

# AREDN

- [AREDN](#) is a project aimed at using wifi devices to create a computer network independent of the internet. Since hams have access to sections of the 2.4GHz and 5.8GHz bands that regular wifi devices don't, those channels are quieter and longer distances can be achieved with better antennas.
- [NARA](#) on the island is leading the way in creating this network in our area, and a few people on the Coast have started experimenting with some of the equipment.
- [This message board](#) is very active with local hams and what they're working on.
- [This map](#) shows the nodes that are live in the area.
- [This site](#) is useful to model line of site, including the 📶 [Fresnel zone](#).

## Getting Started

The easiest way to get started is to get a [Microtik hAP AC Lite TC](#). Once flashed with the AREDN firmware, the device will use the 5.8GHz band as regular wifi for your computer to connect to, and the 2.4GHz band will be used to mesh with other devices within range. Realistically, the hAP is not useful to make long distance links since it would require an external antenna. But it is useful to tunnel to others on the network via the internet to get started with the system. To add RF links, an outdoor device can be connected to the hAP later. See the [support matrix](#) for more information.

## Services

Once on the AREDN network, individuals can run different services on small servers like the Raspberry Pi. A few examples we have running right now are:

- VE7ODG's [Mattermost](#) service for chat. See [here](#) to sign up. You can also use a phone app instead of the web interface as long as your phone is connected to the AREDN network.
- The Island's [VOIP phone network](#)
- VE7LSE's [Winlink gateway](#).<sup>1)</sup>
- and more ...

## Connection Between Nanaimo and the Sunshine Coast

On July 4, 2021, Chris (VE7TOP) and Patrick (VA7FI) made a successful connection on 5.860 GHz (Ch. 172) between Nanaimo (49.227263, -123.975836) and Roberts Creek (49.45465, -123.64199): a distance of 35 km.



### VA7FI's Setup

Patrick installed a [Mikrotik LDF-5](#) (the n model, **not** the ac model) on a used TELUS satellite TV dish.

- The first task was to mount the LDF-5 to the dish roughly where the old receiver was. Unfortunately, the arm and the LDF-5 mounting bracket were both a bit too short so the LDF-5 was too close to the dish and too low:



- So a second arm was bolted on top of the first to raise the LDF-5 and move it a bit further away:



- Initially, the dish was mounted on a post with a 45° angle, but after field testing it, it was found to be unnecessary and a vertical post will be used next time.



- Here's Patrick's setup and the view from the dish. The red circle marks the spot where Chris is. The [log periodic](#) was for VHF communications between Chris and Patrick to perform the adjustments.



- Here are Patrick's settings:



- For the first test, Chris used a dish ( : add details). After adjusting the dish's directions and elevations, the best signal strength received by Patrick was above -60dBm (which is pretty impressive!) with an SNR of over 35dB:



- For the second test, Chris switched to a 120° sector antenna ( : add details). Here, the best signal strength received by Patrick was a bit above 80dBm with with an SNR of about 17dB:



These two tests show that it is possible to establish a connection between Nanaimo and the Sunshine Coast. The 120° sector antenna might be pushing it a little bit, but a 45° sector antenna would be enough to cover Gibsons through Sechelt and would offer an additional 6dB of gain over the 120° sector antenna.



1)

Screenshots of how to send messages through VE7LSE's Winlink gateway:

