RFI Resources

By Mel Ming N7GCO

(NOTE: I am not going to deal with noise caused by antennas and antenna feedlines)

1. Locating noise from within your home.
   (Note: I find this is much easier to do with a friend. One can watch the radio while the other turns off and on circuits are checks a room.)
   1) Power your radio by battery
   2) Turn off all your electrical breakers for the entire house.
   3) Note you noise level on each band (Write it down)
   4) Turn on breakers one at a time and again note the noise level on each band.
   5) Identify which circuits increase your receiver noise.
   6) Work on each circuit that increased noise one at a time.
   7) On a circuit that increases noise, turn off all lights, unplug everything.
   8) Turn on each light one at a time and see if it increases noise. (Note: you can use an SDR/shortwave receiver to help you identify which light is causing noise.)
   9) Plug in thing, one at a time and see if it increases noise. (Note: you can use an SDR/shortwave receiver to help you identify which electronics is causing noise.)
   10) Turn on each piece of electronics on at a time (Washer/Dryer/Microwave/computer/UPS/TV/router/etc.)
   11) Mark each thing that increases noise.
   12) Add Ferrites to any items that increase noise until it is eliminated.
   13) Do the same thing for each circuit.
   14) Do not forget to turn on appliances that are on in circuit.

2. Sources for Ferrite's

   KF7P Metalworks
   https://www.kf7p.com/KF7P/Ferrite_chokes.html

   Palomar Engineers
   https://palomar-engineers.com/

DX Engineering
https://www.dxengineering.com/search/product-line/dx-engineering-ferrite?autoview=SKU&sortby=Default&sortorder=Default

Arrow Electronics
https://www.arrow.com/en/products/search?cat=&q=Fair-rite%20mix%2031&r=true

Note: much cheaper in bulk.

Ferrites to consider:

Fair-Rite Part #0431164281
This is a split core 31 mix ferrite, that nicely fits RG-8x

Fair-Rite Part #0431164181
This is a split core 31 mix ferrite, that nicely fits RG-8

Fair-Rite Part #2631803802
This is a non-split 2.5 inch diameter 31 mix ferrite, will take 4 or 5 turns of RG-8x

Fair-Rite Part #0431173551
This is a split core 31 mix ferrite, with a .75 inch I.D. opening. You can make many turns of a wall wart cable.

3. Tips and Suggestions

Whenever you buy ferrites, be sure to mark what mix they are.

Palomar Engineers
Ham Radio RFI Solutions Cheat Sheet.pdf
https://palomar-engineers.com/wp-content/uploads/Ham-Radio-RFI-Solutions-Cheat-Sheet.pdf

RFI Tip Sheet
https://palomar-engineers.com/wp-content/uploads/RFI-Tip-Sheet-3D-Consumer-RFI-1.pdf

4. Technical Help
   "A Ham's Guide to RFI, Ferrites, Baluns, and Audio Interfacing" version 7 by Jim Brown K9YC
   http://audiosystemsgroup.com/RFI-Ham.pdf

   "Build Contest Scores by Killing Receive Noise" by Jim Brown K9YC
   http://audiosystemsgroup.com/KillingReceiveNoise.pdf

   "A New Choke Cookbook for the 160–10M Bands" by Jim Brown K9YC
   http://audiosystemsgroup.com/2018Cookbook.pdf

   "Chokes and Isolation Transformers For Receiving Antennas" By Jim Brown K9YC
   http://audiosystemsgroup.com/RXChokesTransformers.pdf

   The EMI - RFI page by ON4WW
   http://www.on4ww.be/emi-rfi.html

   NK7Z.NET (Dave Cole's website has many great RFI Resources)
   https://www.nk7z.net/category/info/rfi-mitigation/i-have-rfi-series/

   The ARRL RFI Book (3rd edition) $19.95
   http://www.arrl.org/shop/The-ARRL-RFI-Book-3rd-Edition

5. YouTube Videos

   Ferrite, chokes, and RFI
   https://www.youtube.com/watch?v=LuMlM8zWQFk

Detecting RFI Sources in the Shack and Home
https://www.youtube.com/watch?v=0_919kOA45U

Radio Frequency Interference (RFI) Resolution Tutorial
https://www.youtube.com/watch?v=K_1hBFMzbAs

We are killing the amateur radio bands, and here is how to fix it
https://www.youtube.com/watch?v=K_1hBFMzbAs

LCARA HAM Radio: Reducing RFI in the HAM Shack!!!!
https://www.youtube.com/watch?v=3-Og-7tSl_8

Power Line Noise On Your Ham Radio? How To Find AND Get it Fixed
https://www.youtube.com/watch?v=TtDJpq8UIGo

6. Hints from others:

Mike K7STO

There are so many issues to eliminate. First off I would again turn off all Service Disconnects on your property. Your radio should be running only on 12v battery supply. Questions are many and not in any specific order;

a) As Gary indicated new solar panel installations in your area.
b) Is the noise issue just now new or has it been there all along? The high S levels on all three bands. My option the noise producer is close by if 20 meters is also involved.
c) With the Service Disconnects on your property off and the radio on battery. Did you disconnect the coax at the radio? Did the noise stay or go away? If it stays it may it could be a grounding issue with the radio.
d) Did the power company recently install a new watt meter on your house? The type that transmit a usage signal to a receiver in your area and then to the power company. This also applies to gas and water meters.
e) You are also in a heavy populated area. Does the noise go up in level during the day and down at night or stay constant?
f) Check all three bands when testing for changes in S levels.
g) Do you have garage door openers with a built in UPS system?
h) Do you have new vehicles or RV's with features that may be the noise source?