

Electronic Displays (TVs & computer monitors): Policy recommendations

Hélène Rochat
Anette Michel

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Topten International services

Summary: Topten's key policy recommendations

Topten strongly welcomes the revision to the television Ecodesign regulation and the inclusion of other electronic displays into the scope of the current revision. This policy recommendation is based on the WTO draft regulation from December 21st 2016 that was produced by the European Commission. The current draft regulation should be adopted and implemented with no further delay.

Topten supports many of the changes that are proposed by the draft regulation such as:

- Extending the scope to computer displays,
- Shifting from a linear efficiency approach to a progressive one for the Ecodesign energy efficiency requirements: As the screen area increases, the additional power allowed per dm² decreases;
- Setting new, more ambitious energy efficiency requirements,
- Addressing non-energy environmental issues with the resource efficiency requirements, for all display types covered by the regulation;
- Tightening verification tolerances,
- A unique EEL equation for all displays without differentiating in between screen sizes or resolution, for all tiers,
- A consistent standby requirement for off-mode and standby-mode,
- Removing allowances for extra tuners and integrated hard discs,
- The inclusion of the "quick start" function into the standby power requirement.

Topten also sees potential for improvement to the proposal:

1. Inclusion of all electronic displays for energy efficiency requirements

Topten would like all display categories to be subject to energy efficiency requirements to promote transparency and avoid any possible loopholes resulting from unclear scope definitions. The displays categories that are not subject to energy efficiency requirements since the last draft (signage displays, digital photo frames, professional displays, broadcast displays and security displays) should be included to the scope. These display categories are however required to fulfill the resource efficiency requirements.

2. Consideration of more ambitious MEPS levels

Today, Best Available Technologies (BAT) data from Topten.eu shows that some monitor and television models have already reached the proposed tier 3 threshold. The European Commission should consider more ambitious MEPS levels to assure that the MEPS will have an impact on the market.

3. More ambitious requirements for networked standby and devices with HiNA functionality

Standby power requirements for connected devices especially devices with HiNA functionality are very high (2W and 6W respectively). The requirements are implemented in tier 1 only and the regulation does not foresee tightening them. Topten would like to see more stringent standby power requirements in tier 2 and tier 3.

4. Removal of allowances for non-energy saving functionalities

Allowances can create confusion and should be avoided, unless a feature strongly contributes to energy saving. The standby power allowances proposed for reactivation functions should be removed and these functions should be included in the horizontal overarching standby requirement.

5. Gradual automatic brightness control

Topten is in favor of having an allowance for this function because it can considerably reduce the energy consumption. Today the automatic brightness control function for many screen models only reduces the power when the luminosity of the surroundings reaches the prescribed 12 lux (which is a nearly dark room). The allowance should be granted only when the power reduces gradually in between 300 and 12 lux. This would guarantee that the function indeed saves energy.

6. Alignment of the Ecodesign regulation and the Energy Label

Topten strongly recommends that the Energy Label regulation for electronic displays be aligned as soon as possible with the Ecodesign regulation. The scope extension, the EEI equation, the A – G energy class scheme and screen resolution should all appropriately be aligned.

7. Viewable screen area as information requirement

The product declaration does not provide straightforward information on the viewable screen area – the only variable in the energy efficiency equation. Topten would like for this information to be a product information requirement.

1 Background

The Ecodesign regulation for televisions is applied since 2010, the first Energy Label has been on the market since December 2011. When these regulations were adopted, the future market developments were unpredictable because of the market transformation that had started from CRT to flat screen televisions and from analogue to digital TV, but also because of changing measurement standards and declarations. The Commission therefore decided to set cautious efficiency requirements while asking for an early review of the regulations in 2012. **Today, a revision is strongly needed:**

- Several reports have shown that the on-mode power Ecodesign requirements were overtaken by the rapid market development and were of only minor effect. The Energy Label in contrast still provides an incentive for higher efficiency, with the top-class A+++ still not being reached. Today, class D televisions can still be sold on the market even though market data shows that television classes do not go below B (CSES, 2012; Michel, Attali, Bush, 2014).
- With the Internet serving as a source for television content, the usage and function of monitors and televisions strongly overlap: a scope extension is therefore needed. The draft proposes to widen the scope of televisions to “electronic displays”.
- New technologies have emerged on the market for which the scope and measurement standard are not adequate anymore (ex: UHD resolution and HDR content).
- Due to the linear shape of the energy efficiency equation, it is easier for large screens to reach higher energy classes even if the absolute energy consumption is higher: The Label could be reinforcing the current trend to larger screens.

Because of the ongoing revision of the Energy Label framework directive, the electronic display revision currently covers only Ecodesign requirements. Once the revision of the framework directive is completed, the Energy Label regulation for TVs should be revised as soon as possible to provide an incentive for innovation and pull the market towards more efficient electronic displays. The revision of the Energy Label should:

- Return to the A to G energy class scheme,
- Include other electronic displays (e.g. computer monitors),
- Introduce a progressive energy efficiency equation to remove the misleading incentive supporting the trend towards larger television screens.

2 Ecodesign draft Content

1. Scope

Originally the scope of the draft Ecodesign regulation included all “electronic displays”. Apart from the horizontal standby regulation, other displays are not covered by any Ecodesign regulation. Certain display categories have since then dropped out of the scope for energy efficiency requirements. All displays however are still required to respect the resource efficiency requirements.

Scope of draft regulation	Product categories that have been removed from the scope
<ul style="list-style-type: none"> • Televisions • Computer monitors 	<ul style="list-style-type: none"> • Signage Displays • Digital photo frames • Professional displays • Broadcast displays • Security displays

Table 1: Scope overview

Computer Monitors

The inclusion of computer monitors will have a positive impact on the market and will provide an incentive to manufacturers to increase energy efficiency. A study based on Swiss market data (Energie-agentur-elektrogeräte et al., 2016) shows, that the stock of computer displays decreased in the last years but the total

energy consumption increases (Figure 1)¹. The increase in power per unit could be the consequence of a missing Ecodesign regulation for this display category.

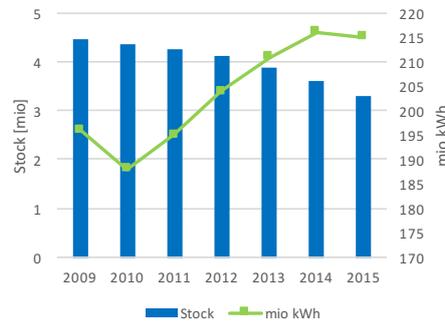


Figure 1: Evolution of the monitor stock and its respective energy consumption in Switzerland

2. On-mode power requirements

The on-mode power requirements for different screen sizes are based on the Energy Efficiency Index (EEI) formula. The draft regulation of the European Commission proposes a tangent formula for on-mode power requirements. Today's linear formula makes it easier for larger screens to meet the on-mode power requirements, even if they have a higher energy consumption than smaller screens. The commission proposal would remove or weaken this misleading incentive.

The European Commission has decided to propose on-mode power requirements that are more ambitious than those set forth in the 2014 proposal. With the tangent formula, the reference line curve flattens as the screen size increases (Figure 2):

- The proposed on-mode requirements are based on a 2016 database of television models. The proposal also considers an empirically calculated annual energy performance improvement rate based on past television of 7%.
- The on-mode requirements are different for HD and UHD televisions in each tier. The EEI equations are identical, but the MEPS level that is used for HD television in one tier is implemented one tier later for UHD television.

Implementation Period	EEI requirements for HD	EEI requirements for UHD
Tier 1 (1.7.2018) ²	0.9	1.10
Tier 2 (1.1.2020)	0.75	0.9
Tier 3 (1.1.2021)	0.6	0.75

Table 2: Overview of the proposed EEI requirements for HD and UHD televisions

¹ The energy consumption was calculated based on assumptions made on consumer use.

² During tier 1 are exempt OLED televisions and televisions with a resolution higher than 4K.

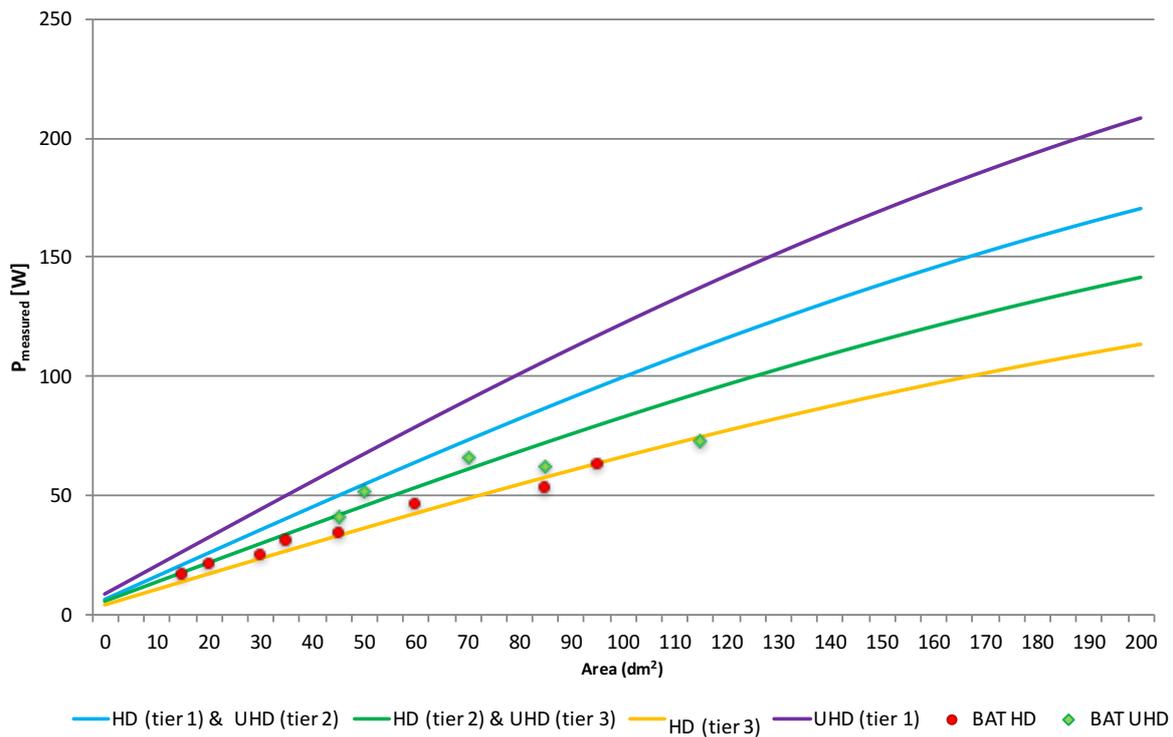


Figure 2: TVs: Electronic display MEPS proposal per tier with Best Available television Technologies (BAT), Topten.eu

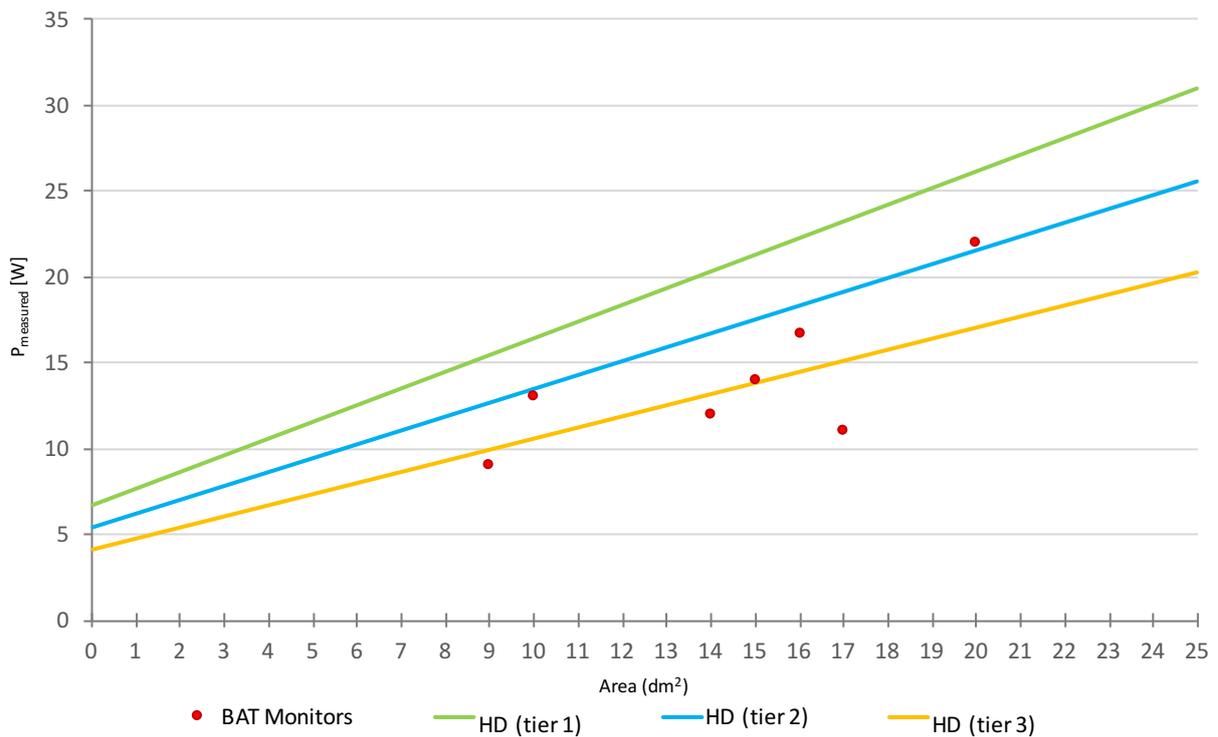


Figure 3: Computer monitors: Electronic display MEPS proposal per tier with Best Available monitor Technologies (BAT), Topten.eu

3. Standby mode Ecodesign requirements

In the current draft, the power limit for displays in off-mode or in standby mode is set for both at 0.3W (Table 3). All standby requirements are only implemented in tier 1. The regulation does not foresee implementing tighter requirements in tier 2 and 3.

	Current regulation		Draft proposal
	07.01.2010	20.08.2011	01.07.2018
Tier date	07.01.2010	20.08.2011	01.07.2018
Off-mode	1.0W	0.3W	0.3W
Standby	1.0W	0.5W	0.3W
Standby with information or status display	2.0W	1.0W	Is now allowance of 0.5W

Table 3: Standby- and off-mode comparison to previous regulation (No 642/2009)

Devices with an activated “quick start” function are also required to respect the 0.3W power requirement. Topten welcomes the inclusion of the “quick start” feature. In a study by the NRDC (Horowitz, 2015), measurements of the energy consumption of televisions with an activated quick start function show that some TV models can use up to 30 – 40W in standby mode. It is very likely that such models are also available in Europe. It is therefore important that this loophole is being now closed.

The draft proposal also includes standby requirements for networked devices (Table 4).

Tier	Current regulation			Draft proposal
	1.1.2015	01.01.2017	01.01.2019	01.07.2018
Networked Standby (non-HiNA)	6.0W	3.0W	2.0W	2.0W
HiNA	12.0W	8.0W	8.0W	6.0W

Table 4: Standby mode for networked devices comparison to previous regulation (No 801/2013)

The draft regulation includes **3 new allowances in the standby mode**. The standby requirement that is now applied to displays providing “*information display or a combination of reactivation function and information or status display including or not a “quick start” function*” is set at 1W. In the draft, this feature is included as an allowance of 0.5W. The draft also foresees an allowance for voice recognition and presences sensors of 0.5W each in standby. These two allowances are permitted because both reactivation functions are described as “enhanced reactivation functions” – an extension of the classic reactivation functions.

Based on the definition for “reactivation function”, internal sensors for reactivation are already included (see below). As such it is unclear why these voice recognition and movement sensors are not considered as normal reactivation functions as described by the definition:

- “Reactivation function” means a function facilitating the activation, by a remote switch a remote control unit, **an internal sensor**, or a timer, of other modes providing additional functions, including the main function.
- “Enhanced reactivation function” traditionally supported by electronic displays (such as infrared remote control unit and internal timer) and using sensor systems for voice recognition, room presence and/or gesture detection.

It is unclear from the wording in the draft regulation if all three allowances can be added to each other bringing the maximum standby requirement to 1.8W or if a maximum of two allowances can be summed, bringing the total standby requirement to 1.3W³.

Allowance	Amount (in addition to 0.3W standby requirement)
Reactivation function and/or information display	0.5W
Voice activation	0.5W
Room presence detection/ Gesture sensitive	0.5 W
Maximum allowed allowance in standby	1.3W or 1.8W

Table 5: Overview of standby mode allowances

³ See Annex for wording.

3 Display Market Overview

General TV market

In July 2014, Topten published its second TV market monitoring report based on GfK sales data, complemented with 2013 sales data to cover the years 2007 – 2013 (Michel, Attali, Bush, 2014). This report still shows the most accurate data for the television market and the main results still hold:

- **The Ecodesign requirements for TVs from 2009 were not ambitious enough** and without visible effect on the market. The data, used by the EC to define the level of the MEPS and the Labeling scale in 2009/2010, was scarce and outdated. Because the measurement standard was only published in 2008 and because of the fast market transformation from CRT to flat panel TVs, the future development was impossible to predict.
- **Today the situation is much better:** there is an obligation to declare in accordance with a certain measurement standard. The Energy Label strongly facilitates market monitoring.
- **The average power of TVs has decreased by 65% from 2008 to 2013.** In 2013, the average TV had an on-mode power of 55W. The drop of on-mode power followed the arrival of new flat screen televisions, which were very power consuming. Only in 2012 the level of the old, smaller CRT TVs was reached again after many years of high-power TVs.
- **TV sales peaked in 2010** (50% sales increase!). At the time, televisions were still power-hungry and the Energy Label was not compulsory. This high number of energy-hungry TVs will still be in European homes for many years.
- **In 2013, nearly 70% of the sold TVs were in classes A or better** across the EU. Class D has disappeared from the market with only 3% of the sales in 2013. Class C has also probably disappeared. Because LED-LCDs are moving away from class B and the other technologies are soon obsolete, class B will not remain on the market for long. This leaves 3 populated classes on the market (A to A++ with A+++ as a potential fourth class).
- **Average screen size has increased by 20% from 2007 to 2013.** The trend towards larger screen sizes is ongoing and unintentionally encouraged by the current EEI calculation formula used in the Labeling and Ecodesign regulations. The least energy consuming televisions are not in class A++, but in class A. Consequently, the average power of TVs will soon start to increase, if the trend towards larger TVs is not stopped.
- **TV prices are not linked to energy efficiency, but to screen size.** Despite higher energy efficiency, TV prices have decreased by 40% - 62% for specific screen size categories from 2007 to 2013. Michel, Attali and Bush (2014) have shown that for televisions, stricter MEPS are favorable because the price of televisions is determined not by the energy efficiency performance but by the screen size: The Least Life Cycle Cost (LLCC) is the lowest for more efficient televisions.
- **UHD Televisions are pushing the market towards bigger screen sizes.** Market data from Topten.eu shows that UHD televisions are on average larger than HD televisions as shown by the number of available models in larger screen size categories. The energy consumption per surface unit is indeed smaller but the absolute energy consumption is larger (Table 8)

Signage Displays

Signage displays are categorized as a separate display type and were removed from the scope of the energy efficiency requirements of the draft regulation. The current regulation does not explicitly exclude this display category but omits displays with “non-standardized video signal paths like DVI and SDI”. This gap in the scope definition leads to confusion and can be exploited as a loophole. Desk research on signage displays currently on the market (Table 6) shows, that the energy consumption widely varies in between models. In most cases however, the energy consumption is in line with that of televisions.

Model ⁴	Resolution	Diagonal (cm)	Inches	Power [W]
Samsung- PM43F	HD	109	43	154
Samsung-RH48E	HD	122	48	130
Panasonic – TH-49AF1	HD	124	49	175
NEC – MultiSync X552S	HD	140	55	205
Samsung – DM55E	HD	140	55	176
AGneovo – PN-55H	HD	140	55	304
Philips – BDL6520QL/00	HD	165	65	123

Table 6: Signage display models currently on the market
Best available Technologies (BAT)

Topten.eu HD TVs	Best class		Most efficient model		
	Energy Label	Indiv. / All models	EEl	Power On	Screen size
<70cm	A+	2 / 2	0.19	17W	60cm
70-90cm	A+	9 / 16	0.17	25W	80cm
90-100cm	-	-	-	-	-
100-110cm	A++	8 / 11	0.12	30W	108cm
110-120cm	-	-	-	-	-
120-135cm	A++	8 / 9	0.11	34W	123cm
>135cm	A++	4 / 5	0.13	53W	139cm

Table 7: Television overview (Topten.eu)

Topten.eu UHD TVs	Best class		Most efficient model		
	Energy Label	Indiv. / All models	EEl	Power On	Screen size
<70cm	-	-	-	-	-
70-90cm	-	-	-	-	-
90-100cm	A+	1 / 1	0.19	41W	100cm
100-110cm	A+	4 / 5	0.19	47W	108cm
110-120cm	-	-	-	-	-
120-135cm	A+	12 / 20	0.18	57W	123cm
>135cm	A++	19 / 33	0.13	73W	165cm

Table 8: UHD television overview. UHD televisions are mostly 120cm diagonal and above (Topten.eu)

Topten.eu data shows that the best available technologies have already surpassed the energy requirement for “Networked Standby” (Table 9). Out of the 25 UHD TVs in the Topten.eu selection that have WLAN, 17 models have a networked standby power consumption of 0.8W. For the remainder, it is 0.9W. This shows that the technology for low networked standby power is already well established.

Resolution	BAT Networked Standby power
HD (> 120cm)	1W
UHD	0.8W (17 Models)

Table 9: BAT "Networked Standby" mode power (Topten.eu)

⁴ See Annex for display sources

Policy recommendations for revised Ecodesign regulations

Proposal: many good aspects

Topten welcomes the draft for the revision of the Ecodesign regulation. Topten is in favor and supports many of the changes that are proposed by the draft regulation:

- **Extending the scope** to include computer monitors in addition to TVs.
- Shifting from a linear to a **curved screen area – power equation** for the minimum efficiency requirements, requiring higher efficiency levels for larger displays and aiming at removing the current incentive towards ever-larger TV screens.
- **Setting new, more ambitious minimum efficiency requirements**, avoid repeating the mistake of too unambitious requirements from the current Ecodesign regulation.
- Addressing **non-energy environmental issues**, with the resource efficiency requirements
- **Tightening verification tolerances** and removing the unneeded tolerance for peak luminance ratio. Up to now the regulation has been confusing for this point (65% or 60%?).
- A **unique EEI equation** for all displays without differentiating in between screen sizes or resolution, for all tiers.
- **Removing the allowances** for integrated hard disc and extra tuners. Simple formulas without allowances or functional adders make the calculations more transparent and simplify market surveillance.
- A **consistent standby requirement** for off-mode and standby-mode.
- The **inclusion of the “quick start”** function into the standby power requirement.

Topten also sees room for improvement to the draft regulation.

1 Inclusion of all electronic displays

The Ecodesign revision initially planned to include all electronic displays types. Topten strongly agrees with this decision. Certain display categories that were included in the first draft of the revision, have been removed from the scope and do not appear in the current draft (Table 1). Topten would like to see those display categories included.

This is especially important for signage displays because this segment has been growing very strongly in the last years. They are considered as an “emerging market” and they should therefore be covered from the start. Their strong growth rate stresses the importance to have this display category included, otherwise a similar situation to televisions will occur where many inefficient devices will be in operation for many years. The industry has argued that the energy requirements of signage displays “are relatively different from those of other electronic displays”, however based on the displays currently on the market, the power requirement are in line with those of TVs (Table 6).

A separate classification for these devices and their resulting omission could lead to loopholes. Topten recommends that the regulation should encompass all displays types as initially intended by the revision to have a straightforward and transparent approach to electronic displays.

2 More ambitious requirements for networked standby and devices with HiNA functionality

The standby power requirements in the draft proposal for tier 1 are indeed stricter than the power requirement in the networked standby directive (Ecodesign regulation No801/2013) by reducing the maximum

power requirement for networked standby from 8W to 6W for devices with HiNA functionality and from 3W to 2W for other connected devices. Topten still sees room for improvement for the networked standby requirements:

- Quick power-down to standby should be required for all networked standby devices.
- With “smart” televisions and “smart” products on the rise, this uncertainty may lead to more TVs to be classified as devices with HiNA functionality. The risk is that networked standby or HiNA standby requirements replace the current 1W/0.5W standby requirement and become the “new normal”.
- Indeed, out of the 39 UHD televisions on Topten.eu, **36 models have WLAN**. Based on the declaration of the product, it is not possible to know how many of these devices have HiNA functionality. Topten would like to see clearer declaration on whether a device has HiNA functionality.
- There is only a tier 1 level of networked standby requirements in the draft without more ambitious requirements planned at a later stage. Topten would like to see further requirements for networked devices in the tier 2 and tier 3. **Topten.eu data (Table 9) shows that BATs already surpass the requirement with 0.8 – 0.9W power** for networked standby instead of 2W. We would recommend **reducing general network standby requirement from 2W to 1W, and to gradually reduce the power requirements for devices with HiNA functionality from 6W to 4W in tier 2 and from 4W to 2W in tier 3.**

3 Consideration of more ambitious MEPS levels

Topten is very satisfied with the on-mode power requirement equation proposed by the European Commission:

- Topten supports the proposal to apply the same EEI formula to all displays. This is key to transparently compare energy consumption of displays across all technologies, resolution, screen sizes, etc.
- Topten also supports the more stringent MEPS levels for non-UHD displays. This allows implementing MEPS that are effective for TVs of both resolution levels, while still leaving sufficient range of UHD products on the market.

Although there are many positive points about the draft, the proposed tier 3 levels are met by BAT HD and UHD televisions, and monitor models already today (Figure 2 and Figure 3). The Commission should consider implementing more ambitious minimum energy efficiency requirements, for all tiers.

4 Removal of standby allowances for non-energy saving functionalities

The Commission proposal suggests introducing allowances of 0.5W to the standby power for displays with voice recognition and presence sensor, and for displays providing an *“information display or a combination of reactivation function and information or status display including or not a “quick start” function”*. Topten recommends removing these allowances and staying with a system of transparent power caps applying for all models instead:

- Allowances are not very transparent and can create confusion as to which level is applying for a model.
- An allowance should only be considered if a feature reduces the energy consumption (i.e. the device goes into standby if no presence is detected after a certain, short amount of time), but is not considered in the declared energy consumption of the product.
- Topten recommends removing these allowances: these sensors as well as the information display are present for convenience purposes only and do not contribute to the energy efficiency of the device. The proposed allowances for voice and presence detection should be removed.
- The “reactivation activation” definition already includes the presence of an internal sensor for reactivation. The sensors for voice and room presence reactivation should be considered as **internal sensors**.

- With the current formulation / definition these functions allow for an **easier activation of the displays** (they might even lead to displays being switched on when nobody intends to use them), but do not help to switch them off in the case of no-use.

5 Gradual automatic brightness control

Automatic brightness control can reduce the energy consumption of a display. A study showed (NRDC, 2015) that UHD televisions use 50% more when the ABC function is switched off. Topten accepts having an allowance for this function because it can considerably reduce energy consumption, while not being considered for the declared energy consumption and efficiency of displays. However, the allowance should be linked to a gradual power reduction requirement to make sure, that the ABC function indeed saves energy. The current requirements and measurement method do not guarantee that the function effectively saves energy. The current and proposed requirement asks for a power reduction of min. 20% at an ambient light illumination of 12 lux. 12 lux correspond to an very dark room, and tests have shown that many displays with an activated ABC function remain at a high power consumption level until the 12 lux level is reached. A gradual power reduction requirement between 300 and 12 lux should be linked to the ABC allowance, and the measurement standard be amended accordingly⁵.

6 Alignment of Ecodesign and Energy Label

The current proposal only encompasses the Ecodesign requirements because of the ongoing revision of the Energy Label Framework Directive. We strongly recommend that the TV Energy Labeling regulation should be aligned as soon as possible with the new Ecodesign regulation. The following aspects need to be appropriately aligned with the Ecodesign regulation:

- Scope extension
- EEI equation: the future Energy Label should use the same EEI formula
- Classification: A-G classification, in line with the revised framework Directive. Thresholds of the least efficient classes (G, F, E) should be at the Ecodesign tier levels. Best classes (A, B) should be empty initially, to allow for efficiency improvement.
- Resolution: It is important that the future Label makes potential efficiency differences between HD and UHD displays transparent. This means that the same classification scale must apply for all technologies, resolutions, etc. The differentiation in between resolution types should only be made for Ecodesign MEPS levels.

7 Declaration of screen dimensions

The key variable in the Ecodesign equation is the viewable screen area. However, the product declaration only provides the screen diagonal and the pixel ratio as information permitting the calculation of the screen size. To simplify the calculation and consequently reach a higher level of transparency, Topten would like to see the screen area in dm² as an information requirement.

⁵ In the frame of the STEP (Smart Testing of Energy Products) project, CLASP has developed a test method that allows measuring a gradual display power reduction between 300 and 12 lux. CLASP's technical report will be published in early 2017.

8 References

Best Products of Europe: www.topten.eu

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European Commission: Possible requirements for electronic displays. COMMISSION REGULATION (EU) No.../... of XXX implementing Directive 2009/125/E C of the European Parliament and of the Council with regard to Ecodesign requirements for electronic displays, repealing Regulation (EC) No 642/2009 with regard to Ecodesign requirements for televisions and amending Regulation (EC) No 1275/2008 with regard to Ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment and Regulation (EU) No 617/2013 with regard to Ecodesign requirements for computers and computer servers. December 2016.

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http://www.topten.eu/uploads/File/European_TV_market_2007-2013_July14.pdf

NRDC, Horowitz N.: What do we know about the energy use of Ultra High Definition (UHD) and “Smart TVs?”, August 2015.

9 Annex

Signage display models currently on the market

Model	URL
Samsung- PM43F	http://displaysolutions.samsung.com/digital-signage/detail/961/PM43F
NEC – MultiSync X552S	https://www.nec-display-solutions.com/p/datasheet/de/datasheet/rp/X552S.xhtml
Philips – BDL6520QL/00	http://www.philips.ch/p-p/BDL6520QL_00/signage-solutions-q-line-monitor/technische-daten
Samsung-RH48E	http://www.samsung.com/ch/business/business-products/smart-signage-tv/smart-signage-tv/LH48RHEELGW/EN
Samsung – DM55E	http://displaysolutions.samsung.com/digital-signage/detail/433/DM55E
AGneovo – PN-55H	http://www.agneovo.com/de/content/pn-55h.asp
Panasonic – TH-49AF1	http://de.business.panasonic.ch/visuelle-systeme/produkte-zubehor/professionelle-displays/indoor-system-on-chip-displays/th-49af1-openport-plattform-3

Reactivation allowances: excerpt from draft

“The following power demand allowances may be added to those given in 2.1.1 for the following functions if enabled as delivered by the manufacturer;

- reactivation using only voice recognition and activation sensor: 0.5 W maximum;
- reactivation using only room presence/gesture detection and activation sensor: 0.5 W maximum;
- reactivation using both voice recognition and room presence / gesture recognition sensors; 1.0 W maximum; information/status display: 0.5W maximum.”

Electronic display MEPS equation per tier based on screen diagonal

