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Docket Number: 14-AAER-02

Comments on CEC Docket No. 14-AAER-2, based on discussion among some Japanese display manufacturers and related Industries Association

Japanese display manufacturers and related Industries Association appreciate to comment on California Energy Commission's Computer, Computer Monitors and Electronic Displays (signage displays) proposed Regulatory Language - Docket No. 14-AAER-2. We attached file on comments.

Additional submitted attachment is included below.

Notice of **Extension** of Comment Period for Computers, Computer Monitors, and Electric Displays
California Energy Commission Docket No. 14-AAER-2 May 8, 2015

- The public written comment period for computers, computer monitors, and signage displays has been **extended to May 29, 2015, at 4:00 p.m. PST.**

Comments on CEC Staff Report Final Draft on Computer Monitors, and Electric Displays
http://www.energy.ca.gov/appliances/2014-AAER-2/prerulemaking/

Based on discussion among some Japanese display manufacturers and related Industries Association (*), as of May 29, 2015

No	Point	Current text	*Our proposal* or modification	Justification
1	CHAPTER16: Proposed Regulatory Language 1601 Scope. (v) (page 51)	Computer monitors and signage displays that are of size greater than 12" and pixel density of greater than 5000 pixel per square inch, televisions, and consumer audio and video equipment, which are compact audio products, digital versatile disc players, and digital versatile disc recorders.	Computer monitors that are of size greater than 12" and pixel density of greater than 5000 pixel per square inch, **signage displays that are of size greater than 12" and pixel density of less than or equal to 5000 pixel per square inch,** televisions, and consumer audio and video equipment, which are compact audio products, digital versatile disc players, and digital versatile disc recorders.	The current draft description of signage display in 1601 Scope is inconsistent with that of "Signage display" in 1602 Definitions.

No	Point	Current text	*Our proposal* or modification	Justification
2	CHAPTER16: Proposed Regulatory Language 1601 Scope. (v) (page 51)		*Add the following sentence after the current text of Scope (v):* **The scope does not cover those displays which** **(1) are defined as "Enhanced-Performance Display";**	To avoid possible confusion in interpreting the Regulation, we believe that the EPD should be clearly described as the exception from Scope (v), in the regulatory language. "CEC Staff Report Final Draft on Electronic Displays" consistently describes the scope of the proposed regulations as "computer monitor" and "signage display" only, from "Chapter 9:Part B : Displays Background" to "Chapter 16: Proposed Regulatory Language 1605.3v) (5) Tables V-5 and 6". Therefore, we can suppose that "Enhanced- Performance Display (EPD)" would be out of the scope of the proposed regulations, even though EPD is defined in "1602 Definitions" of the staff report. However, EPD only appears in "1602 Definitions" of the current proposed regulation, and it may make people wonder how EPD would be treated under the regulation.

No	Point	Current text	*Our proposal* or modification	Justification
3	CHAPTER16: Proposed Regulatory Language 1601 Scope. (v) (page 51)		*Add the following sentence after the current text of Scope (v):* **The scope does not cover those displays which** **(1) ...** **(2) are classified as devices for human use under the Federal Food, Drug, and Cosmetic Act and require U.S. Food and Drug Administration listing and approval as a medical device; or** **(3) are designed for exclusively industrial or professional use.**	Displays which are designed for exclusively industrial or professional use, such as special monitors for movie industry, broadcasters, video production houses, or special medical monitors, should be clearly excluded from the scope of proposed regulations. Such professional displays would need special specifications other than those needed for typical "computer monitors". For example, such professional display for movie may equip a serial digital interface (SDI), which is a communication standard used in professional video distribution. The movie industry, such as Hollywood, needs such special monitors used in checking movie, etc. Some of them may be covered under the definition of EPD, but others would have different specifications than those of EPD and therefore, they may not be excluded as EPD. In addition, medical monitors designed for medical use and approved as medical devices should be excluded from the scope, like precedents of external power supplies and of battery chargers. Without such special monitors, accurate diagnosis would be hampered.

No	Point	Current text	*Our proposal* or modification	Justification
4	CHAPTER16: Proposed Regulatory Language 1601 Scope. (v) (page 51)		Add the following sentence after the current text of Scope (v): **The scope does not cover those displays which** **(1)...** **(2)...** **(3)...;or** **(4) are OLED**	Also, the On mode of computer display composed of OLED panel has big advantage for picture performance (very high contrast ratio, high color gamut, very fast response time and so on) than LCD panel. Also OLED panel can do frequent brightness control to get more efficient of power consumption for moving picture and part of darker picture than LCD. However, OLED need more power to get full white picture because the worst efficiency colors (R or G or B) need to be more power for white and the drive circuit needs an extra power. Also, it is needed the development time to improve the energy efficiency. This is a reason why OLED will be exempted from the revision draft of ErP Lot 5, eco-design requirements for electronic displays*. Therefore, OLED should be exempted. And the duration of exemption shall be the same as ErP lot5. *“(14) OLED and QLED displays are a relatively new, maturing technology but with high potential for further improvement in terms of energy efficiency and should be exempted from the on-mode power demand requirements specified in Tier I of the Regulation. However, these displays should be subject to all other requirements laid down in the Regulation.”on page in the revision draft of ErP Lot5.

No	Point	Current text	*Our proposal* or modification	Justification
5	CHAPTER16: Proposed Regulatory Language 1602 Definitions. (page 51)	TITLE 20 APPLIANCE EFFICIENCY REGULATIONS (CALIFORNIA CODE OF REGULATIONS, TITLE 20: DIVISION 2, CHAPTER 4, ARTICLE 4, SECTIONS 1601-1608 :) (v) Televisions, and Consumer Audio and Video Equipment. " Computer monitor" means an analog or digital device designed primarily for the display of computer generated signals and that is not marketed for use as a television.")	**(v) Televisions, and Consumer Audio and Video Equipment.** "Computer monitor" means an analog or digital device designed primarily for the display of computer generated signals **that displays the user interface and open programs of a computer, allowing the user to interact with the computer, that has a diagonal screen size of greater than 12 inches and a pixel density greater than 5,000 pixels/in^2,** and that is not marketed for use as a television.	Definition of "computer monitor" of Appliance Efficiency Regulations and of Staff Report Final Draft on Electronic Displays is different. To avoid possible confusion in interpreting the Regulation, we consider that the definition of "Computer monitor" of Appliance Efficiency Regulations had better to be modified in accordance to the descriptions in "Chapter 10: Product Description" and "Chapter 16: Proposed Regulatory Language 1601 Scope. (v)". See current Chapter 10: Product Description: *"Computer Monitors* *A computer monitor is an electronic device, typically with a diagonal screen size of greater than 12 inches and a pixel density greater than 5,000 pixels/in^2 that displays the user interface and open programs of a computer, allowing the user to interact with the computer, typically using a keyboard and mouse. Computer monitors are used both in homes and businesses."*

No	Point	Current text	*Our proposal* or modification	Justification
6	CHAPTER16: 1605.3 (v) (5) (page 52)	Computer monitors manufactured on or after January 1, 2017 shall comply with the standards in Table V-5.	Clear description of exemption in terms of On mode. The following texts should be added in Table 5, “On mode” requirement **(1) On mode** ***-The display with over or equal than 1000cd/m2*** ***-Narrow bezel signage display (any bezel width is equal or less than 5mm)***	There are two kinds of LED backlight for LCD signage display as Edge LED backlight*1 and Direct LED backlight*2. 1) As for luminance, 700cd/m2 is the highest Luminance with Edge LED backlight. To get higher luminance we need Direct LED backlight. 2) Narrow bezel signage display*3 for video wall is available in the market, however the product can’t use Edge LED backlight because of limited size of bezel. The narrow bezel display is too narrow to assemble the Edge LED backlights, thus we need to use Direct LED backlights. With above reason and to utilize Edge LED technology as well as Direct LED technology effectively, the following signage display shall be exempted from on mode of the signage display of the Scope, - More and equal than 1,000cd/m2 signage display - Narrow bezel signage display (any bezel width is equal or less than 5mm)

				Edge LED backlight are assembled in an array of row or column, or both of bezel and light guide plate is used to spread light toward the screen. By spreading light toward the screen, the luminance of the screen becomes lower and each LED the limitation to the supplying power current for getting more luminance due to keep ASO (Absolute Safety Operation). Only way to increasing luminance is to increase the number of LEDs. However, there is the limitation that around 140pcs of LEDs to one longer side of Bezel or around 250pcs of LEDs to both shorter sides of Bezel. When increasing number of LEDs, power consumption is eventually increased*4. This means installing Direct LED can get higher luminance than Edge LED and this is only way at present. And 700cd/m2 is the highest Luminance with Edge LED type backlight. Again, when increasing number of LEDs, power consumption is eventually increased too. *1: Edge LED backlight is the most popular for LCD signage display due to cost efficiency and energy efficiency. *2: Direct LED is to put LEDs in back side of LCD panel with no number limitation.

				*3: Any bezel width is equal or less than 5mm. *4: Power consumption of one LED is 0.38W. High luminance signage display uses around 800pcs for Direct LED.

No	Point	Current text	*Our proposal* or modification	Justification
7	General	Once Federal Regulation on the same scope is applied by Department of Energy, Federal regulation would preempt the CEC Regulations. Therefore, we believe that draft CEC regulations should be harmonized (unified) with those considered by Federal DOE. Such harmonization (unification) would make energy-efficiency legislative actions more efficient both for agencies and for the industry.		

<table>
<tr><th>No</th><th>Point</th><th>Current text</th><th>Our proposal or modification</th><th>Justification</th></tr>
<tr>
<td>8</td>
<td>CHAPTER16: 1605.3 (v) (5) Table V-5 and V6 Maximum Power Requirements by Modes-Computer Monitors and Signage Displays (page 53)</td>
<td>
<table>
<tr><th>Diagonal Screen Size in Inches (d)</th><th>On Mode in Watts (P_{ON_MAX})</th></tr>
<tr><td>d<12</td><td>(4.2*r) + (0.04*A) +1.8</td></tr>
<tr><td>12″≤d<17″</td><td>(4.2*r) + (0.01*A) +3.5</td></tr>
<tr><td>17″≤d<23″</td><td>(4.2*r) + (0.02*A) +2.2</td></tr>
<tr><td>23″≤d<25″</td><td>(4.2*r) + (0.04*A) +2.4</td></tr>
<tr><td>25″≤d<61″</td><td>(4.2*r) + (0.07*A) +10.2</td></tr>
</table>
</td>
<td>Energy requirements shall be tighten step by step.
For example : Table V-5
17”≦d＜23

Tier1：{4.2*r}+(0.02*A)+6.2
(2W tighter than EnergyStar6.0)
Tier2：{4.2*r}+(0.02*A)+4.2
Tier3：{4.2*r}+(0.02*A)+2.2
(CEC proposal)

*The step-by-step approach should be adopted regarding not only 17≦d＜23 but also the other inch classes.</td>
<td>Maximum Power Requirements shown on Table V-5 and V-6 are more stringent than EnergyStar V6.0 requirements.

EnergyStar has the power requirements regulation which targets top 20-25% of products in the market in terms of energy performance. Therefore, there are more non-qualified EnergyStar products than Energy star qualified products in the market.

If CEC would accept the current proposal which is much tighter than non-mandatory EnergrStarV6.0, most of the products can’t be sold in California.
And, according to the following table, there are only 3 products of 19 to 20 inch which support FHD and meet the requirements of EnergyStar6.0.

So we need the power requirements which meet the trend of the market.
As our idea, CEC should start with slightly tighter power requirements, tighten the power requirements in the step-by-step manner and focus to the power requirements of CEC proposal finally.</td>
</tr>
</table>

				FYI : the number of the products supporting EnergyStar 6.0 http://www.energystar.gov/productfinder/product/certified-displays/

Bins	Total Resolution (Megapixels)									
	Res (MP)	0.48-1.049	1.296	1.311-1.44	1.764	2.074	2.765-3.686	4.954	8.294	All
Size (in.)	Bins	1.05	1.30	1.50	2.00	2.50	3.80	5.00	8.00	
<14	14	4	0	2	0	1	0	0	0	7
14 - 16	16	13	0	0	0	0	0	0	1	14
16 - 19	19	60	8	21	0	0	0	0	0	89
19 - 20	20	7	35	105	1	3	0	0	0	151
20 - 22	22	0	0	46	1	169	0	0	0	216
22 - 24	24	0	0	0	30	218	3	0	3	254
24 - 26	26	0	0	0	1	104	6	0	1	112
26	28	0	0	0	2	117	57	8	23	207
All		84	43	174	35	612	66	8	28	1050

No	Point	Current text	Our proposal or modification	Justification
9	CHAPTER16: Proposed Regulatory Language 1601 Scope. (v) (page 51)		Add the following sentence after the current text of Scope (v): **The scope does not cover those displays which are satisfied with the following spec requirement (a) - (f).** **(a) a scaling function for multiple display / split screen (e.g. 'video walls');** **(b) specific ID to address the selected display screen uniquely (even in a display group of 25 or more units);** **(c) remote control disabling function;** **(d) vertical and portrait physical orientation of the display screen;** **(e) designed for continuous use ('24x7');** **(f) designed to be installed, hanging from horizontal surfaces, attached to vertical surfaces or mounted on a floor stand.**	To keep global harmonization, CEC needs to consider not only EnergyStar but Ecodesign requirements for Electronic Display in EU, Lot5 of ErP Directive. CEC adopts the non-mandatory EnergyStar regarding the definition of "Signage Display". "Signage Display" in EnergyStar is defined with screen size and resolution. But in view of the draft about intended purpose of "Signage Display" (ex. retail, airport, conference room and so on), we should assume the other requirement (ex. continuous use ('24x7'), vertical and portrait physical orientation and so on.), too. We think the current definition of "Signage Display" is not enough. On the other hand, these sufficient requirements are described in the draft of the law and the regulations in Europe (ErP). So ErP should be referred to by CEC. Then, "Signage Display" which is satisfied with the definitions in ErP should be exempted from CEC regulations as with ErP.

			The following characterising features can be present in addition to but not instead of the definitive features: **i. high brightness level (e.g. 3000 cdl/m2);** **ii. LAN connection for controlling, monitoring or to receive the information to display.** **iii. boosted cooling;** **iv. HD-SDI signal interface capability;** **v. a power-on delay function to reduce power peaks in large installations;** **vi. control button lock and** **i. self-monitoring function (e.g. product internal temperature).**	FYI: Extracts of ErP Article1 and Article2 ・Article1 (1) This Regulation shall not apply to the following products: (a) digital signage displays, ・Article2 1. '*Digital signage display*' (also known as 'public display') means an electronic display with a diagonal display screen size greater than 27 inches. It shall be marketed for digital signage in public or private areas, such as, but not restricted to, retail or department stores, restaurants, museums, conference and meeting centres, fairs, train or metro stations, airports, school campuses or healthcare organisation for simultaneous viewing by one or more users and is not configured or supplied as a free-standing device for desktop use. Its specification shall include all of the following definitive features: (a) a scaling function for multiple display / split screen (e.g. '*video walls*'); (b) specific ID to address the selected display screen uniquely (even in a display group of 25 or more units); (c) remote control disabling function; (d) vertical and portrait physical orientation of the display screen; (e) designed for continuous use ('24x7'); (f) designed to be installed, hanging from horizontal surfaces, attached to vertical surfaces or mounted on a floor stand. The following characterising features can be present in addition to but not instead of the definitive features:

				i. high brightness level (e.g. 3000 cdl/m2); ii. LAN connection for controlling, monitoring or to receive the information to display. iii. boosted cooling; iv. HD-SDI signal interface capability; v. a power-on delay function to reduce power peaks in large installations; vi. control button lock and i self-monitoring function (e.g. product internal temperature).

No	Point	Current text	*Our proposal* or modification	Justification
10	CHAPTER16: 1605.3 (v) (5) Table V-6 Maximum Power Requirements by Modes-Signage Displays (page 53)	d<1400”	**A<1400”**	In the annotation of Table 6, A is described as the diagonal screen size. But D is not described. Perhaps we are wondering if not “d<1400” but “A<1400” is proper words. A<1400”⇒ around 55 inch class

(*) Comment No.1, 2, 3, 5 and 7

Ecodesign WG, Japanese four major Electric and Electronics trade associations are;

- Communications and Information network Association of Japan (CIAJ)
- Japan Business Machine and Information System Industries Association (JBMIA)
- Japan Electronics and Information Technology Industries Association (JEITA)
- The Japan Electrical Manufacturers' Association (JEMA)

Note: Members of the Ecodesign Working Group are;

Buffalo Inc., Canon Inc., Denso Corporation, Funai Electric Co., Ltd., Fujitsu Limited, Hitachi, Ltd., JVC Kenwood Corporation, Konica Minolta, Inc., Mitsubishi Electric Corporation, NEC Corporation, Nikon Corporation, Olympus Corporation, Panasonic Corporation, Pioneer Corporation, Ricoh Company, Ltd., Seiko Epson Corporation, Sharp Corporation, Shimadzu Corporation, Sony Corporation, TDK Corporation, Toshiba Corporation

Comment No.4, 6, 8, 9 and 10

Display Committee, Japan Electronics and Information Technology Industries Association (JEITA)

Note: Members of the Display Committee;

Fujitsu Limited, NEC Display Solutions, Ltd, Sharp Corporation, Sony Corporation

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