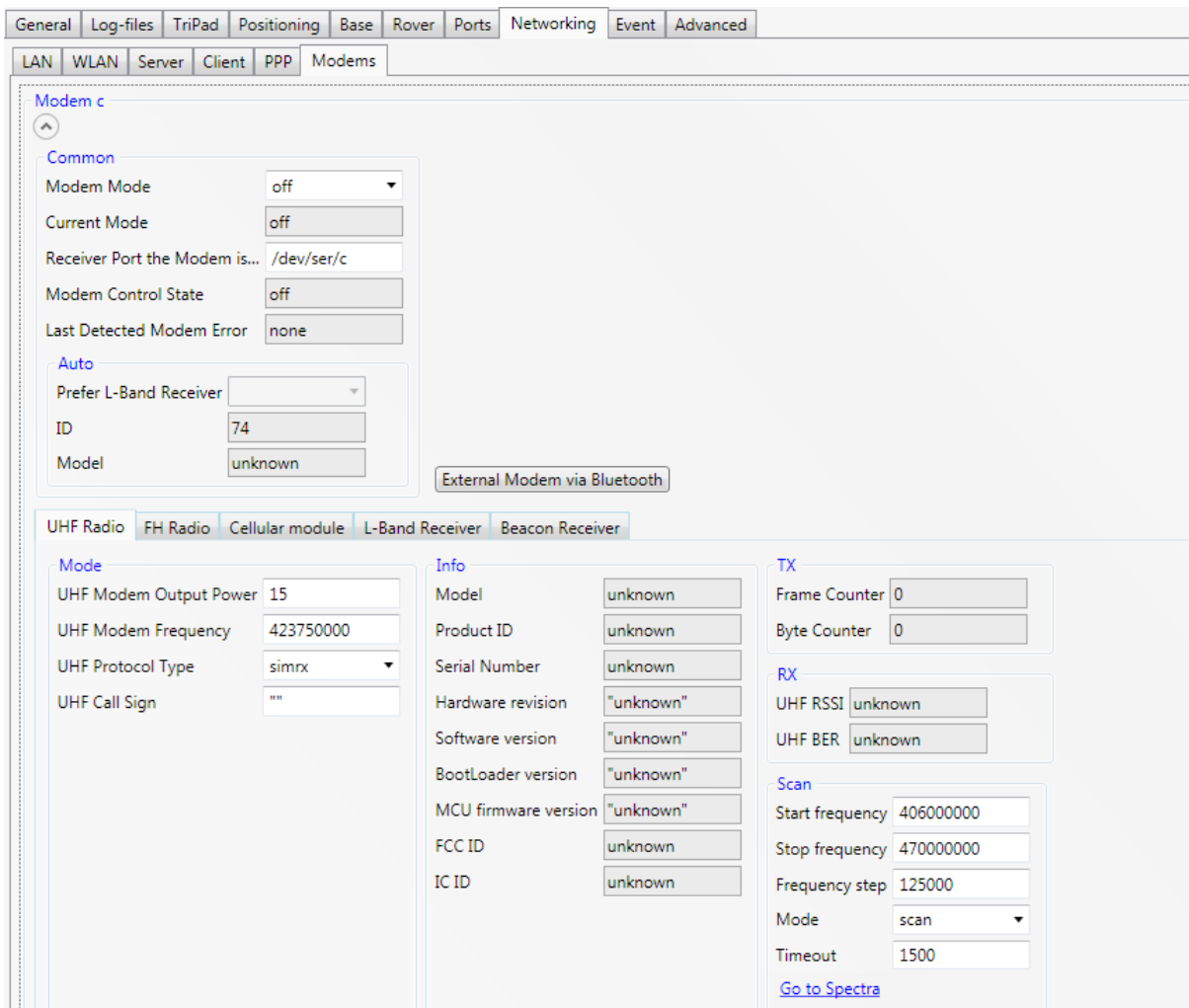


Figure 29. Radio Spectrum scanning parameters

Operation with plots

- *Zoom* - select region by mouse right button or turn the mouse wheel.
- *Pan* - left mouse button move the graph.
- *X axis* – completely, *Y* completely – top right button

To analyze the different aspects of the interference, the plots can be processed. Expand the *Plot Settings* group, specify *Filter Mode* and *Resolution* and click *Apply* button. To return to the original plot, click *Clear* button.

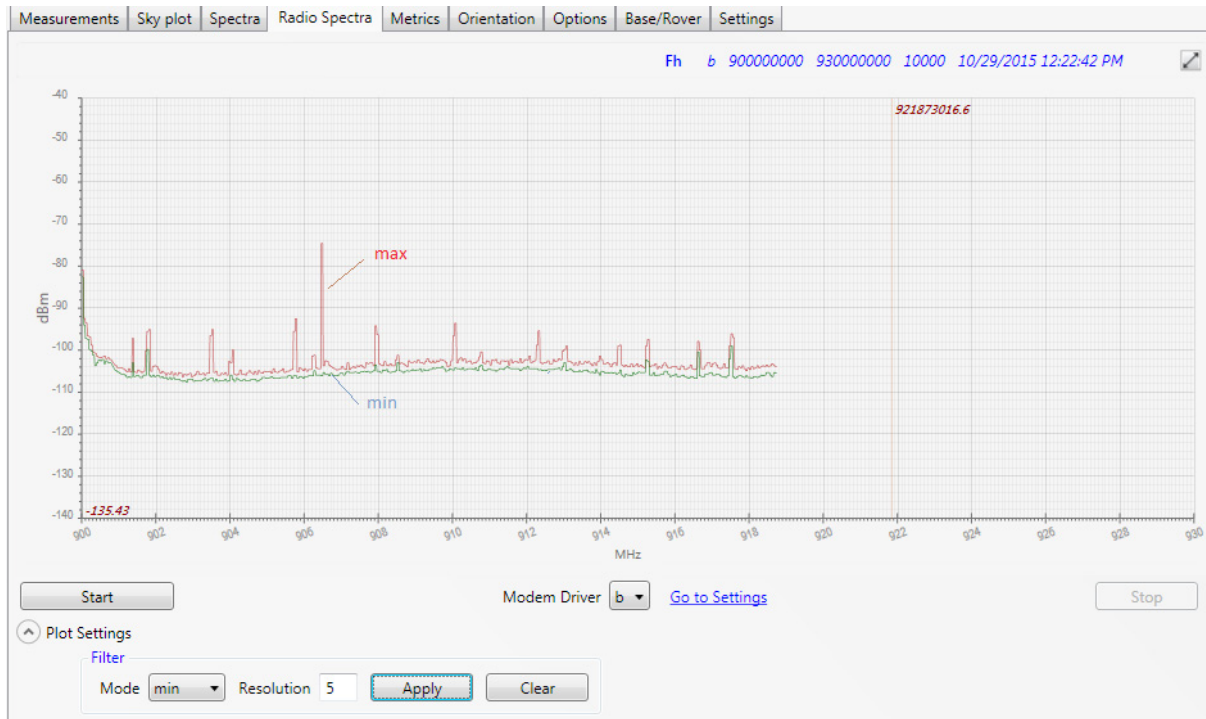


Figure 30. Radio-spectrum zoomed, panned and filtered

Saving and deleting

You can save plots and delete them. To save or delete the spectra, use the buttons in the right bottom:

- *Delete* - Deletes the current spectrum plots.
- *Delete all* - Deletes all plots for the receiver
- *Save Plots* – Saves all the plots as png-files to the selected folder.

Metrics

The *Metrics* tab allows tracing the behavior of the navigation indicators and provides the following tables:

- Signals
- Cycle Slips

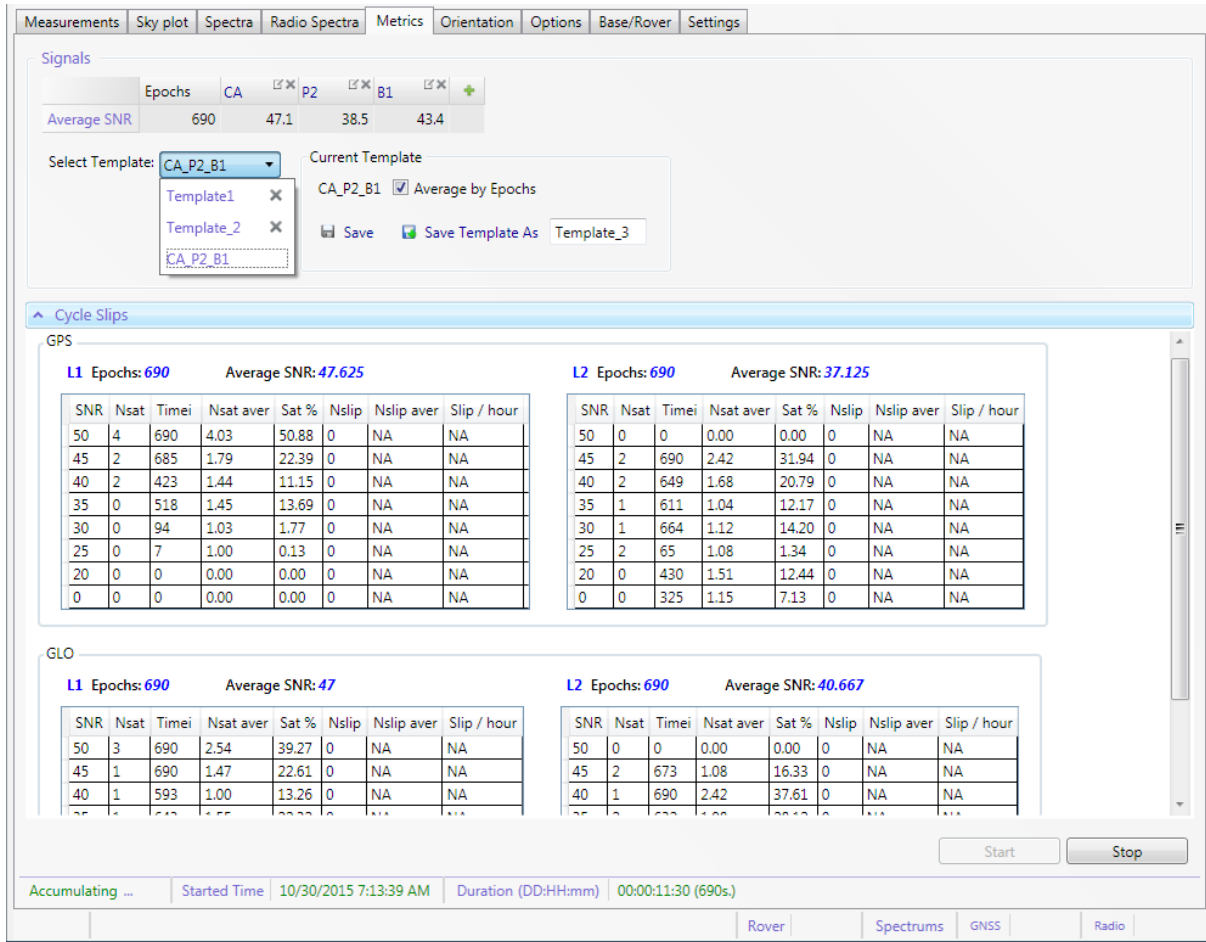


Figure 31. Metrics tab. Navigation indicators are accumulating

Signals

The *Signals* table can contain both simple SNR indicators and expressions. The first column is called *Epochs* and always contains amount of the epochs from start. Other columns are configured by user.

To add a new field, click to the green cross in the right column of the table. *Add Column* window will be opened.

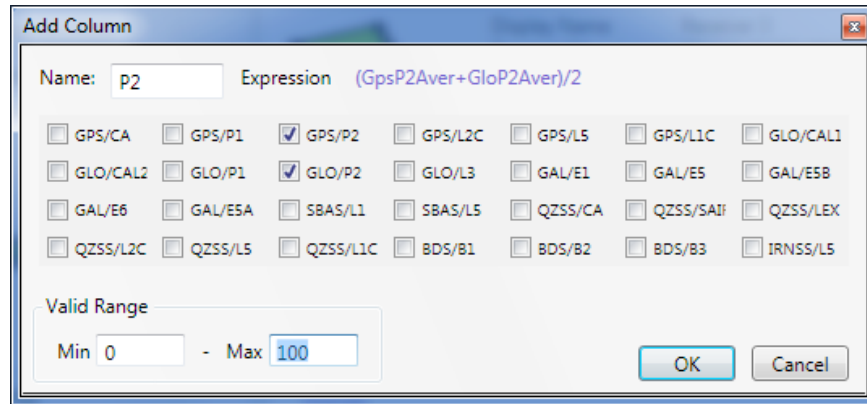


Figure 32. Add (edit) field in the Signals table

Specify the *Name* (column header), check the desired signals and type valid value range. The values outside the range will be shown in red. The expression for calculation is shown in the upper part.

To edit the existing column click left button in the column header, to delete click right button.

The configured table is the part of the *Current Template*.

The *Average by Epochs* flag is applied to the whole table and specifies if the value of the current epoch or average from start.

The table settings can be saved to current *Template* or as the new one and used for another receiver.

The saved templates can be selected from the *Select Template* drop-down list box.

Cycle Slips

The *Cycle Slips* tables allow checking the cycle slips for the following signals:

- GPS L1
- GPS L2
- GLO L1
- GLO L2

The tables represent the set of *SNR* (50, 45, 40, 35, 30, 25, 20, and 0) and show the following indicators for each of *SNR*:

- *NSat* – number of satellites.
- *Timei* – number of the epochs when satellites were tracked.
- *Nsat aver* – average number of satellites from start.
- *Sat %* - the ratio of the number of satellites with this *SNR* to the total number of satellites in the band (%).
- *Nslip* – number of the cycle slips for the all satellites.
- *Nslip aver* – average number of the cycle slips per satellite.
- *Nslip / hour* – number of the cycle slips per hours.

Above the each table signal epoch number and average *SNR* are displayed.

Click the *Start* button to start the accumulation.

The status of process, *Started Time* and *Duration* are displayed in the status bar at the bottom.

Click the *Stop* button to finish the accumulation.

Orientation

This tab information is available for the multi-antenna systems only and displays the orientation of the system.

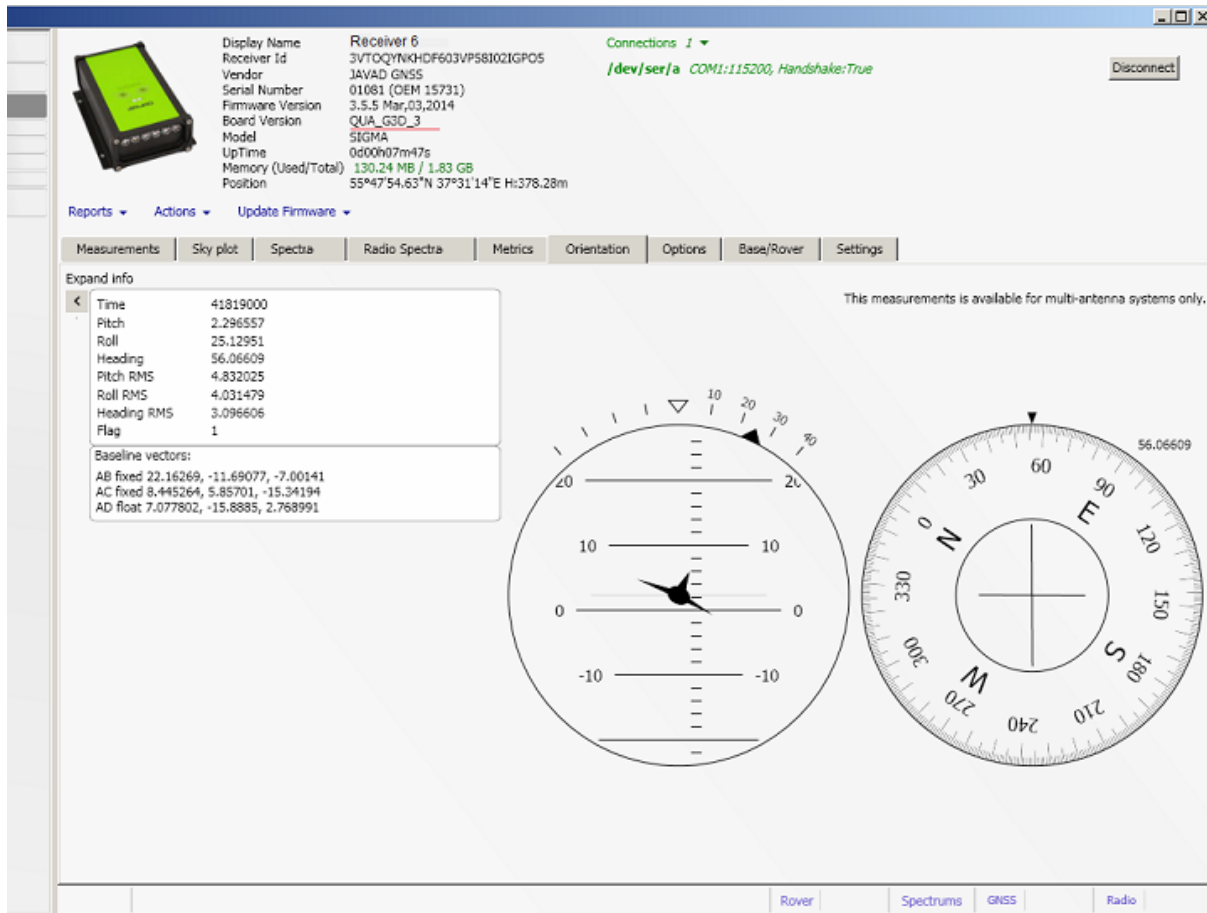


Figure 33. Orientation tab

The following parameters are shown and obtained from the messages:

[AR]

- *Time* - receiver time [ms]
- *Pitch* - pitch angle [deg] (graphically presented on the left plot)
- *Roll* - roll angle [deg]
- *Heading* - heading angle [deg] (graphically presented on the right plot)
- *Pitch RMS* - pitch angle RMS [deg]
- *Roll RMS* - roll angle RMS [deg]
- *Heading RMS* - heading angle RMS [deg]
- *Flag*- 0 - no data available / 1 - data are valid

[mr] - **Baseline vectors:**

- *AB code diff* - baseline vector M-S0 in the current epoch[m]
- *AC code diff* - baseline vector M-S1 in the current epoch[m]
- *AD code diff* - baseline vector M-S2 in the current epoch[m]

The pitch value is also represented on the left plot and Heading on the right.

Options

The *Options* tab is designed to check and update the receiver's options.

Option	Current	Purchased	Leased	Date
GPS (_GPS)	1	0	1	5/1/2015
GLONASS (_GLO)	1	0	1	5/1/2015
L1 (_L1_)	1	0	1	5/1/2015
L2 (_L2_)	1	0	1	5/1/2015
Position update rate(Hz) (_POS)	1	0	1	5/1/2015
Raw data update rate(Hz) (_RAW)	1	0	1	5/1/2015
Memory (Mb) (_MEM)	128	0	128	5/1/2015
Common Tracking (COOP)	-1	0	511	11/2/2015
1-PPS Timing Signal (_PPS)	0	0	0	---
Event Markers (EVNT)	0	0	0	---
In-Band Int. Rejection (_AJM)	1	0	1	5/1/2015
Multipath Reduction (_MPR)	1	0	1	5/1/2015
Frequency Input (_FRI)	-1	0	0	---
Freq. Lock and Output (_FRO)	-1	0	0	---
Serial Port A (Kbps) (RS_A)	460	0	460	5/1/2015
Serial Port B (Kbps) (RS_B)	460	0	460	5/1/2015
Serial Port C (Kbps) (RS_C)	460	0	460	5/1/2015
Serial Port D (Kbps) (RS_D)	460	0	460	5/1/2015
Infrared Port (INFR)	-1	0	511	11/2/2015
Parallel Port (_PAR)	-1	0	511	11/2/2015
GSM (_GSM)	3	0	3	5/1/2015
UHF (_UHF)	3	0	3	5/1/2015
RAIM (RAIM)	1	0	1	5/1/2015
Datums support (_DTM)	1	0	1	5/1/2015

Figure 34. Options tab

Each option in the table above contains the following descriptors:

- *Option* – option name
- *Current* – current value of the option and either coincide with the larger of the purchased and leased values or -1.
 - -1 - the corresponding receiver option is not supported by the firmware version.
 - 0 - the corresponding receiver option is disabled.
 - a positive integer - the option is enabled.
- *Purchased* – value of purchased option or 0
 - 0 - the corresponding receiver option is not purchased.
 - a positive integer - the option is purchased.
- *Leased* – Value of the leased option and the expiration date or 0.
 - 0 - the corresponding receiver option is not leased.
 - a positive integer - the option is leased.
- *Date* – expiration date for the leased option

By default, receiver options are disabled so you have to take special measures to activate them. It can be done by uploading an *Option Authorization File (OAF)* to the receiver from the local store or via Internet.

Note: For the complete description of the supported options see [2, Table 4-2. Receiver Options].

Uploading OAF via Internet

Click the *From Internet* button to upload options from Internet and confirm the intention.

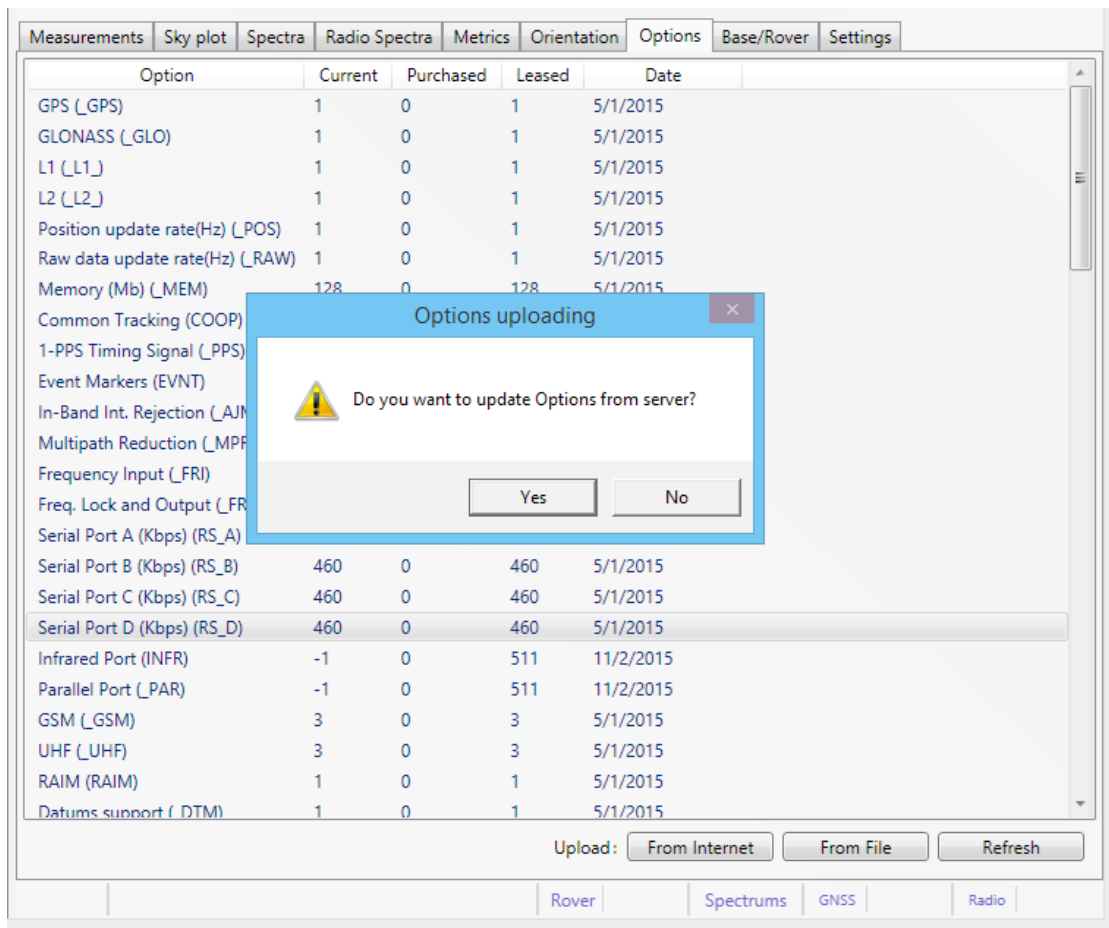


Figure 35. Updating Options via Internet

The status of the uploading and the result are displayed in the bottom status bar. After *Options* are uploaded, receiver *NVRAM* is cleared and then receiver is reset.

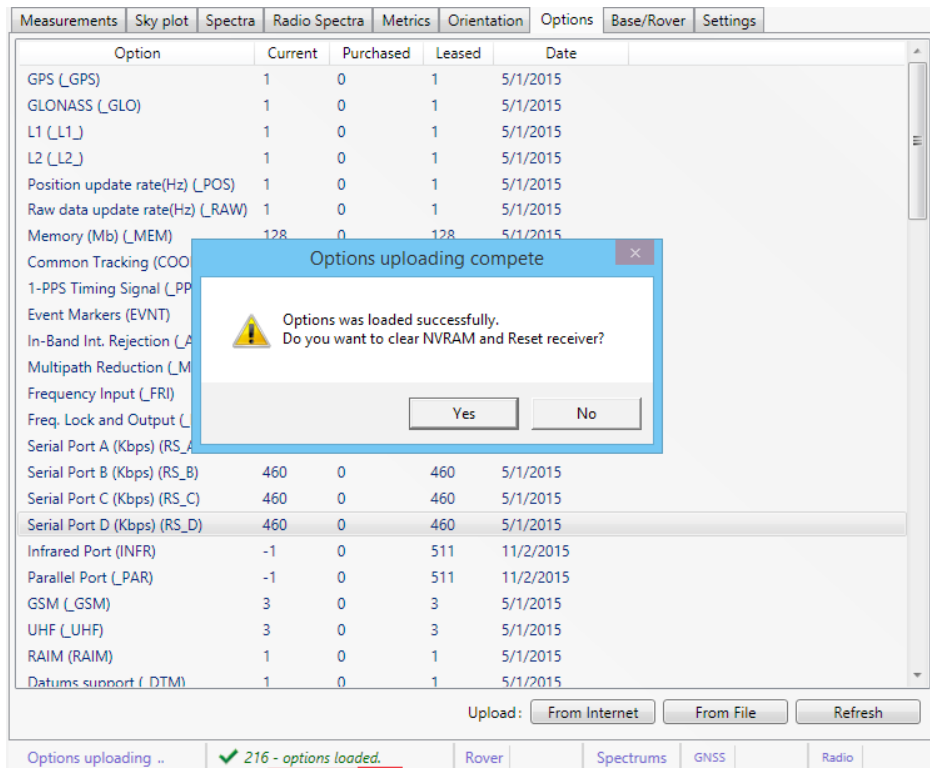


Figure 36. Options are uploaded

To see updated *Options*, click the *Refresh* button after receiver reconnects.

Uploading OAF from File

Click the *From File* button and select **.jpo* or **.opt* file in the *Open Options File* window. The file name must correspond to the receiver identifier. Otherwise the warning will be shown.

Uploading the options from the file is happening the same way as via Internet.

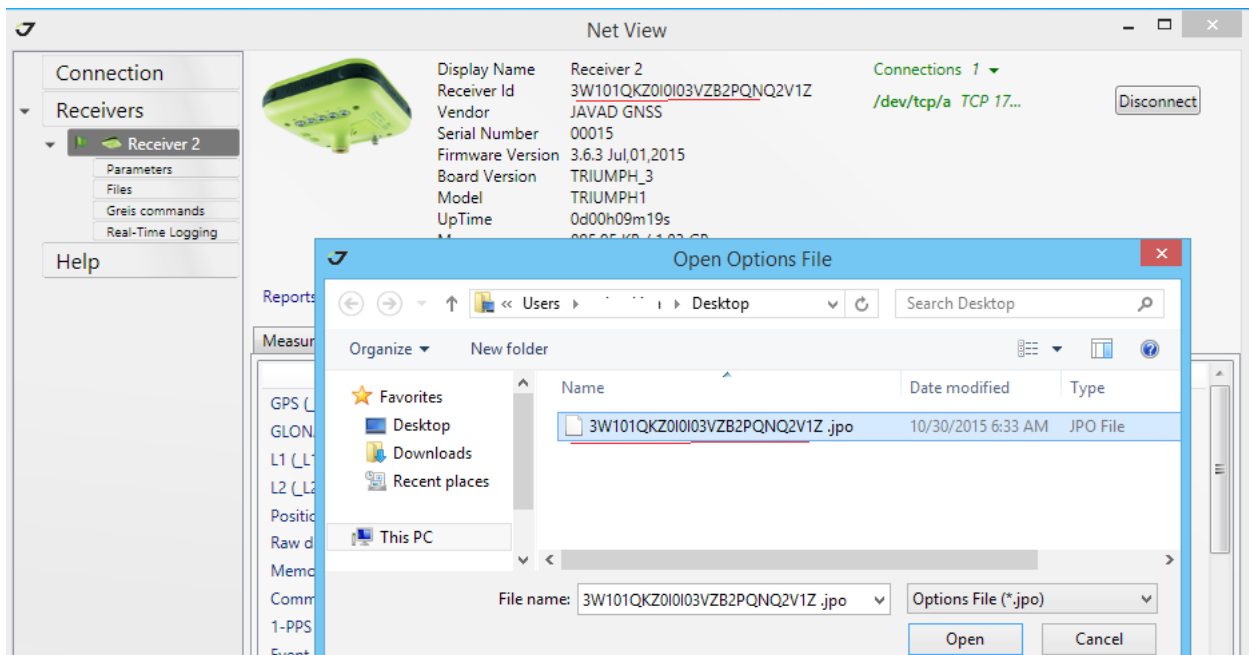


Figure 37. Updating Options from File

Base/Rover

The *Base/Rover* tab allows configuring receiver as a *base* or a *rover*:

Configuring a base

To configure a base receiver perform the following:

- Check *Use receiver as reference base*;
- Specify the *Public base name*, *Country*, *City* and *Network* (optional);
- Select the corrections for transmitting from the list of the predefined message sets (see “Appendix 1. Pre-defined sets of messages” on page 82). You can select any number of the sets;
- Click *Save* to apply settings.

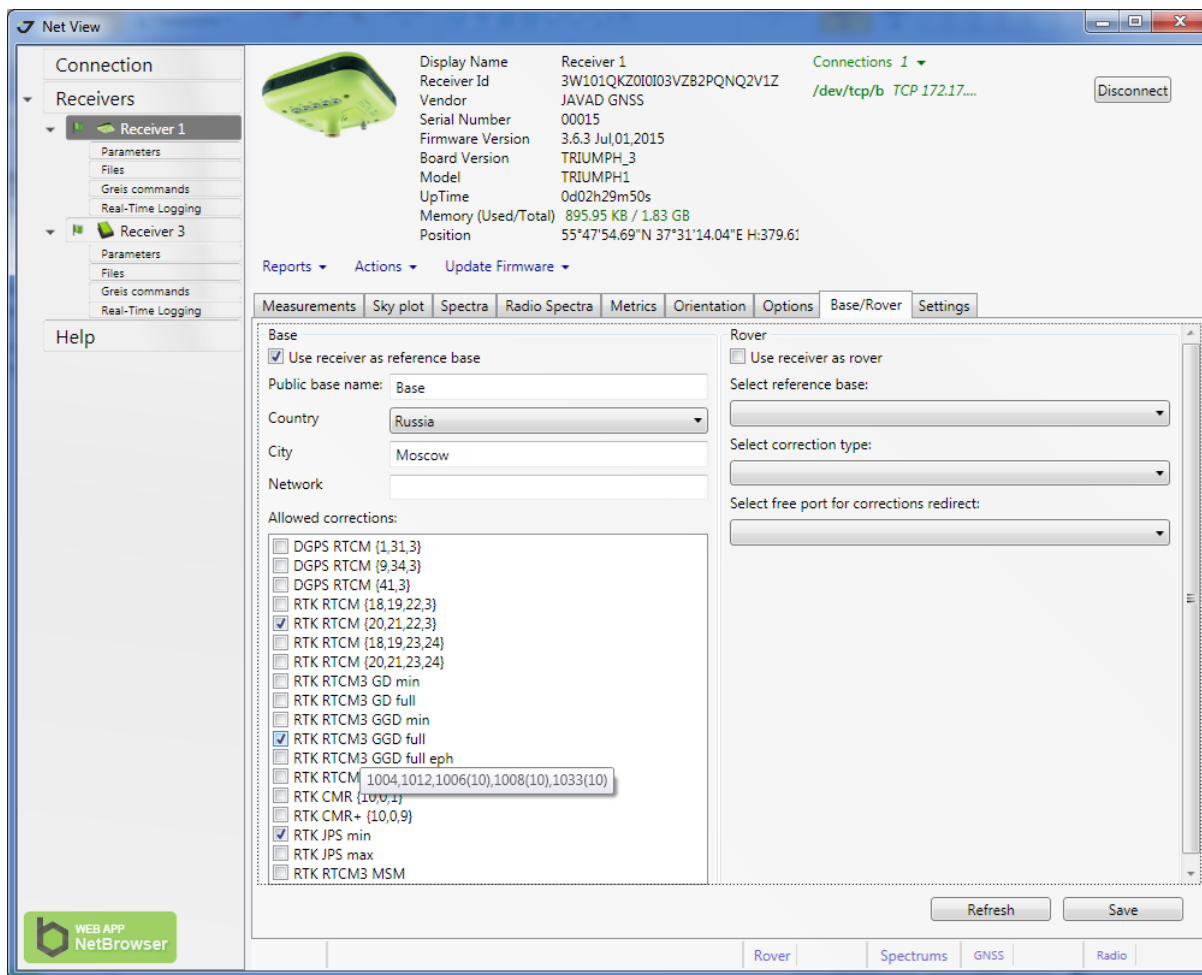


Figure 38. Base/Rover tab. Receiver 1 is configured as a base transmitting RTCM3 corrections

For the base receiver the following parameters should be set as described below on tab *Parameters* ▶ *Positioning*:

- coordinates of *Antenna Phase Center (APC)*;
- coordinates of *Antenna Reference Point Position (ARP)*;
- *Reference Antenna Parameters*.

Configuring a rover

For the rover receiver do the following:

1. Click the *Refresh* button to get base list.
2. Check *Use receiver as rover*.
3. Select reference base from the drop-down list box.
4. Select correction type from the drop-down list box.
5. Select free port for correction redirect (ser/b is suitable for most cases).
6. Click *Save* to apply settings.

Also the *Position Computation Mode* suitable for the correction type, must be specified on the *Parameters* ▶ *Positioning* tab.

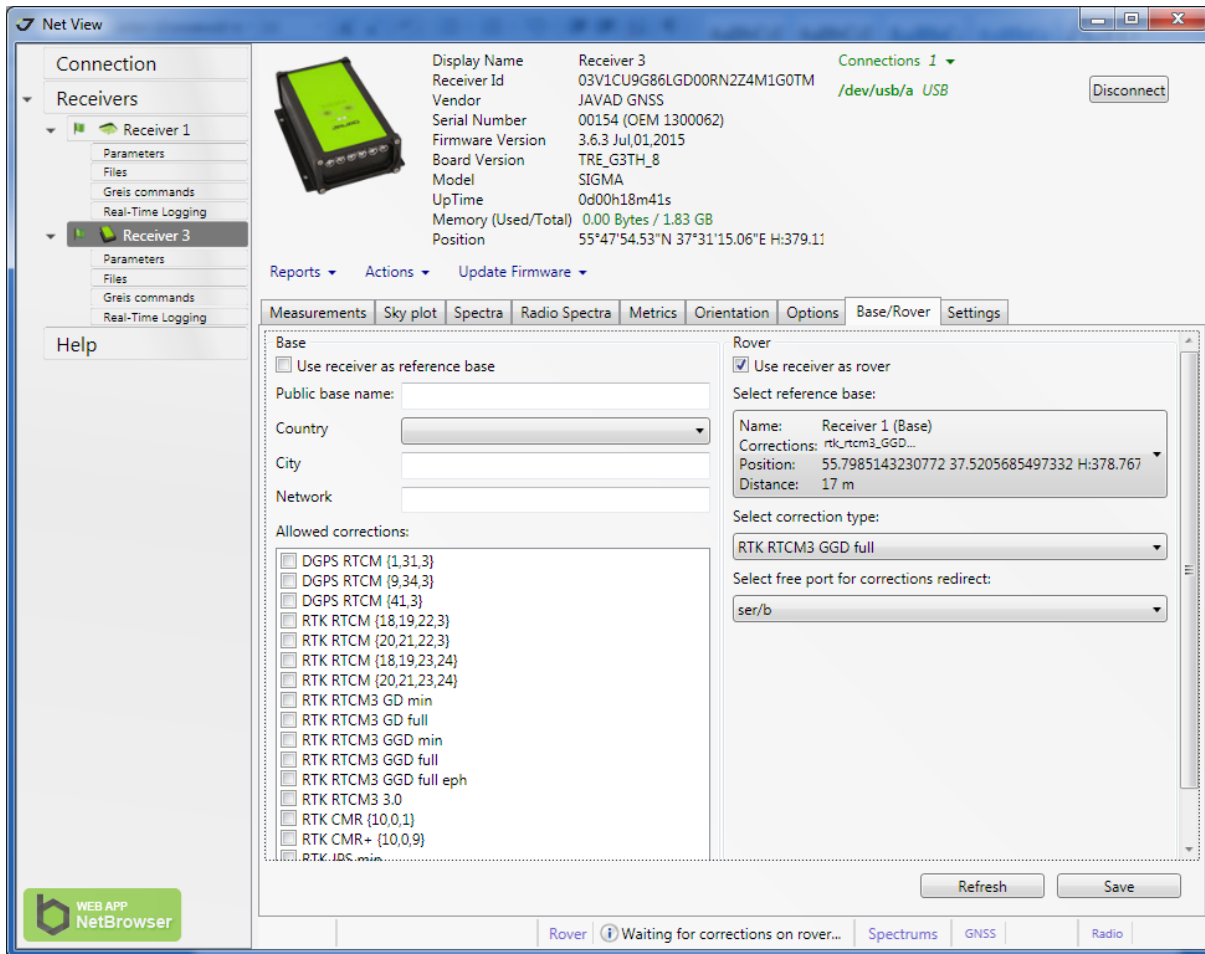


Figure 39. Receiver 3 is configured as a rover of Base (Receiver 1)

The rover status is displayed in the status bar at the bottom. After the rover begins to receive the corrections you will see the corresponding *Link* on the *Measurement* tab.

The screenshot shows the Net View software interface. On the left, there is a sidebar with 'Connection' and 'Receivers' sections. 'Receiver 3' is selected. The main area displays receiver details and a table of links.

Receiver Details:

- Display Name: Receiver 3
- Receiver Id: 03V1CU9G86LGD00RN2Z4M1G0TM
- Vendor: JAVAD GNSS
- Serial Number: 00154 (OEM 1300062)
- Firmware Version: 3.6.3 Jul,01,2015
- Board Version: TRE_G3TH_8
- Model: SIGMA
- UpTime: 0d00h26m11s
- Memory (Used/Total): 0.00 Bytes / 1.83 GB
- Position: 55°47'54.53"N 37°31'15.06"E H:379.1

Links Table:

Sys	Num	EI	Az	CA	P1	P2	L2C	L5	L1C	Track Tim	Status
GPS	1	7	186	39	19	19	37	36		00:26:36	58
GPS	16	12	118	45	21	21				00:26:12	58
GPS	3	59	146	55	48	48	54	49		00:26:36	58
GPS	26	23	90	44	34	34	47	43		00:26:36	30
GPS	9	38	256	47	39	39	49	46		00:26:36	58
GPS	23	79	242	57	49	49				00:26:36	58
GPS	32	23	128	43	28	28				00:26:36	58
GPS	31	25	48	46	37	37	46			00:26:36	30
GLO	15/0	12	22	42	41	35	36			00:25:54	58
GLO	9/-2	39	158	47	46	38	39			00:25:54	58
GLO	16/-1	57	76	53	53	46	47			00:25:54	58
GLO	6/-4	45	104	55	54	41	43			00:25:54	58
GLO	7/5	75	326	52	52	46	47			00:25:54	58
GLO	27/7*	39	156	51	49	45	46	46(G3)		00:25:54	30
GLO	23/3	27	300	32	31	24				00:04:05	30
GLO	22/-3	9	246	47	45	34	36			00:25:54	58
GLO	8/6	24	298	30	30	28				00:25:54	30
SBAS	128	15	130	37						00:26:32	30
SBAS	123	26	188	44						00:26:36	30

Links Section:

- Link Id: /ser/b
- Decoder Id: RTCM 3.0
- Station Id: 0000
- Time elapsed si...: 001
- Received messa...: 3498
- Corrupt messag...: 0000
- Link quality (%): 100.00

Figure 40. Fixed rover. Links displays input corrections

Settings

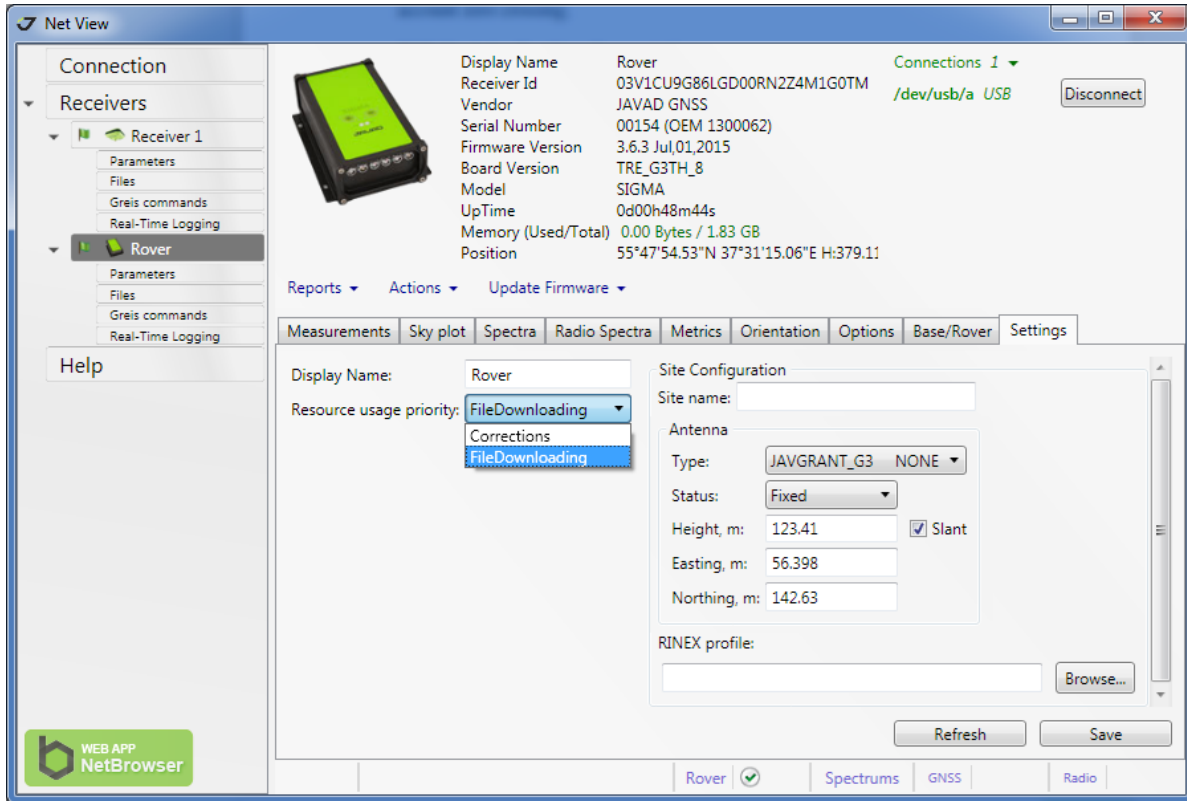


Figure 41. Receiver setting tab

The *Settings* tab is designed to change the receiver *Display Name* and manage *Resource usage Priority*.

- *Display Name* – the name for displaying at the left panel and on the tab *Receivers*.
- *Resource usage Priority (Corrections, File Downloading)* - Specifies which operation will have higher priority. This does matter for base if it connected via single channel.
- *Site Configuration - Antenna* settings can be used for free-events generating. See [2]: 2.3.9 event.
- *Site name and Rinex profile* are used only by *NetHub* and they do not need to be specified.

CONFIGURING THE RECEIVER

Click to the *Parameters* sub-node of the receiver to select the *Parameters* window. The *Parameters* window provides the convenient graphic interface to view and change the settings of the receiver. All the parameters are grouped on the tabs according to the aspect of the behavior and fully match to GREIS Manual [2].

Graphical user interface for working with the receiver parameters

The representation of the each parameter is determined by the type, facility of access and availability. The detailed description coincides with *GREIS Manual* [2] and appears when mouse is over the parameter.

Read-only parameters are gray. Parameters which are not available for this model of receiver are gray and empty.

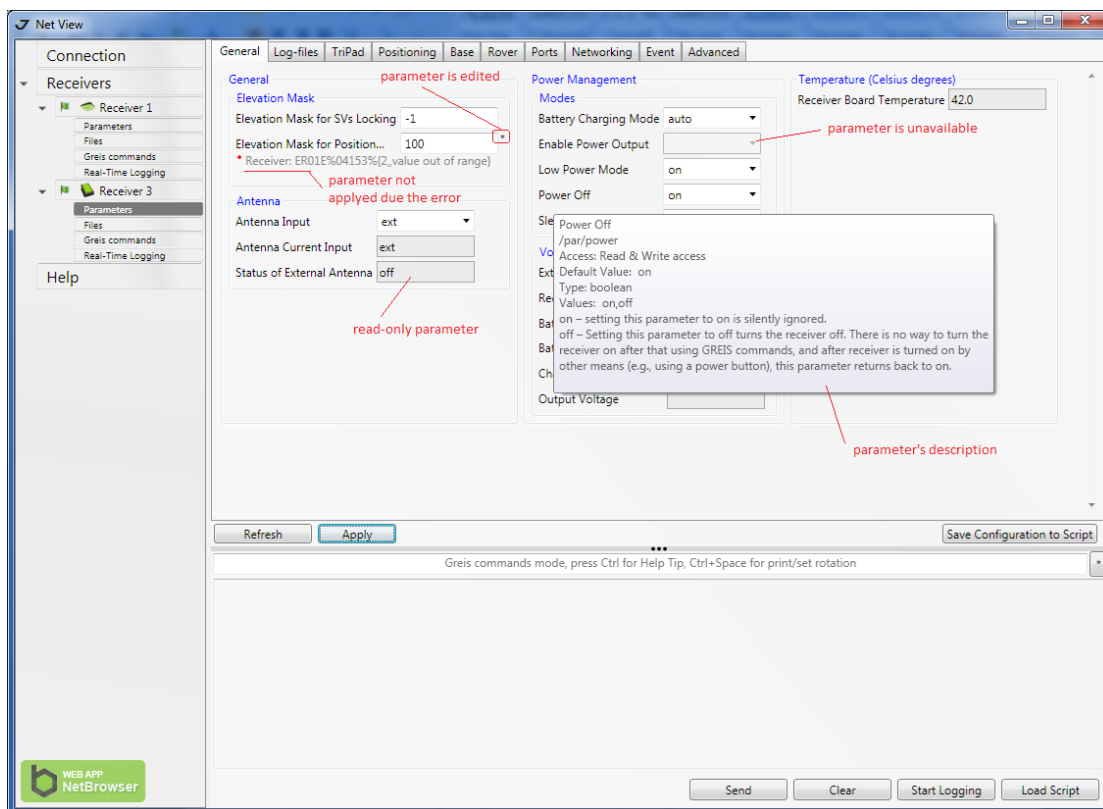


Figure 42. Parameters window.

Depending on the type of the parameter a new value can be typed to text box, selected from the drop-down or checked. An edited parameter is marked by the *-sign and it is not set to the receiver until *Apply* button clicked. Apply action sets all the edited parameters of all the tabs to the receiver. If the receiver is not able to set new value error response is displayed under the parameter. Some parameters come into effect after restarting. The confirmation dialog appears in this case. If it is confirmed, receiver resets and reconnects.

To get current values for the parameters on the selected tab, click *Refresh*. Read-only parameters are refreshed every 10s even without manual refreshing.

The *Save Configuration to Script* button saves all the parameters to the *tcl*-script. It is described below.

Note: Location of the parameters on the tab varies when resizing the main window.

Parameter Tabs

Each parameter tab is detailed described below. The references to relevant chapters of the *GREIS Manual* are given for each group of parameters as [2].

General

The *General* tab shows the most common settings.

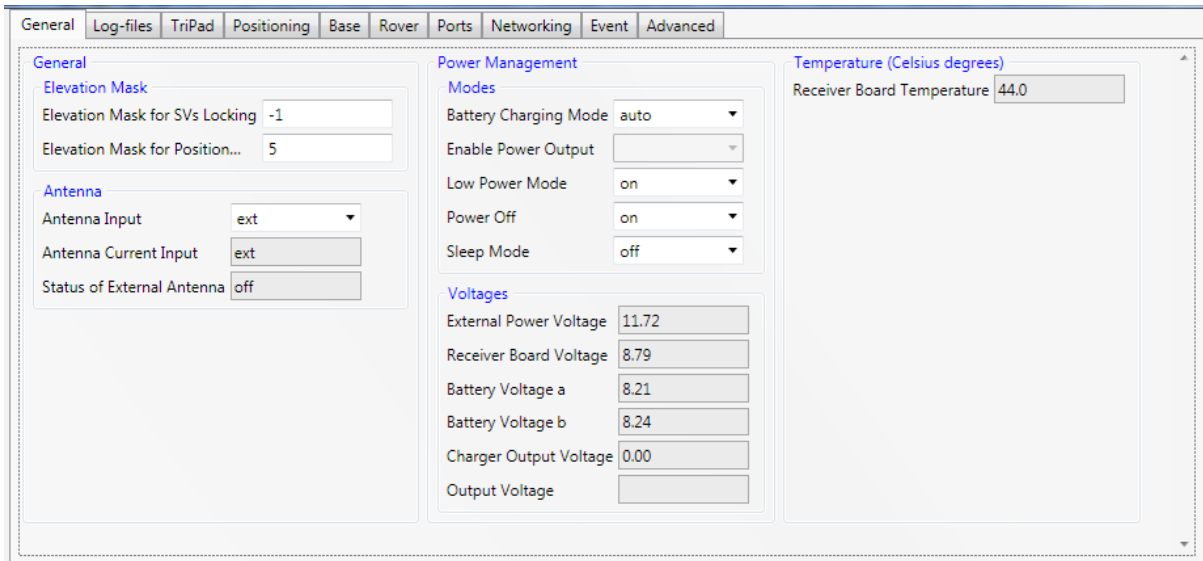
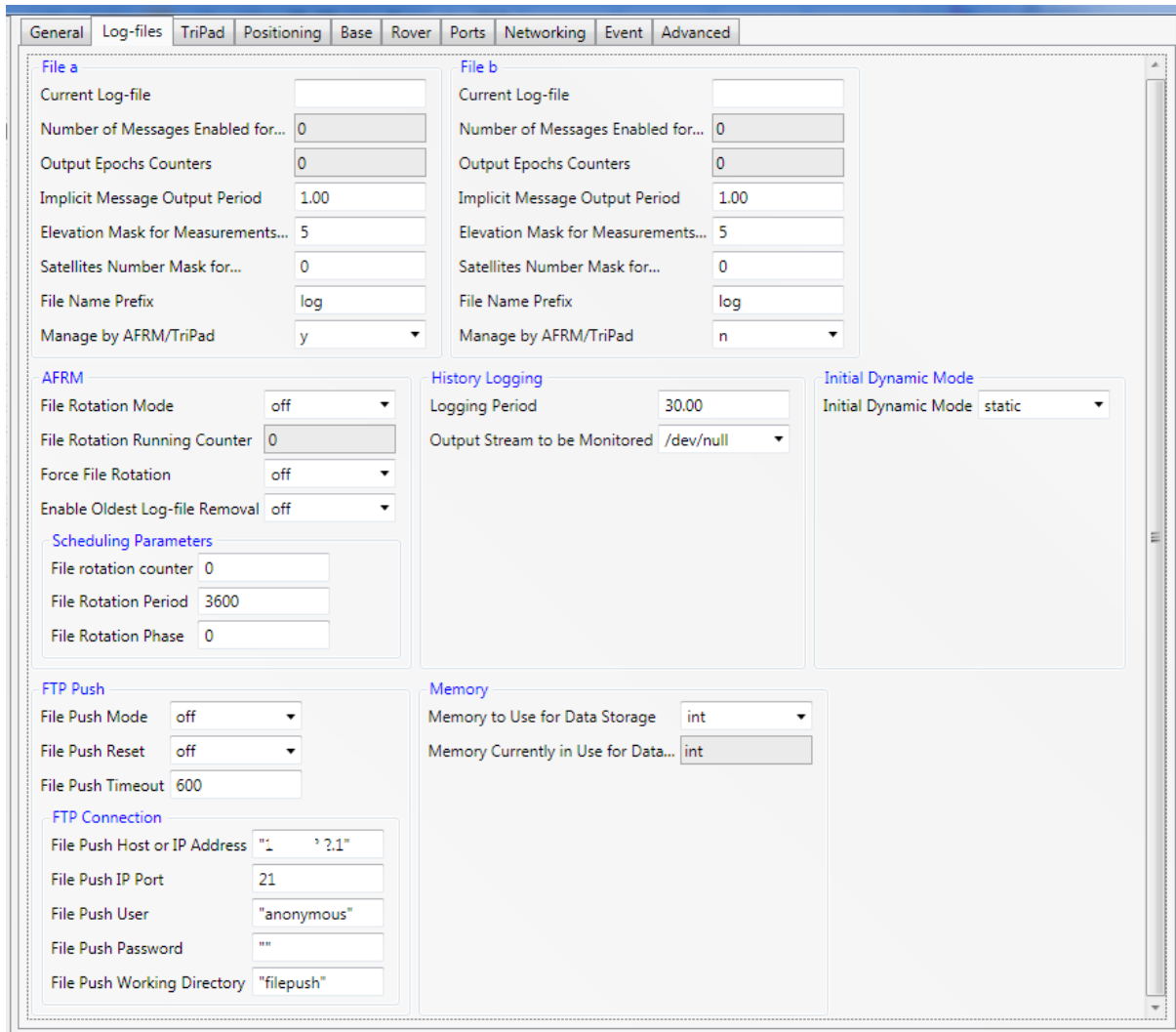


Figure 43. General parameters

- *General* - [2]: 4.4.4. Measurements Parameters
 - *Elevation mask* – Elevation masks for SVs locking and for Position Computation - [2, Satellites Tracking Parameters].
 - *Antenna* - [2, Antenna Input Parameters].
- *Power Management* - [2, 4.4.28 Advanced Power Management]
 - *Modes* – power control modes.
 - *Voltages* – power statuses (all are read-only).
- *Temperature* - board temperature (C °, read-only) – [2, 4.4.35 Miscellaneous parameters].

Log-Files

The *Log-files* tab contains parameters for file managing [2, 4.4.20 File Management, 4.4.16 Parameters of Generic GREIS Messages].



The screenshot shows a software configuration window with a tabbed interface. The 'Log-files' tab is active. The window is divided into several sections:

- File a**: Includes fields for 'Current Log-file', 'Number of Messages Enabled for...' (0), 'Output Epochs Counters' (0), 'Implicit Message Output Period' (1.00), 'Elevation Mask for Measurements...' (5), 'Satellites Number Mask for...' (0), 'File Name Prefix' (log), and 'Manage by AFRM/TriPad' (y).
- File b**: Similar to File a, but with 'Manage by AFRM/TriPad' set to 'n'.
- AFRM**: Includes 'File Rotation Mode' (off), 'File Rotation Running Counter' (0), 'Force File Rotation' (off), and 'Enable Oldest Log-file Removal' (off). Below this is a 'Scheduling Parameters' section with 'File rotation counter' (0), 'File Rotation Period' (3600), and 'File Rotation Phase' (0).
- History Logging**: Includes 'Logging Period' (30.00) and 'Output Stream to be Monitored' (/dev/null).
- Initial Dynamic Mode**: Includes 'Initial Dynamic Mode' (static).
- FTP Push**: Includes 'File Push Mode' (off), 'File Push Reset' (off), and 'File Push Timeout' (600).
- FTP Connection**: Includes 'File Push Host or IP Address' (192.168.1.1), 'File Push IP Port' (21), 'File Push User' (anonymous), 'File Push Password' (""), and 'File Push Working Directory' (filepush).
- Memory**: Includes 'Memory to Use for Data Storage' (int) and 'Memory Currently in Use for Data...' (int).

Figure 44. Log-file parameters

The following parameter groups are available:

- *File a, File b* – settings for configuring the output to File A (File B) - [2, Existing Files, Current Log-files, Masks and Counters, Implicit Output Parameters].
- *AFRM* – settings for automatically rotating the log-files according to the user-defined schedule. [2, Automatic File Rotation Mode (AFRM)].
- *History Logging*- settings for history logger which collects and records statistical information. [2, Logging History].
- *Initial Dynamic Mode* - specify the initial mode for all of the new files opened through *TriPad*. [2, 4.4.29 *TriPad* Parameters].
- *FTP Push* – settings for automatically putting log-files to an external server. [2, File Push Parameters].
- *Memory* – int (internal), ext (SDCARD) Data Storage. Available for the receiver with external memory. [2, File-system Parameters].

TriPad

TriPad tab provides the parameters for configuring TriPad interface of the receiver.

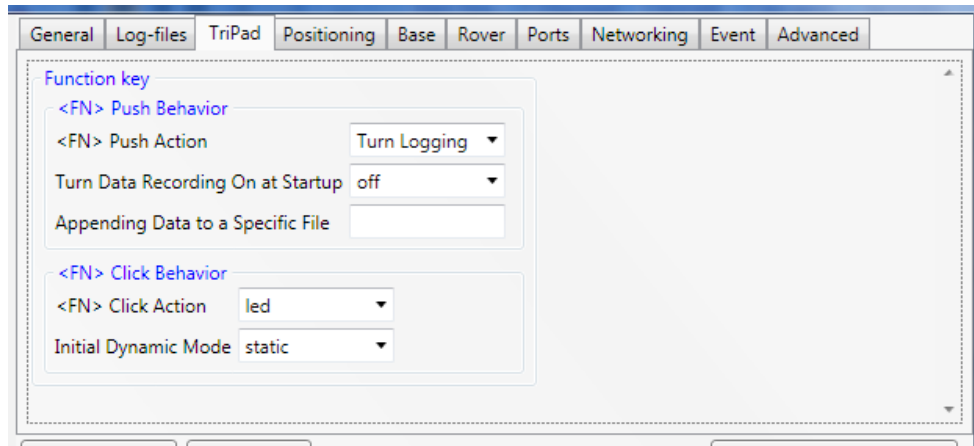


Figure 45. TriPad parameters

- *Function key* - [2, 4.4.29 TriPad Parameters].

Positioning

Positioning tab allows the user to select satellites to track, to specify which measurements to use in position computation and to enable solution mode. Since most of these parameters are described in the chapter [2, 4.4.6 Positioning Parameters] only the subtitles are shown below.

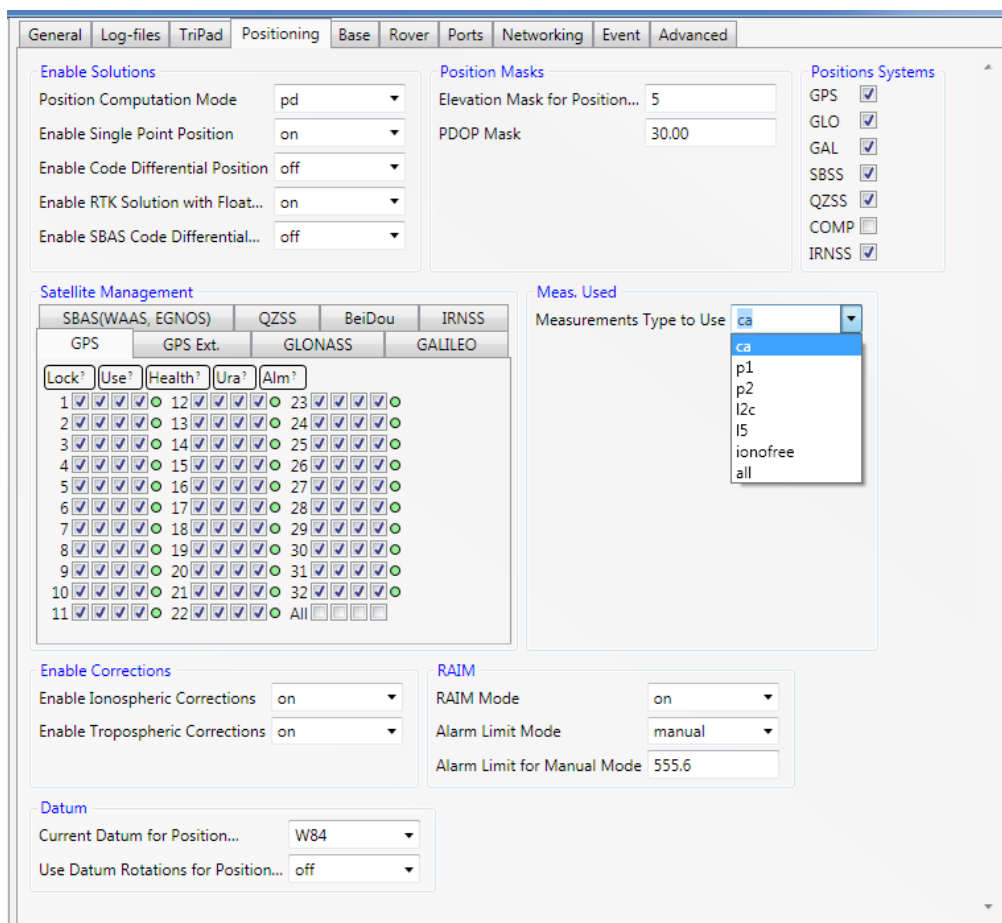


Figure 46. Positioning parameters

The following parameters can be queried and changed:

- *Enable Solution* – configure the position computation. [2, Generic Positioning Parameters].
- *Position Masks* – elevation mask for satellites and PDOP limited the position computation. [2, Generic Positioning Parameters].
- *Positions Systems* - select satellite constellation(s) used for position computation. [2, Enable Satellite System].
- *Satellite Management* – set of the similar tabs for each GNSS system. The tabs contain check boxes for enabling/disabling
- *Lock* – the receiver to track satellites by their PRN. [2, Satellites Tracking Parameters].
- *Use* – using of GNSS satellite number N for position computation. [2, Generic Positioning Parameters].
- *Health* - excluding satellite number N from position computation when the satellite is unhealthy. [2, Generic Positioning Parameters].
- *Ura* – exclude satellite number N from position computation when URA value exceeds the limit specified by URA mask parameter. - [2, Generic Positioning Parameters].
- *Alm* - Green circle to the right of the check boxes indicates that the almanac is available for the satellite. [2, 4.4.5 Almanac Status].
- *Meas. Used* - specifies which measurements receiver will use for single point position computation. [2, Generic Single Point Parameters].
- *Enable Corrections*- receiver will correct the measured pseudo-ranges for enabled corrections. [2, Generic Single Point Parameters].
- *RAIM* – settings for the receiver autonomous integrity monitoring. [2, RAIM Parameters].
- *Datum* - settings of the datum that will be used for position computation. [2, Datums].

Base

Base tab provides the capabilities to configure the receiver as a *Reference Base Station* and also allows getting receiver coordinates. Most of these parameters are described in [2, 4.4.9 Reference Parameters, 4.4.13 RTCM 2.x Parameters, 4.4.14 RTCM 3.x Parameters] and these references are passed.

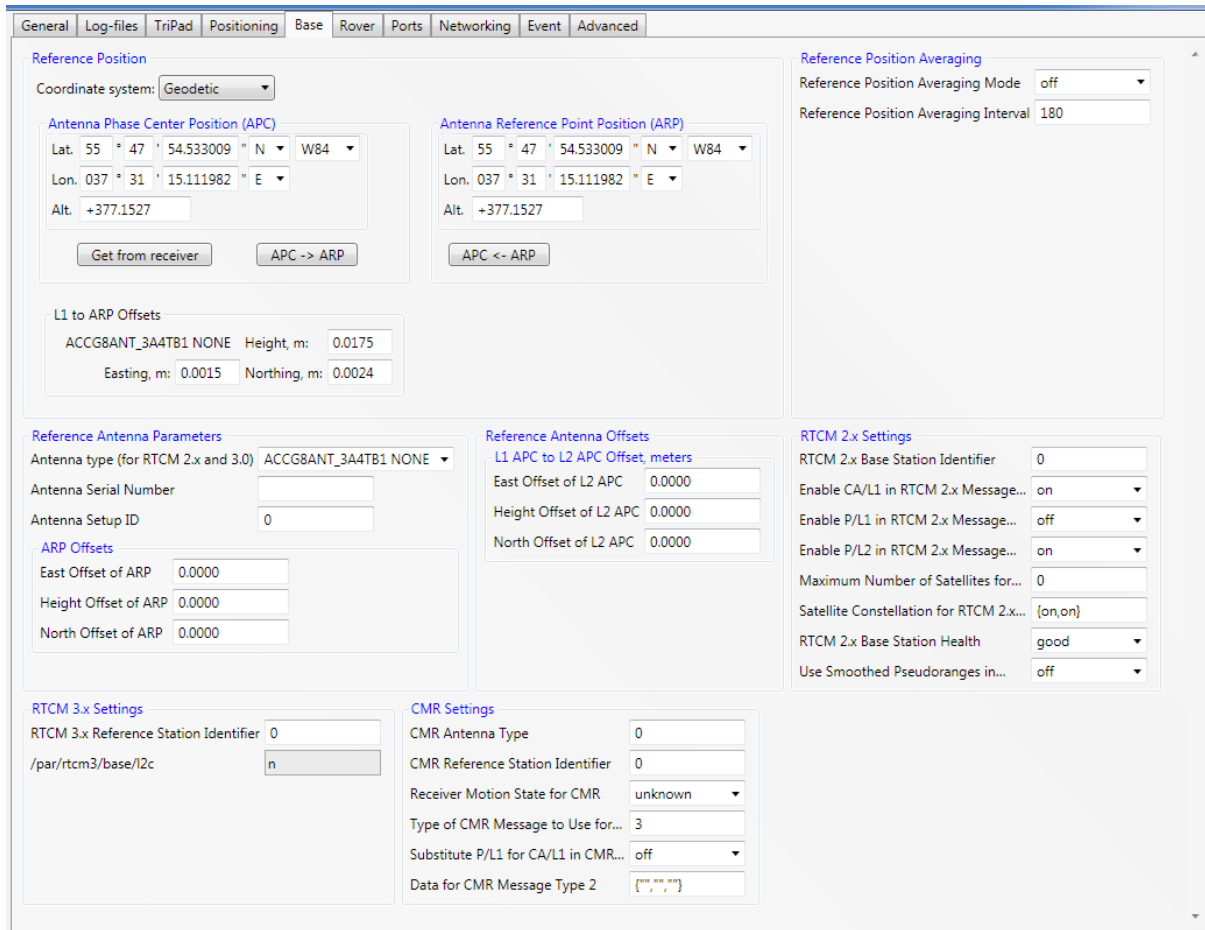


Figure 47. Base parameters

The following parameters can be set using *Base* tab:

- *Reference position* - the coordinates for *L1 Antenna Phase Center (APC)* and *Antenna Reference Point (ARP)*. [2, Reference Station Coordinates]. The *APC* and *ARP* coordinates in the receiver are entirely independent. To calculate one from another click *APC -> ARP* or *ARP -> APC* buttons. Calculating is carried out using *L1 to APR Offsets* – the vector offset between *L1 phase center* and *ARP*, which is determined by the selected *Antenna Type* but can be changed manually. If the coordinates of *APC* and *ARP* are unknown they can be got from the receiver by clicking *Get from Receiver* button. The *APC* coordinates will be filled using (*[PG]*–message but this way should not use for real *Reference Station*. The *RTCM 2.x* message 24 as well as *RTCM 3.x* standard requires that *APC* and *ARP* coordinates to be transmitted from reference station to rover receivers.
- *Reference Position Averaging* – settings automatically calculating and setting reference position when precise position is unknown. [2, Reference Position Averaging].
- *Reference Antenna Parameters* – the settings of the antenna and the vector components between a surveyed point (land mark) and the *ARP*. [2, Reference Antenna Parameters].
- *Reference Antenna Offsets* – parameter specifies the vector components between *L1 Antenna Phase Center (APC)* and *L2 APC*. [2, Reference Antenna Parameters].
- *RTCM 2.x Settings*- settings for configuring *RTCM* (Radio Technical Commission for Maritime Services) 2.x corrections. [2, RTCM 2.x Reference Station Parameters, 3.5.3 RTCM 2.x Messages].
- *RTCM 3.x Settings*- settings for configuring *RTCM* (Radio Technical Commission For Maritime Services) 3.x corrections. [2, RTCM 3.x Reference Station Parameters, 3.5.4 RTCM 3.2 Messages].

- *CMR Settings* - settings for configuring Compact Measurement Record (CMR) corrections. [2, CMR Reference Station Parameters, 3.5.5 CMR Messages].

Rover

Rover tab allows configuring the receiver as a *rover* and mostly useful for RTK operation. Parameters are described in the chapters [2, 4.4.7 Code Differential (DGPS) Parameters, 4.4.8 Phase Differential (RTK)].

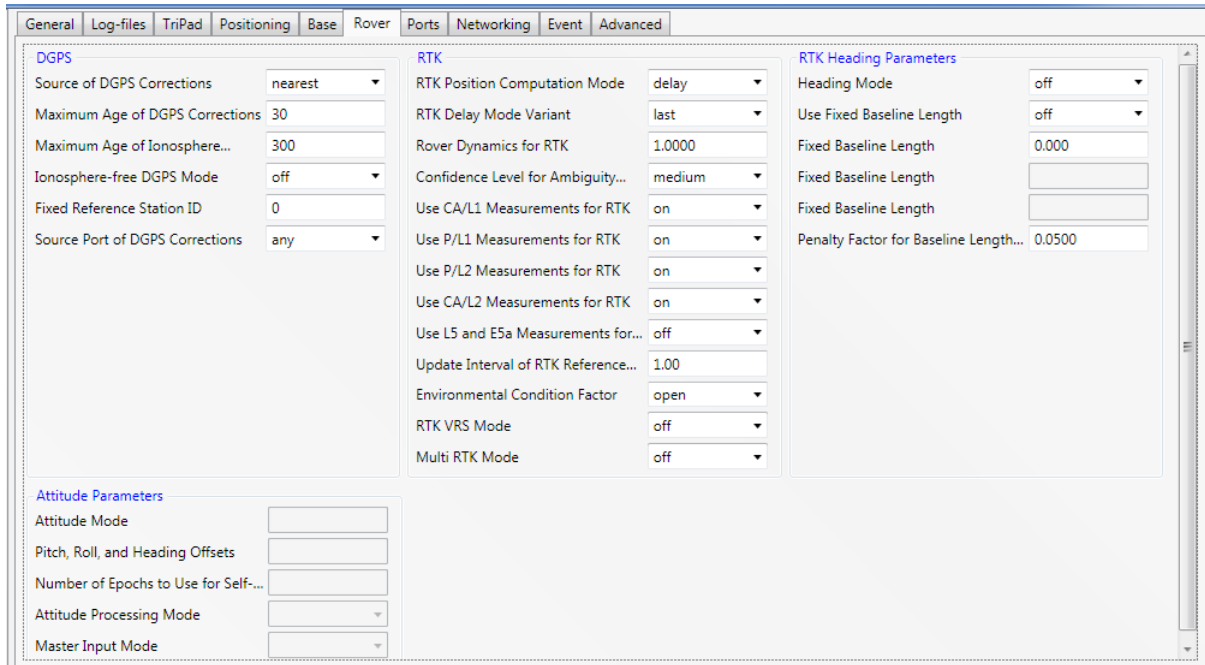


Figure 48. Rover parameters

Available parameter groups:

- *DGPS* – settings for differential corrections using.
- *RTK* – settings for RTK-engine [2, Generic RTK Parameters].
- *RTK Heading Parameters* – settings for configuring *RTK* - engine to compute heading, pitch and orientation in the multi-antennas receiver [2, RTK Heading Parameters],_documentation on Duo and Quattro.
- *Attitude Parameters*- mode and initial values for calculating vectors in the multi-antennas receiver [2, Attitude Parameters],_ documentation to Duo and Quattro receivers.

Ports

Tab *Ports* contains the nested tabs for configuring all the available *input /output* interfaces of the receiver. For each interface can be query/set:

- *Input Mode* - specifies what type of incoming data to accept (excluding TCPO) [2, 4.4.23 Generic Communication Parameters (Basic Operation Mode)].
- *Output Mode*- periodic output. The messages can be selected from the predefined sets of messages (see “Appendix 1. Predefined sets of messages” on page 82. The list of the messages in the set is displayed when mouse is over the item of drop-down. If ordered output does not match any set it is shown as *User Defined*.

Most of the interfaces require additional settings.

The nested tabs are following:

USB tab

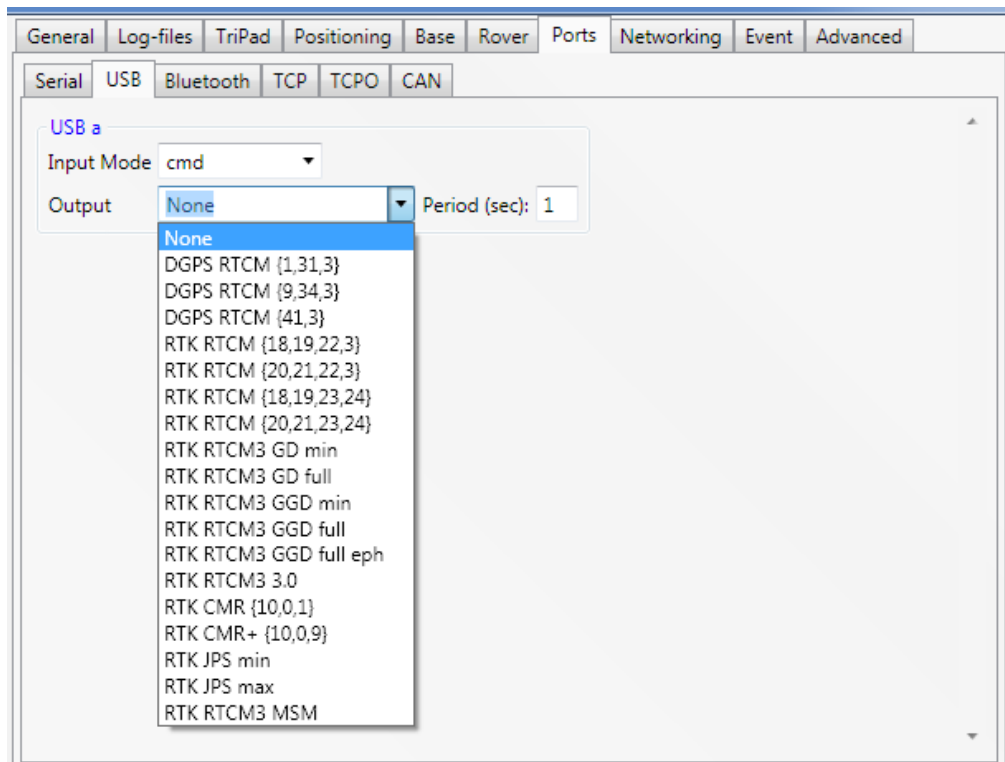


Figure 49. USB port parameters

Serial tab

Serial tab contains parameters for configuring *serial a, b, c, d* ports such as *Baud Rate* and *RTS/CRS Handshake* [2, 4.4.24 Serial Port Parameters. (Hardware Settings)].

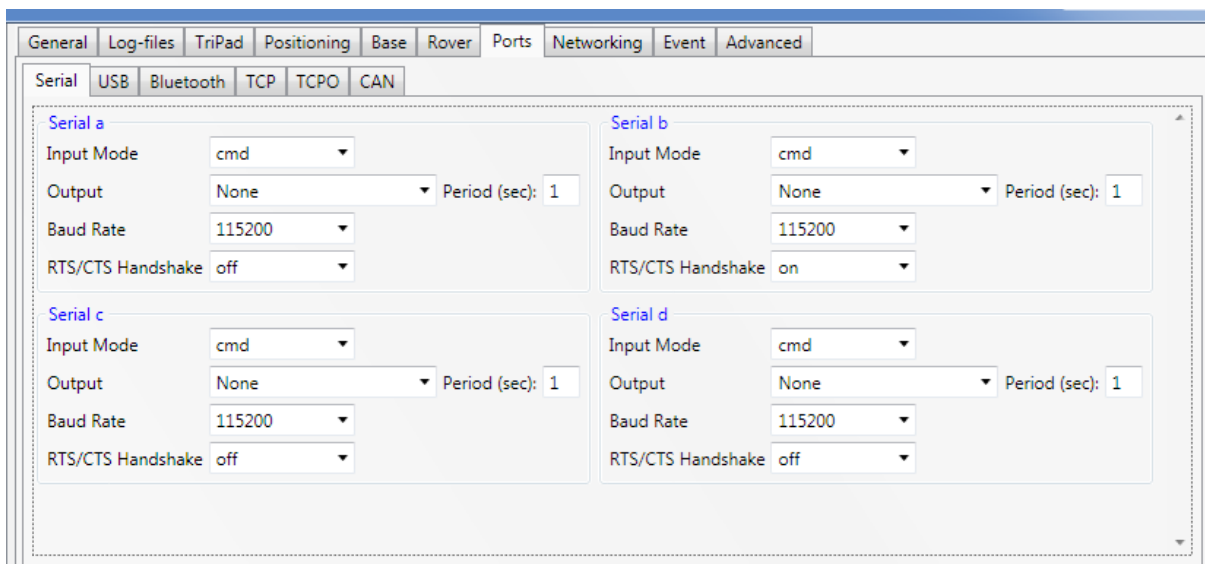


Figure 50. Serial ports parameters

Bluetooth tab

Bluetooth tab allows setting input/output for the available *Bluetooth* ports and also provides *Hardware Settings* to configure *Bluetooth* module [2, 4.4.27 Bluetooth Parameters].

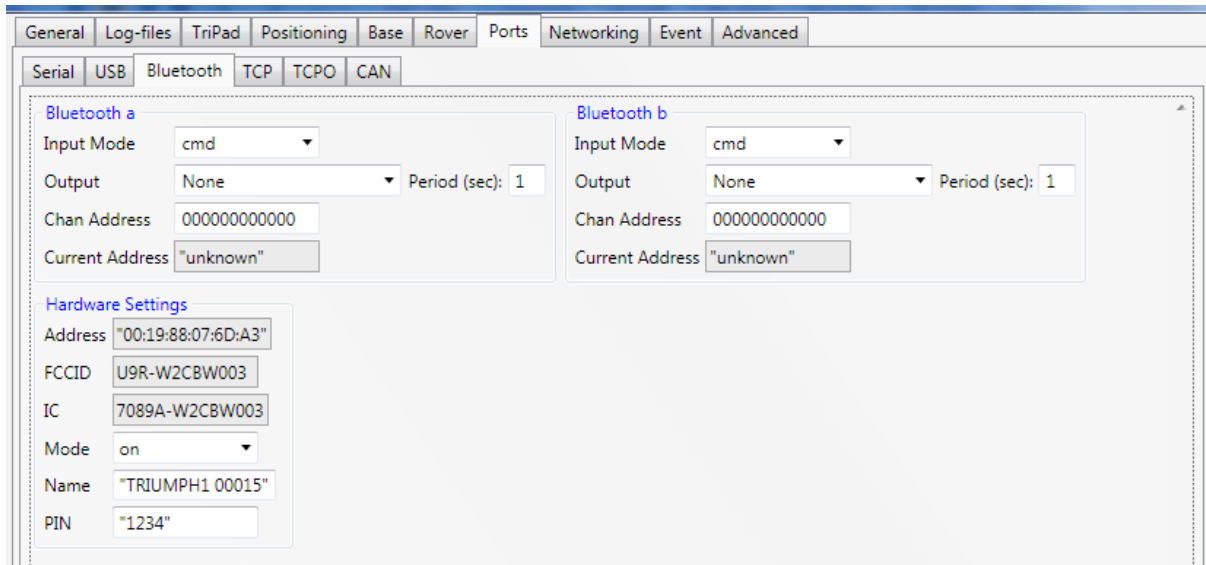


Figure 51. Bluetooth ports parameters

TCP tab

Receiver provides the TCP server functionality which allows establishing bidirectional TCP connections and also it is capable to operate as TCP client for different kinds of TCP servers.

TCP tab contains input/output settings for all types of the TCP ports and statistics on the use of TCP server ports. [2, 4.2.2 Input and Output Ports Notations].

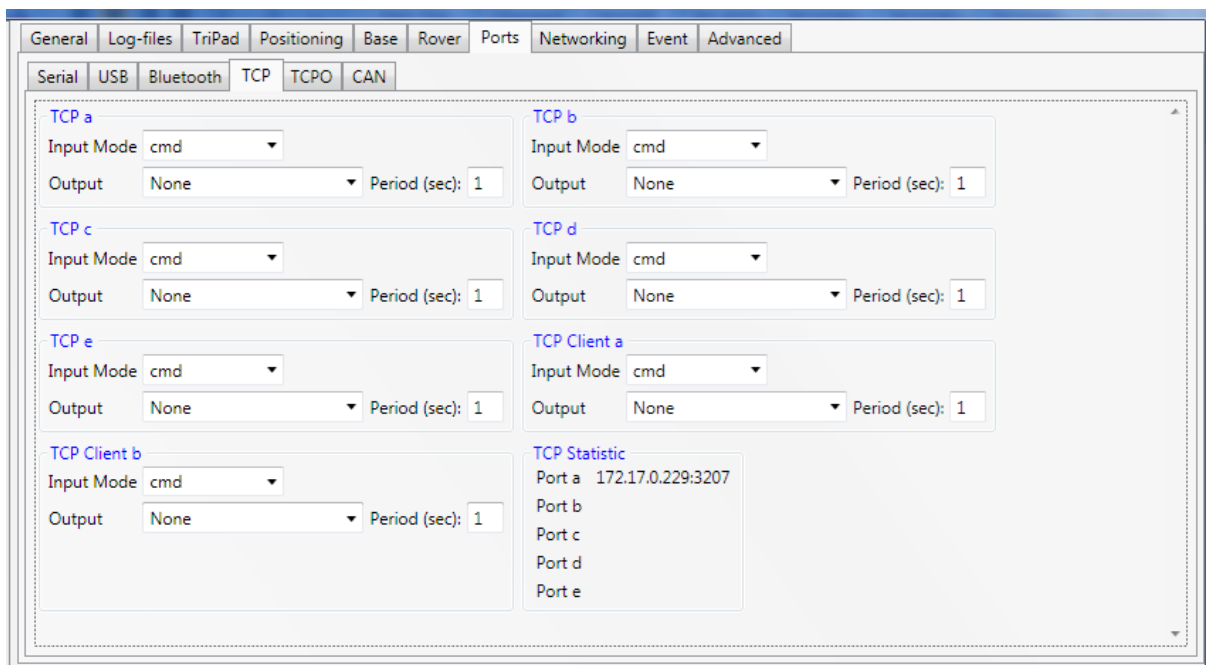


Figure 52. TCP ports parameters

- *TCP a, TCP b, TCP c, TCP d, TCP e* - input/output settings for the *TCP* streams (*dev/tcp/a, ..., dev/tcp/e*)
- *TCP Client a, TCP Client b* - input/output settings for *TCP* client connections. Depending on receiver model, up to 2 independent connections could be established at any given time.
- *TCP Statistics* - list of active incoming *TCP* connections (IP-address and port are displayed). [2, 4.4.25 Network Parameters (Network Statistics)].

TCPO tab

TCPO tab is designed to enable output data for TCP output server ports. [2, 4.4.25 Network Parameter (TCP Output Server Configuration)].

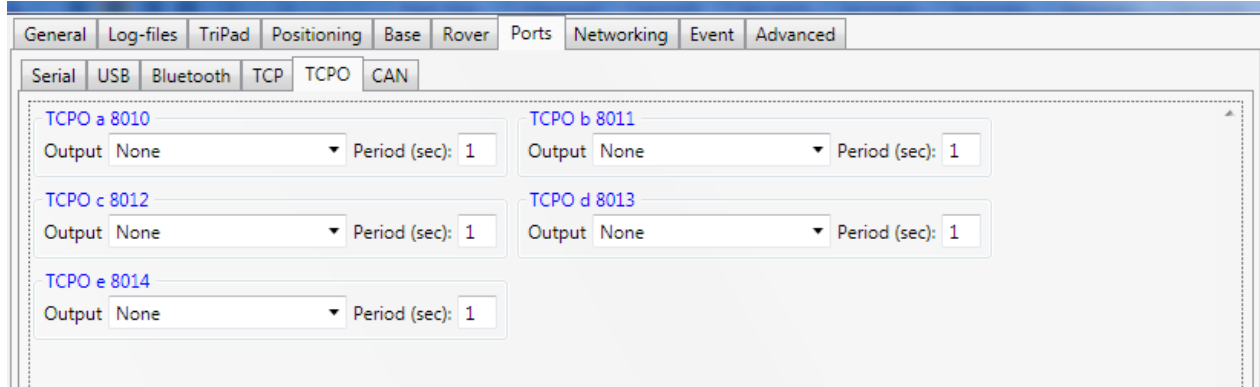


Figure 53. TCPO ports output settings

CAN tab

CAN tab the parameters which allow configuring CAN ports of the receiver to establish connections via CAN interface. [2, 4.4.30 CAN Ports Parameters].

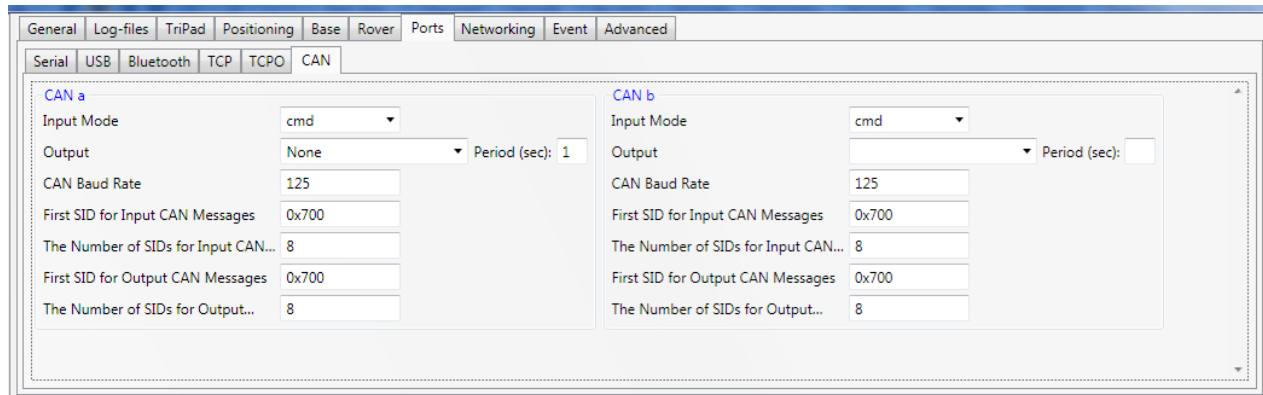


Figure 54. CAN ports settings

Networking

Networking tab comprises in turn the set of the tabs to configure the receiver to establish connections via different network interfaces as a server, and client. In most cases, it requires a reboot to the network settings to take effect. The following nested tabs are available:

LAN tab

LAN tab contains LAN DynDNS and DNS parameters described in [2, 4.4.25 Network Parameter].

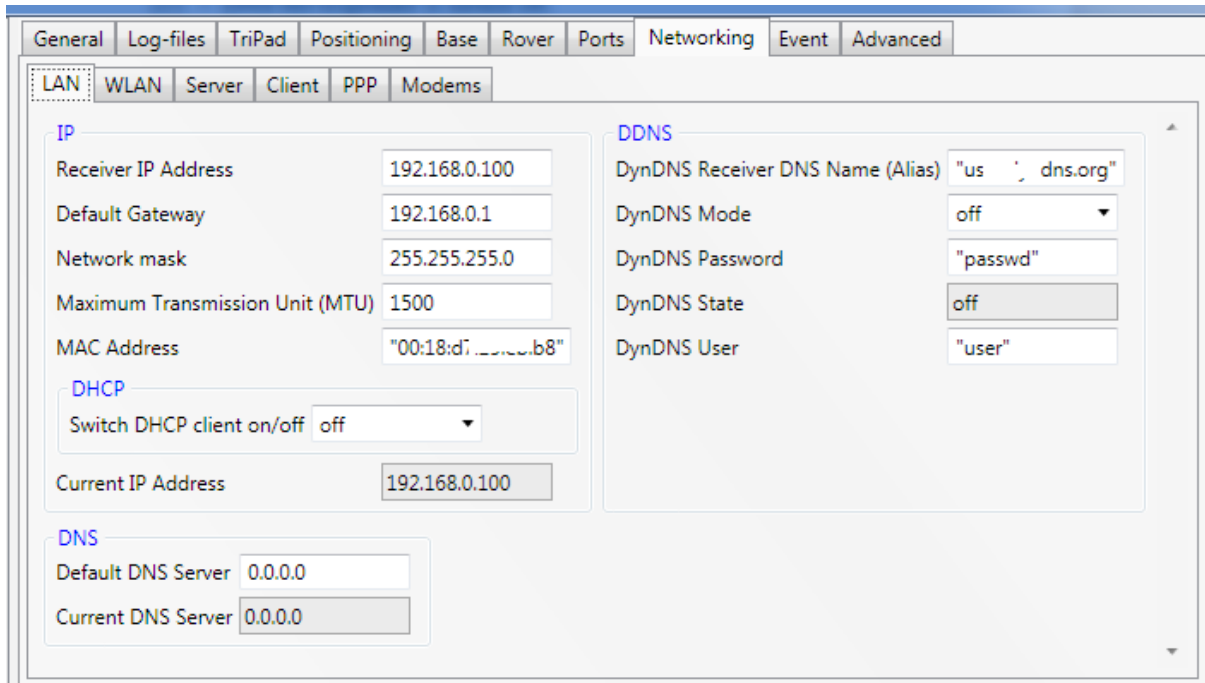


Figure 55. LAN parameters

LAN parameters are the following:

- *IP* - parameters which configure the receiver to be part of a *TCP/IP* local area network (*LAN*). [2, LAN Configuration].
- *DHCP* – enable the capability to automatically assign LAN/WLAN parameters to the receiver. [2, DHCP Client Configuration].
- *Current IP Address* – IP address on the local network assigned to the receiver at the moment.
- *DDNS* – settings for accessing and using dynamic DNS server. [2, Dynamic DNS (DynDNS) Client Parameters].
- *DNS* – addresses of the DNS server to use by default and the DNS server used at the moment. [2, DNS Parameters].

WLAN tab

WLAN tab provides parameters that configure the receiver to be part of a *TCP/IP* wireless local area network (*WLAN*). See detail description in [2, 4.4.25 Network Parameters (WLAN (WiFi) Configuration)].

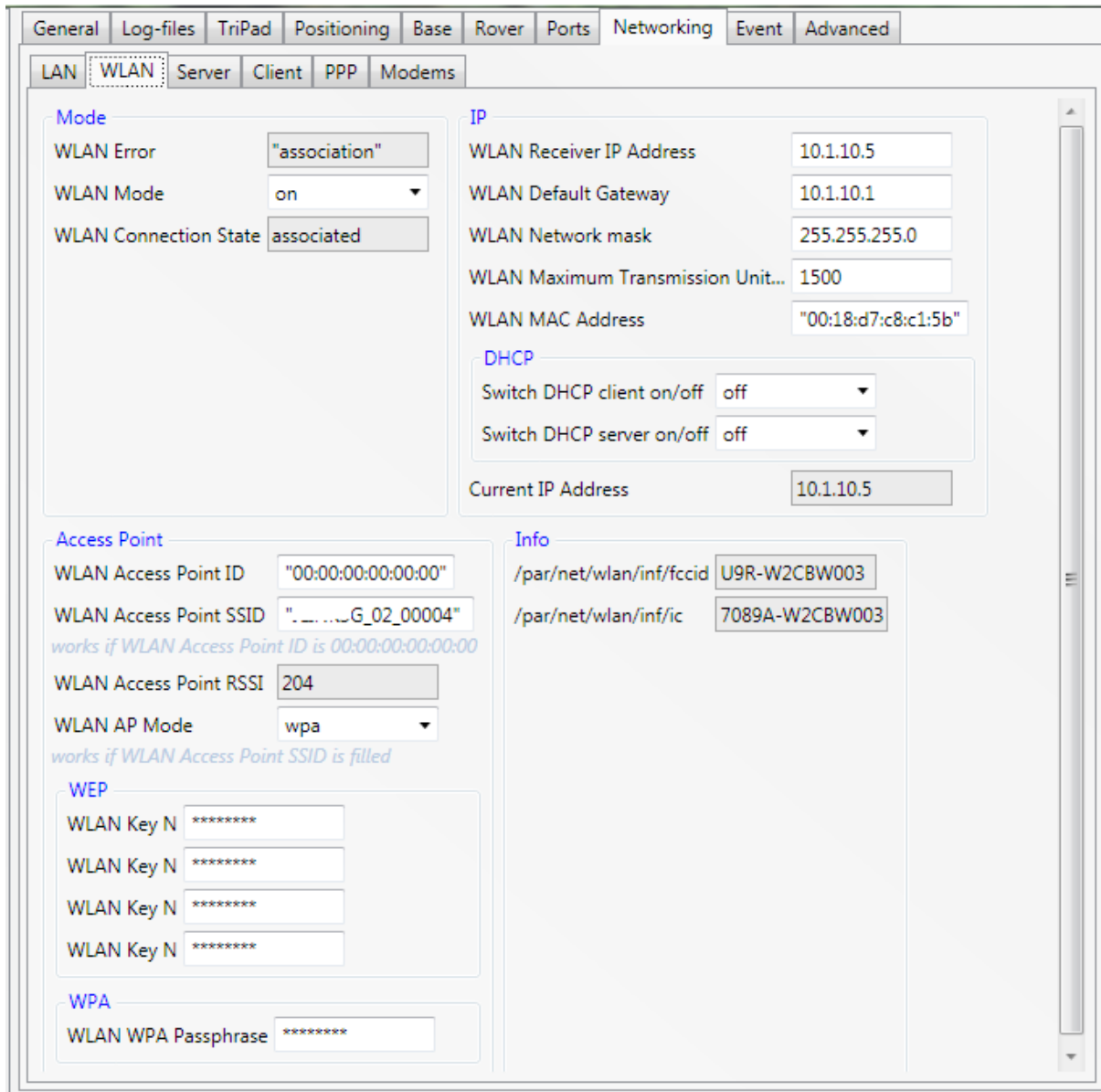


Figure 56. WLAN parameters

The following parameters configure WLAN:

- *Mode* – mode (on, off, adhoc) and statuses.
- *Access Point ID* – access point identifiers, received radio signal power and the type of the encryptions (WEP, WPA-PSK/WPA2-PSK).
 - *WEP* – key strings for the access point (write-only).
 - *WPA* - passphrase for the access point (write-only).
- *IP* – parameters of the TCP/IP network and receiver identifier in it.
 - *DHCP: Client* - enables the capability to automatically assign *LAN/WLAN* parameters to the receiver. [2, DHCP Client Configuration]; *Server* – enables DHCP-server in the receiver.
 - *Current IP Address* – IP address on the wireless local area network assigned to the receiver at the moment.
- *Info* - certification parameters of the *WLAN*- module.

Note: Light gray tips appear under the parameters, if necessary.

Server tab

Server tab contains parameters to enable and configure TCP, FTP, HTTP and NTP servers implemented in the receiver. See [2, 4.4.25 Network Parameters].

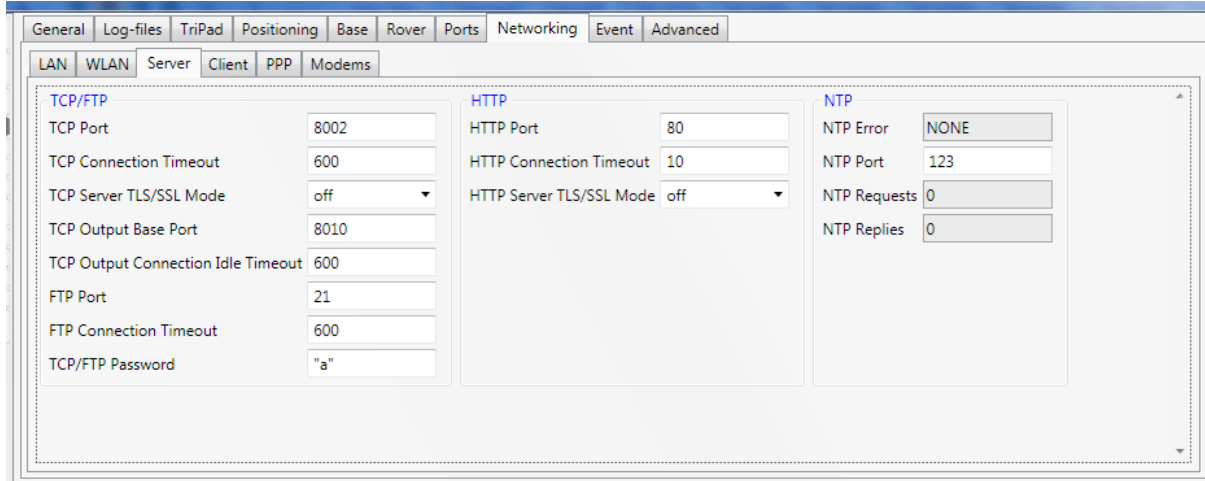


Figure 57. Server parameters

The following servers can be configured:

- *TCP/FTP* – parameters allows
 - *TCP client* - to establish bidirectional connections to receiver. [2, TCP Server Configuration].
 - *FTP-standard client* – to download files (for example). [2, FTP Server Configuration].
- *HTTP* - parameters allows external program running in a *WWW browser* (see [4]) to establish bidirectional connections to receiver on top of *HTTP* protocol. [2, TCP Server Configuration].
- *NTP* – parameters of the *Network Time Protocol (NTP)* for receivers that support it. [2, NTP Server Configuration].

Client tab

Client tab allows configuring the receiver to operate as TCP client for different kinds of TCP servers [2, 4.4.25 Network Parameters (TCP Client Parameters)].

The parameters for *Client* and *Client b* are identically. *Client b* is available depending on receiver model. To access *Client b* parameters it need be expanded.

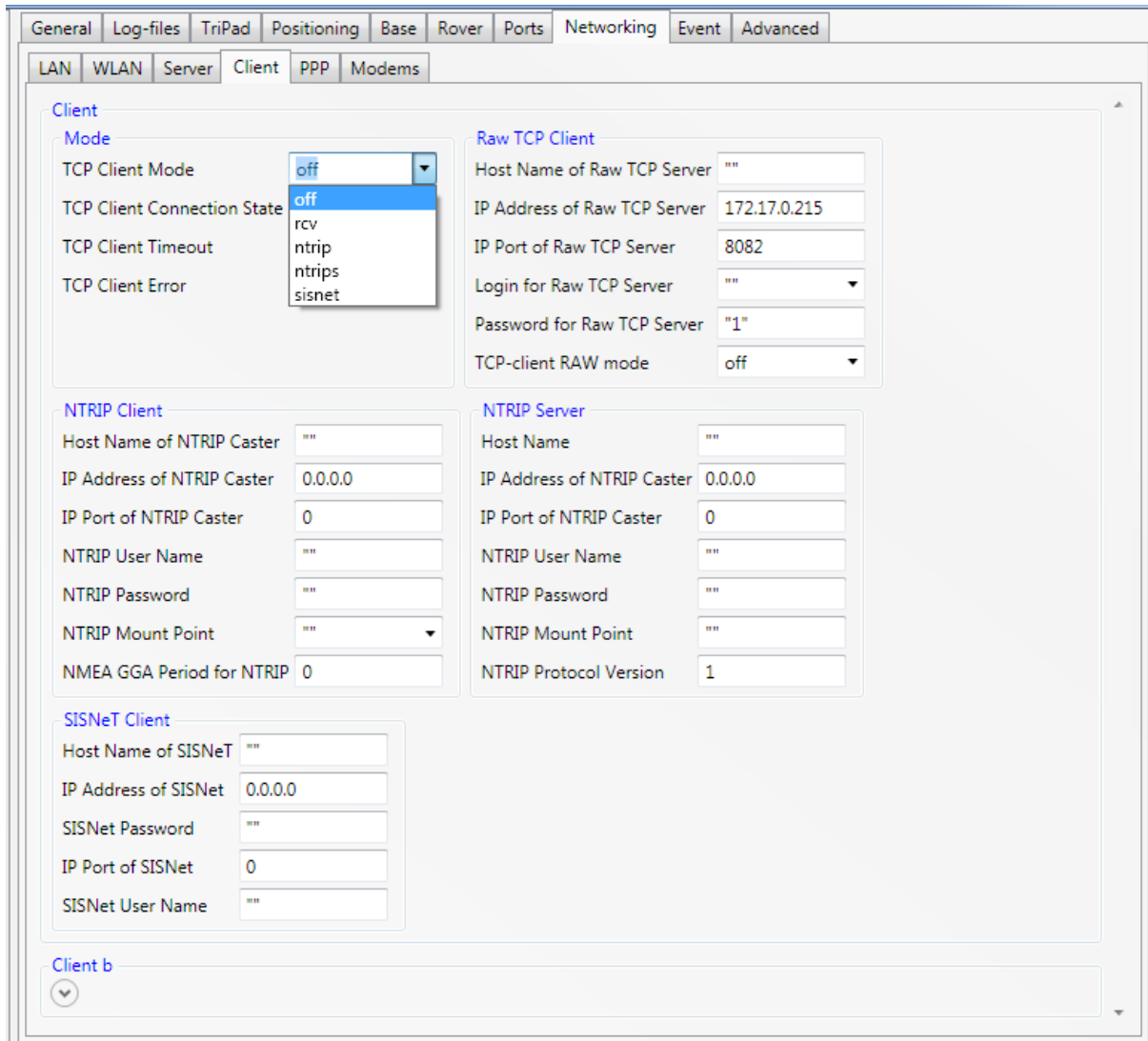


Figure 58. Client parameters

The following parameters for both *Client* and *Client b* can be set:

- *Mode* – causes the receiver to operate as a client of a certain type and displays statuses.
- *Raw TCP Client* - parameters to establish *TCP* connection to another (remote) *JAVAD GNSS* receiver. [2, RCV Mode Parameters].
- *NTRIP Client* - parameters to establish connection to an *NTRIP* caster as a client and request data from particular mount point. [2, NTRIP Client Parameters].
- *NTRIP Client* - parameters to establish connection to an *NTRIP* caster as a server and add itself as mount point. [2, NTRIP Server Parameters].
- *SisNet Client* - parameters to establish connection to a *SISNet* server.

PPP tab

PPP tab displays *PPP* server settings and statuses. *PPP* server starts when receiver connects to *Internet* via *GPRS* and does not require configuring. Only authentication and compression parameters could be set in peculiar cases.

The parameters are described in [2, 4.4.25 Network Parameters (GPRS/DIALUP (PPP) Configuration)].

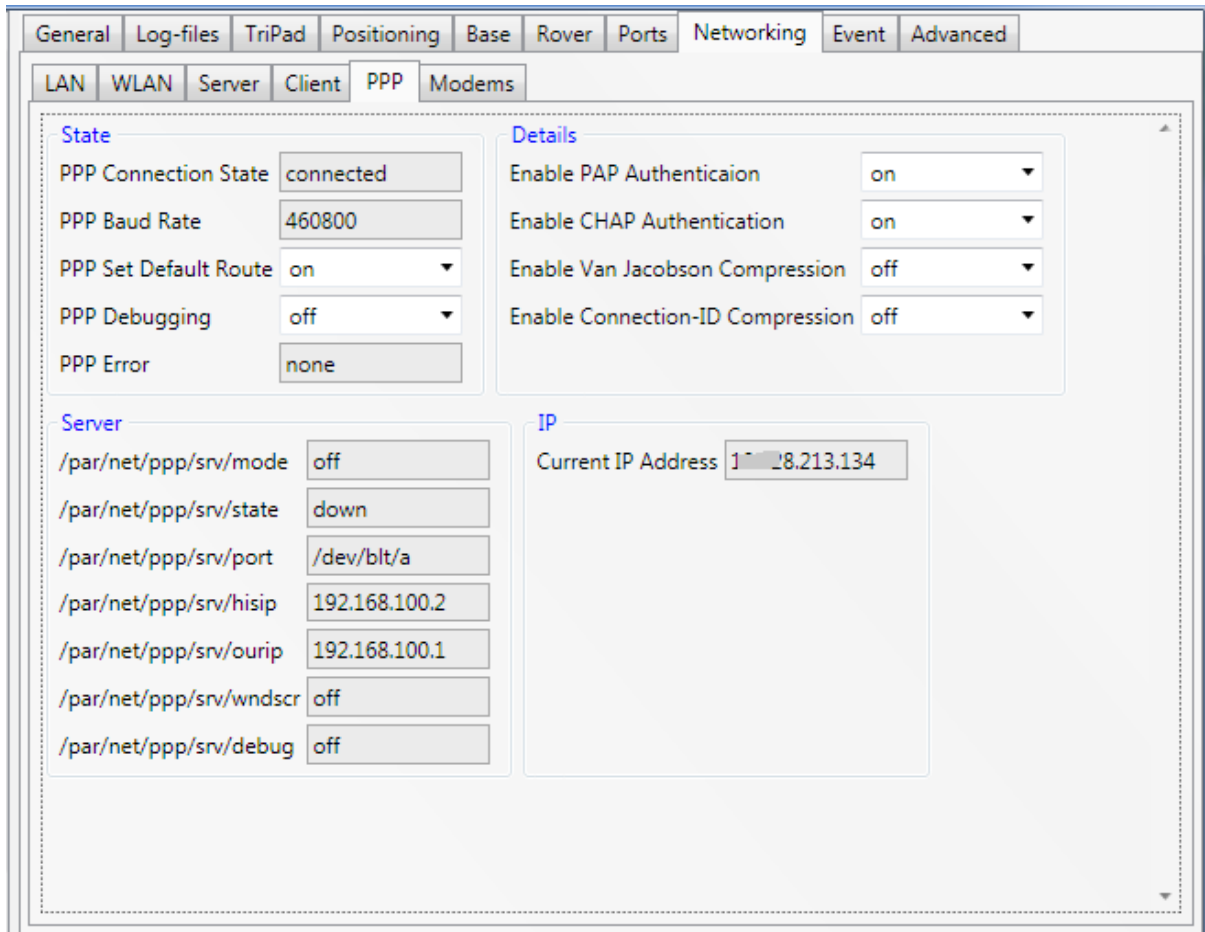


Figure 59. PPP parameters

PPP parameters:

- *State* – connection statuses of *PPP* server [2, PPP Configuration Parameters].
- *Details* – additional authentication and compression settings [2, PPP Configuration Parameters].
- *Server* – internal PPP-server settings.
- *IP* – current IP address assigned by the cell operator.

Modems tab

Modems tab - contains up to four expanding sections called *Modem c*, *Modem a*, *Modem b*, and *Modem d*. All the section provides the identically set of the settings for each modem. Receivers support GSM, UHF and FH modems which can be as internal so paired.

The parameters are described in [2, 4.4.26 GSM, UHF, and FH Modem Parameters].

Depending on the type of modem you may need to configure various settings. They are located at the respective nested tabs.

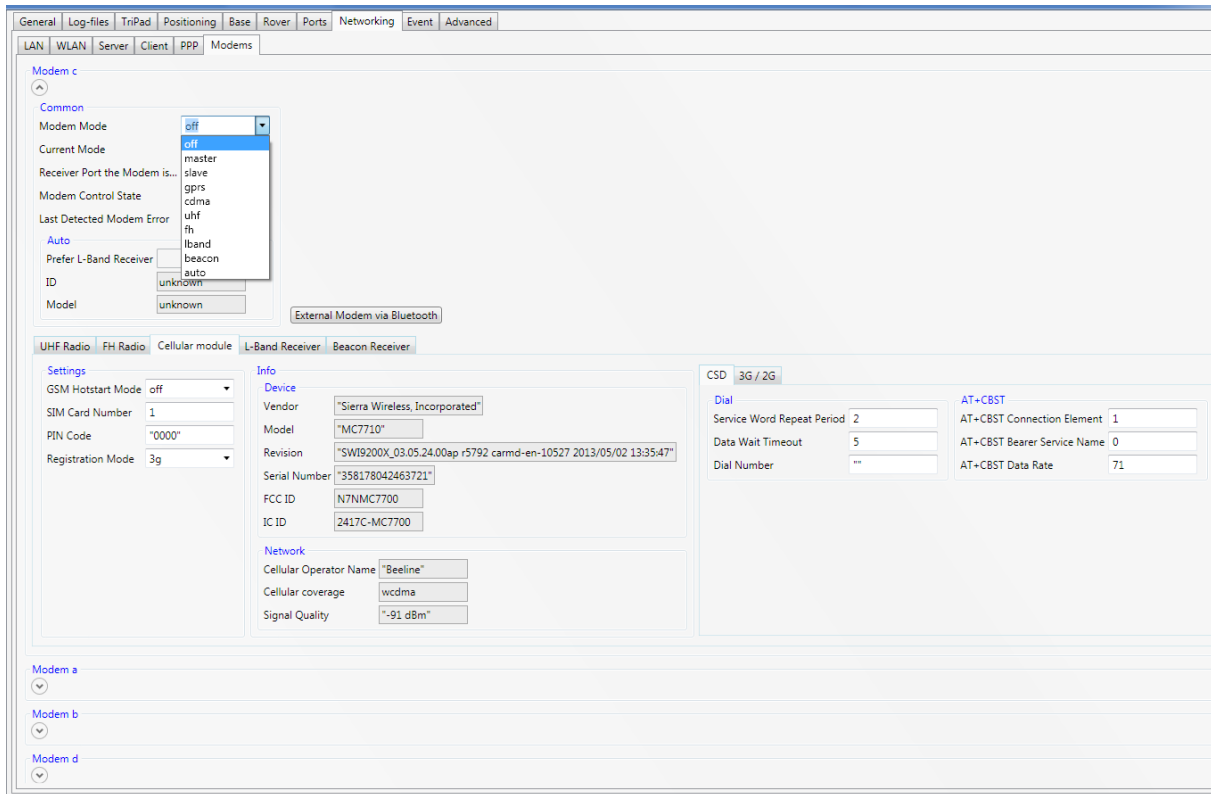


Figure 60. Modem parameters

The following parameters can be set for each modem:

- *Common* – allows setting the *mode* which will use to communicate with the remote modem, corresponding *receiver port* and to monitor the current *mode* and *statuses*.
 - *Auto* – identifiers, filled the modem is detected. [2, Auto modem parameters].
 - *External modem via Bluetooth* – button for pairing with an external modem

Note: Pairing process is described below.

- Tabs for the different types of modems:
 - *Uhf Radio* - [2, UHF Modem Parameters].
 - Mode* – settings configuring the uhf modem
 - Info* – internal settings of the modem (read-only)
 - TX* – counters of the transmitted data (read-only)
 - RX* – characteristics of the received signal (read-only)
 - Scan* – settings for scanning radio interferences.
 - Go to spectra* – button for navigating to the receiver main window tab *Radio Spectra*.

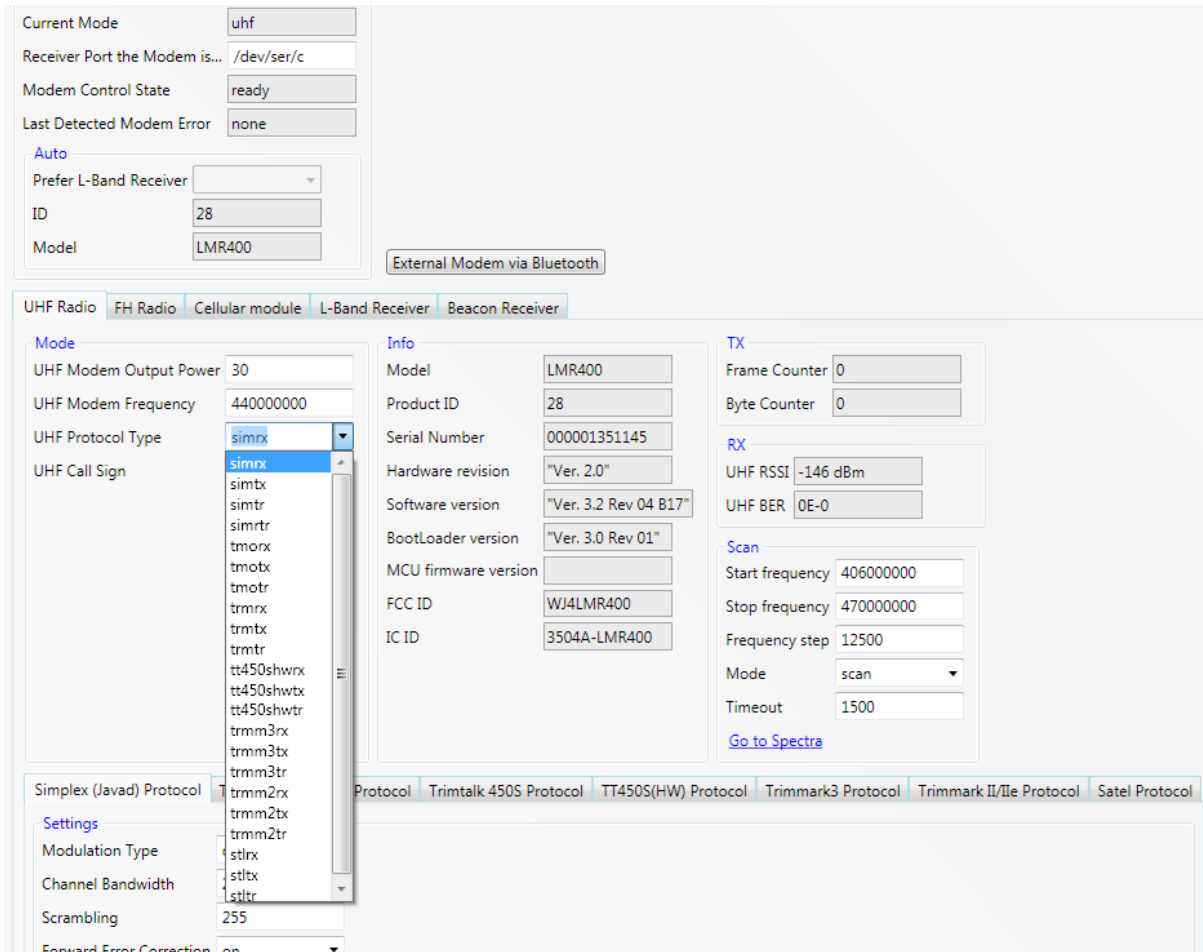


Figure 61. UHF Radio parameters

• *Protocols* – The following protocols can be configured to transmit and receive data via modem depending on selected UHF Protocol Type.

- Simplex (Javad)
- Transparent w/EOT
- Trintalk 450S
- TT450S(HW)
- Trintalk3
- Trimmark II/Ile
- Satel

Settings for each protocol are available on the separate tab.

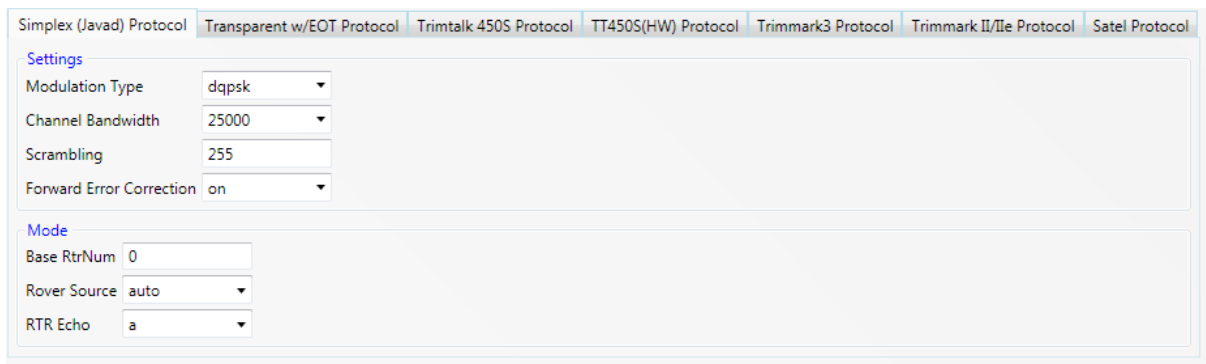


Figure 62. Simplex (Javad) protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	gmsk					
Channel Bandwidth	25000					
Scrambling	255					
Forward Error Correction	on					

Figure 63. Transparent w/EOT protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	gmsk					
Forward Error Correction	on					
Channel Bandwidth	25000					
Scrambling	255					

Figure 64. Trimtalk 450S protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	gmsk					
Channel Bandwidth	25000					

Figure 65. TT450(HW) protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	gmsk					
Channel Bandwidth	25000					

Figure 66. Trimtalk3 protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	gmsk					
Channel Bandwidth	25000					

Figure 67. Trimtalk II/Ile protocol parameters

Simplex (Javad) Protocol	Transparent w/EOT Protocol	Trimtalk 450S Protocol	TT450S(HW) Protocol	Trimmark3 Protocol	Trimmark II/Ile Protocol	Satel Protocol
Modulation Type	4fsk					
Channel Bandwidth	25000					
Forward Error Correction	on					
Clock Correction	on					
Compatibility	3as					

Figure 68. Satel protocol parameters

• *FH Radio* - [2, FH Modem Parameters].

- *Zone* – the zone of FH radio operation
- *Info* – internal settings of the modem (read-only)
- *TX* – counter of the transmitted bytes (read-only)
- *RX* – characteristics of the received signal (read-only)
- *Scan* – settings for scanning radio interferences.

Go To Spectra – button for navigating to the receiver main window tab *Radio Spectra*.

- *Zones* – The following zones can be configured to transmit and receive data via modem depending on selected *Zone*.

USA, AUS - USA and Australia

EU - Europe

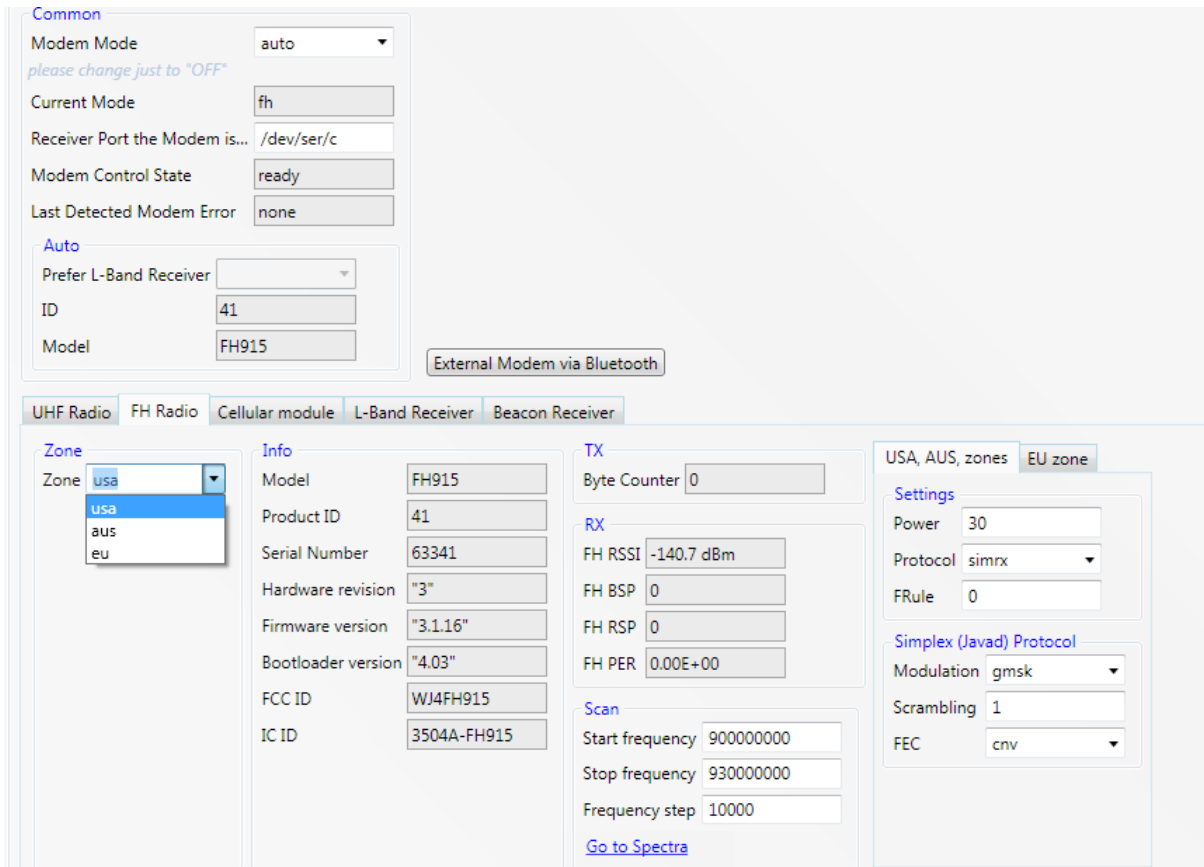


Figure 69. FH Radio parameters, USA, AUS zone

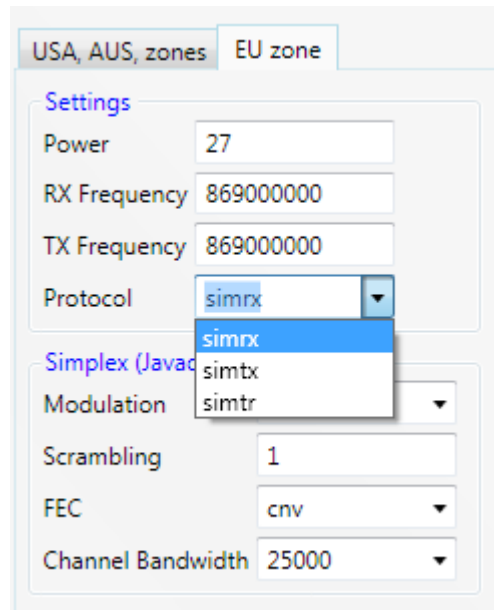


Figure 70. FH Radio parameters, EU zone

- *Cellular module* - [2, GSM Modem Parameters].
 - *Settings* – settings which configure the receiver to control the cellular module
 - *Info-* (read-only):
 - *Device* – internal settings of the modem
 - *Network* – the parameters of the cellular network
 - *Mode* – the settings configuring two different modes of cellular module depending of selected modem mode:

CSD – master, slave
Dial – dial settings
AT+CBST – select bearer service type.
3G/2G – gprs

- *PPP*- connection statuses of the PPP server (duplicated on the *Networking.PPP* tab *PPP Configuration Parameters*)

GPRS – *GPRS* connection parameters [2, *GPRS Configuration*].

PDP - Packet Data Protocol (PDP) settings. [2, *GPRS Configuration*].

Settings for each mode are available on the separate tab.

The screenshot displays the configuration interface for the Cellular module in 3G/2G mode. It is organized into several sections:

- Common:**
 - Modem Mode: gprs (dropdown)
 - Current Mode: gprs (text)
 - Receiver Port the Modem is...: /dev/ser/c (text)
 - Modem Control State: connect (text)
 - Last Detected Modem Error: none (text)
 - Auto section:
 - Prefer L-Band Receiver: (dropdown)
 - ID: unknown (text)
 - Model: unknown (text)
 - External Modem via Bluetooth: (button)
- UHF Radio | FH Radio | Cellular module | L-Band Receiver | Beacon Receiver:**
 - Settings:**
 - GSM Hotstart Mode: off (dropdown)
 - SIM Card Number: 1 (text)
 - PIN Code: "0000" (text)
 - Registration Mode: auto (dropdown)
 - Info:**
 - Device:**
 - Vendor: "Sierra Wireless, Incorporated" (text)
 - Model: "MC7710" (text)
 - Revision: "SWI9200X_03.05.24.00ap r5792 carmd-en-10527 2013/05/02 13:35:47" (text)
 - Serial Number: "358178042463192" (text)
 - FCC ID: N7NMC7700 (text)
 - IC ID: 2417C-MC7700 (text)
 - Network:**
 - Cellular Operator Name: "Beeline" (text)
 - Cellular coverage: gprs (text)
 - Signal Quality: "-81 dBm" (text)
- CSD | 3G / 2G:**
 - PPP:**
 - PPP Connection State: connected (text)
 - PPP Baud Rate: 460800 (text)
 - PPP Error: none (text)
 - GPRS:**
 - GPRS Dial Number: ""99***1#" (text)
 - GPRS User Name: "" (text)
 - GPRS Password: "" (text)
 - PDP:**
 - GPRS PDP Context Identifier: 1 (text)
 - GPRS PDP Access Point Name: "" (text)

Figure 71. Cellular module parameters, 3G/2G mode

Figure 72. Cellular module parameters, CSD mode

- *L – Band Receiver* - [2, LBAND Receiver Parameters]
 - *Mode* – the settings configuring *lband receiver* mode. Channel frequencies can be added, edited and deleted using *Channel map*. Selected frequency is set.
 - *Info*- internal settings of the *lband receiver* (read-only).
 - *Rx* – characteristics of the received signal (read-only).

Figure 73. L-Band Receiver parameters

- *Beacon Receiver* - [2, BEACON Receiver Parameters].
 - *Mode* – the settings configuring beacon receiver mode. Channel frequencies can be added, edited and deleted using *Channel map*. Selected frequency is set.
 - *Info* - internal settings of the beacon receiver (read-only).
 - *Rx* – characteristics of the received signal (read-only).

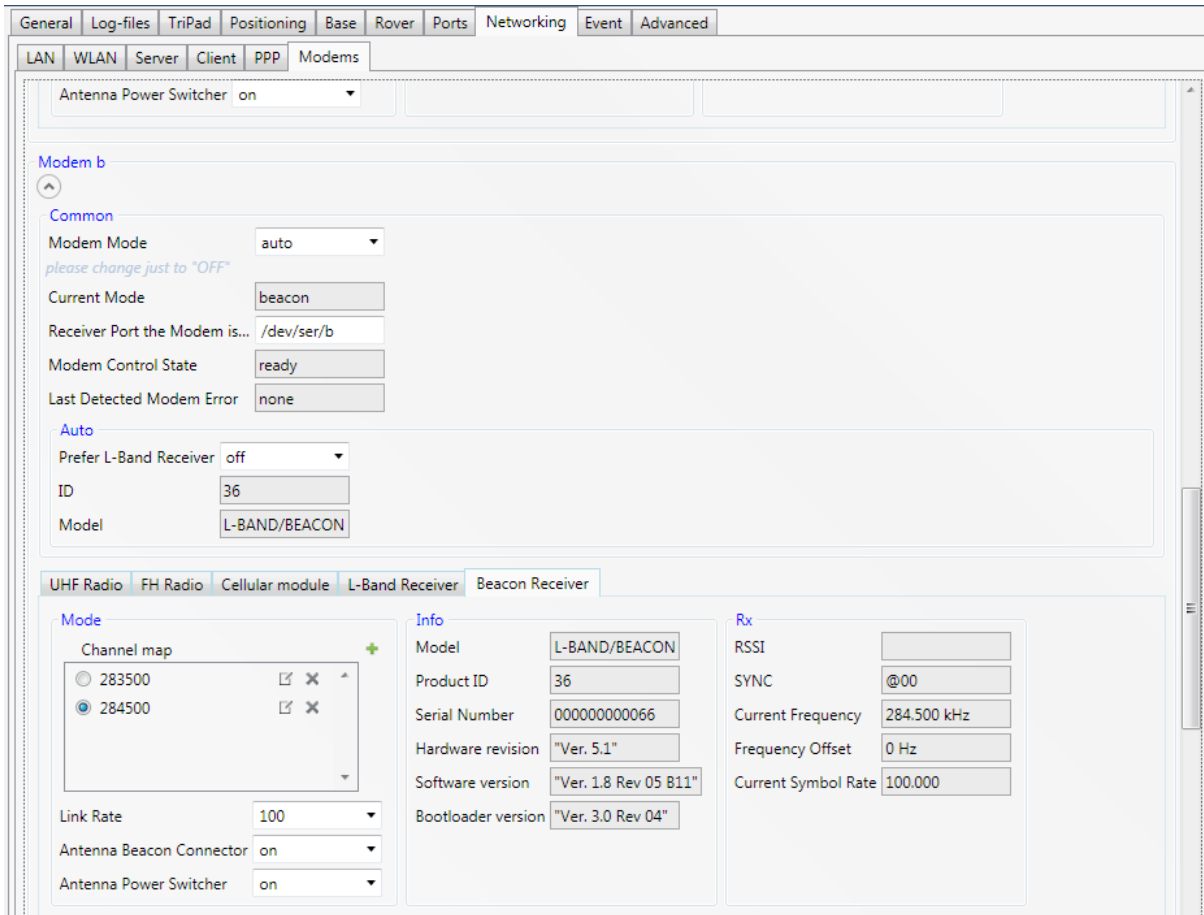


Figure 74. Beacon Receiver parameters

External Modem via Bluetooth

An external modem can be pairing with the receiver using the *External Modem via Bluetooth* button. If the receiver is already paired with the modem, unpairing can be performed in much the same way.

Follow the next steps to pair/unpair modem to the receiver:

1. Set *Receiver port the Modem to...* *dev/ser/blt/a (b)*;
2. Set *Modem Mode* to *off* (Otherwise error window will displayed and pairing process won't start);
3. Connect the radio to the PC via serial interface;
4. Click *External Modem via Bluetooth* button and confirm the action.

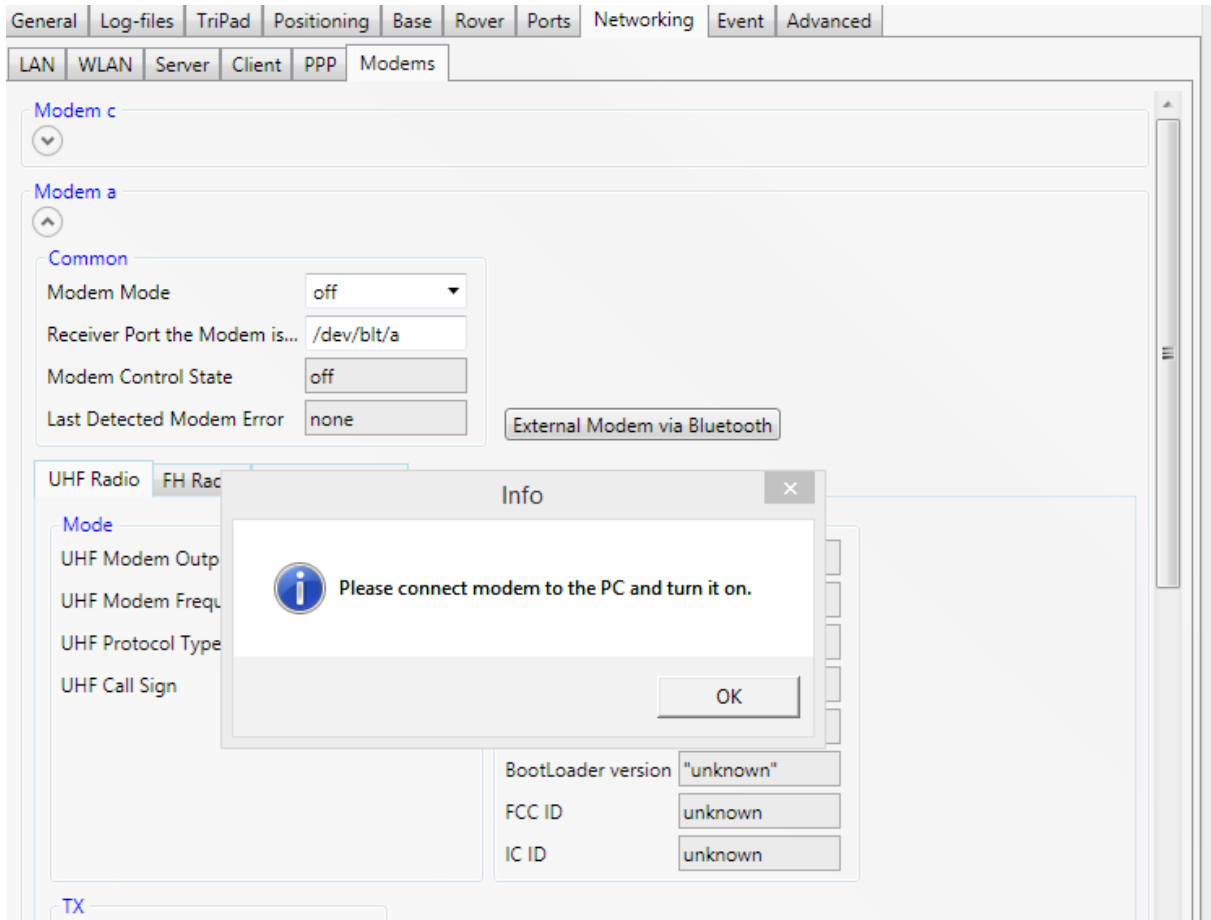


Figure 75. External Modem via Bluetooth confirmation

Pairing External Modem dialog appears:

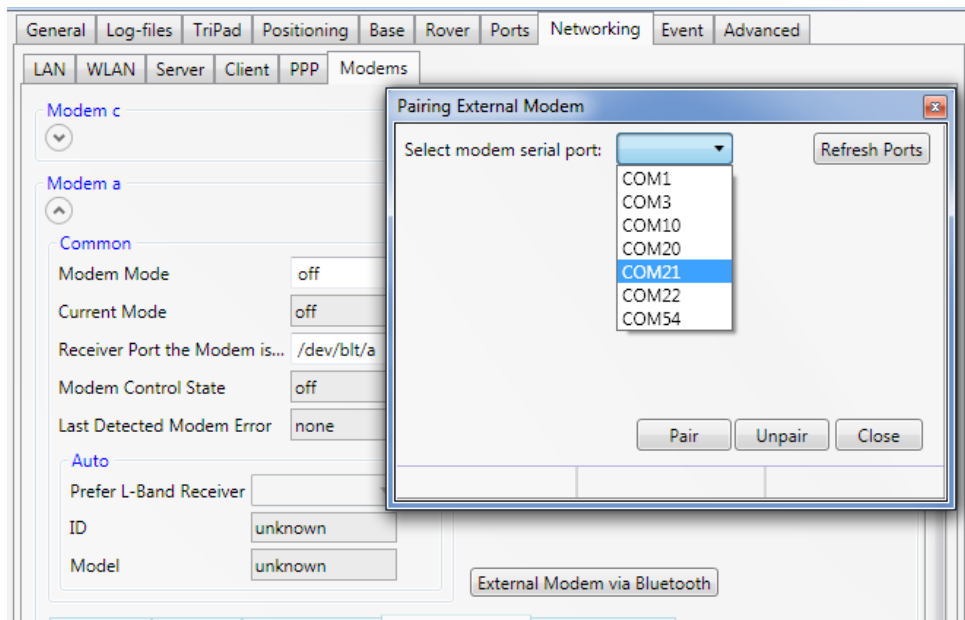


Figure 76. Pairing External Modem dialog

5. Select serial port from drop-down list box. Then click *Pair/Unpair* button. If the needed port is not in the list, click *Refresh Ports*. If the receiver has been previously paired with any radio, a message to confirm continuing with the pairing process appears. After NetView connects to the radio, it displays its info and then starts pairing/unpairing. The process status is shown in status bar at the bottom.

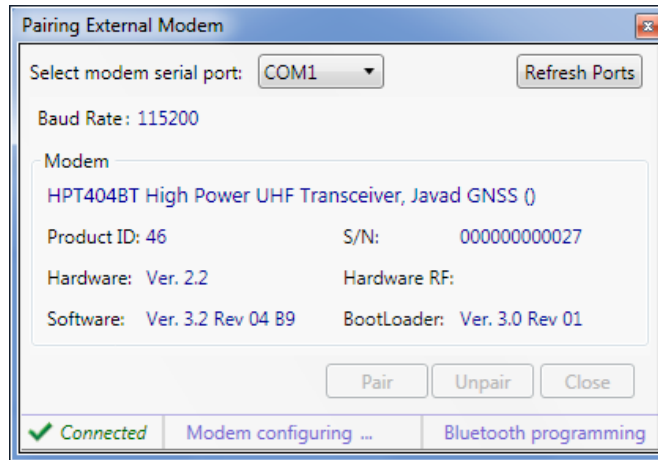


Figure 77. Modem connected. Pairing process

After pairing/unpairing finished successfully corresponding status displayed in status bar. Otherwise error message appears.

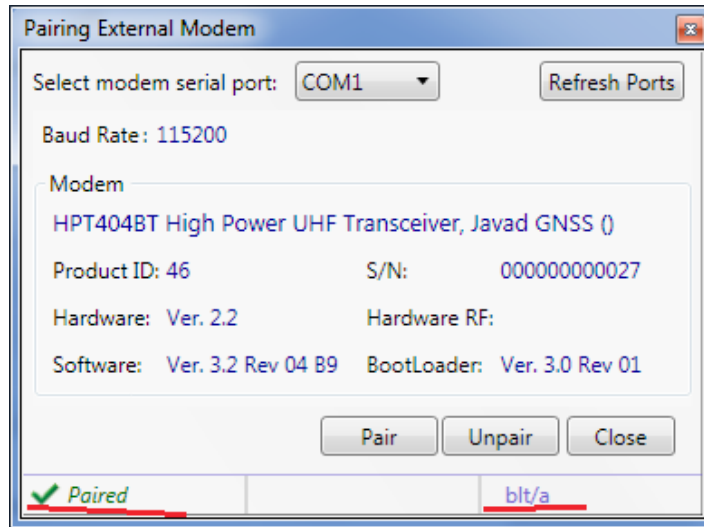


Figure 78. Pairing finish successfully

6. Close the window and check that the corresponding Bluetooth parameters are changed.

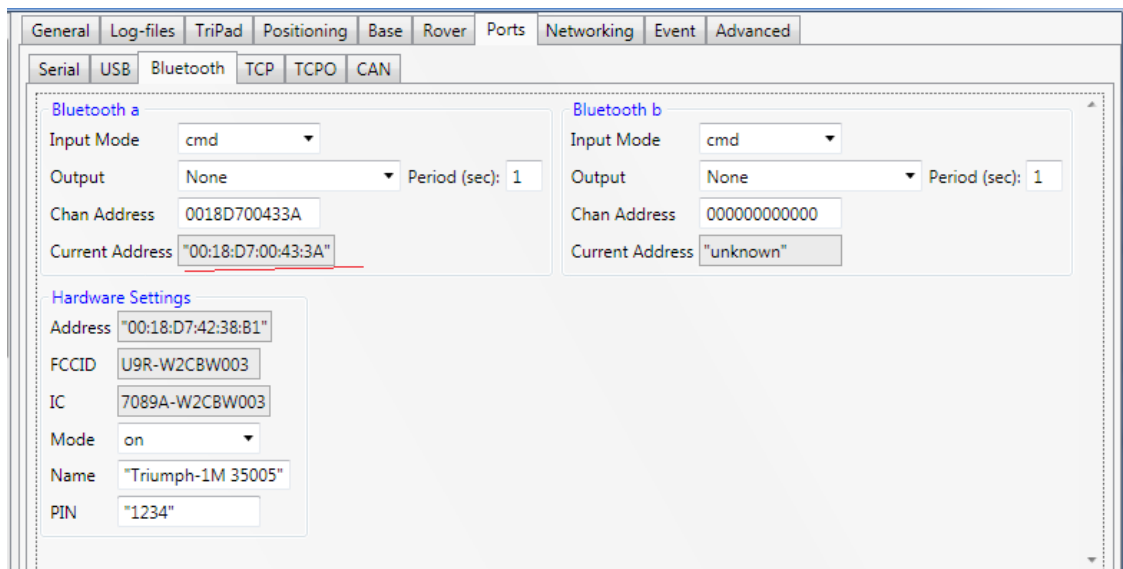


Figure 79. Bluetooth parameters after pairing

Event

The *Event* tab is designed to configure *Pulse per Second* (PPS) signals and *External Events*.

Pulse per Second (PPS) signals [2, 4.4.6 Positioning Parameters Pulse per Second (PPS) Parameters] have programmable reference time system, period and offset. There could be up to two PPS outputs in *JAVAD GNSS* receivers, “a” (PPSA) and “b” (PPSB). It is possible to use both PPS outputs concurrently. *PPSA* or both *PPSA* and *PPSB* can be available depends on *PPS* option value.

External Event functionality [2, 4.4.6 Positioning Parameters External Event Parameters] allows the user to measure/record input event times. Up to two external event pins, *EventA* and *EventB* may be accommodated depending on receiver model. *EVNT* option value determines availability of *EventA* or both *EventA* and *EventB*.

Parameter	Value
Enable PPS Generation	on
PPS Reference Time	utc
Tie PPS to its Reference Time	on
PPS Period	1000
Milliseconds of PPS Offset	0
Nanoseconds of PPS Offset	0
PPS Reference Edge	rise
PPS Pulse Length	2000000
Period of Marked PPS Pulses	0
Length of Marked PPS Pulses	3000000

Parameter	Value
Enable Event Acquisition	off
Event Reference Time	utc
Tie Measured Event Time to its...	on
Event Reference Edge	rise
Synchronize Receiver Clock with...	off
Status of the Receiver Clock...	off
/par/dev/event/a/off/ns	0

Parameter	Value
Enable PPS Generation	on
PPS Reference Time	utc
Tie PPS to its Reference Time	on
PPS Period	1000
Milliseconds of PPS Offset	0
Nanoseconds of PPS Offset	0
PPS Reference Edge	rise
PPS Pulse Length	2000000
Period of Marked PPS Pulses	0
Length of Marked PPS Pulses	3000000

Parameter	Value
Enable Event Acquisition	off
Event Reference Time	utc
Tie Measured Event Time to its...	on
Event Reference Edge	rise
Synchronize Receiver Clock with...	off
Status of the Receiver Clock...	off
/par/dev/event/b/off/ns	0

Figure 80. Event parameters

The following parameters are available:

- *PPS a* (*PPS b*) – settings for the *Pulse per Second* signals either *PPSA* or *PPSB*.
- *Event a* (*Event b*) – settings for external events input either *EventA* or *EventB*.

Advanced

The *Advanced* tab contains the set of tabs for the fine settings that are rarely used.

Anti-Interference tab

The *Anti-Interference* tab allows enabling anti-jamming mode for the GLONASS and GPS bands [2, 4.4.4

Measurements Parameters Anti-jamming Parameters].

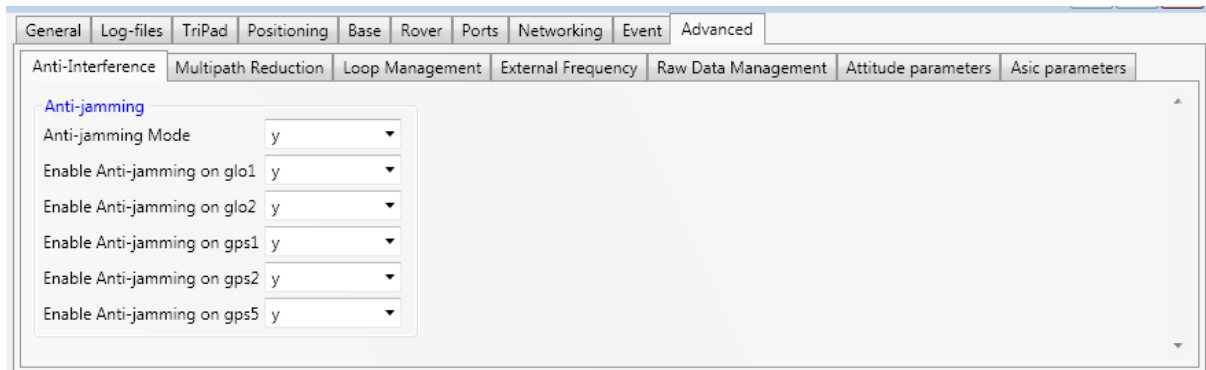


Figure 81. Anti-Interference parameters

Multipath Reduction tab

The *Multipath Reduction* tab contains parameters for enabling code and carrier multipath reduction for CA/L1. [2, 4.4.4 Measurements Parameters Multipath Reduction Parameters].

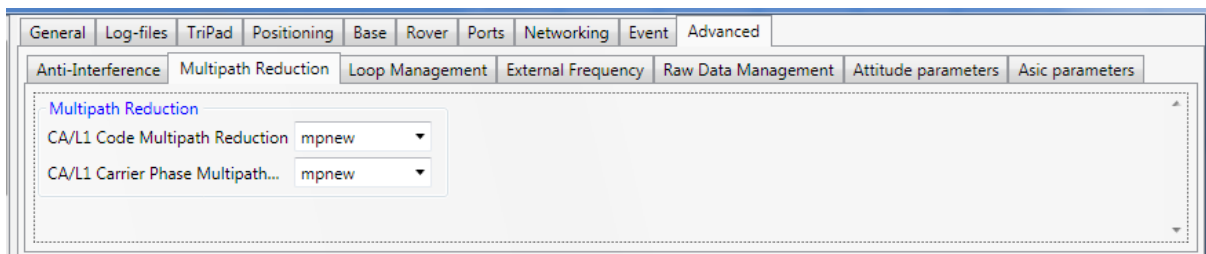


Figure 82. Multipath Reduction parameters

Loop Management tab

The *Loop Management* tab contains tracking loop parameters which is not recommended to change from their default values [2, 4.4.4 Measurements Parameters Tracking Loop Parameters].

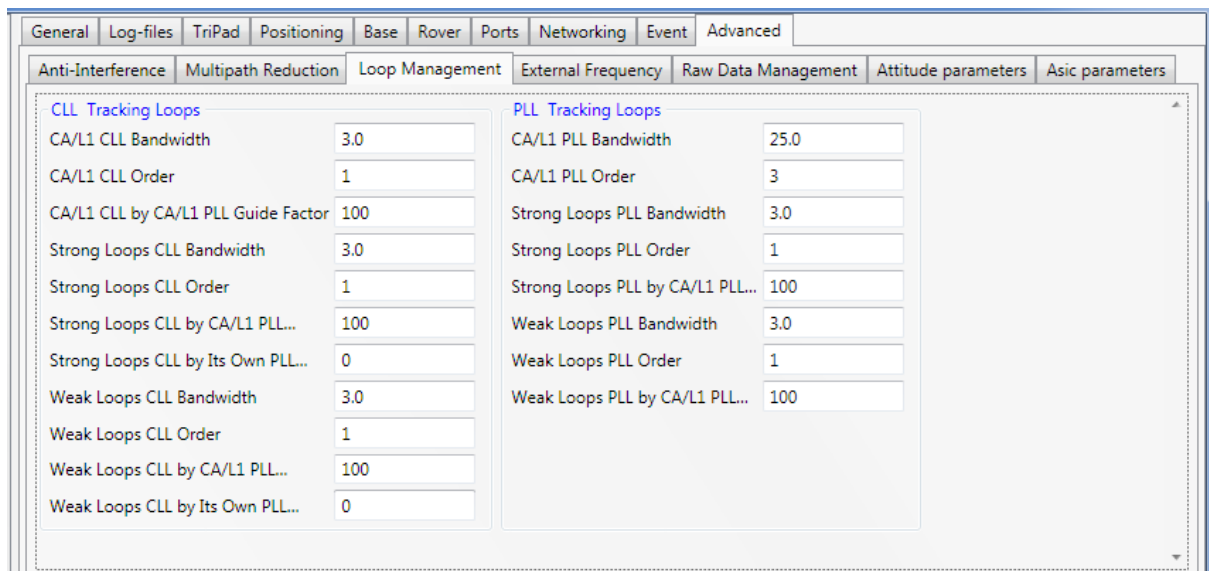


Figure 342. Loop Management parameters.

The following parameters are available:

- *CLL Tracking Loops* – parameters for Code Lock Loop.
- *PLL Tracking Loops* – parameters for Phase Lock Loop.

External Frequency tab

The *External Frequency* tab is designed to select and configure oscillator and hardware calibrator [2, 4.4.4 Measurements Parameters].

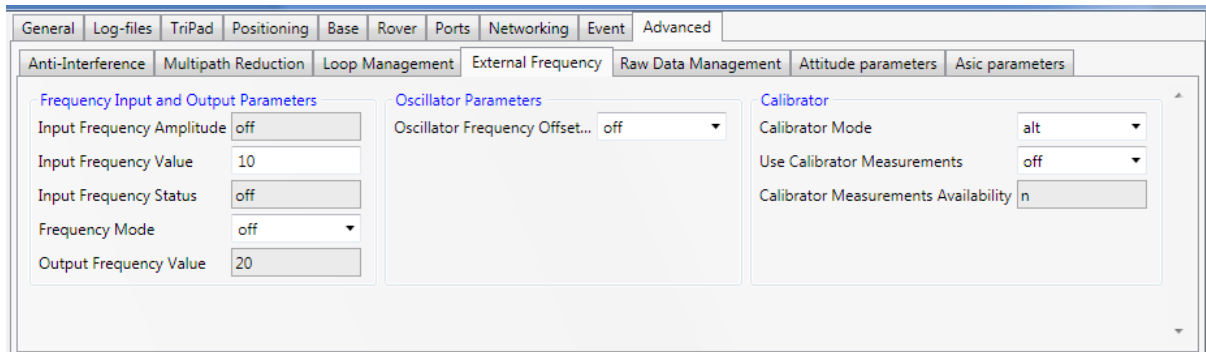


Figure 83. External Frequency parameters

The available parameters are the following:

- *Frequency Input and Output Parameters* – frequency parameters. [2, Frequency Input and Output Parameters].
- *Oscillator Parameters* – oscillator mode - [2, Frequency Input and Output Parameters].
- *Calibrator* – parameters govern the behavior of the hardware calibrator. [2, Hardware Calibrator].

Raw Data Management tab

The *Raw Data Management* tab contains the settings of the internal receiver time grid and smoothing for different the indicators.

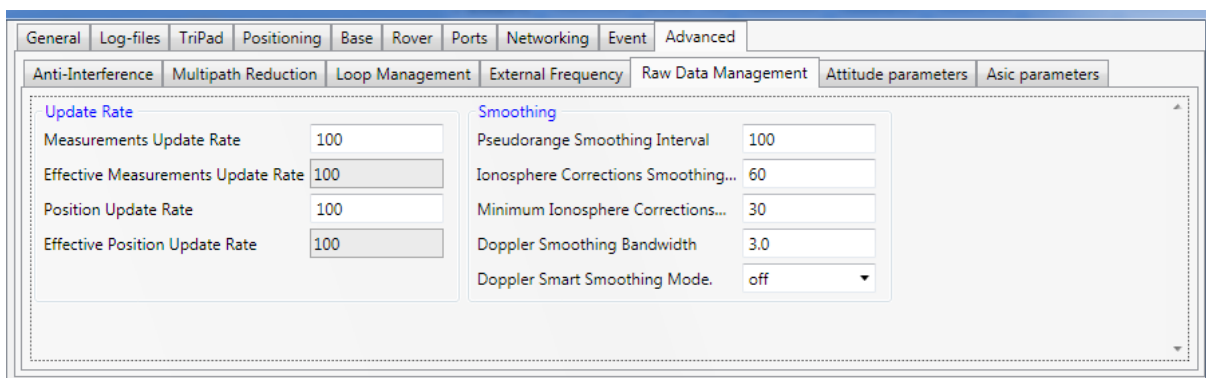


Figure 84. Raw Data Management parameters

The following parameters are presented:

- *Update rate* – parameters specifies the required period of the internal receiver time grid and position updates. [2, 4.4.2. Measurements Parameters Generic Measurements Parameters, 4.4.6. Positioning Parameters Generic Positioning Parameters]. Effective read-only values are depends of the available options.
- *Smoothing* – smoothing settings for the different indicators. [2, 4.4.2. Measurements Parameters Generic Measurements Parameters].

Attitude parameters tab

The *Attitude parameters* tab allows configuring and calibrating a multi-antennas receiver (see documentation on Duo and Quattro and [2, 4.4.8 Phase Differential (RTK) Parameters Attitude Parameter]).

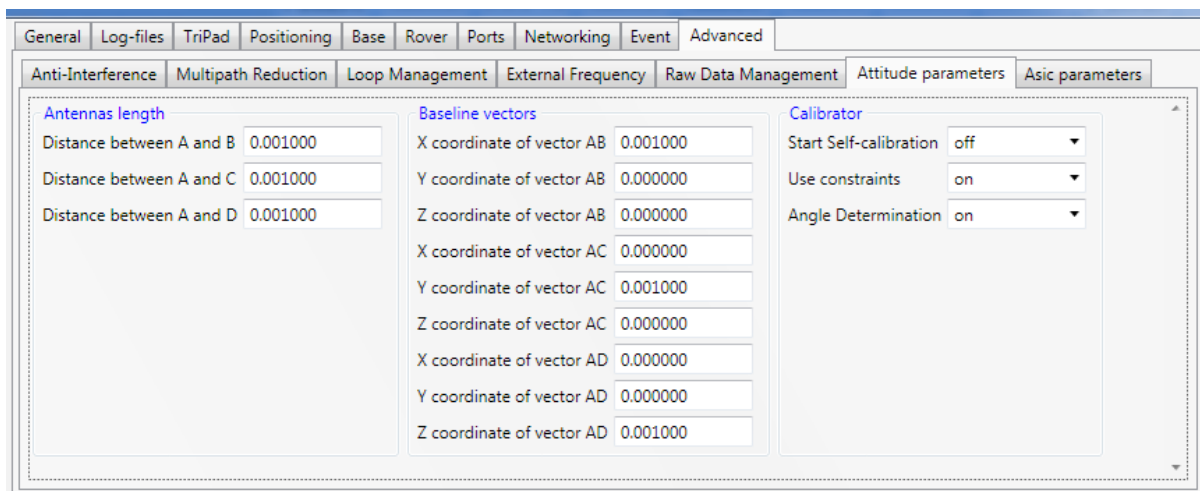


Figure 85. Attitude parameters

The following parameters are available for the multi-antennas receiver:

- *Antennas length* – distance between antennas.
- *Baseline vectors* – coordinates of the baseline vectors
- *Calibrator* – starting self-calibration [2, Attitude Parameters], calibrator settings.

ASIC parameters tab

The *ASIC parameters* tab allows setting processor clock frequency and displays current DSP (digital signal processor) sampling frequency (4.4.35 Miscellaneous parameters).

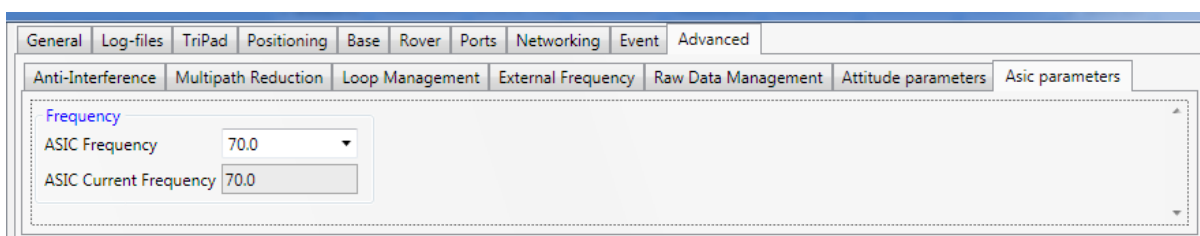


Figure 86. ASIC parameters

Save Configuration

All the parameters from all the tabs can be saved to the *tcl*-script (see “Appendix 2. TCL-script example” on page 82) and then be loaded to this or another receiver using the *Load Script* button.

To save configuration, click the *Save Configuration to Script* button and select file for saving.

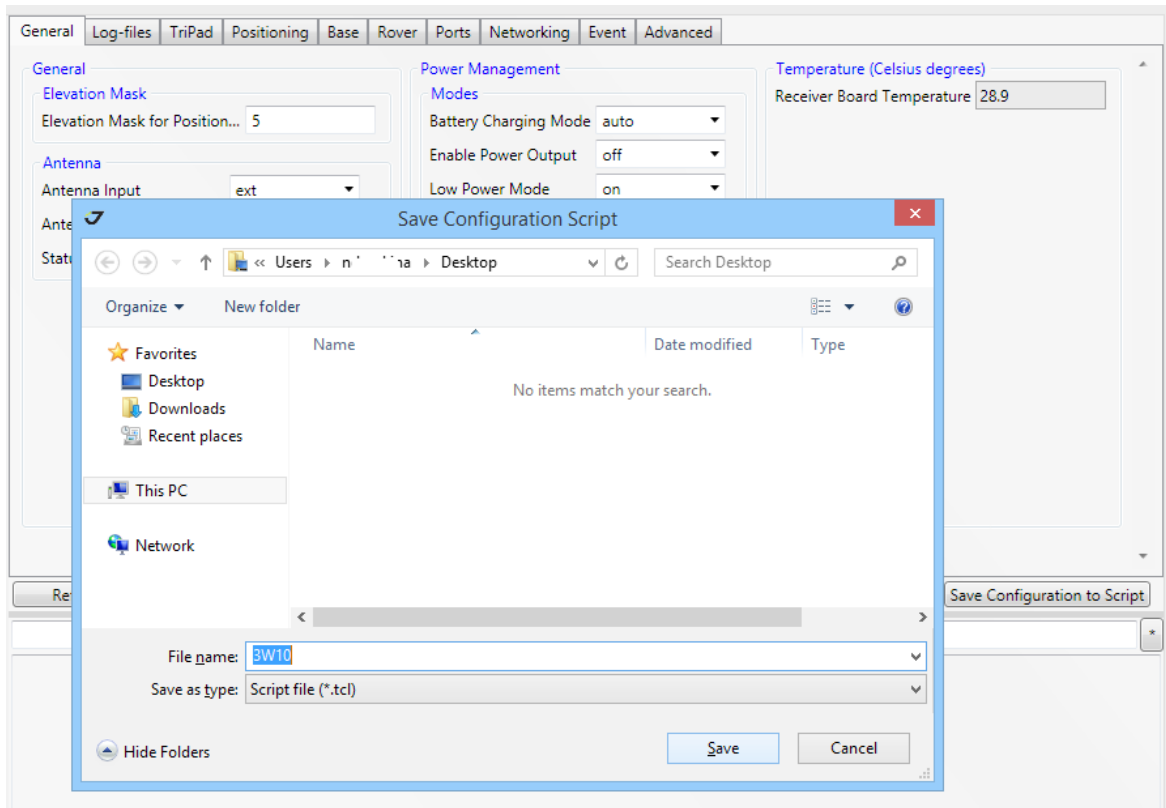


Figure 87. Save configuration to script

If any edited parameter was not applied, the appropriate warning will be shown.

All the parameters from all the tabs except *LAN* and *WLAN* will be saved to the file in *tcl* format (Tool Command Language). The *tcl*-script cannot be loaded to the receiver using ordinary terminals, *ONLY* using the *Parameters of NetView* tab.

While saving user interface is disabled and the corresponding information is displayed near the button.

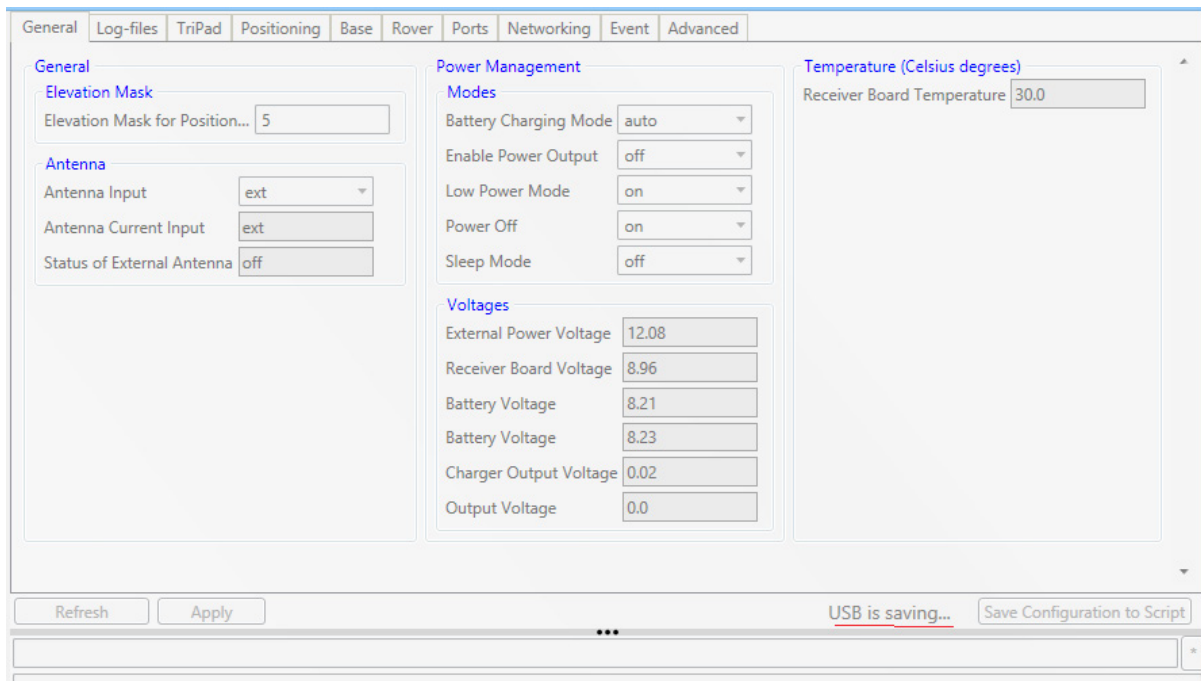


Figure 88. Saving the configuration. User interface is disabled

Limited Manual Mode Pane

Manual panel is located under the parameter tabs and allows directly controlling the receiver by GREIS commands. The manual pane serves as a limited terminal communicating with the receiver, (i.e., it allows the user to send various receiver commands and get responses to these commands). For a complete list of commands supported by JAVAD GNSS receivers, refer to the [2].

Limited Manual pane does not support outputting of the messages. The responses to the commands are displayed and can be logged only.

The full-function terminal is provided on the *Greis commands* page (see “Manual Mode” on page 76).

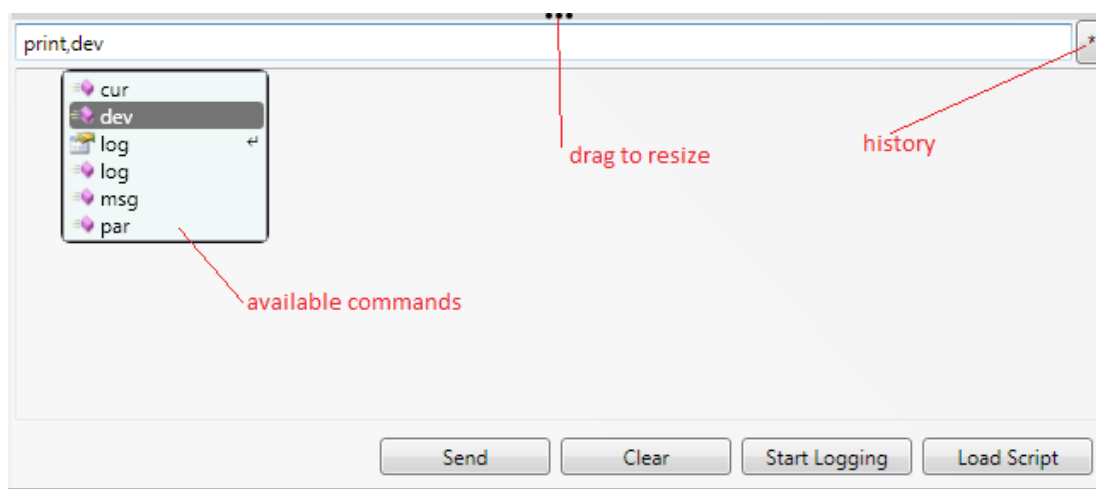


Figure 89. Manual mode pane. Command input

Manual pane consists of the following elements:

- *Input line* for the *Greis* commands. As you type a hint is shown with a list of available commands.

- *Output window* displays receiver responses. “>” means that the receiver responded and is followed by the text of the response.
- * (history button) - allows select one of the previously used commands. Up to 30 commands are stored.
- *Send* button – sends command to the receiver (equivalent to Enter in Input Line).
- *Clear* button – clears the Output Window.
- *Start Logging (Stop Logging) button* – saves receiver output to the selected file. After starting the button changes to *Stop Logging*. Log file path is displayed at the bottom.
- *Load Script button* – sends a set of the commands from the selected script to the receiver. Both ordinary and *tcl*-scripts (see “Appendix 2. TCL-script example” on page 82) are supported.

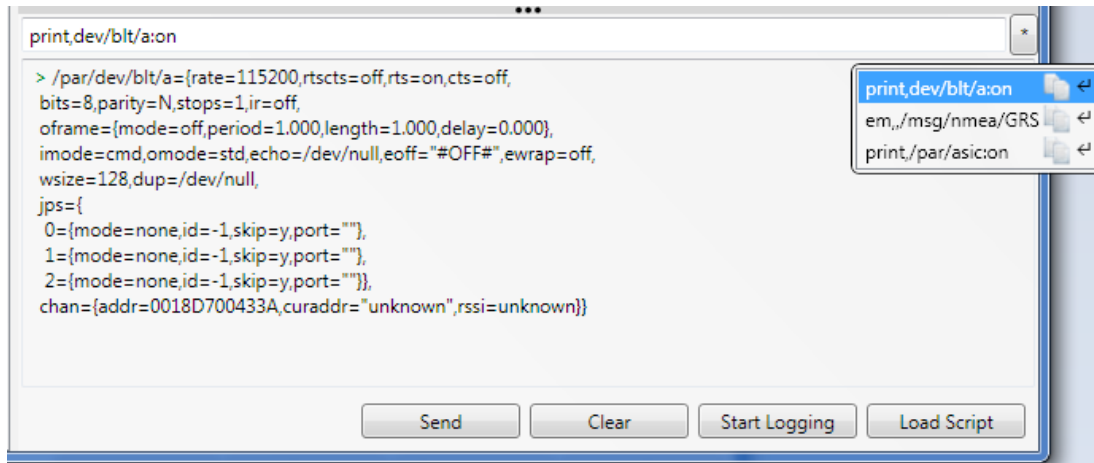


Figure 90. Manual mode pane. The reply of the receiver

The size of the pane can be changed by stretching out the slider, which separates the parameters and the field for manual input. The slider has a typical three points in the middle.

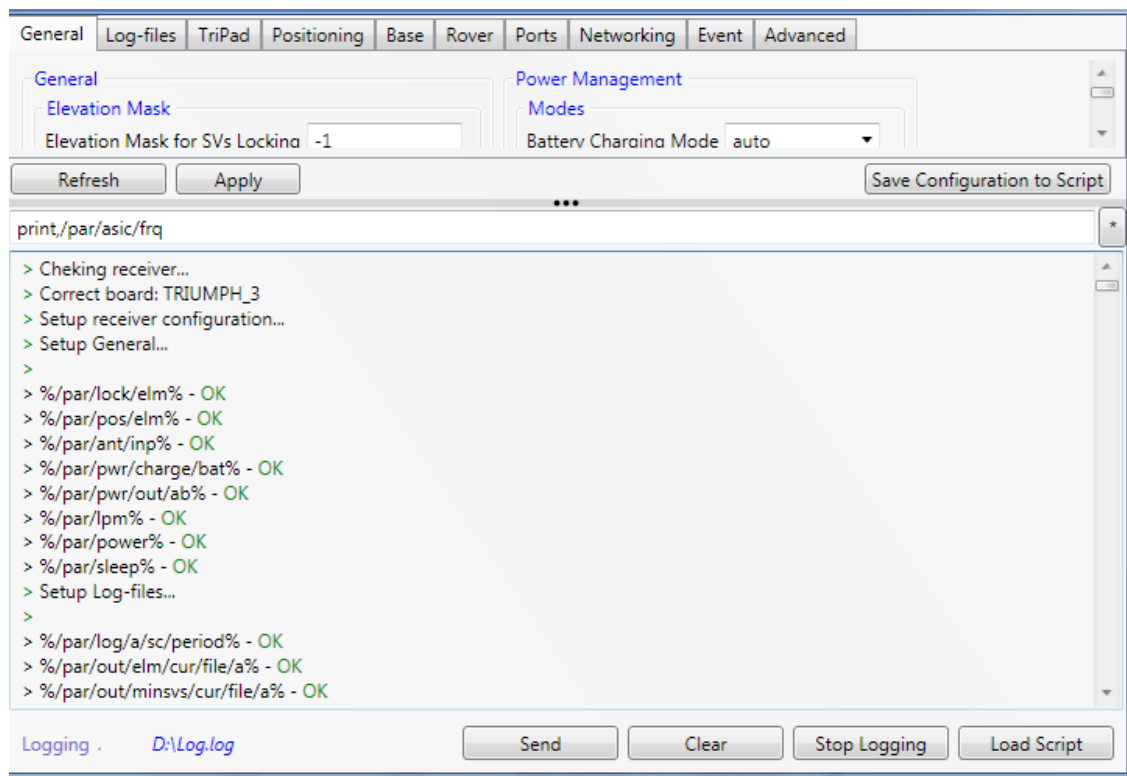


Figure 91. Configuration tcl-script loading

FILE OPERATION

NetView provides the friendly interface for monitoring and managing the memory of the receiver. You can start up two *jps*-files recording, send *free-events* to file, *stop* recording and *download* file from the receiver.

Click on the *Files* sub-node of the receiver, to select the *File* window.

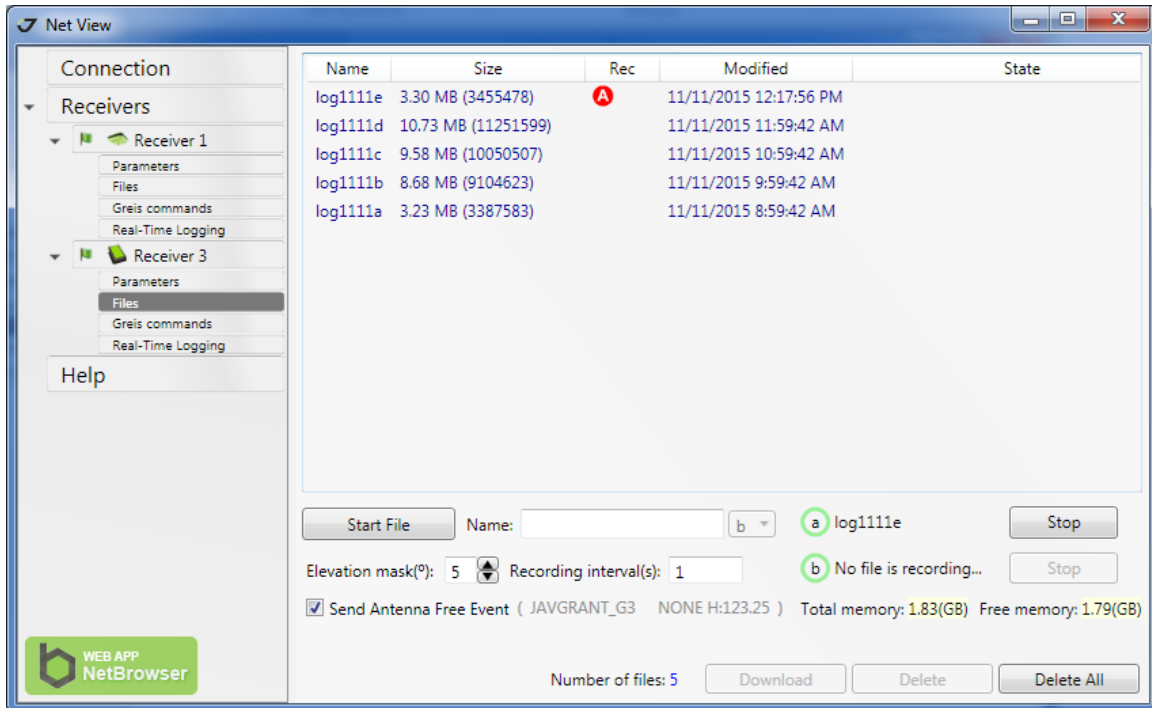


Figure 92. File window

In the upper part of the window is a list of files. If the list is large it might take some time to get it. The following information is provided for each file:

- *Name*
- *Size*
- *Rec* – if the file is recording at the moment A or B is displayed depending *log-file a* or *log-file b* is recording
- *Modified* – time of the last modifying
- *State* – status of downloading

Start/Stop file recording

Under the file list the interface for starting and stopping the file is displayed. If the *log-file a* or *log-file b* is recording, the button *Stop* is enabled for the recording file. Clicking the *Stop* button stops the recording of the corresponding file.

To start new file:

1. Type file *Name*
2. Select *a* or *b* from drop-down. If file is already recording the corresponding list item is unavailable.
3. Specify the *Elevation Mask* – parameter for excluding the satellites whose elevation angles are less than the specified value.

4. Specify *Recording interval* of output.
 5. Check *Antenna Free Event* if desire to send the following free events when file is starting:
 - “_DYM=STATIC”
 - “_ANT=”
 - “_ANH=”
 6. The values for *_ANT* and *_ANH* are displayed in the brackets. They can be specified on the Settings tab of the receiver main page (see “Settings” on page 40).
- See information about free events [2, 2.3.9 event].
7. Click *Start* button.

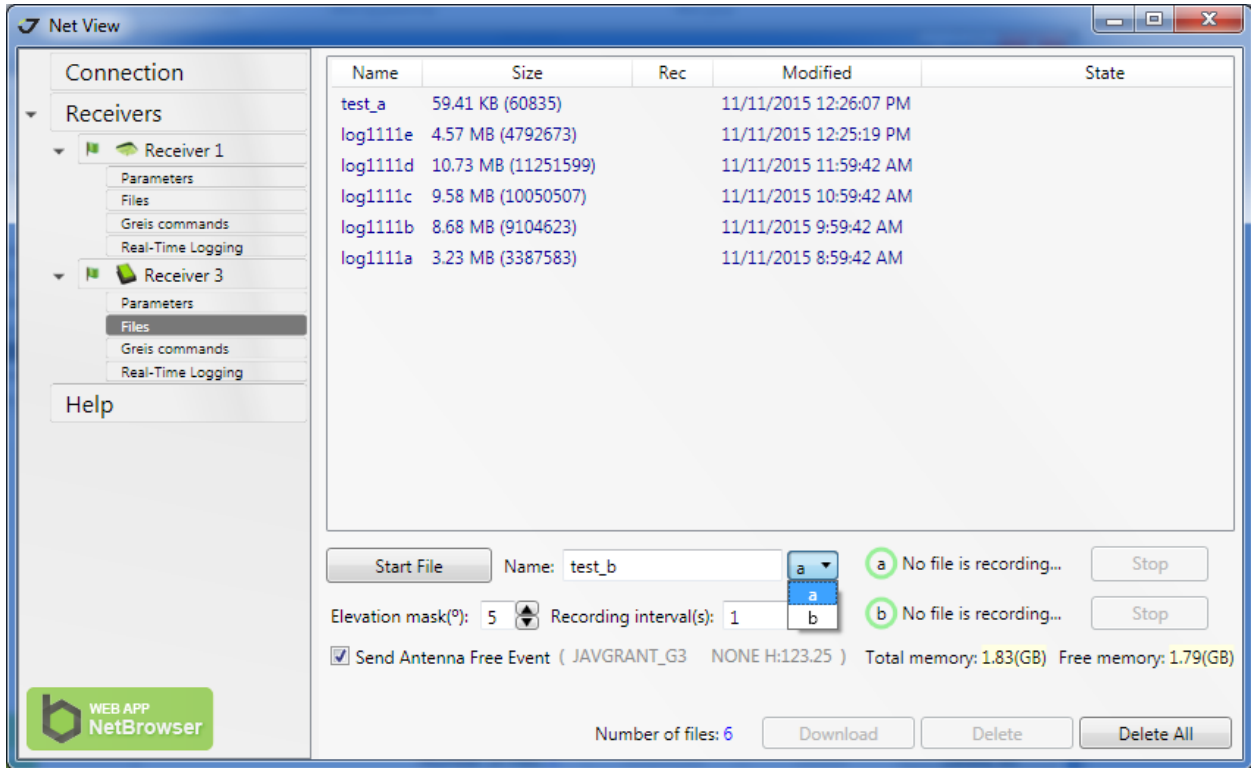


Figure 93. File recording starting

At the bottom of the window the information about *Total Memory*, *Free Memory* available in the receiver and *Number of files* is displayed.

If you try to start the file that already exists you will be suggested to append or overwrite it.

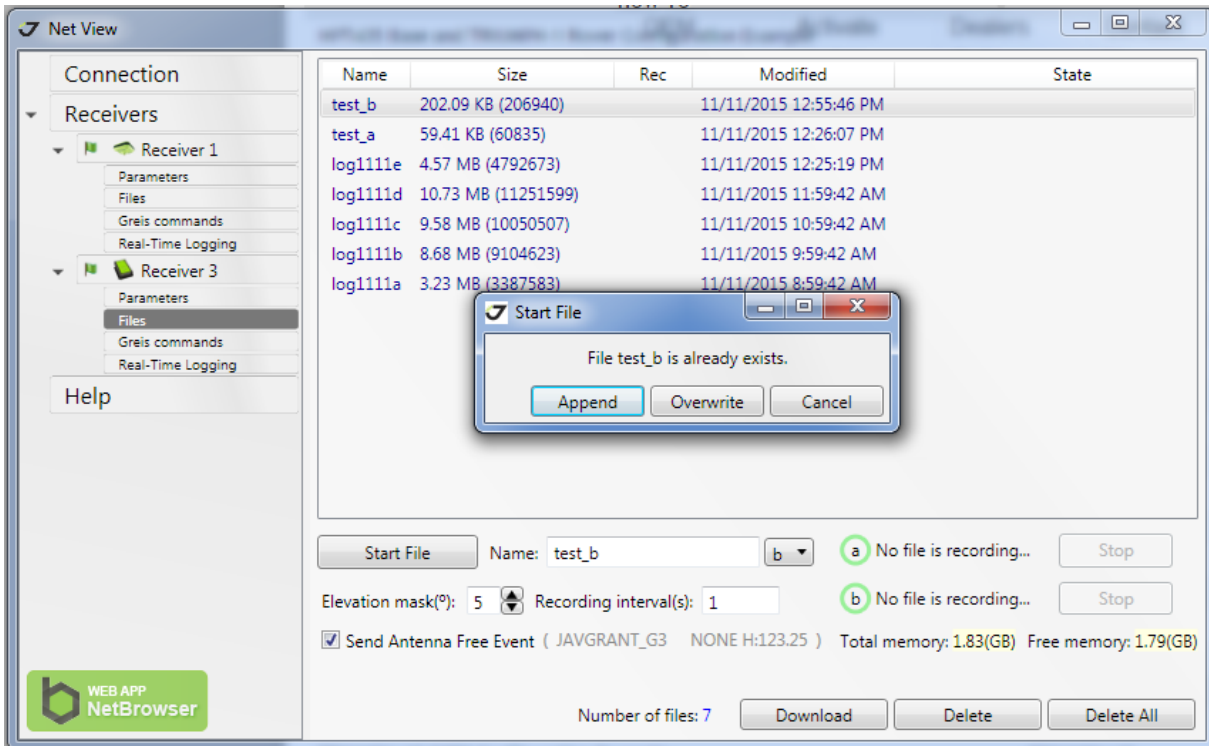


Figure 94. Existing file starting

Downloading Files

Select one or several files from the list and click *Download* button. Specify the file path in case of single file or folder if more then one file is selected.

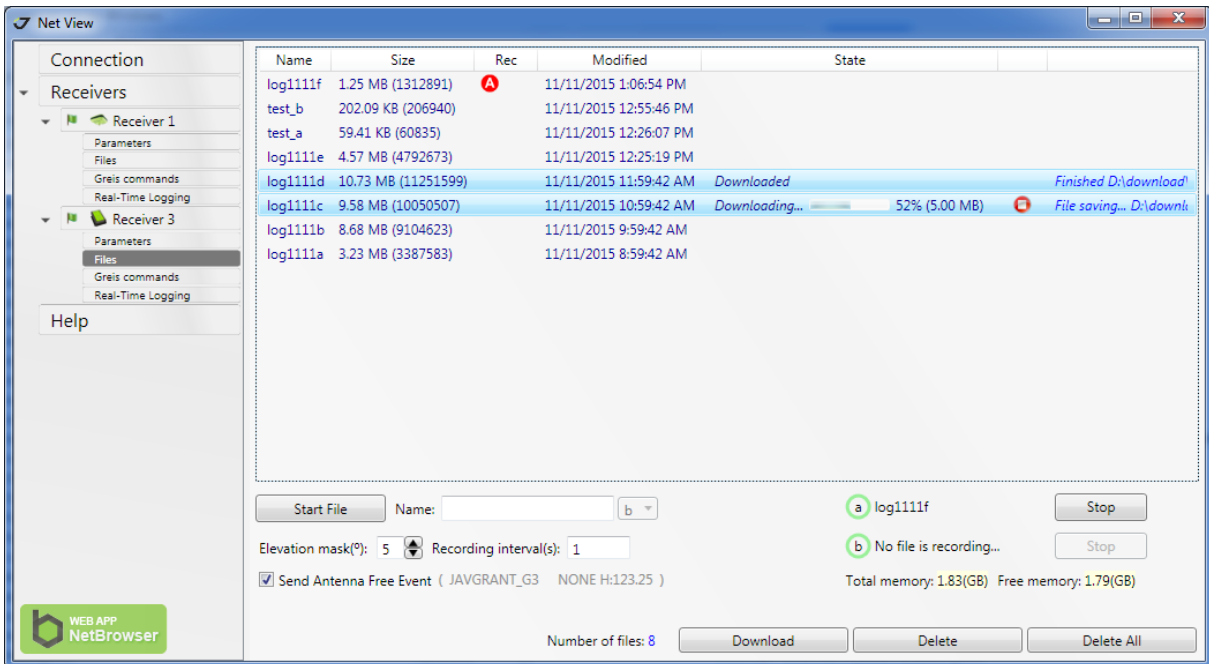


Figure 95. Downloading files

Downloading states are displayed in the file list. The *red button* for interrupting of the downloading is located next.

Deleting Files

Select the files you want to delete and click *Delete* button. Confirmation message will be displayed. Click *Yes*. Deleting process will start.

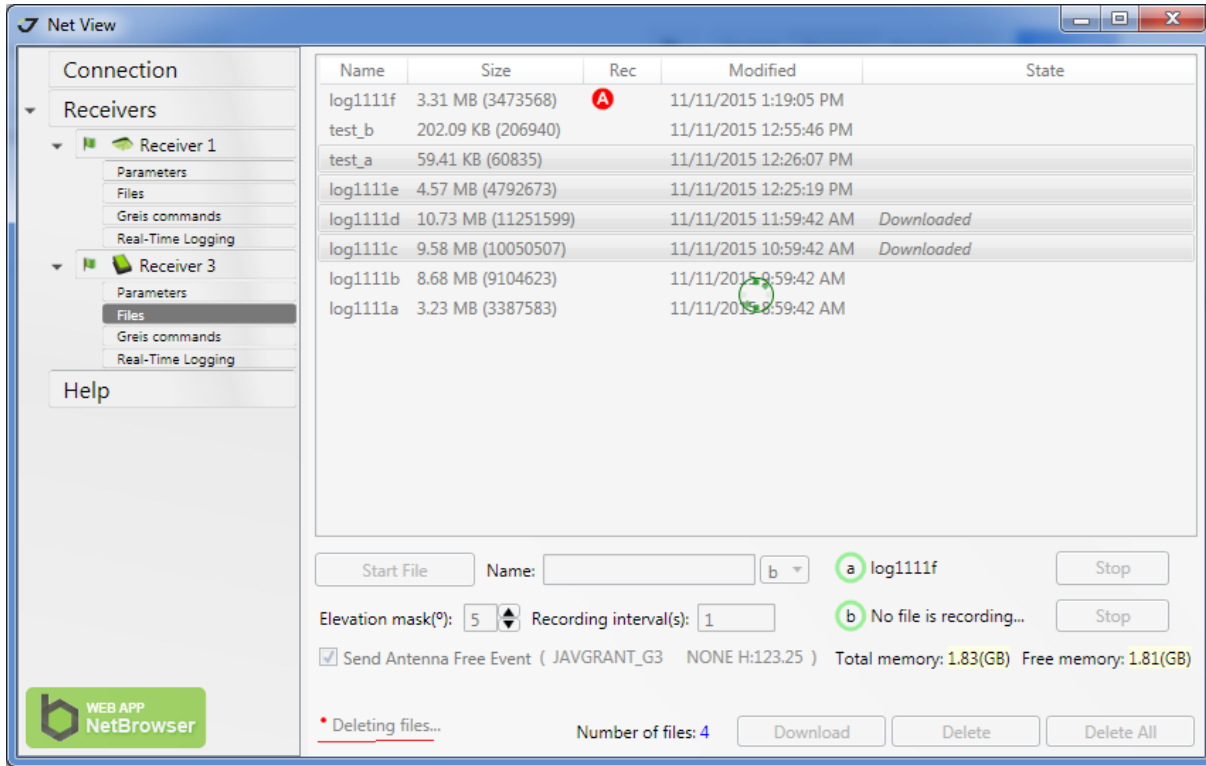


Figure 96. Downloading files

While deleting *File* window is disabled. Removal of a large number of files can take several minutes. To delete all the files just click the button *Delete All* without selecting the files.

MANUAL MODE

Manual Mode window is designed to direct control of the receiver as a same way as using an ordinary terminal. It allows the user to send various receiver commands, get receiver responses and to log them into the text-file. For a complete list of commands supported by *JAVAD GNSS* receivers, refer to the [2].

Click on *Greis commands* sub-node of the receiver to go to *Manual mode* window.

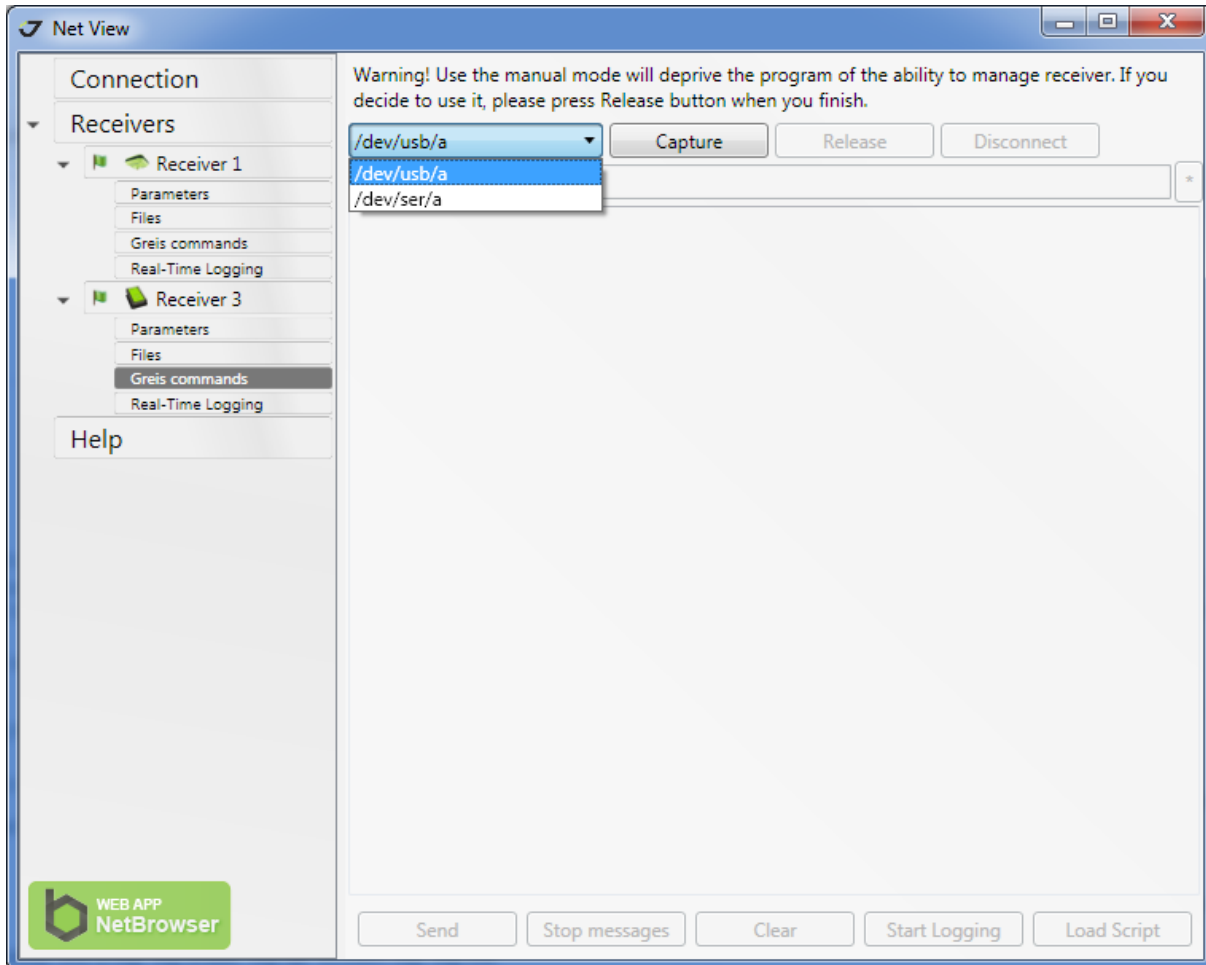


Figure 97. Manual Mode window

The drop-down list contains the interfaces which *NetView* uses to communicate with the receiver.

Select one to use it in manual mode and click the *Capture* button. This connection becomes unavailable for another functionality of *NetView*. If the connection is the only communication with the receiver is carried out only manually.

After connecting all the elements of the user interface are enabled.

Use the *Input Line* to type a command. The functionality of each button is described below.

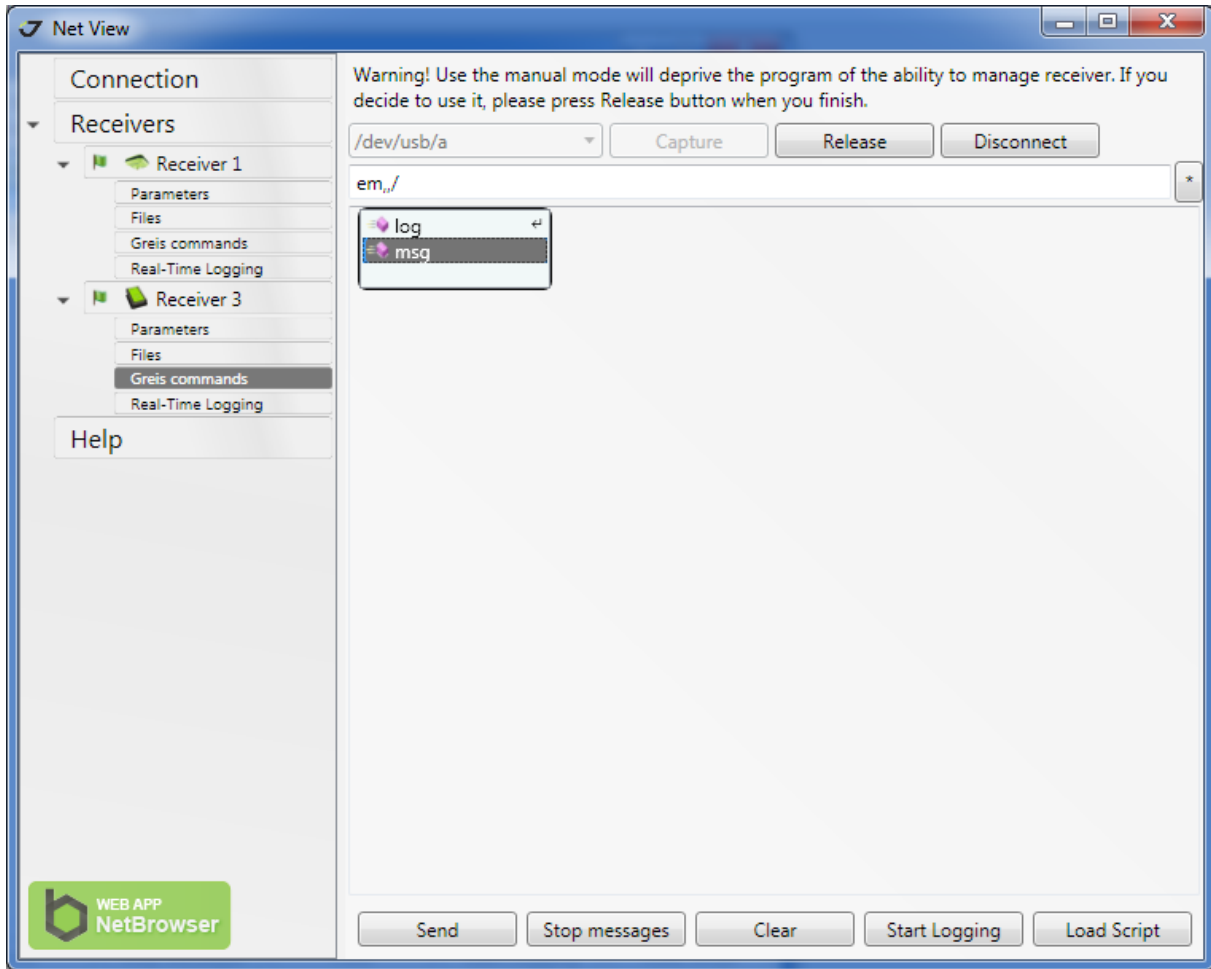


Figure 98. Manual Mode window. Typing the command

The following controls serve the manual operation:

- *Input* line for the GREIS commands. As you type a hint is shown with a list of available commands.
- *Output* window displays receiver responses as is.
- * (history button) - allows select one of the previously used commands. Up to 30 commands are stored.
- *Send* button sends command to the receiver (equivalent to Enter in Input Line).
- *Stop messages* button.
- *Clear* button clears the *Output Window*.
- *Start Logging* (*Stop Logging*) button – saves receiver output to the selected file. After starting the button changes to *Stop Logging*. Log file path is displayed at the bottom.
- *Load Script* button – sends a set of the commands from the selected script to the receiver. Only ordinary scripts are supported (*tcl*-scripts can be loaded using *Parameters* window).

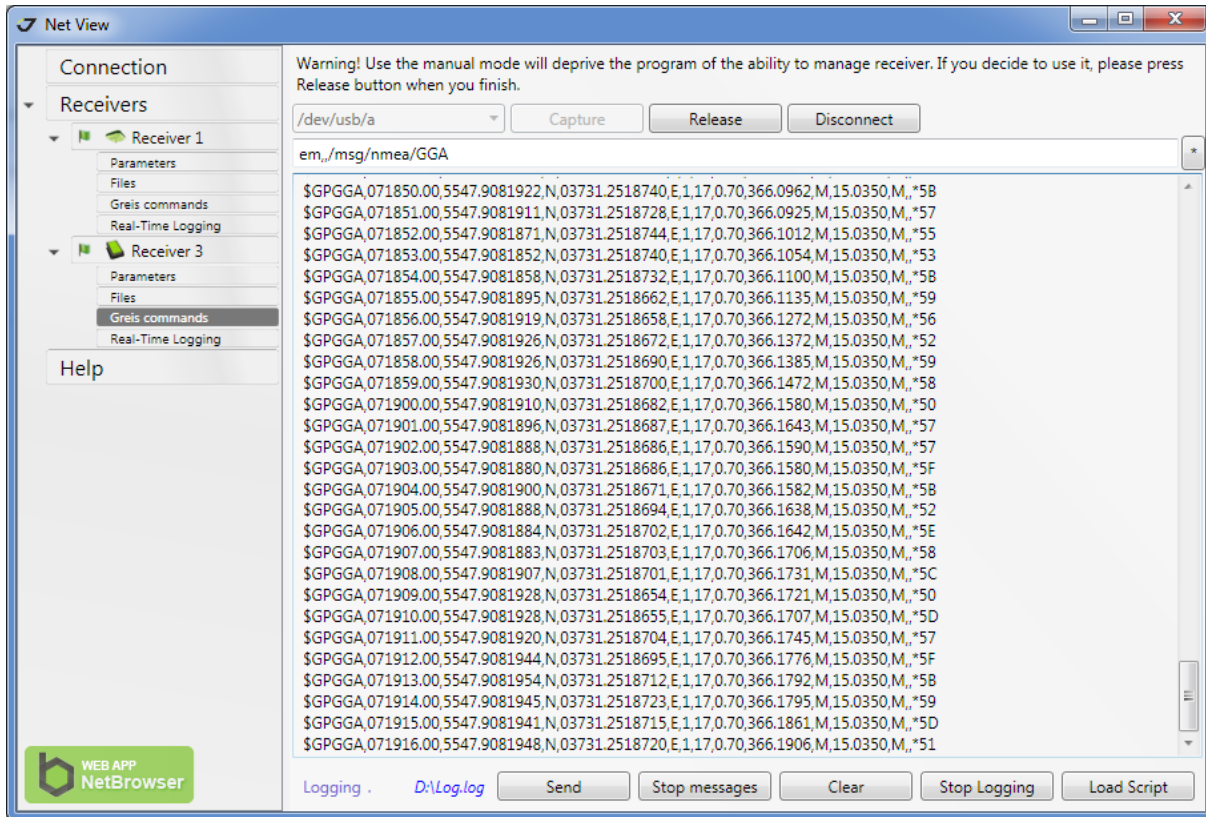


Figure 99. Manual Mode window. Output and logging the stream of messages

Finish the manually operation in one of two ways:

- Click *Release* button and the connection will be returned to the NetView. Output of messages is stopped.
- Click *Disconnect* button to close the connection. The ordered messages continue to be output. NetView doesn't use the connection. This way is useful to configure receiver outputs.

REAL-TIME LOGGING

NetView allows logging JPS or RTCM messages from the receiver directly to the PC storage in real time. It can be useful, for example, for the receiver which internal memory is unavailable. In fact *Real-Time Logging* in NetView is just a wrapper on the console application *RealTimeLogger* which is available on JAVAD GNSS site [5].

Click on *Real-Time Logging* sub-node of the receiver, to open the corresponding window.

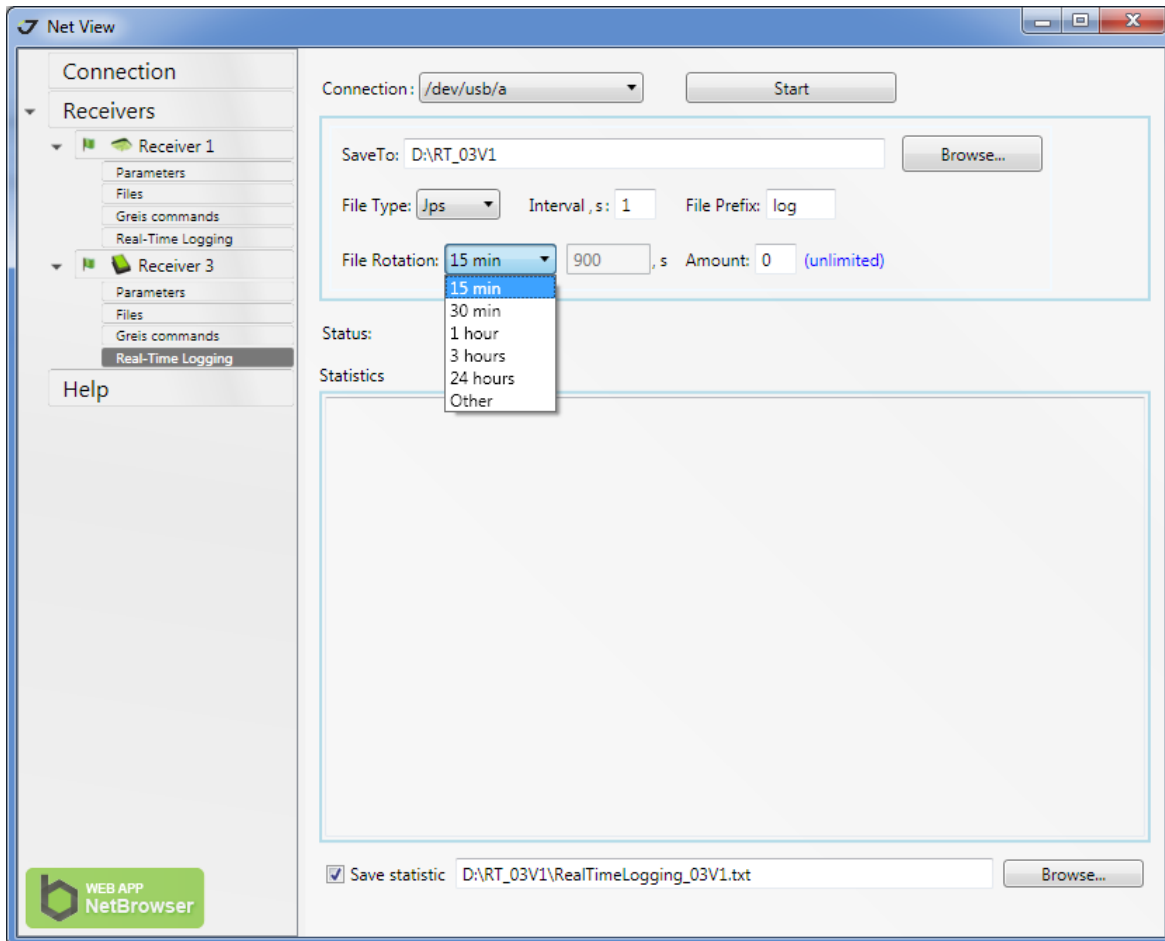


Figure 100. Real-Time Logging window

Follow the steps below to start logging:

1. Select from the drop-down list one of the connections, which is used by the NetView for the communication with the receiver. NetView will use the selected connection for Real-time logging exclusively.
2. Specify the folder for logged files saving by typing or using button *Browse*.
3. Set the following parameters:
 - *File type* - *Jps* or *Rtcm3*
 - *Interval* – interval of messages generation (seconds)
 - *File Prefix* – prefix which will be added to the file name before the date.
 - *File Rotation* - recording period (seconds). It can be selected from the drop-down list or typed manually if *Other* value is selected.

- *Amount* - file number. 0 means the files will be logged until *Real-time logging* is stopped. The value greater than 0 specifies file number to recording.
4. Check *Save statistic* and specify file path for saving statistics if desire. File path can be typed manually or selected using the button *Browse*.
 5. Click *Start* button.

Real-time logging is started (in fact *RealTimeLogger.exe* executed). Status information is displayed below the setting pane and contains the command line which was used for *RealTimeLogger.exe* starting.

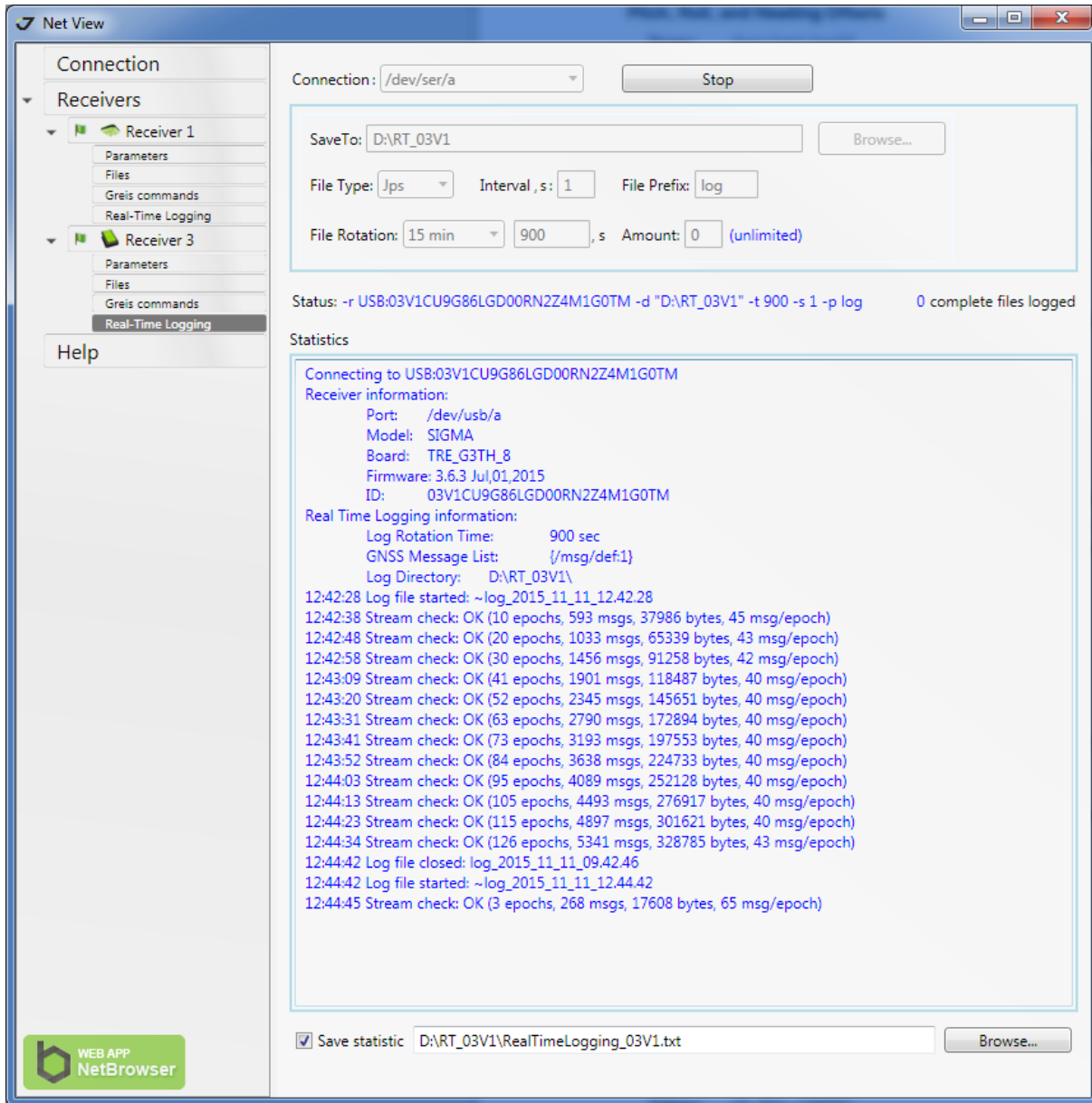


Figure 101. Real-Time Logging is going on

Statistics window displays the statistics received from *RealTimeLogger.exe*.

Logged files are located in the selected folder.

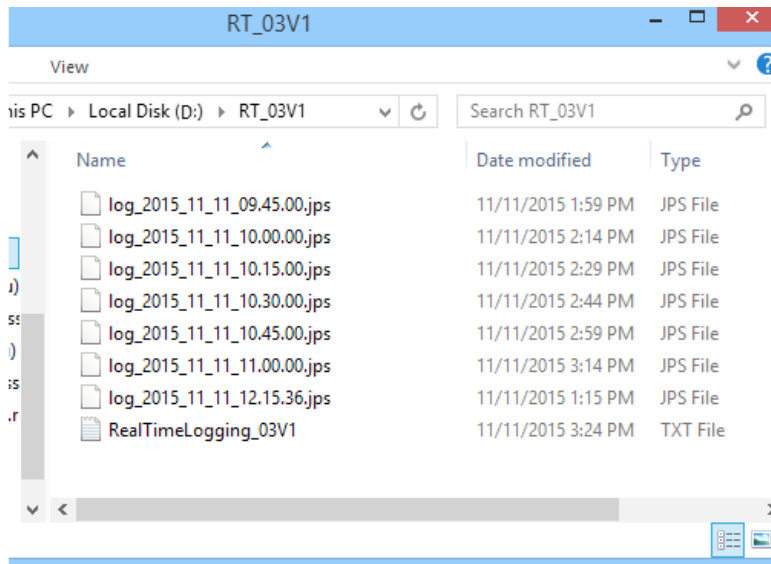


Figure 102. Logged files

First file is usually shorter than selected *File Rotation* due to time alignment. The file which is logging at the moment has extension “.tmp”.

Real-time logging stops if specified file number reached or Stop button is clicked. NetView restores the connection and uses it as usually.

Appendices

Appendix 1. Predefined sets of messages

Name	Solution	Messages IDs (interval, s)
DGPS RTCM {1,31,3}	DGPS (Code diff)	1, 31, 3(10)
DGPS RTCM {41,3}	DGPS (Code diff)	9, 34, 3(10)
DGPS RTCM {9,34,3}	DGPS (Code diff)	41, 3(10)
RTK RTCM {18,19,22,3}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	18, 19, 22(10), 3(10)
RTK RTCM {20,21,22,3}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	20, 21, 22(10), 3(10)
RTK RTCM {18,19,23,24}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	18, 19, 23(10), 24(10)
RTK RTCM {20,21,23,24}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	20, 21, 23(10), 24(10)
RTK RTCM3 GD min	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1033(10), 1003
RTK RTCM3 GD full	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1033(10), 1004
RTK RTCM3 GGD min	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1033(10), 1003, 1011
RTK RTCM3 GGD full	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1033(10), 1004, 1012
RTK RTCM3 GGD full eph	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1033(10), 1004, 1012, 1019, 1020
RTK RTCM3 3.0	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1003 , 1011, 1005 (10), 1007 (10), 1033 (10)
RTK CMR {10,0,1}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	10, 0, 1(10)
RTK CMR+ {10,0,9}	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	10, 0, 9(10)
RTK JPS min	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	RT, GT, NT, SI, rc, cp, 2r, 2p, BI, ET
RTK JPS max	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	RT, GT, NT, SI, rc, cp, DC, EC, 2r, 2p, D2, E2, BI, ET
RTK RTCM3 MSM	RTK float (Phase diff) RTK fixed (Phase diff) Fixed	1006(10), 1008(10), 1074, 1084, 1094, 1104, 1114, 1124

Appendix 2. TCL-script example

The script should start from string: `#!/usr/bin/tcl`.

Below is the example of the script. It requests the receiver *baud rate* for serial *a* and checks that it is *115200*.

```
#!/usr/bin/tcl

puts "Checking of baud rate of serial port a. Expected value is 115200"

set result [send "print,/par/dev/ser/a/rate"]

#   variable 'result' contains result of operations 'send'
#   [lindex $result 0] shows error code. If code is "none" it means no errors.
if {[lindex $result 0] == "none"} {
#   Error code is 'none'
#   [lindex $result 1] contains answer on command print,/par/dev/ser/a/rate if
  {[lindex $result 1] == "115200"} {
puts [concat "Correct baut rate: " [lindex $result 1]]
} else {
puts [concat "Incorrect baut rate: " [lindex $result 1]]
}
} else {
#   # Error code is NOT 'none', [lindex $result 1] contains error text
puts [concat "Error while read baud rate. Error code '" [lindex $result 0] "' "
[lindex $result 1]]
}

puts "Script stopped"
```

Web Resources

1. JAVAD GNSS web site: www.javad.com
2. GNSS Receiver External Interface Specification: http://www.javad.com/downloads/javadgnss/manuals/GREIS/GREIS_Reference_Guide.pdf
3. JAVAD GNSS update page: <http://javad.com/jgnss/support/update.html>
4. NetBrowser: <http://www.javad.com/jgnss/products/software/netbrowser.html>
5. Real-Time Logger: <http://www.javad.com/jgnss/products/software/rtlogger.html>
6. Kvaser: <https://www.kvaser.com/>



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