



Using the SiRFdemo Software

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Using the SiRFdemo Software

The SiRFdemo software is provided to simplify real-time monitoring of the Evaluation Receiver, configuration of the Evaluation Receiver, and efficient logging of data in the field for further analysis.

Before running the software, you need to attach the Evaluation Receiver to your PC, which must be connected to a power source. You should also have an antenna on the Evaluation Receiver and position it so the antenna has a clear view of the sky.

To start the SiRFdemo software, either double-click on the `sirfdemo.exe` file or, if you created a short-cut on your desktop, double-click the SiRFdemo icon.

1 SiRFdemo Menus

The SiRFdemo software has six menus, which are described in table 4-1.

table 4-1 SiRFdemo Menus

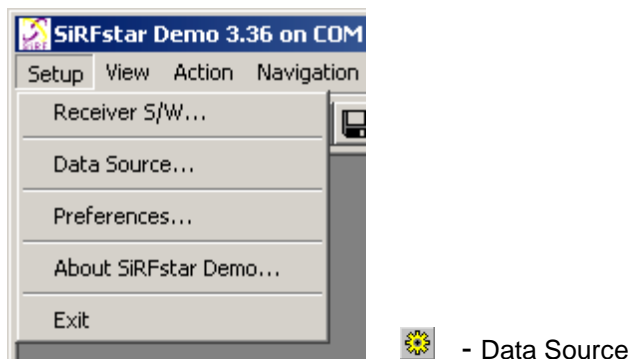
Menu	Description
Setup	The Setup menu lets you configure the data source used by SiRFdemo and configure operating preferences. See "The Setup Menu" on page 6 for detailed information about the Setup menu.
View	<p>The View menu lets you display different view windows. The available view windows include:</p> <ul style="list-style-type: none">• Signal Level• Tracking• Map• Navigation• Response• Error• Development• DGPS Status <p>See "The View Menu" on page 10 for detailed information about the View menu.</p>
Action	The Action menu provides access to most of the SiRFdemo functionality including configuration of the Evaluation Receiver and data logging for later analysis. See "The Action Menu" on page 20 for detailed information about the Action menu.
Navigation	<p>The Navigation menu lets you configure items that effect how a position solution is acquired or the type of position needed.</p> <p>FROM the Navigation menu, you can set various operating masks, the DGPS mode, and the DGPS source. See "The Navigation Menu" on page 39 for detailed information about the Navigation menu.</p>
Poll	The Poll menu is used to obtain Evaluation Receiver information such as software version, navigation parameters, and clock status. You can also use the Poll menu to obtain the latest ephemeris and almanac. See "The Poll Menu" on page 47 for detailed information about the Poll menu.
Window	The commands on the Window menu control the appearance of the information displayed. For detailed information about the Window menu, see "Changing Preferences" on page 9.

Note - The values that appear in the dialog boxes are Evaluation Receiver default values and not what is currently set in the Evaluation Receiver. See "The Navigation Parameters" on page 49 to determine the current settings of all navigation parameters.

2 The Setup Menu

This section describes the SiRFdemo functions on the Setup menu:

- "Selecting the Target Evaluation Receiver" on page 6
- "Defining the Data Source" on page 7
- "Changing Preferences" on page 9
- "Displaying Information About the SiRFdemo Software" on page 10
- "To Exit the SiRFdemo Software" on page 10



2.1 *Selecting the Target Evaluation Receiver*

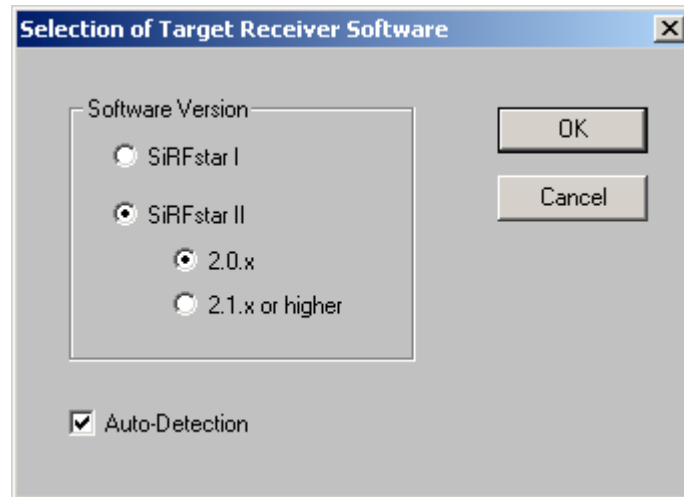
The SiRFdemo software supports the SiRF product lines, SiRFstarI/LX, SiRFstarIIe, and SiRFstarIIe/LP. A built-in auto-detection feature allows the SiRFdemo to identify the hardware/software platform it is connected to and configure the pull down menus correctly. This provides access to features that are common to both platforms (i.e., protocol) and individual access and definition to features that are either unique (i.e., Static Navigation) or redefined (i.e., TricklePower) for each platform.

Once connected, the SiRFdemo software attempts to identify the system as either SiRFstarI or SiRFstarII. If the hardware detection function fails, you are prompted to select the hardware platform manually. The auto-detection function can be disabled by unchecking the Auto-Detection check box.

To select the target Evaluation Receiver:

1. Choose Receiver S/W... from the Setup menu.

The Selection of Target Receiver Software screen is displayed.



2. Click the appropriate hardware platform button – SiRFStarI or SiRFStarII.


If you are using a SiRFstarII product, you must also select the software version being used - either 2.0.x or 2.1 or higher.

3. Uncheck the Auto-Detection checkbox if you want to disable the auto-detection function.

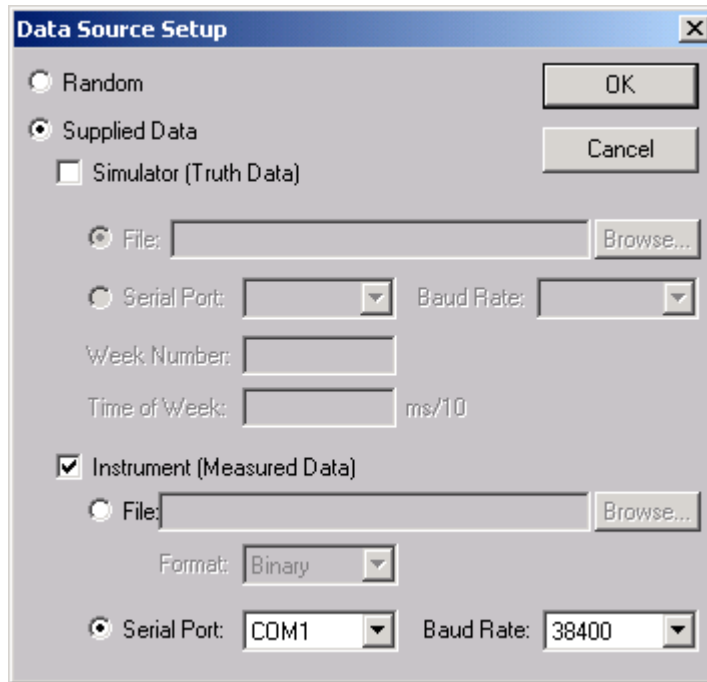
2.2 Defining the Data Source

The SiRFDemo software is capable of receiving data from different sources. You can configure the demo to receive data directly from a connected Evaluation Receiver, generate its own random data, or load data from a previously logged file.

To configure the source of the data used by the SiRFDemo software:

-  1. Click the Data Source button or choose Data Source from the Setup menu.

The Data Source Setup screen is displayed.



2. Select either the Supplied Data or Random option:

Option	Description
Random	Uses randomly generated data. Use this option to verify that the SiRFdemo software is running without the Evaluation Receiver connected.
Supplied Data	The SiRFdemo software will use real data either directly from a Evaluation Receiver, or from a file. If a file is used, the original data can be in either SiRF Binary or NMEA. However, the file itself must be a binary file.

3. To use data from a file, select the File radio button and select the appropriate file using the Browse button.

Note - The Simulator (Truth Data) option is not yet implemented. Do not use the File radio button. This option is not implemented at this time.

4. To use data directly from an Evaluation Receiver, select the Serial Port radio button. Use the selection lists to choose the serial port to which the Evaluation Receiver is connected on your PC, and the correct baud rate.
5. Click the OK button to continue.

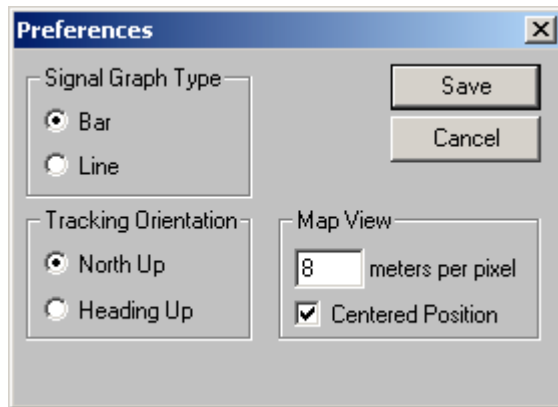
2.3 Changing Preferences

You can change the appearance of some of the view windows to suit your personal preferences. View preferences include the Signal Level view, the Tracking view, and the Map view.

To change the appearance of the view windows:

1. Choose Preferences from the Setup menu.

The Preferences screen is displayed.



2. Select the type of signal graph that you want to view on the 12-Channel Signal Level View screen:

Option	Description
Bar	Displays the data with vertical bars to represent the observed signal strength of each satellite.
Line	Displays the data in a continuous line graph form.

3. Select the direction of the tracking orientation that you want to use in the Tracking View screen:

Option	Description
North Up	True north points to the top of the circle.
Heading Up	This is typically used when driving in a vehicle or if the receiver is moving. Current heading points to the top of the circle.

4. To change the scale of the Map view, type the number of meters you want each pixel to represent in the Meters Per Pixel field.
5. Click the Centered Position check box if you want to display the Map View with the current position at the map center.
6. Click the Save button to save the changes or Cancel to exit without saving changes.

2.4 Displaying Information About the SiRFdemo Software

1. Select About SiRFstar Demo from the Setup menu to display SiRFdemo software information:



2.5 To Exit the SiRFdemo Software

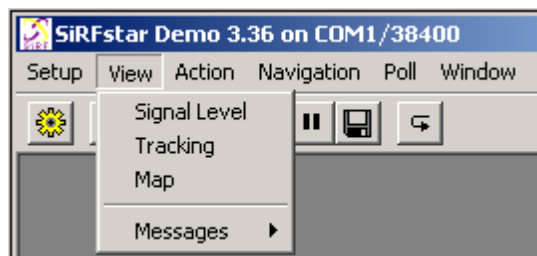
1. Select Exit from the Setup pulldown menu.

This closes SiRFdemo software.

3 The View Menu


This section describes the SiRFdemo functions on the View menu:

- "The 12-Channel Signal Level View Screen" on page 11
- "The Tracking View Screen" on page 13
- "The Map View Screen" on page 14
- "The Measured Navigation Message View Screen" on page 16
- "The Response View Screen" on page 17
- "The Error Message View Screen" on page 18
- "The Development Data View Screen" on page 18
- "The DGPS Status View Screen" on page 18



 — Signal level

 — Tracking

 — Map

3.1 The 12-Channel Signal Level View Screen

The 12-Channel Signal Level View screen is a combined graphical and text display of satellite tracking. Information shown by the Signal Level view includes the satellite number, status, azimuth, elevation, C/No, and last five seconds of measured signal strength.

To display the 12-Channel Signal Level view screen:

1. Click the Signal Level View button or choose Signal Level from the View menu.

Note - If you double-click on the 12-Channel Signal Level View screen, the Preferences screen is displayed. The Preferences screen enables you to modify the way information is displayed on the screen.

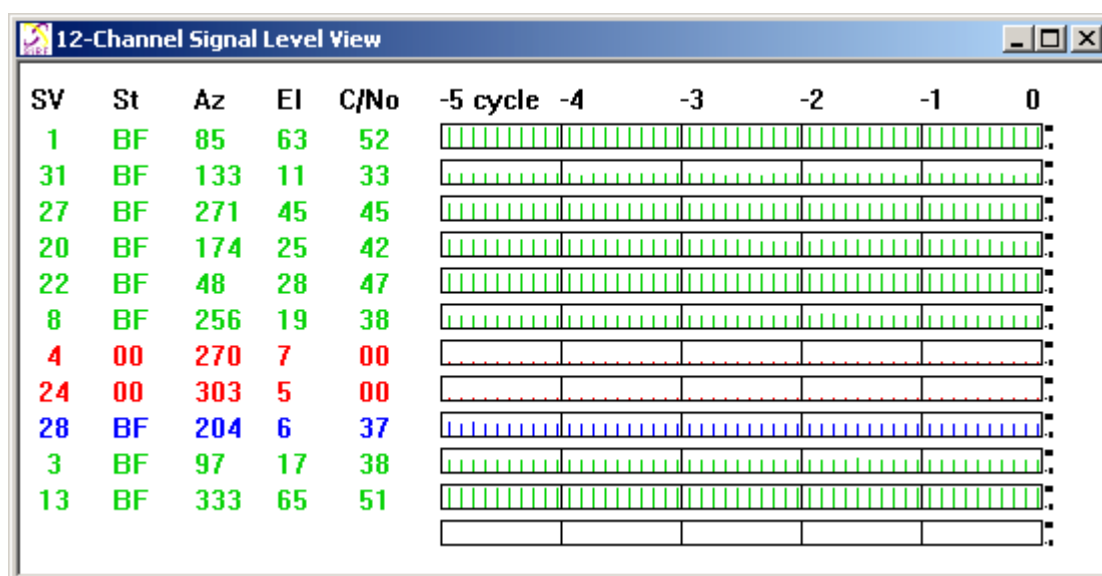


table 4-2 12-Channel Signal Level View Information

Information Displayed	Description
Satellite Number (SV)	The GPS satellite PRN number.
Status (St)	The status of each satellite tracked (see table 4-3, "Tracking Status Definitions.," on page 12 for more information).
Azimuth (Az)	Satellite azimuth (in degrees).
Elevation (El)	Satellite elevation (in degrees) with the horizon being zero degrees in elevation, and directly over-head being ninety degrees.
C/No	Signal level (in dB-Hz).
Signal Level (-5 sec)	5-second history of the measured signal strength.

Table 4-3 represents each of the possible tracking status messages and the corresponding tracking status. Each tracking status state corresponds with an achieved tracking stage for each channel of the Evaluation Receiver.

As an example, if a tracking status of 33 (Hex) is seen, this means that satellite acquisition has been achieved, the delta-phase is valid, the carrier pull-in is complete, and the code has been locked onto. From a cold start you will typically see the the following sequence of tracking status changes; 00→33→37→3F→BF. It only takes about 1 second to achieve a 37 status, approximately another 12 seconds to get to a 3F status, and finally another 20 seconds to achieve a BF status. The sequence and time frames may vary considerably between channels and sessions.

table 4-3 Tracking Status Definitions.

Achieved Tracking Stage								
Tracking Status (Hex)	Acquisition Success	Delta-phase Valid	Bit-sync Done	Sub-frame Sync Done	Carrier Pull-in Done	Code Locked	Ephemeris Data Available	Acquisition Failed
00								
01	✓							
03	✓	✓						
21	✓					✓		
23	✓	✓				✓		
25	✓		✓			✓		
27	✓	✓	✓			✓		
2D	✓		✓	✓		✓		
33	✓	✓			✓	✓		
37	✓	✓	✓		✓	✓		
3F	✓	✓	✓	✓	✓			
8D	✓		✓	✓			✓	
AD	✓		✓	✓		✓	✓	
AF	✓	✓	✓	✓		✓	✓	
BF	✓	✓	✓	✓	✓	✓		
40								✓
CC			✓	✓			✓	✓
CD	✓		✓	✓			✓	✓

The information displayed in the Signal Level view is also assisted by color coding. As the tracking status of each satellite changes, the associated text and signal levels are colored to represent the current status (see table 4-4).

table 4-4 12-Channel Signal Level View Color Coding

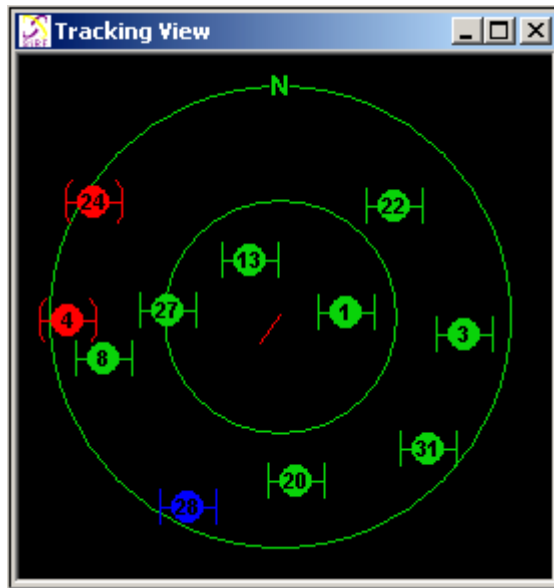
Color	Description
Red	The satellite location is known from almanac information; however, the satellite is not currently being tracked.
Blue	The satellite is being tracked; however, it is not being used in the current position solution.
Green	The satellite is being tracked and is being used in the current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

3.2 The Tracking View Screen

The Tracking View screen graphically displays the location of each of the tracked, used, and available satellites in the form of a polar plot.

To display the Tracking View screen:

1. Click on the Tracking View button or choose Tracking from the View menu.



In addition to the satellite locations, the current tracking status is represented by color (see table 4-5).

table 4-5 Tracking View Color Coding

Color	Description
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.

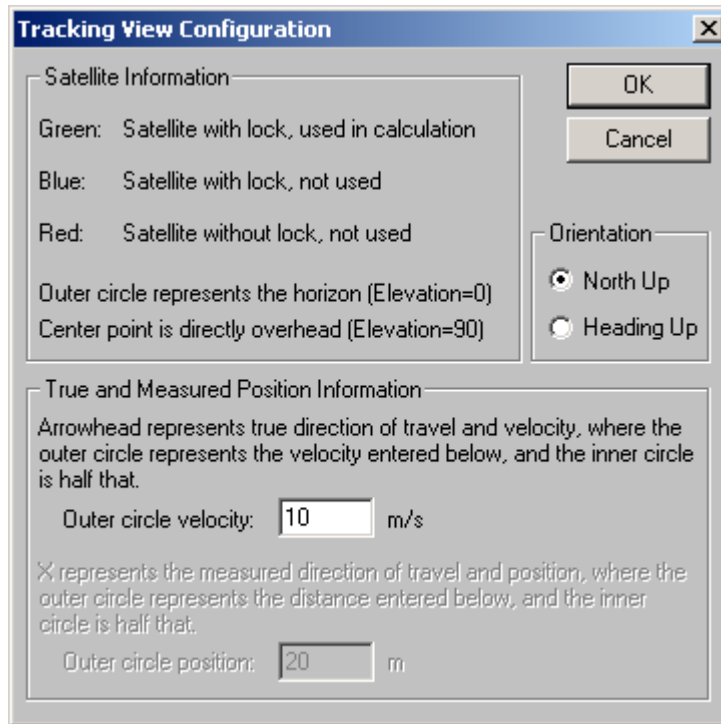
Current speed and heading (in a dynamic environment such as a moving vehicle) is represented by an arrow. The direction of the arrow represents heading while the length of the arrow indicates speed over ground.

Configuring the Tracking View Screen

You can configure the orientation and the velocity representation of the Tracking view screen.

To configure the Tracking view screen:

1. Double-click the Tracking View screen to display the Tracking View Configuration screen.



2. Select the direction of the tracking orientation that you want to use.

Option	Description
North Up	True north points to the top of the circle.
Heading Up	This option can be used when driving. Current heading points to the top of the circle.

3. Type the Outer circle velocity (in m/sec).

Note - The setting of the outer circle velocity means that if the arrow length reaches the outer circle of the plot, then the outer circle velocity has been reached.

4. Click OK to save the changes or Cancel to exit without saving changes.

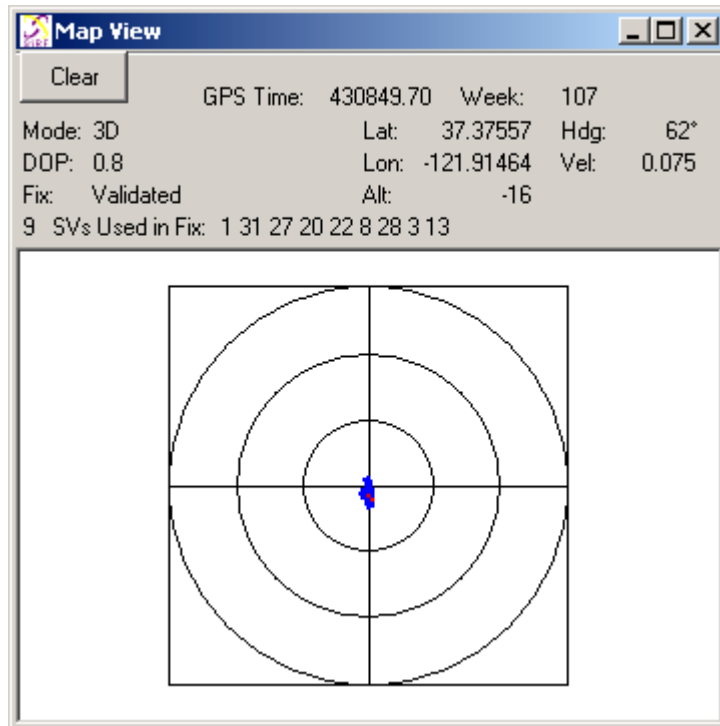
3.3 The Map View Screen

The Map view screen displays a combination of graphical and text-based information. Positions generated by the Evaluation Receiver are plotted on the Map view screen while other information such as GPS time, GPS week, position mode, current position, heading, velocity, DOP, type of position fix, and satellites tracked are displayed as text.

To display the Map view screen:

1. Click the Map View button or choose Map from the View menu.

The Map View screen is displayed.



The current position is represented on the plot by a red dot, while past positions are displayed in blue.

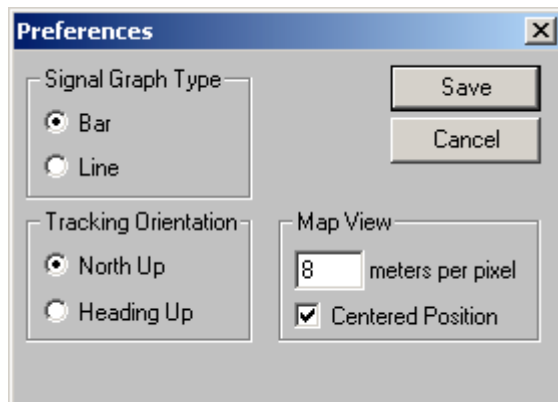
Note - When using the map view, it may be necessary to edit the origin of the plot. To edit the origin of the plot, see "To Change the Map View Preferences" on page 15.

To Change the Map View Preferences

The ability to change the scale of the Map view and to select the appropriate .smp file is provided by the Map view preferences.

To change the Map view preferences:

1. Double-click on the Map View screen to display the Preferences window.



2. Enter the number of meters you want each pixel to represent in the Meters/Pixel field. This value controls the map scale.
3. Click the Center Current check box if you want the Map View to be centered.
4. Enter the latitude and longitude (in WGS-84) of the required center of the Map View display in the Lat and Long fields.
5. To display up to three rings on the MapView display, enter the radius (in meters) of each of the rings in the Ring Radii group.

If a value of 0 (zero) is entered, the ring will not be displayed.
6. Click the Save button to save the changes or the Cancel button to exit.

3.4 The Measured Navigation Message View Screen

The Measured Navigation Message view screen is used to display position solution information such as GPS time, GPS week, position mode, current position, heading, velocity, DOP, type of position fix, and satellites tracked.

To view the Measured Navigation Message View screen:

1. Choose Messages Navigation from the View menu.

The Measured Navigation Message View screen is displayed.

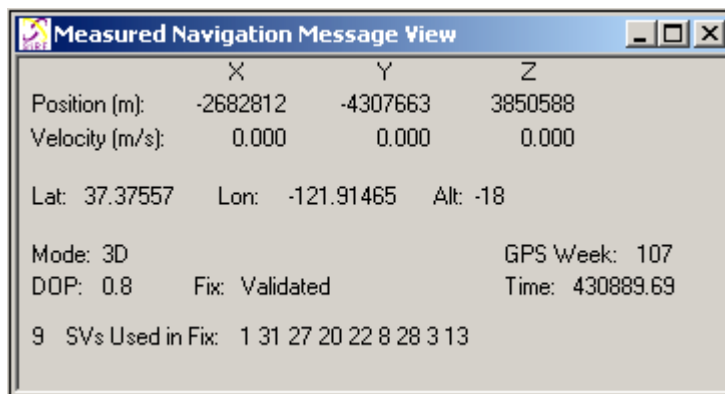


table 4-6 Measured Navigation Message View Information

Information Displayed	Description
X, Y, Z positions	Coordinates of user's position in ECEF (meters)
Velocity	User's velocity in ECEF (m/sec)
Latitude	User's latitude (decimal of degrees)
Longitude	User's longitude (decimal of degrees)
Altitude	User's altitude (meters)
Mode	Navigation solution type. This will change from a No Nav status, through the different fix modes such as 2D, 3DLSQ etc. The Mode field should be used for any TTFF measurements.

table 4-6 Measured Navigation Message View Information

Information Displayed	Description
GPS Week	GPS week number
DOP	Dilution of Precision
Fix	Validated/unvalidated. From an unvalidated state, a 5 SV position solution must be achieved to become a validated position. If the receiver continues to navigate in a degraded mode (3D, 2D, 1SV, or DR), then the validated status will remain. If navigation is lost completely, an unvalidated status will result.
Time	Current GPS time (seconds)
Svs Used in Fix	Sv PRN used in solution

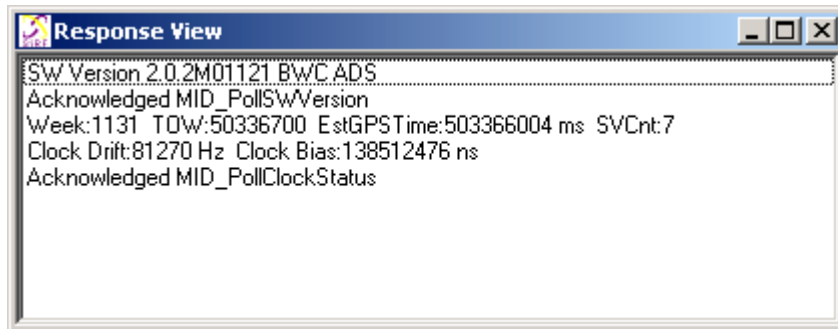
Note - ECEF XYZ is converted geodetic latitude, longitude, and altitude based on the WGS84 ellipsoid parameters.

3.5 The Response View Screen

The Response View screen is used to display any response to a poll request. You can poll the Evaluation Receiver for the software version (see "The Software Version" on page 48), clock status (see "The Clock Status" on page 48), and navigation parameters (see "The Navigation Parameters" on page 49).

To display the Response View screen:

1. Choose Messages Response from the View menu.

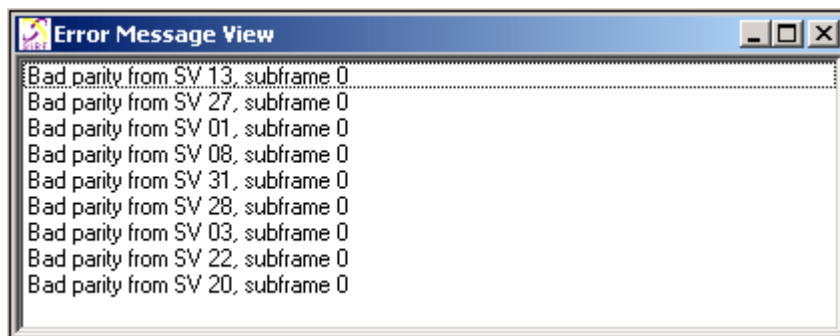


3.6 The Error Message View Screen

The Error Message View screen is used to display any error messages that the Evaluation Receiver may generate. Error messages are generated automatically by the Evaluation Receiver under certain conditions. Many are caused by normal GPS operations such as acquiring a low elevation satellite. This could result in a bad parity.

To view the Error Message View screen:

1. Choose Messages Error from the View menu.

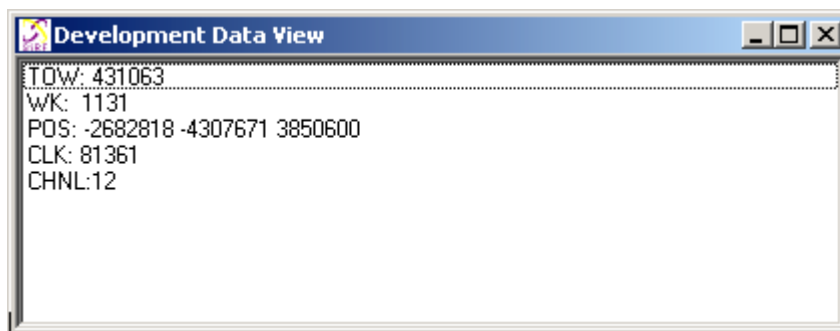


3.7 The Development Data View Screen

The Development Data View screen displays additional information about the Evaluation Receiver operation. The data is generated automatically by the Evaluation Receiver.

To view the Development Data View screen:

1. Choose Messages | Development from the View menu.



Note - To view incoming development data the Enable Development Data checkbox must be enabled on the Receiver Initialization screen. See "Initializing the Data Source" on page 23.

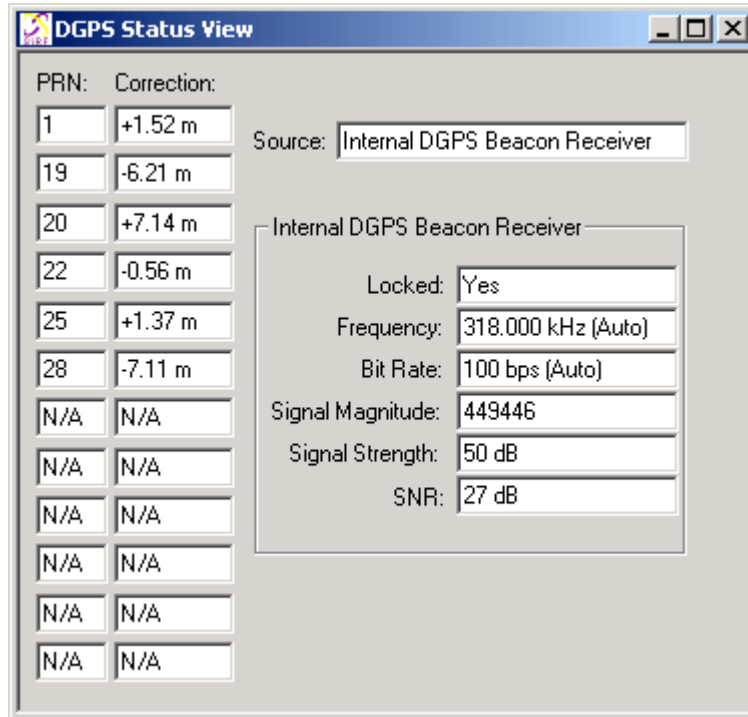
3.8 The DGPS Status View Screen

The SiRFstarIIe/LP Evaluation Receiver has two options for DGPS operation - WAAS or external RTCM. See "Selecting the DGPS Source" on page 44 for more information about each of these options. The DGPS Status View screen provides information about the DGPS source and current operation.

To view the DGPS Status View screen:

1. Choose Messages | DGPS Status from the View menu.

The DGPS Status View screen is displayed.



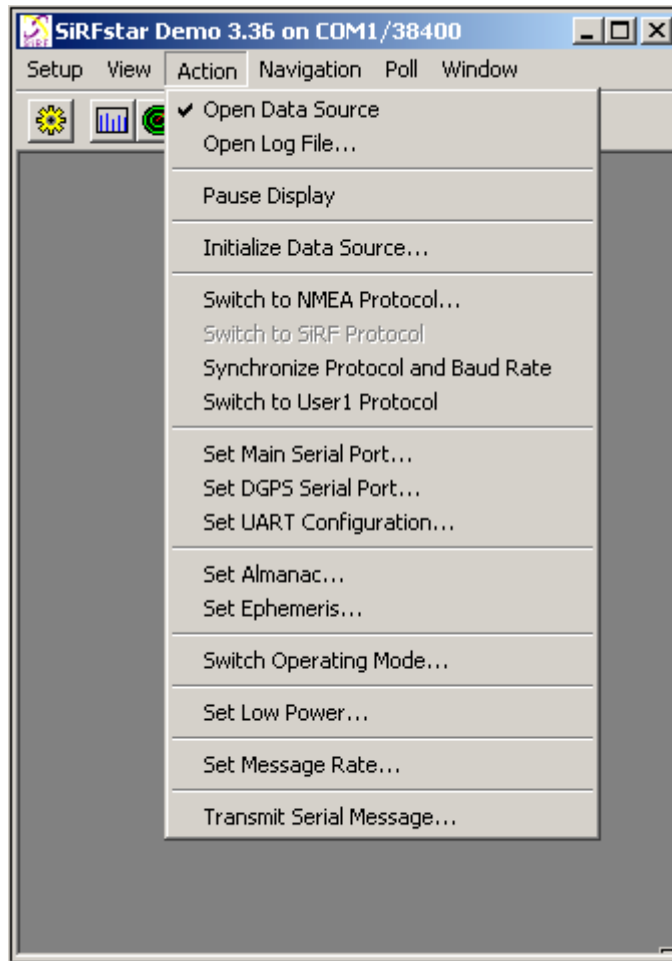
Information	Description
PRN	Pseudo Random Noise code (SV identification) for the satellite.
Correction	Current pseudo-range correction in meters.
Source	Where the correction was received from. The options are external RTCM, internal beacon, and WAAS. If Internal Beacon is the DGPS source, the following information also applies:
	Locked: Status of tracking Coast Guard Beacon
	Frequency: Frequency (KHz) of beacon tracked
	Bit Rate: BPS for signal demodulation
	Signal Magnitude: TBD
	Signal Strength: TBD
	SNR: Signal to Noise Ratio (TBD)






4 The Action Menu

This section describes the SiRFdemo functions on the Action menu:

- "Opening a Data Source" on page 21
- "Opening a Log File" on page 22
- "To Pause the Display" on page 23
- "Initializing the Data Source" on page 23
- "Switching to the NMEA Protocol" on page 26
- "Switching to the SiRF Protocol" on page 28
- "Synchronizing Protocol and Baud Rate" on page 28
- "Switching to User1 Protocol" on page 28
- "Setting the Main Serial Port" on page 29
- "Setting the DGPS Serial Port Parameters" on page 29
- "Setting the UART Configuration" on page 30
- "Uploading an Almanac to the Evaluation Receiver" on page 31
- "Uploading an Ephemeris to the Evaluation Receiver" on page 32
- "Switching Operating Mode" on page 32
- "Setting Low Power Parameters" on page 34
- "Setting the Message Rate" on page 37
- "Transmitting a User Defined Serial Message" on page 38

Note - All values that appear in the dialog boxes under this menu are Evaluation Receiver default values. To determine the current settings of all Navigation Parameters, refer to page 49.





-  – Open Data Source (not connected)
-  – Open Data Source (connected)
-  – Open Log File
-  – Pause Display
-  – Initialize Data Source

4.1 Opening a Data Source

Before any data can be received from or sent to the Evaluation Receiver a communications channel must be established or a data source must be opened.

To open a data source:

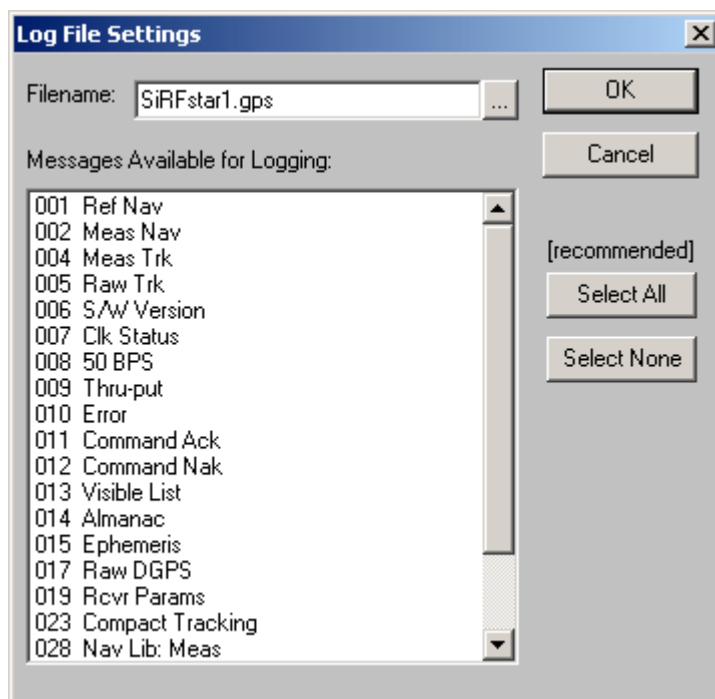
-  1. Click the Connect/Disconnect button or select Open Data Source from the Action menu.
-  2. Click the Connect/Disconnect button again or select Open Data Source from the Action menu to disconnect communication to the Evaluation Receiver.

4.2 Opening a Log File

The log file function provides the ability to log selected information from the Evaluation Receiver to a named file.

To open a file and select messages to log:

1. Click the Log File Settings button or choose Open Log File from the Action menu. The Log File Settings window is displayed.



2. Select each message you want to log to a file by clicking on the required message. You can select all of the messages at once by clicking the Select All button.

Note - Only records that are selected will be logged to a file. If you are logging all available messages, you should use a baud rate of 38400 or higher. This will ensure that no data will be lost during logging.

3. Click OK to begin logging the selected messages or Cancel to abort opening a file.

Each of the available message types and a brief description is provided in table 4-7.

table 4-7 Messages That Can Be Logged to a File

Messages	Description
002 Measured Navigation	Time, position, velocity,...
004 Measured Tracking	Satellite status and C/No
005 Raw Track Data	Not supported by SiRFstarII
006 SW Version	Software version of the Evaluation Kit
007 Clock Status	Receiver clock performance

table 4-7 Messages That Can Be Logged to a File

Messages	Description
008 50 BPS Subframe Data	Satellite ephemeris and almanac data
009 Throughput	CPU throughput usage
010 Error	Various error messages
011 Cmd Ack	Acknowledgment of received commands
012 Cmd Nak	Input message failures
013 Visible List	Satellite visibility list (based on current almanac)
014 Almanac	Satellite almanac data
015 Ephemeris	Satellite ephemeris data
017 Raw DGPS	Differential GPS corrections in RTCM format
019 Rcvr Params	Parameters affecting navigation solutions
028 Navigation Measurements	Observed satellite measurement data
029 DGPS Measurements	Received differential GPS correction information
030 SV State Parameters	Observed velocity, position and clock information
031 Startup Initialization	Startup initialization information
255 Development	Various development information

4.3 To Pause the Display

All of the open windows can be paused to allow easy viewing of the existing data without receiving any further data.

To pause all of the open windows:

1. Click the Pause button or choose Pause Display from the Action menu.

Note - No data is logged while the display is paused.

4.4 Initializing the Data Source

You can reset or initialize the Evaluation Receiver directly through the SiRFdemo software. This function may be used to demonstrate or evaluate the Evaluation Receiver's recovery ability under different circumstances.

To perform a receiver reset or allow Nav Lib or Development data to be output from the Evaluation Receiver:

1. Click the reset button or choose Initialize Data Source from the Action menu.

The Receiver Initialization Setup screen is displayed.

2. Select type of Reset Mode by clicking on the associated radio button. Each of the reset types are described in table 4-8.

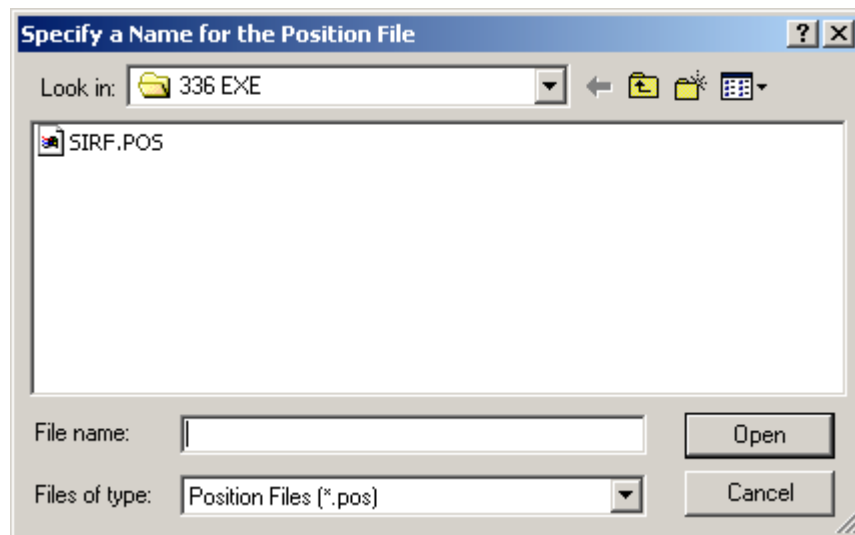
table 4-8 Reset Types

Option	Description
Hot Start	The Evaluation Receiver restarts by using the values stored in the internal memory of the Evaluation Receiver. The stored ephemeris and almanac are both valid.
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 Evaluation 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.

Option	Description
Cold Start	This option clears all data that is currently stored in the internal memory of the Evaluation Receiver including position, almanac, ephemeris, and time. The stored clock drift however, is retained.
Factory Start	This option clears all data including position, almanac, ephemeris, time, as well as the stored clock drift. All Evaluation Receiver parameters are also set back to the factory defaults.

Note - If Cold start is selected, all Evaluation Receiver settings are reset to factory defaults with the exception of low power settings.

- If you selected the Warm Start (Init) reset mode, enter or load the X, Y, and Z coordinates for the current position of the Evaluation Receiver. You can load a file containing the X, Y, Z coordinates by clicking the Load button. The Specify a Name for the Position File window is displayed.



- Select the appropriate file. sample `Sirf.pos` configuration file.

Note - An example file called `sirf.pos` has been provided with the SIRFdemo software. See "Modifying the Sample `sirf.pos` File" for more information on creating a valid `.pos` file.

- Click the OK button to accept or the Cancel button to exit.
The Receiver Initialization Setup screen is displayed again.
- Type 96,000 in the Clock field (96,000 is a typical clock drift value of the crystal in the Evaluation Receiver).

Note - If you type 0 in the Clock field, the Evaluation Receiver uses its last stored value, or a default of 96,000 if no prior stored value is available.

- Click on or off the Use current DOS time check box.
The default value is set to the current time.

Note - It is recommended that you use DOS time (it is assumed that the date and time on your computer are set correctly).

8. Type the number of the week in the Week Number field.
9. Type the time of the week in the Time of Week field.
10. Type number of channels in the Channel field.
You can specify from 1 to 12 channels.
11. Click on Enable Nav Lib Data to log navigation library data.
12. Click on Enable Development Data to turn on message 255. The content of this message is displayed in the Development Data View. The baud rate of the SiRFdemo software and the Evaluation Receiver is automatically changed to 57600 to ensure sufficient through-put to accommodate the quantity of data.

Note - The Development Data output by the Evaluation 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 of support needs from SiRF.

13. Enter a periodic reset value in the Periodic Reset field to automatically reset the receiver at the defined interval. Valid values are 5 to 600 seconds. A value of 0 (zero) will cancel the periodic reset function.
14. Click the Send button to initialize or the Cancel button to exit.

4.5 Switching to the NMEA Protocol

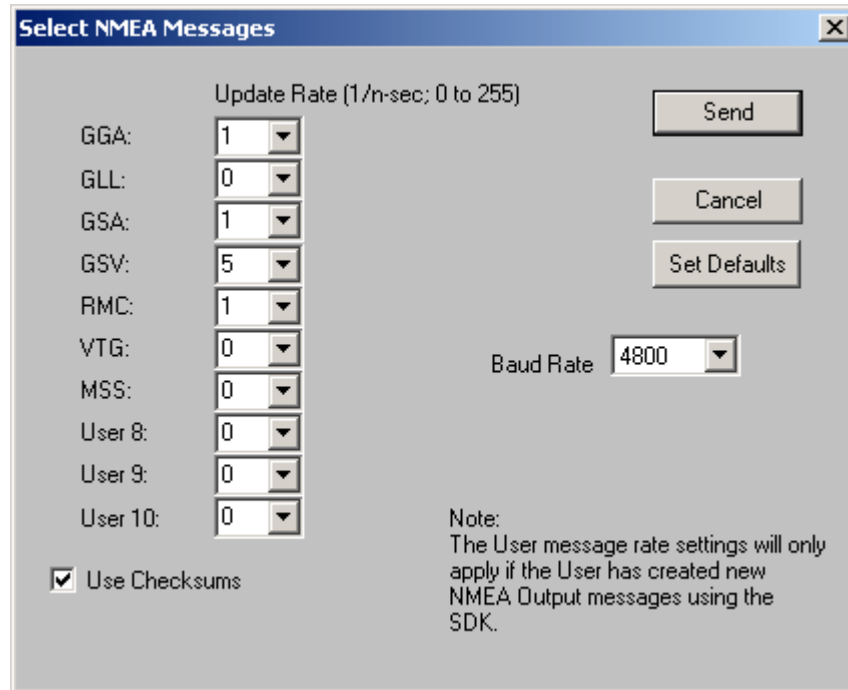
The SiRFstarIIe/LP Evaluation Receiver supports a subset of the NMEA protocol. Rather than operating in the SiRF binary protocol, you may change the protocol to NMEA for the port that is currently connected.

Note - When operating in NMEA mode, many of the SiRFdemo display windows and functions are not supported.

To change the protocol to NMEA for the port currently connected to your PC:

1. Choose Switch to NMEA Protocol from the Action menu.

The Select NMEA Messages screen is displayed.



2. Select the NMEA Messages that you want to use by clicking on the required message. Table 4-9 provides a brief description of each of the available NMEA messages. For detailed information on the NMEA protocol, please see "NMEA Input/Output Messages".

table 4-9 NMEA Messages

Option	Description
GGA	Time, position, and fix related data for a GPS receiver.
GLL	Latitude and longitude of present position, time of position fix and status.
GSA	GPS receiver operating mode, satellites used in the position solution, and DOP values.
GSV	The number of GPS satellites in view satellite ID numbers, elevation, azimuth, and SNR values.
RMC	Time, date, position, course and speed data provided by the GPS receiver.
VTG	The actual course and speed relative to the ground.
MSS	Signal-to-noise ratio, signal strength, frequency, and bit rate from a radio-beacon receiver.
User 8	Reserved for a user defined NMEA string.
User 9	Reserved for a user defined NMEA string.
User 10	Reserved for a user defined NMEA string.

3. Select the update rate for each NMEA message that you want to use from the corresponding Update Rate pulldown menu. Each NMEA message can be output at a maximum rate of 1 per second and at a minimum rate of 1 per 255 seconds.
4. Select the baud rate that you want to use from the Baud Rate pull down menu.
5. Click the OK button to save or the Cancel button to exit.

Note - When the Evaluation Receiver is selected to operate using the NMEA protocol, the output messages can be viewed in the Development Data screen. It can also be logged by using the same technique as a SiRF binary file. Select 255-Development in the Log File Settings screen and Enable Development Data must be checked in the Messages field of the Receiver Initialization screen.

4.6 Switching to the SiRF Protocol

If you are already operating using the SiRF binary protocol, this menu item is unavailable. It can be used, however, with the NMEA protocol and if you want to change the operating protocol back to the SiRF binary protocol.

To change the operating protocol from NMEA to SiRF binary:

1. Choose Switch to SiRF Protocol from the Action menu to return to the SiRF binary protocol.

4.7 Synchronizing Protocol and Baud Rate

All Evaluation Receiver settings including selected protocol and serial port settings are held in battery backed SRAM. If the Evaluation Receiver is power cycled, these settings will remain. If the Evaluation Receiver is left in an unknown state, it is difficult to regain communication with it.

The synchronize protocol and baud rate function attempts to change the serial port settings of the Evaluation Receiver to a known state of SiRF binary and 38400 baud. This is done by issuing commands to the receiver using all possible baud rates and both NMEA and SiRF binary protocols. After this is complete, SiRFdemo resumes operation using SiRF binary protocol and 38400 baud. As the receiver should also be operating with the same settings at this time, communication is resumed.

4.8 Switching to User1 Protocol

If a user protocol has been defined and implemented in the version of software running, Switch to User 1 menu item can be used to enable the user defined protocol. If Switch to User 1 is selected, the target platform changes to the user defined protocol, but SiRFdemo continues to operate in SiRF Binary.

Note - If the target platform is operating in the user defined protocol, there is no direct method through SiRFdemo to switch the target platform back to SiRF Binary. An application based on the user protocol must be used, or the Send Serial Message ability may be utilized.

To change the operating protocol to a user defined protocol:

1. Choose Switch to User 1 Protocol from the Action menu.

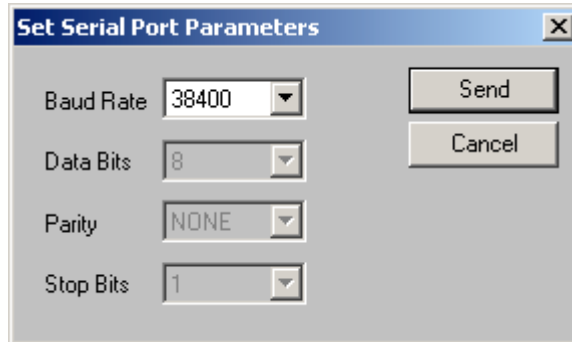
4.9 Setting the Main Serial Port

The Set Main Serial Port function lets you change the baud rate of the serial port connected to the Evaluation Receiver and the serial port of the PC.

To change the baud rate of the port used by the Evaluation Receiver and the PC:

1. Choose Set Main Serial Port from the Action menu.

The Set Serial Port Parameters screen is displayed.



2. Select the baud rate you want to use.
3. Click the Send button to accept or the Cancel button to exit.

Clicking the Send button resets the Evaluation Receiver and computer's serial port to start communicating using the new baud rate.

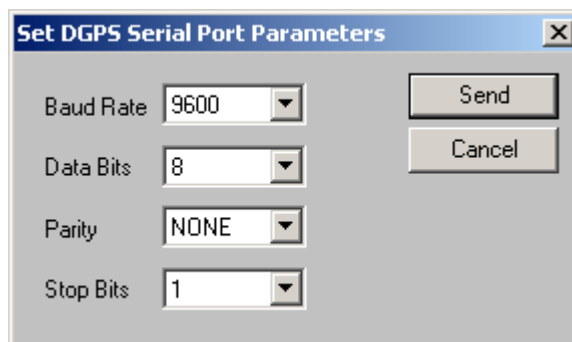
4.10 Setting the DGPS Serial Port Parameters

The Set DGPS Serial Port Parameters function will configure the second serial port (the serial port not currently used by the SiRFdemo software) of the Evaluation Receiver for reception of RTCM data.

To configure the available port for RTCM reception:

1. Choose Set DGPS Serial Port from the Action menu.

The Set DGPS Serial Port Parameters screen is displayed.



2. Select the baud rate, data bits, parity, and stop bits that you want to use for the DGPS serial port parameters from each pull down menu.

3. Click the Send button to accept or the Cancel button to exit.

Clicking the Send button resets the Evaluation Receiver and changes the protocol of the second port to RTCM and the serial port settings to the selected values.

Note - The differential correction data source must be configured separately. See "Defining the Data Source" on page 7.

4.11 Setting the UART Configuration

The UART configuration control is provided to allow support of four unique UARTS. You can configure UART settings such as protocol, baud rate, data bits, parity, and stop bits using the UART configuration control.

Four UART support is provided by some SiRF products, but it is not supported by the SiRFstarIIe/LP Evaluation Receiver. The Evaluation Receiver is restricted to two UARTs (or serial ports) only. The UART configuration control is provided primarily for system developers.

To set the UART configuration of the Evaluation Receiver for the two supported UARTs:

1. Choose Set UART Configuration from the Action menu.

The UART Configuration screen is displayed.

UART Configuration

UART 0 (CPU SCIO 0) Set

Protocol

Baud Rate

Data Bits

Parity

Stop Bits

UART 1 (CPU SCIO 1) Set

Protocol

Baud Rate

Data Bits

Parity

Stop Bits

Send

Cancel

Help

UART 2 (GSP Port A) Set

Protocol

Baud Rate

Data Bits

Parity

Stop Bits

UART 3 (GSP Port B) Set

Protocol

Baud Rate

Data Bits

Parity

Stop Bits

Warning! Improper use of this configuration dialog can cause receiver communications to be lost!
THESE CONFIGURATION ITEMS ARE INTENDED FOR SDK USERS ONLY.

SiRFdemo <-> Receiver UART

UART 0 UART 1

UART 2 UART 3

Note - The com ports supported in a standard Evaluation Receiver are UART 0 (CPU SCIO 0, COM port A) and UART 1 (CPU SCIO 1, COM B).

2. Check the Set box for each UART you want to apply changes to.

If the Set box is not checked, the existing configuration remains in its current state.

Note - UART 0 is equivalent to com port A of the Evaluation Receiver, and UART 1 is equivalent to com port B.

3. Select SiRF binary, NMEA, RTCM, or No I/O from the Protocol selection list.

Select No I/O from the Protocol pull down menu to disable the data output from any port. Each protocol can only be supported by one UART. You cannot configure two different ports to use the same protocol.

4. Select the appropriate serial communication parameters using the selection lists for baud rate, data bits, parity, and stop bits.
5. Click the Send button to accept or the Cancel button to exit.

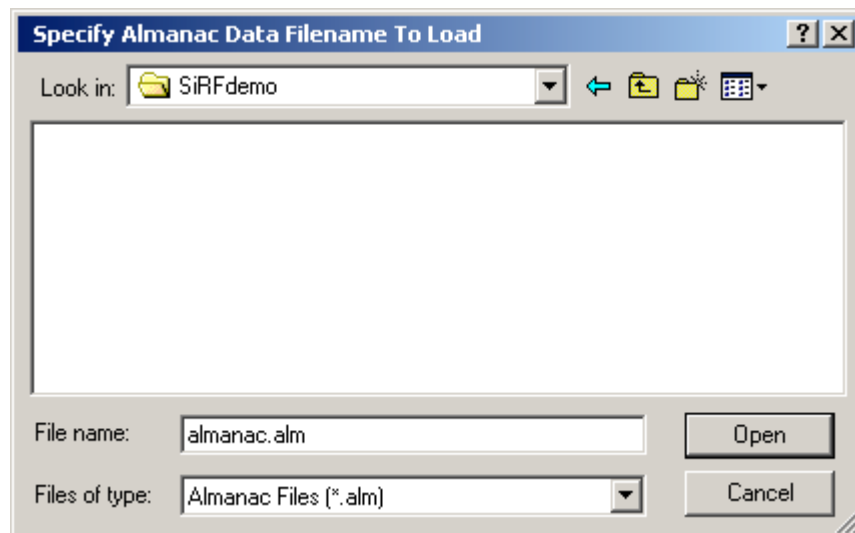
4.12 Uploading an Almanac to the Evaluation Receiver

An almanac file is used by a GPS receiver to assist with locating and tracking available satellites. If a current almanac file does not exist in the Evaluation Receiver due to a cold start or if it has not been used for a long period of time, loading a recent almanac file will assist the Evaluation Receiver in locating and tracking satellites.

To upload an almanac file to the Evaluation Receiver:

1. Choose Set Almanac from the Action menu.

The Specify Almanac Data Filename To Load screen is displayed.



2. Specify the file you want to use.
3. Click the OK button to accept or the Cancel button to exit.

Note - The almanac file must be in the same format as polled from the Evaluation Receiver. To download an almanac file from the Evaluation Receiver, see "Downloading an Almanac File" on page 50.

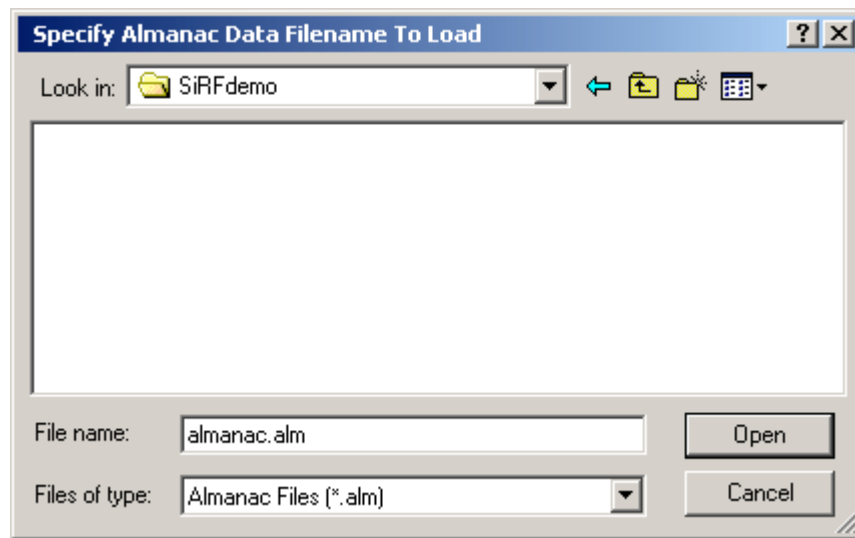
4.13 Uploading an Ephemeris to the Evaluation Receiver

An ephemeris is used by a GPS receiver to calculate the position of the satellites and hence, the position of the GPS receiver. If an ephemeris file is not available, then this must be downloaded from a GPS satellite. To eliminate the time required to download this information from the GPS constellation, a current ephemeris file can be uploaded to the Evaluation Receiver using the SiRFdemo software.

To upload an ephemeris file to the Evaluation Receiver:

1. Choose Set Ephemeris from the Action menu.

The Specify Ephemeris Data Filename To Load screen is displayed.



2. Specify the file you want to use.
3. Click the OK button to accept or the Cancel button to exit.

Note - The ephemeris file must be in the same format as polled from the Evaluation Receiver. To download an ephemeris file from the Evaluation Receiver, see "Downloading an Ephemeris File" on page 51.

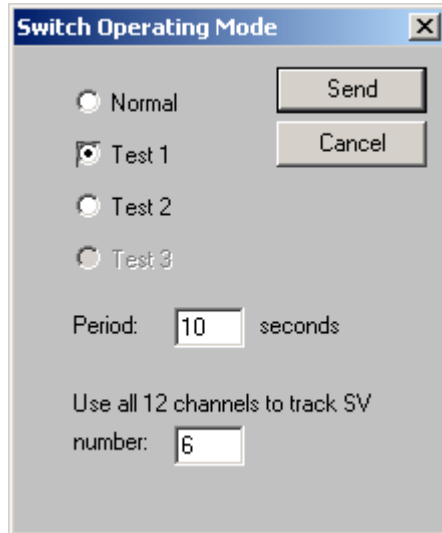
4.14 Switching Operating Mode

It is possible to place the Evaluation Receiver into a test operating mode. This mode allows a single selected satellite to be tracked by all 12 channels of the Evaluation Receiver.

To place the Evaluation Receiver into test mode:

1. Choose Switch Operating Mode from the Action menu.

The Switch Operating Mode screen is displayed.



Switch Operating Mode

Normal

Test 1

Test 2

Test 3

Send

Cancel

Period: 10 seconds

Use all 12 channels to track SV number: 6

2. Select Test 1 or Test 2 if you want to track a specific satellite on all channels and output test results. Test 2 outputs additional data to that of Test 1.

Note - Test 1 and Test 2 enables Testmode 1 and Testmode 2 data respectively. For a full description of each testmode, please see section , "Test Mode 1 - Message I.D. 16," on page 47 and section , "Test Mode 2 - Message I.D. 20," on page 50.

3. In the Period field, enter the output rate of the test reports in seconds.
4. Enter the SV number that you want to be tracked by all 12 channels of the Evaluation Receiver.
5. Select Normal (default) to track all available satellites.
6. Send the command to the Evaluation Receiver by clicking the SEND button.

When the Evaluation Receiver is changed to a test mode, every channel on the receiver tracks only the satellite specified by the user. This can be confirmed by viewing the 12-Channel Signal Level view as shown in figure 4-1 on page 33.

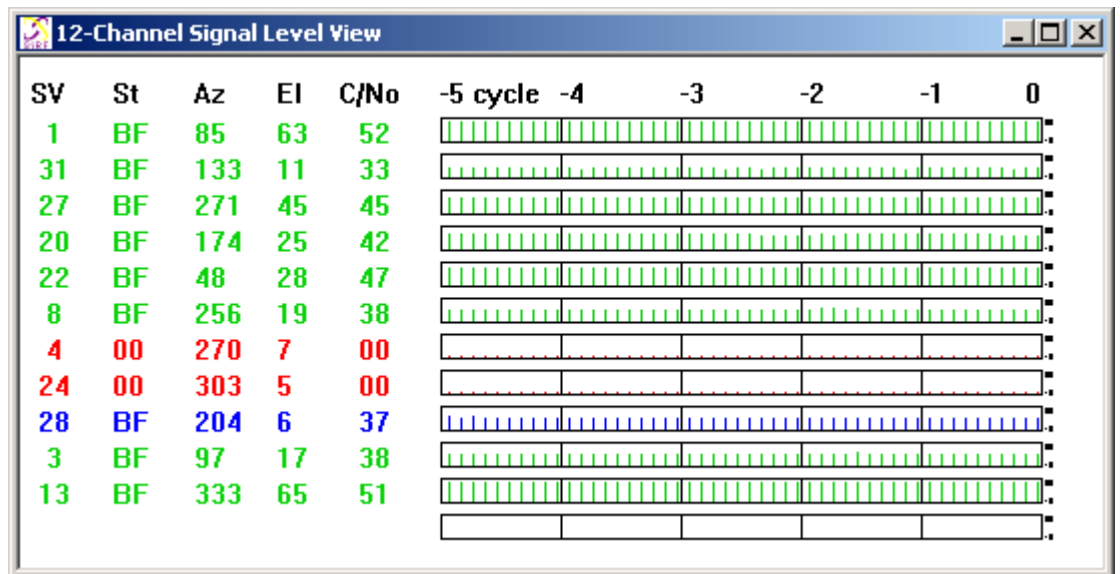


figure 4-1 12-Channel Signal Level View Window when the Evaluation Receiver is in a Test Mode

4.15 Setting Low Power Parameters

The SiRFstarIIe/LP Evaluation Receiver can operate in three modes (shown in table 4-10).

table 4-10 Evaluation Receiver Modes

Mode	Description
Full Power	Full power mode is the standard operating mode. Power is supplied to the receiver continuously and the Evaluation Receiver continues to operate without an interrupt.
TricklePower	In TricklePower mode, the power to the SiRF chipset is cycled periodically, so that it operates only a fraction of the time. Power is applied only when a position fix is scheduled.
Push-to-Fix	In Push-to-Fix mode, the Evaluation Receiver is generally off, but turns on frequently enough to collect ephemeris data to maintain the GSP1 real time clock calibration so that, upon user request, a position fix can be provided quickly after power-up.

TricklePower

In this mode, the power to the GRF2i/LP chip is cycled regularly, according to two user-specified parameters:

- Update Rate
- OnTime
- Maximum Off Time
- Maximum Search Time

During TricklePower operation, the GRF2i/LP chip is powered on for OnTime (in milliseconds), then powered off for a specified number of milliseconds as determined by the update rate. This cycle repeats indefinitely.

The GSP2e/LP chip is not explicitly powered down, but its primary operation is driven by the GPS clock generated by the GRF2i/LP, so it draws very little power while the GRF2i/LP is powered down. The real time clock (RTC) portion of the GSP2e/LP continues operation at all times, and is used to generate the interrupt that turns everything back on.

The microprocessor on which the SiRF code executes is not explicitly powered down. After the OnPeriod has elapsed, the processor continues operating long enough to complete its navigation tasks, then puts itself in sleep mode until it is reawakened by the RTC-generated wake up interrupt.

The default parameter values are:

- Update Rate = 1 second
- On Time = 200 ms
- Maximum Off Time = 30000 ms
- Maximum Search Time = 120000 ms

Push-to-Fix

For applications where a position fix is required on demand (that is, not continuous) then the Push-to-Fix mode is the most appropriate mode of operation for power sensitive situations. In this mode, the receiver turns on periodically according to the user specified parameter:

Push-To-Fix Period

When the receiver turns on, the ephemeris records are updated and the clocks calibrated. When all internal updating tasks are complete, the receiver powers itself off (except for RTC) and schedules the next wake up period.

The default parameter is:

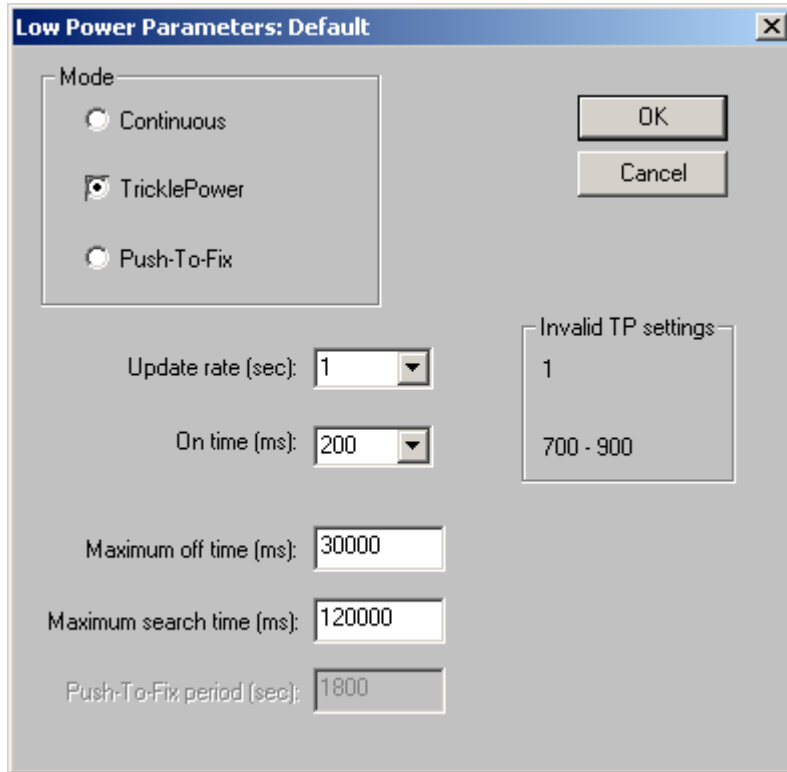
Push -To-Fix Period = 1800 seconds

When the Evaluation Receiver is power cycled externally, a navigation solution will be available to the user in 3 seconds.

To set the Evaluation Receiver trickle power mode:

1. Select Set Trickle Power Parameters from the Action menu.

The Trick Power Parameters screen is displayed.



2. Select the required operating mode.
3. If Trickle Power is selected then you must enter an Update Rate, an On Time, Maximum Off Time, and Maximum Search Time.
4. Click Send to activate selection.

Table 4-11 shows the Update Rate and On Time combinations that the Evaluation Receiver supports when in trickle power.

table 4-11 Trickle Power: Update Rate and On Time

On Time (ms)	Update Rates (seconds)									
	1	2	3	4	5	6	7	8	9	10
200	✓	✓	✓	✓	✓	✓	✓	✓	✓	
300	✓	✓	✓	✓	✓	✓	✓	✓	✓	
400	✓	✓	✓	✓	✓	✓	✓	✓	✓	
500	✓	✓	✓	✓	✓	✓	✓	✓	✓	
600	✓	✓	✓	✓	✓	✓	✓	✓	✓	
700		✓	✓	✓	✓	✓	✓	✓	✓	
800		✓	✓	✓	✓	✓	✓	✓	✓	
900		✓	✓	✓	✓	✓	✓	✓	✓	

To conserve power at start up, you can control how long (Maximum Search Time) the system should attempt to acquire satellites and navigate, and how long (Maximum Off Time) the Evaluation Receiver should remain off (sleep mode) before making another attempt to navigate. Maximum times are in ms.

- Example: Maximum Off Time 30000 ms (default)
 Maximum Search Time 120000 ms (default)
- Scenario 1: System is turned on, but does not acquire Svs (no antenna connected).
Result: System searches for 120000 ms, sleeps for 30000 ms, searches again for 120000 ms, etc.
- Scenario 2: System is turned on and acquires Svs, but does not navigate.
Result: System searches for 120000 ms, sleeps for 30000ms, searches again for 120000 ms, etc.
- Scenario 3: System is turned on, acquires and navigates.
Result: Sleep mode is disabled.

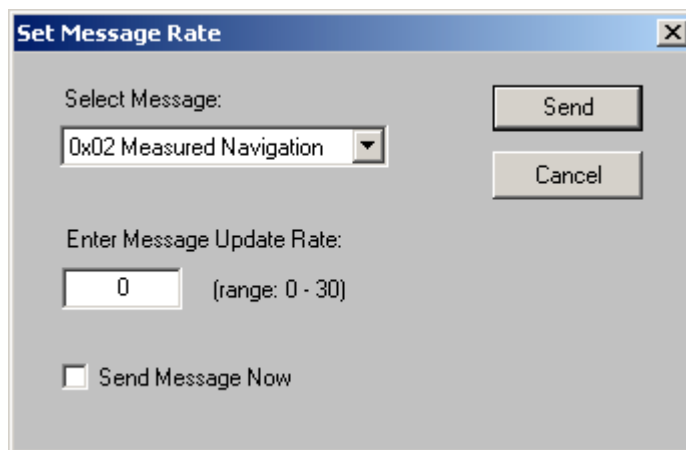
4.16 Setting the Message Rate

You can configure each SiRF binary output message so it is output using a specified frequency.

To set the SiRF binary output rates:

1. Choose Set Message Rate from the Action Menu.

The Set Message Rate screen is displayed.



2. Select the appropriate SiRF binary message from the Select Message selection list.
3. Enter in the rate at which you want the selected SiRF binary message to be output.

Note - The message rate is based on navigation cycles, not seconds. For example, in Trickle Power mode at an update rate of 2 seconds, selecting 5 as the message output rate outputs the selected message every 10 seconds. 10 seconds, in this case, is equivalent to 5 navigation cycles. An Update Rate of 0 will disable the output of that message.

The decrement of the navigation cycle counters for each message begins when the Evaluation Receiver accepts and verifies the input command. Each message is done separately and no mechanism is currently in place to synchronize message output. Message counters are stored in DRAM so they are preserved over hot and warm software resets but will revert to defaults values over power cycles, cold, and factory resets.

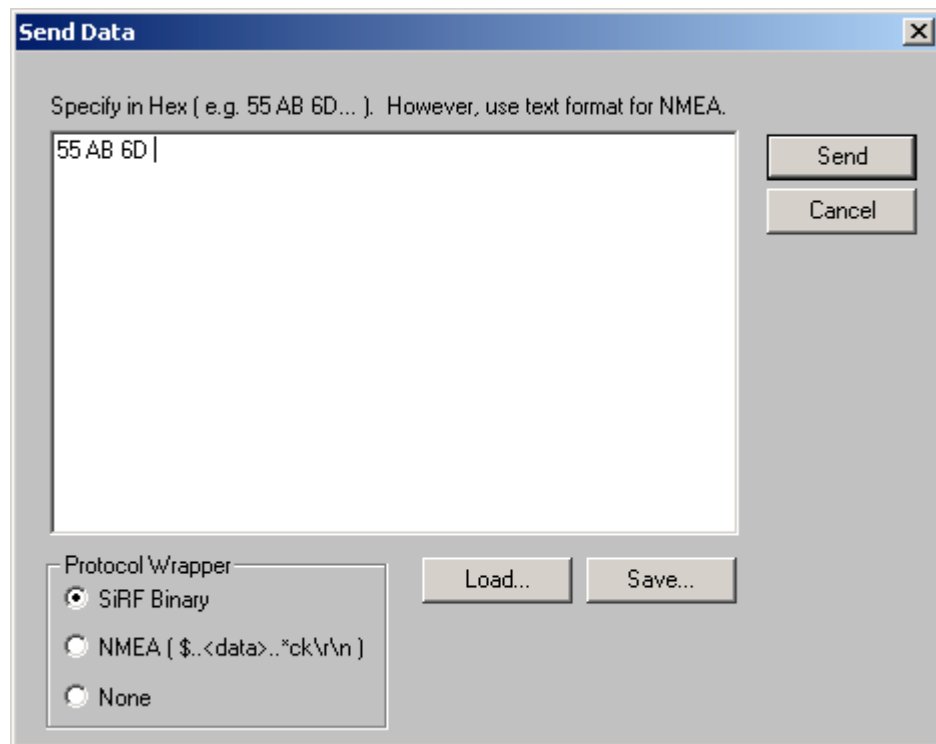
4.17 Transmitting a User Defined Serial Message

The Transmit Serial Message function provides the ability for a user to send generic serial messages to the attached target platform. The message can be automatically wrapped with SiRF Binary or NMEA information or transmitted as is.

To transmit a user defined message to the target platform:

1. Select Transmit Serial Message from the Action menu.

The Send Data screen is displayed.



2. Type the payload of the message that you wish to send to the target platform in the free text field.

Hex format should be used for a binary message content or ASCII for intended NMEA messages.

Note - The defined message can be saved in a CMD file by clicking on the SAVE button and specifying a file name. An already defined message that has been saved can be loaded by clicking on the LOAD button and selecting the appropriate file.

3. Select the desired protocol wrapper from the Protocol Wrapper options. Each of the options are described in table 4-12 on page 39.

table 4-12 Protocol Wrapper Modes

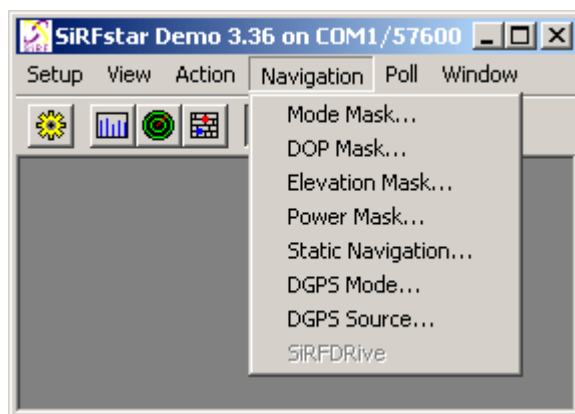
Option	Description	Default
SiRF Binary	The payload of the message will be converted to binary with the appropriate SiRF Binary start sequence, payload length, message checksum, and end sequence will be calculated and added to the payload.	On
NMEA	The appropriate NMEA format start sequence, message checksum, and end sequence will be calculated and added to the payload.	Off (8)
None	No protocol wrapper of any type will be added to the defined payload.	Off (8)

4. Send the defined message to the target platform by clicking the SEND button.

5 The Navigation Menu

This section describes the SiRFdemo software functions under the Navigation menu:

- "Setting Navigation Mode Control" on page 39
- "Setting the DOP Mask Control" on page 42
- "Setting the DGPS Mode" on page 43
- "Selecting the DGPS Source" on page 44
- "Selecting an Elevation Mask" on page 45
- "Selecting a Power Mask" on page 46
- "To Enable/Disable the Static Navigation" on page 46



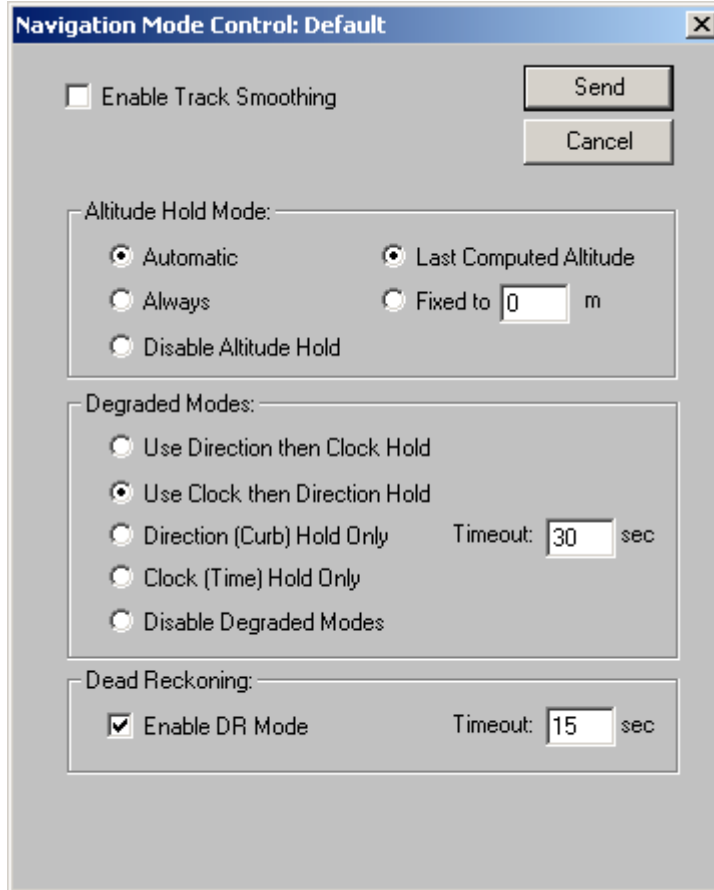
5.1 Setting Navigation Mode Control

Navigation mode control is used to configure the specifics of how the Evaluation Receiver is to navigate or calculate a position. In particular, selecting how a position should be derived if a minimum number of satellites are not available to calculate a full 3D position.

To set the navigation mode control:

1. Choose Mode Control from the Navigation menu.

The Navigation Mode Control screen is displayed.



2. Select the required options. Table 4-13 describes each of the navigation mode options available.

table 4-13 Navigation Mode Options

Option	Description	Default
Enable Track Smoothing	Enables smoothing of the calculated positions based on acceptable variances from the last calculated position. This assists in eliminating any sporadic position jumps possibly caused by multipath, for example.	Off
Enable Altitude Constraint	Restrict any variations in the altitude to 10% of currently calculated horizontal variation. This assists in creating a smoother ground track.	On

table 4-13 Navigation Mode Options

Option	Description	Default
Altitude Hold Mode		
Automatic	Switch automatically to a 2D solution and hold the altitude fixed if only three satellites are available. A 3D solution will be calculated if four or more satellites are available.	On
Always	Stay in 2D mode regardless of the number of satellites available. The altitude will always remain fixed.	Off
Disable Altitude Hold	Only calculate 3D solutions. If it is not possible to calculate a 3D solution due to insufficient satellites, then no navigation will be provided.	Off
Last Computed Altitude	If the Evaluation Receiver is operating in 2D mode, then the altitude will be held to the last known altitude calculated by the Evaluation Receiver.	Off
Fixed to	If the Evaluation Receiver is operating in 2D mode, then the altitude will be held to the value entered in the FIXED TO field.	Off
Degraded Modes		
Use Direction then Clock Hold	If the number of available satellites is reduced to two, the Evaluation Receiver will hold the elevation fixed, and use the last direction and doppler values (change in distance) to continue positioning. If the available satellites is then reduced to one, the clock bias is then extrapolated.	Off
Use Clock then Direction Hold	This mode is similar to the above Direction then Clock Hold mode. However, the clock bias is extrapolated first, and then the direction and doppler measurements are used.	On
Direction (Curb) Hold Only	This mode will restrict positioning to using direction hold only and does not use the extrapolating the clock bias method. Two satellites need to be available.	Off
Clock (Time) Hold Only	Positioning is restricted to using the clock bias extrapolation method only and does not hold the direction. Two satellites need to be available.	Off
Disable Degraded Modes	If less than three satellites are available, no position will be calculated.	Off
Timeout	The Evaluation Receiver will only operate in any degraded mode for the period of time specified by the timeout.	60

table 4-13 Navigation Mode Options

Option	Description	Default
Dead Reckoning		
Enable Dead Reckoning Mode	If a position solution is not possible due to insufficient satellites, a positions will be calculated using the last known velocity. Only applies if the Evaluation Receiver is being used in a dynamic environment.	On
Timeout	The Evaluation Receiver will only calculate positions using dead reckoning for the period of time specified by the timeout.	15

3. Click the Send button to accept or the Cancel button to exit.

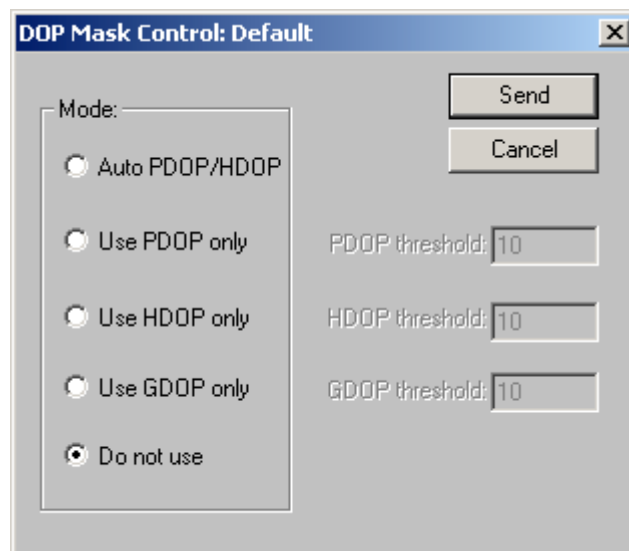
5.2 Setting the DOP Mask Control

This mask enables you to control the position output of the Evaluation Receiver so that positions computed with a high DOP value are not output. When the DOP mask is exceeded, the position message status changes to DOP mask exceeded and the position does not update.

To set the DOP mask controls:

1. Choose DOP Mask Control from the Navigation menu.

The DOP Mask Control screen is displayed.



2. Select the Mode that you want to use.

Option	Description	Default
Auto PDOP/HDOP	The PDOP mask will be used if four or more satellites are available. If only three satellites are available, the HDOP mask will be used.	Off
Use PDOP only	Only the PDOP mask will be used regardless of the number of satellites available.	Off (8)
Use HDOP only	Only the HDOP mask will be used regardless of the number of satellites available.	Off (8)
Use GDOP only	Only the GDOP mask will be used regardless of the number of satellites available.	Off (8)
Do not use	No DOP based mask will be applied. Any available position will be output regardless of any of the DOP values.	On

3. Enter a DOP mask value for the corresponding selected DOP mask.

For each of the DOP masks, the default value is 10. This value is a maximum value and the mask will apply if the current set mask is exceeded.

4. Click the Send button to accept or the Cancel button to exit.

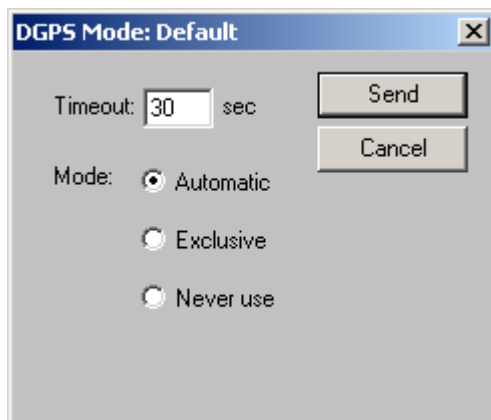
5.3 Setting the DGPS Mode

The DGPS mode is used to control the position output of the Evaluation Receiver based on whether positions are differentially corrected or not. The options include automatic, exclusive, and never use.

To set the DGPS mode:

1. Choose DGPS Mode from the Navigation menu.

The DGPS Control screen is displayed.



2. Select the Mode that you want to use.

Option	Description	Default
Automatic	Use differential corrections when they are available, otherwise compute a non differential solution. (see note below)	On
Exclusive	Only compute a differential solution. If no corrections are available no solution is output.	Off
Never use	Only compute a non differential solution (even if corrections are valid).	Off

3. Enter the timeout value (in seconds) you want to use in the Timeout field.

A received differential correction will be applied to the solution until either the timeout value is exceeded, or a new differential correction is received.

4. Click the Send button to accept or the Cancel button to exit.

Note - For a differential position to be calculated, a pseudorange correction must be valid for each satellite being tracked by the Evaluation Receiver. If there are less corrections than tracked satellites, then a non-differential position will result. If corrections exist for different satellites to that being tracked by the Evaluation Receiver, then a non-differential position will result.

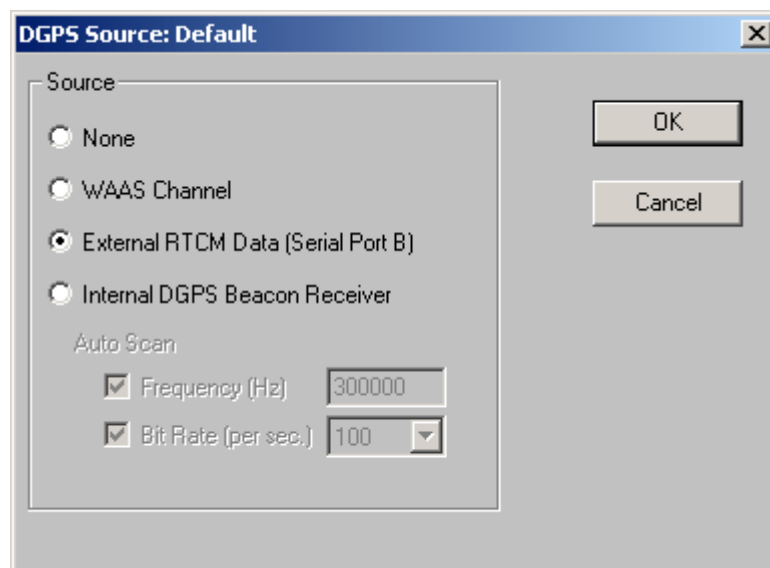
5.4 Selecting the DGPS Source

The SiRFstarIIe/LP Evaluation Receiver has the ability to receive RTCM differential corrections from different sources. The DGPS source control is used to select which source will be used to obtain RTCM differential corrections.

To select the DGPS source:

1. Choose DGPS Source from the Navigation menu.

The DGPS Source screen is displayed.



2. Select the Source that you want to use. Table 4-14 describes each of the available DGPS sources.

table 4-14 DGPS Sources

Option	Description	Default
None	The Evaluation Receiver will not use any of the available DGPS sources.	No
WAAS Channel	The Evaluation Receiver will use the WAAS correction service if available. One of the twelve channels will be dedicated to the WAAS signal.	No
External RTCM Data	The Evaluation Receiver will use any RTCM corrections that are input directly through one of the serial ports.	Yes
Internal DGPS Beacon Receiver	The internal beacon receiver will be used to provide RTCM corrections received from an operating radio-beacon. A beacon antenna is required.	No

3. If the Internal DGPS Beacon Receiver is the chosen DGPS source, select the auto scan options. The auto scan options are described in table 4-15.

table 4-15 Auto Scan Options

Auto Search	Description
Frequency	The internal beacon receiver will automatically scan the radio-beacon frequency range until a usable signal is acquired. If this option is deselected, you must enter a signal frequency for the beacon receiver to use.
Bit Rate	Radio-beacons may broadcast the correction information using different bit rates (the number of bits of data per second). If this option is selected, the internal beacon receiver will also search the different available bit rates until a usable signal is acquired. If this option is deselected, you must enter a signal bit rate for the beacon receiver to use.

Note - The SiRFstarIIe/LP Evaluation Receiver does not support the Internal DGPS Beacon Receiver option.

4. Click the OK button to accept or the Cancel button to exit.

Note - The selection made in the DGPS Source screen is displayed in the DGPS Status View screen by selecting View | Messages | DGPS Status.

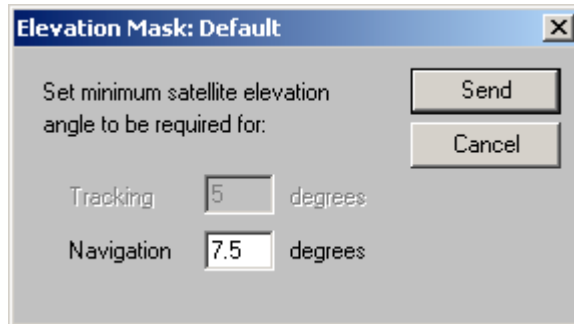
5.5 Selecting an Elevation Mask

GPS satellites that are low on the horizon are subject to noise due to the amount of atmosphere that the signal must travel through. Better position accuracy is often achieved if lower elevation satellites are not used in the position solution. The elevation mask is used to exclude the use of satellites in the position solution that are below a defined elevation mask.

To select an elevation mask:

1. Choose Elevation Mask from the Navigation menu.

The Elevation Mask screen is displayed.



2. Enter the minimum elevation angle for satellites to be used in any position solution.
3. Click the Send button to accept or the Cancel button to exit.

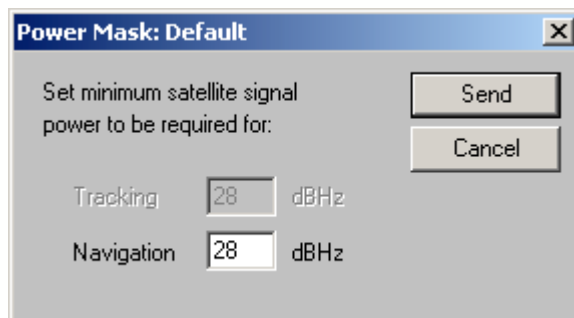
5.6 Selecting a Power Mask

GPS satellites that have a low signal strength are not easily tracked by the Evaluation Receiver and may result in using signals that are either noisy or have been effected by multipath or other interference source. To increase accuracy, it may be necessary to exclude GPS satellites with a signal strength below a selected value.

To exclude satellites from the position solution with a signal strength below a selected value:

1. Choose Power Mask from the Navigation menu.

The Power Mask screen is displayed.



2. Enter the minimum satellite signal level for satellites to be used in any position solution.
3. Click the Send button to accept or the Cancel button to exit.

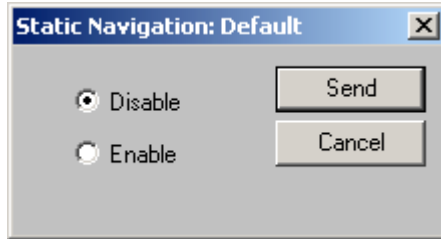
5.7 To Enable/Disable the Static Navigation

The steady state detection allows the navigating algorithms to decrease the noise in the position output when the acceleration is below the threshold. This reduces the position wander caused by Selective Availability (SA) and improves position accuracy especially in stationary applications.

To select the static navigation mode:

1. Choose Static Navigation from the Navigation menu.

The Static Navigation screen is displayed.



2. Select the option that you want to use.

Option	Description	Default
Disable	Displays true user movement due to Selective Availability (and other environmental issues such as multipath).	Yes
Enable	Holds the current position as fixed when the user is in a stationary mode. Updates to the fixed position due to Selective Availability are made based on internal navigation data.	No

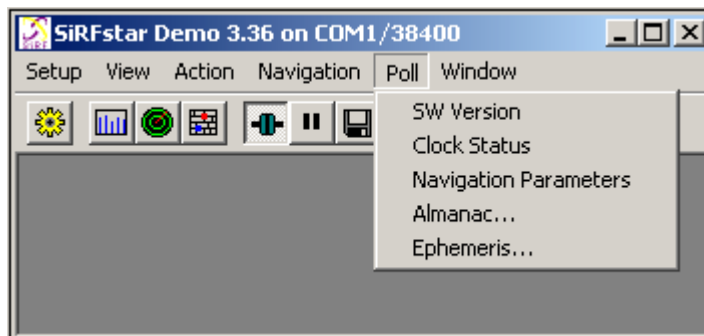
3. Click the Send button to accept or the Cancel button to exit.

Note - The Static Navigation filter is Disabled when DGPS corrections are used in the navigation solution.

6 The Poll Menu

This section describes the SiRFdemo software functions under the Poll menu:

- "The Software Version" on page 48
- "The Clock Status" on page 48
- "The Navigation Parameters" on page 49
- "Downloading an Almanac File" on page 50
- "Downloading an Ephemeris File" on page 51



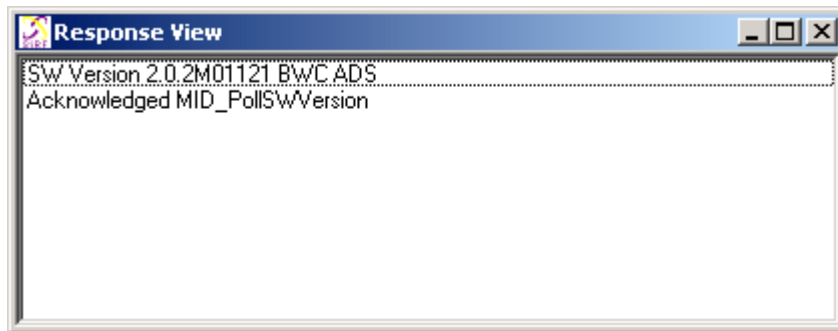
6.1 The Software Version

The poll software version function allows you to query the Evaluation Receiver for the version of embedded software currently being run.

To view the current software version:

1. Choose SW Version from the Poll menu

The Response View screen is displayed showing the software version currently being run.



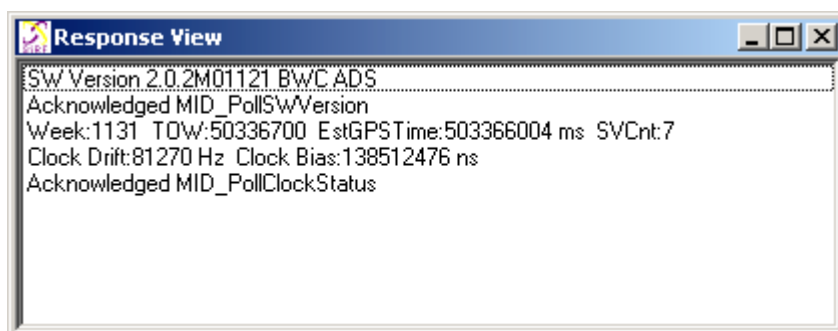
6.2 The Clock Status

The poll clock status function allows you to query the Evaluation Receiver for clock performance information including the GPS week number, GPS time, clock drift, and clock bias.

To poll the Evaluation Receiver for clock status information:

1. Choose Clock Status from the Poll menu.

The Response View screen is displayed with the clock status.



A description of each of the clock status items are given in table 4-16.

table 4-16 Clock Status Items

Item	Description
Week	The number of continuous weeks that GPS has been operational. The start date being January 6, 1980.
TOW	Time of Week — the number of GPS seconds since the start of the current GPS week. The start of the GPS week being 0 hrs Sunday UTC.
EstGPS Time	The estimated TOW while the Evaluation Receiver is not tracking GPS satellites.
SVCnt	The number of satellites currently being tracked and used in the position solution.
Clock Drift	The change in the clock bias. A typical range would be between 76 kHz and 116 kHz.
Clock Bias	The offset of the Evaluation Receiver clock compared with the current GPS time.

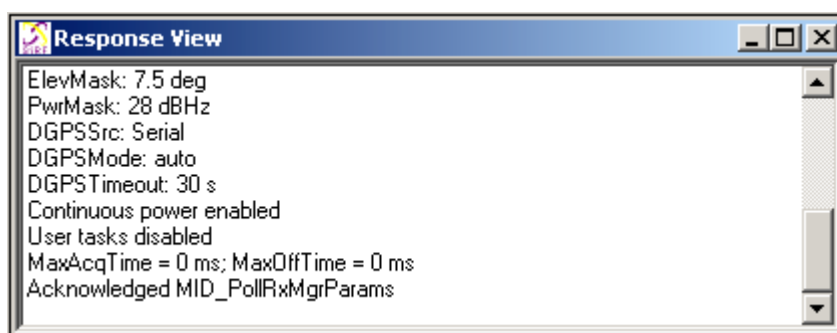
6.3 The Navigation Parameters

All of the user settings that have been set under the Action and Navigation menus can be polled for their current status and settings.

To poll the Evaluation Receiver for it's current navigation parameters:

1. Select Navigation Parameters from the Poll menu.

The current settings are displayed in the Response View window.



A description of each of the navigation parameters are given in table 4-17.

table 4-17 Navigation Parameters

Parameter	Description
AltMode	The selected altitude hold mode.
AltSource	The altitude type used when a 2D solution is being calculated.
Altitude	The altitude used if fixed manually.
DegradeMode	The type of degraded mode selected.
DegradedTimeout	The timeout value applied to degraded mode operation.

table 4-17 Navigation Parameters

Parameter	Description
DR Timeout	The timeout value applied to dead reckoning navigation.
TrkSmoothMode	The enable or disable state of track smoothing.
StaticNav	The enable or disable state of the static navigation mode.
3SV LSQ	Indicates the state of a start-up mode that will allow start-up when only three satellites are available.
DOPMaskMode	The selected DOP mask control.
ElevMask	The currently used elevation mask.
PwrMask	The currently used power mask.
DGPSSrc	The selected DGPS source.
DGPSTimeout	The selected DGPS mode.
DGPSTimeout	The timeout value applied to DGPS corrections.
Power Mode	This line indicates the current power mode of the Evaluation Receiver. It will be either trickle power or full power.
MaxAcqTime	The Maximum Acquisition Time.
MaxOffTime	The Maximum Off Time.

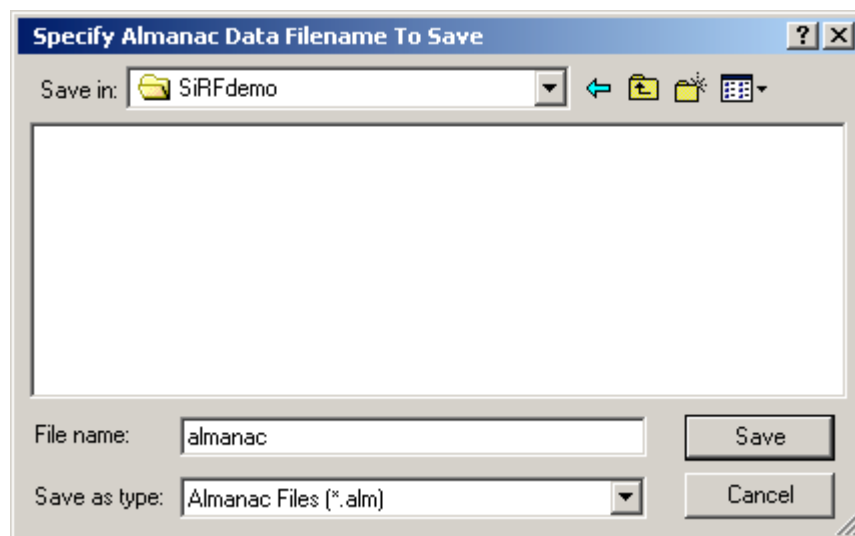
6.4 Downloading an Almanac File

You can download an almanac file from the Evaluation Receiver and load it back into the receiver at a later date or to another Evaluation Receiver. This is to assist with initial satellite tracking. This file may also be used for mission planning and constellation investigations.

To download an almanac file:

1. Choose Almanac from the Poll menu.

The Specify Almanac Data Filename To Load screen is displayed.



2. Specify the file name in which to save the almanac information.
3. Click the OK button to save or the Cancel button to exit.

Clicking the OK button saves the data to file. A message box is displayed to confirm completion.

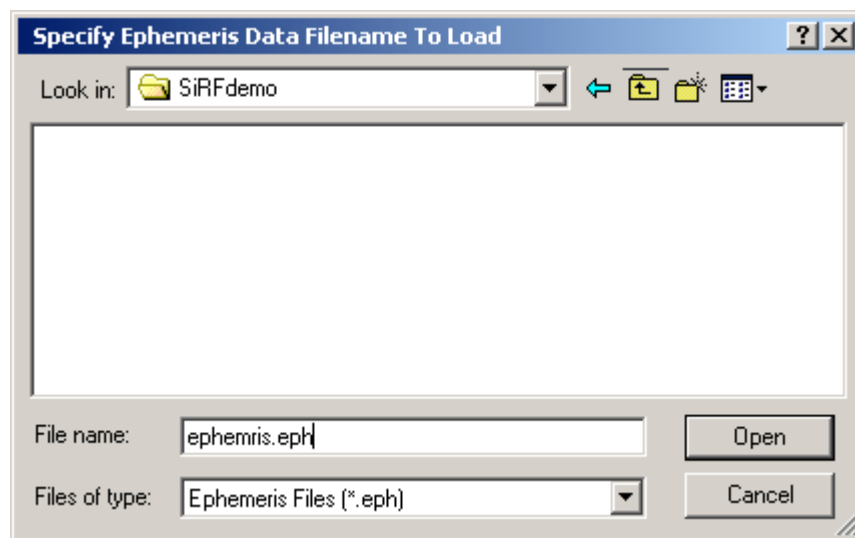
To load an almanac file, see "Uploading an Almanac to the Evaluation Receiver" on page 31.

6.5 Downloading an Ephemeris File

You can download an ephemeris file from the Evaluation Receiver and load it back into the receiver at a later date or to another Evaluation Receiver. This is to assist with initial position calculations. This file may also be used for mission planning and constellation investigations. To download an ephemeris file:

1. Choose Ephemeris from the Poll menu.

The Specify Ephemeris Data Filename To Load screen is displayed.



2. Specify the file name that you want to save the ephemeris information to.
3. Click the OK button to save or the Cancel button to exit.

Clicking the OK button saves the data to file. A message box is displayed to confirm completion.

To load an ephemeris file, see "Uploading an Ephemeris to the Evaluation Receiver" on page 32.