SkyVista On-Site Complete Installation Procedure

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This document will serve as a guide to all of the procedures necessary to set up a Sky Vista / SkyBand site.

Pre-installation

Step 1: Perform a Site Evaluation.

We highly recommend that you pre-qualify the customer installation site prior to entering to any sort of arrangements. This means that you must visit the actual site, preferably with the customer or one of their authorized representatives present. Given the size of the dish, cable run and other factors, it is essential that the placement of the dish meet with both the functional and safety requirements of the site as well as the customer's aesthetic preferences. This is a big dish, and it can be a challenge to conceal or otherwise integrate it with the customer's landscaping and architecture.

NOTE: The customer site must have access to either a standard telephone connection or a usable cell phone signal. *If neither of these is present, then it will not be possible to complete an installation!*

Dish Placement. The most accurate method for determining dish placement depends upon two critical measurements: latitude and longitude. This information is used to calculate the dish azimuth, elevation and polarity settings for the customer site. Use of a GPS removes all uncertainty. The latitude and longitude shown by the GPS can be plugged into any of the various sites used to determine antenna setup values. Visit http://www.satsig.net/ssazelm.htm for a good example. There is even an HTML-based calculator (http://www.satsig.net/sf.htm) on the satsig site that can be transferred to any PDA, thus allowing you to perform the azimuth/elevation calculations on the spot.

The customer's zip code will do in a pinch, but there are situations in which the use of zip code to determine dish settings may not yield the most accurate dish setting data. If you do not have the equipment necessary to determine latitude and longitude readings, use a website such as www.zipinfo.com to determine the latitude and longitude from the locations zip code.

We strongly recommend the use of two pieces of instrumentation to acquire the data that you'll need to accurately site and calibrate the dish. This document assumes that you are technically adept enough to quickly master their use.

1. **Suunto Tandem.** The Suunto Tandem is a liquid-filled precision compass and clinometer in a compact aluminum housing. Available from http://www.skywalker.com/ for approx $140.00 (cheapest known price). This

device will give you the most accurate compass heading (azimuth) while allowing you to simultaneously view the line of sight. There is no substitute for an accurate clinometer. The Suunto Tandem clinometer function is easy to use and removes any doubt as whether or not your elevation line of sight is clear of obstacles. Visit http://www.suunto.com for more information.

2. **Garmin GPS (or equivalent).** Although the use of a GPS to determine absolute site coordinates seems like overkill, it removes all doubt as to location. Some zip code areas are large enough so that there can be some 'slop' when relying on zip code alone to determine antenna settings. Once the customer agrees to go ahead with the project, we highly recommend that you obtain the customer information necessary to set up the customer account before you leave the customer premises. It's worth noting that the very fact that you are using the equipment mentioned above lends credibility to your expertise and professionalism. Visit www.garrmin.com for more information regarding GPS units.

Step 2: Determine Dish Mounting Requirements. All Skyband 1.0 meter dishes require a 2 3/8" mount. 1.2 meter dishes require 2 7/8"-3" mount. There are three possible methods for mounting a SkyVista/SkyBand dish.

- **Pole mount.** Given the size and weight of the dish and its electronics package, we recommend 2 3/8"(1.0 meter dish) 2 7/8" (1.2 meter) schedule 40 "black pipe" or, preferably, galvanized steel. In this case, the use of concrete and at least one anti-rotation rod to anchor the pole is strongly recommended. If this option is chosen, *you must give consideration to the time required to dig the hole and to allow the cement to set*. The time required will vary according to weather and terrain.
- **Non-penetrating roof mount.** Available at extra cost form SkyVista
- **Trimast wall/roof mount.** Available at extra cost form SkyVista

Always present these options to the customer before proceeding any further. Each of these options come with their own set of issues and considerations. Installation time is NOT the time to sort these out.

NOTE: In parts of the country subject to significant snowfall, it is crucial that the dish be mounted in a location that allows for easy and safe removal of snow and ice. Accordingly, in some areas, a roof mount of any kind would be a bad idea.

We highly recommend using a **RG6** cable with a solid copper wire conductor when Installing equipment for 100ft or less.
101-300ft we recommend the **RG11** with a solid copper wire conductor.
Also if using a 4 watt Buc we recommend the **RG11** in order to support the power.
This is to help avoid any possibility of the equipment not working properly.

Step 3: Obtain Customer Site and Account Information. This information will be necessary to set up the account in the Sky Vista Rodopi system (https://skyvista.wctc.net/). Here's what you'll need:

Physical Site Info

1. Street address
2. City, State, Zip
3. On-site contact name
4. On-site contact number

Billing Address info

1. Customer First and Last name
2. Company (Customer's company name if applicable)
3. Installation address
4. Installation city, state and zip

Credit card info

1. Credit card number
2. Expiration date
3. 3 digit card ID (on the back of the credit card)
4. Customer's name as it appears on the card.

Once you have made all of the appropriate business arrangements with the customer, contact Sky Vista and place the order for the equipment. Once the SkyVista shipment arrives, you will then have all of the information necessary – equipment serial numbers, that is - to proceed to the next step. Again, we strongly suggest that you perform customer account setup BEFORE you arrive at the installation site.

Step 4: Build the customer account in SkyVista's Rodopi system. This can and should be done well in advance of the installation. Use a web browser to enter Rodopi interface at https://skyvista.wctc.net and proceed as follows:

1. **Click on Add New Customer** (1st option) and enter Customer Billing information
    a. First and Last name
    b. Company (Customer's company name if applicable)
    c. Billing Address
    d. Phone number
    Click Next

2. **Enter Service Plan**
    a. Select Account – Business
    b. Select Service – Satellite
    c. Select Plan
        i. Example: choose 1.0x128, 1.5x128, or 1.5x256
    Click Add

d. Select Billing period
    i. Example: Monthly, Quarterly, Bi-yearly, Yearly
e. Enter Promo code if applicable
f. Check your work - are the numbers correct?

Click Next

3. **Enter Physical site information (where the Dish is to be installed)**
    a. Street address
    b. City, State, Zip
    c. On-site contact name
    d. On-site contact number
4. **Enter Modem Info**
    a. MAC address (Alphanumeric characters only, no colons or dashes)
    b. Modem Serial number,
    c. BUC (transmitter) Serial number,
    d. LNB Serial number,
    e. Feed horn serial number (if available)
    f. Mount Type
    g. Dish size
    h. Installing dealer code
    i. Technician ID (usually, but not always the same as the dealer code)

Click Next

5. **Enter Payment info**
    a. Contact e-mail (where statements and invoices will be emailed)
    b. Credit Card Info
        i. Number (no dashes)
        ii. Expiration Date
        iii. Name and Billing Address on Card
        iv. CVV/CID (usually a three digit code located on back of card)

Click Next

6. **Enter Dealer code (final Step)**
    a. Enter Selling Dealer code
    b. Enter how customer would like to receive Statements
        Example: Email with HTML, Link, Plaintext, or Hard Copy
    c. Enter how customer would like to receive Invoice
        Example: Email with HTML, Link, Plaintext, or Hard Copy
    d. Enter in a Customer Password
        This will be for a customer to log into their Rodopi portal to enter in new billing info if needed.

Click Finish

You have now established a customer account and you are ready to proceed with the actual installation.

Installation

When and where possible, we strongly recommend that you perform some of the initial hardware assembly and calibration before you proceed to the customer site. The feed horn, BUC and LNB assemblies in particular are susceptible to contamination from moisture, dust and other particulate matter. For example, if you attempt to assemble this gear in a foggy or rainy environment, you will most likely get a few drops of water in the microwave waveguides – and that's enough to cause the installation to fail.

Determine Dish Azimuth and Elevation. You will already have obtained the customer's site latitude and longitude information during your site evaluation. Use these coordinates on http://www.satsig.net/ssazelm.htm to find the dish azimuth and elevation look angles and polarity setting.

1. On the http://www.satsig.net/ssazelm.htm website, for the satellite location, type in -89. That corresponds to the location for satellite IA8.
2. For the latitude, type in the latitude of the site.
3. For the longitude, type in the longitude of the site. Please remember that this is a negative number, so a value such as 115 degrees west, would be entered as -115.
4. Click on the calculate button and record the magnetic north reading (if using a compass for determining your azimuth), or true north if using a GPS unit. Record the elevation angle, and the polarization angle. Remember on the elevation, it is an offset feed and 22 degrees must be subtracted from the elevation angle. If for example your recorded elevation angle is 37 degrees, using your inclinometer you would point the dish at 15 degrees.
5. Preset your approximate elevation using the elevation screw on the dish az/el mount.
6. Preset your polarization to the approximate polarization angle.

Once you have accomplished these things, you are now ready to proceed to the customer site.

Dish Pointing Procedure

Once you have the antenna securely mounted, you are now ready for the moment of truth – finding the satellite.

Required Items:

- Birdog or Wolsey with IA8 (Horizontal) update.
  - To obtain the new values for your Birdog, go to www.birdog.tv
  - To obtain the new values for your Wolsey, go to www.satmeter.com
- Normal Installation Tools (compass, drill, wrenches, etc.)

Peak (align) the antenna to IA8H at 89W.

SurfBeam Satmodem Setup

NOTE 1: When told to type information into your computer, type only the information between the quotation marks. Do not type in the quotation marks.

NOTE 2: You must have a laptop (most convenient) or computer with Windows XP Service Pack 2 (this is a must). It also helps if you're familiar with the use of the telnet and ftp utilities that are standard with all Windows and most Linux/unix installations. If you're not familiar with these utilities, don't worry – the following instructions will walk you through their use.

1) **Ensure that downlink cable is unplugged!** On the modem, this is the top coax connection with the arrow pointing at the dish.
2) **Program the laptop or computer with an IP address of 192.168.1.2 and subnet of 255.255.255.0**. Neither a Gateway address nor a DNS server address is needed.
   a) go to Network Connections
   b) right click Local Area Network and click on properties
   c) under general, highlight "internet protocol (TCP/IP)" and click Properties
   d) under properties enter IP address of 192.168.1.2
   e) use a subnet mask of 255.255.255.0, set the Gateway to 192.168.1.1

3) **Telnet into the Surfbeam modem**
   a) Click on Start -> Run then type "cmd" and hit enter
   b) From the command prompt, type "telnet 192.168.1.1" and hit enter
   c) Type "super" without the quotes and **hit enter 2 times**
   d) Type "exit" without the quotes and **hit enter 2 times**

4) **Change the downstream frequency in the SM**
   NOTE: Messages will scroll across the screen. This is normal but they do not interfere with typing in commands. If you do make a mistake, just hit enter and start over.
   a) Type "downstream-frequency" and hit enter once
   b) For start frequency, type "1051" and hit enter once
   c) For end frequency, type "1071" and hit enter once
   d) For increment, type "10" and hit enter once
   e) Type "last-ds-freq" and hit enter once
   f) Type "1061000000" and hit enter once

5) **Check firmware version of the SM**
   a) Type "ver" and hit enter
   b) Look for S/W RELEASE: X.X.X (ie 2.1.8d or 2.3.0d)
   c) If number is 2.1.8 or 2.3.0b, you must upgrade the firmware with the NOC immediately following the peak and pol.
   d) If Number is 2.3.0e, you may proceed without upgrading

Final Antenna Calibration (Peak and Polarization)

Contact NOC at 866-759-7600. We recommend that you use either a cell phone or a wireless phone with a hands-free headset. This will save you considerable time and frustration.

1) **Perform Peak and Pol with the NOC** (send carrier wave for cross-pol check)
   a) While still telnetted into the modem, from SM> prompt, type "cd cm" and press enter
   b) Prompt should read SM/CmHal>
   c) To transmit carrier wave type the following when the NOC instructs you:
      i) "us_cw_transmit 1071.7 -20" and press enter
      ii) The last number will start at minus 20 but may change depending on if IntelSat needs us to increase or decrease the power of the modem (-20, -0, 20 are defaults).
   d) While in communication with the NOC, adjust Polarizer and Peak as necessary until there is at least 30dB of separation. They will advise you to make the necessary adjustments at the antenna.
   e) Once finished with Peak and Pol checks, lock down the dish, power cycle SM and reconnect downlink cable.

2) **Set computer to obtain an IP address automatically.**
   a) Open up Network connections (Start/Control Panel/Network connections)
   b) Right click on LAN connection, click on Properties
   c) Click on TCP/IP, then properties.
   d) Change to Obtain IP automatically, and Obtain DNS automatically
   e) Click OK until back at Network connections, and close window
   f) Computer should obtain an IP from the network.
   g) If not, click on Start -> Run and then type "cmd" and hit enter
   h) Type "ipconfig /release" and it should show an IP of 0.0.0.0
   i) Type "ipconfig /renew" and it should get an IP from the network (i.e. 209.94.xxx.xxx)

3) **Upgrade modem if necessary**
   a) The NOC will change the Class of Service to perform the upgrade, which takes about 6-10 minutes. SM will power cycle itself when complete.

4) **Perform a speed test**
   a) Click Start -> Run.
   b) Type "cmd" and press enter.
   c) From the command prompt, type "ftp ftp.tznet.com"
   d) Enter "speed" for username, and "test" for password. Once logged in, type "bin" and press enter, then "hash" and press enter.
   e) Download: type "get 2M" and press enter. Once complete, take the kBps value and multiply times 8 to get kilobits per second, which is the customer's speed.

f) Upload: type “put 2M 2ma” and press enter. Once complete, take the kBps value and multiply times 8 to get kilobits per second, which is the customer’s speed. Then type “dele 2ma” and press enter.
g) Type “bye” and press enter, and type “exit” and press enter to close out of command prompt.
h) NOC will record speed results and SNR.

If results are acceptable, repoint is complete.
If results are not acceptable, then the troubleshooting process will be followed.