SiRFLive FAQ

1. REVISION HISTORY

REVISION	DATE	CHANGE DESCRIPTION	Author
1.0	November 18, 2015	First release	Mark K.
1.1	January 20, 2016	Creating Log files	Mark K.
1.2	February 29, 2016	Checksum remark	Mark K.
1.3	May 24, 2016	5Hz – NMEA command	Mark K.
1.4	July 21, 2016	Section2 - Host baud rate change comment Section6 – OSP commands for constellation change	Mark K.
1.5	December 26, 2016	Section6 – addition of OSP command for GLONASS only	Mark K.
1.6	February 19, 2017	Reset and Loopit test update	Mark K.

***All performance tests must be performed in one of the following conditions:

    a. Outdoors, Under open skies.

    b. Under GPS repeater

2. Changing the Baud Rate

After the connection with a module is established, sometimes there is a need to change the baud rate. To do this, follow these steps:

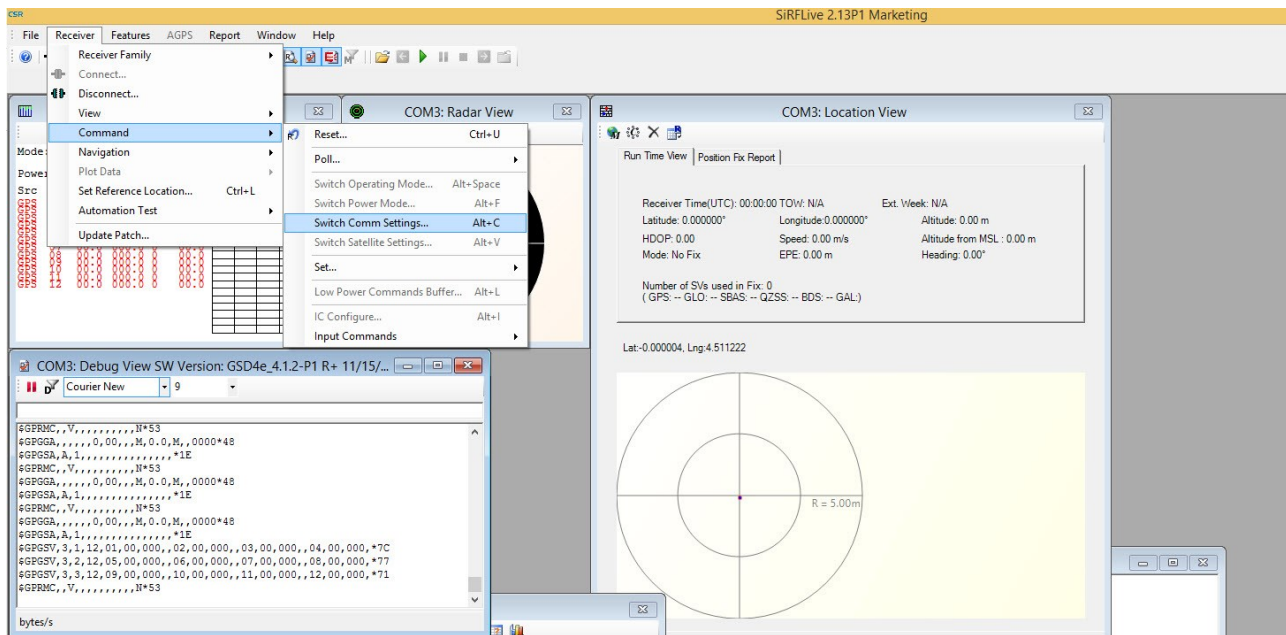1.Click on the top menu on "Receiver" -> Command -> Switch Comm Settings (see Figure 1).

Figure 1 – Selecting Switch Comm Settings

2. A "Switch Comm Settings" window will appear (See figure 2).
   a. Choose "Switch Baud"
   b. Click on the arrow button and choose the desired baud rate.
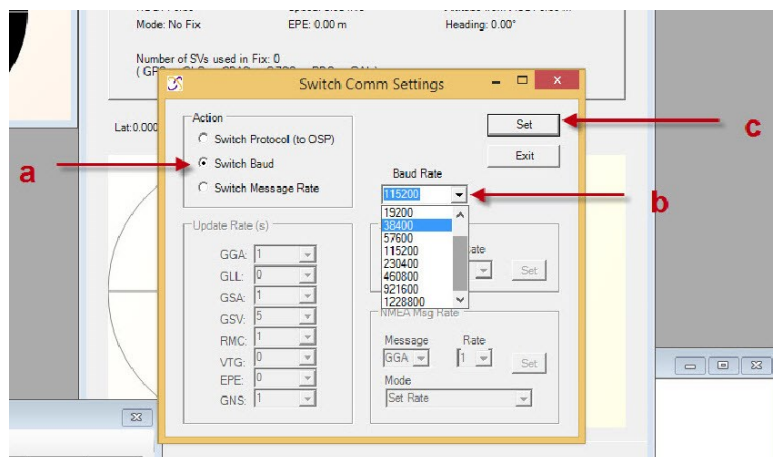   c. Click on "Set".

Figure 2 – Switching Comm Settings – Baud Rate

Please notice: When you change the baud rate of module, you should also change baud rate of

the host. SiRFLive application automatically changes the baud rate on host side.
The baud rate of ROM-based module will return to default after a power cycle.

3. Changing communication protocol NMEA / OSP

In case you want to switch communication protocol after the connection with a module is established, follow these steps:

1.Click on the top menu on "Receiver" -> Command -> Switch Comm Settings (see Figure 1).

2. A "Switch Comm Settings" window will appear (See figure 3)

    a. Choose "Switch Protocol". Please notice: when the current protocol is NMEA, in this line will appear "Switch Protocol (to OSP)". When the current protocol is OSP, in this line will appear   "Switch Protocol (to OSP)".

    b. Click on the arrow button and choose the desired baud rate (for the new protocol)
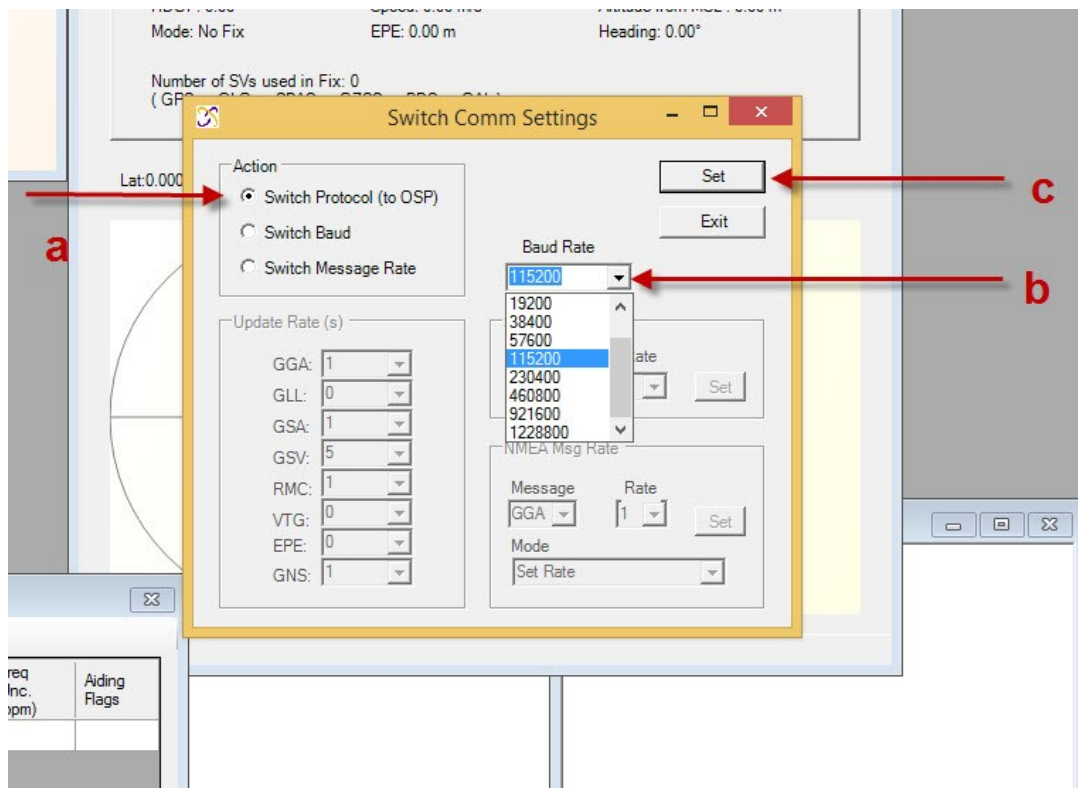   c. Click on "Set".

Figure 3 – Switching Comm Settings – Protocol

4. Setting 5 Hz Navigation

The module starts up by default at 1 Hz frequency. It is possible to switch to 5 Hz frequency by the following steps:

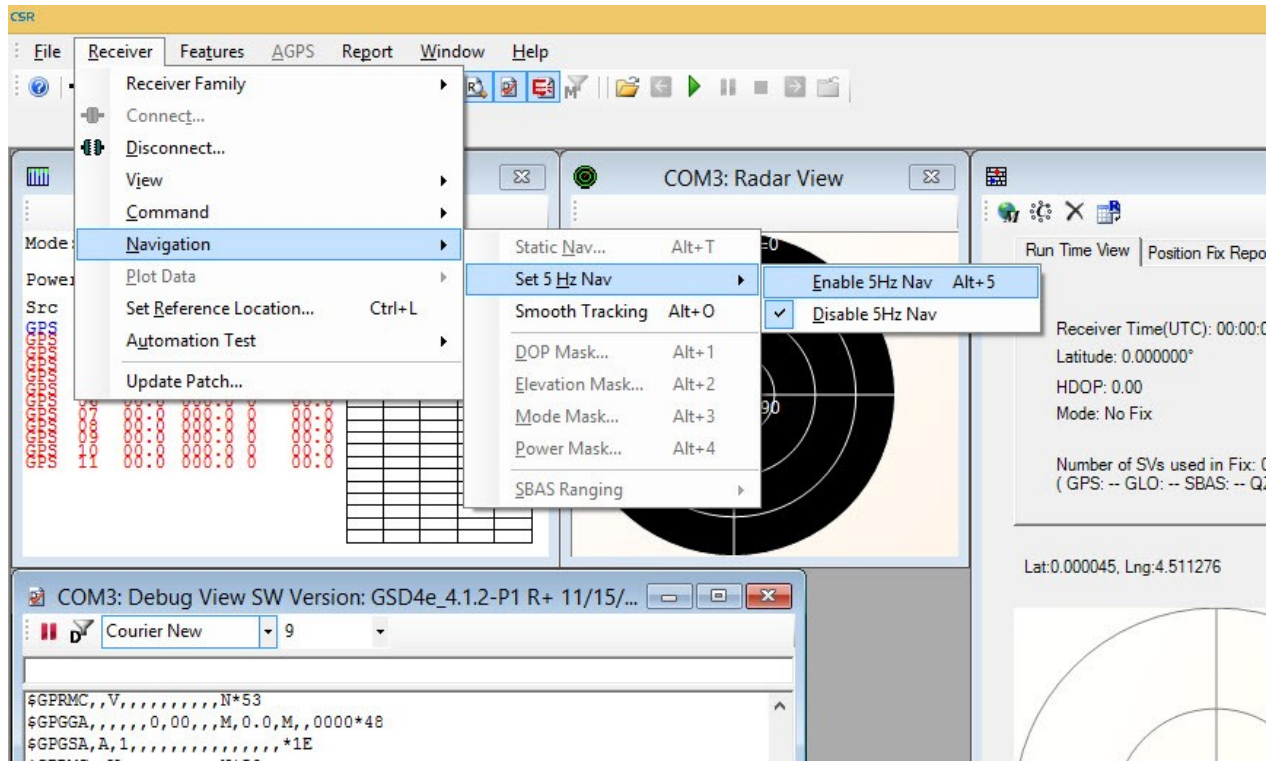1.Click on the top menu on "Receiver" -> Navigation -> Set 5 Hz Nav -> Enable 5Hz Nav (see Figure 4).

Figure 4 – Switching Navigation Settings – 5 Hz

2.You will get the following error (see figure 5) -

Figure 5 – 5Hz navigation warning

In 5 Hz mode there are many more messages compared to 1 Hz mode, to receive all messages it is recommended to increase the baud rate from 4800.

Press "Yes" to continue. From this point you will get navigation messages at 5 Hz frequency.

3. To make sure you get messages in 5 Hz frequency, take a look at the NMEA RMC/GGA messages. In 5 Hz mode the time stamp has fractions of seconds (.000 / .200 / .400 / .600 / .800) , 5 messages per second, as you can see
in figure 6.


```
COM3: Debug View SW Version: GSD4e_4.1.2-P1 R+ 11/15/2011 319-Nov 15 2011-23:04:55

Courier New        9

$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPGSV,3,1,12,09,55,326,43,23,54,038,43,07,52,227,42,03,44,131,38*77
$GPGSV,3,2,12,06,32,282,39,16,27,068,36,30,19,222,35,32,10,129,32*73
$GPGSV,3,3,12,02,08,316,33,01,03,174,31,05,64,138,,17,63,348,*77
$GPRMC,151848.800,A,3159.1832,N,03454.6904,E,0.13,29.92,291115,,,A
$GPGGA,151849.000,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*6C
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151849.000,A,3159.1832,N,03454.6903,E,0.09,29.92,291115,,,A
$GPGGA,151849.200,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*6E
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151849.200,A,3159.1832,N,03454.6903,E,0.03,29.92,291115,,,A
$GPGGA,151849.400,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*68
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151849.400,A,3159.1832,N,03454.6903,E,0.11,29.92,291115,,,A
$GPGGA,151849.600,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*6A
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151849.600,A,3159.1832,N,03454.6903,E,0.03,29.92,291115,,,A
$GPGGA,151849.800,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*64
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPGSV,3,1,12,09,55,326,43,23,54,038,43,07,52,227,42,03,44,131,38*77
$GPGSV,3,2,12,06,32,282,39,16,27,068,36,30,19,222,35,32,10,129,32*73
$GPGSV,3,3,12,02,08,316,33,01,03,174,31,05,64,138,,17,63,348,*77
$GPRMC,151849.800,A,3159.1832,N,03454.6903,E,0.03,29.92,291115,,,A
$GPGGA,151850.000,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*64
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151850.000,A,3159.1832,N,03454.6903,E,0.03,29.92,291115,,,A
$GPGGA,151850.200,3159.1832,N,03454.6903,E,1,09,0.9,77.3,M,16.8,M,,0000*66
$GPGSA,A,3,09,23,07,03,06,16,30,32,02,,,,1.6,0.9,1.3*33
$GPRMC,151850.200,A,3159.1832,N,03454.6903,E,0.22,29.92,291115,,,A

bytes/s
```

Figure 6 – NMEA 5Hz navigation messages

NMEA message to enable 5 Hz navigation: `$PSRF103,00,6,00,1*22.`

After setting 5Hz navigation with NMEA command – please make sure that you indeed have 5Hz NMEA flow, as described in section 3 / figure 6.

For more information, please refer to OriginGPS NMEA reference manual.

5. Enable / Disable different types of messages

In case you want to enable / disable certain types of messages, it is done through manual input commands.

To input a command, click on the top menu on: Receiver -> Command -> Input Commands -> User Defined Message.
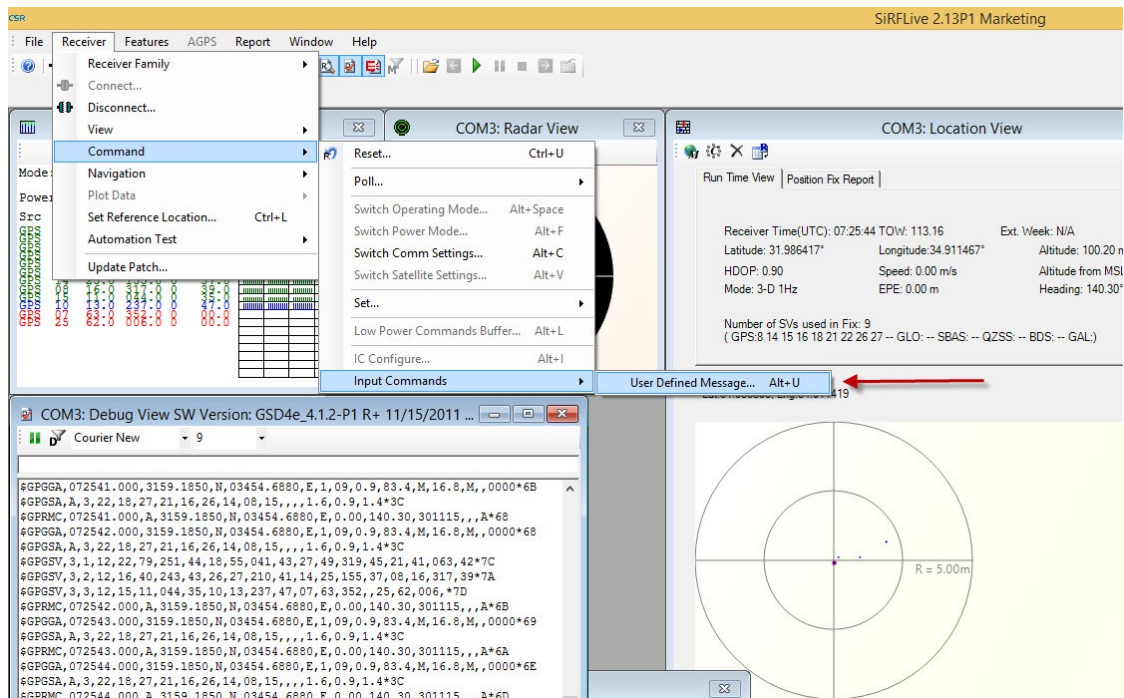
(See figure 7) .

Figure 7 – Input Commands – User Defined Message

A "User Defined Message" window will open (see figure 8). In the left side of the window - choose the protocol, in our case – NMEA. In the right upper side – input the command (see the specific commands bellow). After you enter the command – press the "Send" button.
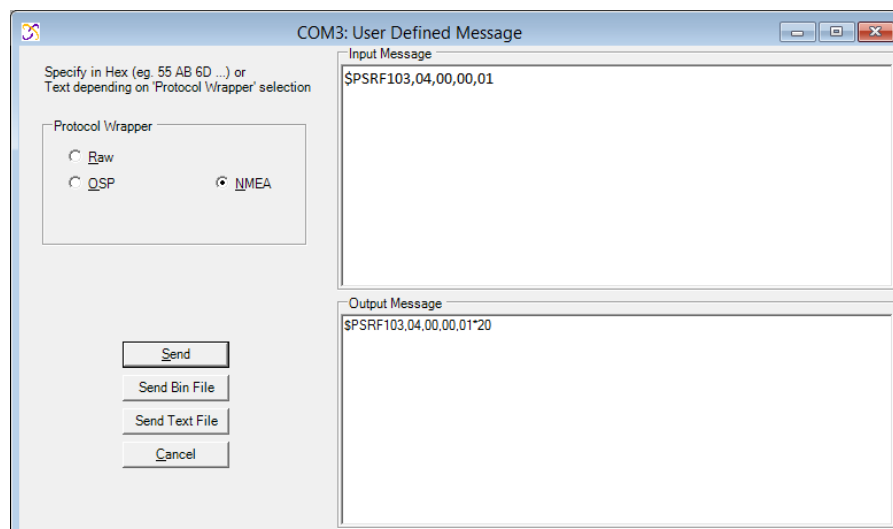
Figure 8 - User Defined Message window

Please notice: Every NMEA / OSP input message must end with a checksum.

When you enter a message through GUI with protocol wrapper – it adds checksum automatically.

If you enter a raw message – use checksum calculator and add checksum in the end of the message.

In this example the checksum is added for every message.

5.1 Enable / Disable RMC messages
To disable RMC messages, enter the command: $PSRF103,04,00,00,01*20
To enable RMC messages, enter the command: $PSRF103,04,00,01,01*21

5.2 Enable / Disable GGA messages
To disable GGA messages, enter the command: $PSRF103,00,00,00,01*24
To enable GGA messages, enter the command: $PSRF103,00,00,01,01*25

5.3 Enable / Disable GLL messages   (by default – GLL messages are disabled)
To disable GLL messages, enter the command: $PSRF103,01,00,00,01*25
To enable GLL messages, enter the command: $PSRF103,01,00,01,01*24

5.4 Enable / Disable GSA messages

To disable GSA messages, enter the command: $PSRF103,02,00,00,01*26
To enable GSA messages, enter the command: $PSRF103,02,00,01,01*27

5.5 Enable / Disable GSV messages

To disable GSV messages, enter the command: $PSRF103,03,00,00,01*27
To enable GSV messages, enter the command: $PSRF103,03,00,01,01*26

5.6 Enable / Disable ZDA messages (by default – ZDA messages are disabled)

To disable ZDA messages, enter the command: $PSRF103,08,00,00,01*2C
To enable ZDA messages, enter the command: $PSRF103,08,00,01,01*2D

5.7 Enable / Disable GNS messages (only for modules supporting GLONASS)

To disable GNS messages, enter the command: $PSRF103,07,00,00,01*23
To enable GNS messages, enter the command: $PSRF103,07,00,01,01*22

5.8 Enable / Disable EPE messages (only for modules supporting GLONASS)
                                 (by default – EPE messages are disabled)

To disable EPE messages, enter the command: $PSRF103,09,00,00,01*2D
To enable EPE messages, enter the command: $PSRF103,09,00,01,01*2C

**Since the units are ROM based only, after every Power Cycle the settings would return to default.

***For more information regarding PSRF103 message please refer to OriginGPS NMEA reference.

6. Enable / Disable GLONASS (only for modules supporting GLONASS)

1.Transform the module to OSP protocol. (Please refer to section 2 for the relevant steps)

2. When in OSP protocol, press the "Set Location Tech Constrains" button on the top panel (See figure 9).
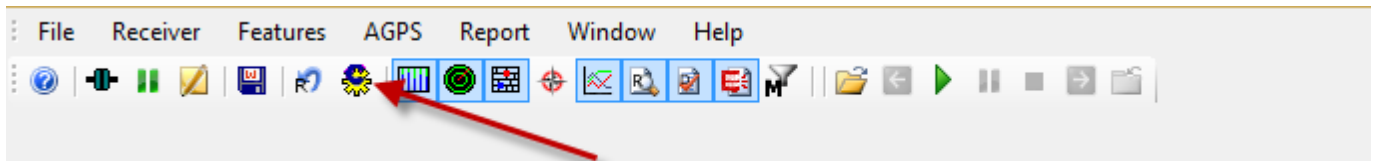

Figure 9 - "Set Location Tech Constrains" button

3. A Set Satellite settings window will open (see figure 10). In this window you can choose the needed satellite constellation – GPS / GPS + GLONASS / GPS + BDS.
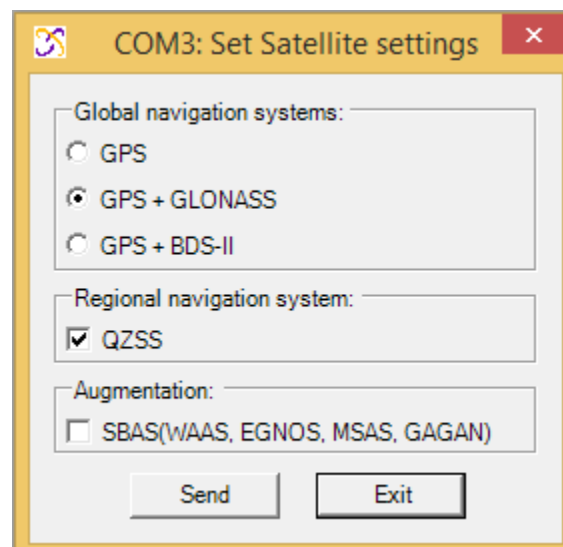

Figure 10 – Set Satellite settings window

4. Click on the "Send" button for the change to effect.

5. For advanced satellite constellation setting, go to Reciever on top menu ->
Command -> Set -> Set Location Tech Constraints (see figure 11).
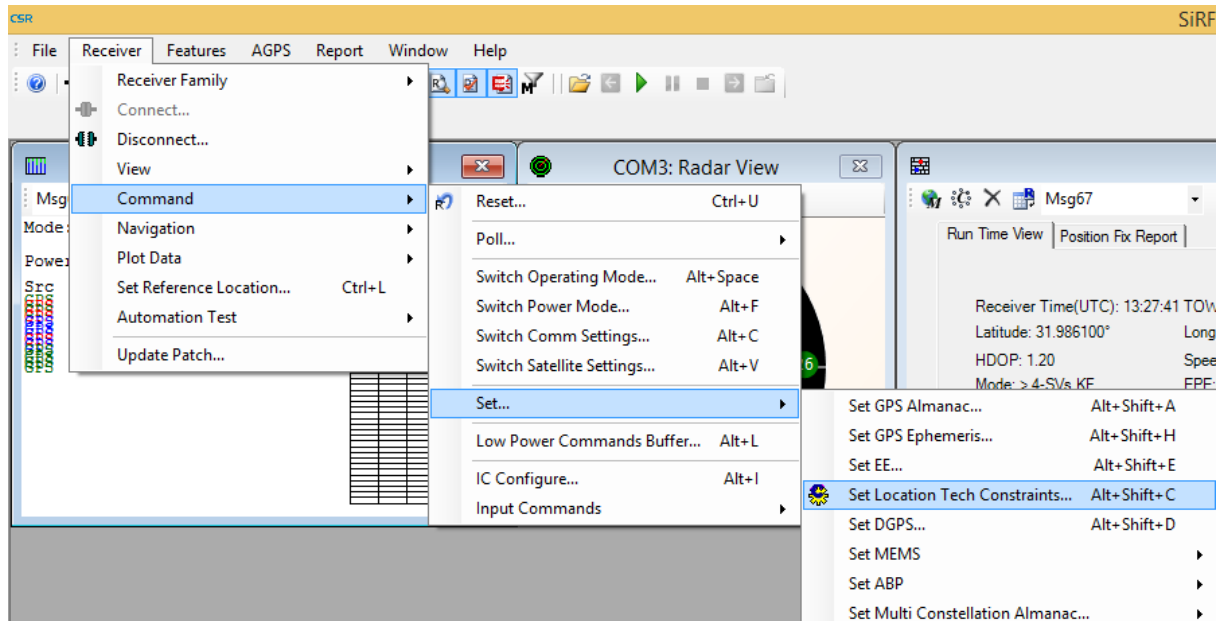
Figure 11 – "Set Location Tech Constraints" menu

A "Set Location Technology Constraints" window will open (see figure 12). Make the desired changes in this window and click the "Send" button / press "Exit" button to exit without changes.
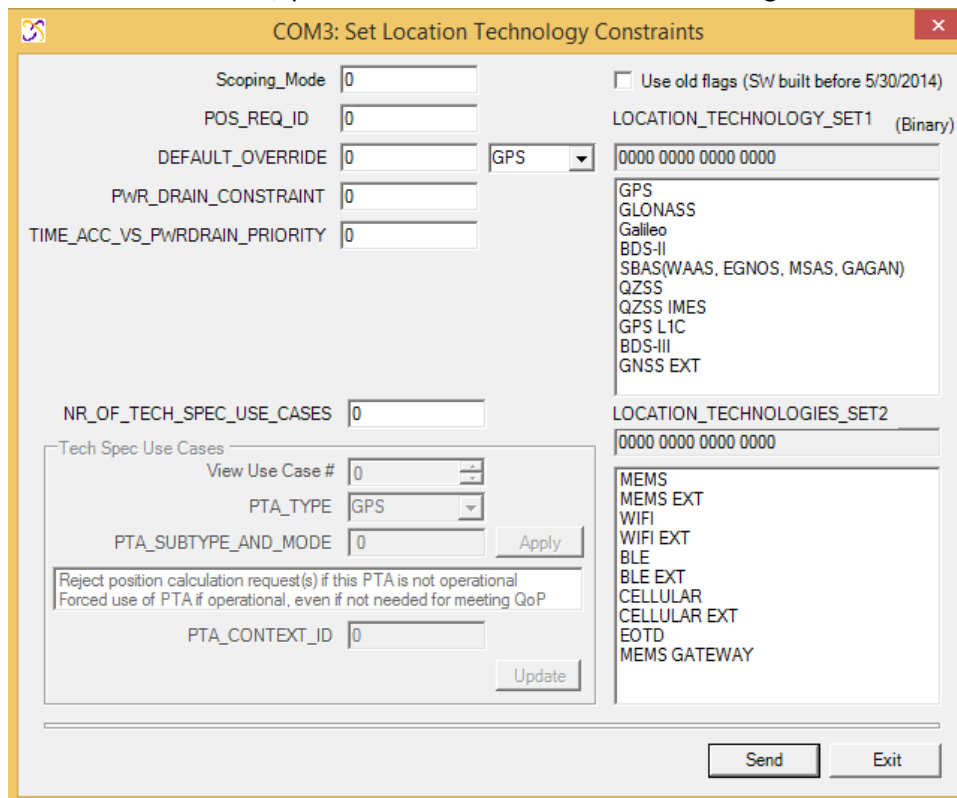
Figure 12 – "Set Location Technology Constraints" window

OSP message for GPS only:

```
A0 A2 00 0E DE 10 00 00 00 00 00 21 00 00 00 00 00 00 01 0F B0 B3
```

OSP message for GPS + GLONASS:

```
A0 A2 00 0E DE 10 00 00 00 00 00 23 00 00 00 00 00 00 01 11 B0 B3
```

OSP message for GLONASS only:

```
A0 A2 00 0E DE 10 00 00 00 01 00 02 00 00 00 00 00 00 00 F1 B0 B3
```

7. Creating NMEA / OSP log file

The method for creating NMEA / OSP log .txt file is the same for both protocols.

1. While your module is configured to the desired protocol – go in the top menu to:
File -> LogFile -> Start. See figure 13.
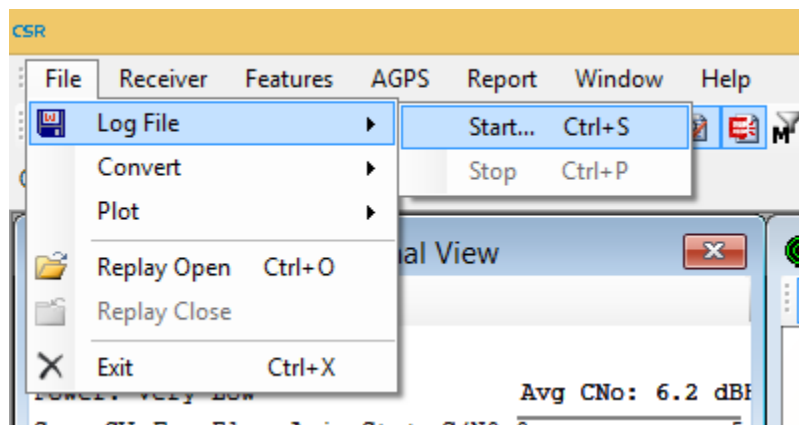
Figure 13 – Start a log file in top menu

2. A "Log File" menu window will open –
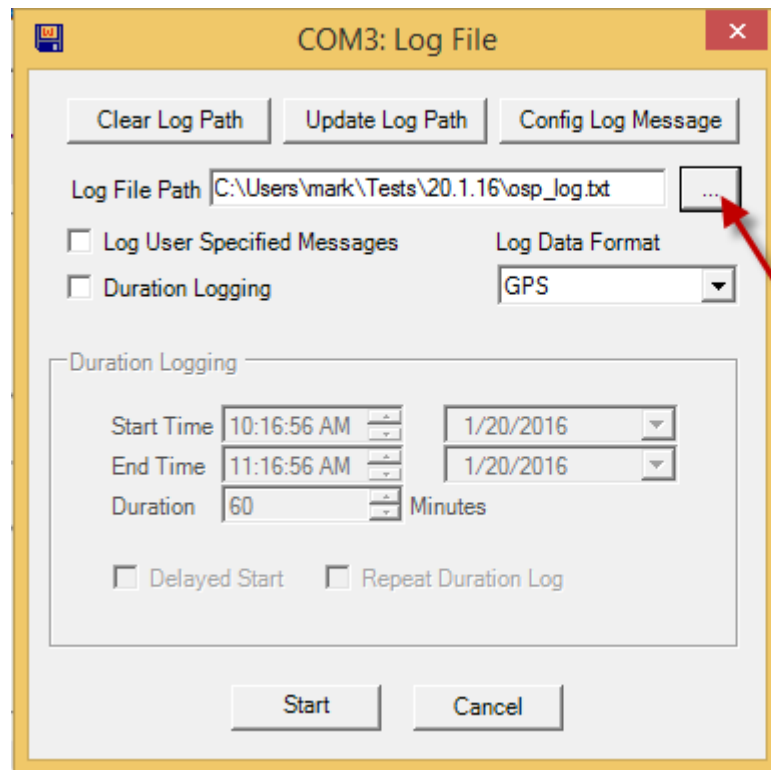
Figure 14 – log file menu

3. Click on the "…" square in the "Log File Path" line – marked with a red error on figure 14, in order to change the log file name, its location (path) and type. A .txt file type is usually best suitable type for a log fie.

4. Click on the "Start" button on the bottom of the log file menu (figure 14).

5. When you want to stop recording the log into a file, click on the top menu:

File -> Log File -> Stop. See figure 15.
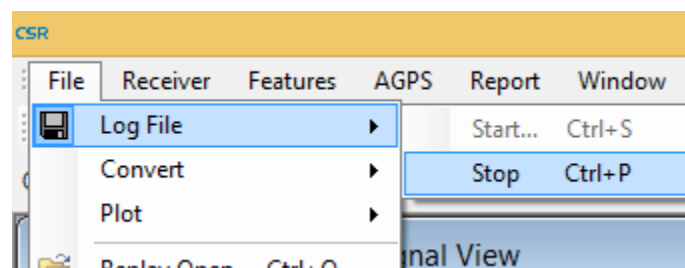
Figure 15 – Stop recording the log

8. Performing Reset

In SiRFLive GUI it is possible to perform different types of reset in both NMEA and OSP protocols. In any protocol, to open the reset menu – go to the top menu Receiver -> Command -> Reset
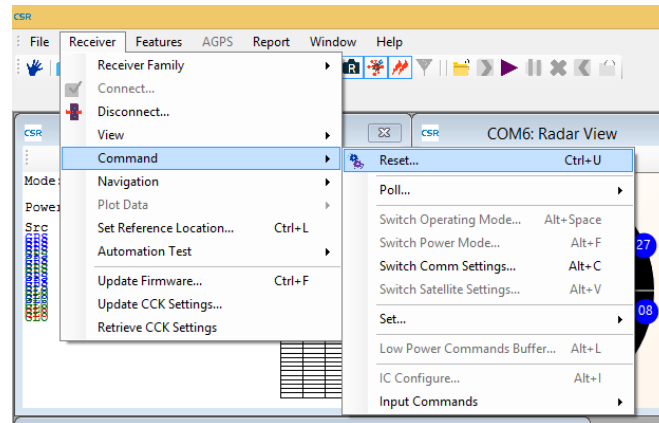
Figure 16 – Opening Reset Menu

In the reset menu window you can choose the type of reset – Factory / Cold / Warm with init / Warm without init / Hot. (see figure 17, Reset Mode surrounded in red).

For Warm Start with init – you have a separate section, in which you can define the current position for input, or use current fix position as aiding data for warm start with init. You can also check the "Use current PC time" option, for time aiding.
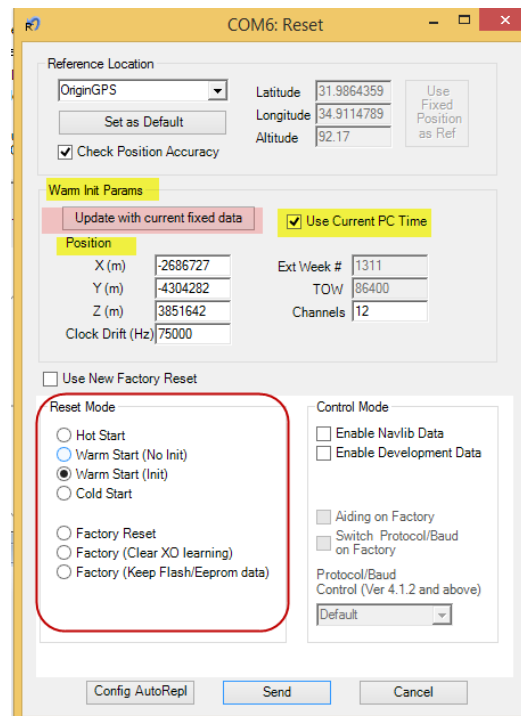
Figure 17 – Reset Menu

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Press the "Send" key on the buttom of Reset menu to perform the selected reset.

8.1 Loopit Test

In order to perform a series of reset tests, and receive min, max and average TTFF values – you should use the "Loopit Test" option.
On top menu, go to Receiver->Automation Test -> Loopit. See figure 18.
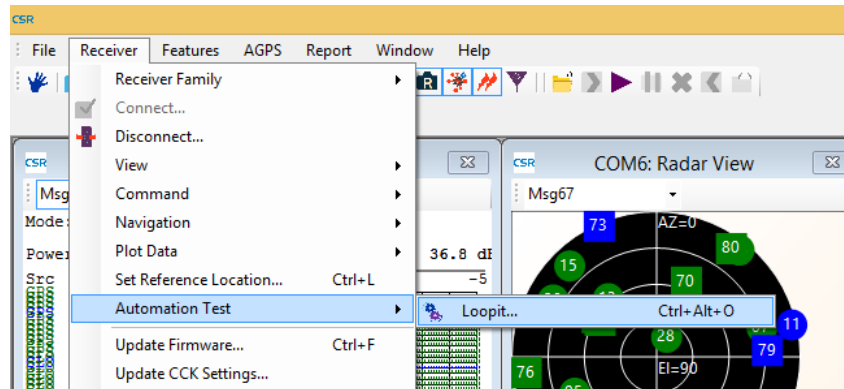
Figure 18 – Opening Loopit Test Menu

You will receive the following window (see figure 19) – Position accuracy confirmation.
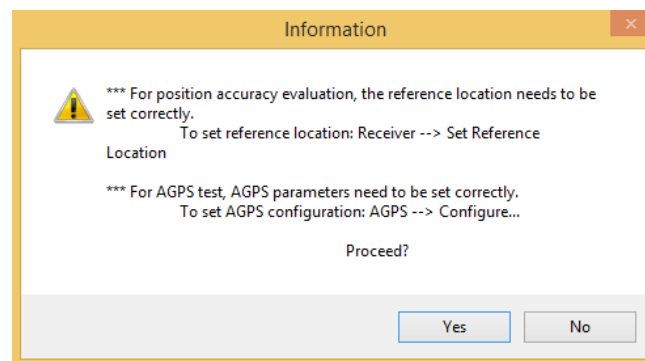

Figure 19 – Position Accuracy Confirmation

In case you want to evaluate position accuracy during the reset tests – go to Receiver->Set Reference Location and set your position.
Click "Yes" on the Position Accuracy Confirmation window.
You will have a loopit test menu opened – see figure 20.
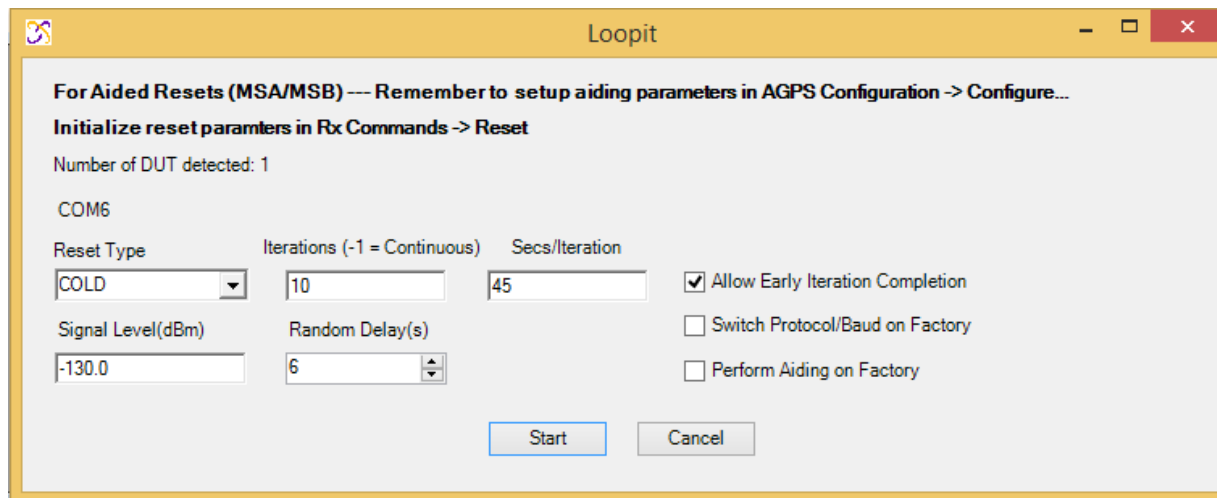
Figure 20 – Loopit test menu

Reset Type – select the required reset type. Cold / Warm with init / Warm without init / Hot / Factory reset.
Iterations – the number of required tests.
Sec/Iteration – max. duration for every test. After this period of time, in case there is no fix – the test will be terminated.

Signal level –should remain -130.dBm.

Random Delay – delay between iterations will be within the limits of this parameter.
I
It is recommended to check the "Allow Early Iteration Completion", or else every test will run for the time period set in the "Secs/Iteration" field, even if the module is already has fix.

Press "Start" to start the test.

You will be asked if you want to make a log file – figure 21.
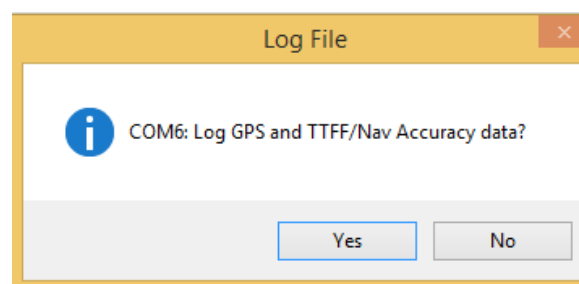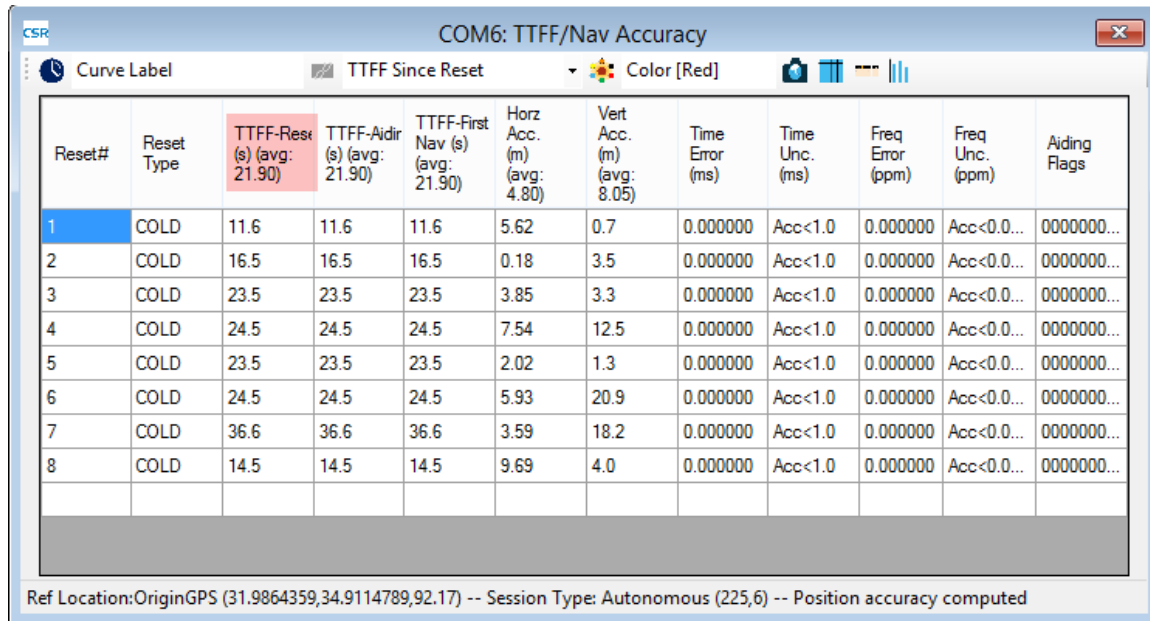
Figure 21 – Log File confirmation

You can press either "Yes" or "No", and the test will start.

During the test you will have a TTFF/Nav Accuracy window, which summarize the test results – TTFF and accuracy in a table.

A the top of the table you will have the average TTFF of all tests performed so far. See figure 22 – highlighted in pink.

Figure 22 – Loopit Test Results