

VA7FI's AREDN Setup

The goal is for my **computers** to connect to **other AREDN nodes**. Currently, I achieve this via two different paths:

1. via an internet tunnel to VE7RBE in Gibsons (which is not really ham radio), and
2. via the 5.8 GHz band to one of the Mount Benson nodes on Vancouver Island.

I also have my system running off of 12 V batteries so it (and my internet connection) continues to work during power outages.



July 1, 2021

I 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 it was too low:



- So I bolted a second arm 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 a bit much (an angle of 20° would be ideal, but I used a vertical post later).



July 4, 2021 Test

A few days later, Chris (VE7TOP) and I 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.



- Here's my setup and the view from the dish. The red circle marks the spot where Chris is. The **log periodic** was so Chris and I could talk on VHF to perform the adjustments.



- Here are my settings:



- For the first test, Chris used a dish ( : add details). After adjusting the dish's

directions and elevations, the best signal strength I received 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 I received 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 60° sector antenna would be enough to cover Gibsons through Halfmoon Bay and would offer an additional 4dB of gain over the 120° sector antenna.



Aug 1, 2021

Today, I managed to install my AREDN dish up the tree, run the CAT5 to the house, and connect it to the hAP. I started working at 7:45 this morning and finished around 5pm (after climbing up and down three times).

I aimed the dish roughly towards Mount Benson (222°), but unfortunately, I didn't manage to make a connection to the node there.



Oct 31, 2021

Yesterday, the folks on the Island went back to Mount Benson and adjusted the tilt on their antennas. After the adjustment, I started getting an intermittent signal. So today, I went back up the tree and used that signal to fine-tune the adjustment of my dish and managed to squeeze an extra 5-10 dB! Here's a graph of the signal before, during, and after the adjustment:



Unfortunately, it looks like I can hear the Mount Benson node 6-7 dB more strongly than it can hear me. I'm transmitting at 25 dBm ¹⁾. The equipment on mount Benson can transmit at 27 dBm ²⁾



Here's the status report pages for both nodes. It looks like I might be able to reach 1.6 mbps, which is pretty impressive compared to VHF packet, but still pretty slow compared to the other stations.



¹⁾

$$25 \text{ dBm} = 10^{2.5} \text{ mW} \approx 320 \text{ mW}$$

²⁾

$$27 \text{ dBm} = 10^{2.7} \text{ mW} \approx 500 \text{ mW}$$