# 6 Powering the GLOBETrekker SNG Standard™

# Powering the GLOBETrekker SNG Standard™

This chapter explains how to power up the GLOBETrekker SNG Standard™ terminal using an AC/DC power supply.

The GLOBETrekker SNG Standard™ requires a 24 V DC power source to the baseband unit and a 48V DC power source to the SSPA/BUC.

The GLOBETrekker SNG Standard™ comes with a 1000W AC/DC power supply that supplies both +24V and +48 on the same connector.

## AC/DC Power Supply

**Figure 23. 1000W AC/DC Power Supply and Cables**

Type of Power Available for the GLOBETrekker: Mains only

Prime Power: 24V DC (nominal)
Optional AC: 110/220 V AC
50 / 60 Hz (Stable to 90 V AC)

# Powering the GLOBETrekker SNG Standard™

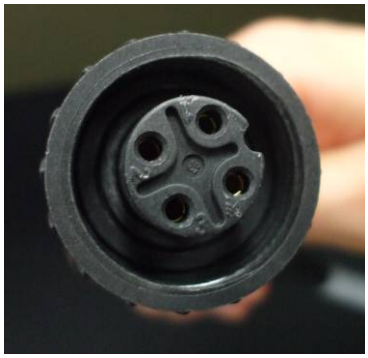
## Connecting the AC/DC Power Supply

NOTE: Make all connections before connecting to AC Mains.

**Figure 24. 1000W AC/DC Power Supply Connections**

To attach the cables to the power supply, perform the following steps:

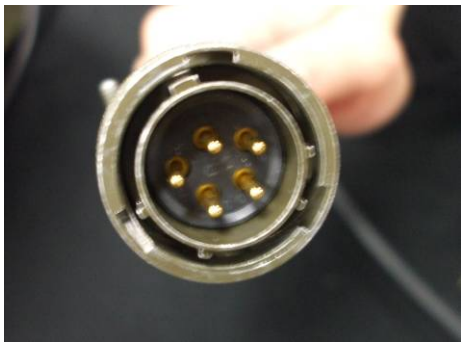
1. Select the black AC power supply cable with the plastic connector.



2. Attach the black, plastic AC connector to the power supply. Make sure that the power supply switch is in off position

# Powering the GLOBETrekker SNG Standard™

3. Select the five pin male connector (DC cable).



4. Attach the five pin male connector (DC cable) to the five pin female connector on the power supply.

5. Attach the other end of the five pin male connector (DC cable) to the front panel of the baseband unit.

   **Caution:** Make sure that the baseband power switch is in OFF position.

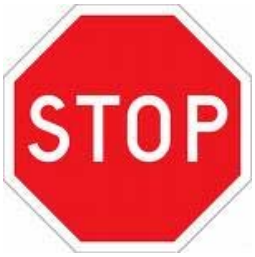
# Powering the GLOBETrekker SNG Standard™

6. Once you have made all of your connections, plug the other end of the AC connector into an AC power source.

7. When you are ready to operate the system, re-check that all connections have been secured.

8. Then, power on the audio data kit first, followed by the baseband unit.

   *Note:* The fans within the audio/data kit will not start running until the baseband unit has been powered on.




**NOTE:**
READ this chapter prior to:

- your first use
- a change in satellite transponder
- a change in hub
- a change in location

# 7 Commissioning the GLOBETrekker SNG Standard™

# Commissioning the GLOBETrekker SNG Standard™

This is a very critical chapter as it identifies the steps necessary to commission the GLOBETrekker SNG Standard™ successfully transmit. The commissioning process ensures operation of the GLOBETrekker SNG Standard™ following:

(i) receipt of the GLOBETrekker SNG Standard™ from the factory

(ii) change in satellite or transponder to be used

(iii) change in hub (or network operator) configuration

### *LinkControl Overview*:

A Norsat proprietary software application called LinkControl controls the GLOBETrekker SNG Standard™. You will use LinkControl to commission the GLOBETrekker SNG Standard™.

The LinkControl application interfaces with the integrated pointing tools enable users to point the antenna towards the desired satellite, peak on the satellite and save user settings; and access the “alarm console” in the LinkControl System Status screen.

Unlike many other systems, the encoder/modulator and other pointing tools are housed inside the baseband enclosure. This has been designed to minimize the weight and enhance portability of the GLOBETrekker terminal.

Why is the Commissioning Process Necessary?

In order for the GLOBETrekker SNG Standard™ to operate successfully, the settings of all of the elements within a satellite network need to match. The three elements are: (i) satellite spacecraft and its transponders; (ii) the satellite hub/teleport; (iii) the GLOBETrekker SNG Standard™ terminal.

*Note:* In some cases, a hub operator can help you ensure that the settings of the GLOBETrekker SNG Standard™ are synchronized with both the hub and the satellite spacecraft. Users will then communicate with the hub operator who will in turn communicate with the satellite operator. In other cases, users will check these settings directly with the satellite operator.

This needs to be done before using the GLOBETrekker SNG Standard™ on a particular satellite, a process known as the Commissioning Process.

# Commissioning the GLOBETrekker SNG Standard™

The Commissioning Process ensures that the following match:

The characteristics of the satellite (and/or satellite transponder) must match with the parameters of the selected “Profile” in the GLOBETrekker SNG Standard™ or in the Satellite Almanac. This is important because the Satellite Operator may have:

a added / deleted / modified the DVB-S carrier properties;
b added / deleted / modified the alignment / beacon properties;
c taken the satellite out of orbit for maintenance; and/or
d gone out of business.

## Commissioning Process Overview

The commissioning process comprises four key steps:

1 Launch LinkControl Application
2 Call the Hub/Satellite Operator
3 Create or Edit Profile (only if required)
4 Edit Satellite Almanac (only if required)

Note: The user may, in some limited instances, forego certain steps in the interest of time.

There is only one prescribed scenario wherein certain steps can be skipped:
i) Change in location

| Steps to be Skipped | Description | Condition in which step can be skipped: Change in location |
|---|---|---|
| 3 | Create or Edit Profile | Not Required if the user will still be served by the same spot beam as the last transmission. This step is not required if the network hub and satellite used in the last transmission will also be used in this next transmission. |
| 4 | Edit Satellite Almanac | |

**Step 1: Launch LinkControl Application**

The LinkControl application will launch automatically after:

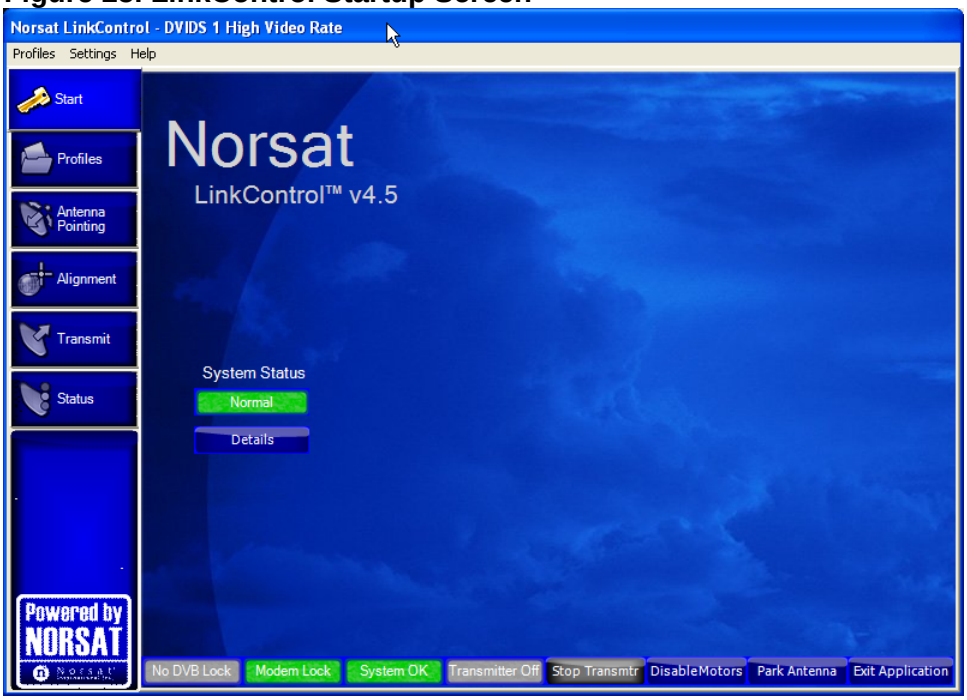
- the GLOBETrekker SNG Standard™ and the laptop have been powered up and;
- the laptop has been connected to the GLOBETrekker SNG Standard™ baseband unit.

It may take several minutes for the application to appear on the screen. The application will open with the start-up screen being displayed as in **Figure 25**.

The LinkControl application performs numerous diagnostics upon start-up.

The user should allow the LinkControl application to fully complete its start-up and diagnostics process 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. The screen below will appear on the display of the laptop when the application is launched:

**Figure 25. LinkControl Startup Screen**



# Commissioning the GLOBETrekker SNG Standard™

The commissioning process 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, although it is strongly recommended you change and document your password.

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 1: Passwords are case-sensitive.
Note 2: Administrator mode can be exited any time (i.e. return to Field mode) by pressing Settings -> Exit Admin Mode

**Step 2: Call the Satellite (or Hub) Operator**

In order to verify certain settings, you will now call the Satellite Operator.

Go through the topics with the Satellite Operator in the sequence provided below:

a) Confirm Satellite Profiles:

Ask the Satellite Operator to confirm the characteristics of the satellite and transponder you wish to use. Address each of the following with the Satellite Operator:

| | | |
|---|---|---|
| Satellite Name | _____ (Transponder #; Slot #) | |
| PROFILE INFORMATION | | |
| Transmit Frequency: | _____ | MHz |
| Receive Frequency: | _____ | MHz |
| LNB Frequency Range: | _____ | MHz |
| Polarization (Transmit): | _____ | (V/H) |
| Polarization (Receive): | _____ | (V/H) |
| SATELLITE ALMANAC INFORMATION | | |
| Orbital Position (Longitude) | _____ | (E/W) |
| Alignment / Beacon Frequency | _____ | MHz / H or V |
| DVB-S carrier Frequency | _____ | MHz / H or V |

**Note 1:** For each satellite, there are five properties which relate to a "profile" saved (or to be saved) in the LinkControl application; and three properties which relate to the satellite Almanac in the LinkControl application.

**Note 2:** Satellites have multiple beacons and DVB receivers. Alignment works best if beacons and DVB receivers are on both polarities.

b) Confirm the encoder/modulator settings for the transmission (details in Figure 28). In order to have a successful transmission, all encoder/modulator parameters must match. These include:
   - Modulator Settings
   - Encoder Settings
   - Audio Settings
   - Video Settings
   - Multiplexer Settings
   - Encryption

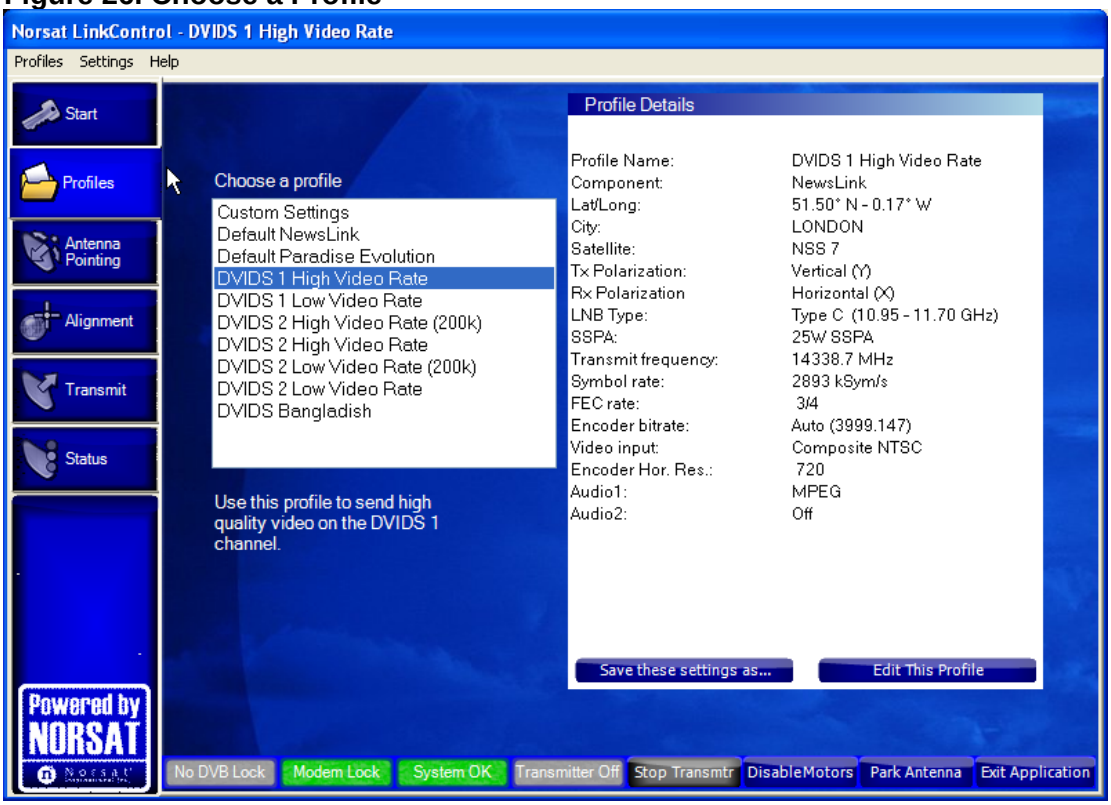
c) Confirm the modem settings for the transmission (details in Figure 29). IN order to have a successful transmission, all modem parameters must match. These include:
   - Transmit Settings
   - Receive Settings
   - Unit Settings
   - IP Option Settings

**Step 3: Create or Edit Profile**

The Link Control Application relies on a Profile to orient the antenna and peak on the satellite. It is important to ensure that the Target Satellite information provided by the Satellite Operator in Step 2b matches an existing profile. If there is no match, then you will create or edit an existing profile.

*Call Up Existing Profiles and Compare:*

**Figure 26. Choose a Profile**




a) Click on the Profiles tab on the left side of the screen.

b) Click on a profile in the list of profiles under **Choose a Profile (Figure 25).**

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

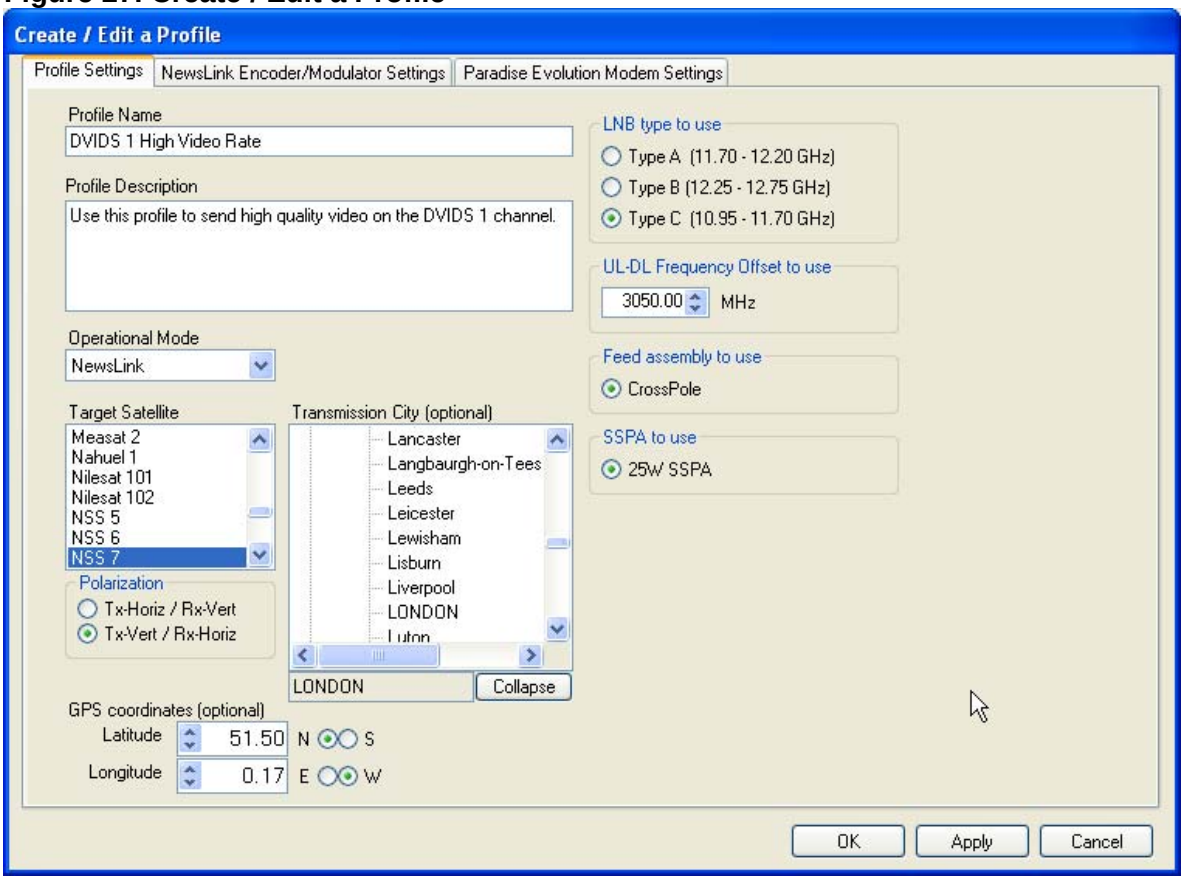
d) Compare the information (target satellite, polarization, GPS coordinates and LNB to use) provided by the Satellite Operator with the existing profile data.

e) If there is a perfect match, proceed to Step 4, otherwise go to step f).

f) If there is a difference in the information provided by the Satellite Operator and that found in the Profiles, then you must decide whether to create a new profile or edit an ‘existing profile”. If you do not plan to use the existing profile ever again, then you may wish to edit an existing profile. Otherwise, create a new profile.

*Create or Edit a Profile*

**Figure 27. Create / Edit a Profile**




a) To create or edit a profile, when in Administrator Mode, press the **Profiles** tab on the LinkControl menu bar.

   To Create a NEW Profile: Select **Add New Profile**.

   To Edit and Existing Profile: Select **Edit Existing Profile** and make your selection from the listed profiles.

*Hint:* You can also click the Profiles button from the Profile tab along the left side of LinkControl and then make your Profile selection under **Choose a profile** from the right-hand side of the screen. If you use this method, click on **Save these settings as**… button OR highlight a profile, click **Edit This Profile** at the bottom of the Profile Details window. Create or modify to your desired settings, then save the Profile with its new name.

b) The **Profile Settings Screen** opens as shown in **Figure 26 Create / Edit a Profile Screen**.

c) To create the new profile, enter a profile name in the **Profile Name** text box.

d) Enter a brief profile description in the **Profile Description** text box.

e) Choose a target satellite from the **Target Satellite** drop down box.

f) Click under **Polarization** to select the type of transmit polarization.

Note: **Optional -** Choose the city of transmission from the **Transmission City** scroll box.

OR

Note: **Optional -** Choose latitude and longitude coordinates from the **Latitude** and **Longitude** scroll boxes and radio buttons.

g) Choose the LNB that is applicable for your transmission location from **LNB type to use**.

h) Choose the feed assembly under **Feed assembly to use** (only if more than one choice is listed).

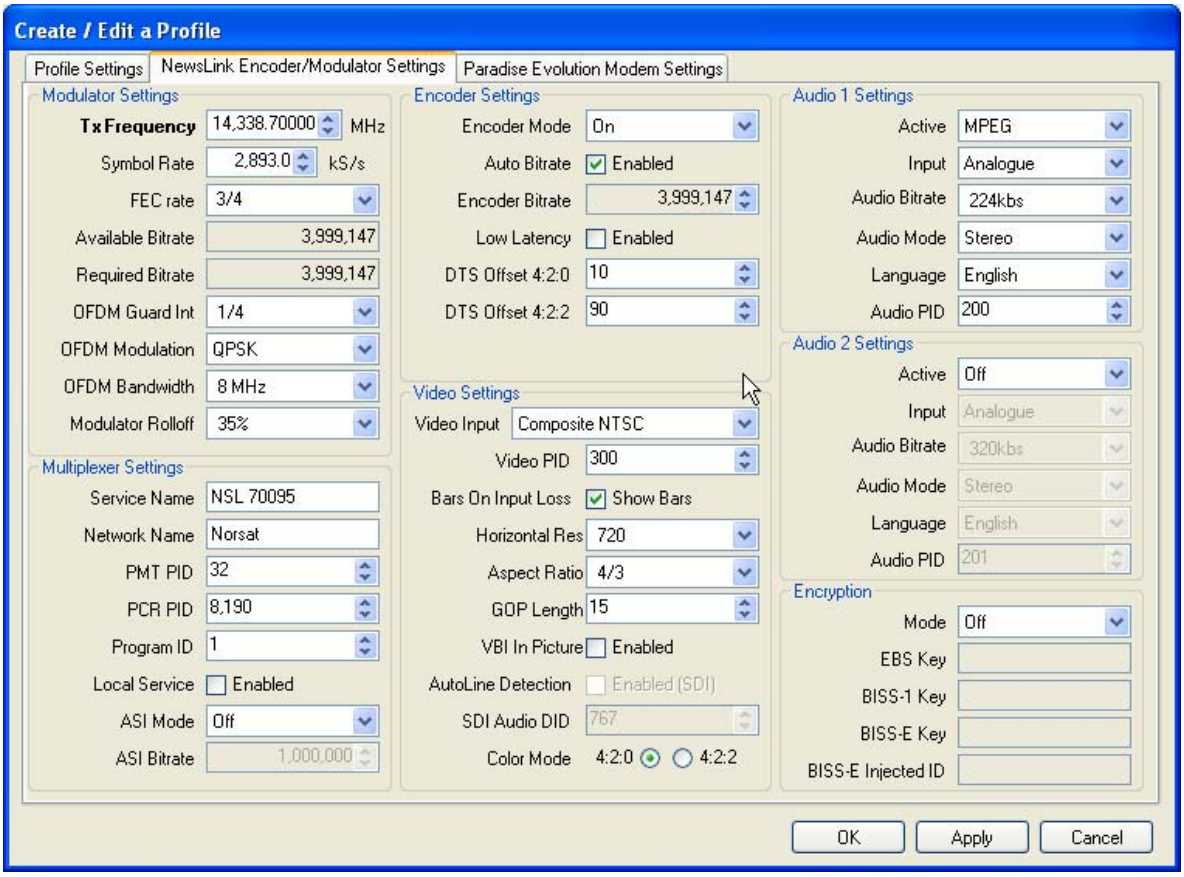
i) Click to select a SSPA under **SSPA to use** (only if more than one choice is listed).

j) Click **Apply**.

*Set Encoder/Modulator Parameters*

To set Tx parameters for the encoder/modulator, click on the "NewsLink Encoder/Modulator Settings" tab. This will bring up the encoder/modulator settings window, and allow you to edit the configuration. For more details on each field shown in Figure 28, refer to *Appendix B: Encoder/Modulator Settings*.

**Figure 28. Encoder/Modulator Settings**



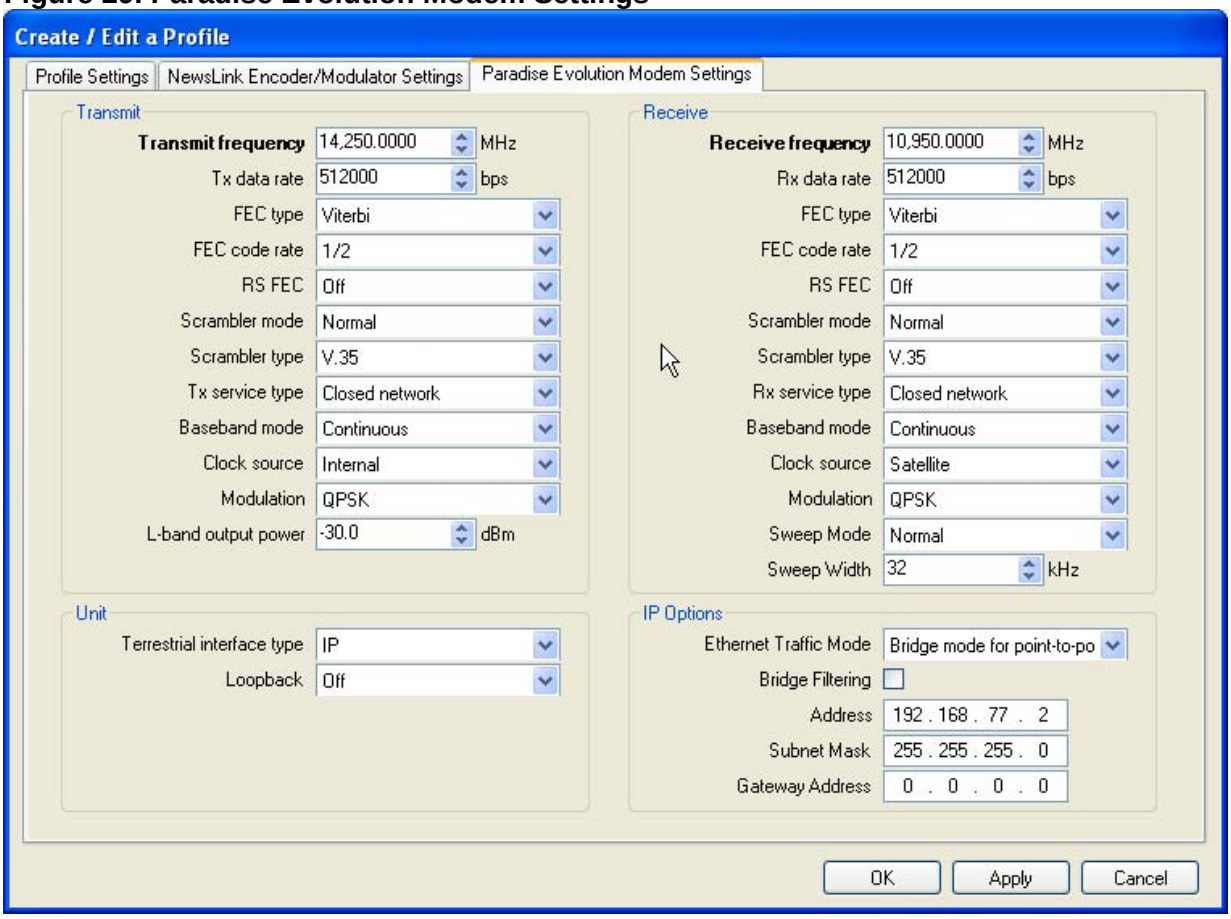

4. Enter new Transmit frequencies, Bitrates and other parameters as required.

5. Click on Apply and then OK.

*Set Paradise Modem Parameters*

To set the parameters for the modem, click on the "Paradise Evolution Modem Settings" tab. This will bring up the modem settings window, and allow you to edit the configuration. For more details on each field shown in Figure 29, refer to *Appendix C: Paradise Evolution Modem Settings*.

**Figure 29. Paradise Evolution Modem Settings**



**Step 4: Edit/Review Satellite Almanac**

a) On the **Menu** bar, press **Settings → Edit Satellite**

b) On the left hand side, find the **Target Satellite** and click on it.

c) If there are any differences in the alignment carrier, DVB-S carrier or orbital position then you can modify them or add new carriers.

d) Click on the **CLOSE** button when you are done.

*To Add a New Carrier:*

1. Enter the Description, Frequency, Polarization, Carrier type and Symbol Rate; (Symbol Rate is always 0 (zero) for Alignment Carriers); for the new carrier inside the Carriers sub-window on the right-hand side.

2. Click Apply, Change on the Carriers sub-window.

3. The new carrier will appear in the list.

*To Edit an Existing Carrier:*

1. Highlight the entire row, (click on the cell in front of the row describing carrier), for the carrier you wish to modify from the list.

2. Edit the desired parameter for the carrier.

3. Click Apply change in the Carriers sub-window.

*To Delete a Carrier:*

1. Highlight the entire row, (click on the cell in front of the row describing carrier), for the carrier you wish to modify from the list.

2. Click on Delete in the Carriers sub-window.

When you have finished working with the Carriers, click on Apply Change in the upper right-hand corner to update the Satellite information.

# Commissioning the GLOBETrekker SNG Standard™

You have now completed the commissioning of the GLOBETrekker SNG Standard™. If you plan to operate using the auto-acquire function of LinkControl, proceed to Chapter 8. If you plan to use the manual mode of acquiring the satellite proceed to Chapter 9.

# 8 Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

# Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

This chapter explains how you can leverage LinkControl's auto-acquire capability to point and peak your antenna to the correct satellite, as well as communicate with the Satellite (or Hub) Operator for transmission.

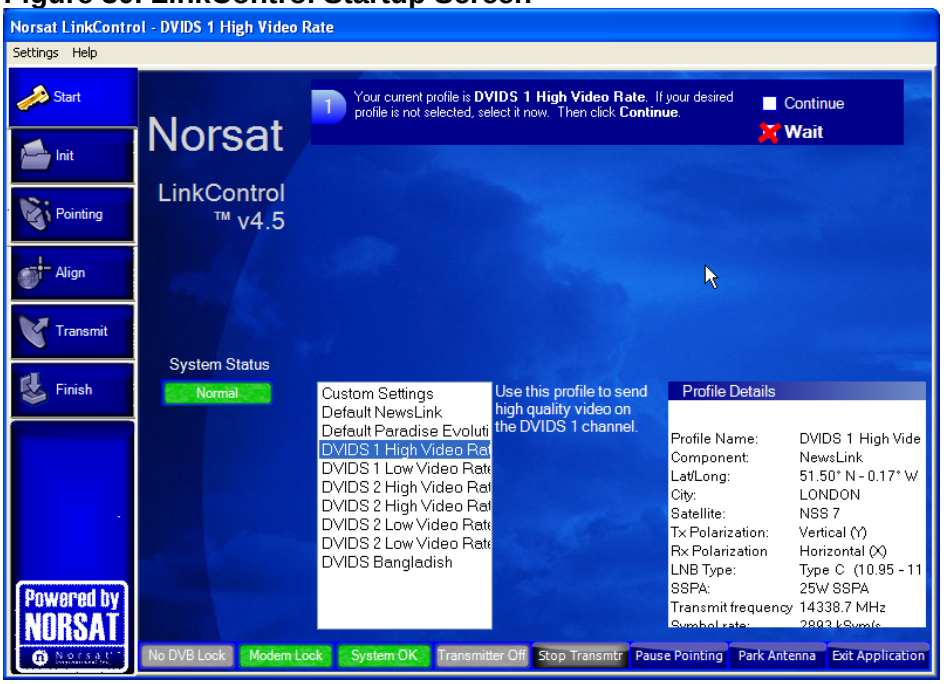
*Hint:* Before using the auto-acquire function for the GLOBETrekker SNG Standard™; ensure a profile has been setup for the desired satellite. In order to create a profile for the satellite, the user must be logged in with Administrator rights and operating in Administrator Mode. This is outlined in Chapter 7. Once a profile has been selected the user must exit Administrator Mode and be operating in Field Mode. The profile must contain enough information about the location of both the desired satellite and the GLOBETrekker SNG Standard™ system in order to successfully locate it (Satellite name, alignment/beacon and DVB-S carriers; GPS coordinates for latitude and longitude).

**It is recommended the user checks that the system is level before operating the LinkControl software.**

## Starting the Auto-Acquire Session

Once LinkControl starts, the **Startup Screen** is launched, as shown in **Figure 30**; this startup 'mode' is known as the **Field Mode**. Follow the instructions on screen. To start the auto-acquisition process, click on a profile to select it, verify the details are correct under Profile Details and click the **Continue** box.

**Figure 30. LinkControl Startup Screen**



Note: If you would like to change your selected profile, simply click on the **Wait** box. This brings you back to the beginning where you can select another profile.

## Initialization

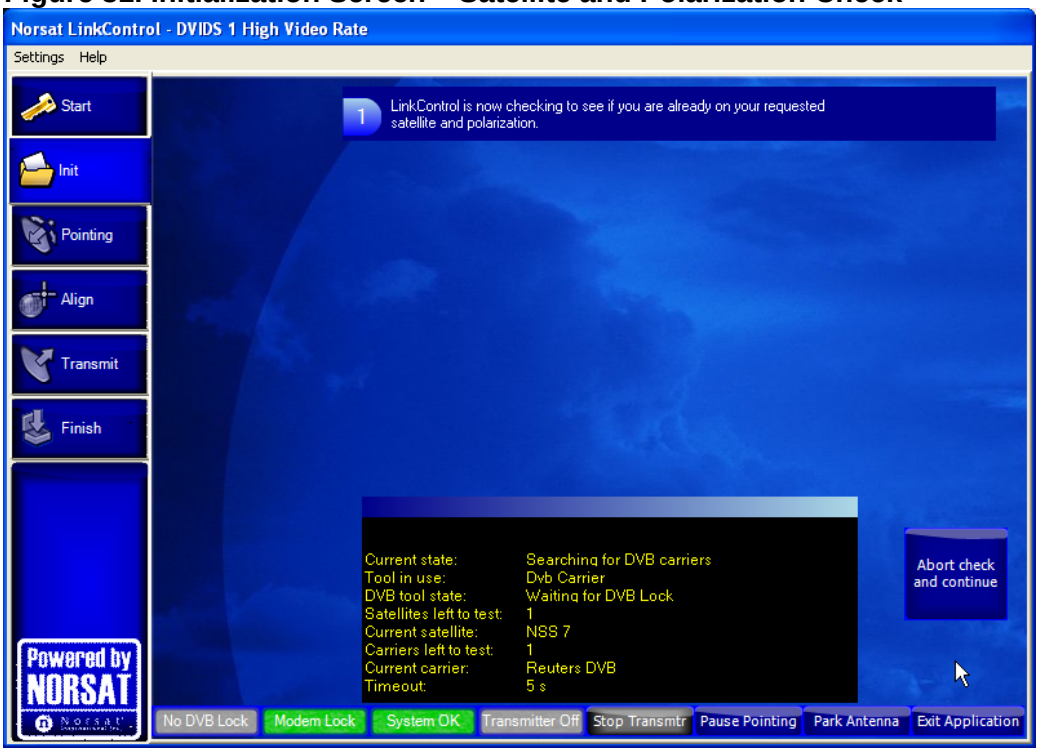
There is no user interaction required on this screen. If the compass or GPS receiver does not return valid data, LinkControl will advise and instruct you on how to proceed.

The initialization process goes through the following steps:

1. Checks to see if the GLOBETrekker SNG Standard™ is already on the desired satellite by searching for DVB and other alignment carriers. Refer to the Satellite Recognition Tool (black screen in Figure 31) to see the current state of the system.

   *Note:* You may opt to abort the check and continue by clicking the button to the right of the Satellite Recognition Tool.

**Figure 31. Initialization Screen – Satellite and Polarization Check**

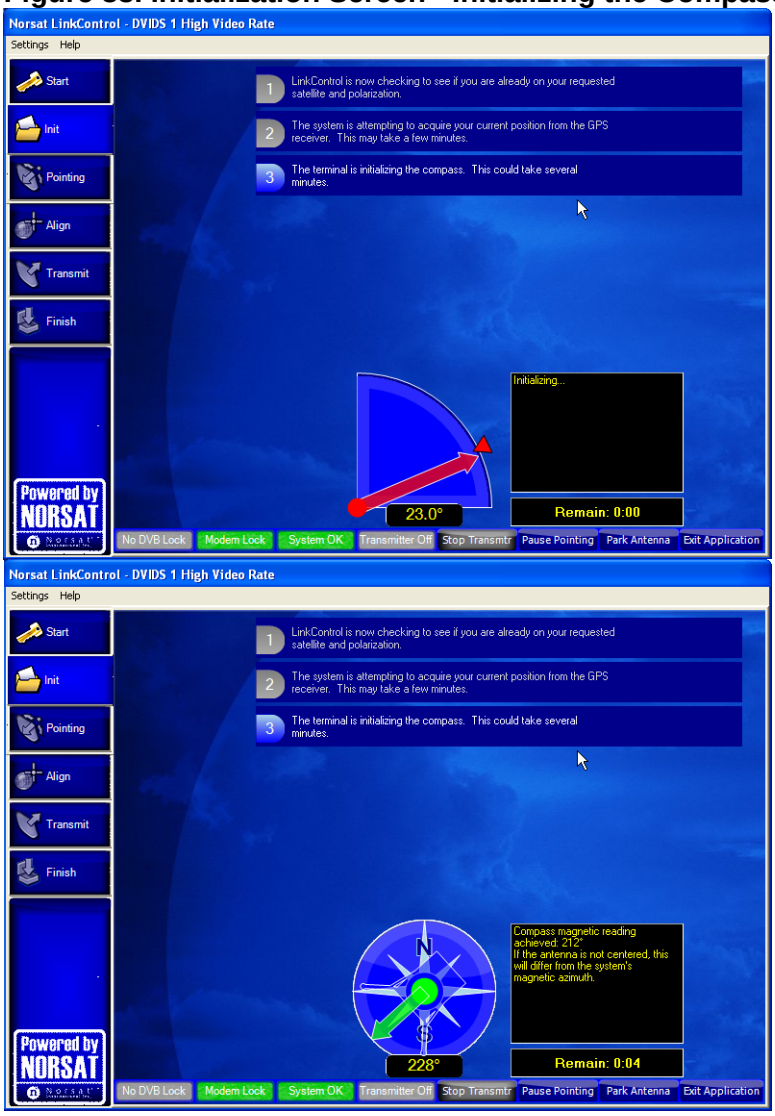


2. Uses the GPS receiver to acquire the latitude and longitude readings of your current position (Figure 32):

**Figure 32. Initialization Screen - Acquire GPS Readings**

3. Initializes the compass to acquire a magnetic reading of the system's current pointing direction (Figure 33). This reading enables LinkControl to calculate the desired Azimuth value for antenna pointing. The compass diagram with the reading below it displays the orientation of baseband unit. The **Compass magnetic reading** of the antenna is displayed inside the black status box.
   *Note:* These compass readings may differ from one another.

**Figure 33. Initialization Screen - Initializing the Compass**



# Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

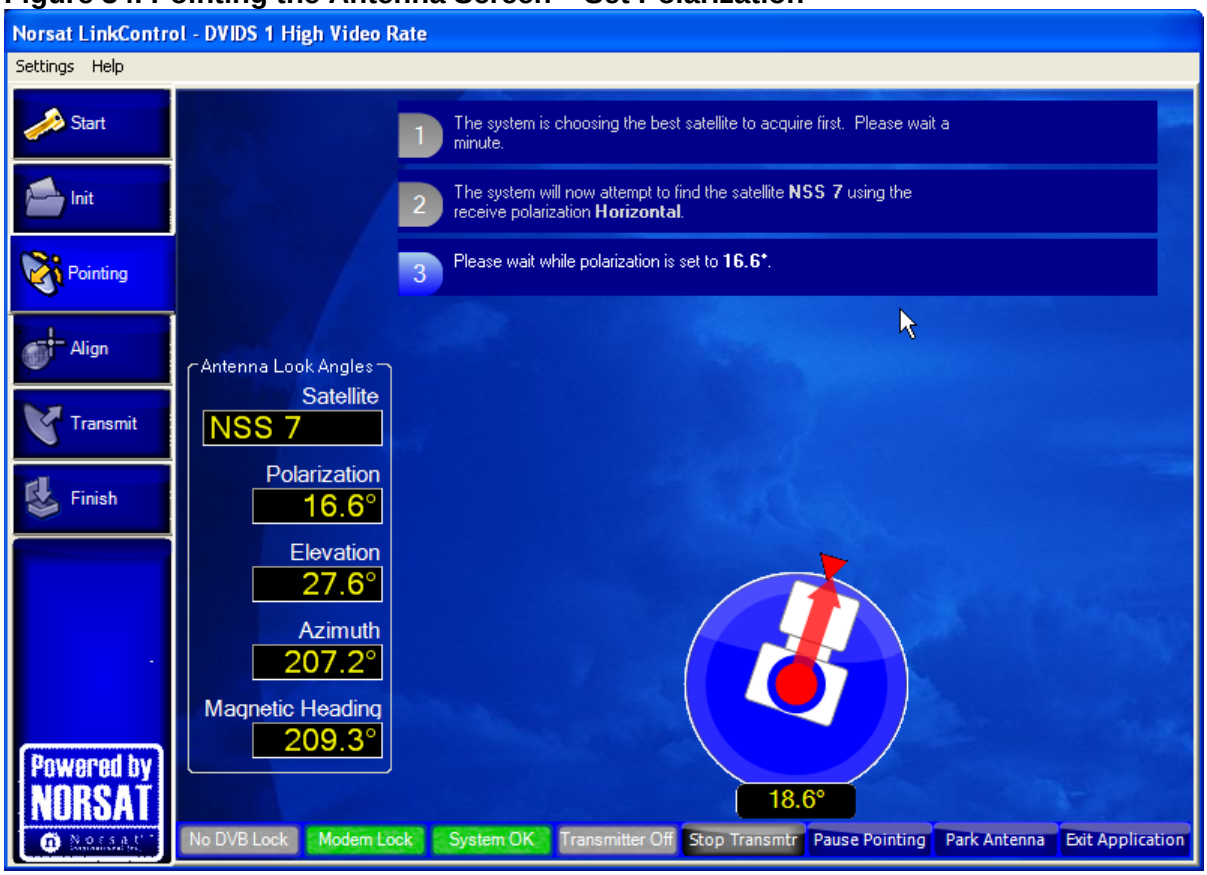
## Initial Antenna Pointing

The **Pointing the Antenna Screen** opens as shown in **Figure 34**. There should not be any information to enter, nor interaction with the terminal, unless there is a problem. If a problem occurs, follow LinkControl's instructions.

The initial antenna pointing process is the system's first attempt to find the satellite saved in the user profile. This process goes through the following steps:

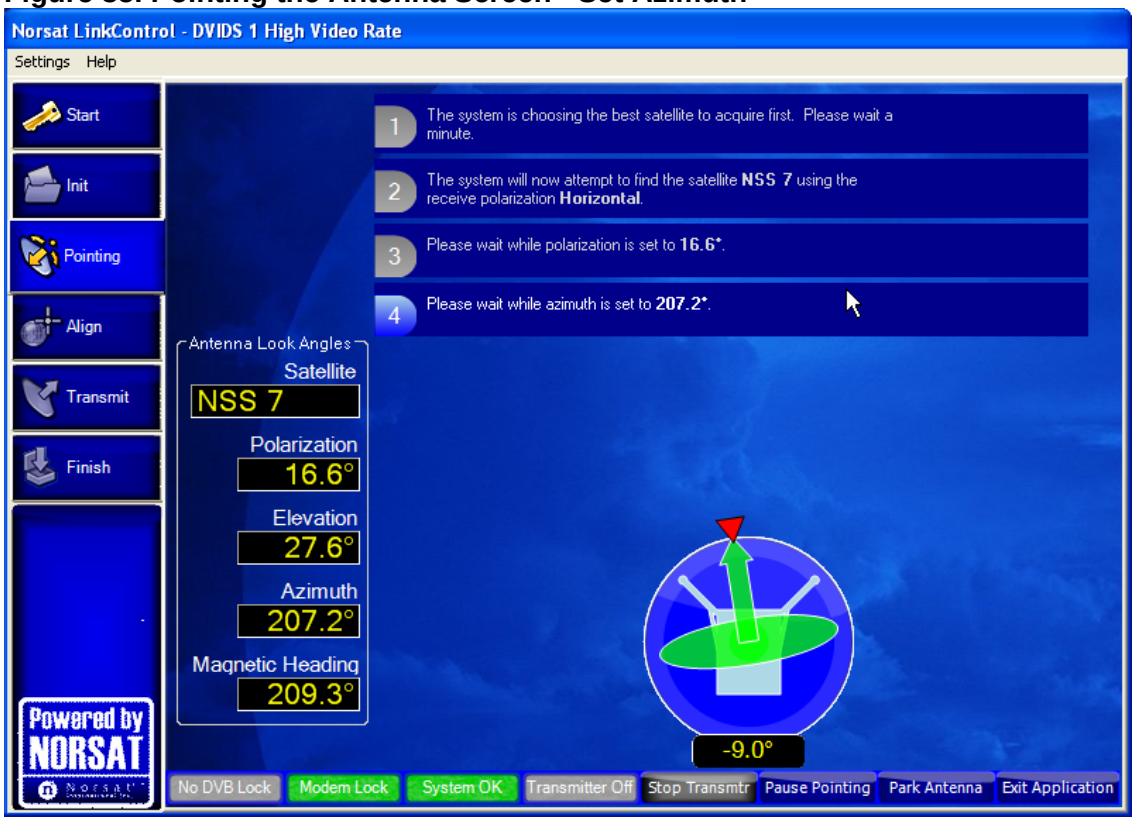
i. Setting Polarization: rotates the feed to find a receive (Rx) antenna signal from the satellite (Figure 34).

**Figure 34. Pointing the Antenna Screen – Set Polarization**



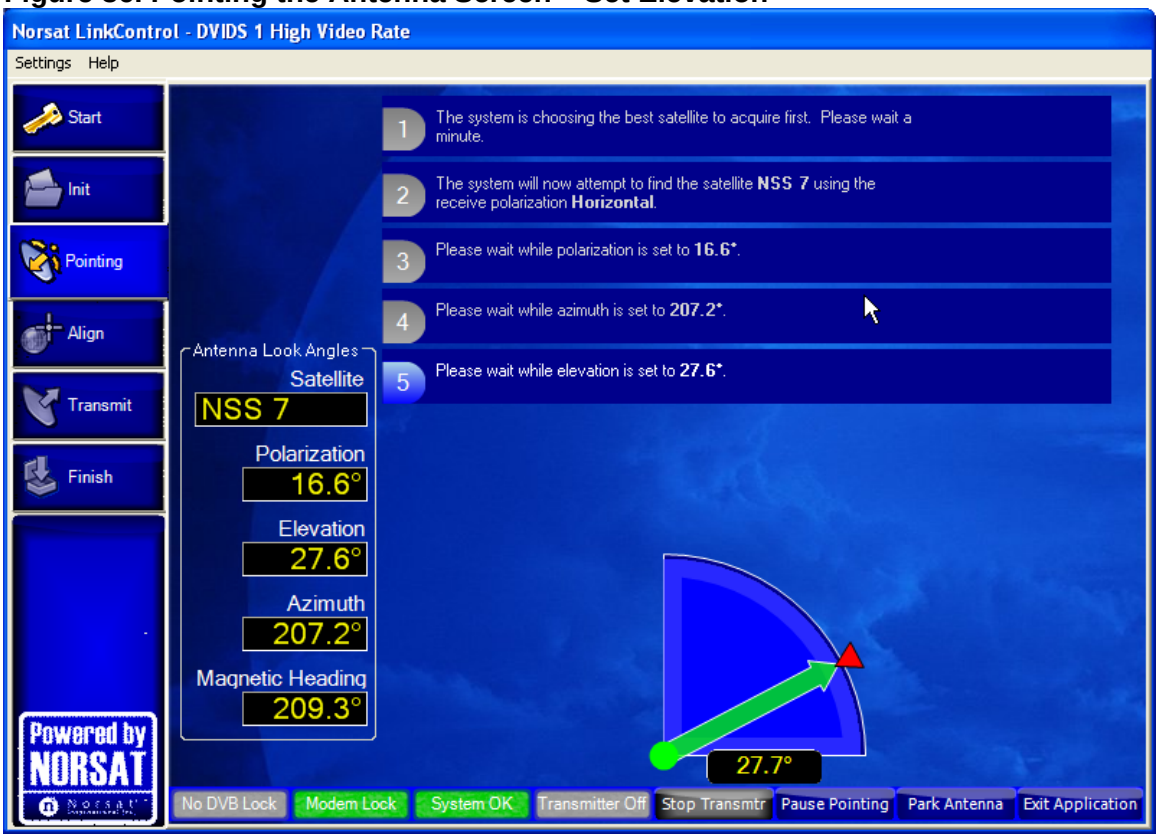
ii. Setting Azimuth: rotates the antenna (side-to-side direction) based on the terminal's position and magnetic compass reading, and the desired satellite's position (Figure 35).

**Figure 35. Pointing the Antenna Screen - Set Azimuth**




iii. Setting Elevation: inclines the antenna to the desired angle based on the satellite and terminal positions (Figure 36).

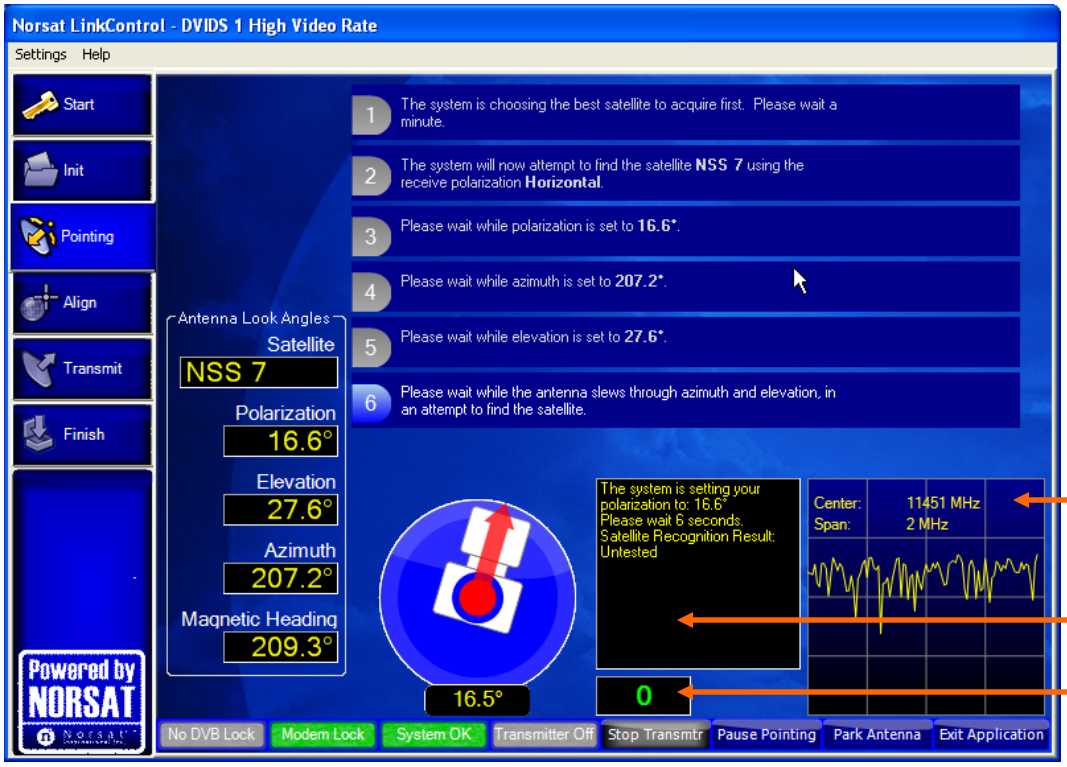
**Figure 36. Pointing the Antenna Screen – Set Elevation**




iv. Slewing the Antenna: Polarization, Elevation, and Azimuth slewed to achieve the best signal (Figure 37).During slewing, the system is making slight adjustments to each parameter and monitoring the *Receive Strength Signal Indicator (RSSI)*. When there is a significant jump in the RSSI value, the motors stop adjusting and the system looks for a peak on the *Spectrum Analyzer*, indicating a possible carrier. When a peak is achieved, the system attempts to lock onto a carrier (i.e. DVB, alignment, etc.). If the carrier is a DVB carrier, the **DVB Lock** button should turn green (or yellow if a **DVB Partial Lock** has been established). The *Satellite Recognition Tool* will inform you if the desired satellite has been recognized and proceed to the antenna peaking process.

# Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

**Figure 37. Pointing the Antenna Screen - Slewing to Find a Carrier**




Spectrum Analyzer

Satellite Recognition Tool

Receive Signal Strength

# Operating the GLOBETrekker SNG Standard™ in Auto-Acquire Mode

## Peaking the Antenna

The peaking process peaks the elevation and azimuth to achieve the best signal. Peaking relies only on the RSSI reading that, when maximized, indicates the most stable frequency.

Peaking on the desired satellite by making finer azimuth, elevation, and polarization adjustments (**Figure 38-39**). Once this occurs, the LinkControl will confirm the name of the successfully acquired satellite.

**Figure 38. Peaking Antenna – Elevation and Azimuth**

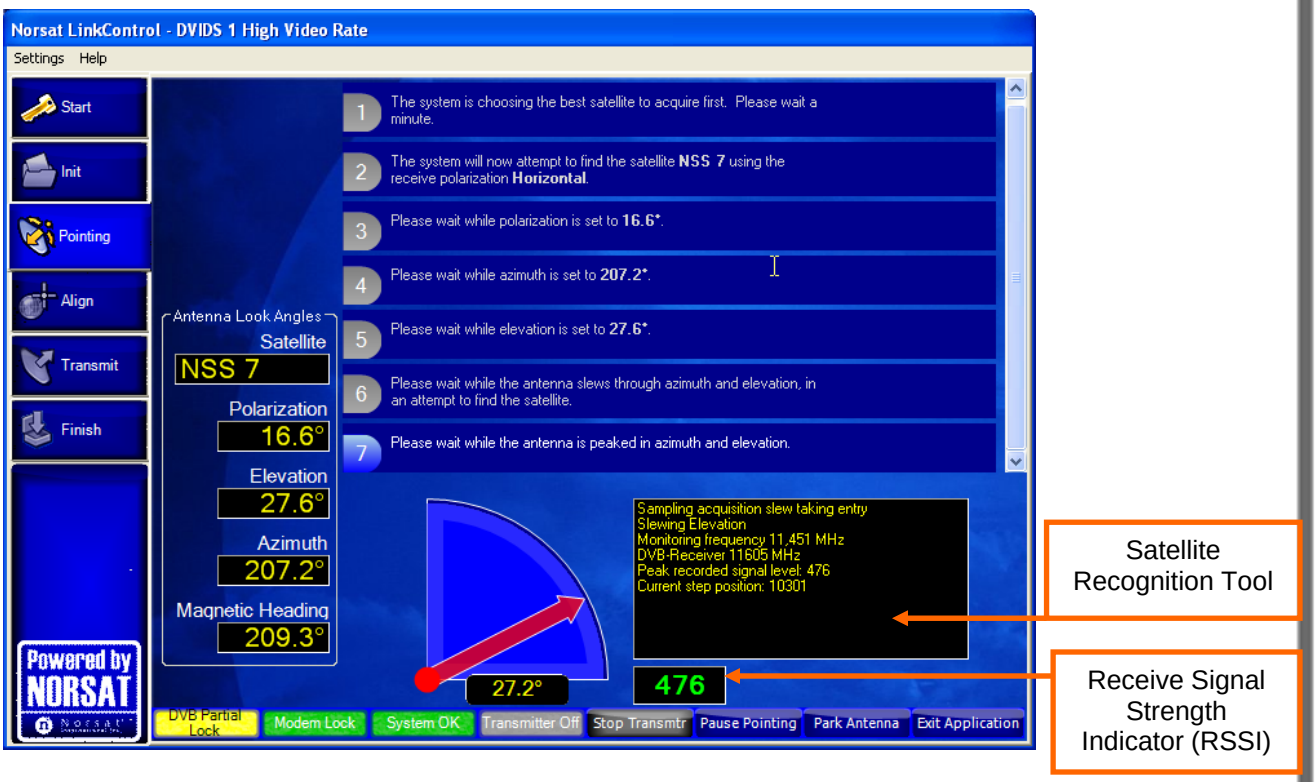


**Figure 39. Peaking Antenna - Polarization**