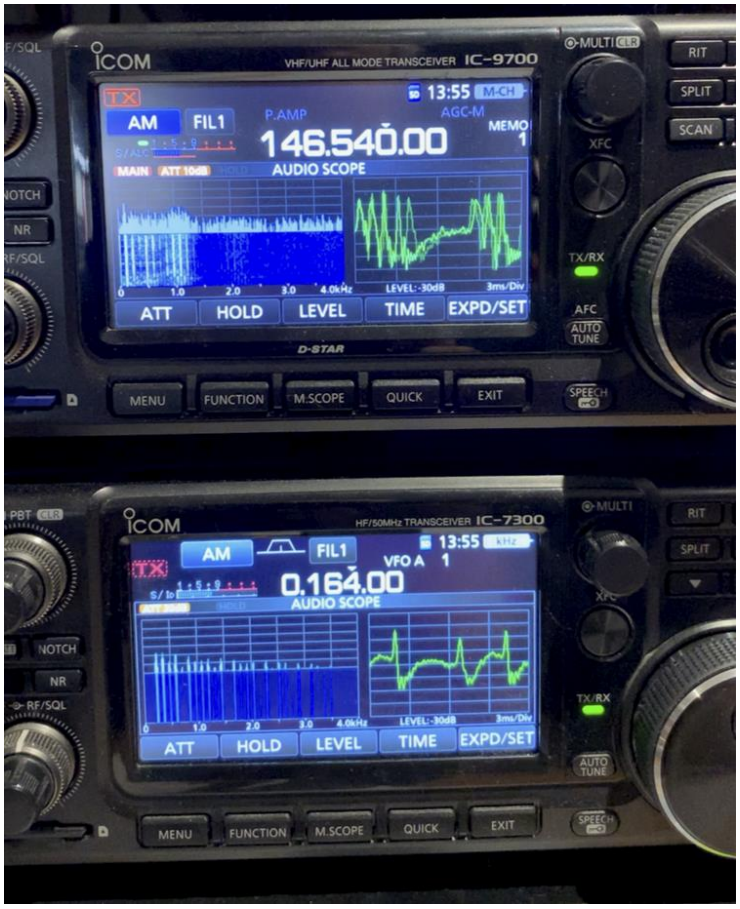
What Does Line Noise Look Like?

The amount of email I get from people complaining about AC noise every week is increasing as more and more people seem to be plagued by it. I want to show you a picture of what line noise actually looks like and what it sounds like. If you are a member of the ARRL you will have received the September 2021 issue with a special emphasis on one case of solving line noise. It is a good article to read and realize that it isn't just a simple thing to find the problem and expect the utility company will come out and fix it. In my case I have a line noise problem that reaches all the way up into UHF and it is especially strong. I have been working with Fortis Alberta to solve it and we are just about there. They have been most helpful as have Industry Canada in solving this problem. However, the sleuthing to find it takes work on your part too. Don't just tell them you have a noise problem and expect them to come and fix it. It simply doesn't work that way.

One of the things you must fully understand is what you are looking for in the first place. For instance, there is a particular signature that AC line noise presents on a scope that needs to be there before it can be identified as line noise. Here a a picture of what line noise looks like:



You will notice that the top part of the image is at 146.54 mHz and the bottom one is at 164 kHz. That is the same interference and the same source. It is coming from a transformer down the lane from my house and the utility company is going to attend to repairing it as soon as they can get a crew out to do it. They will work with me at the same time to ensure the problem has been solved. There is a particular sound to this type of noise. If it doesn't sound like this, it isn't line noise. You have another problem. The sound of line noise is very distinct and will be at 120 Hz always because the peak noise pulses will be twice the 60 Hz line frequency. This is because there are two peaks on the waveform, one on the positive side of the cycle and one on the negative side of the cycle. Here is what it will sound like...

Play

So that is typically what you will here when you find an AC hash on your radio. This one was recorded on the IC-9700 at 146.54 mHz using AM as the mode. So if you happen to see your FM 2M rig showing a high S meter reading it is likely

being interfered with by AC hash. Do some searching with an AM VHF radio or your HF rig on AM and find out where it shows up and then begin the task of trying to find the source. It might take a while, but the search is interesting and sometimes frustrating as the noise may be coming from quite a distance away. Move around your neighbourhood and expand the search out till you find the likely source. Then pass the information to the utility company so they have something to work with.

Good luck.

73
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