RFI – What is it and what can I (or you) do about it?



de K5GP Gene Preston



Your initial response to radio noise.



You would like to call the power company and demand they fix it.



What's Wrong With Calling the Power Company Too Soon?

- The power company is not likely to find your source of noise. Why?
- The person assigned to look for your radio noise is probably not very well trained.
- Their equipment is either too good or too poor (AM radio) at locating the radio noise.
- Once the power company doesn't find the noise, your case becomes lower priority.

Let's go find the noise with this:





How to resonate the small loop



What the 40 meter loop does:

- Able to listen on the same noise frequency
- Able to get a rough idea of the direction
- Able to walk in that direction to get ever closer to the source
- Get close enough to the source to switch to a VHF or UHF frequency – why?

When we get close – switch to this.



Why use a 440 MHz beam?

- Only hear the noise when very close
- Sharp forward beam clearly tells direction
- Beam is able to locate source on the pole
- Beam is able to identify the polarization
- All this information usually allows the likely defective component to be identified
- But are we absolutely sure this noise source is the correct noise source?

Is this the right source?

- The ARRL recommends using special equipment that matches noise signatures
- An alternate approach is to use a time correlation
- I.e. when the HF band noise changes, such as going away, then check the UHF located source to see if it also has done the same thing
- I did this on/off correlation for a week

Now its time to contact the power company.

When making contact, tell them you have identified a noise source on pole xxxxx.

Set a definite time to meet with them at the site.

Let the power company listen to the noise on your receiver – loudly!

Keep the receiver turned on while they poke around looking for the source.

When the noise stops, the component is identified and can be changed out.

In my case, the component was a loose ground wire – the nut was loose.

It was tightened and the noise was gone when the circuit was re-energized.

The total time for the line crew was only 30 minutes from the time they arrived.

Quick repair times usually foster a cooperative relationship with the power company.

Finding the source may not be easy.

Such was the case for a noise problem that occurred for a power transformer with an internal arcing problem.

This Faulty Transformer Was Removed.



And replaced it with this one:

5000KVA 34.5KV-12470Y/7200 12817332

> First Choise

TESTED GOOD RF 19/23/2002 DL3 5DR



What have we learned?

- Finding the source of noise is the first step
- Well equipped hams can quickly locate the source of noise and should do so
- Its best to minimize the cost and time the power company spends on your problem
- As long as the power company is cooperative do not contact the FCC
- Contact <u>http://www.arrl.org/tis/info/rfi-elec.html</u> and <u>rfi@arrl.org</u> for assistance before contacting the FCC
- Send a formal complaint to the FCC after exhausting all cooperative and technical efforts

Here are common sources of power line noise

- Loose bolts on wooden poles
- Strings of slack span insulators
- Leaky lightning arrestors
- High current connections that no longer have a low resistance contact
- High voltage lighting with arcing connections
- Cracked or leaky insulators

Note the slack span and bell insulators



Low Tension Bell Insulators Are A Noise Source



Fiberglas/Rubber Insulators Are Low Noise



Lightning arrestor and fuse cutout



Air switch contacts can make radio noise



Transformers, arrestors, and fuses



A sign can radiate noise as a 1/4 wave vertical antenna



Your noise may be coming from your own equipment or within your house.

Use the HF loop to check out your neighboring houses. Offer to put in ferrite filters to keep their noise contained.

Here is a filter to remove telephone interference



Here is an electronic transformer that makes RFI



Here is a choke for an electronic washing machine with RFI



Questions?

