

# **FCC Part 18 Marketing Violations By Home Depot**

By Mike Gruber, W1MG

July 7, 2015

## **Introduction**

Non-electronic ballasts, which once dominated the fluorescent light market, operated under Part 15 as incidental radiators. Today they have been 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, Massachusetts and Connecticut indicate that most electrical and lighting retail outlets are now primarily or exclusively stocking and selling electronic ballasts. In fact, it should be noted that non-electronic ballasts are no longer being sold by several “big box stores” that we surveyed. Presumably this is a nationwide phenomenon being driven, in part, by a Government mandate.

## **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 devices. 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 devices 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.”*

Although non-consumer devices might be suitable for commercial and industrial environments, ARRL is now receiving reports of actual cases in which commercial devices are causing harmful interference in residential 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 implies, therefore, that commercial ballasts are also a product upgrade for home use. It typically does not include or mention the applicable FCC requirements.

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**

The following four cases highlight the marketing and sale of commercial light fixtures and ballasts by Home Depot to residential users. The device was actually purchased in each of the three ballast cases after consulting with a sales representative. Specifically, the sales representative was asked about the use of the ballast in a residential environment.

#### **Case 1 (Florescent Light Ballast)**

On July 3, 2015, Ms. Deborah Roy purchased a non-consumer rated GE UltraMax G-Series T8 ballast from a Home Depot located at the following address:

The Home Depot E Springfield - #2678  
2001 Boston Road  
Wilbraham, MA, 01095  
Tel: (413)543-8100

Before selecting the ballast, Ms. Roy reports that she asked the sales help for assistance. She asked if she could use the ballast in her home, even though it was labeled as a commercial device. The Home Depot representative only asked about the voltage for the intended application, then said that it would “work okay.” The help person gave no indication that this non-consumer ballast could not be used in a home environment. Ms. Roy then paid for this device using her MasterCard at the store’s check out. Again, this non-consumer item was in not flagged during check-out. After paying for it, she simply walked out of the store with it.

The consumer and non-consumer ballasts in this store were in no apparent order but differentiated by a color scheme. Blue was for residential environments, and red for commercial. (A quick survey of several samples showed the ratio to be about 50/50.) Although this color scheme made it easy to tell commercial from residential ballasts, it wasn't clear why a consumer would select one over the other. In fact, the commercial rating to most consumers might suggest a heavier duty or better quality product.

The particular ballast purchased by Ms. Roy was mixed in with both consumer and non-consumer ballasts. It was labeled in small print as "FCC Part 18, Non-Consumer" on the top part of the ballast. This particular unit was packaged in a cardboard box with an open top. The instruction sheet was not visible in the box without opening it. Once the ballast was purchased and the box opened, an instruction sheet was found to be folded and inserted inside. This sheet has the following warning:

**WARNING: PLEASE READ THE FOLLWING NOTICE BEFORE INSTALLING  
"CLASS A" ELECTRONIC FLOURESCENT BALLASTS!**

This equipment has been tested and found to comply with FCC 47 CFR Part 18, Non-Consumer RFI/EMI ("Class A") limits. This ballast should only be installed in a commercial environment. Do not install this ballast in a residential environment.

The ballasts in this particular store did not all come in a box. It is, therefore, not known if they all came with a similar instruction sheet and warning. Some of these ballasts were non-consumer rated, as indicted 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 typical consumer would not know the significance between Part 18A and Part 18B ratings.

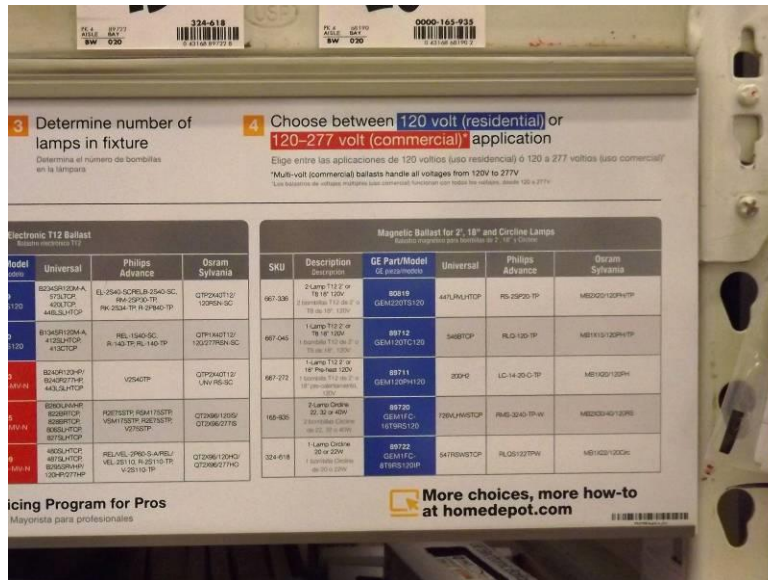
The store display is shown in Figure 1. There was no clear indication of Part 18 FCC requirements. A relatively small sign, shown in Figure 2, was attached to the display and about eye level. Although it contained instructions on how to select a ballast, it did not specifically address the FCC rules nor prohibit the use of non-consumer ballasts in a residential environment. Figure 3 shows a close-up of the only display instructions on how to select between commercial and non-consumer ballasts. It only references voltage requirements. Since 120 vac is typically available in both commercial and residential environments, the consumer in this case might logically conclude that the commercial ballast could be used in a home or residential environment.



**Figure 1 - Store display.**



**Figure 2 - Close-up of store display signage with instructions on how to select a ballast.**



**Figure 3 - Step 4 in previously depicted signage describes how to select between residential and commercial ballasts. This is the only such reference at the store display. It only mentions voltage differences. There is no reference to the FCC rules nor the potential for radio interference.**

## Conclusion

Home Depot is not only selling and marketing to commercial devices to consumers, their sales staff is not knowledgeable enough to properly advise their customers.

## Case 2 (Lighting Fixtures)

Mr. Jerry Ramie arrived at the Home Depot #1041 in Milpitas, CA at about 9:50AM on July 2, 2015. He looked at three fluorescent lighting fixtures for his garage. There were several sections for these fixtures; the first two were industrial, although there was one fixture for sale marked as “For Commercial or Residential Use.” The middle, residential display is shown in Figure 4.



**Figure 4 - The middle display containing both residential and commercial fluorescent light fixtures mixed together in no certain order.**

The bottom left, third stack of fixtures in Figure 4 is the 4x48” T8 fixture pulled forward, and the three pulled forward on the lower right of the bottom shelf are all 4x48” T8 fixtures marked “For commercial use.” They are shown in greater detail below in Figure 5.



**Figure 5 - Close-up of commercial fixtures in the residential section.**

The signage above the display is shown next in Figure 6.



Figure 6 – Display signage for light fixtures shown in previous Figure 5.

This sign, and others showing home scenes, is directly above the three commercial fixtures, as shown next in Figure 7.



Figure 7 - Home scenes in vicinity of commercial lighting devices.

Mr. Ramie asked an assistant for help and the lighting department manager came by. He asked which 48" four-light T8 fixture he should buy and he showed him the residential unit (lower left above) and the three commercial fixtures (lower right above). He asked him what the difference was. The department manager responded that all of them required hard wiring and that he (Mr. Ramie) might want to consider a different unit with a line cord instead. Mr. Ramie told him that he had an electrical box in his garage ceiling and didn't care.

Mr. Ramie then asked him which fixture was of better quality, the residential one or one of the three commercial ones. He said they were "all the same. They all come from China." He noted that the residential version was lower in cost. He recommended the corded residential fixture and suggested using LED lights instead of the fluorescent T8 tubes.

### **Conclusion:**

Although the advice that Mr. Ramie received was correct in that he should have chosen a residential version of the fixture for use in his garage, there were numerous issues with the marketing and display. The layout of the display was confusing with a mix of commercial fixtures under a banner suggesting the products were for residential applications. The marketing of these fixtures is such that a consumer could easily purchase a commercial device for a residential application. The signage was inadequate to properly inform the consumer.

Mr. Ramie also found one product mislabeled in the commercial section. The labeling in this case stated that the fixture was suitable for Commercial or Residential use. It was, however, a commercial fixture as indicated by the 120-277 vac input listed on the box.

### **Case 3 (Fluorescent Light Ballast)**

Mr. Ramie arrived at the Home Depot #6672 in San Jose, CA at about 11:15AM on 7/2/15. He spoke with a sales assistant in the lighting department. He told her that he had two 4x48" T8 fixtures in his garage and wanted to replace the ballast on the one that quit working. He was shown two Philips ballasts; the red one on the left "green tagged" for \$14.97 (Commercial) and the blue one on the right for \$17.97 (Residential).





Figure 8 - Ballasts on display at Home Depot store in San Jose.

Mr. Ramie asked the sales representative which one was “better” and she said they were the same. He asked her why he should “spend more on the blue one than on the red one.” He pointed out that both ballasts had the same number and colors of wires and the connection diagram was the same. She said that Mr. Ramie could save money by purchasing the red one (commercial device) and that “it will work fine for you.” A detail of the ballast she suggested that Mr. Ramie purchase and the receipt for it are shown below in Figure 9.

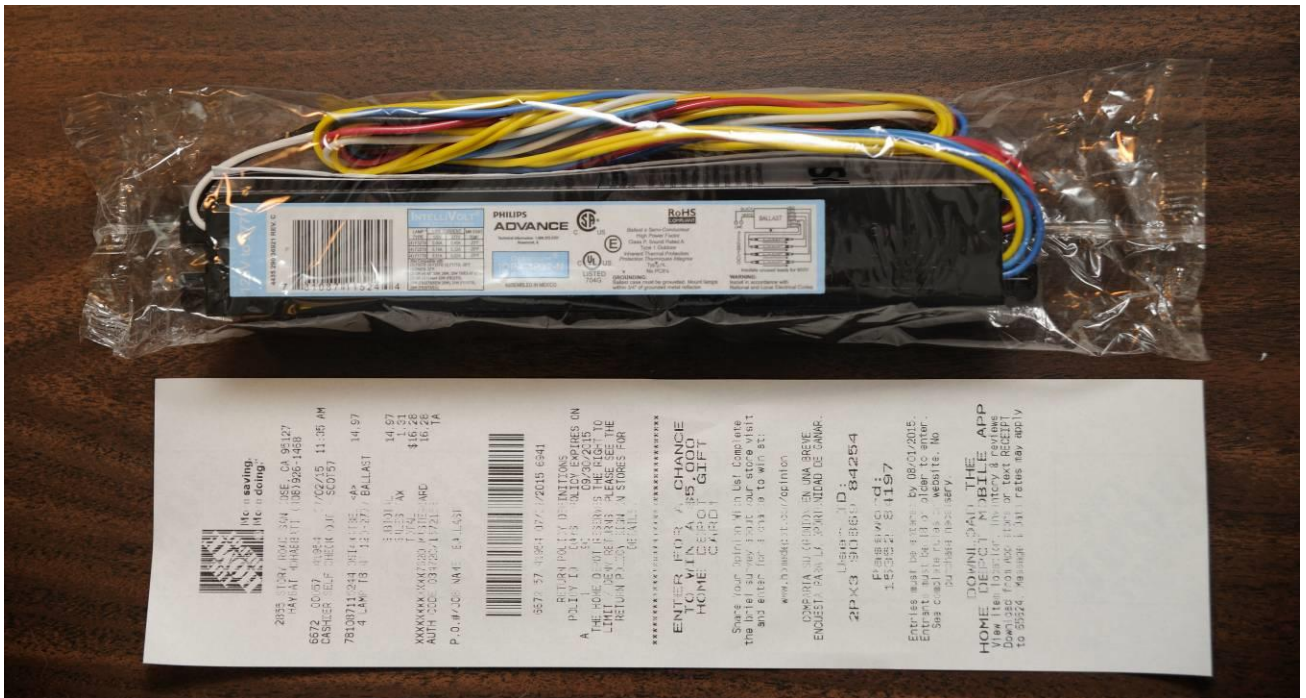


Figure 9 - Commercial ballast suggested by sales person for residential use, and the sales receipt from the resulting transaction.

## **Conclusion:**

The sales people in this case clearly did not understand the difference between the blue (residential) and the red (commercial) ballasts. In a consumer price-driven atmosphere like a big-box retailer named Home Depot, price is the selling point. You would also expect to see products for the Home, as suggested in the name of the store. The sales representative sold Mr. Ramie the lowest cost item she felt would work. The display mixed commercial and residential products together and there were no signs indicating what the differences might be.

## **Case 4 (Fluorescent Light Ballast)**

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. Kosior 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 10. There was no clear indication of Part 18 FCC requirements. A small sign, shown in Figure 11, 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 12 shows commercial ballasts included and mixed into store's display.



**Figure 10 - Main display.**



**Figure 11 - Fluorescent ballast sign.**



**Figure 12 - Commercial ballast on sale and marketed to consumers. There is no FCC warning to indicate that this product cannot be used for residential applications.**

## **Final Conclusion & Recommendation**

Clearly Home Depot's marketing and sale of non-consumer ballasts is not adequate to ensure compliance with FCC Part 18 requirements. This was demonstrated by the four cases described in this report, including the purchase of non-consumer ballasts after telling store personnel that the product was for residential purposes. Furthermore, since the first case (#4 in this report) occurred almost two years ago in July of 2013, it is clear that improper and misleading marketing of non-consumer devices by Home Depot has been occurring for a considerable period of time. It also appears to be a widespread problem in Home Depot stores across America, including California, Connecticut and Massachusetts. It is, therefore, recommended that 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]