

Scope

The document provides a consolidated reference of techniques to enhance signal reception performance of your Dreamcatcher (as of this writing, v3.03, running on Ku band satellite SES-2 for North America). This document does not include information about where Othernet service is available, how to setup or otherwise use your equipment.

Background

The Dreamcatcher operates using a bare LNB (Low Noise Block Downconverter) to receive signals transmitted from a satellite (SES-2 for North America as of this writing). The signal being transmitted is notionally strong enough across the United States (contiguous 48 states) to be received using only a bare LNB (eg no dish antenna) and correct aiming/alignment. Due to weather patterns (heavy clouds, rain), geographical influences and nearby RF pollution sources, the Dreamcatchers signal reception performance may be increased using a “horn” or “cone” over the LNB. Alternately, an appropriately chosen dish antenna (“satellite dish”) may be employed.

How Much is Good Enough?

If you’re reading this with the intent of improving your reception, or generally “make it better”, be aware that “making it better” beyond what’s “good enough” doesn’t provide any benefit. A SNR of - about -13dB is required for lock and signal reception and decoding. The SNR value tends to fade during bad weather (rain fade). If, during times of bad weather, your Dreamcatcher has a good SNR (> -13dB), and retains lock, then there is nothing to do -your setup already has enough margin.

There is a minimum SNR required for demodulation. After accounting for margin due to weather, there is no additional benefit to having better SNR. – Syed, May 2018

Sources and Attributions

Information taken from the following threads:

- <https://forums.othernet.is/t/increasing-gain-with-15-degree-cone/5258/>
- <https://forums.othernet.is/t/free-supplies-for-cone-extension-experiment/5373/>
- <https://forums.othernet.is/t/dreamcatcher-v3-02-feedback-thread/4997/>

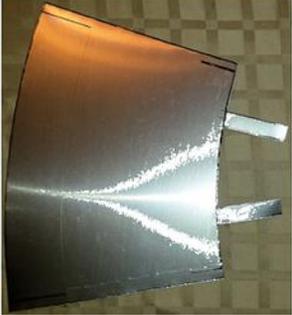
Each design is denoted with the creators Othernet Forum Username in the “Construction” column. All information provided per-row is created and owned by the username listed.

LNB Cones / Horns

This section collects the various designs created and tested by Othernet Forum Members. In most if not all cases, the received signal strength (RSSI) is not changed with the addition of the horn or cone. It is only the Signal to Noise Ratio (SNR) that is improved. Therefore, RSSI performance is not listed, rather only SNR improvements. SNR Improvements listed are the values reported by the forum members during their own tests. The following table serves as a rough guide to assist in the creation of such a device. The exact performance depends on several factors (construction technique, alignment with LNB, precision of aiming at the desired satellite) and therefore the values listed below serve only as a reference.

Construction	Finished Product	SNR Improvement
<p>Collapsed metal rings, approx 2" diameter</p> <p>kenbarbi</p>		<p>+2dB</p>
<p>7.7cm diameter x 11 cm tall tin-can. We had to cut approximately 0.2 cm from the bottom to remove the floor of the can. We slotted the sides 1.8 cm wide by 8 cm deep to accommodate the LNB mounting hardware</p> <p>maxboysdad</p>		<p>+2dB</p>

Construction	Finished Product	SNR Improvement
<p>1-gallon paint can</p>  <p>maxboysdad</p>		<p>+2dB - +3dB</p>
<p>16 oz Styrofoam cup covered in aluminum duct-tape</p>  <p>thomslk</p>		<p>+2.5dB</p>
<p>Pringles potato chip can</p> <p>kenbarbi</p>		<p>+3dB</p>

Construction	Finished Product	SNR Improvement
<p>2.5" at the narrow end and 3.5" at the wide end, pattern expanded from the 12-oz soft-drink cup. The shield is cut from 0.019" aluminum sheet</p>  <p>maxboysdad</p>		<p>+3dB to +3.5dB</p>
 <p>Konrad_Roeder</p>		<p>+3.5dB</p>
<p>7" funnel from an auto-parts store, lined inside-and-out with aluminum duct tape</p> <p>maxboysdad</p>		<p>+4dB</p>

Construction	Finished Product	SNR Improvement
<p>4" x 2" x 8" Aluminum Flashing (held together with duct-tape)</p>  <p>kenbarbi</p>		<p>+4.5dB</p>
<p>1/4" grid "hardware cloth". The opening at the LNB is 2.5", the opening toward the sky is 5" in diameter and the cone is 8" from LNB to the outer opening.</p>  <p>maxboysdad</p>		<p>+5dB</p>
<p>5" x 2.25" x 9" cardboard covered with aluminum foil</p> <p>ALOI</p>		<p>+5.25dB</p>

Construction	Finished Product	SNR Improvement
<p>5" x 2.25" x 9" Wire mesh</p> <p>thomslik</p>		<p>+7dB</p>

Dish Antennas

Though the intent of using the Dreamcatcher is to simply aim a bare LNB at the transmitting satellite, some forum members have successfully implemented dish antennas:

This YouTube video shows you how to adapt a linear LNB (like the one for Outernet) onto a dish previously used for DishNetwork or DirecTV. These use circular-polarized LNBs. The LNB needs to be swapped out. This video shows you how: [How to convert and install a old trashed DTV satellite dish to a FTA Dish](#)

- Konrad_Roeder May 2018

An example from forum member Barefoot_Mike (March 2016) looks like this:

