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LG ELECTRONICS RESPONSE TO TECHNICAL CONSULTATION OF DG ENER ECODESIGN LOT 19

For discussion at

Expert's Working Group 23rd September 2011

SEPTEMBER 2011

For more Information, please contact
Christianna Papazahariou
LGE AE EU Support Team
chris.papazahariou@lge.com

LG No.1

ENERGY LABELLING and ECODESIGN
WORKING DOCUMENT
for comments by 15 September 2011 and for discussion on 23 September 2011

Questions to the Technical Subgroup of the Ecodesign Consultation Forum
on the draft energy labelling and draft ecodesign regulations discussed on 5 July 2011

1. Scope of the regulations

1.1. Professional/household

Do you have information as regards the market share of the following technologies and the impact of the proposed regulations on them?

a) directional halogen lamps designed for use exclusively in professional lighting
b) directional household high-intensity discharge lamps

1.2. Special purpose lamps

Question by the EU	LGE Remarks
1.2.1. Do you agree with the use of the "special purpose lamps" category (as in Regulation 245/2009, ie lamps claimed to be unsuitable for general lighting, not for household room illumination) as a means of providing exemptions to the draft Regulations' requirements?	**LGE Remarks: We believe that having several product categories and making exemptions will create a transparent market. This will hinder competition and make it more difficult for consumers to make a clear distinction between products' characteristics.**

1.2.2. Do you agree that to facilitate market surveillance, the technical documentation of each lamp claimed to be special purpose should indicate the technical parameters required for the lamp's special purpose, and should do so even if the lamp is technically not different from general lighting lamps?

1.2.3. Do you agree with the approach that as regards special purpose lamps in the energy labelling regulation, we simply refer to the Ecodesign Regulations?
Article 1 – Subject matter and scope
(…) "This Regulation does not apply to special purpose lamps."
Article 2 – Definitions
"'Special purpose lamp' means a lamp not intended for general lighting and exempted from minimum requirements in implementing measures of the Directive 2009/125/EC."

2. Definitions

2.1. LED products

Could you provide your views on the definitions covering LED lamps in the working documents, taking into account the following aspects?

a) definitions are needed only for those products that are targeted by the provisions of the regulations

b) if a product group targeted by the provisions of the regulations is too generic compared to the categorisation used outside the context of ecodesign/energy labelling, for clarity it is possible to list in its definition the subgroups that compose the product group (e.g. " 'LED lamp' includes LED modules and self-ballasted LED lamps")

c) the objective is to define what makes a product group unique compared to other product groups in the context of the regulations, not to provide a complete technical description of the product group

3. Tolerances in verification procedures

Question by the EU	LGE Remarks
Could you provide recommendations for the verification procedure by market surveillance so as to have tolerances more tailor-made to the requirements of the Regulation, instead of the single tolerance value per product category as in the current Annex? Of course, only in case you would find it appropriate at all to better distinguish tolerances.	**LGE REMARK: The tolerance level for MR16/PAR16 products and other small dimension products should be taken up to reconsideration.** **LED technology seems to be the best BAT and BNAT today by saving up to 75% energy, having a good CRI and light output. However, not all LED product characteristics can be similar to halogen technology today. The new Regulation should therefore not seek to align these two product categories.**

4. Calculation methods for the energy label

4.1. Efficiency requirements for label classes

What would be the appropriate method to set efficiency requirements for the different label classes?

Options range from the energy efficiency index as calculated in 98/11/EC, to a single lm/W value for each class independently of wattage or light output, with several options including a mixture of these. See more discussion in the Commission's working document 1 on Energy labelling.

Does your recommendation affect the following aspects determined by the method, and if yes, how do you evaluate the effect?

a) downgrading or upgrading existing lamp classifications

b) clarity for consumers
c) equal treatment of technologies, taking into account the main fields of applications covered by the label, and necessary incentives for development
d) actual energy savings achieved by entire lighting systems, taking into account any incentives created by the label to prefer certain lamp categories over others

4.2. "Annual" electricity consumption

Do you agree that taking into account the diversity of applications in household lighting and especially in professional lighting, it would be more accurate to indicate the energy consumption over 1000 hours (kWh / 1000 hours), rather than over a year (which always assumes a given amount of operating hours / year, and can be very misleading)?

4.3. Correction for low pressure sodium lamp (LPS) control gear

In Table 2 of the draft energy labelling regulation, the power of all lamps operating on external control gear is corrected by a technology-dependent factor for losses caused by their gear. However, LPS lamps are not listed. Do you agree that LPS lamps should also get a correction factor, and if yes, what should it be?

(LPS lamps are within the scope of energy labelling, as for example in motorway lighting they can be compared to HID lamps and to LED lamps)

4.4. Measuring the useful beam angle

On the issue of verifying whether a lamp is a DLS or NDLS (80% of flux in 120 degree cone), and measuring the useful beam angle in 90°/120°: in order to reduce test costs and administrative burden for market surveillance authorities, some alternatives to expensive testing are considered, i.e.

a) testing in a 180 degree cone (‘forward flux’),
b) report of visual inspection and manufacturer’s declaration of beam angle; testing with a goniophotometer only if visual inspection raises doubts.

   (‘visual inspection’ would mean that the authority would have to take a photo of the light distribution against an appropriate background. A small software-program that translates the pixel intensity of the photo into an approximate (2 D) flux distribution that would help determine whether a more thorough inspection is to be conducted.)

Which one of these alternatives, if any, would you find acceptable? Do you have a better alternative?
Can you estimate the difference in cost and in availability to market surveillance of the two main measurement instrument (integrating sphere and goniophotometer)?

5. Label layout

Question by the EU	LGE Remarks
Do you agree that three versions of the lamp label are needed? a) Independent full label (brand name and model number have to be shown for identification) b) Full label on the packaging (no need to repeat the brand name and model number, to save space) c) Simple label on the packaging (label class scale alone, it is a version allowed by Directive 98/11/EC that provides flexibility in packaging design since 1998)	**LGE REMARK: Yes.**

If you do not agree, where do you see an opportunity for simplifying the scheme, and for what reason do you want to simplify it? Are there any adverse effects to the simplification (e.g. less flexibility in the design of small packagings), and if yes, how do you propose to tackle them?

6. Efficiency of directional lamps

Question by the EU	LGE Remarks
6.1. Efficacy range of the technologies involved Could you provide your latest information as regards the available efficacy range of the following directional lamp types, in three typical wattages? With luminous flux measured in a 90° cone (except for compact fluorescent lamps where it is measured in 120°). If you deviated from this useful beam angle please clearly indicate it. Lamp types: ✓ Incandescent ✓ conventional mains voltage halogen ✓ conventional extra low voltage halogen ✓ xenon-filled mains voltage halogen ✓ infrared coated extra low voltage halogen with external transformer ✓ infrared coated extra low voltage halogen with incorporated transformer ✓ Compact fluorescent lamp	**LGE REMARK: LED products are required to produce the highest luminous flux from all the lighting technologies covered by the scope of LOT 19.** **We would recommend the use of unified criteria for all light sources in order to enable consumers comparing different lighting products between them.**

- ✓ High intensity discharge lamp
- ✓ non-retrofit LED module
- ✓ extra low voltage retrofit LED (requiring external control gear)
- ✓ Self-ballasted LED lamp

Suggested format for the information for each lamp type:

Lamp type 1	Model design ation	Flux measured in 90° (120° for CFLs)		Flux measured in 180°	
		Lowest efficacy	Highest efficacy	Lowest efficacy	Highest efficacy
[Lowest wattage category]	[e.g. MR16]	[e.g. 12 lm/W]			
[Most frequent wattage category]					
[Highest wattage category]					

We would also be interested in learning what your estimate is of the efficacy likely to be achieved by each lamp type by 2016.

6.2. Optical efficiency of the reflector

What level of optical efficiency can you observe in mainstream examples of the different categories of reflector filament lamps (MR, AR, R/NR, PAR), expressed as % of the light from the source that is leaving the lamp?

7. Requirements for retrofit LED lamps replacing fluorescent or high-intensity discharge lamps

Question by the EU	LGE Remarks
Do you agree with the principle that such retrofit LED lamps should be required to have similar photometry, at least equivalent luminous flux and smaller power than the lamps they intend to replace? If yes, could you suggest a formulation for this requirement and a verification procedure to check conformity with the requirement? If not, what method (if anything) should we use in setting requirements on fluorescent and HID retrofit lamps?	**LGE REMARK: We favour retrofits that allow reducing the energy consumption compared to the products that are being replaced. Also, retrofits should avoid creating a lock-in effect to the benefit of HID and CFLs.**

8. Halogen lighting converters

Question by the EU	LGE Remarks
Could you suggest a set of requirements for halogen lighting converters that make sure all of the following criteria are met: The requirements bring significant cost savings to the end-users of important categories of halogen lighting converters. No category of halogen lighting converter is phased out that would not have an equivalent replacement that can operate the same lamps. The safety of lamps using external halogen converters is not compromised. No lock-in effect is created that would block the upgrading of extra low voltage halogen installations with extra low voltage retrofit LEDs (e.g. flexibility of the converter to work with radically smaller system wattages).	**LGE Remarks: We favour a phase-out of low-efficiency halogens. Currently, stability and lifetime and compatibility issues are a major hindrance for retrofit MR16 (extra low voltage LED spots). Encouraging the implementation of new up to date technology instead of obsolete technology will also save consumers' money in the long run.**

9. Lamp functionality requirements

9.1. Measurement of lifetime

<table>
<tr><th>Question by the EU</th><th>LGE Remarks</th></tr>
<tr><td>Can you propose a solution for checking compliance with lifetime requirements of lamps that have a long life? Is it for example a feasible option to set a requirement on lamp survival factor after a shorter time (e.g. 6 months of testing), rather than to make market surveillance wait until the end of the lamp's claimed life?</td><td>
Table 7 – Functionality requirements for non-directional and directional LED lamps
<table>
<tr><th>Functionality parameter</th><th>Requirement from Stage 1</th></tr>
<tr><td>Rated lamp lifetime at 50% lamp survival and 70% lumen maintenance</td><td>≥ 15000 h
≥ 10000 h for retrofit LEDs with integrated control gear</td></tr>
<tr><td>Number of switching cycles before failure</td><td>≥ 7500
≥ 5000 for retrofit LEDs with integrated control gear</td></tr>
<tr><td>Starting time</td><td>< 0.5s</td></tr>
<tr><td>Lamp warm-up time to 60% Φ</td><td>< 2s</td></tr>
<tr><td>Premature failure rate at 10% of rated life in hours</td><td>≤ 2.0%</td></tr>
<tr><td>Colour rendering (Ra)</td><td>≥ 80
≥ 90 if claimed to be retrofit to halogen or incandescent lamp</td></tr>
<tr><td>Colour consistency</td><td>Correlated Colour Temperature (CCT) spread within a 6-step MacAdam ellipse or less.</td></tr>
<tr><td>Lamp power factor (PF)</td><td>P ≤ 2W : no requirement
2W < P ≤ 5W : PF > 0.4
5W < P ≤ 25W : PF > 0.7
P > 25W : PF > 0.9</td></tr>
</table>
LGE REMARK: How can we alert the final consumer that the values for the rated lamp lifetime are based on different testing between LED and other directional lamps, like CFLs?
</td></tr>
<tr><td>Do you consider that current method of determining lamp lifetime (50% lamp survival at the claimed lifetime) raises issues of consumer confidence in lamps?</td><td>
LGE REMARK: The determination of the lamp lifetime should be based on shorter duration and higher percentage of lumen maintenance so that the consumer can choose the most appropriate new or replacement product, while the price actually reflects the high product quality.

Having a short testing period is necessary so that producers can introduce newest technologies quickly. In particular, LED technology is progressing very quickly and therefore testing periods of under 6 months should be worked on.
</td></tr>
</table>

9.2. Power factor

<table>
<tr><th>Question by the EU</th><th>LGE Remarks</th></tr>
<tr><td>Is the definition of power factor appropriate for the purposes of lighting products?</td><td></td></tr>
<tr><td>Do you consider the power factor as a necessary functionality requirement, or could the Regulation do without it?</td><td>LGE REMARK: The power factor is not a necessary functionality requirement and the Regulation should not include it in the calculations.</td></tr>
<tr><td>What levels of power factor would you find acceptable for CFLs and LEDs?</td><td>
<table>
<tr><th>Scope of the correction</th><th>Power corrected for control gear losses (P_{cor})</th></tr>
<tr><td>Halogen lamps</td><td>P_{rated} X 1.06</td></tr>
<tr><td>LED</td><td>P_{rated} X 1.20</td></tr>
<tr><td>Fluorescent lamps</td><td>$P_{rated} \times \frac{0.24\sqrt{\Phi} + 0.0103\Phi}{0.15\sqrt{\Phi} + 0.0097\Phi}$</td></tr>
<tr><td>High-intensity discharge lamps</td><td>P_{rated} X 1.10</td></tr>
</table>
LGE REMARK: If the power factor were to be maintained, there is no justification as to why LED products have the highest correction factor of all products in the scope of the Regulation.

In percentage, the efficiency loss for LED ballast lamps will be high because the wattage is lower than any other light technology. However, measured in watt the loss will be smaller than any other light technology.

We recommend the use of a more dynamic calculation method using wattage loss as a reference.
</td></tr>
</table>

9.3. Level of ambition

Please assess the level of ambition of the proposed functionality requirements for the different lamp types in Tables 5 to 7.

9.4. Retrofit lamps

Should retrofit lamps (e.g. LEDs or CFLs replacing reflector incandescent bulbs) comply with additional functionality requirements as compared to non-retrofit lamps? If yes which should be these additional requirements?

10. Product information requirements

10.1. Do you agree that at least an indication of the luminous flux of the lamp should be required on the lamp itself (to help consumers replace the lamp at the end of life)?

10.2. Requirements on minimum luminous flux for lamps claimed to be retrofits to conventional halogen reflector lamps

Would you agree if instead of listing the luminous flux requirement for each lamp technology in three columns (obtained through average lumen maintenances applicable to the entire technology), the Regulation provided for a dynamic calculation of the minimum luminous flux by using a multiplication factor obtained from the claimed lumen maintenance of the particular retrofit lamp model?

10.3. Do you agree that the warning about a luminaire's non-compatibility with energy saving lamps should be introduced as a product information requirement?

Such 'luminaires with negative lock-in effect' would be defined as a general lighting luminaire that is not compatible with lamps classified as 'B'.

The compatibility would be established in harmonised standards, taking into account socket type, dimension of the space available for lamps, dimmability etc. Awaiting the harmonised standards, a transitional method to establish compatibility could be published as a Commission communication in the OJ (just as for measurement methods for some products).