Workshop on television set compliance testing

Date: October 7, 2014

Place: Technische Universität Berlin, Gustav-Meyer-Allee 25, Berlin

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Agenda

		Speaker
13:00	Welcoming Words and Introduction to the Workshop	Thibault Faninger (BIO) / Gergana Dimitrova (TUB)
	Topics	
	Home Mode Condition	Gerhard Heine (VDE)
	On-mode Power Consumption	Gerhard Heine (VDE)
	Stand-by and Off-mode Power Consumption	Rudolf Heinz (IPI)
	Automatic Power Down	Rudolf Heinz (IPI)
	Peak Luminance Ratio	Gerhard Heine (VDE)
15:00	**Coffee Break**	
	Calculation of Energy Efficiency Index and Annual Power Consumption	Randolph van Kasteren (Re/genT)
	Energy Label for TVs	Randolph van Kasteren (Re/genT)
	Test Report Template	Gergana Dimitrova (TUB)
	Discussion and Closing Remarks	
17:00	**Workshop End**	

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Introduction to ComplianTV
Background and Objective

Supported by the European Commission's Intelligent Energy Europe (IEE) programme

TVs is one of the most recent product groups to be covered by the Energy Label and Ecodesign Regulations, and may present specific challenges (e.g. measurement standards).

Overall objective: Provide a detailed methodological guidance to allow MSAs, manufacturers and test labs to face the legislative and market challenges for TVs in an effective and cost efficient way.

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Introduction to ComplianTV

Project consortium

10 project partners, from 7 Member States

BIO by Deloitte (Coordinator)		IPI (Laboratory)	
SEVEn		Re/genT (Laboratory)	
Austrian Energy Agency		VDE (Laboratory)	
Energy Saving Trust		ECOS	
Technical University Berlin		DigitalEurope	

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Introduction to ComplianTV
Main activities and outputs

- **Assessment of the compliance of TVs** in the framework of the Energy Labelling and Ecodesign regulations (at least 80 TV models physically tested, and 100 shops and 100 e-shops visited twice), and follow-up with manufacturers and retailers for remedy actions

- Provision of a **database** with results of the physical testing

- Development of **guidelines for physical testing and performing shop inspections** (practical lessons learnt, test templates) and recommendations for future policy development

- **Dissemination** of the information and experience elaborated to all relevant stakeholders (brochures, national and international events).

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Introduction to ComplianTV
Impacts

- **Improved compliance rate** of future TVs and information displayed regarding the Ecodesign Directive and Energy Labelling Directive requirements, through the **tests performed and discussions with manufacturers**

- **Capacity building** in terms of testing skills for laboratories, feedback on practical issues

- **Higher consumer confidence and better understanding** of Energy Label and Ecodesign regulations

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Introduction to ComplianTV
Several target groups

- **Manufacturers:** will be informed of the testing activities concerning their models and involved in the process, and will be supported for possible remedy actions.
- **MSAs** within the EU: will benefit from results and practical experience from the consortium on checking compliance regarding technical aspects of TVs (physical tests) and the display of the Energy Label at the point of sale (shop visits).
- **Retailers:** will be informed of the activities concerning their shops and e-shops, provided with information on proper display of the Energy Label and supported for possible remedy actions.
- **Testing Laboratories:** (within the consortium) will gain experience in testing TVs, which will be shared with laboratories in the EU (outside the consortium) to improve their know-how and testing capability.

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Focus on physical testing activities
Methodology

- **3-batch strategy to test 201 TV units in total:**
  - 1st batch covers the representative market with a 60% share of A-brands
  - 2nd batch covers a wider spectrum of products (70% share of other brands)
- **Round Robin Test** to harmonize testing methodology among the three laboratories
- Use of **a specifically developed test report template and a harmonized interpretation strategy**

- See website for more information: **www.compliantv.eu**

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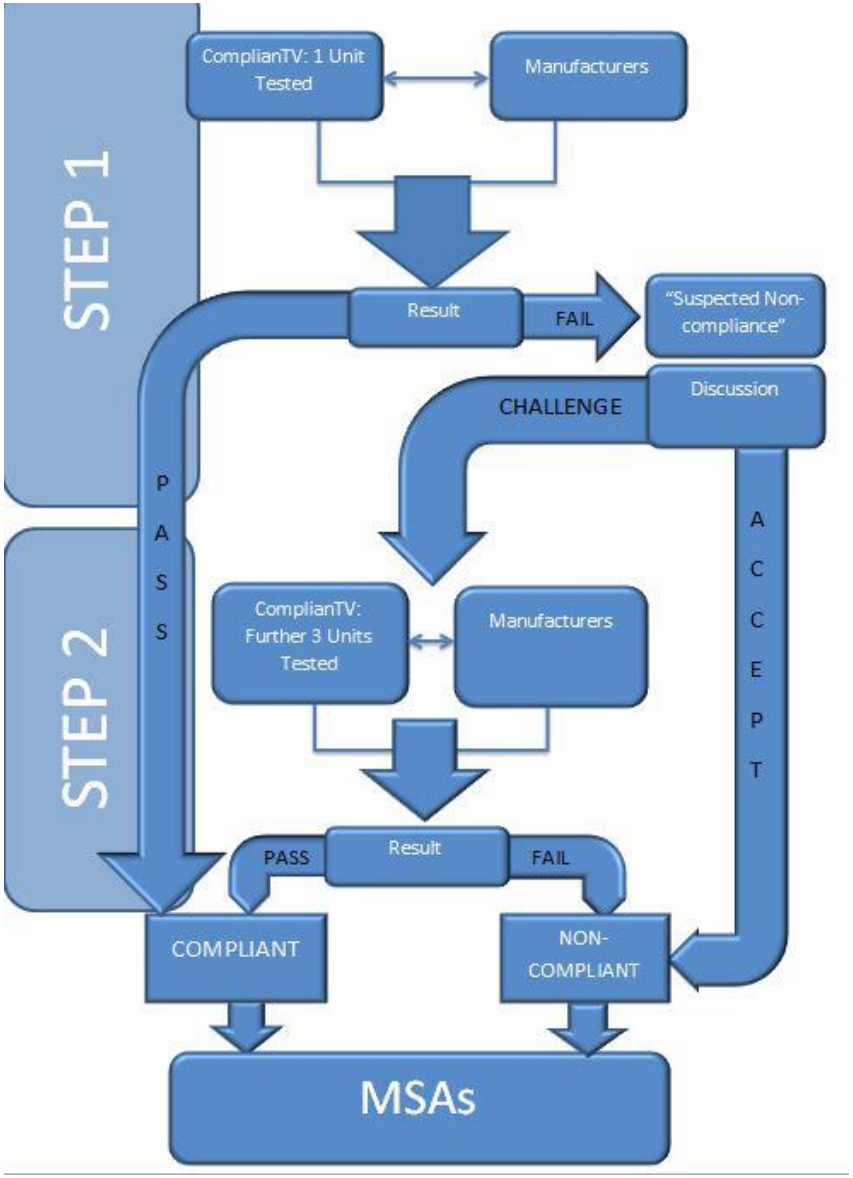
Focus on physical testing activities
Process

- 2 steps regulatory process: **discussion with manufacturers** if suspected non-compliance after step 1



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Home-mode

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Home-mode

Definition of “HOME-MODE” according to 1062/2010

‘home-mode’ means the television setting which is recommended by the manufacturer for normal home use

Definition of “FORCED MENU” according to 1062/2010

‘forced menu’ means a set of television settings, pre-defined by the manufacturer, of which the user of the television must select a particular setting upon initial start-up of the television

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Home-mode

Specifications according to ANNEX VII of 1062/2010 – Measurements

ANNEX VII, point 2 (b) i and ii explain the applicability of the home-mode for the measurements of on-mode power consumption

- (i) television sets without forced menu: The power consumption shall be measured in the on-mode condition of the television as delivered by the manufacturer, that is, the brightness controls of the television shall be in the position adjusted by the manufacturer for the end user; so called “out of the box” condition
- (ii) television sets with forced menu: The power consumption shall be measured in the ‘home-mode’ condition;

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Home-mode

Specifications according to Regulation 642/2009

ANNEX I, point 3:

Television sets, which are delivered with a “forced menu” on initial activation of the television shall provide a “home-mode” in the forced menu, which shall be the default choice on initial activation of the television. If the user selects a mode other than “home-mode” on initial activation of the television, a second selection process shall be prompted to confirm this choice

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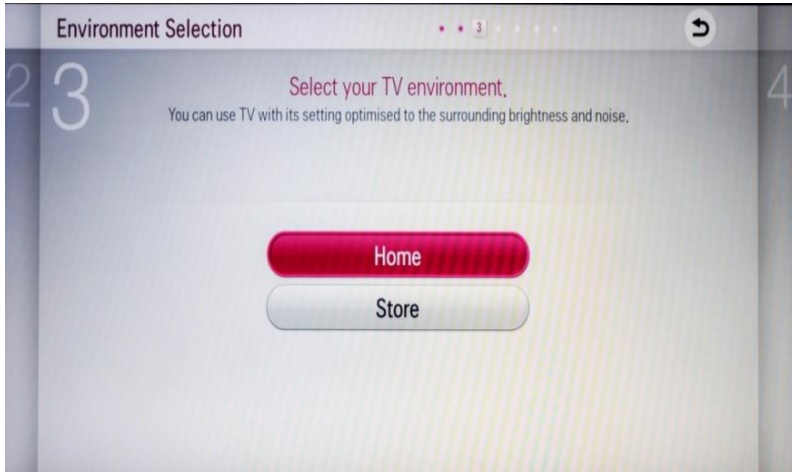
Home-mode

Practical test approach

- ComplianTV verifies by checking the menu of the initial activation, if the “home-mode” is available upon initial activation and if it is set as a default choice



- If a different mode than the “home-mode” can be selected, a second selection process should be initiated for confirmation of the selected mode

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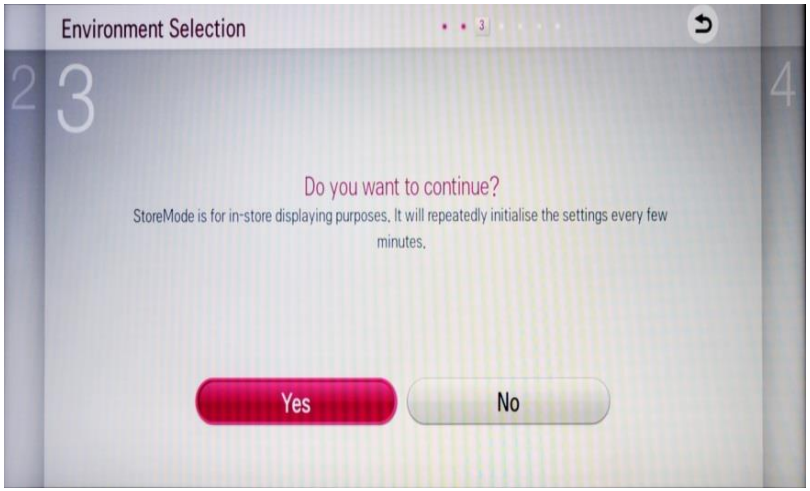
Home-mode

Practical test approach



- The result of the verification process is documented in the final test report
- The verification of the “home-mode” should be documented e.g. in photographs and recorded in the final test report

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Home-mode

Main issues recognised

ComplianTV did not identify any issues related to the verification procedure of the “home-mode”

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On-mode power consumption

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On-mode power consumption

Definition of “ON-MODE” according to 1062/2010

‘on-mode’ means the condition where the television is connected to the mains power source and produces sound and picture

General definition of “Measurements” according to 1062/2010 Annex VII

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements shall be made using a reliable, accurate and reproducible measurement procedure that takes into account the generally recognised state-of-the-art measurement methods, including methods set out in documents the reference numbers of which have been published for that purpose in the Official Journal of the European Union

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On-mode power consumption

Practical test approach

- Measurements shall be made at an ambient temperature of 23 °C +/– 5 °C
- Measurements shall be made with an uncertainty of less than or equal to 2 % at the 95 % confidence level
- The fluctuation of the voltage supplied during the tests shall not exceed ± 2 %
- The frequency fluctuation and the harmonic components of the supplied power shall not exceed ± 2 % and 5 % respectively
- Measurements shall be made with the Automatic Brightness Control function, if such a function exists, made inactive. If the Automatic Brightness Control function exists and cannot be made inactive, then the measurements shall be performed with the light entering directly into the ambient light sensor at a level of 300 lux, or more

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On-mode power consumption

Practical test approach

- Measurements shall be made using a dynamic broadcast-content video signal representing typical broadcast TV content; The measurement shall be the average power consumed over ten consecutive minutes. Here the dynamic broadcast content of IEC 62087 is used

- Measurements shall be made after the television has been in the off-mode for a minimum of 1 hour immediately followed by a minimum of 1 hour in the on-mode and shall be completed before a maximum of 3 hours in on-mode. The relevant video signal shall be displayed during the entire on-mode duration. For televisions that are known to stabilise within 1 hour, these durations may be reduced if the resulting measurement can be shown to be within 2% of the results that would otherwise be achieved using the durations described here

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On-mode power consumption

Practical test approach

- Television sets without forced menu: The power consumption shall be measured in the on-mode condition of the television as delivered by the manufacturer, that is, the brightness controls of the television shall be in the position adjusted by the manufacturer for the end user (out of the box condition)

- Television sets with forced menu: The power consumption shall be measured in the ‘home-mode’ condition

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On-mode power consumption

ComplianTV test approach

- Within ComplianTV the verification procedure for market surveillance purposes defined in Annex VIII of 1062 were considered and applied

- The model shall be considered to comply with the declared value of the on-mode power consumption if the result for on-mode power consumption does not exceed the declared power consumption value by more than 7%

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On-mode power consumption

ComplianTV test approach

- Measure the on-mode power consumption of the TV in out of the box condition or “home-mode” condition , i.e. after the initial installation the settings of the television should not be changed, unless it is explicitly mentioned in the Regulation (e.g. disabling off the ABC)

- Let the display of the television stabilise while playing the dynamic broadcast-content video signal according to IEC 62087 “Methods of measurement for the power consumption of audio, video and related equipment”, edition 2 or edition 3, Clause 11.6

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On-mode power consumption

ComplianTV test approach

- Record the measured power consumption within 10 consecutive minutes during the playing the dynamic broadcast-content video specified in IEC 62087
- Document the measurement result and the graph in the final test report
- Document all settings and adjustments during the initial setup and the on-mode condition and then in the final test report e.g. by photo documentation

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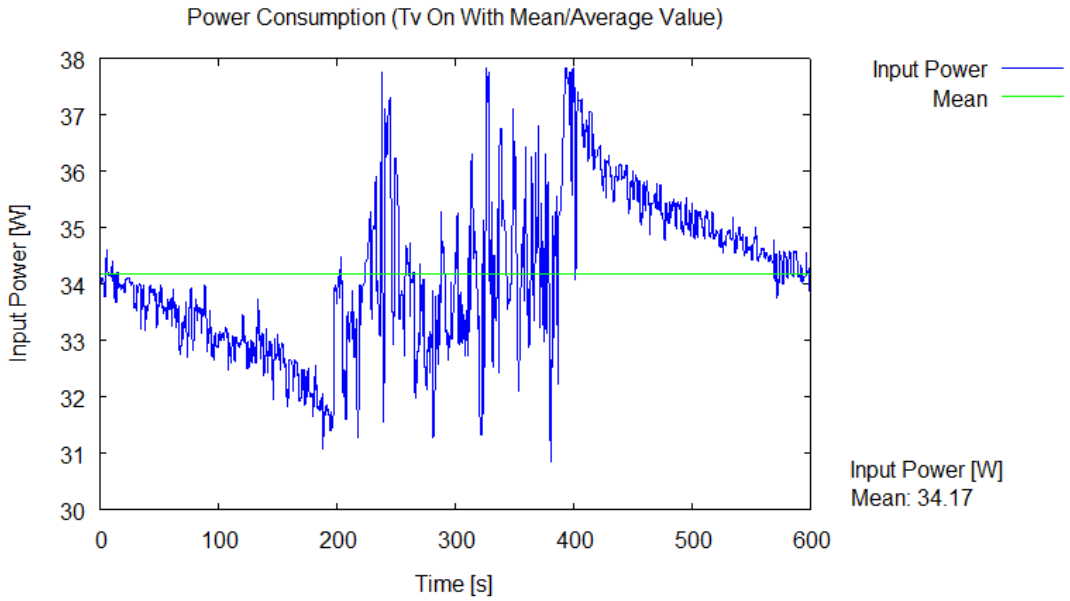
On-mode power consumption

Typical results recognised during testing

- LCD TV with “standard” dynamic in power variation over the time in conjunction with the displayed video content



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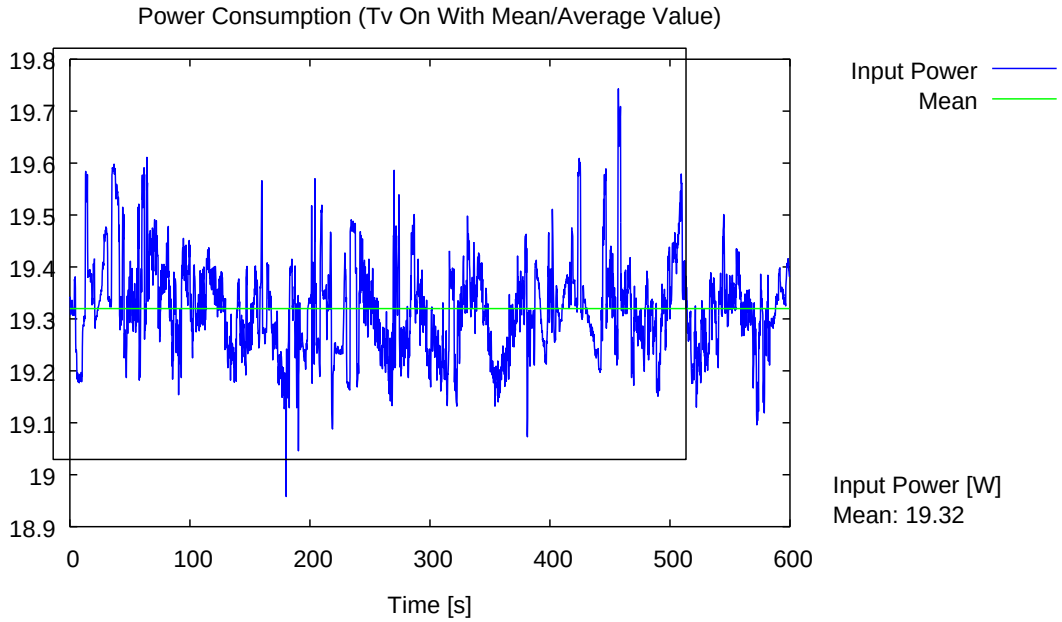
On-mode power consumption

Typical results recognised during testing

- LCD TV no dynamic in power variation over the time in conjunction with the displayed video content



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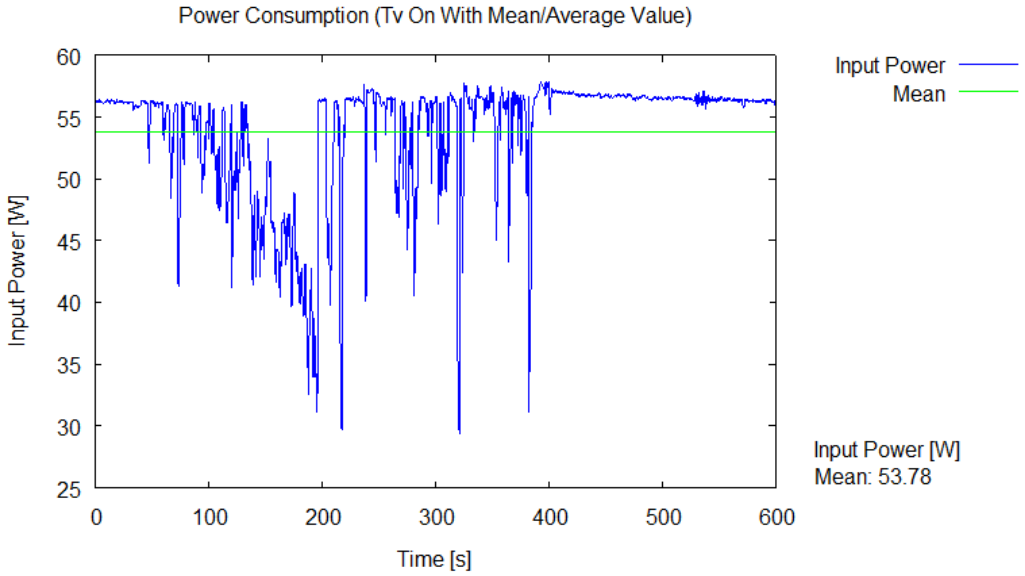
On-mode power consumption

Typical results recognised during testing

- LCD TV with dynamic in power variation over the time in conjunction with the displayed video content, but with a limitation of the maximum power consumption displayed video content



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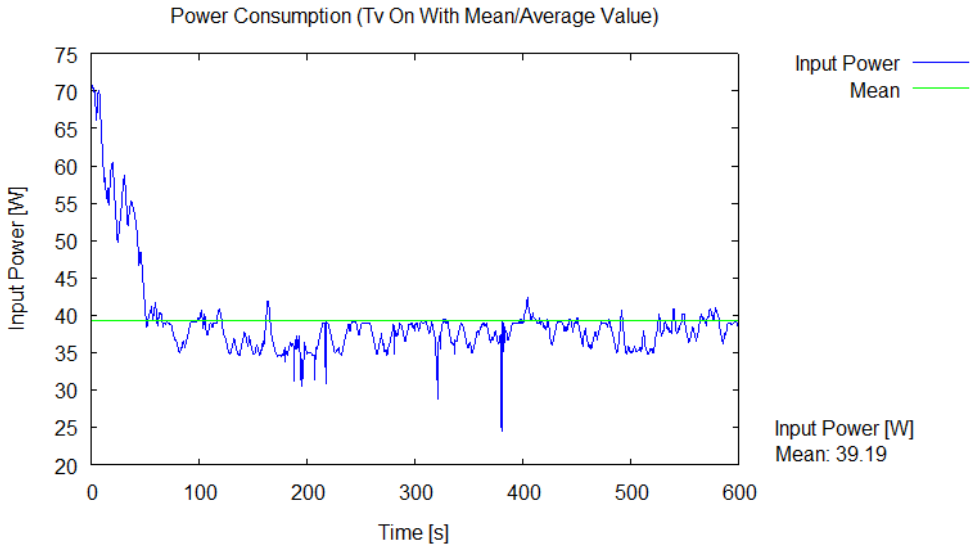
On-mode power consumption

Typical results recognised during testing

- LCD TV with “special” dynamic in power variation over the time in conjunction with the displayed video content, but this behavior has been recognised by applying the IEC 62087 defined dynamic broadcast video content



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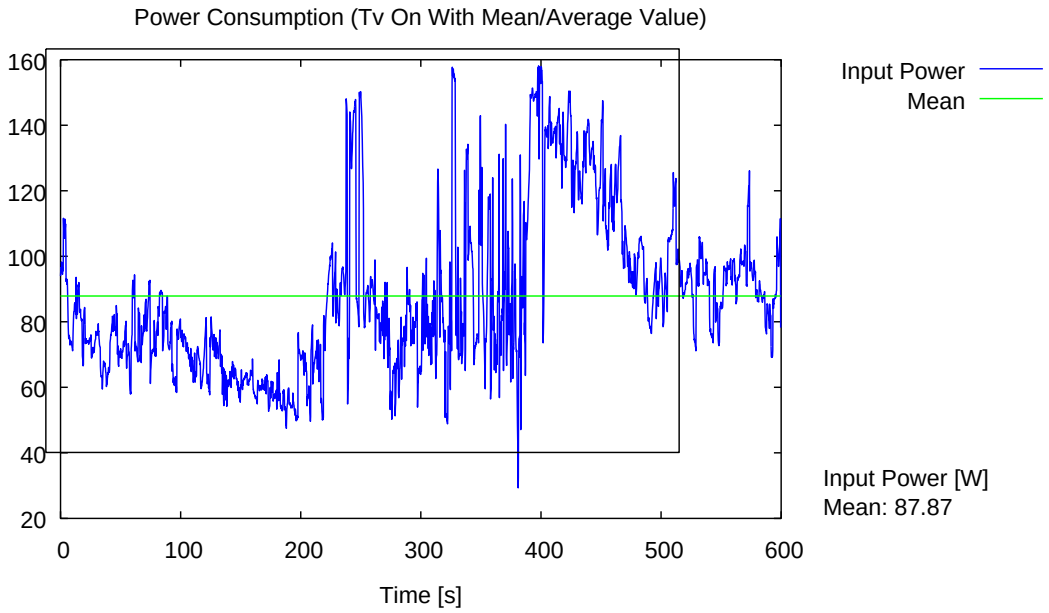
On-mode power consumption

Typical results recognised during testing

- Plasma TV with dynamic in power variation over the time in conjunction with the displayed video content



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On-mode power consumption

Main issues recognised

- **Issue I - Identification and naming of ABC sensor**
  The location of the ABC sensor is not always easily identifiable!
  ABC sensor is **not consistently named** and varies across the TV brands, e.g. the ABC has been named as eco sensor, light sensor etc.

- **Procedure within ComplianTV:** The bezel of the television is covered and dimmed part by part by hand, while the ambient light intensity is held above 300 lux. The location of the ABC sensor is identified, when the luminance meter registers decrease in the television luminance. As an equivalent, it is also possible to check the input power consumption; when it decreases → the sensor is working

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On-mode power consumption

Main issues recognised

- **Issue II - Variation of the power consumption depending on volume settings**

  Changing volume level compared to the level at delivery or in “home mode” can result in considerably changing the level of the on-mode power consumption

  Due to the reason that the volume level is not changed no negative influence to the results could be expected

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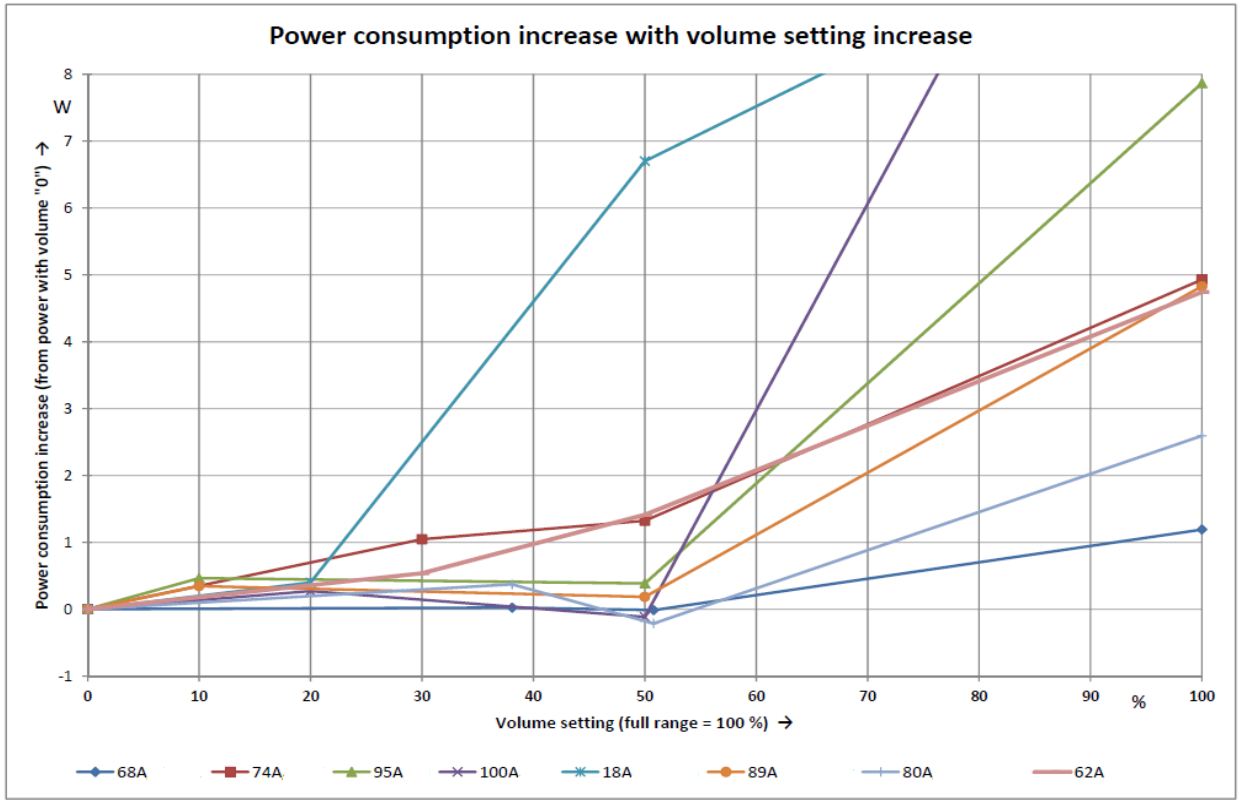
On-mode power consumption



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On-mode power consumption

Recommendations to the Commission

- There are several terms used by manufacturers for the ABC sensor, including eco sensor and light sensor. The availability of the ABC function should be clearly recognizable in the menus. The ABC function should be named unambiguously across the different brands
- ComplianTV identified that setting the speaker volume to a lower level at delivery or in “home mode” can result in considerably lower on-mode power consumption. Adjusting to low volume setting at delivery/”home mode” is comparable to the Regulation’s brightness setting requirements regarding the peak luminance ratio at delivery/”home mode”, in order to avoid a too dark (and less power consuming) setting by the manufacturer
- An amendment of the Regulation No 642/2009 should contain a minimum absolute sound volume setting at delivery/”home-mode”, proven by a sound volume measurement at the speaker or by a power measurement at the speaker

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On-mode power consumption

Recommendations to the Commission

- An amendment of the Regulation No 642/2009 should prevent that the device under test recognises automatically a test condition and reacts to it to achieve a better test result

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Standby / Off-mode power consumption

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Standby / Off-mode power consumption

Definition in Commission Regulation 642/2009, Annex I – Ecodesign Requirements (valid from 20 August 2011)

Limits for power consumption limits are defined:

- Standby-mode(s)
  with only reactivation function, or with reactivation function and additional information or status display

- Off-mode
  with the special case of an off-mode with an “easily visible switch” available (the CENELEC Technical Committee document 100X WG01 tries to give a definition of “easily visible”)

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Standby / Off-mode power consumption

Specifications according to Commission Regulation 642/2009, ANNEX III – Verification Procedure

According Regulation 642/2009 ANNEX III, part 2 (b), a model is considered to comply with the provisions set out in ANNEX I, **if the results of the off-mode/standby measurements do not exceed the applicable limit values by more than 0,10 Watt.**

Within ComplianTV a product is **considered to be compliant** with the provisions set out in ANNEX I, if it fulfils the verification procedure and respective requirements **of Regulation 642/2009 ANNEX III, part 2 (b).**

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Standby / Off-mode power consumption

Practical test approach - Measuring equipment

- Power meter with suitable low current ranges (10 mA or lower)
- Power meter with resolution of 1 mW or better
- Power meter shall measure reliable even with power factors like 0,05 and with crest factors up to 10
- Power meter with sufficient scan rate (minimum 5000/s)
- Recording possibility with computer
- More details to the power meter are listed in Annex B.2 of EN 50564
- Connection of power meter with current side to the load, voltage side to the supply (as described in Annex B.2 of EN 50564 for low power)

Other conditions

- Sufficient stabilization time before standby-mode power recording

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Standby / Off-mode power consumption

ComplianTV test approach

- The television set should be in stable working conditions as required in EN 50564:2011.

- The standby-mode is selected or programmed by operating the “OFF” button with the remote control.

- ComplianTV measures low power consumption according to EN 50564:2011.

- Standby-mode and off-mode power measurements are made with an uncertainty of 0,01 W at the 95 % confidence level, in accordance to EN 50564:2011 (for power consumption less than 0,50 Watt).

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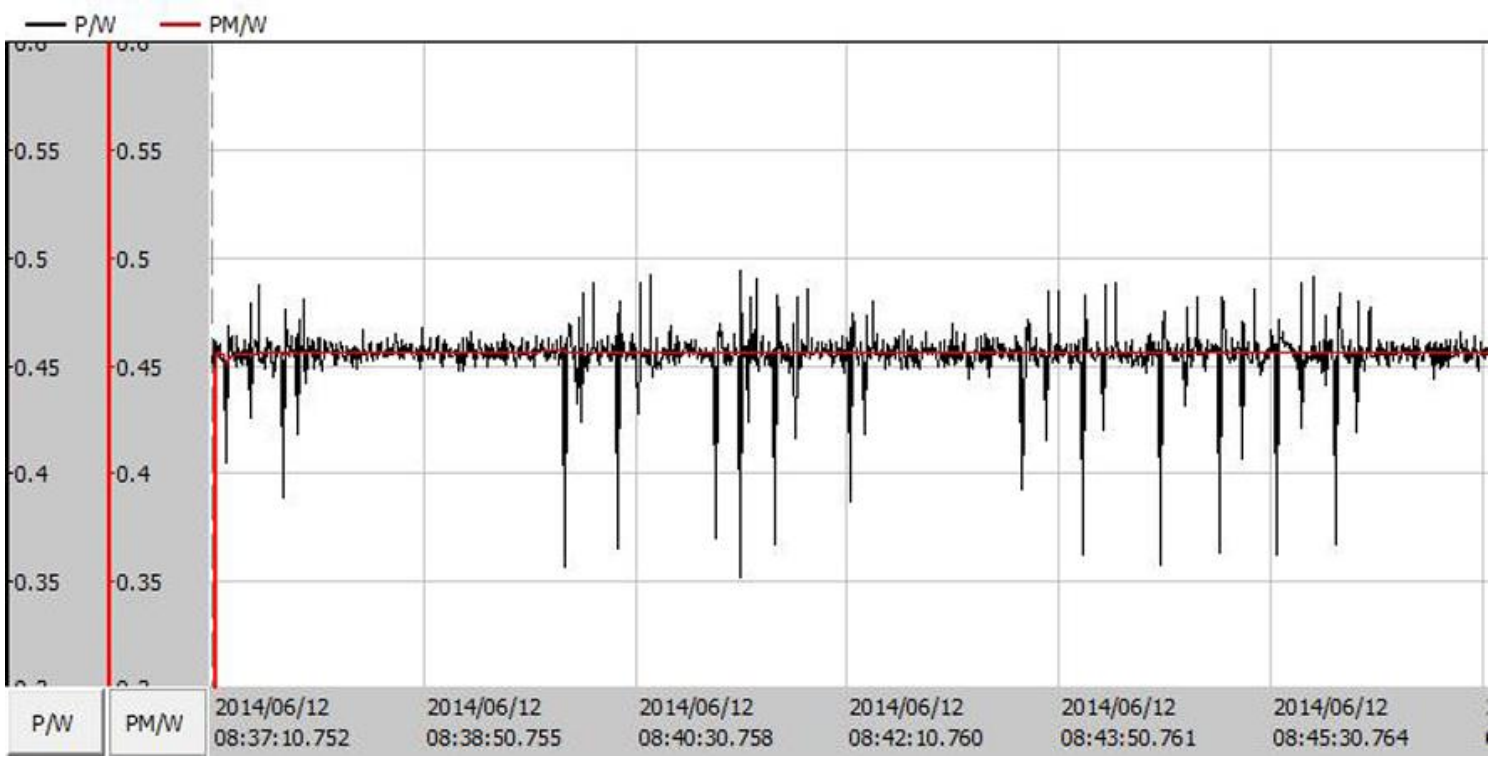
Standby / Off-mode power consumption

“Off-mode with switch” - graph example

Measured standby-mode power consumption: 0,46 W



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Standby / Off-mode power consumption

“Off-mode with switch” - graph example

Measured off-mode power consumption: 0,00 W

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Standby / Off-mode power consumption

Main issues recognised

- Stabilization time until start of recording
- Alternative standby-modes:
  all shall be within the limit – does this require recording of all such modes?
- Easily visible switch:
  is it sufficient that a symbol indicates the position of the switch (for example behind a bezel), or must the switch itself be visible (protrude over the bezel)?
- Is it acceptable if such a symbol for the switch is on a sticker (which can be removed by the user), or is a durable printing required?

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Standby / Off-mode power consumption

Recommendations to the Commission

- Definition of an easily visible switch must be clearly stated by regulation
- One option is to change wording from “easily visible switch” to “easily reachable switch” or adapt definition.

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Automatic power down (APD)

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Automatic power down

Definition in Commission Regulation 642/2009, Annex I - Ecodesign Requirements (valid from 20 August 2011)

- Presence of an automatic switching to standby-mode or off-mode … after no more than 4 hours
- Display of an alert message before the automatic switch function works
- This automatic power down function and the message indication shall be set as default (factory setting)

There is no tolerance range and measurement uncertainty given for this 4 h switch time.

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Automatic power down

Specifications according to Commission Regulation 642/2009, Annex I, part 2, 2 (d/i):

- "after no more than 4 hours in on-mode following the last user interaction and/or a channel change, the television shall be **automatically switched from on-mode to**:
- standby-mode, or,
- off-mode, or,
- another condition which does not exceed the applicable power consumption requirements for off-mode and/or standby-mode;
- This function shall be set as default."

- In addition, **part 2, 2 (d/ii)** defines that "televisions shall display an alert message before the automatic switch from on mode to the applicable condition/modes"
- A product is considered compliant when it fulfils these provisions set out in ANNEX I, part 2, 2 (d/i) and part 2, 2 (d/ii)

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Automatic power down

Practical test approach

- Prior the APD testing:
  - The TV is energised (i.e. in on-mode) for not less than 15 minutes, as specified in EN 50564:2011
- ComplianTV records the last interaction with the television
  - e.g. through pressing the mute button or changing the loudspeaker volume with the remote control
  - Note: the release moment of the remote control button is the starting point of the time measurement
- From that moment, an interaction with the television should not be undertaken. The APD measurement starts from this point. The period up to the APD event (switching to standby/off-mode) should be recorded
- For the measurement of APD, ComplianTV applies a continuous video signal

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Automatic power down

ComplianTV test approach

- ComplianTV declares a product compliant if:

  - the APD is activated as a default setting when the unit is taken out of the box

  - the TV **starts** switching into a low power mode after no more than 4 hours and 1 minute
- The result from the APD measurement is documented in the final test report
- The appearance of the alert message prior the APD event is documented in the final test report
- A photograph of the appearance of the alert message is documented and recorded in the final test report
- A suitable power meter should be used in order to confirm that the television has reached the low power mode

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Automatic power down

Main issues

Issue I – Standby-mode/Off-mode and transition phase

- The Regulation does not provide guidance or requirements on the duration of the transition phase from on-mode to standby-mode/off-mode
- The Regulation does not provide guidance or requirements whether the transition phase should be considered within or beyond the 4 hours
- In the absence of any official guidance, ComplianTV verifies whether the television has reached low power state after the APD event

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Automatic power down

Main issues

Issue II - Tolerance of the 4 hours switching time unclear

- for standby-mode power consumption, 20 % tolerance is accepted by the regulation [0,10 W over the 0,50 W limit, according Annex III, 2. (b)]
- for peak luminance, 60 % are accepted while the limit is 65 % [according Annex III, 2. (c)]
- for on-mode power, 7 % over the limit are accepted [according Annex III, 2. (a)]
- the 1 min tolerance at 4 h defined by ComplianTV is equivalent to 0,4 % deviation

Accuracy of time measurement device/setup:

- shall be defined depending on the switching time tolerance

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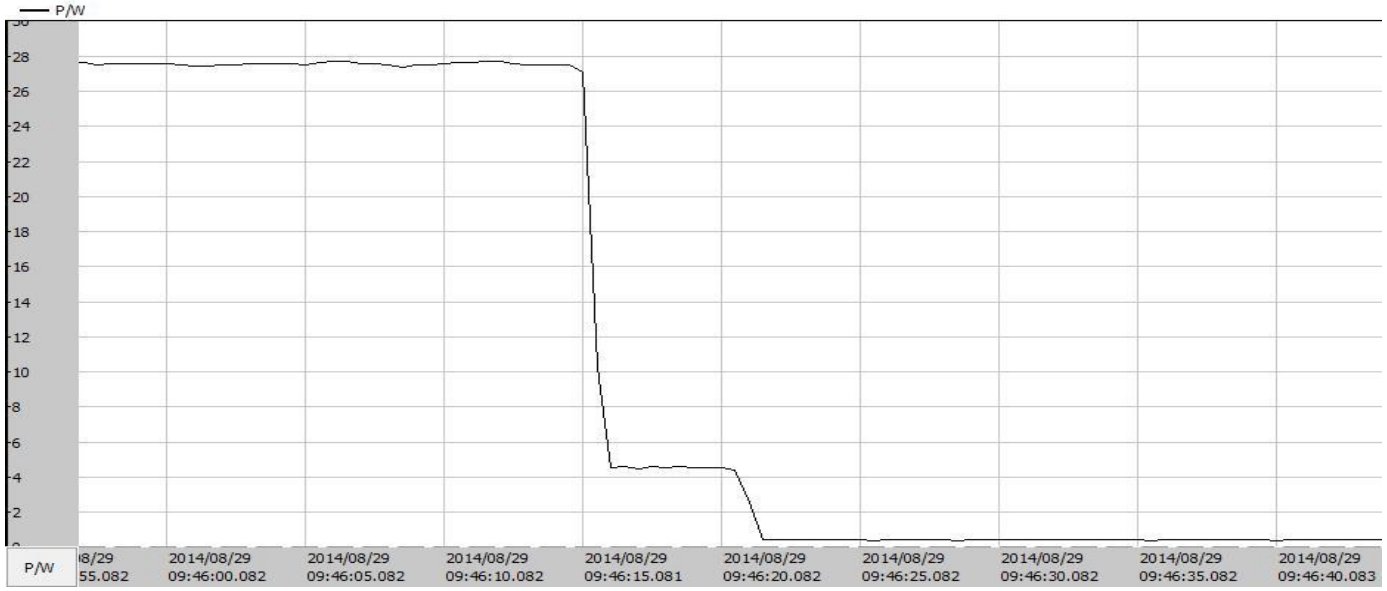
Automatic power down

Main issues

Issue II - Tolerance of the 4 hours switching time unclear

Example for a switching with a **short** transition phase

- The model switches from: 28 W to 4 W in 1 s, remains for 5 s at 4 W and switches in 1 s to 0,42 W.



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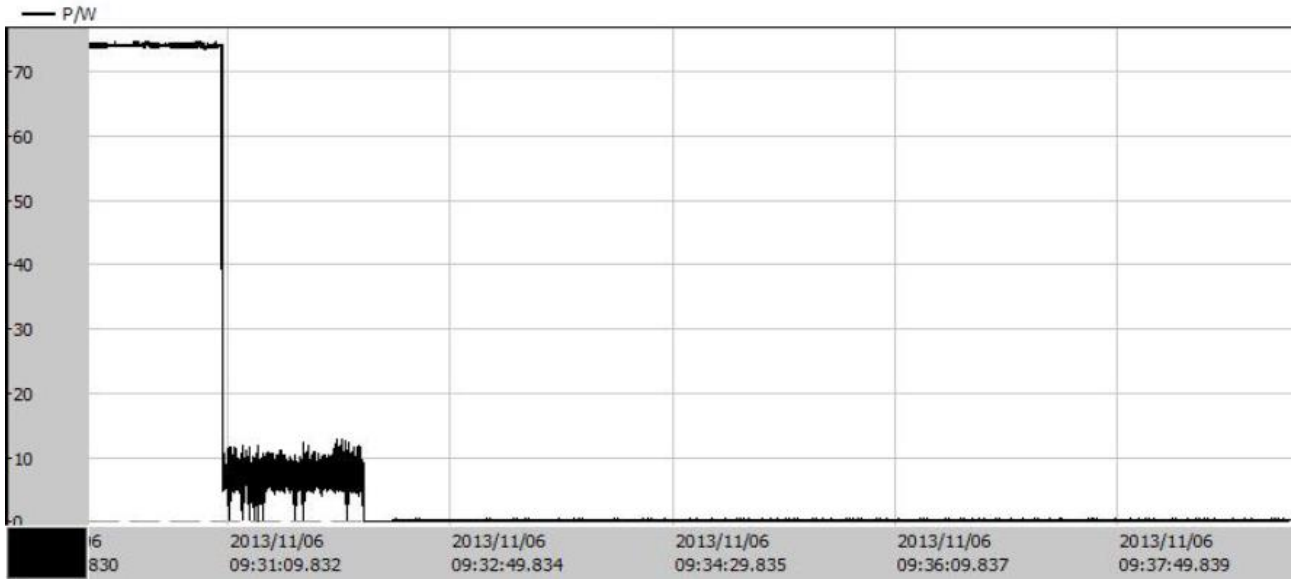
Automatic power down

Main issues

Issue II - Tolerance of the 4 hours switching time unclear

Example for a switching with a **long** transition phase

- The model switches from: 73 W to 8 W in 1 s, remains for about 1 min at 8 W and switches in 2 s to 0,16 W



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Automatic power down

Main issues

Issue III – Last interaction

- Possible mistakes in the APD measurement might occur, if the **moment of the last interaction with the TV is not timed correctly**. The television should have been in **on-mode** for **at least 15 minutes** when the last interaction is undertaken

- The starting point of the timing for the APD testing should be the **release** of the remote control button

- **The APD time measurement should be initiated at this point**

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Automatic power down

Recommendations for good testing

- Recording of the power during the APD test is useful; the exact time can be evaluated from the recording, and the transition phase is shown in this recording

- It shall be ensured that no other remote control is operated near the TV appliance under test – some models recognize the remote signals from other models even from a different brand as “interaction”, and start again with the 4 hours countdown, resulting in a too long APD time

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Automatic power down

Recommendations to the Commission

- Televisions require a transition phase in order to switch from on-mode to standby/off-mode. A future amendment of Regulation No 642/2009 should stipulate unambiguously:
  - Whether after 4h the television should already have switched to a low power state (i.e. standby or off-mode), or
  - After 4h the television should have start switching to a low power state, which is to be reached within a defined transition phase;
- A future amendment of Regulation No 642/2009 should stipulate the duration of the transition phase and whether the transition phase should be considered within or beyond the 4h.

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Peak Luminance Ratio (PLR)

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Peak Luminance Ratio

Definition of “Peak Luminance Ratio” according to 1062/2010

‘peak luminance ratio’ means the ratio of the peak luminance of the home-mode condition or of the on-mode condition of the television as set by the supplier (out of the box), as applicable, and the peak luminance of the brightest on-mode condition

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Peak Luminance Ratio

Specifications according to Regulation 642/2009, ANNEX I clause 4

- "Televisions without forced menu: **the peak luminance** of the on-mode condition of the television as delivered by the manufacturer shall not be less than **65 %** **of the peak luminance of the brightest on-mode** condition provided by the television".

- "Televisions with forced menu: the **peak luminance of the home-mode condition** shall not be less than **65 %** **of the peak luminance of the brightest on-mode** condition provided by the television".

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Peak Luminance Ratio

Specifications according to Reg. 642/2009 resp. 1062/2010, ANNEX II clause 3, resp. ANNEX VII, clause 4

- (a) Measurements shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state of the art measurement methods.
- (b) Measurements of peak luminance shall be made with a luminance meter, detecting that portion of the screen exhibiting a full (100 %) white image, which is part of a 'full screen test' test pattern that does not exceed the average picture level (APL) point where any power limiting occurs in the display luminance drive system.
- (c) Measurements of luminance ratio shall be made without disturbing the luminance meter's detection point on the display whilst switching between the conditions referred to in Annex I, Part 4.

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Peak Luminance Ratio

Specifications according to Regulation 642/2009

ANNEX III clause 2 (c)

- When performing the market surveillance checks a model is considered to comply with the provisions set out in ANNEX I, if “the result for the peak luminance ratio set out in ANNEX I, part 3 does not fall below 60 %”

Specifications according to Regulation 1062/2010

ANNEX VIII clause 2 (c)

- The model shall be considered to comply with the declared value of the on-mode power consumption, if the “result for the peak luminance ratio is above 60 %”

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Peak Luminance Ratio

Practical test approach

- In order to achieve the brightest setting, ComplianTV adjusts all available pre-settings, including “home mode” and “shop mode”
- In order to define the PLR, ComplianTV verifies whether “shop mode” can be manually adjusted into a brighter setting or not and ensures that the product setting is adjusted to the brightest mode
- The used settings / adjustments, where the highest values for the brightness were found have to be documented and have to be implemented into the test report (e.g. by photo documentation)

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Peak Luminance Ratio

ComplianTV test approach

- Luminance ratio is measured by applying the three-bar video signal specified in IEC 62087, edition 2.0 for LCD TV.
  If the TV fails the PLR test, ComplianTV liaises with the manufacturer, who may provide a test pattern (without power limiting!)

- For plasma TVs, the luminance ratio is measured by applying a 4 % white area, specified in the ICDM version 1.03b

- In case that with the above mentioned procedure it is not possible to get positive results or any kind of non allowed limitation could be recognised you have to carry out further studies, which kind of test pattern is applicable and useful

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Peak Luminance Ratio

Main issues recognised

- Non-conform limitations (in power consumption and possible brightness) were found, applying a test pattern with a high Average Picture Level (APL) to Plasma TVs
- Especially the limitation occurs during the change of the adjustments by increasing the brightness and contrast control

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Peak Luminance Ratio

Plasma TV in factory settings

- Maximum Peak luminance is guaranteed only in white areas below 4 %. Above 4 % white area the power management starts to increase (blue line) because of keeping the rising white area in luminance nearly constant (red line)

- Here, in factory settings, power limiting occurs where the white area / Average Picture Level (APL) exceeds 30 % (blue line)

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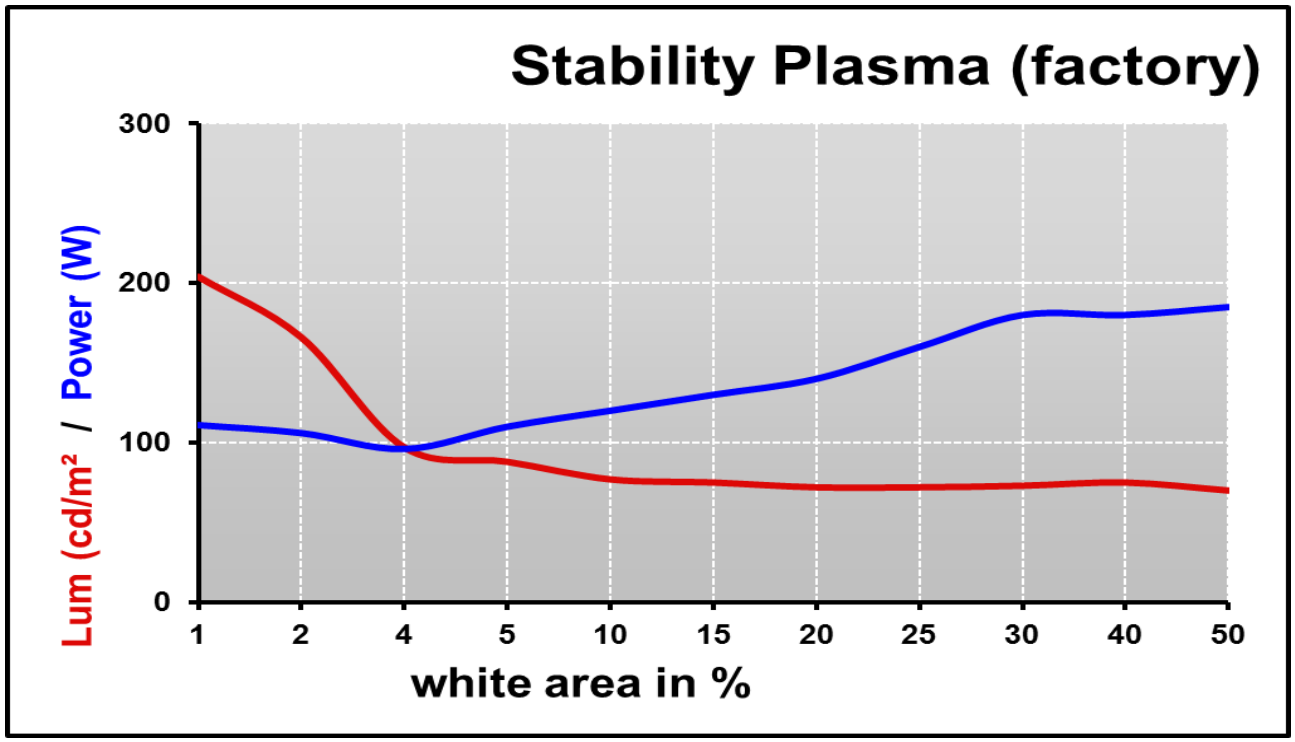
Peak Luminance Ratio

Plasma TV in factory settings



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Peak Luminance Ratio

Plasma TV in factory settings

- Maximum Peak luminance is guaranteed only in white areas below 4 %. Above 4 % white area the power management starts to increase (blue line) because of keeping the rising white area in luminance nearly constant (red line)

- Here, in factory settings, power limiting occurs where the white area / Average Picture Level (APL) exceeds 30 % (blue line)

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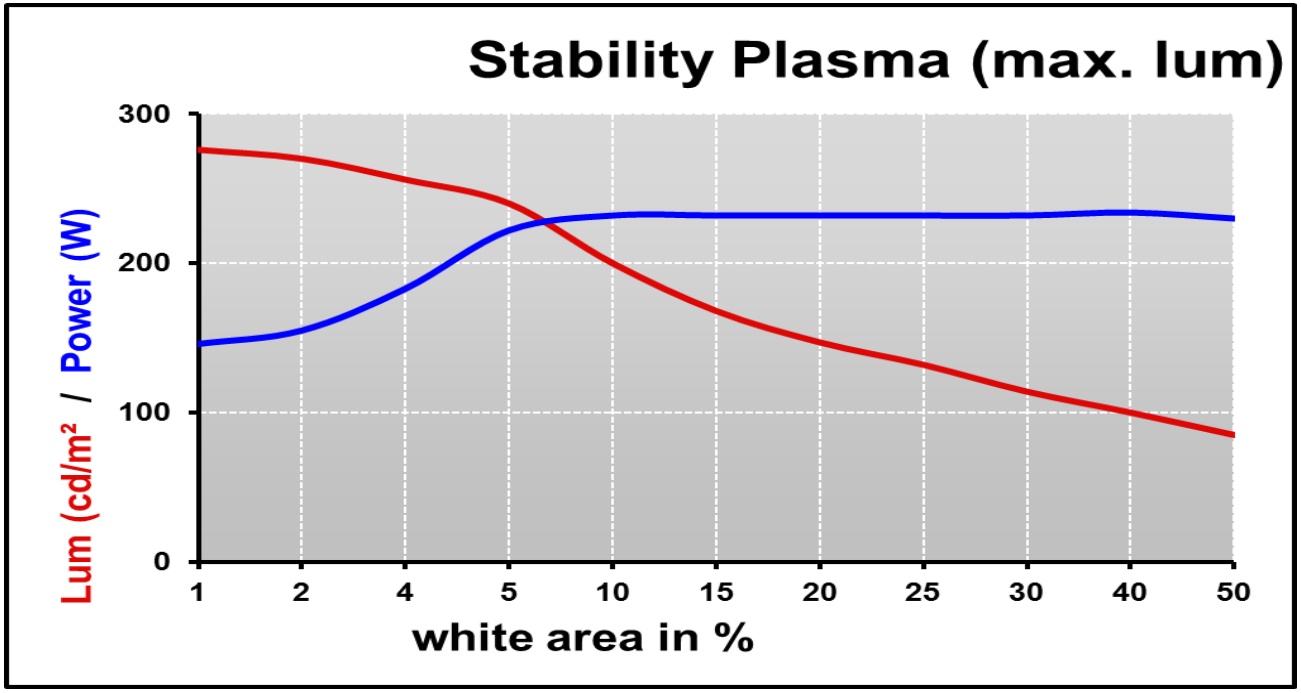
Peak Luminance Ratio

Plasma TV with max. settings for brightness contrast and cell



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Peak Luminance Ratio

Plasma TV with max. settings for brightness contrast and cell

- If settings are adjusted to get a maximum luminance (for PLR-Measurements) power management is active up to 5 % white area (blue line)
- In case of the setting to get maximum luminance the black pixel are also activated to dark gray
- Above 5 % white area power supply is in limitation (blue line). Only luminance decreased depending on the white area / APL (red line)

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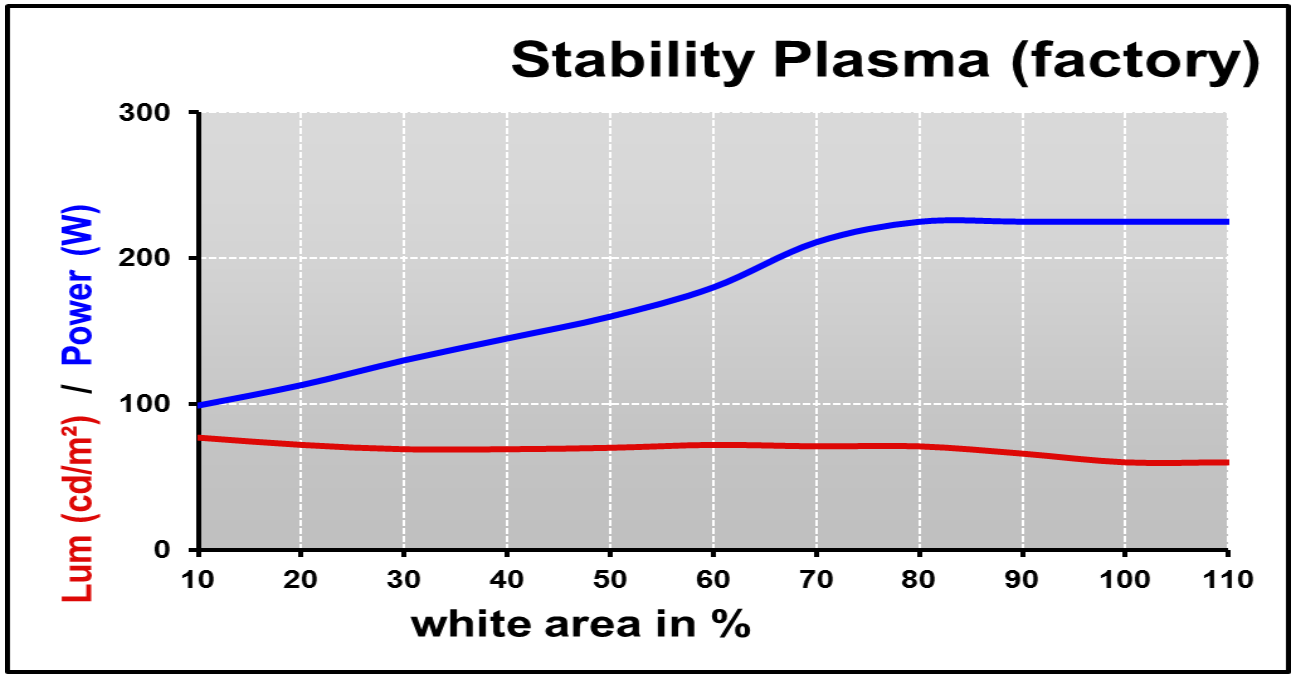
Peak Luminance Ratio

Plasma TV in factory settings



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Peak Luminance Ratio

- Under normal conditions a Plasma TV is working with reduced but uniformed and nearly constant brightness
- Power has to be managed depending of the content (in this case the white area as an equivalent to the APL value)
- Is the white area (APL) to large, here > 70 %, the Power Supply is limited and the brightness starts smoothly decreasing

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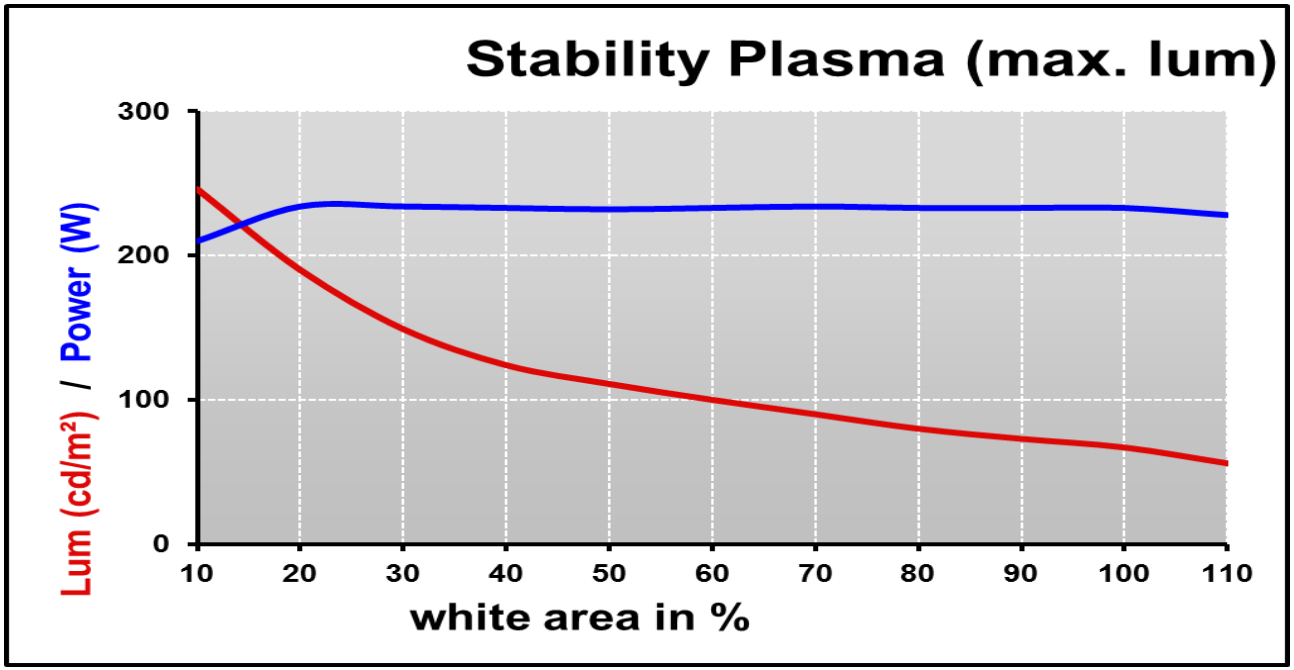
Peak Luminance Ratio

Plasma TV with max. settings for brightness contrast and cell



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Peak Luminance Ratio

- If the display is adjusted to max. brightness the power supply of the TV is limiting at > 20 % white area (blue line)
- Only brightness will be reduced automatically when the white area or Average Picture Level (APL) becomes higher

- **Results of Peak Luminance Ratio (PLR) measurements differ strongly and significant depending of the APL (white area) of the applied and displayed video content**

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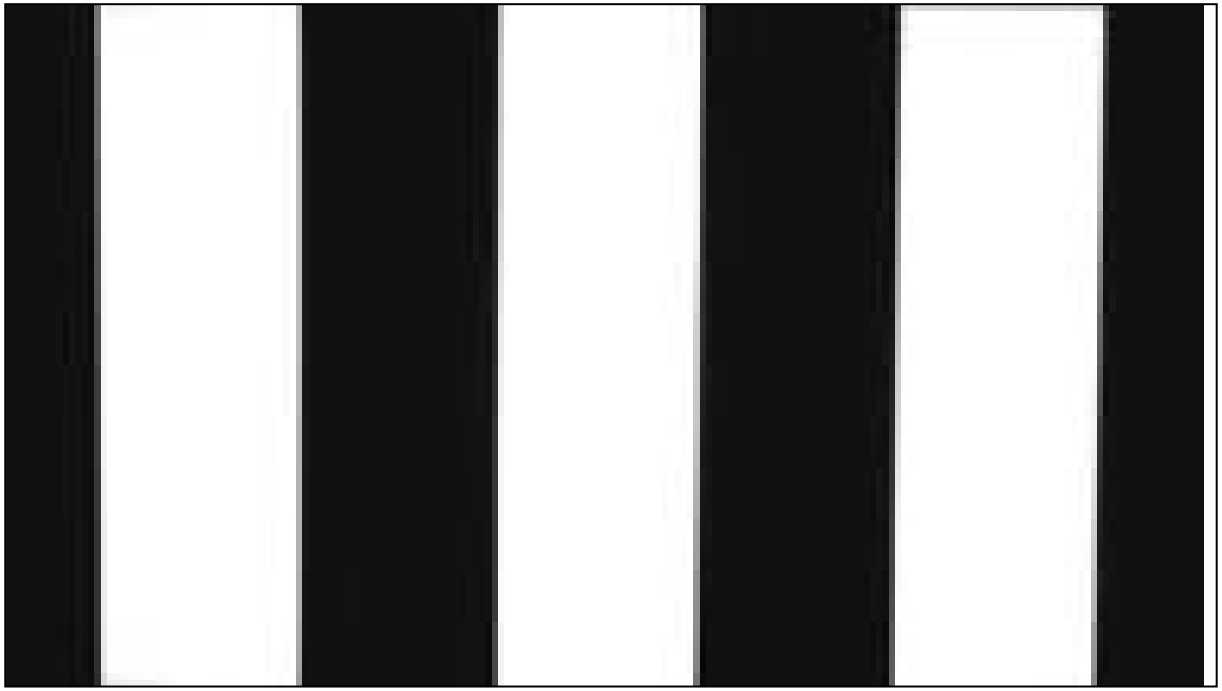
Peak Luminance Ratio

Sample of test pattern

Three bar IEC62087 ed. 3.0



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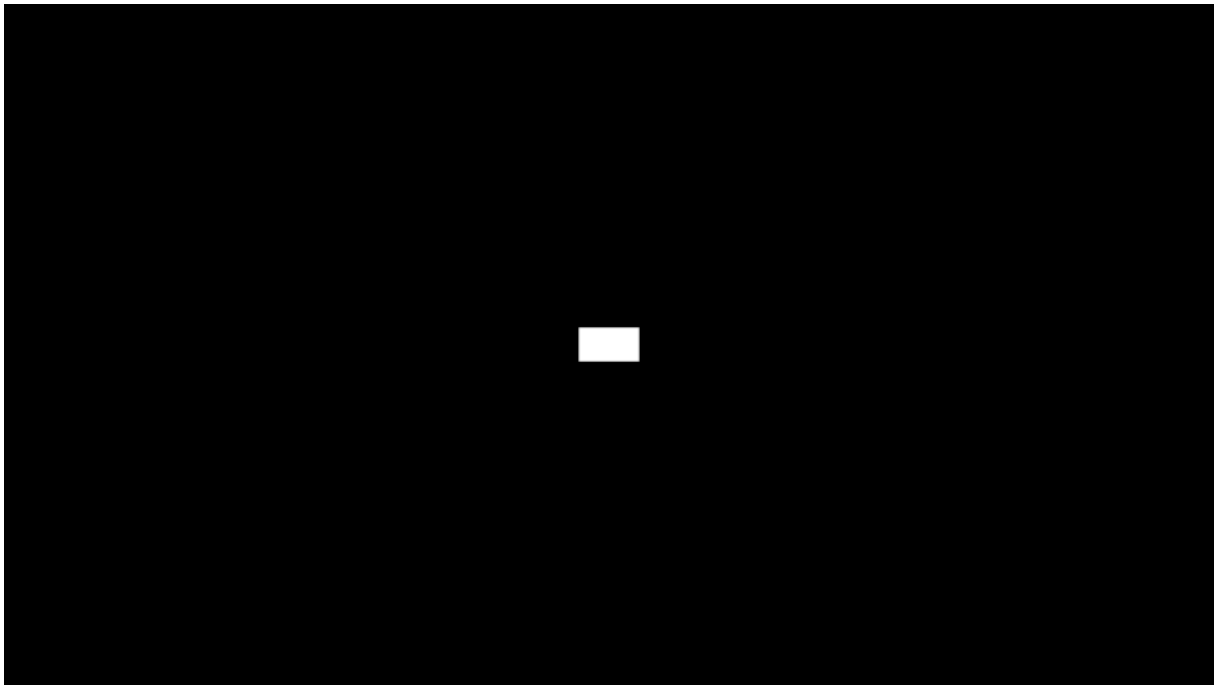
Peak Luminance Ratio

Sample of test pattern

4 % window



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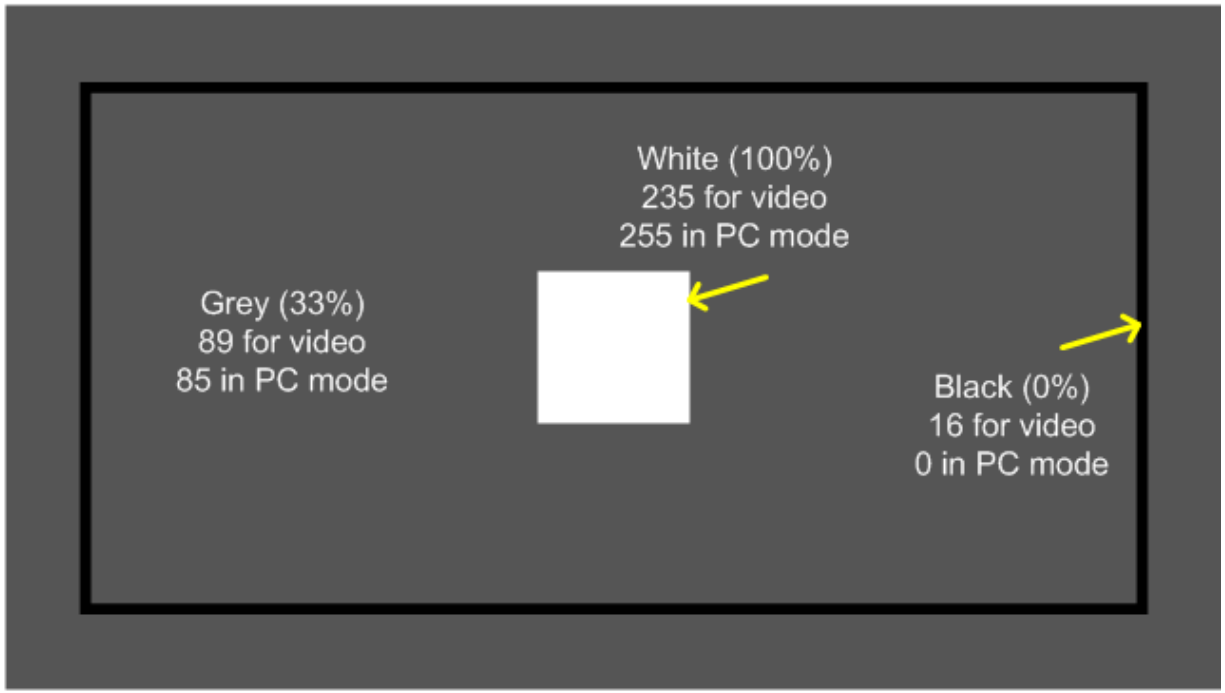
Peak Luminance Ratio

Sample of test pattern

New test pattern defined in IEC62087-2 CDV



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Peak Luminance Ratio

Recommendations to the Commission

- The Commission Regulation (EC) No 642/2009 should define test patterns, which ensure comparable test conditions across all models and brands. Furthermore, the stipulated test patterns should not cause any power limiting

- A future version of the Commission Regulation (EC) No 642/2009 should lay down uniform requirements with respect to the PLR and should avoid inconsistency within the Regulation text

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Energy efficiency index (EEI) and annual on-mode power consumption

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EEI and annual on-mode power consumption

Definition according to Regulation 1062/2010, ANNEX II - Method for Calculating the Energy Efficiency Index and the Annual On-mode Energy Consumption

- According to Annex II, part 1 the Energy Efficiency Index (EEI) is calculated as EEI = P/P_{ref} (A), where:
  - P_{ref} (A) = P_{basic} + A × 4,3224 Watts/dm^2,
  - P_{basic} = 20 Watts for television sets with one tuner/receiver and no hard disc
  - P_{basic} = 24 Watts for television sets with two or more tuners/receivers
  - P_{basic} = 28 Watts for television sets with hard disc(s) and two or more tuners/receivers"
  - A is the visible screen area expressed in dm^2 ,
  - P is the on-mode power consumption of the television in Watts measured in accordance with Annex VII, rounded to one decimal place

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EEI and annual on-mode power consumption

Specifications according to Regulation 1062/2010

- According to ANNEX II, part 2, the annual on-mode energy consumption E in kWh is calculated as E = 1,46 × P.
- According to ANNEX II, part 3, the EEI and the annual on-mode energy consumption measured corresponding to the procedure set out in Annex VII can be reduced by 5%, if the following conditions are fulfilled when the television is placed on the market:
- (a) **the luminance of the television in the home-mode or the on-mode condition as set by the supplier, is automatically reduced between an ambient light intensity of at least 20 lux and 0 lux;**
- (b) the **automatic brightness control is activated in the home-mode condition** or the on-mode condition of the television as set by the supplier.

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EEI and annual on-mode power consumption

ComplianTV test approach

- ComplianTV reduces the EEI and the annual on-mode power consumption by 5% if:
  - The ABC sensor is activated in the factory setting or home-mode condition.
  - The TV automatically reduces the luminance by decreasing ambient light intensity.
- Verification procedure:
  - In order to achieve luminance intensity between 200 lux and 100 lux, a lamp with variable brightness is set near to the ABC sensor of the TV, while a luminance sensor on the screen measures the screen luminance.
  - The luminance on the ABC is reduced to about 0 lux.
  - If the television reduces the luminance, the EEI and the annual on-mode power consumption will be reduced by 5%, according to Regulation 1062/2010, ANNEX II, part 3.

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EEI and annual on-mode power consumption

Main issues recognised

Issue I – Definition of two or more tuners/receivers

- Regulation No 1062/2010 does not provide any guidance on the definition

- ComplianTV considers the definition elaborated during the ADCO meeting (March 22, 2011):
  - The definition of “two or more tuners/receivers” depends upon the functionality of the TV rather than the physical number of tuning devices that are contained inside the TV. Therefore, if the TV has the ability to decode two or more streams of TV broadcast even if both streams are decoded by the same physical tuning device, it will be regarded as a device with two or more tuners/receivers

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EEI and annual on-mode power consumption

Main issues recognised

Issue II - Automatic reduction of TV luminance (ABC)

- The Regulation text is not clear on defining the reduction of ambient light intensity.
  - In Annex II, 3. (a), the text is as follows: **“the luminance of the television…, is automatically reduced between an ambient light intensity of at least 20 lux and 0 lux”**. This can mean that a luminance reduction between any value of the ambient light intensity of 20 lux and higher and a value under 20 lux is acceptable.

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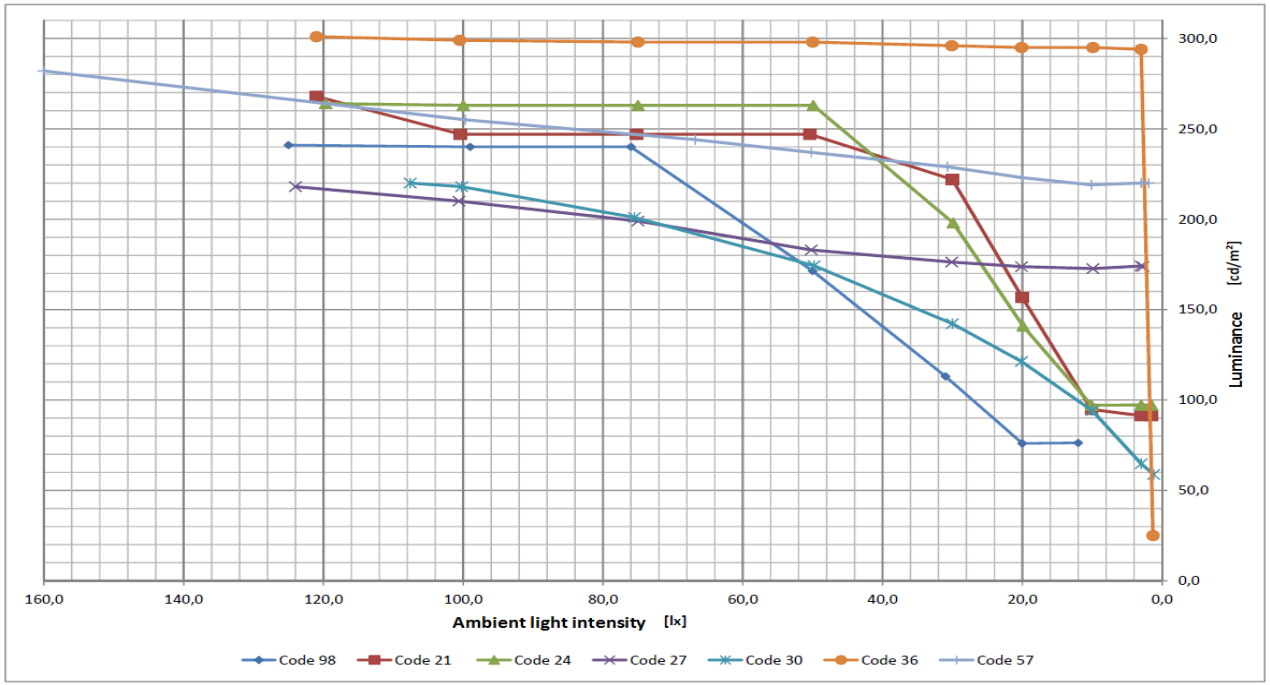
EEI and annual on-mode power consumption

General trends:

- Negligible difference of luminance reduction between 120 and 20 lux;
- Several models with nearly no change between 20 lux and 0 lux and generally only a small reduction from bright to completely dark surrounding;



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EEI and annual on-mode power consumption

Recommendations to the Commission

Annual power consumption

- A future version of Commission Regulation 1062/2010 should provide a definition of television with one tuner, two tuners and more tuners. Furthermore, the definition of “two tuner” and “more tuners” should be easily differentiated from a TV with multiple tuners”;

- A future version of Commission Regulation 1062/2010 should define minimum requirements for luminance reduction;

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EEI and annual on-mode power consumption

Recommendations to the Commission

- ANNEX II stipulates the formula for the annual on-mode energy consumption E in kWh calculated as E = 1.46 × P.

The Regulation should define clearly the formula parameters

- The time parameter 1.46 represents 1460 h – the average time per day of watching television (4h) in one year (365 days).
- ComplianTV recommends that an amendment of the Directive should update the formula as follows: "E_{kWh} = (1460h * P_W) / 1000", where the conversion of Wh to kWh is considered as well

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Energy Label

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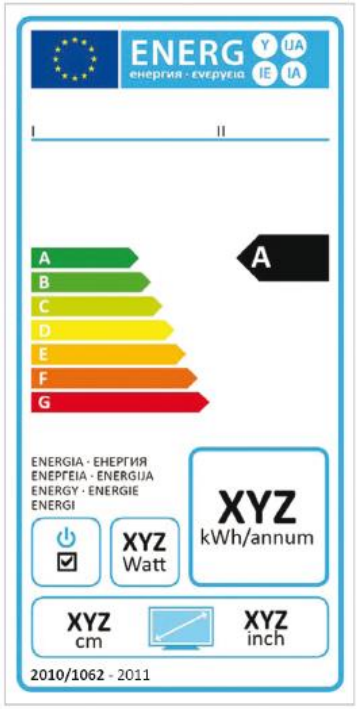
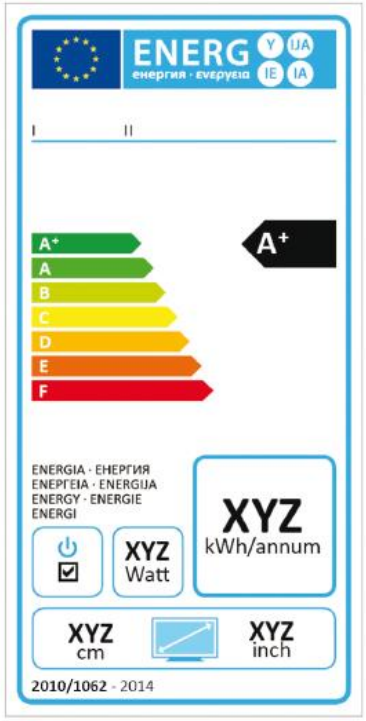
Energy Label

Definition of Regulation 1062/2010 regarding Layout

Placed on the market from 30 November 2011



Placed on the market from 1 January 2014



I) Supplier's name or trade mark
II) Supplier's model identifier

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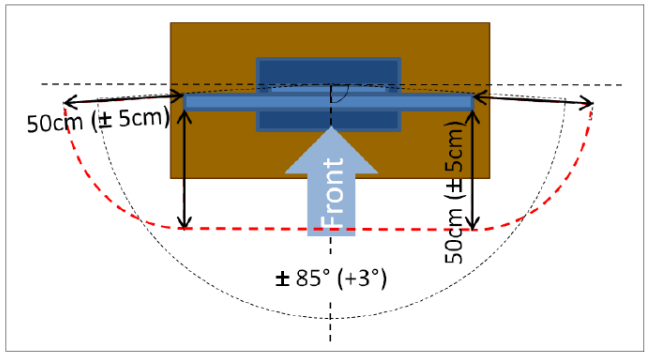
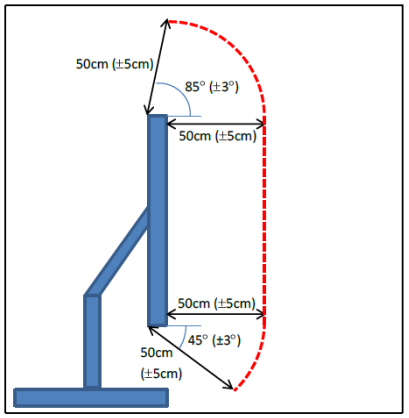
Energy Label

Main issues recognised

Issue I – easily visible switch

- Definition of an easily visible off switch is defined in DKE 742_2013-0049, according to CENELEC Technical Committee 100X WG01 Edition 2.4





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Energy Label

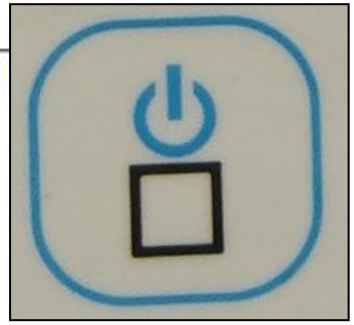
Main issues recognised

Issue I – easily visible switch

- Regulation 1062/2010 states the following about the easily visible switch icon:

For televisions with an …., the symbol defined in point 8 of point 5 may be added.

Photo of the easily visible switch:



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Energy Label

Issue II – Label format

Regulation 1062/2010 states the following about rounding:

- *On-mode power consumption in Watts, rounded to the first integer*
- *Annual on-mode energy consumption calculated in accordance with point 2 of Annex II, in kWh, rounded to the first integer*

Regulation 1062/2010 states the following about energy efficiency class arrow and text:

- ***Arrow:** width: 26mm, height: 8mm, 100% black*
- ***Text:** Calibri bold 15 pt, capitals, white, '+' symbols: Calibri bold 10 pt, capitals, white*

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Energy Label

- Reference period is not displayed correctly

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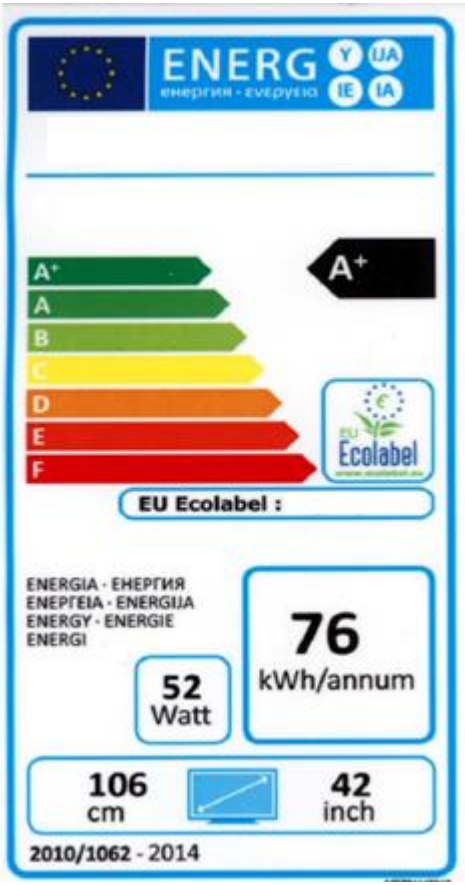
Energy Label

Issue III – Applying the Ecolabel

- According to 1062/2010, where a model has been granted a ‘European Union Ecolabel’ under regulation 66/2010, a copy of the EU Ecolabel may be added.
- According to the Ecolabel regulation 66/2010 the following is stated:
  - *The EU Ecolabel registration number shall also appear on the product. It shall take the following form:*

EU Ecolabel: xxxx/yyy/zzzzz



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Test Report Template

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TEST REPORT

Ecodesign and energy labelling requirements for televisions

Measurement of implementing measures from Directive 2009/125/EC on the Ecodesign of energy-related products and Directive 2010/30/EU on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products

(Please fill in all areas in grey)

1.1.1 **Report**	
Report Reference No.:	*XXX*
Compiled by (+ signature):	*Name* ———
Approved by (+ signature):	*Name* ———
Date of issue:	*DD-MM-YYYY*
Contents:	*XX pages*
Testing Laboratory:	*Name* *Department*
Address:	*Street No, Postal Code, City, Country*
Testing location:	
Test specification:	
Regulation:	**COMMISSION REGULATION (EC) No. 642/2009 of 22nd July 2009** (Ecodesign requirements for televisions) **COMMISSION DELEGATED REGULATION (EU) No. 1062/2010 of 28th September 2010** (Energy labelling of televisions)
Test procedure:	Information test
Non-standard test method:	N/A
Test item description:	*(Please describe here shortly the item which shall be tested e.g. Colour TV)*
Manufacturer / brand name:	
Model / type reference:	*XXX*
Series number:	*XXX*
Display technology (and backlight technology: CCFL / LED / OLED)	*Plasma / LCD with CCFL / LED / OLED backlight*
Test items additional functionalities:	*(Short description)*
Declared Display size:	*XX* inches
Peak luminance ratio value:	
Power supply unit type:	
Power switch:	*With (easily visible / not easily visible) / Without*
Software (version/revision number):	*XXX*
Forced menu	*With (tested in home-mode) / Without (tested in on-mode as shipped)*

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Photo/Copy of name plate:

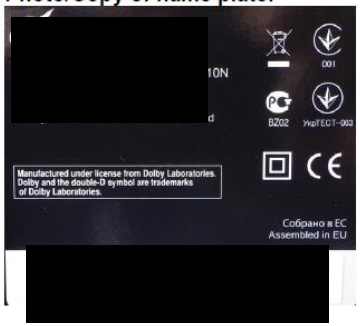

Photo of energy efficiency label:

Front:

Back:

Open:

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Auto power down setting	*XX:XX*	HH:mm
Product declaration / Labelling:	*Yes / No / Not available (N/A) / not declared*	
Energy Efficiency Class:		
On-Mode power consumption:	*XX*	W
Annual power consumption:	*XX*	kWh/a
Standby power consumption:	*XX*	W
Off-mode power consumption:	*XX*	W

Photo/Copy of name plate: *(Insert photo)*	

Photo of energy efficiency label: *(Insert photo)*	

Photo of product fiche: *(Insert photo)*	

Date of access to the website: *(dd/mm/yyyy)*	

Photo of the easily visible switch: *(Insert photo)*

Photo of the whole product: Front: ***(Insert photo)*** Back: ***(Insert photo)*** Open: *(Insert photo)*

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1.1.2 **Test case verdicts**	
Test case does not apply to the test item:	N/A or N
Test item does meet the requirement:	P (Pass)
Test item does not meet the requirement:	F (Fail)
Test item not checked:	NC

1.1.3 **Testing**	
Date of receipt of test item:	*DD-MM-YYYY*
Date(s) of performance of test:	*DD-MM-YYYY*
Description of tested Equipment under Test (EUT):	
Power supply:	*(reference/type)*
Display unit:	*(reference/type)*
Ambient conditions:	*(temperature, etc.)*
Mains supply system:	*(voltage and frequency of the main supply system, voltage harmonics distortion)*
Source of main signal:	*(e.g. HDMI 1)*
Purchase information	
Shop name:	
Address and country:	
Website of the shop:	

1.1.4 General remarks

- This report shall not be reproduced except in full without the written approval of the testing laboratory.
- The test results presented in this report relate only to the item tested.
- "(see remark #)" refers to a remark appended to the report and "(see Annex #)" refers to an annex appended to the report.
- Throughout this report, a comma is used as the decimal separator.
- List of test equipment must be kept on file and available for review.
- Other remarks: (please specify) …..

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Summary of Testing and Conclusions

1. **Regarding "ON-MODE POWER CONSUMPTION"**
   The television set **complies** with **phase X** (e.g. phase 2) of the Ecodesign requirements of COMMISSION REGULATION (EC) No. 642/2009 (into force from 1st April 2012).
   Result: Yes / No

2. **Regarding "STAND-BY/OFF MODE POWER CONSUMPTION"**
   The television set **complies** with **phase X** of the Ecodesign requirements of COMMISSION REGULATION (EC) No. 642/2009 (into force from 20th August 2011).
   Result: Yes / No

3. **Regarding "HOME MODE"**
   The television set **complies** with the Ecodesign requirements of COMMISSION REGULATION (EC) No. 642/2009 (into force from 20th August 2010).
   Result: Yes / No / N/A
   Device is providing a forced menu.
   Result: Yes / No

4. **Regarding "PEAK LUMINANCE RATIO"**
   The television set **complies** with the Ecodesign requirements of COMMISSION REGULATION (EC) No. 642/2009 (into force from 20th August 2010).
   Result: Yes / No

5. **Regarding Energy Label according to Commission delegated Regulation (EU) 1062/2010**

   a. The label was supplied with the unit
      Result: Yes / No

   b. The label format of the television set complies with the requirements of COMMISSION DELEGATED REGULATION (EC) No. 1062 / 2010 (i.e. the label shall be at least 60 mm wide and 120 mm high; the label shall be in colour; the label was not graphically changed. Further information concerning format issues can be found in the Regulation)
      Result: Yes / No

   c. The calculated annual energy consumption of the television set complies with the requirements of COMMISSION DELEGATED REGULATION (EC) No. 1062 / 2010.
      Result: Yes / No

   d. Energy Efficiency Class calculated with declared on-mode power consumption: **X**

   e. Easily visible switch icon used correctly on the label (This is a special format failure. If the TV has no easily visible hard switch, there should be no icon on the label. If the label has a switch icon ticked, but the TV does not have one (easily visible), this is a non-compliance case. If the label has a switch icon without a tick, it has to be referred as a non-compliance case as well since the label cannot be graphically modified.)
      Result: Yes / No / N/A

   f. Applying Annex I and II of the above mentioned Regulation:

The calculated Energy Efficiency Index is:	**0,XXX**
which is equivalent to Energy Efficiency Class:	**X**
The measured power consumption is:	**XX,X W**
The calculated annual Energy consumption is:	**XX,X kWh/a**

Declared values comply with the measured values (including the respective

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tolerances defined in to Commission delegated Regulation (EU) 1062/2010.
Result: Yes / No

6. **Regarding the Product Fiche according to Commission delegated Regulation (EU) No. 1062/2010**
   The information in the product fiche of the television is provided in the order specified in Regulation (EU) 1062/2010, ANNEX III, point 1 and is made available in the product brochure or other literature provided with the product.
   ...(e.g. No information about standby-mode power consumption is provided)
   Result: Yes / No

7. **Information is provided by the manufacturer as required in Commission delegated Regulation (EC) No. 642/2009, Annex I, point 5**

   ...(e.g. No information about standby-mode power consumption is provided)
   Result: Yes / No

8. **Measuring methods;**
   AC input data measured with power analyser.

   Please explain on which basis or standard the on-mode power consumption was measured: ..... (e.g. The "Dynamic Broadcast Content" acc. to IEC 62087 ed.2, clause 11.6. was applied.)

   Please explain on which basis or standard the standby mode power consumption and the uncertainty was measured: ..... (e.g. Power consumption in standby-mode is measured acc. to EN 50564. Measurement uncertainty is specified according to EN 50564).

   Please explain the test method applied to measure the luminance ratio: ..... (short description of the applied test method, e.g. 4% white image test pattern or manufacturer test pattern or the three-bar video signal specified in IEC 62087 Ed. 2.0, Section 11.5.5 was used. It can be further explained if a stabilised display luminance is achieved by display the three-bar signal not less than 10 minutes.

   These measurements are scheduled for detecting the luminance value of the EUT in "home-mode" or under the conditions as delivered by the manufacturer.
   The maximum luminance value of the EUT is measured with the maximum brightness, contrast and back-light which could be adjusted by the setting within the home mode or by using the shop mode.

9. **The detailed measuring results and adjustments are stated in the attached appendix.**

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Measurement of Ecodesign requirements for televisions				
Clause	Requirement – Test	Result – Remark		Verdict (P / F / N / NC)
1	**GENERAL DATA**			
	Safety class of the apparatus:			—
	Power switch provided for condition max. 0,01 W:	XX	W	—
	Switch easily visible	Yes / No		—
2	**RATED ELECTRICAL DATA (NAMEPLATE)**			
	Rated rms input current (I):	XX	A	—
	Rated rms input voltage (U):	XX	V	—
	Rated input power (P):	XX	W	—
	Mains frequency:	XX	Hz	—
3	**TEST RESULTS (ON-MODE POWER CONSUMPTION)**			
	Power measurement with an uncertainty of ≤ 2 % at the 95 % confidence level (measurements are made in accordance with COMMISSION REGULATION (EC) No. 642/2009)			
	Came into force on 1st April 2012 (phase 2) (please adapt date and phase if necessary)			
	Measured visible display area:	XX	dm^2	—
	Limit for power consumption (max.): P ≤ 16 Watts + (A x 3,4579 Watts/dm^2)	XX	W	P / F / N / NC
	Measured power consumption:	XX	W	
4	**TEST RESULTS (STANDBY/OFF MODE POWER CONSUMPTION)**			
	Power measurement of power ≥ 1,0 W made with an uncertainty of ≤ 2 % at the 95 % confidence level (in accordance to EN 50564:2011)	—		P / F / N / NC
	For Maximum Current Ratio (MCR) ≤ 10, measurements of power < 1,0 W are made with an uncertainty ≤ 0,02 W at the 95 % confidence level (measurements are made in accordance with EN 50564;2011) For MCR >10, measurements are made in accordance with EN 50564:2011	—		P / F / N / NC

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Measurement of Ecodesign requirements for televisions				
Clause	Requirement – Test	Result – Remark		Verdict (P / F / N / NC)
4	Description how the stand-by mode was selected or programmed:			—
	Came into force on 20th August 2011 (phase 2) (please adapt date and phase if necessary)			
	Used sampling rate for measurement:	XX	1000/s	—
	a) Off-mode (max. 0,3 W)	XX	W	P / F / N / NC
	Except for televisions with an easily visible switch (max. 0,01 W in off-mode):	XX	W	P / F / N / NC
	Any other off-mode (max. 0,5 W)	XX	W	P / F / N / NC
	b) Standby-mode (max. 0,5 W) (Without information or status display)	XX	W	P / F / N / NC
	Standby-mode (max. 1,0 W) (With information or status display)	XX	W	P / F / N / NC
	c) Availability of "off-mode" and /or "standby-mode"			P / F / N / NC
	"Off-mode" and/or "standby-mode", and/or "another condition" shall be provided which does not exceed the applicable power consumption requirements if connected to mains power source.			P / F / N / NC
	d) Automatic power-down function	(*Please mention whether this function exists and whether it is enabled in delivery state*)		P / F / N / NC
	Sequence of events to reach the mode where the television automatically changes modes:			P / F / N / NC
	(i) After no more than 4 hours in "on mode" without any user interaction and/or channel change the television shall be automatically switched from "on-mode" to	-		-
	"standby-mode", or	Time: XX		P / F / N / NC
	"off-mode", or	Time: XX		P / F / N / NC
	"another condition".	Time: XX		P / F / N / NC

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Measurement of Ecodesign requirements for televisions				
Clause	Requirement – Test	Result – Remark		Verdict (P / F / N / NC)
	(ii) Televisions shall display an alert message before the automatic switch from on mode to the applicable condition/modes.	Yes / No		
5	**"HOME-MODE" FOR TELEVISIONS DELIVERED WITH A FORCED MENU**			
	Came into force on 20th August 2010			
	"Home-mode" provided, which shall be the default choice on initial activation	Yes / No		P / F / N / NC
	If a different mode than "home-mode" can be selected by the user, a second selection process shall be prompted for confirmation.	Yes / No		P / F / N / NC
6	**PEAK LUMINANCE RATIO**			
	Came into force on 20th August 2010			
	For televisions without forced menu: (if relevant)			
	Peak luminance of the on-mode condition as delivered by the manufacturer shall not be less than 60% of the peak luminance of the brightest on-mode condition provided by the television. (in accordance to Annex III, 2. (c))	Indicate selected mode for the brightest condition, and associated parameters: home mode / shop mode / custom mode		P / F / N / NC / N/A
	Delivery state:	XX	cd/m²	
	Max. adjustable brightness:	XX	cd/m²	
	Calculated ratio:	XX	%	
	For Televisions with forced menu: (if relevant)			
	Peak luminance of the home-mode condition shall not be less than 60 % of the peak luminance of the brightest on-mode condition provided by the television. (in accordance to Annex III, 2. (c))	Indicate selected mode for the brightest condition, and associated parameters: home mode / shop mode / custom mode		P / F / N / NC / N/A
	Home mode:	XX	cd/m²	
	Max. adjustable brightness mode:	XX	cd/m²	
	Calculated ratio:	XX	%	
	Are parameters adjustable in shop mode:	Yes / No		-

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Measurement of Ecodesign requirements for televisions				
Clause	Requirement – Test	Result – Remark		Verdict (P / F / N / NC)
7	**ENERGY EFFICIENCY INDEX AND ANNUAL POWER CONSUMPTION ACCORDING DELEGATED REGULATION (EU)1062/2010 (Came into force on 30th November 2011)**			
	To calculate the EEI, the on-mode power consumption could be reduced by 5 %, if luminance is automatically reduced between an ambient light intensity of at least 20 lux and 0 lux and if automatic brightness control is activated.			
	Energy Efficiency Index (EEI):			
	$EEI = P_{measured} / P_{ref}$ $P_{ref} = P_{basic} + A \times 4{,}3224\ W/dm^2$	$A_{measured}$ = XX	dm²	P / F / N / NC
		P_{basic} = XX	W	
		$P_{measured}$ = XX	W	
		P_{ABC} = XX	W	
		P_{ref} = XX	W	
	Energy Efficiency Index (EEI) Energy Efficiency Class (EEC)[1]	EEI = 0,XX is equivalent to EEC = Y		
	$EEI_{ABC} = EEI \times 95\%$			P / F / N / NC
	Annual on-mode energy consumption:			
	E in kWh = 1,46 x $P_{measured}$	E = XX,X	kWh	P / F / N / NC
	E_{ABC} = E x 95 % (only if the automatic brightness control requirements are fulfilled)	E_{ABC} = XX,X	kWh	P / F / N / NC

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Measurement of Ecodesign requirements for televisions				
Clause	Requirement – Test	Result – Remark		Verdict (P / F / N / NC)
7	**ENERGY EFFICIENCY INDEX AND ANNUAL POWER CONSUMPTION ACCORDING DELEGATED REGULATION (EU)1062/2010 (Came into force on 30th November 2011)**			
	To calculate the EEI, the on-mode power consumption could be reduced by 5 %, if luminance is automatically reduced between an ambient light intensity of at least 20 lux and 0 lux and if automatic brightness control is activated.			
	Energy Efficiency Index (EEI):			
	$EEI = P_{measured} / P_{ref}$	$A_{measured} = 22,6$	dm^2	P
	$P_{ref} = P_{basic} + A \times 4,3224\ W/dm^2$	$P_{basic} = 20$	W	
		$P_{measured} = 30,6$	W	
	$P_{ABC} = P_{measured} \times 95\%$	$P_{ABC} =$	W	
		$P_{ref} = 118$	W	
	Energy Efficiency Index (EEI) Energy Efficiency Class (EEC)[1]	**EEI = 0,2600 is equivalent to EEC = A**		
	$EEI_{ABC} = EEI \times 95\%$			N
	Annual on-mode energy consumption:			
	E in kWh $= 1,46 \times P_{measured}$	**E = 45,0**	**kWh**	P
	$E_{ABC} = E \times 95\ \%$ (only if the automatic brightness control requirements are fulfilled)	**E_{ABC} =**	**kWh**	N

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TABLE: list of measurement device					
No	Type	Device No.	Calibration date		Remarks
			Last	Next	
1	Wattmeter WT 500 (Yokogawa)	1070185	09/13	09/14	
2	Blue ray disk player DMP-B080 (Panasonic)	4350628	-	-	
3	Test signal DVD IEC 62087 BD	3200284	-	-	
4	Luminance meter LS-100 (Konica Minolta)	1150259	03/14	03/15	
5	Rotronic Hygrolog + Ext. Sensor	1300652 + 1301166	04/14	10/15	

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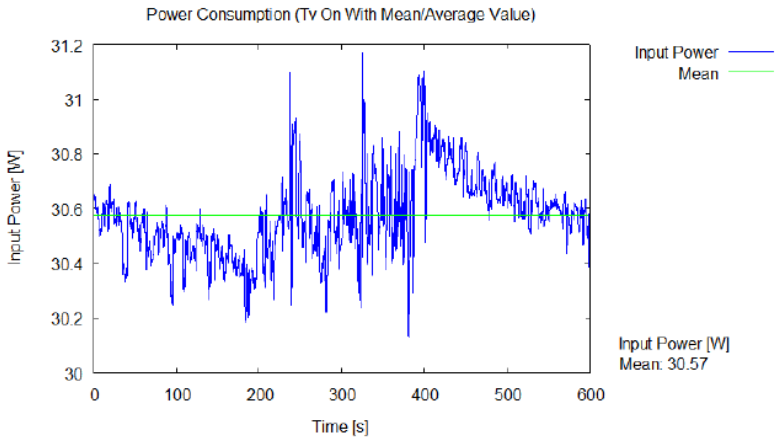
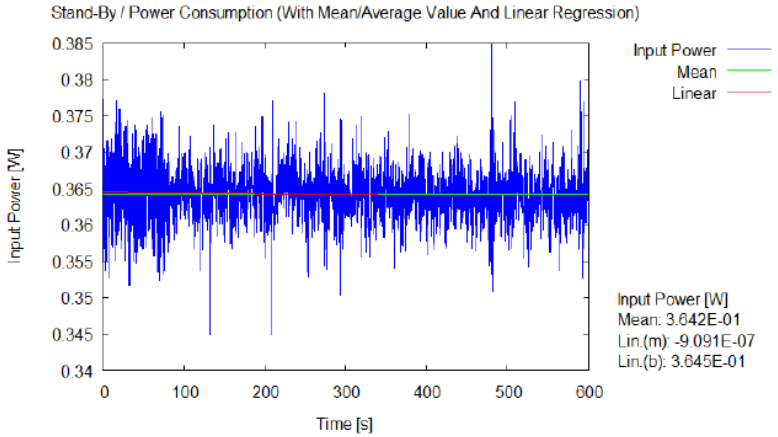
Appendix 1: Measuring results

On mode:

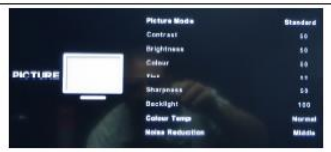


Stand-by:



Appendix 2: Settings / adjustments used:

On-mode and luminance in on-mode:

	
	Auto power down after 4 h

For maximum luminance the settings/adjustments changed in comparison to on-mode:

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Measurement uncertainty and tolerances

On-mode power consumption

- On-mode power measurements are made with an uncertainty required in 642/2009, respectively in IEC 62087 ed 2. or ed. 3
- According to Regulation 642/2009 Annex III, 2. (a) a tolerance of 7% is accepted for on-mode power limit, which is in line with the requirements for the market surveillance checks.

Standby / Off-mode power consumption

- The measurement uncertainty is done according to Commission Regulation No. 642/2009, respectively EN 50564
- According to Commission Regulation (EC) No 642/2009, within the market surveillance checks a tolerance of 0,1 W is accepted for the standby power limit.

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Measurement uncertainty and tolerances

Automatic power down

- Within ComplianTV a time measurement tolerance of 1 minute is accepted for the specified value of 4 hours for the required APD.

Peak luminance ratio

- According to the ANNEX III VERIFICATION PROCEDURE 3 (c), the result for the PLR should not fall below 60%. For the PLR test, ComplianTV uses the market surveillance limits.

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Discussion and Closing Remarks

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Project summary

The ComplianTV project aims at providing a fully-fledged and detailed methodological guidance to allow European Union (EU) Member State (MS) Market Surveillance Authorities (MSAs) to face the new legislative and market challenges for TV sets and monitors in an effective and cost-efficient way (with a support of aligned concerted testing and the development of a database). The project has the objective of:

- Analysing the implication of the new Energy Labelling Directive (labelling declarations, Commission Delegated Regulation (EU) No 1062/2010) and Ecodesign Directive (Commission Regulation (EC) No 642/2009 defining the minimum ecodesign requirements) on the market surveillance activities by carrying out ad-hoc surveys.
- Assessing the compliance of TV sets and TV monitors in the framework of the new Energy Labelling and Ecodesign regulations, through verification procedures.
- Improving the know-how and testing capability of laboratories with regard to the new and complex measurement method for measuring energy efficiency of TVs and computer monitors. This capacity building action will be carried out through harmonisation and coordination between laboratory partners of this project and other laboratories.
- Evaluating the outcomes of the product tests carried out and proposing corrective approaches to manufacturers and retailers.

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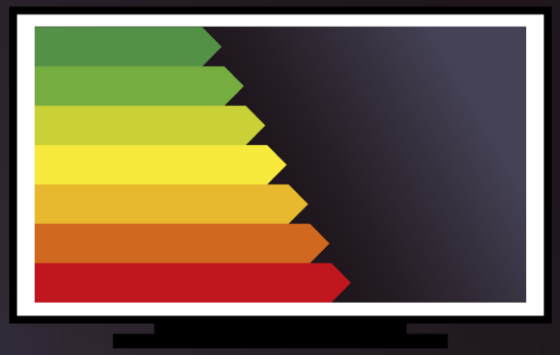

Compliance of TVs

with Energy Label and Ecodesign Requirements

Thank you for your attention.

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ComplianTV project
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