

## **FCC Part 18 Marketing Violations**

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July 24, 2013

### **Introduction**

Non-electronic ballasts, which once dominated the fluorescent light market, operated under Part 15 as incidental radiators. Today they are rapidly being phased out in favor of newer electronic ballasts which, along with CFL bulbs, operate under Part 18 as “RF Lighting Devices.” In this case, the FCC considers these devices to be converting RF energy above 9 kHz directly into light, i.e., another form of energy. For this reason, the Commission classifies an electronic ballast as an ISM device.

Recent surveys conducted by the ARRL in several states, including California, Illinois and Connecticut indicate that most electrical and lighting retail outlets are now primarily stocking and selling electronic ballasts. In fact, it should be noted that non-electronic ballasts no longer seem to be stocked by several “big box stores” in Connecticut. Presumably this is a nationwide phenomenon.

### **Part 18 Limits for RF Lighting Devices**

As shown by Appendix A, Part 18 has two sets of limits for RF Lighting Devices. Specifically, there is a separate set of limits for consumer vs. non-consumer lighting devices. The emissions limits are considerably lower for consumer rated bulbs. As an example, the conducted emissions limits for all present ham bands below 30 MHz are 22 dB less for consumer rated devices. It should also be noted that these are the only bulbs that should be used for a home or residential applications. Per § 18.107 (g), consumer ISM equipment is to be “*used or intended to be used by the general public in a residential environment, notwithstanding use in other areas.*”

### **Illegal Marketing of Part 18 RF Lighting Devices**

The previously mentioned multi-state survey of fluorescent light ballasts showed an alarming number of non-consumer rated ballasts mixed in with consumer products. Furthermore, the display signage in many cases did not mention or adequately address FCC Part 18 requirements as they pertain to interference in a residential environment. In most of the stores that we surveyed, unsuspecting consumers have no way of knowing the significance of consumer vs. non-consumer ballasts. In some cases, “commercial” grade ballasts, with their associated non-consumer emissions limits, appeared to be a heavier duty or superior product. The display signage implied, therefore, commercial ballasts were also a product upgrade for home use. There was no mention of FCC requirements in this case.

Although Part 18 only describes limits for consumer and non-consumer RF Lighting Devices, many ballasts are only labeled as either Part 18A or 18B. This nomenclature is clearly an adaptation from Part 15A and 15B, which pertains to commercial/industrial

and residential digital devices, respectively. Part 18 does not include an A or B designation for RF lighting devices.

See Appendix B for pertinent definitions and rules in Part 18, particularly with regard to the marketing and sale of non-consumer devices to consumers. Additional information in Appendix C is taken from Part 2 of the FCC rules. Appendix D is for reference purposes only. It contains some of the equivalent rules with regard to Part 15A (non-consumer) and Part 15B (consumer) digital devices.

### **Sale of Non-Consumer RF Lighting Devices for Residential Purposes**

On July 22, 2013, Ms. Lori Kosior purchased a non-consumer rated GE PROLINE T8 ballast from a Home Depot located at the following address:

The Home Depot  
225 Berlin Turnpike  
Berlin, CT 06037

Before selecting the ballast, Ms. Kosior reports that she asked the sales help for assistance. She indicated that she was buying the ballast for her husband, who was attempting to fix a light in their basement, clearly a residential application. The Home Depot representative asked a few questions pertaining to the number of bulbs in the fixture, then said that it “should be okay.” The help person gave no indication that this non-consumer ballast could not be used in a home environment. Ms. Kosier then paid cash for this device at the store’s check out. Again, this non-consumer item was in no flagged during check-out. After paying for it, she simply walked out of the store with it.

This particular ballast was mixed in with both consumer and non-consumer ballasts, and in no apparent certain order. (A quick survey of several samples showed the ratio to be about 50/50.) It was labeled in small print as “FCC Part 18 Class A” on the top part of the ballast. This particular unit was wrapped in clear plastic. It also had an instruction sheet visible through the plastic wrap along the bottom of the ballast. This sheet has the following warning:

FOR COMMERCIAL USE ONLY. NOT FOR RESIDENTIAL (CONSUMER) USE.  
FCC 47 CFR Part 18 Class A, Non-Consumer Rated Product

Many ballasts in this particular store did not have such a plastic wrapping, and therefore, did not come with an instruction sheet. Some of these ballasts were non-consumer rated, as indicated only by the Part 18 A labeling. It should also be pointed out that this labeling is most likely meaningless to most of the customers that purchase these devices.

The store display is shown in Figure 1. There was no clear indication of Part 18 FCC requirements. A small sign, shown in Figure 2, was perpendicular to the display and above eye level. Although it contained instructions on how to select a ballast, it did not specifically address the FCC rules nor prohibit the use of non-consumer ballasts in a

residential environment. Figure 3 shows commercial ballasts included and mixed into store's display.



**Figure 1 - Main Display**



**Figure 2 - Fluorescent Ballast Sign**



**Figure 3 - Commercial Ballast on Sale and Marketed to Consumers. There is no FCC warning to indicate this product cannot be used for residential applications.**

## **Conclusion & Recommendation**

Clearly Home Depot's marketing of non-consumer ballasts is not adequate to ensure compliance with FCC Part 18 requirements. This was demonstrated by Lori Kosior's purchase of a non-consumer ballast even after she told store personnel that it was to be used in her residence. Furthermore, improper and misleading marketing of non-consumer devices appears to be a widespread problem in Home Depot stores across America. It is, therefore, recommended that this Home Depot be reported to the FCC for the illegal and misleading market of Part 18 non-consumer ballasts.

## **List of Appendices**

- 1) Appendix A - Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)
- 2) Appendix B - Part 18 - Pertinent Definitions and Rules
- 3) Appendix C - Part 2 - Pertinent Definitions and Rules
- 4) Appendix D - Part 15 - Pertinent Definitions and Rules

## Appendix A

### Part 18 Emissions limits for RF Lighting Devices (Including Electronic Fluorescent Light Ballasts)

**Table 1A - Part 18 Conducted Emissions Limits (For RF Lighting Devices, such as CFLs and Electronic Fluorescent Light Ballasts)**

Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)	Conducted limit (dBμV)
<b>Consumer equipment:</b>		
0.45 to 2.51	250	48
2.51 to 3.0	3,000	70
3.0 to 30	250	48
<b>Non-consumer equipment:</b>		
0.45 to 1.6	1,000	60
1.6 to 30	3,000	70

(d) If testing with a quasi-peak detector demonstrates that the equipment complies with the average

**Table 1B - Part 18 Radiated Emissions Limits for RF lighting devices**

Frequency (MHz)	Field strength limit at 30 meters (μV/m)
<b>Non-consumer equipment:</b>	
30-88	30
88-216	50
216-1000	70
<b>Consumer equipment:</b>	
30-88	10
88-216	15
216-1000	20

## Appendix B

### Part 18 - Pertinent Definitions and Rules

#### **§ 18.107 Definitions.**

(a) *Radio frequency (RF) energy.* Electromagnetic energy at any frequency in the radio spectrum from 9 kHz to 3 THz (3,000 GHz).

(b) *Harmful interference.* Interference which endangers the functioning of a radionavigation service or of other safety services or seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with this chapter.

(c) *Industrial, scientific, and medical (ISM) equipment.* Equipment or appliances designed to generate and use locally RF energy for industrial, scientific, medical, domestic or similar purposes, excluding applications in the field of telecommunication. Typical ISM applications are the production of physical, biological, or chemical effects such as heating, ionization of gases, mechanical vibrations, hair removal and acceleration of charged particles.

(g) *Consumer ISM equipment.* A category of ISM equipment used or intended to be used by the general public in a residential environment, notwithstanding use in other areas. Examples are domestic microwave ovens, jewelry cleaners for home use, ultrasonic humidifiers.

(i) *Marketing.* As used in this part, marketing shall include sale or lease, offer for sale or lease, advertising for sale or lease, the import or shipment or other distribution for the purpose of sale or lease or offer for sale or lease. See subpart I of part 2 of this chapter.

NOTE: In the foregoing, sale (or lease) shall mean sale (or lease) to the user or a vendor who in turn sells (or leases) to the user. Sale shall not be construed to apply to devices sold to a second party for manufacture or fabrication into a device which is subsequently sold (or leased) to the user.

#### **§ 18.203 Equipment authorization.**

(a) Consumer ISM equipment, unless otherwise specified, must be authorized under either the Declaration of Conformity or certification procedure prior to use or marketing. An application for certification shall be filed with the Commission on an FCC Form 731, pursuant to the relevant sections in part 2, subpart J of this chapter and shall also be accompanied by:

(1) A description of measurement facilities pursuant to § 2.948, or reference to such information already on file with the Commission.

(2) A technical report pursuant to §§ 18.207 and 18.311.

(b) Consumer ultrasonic equipment generating less than 500 watts and operating below 90 kHz, and non-consumer ISM equipment shall be subject to verification, in accordance with the relevant sections of part 2, subpart J of this chapter.

**§ 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.



## Appendix C

### Part 2 - Pertinent Definitions and Rules

#### **§ 2.1 Terms and definitions.**

*Interference.* The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation, or loss of information which could be extracted in the absence of such unwanted energy. (RR)

#### **§ 2.801 Radiofrequency device defined.**

As used in this part, a radiofrequency device is any device which in its operation is capable of emitting radiofrequency energy by radiation, conduction, or other means. Radiofrequency devices include, but are not limited to:

(c) The industrial, scientific, and medical equipment described in part 18 of this chapter.

(d) Any part or component thereof which in use emits radiofrequency energy by radiation, conduction, or other means.

#### **§ 2.909 Responsible party.**

The following parties are responsible for the compliance of radio frequency equipment with the applicable standards:

(a) In the case of equipment which requires the issuance by the Commission of a grant of equipment authorization, the party to whom that grant of authorization is issued (the grantee) If the radio frequency equipment is modified by any party other than the grantee and that party is not working under the authorization of the grantee pursuant to § 2.929(b), the party performing the modification is responsible for compliance of the product with the applicable administrative and technical provisions in this chapter.

(b) In the case of equipment subject to authorization under the verification procedure, the manufacturer or, in the case of imported equipment, the importer. If subsequent to manufacture and importation, the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modification becomes the new responsible party.

(c) In the case of equipment subject to authorization under the Declaration of Conformity procedure:

(1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under a Declaration of Conformity, the assembler.

(2) If the equipment, by itself, is subject to a Declaration of Conformity and that equipment is imported, the importer.

(3) Retailers or original equipment manufacturers may enter into an agreement with the responsible party designated in paragraph (c)(1) or (c)(2) of this section to assume the responsibilities to ensure compliance of equipment and become the new responsible party.

(4) If the radio frequency equipment is modified by any party not working under the authority of the responsible party, the party performing the modifications, if located within the U.S., or the importer, if the equipment is imported subsequent to the modifications, becomes the new responsible party.

(d) If, because of modifications performed subsequent to authorization, a new party becomes responsible for ensuring that a product complies with the technical standards and the new party does not obtain a new equipment authorization, the equipment shall be labelled, following the specifications in § 2.925(d), with the following: “This product has been modified by [insert name, address and telephone number of the party performing the modifications].”

[54 FR 17712, Apr. 25, 1989, as amended at 61 FR 31045, June 19, 1996; 62 FR 10470, Mar. 7, 1997; 62 FR 41880, Aug. 4, 1997]

## Appendix D

### Part 15 - Pertinent Definitions and Rules

#### **§ 15.105 Information to the user.**

(a) For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

(c) The provisions of paragraphs (a) and (b) of this section do not apply to digital devices exempted from the technical standards under the provisions of § 15.103.

(d) For systems incorporating several digital devices, the statement shown in paragraph (a) or (b) of this section needs to be contained only in the instruction manual for the main control unit.

(e) In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

[54 FR 17714, Apr. 25, 1989, as amended at 68 FR 68546, Dec. 9, 2003]