



This handbook was written to help users setup their AFN Antenna and Decoder. Both of these must be setup and configured correctly before you can receive AFN signals.

**You will need:**

- Internet access (or complete step one and download/print this guide for later use)
- Television
- Satellite dish
- AFN decoder
- Antenna cables (see step 4 below for appropriate cables and connectors)
- Magnetic compass
- Angle located / elevation guide / protractor (see step 3 below)

**1. Authorizing your Decoder**

You must Visit [PowerVu Connect webpage](#) to authorize your decoder. Enter in the TID and UA numbers found on the back of your decoder and follow the instructions on the screen to complete the authorization.

If Internet service is not available call AFRTS-BC 24 hours a day at (951) 413-2339, DSN 348-1339 or AFRTS-HQ during normal working hours east coast time at (703) 428-0616, DSN 328-0616.

NOTE: AFN decoders must be reactivated every 3 years.

**2. Setting up your Decoder**

a) Find the appropriate satellite information (satellite name, azimuth, elevation). You can find this information, along with the appropriate satellite name, in the back of this guide starting on page 16.

b) Look up the applicable satellite for your region (ie Hotbird 6) and find the appropriate band data, etc. in the list starting on page 28.

Once you have this information, follow the steps below, depending on your specific decoder model. You will need the information you just found to complete the Decoder and Antenna installation.

- (1) 9223 model decoders
- (2) 9234 model decoders
- (3) 9834 and 9835 model decoders

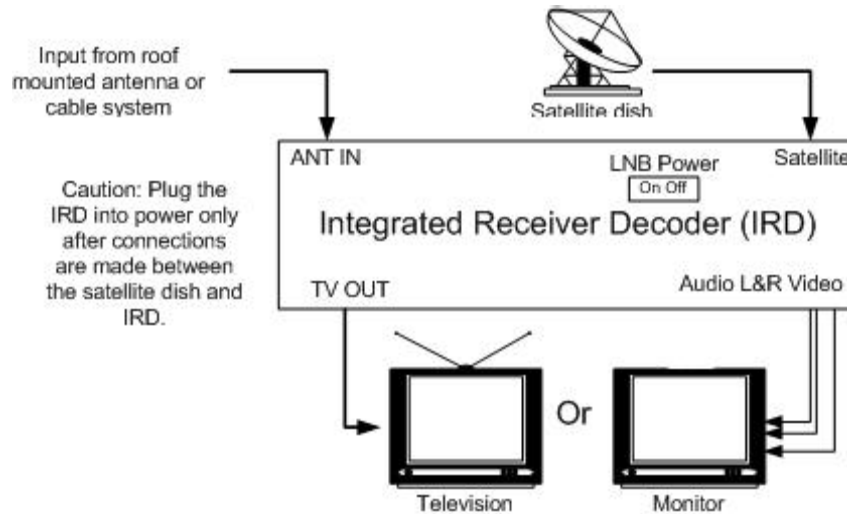


Figure 1 IRD (Decoder) Connection

### (1) Decoder Setup: Scientific Atlanta PowerVu (Model 9223)

1. Turn the LNB power switch located on the rear of the Decoder to the 19V DC setting.
  2. Connect a video cable from the Video Out connector on the rear of the Decoder to the Video input on the rear of the TV monitor. Connect audio cables from the L-R Audio Output connectors on the rear of the Decoder to L-R Audio Input connectors on the rear of the TV Monitor.
  3. Connect the Decoder to the AC power source. A green dot will appear in the center of the front panel display window. Push the on/off switch, located on the front lower left of the Decoder, to turn the Decoder on. Select Channel 0.
  4. On the front panel keypad, press MENU.
  5. Press 2, to unlock the installer MENU.
  6. Press 9 to bring up the first page of the installer MENU.
- NOTE: The INSTALLER MENU consists of two pages of selectable settings for transponder frequency and other vital decoder specific parameters including a preset frequency plan. You can exit this menu at any time by pressing VIEW.
7. Press CHAN UP/DN on the front left portion of the Decoder to change the setting to appropriate setting for your satellite region.
  8. Press NEXT on the front keypad to select L/C-band Freq setting on the menu screen. Using the keypad enter the correct L/C-band frequency setting for your satellite region.
  9. Scroll to the Polarization block, push the SELECT button to enter H (fixed).
  10. Press NEXT to move the arrow down to the FEC RATE. Using the channel up/down keys enter the correct FEC RATE for your satellite region. SatNet users should select  $\frac{3}{4}$  and DTS users should select  $\frac{2}{3}$ .
  11. Press NEXT to select SYMBOL RATE. Using the keypad enter the correct SYMBOL RATE for your satellite region.
  12. Press YES on the front keypad section and note the system will respond that it is saving the entries in the upper right of the TV monitor. NOTE: Failure to save entries will

result in the system reverting to the factory default settings and the Decoder will not authorize.

13 Double check the changes you made to page 1 of the installer MENU comparing the settings with those listed in the PowerVu setup data for your satellite region.

14 Press USER to select page 2.

15 Press NEXT to select NETWORK ID.

16 Using the keypad enter the NETWORK ID for your satellite region.

17 Press YES to save the changes.

## (2) Decoder Setup: Scientific Atlanta PowerVu (Model 9234)

1. Turn the LNB power switch located on the rear of the Decoder to ON.

2. If you are using a TV Monitor (a TV without ability to change channels), connect a video cable from the Video Out connector on the rear of the IRD to the Video input on the rear of the TV monitor. Connect audio cables from the L-R Audio Output connectors on the rear of the Decoder to L-R Audio Input connectors on the rear of the TV Monitor.

3. If you are using a TV Receiver (a TV with ability to change channels), connect a coaxial cable from the TV Out connector on the rear of the Decoder to the VHF input on the TV. Select either TV channel 3 or 4 on the rear of the Decoder and select that channel on your TV.

4. Connect the Decoder to a power source. Push the on/standby switch, located on the front lower left of the Decoder, to turn the Decoder on.

5. Using the remote control, display the BSR MAIN MENU by pressing the Menu button. See Figure 2 for an example.

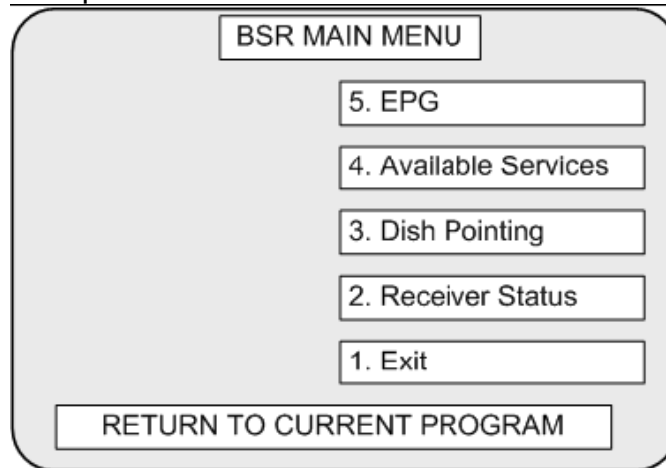


Figure 2 BSR Main Menu

6. Display the RECEIVER STATUS MENU by pressing 2 and then SELECT, or move to Receiver Status using the scroll arrows on the remote control and press SELECT. See Figure 3 for an example.

RECEIVER STATUS	
Network ID	Reset ADP
Address	
Smart Card Not Installed	
Signal Strength	
Signal Quality	4. Configuration
Signal State Lock, +SIG	3. Receiver Setup
ADP (enc)	2. User Setup
ADP (non enc)	1. Exit
RETURN TO MAIN MENU	

**Figure 3 Receiver Status Menu**

7. Display the RECEIVER SETUP MENU by pressing 3 and then SELECT, or move to Receiver Setup using the scroll arrows on the remote control and press SELECT. See Figure 4 for an example.

Receiver Setup	
Freq. Mode Downlink	Network ID 4
Frequency 12.647	AFC Level
L.O. Freq #1 9.7500	Signal Strength
L.O. Freq #2 10.6000	Signal Quality
Crossover N/A	Signal State
Polarization V (fixed)	Find Off
FEC Rate 3/4	2. Search Setup
Symbol Rate 28.0000	1. Exit
Return to the RECEIVER STATUS MENU	

**Figure 4 Receiver Setup Menu  
(shown with Japan and Korea settings)**

8. Once in the RECEIVER SETUP MENU, scroll to the Freq Mode block and set to L-band/#1 using the SELECT button. 11. Scroll to the L.O. Freq # 1 Block, push SELECT button to clear the entry, enter the appropriate L.O. Freq for your satellite region.

9. Scroll to the Frequency block, push SELECT button to clear the entry, enter the correct frequency for your satellite region. Push the SELECT button to store (save) the Frequency block setting. The L.O. Freq. #2 and crossover blocks should be set to N/A.

10. Scroll to the Polarization block, push the SELECT button to enter H (fixed).

11. Scroll to FEC Rate block, push SELECT button to enter appropriate FEC Rate for your satellite region. SatNet users should select 3/4 and DTS users should select 2/3. Do not push SELECT button at this time.

12. Scroll to the Symbol Rate block, push SELECT button to clear the entry, enter the appropriate Symbol Rate for your satellite region. (Refer to appendix D) Push the SELECT button to store (save) the setting.

13. Scroll to the Network ID block, push SELECT button to clear the entry, enter the appropriate Network ID for your satellite region. Push the SELECT button to store (save) the setting.

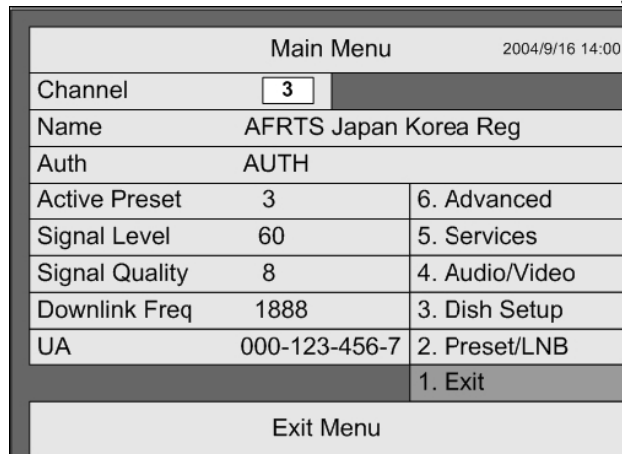
14. Scroll to the Exit block and push SELECT. (A yes/no box to store settings will appear.) Push 1 to store the settings. This will return you to the Receiver Status Menu. Scroll to the Exit block on this menu and push the SELECT button. This will return you to the BSR MAIN MENU. Scroll to Exit and push the SELECT button. This will return you to normal viewing.

### (3) Decoder Setup: Scientific Atlanta PowerVu (Model 9834 and 9835)

1. Connect a video cable from the VIDEO connector on the rear of the Decoder to the Video input on the rear of the TV monitor. Connect audio cables from the L-R AUDIO output connectors on the rear of the IRD to L-R Audio Input connectors on the rear of the TV Monitor. Alternatively you can run a cable from the TV OUT connector on the Decoder to the RF input on a television. Signal quality isn't quite as good as using the separate video and audio cables and the television set must be tuned to 3 or 4 (channel 3 is the default).

2. Plug the Decoder into AC power and wait for about 1 minute while the receiver is booting up before continuing on. While the receiver is booting up, the front panel display will show APP and a number representing the current application code version. This sequence will stop once the receiver is ready for operation.

3. On the front panel or using the remote control, press MENU. The main menu should be displayed on your television or monitor's screen as shown in figure 5.



Main Menu		2004/9/16 14:00
Channel	3	
Name	AFRTS Japan Korea Reg	
Auth	AUTH	
Active Preset	3	6. Advanced
Signal Level	60	5. Services
Signal Quality	8	4. Audio/Video
Downlink Freq	1888	3. Dish Setup
UA	000-123-456-7	2. Preset/LNB
		1. Exit
Exit Menu		

Figure 5 9834 Decoder Main Menu

6. Use the up and down arrows on the front panel or the remote to select the PRESET & LNB SETUP or press the number 2 on the remote control and then press SELECT.

7. Cursor over using the left and right arrows to high light the LNB Pwr. Press SELECT and then the up and down to choose POLARISER which is the automatic mode. Press SELECT again to set the LNB Pwr to POLARISER. The screen should now appear similar to figure 6.





**Figure 6 Preset and LNB Setup Menu**

8. Some Ku bank LNBS will have two local oscillator or LO frequencies. Use the up and down arrows to cursor down to the LO Freq 1 and press select. Enter in the LO frequency recorded from your LNB. Press SELECT to accept the numbers you entered. If your LNB listed a second LO frequency enter that number in the same manner. You can either use the arrow up or down key to change the numbers or enter them in directly using the number buttons on the remote control. Press select to accept the number.
9. Use the arrow keys to cursor over to the LO SELECT and choose XOVER. Press SELECT again to accept this setting.
10. Use the left and right arrow key to cursor over to the ACTIVE setting and press SELECT. Use the up and down arrow keys to select the proper preset from Table 1 below. Press SELECT again to set the proper preset into use.

Pre-set number	Signal	Region
1	AFRTS (Hotbird)	Europe
2	Not used	NA
3	AFRTS	Japan and Korea*
4	DTS	Pacific Ocean
5	DTS	Atlantic Ocean
6	DTS	Indian Ocean
7	AFRTS	Atlantic Ocean
8	AFRTS	Domestic US
9	DTS	Domestic US

\* Pre-set requires some modification see Appendix D.

**Table 1 Decoder Pre-sets**

11. Make sure that the ACTIVE pre-set matches your desired selection and then use the arrow keys to cursor over to EXIT or press the 1 key on the remote and then press SELECT to return to the main menu. Note the PRESET setting has no effect on how the Decoder decodes the signal – only the ACTIVE setting has effect.

### 3. Placing and Aiming your Antenna (Satellite Dish)

a) You need two numbers to properly aim your satellite dish: Azimuth and Elevation. Azimuth numbers are drawn from a magnetic compass and will tell you how far left or right to aim your dish. Elevation numbers describe the angle up from the horizontal horizon that you must tilt your dish (how far up, starting by aiming straight at the horizon, you must turn your dish). You can find this information, along with the appropriate satellite name, in the back of this guide starting on page 16

b) Go outside to your antenna site and hold your compass flat in your hand. Rotate the compass to get the “N” (north) and pointer to align.

c) Locate the mark on the compass that corresponds to the **azimuth number** for your location. This azimuth is the left/right direction in which you must place your antenna. Satellites are located above the Earth’s equator, so you must generally aim toward the equator (in the Northern Hemisphere, aim South, in the Southern Hemisphere, aim North).

d) Point or aim your antenna roughly in the direction of your azimuth setting. Do not worry about exactly aligning your antenna, because that will come in a later step.



**Figure 7 Satellite Pointing Tools**

e) Use your angle locator to find the angle listed as the **elevation** for your location. Some antennas have an elevation scale on the antenna mount that will allow you to line up your dish without an angle locator. If you don’t have an elevation scale and can’t

locate an angle finder at your local hardware store, you can make your own using a common protractor. See Figure 2 below.



**Figure 8 Angle Finder using Common Protractor**

f) Raise your satellite dish arm to approximately the elevation angle, using your angle gauge for reference. This is the direction and elevation of your antenna. Sight down your arm to ensure a clear path. Trees or buildings should not block your antenna; otherwise your site will not be a suitable location. Trees will block the signal so take into consideration their future growth.

g) At this point exact aiming is not important the dish is being pointed in a general direction to allow for the installation of connection cables.

#### **4. Connecting the Antenna (Satellite Dish) and Decoder**

TIP: You should place the TV and decoder beside the antenna, or within view of the antenna (through a window from the outside location) for aligning purposes. You can place the TV and decoder box outside at the antenna location by running an extension cord to that location.

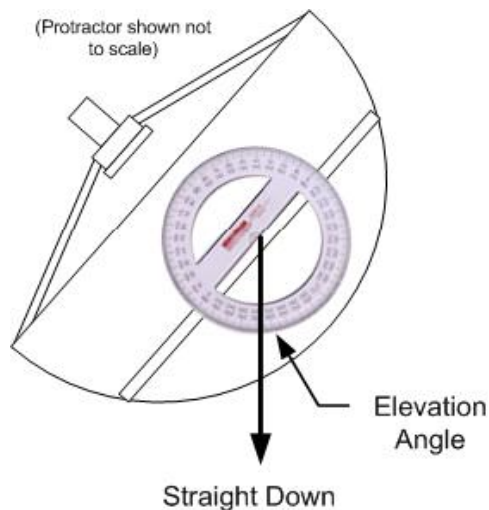
a) Connect the antenna to the decoder box using RG-6 coaxial cable with "F" type connectors. Thinner RG-59 coaxial cable can be used at lengths of 50ft or less. You can purchase these items at you local Powerzone, or on the local market at an electronics store.





d) The green signal LED on the front of the IRD and the Signal Status menu are the first and most reliable indicators of receiving the satellite signal. It is best to use the signal status menu window for signal verification during the antenna tuning process. On the 9834 and 9835 the signal LED is located near the center of the display and will light when the signal is locked in and authorized, blink when the signal is locked in but not authorized, and not light when no signal has been found.

e) Now is the time to adjust the elevation angle on your antenna using the scale located on the back of the antenna or use the protractor method if the antenna is not marked. Note: when adjusting the elevation angle of an offset dish, subtract the manufacture's offset angle from the elevation angle provided for reference.



**Figure 11 Look angle adjustment**

You'll have to do this if using the protractor method. Most offset dish manufacturers supply a gauge on the antenna mount that automatically makes this correction for you (see Figure 8 above).

f) Once you have the proper elevation angle, it's time to find the exact azimuth. If necessary, loosen the nuts on the antenna support pole so that the antenna can rotate easily left and right.

g) Hold the compass flat in the palm of your hand away from the antenna and any large metal object.

h) Rotate the compass so that the "N" (North) is under the dark point of the compass pointer or arrowhead. Your compass is now aligned with the north and the marks around the edge of the compass represents azimuth degrees.

i) Locate the mark on the compass that corresponds to the azimuth number for your site location.



j) Swing the antenna in the direction of your azimuth (compass) heading, use the LNB that sticks out from the dish center as your pointer. Try to make this adjustment as accurately as you possibly can. It usually helps to pick an object that is several hundred feet away from your antenna that aligns with the antenna mounting pole and your azimuth heading, and then to align your antenna with that object.

k) After making azimuth adjustments, to prevent the antenna from moving, lightly tighten those bolts down. If you are lucky enough to have a locked signal at this point, exit from the Installer/Receiver Setup Menu to the main menu and set the Decoder to a known video channel. The Decoder will not authorize immediately, so give it a couple of minutes to do so. If after a couple of minutes the Decoder does not authorize, check the customer settings in the satellite listed for your region (repeat step 2 above) and see step 7 below for troubleshooting. As indicated above, Lock + Sig is proof that your antenna is locked on the satellite. All other problems are associated with the Decoder setup or authorization in the AFRTS database.

## **6. Fine Tuning your Antenna**

a) Perform this procedure only after getting Lock + Sig in the Installer or Receiver Setup menu. If no Lock + Sig go to step 8 below.

b) Mark your antenna's azimuth and elevation settings with a magic marker pen for reference. This is done as precaution, just in case you totally lose the signal during the fine-tuning phase.

c) Slowly tilt the antenna forward and backward (elevation) and set for maximum "Signal Level" and "BER/Signal Quality" levels moving the antenna's edge by just a half an inch or less. Signal quality or BER is the most important to maximize. Remember, BER of 0.0 E-2 is bad and 0.0 E-6 is perfect, and Signal Quality 1-10, with 10 being the best.

d) Do the same for azimuth, left and right again moving the dish in very slight amounts.

e) Repeat steps 2 and 3 at least two times each.

f) Tighten the bolts down with a wrench to prevent movement.

**DONE? Need AFN Television Schedules? Get them online at:**  
[http://www.lets-go-europe.com/Germany/military/AFN\\_television\\_schedule.html](http://www.lets-go-europe.com/Germany/military/AFN_television_schedule.html)

## **7. Repeat Fine Tuning (if needed)**

If the Signal State is not displaying Lock + Sig do the following:



a) Check to see if the LNB Power switch on the back of the set is set to the ON position for a 9234. For a 9223, the Decoder has three Power positions: 19, OFF, and 13/19 Volt positions, do the following, for C-band users set it to the 19 Volt position, for Ku-band users set it to the 13/19 Volt position. On the 9834 and 9835 the voltage is controlled by the software in the menu PRESET & LNB SETUP.

b) Also, ensure your antenna is polarized correctly for the signal you intend to receive. Note: For Ku-band users (direct to home customers in Europe, Japan and Korea) the receiver voltage can switch the antenna polarization from vertical to horizontal within the receiver setup menu (13 Vertical-19 Horizontal).

c) If this was your problem, the green signal light on front of the Decoder will illuminate. Go to the Receiver Setup or Installer Menu and check to see if the No Signal state has change to Sig+Lock.

d) If you have Sig+Lock, go back to Step 5 and following those instructions.

e) If this was not your problem, it is time again to check the antenna position; perform the following:

- Check the azimuth and elevation and reposition as needed. Use very small movements up and down, left and right. Remember that small adjustments will move you among satellites. You should be moving the dish one quarter to a half and inch measured at the edge at a time. If the signal level increases significantly with No lock + Signal, you are on the wrong satellite or the setup parameters are wrong.

- Remember at any time during the following procedures you get a locked signal (Lock+Sig) stop and mark the antenna's azimuth and elevation positions. If yes go back to "Peaking the Antenna" if no proceed to the next step.

- The following is a slow process but will result in aligning your antenna.

- Loosen antenna-mounting bolts so that you can move the antenna's azimuth (east and west).

- While monitoring the Signal State (No Lock) slowly move the antenna from east to west. Again, if the signal state ever changes to Lock+Sig, stop and lock the antenna in that position and perform "Peaking the Antenna".

- This is a long and time-consuming process to follow and adjustments must be made in slow, small increments. Reset the antenna's elevation by repositioning by less than one degree, tilting it in ½ inch increments, locking it down and moving it slowly, east to west.



- Repeat Step last two steps until you have a LOCKED (Lock+Sig) signal.
- Once you obtain a locked signal, mark the antenna's azimuth and elevation with a permanent marker for future reference.

## **8. Troubleshooting Guide**

### **Satellite integrated receiver decoder will not turn on.**

- (1) Check to see if the receiver is plugged in to the wall jack.
- (2) Try plugging the receiver into a different electrical outlet. Be sure you're not plugged into a "half hot" or "switched" outlet controlled with a light switch.
- (3) Plug your TV into the same outlet and see if it will power on.
- (4) Make sure the problem is not with the receiver. Turn on the receiver both from the front panel and with the remote.
- (5) Check the fuse box circuit breaker.

### **I cannot set the receiver to the on-screen menu.**

- (1) Check to see if your TV is tuned to the correct channel either channel 3 (default) or 4 and select the same on the back of the receiver.
- (2) Check to see if you are using the correct connections from the Receiver to the TV. Are you using the RF (To TV) connection and connected to the "from antenna on the TV". Are you connected to the Video output from the receiver, to the video input on the TV/monitor.
- (3) If you are using the RF connection from the receiver to the TV, tune to channel 3 or 4.
- (4) Turn the receiver on from the remote or the front panel.
- (5) In the receiver setup menu select NTSC.

### **I cannot pick up the satellite signal**

- (1) Have you gotten your receiver authorized?
- (2) Check that all signal connections from antenna, receiver, and TV are correct.





(3) Make sure there are no obstructions blocking the antenna's view to the satellite. Always stand behind the antenna, not in front while checking. Vegetation like bushes and trees will block the satellite signal.

(4) Check that the antenna is set to the correct polarity, for example, horizontal, vertical, left hand circular or right hand circular.

(5) Check the antenna azimuth and elevation settings, if wrong see "Antenna Pointing".

(6) Tune the receiver to the "Receiver Setup Menu" on the 9234 and 9834, the "Installer Menu" on the 9223, or the "Dish Setup" and the 9834 and 9835 receiver model. If the signal indicator reads Sig+Lock, check the following for your location and service. If all of the settings below are correct; chances are good that your decoder isn't authorized in the AFRTS decoder database; call for authorization – see step 1 of this guide above. Use the list on page 28 to check the parameters listed below. On the model 9834 ensure that the proper pre-set setting is being used for your region.

- a. Network ID
- b. FEC Rate
- c. Frequency
- d. Band
- e. L.O.
- f. Polarization
- g. Symbol Rate
- h. Video Standard is (NTSC)

(7) If the signal indicator in the "Receiver Menu" reads No Signal check the cable from the antenna to the Receiver.

(8) "Reboot" your IRD. Turn off the IRD using the remote control and then unplug it from the electrical power. Wait a minute and then plug the IRD back in and turn it on.

(9) Rarely you might be attempting to receive the signal during either a sun outage or a signal outage caused by a technical problem at the up link site. These outages would affect an entire region at once so your neighbors and other service members at your command would have also lost signal. An easy check is to see if the signal is available at another receiver in your same location. A sun outage lasts only 10 to 15 minutes. Sun outages over the United States can affect signals in elsewhere in the world.

**I was receiving the satellite signal but it comes and goes or I get a lot of freeze frames and digital artifacts.**

This is the sign of a weak signal and can usually be traced to one of the following problems:



- (1) Poor connection from the Antenna to the Receiver. Wiggle the connections to see if you can get the signal to intermit from Loss of Signal to Freeze-Frames. If so, redo or replace connectors.
- (2) Antenna is not peaked for best signal strength or is too small for your area. See the section of this chapter on signal peaking. Your dish should be at least the same size as other's who are watching AFRTS.
- (3) LNB does not meet specifications. This typically happens with a new LNB that has replaced a failed one or one from a brand new installation. Heat and cold will often cause a marginal LNB to lose signal.
- (4) Poor quality cable or connectors in use or impedance mismatch. Make sure that you are using the proper RF cabling between the LNB and the receiver. Computer network cable is the wrong electrical impedance and will cause signal loss.
- (5) Signal level input to the IRD is too high; optimum input is  $-42$  dBm. This is very rare.
- (6) Antenna is not stable; wind moves or shakes the antenna excessively. Extreme weather will cause the satellite dish to move off the satellite's position.
- (7) Terrestrial Interference. Typically caused by radio transmitters located in front of the dish.
- (8) This could be caused by a regional sun outage where the sun passes directly behind the satellite. At certain times of year, approximately one month either side of the spring and autumn equinoxes, there may be a conjunction of the sun and satellite positions. Depending upon the size of the earth station antenna, such events can lead to a serious impairment of the space-earth link. These outages typically last only a few minutes at a time once a day with a normal worst case outage of about ten to fifteen minutes. Outages will affect each link in multi-hop circuits. For example viewers in Europe or the Indian Ocean area would be affected by an outage of first, the Atlantic satellite and then secondly, of the actual satellite feeding their antenna. Antennas should not be adjusted or re-pointed at these lost-of-signal times. The viewer should wait out the outage until the sun finishes passing directly behind the satellite.

### ***Dish Pointing Data (using magnetic north)***

<b>AFRICA, MIDDLE EAST, SW ASIA Country, City</b>	<b>LAT LOG Magnetic Variation:</b>	<b>Satellite</b>	<b>Type</b>	<b>Polarization</b>	<b>Location:</b>	<b>Mag Azimuth:</b>	<b>Elevation:</b>
<b>Afghanistan, Kabul</b>	34.35N 69.12E MV 13.5E	HOTBIRDS 6 & 7a	KU	V	13.0E	246.8	19.2
		INTELSAT 906	C	LHC	64.1E	135.1	9.4
<b>Algeria, Alger</b>	28.00N 3.00E MV:2.01W	INTELSAT 906	C	LHC	64.0 E	106.59	17.03
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	160.5	55.5
“		INTELSAT 10-02	C	RHC	359 E	190.48	57.02
“		NSS-7	C	LHC	338.0 E	225.8	47.3
<b>Azerbaijan, Baku</b>	40.23 N 39.51 E MV: 4.95 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	213.2	36.1
<b>Bahrain, Manama</b>	26.13N 50.35 E MV:2.12E	INTELSAT 906	C	LHC	64.0 E	149.01	55.88
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	237.9	38.8
“		INTELSAT 10-02	C	RHC	359 E	248.48	26.32
“		NSS-802	C	LHC	338.0 E	259.9	7.2
<b>Bangladesh, Dhaka</b>	24.00N 90.25E MV: 56W	INTELSAT 906	C	LHC	64.0 E	231.05	49.37
<b>Cameroon, Yaounde</b>	6.00 N 12.00 E MV: 2.79 W	INTELSAT 906	C	LHC	64.0 E	96.6	25.0
“ “		NSS-802	C	LHC	338.0 E	263.4	50.0
<b>British Indian Ocean Territory, Diego Garcia</b>	7.26 S 72.37 E MV: 7.59W	INTELSAT 906	C	LHC	64.0 E	318.25	76.99
“		INTELSAT 10-02	C	RHC	359 E	279.75	7.88
<b>Djibouti, Djibouti</b>	11.30 N 43.00 E MV: 1.07 E	INTELSAT 906	C	LHC	64.0E	114.91	61.33
“		NSS-7	C	LHC	338.0 E	263.4	16.1
“		INTELSAT 10-02	C	RHC	359 E	257.46	38.02
<b>Egypt, Cairo</b>	30.50 N 31.00 E MV: 2.61 E	INTELSAT 906	C	LHC	64.0E	125.40	39.58

“		HOTBIRDS 6 & 7a	KU	V	13.0E	209.9	49.4
“		INTELSAT 10-02	C	RHC	359 E	228.31	40.33
“		NSS-7	C	LHC	338.0 E	246.3	23.2
<b>India, New Delhi</b>	28.36 N 77.12 E MV: 0.51 E	INTELSAT 906	C	LHC	64.0 E	205.62	53.87
<b>Ivory Coast, Abidjan</b>	5.19 N 4.02 W MV: 8.54 W W	NSS-7	C	LHC	338.0 E	260.7	68.1
<b>Iraq, Baghdad</b>	33.20 N 44.26E MV: 4.81	HOTBIRDS 6 & 7a	Ku	V	13.0E	224.6	38.7
“		NSS-7	C	LHC	338 E	253.1	11.0
<b>Basra</b>	30.5 N 47.75 E MV: 5.12	HOTBIRDS 6 & 7a	Ku	V	13.0E	197.8	33.5
			C	LHC	338.0 E	235.2	15.8
<b>Mosul</b>	36.19 N 43.9 E MV: 4.87	HOTBIRDS 6 & 7a	Ku	V	13.0E	207.4	35.0
		NSS-7	C	LHC	338.0 E	137.5	32.9
<b>Israel, Jerusalem</b>	31.46 N 35.14 E MV: 2.76	HOTBIRDS 6 & 7a	KU	V	13.0 E	222.2	14.1
“		INTELSAT 10-02	C	RHC	359 E	231.69	36.57
“		NSS-7	C	LHC	338.0 E	248.3	19.4
“		INTELSAT 906	C	LHC	64.0 E	130.68	41.87
Tel Aviv	32.05 N 34.48 E MV: 3.13 E	INTELSAT 906	C	LHC	64.0 E	130.03	40.97
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	213.5	46.0
“		INTELSAT 10-02	C	RHC	359 E	230.22	36.68
“		NSS-7	C	LHC	338.0 E	247.7	19.7
<b>Kenya, Nairobi</b>	1.17 S 36.49 E MV:0.1W	INTELSAT 906	C	LHC	64.0 E	87.90	57.85
“		NSS-7	C	LHC	338.0 E	270.6	23.5
“		INTELSAT 10-02	C	RHC	359 E	271.67	46.52
<b>Kuwait, Kuwait City</b>	29.30 N 47.45 E MV: 2.55E	INTELSAT 906	C	LHC	64.0 E	146.19	51.29
“ “		HOTBIRDS 6 & 7a	KU	V	13.0 E	231.8	39.3
“ “		INTELSAT 10-02	C	RHC	359 E	244.01	27.64

“	“		NSS-802	C	LHC	338.0 E	256.79	9.68
<b>Malawi, Banjul</b>	13.28 N 16.39 W MV:11.28W		NSS-802	C	LHC	338.0 E	212.55	73.30
“	“		INTELSAT 906	C	LHC	64.0 E	103.51	0.66
<b>Mali, Bamako</b>	12.39 N 8.00 W MV: 7.15 W		INTELSAT 906	C	LHC	64.0 E	101.14	8.98
“			NSS-7	C	LHC	338.0 E	235.1	68.2
“			INTELSAT 10-02	KU	RHC	359 E	157.37	73.31
<b>Morocco, Rabat</b>	34.02 N 6.51 W MV: 4.78 W		HOTBIRDS 6 & 7a	KU	V	13.0 E	151.1	45.3
“			INTELSAT 10-02	C	RHC	359 E	175.00	50.02
“			NSS-7	C	LHC	338.0	209.7	47.1
<b>Mozambique, Maputo</b>	26.00 S 32.25 E MV:17.08 W		INTELSAT 906	C	LHC	64.0 E	71.77	43.55
“			INTELSAT 10-02	C	RHC	359 E	320.85	42.32
“			NSS-7	C	LHC	338.0 E	305.5	23.7
<b>Pakistan, Islamabad</b>	33.42 N 73.10 E MV: 1.59 E		INTELSAT 906	C	LHC	64.0 E	194.63	49.92
<b>Saudi Arabia Jiddah (Jeddah)</b>	21.30 N 39.12 E MV: 2.02 E		INTELSAT 906	C	LHC	64.0 E	124.93	51.65
“			HOTBIRDS 6 & 7a	KU	V	13.0 E	231.1	51.4
“			NSS-7	C	LHC	338.0 E	256.3	18.5
“			INTELSAT 10-02	C	RHC	359 E	244.6	38.66
<b>KKMC</b>	27.80 N 45.50 E MV:2.37 E		INTELSAT 906	C	LHC	64.0 E	140.6	51.1
“			HOTBIRDS 6 & 7a	KU	V	13.0 E	231.1	41.8
“			NSS-7	C	LHC	338.0 E	256.4	11.3
“			INTELSAT 10-02	C	RHC	359 E	243.8	30.0
<b>Saudi Arabia (Continued) Riyadh</b>	24.39N 46.43 E MV: 2.13E		INTELSAT 906	C	LHC	64.0 E	138.9	54.75
“			HOTBIRDS 6 & 7a	KU	V	13.0 E	235.8	43.1



“		INTELSAT 10-02	C	RHC	359 E	247.1	30.5
“		NSS-7	C	LHC	338.0 E	258.5	11.0
Tabuk	28.23 N 36.35E MV: 2.76 E	INTELSAT 906	C	LHC	64.0 E	129.32	45.18
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	219.6	48.2
“		INTELSAT 10-02	C	RHC	359 E	235.45	37.58
“		NSS-7	C	LHC	338.0 E	250.9	19.3
<b>South Africa, Capetown</b>	33.55 S 18.22 E MV: 22.00W	INTELSAT 906	C	LHC	64.0 E	83.73	27.86
“		INTELSAT 10-02	C	RHC	359 E	349.75	45.86
“		NSS-7	C	LHC	338.0 E	327.0	32.2
Pretoria	25.45 S 28.10 E 14.29 W	INTELSAT 906	C	LHC	64.0 E	73.59	40.40
“		INTELSAT 10-02	C	LHC	359 E	321.96	46.07
“		NSS-7	C	LHC	338.0	305.9	27.7
<b>Tunisia, Tunis</b>	36.48 N 10.11 E MV: 0.44 E	INTELSAT 906	C	LHC	64.0 E	113.01	20.13
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	174.4	47.6
“		INTELSAT 10-02	C	RHC	359 E	197.84	46.07
“		NSS-7	C	LHC	338.0 E	225.8	35.9
<b>Turkey (See Europe table)</b>							
<b>Uganda, Kampala</b>	0.19 N 32.25 E MV: 0.28	INTELSAT 906	C	LHC	64.0 E	90.03	53.03
“		NSS-7	C	LHC	338.0 E	269.5	28.1
<b>United Arab Emirates (UAE), Abu Dhabi</b>	24.28 N 54.22 E MV: 1.45 E	INTELSAT 906	C	LHC	64.0 E	155.81	59.54
“		HOTBIRDS 6 & 7a	KU	V	13.0 E	243.4	36.3
“		INTELSAT 10-02	C	RHC	359 E	252.61	23.35
<b>Yemen, Sanaa</b>	15.23 N 44.12 E MV:1.28 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	244.9	50.1
“		INTELSAT 10-02	C	RHC	359 E	254.06	35.87
“		NSS-7	C	LHC	338.0 E	261.8	14.6
“		INTELSAT 906	C	LHC	64.0 E	124.72	60.93

AMERICAS Country, City	LAT LOG Magnetic Variation:	Satellite	Type	Polarization:	Location:	Mag Azimuth:	Elevation:
Columbia, Bogota	14.66 N 74.12 W MV: 5.0 W	INTELSAT 10-02	C	RHC	359 E	99.40	7.70
"		NSS-7	C	LHC	338.0 E	108.7	28.8
Cuba, Guantanamo Bay	19.93 N 75.12 W MV: 5.72 W	NSS-7	C	LHC	338.0 E	112.0	26.6
"		IA-8	C	H	89.0 E	224.2	61.8
Ecuador, Quito	0.13 S 78.30 W MV: 1.17 E	NSS-7	C	LHC	338.0 E	91.6	25.9
Honduras, Soto Cano AB	14.37 N 87.60W MV:1.76 E	NSS-7	C	LHC	338.0 E	103.9	24.6
		IA-8	C	H	89.0	222.4	69.1
Puerto Rico, Roosevelt Roads	18.23 N 65.65 W MV:12.87W	INTELSAT 10-02	C	RHC	359 E	111.30	15.62
"		NSS-7	C	LHC	338.0 E	121.2	36.4
"		IA-8	C	H	89.0 E	247.5	55.8
Venezuela, Caracas	10.66 N 66.82 W MV: 9.87 W	INTELSAT 10-02	C	RHC	359 E	104.62	15.36
"		NSS-7	C	LHC	338.0 E	112.0	37.3
ASIA Country, City	LAT LOG Magnetic Variation:	Satellite	Type	Polarization:	Location:	Mag Azimuth:	Elevation:
Brunei, Bandar Seri Begawan	4.95 N 114.6 E MV:0.32E	NSS-5	C	LHC	177 W	91.6	13.0
Burma, Rangoon	16.47 N 96.10 E MV :0.78 E	INTELSAT 906	C	LHC	64.0 E	245.9	48.7
China Beijing	39.55 N 166.25 E MV:5.82 W	POR DTS	C	LHC	180.0 E	158.0	42.1
		NSS-5	C	LHC	177 W	110.8	9.1
		NSS-6	Ku	VP	95 E	216.9	39.2
Shanghai	31.01 N 121.30E MV: 4.63 W	POR DTS	C	LHC	180.0 E	112.2	18.2
		NSS-5	C	LHC	177 W	110.3	15.6
		NSS-6	Ku	VP	95 E	228.6	44.0
"		INTELSAT 906	C	LHC	64.0 E	256.4	19.5

<b>Indonesia, Jakarta</b>	6.10 S 106.48 E MV: 0.12W	INTELSAT 906	C	LHC	64.0 E	276.74	40.57
“		POR DTS	C	LHC	180.0 E	88.32	7.77
“		NSS-5	C	LHC	177 W	88.3	4.7
<b>Japan, Atsugi</b>	35.27 N 139.27 E MV: 7.39 W	INTELSAT 701	C	LHC	180.0 E	131.2	30.8
		NSS-5	C	LHC	177 W	128.5	28.5
		NSS-6	Ku	VP	95 E	246.7	28.1
Iwakuni	34.15 N 132.24 E MV: 7.27 W	POR DTS	C	LHC	180.0 E	117.0	25.99
“		NSS-5	C	LHC	177 W	121.7	23.6
		NSS-6	Ku	VP	95 E	240.0	34.0
“		INTELSAT 906	C	LHC	64.0 E	257.3	9.4
Misawa (Misawa AB)	40.68 N 141.36E MV:8.48 W	POR DTS	C	LHC	180.0 E	129.2	28.70
“		NSS-5	C	LHC	177 W	135.0	26.8
		NSS-6	Ku	VP	97 E	246.8	23.6
Okinawa (Camp Butler)	26.31 N 127.79 E MV: 4.28 W	POR DTS	C	LHC	180.0 E	113.24	24.48
“		NSS-5	C	LHC	177 W	111.1	22.7
		NSS-6	Ku	VP	95 E	239.9	42.5
“		INTELSAT 906	C	LHC	64.0 E	257.6	15.0
Sasebo	33.17 N 129.72 E MV: 6.01 W	POR DTS	C	LHC	180.0 E	114.4	24.4
“		NSS-5	C	LHC	177 W	119.0	22.0
		NSS-6	Ku	VP	95 E	238.5	36.5
“		INTELSAT 906	C	LHC	64.0 E	256.1	11.7
Tokyo (Yokota AB)	35.75 N 139.34 E MV:6.50 W	POR DTS	C	LHC	180.0 E	124.2	30.5
“		NSS-5	C	LHC	177 W	129.0	28.3
		NSS-6	Ku	VP	97 E	246.7	27.8
<b>Johnston Island Atoll</b>	16.73 N 169.52 W MV:1024 E	POR DTS	C	LHC	180.0E	202.48	66.94
<b>Korea, Kwangju</b>	35.09 N 126.54 E MV:6.69 W	POR DTS	C	LHC	180.0 E	113.1	21.0
“		NSS-5	C	LHC	177 W	117.6	18.6

		NSS-6	Ku	VP	95 E	233.6	37.3
“		INTELSAT 906	C	LHC	64.0 E	260.06	13.72
Osan (Osan AB)	37.08 N 127.03 E MV:7.22 W	POR DTS	C	LHC	180.0 E	121.68	20.58
“		NSS-5	C	LHC	177 W	119.6	18.3
		NSS-6	Ku	VP	95 E	233.5	35.5
“		INTELSAT 906	C	LHC	64.0 E	260.16	12.73
Seoul	37.60 N 126.98 E MV: 7.12 W	POR DTS	C	LHC	180.0 E	121.79	20.31
“		NSS-5	C	LHC	177 W	120.0	18.0
		NSS-6	Ku	VP	95 E	233.3	35.1
“		INTELSAT 906	C	LHC	64.0 E	259.83	12.61
Taegu (AFKN)	35.84 N 128.59 E MV:6.73	POR DTS	C	LHC	180.0 E	121.78	22.34
“		NSS-5	C	LHC	177 W	120.2	20.0
		NSS-6	Ku	VP	95E	236.0	35.4
“		INTELSAT 906	C	LHC	64.0 E	261.19	11.85
<b>Guam, Agana</b>	13.4N 114.75 E MV:0.7 W	NSS-5	C	LHC	177 W	96.0	12.6
<b>Hong Kong</b>	22.28 N 114.2 E MV:1.88 W	NSS-5	C	LHC	177 W	100.2	11.0
“		NSS-6	Ku	VP	95 E	224.5	56.1
<b>Malaysia, Singapore</b>	1.22 N 103.48 E MV:0.43 W	INTELSAT 906	C	LHC	64.0 E	268.95	44.29
<b>Marshall Islands, Kwajalein Island</b>	8.73 N 167.74 E MV:8.65 E	POR DTS	C	LHC	180.0 E	116.29	72.36
“		NSS-5	C	LHC	177 W	110.7	69.4
<b>Philippines, Manila</b>	14.55 N 121.0 E MV :1.27 W	NSS-5	C	LHC	177 W	98.9	18.8
			Ku	VP	95 E	244.0	55.5
<b>Taiwan, Taipei</b>	25.0 N 121.5 E MV :3.43 W	NSS-5	C	LHC	177 W	106.4	17.3
<b>Viet Nam, Ho Chi Minh City EUROPE Country, City</b>		NSS-6	Ku	VP	95 E	233.1	48.4
	10.7 N 106.7 E MV:0.12W	NSS-5	C	LHC	177 W	92.7	4.8
	<b>LAT LOG Magnetic Variation:</b>	<b>Satellite: Type:</b>	<b>Type</b>	<b>Polarization:</b>	<b>Location:</b>	<b>Mag Azimuth:</b>	<b>Elevation:</b>

<b>Albania, Tirania</b>	41.20N 19.49E MV: 1.92 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	187.3	41.9
"		INTELSAT 10-02	C	RHC	359 E	207.65	37.97
"		NSS-7	C	LHC	338.0 E	230.8	26.5
"		INTELSAT 906	C	LHC	64.0 E	121.90	24.55
<b>Austria, Vienna</b>	48.12N 16.22E MV: 2.15 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	182.1	34.7
<b>Belgium, SHAPE</b>	50.50N 04.20E MV: 1.95 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	170.0	31.5
Mons	50.58 N 4.05 E MV: 1.94 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	169.9	31.4
<b>Bosnia Herzegovina, Sarajevo</b>	43.52 N 18.25 E MV: 2.14 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	185.2	39.5
<b>Bulgaria, Sofia</b>	42.41N 23.19E MV: 2.91 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	191.8	40.0
<b>Cyprus, Nicosia</b>	35.10N 33.22E MV: 3.08 E	INTELSAT 906	C	LHC	64.0 E	130.91	37.80
"		HOTBIRDS 6 & 7a	KU	V	13.0E	209.3	43.9
"		INTELSAT 10-02	C	RHC	359 E	226.71	35.50
"		NSS-7	C	LHC	338.0 E	244.9	19.6
<b>Finland, Helsinki</b>	60.10N 24.58E MV: 6.23 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	187.2	21.1
<b>France Istres</b>	43.31N 04.59E MV:1.37 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	168.5	39.3
Paris	48.52N 02.20E MV: 2.46 w	HOTBIRDS 6 & 7a	KU	V	13.0 E	165.9	38.6
<b>Germany Baumholder</b>	49.37N 07.20E MV: 1.23 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	172.7	33.1
Bitburg	49.58N 06.31E MV: 1.15 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	171.8	32.8
Frankfurt	50.13N 8.68 E MV: 0.46 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	174.2	32.4



Garmisch	47.29N 11.05E MV: 0.17 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	176.4	35.6
Hannau	50.08N 08.55E MV: 0.44W	HOTBIRDS 6 & 7a	KU	V	13.0 E	196.1	32.4
Heidelberg	49.25N 08.43E MV: 0.47 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	173.9	33.3
Kaiserlautern (Ramstein)	49.26N 07.46E MV: 1.25 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	173.9	33.3
“		INTELSAT 10-02	C	RHC	359 E	192.36	32.91
“		NSS-7	C	LHC	338.0	217.6	26.5
“		INTELSAT 906	C	LHC	64.0 E	117.85	12.61
Stuttgart	48.46N 09.11E MV: 0.45 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	174.5	34.2
Vilseck	49.37N 11.48E	HOTBIRDS 6 & 7a	KU	V	13.0 E		
Wiesbaden	50.05N 08.14E MV: 0.37 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	173.7	32.4
Wurzburg	49.48N 09.56E MV: 0.64 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	175.0	33.2
<b>Greece Athens</b>	37.59N 23.44E	HOTBIRDS 6 & 7a	KU	V	13.0 E	194.1	45.1
(Crete) Souda Bay	35.29N 24.42E MV: 2.44 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	196.7	47.2
“		INTELSAT 10-02	C	RHC	359 E	216.50	40.89
(Crete) Souda Bay (continued)		NSS-7	C	LHC	338.0 E	238.6	26.5
“		INTELSAT 906	C	LHC	64.0 E	122.41	31.24
<b>Greenland, Thule</b>	76.34N 68.47E MV: 68.33 W	GE 1	C	V	103.0 W	283.63	2.53
<b>Hungary, Budapest</b>	47.30N 19.05E MV: 2.28 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	185.4	35.3
<b>Iceland, Keflavik</b>	63.96N 22.60W MV: 20.60W	HOTBIRDS 6 & 7a	KU	V	13.0 E	160.6	12.4
“		INTELSAT 10-02	C	RHC	359 E	176.82	15.72
“		NSS-7	C	LHC	338.0 E	198.3	17.8
<b>Ireland, Dublin</b>	53.20N 06.15W MV: 7.70 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	162.6	26.7



<b>Italy Aviano</b>	46.04N 12.36E MV: 1.00 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	177.8	37.0
La Maddalena	41.13N 09.24E MV: 0.22 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	173.7	42.3
Livorno (Pisa)	43.33N 10.19E MV: 0.30 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	175.1	39.9
"		INTELSAT 10-02	C	RHC	359 E	195.95	38.35
"		NSS-7	C	LHC	338.0 E	221.7	30.5
"		INTELSAT 906	C	LHC	64.0 E	116.66	17.10
<b>Naples</b>	40.50N 14.13E MV: 1.31 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	180.2	43.2
"		INTELSAT 10-02	C	RHC	359 E	202.41	40.74
"		NSS-7	C	LHC	338.0 E	226.7	30.4
"		INTELSAT 906	C	LHC	64.0 E	117.82	21.91
<b>Sicily AFN-S Station Sigonella</b>	37.43N 14.97E MV: 1.01 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	181.7	46.6
"		INTELSAT 10-02	C	RHC	359 E	204.21	43.47
"		NSS-7	C	LHC	338.0 E	229.5	32.0
"		INTELSAT 906	C	LHC	64.0 E	116.82	23.40
Vicenza	45.33N 11.33E MV: 0.13 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	176.6	37.8
<b>Lithuania, Vilnius</b>	54.41N 25.19E MV: 4.85 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	189.7	26.9
<b>Macedonia, (Former Yugoslav Republic), Skopje</b>	42.00N 21.29E MV: 2.30 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	189.4	40.8
<b>Netherlands The Hague</b>	52.05N 04.18E MV: 2.14 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	170.5	29.9
Maastricht	50.52N 05.43E MV: 2.10 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	171.2	31.7
<b>Norway Oslo</b>	59.55N 10.45E MV: 0.51 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	177.0	22.4
Stavanger	58.58N 05.45E MV: 3.35 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	171.8	22.9
<b>Poland, Warsaw</b>	52.13N 21.02E MV: 3.42 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	186.4	29.9
<b>Portugal, Azores (Lajes Field)</b>	38.30N 28.00W MV: 12.92 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	137.6	28.7
"		INTELSAT 10-02	C	RHC	359 E	154.88	37.56
"		NSS-7	C	LHC	338.0 E	184.4	45.2
<b>Portugal (continued), Lisbon</b>	38.43N 09.08W MV: 5.72 W	HOTBIRDS 6 & 7	KU	V	13.0 E	151.3	39.9
"		INTELSAT 10-02	C	RHC	359 E	172.55	44.37
"		NSS-7	C	LHC	338.0 E	204.6	43.5

<b>Romania, Bucharest</b>	44.26N 26.06E MV: 3.98 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	194.6	37.3
<b>Spain, Madrid</b>	40.24N 03.41W MV: 3.70 W	HOTBIRDS 6 & 7a	KU	V	13. E	158.2	40.5
Moron (Moron de la Frontiera)	37.08N 05.27W MV: 4.21 W	HOTBIRDS 6 & 7a	KU	V	13. E	154.5	42.9
Rota	36.37N 06.21W MV: 5.01 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	153.0	43.2
"		INTELSAT 906	C	LHC	64.0 E	107.04	7.04
"		INTELSAT 10-02	C	RHC	1.0 W	176.11	47.13
"		NSS-7	C	LHC	338.0 E	208.9	44.6
<b>Sweden, Stockholm</b>	59.20N 18.03E MV: 3.21 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	182.5	22.6
<b>Switzerland, Geneva</b>	46.12 N 6.09 E MV: 0.77 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	170.8	36.5
<b>Turkey, Adana</b>	37.01N 35.18E MV: 3.47 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	210.4	41.1
Adara	39.56N 32.52E MV: 3.61 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	205.3	39.9
Incirlik	37.00 N 35.83 E MV: 3.40 E	HOTBIRDS 6 & 7a	KU	V	13.0E	211.2	40.8
"		INTELSAT 10-02	C	RHC	359 E	227.82	32.40
"		NSS-7	C	LHC	338.0 E	245.50	16.8
"		INTELSAT 906	C	LHC	64.0 E	134.94	37.90
Izmir	38.25N 27.09E MV: 3.08 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	198.9	43.3
"		INTELSAT 10-02	C	RHC	359 E	217.68	36.91
"		NSS-7	C	LHC	338.0 E	238.6	22.9
"		INTELSAT 906	C	LHC	64.0 E	126.41	31.49
<b>Ukraine, Kiev</b>	50.50 N 30.50 E MV: 5.76 E	HOTBIRDS 6 & 7a	KU	V	13.0 E	196.6	29.8
"		INTELSAT 10-02	C	RHC	359 E	212.69	24.97
"		NSS-7	C	LHC	338.0 E	233.7	14.4
"		INTELSAT 906	C	LHC	64.0 E	133.62	24.10
<b>United Kingdom, Cambridge</b>	52.13N 00.80E MV: 3.92 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	170.3	29.8
London	51.30N 00.07W MV:4.64 W	HOTBIRDS 6 & 7a	KU	V	13.0 E	166.5	30.0
Reading	51.47N 0.98 W MV: 4.56 W	HOTBIRDS 6 & 7a	KU	V	13.0E	165.8	29.6
"		INTELSAT 10-02	C	RHC	359 E	184.59	31.09
"		NSS-7	C	LHC	338.0 E	209.5	27.9



Notes: Higher elevations “higher look angles”, typically result in better reception and less interference. If there is a choice between two satellites all other things being equal, the one with the higher elevation will normally get the better signal. Because of the way the Direct to Sailor signal is sent it may have better reception in some locations even though it is lower in the sky. The best thing to do is to try out each signal available and choose the best one.



## AFRTS Satellite Information

### AFRTS SatNet Service

#### NewSkies NSS-5 (C-band)

Location: 183 degrees East

Band: C

Transponder Antenna polarization: Left-hand circular

Receiver Setting Polarization: "H-fixed" for model 9234 consumer-grade decoders or "H" for commercial-grade decoders with dual-band LNBS

C Band Downlink Frequency: 3.97713 GHz

Transponder: 44

L-Band: 1172.75 MHz

Symbol Rate: 28.0000 MS/s

FEC Rate:  $\frac{3}{4}$

EIRP: 34.0 dBW

Network ID: 2

Coverage Map: [http://www.newskies.com/newhome/home\\_net.asp#](http://www.newskies.com/newhome/home_net.asp#) click on the map and select NSS-5 and then the C-band half of the satellite. The north-west zone beam is AFRTS.

#### NewSkies NSS-6 (Ku-band)

Location: 95 degrees East

Band: Ku

Transponder Antenna polarization: Vertical Polarization\*\*

Receiver Setting Polarization: "V-fixed" for model 9234 consumer-grade decoders or "V" for commercial-grade decoders with dual-band LNBS

Ku Band Downlink Frequency: 12.647 GHz

Transponder:

L-Band: 12.647 GHz\*

Symbol Rate: 28.0000 MS/s

FEC Rate:  $\frac{3}{4}$

EIRP: 53.7 dBW center pattern

Network ID: 4

Coverage Map: [http://www.newskies.com/newhome/home\\_net.asp#](http://www.newskies.com/newhome/home_net.asp#) click on the map and select NSS-6 and then the Ku-band half of the satellite (lower half. Now hover the mouse over the Japan/Korea area.

#### INTELSAT 10-02 (South America, Africa, and Atlantic Ocean Region)

Location: 359 degrees East (1 degree West)

Band: C

Transponder Antenna Polarization: RHCP

Receiver Setting Polarization: "H-fixed"

C-Band Frequency: 4.1750 GHz

Transponder: 38

Defense Media Center Satellite Handbook V.3.15

Appendix D page 20





L-Band frequency: 975 MHz

Symbol rate: 28.0000 MS/s

FEC rate:  $\frac{3}{4}$

EIRP: 35 dBW

Network ID 3

Coverage Map: <http://www.intelsat.com/images/en/resources/coveragemaps/maps/10-02-359-global.jpg>

### **IntelSat Galaxy 28 (United States/Central America/Caribbean)**

Location: 89 degrees West

Band: C/L Band

C-band frequency: 4.060 GHz

Transponder: 18

Transponder Antenna Polarization: Horizontal Polarization

Receiver Setting Polarization: "H-fixed" for model 9234 consumer-grade decoders or "H" for commercial-grade decoders with dual-band LNBs

L-Band frequency: 1090 MHz

Symbol rate: 28.0000 MS/s

FEC rate:  $\frac{3}{4}$

EIRP: 42 dBW

Network ID 9

Coverage Map: <http://www.intelsat.com/apps/coveragemaps/images/en/resources/coveragemaps/maps/IA-8-C-band-NA.jpg>

### **Hotbirds 6 & 7a (Europe)**

Location: 13 degrees East (co-located together)

Band: Ku

Transponder Antenna Polarization: Vertical Polarization

Transponder: 113 (6), 129 (7A)

Receiver Setting Polarization: "H-fixed" for model 9234 consumer-grade decoders or "H" for commercial-grade decoders with dual-band LNBs based on transponder settings

Ku Band Downlink Frequency: 10.775 GHz (6), 11.096 (7A)

L-Band/LO frequency: 1025 MHz\* (assuming 9.750 MHz LNB Frequency)

Symbol rate: 28.0000 MS/s

FEC rate:  $\frac{3}{4}$

EIRP: 50.0 dBW

Network ID 6

Coverage map: [http://www.eutelsat.org/satellites/13ehb7a\\_popd.html](http://www.eutelsat.org/satellites/13ehb7a_popd.html)

### **Direct To Sailor (DTS) Service**

#### **INTELSAT 701 (Pacific Ocean)**

Location: 180 degrees East

Band: C



Transponder Antenna Polarization: LHCP

Receiver Setting Polarization: "H-fixed"

Defense Media Center Satellite Handbook V.3.15

Appendix D page 21

C-Band frequency: 4.1735 GHz

L-Band frequency: 976.5 MHz

Symbol Rate: 3.6800 MS/s

FEC rate: 2/3

EIRP: 29.0 dBW

Network ID 5

Coverage map: <http://www.intelsat.com/images/en/resources/coveragemaps/maps/701-180-global.jpg> (global)

### **INTELSAT 906 (Indian Ocean and Persian Gulf)**

Location: 64.1 degrees East

Band: C

Transponder Antenna Polarization: LHCP

Receiver Setting Polarization: "H-fixed"

C-Band frequency: 4080 MHz

L-Band frequency: 1070 MHz

Symbol Rate: 3.6800 MS/s

FEC Rate: 2/3

EIRP: 29.0 dBW

Network ID 7

Coverage map: <http://www.intelsat.com/images/en/resources/coveragemaps/maps/906-64-global.jpg> (global)

### **New Skies NSS-7 (Atlantic Ocean and Mediterranean Sea)**

Location: 338.0 degrees East (22 degrees West)

Band: C

Transponder Antenna Polarization: LHCP

Receiver Setting Polarization: "H-fixed"

C-Band frequency: 4127 MHz

L-Band frequency: 1023 MHz

Symbol Rate: 3.6800 MS/s

FEC Rate: 2/3

EIRP: 30.5 dBW

Network ID 6

Coverage map: <http://www.newskies.com/PBFleet/fleet7new.asp> (global)

### **AMC-1 Ku Band (The Pentagon Channel)**

Location: 103 degrees West

Band: Ku

Transponder Polarity: Vertical Polarization



Receiver Setting Polarization: Vertical  
Ku band frequency: 12.100 GHz\*  
Transponder number: 20  
Symbol Rate: 20,000 MS/s  
FEC Rate:  $\frac{3}{4}$   
Network ID:1  
Defense Media Center Satellite Handbook V.3.15  
Appendix D page 22  
Encryption: none  
Coverage map: <http://www.ses-americom.com/satellites/amc-1.html>

### **AMC-1 C Band Domestic**

Location: 103 degrees West  
Band: C  
Transponder Polarity: Horizontal Polarization  
Receiver Setting Polarization: "H-fixed"  
C-Band frequency: 4.065.75 GHz  
L-Band frequency: 1.084.25 GHz  
Network ID 9  
Coverage map: <http://www.ses-americom.com/satellites/amc-1.html>