

Some easy steps you can take if you have an RFI problem

1. Start keeping a log, when it starts/stops, bands, modes, symptoms on your receiver.
2. Ensure the RFI isn't coming from your home; perform a circuit breaker test (see NK7Z link below).
3. Do some direction finding (with a helper if possible). Focus on "where" the RFI might be coming from, rather than "what" the RFI might be. This can be done simply, even with a small portable radio.
4. Keep track of conversations with neighbors, utilities, others regarding the noise (provided you have located the noise).
5. If you find the source, see if others have had the issue, look for a resolution (see below).

Getting help from others

If you need help finding or resolving the noise, here are some additional resources:

Contact a local **ARRL Affiliated Club** or your **ARRL Section Technical Coordinator**:

- ▶ Local club search:
www.arrl.org/find-a-club
- ▶ ARRL Section search:
www.arrl.org/sections

Contact the **ARRL RFI Engineer**:

- ▶ Steve Anderson, Q1EMI
E-mail: w1emi@arrl.org
Phone: (860) 594-0392

Helpful RFI websites and resources

- ▶ ARRL RFI web page,
www.arrl.org/radio-frequency-interference-rfi
- ▶ ARRL Handbook (Chapter 27 – RFI/EMC),
handbook.arrl.org
- ▶ NK7Z web page on locating RFI,
www.nk7z.net/i-have-rfi-now-what-locating-it
- ▶ eHam RFI/EMI forum:
www.eham.net/forum/index
- ▶ RFI Services (locating noise inside a residence),
rfiservices.com/locating-inside-sources
- ▶ Ferrites from ProAudio Engineering,
proaudioeng.com/fair-rite-ferrites
- ▶ RFI Solutions from Palomar Engineers,
palomar-engineers.com



ARRL The National Association for
Amateur Radio

www.arrl.org

ARRL
Attn: Laboratory
225 Main Street
Newington, CT 06111-1400 USA

Join ARRL Today
www.arrl.org/join

ARRL Membership Benefit

ARRL's RFI Program

ARRL The National Association for Amateur Radio® is working to reduce Radio Frequency Interference on our bands. As hams, we see the radio spectrum as a precious natural resource. The FCC has existing laws that protect licensed radio services from harmful interference:

- ▶ Most electronic consumer devices have specified emissions limits per FCC Parts 15 and 18
- ▶ Radio emissions from utility related equipment and consumer devices must not cause harmful interference to licensed radio services

Common causes of this problem include:

- ▶ Arcing on power lines and related utility company equipment
- ▶ Home and consumer devices



A Program of
ARRL The National Association for
Amateur Radio

Glossary

Radio Frequency Interference or “RFI” is generally defined as interference to radios (amateur or otherwise) and televisions, as well as to appliances, computers, audios systems and other devices from a source of RF energy.

Electromagnetic Compatibility or “EMC” is defined as the capability of electronic equipment or systems to be operated with a defined margin of safety in the intended operational environment, at designed levels of efficiency, without degradation from interference.

Most RFI “sources” fall into two categories:

1. Power Line Noise

- ▶ Approximately 1/3 of the known sources reported to us
- ▶ Caused by arcing on power lines and related utility hardware
- ▶ Produces a harsh raspy buzz across the radio spectrum
- ▶ Reduces effectiveness of FM reception

2. Consumer Devices

- ▶ Devices are typically electronic — sometimes electrical
- ▶ Devices are installed or operated in complainant’s home or nearby
- ▶ Interference from these devices is statistically on the rise relative to power line noise

- ▶ Common sources include but are not limited to:
 - Switching mode power supplies such as “wall warts”
 - Solar PV systems
 - Lighting devices, including LED lights

The vast majority of RFI “victims” are amateur radios!

Unlike years past, amateur radios are now on the receiving end of RFI from noisy devices and power lines. Other victims, generally uncovered by amateurs themselves or rarely a nearby neighbor, might include the following:

- ▶ AFCI circuit breakers
- ▶ Appliances
- ▶ Cable TV or internet
- ▶ Smoke Alarm
- ▶ Modem



Federal Law on RFI:

- ▶ Only the FCC is empowered to make and enforce rules regarding harmful radio interference
- ▶ Below 30 MHz, most consumer devices have limits for emissions conducted onto the AC mains

All licensed radio services are protected from harmful interference caused by consumer devices and power lines.

ARRL’s role in resolving RFI:

- ▶ Consumer complaints to FCC (under ARRL’s cooperative agreement with FCC) from amateur radio operators are sent to ARRL for assessment and an attempt to resolve where possible
- ▶ Advise affected amateur radio operators on locating noise sources
- ▶ Test and measure emissions from problematic consumer devices reported to us by amateurs
- ▶ Test potential RFI solutions for members
- ▶ Correspond with entities believed to be responsible for RFI, when amateurs have exhausted local level complaint options
- ▶ Escalate RFI cases to FCC when ARRL options for resolution have been exhausted
- ▶ Work with the FCC to resolve harmful interference complaints from consumer devices
- ▶ Review products that aid in the location and mitigation of RF
- ▶ Support and encourage development of local RFI expertise

ARRL’s involvement in EMC standards development

- ▶ ARRL participates in the Institute of Electrical and Electronics Engineers (IEEE) EMC Society
- ▶ ARRL sits on American National Standards Committee C63 which develops standards for testing and measuring EMC