SkyEdge II

VSAT Configuration and Installation

October 2009

Document No. DC-4491-20(E)

Gilat Satellite Networks Ltd.

Contents

1. Introduction and Overview

In This Chapter

1.1. Scope and Limitations

This manual is valid for SkyEdgeII VSATs.

SkyMagic is available only from VSAT Boot Code 6.0.0.8 for IP and Extend VSATs and 7.0.1.0 for Access and Pro VSATS. For older versions use document DC-4491-20(D).

1.2. Background and Purpose

In order to enable a VSAT to come on line it has to be configured with a minimum number of parameters that are used to enable the VSAT to boot up. This operation is performed using the internal web page. This procedure is found in the Configuring SkyEdge VSATs via SkyManage Web Page (on page 9) section .

1.3. VSAT Types

Photographs of all of the various SkyEdgeII VSATs are found below. They are not shown to size:

Figure 1: SkyEdge II IP VSAT

Figure 2: SkyEdge II IP VSAT - Rear view

Figure 3: SkyEdge II Extend VSAT

Figure 4: SkyEdge II Extend VSAT -

Figure 5: SkyEdge II Access VSAT

Figure 6: SkyEdge II Access VSAT - Rear view with Two FXS Add Ons and DC Power Supply

Figure 7: SkyEdge II Pro VSAT

Figure 8: SkyEdge II Pro VSAT - Rear view with Slot 1 ready for mesh

The following table lists the number of IP ports, add-on and power modes for the various types of VSATs.

VSAT IP Ports, Add On and Power Modes

VSAT Type	IP Ports	Add-on	Power Modes	VRs
IP	1	None	AC with external power supply	2
Extend	2	None	AC with external power supply	2
Access	4	1 FXS or 2FXSs or Mesh	AC direct or 24 VDC	8
Pro	4	Mesh (in slots 1 and 2) and 1 FXS or 2FXSs or 1-4 FXSs	AC direct or 24/48 VDC	8

The following figure shows a rear view of the VSAT with the connectivity ports labeled.

Figure 9: SkyEdge II Extend VSAT - Rear view with Connections Labeled

The VSAT can be in either one of two modes, Boot or Operational. The configuration parameters can only be modified while the VSAT is in Boot mode. This ensures that no changes can be made in the basis VSAT configuration parameters to a VSAT that is live in a network. All changes to such a VSAT are made from the NMS.

1.4. Mesh Connectivity

When an Access or Pro VSAT has a mesh card installed in slots 1 and 2, an additional cable supplied by Gilat has to be installed between the RF Out port on the Mesh Card and the RF In port on the VSAT. The following drawings show the Mesh Connectivity for an Access VSAT and the Mesh connectivity on a Pro VSAT.

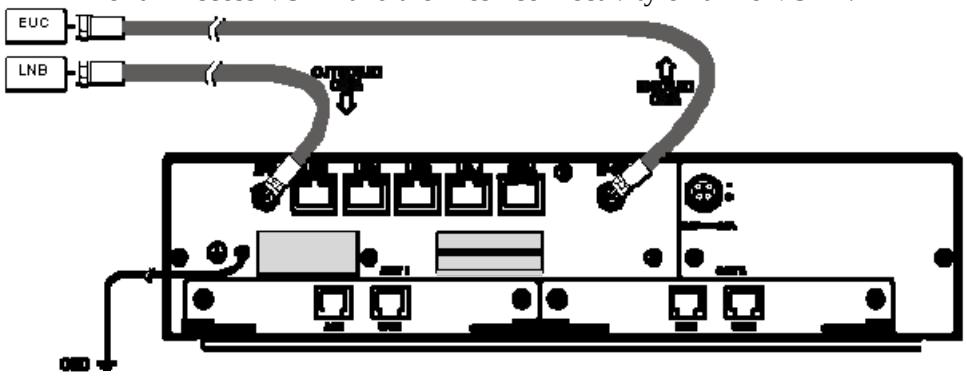


Figure 10: Access VSAT Mesh Connectivity

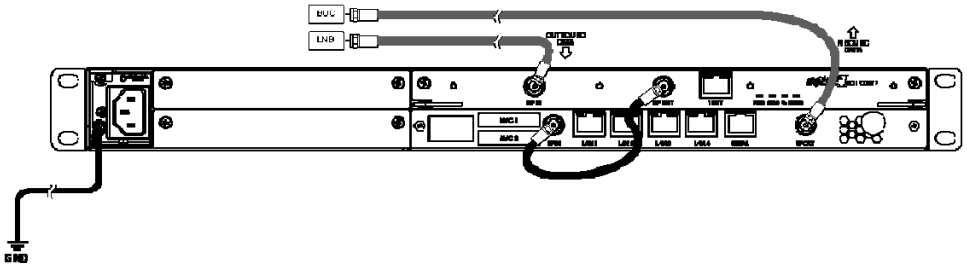


Figure 11: Pro VSAT Mesh Connectivity

1.5. Inter-Facility Link (IFL) Cables

Two IFL cables are used:

1. Coaxial Cable
2. LAN Cable

1.5.1. Coaxial Cables

The Inter-Facility Link between the ODU and IDU provides a full duplex communication path between the two units. It consists of two coaxial cables: IFL Tx and IFL Rx. Gives the maximum cable lengths for various power supplies, BUCs and cable types.

For further information regarding the length and type of Coax cables required for your specific sites contact Gilat. These parameters are determined by the VSAT, BUC and power supply used.

1.5.2. LAN Cable

All of the LAN cables used are type CAT-5. Ethernet hubs or switches are used to connect multiple PCs to the SkyEdge VSAT. The maximum length of a LAN cable is 100 meters (325 feet).

2. VSAT Location Coordinates

In This Section:

2.1. VSAT Location Overview

SkyEdgeII has introduced two factors that are important in the VSAT commissioning process in order to get the maximum performance from the VSAT.

- VSAT Location Coordinates
- Antenna Pointing

2.2. VSAT Location Coordinates

The specific location of the VSAT as entered in degrees, minutes and seconds must be accurate to ± 10 km. This data can be obtained in a number of ways as listed below:

- SkyMagic - this device enables the user to collect GPS satellite coordinates during the antenna pointing process and transfer them to the VSAT.
- Portable GPS device – this is the most accurate method of obtaining the data at the exact point where the installation is to take place. It is also the most expensive due to the cost of the device.
- Topographic maps – most locations are found on topographic maps that can be purchased through governmental agencies in most countries. The data from the map has to be given to the installer prior to travel to the site.
- Online applications – most of these are based upon Google Earth (www.earth.google.com). The data generally is satisfactory for use but Gilat recommends that the accuracy for the specific geographic area where the VSATs are to be used be investigated prior to using it for installations. The application can be installed on any laptop.

2.3. Antenna Pointing

Since SkyEdgeII uses dynamic automatic adjustment of both the Inbound and Outbound coding parameters, the antenna pointing at the remote VSAT sites has become very

important. If the antenna is not pointed correctly and the signal strength is not at the maximum, the ability of the SkyEdgeII system to be utilized to the full extent of its capabilities will be affected.

The antenna assembly and pointing should be carried out according to the instructions of the antenna manufacturer and using the VSAT or a suitable measuring device capable of detecting small differences in signal strength. If the SkyMagic is available, it is also an antenna pointing device.

2.4. VSAT Site Installation

This section contains a general overview of the operations that have to be carried out in the successful installation of a SkyEdgeII VSAT at a remote site.

1. Determine the location of the VSAT antenna, take into consideration the antenna mount to be used. Make sure that there is a clear line-of sight for the satellite, taking into account the azimuth and elevation required.

2. Determine the location of the VSAT, verifying that it is close to the required power source.

3. Configure the VSAT using the parameters supplied according to the procedure found in Configuring the VSAT (on page 9).

4. Assemble the antenna and mount, including the LNB and ODU according to the instructions received from the antenna manufacturer.

5. Run the coaxial cables from the antenna to the VSAT. Make sure that all of the connections are sealed and that there is sufficient cable that there is no tension in the cable that can cause damage. At this point, connect the cables to the antenna only.

6. Verify with the Network Operations Center (NOC) that the VSAT has been configured in the NMS.

7. Point the antenna at the satellite and maximize the Outbound signal strength using the tool supplied. If the transponder requires cross-pol adjustment, this must be carried out together with the NOC.

8. Send a CW to the NOC and carry out fine adjustments to the antenna in order to maximize the strength of the Inbound signal.

9. After completing all of the antenna adjustments, verify that all of the antenna components have been properly tightened and locked.

10. Power-off the VSAT and connect the coaxial cables from the antenna.
11. Power-on the VSAT and monitoring the LED boot sequence to verify that the VSAT comes on line properly.
12. Verify that internet browsing or some similar operation can be successfully carried out.

3. Configuring the VSAT

In This Section:

3.1. Data Required

Prior to configuring a VSAT verify that the following parameters have been supplied by the hub operations staff using the spreadsheet supplied by Gilat. The parameters are found in the *Configuration Parameters* table in the Configuring the VSAT (on page 15) section.

3.2. Configuring SkyEdge VSATs via SkyManage Web Page

Before starting the configuration process verify that all of the configuration parameters required during the procedure are available.

3.2.1. Accessing the SkyManage Web Page

Microsoft© Internet Explorer (V 5.5 or higher) and Firefox (V 1.0 or higher) web browsers are supported on PCs.

The SkyManage web page can be accessed in a number of different ways:

- Via a PC using a cross LAN cable
- Via a PC with a wireless link. A wireless adapter is inserted in the VSAT LAN port.
- Via a PDA (Palm type device) running Microsoft Mobile 2003 or Palm OS with PalmOne Blazer (V4.0 or higher) web browser. Either a cross LAN cable or a wireless connection can be used.

All of the captures in this section were taken using Microsoft Internet Explorer. The screens viewed when using other web browsers may be slightly different in appearance.

All of the captures were carried out on a VSAT that had not yet downloaded its operational code.

Verify that the device being accessed has its IP address configured on the same subnet as the built-in web page (192.168.1.1).

Verify that the use of a proxy has been disabled in the browser application.

1. To open the SkyManage web page type **192.168.1.1** in the address bar and click to open.

Result: The SkyManage home page opens.

Figure 12: SkyManage Home Page – IP and Extend VSATs

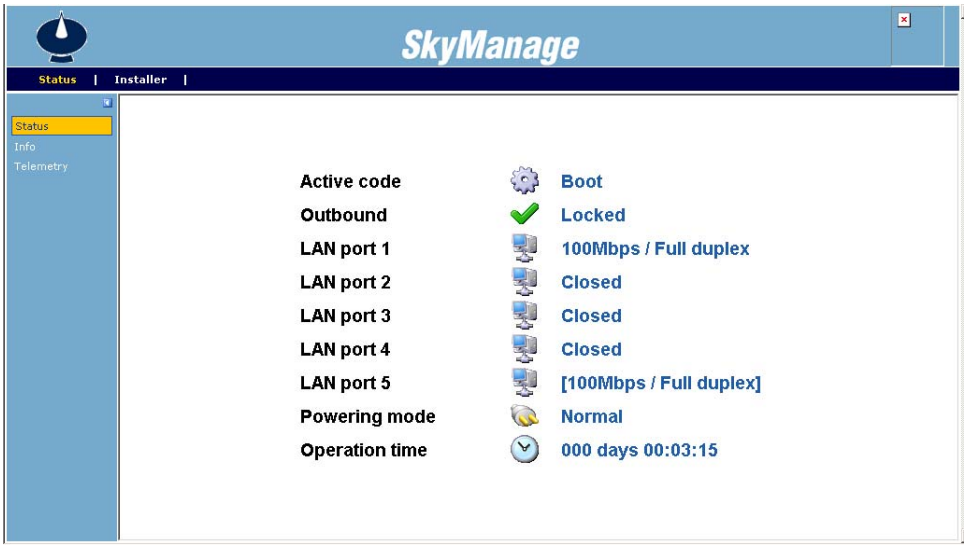


Figure 13: SkyManage Home Page – Access and Pro VSATs

The home page, viewable by all users, contains the following information (for operational VSATs additional parameters are shown):

- **The VSAT status** (in this case Boot) is shown by the logo in the upper left corner
- **Active code type** - Boot or Operational
- **Outbound Lock state** – Unlocked or Locked
- **LAN Ports**– speed and duplex mode. For Access and Pro VSATs ports2-4 are blocked in Boot Mode and only are available for use in Operational Mode. Port 5 is an internal port that cannot be seen by the user
- **Powering mode** – Normal/Low Power/Power Save
- **Operation time** – time since VSAT was powered on or reset

2. Click **Info** to open the page showing the hardware and software components of the VSAT:

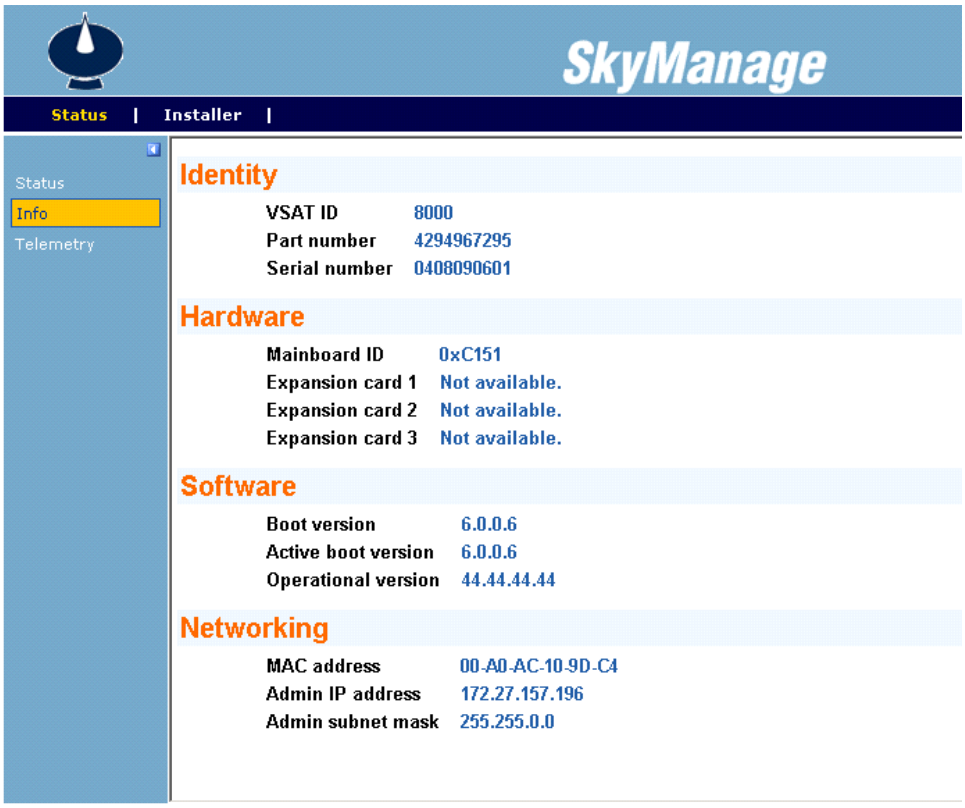


Figure 14: Info Page Before Configuration – IP or Extend VSAT

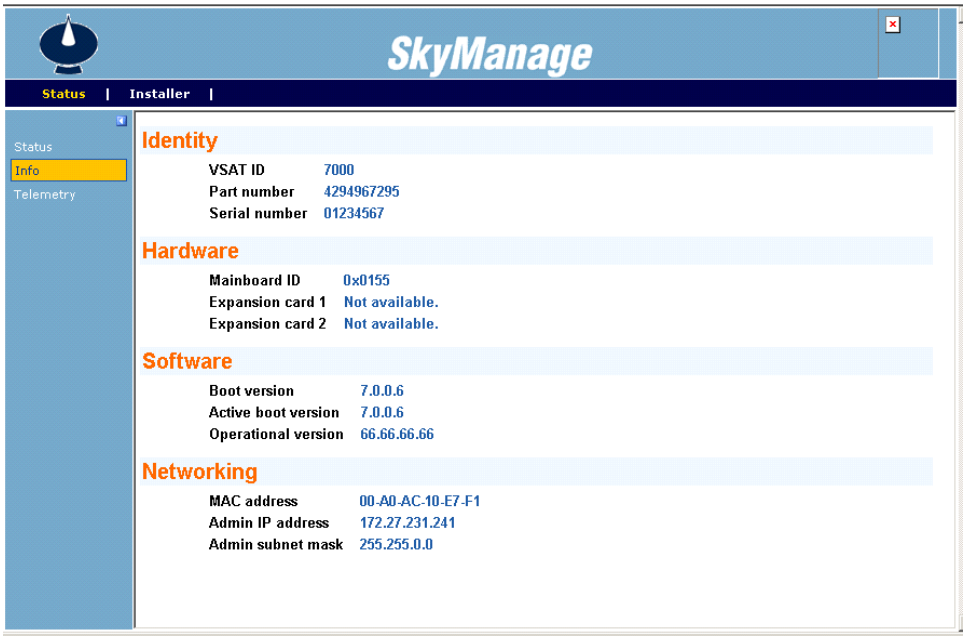


Figure 15: Info Page Before Configuration – Access or Pro VSAT

The Info page, viewable by all users, contains the following:

- **Identity** – VSAT ID (if configured), part number and serial number (factory assigned)
- **Hardware** – identifies the hardware version of the main board. There are no expansion boards in the SkyEdgeII IP or Extend VSAT.
- **Software** – lists the factory boot version, active boot version and operation version of the VSAT. A VSAT that has never received operational code will have a message instead of the code version.
- **Networking** – lists the MAC address, Admin IP address and Admin subnet mask (factory assigned)

3. Click **Telemetry** to view the available telemetries:

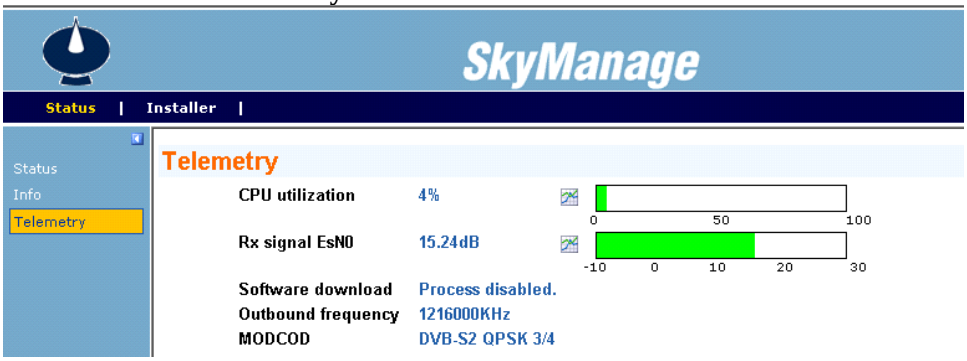


Figure 16: Telemetry Page

This page shows the CPU Utilization and Rx Signal EbN0 (for offline VSATs the value is 0).

4. Click on the Graph button next to the telemetry bar graph to view a graphical presentation of the telemetry.

Result: The CPU Utilization Graph appears.

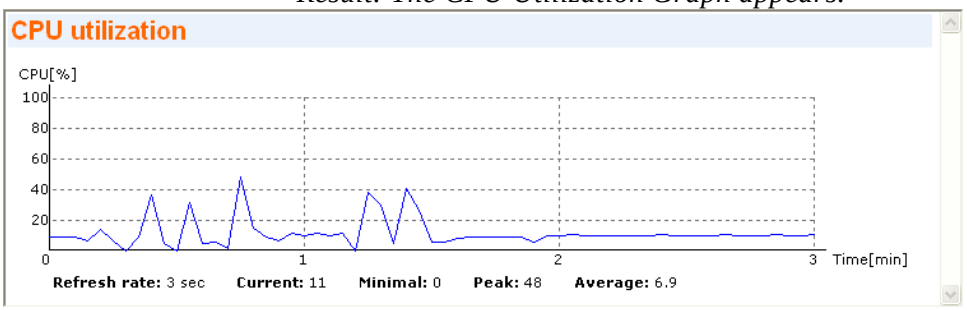


Figure 17: CPU Utilization Graph

Result: The Rx signal EsNo Graph appears.

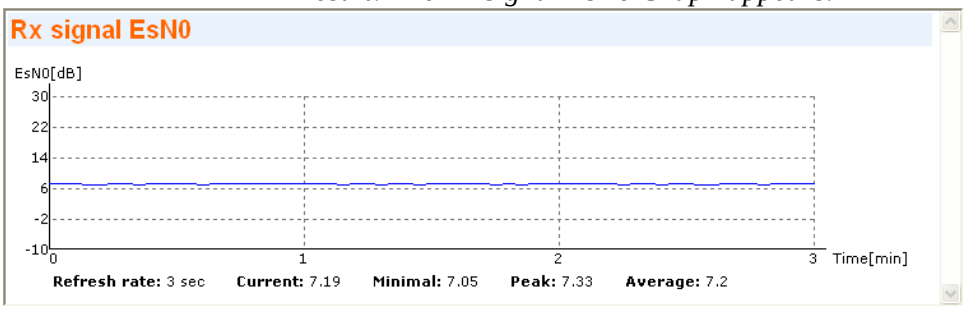


Figure 18: Rx EsNo Signal Graph

3.2.2. Configuring the VSAT

To configure the VSAT from the SkyManage web site:

1. Click **Installer**.

Result: The Password screen opens.

Figure 19: Password

2. Type the User name **inst** and Password **$Sat2598$** and click **OK**.

> The password above is the default. Check with your hub operator to verify that the password has or has not been changed.

Result: The Setup page opens.

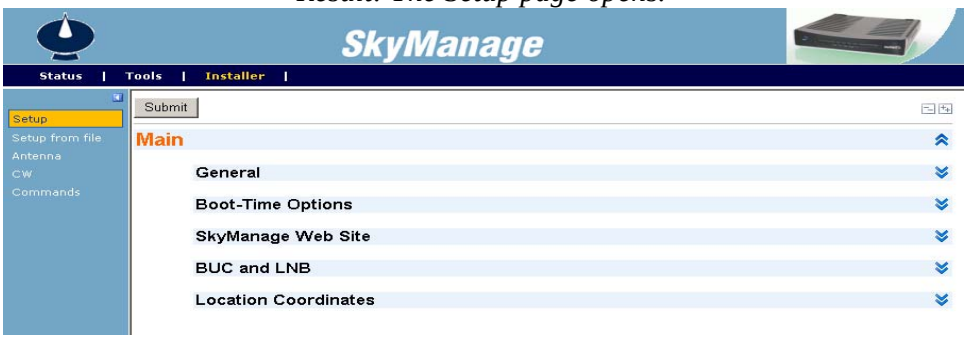


Figure 20: Setup (compressed view)

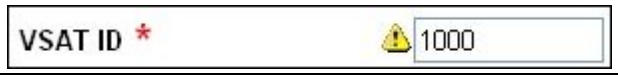
The above screen shows all of the specific parameters hidden in order to view the entire page.

3. Enter all of the configuration parameters as shown in and explained in .

Parameters marked with an asterisk (*) must be typed in the field. All other parameters are selected from the drop-down list.

Each of the parameters has a pop-up with the valid range.

If an out of range value is used a warning appears next to the parameter as shown below.



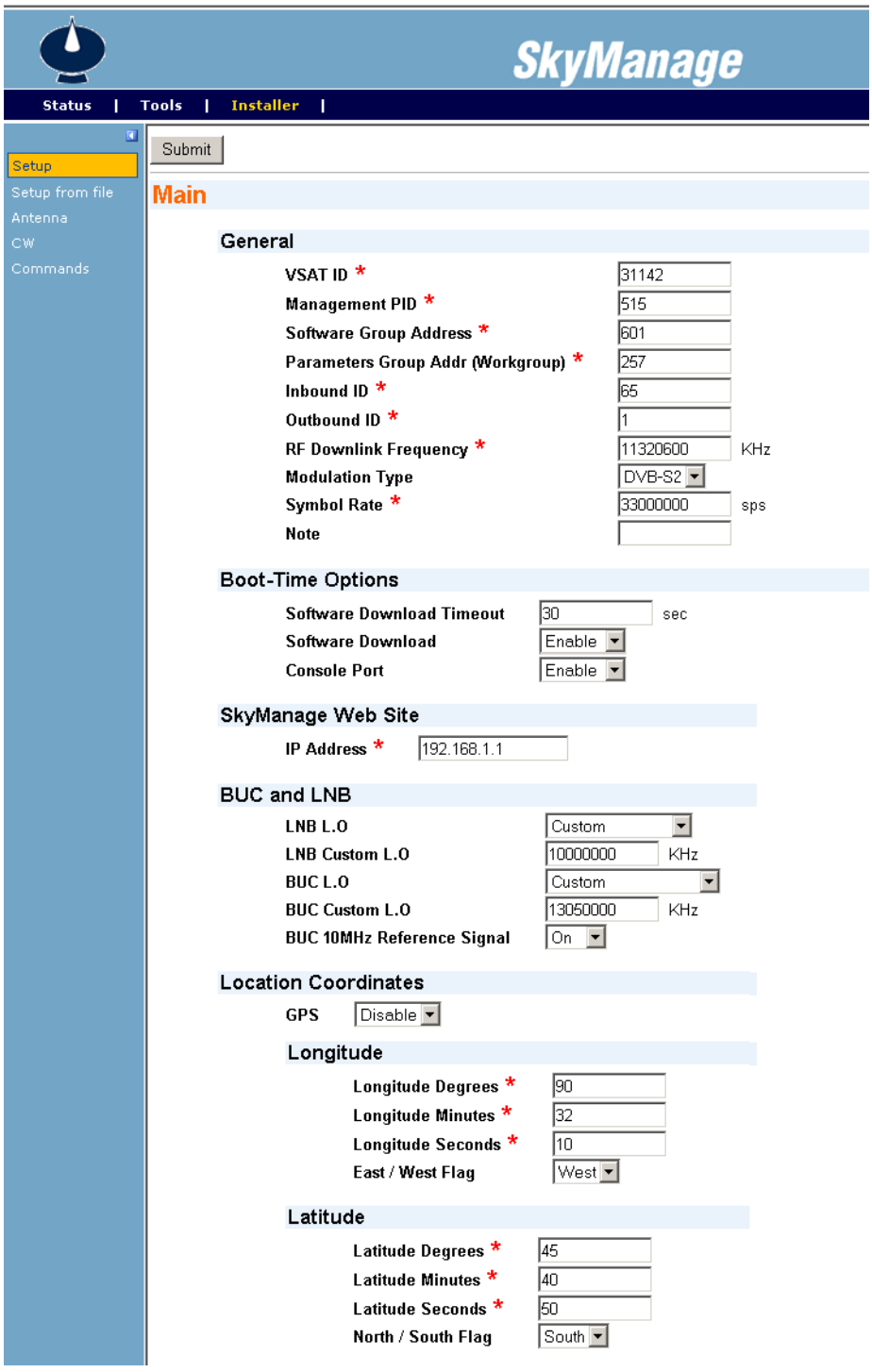


Figure 21: Configuration Parameters

Configuration Parameters

Parameter Type	Parameter	Explanation
General	VSAT ID	Assigned in NMS
	Management PID	
	Software Group Address	
	Parameters Group Address (Workgroup)	
	Inbound ID	
	Outbound ID	
	Software Download	Enable or Disable
	DHCP	Enable or Disable
	Console Port	Enable or Disable
SkyManage Web Site	IP Address	SkyManage IP address
BUC and LNB	LNB L.O. If Custom is selected, a numerical field entitled LNB Custom L.O. appears and a frequency has to be entered.	Custom 5.15GHz (C) 5.95 GHz (Ext.C) 9.75 GHz (Ku) 10.0 GHz (Ku) 10.6 GHz (Ku) 10.75 GHz (Ku) 11.3 GHz (Ku)
	LNB Custom L.O.	LNB L.O. Frequency
	BUC L.O. If Custom is selected, a numerical field entitled BUC Custom L.O. appears and a frequency has to be entered.	Custom 4.90 GHz (C) 5.29 GHz (Palapa.C) 5.75 GHz (Ext C) 12.80 GHz (Ext Ku) 13.05 GHz (Ku)
	BUC Custom L.O.	BUC Custom L.O. Frequency
	BUC (10 MHZ) Reference Signal	Must be set to ON.
Location Coordinates These are required fields and must be obtained via a GPS compass. If SkyMagic is used, the coordinates are downloaded to the VSAT.	GPS for On-the-Move Applications	Enable or Disable
	Longitude	Longitude Degrees, Minutes, Seconds East/West Flag
	Latitude	Latitude Degrees, Minutes, Seconds North/South Flag

4. When all of the parameters have been entered, click **Submit**.

Result: The confirmation message appears.

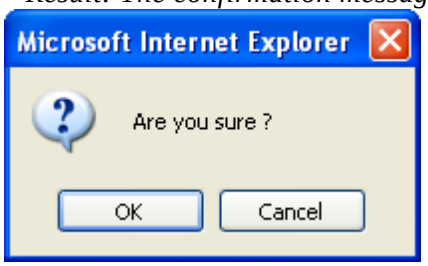


Figure 22: Confirm Configuration Parameters

5. Click **Enter Installation Mode**.
6. Click **Reset**.
7. Click **OK**.

Result: The Submit Successful message appears.

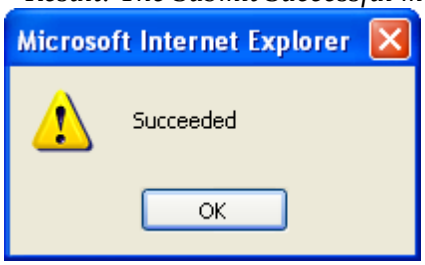


Figure 23: Submit Successful

3.3. Configuring a VSAT using a File

This procedure can only be used with a PC and not with a PDA.

When multiple VSATs are configured, the changes between them are minimal. In order to simplify the configuration process, the configuration of one VSAT cab used for others using the procedure in this section. The parts of the procedure are as follows:

- Save the configuration to a PC as a file
- Upload the file to the VSAT to be configured
- Modify the parameters as necessary (in all cases the VSAT ID must be changed).

3.3.1. Saving the Configuration as a File

To save a VSAT configuration as a file:

1. After submitting the configuration, click **Setup from File**.

Result: The Setup from file page opens.

Figure 24: Setup from file

2. Click **Save current setup parameters to file**.

Result: The Save as file message appears.

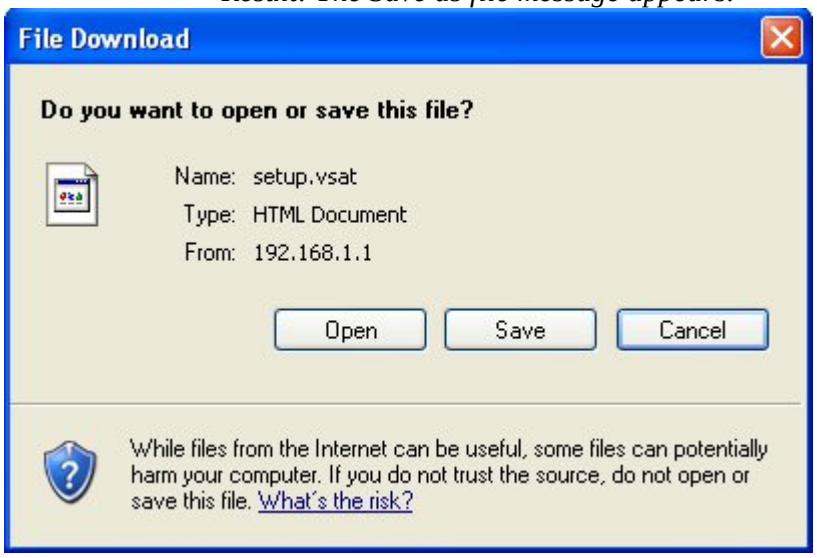


Figure 25: Save as file

3. Click **Save**.

Result: A Save As dialog box opens.

4. Save the file to the desired location. It is recommended that the file be saved to the Desktop.

A sample file is shown in the following figure.

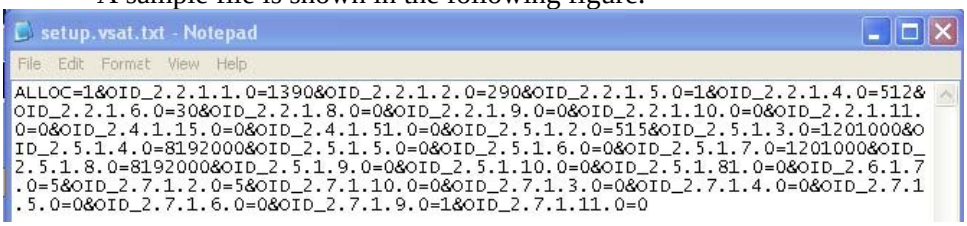


Figure 26: Setup file

Do not attempt to edit the saved file. All modifications should be made using the web page.

3.3.2. Uploading a File to a VSAT

To upload a file to a VSAT:

1. On the Setup from file page, click **Browse**.
2. Browse to the location of the file and click **Load**.

Result: The parameters are loaded to the VSAT.

3.3.3. Modifying VSAT Parameters

To modify the VSAT parameters that are different from the ones in the imported file, go to Uploading a File to a VSAT (on page 21) and start at step 3.

3.4. Reset VSAT

To reset a VSAT:

1. On the Installer page, click **Commands**.

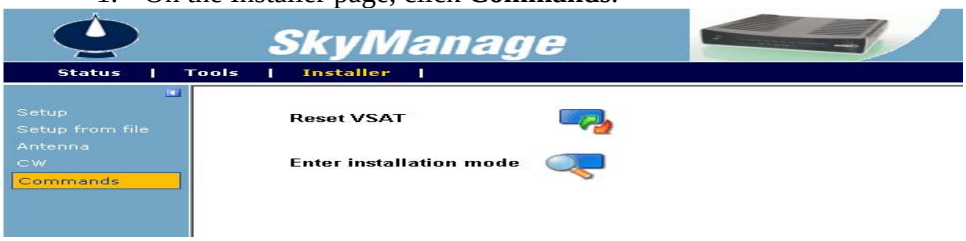


Figure 27: Reset VSAT

2. Click **Enter Installation Mode**.
3. Click **Reset VSAT**.

Result: The Confirm Reset VSAT message appears.

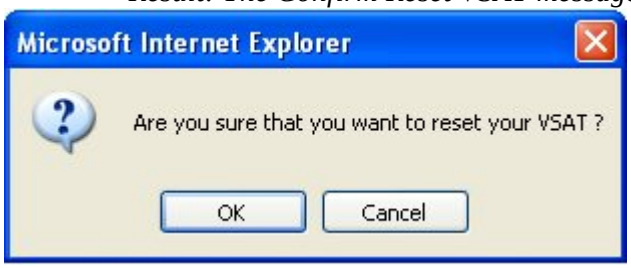


Figure 28: Confirm Reset VSAT

4. Click **OK**.

Result: The Reset VSAT Successful message appears.

Figure 29: Reset VSAT Successful

4. VSAT Installation

In This Section:

4.1. Grounding

Before installing the unit, be sure the antenna and cable system is grounded so as to provide protection against voltage surges and static charges. Section 810 of the US National Electrical Code, ANSI/NFPA 70, and Section 54 of the Canadian Electrical Code provide information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

4.2. VSAT Physical Connections

Before starting this section verify that the VSAT power cable is disconnected from the VSAT.

To connect the VSAT to the ODU and Antenna perform the following:

1. Connect the IFL cables to the ODU as shown in the following illustration.

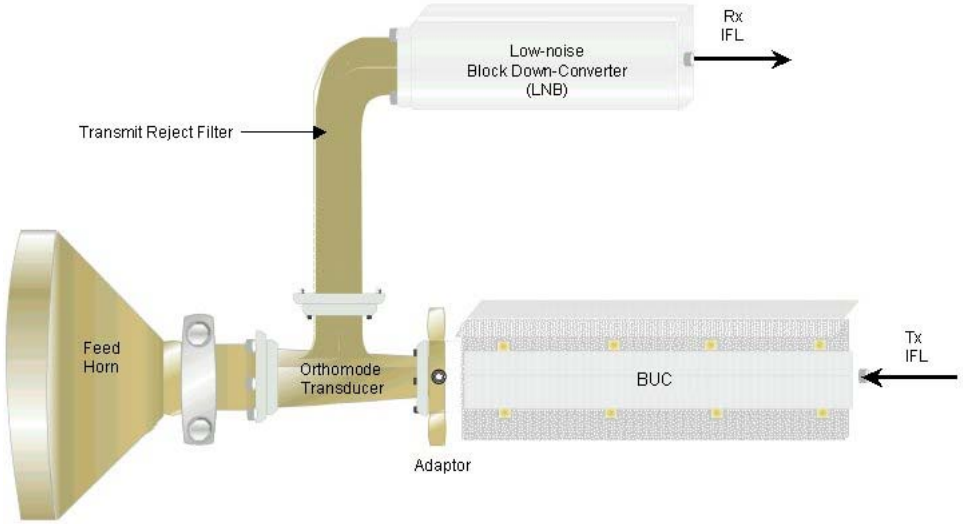


Figure 30: ODU and Cable Connections

2. Place the VSAT on a flat surface with the rear panel facing towards you.
3. Connect the coaxial cable labeled **RF IN** to the **RF-IN** connector on the VSAT.
4. Connect the cable marked **RF OUT** to the **RF OUT** connector on the VSAT.
5. Insert the power cord into the power socket on the VSAT and then into the local power supply.

4.3. Using the VSAT as a Pointing Device

This section can only be used in case VAPS is installed in the System.

The VSAT can be used as a pointing device to assist in the final pointing of the VSAT antenna.

The VSAT can be used as a pointing device without configuring the parameters.

To use the VSAT as a pointing device:

1. Verify that the VSAT power is turned off.
2. Install the antenna and adjust the azimuth and elevation angles in accordance with the worksheet received from the hub.

3. Connect the coaxial cable labeled **RF IN** to the **RF-IN** connector on the VSAT.
4. Connect the other end of this coaxial cable to the LNB.
5. Connect the cable marked **RF OUT** to the **RF OUT** connector on the VSAT.
6. Connect the other end of this coaxial cable to the ODU.
7. Power on the VSAT.
8. Log on to the SkyManage web page according to the instructions in Accessing the SkyManage Web Page (on page 9).
9. Log on to the Installation page according to the instructions in Section Configuring the VSAT (on page 15), steps 1 and 2 and click **Start alignment**.

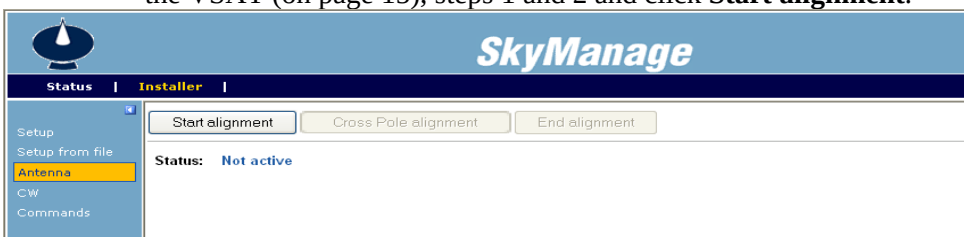


Figure 31: Start Alignment

Result: The VSAT restarts in Antenna Alignment mode.

The device works by reading the outbound signal received by the VSAT. As the antenna position is adjusted, the strength of the signal is indicated simultaneously in two different forms:

- Bar graph with Eb/N0 reading
- Audio signal through speaker. The higher the pitch and strength of the sound, the higher the reading.

The optimal angle is achieved when the indicators are at their maximum values.

10. Activate the speaker by clicking on it.

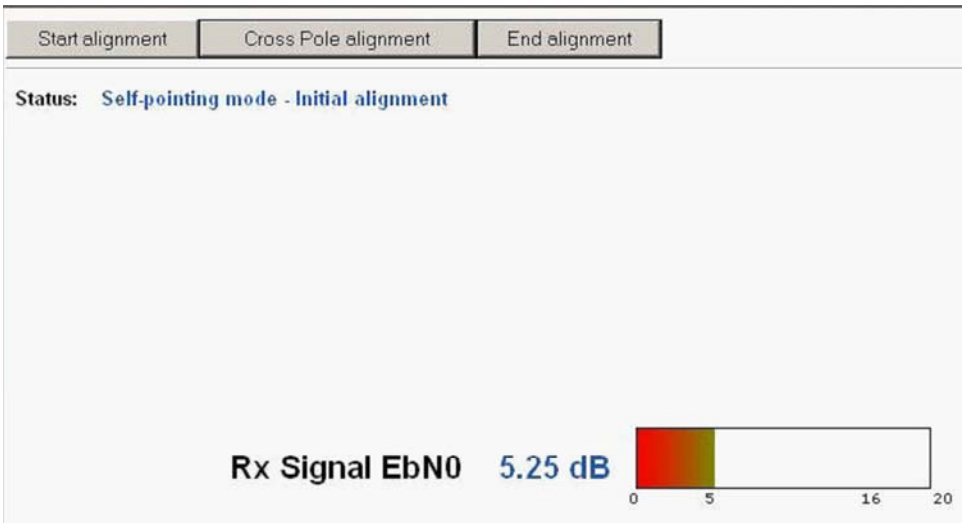


Figure 32: Rx Signal before Alignment

11. Rotate the antenna until the Rx Signal is optimized.

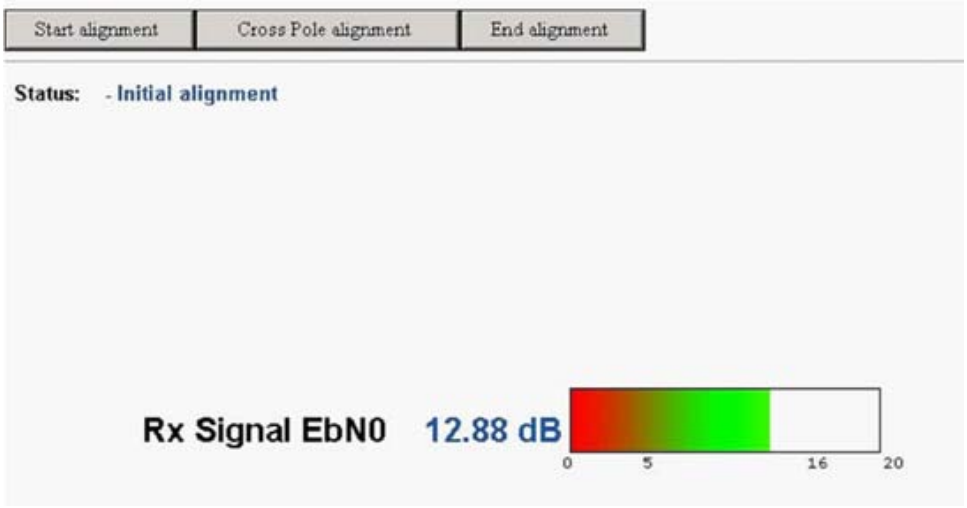


Figure 33: Rx Signal Optimized

12. Click **Cross Pole Alignment**.

Result: The Cross Pole Alignment screen appears.

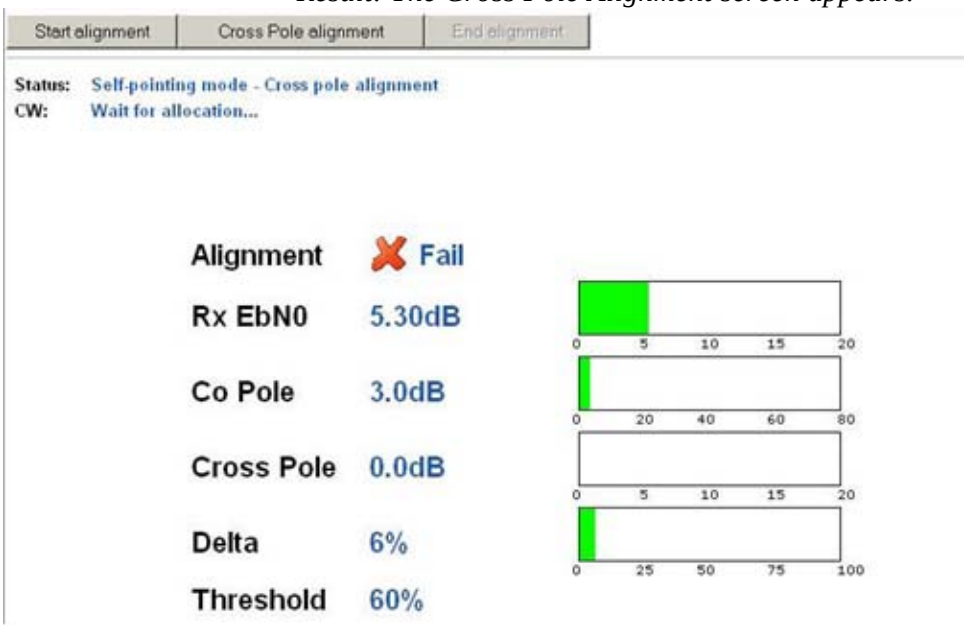


Figure 34: Cross Pole Alignment Starting

13. Wait until the CW is assigned and then rotate the feed arm until the Delta value is greater than the Threshold value. Proceed to step 18.

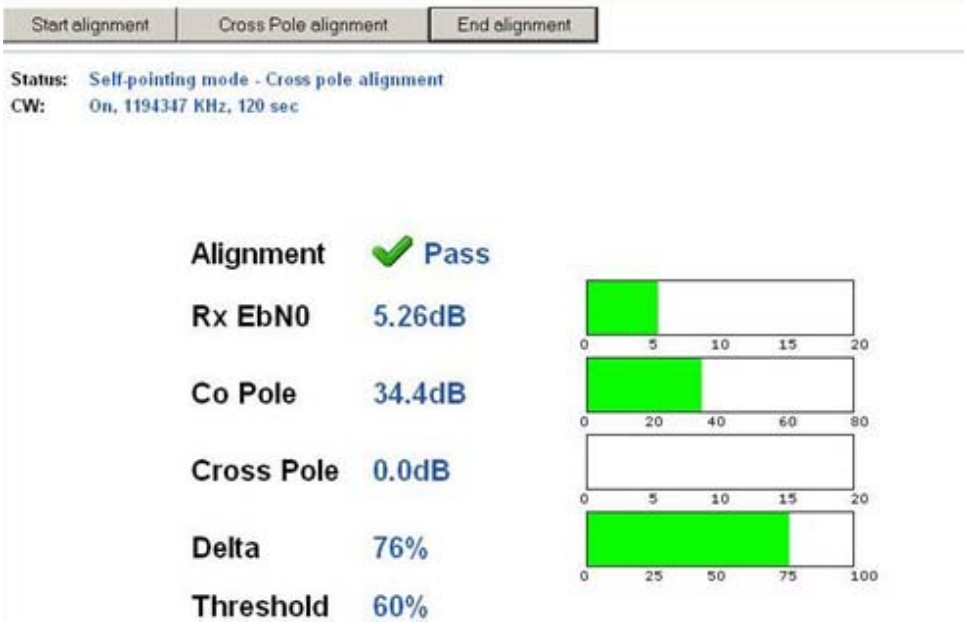


Figure 35: Cross Pole Completed

14. Loosen the azimuth lock bolt and slowly rotate the antenna from side to side until you pass the maximum signal strength, as indicated on the screen and speaker.

15. Set the antenna to the position where the readings are at their highest, and tighten the azimuth lock bolt.

16. Loosen the elevation lock bolt and slowly rotate the antenna from side to side until you pass the maximum signal strength, as indicated by the readings.

17. Tighten the antenna in place and click **End Alignment**.

18. Click **Reset** and follow the reset procedure to allow the VSAT to go online.

4.4. Initial Boot-Up

The initial boot up includes both monitoring via the LEDs and the monitoring via the SkyManage web page.

4.4.1. Monitoring via the LEDs

After successfully assembling the ODU and antenna and pointing the antenna, the IFL (coax) cables are connected to the VSAT as described in the previous section and the external power supply is plugged in. At this point the LEDs on the VSAT flash in accordance with the LED Boot Sequence table below.

Figure 36: VSAT LEDs

LED Boot Sequence

Mode	LED	Status
Boot Mode	PWR	On
	Tx	Flash On and Off
	On-Line	Flash On and Off
	SYNC	Flash On and Off
	Rx	Flash On and Off
	Tx	Flashes On and Off

Mode	LED	Status
		for 5 seconds
	Rx	On
Operational Mode	Rx	Off
	Rx	On
	SYNC	On
	Tx	Flash On and Off
	On-Line	On
	SYNC	Off and On
	Tx	Flashes

At this point the VSAT should be operating normally and web browsing can successfully carried out.

4.4.2. Monitoring via the SkyManage Web Page

This section details what is shown on the SkyManage web page after successfully assembling the ODU and antenna and pointing the antenna, the IFL (coax) cables are connected to the VSAT, the power switch is turned on or the external power supply is plugged in and the VSAT is reset as shown in the Reset VSAT (on page 22) section. The captures in this section are from different pages on the web site.

1. The Outbound locks on while the VSAT is still in Boot code mode.

2. The VSAT downloads the software tables.

3. The Outbound locks on in Operational code mode.

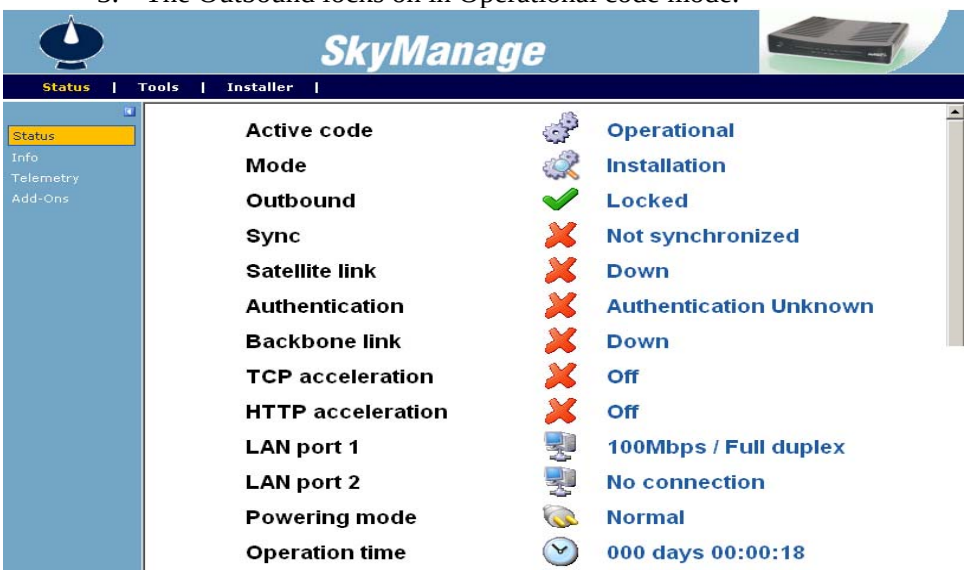


Figure 37: Outbound Locked in Operational Code

4. The VSAT is Authorized (Sync up, Satellite link up).

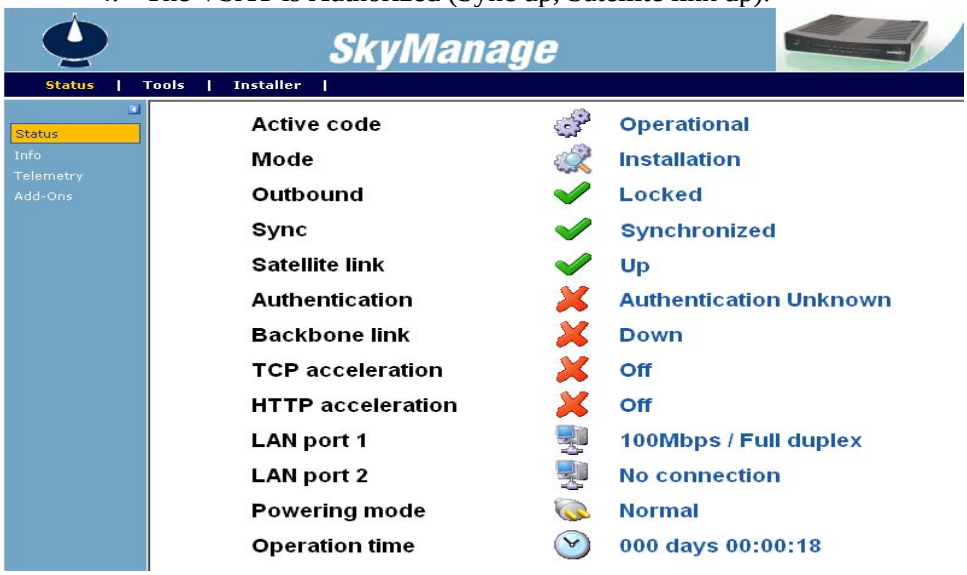


Figure 38: VSAT Authenticated with Sync and Satellite Link Up

5. The VSAT is shown to be fully active.

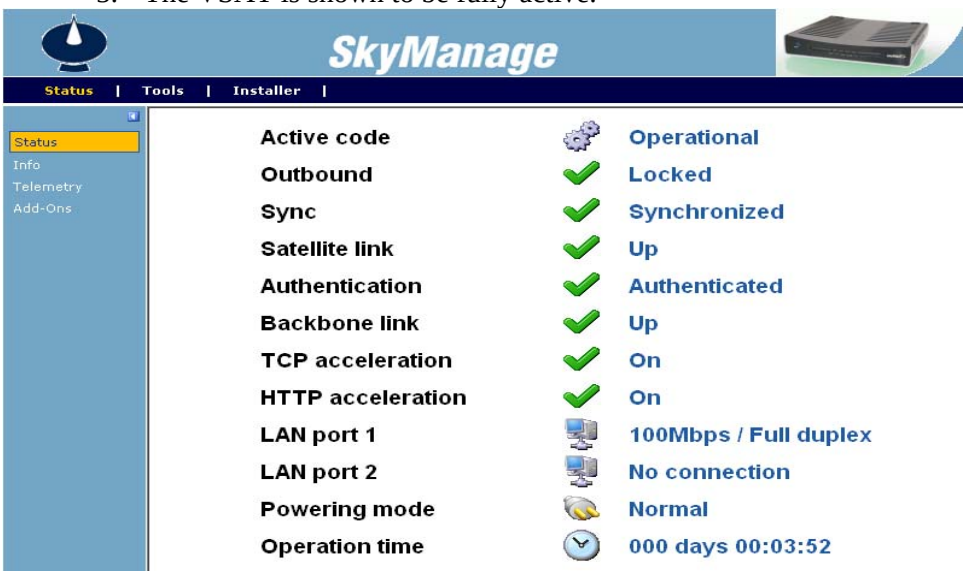


Figure 39: Active VSAT

6. The VSAT Info page is updated.

Figure 40: VSAT Info page for Active IP VSAT

4.5. Activating CW

Do Not Transmit A CW unless authorization to transmit is given by the hub operator!

If the commissioning of the VSAT cannot successfully be carried out from the hub it will be necessary to initiate a CW broadcast from the VSAT. In this case, the VSAT stays in Boot mode and no Operational code is downloaded.

To send a CW to the hub:

1. On the Install page, click **CW**.

   Result: The CW page opens. The CW Off dialog box is located in the middle of the page.

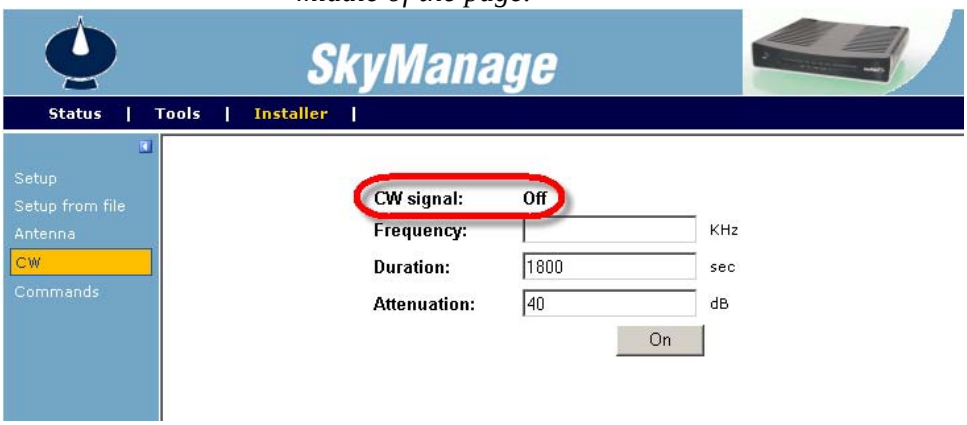


Figure 41: CW Off

When this screen appears the frequency field is blank. The value in is for demonstration purposes only.

2. Type the **CW Frequency** and **Duration** (maximum 3600 seconds/default 1800 seconds) and click **On**.

Result: The CW is sent to the hub and CW On appears

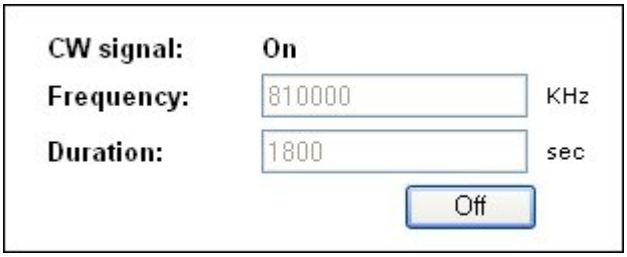


Figure 42: CW On

3. Click **Off** to stop the CW signal as soon as approval is received from the Hub.

5. Appendix A- Using SkyMagic Device

In This Section:

5.1. SkyMagic Device

The following pictures shows the front (left) and rear (right) views of the SkyMagic device. The components are described in the table below.

Figure 43: SkyMagic

The SkyMagic components are:

Number	Components	Description
1	Hanger	Enables hanging the device on clothing or other location.
2	LCD Display with LED	Contains status of SkyMagic. When VSAT locks on the correct satellite signal the LED switches on.

Number	Components	Description
3	Navigation button	Used to navigate between the various menus.
4	IDU RX	F-Type connector on Rx cable (RF IN) connection from the VSAT.
5	IDU TX	F-Type connector on Tx cable (RF OUT) connection from the VSAT.
6	LNB	F-Type connector on the cable prepared by the installer connected to the LNB.
7	Earphone	Enables the installer to detect the maximum node using the earphone supplied (satellite pointed with maximum received power).
8	IDU SER	Used to connect the USB/Serial cable supplied which is used to transmit the GPS coordinates to the VSAT.

5.2. Contents of SkyMagic Kit

The SkyMagic kit contains the following items:

- SkyMagic device
- Earphone used in satellite antenna pointing connected to Port 7
- USB/Serial cable connected to Port 8 for transmitting the GPS coordinates to the VSAT

In addition, the installer has to prepare a coax cable approximately two meters long with F-Type connectors at each end for use during the installation process. RG-6 cable can be used for this purpose.

5.3. Using SkyMagic for Antenna Pointing

During the antenna pointing process the GPS satellite coordinates are being collected in the background. The coordinates are not collected automatically but requires user action.

5.3.1. Navigating the Menus

During the use of the SkyMagic, you navigate between the menus and within specific menus.

- To navigate between menus – press and hold the button down until the correct menu is reached.
- To navigate within a menu – press and quickly release the button.

5.3.2. Pointing the Antenna

Prior to pointing the antenna, verify that the following activities have been carried out:

- The antenna and mount have been assembled according to the manufacturer's instructions and the antenna has been roughly pointed according to the Azimuth, Elevation and Skew values obtained from the NOC.
- The VSAT has been configured and then connected to the LNB and BUC using the coax cables. The outdoor connections should not yet be waterproofed.

To point the Antenna using the SkyMagic device:

1. Disconnect the RF cables from the LNB and BUC.
2. Connect the Tx cable (RF OUT) to Port 4 and the Rx cable to Port 5.
3. Connect the coax cable prepared by the installer to Port 6 and the LNB.

   Result: Power is supplied to the SkyMagic device and the LCD screen shows a search mark and the GPS indicator dot in the lower left corner is blinking.

4. Connect the earphone to Port 7 and place it in your ear. Navigate to menu **U** to control the volume. **U2** is the normal setting and the values can be adjusted between **U1** and **U4**.

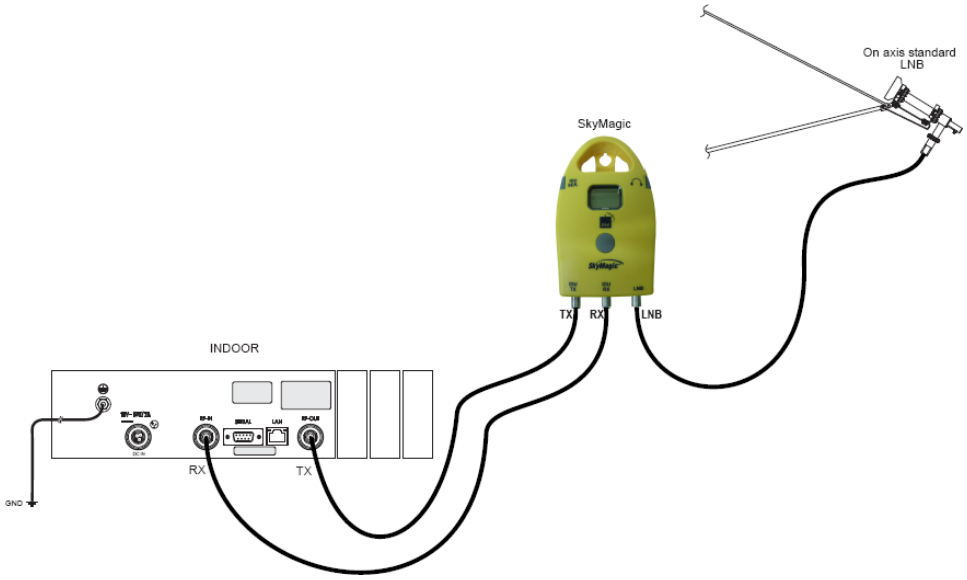


Figure 44: SkyMagic Field Connection

When the SkyMagic detects the Outbound signal, the LED in the bottom of the LCD will light up and remain lit as long as the signal is being received.

5. Move the antenna along the Azimuth until the maximum signal is received and then until it decreases slightly. The maximum value is displayed on the LCD. Return to the maximum value.

6. Repeat step 5 for both elevation and skew. Once the maximum has been successfully reached, tighten the antenna.

7. Verify that the GPS indicator dot has stopped blinking. If it is still blinking wait until it becomes constant. This indicates that the GPS satellite coordinates have successfully been acquired.

8. Navigate to menu E3 and wait until Fb appears on the display. This confirms that the GPS coordinates have been burned into the SkyMagic flash memory.

9. Disconnect the coax cables from the SkyMagic and ODU components and reconnect them as they were in step 1.

5.3.3. Transferring GPS Coordinates to VSAT

To transfer the GPS coordinates to the VSAT:

1. Connect the USB/Serial cable supplied to Port 8 on the SkyMagic and to the Serial port in the rear of the VSAT.

2. Disconnect the Tx (RF OUT) cable from the VSAT. Connect the coax cable prepared by the installer to the Tx port on the VSAT and to Port 4 on the SkyMagic.

   Result: Power is supplied to the SkyMagic device and the LCD screen is lit.

3. Navigate to menu H1 and verify that Sd appears on the display. This confirms that the transfer has been successful. If it has not been successfully transferred, Er appears. If no coordinates exist in the SkyMagic flash memory, Ep appears on the display.

4. Disconnect the coax cable from the Tx port and reconnect the Tx cable between the VSAT and BUC.

6. Appendix B- Regulatory Requirements

In This Section:

6.1. Electrical Ratings

VSAT Electrical Ratings

VSAT Description	Power Supply Type	VSAT Input Rating
SkyEdgeII IP P/N 566000	AC Adapter 100-240VAC, 1.8Amp	24Vdc/3Amp
SkyEdgeII Extend P/N 561000	AC Adapter 100-240VAC, 2.5Amp	24Vdc/5Amp
SkyEdgeII Access (AC powered) P/N 562000	AC Adapter 100-240VAC, 2.5Amp	24Vdc/5.5Amp
SkyEdgeII Access (DC powered) P/N 56200051xxxx	External DC source 12VDC, 8Amp	12Vdc/8Amp
SkyEdgeII Pro (AC powered) P/N 564000	AC Mains source 50/60 Hz	100-240Vac, 2 Amp
SkyEdgeII Pro (48 VDC powered) P/N 564200	External DC source 48VDC, 8Amp	48Vdc, 8Amp
SkyEdgeII Pro (24 VDC powered) P/N 564100	External DC source 24VDC, 8Amp	24Vdc, 8Amp

6.2. Regulatory Approvals

- The SkyEdgeII VSATs are approved for the EU (European Union) and United States of America markets.
- They comply with the EMC, Electrical Safety and Spectrum regulations.

- The following labels are found on the VSATs:

Figure 45: FCC

Figure 46: c/TUV/us

Figure 47: GS Mark

Figure 48: CE Mark

Figure 49: C-Tick

6.3. RoHS Compliant

Gilat complies with the EU Reduction of Hazardous Substances Directive

6.4. IECEE CB Scheme

Gilat participates in the IEC System for Conformity Testing and Certification of Electrical and Electronic Components, Equipment and Products. The acronym CB Scheme simply means "Certification Bodies' Scheme.

6.5. WEEE Compliance

Gilat participates in the EU recycling program.

Figure 50: WEEE Symbol

6.6. Precautions

- AC powered units are intended for restricted access location in Finland, Norway and Sweden and must be connected to an earthed mains socket outlet.
- DC powered units are intended for restricted access location in USA and Canada.

- 36-75 VDC powered units are intended for restricted access location in all countries.
- 11-15 VDC powered units shall be connected to DC power systems containing a protection device rated max.10 Amp.
- 36-75 VDC powered units shall be connected to DC power system containing a protection device rated max.7.0 Amp.
- A readily accessible disconnect device that is suitably approved and rated shall be incorporated in the field wiring.
- External protective earth terminal shall be permanently connected to protective earth.
- The SkyEdge IP VSAT supports an ambient temperature of 46^{o}C.
- For North American power connections, select a power supply cord that is UL Listed and CSA Certified 3 - conductor, [18 AWG], terminated in a molded on plug cap rated 125 V, [15 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m...

6.7. VSAT Sicherheitsvorschriften (Germany)

- Allgemein
- Vorkehrungen
- Erdung und Kabelverbindung

6.7.1. Allgemein

Vergewissern Sie sich, dass die VSAT-Installation ausschließlich von einem durch die Firma Gilat zugelassenen Mitarbeiter durchgeführt wird.

1. Entfernen Sie den VSAT Deckel nicht, solange die Ausrüstung an die Hauptleitungen angeschlossen ist.
2. Vergewissern Sie sich, dass der für die Ausrüstung benutzte Strom dem Leistungsgrad entspricht, der auf der Steckdose angegeben ist.
3. Vergewissern Sie sich, dass die Verbindung / Abtrennung der RF-Kabel nur dann durchgeführt wird, wenn die VSAT-Ausrüstung im OFF-Modus ist, d.h. sich im ausgeschalteten Zustand befindet.
4. Vermeiden Sie ein Kurzschließen an den RF-Koaxialkabeln.

5. Platzieren Sie die VSAT-Ausrüstung niemals in einer Umgebung, die extremen Temperaturen oder einer hohen Luftfeuchtigkeit ausgesetzt ist.

6. Die Lüftungsausgänge der VSAT-Ausrüstung dürfen in keinem Fall blockiert werden.

7. Für europäische Anschlüsse wählen Sie bitte eine international harmonisiertes Netzkabel mit der Markierung "<HAR>", 3-phasig, 0,75 mm2 Minimum mm2 Draht, nominal 300 V, mit PVC-isoliertem Mantel. Das Kabel muss über eine aufgeschweißte Steckerkappe mit 250 V, 10 A. verfügen.

6.7.2. Vorkehrungen

- Die Wechselstromeinheiten sind für Standorte mit eingeschränktem Zugang in Finnland, Norwegen und Schweden vorgesehen und müssen an einen geerdeten Hauptleitungsanschluss angeschlossen werden.

- Die Gleichlstromeinheiten sind für Standorte mit eingeschränktem Zugang in den USA und Kanada vorgesehen.

- Eine jederzeit zugängliche Abschaltungsvorrichtung, die dementsprechend zugelassen und eingestuft ist, muss in der Verdrahtung integriert sein.

- Ein extern schützender geerdeter Anschluss muss ständig an eine schützende Erdung angeschlossen sein.

- IP- Vsats sind für eine Umgebung von 46°C

6.7.3. Erdung und Kabelverbindung

Before installing the unit, be sure the antenna and cable system is grounded so as to provide protection against voltage surges and static charges. Section 810 of the US National Electrical Code, ANSI/NFPA 70, and Section 54 of the Canadian Electrical Code provide information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

Before starting this section verify that the VSAT power cable is disconnected from the VSAT.

To connect the VSAT to the ODU and Antenna perform the following:

1. Connect the IFL cables to the ODU as shown in the following illustration.

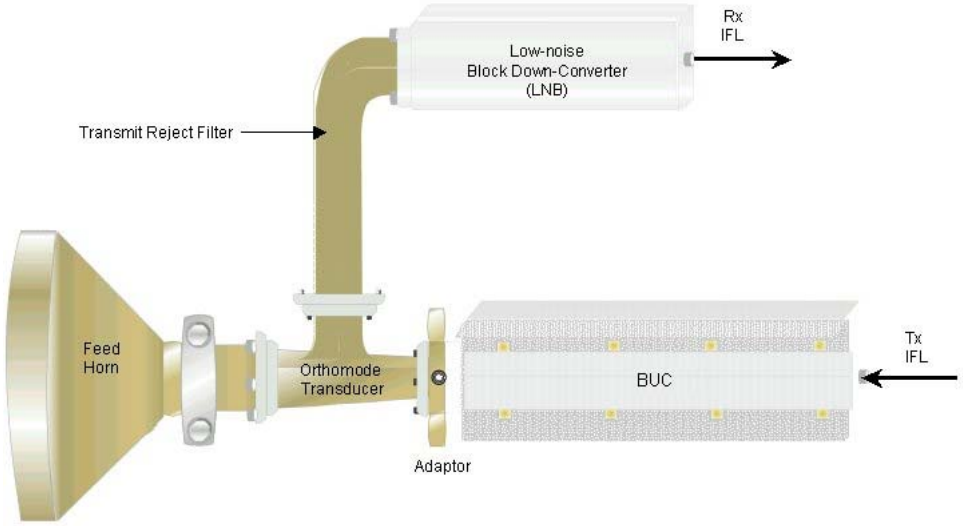


Figure 51: ODU and Cable Connections

2. Place the VSAT on a flat surface with the rear panel facing towards you.
3. Connect the coaxial cable labeled **RF IN** to the **RF-IN** connector on the VSAT.
4. Connect the cable marked **RF OUT** to the **RF OUT** connector on the VSAT.

Insert the power cord into the power socket on the VSAT and then into the local power supply.

6.8. Other Countries

- **Denmark**- "Unit is class I, unit shall be used with an AC cord set suitable with Denmark deviations. Cord shall including an earthing conductor. Unit shall be plugged into a wall socket outlet which connected to protective earth. Socket outlets which are not connected to earth shall not be used!"

- **Finland -** (Marking label and in manual) -"Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"

- **Norway -** (Marking label and in manual) - "Apparatet må tilkoples jordet stikkontakt". Unit is intended for connection to IT power systems for Norway only.

- **Sweden -** (Marking label and in manual) - "Apparaten skall anslutas till jordat uttag."