

Book Review

“Radio Frequency Interference (RFI) Pocket Guide”

by

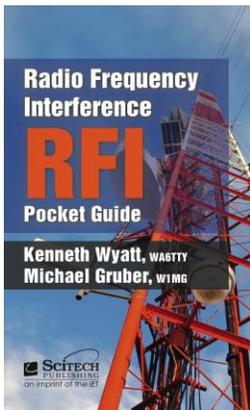
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This small 88-page spiral bound (3" x 5") pocket guide is written primarily for radio amateurs and others in the radio communications field having to deal with RFI problems. It would also be helpful to homeowners, or anyone, trying to troubleshoot RFI and TVI problems in home entertainment equipment (radios, TVs, and stereo equipment). It makes a good companion to “The ARRL RFI Book,” the editor of which, Michael Gruber, is also a co-author of this guide. The other co-author of this guide, Ken Wyatt, also authored the “EMC Pocket Guide” with Randy Jost.

The Radio Frequency Interference Pocket Guide starts with a discussion of some fundamental EMC principles, includes a frequency versus wavelength table, and lists broadcast frequency allocations in the U.S. This is followed by the crux of the material in four sections (40 pages):

- Identifying RFI,
- Locating RFI,
- Resolving RFI, and
- Assembling an RFI Locator Kit.

Identifying RFI. Interference is characterized as either narrow band or broadband. The vast majority of RFI is caused by either unintentional RF emission from consumer devices, or ac power line noise. The switched-mode power supplies used to power consumer devices are a very common source of broadband radio frequency interference. This is also true of other switching devices such as the newer LED lighting devices. Power line noise caused by arcing on electric power lines is another relatively common broadband interference source. Less common narrowband noise sources are also covered, such as two-way mobile radio, paging transmitters, broadcast transmitters (AM, FM, and TV), and cable television system cable leakage.

The authors make the important point that, “you don’t need to know what it is [the source of the noise] in order to find it.”

Locating RFI. This I believe is the most important sections of the Pocket Guide. It gives detailed procedures for tracking down or localizing the source of the RFI. I once found a defective incandescent light bulb (arcing inside of the bulb) that was causing interference to my TV using a method very similar to that described in this guide. The authors also detail procedures for determining if the noise source is inside or outside of your home and discusses simplified direction finding techniques.

Resolving RFI. Having found the source, or location, of the noise, the next step is to resolve the interference problem. The use of ferrite chokes and filters are discussed. The guide also gives useful tips on dealing diplomatically with neighbors, when the source of interference is found to be located on their property. In some cases you may want to get some additional local help from the ARRL, FCC, or the local power company. For example, if ac power line arcing is involved, you will have to get the power company involved with the fix. Most power companies are more than happy to do this if you can point out to them where the problem is.

Assembling an RFI Locating Kit. This section discusses specific equipment that can be used in tracking down an RFI problem, from simple and inexpensive (portable AM or AM/SW broadcast receivers), to professional equipment (spectrum analyzers and radio receivers). One feature of this guide that I really like is that it gives specific details, model numbers, and in many cases prices, for the recommended test equipment. This section also includes a list of RFI mitigation components (ferrites, filters, copper tape, etc.) that may be required to solve the problem.

The guide ends with a listing of references and other resources including FCC and European Union EMC regulations, commonly used equations, books, magazines, useful web sites, standards organizations, as well as a listing of manufactures and distributors of test equipment and mitigation components.

This handy Pocket Guide contains a lot of useful information. It outlines in very concise form the procedures necessary for tracking down most radio frequency interference problems. For anyone wanting to track down an RFI problem, without having to learn all the basic theory involved, this Pocket Guide is a valuable resource. For those interested in learning more details about RFI problems, the Pocket Guide in combination with a more in-depth text, such as the aforementioned “ARRL RFI Book” would make a good combination.

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