Exhibit 6

Exhibit 6

EXHIBIT 6

WAIVER IMPLICATIONS OF THE ENERGY POLICY ACT OF 1992

The Energy Policy Act of 1992 was signed by President Bush on October 24, 1992. The Act mandates new efficiency standards, testing, and labeling requirements for a variety of products, including lighting products. This summary details key aspects that relate to lamps.

The Act has at least two purposes that relate directly to the arguments in support of our petition:

- Slow the dependence on imported oil —

  Almost 8 million gallons of oil are used per year for electrical utility fuel. Advanced high efficiency lighting products will help to reduce consumption of oil for electricity generation and help to make more oil available where there are less viable alternatives for conservation.

- Encourage more efficient use of energy —

  By establishing minimum efficiency standards for incandescent reflector lamps, the Act encourages the development of technologies that may more readily comply with the Act. The RF driven reflector products covered by this waiver will easily surpass the efficiency standards in the Act and will physically fit many more sockets than current fluorescent reflector products.

The Act specifies energy efficiency standards only for specific types of fluorescent lamps and incandescent reflector lamps. DOE has the authority to determine whether efficiency standards would be appropriate for other incandescent and general service fluorescent lamps and also to prescribe efficiency standards for high intensity discharge lamps.

Specifically, medium base 120V reflector lamps with wattages between 40-205 watts will not be able to be manufactured or imported for sale in the United States after October 31, 1995. This will have the effect of requiring consumers to switch to either halogen or fluorescent technology replacements. Although halogen lamps will meet the efficiency standards, the fluorescent versions will be more efficient, saving still more energy, and will also have increased life by a factor of four (First Generation CFL) to ten (EFL) times.

Based on a residential market survey of the US households, this means that ultimately, 310 million sockets that now use incandescent reflector lamps will be opportunities for upgrading to halogen or fluorescent reflector products. How many are likely to become fluorescent will in large part depend upon how well the cost structure develops and how small the packages can become. Even a conservative 10 per cent penetration yields a target of 31 million sockets for reflector products.

It is expected that the DOE will enact future standards under authority provided in the Act for general service incandescent lamps at some point. The A-Line version of the advanced technology CFL covered in the waiver would be a key alternative for the 1.4 billion sockets that utilize today's common incandescent products.

The DOE is likely to continue to drive additional energy conservation in the future by this same strategy — support the development of more advanced energy efficient technologies by periodically eliminating classes of less efficient products via rulemaking in support of authorizing legislation. It is important that the FCC recognize that they will need to devise faster, more flexible administrative procedures to support the development and commercialization of the very technologies being promoted through the actions of other agencies such as the DOE and EPA. In the lighting industry especially, a large proportion of new advanced technologies will utilize electronics in general and RF excitation of discharges in particular, which clearly makes the FCC a key player in the timely adoption of such new technologies.

References

NEMA Analysis of the Energy Policy Act of 1992
National Electrical Manufacturers Association, 1992

Internal GE Lighting Summary of the Act:
The Impact of the Energy Policy Act of 1992 on
Lamps and Lighting (0593)

Attachment: GE Federal Energy Legislation Guide

Exhibit 7

Exhibit 7

EXHIBIT 7

EFL ECONOMIC COMPARISON

Product Category	Design & Develop Time	Additional Program Costs	Filter Costs	System Costs	Labor Costs	Lamp Costs	Total System $	Reference $
2.6 MHz Consumer 70 dBμV Limit	0 Yr.	$0	0%	0%	0%	0%	0%	$15.00
2.6 MHz Consumer 48 dBμV Limit	1 Yr.	$5MM	+50%	+25%	+30%	0%	+39.3%	$20.90
2.6 MHz Consumer 92 dBμV Limit	>0.5 Yr.	>$0.5MM	-33%	-15%	-25%	-80%	-35.8%	$9.62

Description of the Table Components (by column)

(1) **Product Category** - The product category lists the 2.6 MHz products at three conducted limit levels. The baseline product is a reflector lamp at the 70 dBμV limit, intended for commercial and industrial applications.

(2) **Reference Development Time** - This is the additional development time that would be required to engineer the product to meet the new product limit or realize the cost benefits of a higher limit. The > symbol indicates the time required is a rough estimate. Additional inventions may be required, which are difficult to predict.

(3) **Additional Program Costs** - This is the additional investment and expense dollars, in millions, that would have to be allocated to implement the associated limit level. The > symbol indicates the dollars required is a rough estimate since some processes would have to be invented to complete the program.

(4) **Filter Costs** - These percentages are the approximations of the addition or reduction of the electronic filter components necessary to achieve the specified consumer limit.

(5) **System Costs** - These percentages are the approximations of the addition or reduction of mechanical shields, coatings or housings parts required to meet the specified consumer limit.

(6) **Labor Costs** - These percentages are the addition or reduction of the labor in assembly and processing of the product to meet the specified consumer limits.

(7) **Lamp Costs** - This column is the reduction in the lamp manufacturing costs due to the removal of EMI shields and coatings.

(8) **Total System $** - The Total System $ indicates the relative cost increase or decrease of the overall cost of the product.

(9) **Reference $** - The Reference $ column assumes a base consumer cost of $15.00. This cost is a projection and may be adjusted when the product reaches high volume production.

Conclusion

The table presented is based on the current maturity level of the EFL lamp topology. Waiving the current Part 18 regulations to the 70 dBμV level has nearly a 40% cost advantage over product designed to meet the current 48 dBμV limits. Substantial improvement in the product cost of $11.28 can be achieved by changing to 92 dBμV from the current limit 48 dBμV.

Exhibit 8

Exhibit 8

EXHIBIT 8

Pursuant to 47 C.F.R. §§ 0.457(d), 0.459, GE has filed this exhibit separately as confidential commercial information and requests confidential treatment.

Exhibit 9

Exhibit 9

EXHIBIT 9

Pursuant to 47 C.F.R. §§ 0.457(d), 0.459, GE has filed this exhibit separately as confidential commercial information and requests confidential treatment.

Exhibit 10

Exhibit 10

EXHIBIT 10

Pursuant to 47 C.F.R. §§ 0.457(d), 0.459, GE has filed this exhibit separately as confidential commercial information and requests confidential treatment.

Exhibit 11

Exhibit 11

EXHIBIT 11

SUMMARY OF INTERFERENCE COMPLAINTS FROM RF COMPACT FLUORESCENT PRODUCTS

Current generation RF lighting CFLs in the field are a mixture of designs that operate from approximately 30 kHz to about 70 kHz, depending upon the model. A recent complaint search was performed for the years 1992 through 1994 inclusive. These have been the years of fastest CFL growth and represent the most prolific use of RF lighting technology. Before this period, some products utilized less efficient, heavier, and larger electromagnetic ballast technology, which energized the discharge at 60 Hz.

Over 1,000 complaints were found in the database. These complaints represented a variety of specific problems as perceived by the ~~customer~~ and as brought to the attention of our customer service specialists.

A total of seven complaints was received under the category of "unit causes interference."

Upon further investigation, it was found that none of these complaints were related to RF interference. All seven complaints were related to infrared (IR) interference with television (TV) remote control units. (1)

While this type of evidence does not imply that there will never be a case of RF-related interference, it does indicate with some degree of certainty that such cases are rare compared to the day-to-day typical levels of complaints received for other causes.

The lack of RF interference complaints is especially noticeable when one considers that the volume sold over this period exceeded 2,000,000 units. Even the seven IR related complaints represent a complaint-per-million index of approximately 2.7 complaints per every million units sold. This is significantly under the overall combined index for the product family of approximately 500 CPM.

These products are currently manufactured under the existing Part 18 emission limits — suggesting there is some degree of conservatism to the current limits that is worth testing via the granting of the waiver.

Notes

(1)
Currently, GE Lighting is working with an industry task group composed of members from the National Electrical Manufacturers Association (NEMA) and the Electronic Industries Association (EIA) to chart a course to minimize this type of interference.

Exhibit 12

Inchcape Testing Services
Dash, Straus & Goodhue

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General Electric

Interference Study
Performed
on the
Electrodeless Compact Fluorescent Lamp

WO# 94000396
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Total No. of Pages Contained in this Report: 42

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Introduction

The scope of this document is to provide the required information necessary to assess the interference potential of the Electrodeless Compact Fluorescent Lamp (EFL) products. The intent is to show the magnitude of interference that may exist with licensed radio services while this product is used in industrial, commercial and residential environments. This report will summarize: 1) the FCC emission requirements as defined in Part 18, Code of Federal Regulations 47 and the particular specifications used to precisely characterize the product emissions; 2) the measured emission characteristics of the Revision 3 and Revision 4 lamps as compared to applicable specifications; 3) the available services in the frequency range of 2.2 MHz to 3.0 MHz (the operating frequency range); 4) usage of the frequencies from 2.2 MHz to 3.0 MHz; and 5) the potential of interference as determined under various scenarios.

Please note that an independent test report has been prepared which carefully summarizes and details the specific measurements of Radiated Emissions, both Electric Fields and Magnetic Fields, and AC mains line-conducted emissions. The applicable emission requirements are detailed in Exhibit 1.0 of this report. The specific equipment used for measurements are detailed in Exhibit 2.0 of this report. Exhibit 3.0 summarizes the available services and Exhibit 4.0 provides information regarding the density of usage. Exhibit 5.0 reviews several scenarios where the noise floor is discussed and the possibility of interference is evaluated. A summary is included in Exhibit 6.0.

1.0 Summary of the Part 18 Requirements

Electronic lighting products (such as RF ballasts) are regulated under FCC Part 18, CFR 47. FCC Part 18 specifies criteria for two types of emissions, radiated emissions within the frequency range from 30 MHz to 400 MHz, and AC mains line-conducted emissions from 450 kHz to 30 MHz. For consumer devices, the radiated and AC mains line-conducted emission limits are as follows:

Radiated Emissions				
	Consumer Limit (Scaled to 3m)		Non-Consumer Limit (Scaled to 3m)	
Frequency (MHz)	Limit @ 3m (μV/m)	Limit @ 3m (dBμV/m)	Limit @ 3m (μV/m)	Limit @ 3m (dBμV/m)
30 - 88	100	40.0	300	49.5
88 - 216	150	43.5	500	54.0
216 - 1000	200	46.0	700	57.0

AC Mains Line Conducted Emissions				
	Consumer Limit		Non-Consumer Limit	
Frequency (MHz)	Limit (μV)	Limit (dBμV)	Limit (μV)	Limit (dBμV)
0.45 - 1.705	250	48.0	1000	60.0
1.705 - 30.0	250	48.0	3000	69.5

IEEE C95.1-1991 gives recommendations to prevent harmful effects in human beings exposed to electromagnetic fields in the frequency range from 3 kHz to 300 GHz. The recommendations applied within this report were intended to apply to exposures in uncontrolled environments. Uncontrolled environments is defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. A typical location for uncontrolled environments is the living quarters.

The limits as shown below have been taken from Table 2 of IEEE C95.1-1991:

Maximum Permissible Exposure for Uncontrolled Environments Electromagnetic Fields		
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**
0.003 - 0.1	614	163
0.1 - 1.34	614	16.3 / f
1.34 - 3.0	823.8 / f	16.3 / f
3.0 - 30	823.8 / f	16.3 / f
30 - 100	27.5	$158.3 / f^{1.668}$
100 - 300	27.5	0.0729

2.0 Measurements - Emanations

2.1 Brief Summary of Emanations

Four prototype Electrodeless Compact Fluorescent Lamps (EFL) were provided for the emission evaluation. The first three lamps were representative samples from the revision 3 manufacturing lot. The revision 3 samples are referred to in this report at Proto 3, Samples 1, 2 and 3. The fourth sample was revision 4 of the EFL samples. The revision 4 EFL is referred to as Proto 4. Each of these samples was tested for compliance to regulated parameters including Radiated Emissions from 30 MHz to 400 MHz, AC Mains line-conducted emissions from 450 kHz to 30 MHz, and also for parameters not regulated within the United States, such as E-field signal radiation from 9 kHz to 30 MHz, H-field radiation from 9 kHz to 30 MHz, and ELF/VLF fields from 0 Hz to 9 kHz. Emission limits for these non-regulated emissions were taken from foreign standards and domestic recommendations including the Swedish MPR 1990:10 limits, and IEEE C95.1 (1991).

Radiated emission measurements were performed at the ELF/VLF frequencies using field probes and from 9 kHz to 30 MHz using both loop antennas (magnetic) and monopole antennas (electric). At frequencies above 30 MHz, broadband biconical antennas and tuned dipole antennas were used for measurements.

Please note that two fixtures were used to test the lamps. The first fixture was a ceramic fixture used for a single lamp. The second fixture allowed for a total of three lamps.

The following equipment was used for all measurements:

Description	Manufacturer	Model Number	Serial Number	Last CAL Date	CAL Due Date
Spectrum Analyzer	Hewlett Packard	8593A	3009A00659	11/2/93	11/2/94
LISN	Solar Electronics	8012-50-R-24-BNC	934610	11/22/93	11/22/94
Tuned Dipole Antenna Set	Compliance Design	A100	DSG1	4/12/93	4/12/94
Broadband Biconical Antenna	Compliance Design	B100	1670	12/3/93	12/3/94
Broadband Biconical Antenna	Compliance Design	B200	1671	12/3/93	12/3/94
Broadband Biconical Antenna	Compliance Design	B300	1672	12/3/93	12/3/94
Preamplifier	Hewlett Packard	8447D	1937A03354	5/11/93	5/11/94
Field Probe	Combinova	MFM10	324	8/23/93	8/23/94
Field Probe	Combinova	EFM200	183	8/23/93	8/23/94
Field Probe	Combinova	MFM 1000	410	8/23/93	8/23/94
Monopole Antenna	A.H. Systems	SAS-200/550-1	418	8/12/93	8/12/94
Double Ridge Guide Horn Antenna	EMCO	3115	1878	9/1/93	9/1/94
Loop Antenna	Empire Devices	LG105	61	5/10/93	5/10/94
Loop Antenna	Empire Devices	LP105	905	5/10/93	5/10/94