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Lee Co ARES Training Net

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Tonight's training is on Electromagnetic Interference.

If you've ever keyed a mic and had your garage door open, or motion sensor lights come on, or the touch sensor kitchen faucet start spewing water, or feedback thru your stereo equipment, you've experienced EMI. If you're lucky, these anomalies are only limited to your household and not your neighbor's (in which case you'll also need to include a healthy amount of diplomacy in your tool bag to fix the problem).

And you must fix the problem.

FCC regulations Part 97 requires the ham operator to fix any interference created from the operation of their transmitter. Fortunately, most cases of interference are not the fault of the transmitting station, but usually involve some type of electrical noise or fundamental overload. After decades of investigating interference complaints, the FCC no longer pursues RFI complaints to telephone, TV, or entertainment systems, but encourages the consumer to contact the manufacturer of the affected equipment. FCC rules on computer RFI are simple and clear cut. Computers are part 15 devices and as such they may not interfere with any licensed radio service and must accept any interference.

That doesn't mean you're off the hook with your neighbor. You still need to work thru a solution that's agreeable to all parties, so you can continue to be a good neighbor. Under no circumstances should you work on any of your neighbor's electrical devices. If any thing goes wrong, guess who will get the blame.

This is when the ham becomes a detective; Who is involved? What devices are impacted? When does it happen? Where is it located? How do you fix it?

Interference from ham radio to other devices may be caused by too much power, close proximity to the antenna, poor grounding, high SWR, or the equipment being impacted may have a poor electrical design or construction. Some methods used to correct these problems include adding bypass capacitors, additional shielding and grounding, RF chokes on all input or output cables connected to the device, low-pass filters, etc.

On the flip side, FCC regulations requires the owner of any device that is interfering with any radio service to fix the problem within a given time frame or suffer a fine. Interference to radio reception can be caused by large motors, LED lights, microwave ovens, computers,

monitors, power supplies, welding equipment, electric fencing, improper grounding, or a host of other items owned by neighbors, local business, or even your local electric utility.

You may have seen or heard arcing on high voltage power lines during times of high humidity or fog. This can be due to pollution that has accumulated on the insulators or may be an electrical device that is failing such as a leaky lightning arrester on the electric utility power pole outside. The source of the electrical noise can be close by or many miles away.

Identifying the source of electrical noise on the ham bands can be time consuming. The first step is to eliminate the obvious. Is the noise coming from inside your house or down the street? Using a battery powered radio, move about the house placing the radio near any suspected electrical device; you're looking for noise in the form of static, whistles, snap, crackle, pop. Turn off your main breaker to your house. Did the noise go away? If not, the source is outside. Take the battery powered radio and go for a walk. Again, you're looking for noise. Take notes and photos. Don't trespass on private property. Once you think you've located the culprit, approach the owner of the equipment and express your concerns and ask for their cooperation in addressing the problem. Be diplomatic. Filing an RFI complaint with the FCC should only be done as a last resort.

To explore this topic further, the ARRL has a wealth of resources: on their website, in past issues of QST, and in the ARRL Handbook (which I highly recommend). If you are faced with an interference problem and your neighbor is convinced that you are the culprit, help is available in evaluating the problem. Your ARRL [Section Manager](#) can refer you to your section's Technical Coordinator and to other local sources of assistance.

References:

ARRL Handbook

ARRL website

HamUniverse.com – “RFI Tips and Tricks” – Mark Lowell – N1LO