Appendix D

FCC Rules

As previously reported in the July 2011 EMC Committee report, Messers. Gruber and Hare have proposed the following five suggestions for changes in the FCC rules. These proposals remain under review.

1. Presently there are no Part 15 radiated emissions limits for unintentional emitters below 30 MHz. This had been a relative non-issue until the proliferation of plasma TVs. Our experience has shown that direct radiation at HF from a plasma display can be problematic and difficult to fix. One suggestion therefore would be to add absolute radiated emissions limits in this case to the HF spectrum. (Note: In the cases looked at by the Lab, the interference was relatively short range. While reducing the frequency of the limits may not completely solve the problem, it should help in some cases.)

2. Fluorescent lights with electronic ballasts, electronic ballasts and CFLs typically operate under Part 18. Part 18 has a separate set of absolute limits for "RF Lighting Devices." These limits are then broken down into consumer and non-consumer devices. Note: The limits are higher for non-consumer devices, similar to Part 15A and 15B for digital devices.

   Quasi-Peak Part 18 limits from 3 to 30 MHz for consumer and non-consumer RF lighting devices are 48 $dB_{\mu V}$ and 70 $dB_{\mu V}$, respectively. For consumer devices, these are the lowest of any specified limits in Parts 15 and 18 of the rules. It is also important to note that, in the case of Part 18 lighting devices, the FCC created a special set of lower limits just for them. Apparently, the difficulty in eliminating interference from a widespread proliferation of Part 18 bulbs in homes and neighborhoods is something that concerned the FCC when they wrote these rules.

   Unlike fluorescent bulbs however, the new LED bulbs operate under Part 15. The limits for these bulbs are 56 $dB_{\mu V}$ from 0.5 to 5 MHz, and 60 $dB_{\mu V}$ from 5 to 30 MHz. These newer LED bulbs are becoming increasingly ubiquitous in many stores and homes. Unlike their Part 18 equivalent however, they have also become a source of interference. The suggestion would be to reduce the Part 15 limits for lighting devices to Part 18 lighting device limits from 3 to 30 MHz. Essentially, make the limits for Part 15 and 18 bulbs the same, thus reducing the RFI potential from newer LED bulbs before they become a major problem.

3. Part 18 rules specify labeling for RF lighting devices are as follows:

   § 18.213 Information to the user.

Information on the following matters shall be provided to the user in the instruction manual or on the packaging if an instruction manual is not provided for any type of ISM equipment:

> *(a) The interference potential of the device or system*
> *(b) Maintenance of the system*
> *(c) Simple measures that can be taken by the user to correct interference.*
> *(d) Manufacturers of RF lighting devices must provide an advisory statement, either on the product packaging or with other user documentation, similar to the following: This product may cause interference to radio equipment and should not be installed near maritime safety communications equipment or other critical navigation or communication equipment operating between 0.45–30 MHz. Variations of this language are permitted provided all the points of the statement are addressed and may be presented in any legible font or text style.*

As the above indicates, including (d), the RFI potential is not required to appear on the outside of the package. One could easily buy a fluorescent light or ballast and not know there are issues until he opens the box. The suggestion would be to require an obvious warning on the outside of the package, similar to what appears on the box of a Part 15 unintentional emitter. The suggested wording would be similar to its Part 15 equivalent. In addition, part c of the above rules should be referenced and give the location of this information.

4. Part 18 specifies two sets of limits for RF Lighting Devices – consumer and non consumer. (Note: Some manufactures specify Part 18A and 18B on their products, similar to Part 15. This is not spelled out in Part 18 however.) A quick look at a local "big box" store will show that many ballasts are non-consumer rated. The label is not on the box but rather in very small print in the device or on a sheet inside the box. The suggestion would be to require consumer and non consumer labeling on the outside of the box. The labeling must also be large enough to be obvious to the consumer at the time of purchase.

   In addition, some fluorescent light fixtures with electronic ballasts do not specify the type of ballast inside. The suggestion would be to also add labeling to the outside of the box in the case of a light fixture. It should be clear to the consumer that the device is or is not suitable for residential use.

5. Add intentional emitter radiated emissions limits for Part 15 incidental emitters in the case of power lines, associated hardware and electric motors. Although power line noise is the most reported source of known interference to the ARRL, and often the most difficult to solve, there are presently no specified limits for power lines (or any other) incidental emitters.