LG Electronics

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March 09, 2012

Ms. Verena Radulovic
ENERGY STAR Program
U.S. Environmental Protection Agency
Via e-mail: displays@energystar.gov

Re: ENERGY STAR Draft 3 Version 6.0 Displays Specification

Dear Ms. Radulovic

Thank you for the opportunity to comment on the ENERGY STAR Draft 3 Version 6.0 Specification. LG Electronics, a long-time ENERGY STAR Partner, is pleased to submit these comments.

LG Electronics USA, Inc., based in Englewood Cliffs, NJ, is the North American subsidiary of LG Electronics, Inc., a global leader in home appliances, consumer electronics and mobile communications. In the United States, LG Electronics sells a range of stylish and innovative home appliances, LED lighting products, solar energy systems, home entertainment products, mobile phones and air conditioners. Founded in 1958, LG has been leading the way in bringing advanced technologies to our customers, and we aim to become recognized as the global leader in energy efficient products. As you know, LG is a long-time ENERGY STAR® partner, and more than 500 LG products currently available in the United States are ENERGY STAR® qualified. Recently, LG Electronics was selected to receive the 2012 Energy Star Partner of the year.

LG's comments on Toxicity and Recyclability Requirements

Section 3.7.1:

On the previous draft, the exemptions were the same as EU RoHS, however in the current draft there are only 4 exemptions. The following should be added to the exemptions list.

1) Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp)
   ➔ Impacts CCFL type
2) Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35% lead by weight.
   ➔ Impacts model's containing Pemnut
3) Lead as an alloying element in aluminum containing up to 0.4% lead by weight
   ➔ Impacts some models
4) Lead in high melting temperature type solders (i.e. lead-based alloys containing 85% by weight or more lead)
   ➔ Impacts some component parts

Section 3.7.2: No comment

Section 3.7.3:

1) Documentation for RoHS directive: RoHS technical report for EU CE needs to be prepared for Energy Star qualified models.
   ➔ 3rd party verification or self verification is needed to prepare technical report.
2) Documentation for recyclability (IEEE1680): Report on recyclability needed.
   ➔ Monitor models are capable of preparing a report.

On what level does the manufacturer need to keep the technical report, and does this report need a 3rd party verification.

Again, thank you for the opportunity to comment. We welcome the opportunity to discuss this matter further if you wish.

Cordially,

Jacob Gyusik Cho
Director, Product Regulatory Compliance
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Hello Energy Star,

Additionally, below are a few questions that were raised by our displays engineers.

Sleep Mode:

1) Looking at the calculation method for products with USB 2.x and display port, will the sleep mode limit calculate to 1.7W (0.5 + 0.5 + 0.7)?
2) Also, if there is a product with 2 upstream USB 2.x and 2 downstream USB 2.x, will we be able to add 2W since the allowance is 0.5W each?

ABC:

1) What is the weighting for power consumption measured at 10, 100, 300, 500?
   For example, if the weighting is the same for all four, will it be 0.25*P10 + 0.25*P100 + 0.25*P300 + 0.25*P500?

Thank you in advance for your clarifications and please let us know if you have any questions.

Best Regards,

Principal Strategic Partner

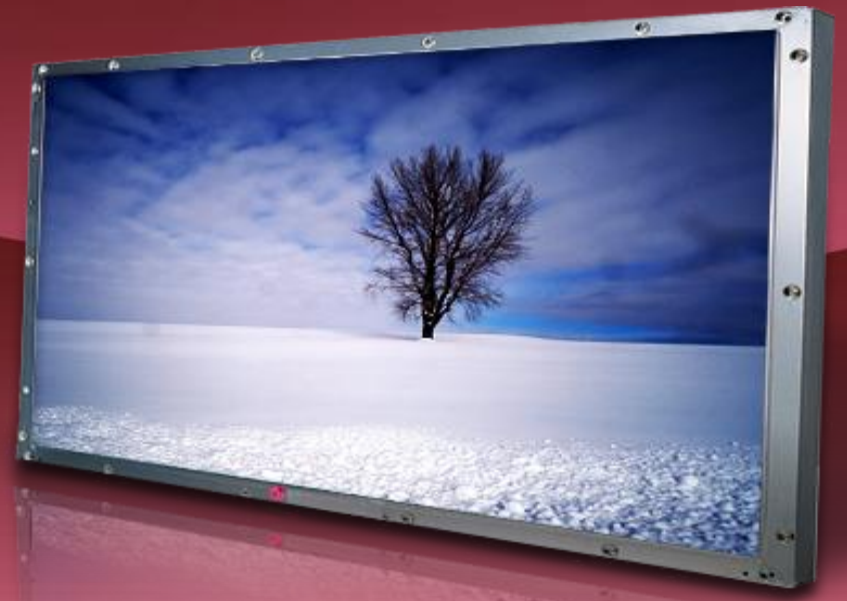
In Plane Switching

LG Display's Feedback

For Enhanced-Performance Display

2012. 3. 18

LG Display



1) Feedback to Enhanced-Performance Display

Item	Draft3 of ES6.0	LGD Comments	LGD Request
(2) Enhanced Performance Display (‘12.Feb)	(1) Enhanced-Performance Display: A Computer Monitor that has all of the following features and functionalities: (a) A contrast ratio of at least 60:1 at horizontal viewing angles of at least 85° (b) A native resolution greater than or equal to 2.3 megapixels (MP), and (c) A color gamut of at least sRGB (IEC 61699 2-1). (←Draft 3 Version 60 ENERGY STAR Displays Specification.pdf page1, line 14)	“(a)&(b)&(c)” condition of Enhanced Performance Display is only for partially & extremely high-end monitors not high-performance monitors like 27 inches with Full-HD resolution.	LGD proposes “(a)or (b) or(c)” condition for Enhanced Performance Display. This or condition is possible to cover overall performance display in performance monitors like large size or high-resolution or high color gamut.
Additional Feedback		There are various type products according to market segmentation and products have different key specification. For example, medical monitor has higher megapixel or higher bit rate, like 10bits, for accuracy of image(b). Graphic monitors for Computer graphic users have larger screen and sRGB or Adobe RGB to create realistic images(c). Broadcasting monitors or satellite monitors have higher contrast ratio to express gradation of color/gray and wide viewing angle for many(a).	There are various type products in Enhanced-Performance Display and each product belongs specific market segmentation. Each product belonged specific market has different and specific characteristic/spec it is impossible to cover all 3 conditions of Enhanced-Performance Display of ES6.0 Draft3. So I think 3 conditions of Enhanced-Performance Display need to be divided and if possible we have to apply 3 conditions separately and graded.

2)Proposal to Enhanced-Performance Display

If 'Enhanced-Performance Display' is considered within 'Computer monitors'

We have to consider LC technologies and relative characteristic as below comments of 'High-Performance Display'.

Item	Enhanced-Performance Display (ES6.0 D3)	High-Performance Display (Comments)	Proposal of LG Display (Proposal)
Contrast Ratio	least 60:1 at horizontal viewing angles of at least 85°, Ref. P_{EP}=20%×P_{ON_MAX}	Natively more power helps wide viewing angle in IPS/PLS. Wide viewing of IPS/PLS is good to eyesight against VA/TN. VA/TN use complementary sheet to follow wide viewing but it is deficient. Technically IPS/PLS are operated in horizontal electric field and this spends more power consumption relatively. Today IPS/PLS portion in computer monitor market is increasing because of proper color and viewing angle, it is vivid color and wide viewing angle. So criteria and conditions for criteria need to consider LC Type in power consumption.	The portion of P_{EP} needs to be graded according LC types, IPS/PLS, VA, TN and etcs. Higher priority is the IPS/PLS provides wide viewing and spends more power consumption..
Native Resolution	greater than or equal to 2.3 megapixels (MP)	PPI(Pixel per Inch) is increasing in computer monitor market related to mobile devices like retina display under N screen trend.	-
Color Gamut	at least sRGB (IEC 61699 2-1)	There's Adobe RGB for graphic users in computer monitor market. Adobe RGB needs more power consumption relatively.	I suggest to subdivide the condition and make classes in Enhanced display.