



## Hams, dogs and electronic dog fence issues

Got dogs ? I have a new Golden Retriever addition to the household. I have had great success with the invisible fence products used to train a dog to stay in a confined property area. My other dogs have also been Golden's and they seem to be remarkably easy to train to stay in the fence area.

At my previous Halifax QTH I had an invisible fence that did not produce any detectable HF radio noise.

At my new QTH site I decided to fence off about an acre for the dog, with idea of expanding it to a larger portion if needed. The area includes a large area down to the lake behind me, the house and barn. My dog can follow me around, run and play or find a sunny spot to nap. No actual fencing in site anywhere.

BUT..this newer unit generates wideband radio noise, and lots of it. There is a 120 Hz pulse racket from around 500 KHz all the way up to 14 MHz. And it's nasty.

The fence unit functions correctly and there are no specifications on the noise emissions from these things. This one claims it is immune to external RF noise. I can't verify that completely but my 1 KW outputs on CW or SSB have not tripped the thing off yet.

But the noise generation from the unit itself had to be cured.

My fence wire ( antenna wire) is lying on the ground. Some of it is buried a few inches where it crosses a drive way and a boat ramp. It encircles around 1 .2 acres. The worst pickup on my antennas comes from the radio antenna that runs parallel to one leg of the fence wire, and about 60 feet above it.

These units typically use a carrier frequency below 10 KHz. Using a portable scanner around the transmission unit allowed me to zero in on the RF noise.

### ISSUE # 1: Power supply.

Mine came with a typical walwart style 12V switching unit, ironically labelled " Radio Corporation of Thailand". The noise from this thing was astounding. Tossed that unit in the trash and substituted a much better behaved power supply that was originally intended for Dell laptops. That took care of a large chunk of the noise radiating around the transmitter, but there was still transmitted RF out on the fence wire.

## ISSUE #2: HF radiation from the fence wire

I decided a low pass filter with a knee in the 50kHz region should be suitable for filtering out the HF noise. A simple RF inductor in series with one of the output leads did the trick. I started with 500 uH and increased the windings on a junk box ferrite toroid until the unit was quiet. In the end I settled on 750 uH. I wound mine on a 3F3 ferrite core.

There is now radio peace and quiet and the dog fence still works fine.

It is entirely possible a different installation may need more or less filtering. However, trial and error is not hard to perform.

Like so many consumer products these days, there is zero effort from the manufacturers to make their products RF quiet. Disappointing in so many ways.

If you run across this problem with your own fence or maybe a neighbours fence that is causing issues for your gear, the solution may be as simple as a single inductor as a low pass filter. Be sure and test the fence for functionality after wards. Usually the collars for these systems indicate they are triggered with a low level beep and a small correction pulse, depending on how they are setup. I had to increase the strength of mine very slightly to attain the same performance as the unfiltered mode.

The VE1ZAC radio pup happy with his “Radio quiet” fenced area

