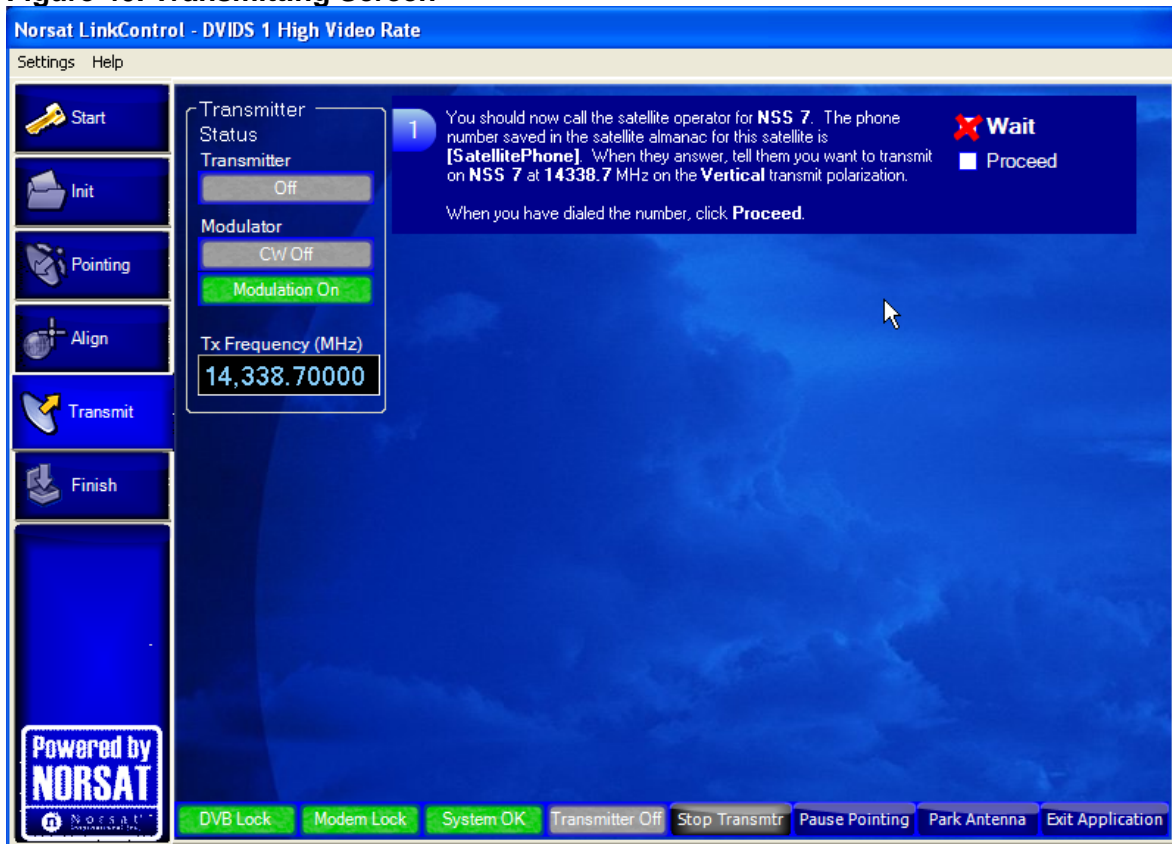


Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

Transmitting the Signal – Satellite Access Procedures

When the terminal is ready to transmit, the **Transmit** screen opens as shown in **Figure 40**. Before you can start transmitting you must call into the Satellite Operator to gain access to the satellite. Follow the instructions of the Satellite Operator to avoid the risk the possibility of fines.

Figure 40. Transmitting Screen



Note: If you need to stop your transmission at any time, click the **Stop Transmitter** button at the bottom of the screen. If you are ready to end transmission, click **Finish** button on the left side menu. The **Finish Screen** will open. Follow the instructions.

Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

The Call

The following screen in LinkControl will tell you when to call the Satellite Operator. Satellite Operators generally advise you to call 10 to 15 minutes before the scheduled transmission time. These screens will help walk you through the call with the Satellite Operator.

Hint: Have the phone number for the Satellite Operator ready in advance. When you are ready to call, click the Proceed button as shown in **Figure 41**.

- 1 You should:
 - i. Have a (mobile) telephone number where the Satellite Operator can reach you;
 - ii. Identify yourself and provide your location;
 - iii. Indicate that you have scheduled satellite time;
 - iv. Indicate the purpose of your transmission (example: data transfer) / video feed;
 - v. Indicate that you are ready to start transmitting on satellite, transponder and frequency slot allocation (example: NSS7, Transponder K18, Slot C).

The Satellite Operator may in turn verify some parameters and ask some questions. You should be able to find most of these answers without having to resort to administrator mode.

Such parameters/ questions may include:

- Are you aligned and peaked on the satellite?
- Modem settings
- Confirm Uplink frequency and polarization

- 2 The Satellite Operator may then ask you to conduct a “cross-pol test”.

You may be asked for to bring up a “clean carrier” (or “unmodulated carrier” or “continuous wave” or “CW”) at low power.

Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

- 3 Click the **CW** box as shown in Step 2 of **Figure 32** if you are asked to complete this step. If he doesn't ask you to complete this step but to simply proceed directly to transmitting mode, click the **No CW** box.

Note: LinkControl will then guide you through the rest of the CW transmission process.

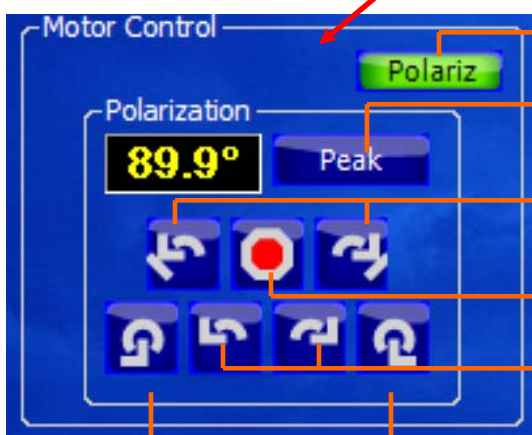
Figure 41. Satellite Access Procedure Screen - CW



Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

- 4 The Satellite Operator may then ask you to adjust your polarization. Select the **Change Pol** box in Step 3. Link Control will then open the polarization adjustment controls as shown in **Figure 42**. Use the Polarization control buttons to adjust.

Figure 42. Satellite Access Procedure Screen – Change Polarization



Indicates Polarization controls (no user interaction)

Placeholder button for Manual Mode; no user interaction)

Nudge $\pm 0.2-0.3^\circ$

Stop adjusting

Continuous adjustment (medium speed)

Continuous adjustment (fast speed)

Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

- 5 When you are finished with the polarization adjustment, or are not asked to adjust your polarization, click **Continue**.

Hint: If you are asked to make an adjustment to your Transmit Frequency before your polarization, simply click **Continue** which brings you to the screen which allows you to change the transmit frequency (**Figure 43**). Once frequency adjustment completed you can go back and make your polarization adjustment should the Satellite Operator ask you to do so.

- 6 You may be asked to change your transmit frequency. LinkControl will present you with the **Transmit Frequency** display which you can change with the “up” and “down” arrows, or type a value into the field, as shown in **Figure 43**. When finished adjusting the frequency, click the **Continue** box.

Figure 43. Satellite Access Procedures – Change Transmit Frequency



Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

- 7 The transmitter is now ready to be turned on. Click the **Turn On** box when you are ready as shown in **Figure 44** to power up your transmitter.
- 8 Once you click on the Turn On button, you are transmitting and are then presented with the next screen to adjust your output power level as shown in **Figure 44**.

Figure 44. Satellite Access Procedures – Turn on Transmitter and Adjust Output Power



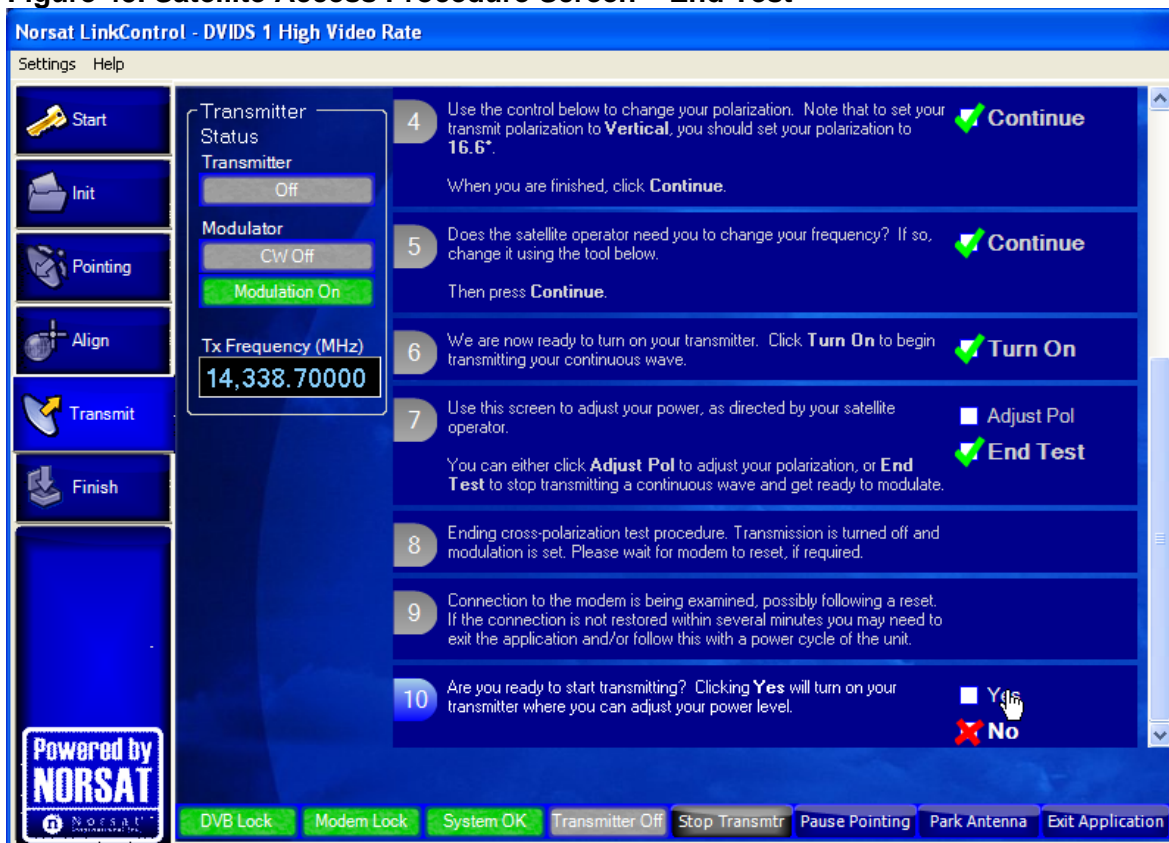
- 9 The Satellite Operator may also ask you to adjust your power level. When directed, slowly increase power to operating level and stop. **Figure 44** displays the power control adjustment control in the lower part of the screen.

Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

Hint: Under the guidance of the Satellite Operator, use the buttons to the left of the **Output Power** display to adjust the power level in 1.0 dB steps and use the buttons on the right of the **Output Power** display to adjust the power in 0.1 dB steps. Watch the results in the **Actual Power Output** display area.

- 10 The Satellite Operator may ask you to re-adjust your polarization. If asked to do so, click the **Adjust Pol** box as shown in **Figure 44** (to open the Polarization adjustment window, as shown in **Figure 42**); otherwise, click the **End Test** box.
- 11 Once you have clicked the **End Test** box, see **Figure 45**. The system ends the cross pol test, turns transmission off, and enables modulation.

Figure 45. Satellite Access Procedure Screen – End Test



Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

- 12 LinkControl then proceeds to Step 10 which provides the interface to turn the transmitter on only when instructed to do so by the Satellite Operator. Wait for further instructions from the Satellite Operator while carrier specifications are checked (typically, by the hub operator).
- 13 When directed, modulate the signal (start transmitting) by clicking the **Yes** box as shown in **Figure 46** Step 10. The Satellite Operator may then ask you to re-adjust your power (power adjustment will re-open – **Figure 44**). Wait for further instructions from the Satellite Operator while carrier specifications are re-checked. Follow his instructions and click **Done** when instructed to do so.

Figure 46. Satellite Access Procedure Screen - Transmitting



- 14 The Satellite Operator will verify your phone number and the end time for your uplink. LinkControl will remind you to call the Satellite Operator again just before the end of the uplink (the "Goodnight Call").

Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

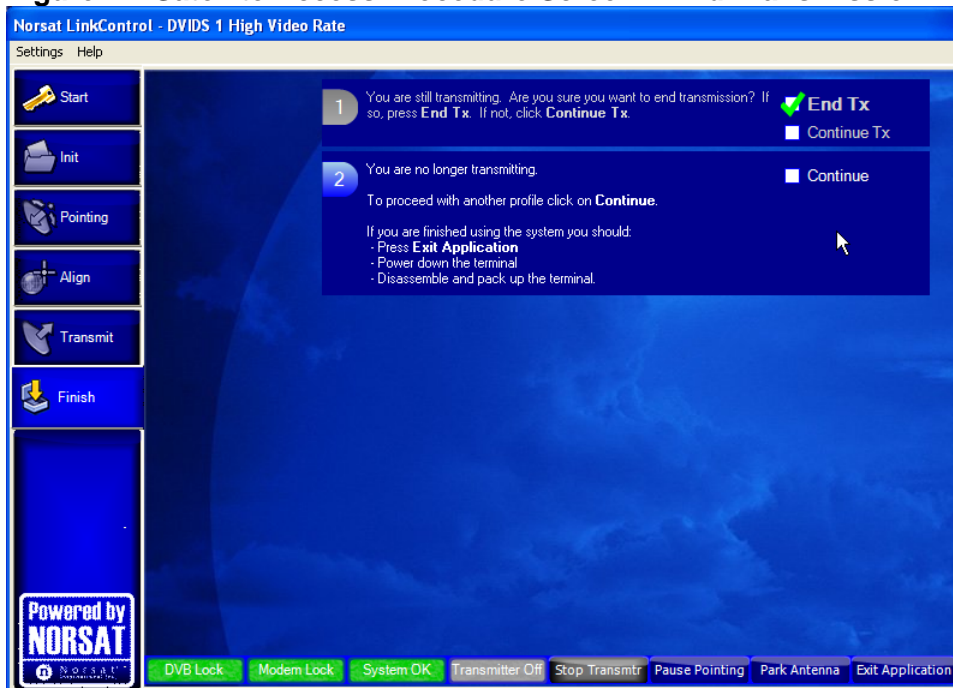
Goodnight Call

The purpose of the Goodnight Call is to inform the Satellite Operator that you have completed your transmission and that you wish to end your transmission.

- 1 When you are finished transmitting, contact the Satellite Operator to confirm the end of your transmission. Then, click the **Finished** box in **Figure 46**.
- 2 You will then receive an End Transmission confirmation as shown in Step 1 of **Figure 47**. Click the **End Tx** box to turn off the transmitter. LinkControl will confirm that you are no longer transmitting (Step 2). If you intend to stow away the system, click the **Park Antenna** button to return the antenna back to its optimal tear-down position (0° Azimuth; 0 ° Polarization; 10 ° Elevation). Finally, click the **Exit Application** button to close LinkControl.

Note: When you click the **End Tx** box, both lock indicators, the **Transmitter Off** (previously Transmitting in red) and **Stop Transmtr** buttons will turn grey; the Pause Pointing, Park Antenna, and Exit Application buttons will be blue; the DVB Lock and System OK buttons should remain green.

Figure 47. Satellite Access Procedure Screen – End Transmission



9 **Operating the GLOBETrekker SNG Standard™ in Manual Mode**

Operating the GLOBETrekker SNG Standard™ in Manual Mode

This chapter enables a user to operate LinkControl in Manual (or Administrator) Mode to manually align the antenna towards the desired satellite; verify and peak on the correct satellite; and communicate with the Satellite (or Hub) Operator for transmission.

There are ten steps in the manual operation:

1. Launch LinkControl Application and Enter Administrator Mode
2. Choose a Profile
3. Identify Location
4. Verify Target Satellite
5. Check Clearance Distance
6. See the Sky View
7. Check if there is a DVB Carrier on the target Satellite
8. Point the Antenna
9. Acquire Satellite and Peak Antenna
10. Call the Satellite (or Hub) Operator to Access Satellite

Launch Link Control Application and Enter Administrator Mode

The LinkControl application will launch automatically once the GLOBETrekker SNG Standard™ has been powered up.

Access to the LinkControl application screen will be available on the wired display provided with the GLOBETrekker SNG Standard™ system when the system has been powered up.

It may take several minutes for the application to appear on the screen. The application will open with the Startup screen being displayed as in **Figure 48**.

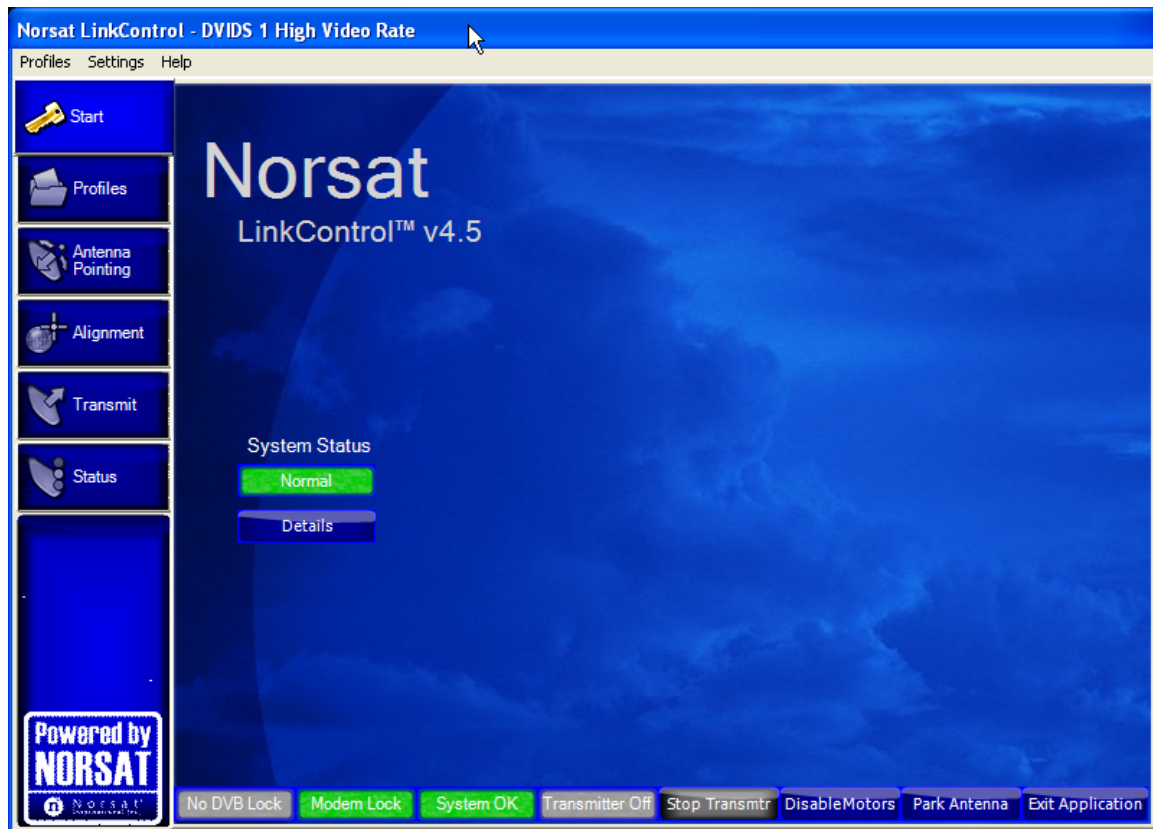
Note: Click the **Details** button on the Startup screen to view System Status Details.

The LinkControl application performs numerous diagnostics upon start-up.

The operator should allow the LinkControl application to fully complete its diagnostics before attempting to take control of the application. The results of the diagnostics can be viewed by pressing the DETAILS button below the System Status indicator.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Figure 48. LinkControl Startup Screen



Operating the GLOBETrekker SNG Standard™ in manual mode is password-protected and is accessible only to users designated as "administrator(s)" in LinkControl.

If you are using the GLOBETrekker SNG Standard™ for the first time, the system will come with an Administrator password. This can be changed at a later date.

To enter Administrator mode:

- 1 On the Menu bar press Settings -> Enter Admin Mode
- 2 Enter the Administrator password. By default the password is "Administrator".

Note: Passwords are case sensitive

To exit Administrator mode and enter Operator mode:

- 1 On the Menu bar press Settings
- 2 Select Exit Admin Mode

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Choose a Profile

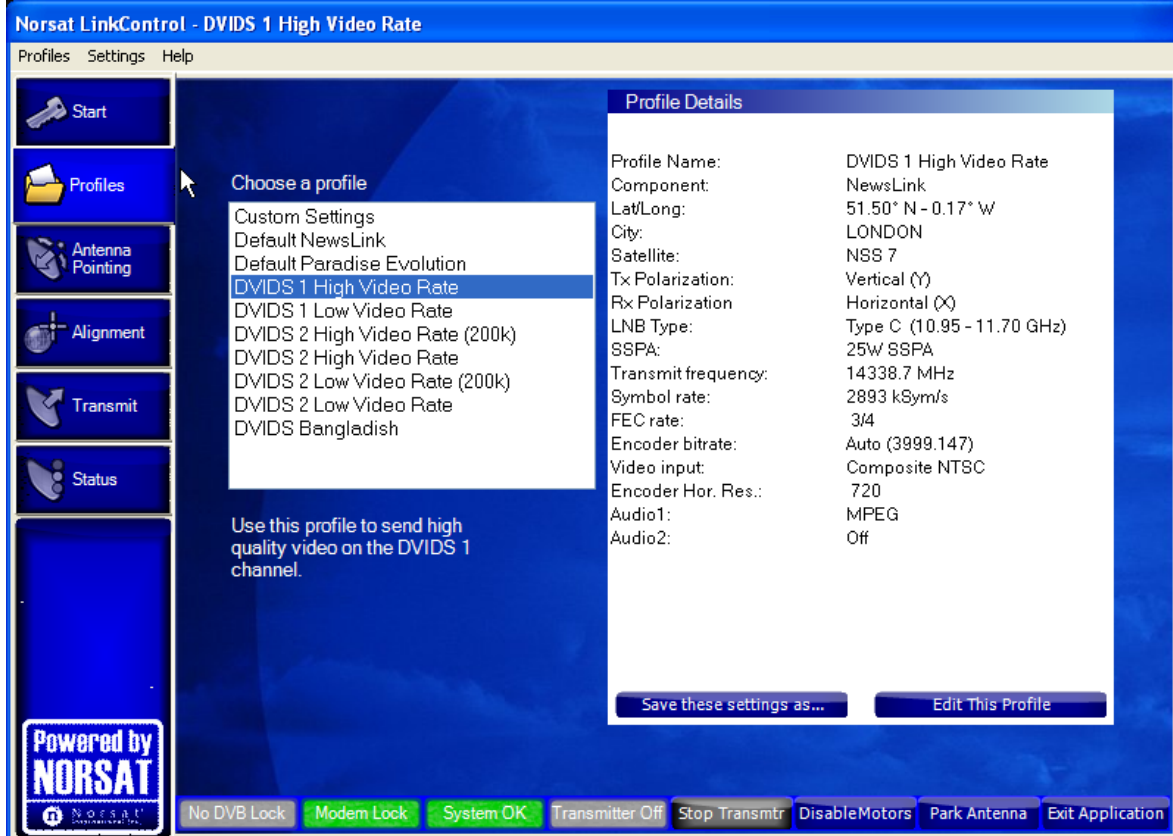
Choose an Existing Profile:

- Click on the Profiles tab on the left side of the screen; refer to **Figure 49**.
- Click on a profile in the list of profiles under **Choose a profile**.

Note: To create or edit a profile, refer to the instructions in *Chapter 7: Commissioning the GLOBETrekker SNG Standard™*.

- A summary of the selected profile is displayed on the right side of the screen.

Figure 49. Choose a Profile



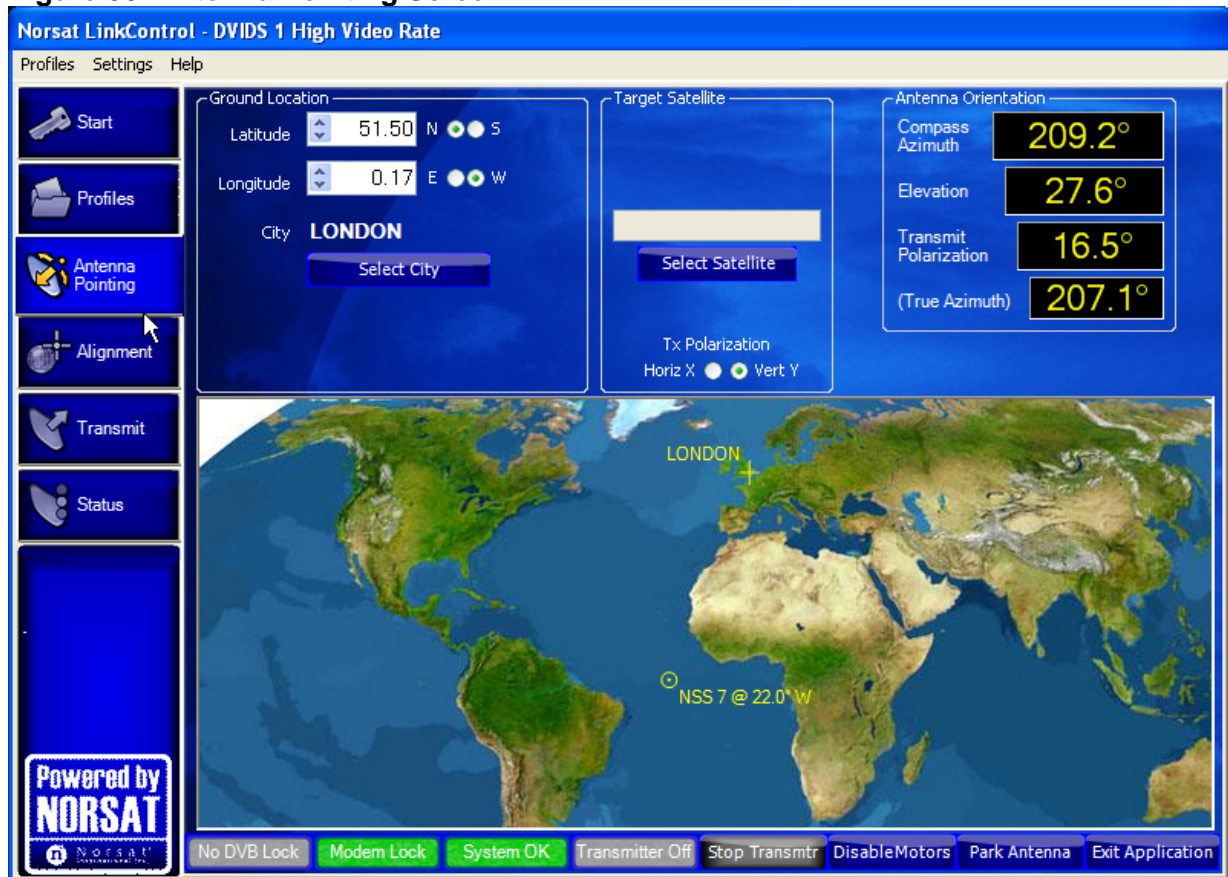
Operating the GLOBETrekker SNG Standard™ in Manual Mode

Identify Location

To correctly point the antenna to a desired satellite:

Click **Antenna Pointing** on the Toolbar. The **Antenna Pointing Screen** opens as shown in **Figure 50**. The **Antenna Orientation** fields display the antenna pointing values.

Figure 50. Antenna Pointing Screen



The world map in **Figure 50** shows the GLOBETrekker SNG Standard™ position and the position of the selected satellite.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Ground Location

The LinkControl application must know your current ground location in order to calculate the look angles required to point the antenna at the satellite.

The location of the terminal can be determined in three different ways:

- i) selecting your location from the City list;
- ii) by using the supplied GPS receiver;
- iii) by manually entering the latitude and longitude.

If the selected profile does not already have the GLOBETrekker SNG Standard™'s current location, use the following steps:

To select location from the city list:

- 1 Click on **Select City**
- 2 Expand the continent and country trees by clicking on the + sign.
- 3 Click on the nearest city.
- 4 Click **OK**.

To determine location using the GPS:

- 1 Ensure the GPS is connected. If this was not done during the set up, the GPS will not be initialized.

To initialize the GPS:

- a Click on **View GPS Data**
 - b Click on **Initialize**
 - c Click on **Close**
- 2 If the **Use GPS Data** button is green, it has acquired a location. Press the button to use the GPS information as its position.

Note: The GPS unit requires a clear and unobstructed view of the sky to operate properly. If portions of the sky are blocked, it may impact acquisition time.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

To manually enter latitude and longitude:

- 1 Enter the Latitude in the box or select the value using the scroll arrows.
- 2 Select the North or South radio button.
- 3 Enter the Longitude in the box or select the value using the scroll arrows.
- 4 Select the East or West radio button.

Note: The format for latitude and longitude is <Degrees.Decimal Degrees>

Verify Target Satellite

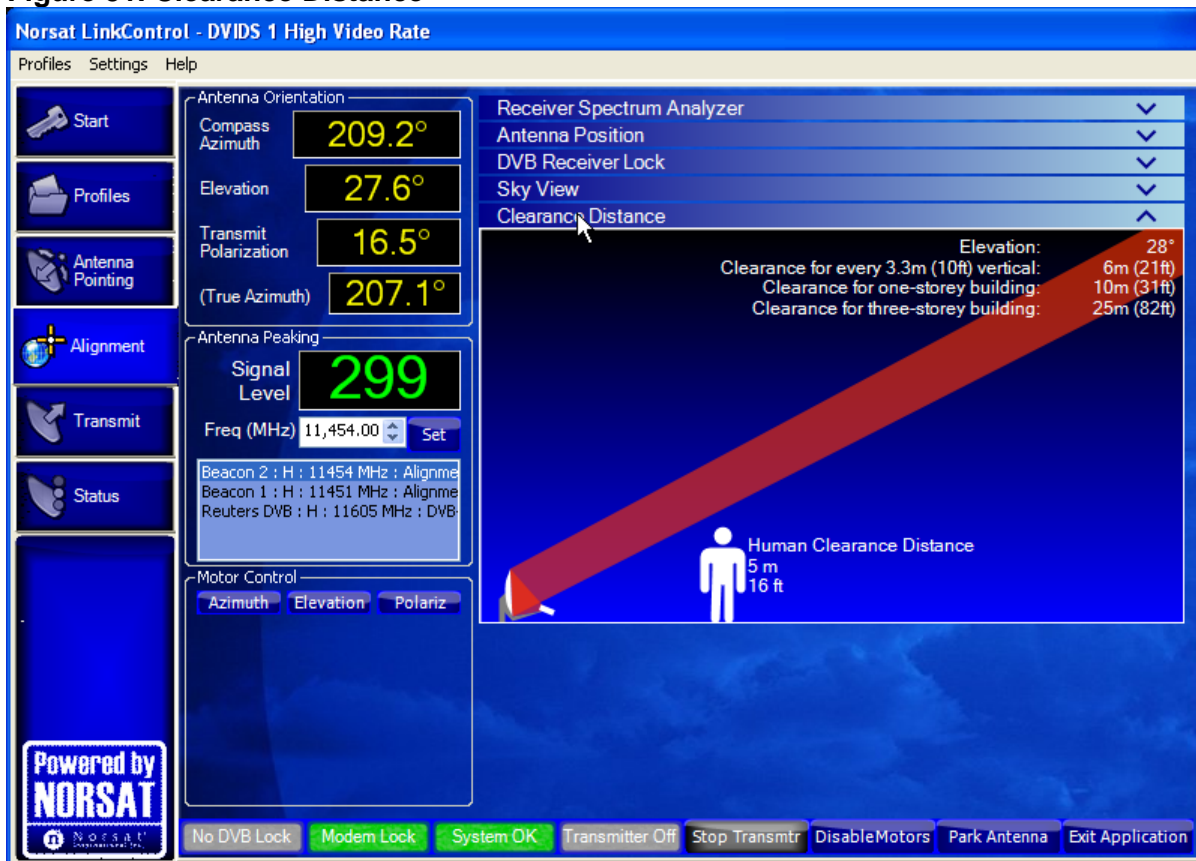
Confirm the satellite name that appears in the white **Target Satellite** box on the **Select Satellite** drop down screen (**Figure 50**).

Check Clearance Distance

- 1 Click on the **Alignment** tab.
- 2 On the **Alignment** screen, click the **Clearance Distance** tab (**Figure 51**).
- 3 Ensure that there are no obstructions within the clearance range listed.
For more information on clearance distances refer to Chapter 1 – Safety Basics.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Figure 51. Clearance Distance



See the Sky View

The Sky View screen, as shown in **Figure 52**, gives the operator a view of the satellites adjacent to the desired satellite. This tool is a visual aid to help the operator if they suspect that they are pointed on a satellite, but not necessarily the correct satellite.

The arc described by the adjacent satellites is drawn from the operator's point of view. The desired satellite is highlighted in orange.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Figure 52. Sky View Screen



Check if there is a DVB Receiver on the Target Satellite

- 1 Click the DVB Receiver Lock tab on the right side menu.
- 2 Check to see if a DVB carrier appears in the box in the upper right corner as shown in **Figure 53**.
- 3 Select a DVB carrier if one is present (DVB listed to the right of the **Current Rx Polarization**: section as shown in **Figure 53**).

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Figure 53. DVB Receiver Lock



If no DVB carriers appear in the box, you will need to rely on the presence of either a beacon or alignment carrier when acquiring the satellite signal. That is, the **No DVB Lock** button (bottom-left screen) will remain grey throughout the entire satellite acquisition process.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Point the Antenna

Once the Norsat LinkControl application has its location and desired satellite, it will automatically calculate the look angles required to point the antenna at the satellite.

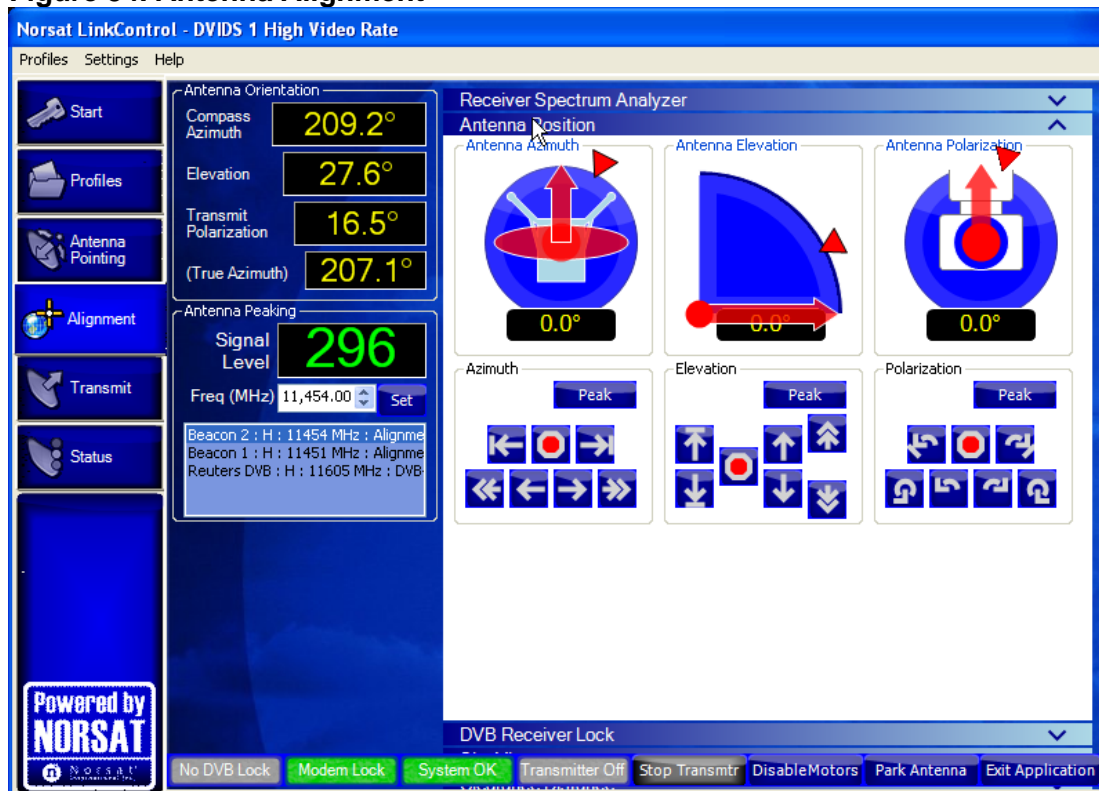
The application calculates four values:

- Compass Azimuth – magnetic compass bearing to which the antenna should be set
- Elevation – angle to which the inclinometer should be set
- Polarization – angle to which the feed should be rotated
- True Azimuth – bearing relative to Geographic North rather than Magnetic North

Aligning the Antenna

To align the antenna, click **Alignment** on the GLOBETrekker SNG Standard™ Functions Toolbar on the left side menu. The **Alignment** screen opens (**Figure 54**).

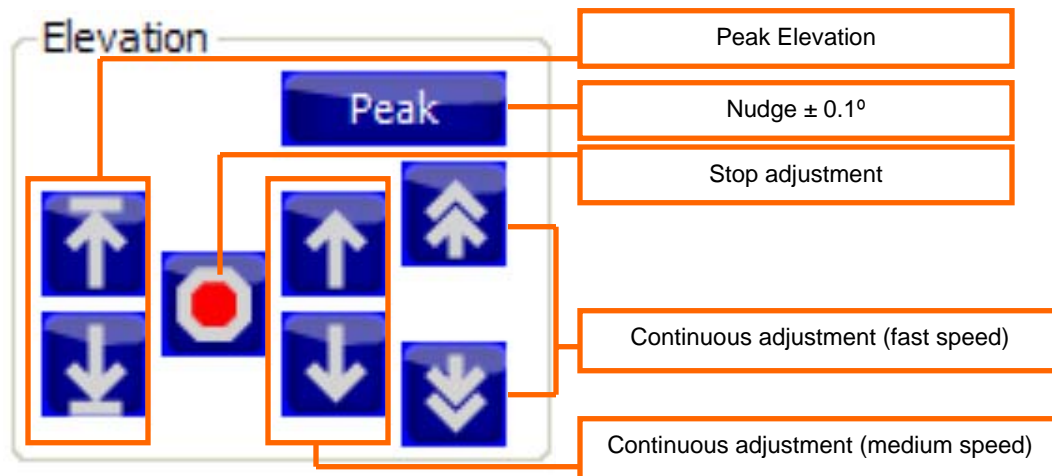
Figure 54. Antenna Alignment



Operating the GLOBETrekker SNG Standard™ in Manual Mode

Adjusting Antenna Elevation

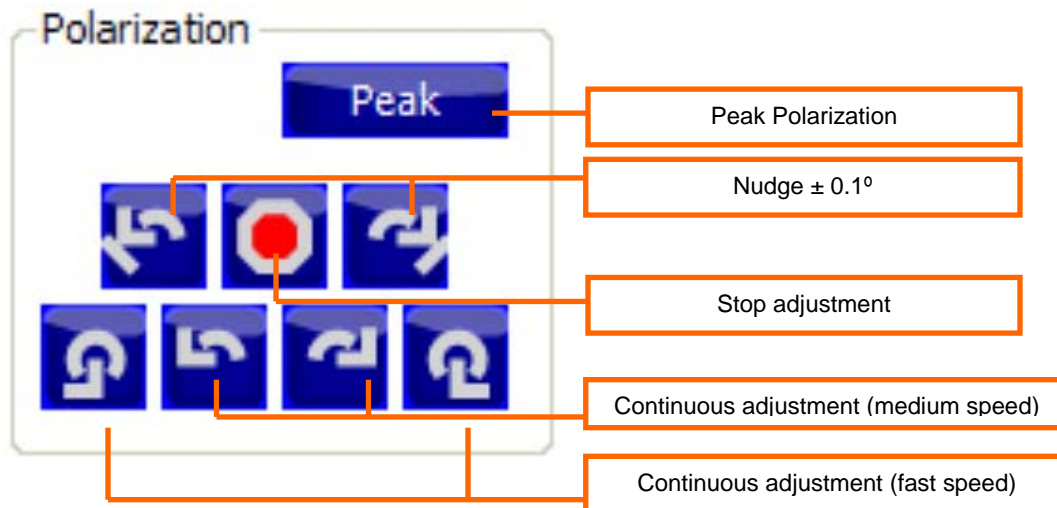
To adjust the antenna elevation, adjust the elevation of the antenna to match the degrees as shown in the **Elevation** field (as shown in **Figure 54**) using the arrows inside the Elevation positioning box. The arrow of the elevation adjustment diagram will change color from red to green when you have reached the calculated elevation value.



Operating the GLOBETrekker SNG Standard™ in Manual Mode

Setting Antenna Polarization

Set the Tx polarization to match the value set in the **Transmit Polarization** field (as shown in **Figure 54**) using the arrows inside the Polarization positioning box. The arrow of the polarization adjustment diagram will change color from red to green when you have reached the calculated polarization value.



Adjusting the Azimuth

Do not attempt to adjust the Antenna Azimuth to match the Compass Azimuth reading.

- Instead, using the Azimuth controls, adjust the azimuth until the diagram arrow turns green.
- Then, proceed to the next section on Acquire Satellite and Peak Antenna by clicking the **Receiver Spectrum Analyzer** tab (Figure 55).

Acquire Satellite and Peak Antenna

Acquiring the satellite and peaking the antenna involves the use of the built-in spectrum analyzer and a DVB lock indicator (in the case of a DVB carrier).

Operating the GLOBETrekker SNG Standard™ in Manual Mode

The process of acquiring a satellite and peaking the antenna is easiest when a satellite has a DVB carrier and a beacon. Where a DVB carrier does not exist a beacon can still be used.

Note: When neither a DVB carrier nor a beacon exists, other types of carriers, if present, and/or reference satellites can still be used to acquire a particular satellite. This chapter does not address such occurrence. To learn more about how to handle such situations, attend a Norsat training session.

The reference level (dBm) and the dB per division functions will be set to auto mode (these are pre-selected and set from the factory).

Note: Advanced users can deselect either or both the reference level and the dB per division in order to configure the spectrum analyzer to settings of their choice. Additionally, the Center Frequency and Frequency Span are also adjustable using scroll arrows.

The process of acquiring a satellite and peaking the antenna requires the use of the Spectrum Analyzer Screen.

Viewing the Receive (Rx) Spectrum Analyzer Screen

To open the Receiver Spectrum Analyzer Screen, click the down arrow beside the **Spectrum Analyzer**. The **Receive Spectrum Analyzer Screen** opens as shown in **Figure 55**.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

The **Receive Spectrum Analyzer** screen, shown in **Figure 55** displays physical parameters along the X axis and the Y axis as follows:

- frequency along the X axis
- signal amplitude along the Y axis

Figure 55. Alignment Screen with Rx Spectrum Analyzer



Table 5 lists the various controls and functions for the **Receive Spectrum Analyzer**. Refer to **Figure 55** for the locations and descriptions of the control buttons.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Table 5. Controls on the Rx Spectrum Analyzer

Controls	Functions
Rx Spectrum Analyzer	
1. Center frequency (MHz)	<p>To change the Center frequency, complete the following steps:</p> <ol style="list-style-type: none"> 1 Click the up/down arrows to increase or decrease the frequency OR 2 Type in the desired frequency OR 3 Use the horizontal arrows to adjust the frequency. 4 Set a marker to the desired frequency. 5 Click on either Marker 1 or Marker 2 depending on the pre-selected frequency setting. <p>Note: see number 5 in table for more detail.</p>
2. Reference level (dBm)	<p>To adjust the Reference level field, complete the following steps:</p> <ol style="list-style-type: none"> 1 Click the up arrow to increase the reference level by 5dB. This moves the trace down the screen. 2 Click the down arrow to decrease the reference level by 5dB. This moves the trace up the screen. <p>Hint: the check box to the right of the Reference Level settings should be unchecked (deselected) to make manual changes to the reference level settings and checked (selected) when the system is operating.</p> <p>Note: see number 5 in table for more detail.</p>
3. Frequency Span (MHz)	<p>To adjust the Span frequency, use the + / - buttons and complete the following steps:</p> <ol style="list-style-type: none"> 1 Click the right + button to decrease Span frequency. 2 Click the left - button to increase the Span frequency. <p>Note: see number 6 in table for more detail.</p>

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Table 5. Controls on the Rx Spectrum Analyzer - continued

Controls	Functions
Rx Spectrum Analyzer	
4. dB per division	<p>To adjust the dB per div, use the + / - buttons and complete the following steps.</p> <ol style="list-style-type: none"> 1 Click the upper + button to decrease the dB per div by 1dB. 2 Click the lower - button to increase the dB per div by 1dB. 3 Range is 3 to 10dB per division in steps of 1 dB. <p>Hint: the check box to the right of the Reference Level settings should be unchecked (deselected) to make manual changes to the reference level settings and checked (selected) when the system is operating.</p> <p>Note: see number 6 in table for more detail.</p>
5. Frequency Adjust and Reference Adjust	<p>Frequency adjustment controls (center frequency):</p> <ul style="list-style-type: none"> ▪ Are the Left and Right arrow buttons. ▪ Left arrow for DOWN frequency adjust and Right arrow for UP frequency adjust. <p>Reference adjustment controls (reference level):</p> <ul style="list-style-type: none"> ▪ Up and Down arrow buttons. ▪ Up arrow for UP reference adjust and Down arrow for DOWN reference adjust.
6. Frequency Span and Strength Span Adjust	<p>Frequency Span adjustment controls (frequency span):</p> <ul style="list-style-type: none"> ▪ Are the Left and Right Minus/Plus signs. ▪ Left side Minus Increases frequency span and Right side Plus sign Decreases frequency span. <p>Strength Span adjustment controls (dB per division):</p> <ul style="list-style-type: none"> ▪ Are the Top and Bottom Plus/Minus signs. ▪ Top Plus sign Decreases strength span and Bottom Minus sign Increases strength span.

Operating the GLOBETrekker SNG Standard™ in Manual Mode

Table 5. Controls on the Rx Spectrum Analyzer - continued

Controls	Functions
Rx Spectrum Analyzer	
7. Detail	<p>Detail controls the number of sweep samples used in drawing the signal trace in the Spectrum Analyzer.</p> <p>Increasing the sweep detail increases the amount of time required to draw the trace on the spectrum analyzer. It is normal to leave this set to high detail as it may be difficult to distinguish signals when the detail is set too low.</p> <p>Detail changes the resolution bandwidth of the Spectrum Analyzer. The following resolution bandwidths are available:</p> <ul style="list-style-type: none"> 600Hz, 1.2KHz, 2.4KHz, 4.9KHz, 9.8KHz, 19.5KHz and 39.1KHz
8. Signal Averaging	<p>Controls the number of sweep samples averaged and displayed as one trace; Averaging ranges from 1 (no averaging) to 16.</p>
9. Rx and Tx polarization	<p>Rx polarization radio buttons control the types of carriers which appear in the carrier selection list.</p> <p>This enables a user to check for a known signal on the opposite polarization to help verify the correct satellite.</p> <p>To view alternate polarization signals, complete the following steps:</p> <ol style="list-style-type: none"> 1 Click the radio button to select the type of polarization. 2 Adjust the polarization settings on the feed assembly. 3 Return to the desired polarization type before Tx.
10. Carrier selection list	<p>The carrier selection list enables a user to set the spectrum analyzer to view a particular signal.</p> <p>Clicking on a carrier in the list automatically sets the Center frequency and Span to match the selected carrier.</p>

Operating the GLOBETrekker SNG Standard™ in Manual Mode

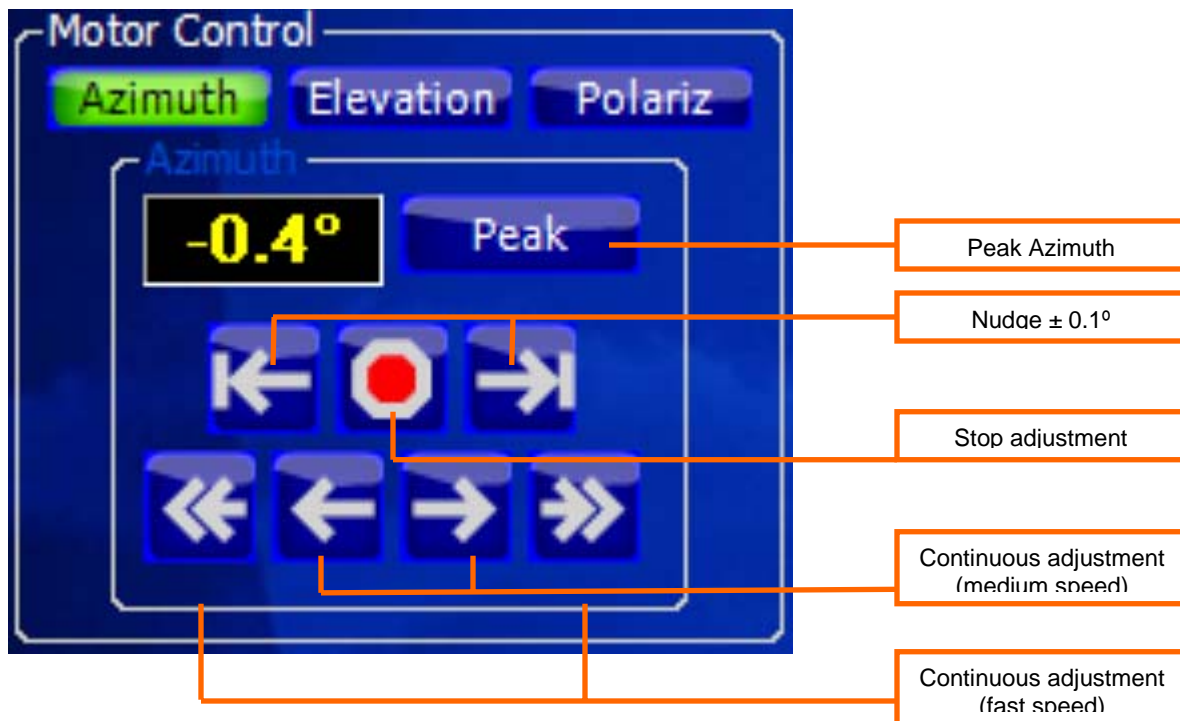
Table 5. Controls on the Rx Spectrum Analyzer - continued

Controls	Functions
Rx Spectrum Analyzer	
11. Marker Functions (MHz)	<p>Measures the amplitude difference (marker delta); the bandwidth of signals and changes the Center frequency</p> <p>To set a marker, complete the following steps:</p> <ol style="list-style-type: none"> 1 On the Spectrum Analyzer, move the pointer to the spot you wish to mark. 2 To set Marker 1, left click with mouse, Marker1 is displayed as a blue arrow. 3 To set Marker 2, right click with mouse, Marker 2 is displayed as an orange arrow.

The acquisition process involves:

- 1 Choosing a DVB-S carrier or Beacon carrier from the list as shown in **Figure 55**.
- 2 Sweeping for a Signal.
 - a Click on the Azimuth button in the Motor Control box, as shown in **Figure 55**.
 - b Within the **Motor Control** box of the screen, click **Azimuth** and, using the **controls**, nudge the Azimuth the **Signal Level** reading is maximized. Graphically, you should observe the greatest peak on the Spectrum Analyzer. (If no signal appears or is visible, use different carrier or change Span).

Operating the GLOBETrekker SNG Standard™ in Manual Mode



- 3 Verifying the satellite. Perform the following for each of the carriers that appear in **Figure 55**.
 - a Select the carrier, either DVB carrier or Beacon carrier.
 - b Look at the Receive Spectrum Analyzer screen and if the beacon carrier is chosen, ensure that spike appears in middle of the screen. If DVB carrier is chosen, ensure that signal is in the center of the screen and that list bandwidth is close in width to the horizontal line (indicator) displayed on the screen.

You are now pointing at the satellite and need to peak the antenna to maximize your signal strength.