SiRFLive User Manual

Revision 1.46
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1. OVERVIEW

This document is the user manual for SiRFLive and will discuss the available selections and how to interpret and use them.

1.1. Purpose

SiRFLive is a software tool built to interact with SiRF GPS receivers for validation and characterization.

High level objectives:

1) SiRFLive is designed to work with the communication protocols used by SiRF products: 4t, 4e, and SoC; including NMEA and OneSocket protocols (OSP).

2) SiRFLive is configured to automatically run 3GPP tests when a Spirent STR4500 simulator is used.

1.2. Scope

The SiRFLive GUI for manual control is covered. The screenshots and windows associated with SiRFLive are discussed and explained.

2. REFERENCES

Any abbreviations or acronyms used in this manual will be listed below.

2.1. Abbreviations and Acronyms

Following is a list of abbreviations and acronyms used throughout this document:

Acronym	Definition
3GPP	3rd Generation Partnership Project
ABP	Almanac Based Position
ASCII	American Standard Code for Information Interchange
CSV	Comma Separated Value
DOP	Dilution of Precision
EE	Extended Ephemeris
HW	Hardware
GPS	Global Positioning System
GUI	Graphic User Interface
I^2C	Inter-Integrated Circuit
LLA	Latitude, Longitude, Altitude
MEMS	Micro Electrical Mechanical Systems
MSA	Mobile Station Assisted
MSB	Mobile Station Based
NMEA	National Marine Electronics Association
OSP	One Socket Protocol
PPM	Parts Per Million
RS232	Recommended Standard 232, serial communication standard
RF	Radio Frequency
Rx	Receiver
SoC	System on a Chip
SRS	Software Requirements Specification
SV	Space Vehicle
TCP/IP	Transmission Control Protocol/Internet Protocol
TTB	Time Transfer Board
TTFF	Time To First Fix
TOW	Time of Week (displayed in seconds)
UART	Universal Asynchronous Receiver Transmitter
USB	Universal Serial Bus

Acronym	Definition
3GPP	3rd Generation Partnership Project
ABP	Almanac Based Position
ASCII	American Standard Code for Information Interchange
UTC	Universal Time, Coordinated
XML	Extended Markup Language

3. INSTALLING SIRFLIVE

Following are the steps and requirements necessary to install SiRFLive on a local PC.

3.1. Software Requirements

Minimum software requirement:

- Win XP
- .NET Framework 2.0.
  - This will be automatically installed by the SiRFLive package if necessary (internet connection is required)

3.2. Hardware Requirements

Minimum PC requirements:

- Pentium CPU 2GHz
- 1GB of RAM
- 100 MB hard drive

Recommended:

- 2 GB of RAM
- 1280 x 1024 screen resolution
- USB Dual Drivers CDM 2.04.16 or later

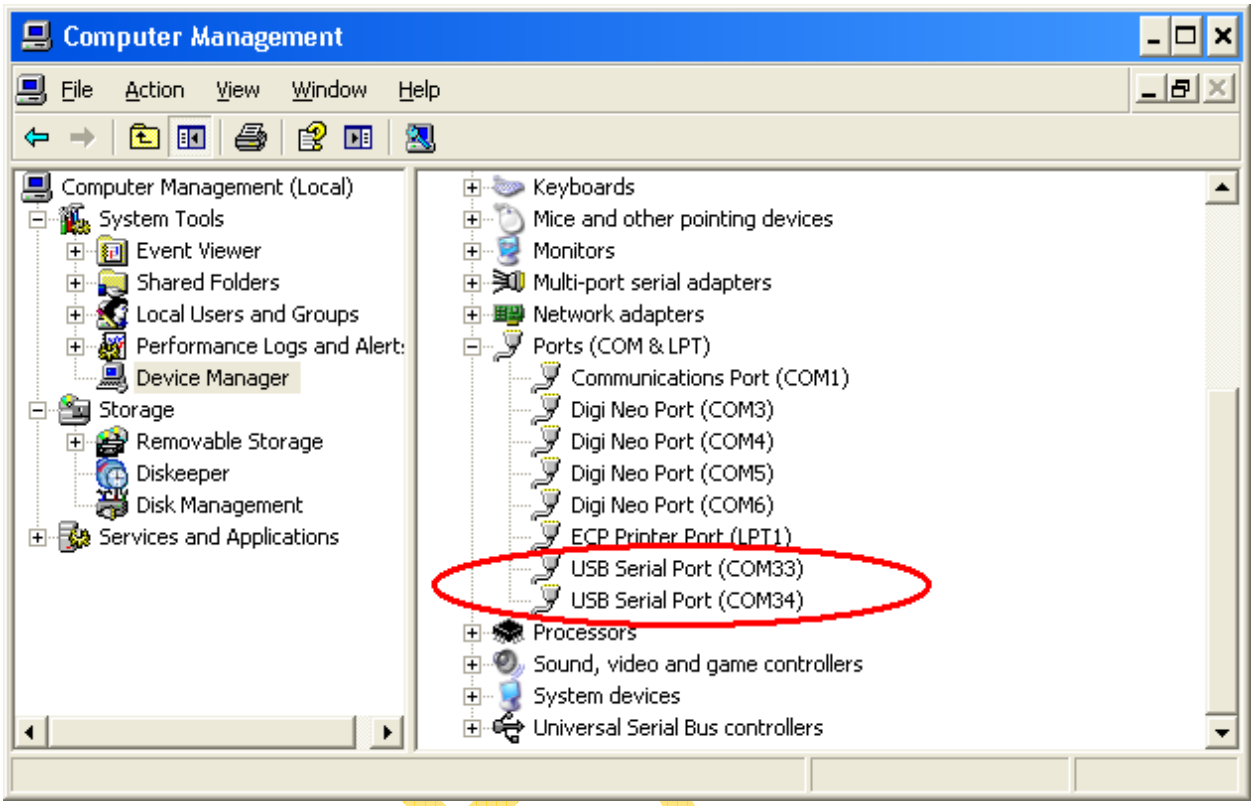
3.2.1. Connecting Rx to PC

The quickest way to connect the Rx to the PC is through the use of a USB cable connection.

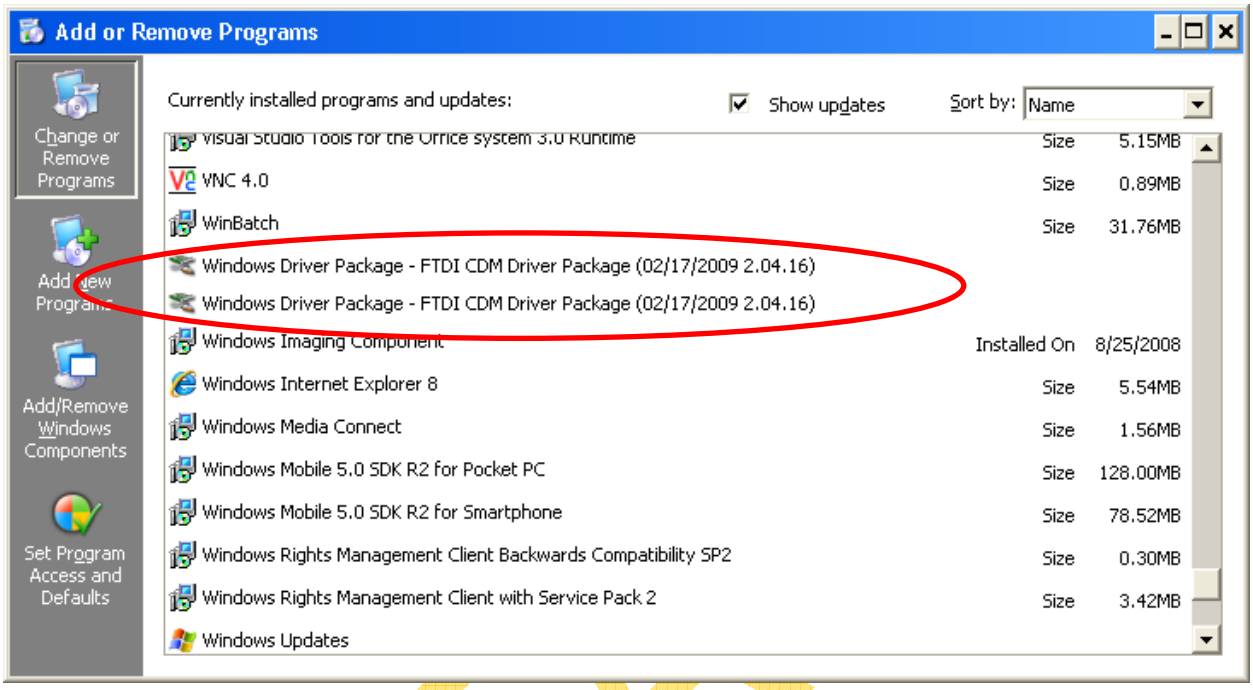
3.2.1.1.USB

To connect the Rx to the PC using a USB cable, special USB drivers are necessary. Install the application ***CDM 2.04.16.exe*** or later version (by double-clicking on the .exe) and then plug the USB "B" end into the Rx and the USB "A" end into an available port on the PC. Windows will search for the new device and install the DualRS232 drivers.

To confirm new COM port numbers for the USB drivers go to the Device Manager window. Right-click on *My Computer*, select *Manage*, and click on *Device Manager* in the navigation pane. Then expand the Ports (COM & LPT) menu tree item to see the available ports.



To uninstall the drivers, go to the Add or Remove Programs window [Start | Settings | Control Panel | Add or Remove Programs] and listed will be the drivers as shown below:



3.3. Installer

Run the most current *Setup.exe* with the *SiRFLiveInstaller.msi* that is in the Customer Zone or that was given to you by SiRF and follow the instructions to install SiRFLive to the local machine. Most users should allow SiRFLive to install to the default location - C:\Program File\SiRF\SiRFLive, but it can be changed if necessary.

4. RECEIVER COMMUNICATION

Once SiRFLive is installed, open the SiRFLive application:

- By double-clicking the desktop icon.

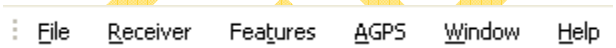
- Through the Start | Programs | SiRF | SiRFLive link.
- By running the executable program (if installed in the default location) *C:\Program File\SiRF\SiRFLive\Release\SiRFLive.exe.*

To establish GPS receiver communication over COM Port(s) via multiple protocols (OSP, NMEA) if a serial port communication window is not already open, select Receiver | Connect or press the Receiver Settings button on the Main Tool Bar to open a connection.

4.1. Main Interface

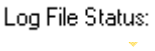
Below is the main interface that the user will encounter upon opening SiRFLive.

The *Main Menu Bar*



The *Main Tool Bar*

The *Log File Status Bar*



located right below the Main Tool Bar

4.2. Connecting with the Receiver

To connect the Rx the user can utilize the Main Menu with Receiver | Connect

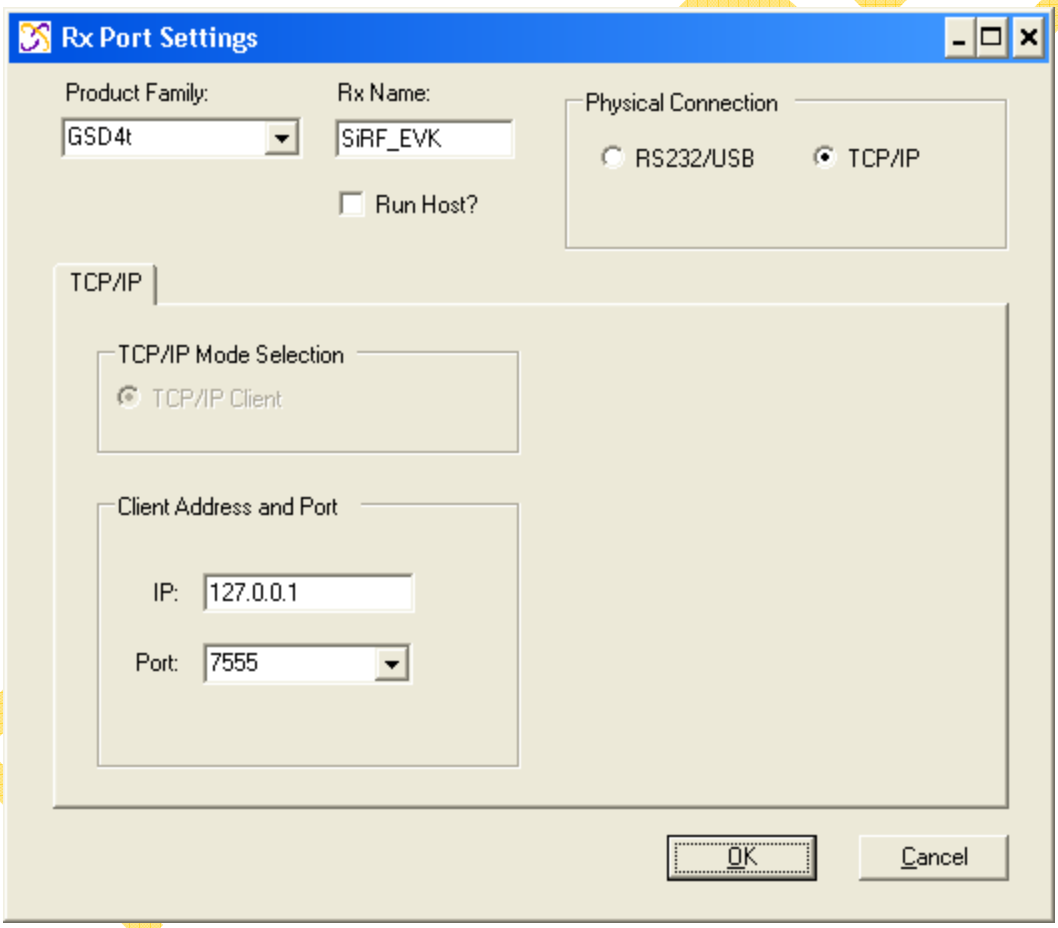
or on the Main Tool Bar  or by selecting the Receiver Settings button  on the Tool Strip.

4.3. Tool Strip

The tool strip has icon buttons for quick access to the most used features of SiRFLive.

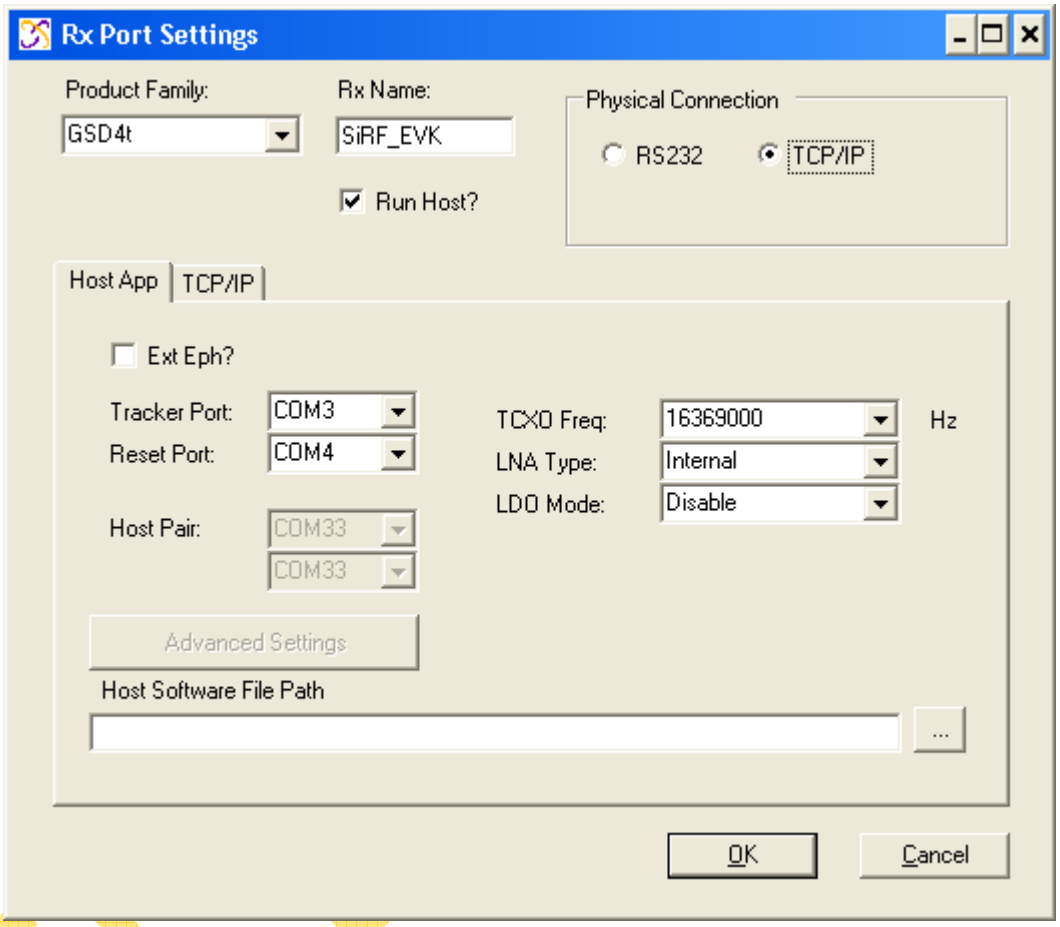
4.3.1. Receiver Settings

 on the Main Tool Bar will open the following dialog window.



4.3.1.1.Host App

If the Rx requires a host app to be run for the tracker, make sure the 'Run Host?' checkbox is checked. Default is Run Host unchecked, TCP/IP selected using port 7555.



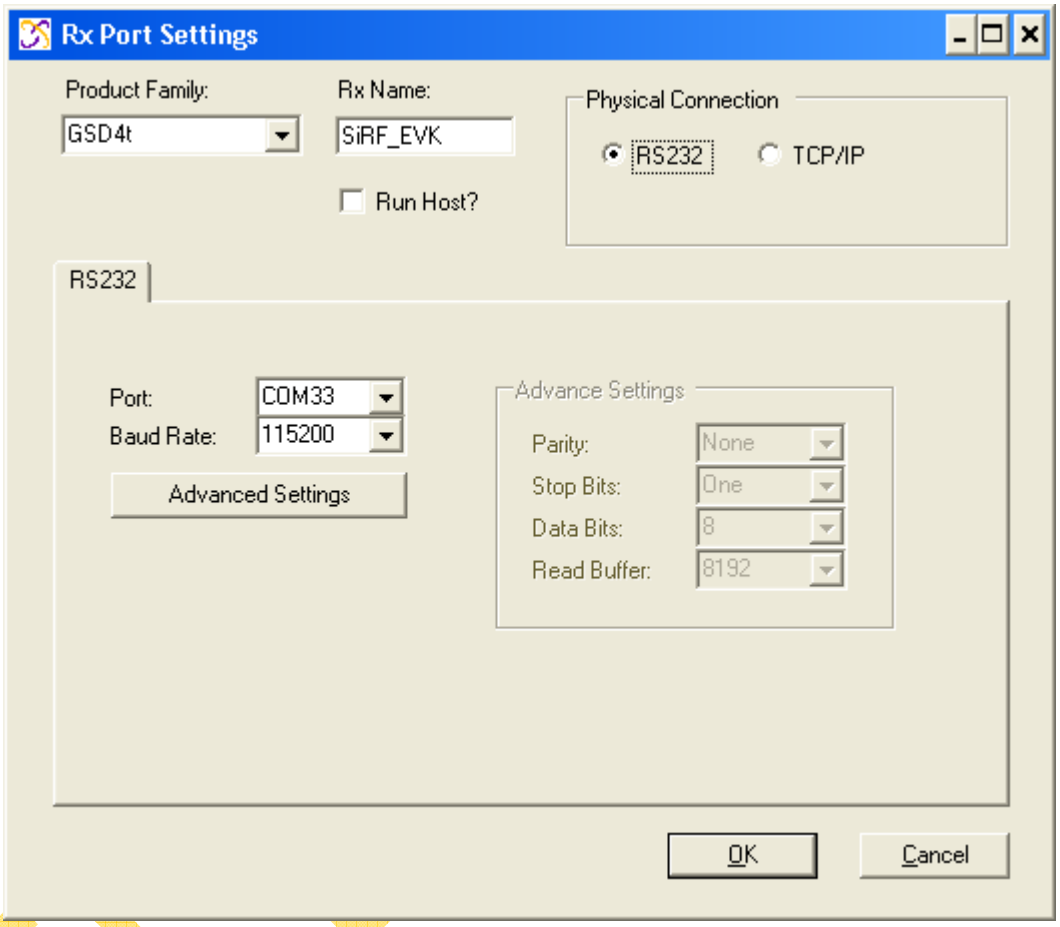
The user must then select the Host Software File Path by entering the full path name in the text box or by navigating to the host software by pressing the ellipse button to the right of the text box.

4.3.1.1.1.RS232

One of the ways to interface with the Rx with SiRFLive is by using a RS232 connection. This could be a serial com port or a USB connection.

4.3.1.1.1.1.Common Settings

Select the RS232 radio button to use UARTs. Set the COM port and baud rate.

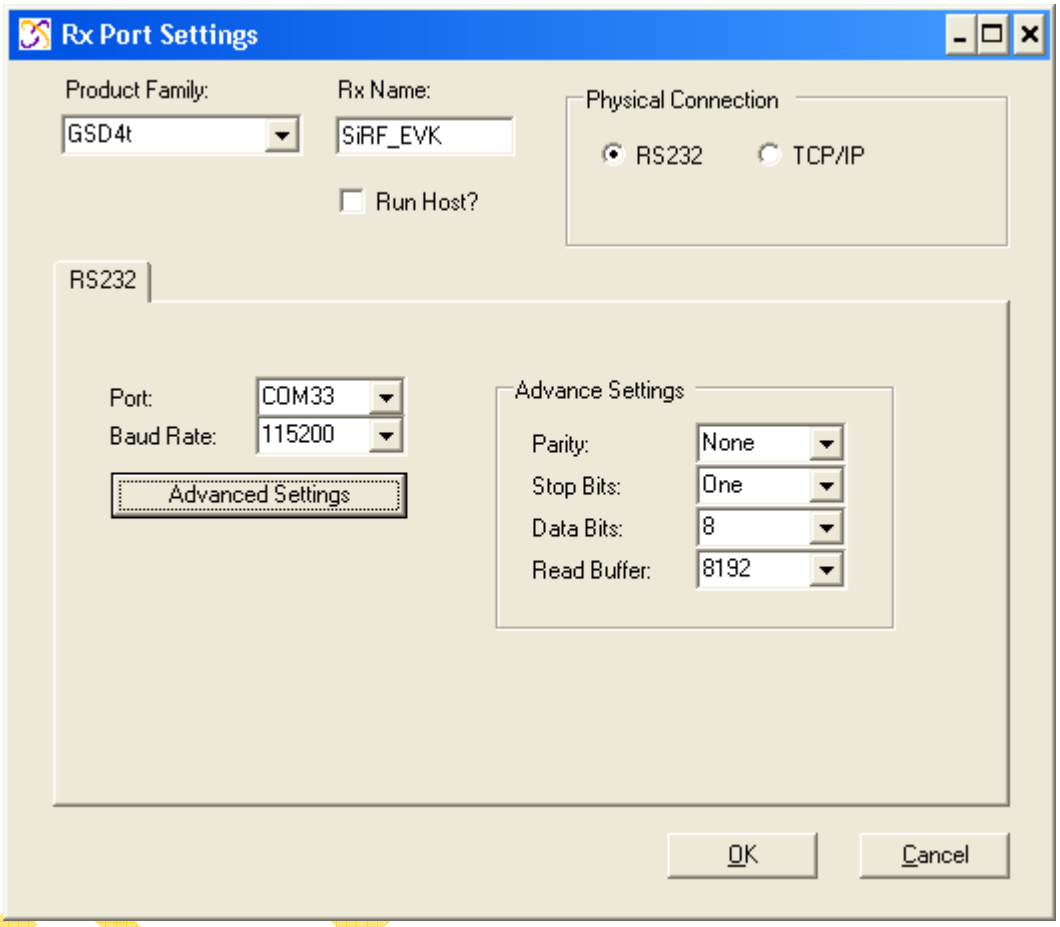


4.3.1.1.1.2.Advanced Settings

Pressing the Advanced Settings button will enable the Advance Settings group of items

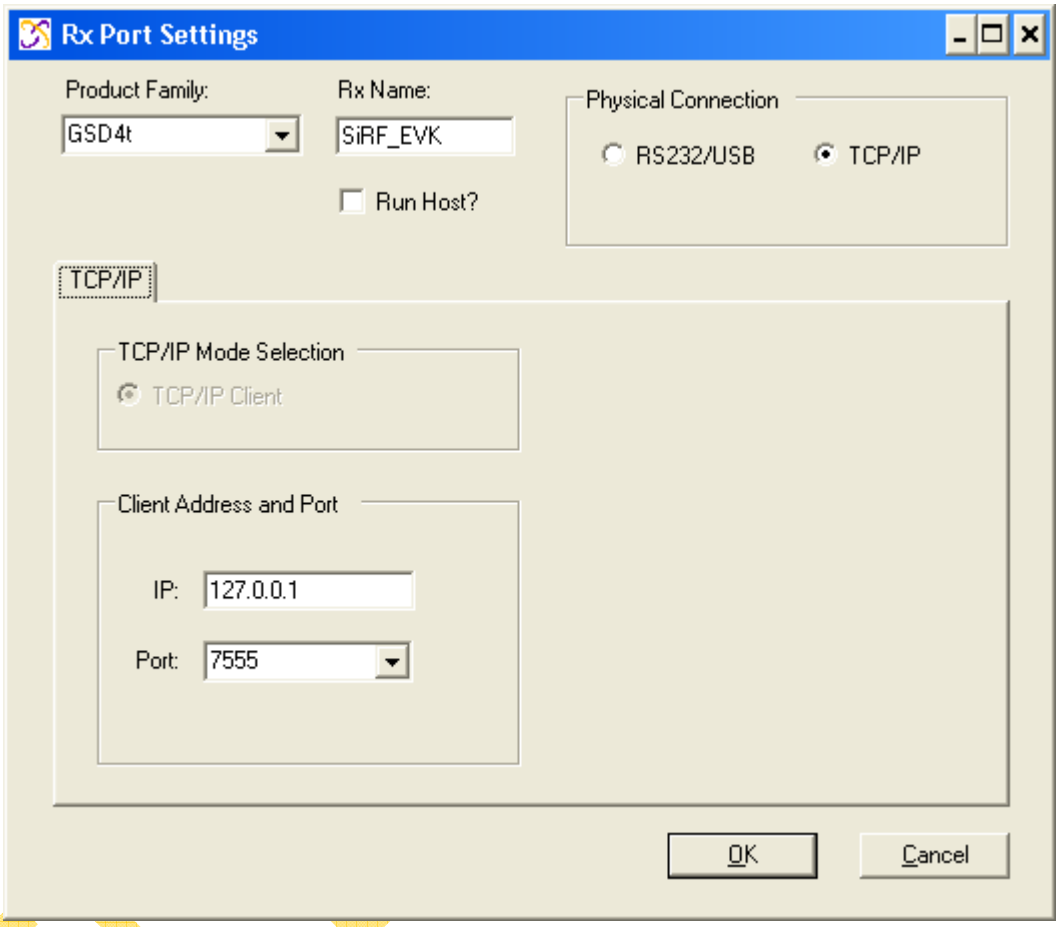
The default settings for Parity, Stop Bits, and Data Bits do not need to be changed.

Read Buffer refers to the size of the buffer for read data to be collected.



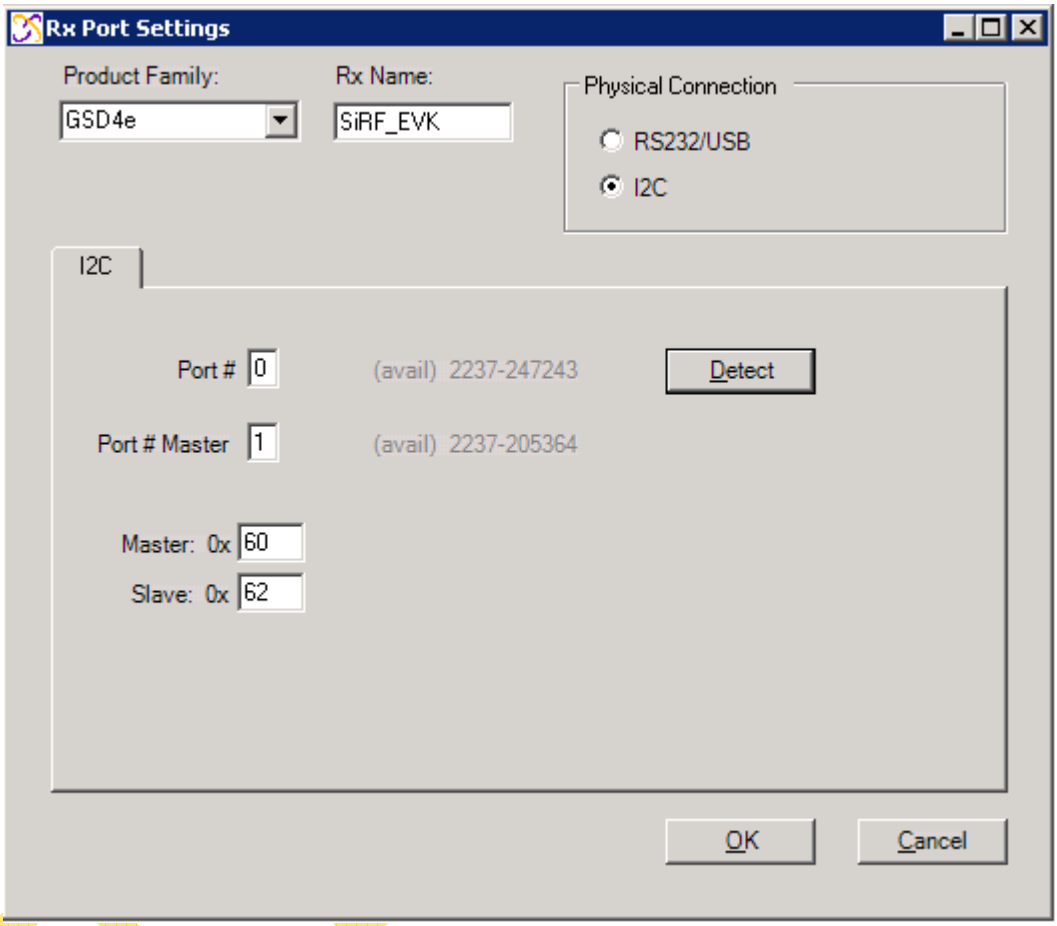
4.3.1.1.2.TCP/IP

Select either the Client or Server as the mode selection. In most cases, selecting Client and using the default IP address (local: 127.0.0.1) and port (7555) will suffice.

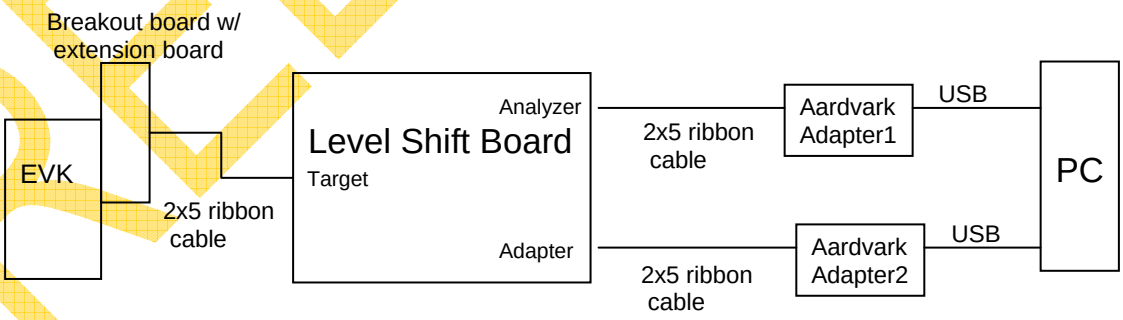


4.3.1.1.3.I^{2}C

The I^{2}C connection only works with the GSD4e. The default values of the Ports, Master, and Slave settings should be used.



The hardware configuration for I^{2}C is shown below:



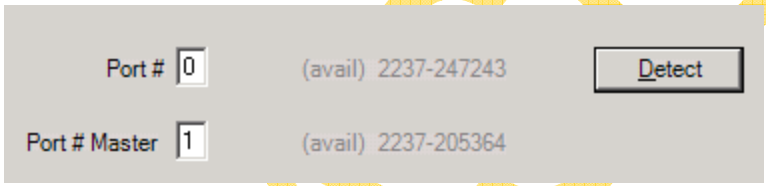
HW Equipment needed:

- Aardvark I^{2}C/SPI Level Shifter board – v 1.0 or higher
- Aardvark I^{2}C/SPI adapters (2) - v3.0 or higher

- USB cables (2)
- Breakout board and extension board

Level Shift board settings have jumpers on: “TPWR”, “3.3V”, and “Disable”

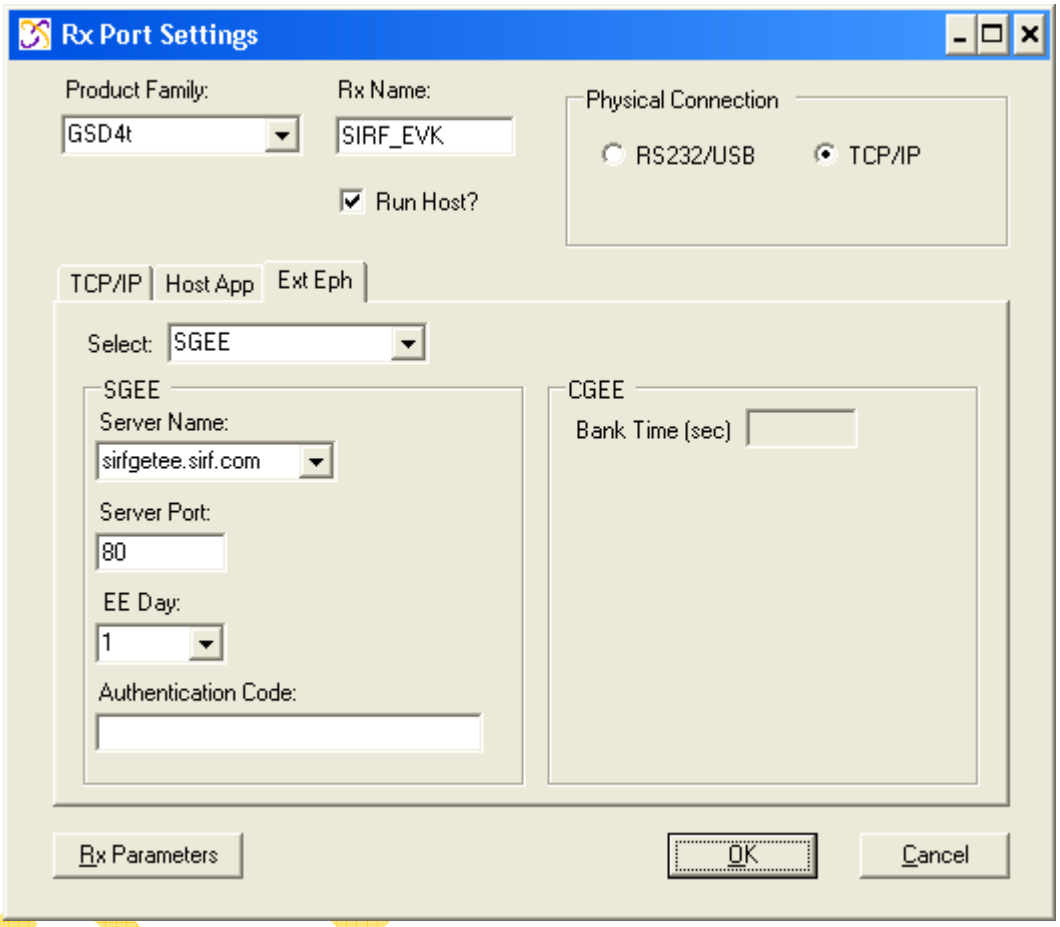
Pressing the Detect button will make sure that the connectivity is there before proceeding.



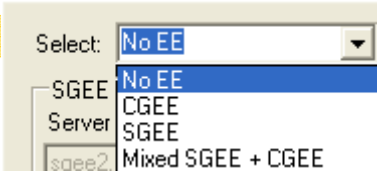
If devices are found, the message shows if they are available and the serial numbers of the I^2C devices are displayed.

4.3.1.1.4.Ext Eph

******NOTE***Extended Ephemeris is only available for GSD4t if the Run Host checkbox is selected.*** The Extended Ephemeris tab allows the user to access server-generated, client-generated, or mixed, extended ephemeris to assist in getting a position.



The selections are: No EE, CGEE, SGEE, and Mixed SGEE + CGEE



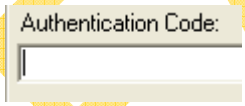
Server Name: IP address of the server to connect to. Default is sirfgetee.sirf.com.

Server Port: port number to be used from the server. Default is 80.

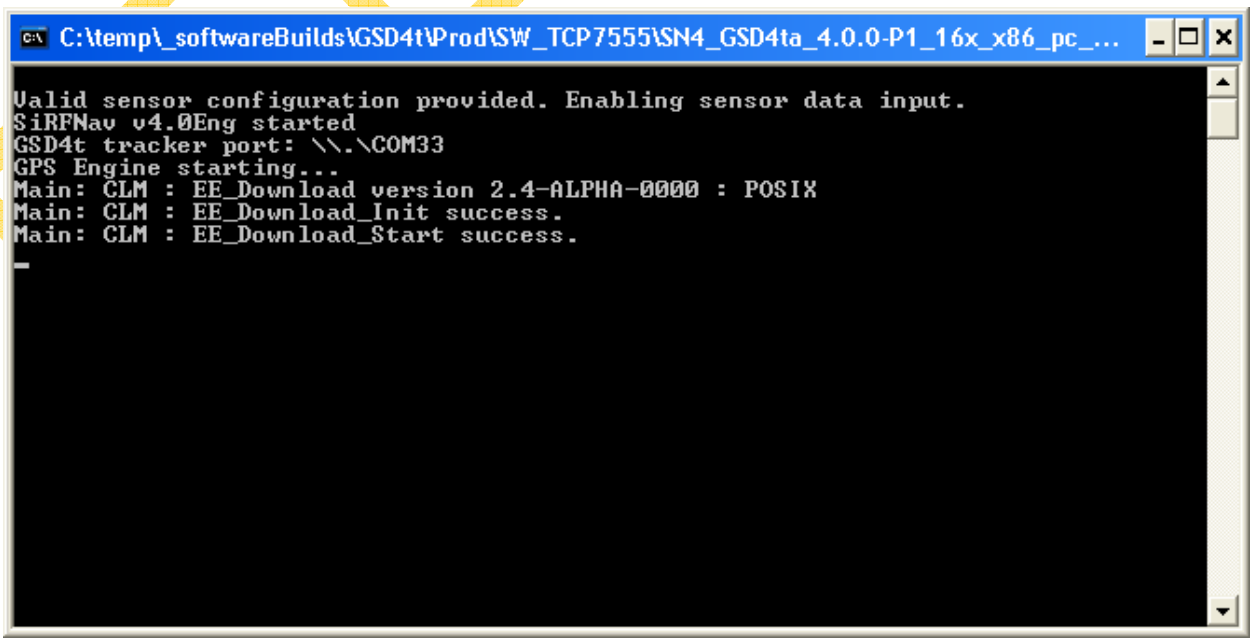
EE Day: the validity, in days, for extended ephemeris. Values are 1, 3, 5, and 7 days. Default is 1 day.

Authentication Code: the code string to grant access to the EE on the server.

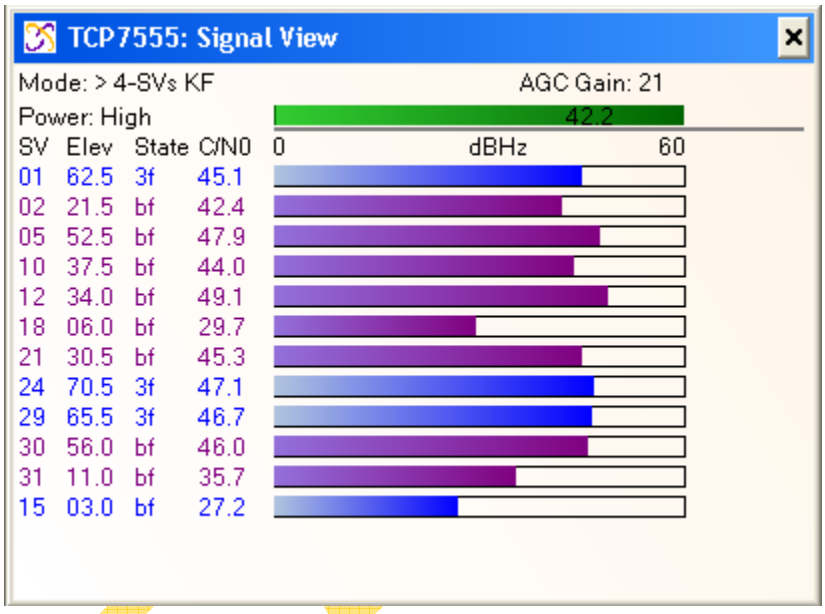
****NOTE*** the Authentication Code is given to the end user by the server team. For further help please contact your representative.*



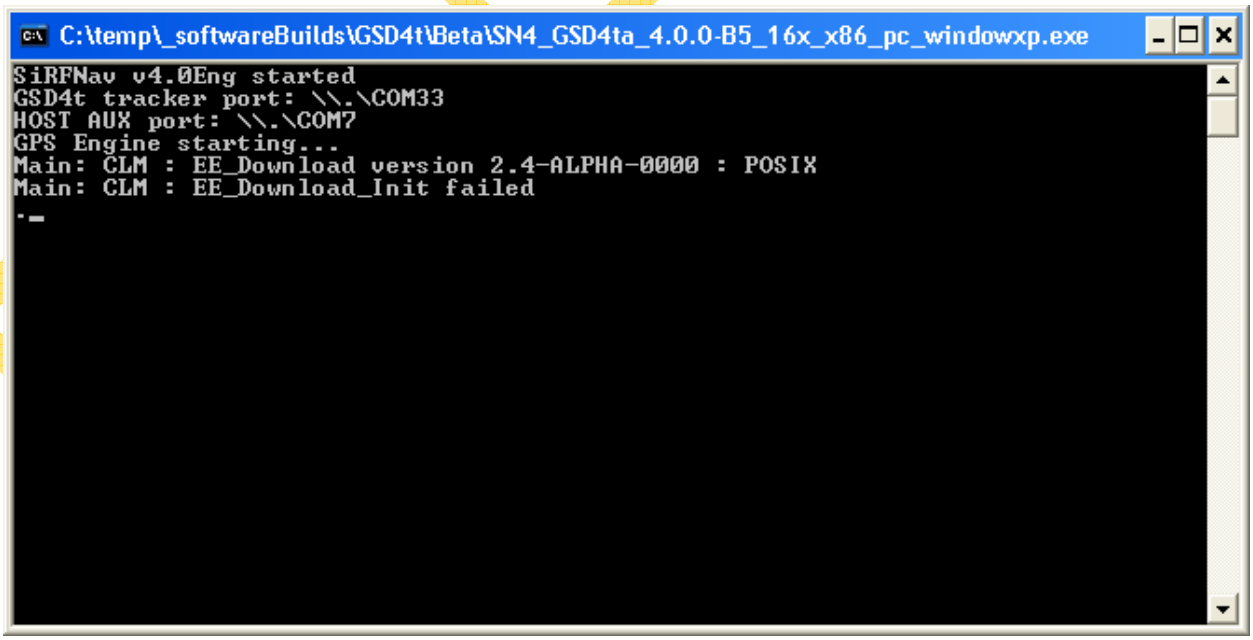
The COM window that appears if any type of Extended Ephemeris is selected will look something like this, the difference is the last three lines only:



EE information can be seen in the Signal View window and will display as the color magenta:



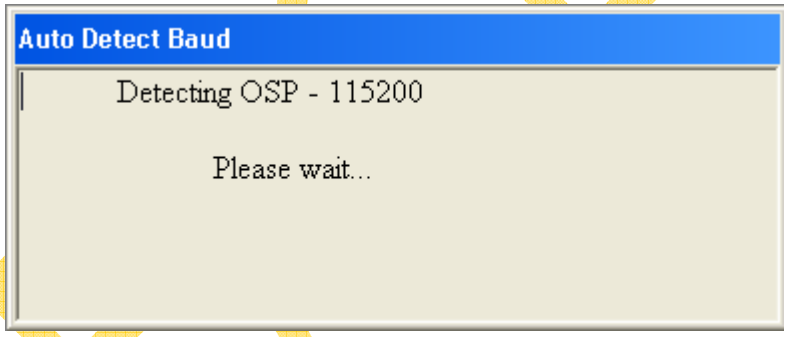
If the server does not connect, the result can also be seen in the COM window.



Once the OK button is pressed, data will be displayed in the main window which will start with the time, com port, baud rate, Rx type selected, and software version, if applicable.

4.3.1.1.5.Auto-Detect

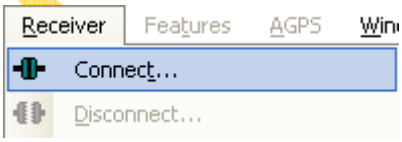
The Auto-Detect feature in SiRFLive will automatically decipher the protocol and baud rate that the receiver being connected to is running. This aids in getting the user up and running without the worry if the wrong baud rate or protocol was selected, and allows for quick connectivity.



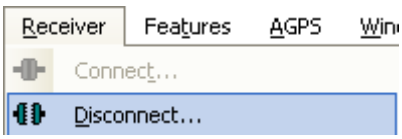
4.3.2. Connect/Disconnect

Press the Connect button again to break serial communication between the receiver and SiRFLive

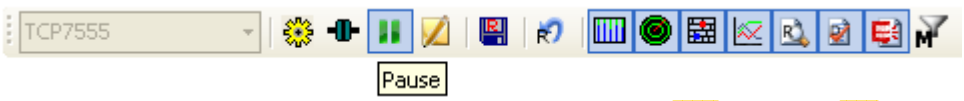
Or use the menu item to connect



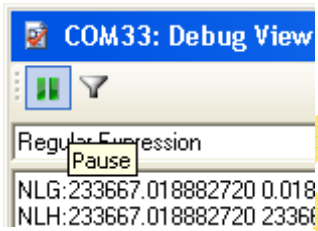
and disconnect.



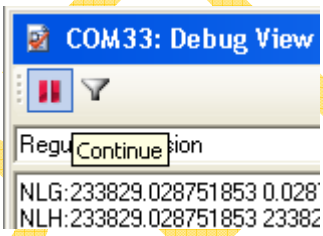
4.3.3. Pause



Pressing the pause button will freeze the displays. The receiver is still working in the background and there is no interruption to the flow of data when logging. This allows the user to scroll through the messages that are displayed to pinpoint particular information. Pause can be access either through the Main Tool Bar, shown above, or through the Debug window Tool Bar



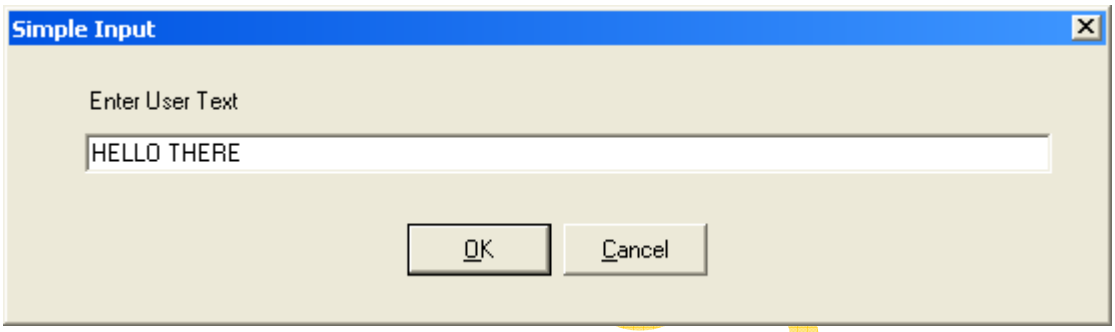
Once selected, the title bar tool tip will change to ‘Continue’ and the icon will change color to red which states that that this com port has been paused:



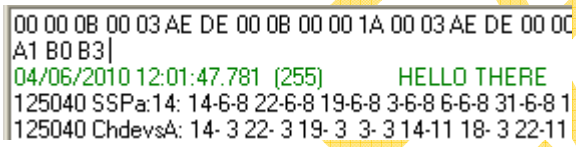
Press the Pause button again to resume the display of current data.

4.3.4. User Text

The User Text button allows the user to insert comments into the Debug View output window and the log file. This can assist the user in finding a certain section of data or help them remember an incident that happened at a particular time. Pressing the button displays the following dialog where the user can enter whatever text they want.



When the OK button is pressed, the text appears in the debug view window and if a log file is being collected, then it will also appear there.

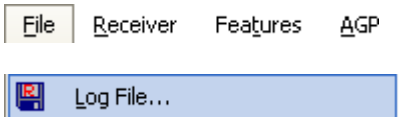


4.3.5. Logging

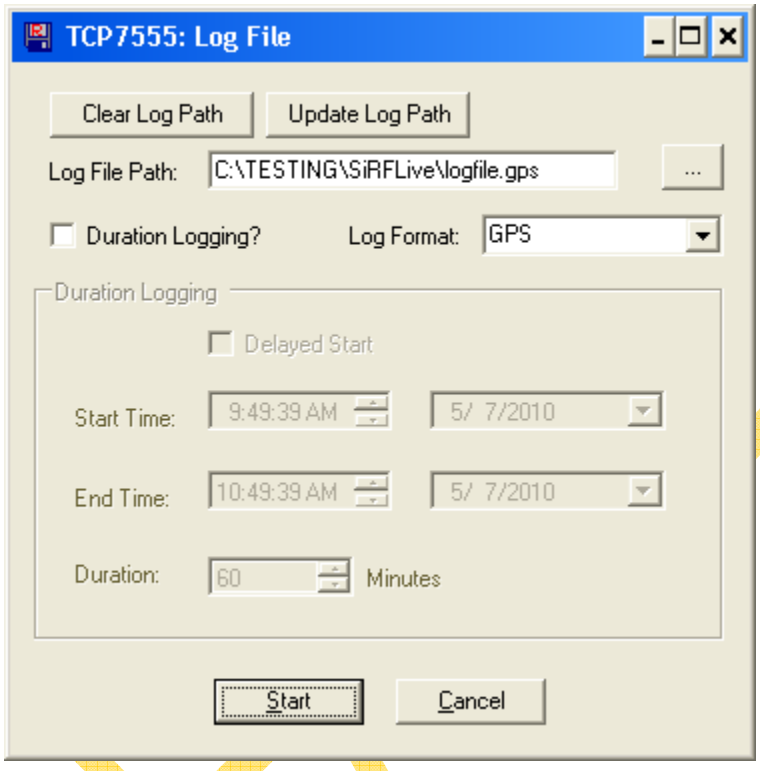
Logging a GPS file using SiRFLive assists in the interpretation of the data at a later time.

4.3.5.1. Log File

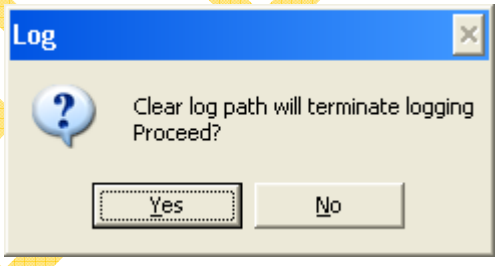
on Main Tool Bar or from the menu list

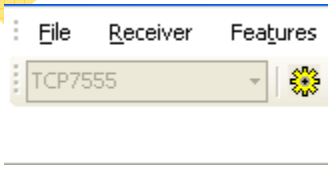


Select Log File to begin capturing the information coming from the Rx. Press the ellipse button to select a log file location and name or type the location into the edit box.

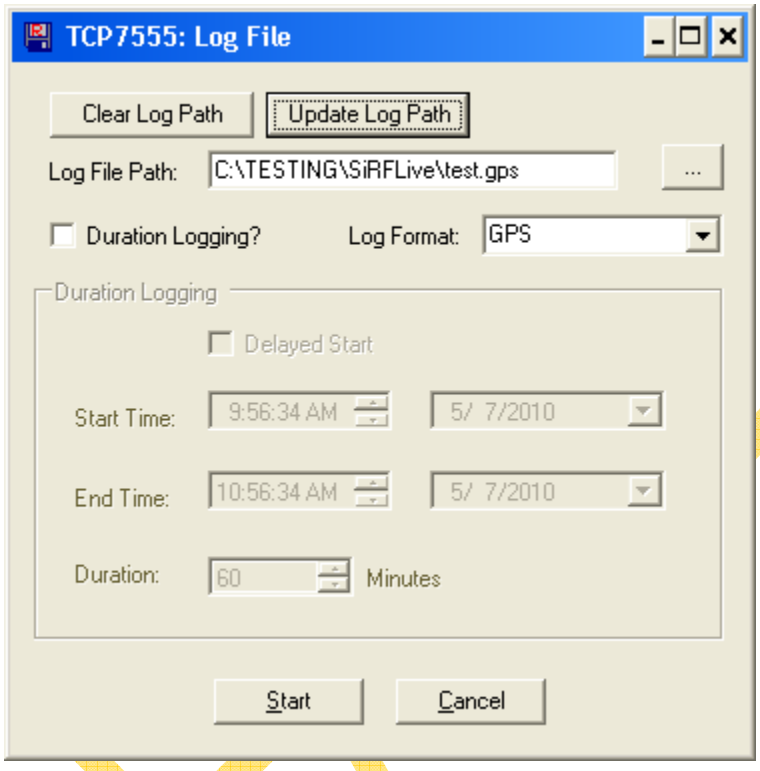


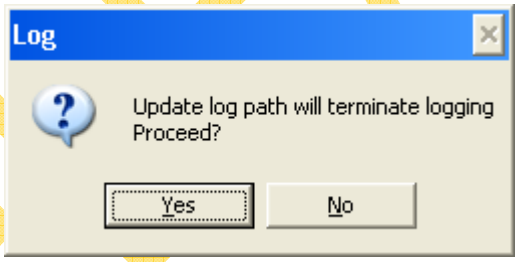
Clear Log Path will terminate any current logging and will remove the path from the log file status bar

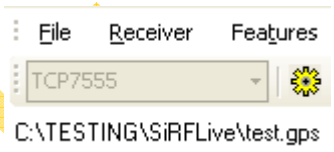




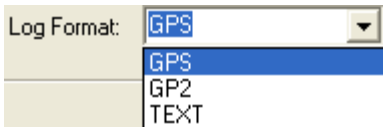
Update Log Path will update the log file status bar with the currently selected log file path





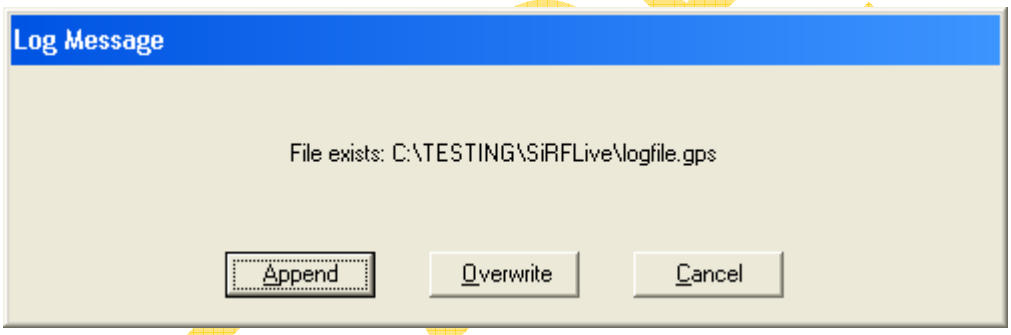


The three log formats available are: GPS, GP2, and TEXT.



The complete log file path name will be displayed below the Main Tool Bar.

If the log file exists, the following Information window will appear.



Press **Append** to ***append the log file***

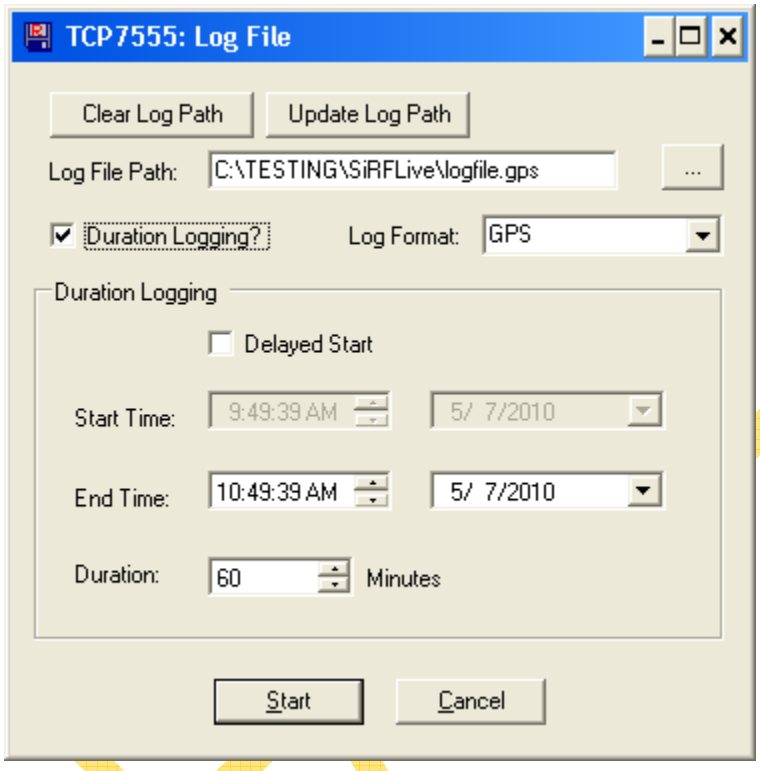
Press **Overwrite** to ***write over the existing log file***

Press **Cancel** to ***exit the request and select a new filename for the log***

Pressing the Log File icon again will remove the highlight from the button and stop the logging, even if it was a set duration log event.

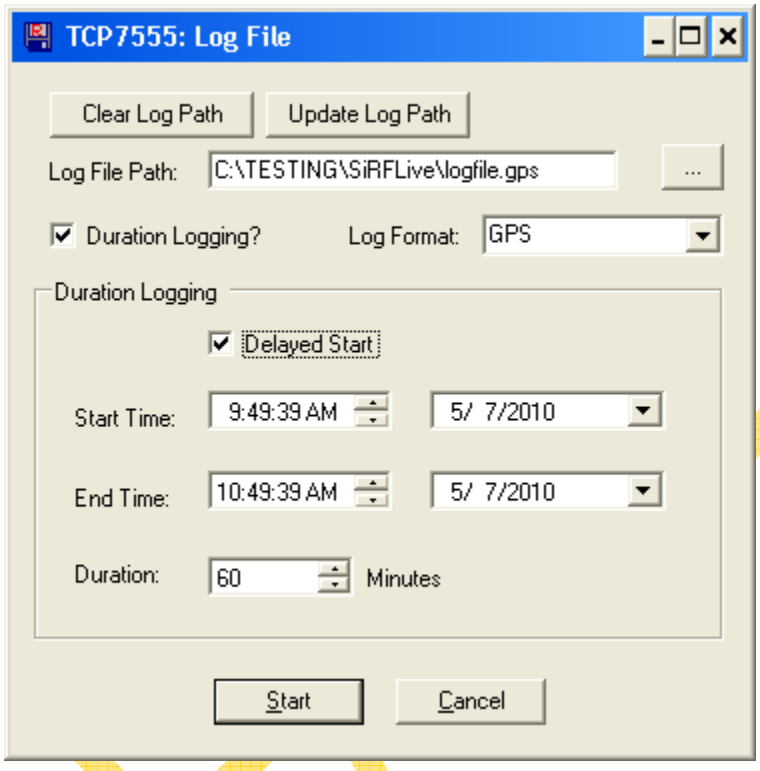
4.3.5.2.Log for a Duration

This allows the user to define the length of the logging event. The Duration Logging window will appear



The default logging will be for one hour after the current time. The user may adjust the End Time to however long the logging event is required to run.

The user may also delay the logging event by ticking the Delayed Start checkbox which will activate the Start Time day and time fields.



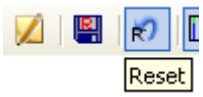
Either setting the Start Time and End Time or the Duration will adjust the length of the logging.

The maximum duration that can be set is 9999 minutes or just under 7 days.

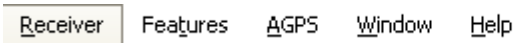
Once selected, the time of the logging duration will appear underneath the Main Tool Bar

Pressing the Log File button again will stop logging immediately.

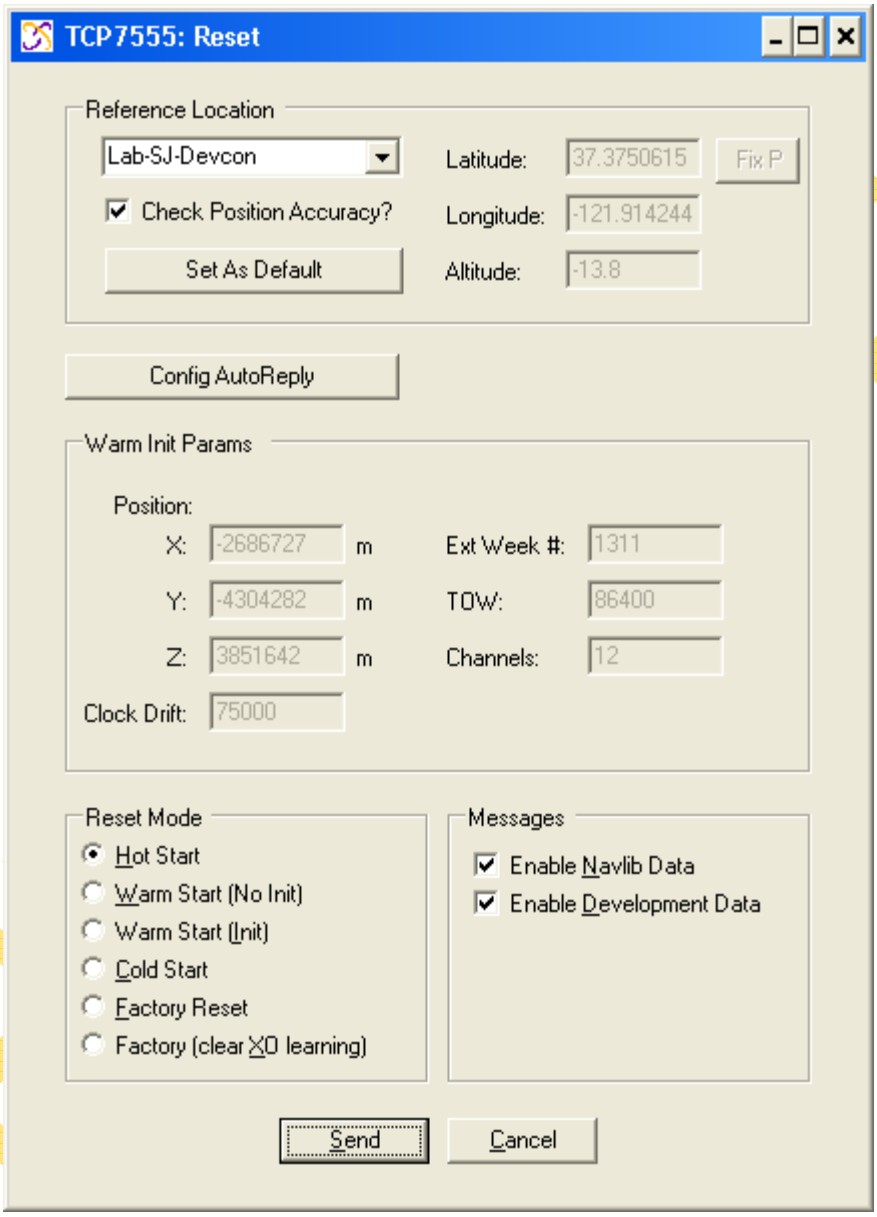
4.3.6. Reset



on the Main Tool Bar or from the menu list

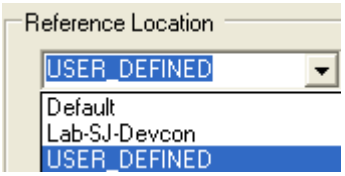


The Reset command allows the user to send different resets to the Rx.

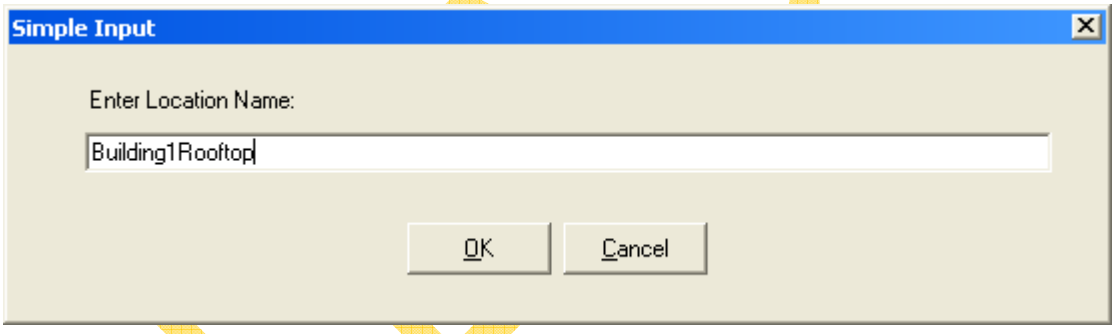


4.3.6.1.Reference Location

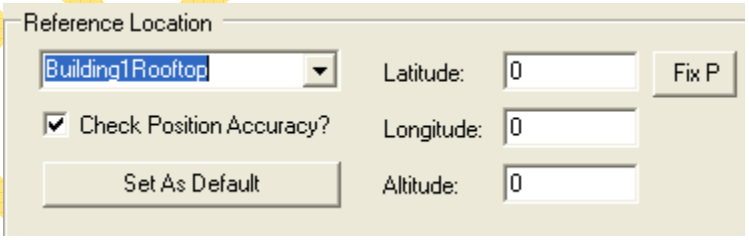
The Reference Location section is used to help determine position accuracy in conjunction with the TTFF values. Setting this location to the position of the antenna used for the Rx under testing will make the accuracy of the horizontal and vertical errors more precise.



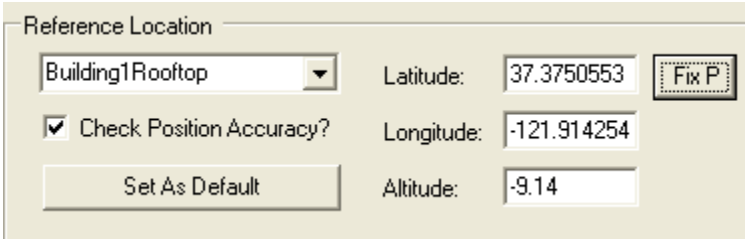
Selecting USER_DEFINED allows the user to specify the antenna position to be used within SiRFLive. An input window appears for the name to be used in conjunction with the position.



This then allows the user to enter the LLA coordinates.



Or press the 'Fix P' button to have the latest coordinates automatically loaded into the fields

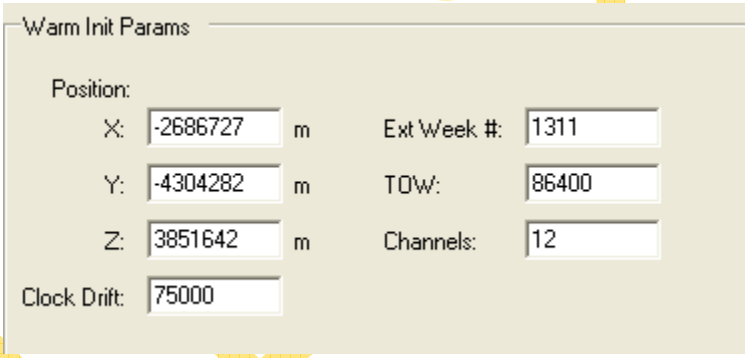


Then press the 'Set As Default' button to save the reference and utilize it each time SiRFLive is activated. These references are saved within the ReferenceLocation.xml file that is located in the SiRFLive directory..\bin\Protocols.

4.3.6.2.Config Auto Reply

The Config Auto Reply button opens the AutoReply Settings window for modification. See Section 4.3.1.2.13 for more information.

4.3.6.3.Warm Init Params



The Warm Initialization Parameters are enabled when a Warm Start (Init) reset is selected to be sent to the Rx.

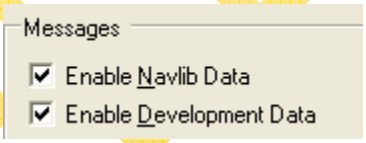
Any of the seven parameters can be modified in an attempt to place the Rx somewhere else before the reset; whether it is referring to position, frequency, or time.

4.3.6.4.Reset Mode

Hot Start	The GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac.
Warm Start (No Init)	This option has the same functionality as Hot Start except that it clears the ephemeris data and retains all other data.

Warm Start (Init)	This option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Warm Init Params section. The almanac is retained but the ephemeris is cleared.
Cold Start	This option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained.
Factory Reset	This option clears all data including position, almanac, ephemeris, time, as well as the stored clock drift. All GPS receiver parameters are also set back to the factory defaults.
Factory (clear XO learning)	This option clears all data as the Factory Reset, as well as any stored TCXO learning values.

4.3.6.5.Messages



Check Enable Navlib Data to log navigation library data.

Check Enable Development Data to turn on message 255.

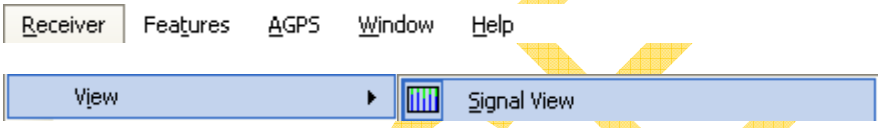
****NOTE*** The Development Data output by a GPS receiver is required to assist in the analysis and debug of system performance problems. It is highly recommended to enable Development Data during development and testing in the event that support is needed from SiRF.*

4.3.7. Views

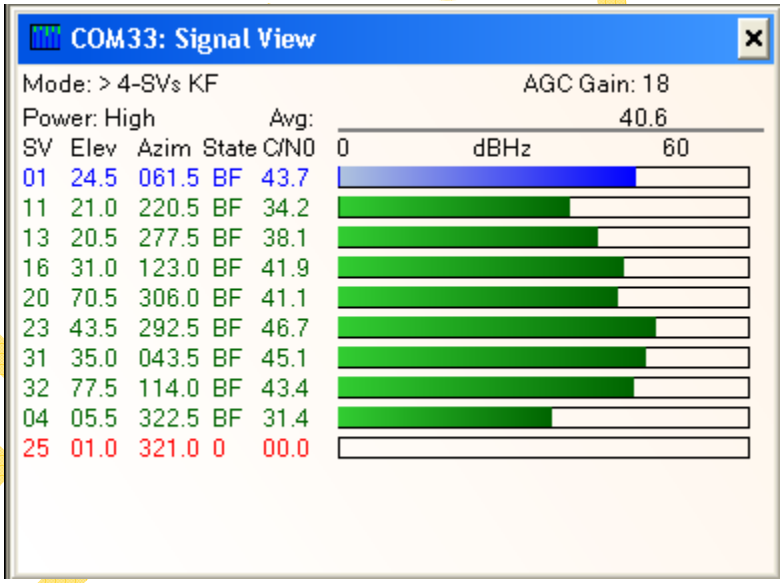
There are a number of views that are available to the user that display additional information. Five of the most popular windows have icon buttons for quick access.

4.3.7.1.Signal View

 on Main Tool Bar or from the menu list



The Signal View displays the SVs available and the corresponding C/No values and state for each.



****Note*** at the time of this writing SV01 was unhealthy and not used in the solution.*

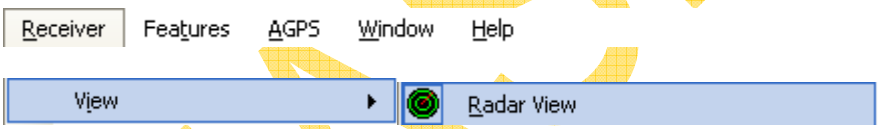
The colors that may be seen in this window:

- Red — The satellite location is known from almanac information; however, the satellite is not currently being tracked.
- Blue — The satellite is being tracked; however, it is not being used in the current position solution.
- Green — The satellite is being tracked and is being used in the current position solution.

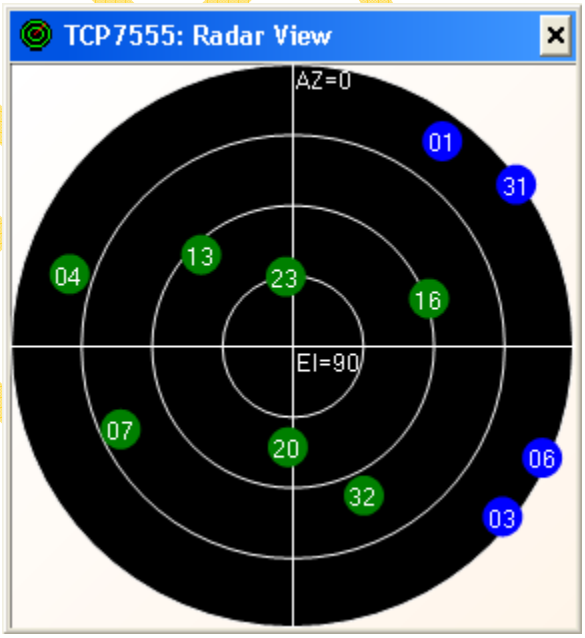
- SkyBlue For SBAS satellites only. The satellite is being tracked and corrections are being used in the current position.
- Magenta The satellite is being tracked; however, a SiRFInstantFix extended ephemeris is being used for the position solution.
- Orange For Almanac Based Positioning.

4.3.7.2.Radar View

 on Main Tool Bar or from the menu list

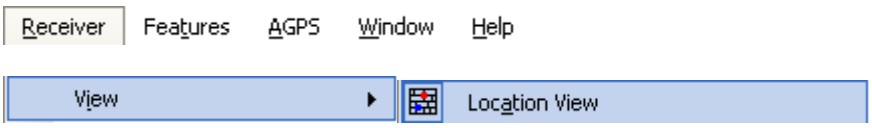


The Radar View displays the location of the SVs by azimuth and elevation.

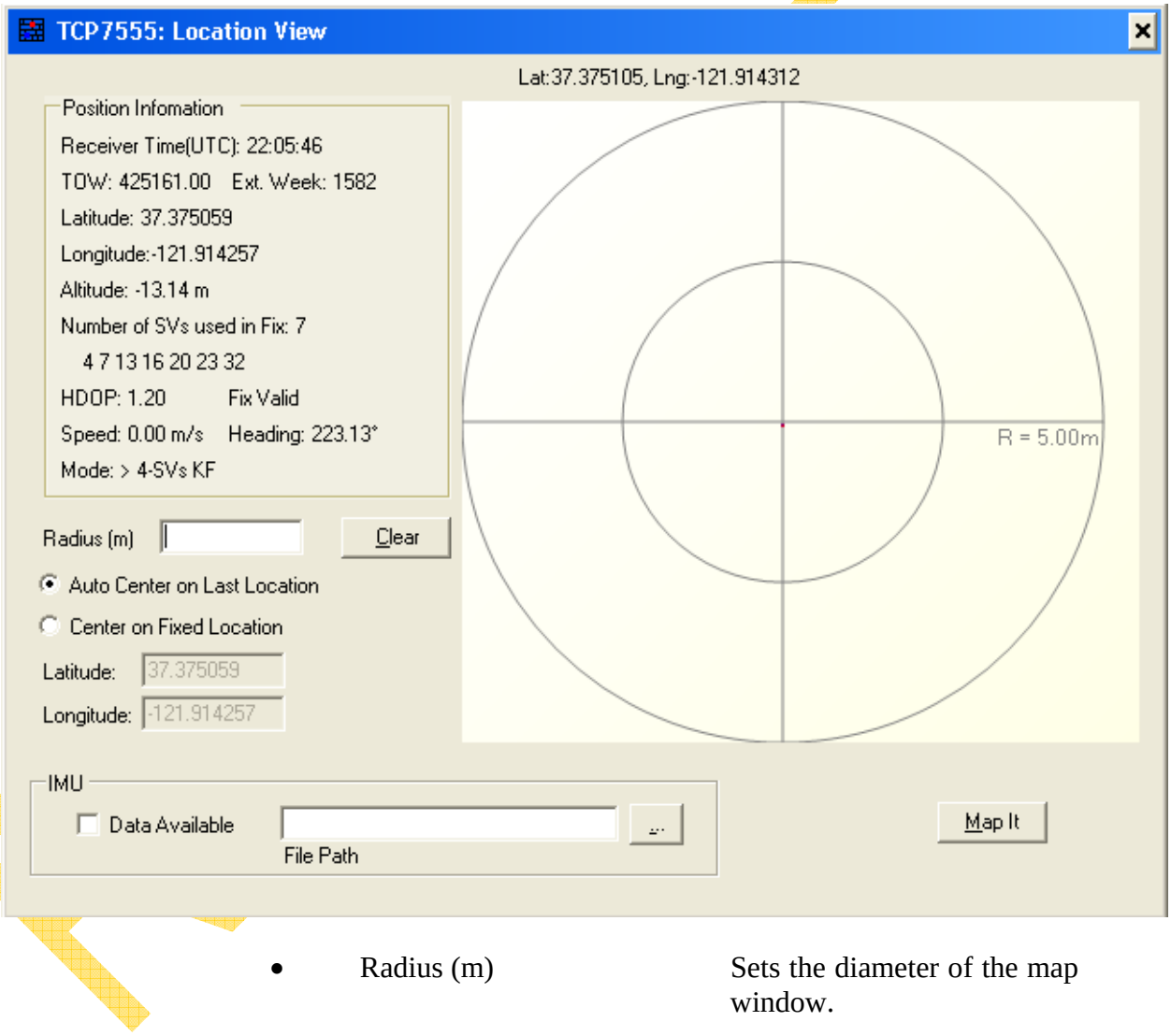


4.3.7.3.Location View

 on Main Tool Bar or from the menu list

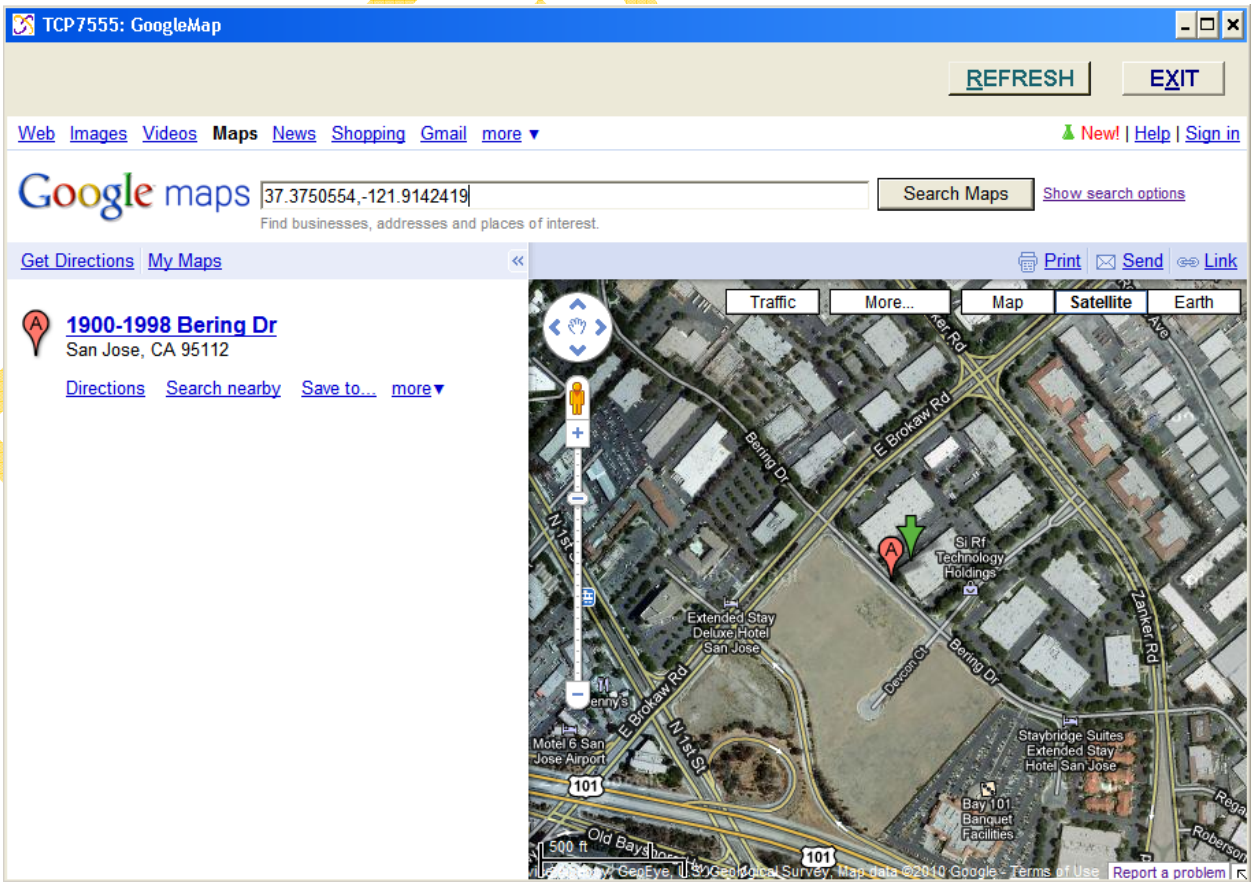


The Location View displays more detailed information regarding the UTC, TOW, Latitude, Longitude, Height/Altitude, etc.



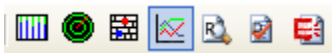
- Radius (m) — Sets the diameter of the map window.
- Clear — This button clears all positions that are represented in the location map view.

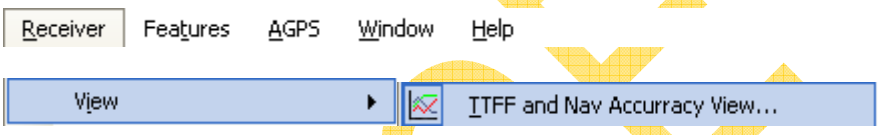
- Auto Center on Last Location — This selection automatically sets the center of the map to the position of the last location.
- Center on Fixed Location — This selection automatically sets the center of the map to the point that is entered as Latitude and Longitude. If the user right-clicks on the map, then where the cursor is located will become the center position.
- Map It — This button opens a new web interface that maps the current position using Google Maps if the user has internet access.



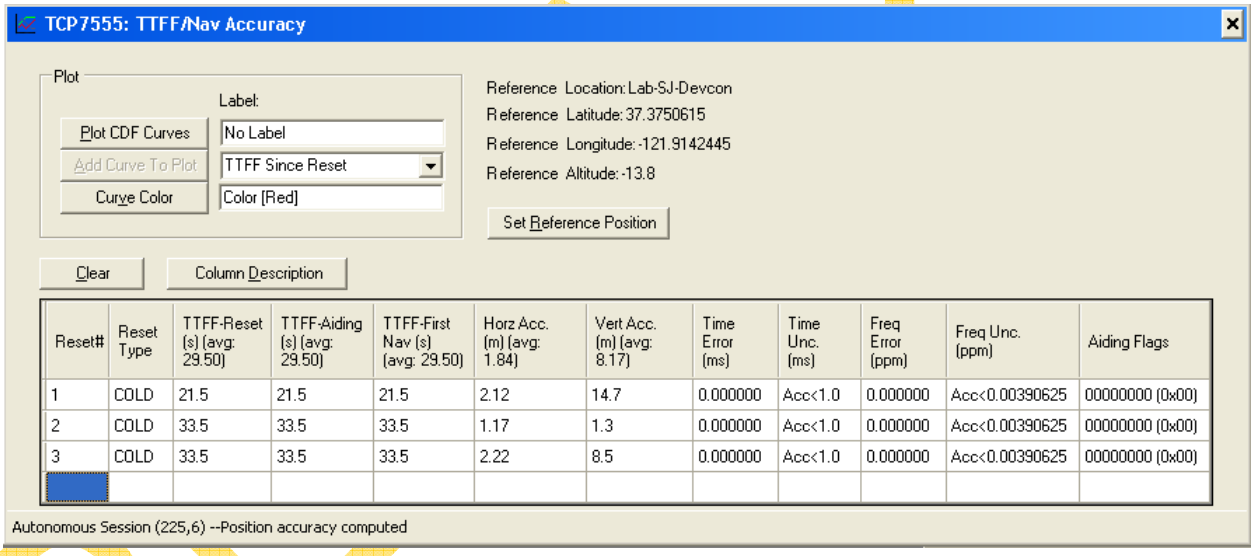
- Refresh — Refreshes the current map view.
- Exit — Closes the Map window.

4.3.7.4.TTFF/Nav Accuracy View

 on Main Tool Bar or from the menu list



Selecting the TTFF view displays the following:

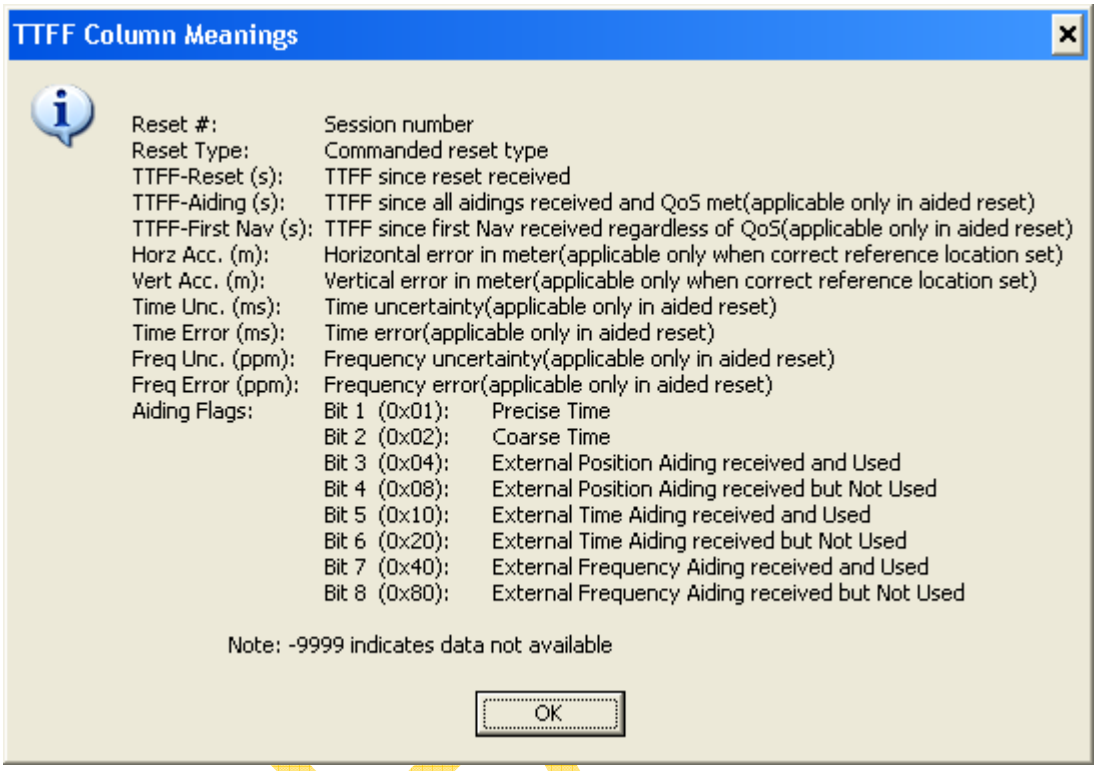


Set Reference Position — Change the reference position if necessary

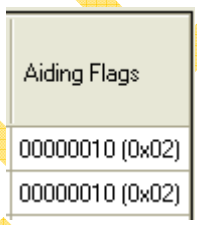
Clear — Will clear all information in the reset fields

Column Description — Will display a dialog to explain each of the column headings

The Column Description dialog window that will appear is shown below:

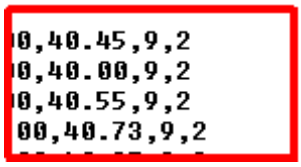


4.3.7.4.1.Aiding Flags

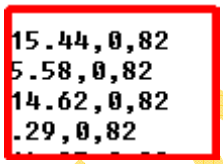


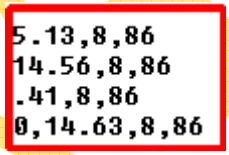
The last column in the TTFF window represents the aiding flags that are being used for the particular reset. As the above image shows, this would be the default for an autonomous session where the only bit set is the Coarse Time bit 2 (0x02) and there is no aiding received (all other bits are 0).

This information can also be seen when capturing a log file using 3GPP Automation Tests or Loopit in SiRFLive. Logging data will also create a *<log file name>_ttff.csv* file along with the .gps file. Looking at the last column in the .csv file will show the value of the aiding bits used.



The two represents that only the Coarse Time bit was set, informing the user that this was an autonomous session. The following examples show that Frequency Aiding was received but not used (0x82) [Bit 8 + Bit 2] and Frequency Aiding and Position Aiding were received but only Position Aiding was used (0x86) [Bit 8 + Bit 3 + Bit 2] with Coarse Time.

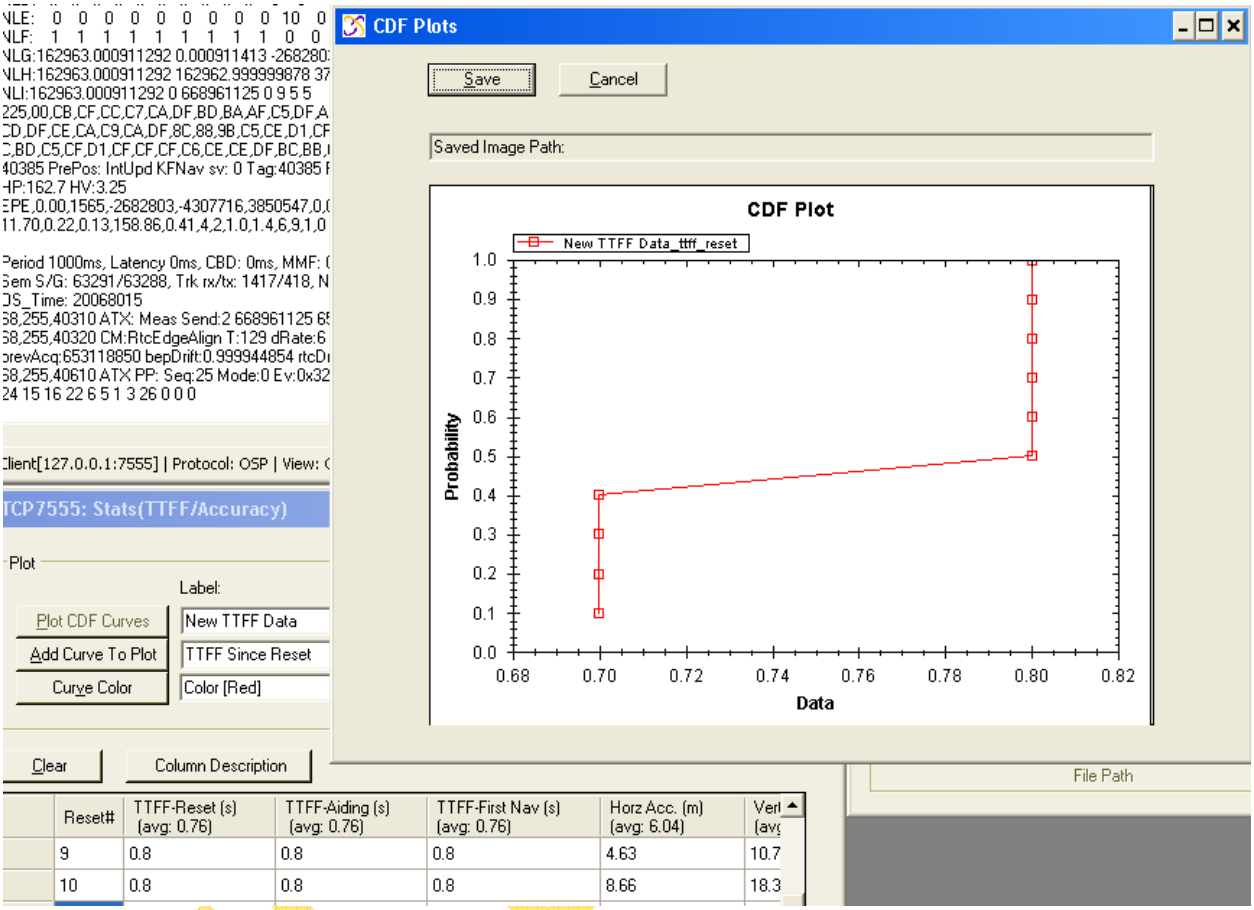




****NOTE*** The TTFF window cannot be opened while in NMEA protocol mode, the user must switch to OSP protocol to characterize TTFF performance.*

4.3.7.4.2.Plot

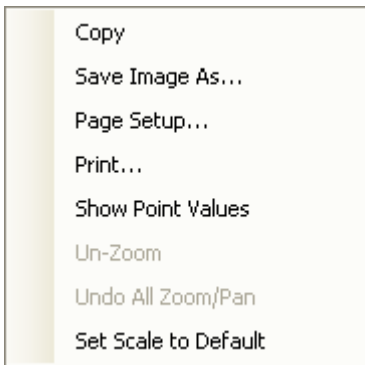
- Plot CDF Curves — This button opens a new window that displays the data. The example shown below has the label name of *New TTFF Data*. The default value is *No Label*.



- Add Curve to Plot Allow the user to select the data to be included in the CDF plot.
- Curve Color Change the color of the plotted line.

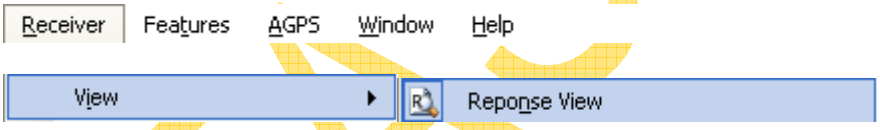
Set Reference Position: See the Reference Position Section for more information.

Right-clicking the CDF Plot window opens the following options that can be used:

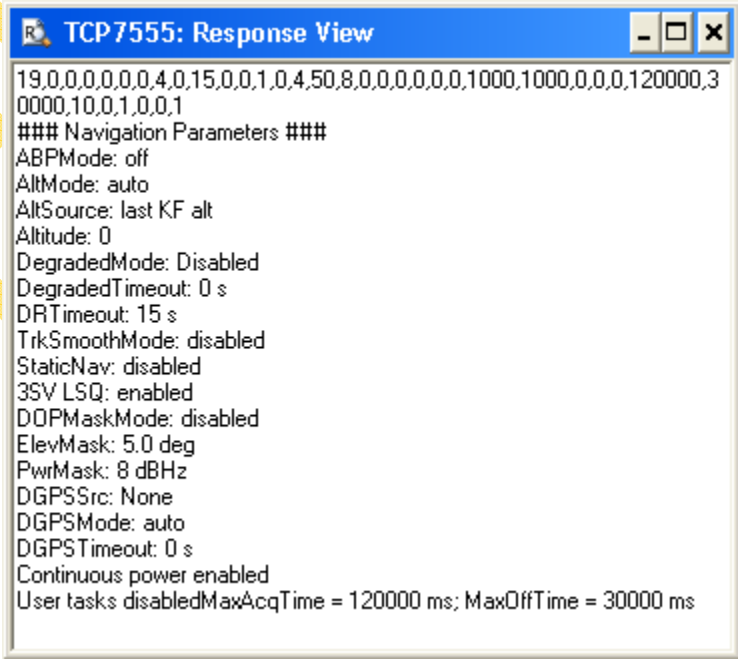


4.3.7.5.Response View

 on Main Tool Bar or from the menu list

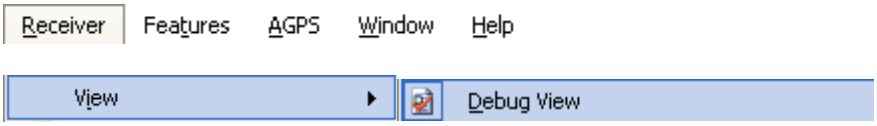


Selecting the Response view displays the Response View window. Some of the output to this window is from the Poll S/W Version request and the Poll Nav Parameters request as shown below. Message 19 is the Navigation Parameters.

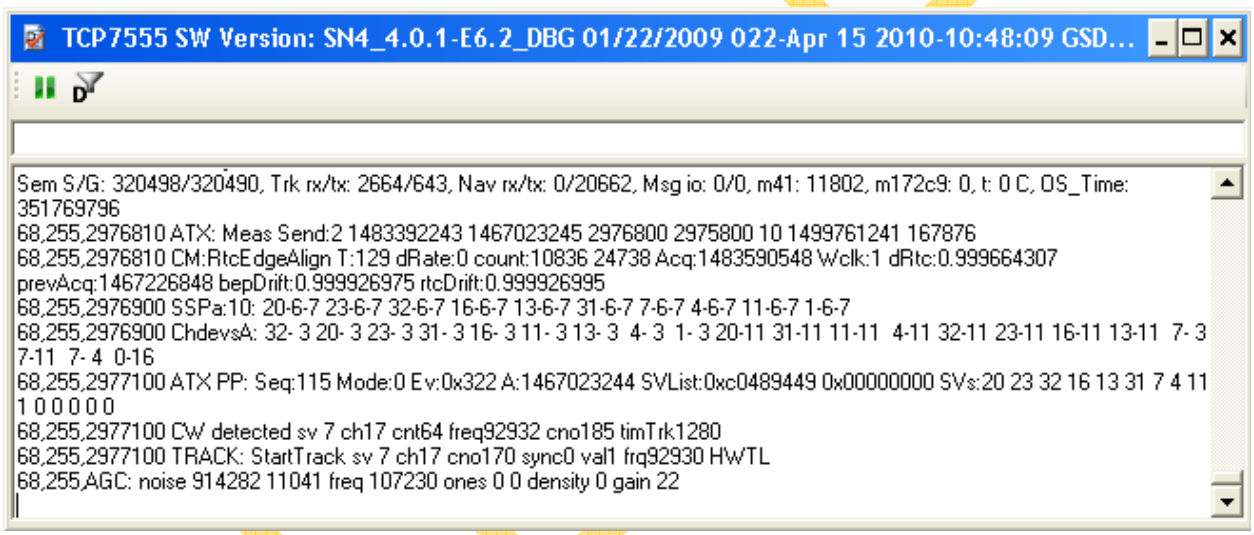


4.3.7.6.Debug View

 on Main Tool Bar or from the menu list

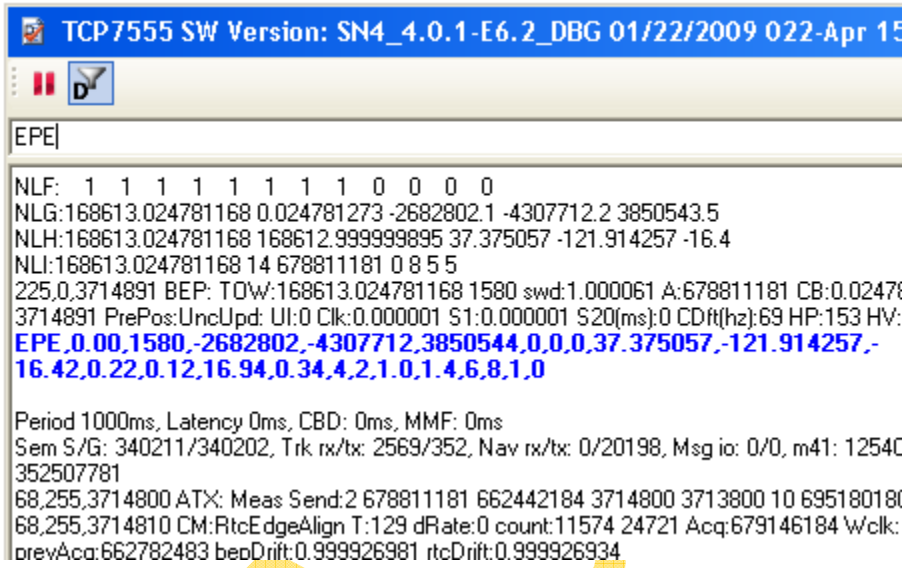


The Debug View window displays all of the messages that are coming out of the receiver.



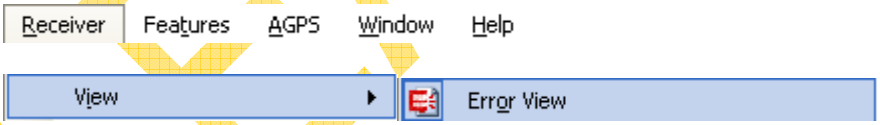
There are two features of the Debug window that can assist the user with locating messages within the window.

- Pause – The pause feature is described in Section 4.2.1.2
- Filter – The message filter is similar to the Regular Expression Section of the Message View window. The font changes to bold with blue color.

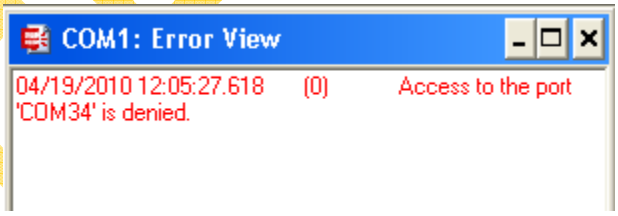


4.3.7.7.Error View

 on Main Tool Bar or from the menu list



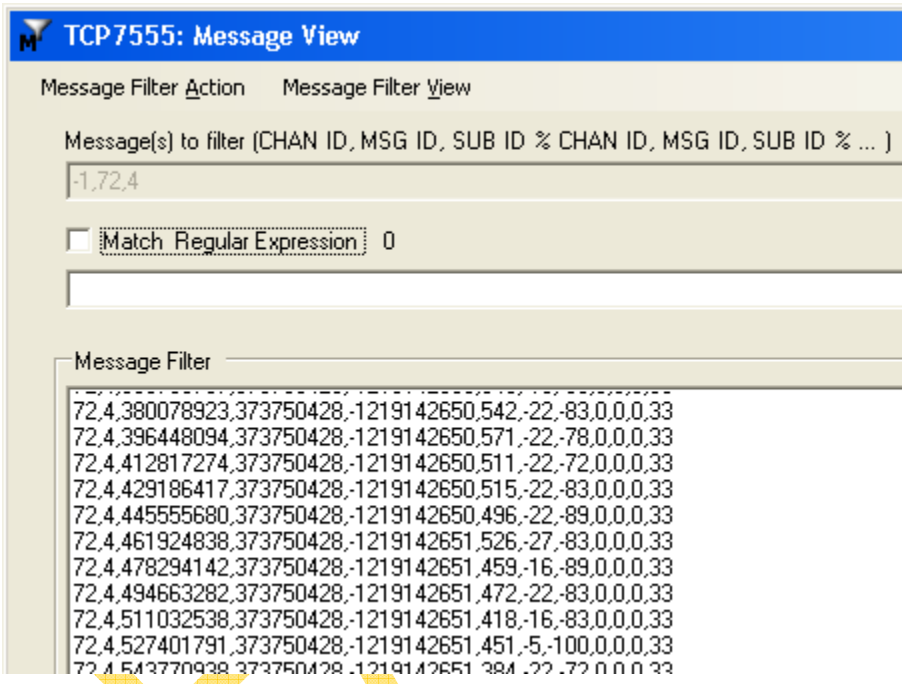
Selecting the Error View displays the Error View window. This window shows any errors that may appear with the use of the Rx.



4.3.7.8.Message View

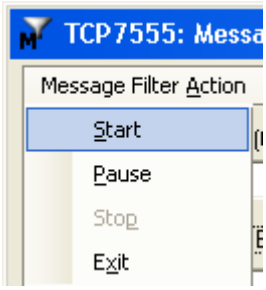
 on Main Tool Bar or from the menu list

Selecting the Message View allows the user to see particular messages in the output window.



4.3.7.8.1.Select Single Message

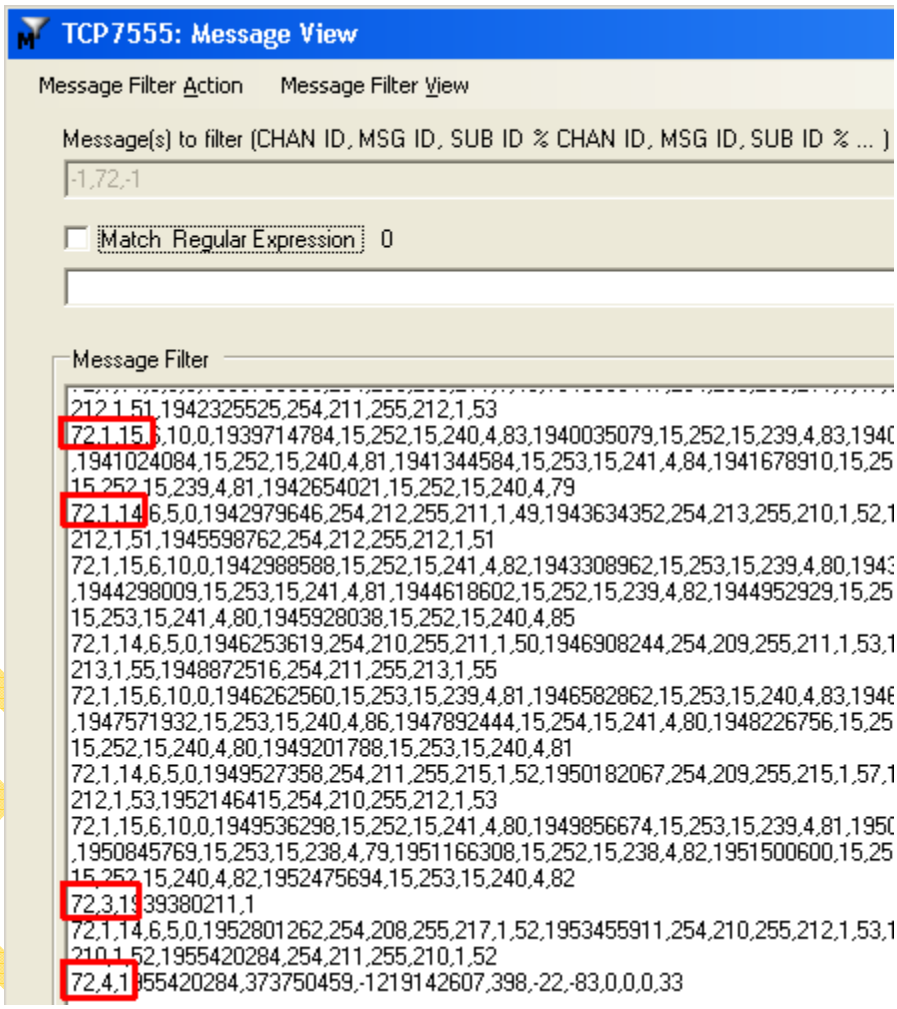
- Enter filter in <Channel ID>, <Message ID>, < Message sub ID> format.
- For OSP and GSW Rx: Channel ID equals -1
- Use -1 for the field to be ignored
- Hit <Enter> or Message Filter Action | Start



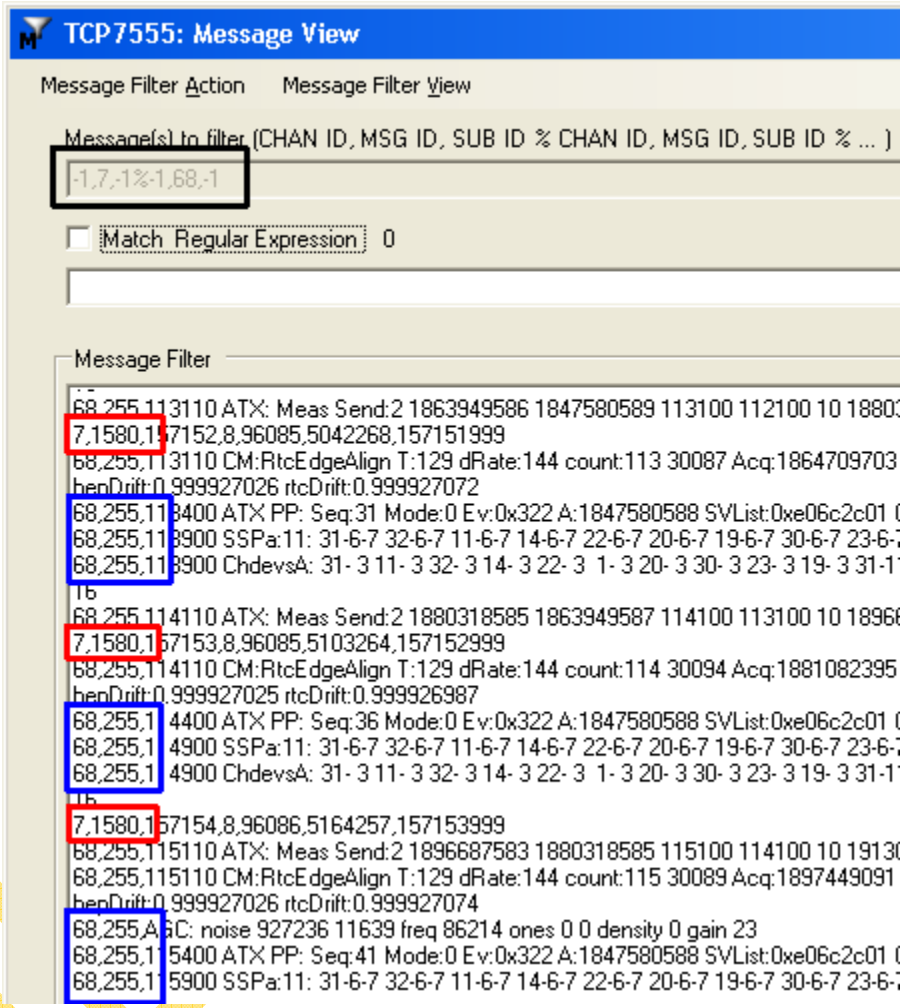
4.3.7.8.2.Select Multiple Messages

Selecting multiple messages to be seen can be done in different ways:

- Use *-1* as the Sub message ID value. This will display all Sub message IDs for the Message ID selected.



- Use *%* between messages to add more messages



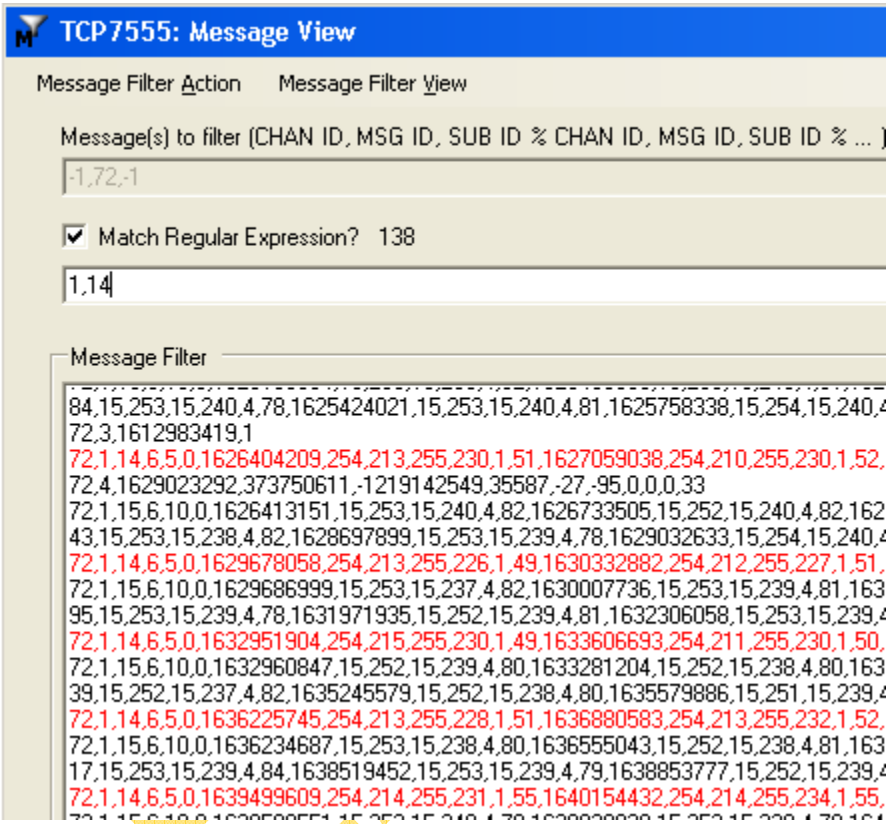
4.3.7.8.3.Regular Expression

Highlight the Match Regular Expression checkbox and then enter the text to match in the filter. Press <Enter> and the text will display with red font color in the message filter window.

******NOTE****** *The following metatcharacters are for advanced use only:*

^ [ ] . $ { } * ( ) \ + | ? < >

Search the web regarding Regular Expressions for more information.

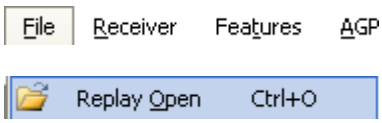


4.3.8. Playback

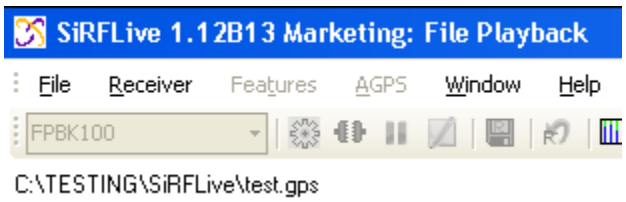
The playback section of the Main Tool Bar allows for replaying of GPS files. When a file is replayed, all of the information will be displayed as it was originally.

4.3.8.1. Open File

 on the Main Tool Bar or in the Menu under



Selecting the Open function will load all playback functionality and display the file in the log file status bar.

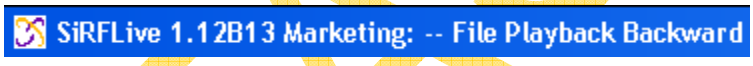


The COM port displayed in the view windows [FPBK100] shows that it is a file playback.

4.3.8.2.Previous Epoch

 on Main Tool Bar.

Pressing the Previous Epoch button will move the playback backwards one epoch. This will be shown in the title bar.



4.3.8.3.Play File

 on Main Tool Bar.

Pressing the Play button will start the file playback and display the state in the title bar.

4.3.8.4.Pause

 on Main Tool Bar.

Pressing the Pause button will suspend the file playback and the icon will change to red  and display the state in the title bar.

4.3.8.5.Stop

 on Main Tool Bar.

Pressing the Stop button will completely halt the file playback and display the state in the title bar. Playing the file again will start from the beginning of the file.

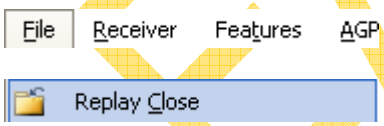
4.3.8.6.Next Epoch

 on Main Tool Bar.

Pressing the Next Epoch button will move the playback forwards one epoch. This will be shown in the title bar.

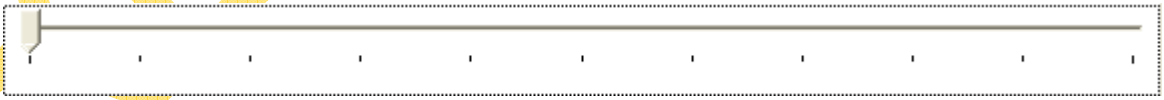
4.3.8.7.Close File

 on Main Tool Bar or in the Menu under



Selecting the Close function will shut down all playback functionality.

4.3.8.8.Track Bar

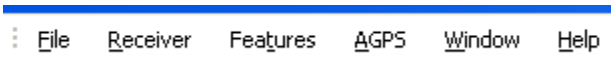


The Track Bar displays the length of the playback file as a percentage of the total duration of the file. Each tic is an increment of 10%. During playback, the bar will update to correspond to the time of the file.

The user can drag the track bar to quickly move to certain sections of the playback file, but only if the file is paused.

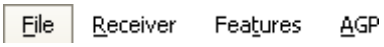
4.4. Menu Strip

The following commands may be used from the menu strip:

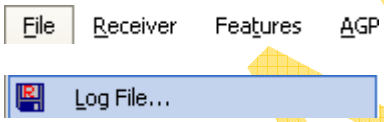


4.4.1. File

The File menu list item has the following selections available

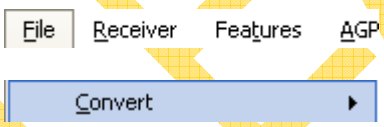


4.4.1.1.Log File



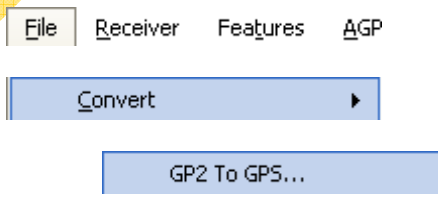
See the Logging Section under Tool Strip for more information

4.4.1.2.Convert

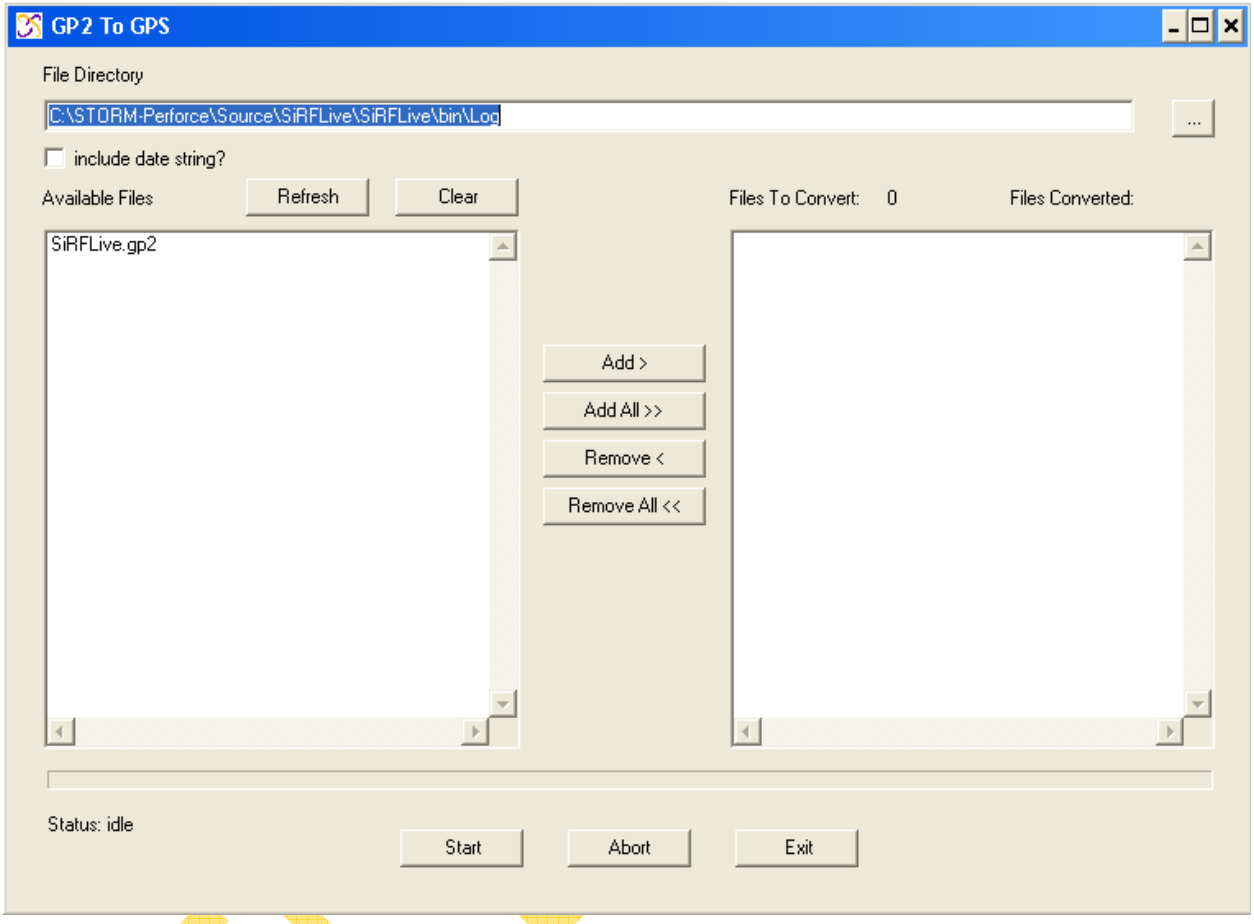


The Convert process allows the user to convert different log file formats to other formats.

4.4.1.2.1.GP2 to GPS



The GP2 to GPS conversion will convert a .gp2 file format to a .gps format.



File Directory: displays the path of the directory that contains the GP2 files.

Include Date String: when checked will add the log date to each line of the converter file.

Available Files: displays all of the GP2 files in the directory specified in the *File Directory*.

Refresh: refresh/update *Available Files* box

Clear: clear all files listed in *Available Files* box

Files To Convert: displays the files that will be converted when the *Start* button is pressed.

Files Converted:	displays the number of files that were converted.
Add>:	add the selected file in Available Files box to Files To Covert box
Add All>>:	add all files in the Available Files box to Files To Convert box
Remove <:	remove the selected file in the Files To Convert box
Remove All <<:	remove all files listed in File To Convert box
Start:	start the conversion process
Abort:	abort a conversion in process
Exit:	quit

There are two options in finding the GP2 files:

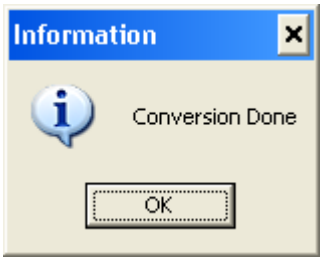
1. Click the ellipse button to browse to the directory that contains the GP2 files.
2. Cut and paste the absolute path of the directory containing the GP2 files to the *File Directory* textbox and press the *Refresh* button.

Double clicking on a file in *Available Files* will add the file to the *Files To Convert* box.

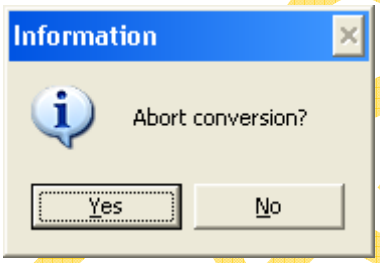
Double clicking on a file in *Files To Convert* box will remove the file from the box.

When the *Start* button is pressed, all the files listed in *Files To Convert* will be converted. The converted files are placed in the same directory as the original files with the extension ***.gps***.

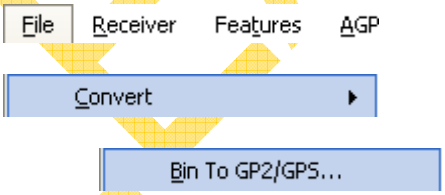
A popup window will notify the user that the conversion is complete.



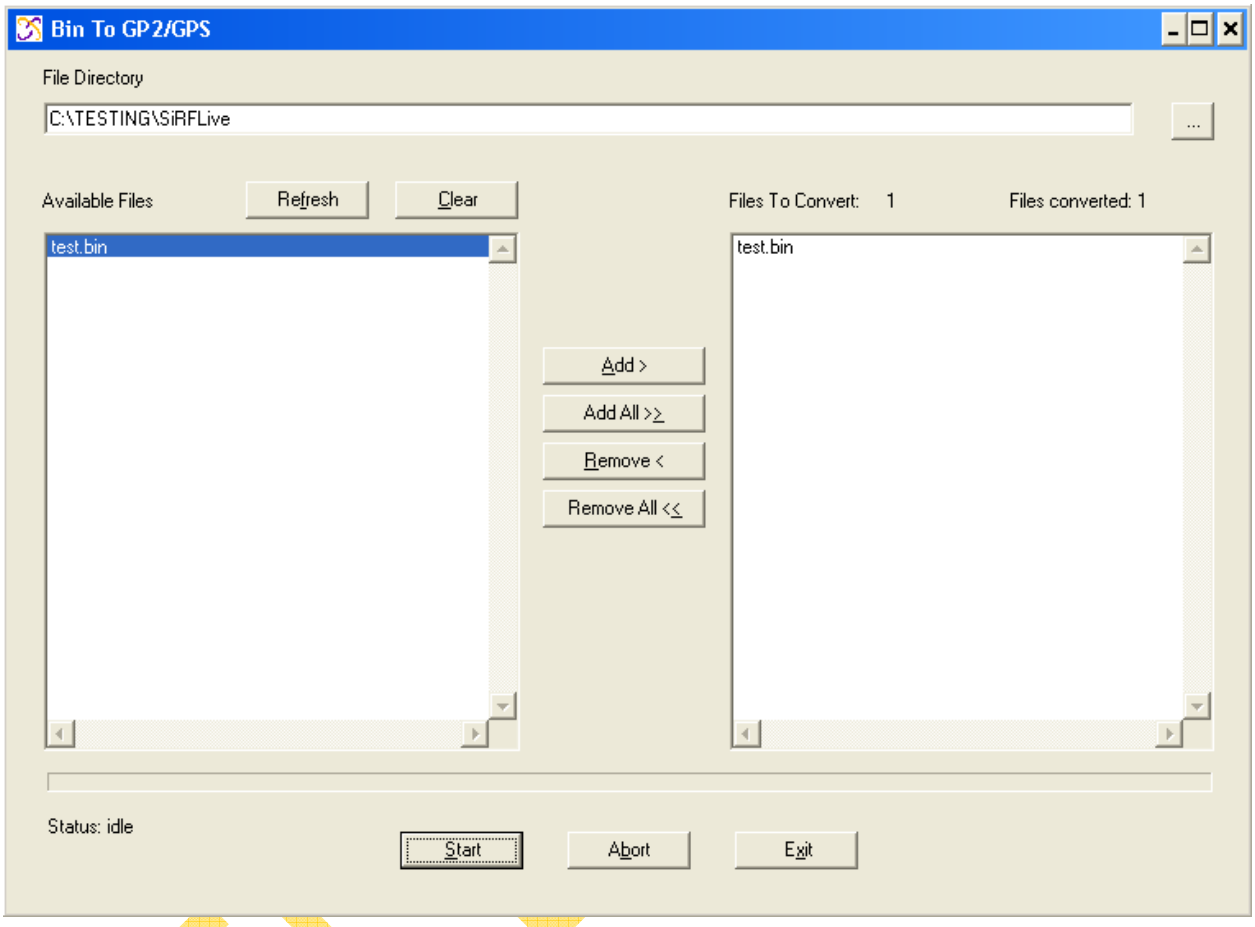
If the Abort button is pressed during conversion, a popup window will ask the user to confirm their decision before continuing.



4.4.1.2.2.Bin to GP2/GPS



The Bin to GP2/GPS conversion will convert a binary file format to a .gp2 format.



File Directory: displays the path of the directory that contains the BIN files.

Available Files: displays all of the BIN files in the directory specified in the *File Directory*.

Refresh: refresh/update *Available Files* box

Clear: clear all files listed in *Available Files* box

Files To Convert: displays the files that will be converted when the *Start* button is pressed.

Files Converted: displays the number of files that were converted.

Add>:	add the selected file in Available Files box to Files To Covert box
Add All>>:	add all files in the Available Files box to Files To Convert box
Remove <:	remove the selected file in the Files To Convert box
Remove All <<:	remove all files listed in File To Convert box
Start:	start the conversion process
Abort:	abort a conversion in process
Exit:	quit

There are two options in finding the binary files:

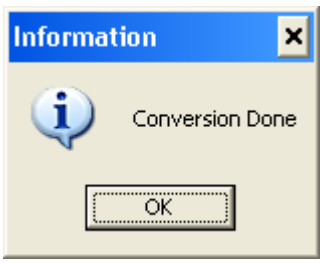
3. Click the ellipse button to browse to the directory that contains the binary files.
4. Cut and paste the absolute path of the directory containing the BIN files to the *File Directory* textbox and press the *Refresh* button.

Double clicking on a file in *Available Files* will add the file to the *Files To Convert* box.

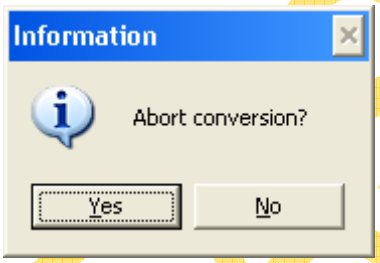
Double clicking on a file in *Files To Convert* box will remove the file from the box.

When the *Start* button is pressed, all the files listed in *Files To Convert* will be converted. The converted files are placed in the same directory as the original files with the extension ***.bin***.

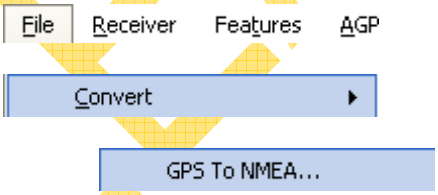
A popup window will notify the user that the conversion is complete.



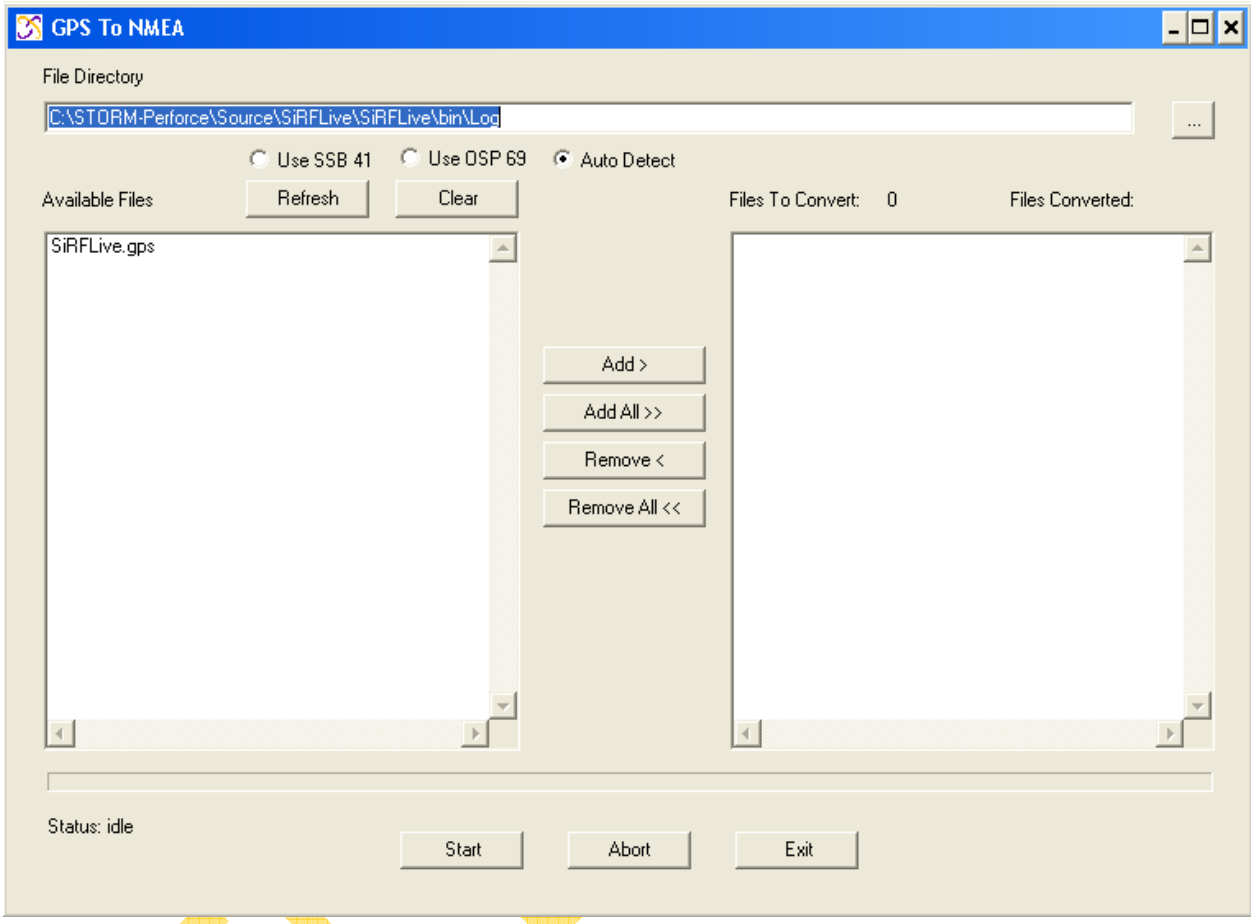
If the Abort button is pressed during conversion, a popup window will ask the user to confirm their decision before continuing.



4.4.1.2.3.GPS to NMEA



The GPS to NMEA conversion will convert a .gps file format to an NMEA format.



File Directory: displays the path of the directory that contains the GPS files.

Use SSB 41: option to convert GPS to NMEA using SSB message 41.

Use OSP 69: option to convert GPS to NMEA using OSP position response.

Auto Detect: default option that looks for both messages 41 and 69 and will align the TOW timestamps and output both messages. If message 69 is not found then it will only use message 41.

Refresh: refresh/update *Available Files* box

Clear:	clear all files listed in *Available Files* box
Available Files:	displays all of the GPS files in the directory specified in the *File Directory*.
Files To Convert:	displays the files that will be converted when the *Start* button is pressed.
Files Converted:	displays the number of files that were converted.
Add>:	add the selected file in *Available Files* box to *Files To Covert* box
Add All>>:	add all files in the *Available Files* box to *Files To Convert* box
Remove <:	remove the selected file in the *Files To Convert* box
Remove All <<:	remove all files listed in *File To Convert* box
Start:	start the conversion process
Abort:	abort a conversion in process
Exit:	quit

Two options to find the GPS files:

1. Click the ellipse button to browse to the directory that contains the GPS files.

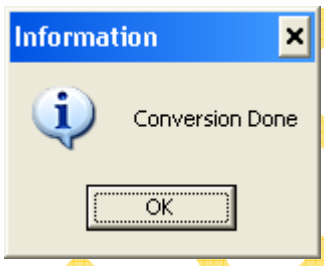
2. Cut and paste the absolute path of the directory containing the GPS files to the *File Directory* textbox and press the *Refresh* button.

Double clicking on a file in *Available Files* will add the file to the *Files To Convert* box.

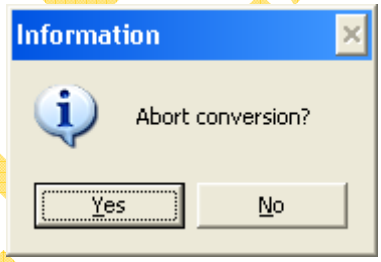
Double clicking on a file in *Files To Convert* box will remove the file from the box.

When the *Start* button is pressed, all the files listed in *Files To Convert* will be converted. The converted files are placed in the same directory as the original files with the extension ***.nmea***.

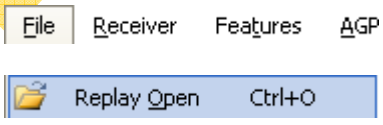
A popup window will notify the user that the conversion is complete.



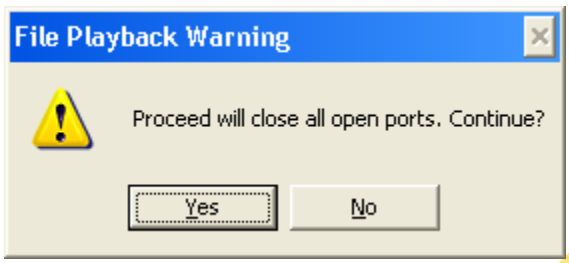
If the Abort button is pressed during conversion, a popup window will ask the user to confirm their decision before continuing.



4.4.1.3.Replay Open



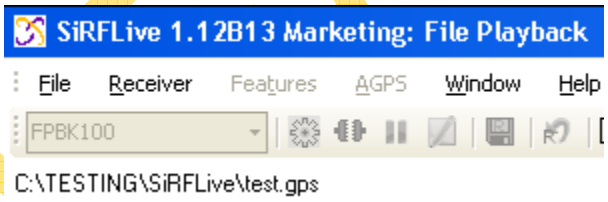
Open a Replay file. Selecting this command will warn the user with the following dialog.



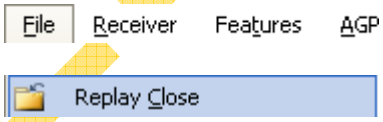
Pressing Yes will activate the playback function buttons,

the track bar,

and show the file name in the log file status bar and display 'File Playback' in the title bar.

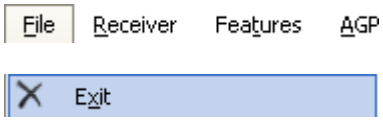


4.4.1.4.Replay Close



Close the Replay File

4.4.1.5.Exit

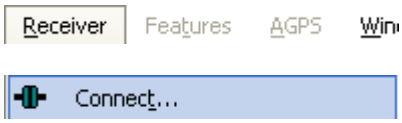


This terminates the application and closes SiRFLive. This will also save the location of any open windows in SiRFLive.

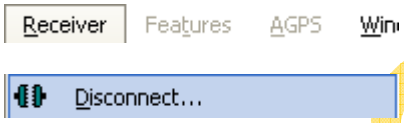
4.4.2. Receiver

Most interactions with the Rx can be performed under the Receiver menu item

4.4.2.1.Connect

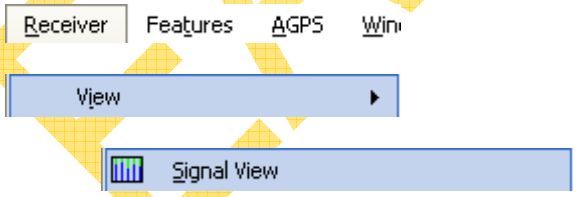


4.4.2.2.Disconnect



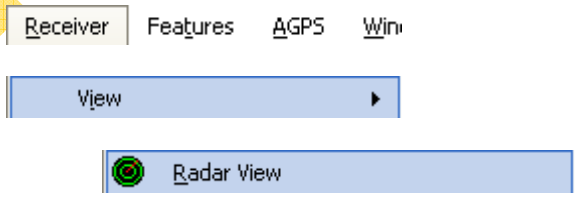
4.4.2.3.Views

4.4.2.3.1.Signal View



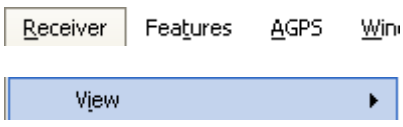
See the Signal View Section under Tool Strip for more information.

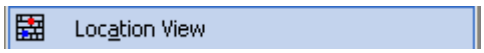
4.4.2.3.2.Radar View



See the Radar View Section under Tool Strip for more information.

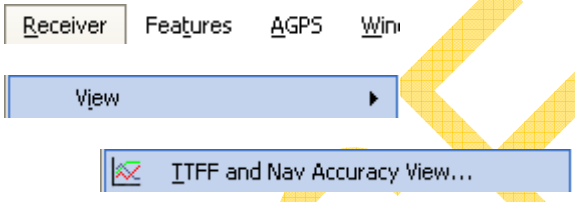
4.4.2.3.3.Location View





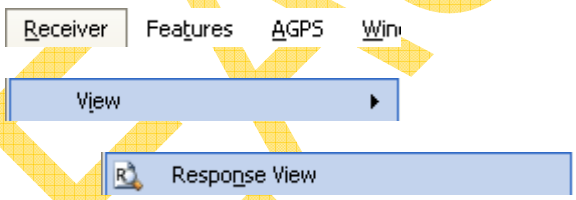
See the Location View Section under Tool Strip for more information.

4.4.2.3.4.TTFF/Nav Accuracy View



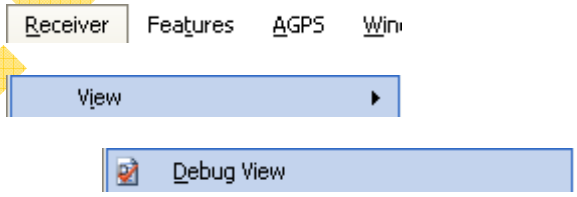
See the TTFF/Nav Accuracy View under Tool Strip for more information.

4.4.2.3.5.Response View



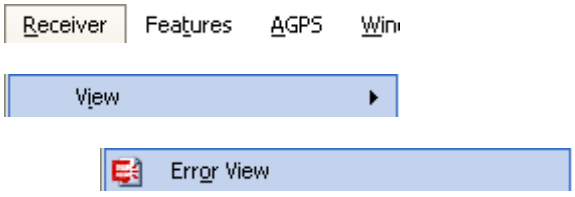
See the Response View Section under Tool Strip for more information.

4.4.2.3.6.Debug View



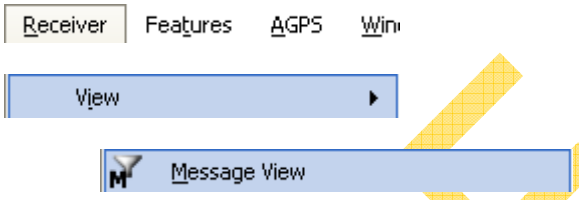
See the Debug View Section under Tool Strip for more information.

4.4.2.3.7.Error View



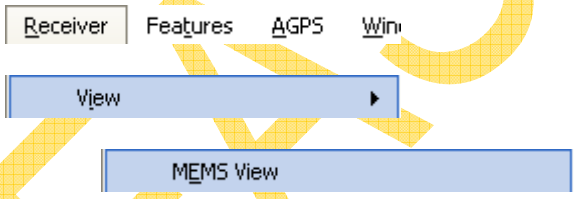
See the Error View Section under Tool Strip for more information.

4.4.2.3.8.Message View

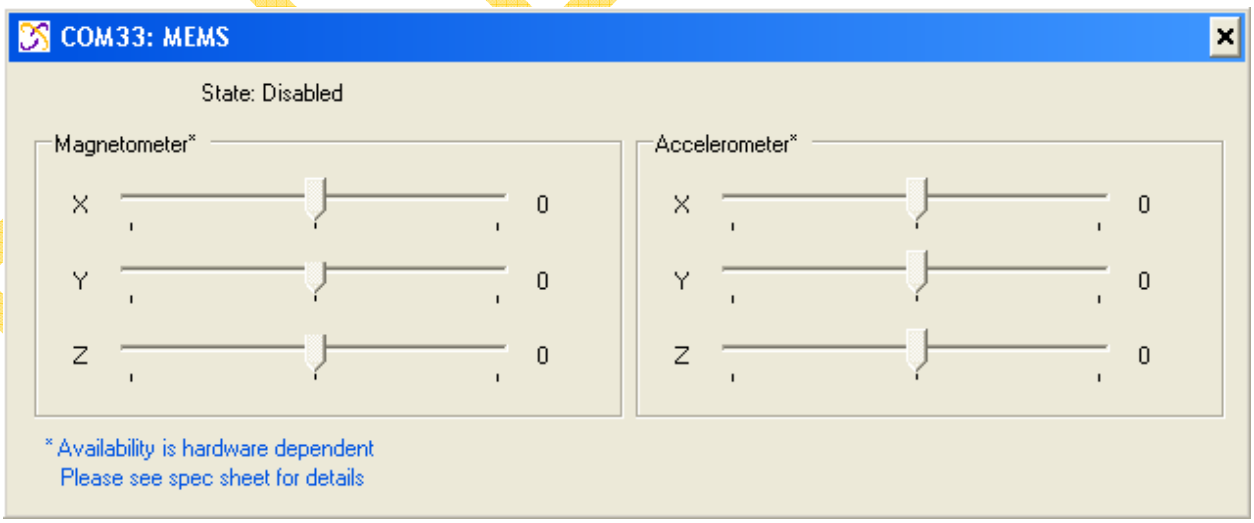


See the Message View Section under Tool Strip for more information.

4.4.2.3.9.MEMS View

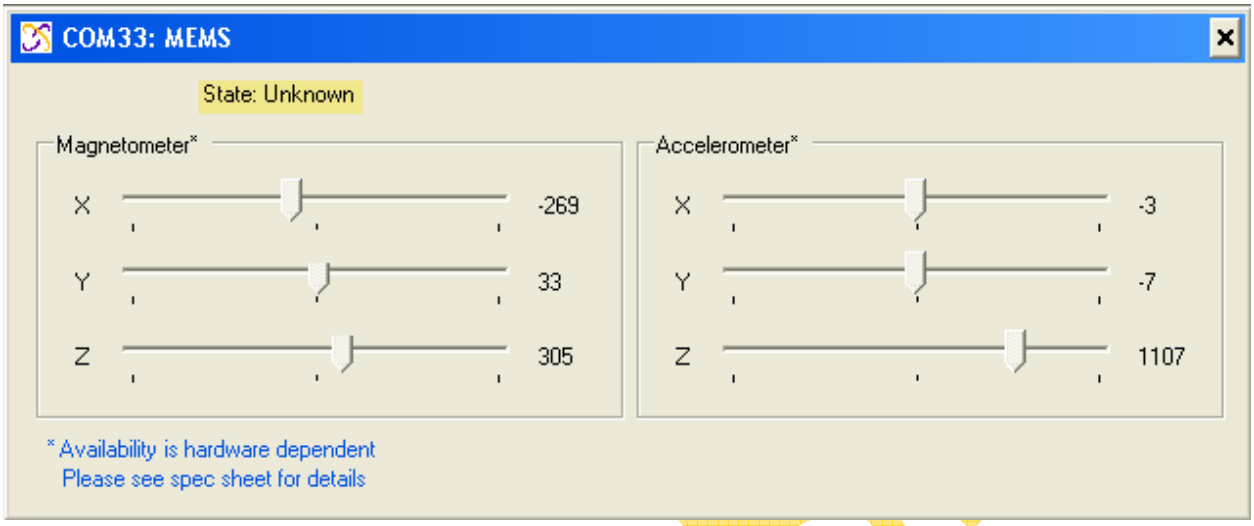


If the MEMS state of the Rx is disabled, then the MEMS View will look like the following:

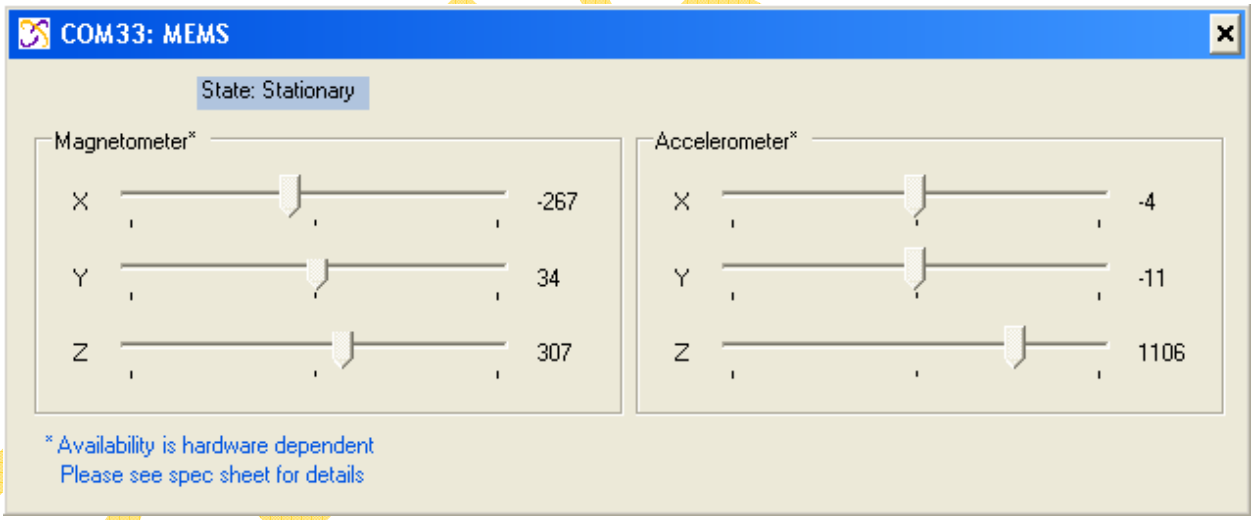


The three other states that MEMS can be in if enabled are:

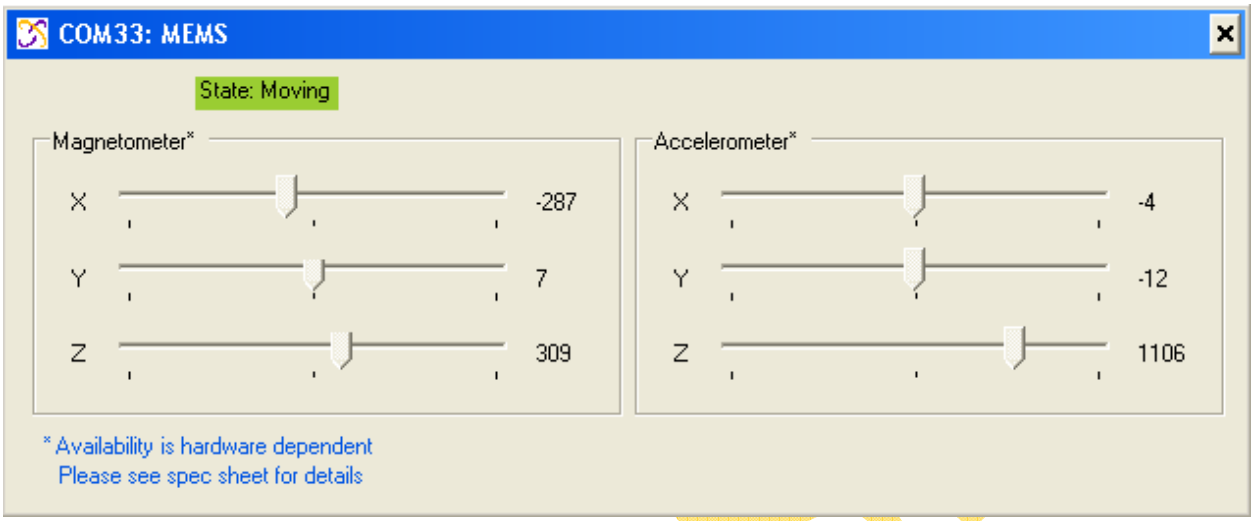
- Unknown: When there is not enough information for the unit to make a decision.



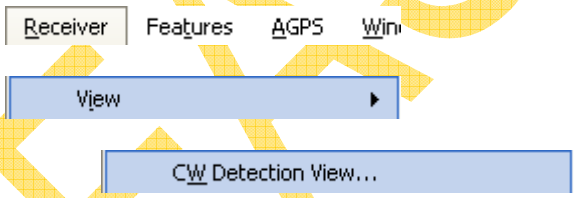
- Stationary: When there is enough information to tell that the unit is motionless.



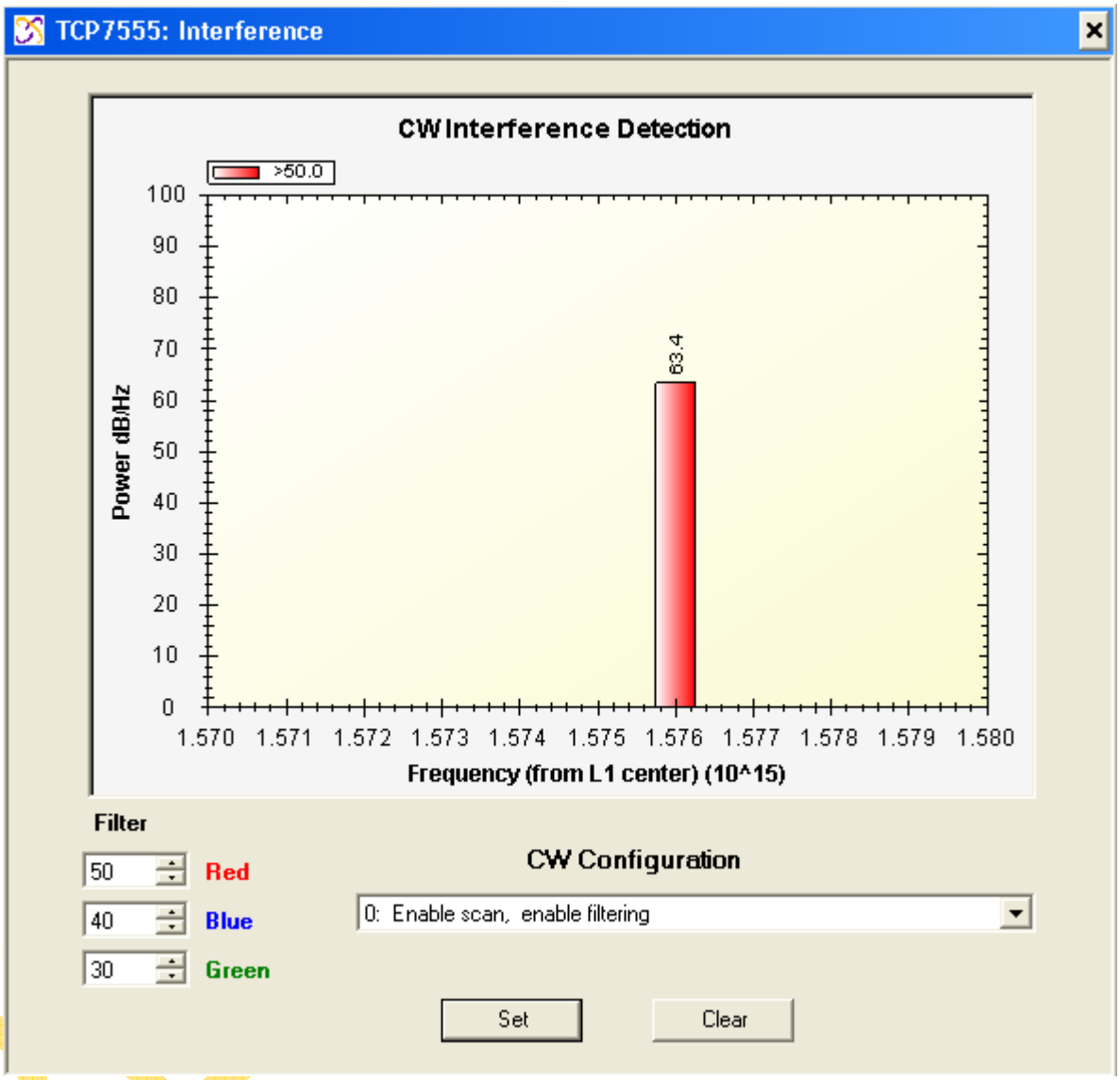
- Moving: When there is enough information to tell that the unit is in motion.



4.4.2.3.10.CW Detection View



The Continuous Wave Interference Detection window can display the jamming effect caused by an external signal. The following screenshot shows a jamming signal being inserted at 1.576GHz.



Filter values –

Red: > red filter value (default: 50)

Blue: > blue filter value and < red filter value (default: 40)

Green > green filter value and < blue filter value (default: 30)

CW Configuration –

0: Enable scan, enable filtering

Normal operation; turns on the OFFT filter if the interference is in the band, turns on 2MHz filter if strong interference is present.

2: Enable scan, use 2MHz

Same as above but disables the OFFT filter.

3: Enable scan, no filtering

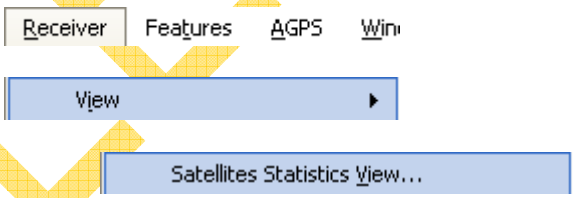
Same as above but disables all filtering (2MHz and OFFT).

4: Disable scan, disable filtering

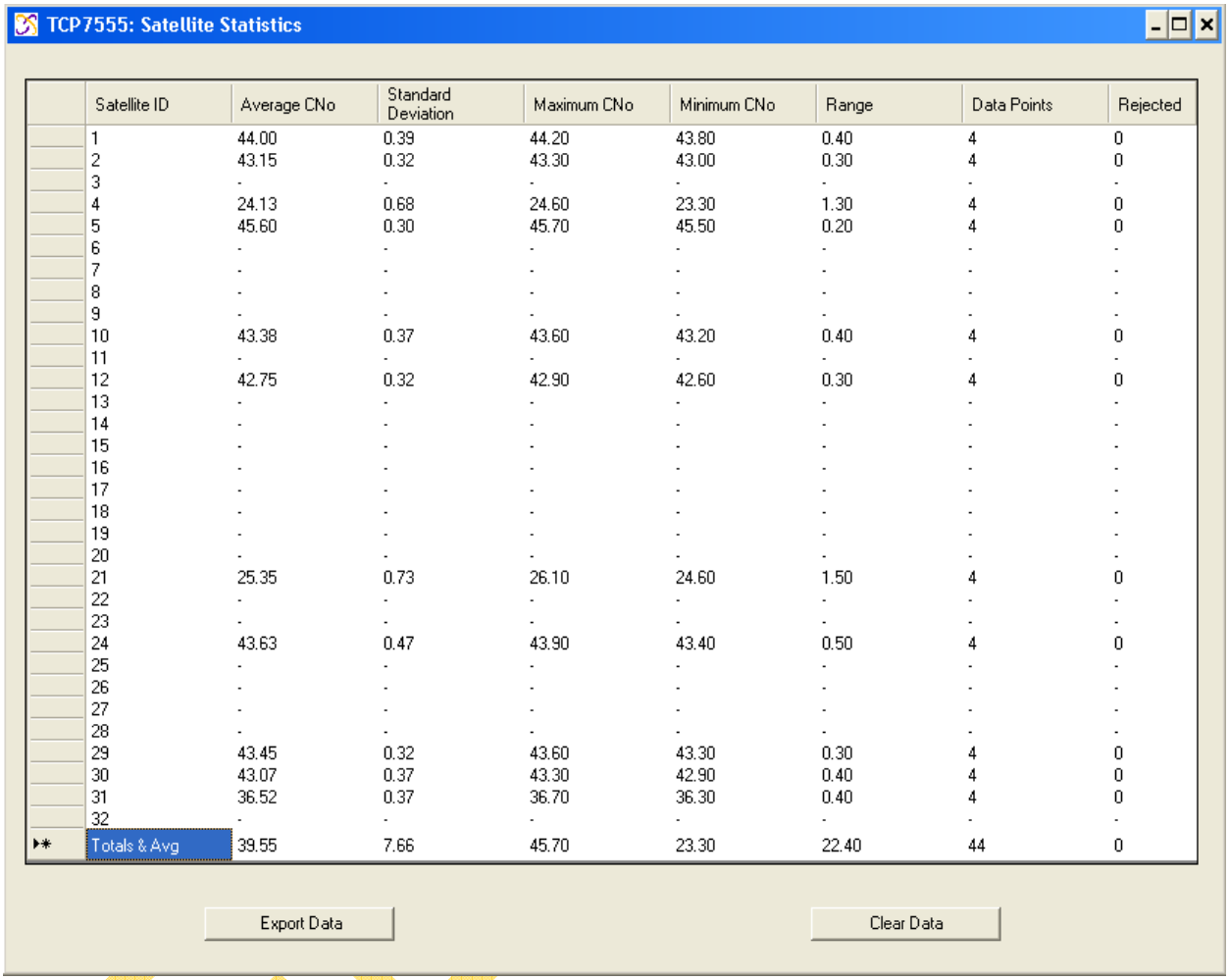
Completely disables both scanning and filtering.

The Interference window can detect up to 8 separate signals being inserted.

4.4.2.3.11.Satellites Statistics View



The Satellite Statistics window displays the following information per SV: Average C/No, Standard Deviation, Maximum C/No, Minimum C/No, Range, Data Points, and Rejected.

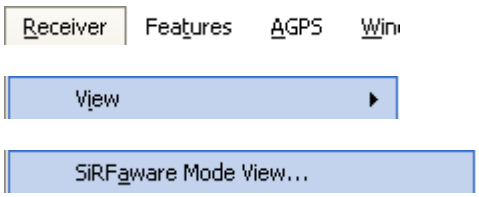


	Satellite ID	Average CNo	Standard Deviation	Maximum CNo	Minimum CNo	Range	Data Points	Rejected
	1	44.00	0.39	44.20	43.80	0.40	4	0
	2	43.15	0.32	43.30	43.00	0.30	4	0
	3	-	-	-	-	-	-	-
	4	24.13	0.68	24.60	23.30	1.30	4	0
	5	45.60	0.30	45.70	45.50	0.20	4	0
	6	-	-	-	-	-	-	-
	7	-	-	-	-	-	-	-
	8	-	-	-	-	-	-	-
	9	-	-	-	-	-	-	-
	10	43.38	0.37	43.60	43.20	0.40	4	0
	11	-	-	-	-	-	-	-
	12	42.75	0.32	42.90	42.60	0.30	4	0
	13	-	-	-	-	-	-	-
	14	-	-	-	-	-	-	-
	15	-	-	-	-	-	-	-
	16	-	-	-	-	-	-	-
	17	-	-	-	-	-	-	-
	18	-	-	-	-	-	-	-
	19	-	-	-	-	-	-	-
	20	-	-	-	-	-	-	-
	21	25.35	0.73	26.10	24.60	1.50	4	0
	22	-	-	-	-	-	-	-
	23	-	-	-	-	-	-	-
	24	43.63	0.47	43.90	43.40	0.50	4	0
	25	-	-	-	-	-	-	-
	26	-	-	-	-	-	-	-
	27	-	-	-	-	-	-	-
	28	-	-	-	-	-	-	-
	29	43.45	0.32	43.60	43.30	0.30	4	0
	30	43.07	0.37	43.30	42.90	0.40	4	0
	31	36.52	0.37	36.70	36.30	0.40	4	0
	32	-	-	-	-	-	-	-
▶*	Totals & Avg	39.55	7.66	45.70	23.30	22.40	44	0

Data Buttons:

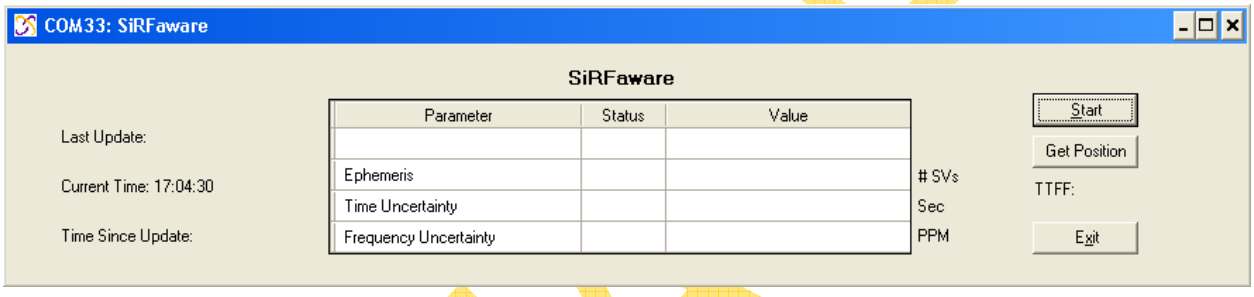
- Export Data: Allows the user to export the data shown in the Satellite Statistics window to a .csv file.
- Clear Data: Clears all fields of the Satellite Statistics window.

4.4.2.3.12.SiRFaware Mode View

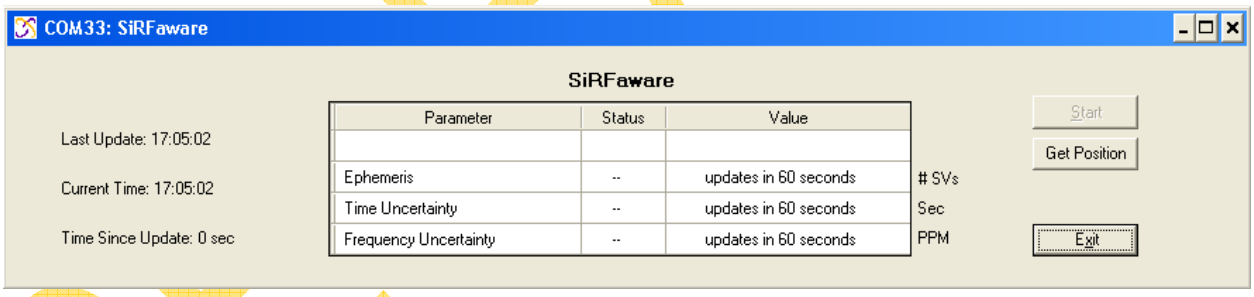


SiRFaware seeks to minimize position, time and frequency uncertainty on a best-effort basis, subject to an average power consumption constraint. SiRFaware is particularly targeted to maintaining internal aiding in difficult indoor environments.

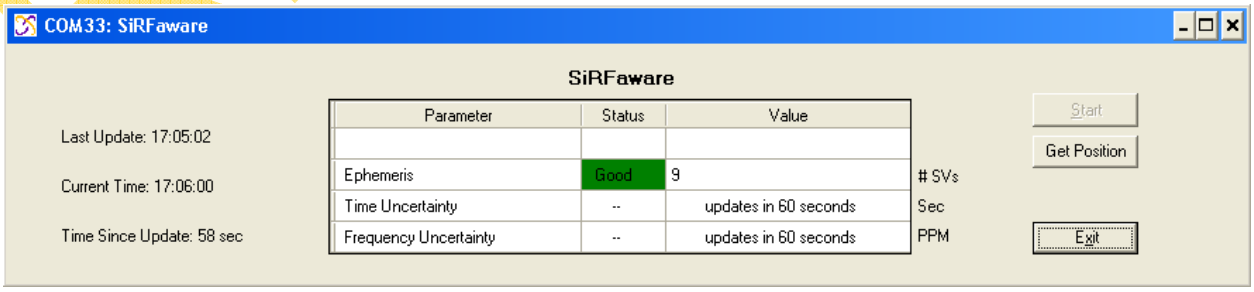
The SiRFaware window that appears allows for the user to set the Rx into SiRFaware mode, which will update time and frequency uncertainties every sixty seconds.



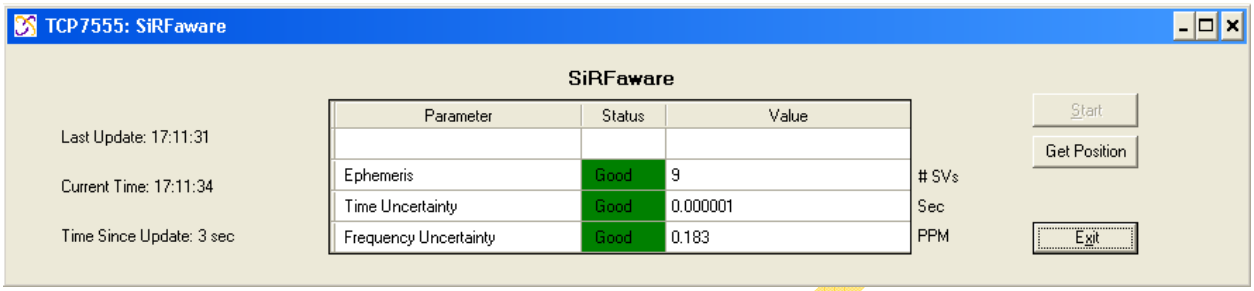
Once the Start button is pressed, data will update in the window when available and start the timer.



The ephemeris value will usually update first, showing the number of SVs that are available in the ephemeris list.

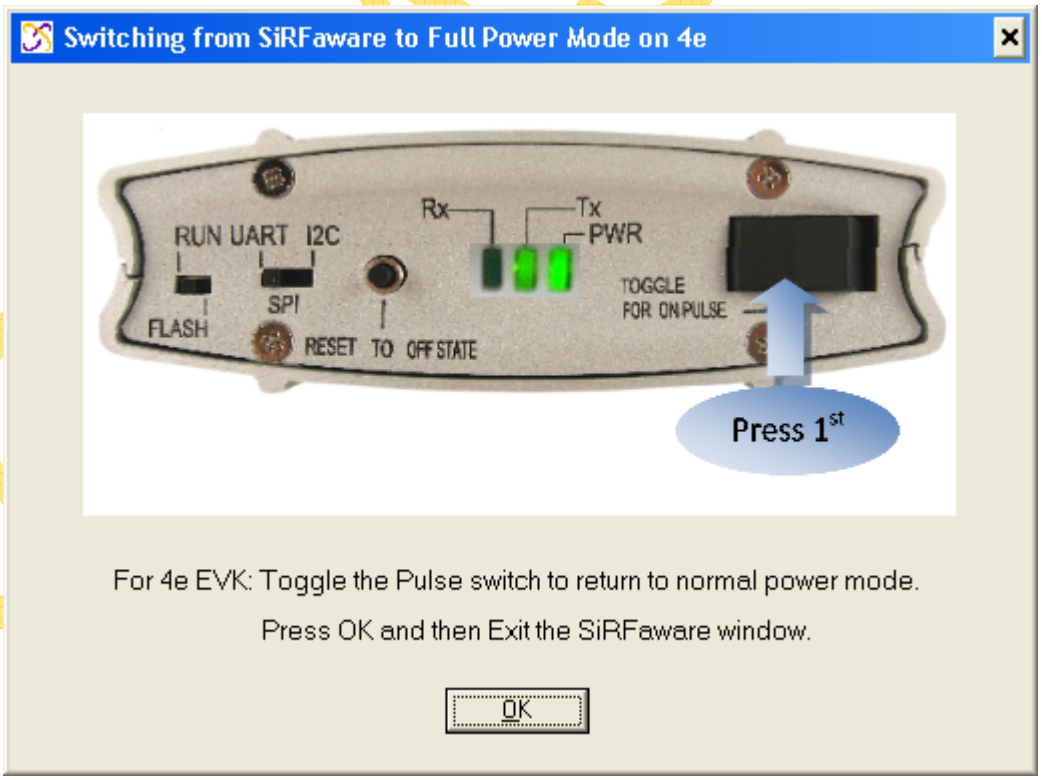


After sixty seconds the time and frequency uncertainties will be updated.

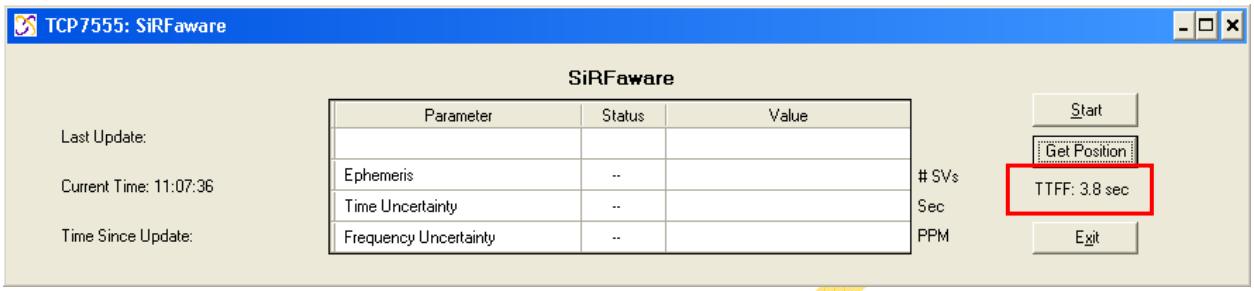


Pressing the Get Position button will take the Rx out of SiRFaware mode and clear the fields in the window. It will also display the TTFF in seconds, shown below.

******NOTE*** When using a GSD4e receiver, after pressing the* Get Position *button the following window will appear since a hardware pulse is required:***

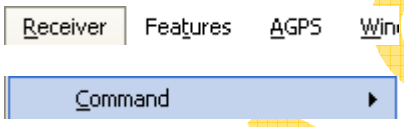


After the Pulse switch on the 4e Rx is toggled, the SiRFaware window will display the TTFF.



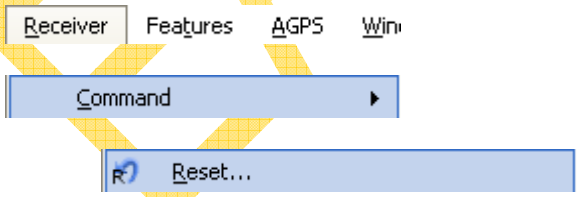
Press the Exit button to close the SiRFaware window.

4.4.2.4.Command



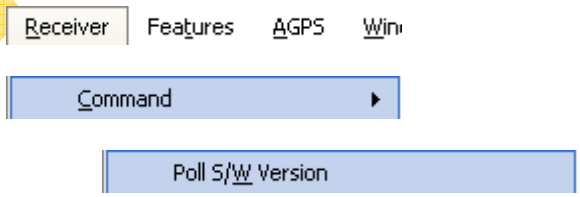
Commands for the Rx to act upon are done through this menu

4.4.2.4.1.Reset

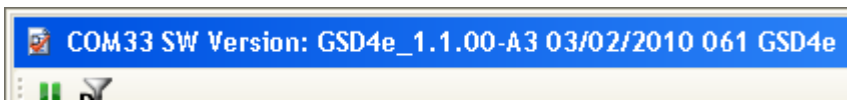


See the Reset Section for more information

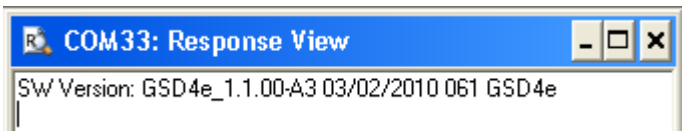
4.4.2.4.2.Poll S/W Version



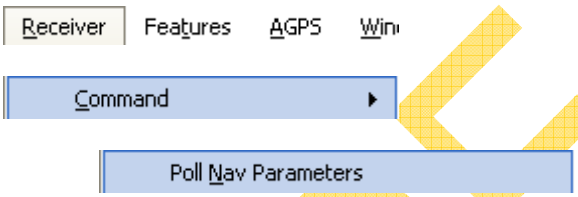
The Poll S/W Version command will display the current software version in the Debug View title bar



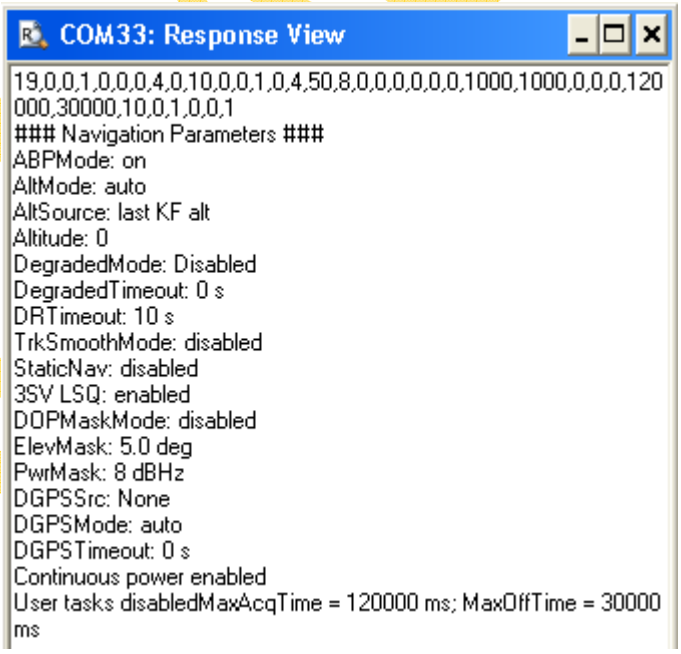
as well as in the Response View window



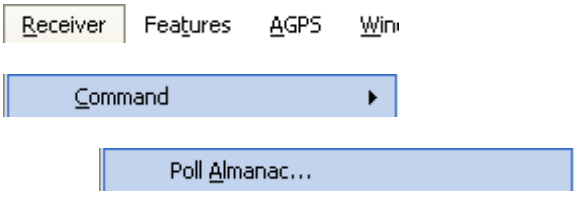
4.4.2.4.3.Poll Nav Parameters



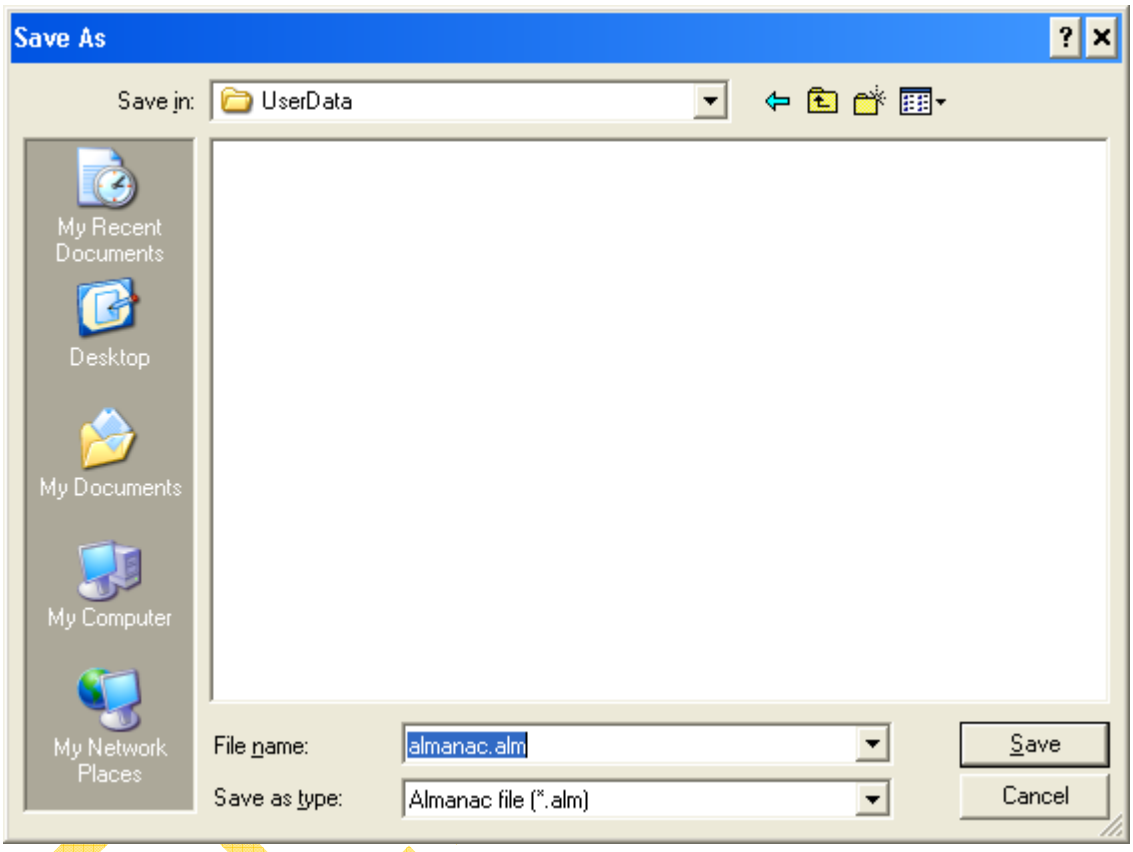
When the Response View window is opened, polling the navigation parameters will display that information in the window as both Message 19 output and as user-friendly text for quick and easy interpretation of the message.



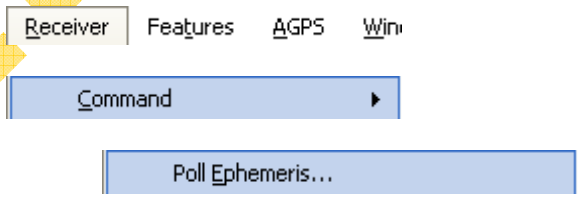
4.4.2.4.4.Poll Almanac



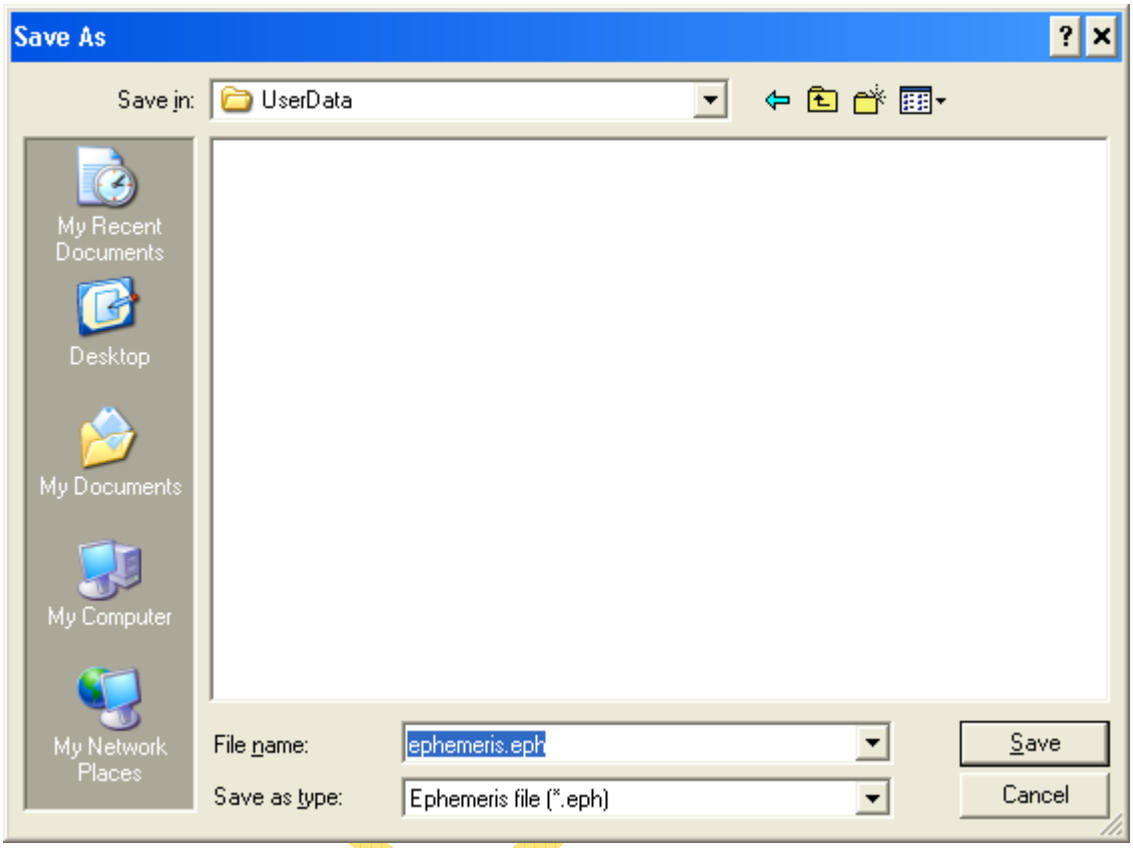
Polling the Almanac will save the current almanac into a file with an .alm file extension.



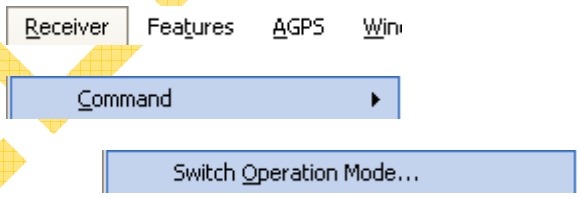
4.4.2.4.5.Poll Ephemeris



Polling the Ephemeris will save the current ephemeris into a file with an .eph file extension.

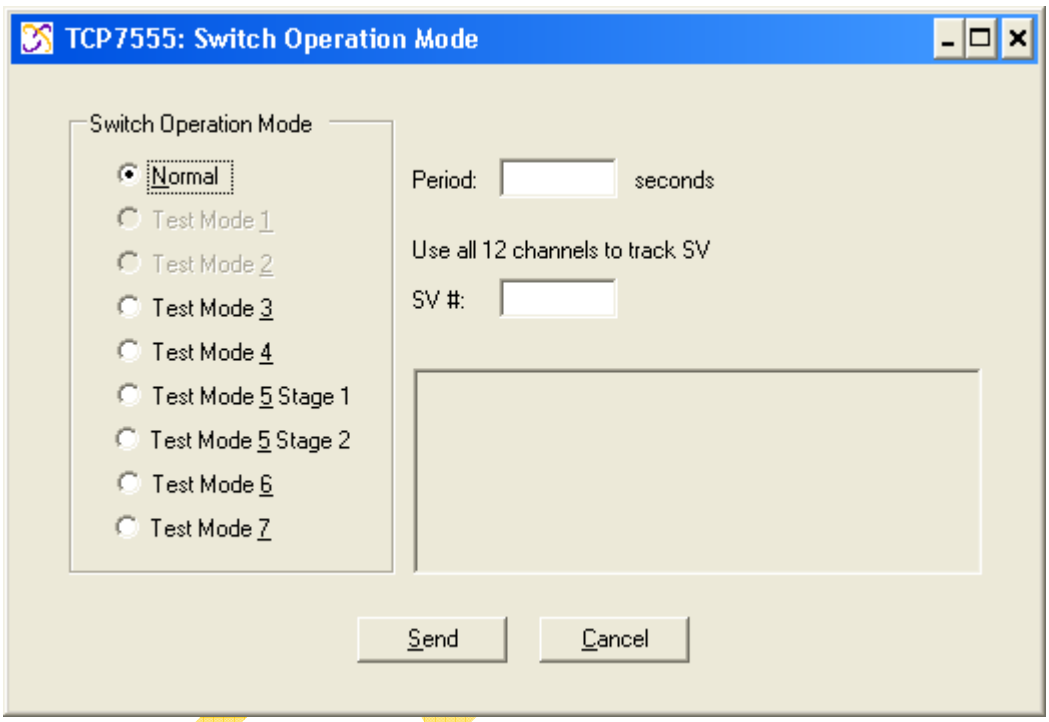


4.4.2.4.6.Switch Operation Mode

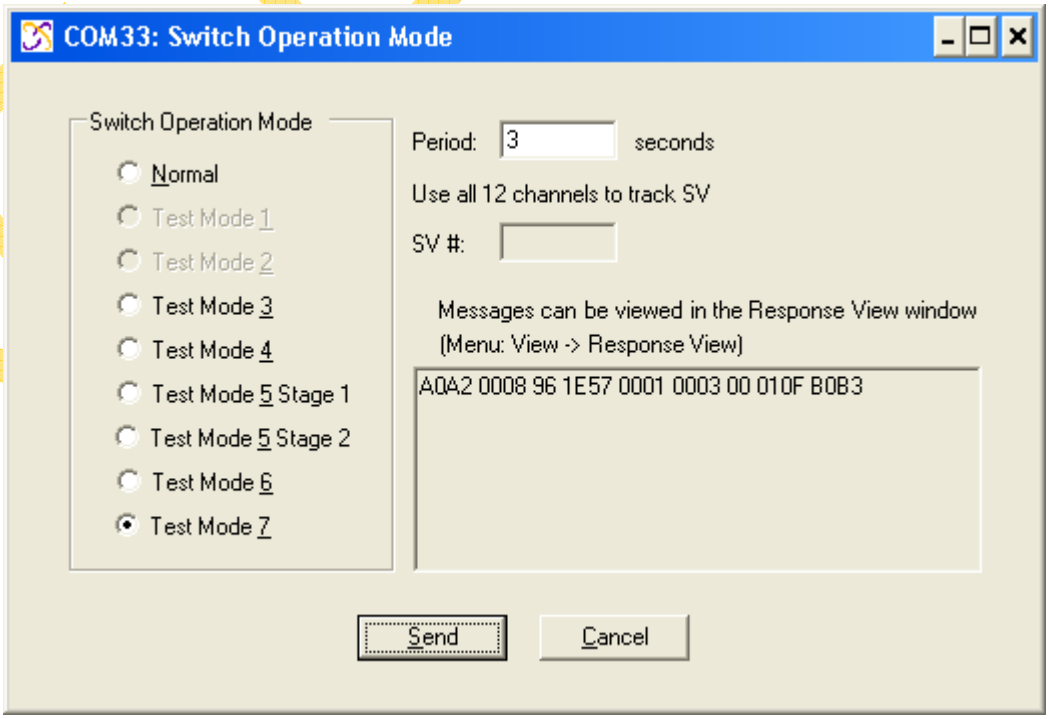


To enable the different Test Modes available select 'Switch Operation Mode'. Select the length of time to run the test and which SV to track in the appropriate fields.

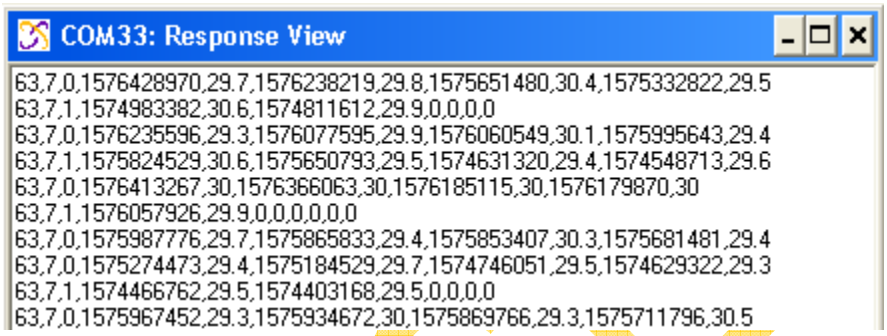
This is specifically for developers with the understanding of the RF signal input and the use of a single channel simulator.



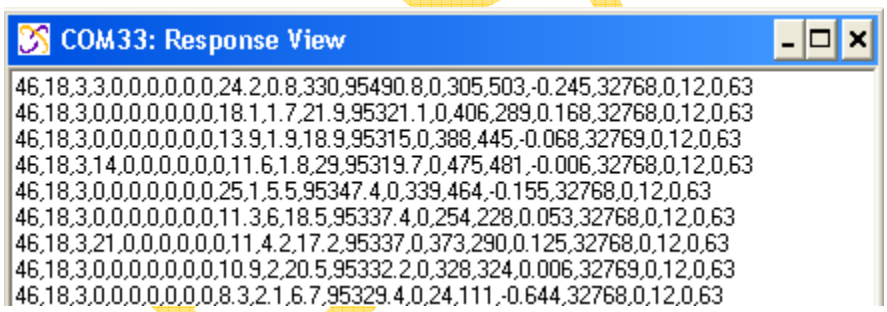
The example below displays the message used to set the Rx into Test Mode.



After enabling the Test Mode selected the Response View window will show message 63 for Test Mode 7

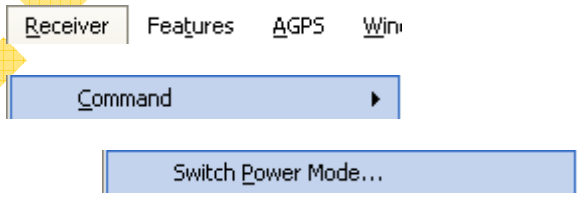


and message 46 for the other Test Modes



To get the Rx out of Test Mode, select the Normal radio button and then press the 'Send' button.

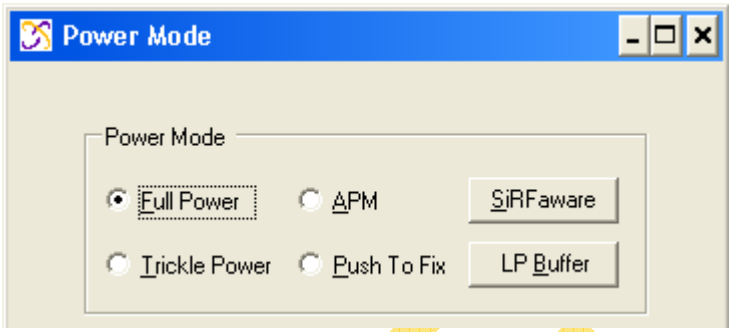
4.4.2.4.7.Switch Power Mode



The Switch Power Mode window allows for the receiver to be put into different low power states and to return the receiver to normal or full power.

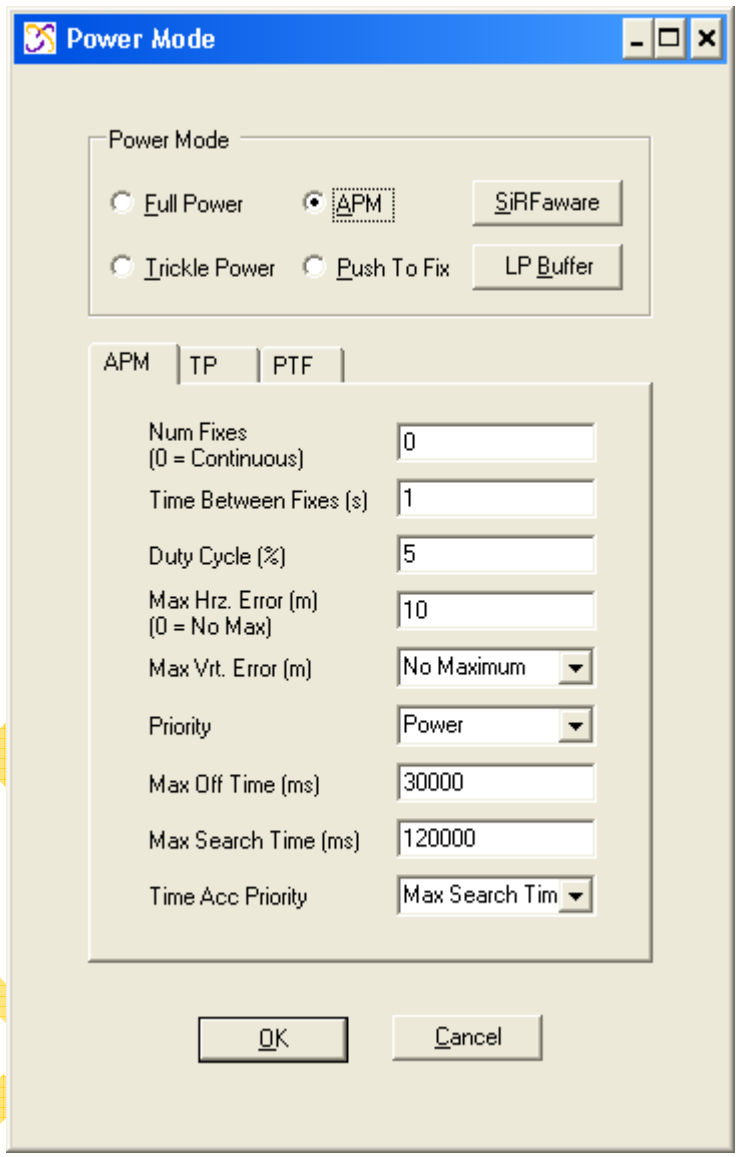
4.4.2.4.7.1.Full Power

Full Power is the normal state of the receiver



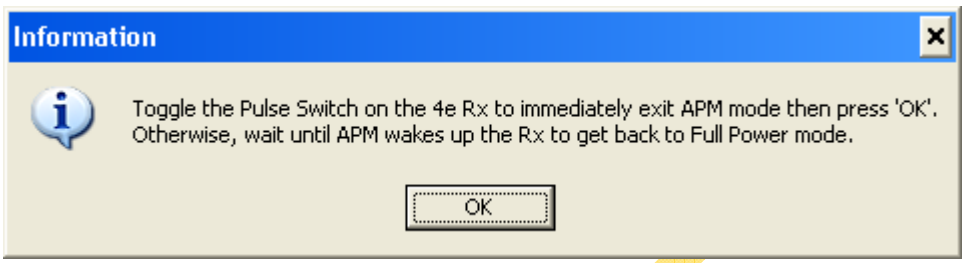
4.4.2.4.7.2.APM

APM is the Advanced Power Management state



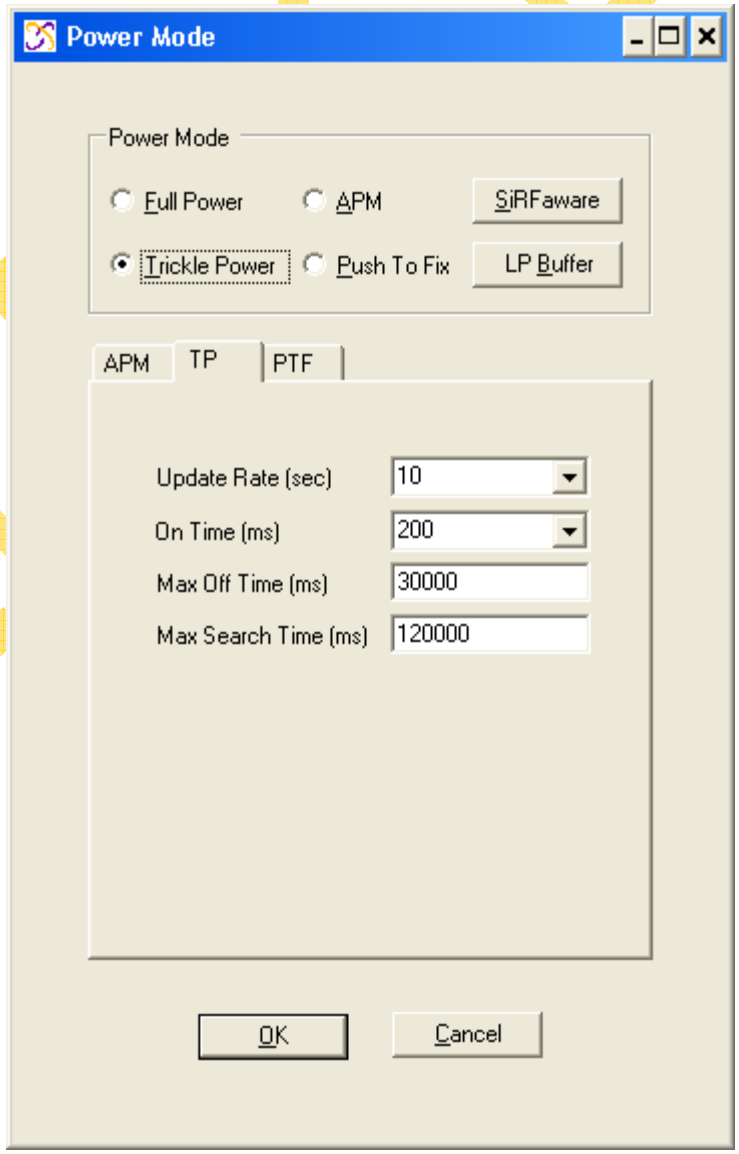
By default, when APM is selected, the AutoReply settings are set to the required parameters and a hot start is sent in order for APM to be enabled on the Rx.

To turn off APM, select the Full Power radio button and press OK. The following dialog will appear



4.4.2.4.7.3.Trickle Power

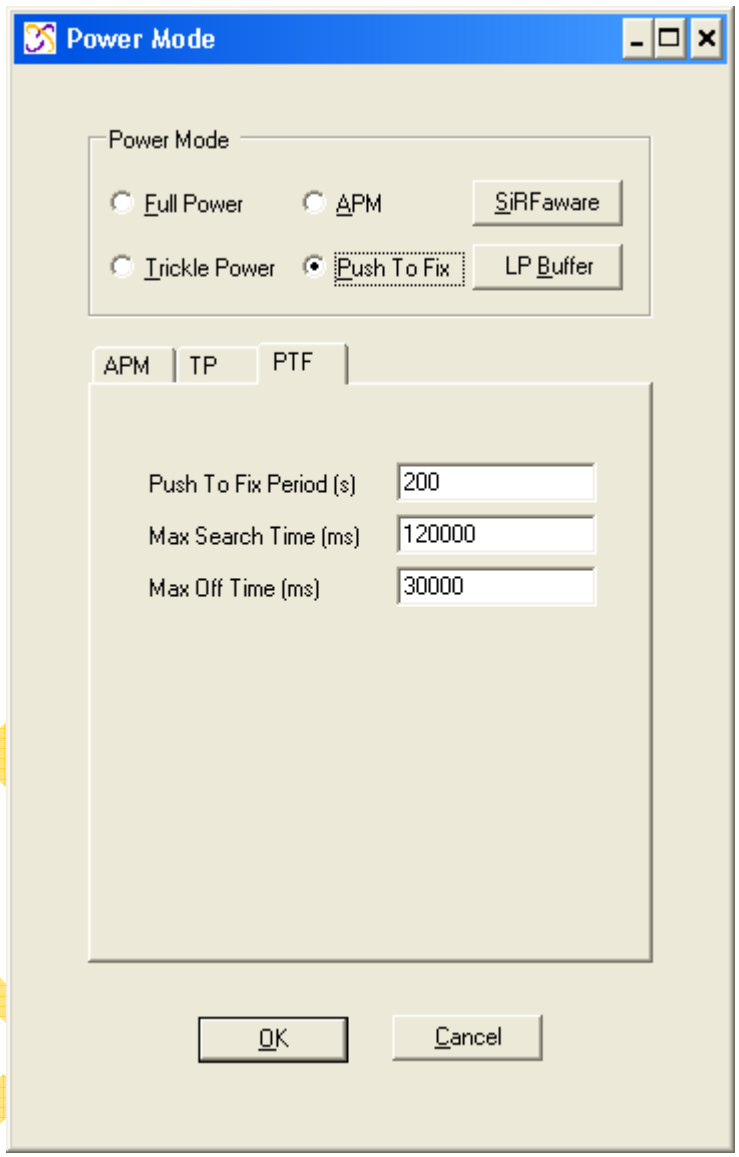
Trickle Power allows the Rx to be in various power modes to save power.



- Update Rate (sec) — how often the receiver will update its status
- On Time (ms) — how long the receiver has to update its status
- Max Off Time (ms) — maximum time for sleep mode. When the Rx is unable to acquire satellites for a TP cycle, it returns to sleep mode for this period of time before it tries again.
- Max Search Time(ms) — When the receiver is unable to reacquire at the start of a cycle, this parameter determines how long it will try to reacquire for. After this time expires, the unit returns to sleep mode for the value set in the Max Off Time field. Entering a value of 0 for this field makes max search time disabled such that the receiver attempts to reacquire continuously. When a value of 0 is entered for the MAX_SEARCH_TIME, the value entered in the MAX_OFF_TIME field is N/A and ignored.

4.4.2.4.7.4.Push To Fix

Push to Fix is a low power state where the receiver goes into a ‘sleep’ mode for a predefined period of time, then ‘wakes’ up until a position is calculated, then goes back to sleep.



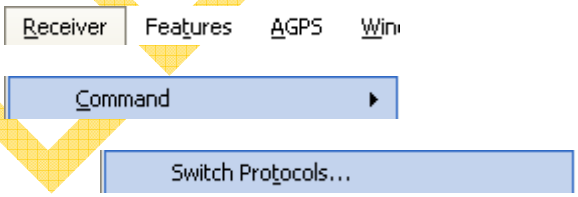
- Push to Fix Period (s) cycle time in seconds. Value range: 10 – 7200 seconds.
- Max Off Time (ms) maximum time for sleep mode. When the Rx is unable to acquire satellites for a TP cycle, it returns to sleep mode for this period of time before it tries again.

- Max Search Time(ms) When the receiver is unable to reacquire at the start of a cycle, this parameter determines how long it will try to reacquire for. After this time expires, the unit returns to sleep mode for the value set in the Max Off Time field. Entering a value of 0 for this field makes max search time disabled such that the receiver attempts to reacquire continuously. When a value of 0 is entered for the MAX_SEARCH_TIME, the value entered in the MAX_OFF_TIME field is N/A and ignored.

4.4.2.4.7.5.Low Power Buffer

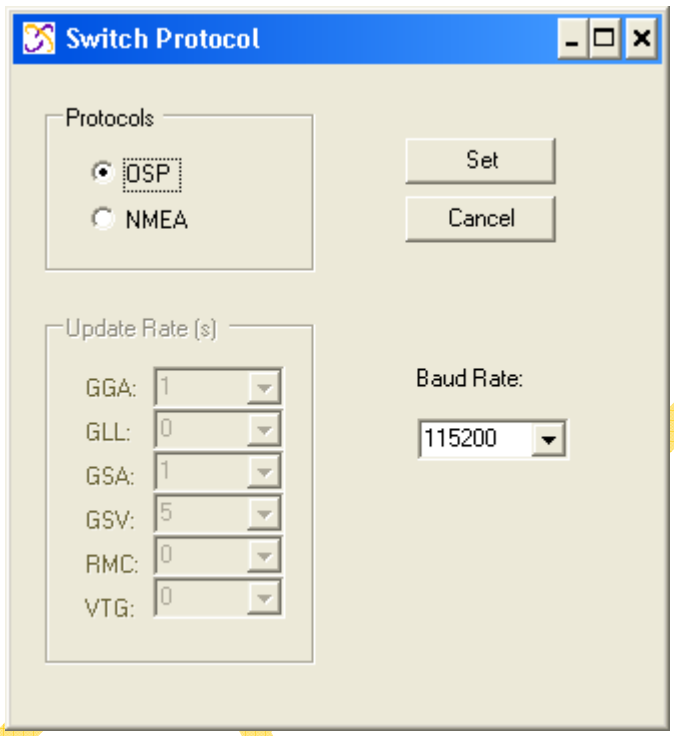
See Section 4.1.2.2.7 for more information

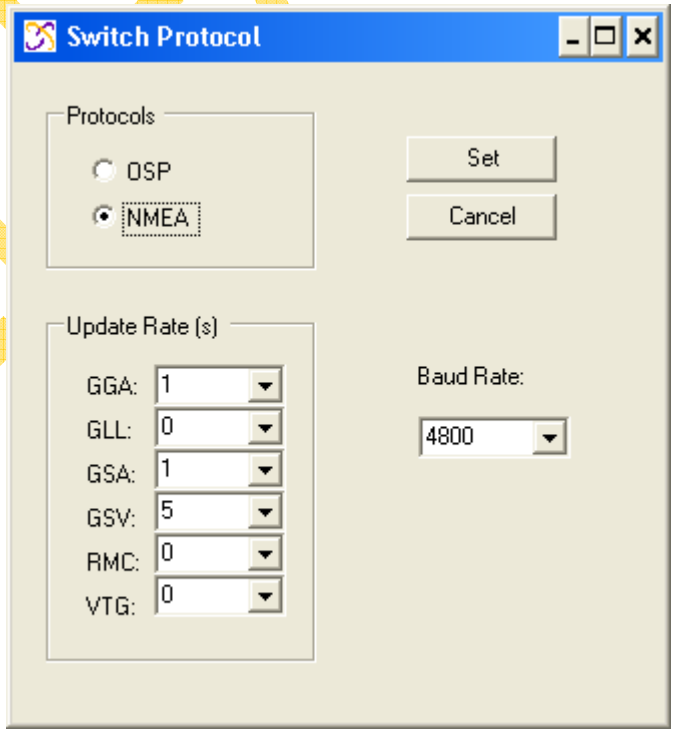
4.4.2.4.8.Switch Protocols



******NOTE*** For GSD4e only***

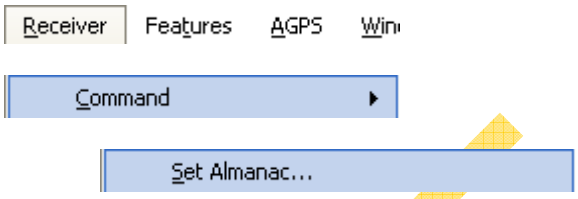
To switch between NMEA and OSP protocols, the Switch Protocol allows the setting of the protocol along with the baud rate, and update rates for NMEA mode.





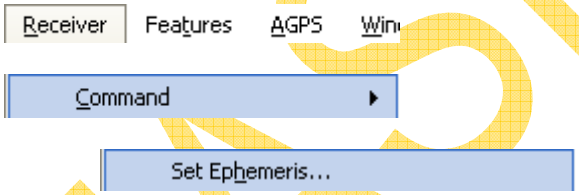
The default values are defined based on the protocol selected as shown above.

4.4.2.4.9.Set Almanac



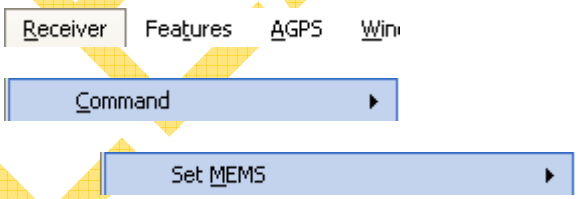
TBD

4.4.2.4.10.Set Ephemeris



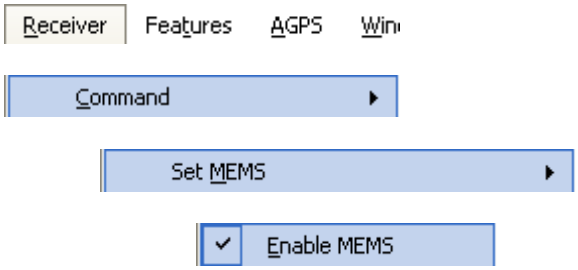
TBD

4.4.2.4.11.Set MEMS



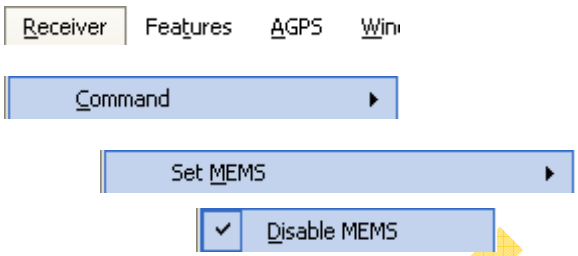
This command turns the MEMS function on and off.

4.4.2.4.11.1.Enable MEMS



This turns on the MEMS feature on the Rx.

4.4.2.4.11.2.Disable MEMS

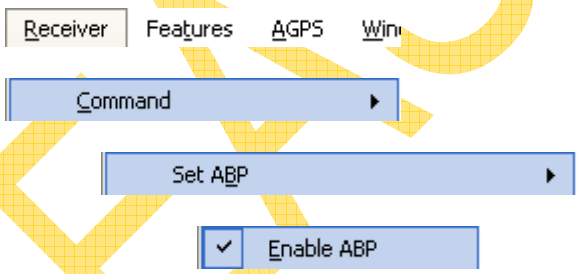


This disables MEMS on the Rx.

4.4.2.4.12.Set ABP

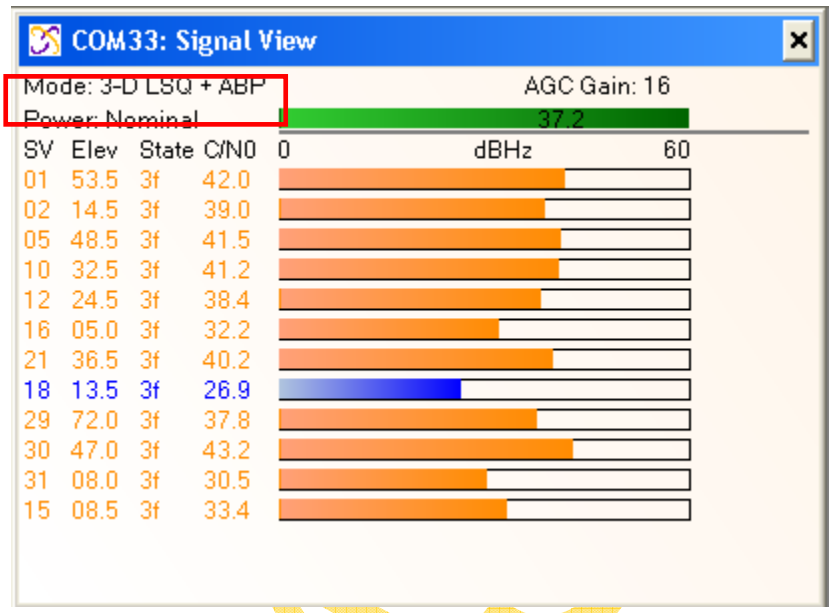
Almanac Based Positioning assists the Rx by obtaining a fix faster through the use of the almanac.

4.4.2.4.12.1.Enable ABP



******NOTE*** For GSD4e only***

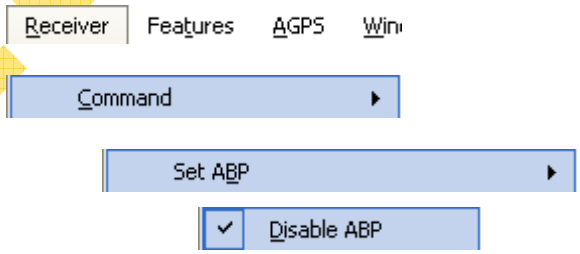
ABP mode by default is disabled. When enabled, the ABP fix for warm and cold starts in the Signal View window is distinguished by the orange color and ABP in the Mode value.



With ABP Mode enabled, the fix has a good TTFF time with a tradeoff with the position error. Cold Reset #3 is with ABP disabled and Cold Reset #4 is with ABP enabled.

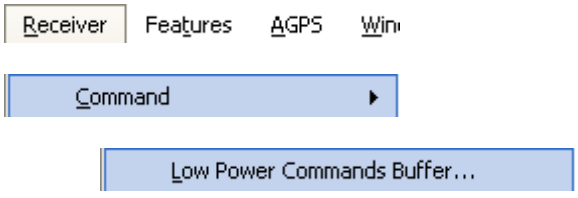
Reset#	TTFF-Reset (s) (avg: 29.53)	TTFF-Aiding (s) (avg: 29.53)	TTFF-First Nav (s) (avg: 29.53)	Horz Acc. (m) (avg: 85.64)	Vert Acc. (m) (avg: 35.41)
3	36.3	36.3	36.3	2.52	5.18
4	22.2	22.2	22.2	162.24	69.35

4.4.2.4.12.2.Disable ABP

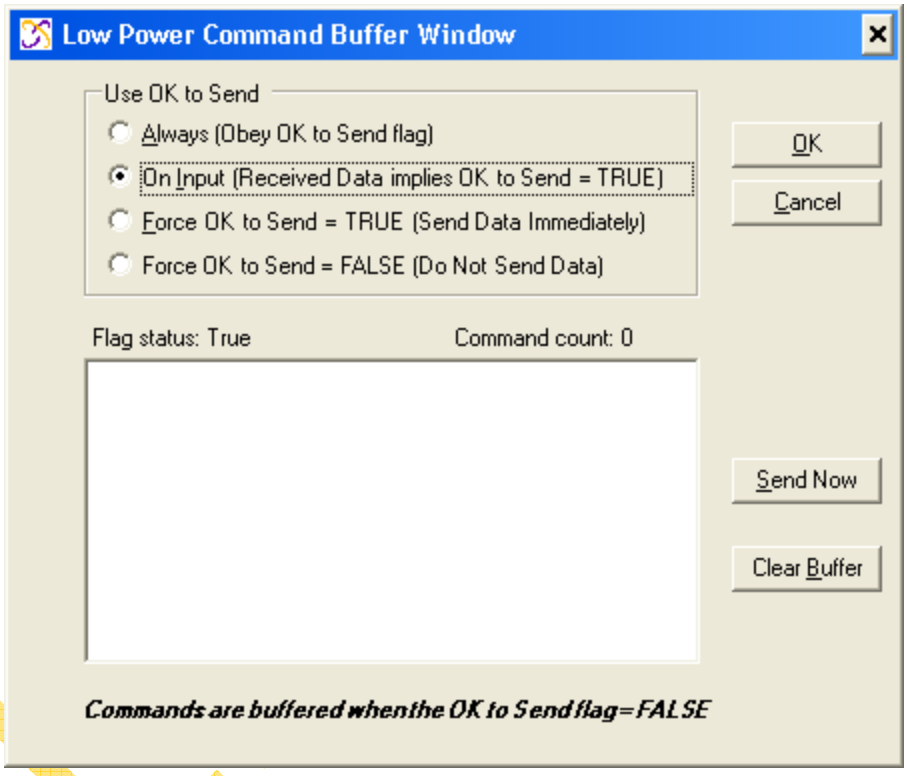


This turns off ABP.

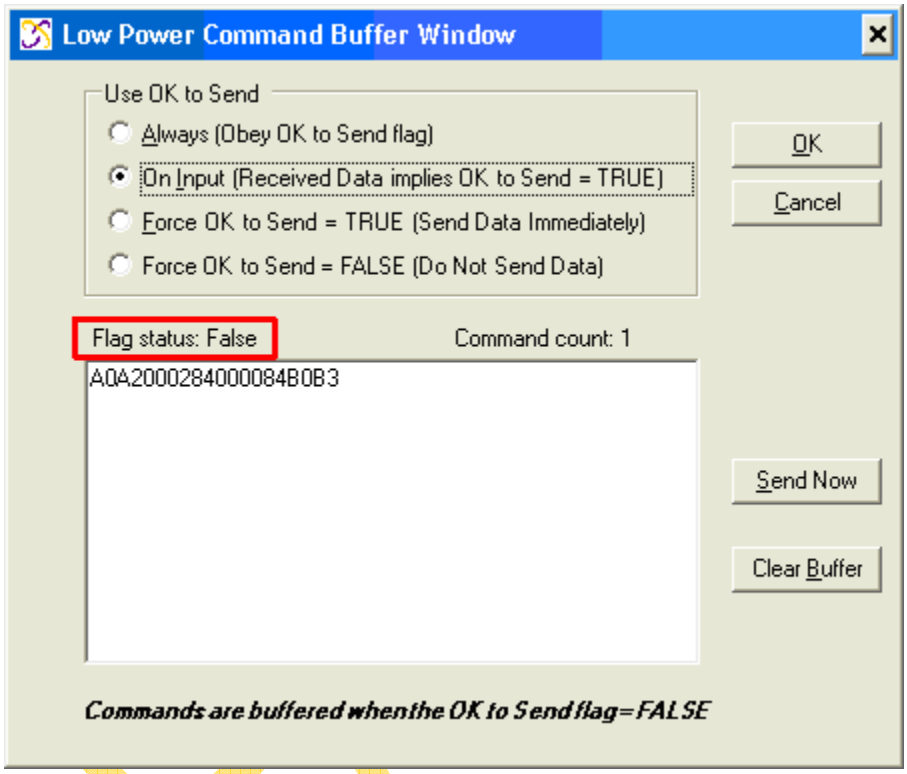
4.4.2.4.13.Low Power Commands Buffer



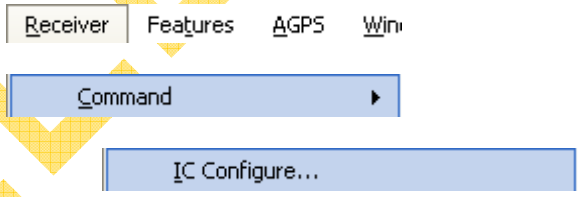
The Low Power Command Buffer allows the user to view any commands that are not sent to the Rx but stored in a buffer during periods of low power (Trickle Power, Push-to-Fix, or APM)



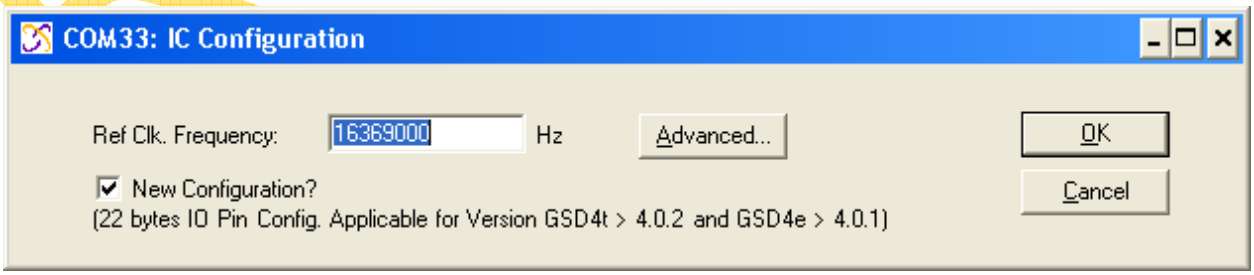
If a command is selected to be sent to the receiver but the receiver is in a low power state, the OK to Send flag is set to false and the commands are buffered until the receiver 'wakes up' and can accept new commands. Below is an example where the Rx is in Trickle Power mode and the Poll S/W Version command was selected but was not sent. Once the OK to Send flag equals true then the buffered commands are sent to the receiver.



4.4.2.4.14.IC Configure

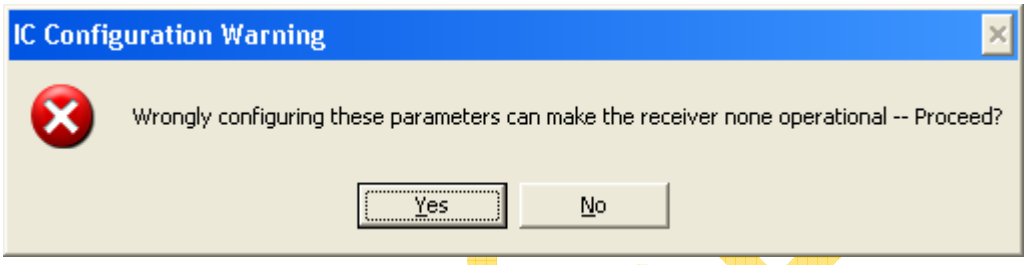


The IC configuration is an advanced configuration tool to assist the developer.

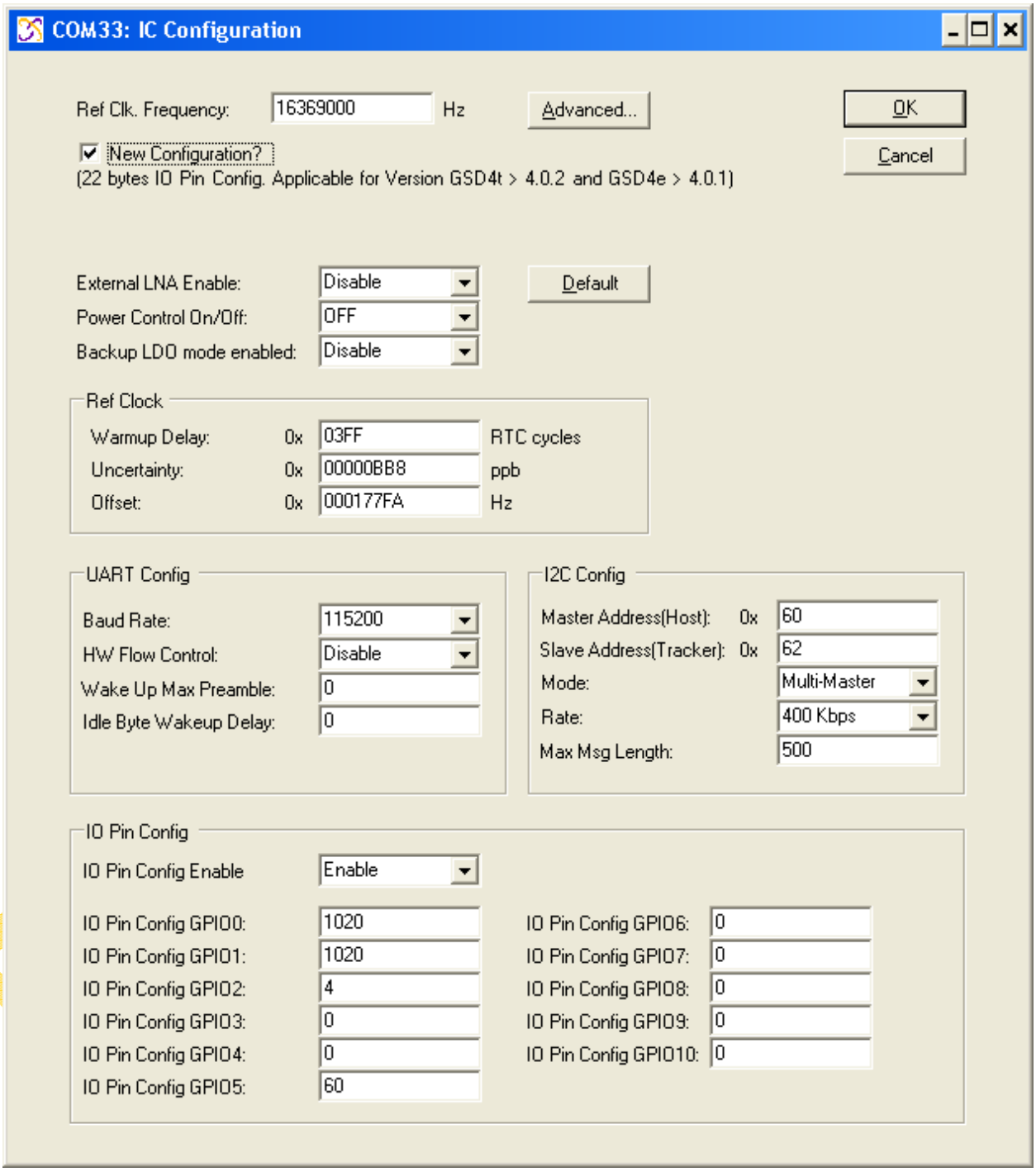


The reference clock frequency is the main item to be modified. Pressing the Advanced button will reveal the other configuration values.

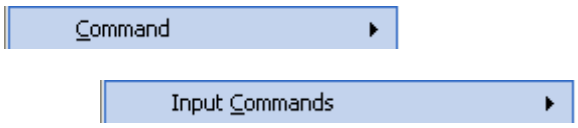
The Warning dialog window will appear first.



If the user selects 'Yes' then the following screen will appear where all of the parameters can be configured.

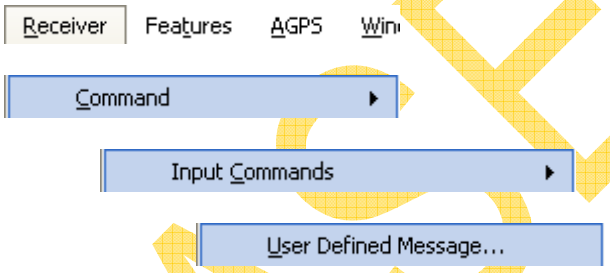


4.4.2.4.15.Input Commands



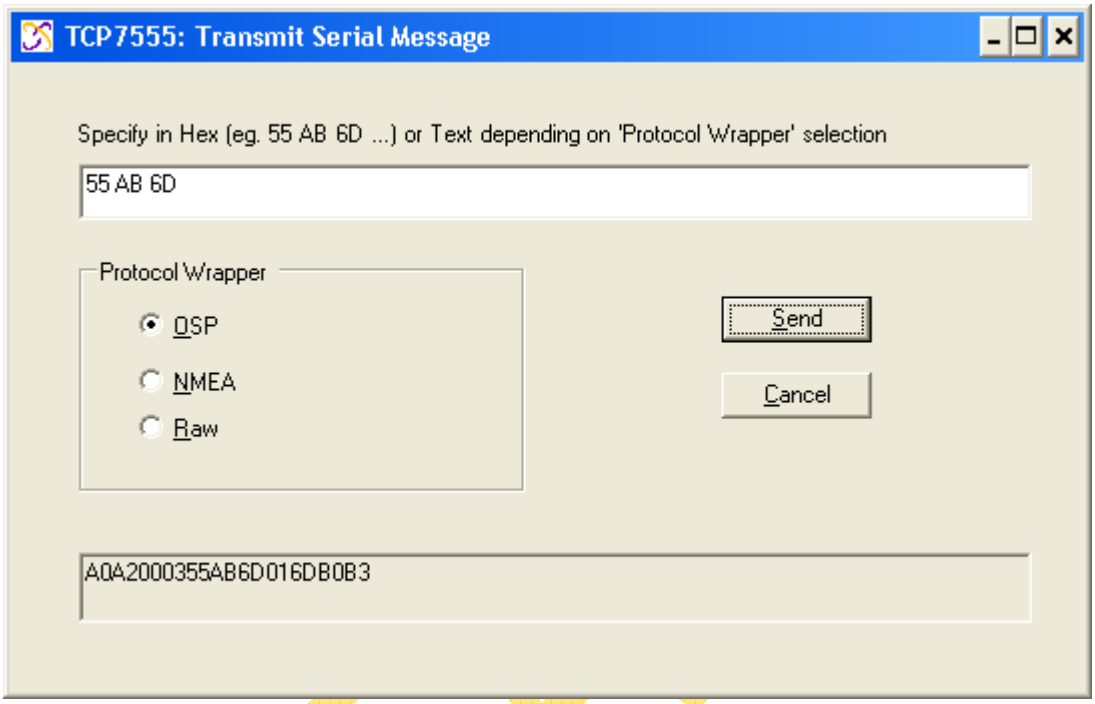
Specific commands can be sent to the Rx through this menu item.

4.4.2.4.15.1.User Defined Message

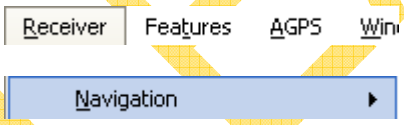


This user defined input command allows the user to enter specific messages directly to the receiver using one of the different protocol wrappers available; OSP, NMEA, or Raw.

The below example shows the beginning and ending wrapper that is added to the message entered at the bottom of the window.

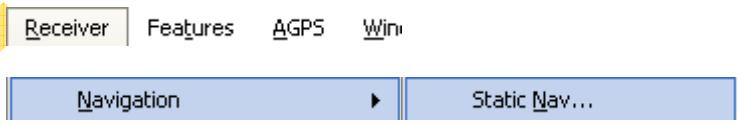


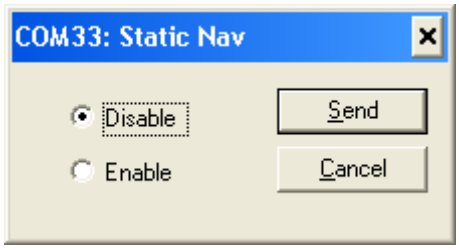
4.4.2.5.Navigation



Navigation Parameters of the Rx can be set under this section.

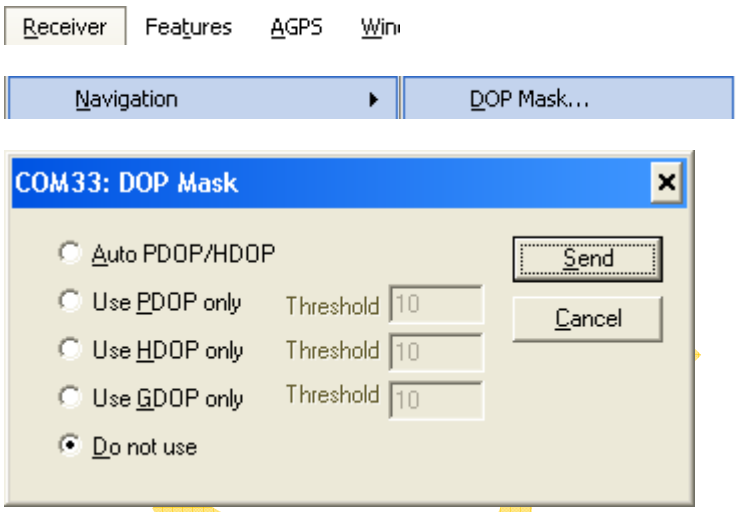
4.4.2.5.1.Static Nav





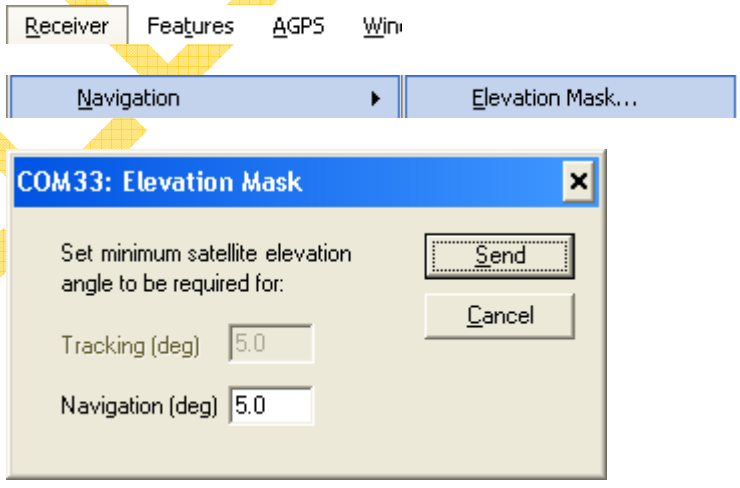
Allows the user to enable or disable static navigation to the receiver.

4.4.2.5.2.DOP Mask



This message provides a method to restrict use of solutions when the DOP is too high. When the DOP mask is enabled, solutions with a DOP higher than the set limit are marked invalid. The default setting is 'Do not use'.

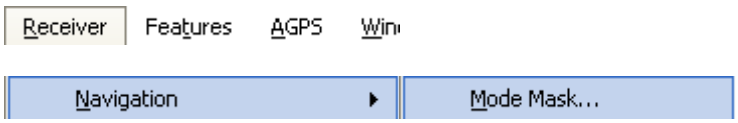
4.4.2.5.3.Elevation Mask

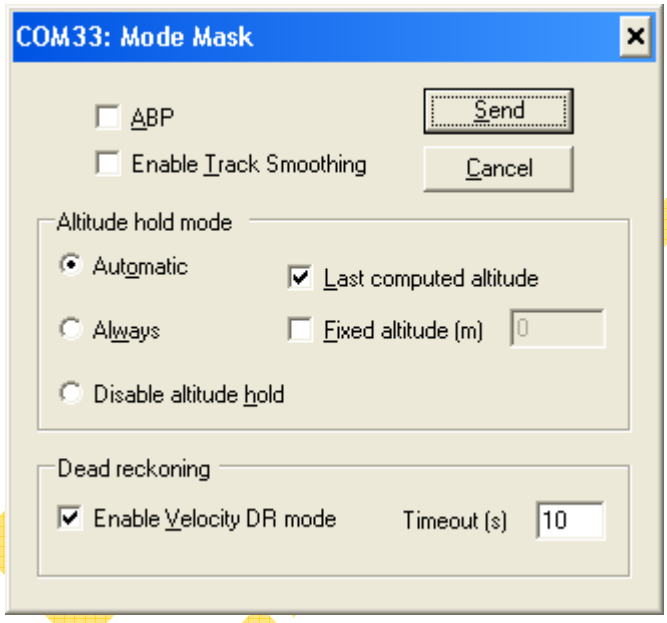


Elevation mask is an angle above the horizon. Unless a satellite's elevation is greater than the mask, it is not used in the solutions. This message permits the receiver to avoid using the low-elevation-angle satellites most likely to have multipath problems. The default value is 5 degrees.

The tracking mask is not implemented at this time.

4.4.2.5.4.Mode Mask



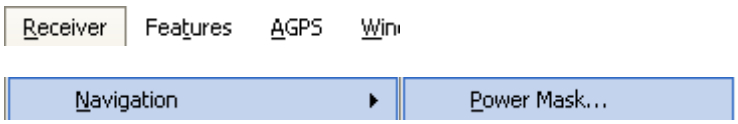


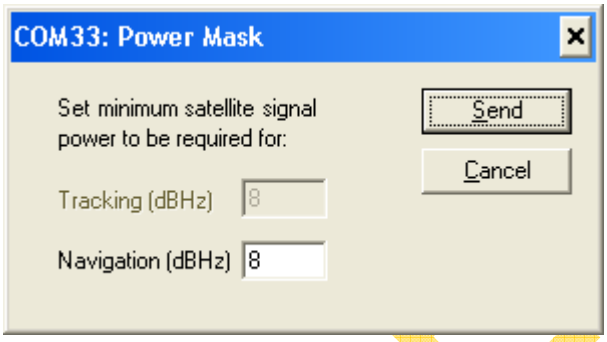
The ABP selection is for GSD4e only. Checking and sending the command turns it on, unchecked turns it off.

There are three different selections referring to the altitude hold mode, and either the last computed altitude or a fixed altitude set by the user may be implemented.

Dead reckoning may be enabled or disabled, with a timeout limit range of 1 to 120 seconds.

4.4.2.5.5.Power Mask

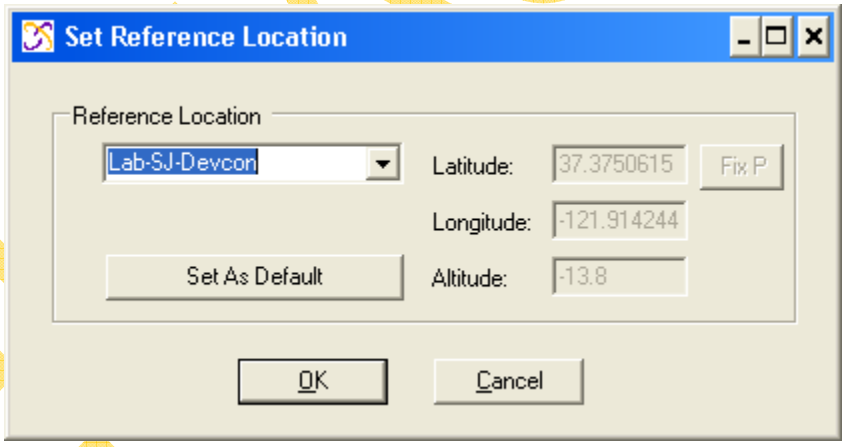




The power mask is a limit on which satellites are used in navigation solutions. Satellites with signals lower than the mask are not used. The default value is 8dBHz.

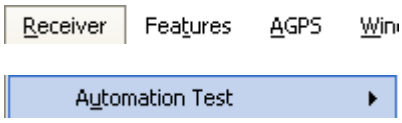
The tracking mask is not implemented at this time.

4.4.2.6.Set Reference Location



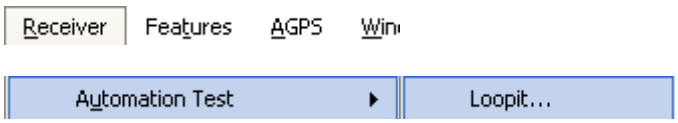
See Reference Location Section under Tool Strip for more information

4.4.2.7.Automation Test

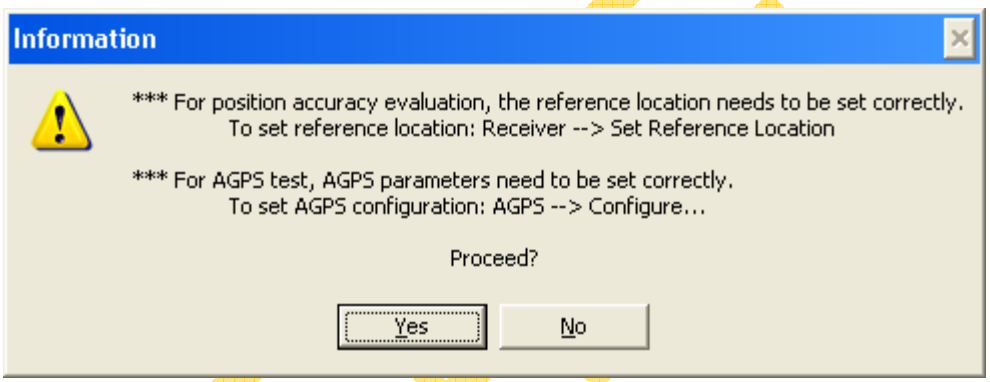


Some tests can be run automatically. This section describes the tests that are included with SiRFLive.

4.4.2.7.1.Loopit

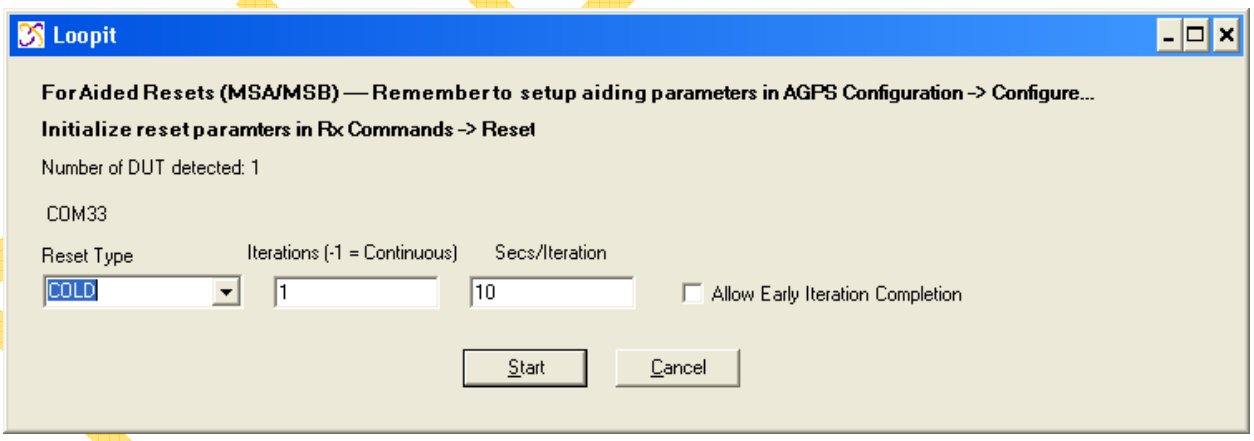


To run predefined resets, the Loopit function is used. This allows a specified amount of resets to be sent as the user requires. When the Loopit menu item is selected, the following window will appear:



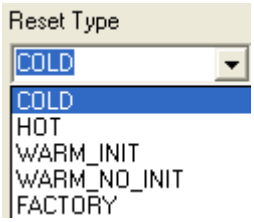
Pressing 'Yes' will open the following window:

4.4.2.7.1.1.Loopit Window



The main Loopit window has four items that need to be configured by the user:

4.4.2.7.1.2.Reset Type



Select the type of reset to be performed

- COLD: This option clears all data that is currently stored in the internal memory of the GPS receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained.
- HOT: The GPS receiver restarts by using the values stored in the internal memory of the GPS receiver; validated ephemeris and almanac.
- WARM_INIT: This option clears all initialization data in the GPS receiver and subsequently reloads the data that is currently displayed in the Receiver Initialization Setup screen. The almanac is retained but the ephemeris is cleared.
- WARM_NO_INIT: This option has the same functionality as Hot Start except that it clears the ephemeris data and retains all other data
- FACTORY: This option clears all data including position, almanac, ephemeris, time, as well as the stored clock drift. All GPS receiver parameters are also set back to the factory defaults

4.4.2.7.1.3.Iterations

This is the number of resets to be performed. A setting of -1 will run resets continuously until manually stopped.

4.4.2.7.1.4.Secs/Iteration

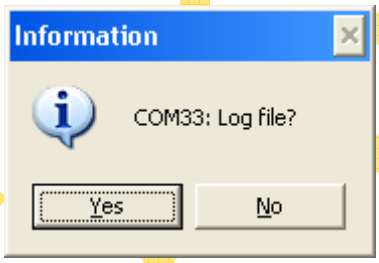
The number of seconds between each software commanded reset.

4.4.2.7.1.5.Early Iteration Completion

Selection of this checkbox will allow the next reset to be sent immediately after the previous reset navigates – i.e. if Secs/Iteration is set to 60 seconds but it only takes 28 seconds for the Rx to navigate, then the next reset will not wait the full sixty seconds but will be performed after the 28 seconds.

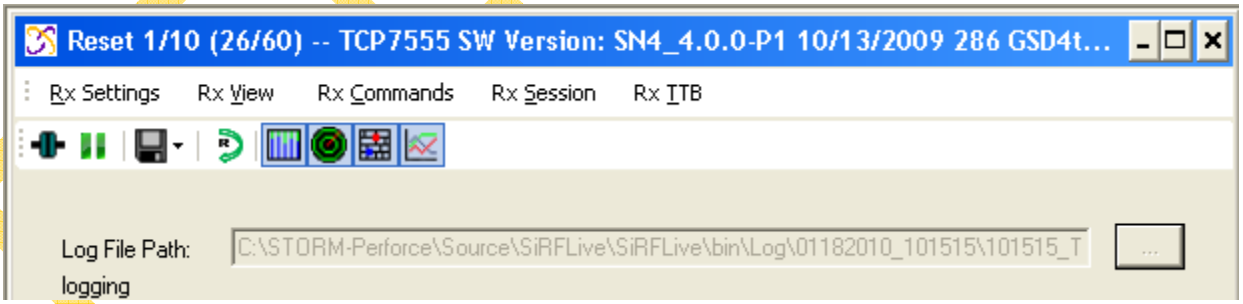
4.4.2.7.1.5.1.Log File

When the Start button is pressed for Loopit, a window asking if the user would like to log the data will appear.



Pressing 'Yes' will start the logging of the Loopit test. The log file path is shown in the main COM window. The nomenclature is

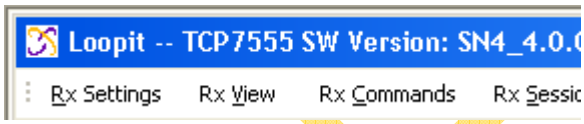
Log\mmddyyyy\hhmmss_<COM used>_<reset selected>.gps.



The display shows which reset the test is on (1 of 10) and how much time into the session (26 of 60 seconds).

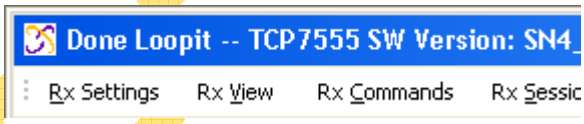
4.4.2.7.1.5.2.Loopit Display

Once the settings have been selected and the Start button pressed, the user can track the progress of Loopit through the title bar of the COM port selected. When Loopit first starts the title bar will resemble

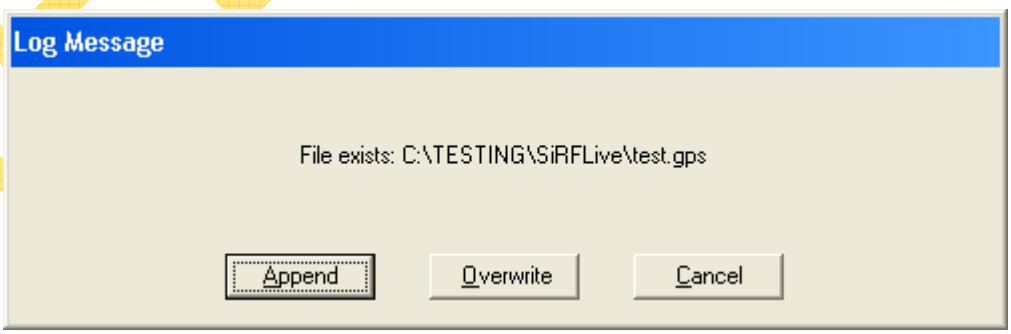


During Loopit, the number of current resets over the number of total resets will fill the title bar

When Loopit is complete the title bar will show that it is finished



On subsequent runs of Loopit, if the same reset type is selected, the user will be prompted with the following window when the Loopit start button is pressed and the user selects 'Yes' to log the file.



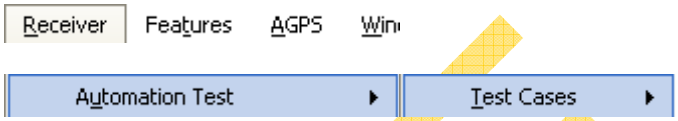
Press **Append** to ***append the log file***

Press **Overwrite** to ***write over the existing log file***

Press **Cancel** to ***exit the request and select a new filename for the log***

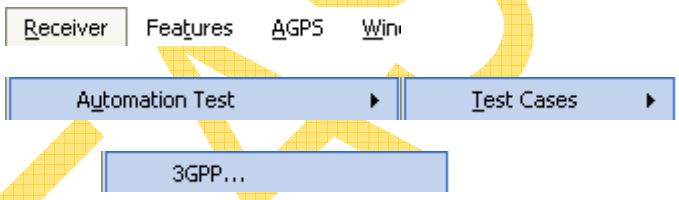
The user can also select the path and filename as long as they are valid, otherwise an error message will appear.

4.4.2.7.2.Test Cases



Predefined tests that may be performed fall under the Test Cases category.

4.4.2.7.2.1.3GPP

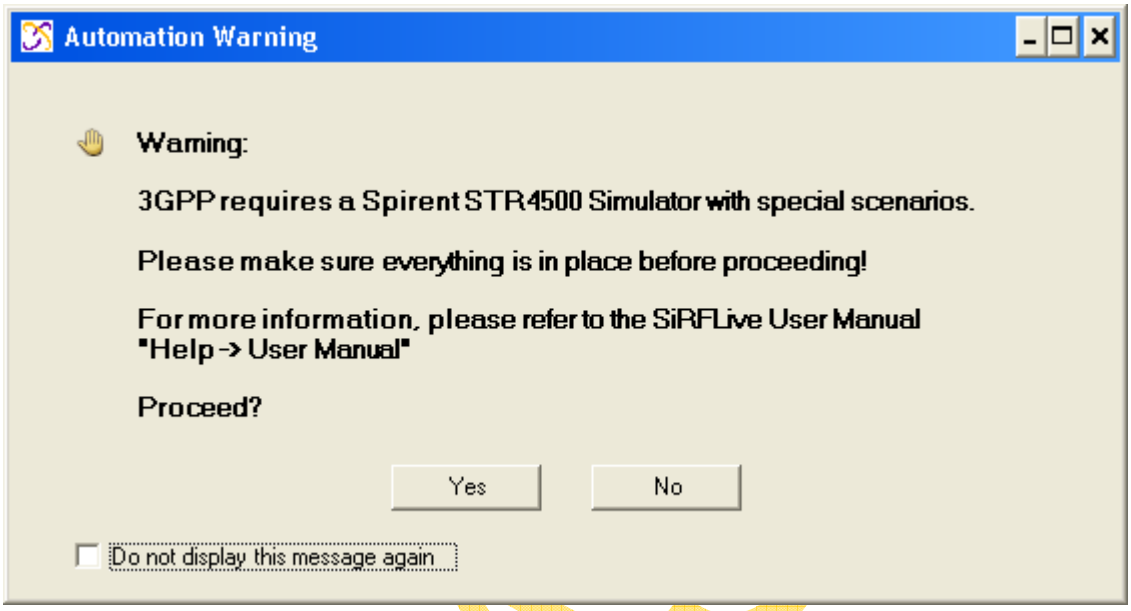


******NOTE*** The following section of 3GPP test automation assumes that the user has a Spirent STR4500 simulator with appropriate Spirent software to run the simulator.***

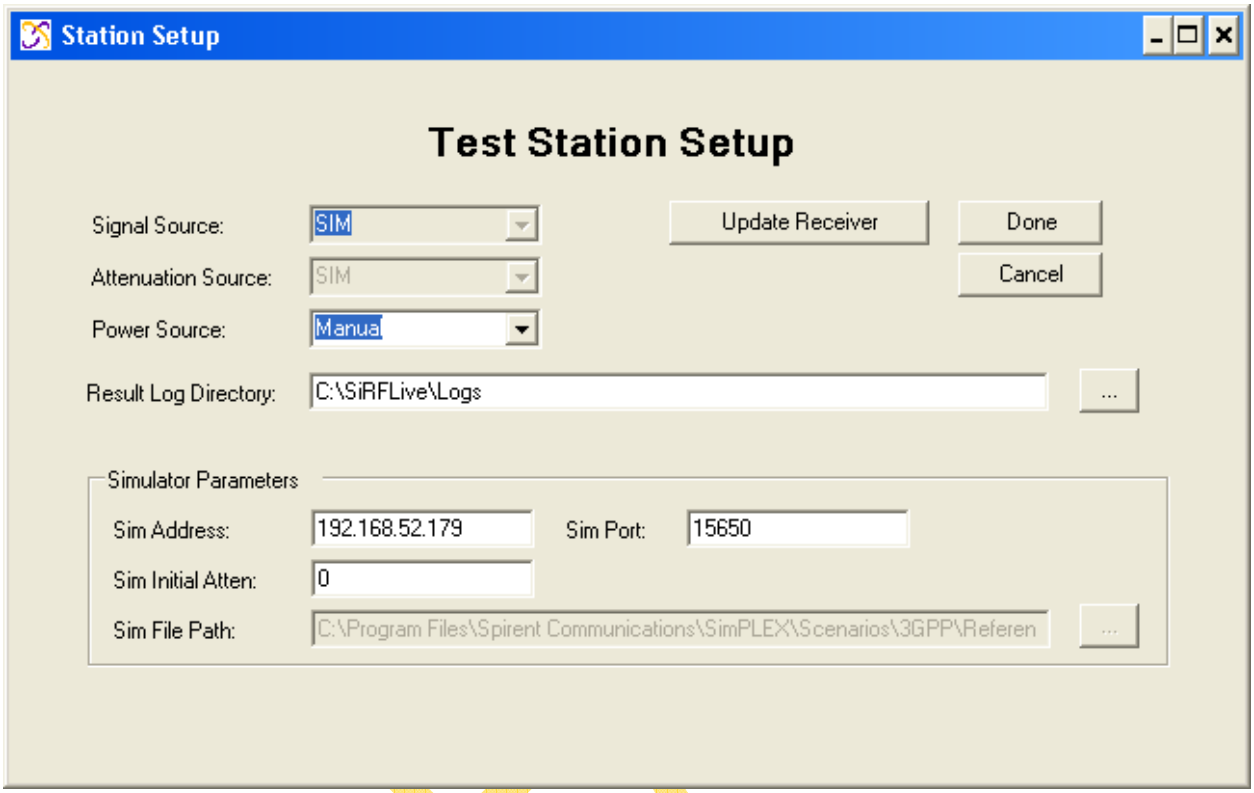
Scenarios needed to run the following 3GPP tests are available. They are self-extracting executables that will install the scenarios and their associated files to the correct location on the PC that controls the simulator. Please contact your CSR representative for more information.

The directory of where these scenarios will be located is C:\Program Files\Spirent Communications\SimPLEX\Scenarios\3GPP.

Running the 3GPP test automation for the first time will display the following window.

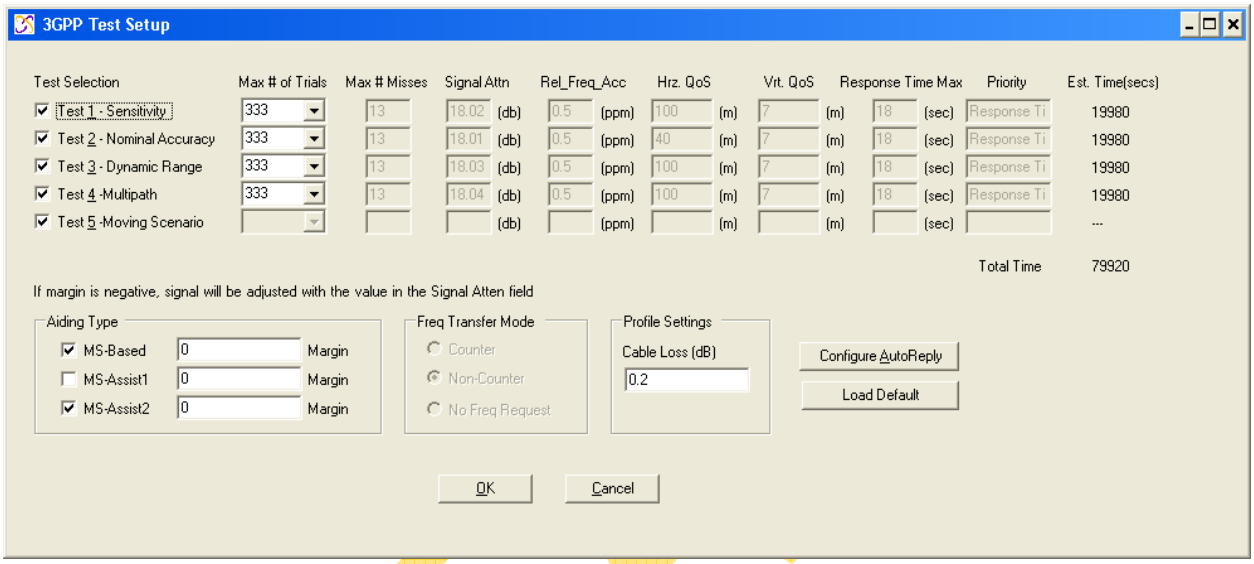


This is just a warning that the scenarios and simulator need to be in place before attempting to run the 3GPP tests. Selecting the 'Do not display this message again' checkbox will hide this window on subsequent attempts. When the 'Yes' button is pressed, the following window will be displayed.



- Signal Source: default (SIM) is used for 3GPP tests and cannot be changed.
- Attenuation Source: default (SIM) is used for 3GPP tests and cannot be changed.
- Power Source: should be left as default of Manual unless a SPAz unit is used for the test.
- Result Log Directory: location of recorded log files. Default is (C:\SiRFLive\Logs).
- Sim Address: the IP address of the machine running the Spirent STR4500 simulator.
- Sim Port: default (15650) is used for Spirent STR4500.
- Sim Initial Atten: default (0) is used for 3GPP tests.

- Sim File Path: location of simulated scenario to be used for the test. Cannot be changed for 3GPP tests



4.4.2.7.2.1.1.Test Selection

This allows the user to select the tests to be performed. The tests are setup to run in a consecutive manner, i.e. if you select Test 1, and Test 3 for a certain number of cycles, the automation will run Test 1 first, complete the total number of selected cycles, and move on to running Test 3 and its total number of selected cycles.

4.4.2.7.2.1.2.Max # of Trials

This is the number of cycles to be run for the selected test. Number of cycles that is selectable per test is defined in compliance to TS 34.171 Annex F: General Test Conditions and Declarations in Section F6.1.4.1 titled “Numerical definition of the pass fail limits”. Note: the moving scenario is a tracking test and so the entire scenario will be run; only one cycle of this test will run in SiRFLive.

4.4.2.7.2.1.3.Max # Misses

This is the number of failed resets that can occur and still pass 3GPP tests based on the number of trials being done.

4.4.2.7.2.1.4.Signal Attn

Signal Attenuation. **This is NOT a requirement in the 3GPP standards.** This is a special request to attenuate overall scenario signals so as to assess how much signal loss is available to the system when the SiRF chipset is integrated with the target platform. Because the power level range between the highest and lowest signal satellites for the Dynamic Range test is 18dB, signal attenuation cannot be automated due to a clipping of 3 dBs when the relative signal levels are set. Therefore, any attenuation must be performed manually for the Dynamic Range test.

**Note: if there is a value in the Signal Attn field and the Cable Loss in the Profile Settings groupbox is blank, then the Signal Attn value will be used. If there is any value in the Cable Loss editbox ≥ 0 then the Signal Attn value will be ignored.*

4.4.2.7.2.1.5.Rel_Freq_Acc

Relative Frequency Accuracy: the frequency uncertainty in ppm that is set and with a default to the 3GPP standard of 0.5 ppm.

4.4.2.7.2.1.6.Hrz QoS

The horizontal Quality of Service errors are set and default to 3GPP standards for each of the prescribed tests.

4.4.2.7.2.1.7.Vrt QoS

The vertical Quality of Service errors are set and default to 3GPP standards for each of the prescribed tests.

4.4.2.7.2.1.8.Response Time Max

The maximum time to wait for a response: settings are No Limit (0) and 1 to 255 seconds.

4.4.2.7.2.1.9.Priority

This selection determines what takes priority when figuring the position; the Response Time or the Position Error, or the default, No Priority.

4.4.2.7.2.1.10.Est. Time

Estimated time: Dependent on user selection of total # of cycles that is to be performed, SiRFLive calculates an estimated total time to assist the user in anticipation of the timeframe to completion of the tests.

4.4.2.7.2.1.11.Aiding Type

MS-Based: includes Time, Position, Frequency, and Ephemeris

MS-Assist1: includes Time, Position, Frequency, and Acquisition Assistance

MS-Assist2: includes Time, Position, and Frequency

Margin (dBHz): This is the amount of signal that the user wants to change from the standard level. This attenuates the simulated signal through the use of the User Actions File (UAF) in Spirent's SimPLEX software. The value can be in the range from 9.9 to -9.9 in .1 dBHz increments. Multiple margin values may be entered and the tests will run back-to-back. So if 3, 4, and 5 is entered in the MSBased Margin editbox and 2 is entered in the MSAssist2 Margin editbox, and Test1 and Test2 are selected as the tests to run, then both tests will run with a 3dBHz margin, and then both tests will run with a 4dBHz margin, and then both again with a 5dBHz margin in MSBased mode before starting the MSAssist2 tests at 2dBHz.

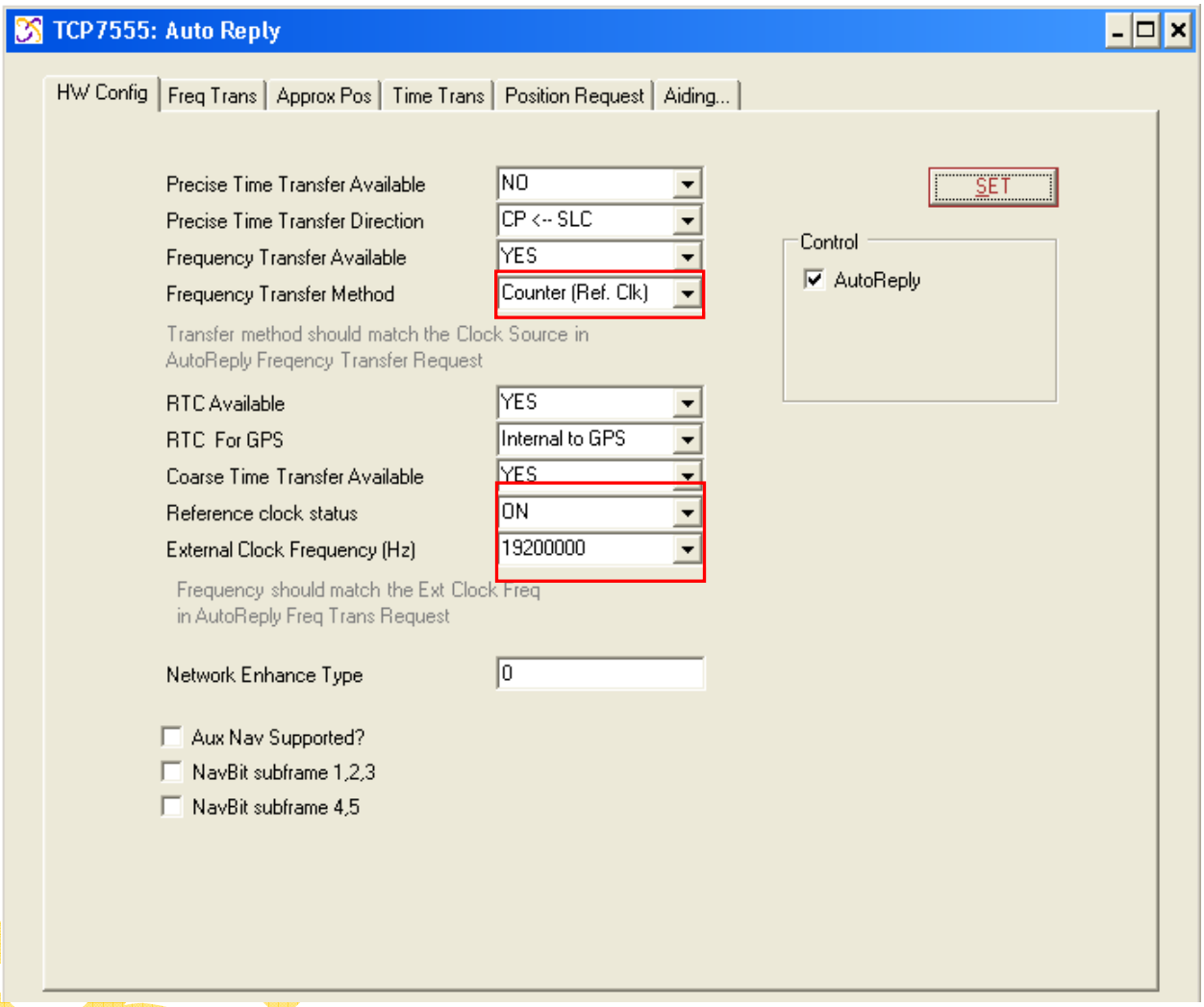
4.4.2.7.2.1.12.Freq Transfer Mode

This selection determines if Frequency Transfer is to be used in the test suite and if so, whether the Frequency Transfer type is to be Counter, Non-Counter, or No Frequency Requested.

4.4.2.7.2.1.12.1.Counter

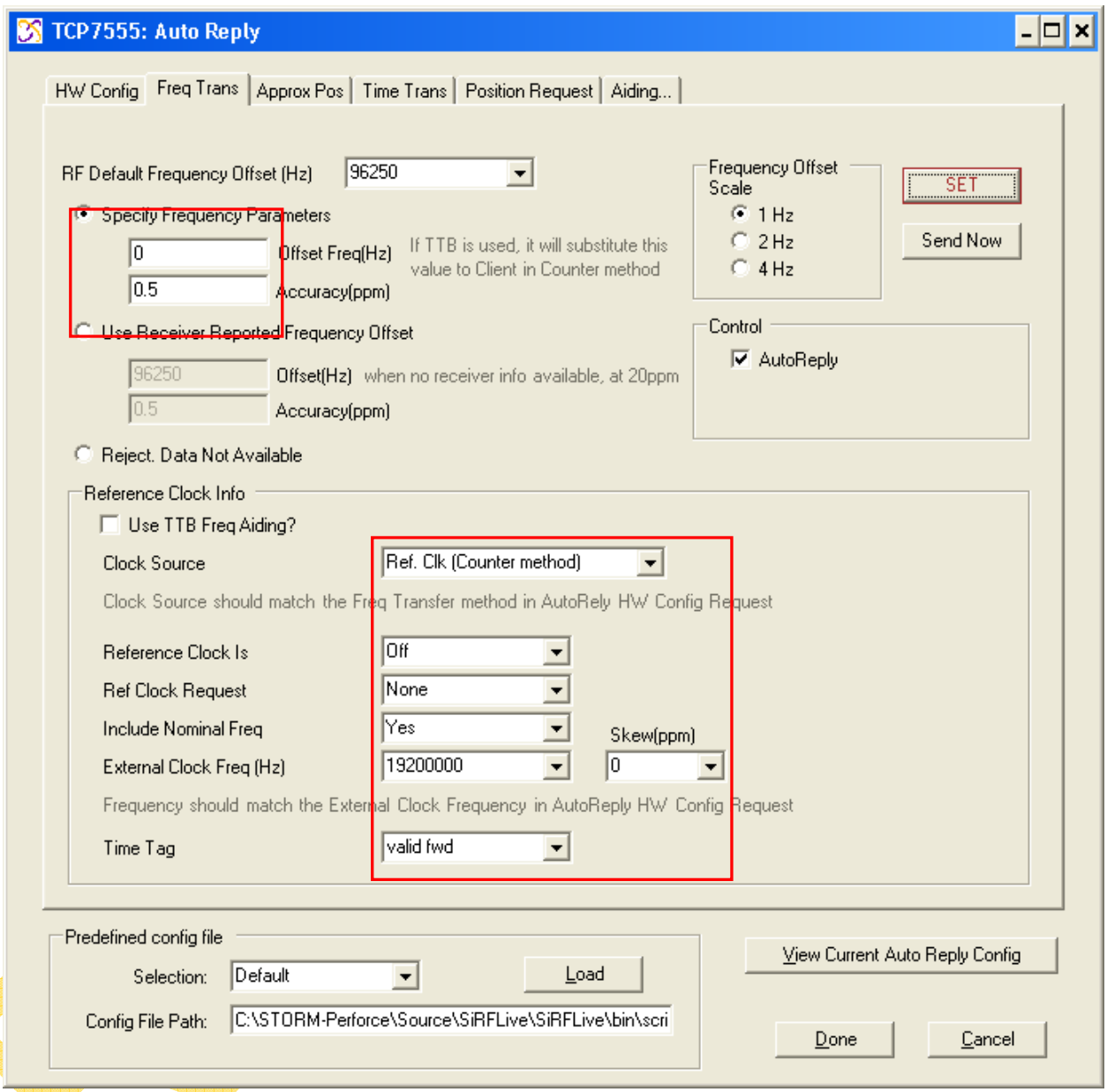
When Counter method is selected, the following settings are preset in the AutoReply Settings:

- HW Config – Frequency Transfer Method is set to *Counter*; Reference clock status is set to *On*, and External Clock Frequency is set to *19200000* Hz.



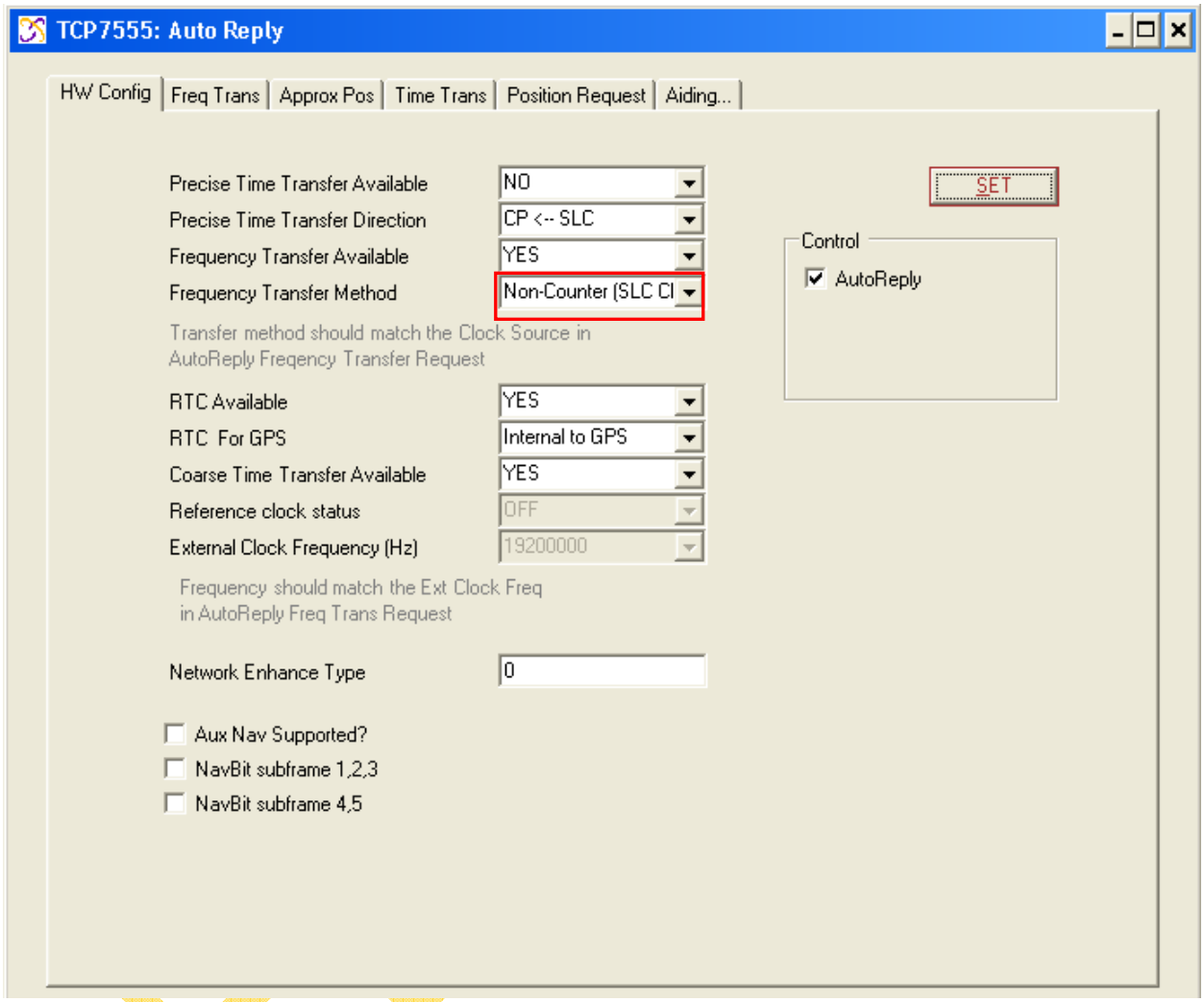
- Frequency Transfer – Specify Frequency Parameters are set to *0* as the Offset Frequency and the Accuracy (ppm) is set to *0.5*.

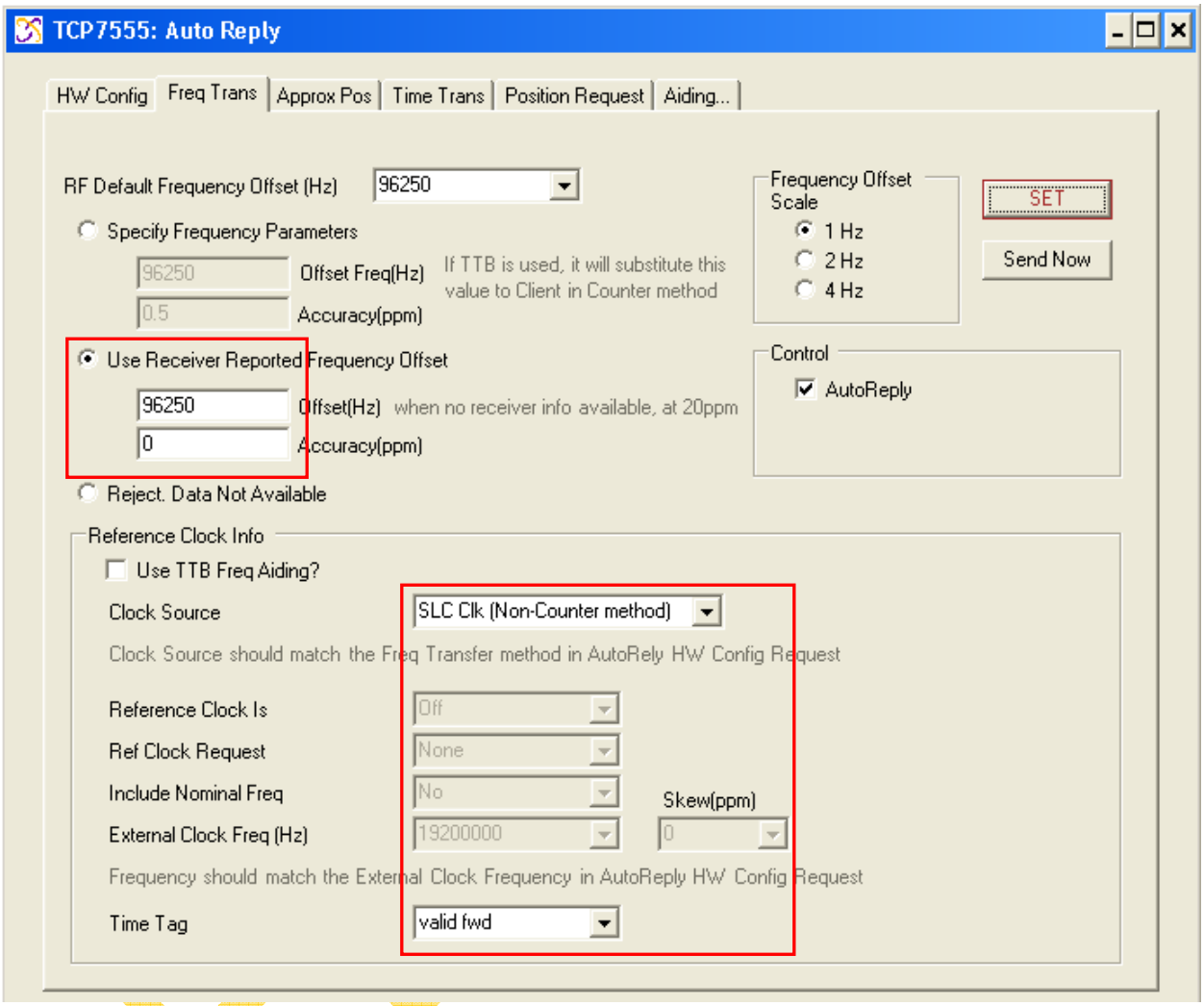
- Frequency Transfer – Reference Clock Info is set with Clock Source as *Ref. Clk (Counter method)*, Reference Clock Is *On*, Ref Clock Request is set to *None*, Include Nominal Freq is set to *Yes*, External Clock Freq (Hz) is set to *19200000*, Skew is set to *0* and Time Tag is set to *valid fwd*.



4.4.2.7.2.1.12.2.Non-Counter

When the Non-Counter method is selected, the settings are set as per the example in the next section and as below.


TCP7555: Auto Reply
HW Config
Freq Trans
Approx Pos
Time Trans
Position Request
Aiding...
Precise Time Transfer Available
NO
Precise Time Transfer Direction
CP <-- SLC
Frequency Transfer Available
YES
Frequency Transfer Method
Non-Counter (SLC Cl
Transfer method should match the Clock Source in AutoReply Freqency Transfer Request
RTC Available
YES
RTC For GPS
Internal to GPS
Coarse Time Transfer Available
YES
Reference clock status
OFF
External Clock Frequency (Hz)
19200000
Frequency should match the Ext Clock Freq in AutoReply Freq Trans Request
Network Enhance Type
0
Aux Nav Supported?
NavBit subframe 1,2,3
NavBit subframe 4,5
SET
Control
AutoReply



4.4.2.7.2.1.13.Profile Settings

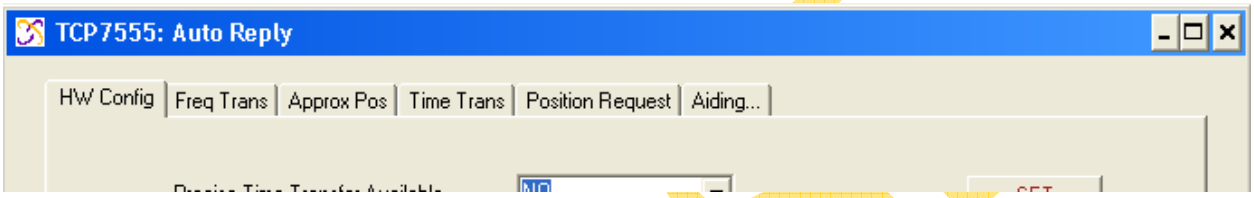
Cable Loss (dB): This is the amount of cable loss that was calculated during calibration. This is included to take the trouble of determining the cable loss and then subtracting from the total attenuation and configure any manual attenuation by modifying the scenario power level automatically (i.e. if a 5dBHz margin was entered for the Margin and the Cable Loss entered was 2.3dBHz, then the scenario's UAF will be attenuated 2.7dBHz [5 - 2.3 = 2.7]).

**Note: if there is a value in the Signal Attn field and the Cable Loss in the Profile Settings groupbox is blank,*

then the Signal Attn value will be used. If there is any value in the Cable Loss editbox ≥ 0 then the Signal Attn value will be ignored.

4.4.2.7.2.1.14.Config AutoReply

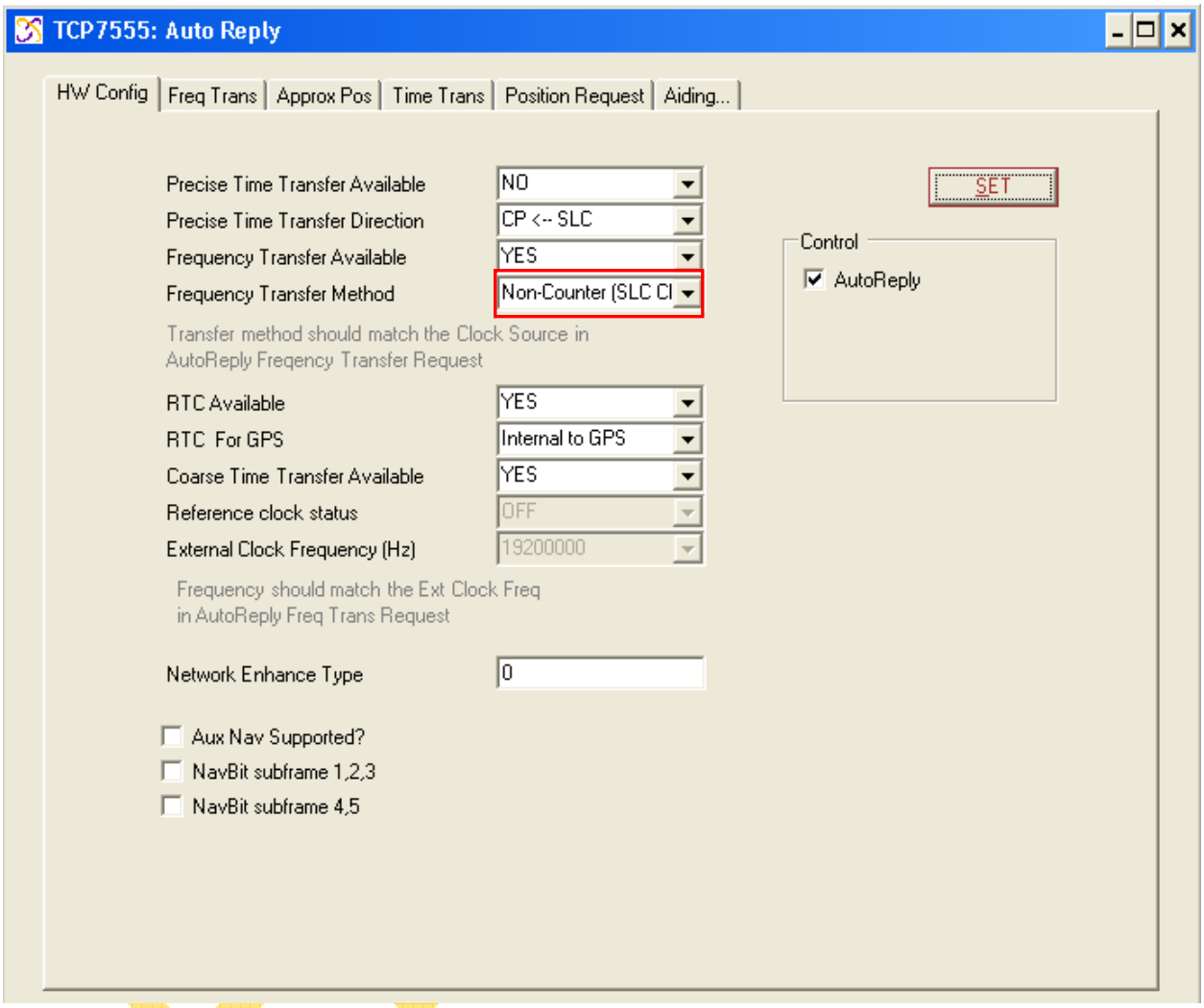
The Config AutoReply button allows the user to select specific settings that will be available for 3GPP tests only. It will open a new AutoReply tabbed window.



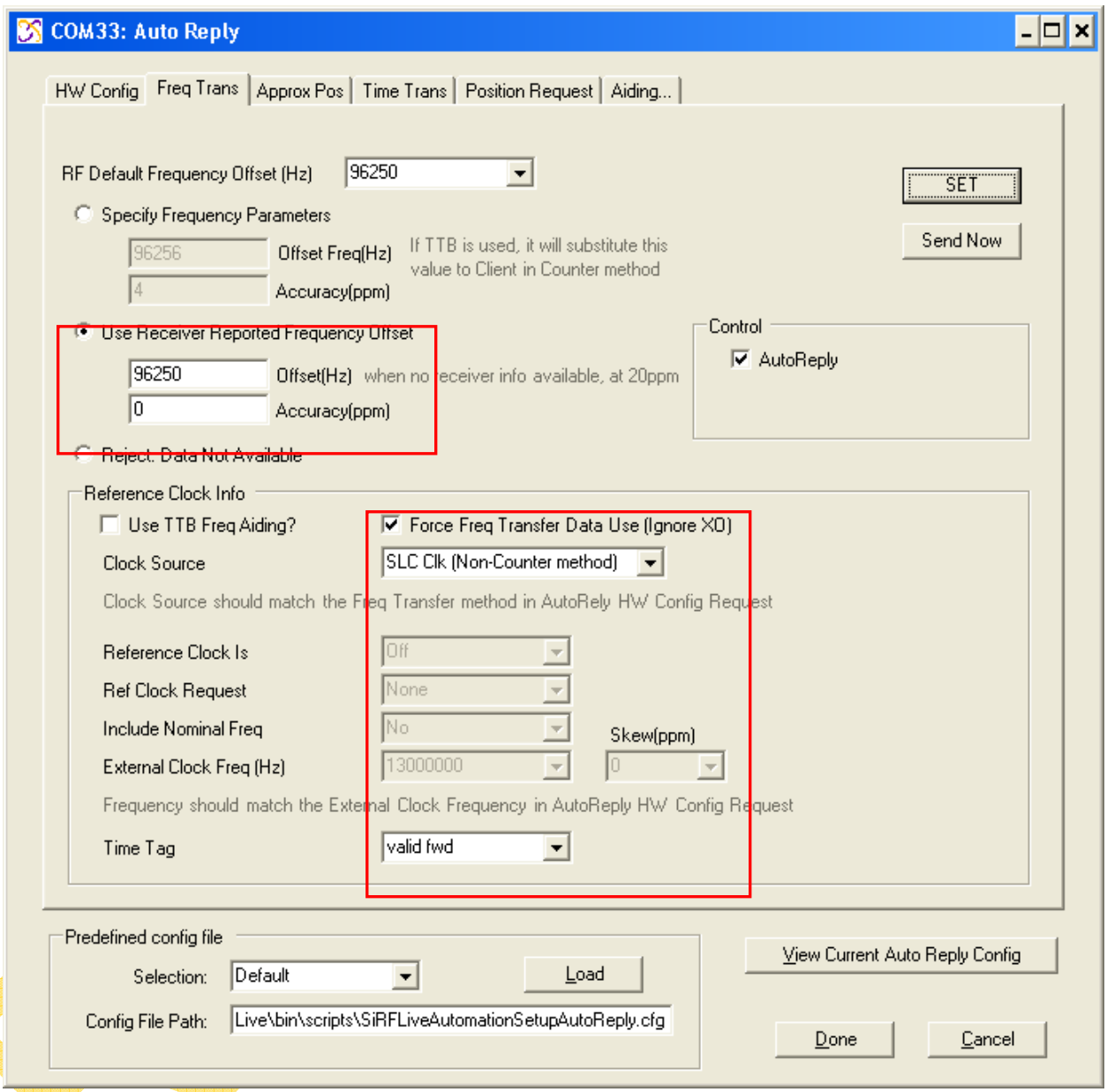
Values can be entered similar to SiRFLocDemo. Press the SET button to set those parameters on each tabbed window. The SET button will turn red to confirm that the values were set and saved.

The following default settings are based on an MS-Based 3GPP test using the Non-Counter method. They should not need to be set but should run from the predefined configuration file. They are only shown for information purposes only.

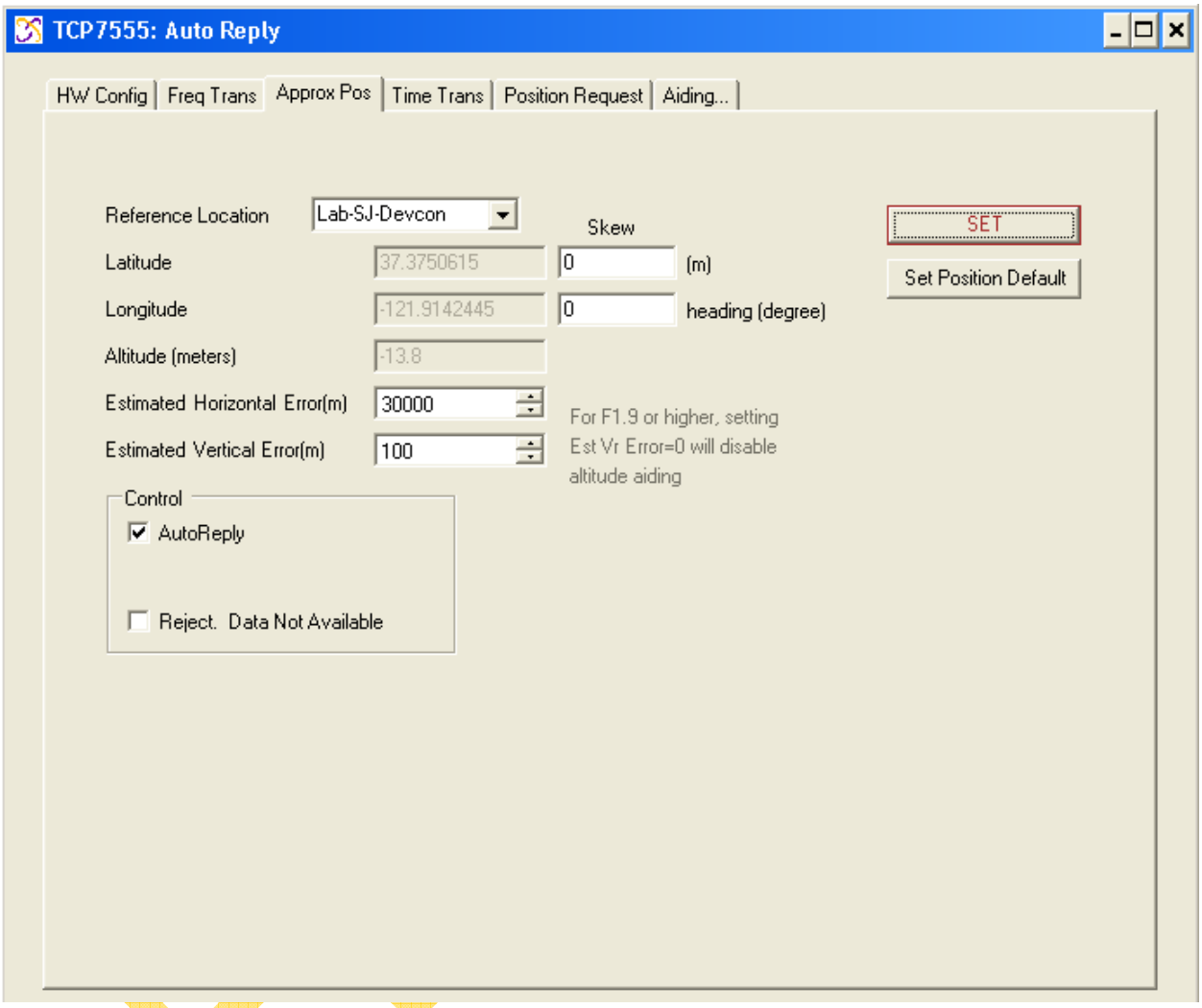
4.4.2.7.2.1.15. HW Config



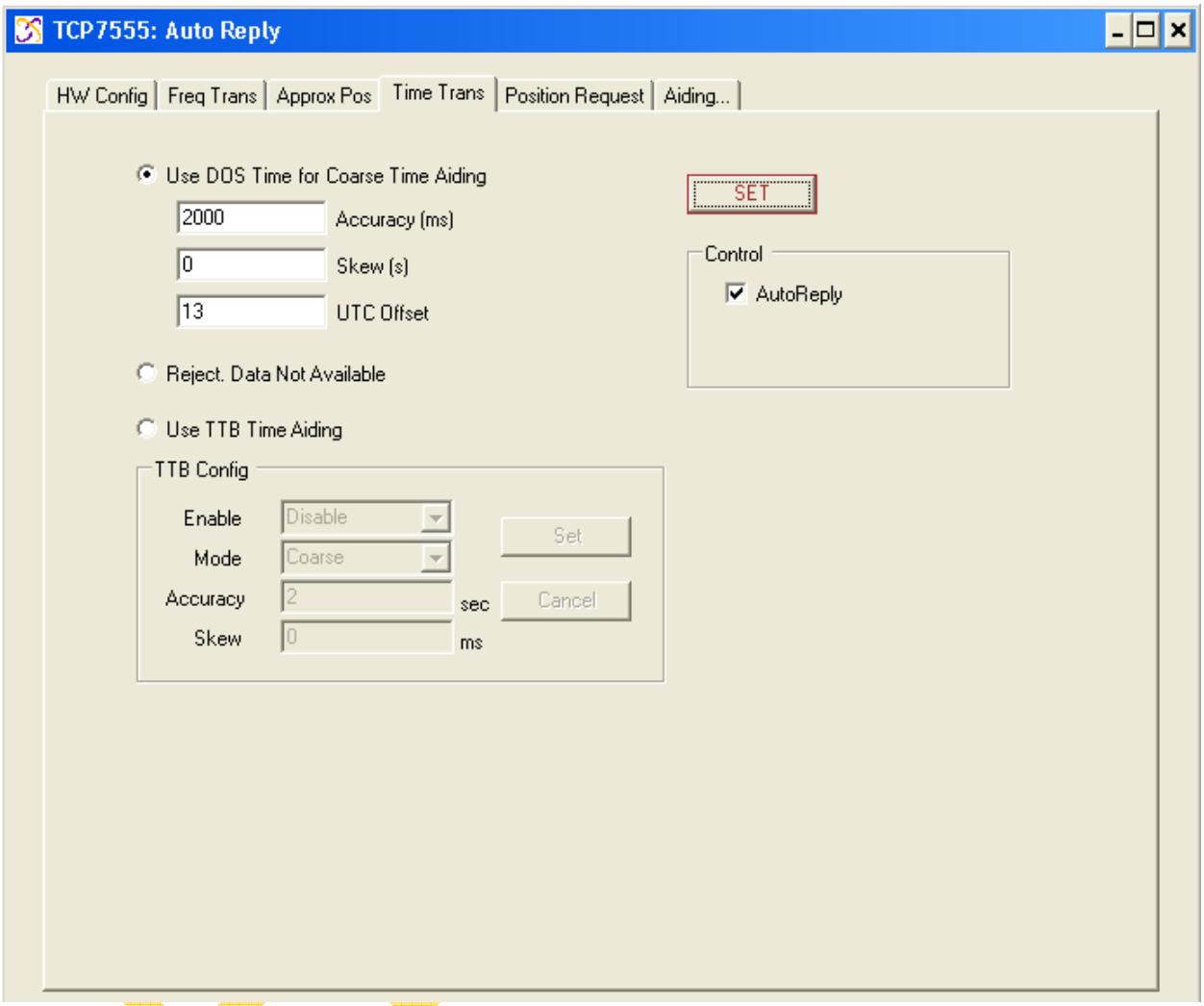
4.4.2.7.2.1.16. Freq Trans



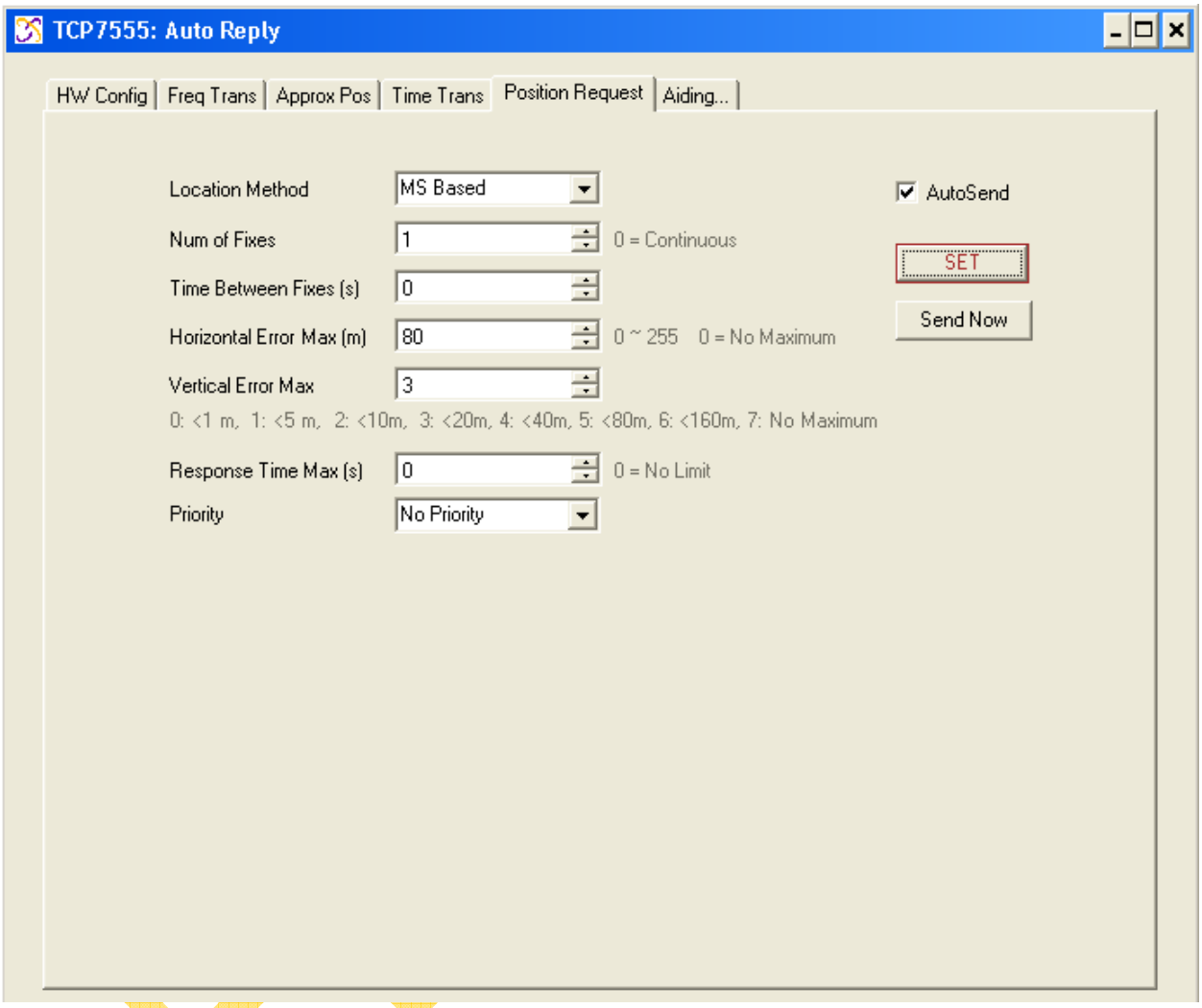
4.4.2.7.2.1.17. Approx Pos



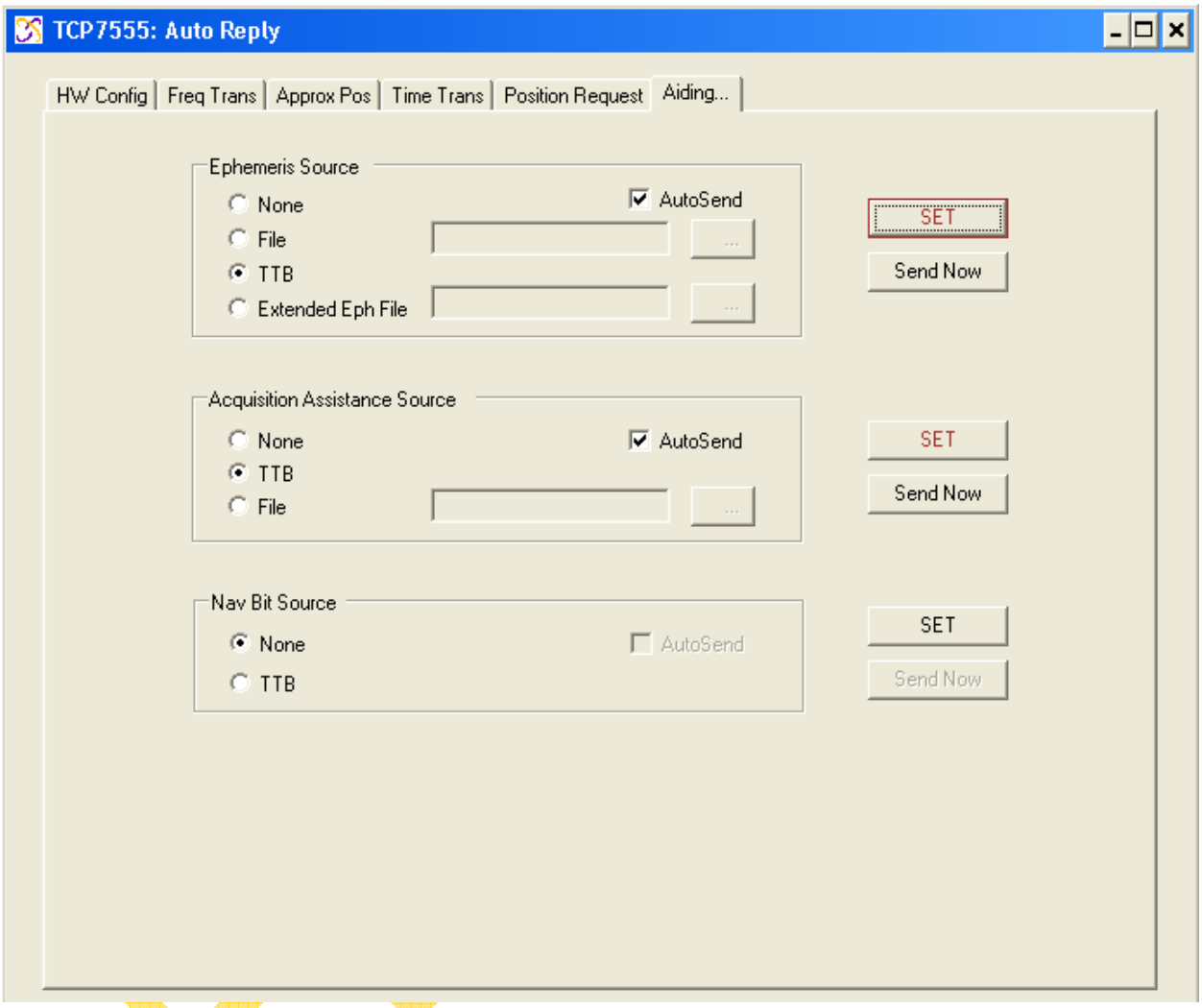
4.4.2.7.2.1.18. Time Trans



4.4.2.7.2.1.19. Position Request



4.4.2.7.2.1.20. Aiding

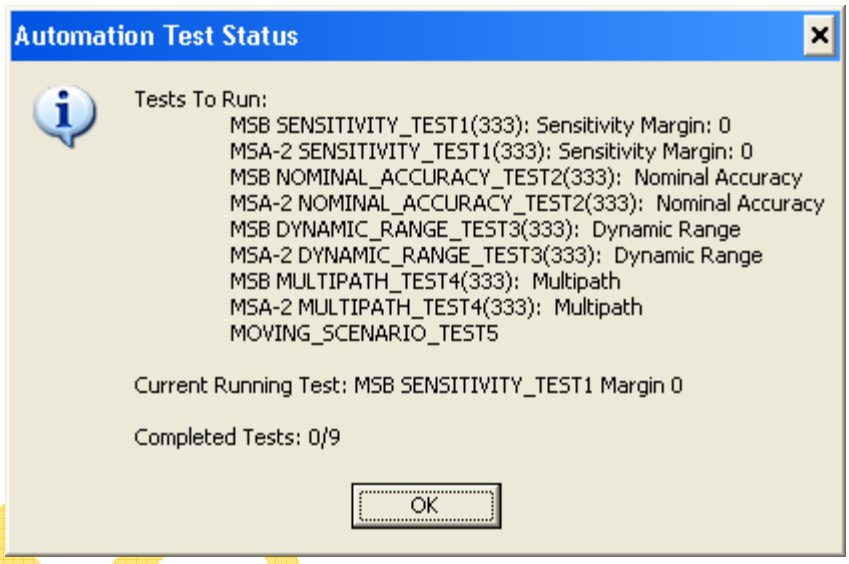


4.4.2.7.2.1.21.Load Default

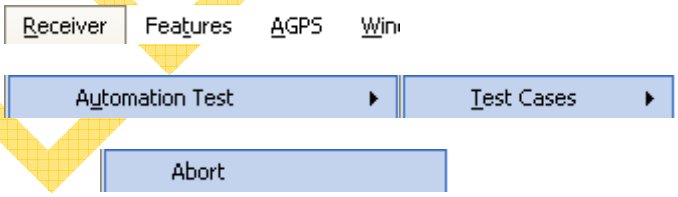
This button automatically sets the values for all of the 3GPP tests, selecting all five tests, setting the first four to run up to 333 trials if needed.

4.4.2.7.2.2.Status

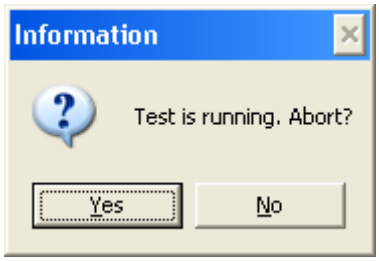
The Status of the automation tests being run can be monitored using this menu item. Selecting Status will display the total number of tests to be run, the current test that is being run, and the number of tests that have been completed.



4.4.2.7.2.3.Abort



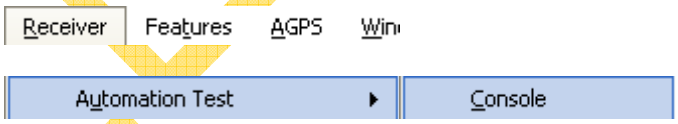
If there is an automation test running, the user may terminate the test early by selecting the Abort function. This will display the following window.



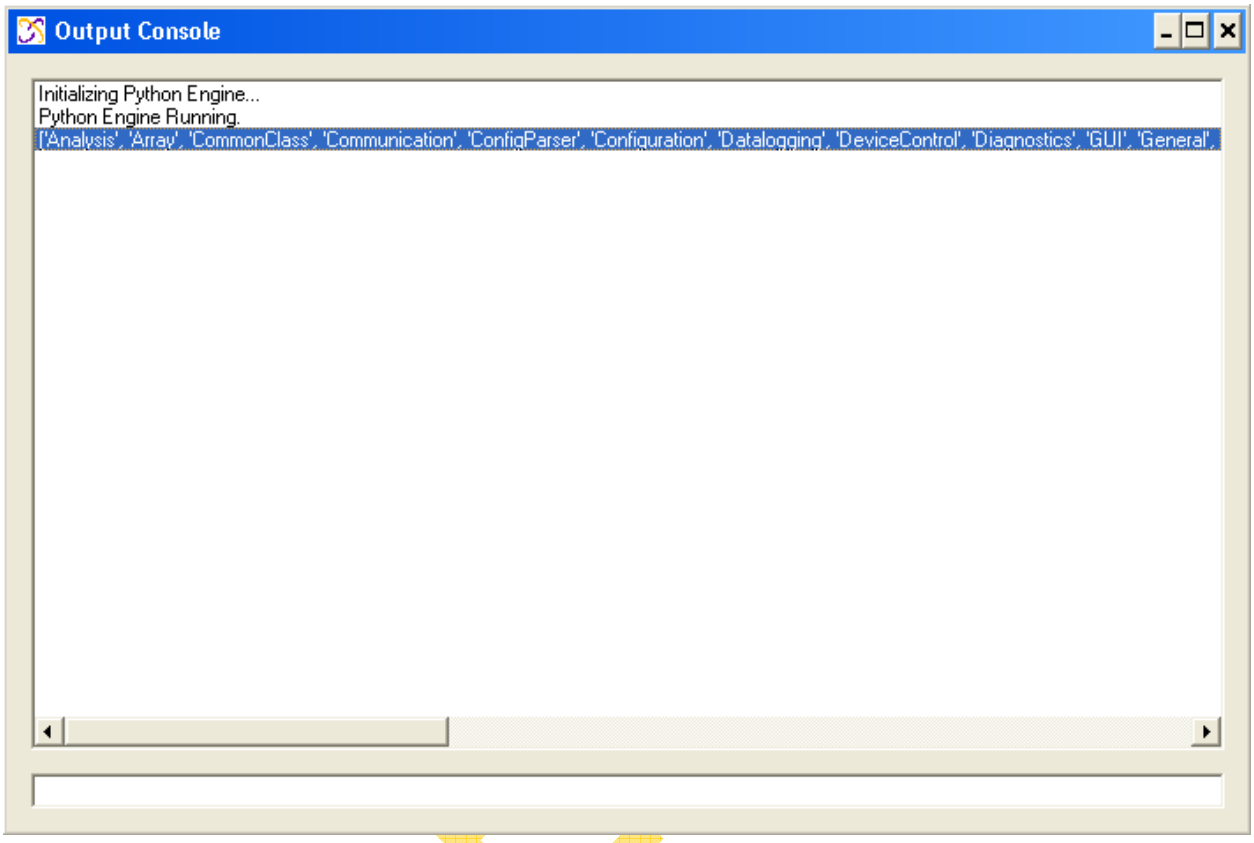
Pressing 'Yes' will display two more windows. The SiRFLive Event *SystemExit* window handles the Python script that is running

and the Automation Test *Test Aborted* window handles the automation application.

4.4.2.7.3.Console



Selecting the Console item under the Automation Test menu will open a Iron Python console window.

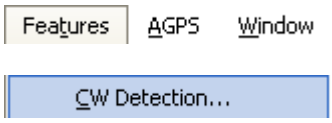


The console allows the user to run Python scripts or enter commands directly into the lower edit box.

4.4.3. Features

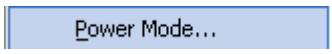
Some of the main features of SiRFLive are listed below and have been described earlier in this manual.

4.4.3.1.CW Detection



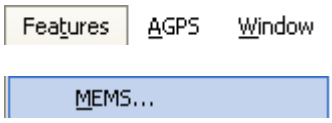
See CW Detection View Section for more information.

4.4.3.2.Power Mode



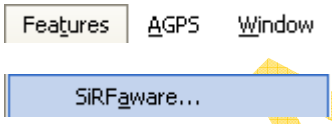
See Switch Power Mode Section for more information.

4.4.3.3.MEMS



See MEMS View Section for more information

4.4.3.4.SiRFaware

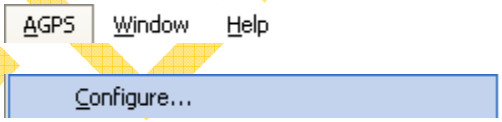


See SiRFaware Mode View Section for more information.

4.4.4. AGPS

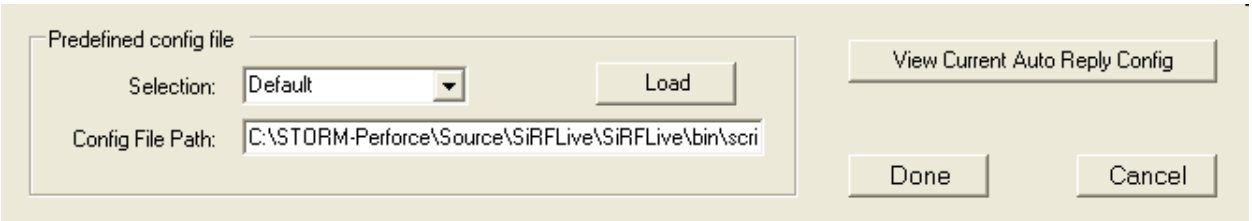
The Rx Session section pertains to aiding and the parameters that can be defined for the receiver.

4.4.4.1.Configure



See Section 4.2.1.1.14 on Config Auto Reply for more information.

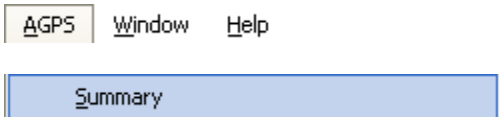
For loading predefined configurations for AGPS settings, select one of the items from the drop down list at the bottom of the page:



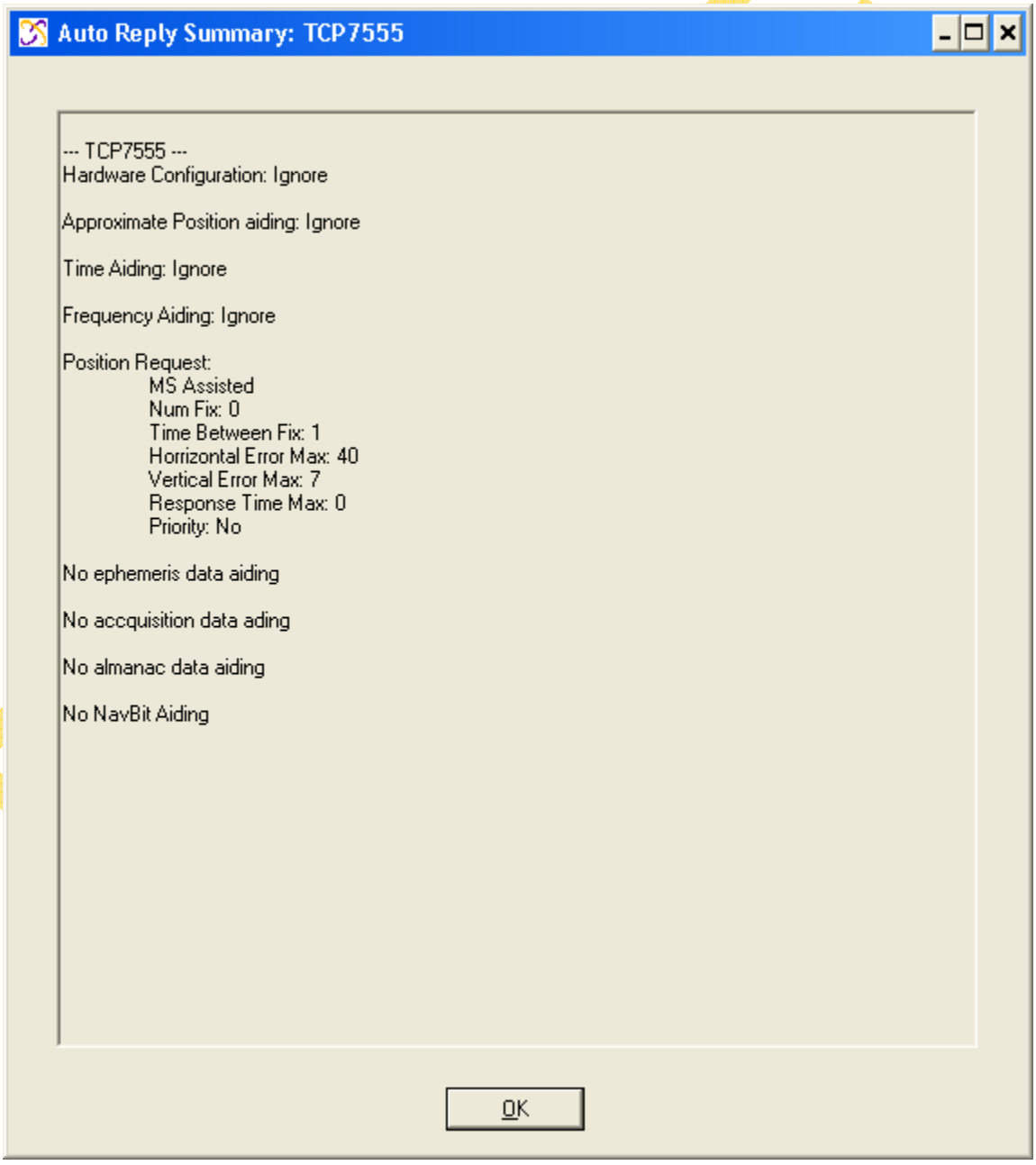
Press the 'Load' button to have the predefined configuration set the Auto Reply values.

Press the 'View Current Auto Reply Config' to see the changes or view the settings by looking at the Auto Reply Summary page.

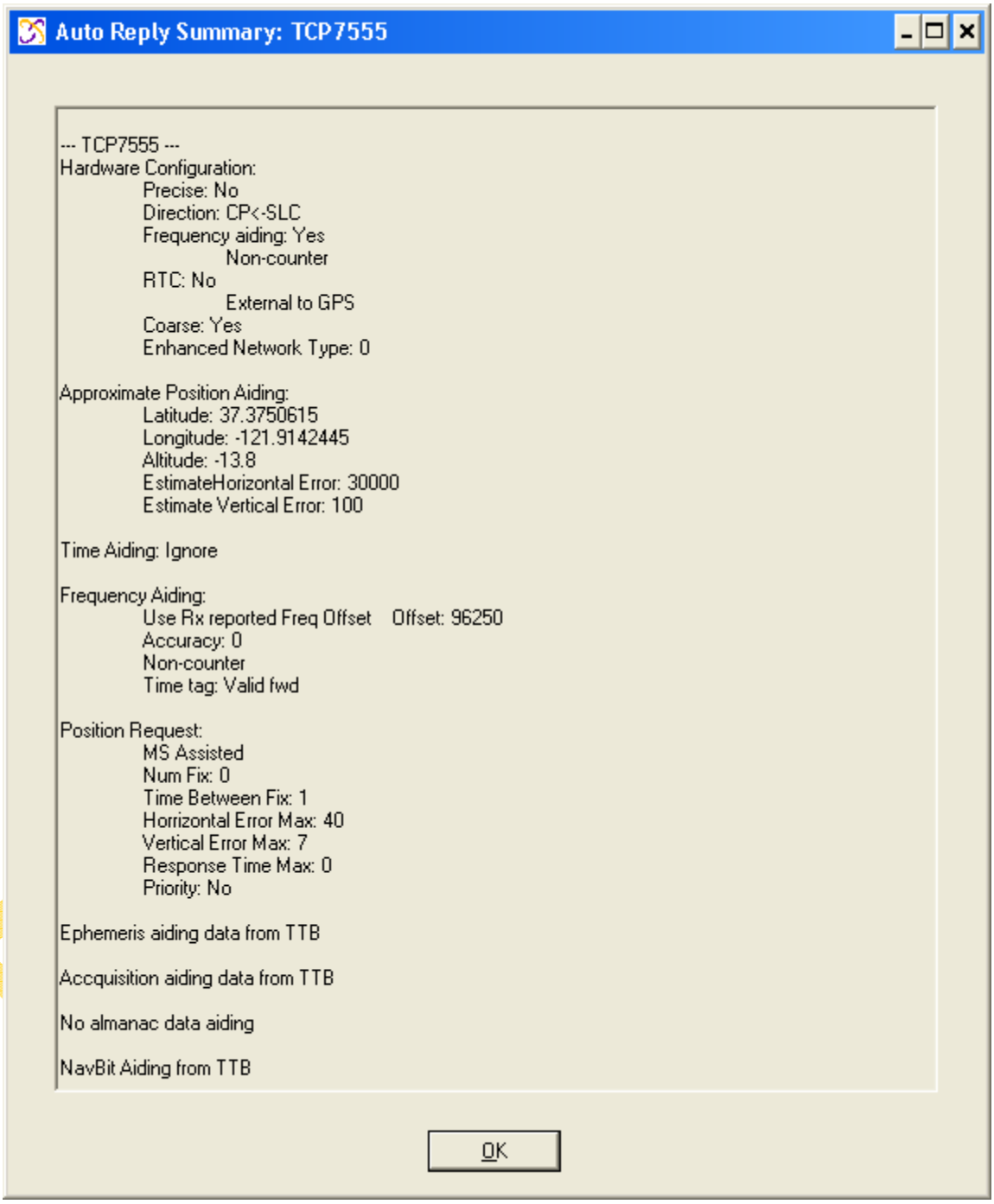
4.4.4.2.Summary



The AGPS Summary displays the currently selected options from all of the aiding settings available for review by the user.

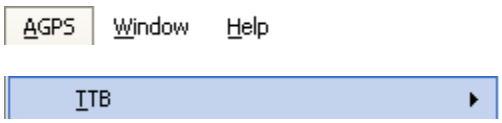


Autonomous example



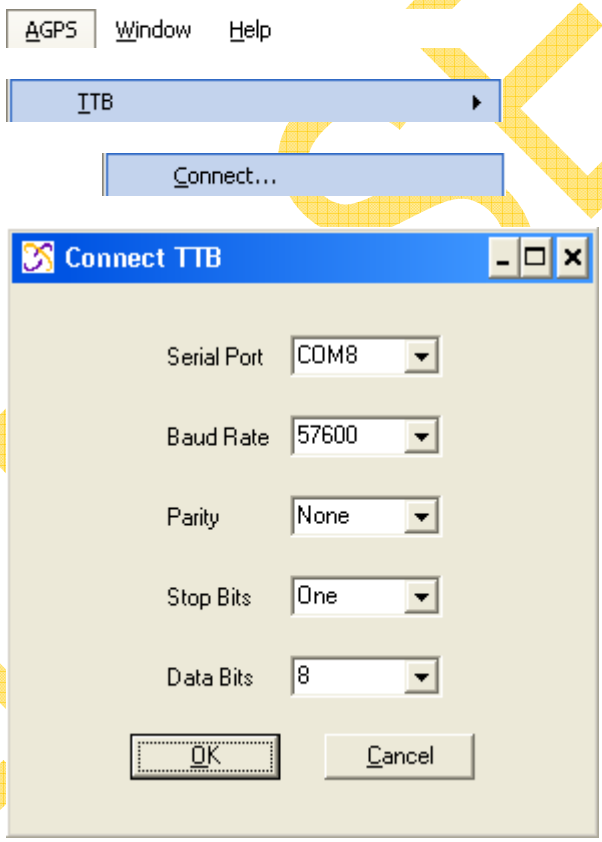
MSA-1 Coarse example

4.4.4.3.TTB



The TTB settings can be modified and checked using the following commands:

4.4.4.3.1.Connect



Serial Port: Port connection for the TTB

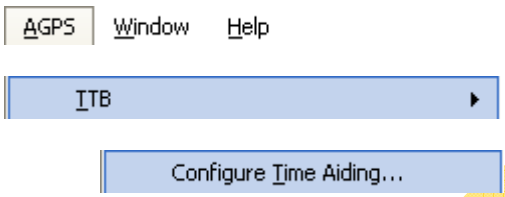
Baud Rate: Baud rate to run the TTB, Default is 57600

Parity: Default is None

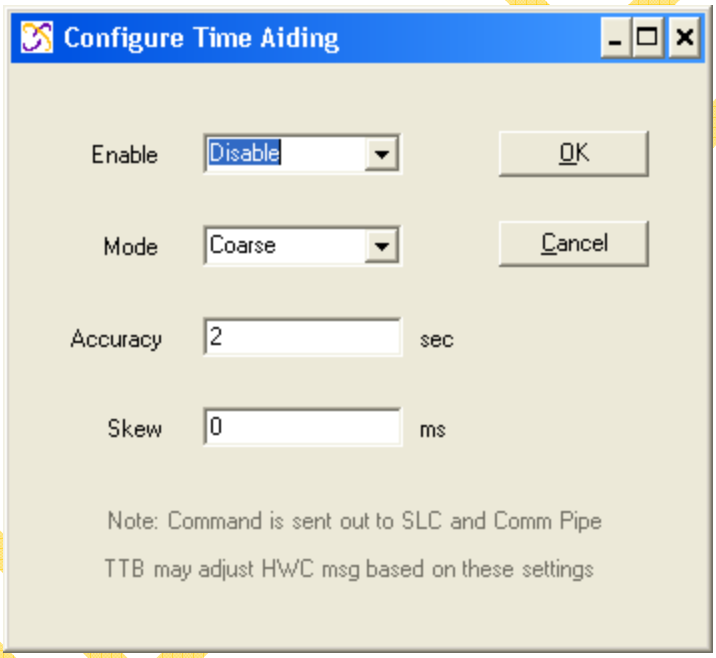
Stop Bits: Default is 1

Data Bits: Default is 8

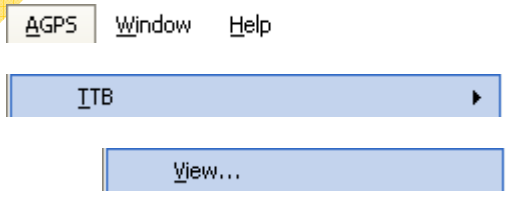
4.4.4.3.2.Configure Time Aiding



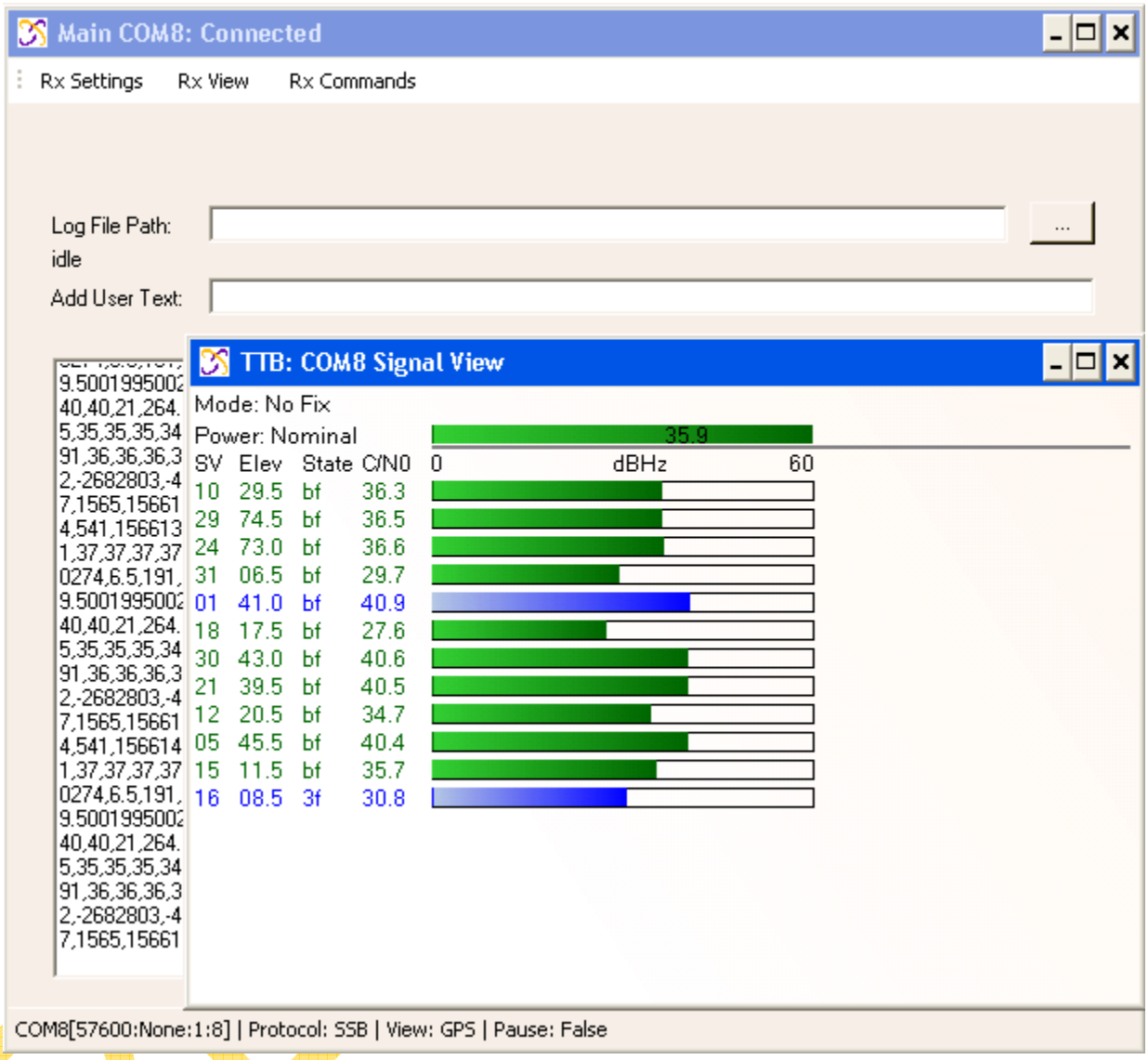
Configure the TTB for Precise or Coarse aiding.



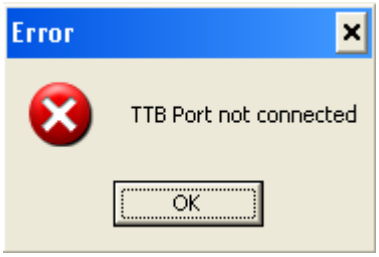
4.4.4.3.3.View



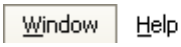
View allows the user to see how the TTB is functioning. Selecting View opens a new COM window for the TTB and a separate Signal View window. The example below shows the TTB connected to COM 8:



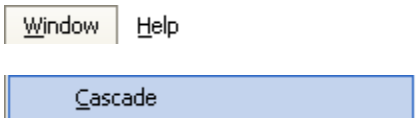
If there is no TTB connected, then the following error message will appear



4.4.5. Window

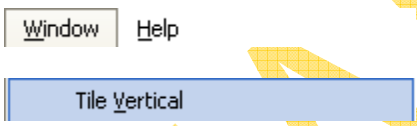


4.4.5.1.Cascade



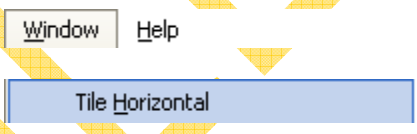
Cascade – all visible windows are fanned out across the window with the title bar of each window showing.

4.4.5.2.Tile Vertical



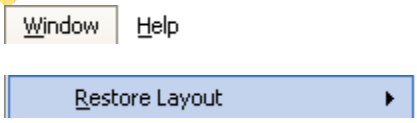
Tile Vertical – the window with focus will be on the left-most side of the screen with subsequent visible windows following left to right.

4.4.5.3.Tile Horizontal

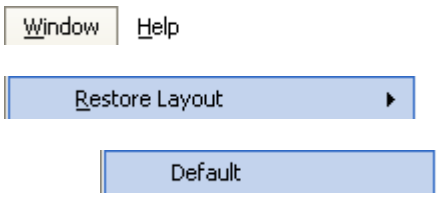


Tile Horizontal – the window with focus will be at the top of the screen with subsequent visible windows following top to bottom.

4.4.5.4.Restore Layout

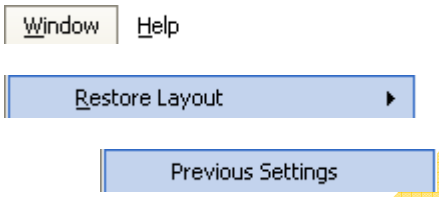


4.4.5.4.1.Default



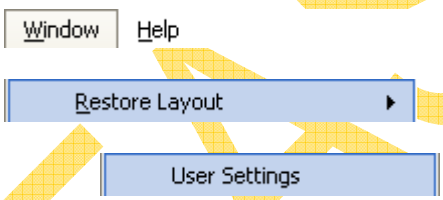
This will set all of the open windows into the default layout

4.4.5.4.2.Previous Settings



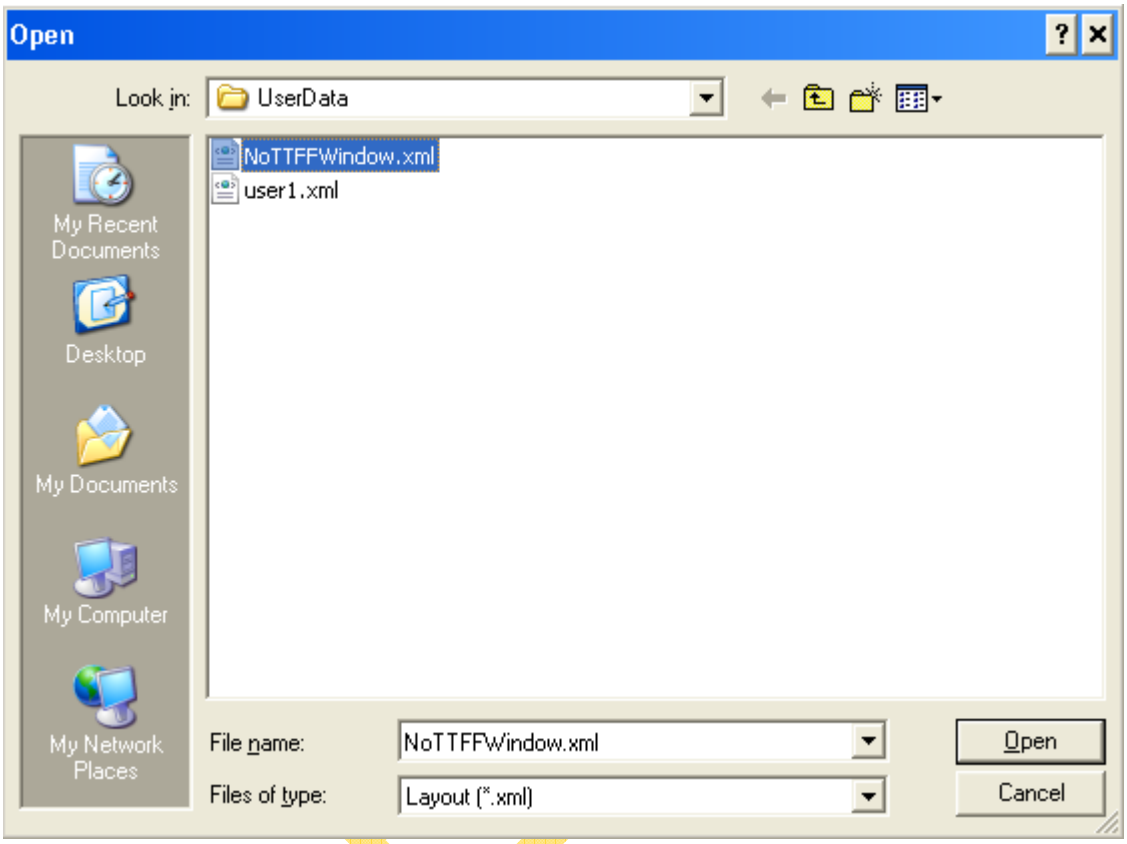
The Previous Settings action will open and arrange the windows that were last set in SiRFLive.

4.4.5.4.3.User Settings

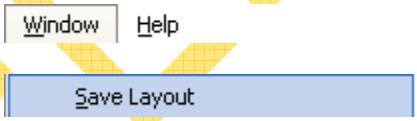


The User Settings action allows the user to open saved window arrangements.

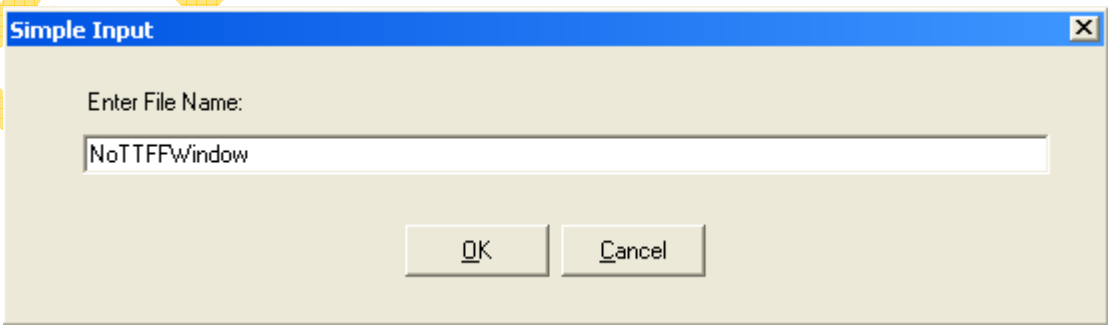
****NOTE*** The file 'NoTTFFWindow.xml' is shown as an example only.*



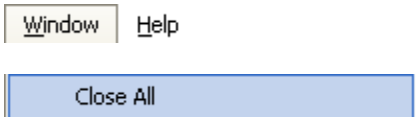
4.4.5.5.Save Layout



User preferences on the window layout may be saved to be used later

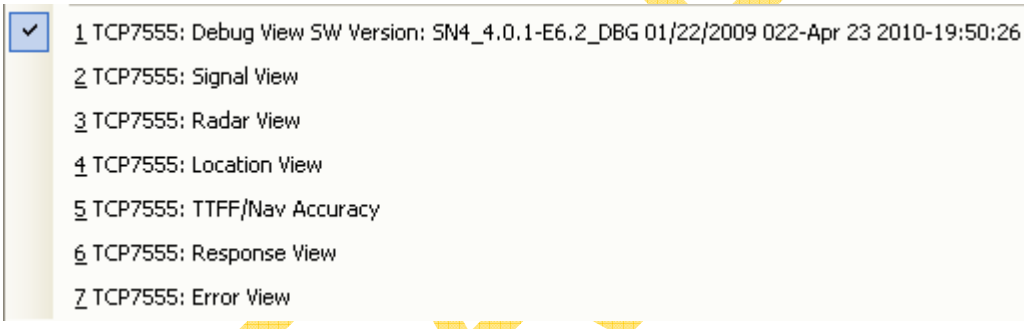


4.4.5.6.Close All



The Close All selection closes all of the open windows in SiRFLive.

4.4.5.7.Open Windows

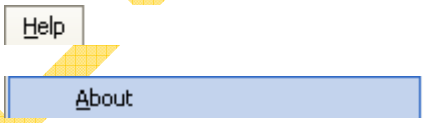


Any window that is open will be displayed at the bottom of the Window menu list. The checkmark signifies the window that is highlighted or has focus.

4.4.6. Help

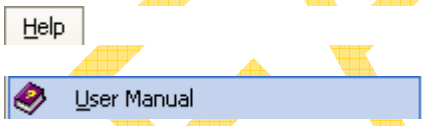
The Help menu lists the About and Help items.

4.4.6.1.About

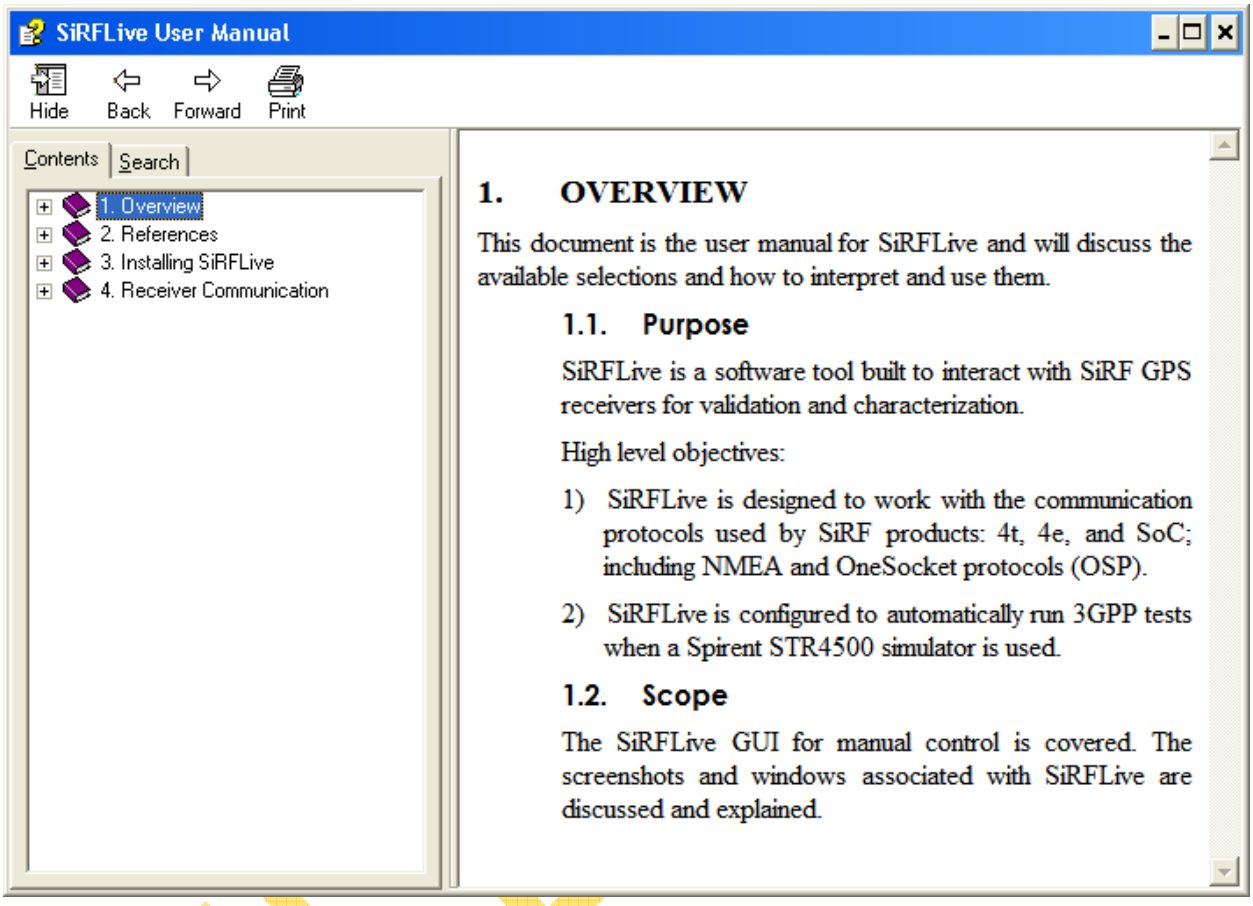


The About window: displays the version and copyright information for SiRFLive.

4.4.6.2.User Manual



This displays the User Manual help file as shown below.


SiRFLive User Manual
Hide
Back
Forward
Print
Contents
Search
1. Overview
2. References
3. Installing SiRFLive
4. Receiver Communication
1. OVERVIEW
This document is the user manual for SiRFLive and will discuss the available selections and how to interpret and use them.
1.1. Purpose
SiRFLive is a software tool built to interact with SiRF GPS receivers for validation and characterization.
High level objectives:
1) SiRFLive is designed to work with the communication protocols used by SiRF products: 4t, 4e, and SoC; including NMEA and OneSocket protocols (OSP).
2) SiRFLive is configured to automatically run 3GPP tests when a Spirent STR4500 simulator is used.
1.2. Scope
The SiRFLive GUI for manual control is covered. The screenshots and windows associated with SiRFLive are discussed and explained.

5. FAQ

5.1. Features

Q. Why doesn't my MEMS window update?

A. Confirm that MEMS is enabled by going to Receiver | Command Set MEMS and check the Enable MEMS option. If it is enabled, check your hardware configuration documentation to ascertain which sensors are available for your EVK. For more information, please contact your CSR representative.

Q. Why doesn't the 3GPP Automation tests work on my system?

A. The SiRFLive application does not include the scenarios by default. If you have a Spirent STR4500 simulator then contact your CSR representative to obtain the scenarios.

5.2. General

Q. The documentation states that all debug messages are disabled upon sending a Factory reset. When I send a Factory reset through SiRFLive I notice that debug messages still come out.

Q. Why do debug messages come out when I put the EVK into SiRFaware mode when I shut them (debug messages) off just prior to sending the command?

A. For troubleshooting reasons, SiRFLive automatically enables debug messages after a Factory reset, when enabling SiRFaware, and when switching protocols from NMEA to OSP. If a file is logged then this allows the capture of all possible issues that may occur over resets or other transitional modes.

5.3. GUI

Q. The Debug View title bar and the SiRFLive title bar show the software version, but under the Windows menu list the Debug View window does not. Why?

A. This is a known issue where the title bars don't always get updated immediately. Click on the Debug View window to set focus on it, and then when you look under the Window menu list again you will see that the title bar is now updated.

Q. How can I clear the contents of a window, like the Response View window?

The Error View, Response View, and Debug View windows can all be cleared by double-clicking within each individual window.

Q. I don't like the default window layout provided. How can I customize the layout?

A. Open or close the windows that you want and then resize them to your preference. Once you have everything where you want it go to the Window menu list and select 'Save Layout'. In the dialog window that appears give the layout a unique name and then press OK. If you ever need to reset your custom layout, just go to the Window menu and select Restore Layout | User Settings and select your specific layout.

Q. If there are no window views open in SiRFLive, is there an easy way to display them?

A. Yes, select Window | Restore Layout Default to open the seven standard window views all at once.

5.4. Installation

Q. The installation of the latest version of SiRFLive has an old version of the COM window appear when first opened. The PC is Windows 7.

A. Not all of the compatibility issues with Windows Vista and Windows 7 have been completely addressed at this time. Please uninstall all versions of SiRFLive through the Add or Remove Programs window and then confirm that there are no trace files left in the directory. Then reinstall the latest SiRFLive.

5.5. Playback

Q. How do you use the track bar slider that is displayed during playback.

A. The track bar will display the location within the file based on time. The user may adjust the slider by pressing the playback pause button first. Once the slider is moved to the desired location press the pause button again to start playing from the new slider location.

5.6. Protocol Detection Failure

Q. I get a Connection Error "The parameter is incorrect." Why?

A. If you select the wrong product type (4e instead of 4t) for the type of EVK used this error will appear. Please make sure to select the proper product that matches the EVK being used.

Q. I get a Connection Error "Access to the port 'xxx' is denied. Why?

A. The port selected may already be in use or is unavailable. Check to make sure the correct port is selected.

Q. The 'Connect' icon shows that I've connected my Rx but there is no output. Why?

A. Check to make sure that the correct port number is selected. An available port may be selected but it might not be the one connected to your Rx.

Check to make sure that the Tx light on the EVK is blinking. For 4e, the EVK may need to have the pulse switch toggled. For 4t, the tracker may be loading on the EVK. The EVK could be in hibernate mode or the auto-detect function may not have

Q. I get an Error "Host SW does not exist". Why?

A. The correct host software executable must be used if the 'Run Host' checkbox is selected for a GSD4t EVK. Confirm that the proper one is available and selected.

5.7. Resets

Q. What does the -9999 I sometimes see in the TTFF window mean?

A. The -9999 is a placeholder for data that is not available at that time.

Q. I sent an aided cold reset and yet the TTFF time is the same as a regular cold reset. Why is that?

A. If incorrect aiding values are sent the resulting reset will look like a normal reset. Be sure to confirm the aiding settings are correct.

Q. I sent an autonomous cold reset and the resulting TTFF was very fast. Why would that happen?

A. If ABP or CGEE is enabled for the Rx then the reset can give very fast TTFF values. Check that these settings are turned of if required.

Q. My reset TTFF is fast as I expected but why would the position error be thousands of meters in size?

A. If ABP is enabled then the TTFF will be quick but the horizontal accuracy can be quite large.

Q. The reset I sent was typical in the time to first fix but why would the position be way off from what I expected?

A. This can be caused by an incorrect reference location; the real antenna/signal location is not the same location selected as the reference. Please check and set the proper reference location for your testing.

5.8. Rx Port Settings

Q. Why is there an Rx Name edit box?

A. This helps distinguish which Rx is being used for tests if the user has multiple Rxs. The user may use the serial number of the unit as one possible example.

Q. For a 4t Rx, if the 'Run Host' checkbox is selected as well as the Extended Ephemeris checkbox, what is the Server Name that should be used?

A. You may use the demo server – sirfgetee.sirf.com. For more information, please contact your CSR representative.

Q. What is the Authentication Code that I need to enter to access the SGEE server?

A. Please contact your CSR representative for this information.

Q. What does the "TCP/IP open error: …target machine actively refused connection on 127.0.0.1:7555…" mean?

A. This error means that you are attempting to connect to a 4t host app running at TCP/IP address 127.0.0.1:7555 but that the host app is not running on this address/port. To resolve this problem you need to correct the 4t host app settings in the Rx Setup dialog. Verify that the com port numbers for tracker/reset are valid, verify that the run host option is checked and verify that the host app .exe file selected is correct.

6. REVISION HISTORY

6.1. Revision History

Rev	Rev Date	Author	Description
1 d1	12/05/08		Initial Release.
1 d2	12/16/08		Added chapters GUI screenshots
1 d3	12/18/08		Added todo's for GUI descriptions
1 d4	12/22/08		Updated sections 3.3.1,3.3.2, 3.4.1
1 d5	12/23/08		Updated sections 2.2 and 3.5
1 d6	12/23/08		Merged in device control, RF playback, automation and reporting changes
1 d7	01/05/09		Added Appendix
1 d8	01/07/09		Added receiver configuration screenshots
1 d9	01/08/09	Conrad Canderle	Updated syntax and merged changes
1 d10	01/08/09	Conrad Canderle	Decreased indent for Appendix and Revision History so numbering is correct
1.0d	03/26/09	Conrad Canderle	Update all screen shots and reset section
1.0r	03/27/09	Conrad Canderle	Updated to SiRFLive 1.05 screen shots
1.05	04/14/09	Conrad Canderle	Updated with latest screen shots
1.06	06/04/09	Conrad Canderle	Added Power Modes and updated Location Map
1.07	06/18/09	Conrad Canderle	Added 3GPP and Automation Tests section
1.08	07/10/09	Conrad Canderle	Updated the COM port settings and SiRFaware sections
1.09	07/17/09	Conrad Canderle	Updated the 3GPP images
1.10	07/22/09	Conrad Canderle	Updated the reset type descriptions, expanded the troubleshooting section with more details, and explained the Loopit logging event.
1.11	07/23/09	Conrad Canderle	Added USB com port connection and driver section 3.2.1
1.12	07/27/09	Conrad Canderle	Added Rx Session, Rx TTB, and updated all new images
1.13	07/28/09	Conrad Canderle	Added AutoReply Summary section
1.14	08/03/09	Conrad Canderle	Moved Troubleshooting to its own section number
1.15	08/06/09	Conrad Canderle	Added the Switch Operating Mode section
1.16	08/13/09	Conrad Canderle	Added the Log Duration section and updated the Python Console section. Expanded on the Installing SiRFLive portion and opening the application.
1.17	09/03/09	Conrad Canderle	Updated all of the Menu bar items in the COM window. Updated SiRF logo.
1.18	09/21/09	Conrad Canderle	Added Performance Monitor and Extended Ephemeris

			sections.
1.19	09/22/09	Conrad Canderle	Updated the Action section to include the same images as the EE section. Show COM default settings.
1.20	10/16/09	Conrad Canderle	Added the Counter and Non-Counter method settings for 3GPP.
1.21	10/29/09	Conrad Canderle	Added the File Format Conversion section. Changed TOC style from 6 to 4 heading places for better clarity.
1.22	11/4/09	Conrad Canderle	Added the AutoDetect feature of the GPS to NMEA file format conversion. Removed Message Queuing since this feature no longer exists.
1.23	11/20/09	Conrad Canderle	Added TBD to Tracker IC and Config section.
1.24	01/05/10	Conrad Canderle	Updated Rx View Section and corrected header syntax. Updated the SiRFaware section images. Updated the 3GPP Setup Config section.
1.25	01/07/10	Conrad Canderle	Corrected format issues for .chm conversion. Added the Set ABP Mode and Switch Protocol sections for GSD4e. Updated TTFF and CW Interference sections.
1.26	01/08/10	Conrad Canderle	Expanded on the CW Interference configurations.
1.27	01/12/10	Conrad Canderle Quoc Vo	Updated 3GPP section.
1.28	01/13/10	Conrad Canderle	Updated Section 4.2.1 Test Station Setup parameter descriptions. Updated recommended screen resolution.
1.29	01/14/10	Conrad Canderle	Added 3GPP Scenario explanation and more acronyms. Removed references to items that were deleted. Updated Rx Settings images. Updated Loopit logging images.
1.30	01/18/10	Conrad Canderle	Updated EE and Loopit images. Removed redundant data on Rx Port Settings and used hyperlinks instead.
1.31	01/19/10	Conrad Canderle	Added Auto-Detect information. Updated 3GPP section with Spirent information window and Status and Abort menu items.
1.32	01/28/10	Conrad Canderle	Added MEMS section and updated the IC Configuration images.
1.33	02/02/10	Conrad Canderle	Updated Switch Operation Mode images showing output in Response View window.
1.34	02/03/10	Conrad Canderle	Updated new SiRFaware window and 4e information.
1.35	02/04/10	Conrad Canderle	Added the Force Freq Trans Data Use checkbox image for Frequency Transfer.
1.36	02/05/10	Conrad Canderle	Updated image for Test Mode 7: SVs disabled.
1.37	02/12/10	Conrad Canderle	Added Aiding Bit section in TTFF.
1.38	03/02/10	Conrad Canderle	Added Response View information
1.39	04/20/10	Conrad Canderle	Updated with new SiRFLive GUI

1.40	04/23/10	Conrad Canderle	Updated Loopit section, Logging, and Signal View GUI.
1.41	05/05/10	Conrad Canderle	Added the Mapit information in the Location Map View
1.42	05/06/10	Conrad Canderle	Added Log File and Replay to Open/Close menu items. Updated Location, Radar, and TTFF View images.
1.43	05/07/10	Conrad Canderle	Added updated images for each menu item. Filled in content for each heading for the new .chm file. Added Playback section details. Added FAQ section.
1.44	05/10/10	Conrad Canderle	Added I^2C hardware configuration.
1.45	05/12/10	Conrad Canderle	Added new FAQ and Track Bar Slider under Playback section.
1.46	05/14/10	Conrad Canderle	Added details for Regular Expressions and an Installation question under the FAQ section. Updated SGEE server addresses.