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Grow Lights and Other Annoyances

"Radio spectrum pollution is as old as radio itself. One source is growing, in more than one sense."

On page 73 of this issue of *QST* we report that on March 12 the ARRL filed a well-documented complaint with the FCC, asking that the Commission immediately commence an enforcement proceeding to halt the marketing of the Lumatek LK-1000 electronic ballast. This device, used in conjunction with "grow lights" for indoor gardening, is in flagrant violation of FCC Part 18 rules and is but one of an increasing number of unintentional radiators of radio frequency energy that are adding to the pollution of the radio spectrum.

Radio spectrum pollution from unintentional radiators is not new. Noisy power lines probably existed before there were radio receivers to detect the noise. Regenerative radio receivers were themselves sources of significant interference. When television came along, amateurs and other radio listeners were plagued with the harmonics of TV horizontal oscillators every 15.75 kHz across the LF, MF, and lower HF bands. Cable television leakage was a significant problem in the early days of the cable industry and still crops up occasionally. Some early personal computers lacked the shielding and filtering required to keep even the small amounts of RF that they generated inside the box. Broadband over Power Lines (BPL) could have developed into a serious source of interference had it not been for the strong opposition mounted by the ARRL, BPL's technological limitations that were more obvious to us than to its investors, and its ultimate failure in the marketplace.

Today, power line noise ranks first in terms of the interference complaints received at ARRL Headquarters. Other common sources of interference to radio reception range from plasma displays in TV receivers to the ubiquitous "wall wart" switching power supplies. The growing list of potential sources is much too long to include here and encompasses anything that can generate an arc such as an electric fence or motor as well as anything that generates RF, such as a microprocessor, a dc-to-ac power inverter, or a charge controller in a solar electric system. Even among all of these, electronic ballasts for grow lights stand out.

ARRL Lab tests of conducted emissions from a Lumatek LK-1000 showed that the unit exceeded the FCC limits by as much as 58 dB. That's a lot — it's equivalent to the emissions from 630,000 legal devices! Unfortunately, this Lumatek unit is far from the only offender among electronic ballasts. The ARRL Lab has tested additional models from Lumatek and another manufacturer and has yet to find one that even comes close to being legal. More tests are planned. If we ever find an electronic ballast that's legal we will report that, too; just as with BPL it's not the technology we oppose, but the resulting interference.

Even devices that are legal to sell and use can cause harmful interference. When it occurs it is the responsibility of the operator of the device to eliminate the interference. The interference "footprint" of a legal device is relatively small and is unlikely to extend more than a couple of doors away, even in a densely populated neighborhood. The issue, therefore, can be dealt with like any other issue between neighbors. If the interference is sporadic or minor, most of us will just live with it. Outside intervention — for example, a letter from the FCC to the operator of the offending device — is needed but rarely.

On the other hand, interference from grow lights has been observed a half-mile away. Tracking down the source may be time-consuming and difficult. The likelihood of knowing someone that far away is much less than knowing a nearby neighbor. You may be reluctant to approach them, depending on what you think they may be growing. Given the very limited resources the FCC can devote to enforcement — the subject of another recent ARRL filing in GN Docket No. 14-25, as reported on page 72 this month — it is virtually impossible to address the problem of interference from grow lights on a case-by-case basis. The only solution is to prevent illegal electronic ballasts from entering the stream of commerce, and to remove those that do before they reach the end users.

Is that realistic? We think so. First of all, there is no reason that an electronic ballast should ever leave a factory without adequate filtering being built in; it is neither difficult nor expensive to do at the point of manufacture and is much easier than adding it in the field. Second, if the FCC takes prompt enforcement action against current violators it will send a strong message to all manufacturers, importers, and distributors of these devices. And finally, some purchasers of grow lights are anxious not to broadcast what they're doing. To that part of their market, the makers and sellers of ballasts that don't radiate detectable levels of RF energy would have a huge competitive advantage.

The solution begins with prompt FCC attention to our complaint. There is a new Acting Chief of the Enforcement Bureau, Travis LeBlanc, who appears to be off to a good start in resolving long-delayed cases. We will be giving him every encouragement to maintain this momentum.