

Overview

The Byonics AA1 is a active attenuator (also called an offset attenuator) used to reduce the signal strength of a received radio transmission on an amateur radio transmitter hunt, or foxhunt. Typically, when a receiver is very near a transmitter, the received signal is so strong that a direction cannot be determined. The AA1 can reduce that signal to a more useable level, allowing the transmitter to be located. The AA1 mounts directly to the female SMA antenna jack on many radios, between the radio and an antenna, typically a yagi with an SMA male antenna cable. It is powered by an included 3V CR2032 coin cell and can be used on both VHF and UHF.



Theory of Operation

When two waves are mixed together, the products are the original waves, plus the sum and difference of those waves. The AA1 mixes an internally generated a 1 MHz signal with a nearby strong radio transmission to generate images at 1 MHz above and below the transmitter frequency. Since the AA1 can control the strength of the 1 MHz signal, it can also control the intensity of the image frequencies. By tuning a radio receiver to one of these image frequencies, a scalable signal can be monitored.

Operation

When the received signal is too strong to determine a direction, install the AA1 between the radio antenna jack and the receiving antenna. **Tune the radio to 1 MHz above or 1 MHz below the transmitter frequency.** For example, if the transmitter is on 146.565 MHz, tune the receiver to 145.565 MHz or 147.565 MHz. Turn the AA1 on by rotating the knob clockwise and the yellow LED will light up. Rotate the knob clockwise to increase the image signal strength, and counter-clockwise to reduce it, similar to a volume control.

Notes

- **Do not transmit through the AA1.** It is recommended to set your radios to a memory channel with a transmit frequency outside the usable limits to prevent accidental PTT.
- For radios with a male SMA antenna jack, a female to female SMA adapter can be used. For radios with a BNC antenna jack, a BNC male to SMA female adapter can be used.
- When installed, the AA1 will slightly reduce signal strength even when the radio is tuned to the actual transmitter frequency. Therefore it is recommended that the AA1 not be connected at the start of the hunt, when the signal is weaker and a direction can be determined without it.
- For even more attenuation, tune 2 or 3 MHz above or below the transmitter frequency. Each multiple of 1 MHz should produce a weaker image.

- It is handy to program the transmitter frequency into a radio memory, and then a frequency 1MHz away from that the next memory for easy selection.