



UK Market Transformation Programme (MTP) Comments on ENERGY STAR Draft 2 Version 5.0 Display Specification distributed on 23/10/08

Testing products at fixed luminance settings – luminance settings specified differently for various display resolutions and sizes.

- MTP would not support this current proposal for specified luminance settings in the testing procedure for the following reasons:
 - **Inconsistency with TVs:** This approach is not consistent with approaches being taken at an international level on TVs, especially relevant considering the opportunity for future convergence and harmonisation with TV approaches.
 - **Availability of default settings:** Our MTP testing lab technicians have confirmed that monitors do normally have default settings and can also have different operational modes – meaning that an approach more consistent with IEC 62087 is an option. To ensure repeatability of tests, manufacturers could log luminance when declaring test data if required.
 - **Availability of “return to factory default” settings:** Our MTP testing lab technicians have never tested a monitor which did not have a “return to factory defaults” option, so a used sample could certainly be tested at default settings if required.
 - **Underestimated power consumption figures:** Specifying set luminance levels, which are not likely to match the actual luminance levels in use, mean that ENERGY STAR will be based off figures for power consumption which are not representative of actual use, underestimating the energy impact of displays and misleading consumers/procurers. The chart of prescribed vs draft luminance for the data set shows considerable scatter. A majority of the products have a luminance ratio of less than 1 – meaning that the prescribed luminance level is less than the default level for the majority of products. In fact, in a number of cases, the prescribed level is at least 50% lower than the default setting. Additionally, some products that may now be in scope, such as medical displays could have very high default luminance compared to other products, required by safety legislation. Testing these products at a lower luminance level will significantly skew results toward unrealistic levels.
 - **Difficulty in configuring monitors to precise luminance levels:** Some industry suggested at the September stakeholder meeting that there was an issue with how easily luminance settings could be changed on a monitor compared to a TV - i.e. monitors usually just a sliding scale.
 - **Industry willingness to consider default approach:** views on the luminance requirement at the September meeting were by no means conclusive – with a number of industry voices supporting a default specification if an Australian-style approach was taken (see below).
 - **Technological considerations of specified luminance levels:** Issues with plasma monitors illustrate the problems with a specified luminance approach – likely to become increasingly relevant as other display technologies enter the mainstream market in future years.
- MTP would propose an approach more consistent with the revised IEC 62087, whereby the display is tested at default luminance as shipped for normal home/office use.
 - The luminance level for testing can be specified to avoid unreasonable default values, by defining the requirements in line with the Australian Greenhouse Office approach to TV luminance:
 - A test on 22 TVs that showed that the recommended default home use mode had an approximate luminance level not less than 66% of the luminance level of the default mode with the highest luminance.
 - Compromise with Industry resulted in agreement that the recommended default level could be as low as 50% of the maximum default level.
 - There was some industry support for this type of approach in the September stakeholder meeting held in Washington DC.
 - The important aspect of this anti-cheating test is that an absolute luminance measurement does not have to be made to carry out the test. The luminance measurement is comparative (delivered mode setting compared with maximum luminance mode setting - this is much easier to

achieve to smaller error limits - usually less than 3% - and overcomes LCD stabilisation issues.

- Taking into account that the controlling parameter in the old EPA luminance test for monitors was that the display should properly reproduce a grey scale at the test luminance setting, this approach could be adapted to ensure an out of the box setting was viable. An on-mode test could be achieved, avoiding luminance measurements at a prescribed level – and significantly reducing test effort, whilst increasing reproducibility of results. The MTP suggested approach is a dynamic test loop approach as in the TV methodology (this is already available for PC monitoring as part of the TV standard work) as follows:
 1. Disable automatic luminance control (ALC)
 2. Check grey scale is acceptable at delivered setting of Monitor and determine the maximum luminance setting that is also still capable of providing an acceptable grey scale.
 3. Check that ratio of luminance in the delivered setting to that of the luminance in the determined maximum setting is within the prescribed limits of the (to be) agreed set criteria (eg. > 0.5 as for Aus TVs)
 4. Run Dynamic PC Monitor test loop at delivered setting if within the set criteria and measure and record time averaged power.
 5. Repeat test loop power measurement with ALC fully enabled (dark room) and record time averaged power.
- This sequence would effectively replicate the new TV methodology except for the use of a grey scale test. (TV manufacturers effectively meet a grey scale test in each TV default mode in that no picture is unwatchable in contrast terms).

Proposed Tier 1 On Mode requirements based on equations, categories based on display diagonal screen size and resolution.

- These requirements should be revised to reflect default luminance data, in line with the recommended test approach.

Tier 2 Sleep and Off Mode requirements of less than or equal to 1 watt.

- MTP would strongly support the Tier 2 sleep requirements of 1 Watt in sleep and off modes, but would question why the Tier 1 requirements for displays of greater than or equal to 30" diagonal screen size require a sleep mode of 4 watts and off mode of less 2 watts, as this off mode requirement will be inconsistent with European EuP standby requirements likely to come into force in 2010.
- MTP would strongly support the application of sleep requirements across all sleep modes.

Accounting for Automatic Brightness Control enabling approach based on a measurement of low and high ambient light conditions (low 20% of the time, high 80% of the time).

- MTP would support this approach, consistent with that of the TV specification and international TV approaches.

Modification of the definition of Sleep Mode and clarified the definition of Off Mode.

- MTP would support these modifications. NOTE: The sleep mode definition contains repetition in the text of the phrase "that can initiate".

Tier 2 requirements TBD under the Draft 2 Version 5.0 displays specification.

- MTP would strongly support a Tier 2 implementation, especially one which aims to harmonise with international approaches on TVs (see previous comments on luminance test approach. It will also be important to consider the European EuP proposals for TVs, and upcoming monitor discussions under EuP). MTP would encourage addressing considerations such as automatic brightness control etc in line with the approach to handling these for TVs.
- MTP would not support future approaches based upon adders for additional display features such as speakers or USB ports – such considerations should be approached via a category based specification in Tier 2, if additional allowance is justified for these components in the modes addressed.

"Power Management Requirements," state that displays must have at least one mechanism enabled by default that allows the display to automatically enter Sleep or Off Mode.

- MTP would support power management enabling as default.

Proposed dates for the specification revision of: January 21, 2009 to finalise the specification, October 21, 2009 for the specification to become active, and October 2011 for Tier 2 to become active.

- MTP would strongly support current proposed dates, as it is important that the new specification is available as soon as possible, considering the high market penetration of the current requirements.

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