

This guide was developed to help American Forces Network customers who desire to receive AFN programming where access to a military installation cable distribution system is not available. The frequently-asked questions provide a broad explanation of AFN signal distribution and reception issues to help you tune in AFN programming.

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## Satellites carrying AFN programming

The American Forces Network uses five satellites to distribute programming around the world. Your location determines which satellite you can 'see,' the size of satellite dish you need, and the type and kind of low noise blocker (LNB) you will need to acquire a signal.

#### Direct to Home (DTH) Satellites

#### Eutelsat 9B (Will be terminated March 2026)

Location: 9° East Band: Ku-band Transponder: Wide Beam Area: Europe and Western Asia

#### Koreasat 5A (Will be terminated March 2026)

Location: 113° East Band: Ku-band Transponder: NEAsia Area: Japan, Korea & Philippines

#### Direct to Sailor (DTS) Satellites Intelsat 35e

Location: 34° West Band: C-band Area: Atlantic Ocean Region Transponder: Global

#### **NSS-12**

Location: 57° East Band: C-band Transponder: Global Area: Indian Ocean Region

#### **Horizons 3e**

Location: 169° West Band: C-band Transponder: Global Area: Pacific Ocean Region

**Note:** Because of the unique signal compression used on the DTS service you can use a 1.5 meter satellite dish at most locations to acquire a quality signal.



## Getting service, step by step

The first step in seeing if you can get service is to determine if you can "see" the satellites that carry AFN programming. You must live in an area where you have an unobstructed line of sight (LOS) between where you place or can place the satellite dish and the azimuth (left and right) and elevation (up and down) between the dish and the satellite. If there are large trees, buildings or other terrain obstructions in the line of sight you will not be able to get a quality signal.

Before you sign a rental agreement we recommend you check with the housing office and any potential landlord to see if the landlord will allow you to place a satellite dish on their property. If you can, determine the azimuth and elevation by following the steps on pages 10 through 12. There are several smartphone apps available that can help you determine the azimuth and elevation of any potential satellite dish location. We recommend you only buy or lease the equipment needed to get AFN after you've determined you can receive it where you live.





## **Satellite Dish Characteristics**

The C-band or Ku-band satellite signal transmission and your location in the satellite footprint are the primary factors that determine the size of a satellite dish you need to acquire a signal. The higher power of Ku-band transmissions allow you to use a smaller satellite dish to obtain a quality signal. This is how American companies like DirecTV<sup>®</sup> send content to their subscribers. The lower power of a C-band transmission requires a larger dish to get a good signal. Remember a 1.5 meter dish should work to get DTS service at most locations due to the signal compression characteristics of that service.

AFN recommends round satellite dishes with a solid reflective surface. Having a slightly larger dish than required also offers better signal stability to counter a phenomenon called 'rain fade,' which may occur during periods of heavy rain and snow or very dense cloud cover.

The LNB technical specifications vary depending upon the satellite you're trying to lock to and the transponder and band used. Signal acquisition will not happen if you have an LNB that doesn't meet the technical specifications for the signal you're trying to acquire. Determining the minimum size dish needed and LNB requirements are covered later in this guide.





## **Determining Satellite Dish Size**

Check the information on page three to determine which satellite footprint you're in and which transponder AFN uses on that satellite to deliver programming. In the example below you are seeing the "Wide" beam, Ku-band transponder footprint on the Eutelsat 9B satellite on <u>www.satbeams.com</u>.

① From the main page select 'footprints.'

- <sup>②</sup> Select the orbital position of the satellite.
- ③ Using the scroll bar under the mini footprint maps, scroll to the correct satellite.
- ④ Select the proper transponder.





## **Determining Satellite Dish Size**

This example demonstrates steps necessary to determine the satellite dish size and other pertinent information for a person living off base near Rota Naval Station in Spain. In this example we are using the Eutelsat 9B Ku-band satellite footprint as this is a satellite delivering AFN content to this location. The identified steps work for all locations.

Once you have selected the proper satellite and transponder on <u>www.satbeams.com</u>, zoom in on the map and left click the mouse on your location. A 'reception details' dialog box appears on the map and displays the recommend dish size. Another 'reception details' box on the left side of the screen provides additional information.





## **Determining Satellite Dish Size**

Now that you know the recommended satellite dish size, use <u>www.dishpointer.com</u> to get the elevation, true and magnetic azimuth and the LNB Skew specifications.



- ① Entering your city and country will position the map to the center of the city and speed up the process of finding your location.
- ② The pull-down menu lists the satellites by their orbital location above the earth's longitudinal lines. Check the satellite positions on the chart on page three to verify the location of the satellite you wish to find. **NOTE:** dispointer.com uses Eutelsat 9A and 9B interchangeably.
- ③ Click on the green pin and drag it to your location. You can zoom in and out of the map by using the +/- in the lower righthand corner or the mouse roller wheel.
- The dish setup data will help you properly align your satellite dish to achieve a quality signal. Mouse over the four data elements to display a pop-up box of additional information.



Definitions		
<ul> <li>C-band: Satellite transmission that uses lower downlink frequencies between 3.74 and 4.2GHz. The lower frequencies that C-band uses perform better under adverse weather conditions than Ku-band frequencies.</li> <li>Decoder: A component or box that is used to decrypt encrypted satellite signals. All AFN programming is encrypted to limit access only to the authorized audience.</li> <li>DTH: The Direct to Home service that provides eight television and 18 audio services.</li> <li>DTS: The Direct to Sailor service that provides three television and three audio services.</li> <li>Feedhorn: A part of a satellite dish system which gathers the reflected signal from the dish and focuses it toward the LNB.</li> <li>Ku-band: Satellite transmission that uses higher downlink frequencies ranging from 11.7 to 12.7GHz</li> <li>LNB: A low-noise block downconverter is the receiving device mounted on satellite dishes used for satellite TV reception, which collects the radio waves from the dish. There are three types of LNBs: circular polarization, linear polarization and universal. DIrect to Home Ku-band customers should use a universal Ku-band LNB. DTS C-band customers should use a circular polarization LNB.</li> <li>LNB Skew: The required rotational angle needed to match the</li> </ul>	<ul> <li>Rain Fade: The degradation of a satellite signal caused by atmospheric conditions like heavy rain, snow or thick cloud cover.</li> <li>Satellite Transponder: Satellite transponders are like TV channels, you have to be tuned to the right transponder to see the content you want.</li> <li>Unstable Signal: An unstable signal error occurs when the satellite signal reaching the dish is not strong enough to achieve a quality signal. The cause off this error is typically weather related during periods of heavy rain, snow or thick cloud cover.</li> </ul>	
horizontal and vertical position of the orbiting satellite.		

# **FN** Signal Acquisition Guide

## **Helpful Links**

Adjusting the elevation and azimuth of a satellite dish: <u>http://www.sat.drossel-services.de/method.php?lg=EN</u>

How does satellite TV work? http://www.tech-faq.com/satellite-tv.html

Find the satellite dish size you need at www.satbeams.com

Finding the dish elevation, azimuth and LNB Skew: www.dishpointer.com

Dish alignment calculator using Google Maps: http://www.geosats.com/lookangle.html

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