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Development of European Ecolabel and Green Public Procurement Criteria for Televisions

TECHNICAL REPORT, TASK 1

Scope and Definitions

(Draft) Working Document

Dritan Osmani, Oliver Wolf (JRC-IPTS)

Kathrin Graulich, Rita Groß, Ran Liu, Andreas Manhart,
Siddharth Prakash (Öko-Institut e.V. – Institute for Applied
Ecology)

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Joint Research Centre
Institute for Prospective Technological Studies (IPTS)

Contact information

Dr. Dritan Osmani

Address: Joint Research Centre, Edificio EXPO, Calle Inca Garcilaso 3, E-41092 Sevilla, Spain

E-mail: dritan.osmani@ec.europa.eu

Tel.: +34 954 488 288

<http://ipts.jrc.ec.europa.eu/>

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INTRODUCTION

This draft Task report is intended to provide the background information for the revision of the EU Ecolabel criteria for televisions. The study has been carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) with technical support from the Öko-Institut e.V. (OEKO). The work is being developed for the European Commission's Directorate General for the Environment. The EU Ecolabel criteria form key voluntary policy instruments within the European Commission's Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan and the Roadmap for a Resource-Efficient Europe. The Roadmap seeks to move the economy of Europe onto a more resource efficient path by 2020 in order to become more competitive and to create growth and employment. The EU Ecolabel promotes the production and consumption of products with a reduced environmental impact along the life cycle and is awarded only to the best (environmental) performing products in the market.

An important part of the process for developing or revising Ecolabel criteria is the involvement of stakeholders through publication of and consultation on draft technical reports and criteria proposals and through stakeholder involvement in working group meetings. This document sets the scene for the discussions planned to take place at the two working group meetings planned in 2013/2014.

This draft preliminary Task 1 report addresses the requirements of the Ecolabel Regulation No 66/2010 for technical evidence to inform criteria revision. It consists of background information, including a description of the legal framework.

Together with a market and a technical analysis (task 2 and 3) and input from stakeholders, the information will be used to determine the focus for the revision process and present an initial set of criteria proposals.

1. DEFINITION AND CATEGORIZATION

1.1 Background

1.1.1 The EU product policy framework

The EU Ecolabel criteria form key voluntary policy instruments within the European Commission's Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan (2008) and the Roadmap for a Resource-Efficient Europe (2020). The EU Ecolabel forms an important component of the European Commission's broader strategy to support green growth and eco-innovation.

On 16 July 2008 the European Commission presented the Sustainable Consumption and Production and Sustainable Industrial Policy (SCP/SIP) Action Plan. The plan includes a series of proposals on sustainable consumption and production aiming at:

- improving the environmental performance of products;
- increasing the demand for more sustainable goods and technologies;
- stimulating innovation by EU industry.

The EU Integrated Product Policy (IPP) formed a key element of the Action Plan, which proposes a combination of voluntary and mandatory instruments which seek to reduce the environmental impacts arising from products and services along all the phases of their life-cycle.

One important voluntary policy instrument within the IPP and which was highlighted by the SCP/SIP was the EU Ecolabel, which is intended to promote products and services which demonstrate lower negative environmental impacts when compared with functionally alternative options belonging to the same product/service group. In doing so, this scheme can contribute to the wider objectives of competitiveness and green growth within the EU.

The Roadmap for a Resource-Efficient Europe, which was published in September 2011 and forms part of the Europe 2020 Strategy, further re-inforces the role of the EU Ecolabel. The aim of the Roadmap is to move the economy of Europe onto a more resource efficient path by 2020 in order to become more competitive and to

create growth and employment. The role of the Ecolabel is highlighted as key action that will contribute towards improving products and changing consumption patterns. Returning to the SCP/IP, the role of the Ecolabel was highlighted as complementing the information provided to consumers and in acting as a 'label of excellence' that signal to consumers that products perform better in relation to environmental criteria over the whole product life-cycle. It was also intended that the process of setting criteria for the Ecolabel provides useful information for other policy instruments, such the expanded Ecodesign Directive proposed under the Roadmap for a resource-efficient Europe.

According to the Communication 'Building the Single Market for Green Products' from the EU Commission (COM (2013) 196), in general better information on the environmental performance of products should be facilitated. This should be done by gradually incorporating the Product Environmental Footprint (PEF) methodology as appropriate inter alia in its Green Public Procurement (GPP) and in the EU Ecolabel policies. This also includes the use of the International Reference Life Cycle Data System (ILCD) Handbook, which provides technical guidance for detailed LCA studies and the technical basis to derive product category-specific criteria. In the current revision process of Ecolabel criteria for televisions, these methods references will be taken into account within Task 3 'Technical Analysis'.

The EU Ecolabel currently covers a wide list of products and services, with further groups being continuously added. In the EU Ecolabel work plan 2011-2015, the European Union Ecolabelling Board (EUEB) and the European Commission determined "televisions" as a product category for revision starting 2012. It is recommended to revise the electronics groups "televisions", "personal computers" and "notebook computers" at the same time. For TVs a transitional period for the revised criteria shorter than 12 months should be considered, and the criteria for desktop and notebook computers should be merged.

1.1.2 Aim and approach of Task 1

Aim of the Task 1 report is to provide an overview of existing statistical and technical categories, relevant legislation and standards, and to propose on that basis the scope and definition of the product for the revised criteria. In a second step, feedback will be gathered from stakeholders regarding the practicability of the proposed product group definition and scope as well as the revised criteria. Based on this stakeholder feedback, the product group definition and scope might be confirmed, or otherwise a revised scope and definition of the product group will be proposed. Focused on the proposed scope definition, and based on existing material from the previous criteria development, relevant legislation, tests and technical standards of political relevance for the product at EU and Member State level are identified and updated. Non-EU legislation and standards are also included where relevant.

1.2 Scope definition

This section provides a summary of initial findings and recommendations under **task 1 "Definition and categorization"** in which existing definitions under the European Ecolabel, US Energy Star, TCO, Blue Angel, Nordic Swan and further ecolabels were analysed regarding their scope. Basic information is included in the paper and any other evidence is included as an **Annex** to this study.

1.2.1 Overview

The current scope of the EU Ecolabel criteria document for televisions is defined in article 1 of the Commission Decision of 12 March 2009 "establishing the revised ecological criteria for the award of the Community Ecolabel to televisions [Decision 2009/300/EC]:

- The product group 'televisions' shall comprise: 'Mains powered electronic equipment, the primary purpose and function of which is to receive, decode and display TV transmission signals.'

The following tables provide an overview of the analysed standards, regulations and labelling schemes as basis for the revision of the product definition for televisions in the EU Ecolabel. For detailed analyses, see Annexes.

Table 1: Mandatory standards and regulations for televisions

Regulation	Title	Effective	Valid until
Ecodesign Regulation EU 642/2009	COMMISSION REGULATION (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions	22.07.2009	The Commission shall review this Regulation no later than 3 years after its entry into force. The review process is in progress ¹ .
Television Energy Labelling Regulation 1062/2010	COMMISSION DELEGATED REGULATION (EU) No 1062/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions	28.09.2010	The Commission shall review this Regulation in the light of technological progress no later than 5 years after its entry into force. The review process is in progress ¹ .
Japanese Top Runner Programme	Energy Efficiency Standards Subcommittee, Advisory Committee for Natural Resources and Energy Television Receiver Evaluation Standards Subcommittee	07. 2009 (last update)	Not specified

Table 2: Voluntary ecolabelling schemes for televisions

Labelling Programs	Title	Version / Number	Effective	Valid until
EU Eco-label	COMMISSION DECISION of 12 March 2009 establishing the revised ecological criteria for the award of the Community Eco-label to televisions	2009/300/EC	12.03.2009	31.10.2013
Blue Angel	Televisions	RAL- UZ 145	07.2012	31.12.2014

¹ Currently, the proposals discussed at the Consultation Forum meeting in October 2012 are being amended taking into account stakeholders' comments expressed at and after the meeting, as well as further tests (mainly of small monitors) performed by the EC contractors at the end of 2012. This work also includes discussions with the representatives of displays industry on non-energy related aspects. Furthermore, it has been started drafting an impact assessment of the draft Regulations on electronic displays. It is expected that the TV review under Ecodesign will terminate before the end of this project and we will incorporate the relevant aspects of the Ecodesign review in this Ecolabel review

Labelling Programs	Title	Version / Number	Effective	Valid until
Nordic Swan	Nordic Ecolabelling of Audiovisual equipment	Version 4.2	15.12.2009	31.10.2014 ²
TCO Development	TCO Certified Displays	Version 6.0	05.03.2012	Not specified
	TCO Certified Edge Displays 1.2	Version 1.2	15.11.2012	Not specified
Austrian ecolabel	No criteria for televisions			
US Energy Star®	ENERGY STAR® Program Requirements Product Specification for Televisions	Version 6.0	01.06.2013	Not specified
EPEAT	Television Criteria	Not specified	Not specified	Not specified
Australian Good Environmental Choice	Audiovisual Equipment	GECA 27-2008, Version 1.1	16.01.2008	Not specified
Chinese environmental labelling	Technical requirement for environmental labelling products Colour television broadcasting receivers	HJ 2506-2011	01.04.2011	Not specified
		Version 5.3	Effective until May 31, 2013; note: as of January 16, 2013, CBs will no longer certify new products to V5.3	Not specified
Green Mark from Taiwan	Televisions	Version 1.0.1	15.09.2011 (last update)	Not specified
Korean ecolabelling scheme	It is not possible to assess the Korean Ecolabel, since the website does not work. www.ecolabel.keiti.re.kr/			
Environmental Choice New Zealand Ecolabel	No criteria for televisions			

² Currently, there is a revision process with a published proposal for a revised version 5.0 of the criteria for Nordic Ecolabelling of Audiovisual equipment.
http://www.svaneriket.no/PageFiles/7937/Lyd_bilde/External%20review%20letter_audiovisual_equipment.pdf

1.2.2 Summary

The analysis of existing definitions under the above diverse labelling programs and regulations revealed the following findings:

- The level of detail for the definitions of televisions is very different. It ranges from solely the term “television” without further explanation (e.g. Nordic Swan, TCO), the categorization of different screen technologies like CRT, LCD, or PDP, to detailed definitions of the primary and additional functions of the devices, or applications. However, detailed definitions of different technologies within the scope do not automatically mean different criteria sets being applied to them.
- European Regulations (EU 642/2009, EU 1062/2010) use the term television as umbrella term for TV sets or TV monitors. The German Blue Angel has the definitions of the mandatory EU regulations fully adopted.
- The existing EU definitions draw a clear boundary between TVs and computer monitors by requiring television sets to be “designed primarily for the display and reception of audio-visual signals”. For example, the current US Energy Star Programme Requirements for Computer Displays (Energy Star Displays 6.0) explicitly exclude the following products from the scope:
 - “Products with an integrated television tuner;”
 - “Products that are marketed and sold as televisions, including products with a computer input port (e.g., VGA) that are marketed and sold primarily as televisions;”
 - “Products that are component televisions. A component television is a product that is composed of two or more separate components (e.g., display device and tuner) that are marketed and sold as a television under a single model or system designation. A component television may have more than one power cord;”
 - “Dual-function televisions / computer monitors that are marketed and sold as such.” These products are, however, included in the US Energy Star requirements for *televisions*.

- However, a growing number of devices can be used as both, television and computer displays. Television sets are increasingly enabled for web browsing (so called “Smart TVs”, “Connected TVs”, “Hybrid TVs”, and “IPTV” services) and computer monitors are being used to watch content normally only viewed on televisions (computer monitors with integrated TV tuners, “Web-TVs”). The market share of these products is likely to increase³. Products sold explicitly as “dual-function TV/monitors” are either categorized as computer monitors with built-in DTV tuner, but Energy Star rated as television⁴ or marketed as TV with ability to be used as “dual function TV/Monitor with complete TV and PC system capabilities including word processing, e-mail, spread sheets, and Internet browsing”⁵.
- It is becoming more and more difficult to distinguish between the two product categories. Recent definitions use interface specifications, such as HDMI and VGA to create a distinction, but this can create problems around the consistent application of the Regulations to a subset of covered products. For example in principle, those computer monitors with HDMI interfaces should be classified as televisions and should be affected by energy labelling requirements and those without should not. On the other hand, the HDMI interfaces can also be used to connect other high definition devices like blu ray players which would not automatically classify them as televisions. Thus, ideally a definition is needed being not based on interface connections.
- In the current review process of EU Ecodesign and Energy Labelling Regulations for televisions, the discussion paper proposed to change the scope from solely “televisions” to all “electronic displays” that can be connected to the mains power source either directly or via an external power supply. Within this scope of coverage would be several categories of products commonly known as televisions, television monitors, computer monitors, digital photo frames, and

³ See for example: <http://www.electronics.ca/presscenter/articles/1883/1/Global-Market-for-PC-TV-Tuners-to-Reach-US26-Billion-by-2018/Page1.html>

⁴ See for example: <http://www.samsung.com/us/computer/monitors/LT27B750NDX/ZA-features>

⁵ See for example: http://support.dell.com/support/edocs/monitors/w2300/En/Intro/INTRO_US.HTM

signage products. This is due to the fact of increasing overlaps of functionalities between computer and television displays.

- Equipment solely powered by batteries is excluded by all documents explicitly referring to this point. Energy Star, however, includes products that are capable of being powered a battery unit that is sold with an external power supply.
- The definitions of Energy Star are more comprehensive than other documents.
 - US Energy Star limits the display with a diagonal screen size of 15 inches or larger which is not defined in the definition under EU regulations.
 - US Energy Star takes only TV manufactured with a TV tuner into consideration, while EU regulations include also TV monitors which are not equipped with a TV tuner.
 - Products which provide DVI (Digital Visual Interface) are not considered to be television monitors defined in regulations EU 642/2009, EU 1062/2010 and therefore the Blue Angel, while they are in the scope of the definition of US Energy Star. The reason for exclusion in the EU regulation is that signal paths like DVI and SDI (Serial Digital Interface) are regarded as non-standardised video signal paths. Monitors designed with DVI are specifically designed for the connection to PCs and/or professional equipment (Guidelines EU 642/2009).
 - US Energy Star further defines sub categories for rear-projection TVs, direct-view TVs, and hospitality TVs as well as differentiates between analogue and digital television.

1.2.3 Recommendations

- **Recommendation 1: Harmonise established definitions.** Generally, it is recommended to follow a harmonised approach between the various European policies on TVs. For televisions, mandatory EU regulations on ecodesign and energy labelling apply (EU 1062/2010 and EU 642/2009). Thus the definitions of these regulations should also be used as basis for the EU ecolabel. However, it has to be noted that the current regulations are under revision which probably might have an effect on the scope and definitions as well.

In contrast to other product groups, where the European Ecolabel refers to the Energy Star programme, this approach seems not appropriate for televisions. The EU ENERGY STAR programme follows an Agreement between the Government of the US and the European Community (EU) to co-ordinate the energy labelling of office equipment⁶. This covers the product categories computer equipment, displays, and imaging equipment. The US and EU Agreement on Energy Star does not cover televisions. Further, US Energy Star definitions vary significantly from those of EU regulations, thus a harmonization of EU and US definitions for televisions seems not feasible.

- **Recommendation 2a: Create a unified criteria set for dual-function televisions and computer monitors.** It is recommended to cover dual-function television / computer monitors, including computer monitors with integrated television tuner within the scope of televisions. There are two main justifications seen for this:
 - It is generally recommended to follow a harmonised approach between the various (European) policies. Energy Star (EU) explicitly excludes those products from the scope of computer displays, but covers them under televisions (US); in the revision process of the Ecodesign and Energy Labelling regulations for televisions it is proposed to prepare one set of ecodesign and energy labelling requirements for *all* electronic displays, including televisions and computer monitors
 - Computer displays with TV capabilities have additional energy-relevant components compared to computer displays without TV tuner (built-in tuner, speakers, sound cards, as well as integrated functions like HDD and DVD/Blu-ray disks) which make them more comparable to televisions. However, there might be different (energy) labelling criteria for the different sub-categories TV sets, TV monitors and PC monitors with integrated tuner.

⁶ REGULATION (EU) No 174/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 5 February 2013 amending Regulation (EC) No 106/2008 on a Community energy-efficiency labelling programme for office equipment

- **Recommendation 2b: Consider the potential for a unified scope for all forms of displays (television displays and computer displays).** Given the increasing level of integration of the televisions and the display sub-category all products could be unified into one scope (with possibly different criteria sets for the sub-categories). There are then a number of possible options for how this could work:
 - Option 1: Full integration of criteria sets for television displays and computer displays. The television displays and computer displays criteria would be fully integrated to become the ‘display’ product group and would be removed from the computer scope. TVs and computer displays would need their own Ecolabel license
 - Option 2: Integrated criteria set for television displays and computer displays transposed to the computer scope. The television displays and computer displays would be fully integrated to become the ‘display’ product group, with the full set of criteria then transposed into the computer scope unchanged.
 - Option 3: Incorporate TV/displays for bundled products into the computer scope. Integrated TV/display criteria would be relevant only for Ecolabel applicants selling a bundled product (i.e. desktop PC + computer display or dual function TV/computer). All other applicants for displays would need a TV/display license.

Both recommendations 2a and 2b will be informed by the emerging market and technical analysis (Task 2 and 3 of this study) as well as stakeholders’ input during the further course of the study (cf. section 1.2.5). It will be discussed if this integrated approach proposed within the revision process of ecodesign and energy labelling for televisions should be followed and *all* computer and television displays could be covered by an overall scope on “Displays” with specific requirements for the different sub-categories. The different ways in which products are sold within the EU market may also inform the revisions.

- **Recommendation 3: Clearly differentiate televisions from the mobile segment.** It seems necessary to clearly differentiate the TV segment from the mobile segment (e.g. tablet computers and mobile phones) and from digital picture frames, as these devices increasingly can be used to display audio-visual signals.
- **Recommendation 4: Do not base the scope on display technologies.** For the scope, a principle differentiation between certain display technologies (CRT, LCD, and PDP) seems not appropriate as all currently available as well as future display technologies of televisions should be covered by the scope of an ecolabel in order to avoid discrimination against individual technologies⁷. This technological neutral approach is followed by EU regulations on ecodesign and energy labelling (EU 1062/2010 and EU 642/2009).
- **Recommendation 5: Do not generally exclude large devices.** For the scope definition, it is not recommended to introduce an absolute maximum cap for the display size. Although it is known that large TVs usually consume more electricity than small devices, it might also be possible to develop large TV screens with relatively low energy-consumption and higher energy efficiency. On the other side, large TVs with high energy consumption should not be awarded with an ecolabel. For these cases, the current version of the EU Ecolabel and other ecolabel (e.g. Blue Angel) for TVs include a maximum cap based on a maximum (on-mode) power consumption in the criteria. This approach should be maintained in the revision of the criteria and/or other approaches ensuring reduced energy consumption by larger screen TVs.
- **Recommendation 6: Do not widen the scope to further audio-visual equipment.** The Nordic Swan ecolabel (current Version 4.2) and the Australian ecolabel subsume the product group televisions under a general criteria document for audio-visual equipment including other product groups like

⁷ However, an indirect discrimination might result from environmental benchmarks, which might be very difficult to be achieved by a certain technology. In any case, it is highly recommended to avoid a direct discrimination in the product scope as the various existing technologies might further develop in terms of efficiency and other environmental benchmarks.

videoconferencing systems, video recorders, CD players, DVD / Blu-ray players, stereo and hi-fi systems, Set Top Boxes, or Projectors. As these are completely different from televisions (functions, market penetration, technical features, improvement potentials, current status of EU regulations or labelling schemes, etc.) and also diverge in terms of relevant stakeholders, we recommend not following this approach for the EU ecolabel within this project⁸. Further, in its background document on the current review proposal for the criteria document version 5.0, the Nordic Ecolabelling proposes a more limited product group definition. From a broad product group definition only TV-sets and Projectors are within the new scope whereas all other product types will be removed. The motivation is stated as follows: “*Focus on the criteria should be consistent on large volume products with significant environmental benefits*”.

1.2.4 Proposed scope and definitions for ‘Displays’ for the revision of the EU ecolabel criteria

The following proposed scope and definitions are based on the recommendations 2a and 2b and include all display products in one scope. The definitions for television displays are based on the existing EU regulations on ecodesign and energy labelling, the definitions for computer displays are based on US Energy Star draft v6.0⁹.

NOTE: Depending on the final definitions of the revised EU Ecodesign and Energy Labelling Regulations for televisions and displays, the following proposed definitions for the EU Ecolabel might be adapted accordingly.

‘Displays’ cover television sets, television monitors, dual-function TV/monitors, and external computer displays.

‘Television set’ means a product designed primarily for the display and reception of audio-visual signals, which is,

⁸ The necessary work would explicitly go beyond the scope of the tender as for each of the product groups under “audio-visual equipment” a full analysis of all tasks including new criteria development would be necessary.

⁹ Red marked: proposed amendments or additions to the original definitions

1. *marketed and sold to the consumer as a television,*
2. *placed on the market under one model or system designation,*
3. *and which consists of:*
 - (a) *A display;*
 - (b) *One or more tuner(s)/receiver(s) and optional additional functions for data storage and/or display such as digital versatile disc (DVD), hard disk drive (HDD) or videocassette recorder (VCR), either in a single unit combined with the display, or in one or more separate units;*

‘Television monitor’ means a product designed to display on an integrated screen a video signal from a variety of sources, including television broadcast signals, which optionally controls and reproduces audio signals from an external source device, which is linked through standardised video signal paths including cinch (component, composite), SCART, HDMI, and future wireless standards (but excluding non-standardised video signal paths like DVI and SDI), but cannot receive and process broadcast signals. *Television monitors are products marketed and sold to the consumer primarily as televisions.*

‘Dual-function TV/monitor’ means

- *Either an external computer display with an integrated television tuner that is marketed and sold primarily as computer display;*
- *A television monitor with a computer input port (e.g., VGA) that is marketed and sold primarily as television;*
- *And/or products that are marketed and sold as dual-function TV/monitors.*

‘External Computer Display’ means an electronic device encased in a single housing, typically with a diagonal screen size greater than 12 inches and a pixel density greater than 5,000 pixels per square inch (pixels/in²), that displays a computer's user interface and open programs, allowing the user to interact with the computer, typically using a keyboard and mouse.

The following products are not considered to be external computer displays under this specification:

- a) Products with a viewable diagonal screen size greater than 61 inches;
- b) Products with an integrated television tuner;
- c) Products that are marketed and sold as televisions, including products with a computer input port (e.g., VGA) that are marketed and sold primarily as televisions;
- d) Products that are component televisions. A component television is a product that is composed of two or more separate components (e.g., display device and tuner) that are marketed and sold as a television under a single model or system designation. A component television may have more than one power cord;
- e) Dual-function televisions / computer monitors that are marketed and sold as such;
- f) Mobile computing and communication devices (e.g., tablet computers, electronic readers, smartphones);
- g) Products that must meet FDA specifications for medical devices that prohibit power management capabilities and/or do not have a power state meeting the definition of Sleep Mode.

'Enhanced-Performance Display' means an *external* computer *display* that has all of the following features and functionalities:

- a) A contrast ratio of at least 60:1 measured at a horizontal viewing angle of at least 85°, with or without a screen cover glass;
- b) A native resolution greater than or equal to 2.3 megapixels (MP); and,
- c) A colour gamut size of at least sRGB as defined by IEC 61966 2-1. Shifts in colour space are allowable as long as 99% or more of defined sRGB colours are supported.

Products with 'internal computer display' (e.g. integrated desktop computers, notebook computers) are not included in the scope.

Products with internal display that are designed to be operated mainly by batteries (e.g. Tablets, Smartphones) are not included in the scope.

Displays, such as digital photo frames whose primary function is to produce digital images and have generally less than 15 inches diagonal screen size, are not included in the scope.

The following matrix presents an initial overview of the proposed changes to the current Ecolabel. Possible information gaps and uncertainties as well as possible implications of extending the scope will be investigated further during the course of this on-going study (market analysis, technical analysis).

Table 3: Overview of proposed changes of the EU Ecolabel scope for Televisions / Displays

	Primary use => Marketed / sold as	Size	Battery operated	Scope
Television set	Television	No explicit limitation regarding the scope	Mainly mains powered	Included
Television monitor	Television	No explicit limitation regarding the scope	Mainly mains powered	Included
Dual-function TV/monitor	Computer display with integrated TV tuner; Television monitor with computer input port; dual-function TV/monitors	Greater than 12" (EnergyStar)	Mainly mains powered	Included
External computer displays incl. enhanced performance displays	Computer display	< 61 inches	Mainly mains powered	Included
Internal computer displays	Integrated Desktop Computer, Notebook Computer	No explicit limitation regarding the scope	Mains or battery operated	Excluded
Tablet PCs, Smart Phones with TV capability	Television capability only secondary use	Smaller segment compared to TVs and Computer displays	Mainly battery operated	Excluded
Digital picture frames with TV capability	Television capability only secondary use	Smaller segment compared to TVs and Computer displays	Mains or battery operated	Excluded

1.2.5 Stakeholder feedback on scope and definitions

During the course of the revision process a questionnaire was sent out to selected stakeholders. The target groups were industry, Member States, NGOs and research institutions. The specific suggestions from the individually answering stakeholders regarding the proposed revised scope and definitions are reflected below.

1.2.5.1 Scope

Would you agree to generally base the scope and definitions on the existing EU regulations on ecodesign and energy labelling of televisions?

- If the Ecolabel criteria are to expand to cover more than TVs, it is suggested that scope and definitions are aligned with the upcoming revised Ecodesign and Energy Label regulations for Electronic Displays.
- Yes, as long as the set of criteria is based on the existing set of criteria used in the ecolabel for television
- Yes, but these definitions need to be revised.
- It is agreed to align the scope and the definitions with the EU regulations on ecodesign and energy labelling of televisions as this will lead to less ambiguity.
- The scope (and definition of scope) of Eco Flower should be the same as that expected to be defined in the revision of 642/2009.
- We support the same scope that is used in the (EC) No 642/2009. The use of the same scope and definition is very important in creating acceptance for the EU Ecolabel by manufacturer.
- In general it is good to use the same definitions and scopes (avoid consumer confusion, be coherent), but the Eco Label could also serve to fill gaps in EU legislation. Especially it should focus more on sufficiency and total energy consumption by setting a power cap (e.g. 90W). The linear efficiency approach of the EU legislation favours too much large TVs.
- We support a methodological alignment between Ecodesign, Energy Label and Ecolabel but that should not mean less criteria for the Ecolabel.
- Yes

Would you agree to follow the approach proposed by the revision process of the EU Ecodesign and Energy Labelling regulations for televisions to cover all computer and television displays (including computer displays without integrated television tuner) by an overall scope on “Displays” with specific requirements for the different sub-categories?

- Yes, we support the harmonization with the upcoming Ecodesign and Energy Label regulations in terms of scope and definitions.
- Yes as long as the set of criteria is based on the existing set of criteria used in the ecolabel for televisions.
- Scope – yes. Sub-categories: We do not see any need to differentiate between products, but, if the revised 642/2009 regulation finally does differentiate then the Eco Flower should follow.
- NO, it is better to have more and smaller criteria. The focus of the development can become wrong if there are too many categories in one criterion.
- Difficult:
 - Generally an equal treatment of both product categories would be good;
 - Monitors though can hardly be assessed by the (same) TV measurement method IEC 62087, and other or no regulations apply for monitors and because of different product characteristics. It would be ‘unfair’ to apply the same limits to both;
 - Two limits or labelling scales are however not applicable as long as the differentiation of the product categories is based solely on the manufacturers’ definition;
 - If a differentiation by technical specifications is possible, this would be helpful.
- We support the inclusion of all models, without lower size limit, but calculations may be adapted not to give favor to larger screens (as was assessed in the ongoing discussion for revising TV’s Ecodesign): smaller TV’s consume less energy, less material and should not be discouraged. As regard very large

screens, we would prefer that they cannot be awarded with Ecolabel to discourage “rebound effect” linked to oversized models.’

- With regards to the scope it can be desirable to include as many types of products as possible. It is difficult to foresee the use pattern in place the next years. The criteria of televisions and computers should work in a way to tackle the merging of televisions and displays.
- We have a convergence issue, e.g. computer displays, monitors and TVs. It is important that the process of developing criteria for TVs recognizes this and that there is a close liaison with the Desktop PCs revision process.
- We would prefer to keep the product group as TVs.

Do you have a preference for any of options presented under Recommendation 2b?

Option 1: Full integration of criteria sets for television displays and computer displays

Option 2: Integrated criteria set for television displays and computer displays transposed to the computer scope

Option 3: Incorporate TV/displays for bundled products into the computer scope

- Option 1 would be preferred, in order to harmonize with the upcoming Ecodesign and Energy Label regulations for Displays.
- Preferred option 1 if the criteria of the display group is based on the existing set of criteria used in the ecolabel for television.
- Option 1 – keep it simple, follow the 642/2009 legislation.
- We support the merging of TV’s and displays, but with Option 1 (= inclusion of displays in TV’s category, and not TV’s in computers category) as only TV’s have a label today, not computer and we fear that putting TV’s under computer category could endanger the energy labelling for TV’s and weaken the alignment between policies. This being said, we may need a transitional arrangement to differentiate between TV’s and displays Ecolabel thresholds (noticeably with regard energy efficiency) as displays could too easily comply with TV’s requirements (at least on energy efficiency) if the criteria are totally merged immediately.

- Not really, both option 1 and option 2 could work since the ecolabel is a voluntary label so there is not the issue (as with ecodesign and energy label regulations) of manufacturers trying to avoid the requirements by declaring their product is a monitor where it could also be a television (and vice versa).
- Possibly Option 3 but would like to see more evidence presented.
- Option 3

Would you agree to include dual-function television/computer monitors (e.g. external computer displays with integrated television tuner) into the scope?

- We already consider these products as TV sets under the current Ecodesign and Energy Label regulation, based on the fact that these products include an integrated TV tuner. Therefore we would support extending the scope of the ecolabel criteria to include these products.
- Yes as more & more of monitor with TV function and users also treat the device as TV & monitor therefore it is appropriate to include monitors with TV function into the scope.
- Yes, if the scope would be broadened then these products would be automatically included.
- It should be based on the NEW scope and definitions of the revised 642/2009 regulation.
- Agree / Yes
- No, this shall be done in separate display criteria.

Would you agree to exclude displays from the scope, that might provide a television capability, but whose primary function is not being a television (e.g. digital photo frames, tablet computers, smartphones)?

- Yes, these products should be excluded from the scope, due to the fact that they are not designed and marketed as TVs and this is not their main functionality.
- It should be based on the NEW scope and definitions of the revised 642/2009 regulation.

- Yes / Agree
- Small size could be a reason to exclude products and by setting the size at a certain level photo frames, tablets and smart phones are excluded automatically.
- The question whether restrictions on screen size (minimum, maximum) are needed needs further attention. From a practical point of view such restrictions can be useful. However, the minimum size should be such that all kinds of small (information) displays are not covered¹⁰, while the maximum size should be such that it does not work as “target” to produce larger displays in order to be exempted from the regulation. Size limits should be given in screen area. A suggestion is a minimum screen area of 1 dm² and a maximum of 100 dm². This lower limit would mean that almost all Digital Picture Frames (DPFs) would be included.

Would you agree to exclude displays from the scope, that are mainly battery operated (e.g. tablet computers, smartphones)?

- Yes, these products should be excluded from the scope, due to the fact that they are not designed and marketed as TVs and this is not their main functionality. Also, the fact that they are designed for portability (being battery operated), makes these products significantly different from TVs.
- It should be based on the NEW scope and definitions of the revised 642/2009 regulation. Also, such portable, battery operated products are technically completely different to “displays” and should not be compared for power consumption, working life etc.
- Yes. This shall have separate criteria.
- Agree
- Not directly; although the power consumption of these products might already be limited by the battery operation, other environmental aspects might warrant

¹⁰ Note that built-in displays most probably do not fulfil the requirement that the primary function of the product (of which the display is only a part) is to display visual information.

including these products. Indicating a minimum screen size would exempt probably most of the products that you do not want in the scope.

- Not completely, where there are displays whose primary function is as a TV display and powered by a battery, perhaps these should be included; maybe in line with Energy Star definition i.e. also supplied with a mains power cable.
- The border with computers, e.g. tablet computers, computers with integrated screen or large (signage) displays that include a mainboard is more problematic. In principle the wordings “of which the primary function is to display visual information” mark the difference with computers. However, televisions and some signage displays can have very powerful processing capabilities, e.g. for 3D processing, and storage, and some televisions can run third party software (e.g. apps) and accept input through an external keyboard. Also, displays can have touch screen capabilities meaning that the user can provide input. Nevertheless for all these examples the primary function is still to display the (processed) visual information. A partly solution would be to restrict the measures to products that need to be connected to the mains to function as intended, assuming that products that have to run on batteries have already enough incentive to be energy efficient. This would then exclude tablets and slate computers that run on batteries, but it would not exclude products with external power supplies. Another solution would be to allow a modular approach, like with personal desktop computers where the processing unit is separate from the display. This would need a good differentiation between the processing unit and the display, even if they are in the same housing which creates more problems than solves them. Concluding, the proposed definition complemented with a restriction to mains connected (i.e. not running on batteries) products should be appropriate.

1.2.5.2 Definitions

Would you agree to further concretize the definitions for ‘television sets’ and ‘television monitors’ by the term ‘products being marketed and sold to the consumer primarily as televisions’?

- It is supported to take primary functionality into account, since this would go in line with how manufacturers design and market TVs.
- Defining a TV based on its primary functionality is in our opinion a sufficient differentiator to cover TV products only.
- Connectivity, as given in the current definition for TV monitors in the EU ecodesign and energy labelling regulations on televisions, is not a sufficient differentiator for these products, due to technology and market developments.
- The issue with the current definition for TV monitors in the EU Ecodesign and Energy Labelling regulations should be resolved by also referring to a definition based on the primary functionality of a TV monitor and not on the connectivity of the product.
- This sounds sensible
- Yes / Agree
- The present definition might be too precise, especially regarding the words “primary” and “transmission”. If a television is designed for displaying broadcast content and video content from a home server, what is the primary purpose? Transmission refers or at least has a connotation with broadcast signals coming via terrestrial, cable or satellite and less or not to IP signals
- No, because what a television is, is becoming less easy to define

What are the technological differences between computer displays and television displays?

- While this differentiator might not be as relevant if all displays are covered by the same criteria, we would like to point out some differentiators with possible implication for the criteria. Currently different safety standards apply to both types of products. While TVs need to comply with candle test requirement,

computer displays don't have this requirement. This would result in different use of Flame Retardant substances, with implications for Chemical criteria.

- In general a computer display is designed to watch from a short distance (up to 0.5 m) whereas a television display is designed to watch from a distance of a few meters. However, with the screen areas of both displays overlapping (large monitors, small televisions) and also the functions overlapping this difference becomes less relevant.
- The following differences make it easier for computer displays to meet the Eco Flower requirements and as a result disrupt the level playing field. Additional requirements for computer displays can be considered to compensate for this.
 - The viewing angle is substantially different between a computer display and a TV display. This gives computer display a benefit on power for the same amount of light output (measured perpendicular to the screen).
 - A major difference is also the larger amount of processing and source selection functionality available in a TV display required to be able to select, decode and process the larger number of signal types covered by a TV (e.g. Broadcast signals, analog video input, HDMI, RGB, YPbPr, USB, Ethernet, ...). Functionality which is not present in a computer display but in the attached computer.
- It is important to get EU Ecolabel criteria for the big advertising displays in the future that are being used more by companies. These products shall not be in the Television criteria.
- TVs are brighter than monitors

1.3 Existing legislation, standards, and labelling schemes

In this section legislation, standards, and labelling schemes at EU level and, as far as relevant, at Non-EU level are brought together which may be of significance to the revision of the EU Ecolabel for televisions and displays.

1.3.1 Legislative background

1.3.1.1 Ecodesign

Televisions

The Commission regulation (EC) No 642/2009 of 22 July 2009 is implementing the Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions.

Displays

For displays other than televisions and television monitors (ENER Lot 3), a draft of the ecodesign Working Document on displays was discussed at the Consultation Forum meeting back in October 2009. Designing a separate measure for displays, however, has proven to be difficult because the convergence of products has made it difficult to clearly define separate product categories.

Traditional product category definitions relied on different input signals and the presence of a tuner for televisions. Any display can be designed to accept a variety of input signals, including broadcast signals for which a tuner is required. Also the importance of the tuner/receiver regarding energy consumption has decreased significantly. Furthermore, the experience with the current definitions on televisions and television monitors in the Regulations is not positive regarding providing a clear distinction for products on the market. Therefore, it has been decided to merge the review work on the television Regulations with the work on the draft Regulation on display products and to prepare one set of ecodesign and energy labelling requirements for all electronic displays, including televisions, computer monitors and digital photo frames.

On 8 October 2012, a discussion paper on the review of the Ecodesign and Energy Labelling Regulation for televisions and on the draft Regulation on electronic displays, including computer monitors, has been presented and discussed with stakeholders at a Consultation Forum Meeting. Currently, the proposals discussed at this meeting are being amended and an impact assessment on the draft regulations on electronic displays has been started. It is expected that the TV review under Ecodesign will terminate before the end of this project.

Standby

Commission Regulation (EC) No 1275/2008 of 17 December 2008 is implementing the Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment. According to Annex I of the regulation, television sets as well as information technology equipment intended primarily for use in the domestic environment are falling under the scope of this regulation.

Currently, stage 2 is applicable for products placed on the market from 7 January 2013, with the following requirements regarding power consumption for standby- and off-mode, as well as power management or similar functions:

- Power consumption in 'off mode': Power consumption of equipment in any off-mode condition shall not exceed 0.50 W.
- Power consumption in 'standby mode(s)': The power consumption of equipment in any condition providing only a reactivation function, or providing only a reactivation function and a mere indication of enabled reactivation function, shall not exceed 0.50 W. The power consumption of equipment in any condition providing only information or status display, or providing only a combination of reactivation function and information or status display shall not exceed 1.00 W.
- Availability of off mode and/or standby mode: Equipment shall, except where this is inappropriate for the intended use, provide off mode and/or standby mode, and/or another condition which does not exceed the applicable power

consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source.

- Power management: When equipment is not providing the main function, or when other energy-using product(s) are not dependent on its functions, equipment shall, unless inappropriate for the intended use, offer a power management function, or a similar function, that switches equipment after the shortest possible period of time appropriate for the intended use of the equipment, automatically into:
 - standby mode, or
 - off mode, or
 - another condition which does not exceed the applicable power consumption requirements for off mode and/or standby mode when the equipment is connected to the mains power source. The power management function shall be activated before delivery.

However, for televisions, ecodesign requirements for standby/off-mode have been set in the product-specific measures of the Commission regulation (EC) No 642/2009 of 22 July 2009.

Networked Standby

The draft Commission Regulation on Networked Standby amending Commission Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Commission Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions has been presented to the Regulatory Committee for vote.

Given that televisions being subject to a product-specific ecodesign implementing measure were exempted from the scope of Commission Regulation (EC) No 1275/2008, ecodesign requirements for networked standby related to televisions will be included in the Commission Regulation (EC) No 642/2009 (currently being under revision) with regard to ecodesign requirements for televisions.

The technical, environmental and economic study on networked standby estimated that ecodesign requirements for networked standby of televisions lead to estimated savings of 10 TWh by 2020.

According to the draft Commission Regulation on Networked Standby, the Commission Regulation (EC) No 642/2009 will be amended with regard to the definitions for networked standby concerning televisions, networked standby power consumption requirements for televisions, measurement conditions, and verification procedures for networked standby.

1.3.1.2 Energy Labelling

The Commission Delegated Regulation (EU) No 1062/2010 of 28 September 2010 is supplementing the Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions.

As for ecodesign requirements for televisions, also the Regulation on energy labelling of televisions is under review. It has been decided to prepare one set of ecodesign and energy labelling requirements for all electronic displays, including televisions, computer monitors and digital photo frames.

1.3.1.3 REACH

The European chemicals regulation REACH 1907/2006/EC entered into force on 1st of June 2007. Under the REACH Regulation, certain substances that may have serious and often irreversible effects on human health and the environment can be identified as Substances of Very High Concern (SVHCs). If identified, the substance is added to the Candidate List, which includes candidate substances for possible inclusion in the Authorisation List (Annex XIV). Those SVHC, that are included in Annex XIV become finally subject to authorisation. By this procedure REACH aims at ensuring that the risks resulting from the use of SVHCs are controlled and that the substances are replaced where possible.

In this regard, REACH also introduced new obligations concerning general information requirements on substances in articles. Producers and importers of articles that contain substances of very high concern (SVHC) included in the

candidate list, will be required to notify these to the Agency (ECHA) if both of the following conditions are met:

- The substance is present in those articles in quantities totalling over 1 t/y per producer or importer;
- The substance is present in those articles above a concentration of 0.1% weight by weight (w/w).

Notification will not be required in case the SVHC has already been registered for this use by any other registrant (Article 7(6)), or exposure to humans or environment can be excluded (Article 7(3)).

In addition, Article 33(1) requires producers and importers of articles containing more than 0.1% w/w of an SVHC included in the candidate list, to provide sufficient information to allow safe handling and use of the article to its recipients. As a minimum, the name of the substance is to be communicated.

The provisions of Article 33(1) apply regardless of the total amount of the SVHC used by that actor (no tonnage threshold) and regardless of a registration of that use. Furthermore, this information has to be communicated to consumers, on request, free of charge and within 45 days (Article 33(2)).

1.3.1.4 CLP

The Regulation (EC) No 1272/2008 of the European Parliament and the Council of 16 December 2008 on the classification and packaging of substances and mixtures entered into force on 20 January 2009.

The purpose of the so called CLP-Regulation is to identify hazardous chemicals and to inform their users about particular threats with the help of standard symbols and phrases on the packaging labels and through safety data sheets. The purpose of the globally harmonised system (UN-GHS) is to make the level of protection of human health and the environment more uniform, transparent and comparable as well as to simplify free movement of chemical substances, mixtures and certain specific articles within the European Union.

Substances have to be classified until 1 December 2010 pursuant to Directive 67/548/EEC and mixtures until 1 June 2015 pursuant to Directive 1999/45/EC.

Differing from this provision, the classification, labelling and packaging of substances and preparation may already be used before 1 December 2010 and 1 June 2015 in accordance with the provisions of the CLP/GHS-Regulation. After these dates the provisions of the CLP-Regulation are mandatory. The REACH-Regulation is complemented by the CLP-Regulation.

1.3.1.5 *F-gases*

Fluorinated gases (F-gases), such as Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur hexafluoride (SF₆), or Nitrogen trifluoride (NF₃), are a family of man-made gases used in a range of industrial applications. Because they do not damage the atmospheric ozone layer, they are often used as substitutes for ozone-depleting substances. However, F-gases are powerful greenhouse gases, with a global warming effect up to 23 000 times greater than carbon dioxide (CO₂), and their emissions are rising strongly¹¹.

SF₆ and NF₃ emissions occur during the manufacture of LCD screens for use in monitors and televisions. LCD manufacturers use F-GHGs to clean chemical vapour deposition chambers and plasma etch silicon containing materials.

After introduction of NF₃ into the production of flat panel displays (TFT-LCD), and the rapid expansion of the sector after 2000 in Korea, Japan, and Taiwan, the demand for NF₃ rapidly increased and caused quadrupling of the production capacities for NF₃ in the USA and East Asia. The gas replaced step by step SF₆ which had initially been used as main cleaning agent in this sector. NF₃ emissions from the East Asian LCD production were considered the main cause of the steep increase in measured atmospheric concentrations. NF₃ production is estimated to range around at least 6,000 t/y. Almost 5,000 t are used in LCD manufacturing in Korea, Taiwan and Japan. NF₃ is used in the production of thin-film-transistor flat panel displays (LCDs). For a long time the global warming potential of NF₃ had been considered tolerable compared to that of SF₆ which is also widely used in the manufacture of LCDs. However, the global warming potential of NF₃ (17,200) comes close to that of SF₆

¹¹ Source: http://ec.europa.eu/clima/policies/f-gas/index_en.htm

(22,200), so that the gas shows the second highest GWP value of all known greenhouse gases¹².

In 2003, LCD manufacturers in Taiwan, Japan and Korea launched a voluntary initiative through the WLICC to set aggressive F-GHG emission reduction goals for 2010. These countries produce roughly 96% of the world's LCDs¹³. LCD manufacturers have started implementing control technologies that reduce the emissions of greenhouse gases by 90%.

To control emissions from fluorinated greenhouse gases the European Union has adopted the "F-gas Regulation" which covers all other key applications in which F-gases are used. The F-gas Regulation follows two tracks of action:

- Improving the prevention of leaks from equipment containing F-gases. Measures comprise: containment of gases and proper recovery of equipment; training and certification of personnel and of companies handling these gases; labelling of equipment containing F-gases; reporting on imports, exports and production of F-gases.
- Avoiding F-gases in some applications where environmentally superior alternatives are cost-effective. Measures include restrictions on the marketing and use of certain products and equipment containing F-gases.

The Regulation has been supplemented by 10 implementing acts or "Commission Regulations". Furthermore, reporting provisions have been introduced to facilitate monitoring of the Regulation's measures and ensure that its objectives are being met. The F-gas Regulation was adopted in 2006. In November 2012 the European Commission proposed a revision of the F-gas Regulation that would tighten up its requirements¹⁴. This followed a review of the adequacy of the Regulation, a public consultation in 2011 and an open stakeholder conference in 2012 on options for strengthening EU measures to reduce F-gas emissions in order to contribute to the

¹² Source: http://ec.europa.eu/clima/policies/f-gas/docs/2011_study_en.pdf

¹³ Source: http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/monitors/Addressing%20Greenhouse%20Gas%20Emissions%20from%20LCD%20Manufacture.pdf

¹⁴ Source: http://ec.europa.eu/clima/policies/f-gas/legislation/docs/com_2012_643_en.pdf

transition to a low-carbon economy. As proposed by the Commission, the revised Regulation would reduce F-gas emissions by two-thirds of today's levels by 2030 and ban the use of F-gases in some new equipment where viable climate-friendly alternatives are readily available.

When re-evaluating the Energy Star specifications for displays, it was discussed that US EPA could propose limiting the emissions associated with LCD panels by either requiring the use of control technologies for F-gases or by setting a limit on the amount of F-gas emissions per area of LCD panels produced¹⁵. In these cases, manufacturers would be responsible for working with their suppliers to track these emissions for LCD panels used in displays and televisions.

1.3.1.6 *RoHS*

The Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment 2011/65/EU (commonly referred to as the RoHS-Directive) restricts the use of six hazardous substances in electrical and electronic equipment to be sold in the EU. The Directive 2011/65/EU replaces Directive 2002/95/EC, which entered into force on 1st July 2006. The RoHS-Directive covers the following substances:

- Lead
- Mercury
- Cadmium
- Hexavalent chromium
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PDBE)

The RoHS-Directive limits the use of these substances to concentrations not exceeding 0.1% by weight of homogenous material. For Cadmium the threshold level is at 0.01%. Exemptions from these provisions are only possible if at least one of the following reasons applies:

¹⁵

Source:

http://www.energystar.gov/ia/partners/prod_development/revisions/downloads/monitors/Addressing%20Greenhouse%20Gas%20Emissions%20from%20LCD%20Manufacture.pdf

- Substitution is not possible from a scientific and technical point of view;
- The negative environmental, health and consumer safety impacts caused by substitution are likely to outweigh the benefits;
- The reliability of substitutes is not ensured.

Applications for exemptions have to be submitted to the European Commission and require a justification including comprehensive information on the substance-application and possible substitutes. All applications undergo a technical analysis as well as a stakeholder consultation. Currently, there are various exemptions for mercury in fluorescent lamps (see Annex III of the Directive), which are of relevance for TVs with CFL-backlight systems.

Similar pieces of legislation are in place in various countries, including Switzerland, China, South-Korea and California.

1.3.1.7 *Electromagnetic Compatibility*

Directive 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC regulates the electromagnetic compatibility of equipment. It aims to ensure the functioning of the internal market by requiring equipment to comply with an adequate level of electromagnetic compatibility. Equipment shall be so designed and manufactured, having regard to the state of the art, as to ensure that:

- the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;
- it has a level of immunity to the electromagnetic disturbance to be expected in its intended use which allows it to operate without unacceptable degradation of its intended use.

The manufacturer shall also provide information on any specific precautions that must be taken when the apparatus is assembled, installed, maintained or used, in order to ensure that, when put into service, the apparatus is in conformity with the protection requirements set out in the Directive.

1.3.1.8 *Low Voltage*

Directive 2006/95/EC on the “harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits” applies to all ‘electrical equipment’ designed for use with a voltage rating of between 50 and 1 000 V for alternating current (AC) and between 75 and 1 500 V for direct current (DC). It requires products to have protection against hazards arising from the electrical equipment itself or hazards which may be caused by external influences on the electrical equipment.

1.3.1.9 *WEEE*

The Directive on waste electrical and electronic equipment (WEEE) 2012/19/EU (commonly referred to as WEEE-Directive) regulates the separate collection, treatment and recycling of end-of-life electrical and electronic equipment. Directive 2012/19/EU replaces Directive 2002/96/EC of 27 January 2003, which entered into force on 1st of July 2006. Amongst others, Directive 2012/19/EU requires member states to achieve quantitative collection targets (e.g. 65% of the average weight of EEE placed on the market in the three preceding years). It also requires Member States to ensure that producers provide for the financing of the collection, treatment, recovery and environmentally sound disposal of WEEE (Article 12).

The WEEE-Directive classifies EEE in various categories. In this system, TVs are classified under category 4 “consumer equipment and photovoltaic panels”.

Nevertheless, this classification is under transition and will follow a new logic from 15th of August 2018 on. Under this new system, TVs will be classified under category 2 “screens, monitors, and equipment containing screens having a surface greater than 100 cm²”.

Annex V of the Directive also contains minimum targets for recovery and recycling. For category 4 equipment (consumer equipment and photovoltaic panels), these targets are 75 % for recovery and 65 % for recycling. From 15th of August 2015, these targets will be raised to 80 % for recovery and 70 % for recycling.

Furthermore, Annex VII of the Directive specifies substances, mixtures and components that have to be removed from any collected WEEE for selective treatment. Regarding TVs, the following components are of particular relevance:

- Mercury containing components, such as switches or backlighting lamps,
- Printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- Plastic containing brominated flame retardants,
- Liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps,
- External electric cables.

1.3.2 Standards and testing procedures

1.3.2.1 Televisions

The following analysis on standards and testing procedures for televisions is initially based on the EuP preparatory study lot 5 “televisions” (EuP Lot 5 TV 2007). The standards on televisions listed in the EuP Task 1 report have been analysed regarding validity, revisions or possible withdrawals. Additionally, current ecolabelling schemes have been analysed regarding information on possibly new standards or testing procedures.

IEC 62087:2011, ed3.0

- Title/Scope: Methods of measurement for the power consumption of audio, video and related equipment
- Organization: IEC (International Electrotechnical Commissions)
- Status/Year: International Standard, publication date 13 April 2011

- Issues¹⁶: IEC 62087 is commonly used as measurement method of the active mode and standby modes (active, passive) in eco-label schemes. It specifies the measurement method for the power consumption of television sets, video recording equipment, set top boxes, audio equipment and multifunction equipment for consumer use. Television sets include, but are not limited to, those with CRT, LCD, PDP or projection technologies. Measuring conditions for television sets, excluding on (average) mode describe the settings for the input signal, radio frequency (RF) input signal, baseband input signal level, video test signal, audio test signal(s), the loading of terminals, the on (play) mode and the measurement conditions of the standby mode and off mode. This International Standard further gives methods of measuring the on (average) mode power consumption of television sets. The power consumption of television sets varies depending upon the video signal being displayed. Clause 11 includes three different video signals: static, dynamic broadcast-content, and Internet-content.
- Revision: This third edition cancels and replaces the second edition, published in 2008, and constitutes a technical revision.

The main changes with respect to the previous edition are listed below.

- Clause 8 is expanded.
- Annex D and Annex E are added.

Furthermore methods for measuring power consumption of set top boxes mainly in the modes of on mode and standby-active, high mode are revised.

IEC 62301 ed2.0

- Title/Scope: Household electrical appliances - Measurement of standby power
- Organization: IEC (International Electrotechnical Commissions)
- Status/Year: International Standard published 27 January 2011

¹⁶ Sources: http://webstore.iec.ch/Webstore/webstore.nsf/ArtNum_PK/45001?OpenDocument and http://webstore.iec.ch/preview/info_iec62087-BD%7Bed3.0%7Db.pdf

- Issues¹⁷: The standard specifies methods of measurement of electrical power consumption in standby mode. It specifies the general conditions for measurements (test room, power supply, supply-voltage waveform and power measurement accuracy) as well as selection and preparation of appliance/equipment for measurement, and test procedure. The scope is product specific. The standard is applicable to mains powered electrical household appliances (this includes TV). The objective of the standards is to provide a method of test to determine the power consumption of a range of appliances and equipment in standby mode. The standard defines “standby” mode as the lowest power consumption when connected to the mains. The standard is dedicated to the measurement of energy consumption for the use phase of the equipment.

EN 50301:2001

- Title/Scope: Methods of measurement for the power consumption of audio, video and related equipment.
- Organization: CENELEC (European Committee for Electrotechnical Standardization)
- Status/Year: European Standard issued 2001 (1999).
This document has been withdrawn and superseded by EN 62087.

IEEE 1680.3-2012

- Title / Scope: IEEE Standard for Environmental Assessment of Televisions
- Organization: Institute of Electrical and Electronics Engineers (IEEE) Standards Association
- Status / Year: 19 October 2012

¹⁷

Source: http://webstore.iec.ch/webstore/webstore.nsf/Artnum_PK/44782

- Issues¹⁸: A clear and consistent set of environmental performance criteria for the design of televisions is established, providing an opportunity for manufacturers to secure market recognition for efforts to reduce the environmental impact of electronic products. This Standard defines environmental performance for televisions, television combination units, and component television units, relating to reduction or elimination of environmentally sensitive materials, materials selection, design for end of life, lifecycle extension, as well as energy conservation, end of life management, corporate performance, and packaging. This Standard applies to products that are primarily marketed as televisions, and does not cover computer displays as defined by IEEE 1680.1. This standard is also intended to provide a tool for government, institutional, corporate, and consumer purchasers to identify products that demonstrate environmental leadership.

U.S. Energy Conservation Program: Test Procedure for Television Sets

- Title/Scope: DOE Test Procedure, 10 CFR, Part 430 (Energy Conservation Program for Consumer Products; Title 10 – Energy); Appendix H to Subpart B of Part 430: Uniform Test Method for Measuring the Energy Consumption of Television Sets
- Organization: DOE (Department of Energy)
- Status/Year/Revision¹⁹: U.S. standard issued 2003; DOE adopted a test procedure for televisions on June 29, 1979 being appropriate for measuring the energy efficiency of only analogue televisions. The Digital Television Transition and Public Safety Act of 2005 required the Federal Communications Commission to terminate all licenses for full-power television stations in the analogue television service and to require them to stop broadcasting in

¹⁸ Sources: http://www.techstreet.com/cgi-bin/detail?doc_no=ieee%7C1680_3_2012;product_id=1789028;
<http://grouper.ieee.org/groups/1680/1680.3/>

¹⁹ Source: http://www1.eere.energy.gov/buildings/appliance_standards/product.aspx/productid/34

analogue by June 13, 2009. Accordingly, DOE repealed the test procedure on October 20, 2009. DOE is currently conducting a test procedure rulemaking.

Proposed rule: 19 January 2012

- Issues of the proposed rule²⁰: DOE is currently proposing a new test procedure for determining the energy use of TVs.

JEITA Test Standard (Top Runner Standard)

- Title/Scope: Final Report on the Top Runner Target Product Standards for CRT/LCD/Plasma TV sets; including a Measurement method for energy consumption efficiency of television receivers.
- Organization: JEITA (Japan Electronics and Information Technology Industries Association)
- Status/Year: Japanese Standard issued for Top Runner Initiative (rev. 1998); latest revision: July 2009
- Issues²¹:
 - Included in the scope of this standard are television receivers (direct-view cathode-ray tube types or direct-view types with liquid crystal or plasma display panels) that run on alternating-current circuits (with a rated frequency of 50 Hz or 60 Hz and a rated voltage of 100 V). Excluded are televisions for industrial use, televisions made specifically for tourists, CRT-based multi-scanning televisions with horizontal frequency exceeding 33.8 kHz, rear-projection televisions, receiver size 10, 10V or smaller televisions and wireless televisions.
 - The document contains classification methods for CRT, LCD and plasma (PDP) televisions. For LCD and PDP televisions, the following classifications are proposed and differentiated:

²⁰ Source: <http://www.gpo.gov/fdsys/pkg/FR-2012-01-19/pdf/2012-687.pdf>;
http://www1.eere.energy.gov/buildings/appliance_standards/pdfs/tv_tp_snopr.pdf

²¹ Source: http://www.eccj.or.jp/top_runner/pdf/tr_tv_jul.2009.pdf;
http://www.eccj.or.jp/top_runner/index.html

- Classification by the number of pixels. Classification proposal: (1) Vertical pixels of 1080 or more and horizontal pixels of 1920 or more; (2) Others
 - Classification by receiver size. Classification proposal: (1) Smaller than 19V-type; (2) 19V-type or larger and smaller than 32V-type; (3) 32V-type or larger
 - Classification by moving picture display speed. Classification proposal: (1) Normal drive (displaying 60 frames or more and fewer than 120 frames of still pictures per second); (2) Double-speed drive (displaying 120 frames or more and fewer than 240 frames of still pictures per second); (3) Quad-speed drive (displaying 240 frames or more of still pictures per second) and plasma televisions
 - Classification by added functions. In view of the present product makeup, consideration shall only be given to main added functions: (1) “double digital tuner” and (2) “recording devices (DVD, hard disk HDD and Blu-ray disk BD).” Of the “recording devices,” “DVD” and “BD” are almost never loaded together; therefore a maximum of three added functions shall be included in the classification. Classification proposal: (1) With no added functions; (2) With one added function; (3) With two added functions; (4) With three added functions
- The document provides specific target standard values (= top runner values) for each of the function categories differentiated by the classifications above. (Attachment 4)
 - Finally, the document provides a “Measurement method for energy consumption efficiency of television receivers” (Attachment 5).

1.3.2.2 *Displays*

IEC 62087 / IEC 62301

See section 1.3.2.1

IEEE 1680.1 standard

- Title / Scope: IEEE Standard for Environmental Assessment of Personal Computer Products, Including Notebook Personal Computers, Desktop Personal Computers, and Personal Computer Displays
- Organization: Institute of Electrical and Electronics Engineers (IEEE) Standards Association
- Status / Year / Revision: Publication date March 2010; the existing IEEE 1680.1 Standard for Environmental Assessment of Personal Computer Products, including Notebook Personal Computers, Desktop Personal Computers, and Personal Computer Displays is currently being updated. During the fall of 2011 and into 2012, study groups worked to develop preliminary material to assist in the launch of the 1680.1 standard update. In late 2012 or early 2013, a Working Group will be convened for the update of the 1680.1 standard.
- Issues²²: This Standard provides a set of performance criteria for the design of personal computer products, and provides an opportunity to secure market recognition for efforts to reduce the environmental impact of electronic products. The environmental performance criteria of this standard are intended to define a measure of environmental leadership in: the design and manufacture of personal computer products; the delivery of specified services that are associated with the sale of the product; and in associated corporate performance characteristics. This Standard is defined with the intention that the criteria are technically feasible to achieve, but that only products demonstrating the leading environmental performance currently available in the marketplace would meet them at the time of their adoption. As the environmental performance of products that are available in the marketplace improves, it is

²²

Sources: <http://grouper.ieee.org/groups/1680/1680.1/>

intended that the criteria will be updated and revised to set a higher performance standard for leadership products.

ISO 9241 “300” subseries

- Title / Scope: Ergonomics of human-system interaction - Part 300
- Organization: International Organization for Standardization (ISO)
- Status / Year: Publication date June 2009
- Issues: The ISO 9241 “300” subseries establishes requirements for the ergonomic design of electronic visual displays. These requirements are stated as performance specifications, aimed at ensuring effective and comfortable viewing conditions for users with normal or adjusted-to-normal eyesight. Test methods and metrology, yielding conformance measurements and criteria, are provided for design evaluation. The ISO 9241 “300” subseries is applicable to the visual ergonomics design of electronic visual displays for a diversity of tasks in a wide variety of work environments. The former ISO 13406-2:2001 standard "Ergonomic requirements for work with visual displays based on flat panels -- Part 2: Ergonomic requirements for flat panel displays" has been withdrawn and revised by the ISO 9241-302, 303, 305 and 307 standards

ISO 7779:2010

- Title / Scope: Acoustics - Measurement of airborne noise emitted by information technology and telecommunications equipment
- Organization: International Organization for Standardization (ISO)
- Status / Year: Publication date January 2011
- Issues: ISO 7779:2010 specifies procedures for measuring and reporting the noise emission of information technology and telecommunications equipment. The basic emission quantity is the A-weighted sound power level which may be used for comparing equipment of the same type but from different manufacturers, or for comparing different equipment.

EN 50279

- Title / Scope: EN 50279 - Visual Display Units - Measuring Methods For Low Frequency Electric And Magnetic Near Fields
- Organization: CENELEC (European Committee for Electrotechnical Standardization)
- Status / Year: Published December 1997
- Issues: Measuring methods for low frequency electric and magnetic near fields

ENERGY STAR Test Method for Displays

- Title / Scope: ENERGY STAR Test Method for Determining Displays Energy Use Version 6.0 – Rev. Jan-2013
- Organisation: Energy Star
- Status / Year: Published January 2013
- Issues²³: The test method for determining the energy use of displays is applicable to all products eligible for qualification under the ENERGY STAR Product Specification for Displays. Note: The U.S. Department of Energy (DOE) has published the Test Procedure for Television Sets Notice of Proposed Rulemaking (77 FR 2830), cf. section 1.3.2.1. Any product that is included in DOE's scope of coverage for TVs shall ultimately be tested according to the Test Procedure for Television Sets Final Rulemaking published by DOE.

VESA Flat Panel Display Measurements (FPDM) Standard, Version 2.0

- Title / Scope: Flat Panel Display Measurements (FPDM2) Version 2 Update
- Organization: Video Electronics Standards Association
- Status / Year: May 2005

²³

Source:

http://energystar.gov/products/specs/sites/products/files/Final_Version_6%200_Displays_Program_Requirements.pdf

- Revision: The FPDM standard has been replaced by the Information Display Measurements Standard (IDMS) published by the Society for Information Display (SID), see below

INFORMATION DISPLAY MEASUREMENTS “STANDARD” (IDMS)

- Title / Scope: Information display measurements standard
- Organization: Society for Information Display (SID), International Committee for Display Metrology (ICDM), Video Electronics Standards Association (VESA)
- Status / Year: Version 1.03, June 2012
- Issues: This document consists of standard measurement procedures to quantify electronic display characteristics and qualities. However, it is also a document that discusses display metrology or the science of display measurements in that it reveals some of the problems associated with making display measurements, contains diagnostics to reveal those problems, and offers solutions to these measurement difficulties. The measurements in the document shall be considered to be a buffet from which the desired measurement methods can be selected depending upon the needs of the user.

DRAFT - WORK IN PROGRESS

1.3.3 Environmental labelling schemes and criteria analysis

In this section, current ecolabelling schemes have been analysed with regard to their criteria. In the light of fast technological progress of televisions and displays, only those labelling schemes and criteria published or revised subsequently to the current EU Ecolabel criteria are listed below.

1.3.3.1 Televisions

Blue Angel “Television Sets” (RAL-UZ 145)

- Organization: Federal Ministry for the Environment Nature Conservation and Nuclear Safety
- Status/Year: Edition July 2012
- Title/Scope: Television Sets RAL-UZ 145
- Issues: The Blue Angel eco-label for television sets may be awarded to products with the following environmental properties:
 - Low energy consumption,
 - Long life cycle,
 - Low pollutant load.
- Test Methods / Standards for the Blue Angel “Television Sets”: Energy Consumption according to Regulation (EU) 1062/2010. Automatic Brightness Control according to IEC 62087.
- Criteria:
 - Requirements for energy consumption in
 - On Mode
 - Off Mode and Passive Standby
 - (Energy) requirements for
 - Wireless Network Connections
 - On/Off Control
 - Quick Start (or Fast Start)
 - Manual Brightness Control / Automatic Brightness Control

- Pollutants
- Material Requirements
- Longevity
- Recyclable Design
- Consumer Information

ENERGY STAR specification for Televisions (Version 6.0)

- Title/Scope: ENERGY STAR® Program Requirements Product Specification for Televisions Eligibility Criteria Version 6.0
- Organization: ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy
- Status/Year/Revision: The Version 6.0 ENERGY STAR specification for Televisions has currently been finalized and has taken effect on May 15, 2013.
- Issues: ENERGY STAR certified televisions are on average, over 20% more energy efficient than conventional models. The label can be found on everything from standard TVs to HD-ready TVs, to the largest flat-screen LCD and plasma models. Current ENERGY STAR requirements demand larger sets meet even more stringent efficiency levels to earn the label. For example, an ENERGY STAR certified 60 inch television will be, on average, almost 40% more efficient than a non-certified model.
- Test Methods / Standards for ENERGY STAR Qualification:
 - ENERGY STAR Test Method for Televisions Rev. Aug 2011.
 - IEC 62087, Ed 3.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment.
 - IEC 62301 Ed 2.0: Household Electrical Appliances – Measurement of Standby Power.
 - CEA: Procedure for DAM Testing (Download Acquisition Mode)
- Criteria:

- On Mode requirements
- Standby-Passive Mode requirements
- Luminance requirements
- Download Acquisition Mode (DAM) Requirements
- Hospitality Television requirements
- General requirements on external power supplies (EPS), user information, and forced menu.

Nordic Ecolabel (Nordic Swan)

- Title/Scope: Nordic Ecolabelling of audiovisual equipment
- Organization: Nordic Ecolabelling organisation (Nordic Ecolabel is the official Ecolabel of the Nordic countries, established by the Nordic Council of Ministers)
- Status/Year: Version 4.2, 15 December 2009 – 31 October 2014
- Issues: Nordic ecolabelling criteria for audiovisual equipment have been put together in order to stimulate the development of equipment with low energy consumption, reduction of the use of substances that are harmful to the environment and to health, 2 years of guarantee, design to facilitate repair, improved possibility to recycle and reuse material, and improved possibility of recycling.
- Criteria: The requirements, which audiovisual equipment must fulfil to be awarded the Nordic Ecolabel, focus on the following aspects:
 - Energy efficiency
 - On-off switch
 - Requirements for passive Standby
 - Requirements for on-mode power consumption
 - Requirements for Hazardous materials
 - Design for recycling
 - Customer information
 - Life-time extension.

- Revision: on-going revision process; future criteria will consider the following:
 - Requirements regarding recycled or reused plastics.
 - The requirements on additives to plastic shall strive to minimise the amounts of additives and to clarify the effects regarding health and environment of the added substances.
 - Reinforcement of the energy requirements.

TCO Certified Displays 6.0

- Title/Scope: TCO Certified Displays 6.0
- Organization: TCO Development
- Status/Year: March 2012
- Issues: The criteria are applicable to all flat panel displays. Televisions shall be tested according to the criteria in the document. In addition to all TCO Certified criteria, displays need to fulfil requirement for visual ergonomics, including luminance, contrast and colour performance. For best in class displays, the add-on “TCO Certified Edge” certification is available. It requires the display to show leading edge performance in a particular area (see below, TCO Certified Edge Displays 1.2). As part of TCO Development’s continued commitment to sustainable IT, the major changes in TCO Certified Displays 6 focus primarily on CSR requirements. Environmental and image quality criteria have also been enhanced as part of this update.
- Test Methods / Standards for TCO Certified Displays:
 - Own TCO Test Methods
 - Energy consumption measurements shall be taken in accordance with the most recently published version of the Energy Star standard for displays.
- Criteria:
 - Visual ergonomics
 - Work load ergonomics

- Emissions
- Electrical safety
- Environmental requirements:
 - Climate (energy consumption)
 - Environmentally hazardous substances
 - Product lifetime (warranty and spare parts)
 - Preparation for recycling
 - Product packaging
- Corporate social responsibility
- Revision: no information available

TCO Certified Edge Displays 1.2

- Title/Scope: TCO Certified Edge Displays 1.2
- Organization: TCO Development
- Status/Year: November 2012
- Issues: TCO Certified Edge is a supplemental certification for TCO Certified Displays - recognizing best in class displays in a specific sustainability attribute.
- Criteria: Current qualifying criteria are:
 - Halogen free display
 - Minimum 65% post-consumer recycled plastic content
 - Full function ergonomic display stand

To comply with TCO Certified Edge Displays it is enough to fulfil only one of the cutting edge criteria. To apply for a TCO Certified Edge certificate it is also necessary that the product is certified according to the regular TCO Certified programme.

- Revision: no information available

EPEAT

- Title/Scope: Television Criteria
- Organization: Green Electronics Council (GEC)
- Status/Year: no information available
- Issues: EPEAT-registered electronic products meet environmental measures referred to as criteria. EPEAT criteria reflect several categories of environmental attributes that cover the full lifecycle of electronic products. Products are measured against both required and optional criteria. A product must meet all of the required criteria in its category to be added to the registry. It is then rated Bronze (meets all required criteria), Silver (meets all required plus at least 50% of optional criteria) or Gold (meets all required plus at least 75% of optional criteria).
- Test Methods / Standards for EPEAT of Televisions:
 - Currently, EPEAT registration is based on the 1680 and 1680.3 Environmental Assessment Standards.
- Criteria: The “Television Criteria” address²⁴:
 - Reduction of use of hazardous substances
 - Materials selection
 - Design for end of life
 - Product longevity/life cycle extension
 - Energy conservation
 - End-of-life management
 - Corporate performance
 - Packaging
- Revision: no information available

²⁴

Source: <http://www.epeat.net/resources/criteria-discussion/television-criteria/>

Detailed criteria analysis of current ecolabelling schemes

The following table provides an in-depth analysis of the detailed criteria of current ecolabels for televisions. The criteria are structured along their life-cycle phases. As the analysed ecolabels were developed subsequently to the current EU Ecolabel, diverging criteria are marked bold in order to point out possible amendments for the EU Ecolabel revision process.

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Table 4: Overview – Analysis of current ecolabel criteria for televisions

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
Manufacturing	Corporate environm. and/or social responsibility	---	<ul style="list-style-type: none"> • Code of conduct => plan for ethical production (sub-contractors & producers => UN Global Compact) 	---	<ul style="list-style-type: none"> • Corporate Social responsibility (good labour relations and working conditions by proving accordance with ILO, UN Convention on the Rights of the Child, the health and safety legislation, the labour law in the manufacturing country) • Environmental management certification (EMAS, ISO 14001) for each manufacturing plant 	---	<ul style="list-style-type: none"> • R: Self-declared environmental management system for design and manufacturing organizations • O: Third-party certified environmental management system for design and manufacturing organizations • R: Public disclosure of key environmental aspects • O: Public disclosure of supply chain toxics • O: Product life-cycle assessment and public disclosure of analyses

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
Limitation of hazardous substances during production / in the product	<ul style="list-style-type: none"> Plastic parts shall not contain <ul style="list-style-type: none"> Flame retardants with certain risks (R phrases) RoHS-substances as long as not exempted or below threshold Limit values for mercury in fluorescent lamps 	<ul style="list-style-type: none"> Products shall not contain <ul style="list-style-type: none"> Flame retardants <ul style="list-style-type: none"> Plastics: with certain risks (R phrases); incl. some exemptions Containing organohalogen compounds RoHS-substances as long as not exempted or below thresholds Chlorinated paraffin Chlorine based plastics A list of phthalates in external cable No mercury content in background lighting in the TV 	<ul style="list-style-type: none"> Plastics shall not contain (incl. some exemptions) <ul style="list-style-type: none"> Substances with certain risks (R phrases) Flame retardants containing halogenated organic compounds Halogenated polymers Substances of very high concern (REACH Candidate List) The TV set shall not contain (=> without exemptions) <ul style="list-style-type: none"> any mercury any lead 	<ul style="list-style-type: none"> Products shall not contain <ul style="list-style-type: none"> PBB, PBDE and HBCDD Flame retardants in plastics: <ul style="list-style-type: none"> with certain risks (R phrases); incl. some exemptions containing organically bound bromine or chlorine containing Antimony(III)oxide (Sb₂O₃) containing Tri-o-cresyl phosphate Plastics with chlorine and bromine as part of the polymer (excluding printed wiring board laminates and 	---	<ul style="list-style-type: none"> R: Compliance with provisions of European Union (EU) RoHS Directive O: Further reduction of the use of EU RoHS Directive hazardous substances (cadmium) R: Reporting on amount of mercury in light sources O: Use of non-mercury containing light sources O: Further reduction of the use of EU RoHS Directive hazardous substances (lead) O: Reduction of substances on the EU REACH Candidate List of SVHCs R: Compliance with provisions 	

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
			screen • Declaration of NF3-use during LCD-display / TFT-cell production		cable insulation) • No RoHS-substances (Cd, Hg, Pb, CrVI), except for Limit values for mercury in background lightning system • Certified Edge criteria: halogen free plastics in the display		of EU Battery Directive • O: Reducing BFR/CFR/PVC content of external plastic casings • O: Eliminating or reducing BFR/CFR content of printed circuit board laminates • O: Eliminating or reducing BFR/CFR/PVC content of product • O: Reduce fluorinated gas emissions resulting from flat panel display manufacturing • O: Inventory of intentionally added chemicals residing in the product

DA

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
	Ergonomics	---	---	---	<ul style="list-style-type: none"> • Visual ergonomics; characteristics for <ul style="list-style-type: none"> ○ Image detail ○ Luminance ○ Luminance contrast ○ Reflection ○ Screen colour • Work load ergonomics <ul style="list-style-type: none"> ○ Vertical tilt ○ Vertical height ○ Certified Edge criteria: full function ergonomic display stand 	---	---
	Design for recycling	<ul style="list-style-type: none"> • Easy disassembly • Incompatible and hazardous materials shall be separable • Plastic parts: one polymer or 	<ul style="list-style-type: none"> • Easy disassembly • Plastic parts: one polymer or compatible polymers for recycling; marking • Information on hazardous substances 	<ul style="list-style-type: none"> • Easy disassembly • Incompatible and hazardous materials shall be separable • Plastic parts: one polymer or compatible polymers for recycling; marking • Disassembly instructions 	<ul style="list-style-type: none"> • Information on hazardous substances • No more than 2 different types of plastic material parts weighing more than 100 grams • Material coding of plastics • No external/internal metallization of 	---	<ul style="list-style-type: none"> • R: Ease of disassembly of product • O: One recyclable plastic type per rigid plastic part > 25g • R: Plastic markings • O: Manual separation of plastics for recycling

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
		compatible polymers for recycling; marking <ul style="list-style-type: none"> Information on hazardous substances 		for end-of-life recyclers or treatment facilities to recover valuable resources	the outer plastic casing <ul style="list-style-type: none"> Requirements for preparation for recycling of mercury lamps (avoidance of damage) Certified Edge criteria: Product shall contain a minimum of 65% recycled plastic by weight of total weight of plastic parts in the product 		<ul style="list-style-type: none"> O: Molded/glued-in metal eliminated or removable R: Restriction on materials not compatible with reuse and recycling R: Notification regarding and the identification of materials and components with special handling needs O: Marking provided on the product identifying items containing materials with special handling needs R: Minimum reusable/recyclable rate based on EU WEEE Directive O: Minimum 90% reusable/recyclable O: Preparation

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
							of end-of-life characterization report <ul style="list-style-type: none"> • R: Declaration of postconsumer recycled plastic content • O: Minimum 5% to 10% content of postconsumer recycled plastic • O: Minimum 25% content of postconsumer recycled plastic • R: Declaration of biobased plastic materials content • O: Minimum content of biobased plastic material • R: Declaration of product weight
	Packaging	---	<ul style="list-style-type: none"> • 80% re-cycled (post-consumer) cardboard • Ban of halogenated 	---	<ul style="list-style-type: none"> • The packaging shall not contain lead (Pb), cadmium (Cd), mercury (Hg) or 	---	<ul style="list-style-type: none"> • R: Elimination of intentionally added heavy metals in packaging

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
			<p>organic substances in packaging material</p>		<p>hexavalent chromium (CrVI)</p> <ul style="list-style-type: none"> • Plastic packaging material shall not contain organically bound halogens • Non-reusable packaging components > 25g shall be possible to separate into single material types without the use of tools 		<ul style="list-style-type: none"> • R: Elimination of elemental chlorine as a bleaching agent in packaging material • R: Separable packaging materials • O: Packaging 90% compostable/recyclable • R: Plastics marked in packaging materials • R: Recovered content in select fiber-based packaging materials • O: Provision of take-back service for packaging
Use	Energy savings	<p>Maximum energy consumption values for</p> <ul style="list-style-type: none"> • Passive stand-by • Off-Mode 	<ul style="list-style-type: none"> • Clearly visible hard or soft on/off- switch • Requirements for energy efficiency referring to Energy efficiency 	<ul style="list-style-type: none"> • Clearly visible On/off control • Off-Mode / passive stand-by for TVs with On/off control • Requirements 	<ul style="list-style-type: none"> • Requirements according to most recently published Energy Star • Requirements for external power supplies 	<ul style="list-style-type: none"> • Requirements for external power supplies • Maximum energy consumption 	<ul style="list-style-type: none"> • R: Compliance with current ENERGY STAR® specification • O: On Mode power

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
		<p>/ passive stand-by for TVs with hard off-switch</p> <ul style="list-style-type: none"> • On-mode (calculation formula) • Maximum energy consumption in on mode \leq 200 W 	<p>classes according to EU 1062/2010</p> <ul style="list-style-type: none"> • Maximum energy requirement has been removed 	<p>for energy efficiency in on mode referring to Energy efficiency classes according to EU 1062/2010</p> <ul style="list-style-type: none"> • Maximum energy consumption in on mode \leq 100 W • Manual brightness control • Requirements for <ul style="list-style-type: none"> ○ Wireless Network Connections ○ Quick start / Fast start ○ Automatic brightness control 		<p>values for</p> <ul style="list-style-type: none"> ○ On-mode (calculation formula); differentiation regarding Automatic Brightness Control (ABC) ○ Passive stand-by • Requirements for <ul style="list-style-type: none"> ○ Luminance (difference between “home” / “retail” picture setting ○ Download Acquisition Mode (DAM) 	<p>performance exceeding ENERGY STAR®</p> <ul style="list-style-type: none"> • O: Additional On Mode power performance exceeding ENERGY STAR® • O: Low standby power • O: Automatic switch to sleep mode
	Emissions / electrical safety	---	---	---	<ul style="list-style-type: none"> • Alternating electric fields • Alternating magnetic fields • Acoustic noise (applies only when 	---	---

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
					FPD is equipped with integrated moving parts such as a fan) • Electrical safety		
	User instructions	<ul style="list-style-type: none"> • Power consumption & savings; • Average annual energy consumption • Tips for reducing energy consumption • Repair information 	<ul style="list-style-type: none"> • Power consumption & savings; • Average annual energy consumption • Tips for reducing energy consumption • Repair information 	<ul style="list-style-type: none"> • Power consumption & savings; <ul style="list-style-type: none"> ○ Power cons. in active stand-by (low) for networked TV sets ○ Warning that Quick Start function causes increased power consumption ○ Energy savings by Manual or Automatic Brightness Control ○ Integrated functions (receiver, hard disk recorders) might help reducing 	---	<ul style="list-style-type: none"> • Energy Star programme • Energy consumption implications of changes to default as-shipped configurations and settings • Notification that enabling certain features & functionalities may increase energy consumption beyond Energy Star limits • Differences between “home” picture setting and “retail” 	---

		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
				<p>power consumption if external devices would be redundant</p> <ul style="list-style-type: none"> • Average annual energy consumpt. • Tips for reducing energy consumpt. • Repair information 		picture setting	
End of life	Reduction of waste	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	---	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	---	<ul style="list-style-type: none"> • R: Provision of product take-back service • O: Provision of take-back service for broader scope of products • R: End-of-life processing requirements • O: Certification of programs exempt from end-of-life processing requirements

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		EU Ecolabel 2009	Nordic Swan 2009 incl. major changes of revision 2013	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
	Durability / life time extension	<ul style="list-style-type: none"> Commercial guarantee of at least 2 years Availability of replacement parts should be guaranteed for 7 years from that time the production ceases 	<ul style="list-style-type: none"> Commercial guarantee of at least 2 years Availability of replacement parts should be guaranteed for 7 years from that time the production ceases 	<ul style="list-style-type: none"> Availability of replacement parts should be guaranteed for 5 years from that time the production ceases 	<ul style="list-style-type: none"> Product warranty for at least 1 year Availability of replacement parts should be guaranteed for 3 years from that time the production ceases 	---	<ul style="list-style-type: none"> R: Upgradeable firmware R: Service information readily available R: Early failure process

DRAFT - WORK IN PROGRESS

Summary of criteria analysis

- Manufacturing phase:
 - Corporate environmental and/or social responsibility: Nordic Swan, TCO and EPEAT require CSR aspects and an Environmental Management System during the manufacturing process of televisions. EPEAT further optionally requires the public disclosure of supply chain toxics and product lifecycle assessment analyses.
 - Limitation of hazardous substances: The current ecolabelling schemes partially go beyond the EU Ecolabel criteria in terms of
 - Halogenated organic compounds (Nordic Swan, Blue Angel, TCO, EPEAT),
 - Halogenated polymers (Nordic Swan, Blue Angel, TCO)
 - PBB, PBDE and HBCDD (TCO)
 - Certain RoHS substances without exemptions (Nordic Swan, Blue Angel, TCO)
 - Substances of very high concern (Blue Angel, EPEAT)
 - Phthalates in external cables (Nordic Swan)
 - Halogen free plastics in the displays (TCO Certified Edge)
 - Declaration of / reducing NF_3 -use during LCD-display / TFT-cell production (Nordic Swan / EPEAT)
 - Ergonomics: only addressed by TCO criteria
 - Design for recycling:
 - Disassembly instructions for end-of-life recyclers or treatment facilities to recover valuable resources (Blue Angel, EPEAT)
 - Requirements for preparation for recycling of mercury lamps to avoid damage (TCO Certified Edge, EPEAT)
 - Product shall contain a minimum of 65% recycled plastic (TCO Certified Edge) / a minimum of 5-10% or 25% (EPEAT)

- Declaration and/or minimum content of biobased plastic material (EPEAT)
- Packaging: addressed by Nordic Swan, TCO criteria and EPEAT
 - 80% re-cycled (post-consumer) cardboard
 - Ban of halogenated organic substances in packaging material
 - The packaging shall not contain lead (Pb), cadmium (Cd), mercury (Hg) or hexavalent chromium (CrVI)
 - Plastic packaging material shall not contain organically bound halogens
 - Non-reusable packaging components > 25g shall be possible to separate into single material types without the use of tools
- Use phase
 - Energy savings
 - Criteria for External Power Supplies (TCO, Energy Star)
 - Diverging requirements for on/off-control
 - On mode: maximum energy consumption 100 W (Blue Angel); no maximum energy consumption (Nordic Swan rev. 2013, TCO, Energy Star)
 - Requirements for new features (automatic brightness control, download acquisition mode, wireless network connections, quick start / fast start functions, different luminance picture settings (home ↔ retail))
 - Emissions / electrical safety: only addressed by TCO criteria
 - User instructions: Notification that enabling certain features & functionalities may increase or reduce energy consumption; implications of changes to default as-shipped configurations and settings (Blue Angel, Energy Star)
- End of life phase: Different requirements for guaranteed availability of replacement parts after production ceases (Nordic Swan: 7 years; Blue Angel: 5 years; TCO: 3 years)

1.3.3.2 Displays

Blue Angel “Computer Monitors” (RAL-UZ 78c)

- Title/Scope: Computer Monitors RAL-UZ 78c
- Organization: Federal Ministry for the Environment Nature Conservation and Nuclear Safety
- Status/Year: Edition January 2012
- Issues: The Blue Angel eco-label for computer monitors may be awarded to devices with the following environmental properties:
 - Low power consumption;
 - Product longevity;
 - Recyclable design;
 - Avoidance of environmentally harmful materials.
- Test Methods / Standards for the Blue Angel “Computer Monitors”: The Blue Angel accepts the „TCO Certified Displays 5.2“ certificate for compliance with the following Basic Criteria:
 - Reparability
 - Material Selection and Labelling
 - Ergonomics

However, the present Basic Criteria include additional requirements for computer monitors that go beyond the criteria set forth in „TCO Certified Displays 5.2“ the compliance with which needs to be additionally verified by the applicant.

- Other measurements shall be taken in accordance with the ENERGY STAR Program Requirements for Displays (Version 5.0) (see below).
- Ergonomics shall be tested according to DIN EN ISO 9241-307
- Criteria:
 - Power Consumption in On Mode, Sleep and Off Modes
 - Power-Saving Requirements

- Recyclable Design
- Material Requirements
- Backlight and Liquid Crystal Compounds
- Ergonomics
- Consumer Information

ENERGY STAR Program Requirements for Displays (Version 6.0)

- Title/Scope: ENERGY STAR® Program Requirements Product Specification for Displays Eligibility Criteria Version 6.0
- Organization: ENERGY STAR is a joint program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy
- Status/Year/Revision: The Version 6.0 ENERGY STAR Display Products specification has taken effect on June 1, 2013.
- Issues: ENERGY STAR qualified displays include computer monitors, digital picture frames and professional signage which meet stringent energy efficiency requirements in On, Sleep, and Off Modes.
- Test Methods / Standards for ENERGY STAR Qualification:
 - ENERGY STAR Test Method for Determining Displays Energy Use Version 6.0 – Final Sep 2012.
 - “Video Electronics Standard Association (VESA) Flat Panel Display Measurements (FPDM) Standard version 2.0 test patterns” (shall be used only for products that cannot be tested using the IEC 62087-2011 Dynamic Broadcast-Content Signal).
 - IEC 62087, Ed 3.0: Methods of Measurement for the Power Consumption of Audio, Video and Related Equipment.
 - IEC 62301-2011: Household Electrical Appliances – Measurement of Standby Power.
 - Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004

- Criteria:
 - On Mode requirements,
 - Sleep Mode requirements,
 - Off Mode requirements,
 - Luminance reporting requirements,
 - General requirements: External Power Supply and Power management.
- Revision: The Version 6.0 ENERGY STAR Display Products specification has been taken effect on June 1, 2013. Compared to the prior version, the version 6.0 specifications establish new On-Mode power consumption requirements for displays with a viewable diagonal screen size from 12 to 30 inches and for computer monitors greater than 30 inches. They also establish a new maximum Sleep Mode power requirement of 0.5 W for all displays, and a power management requirement that all computer monitors must enter Sleep Mode after the connection to a host is discontinued. In addition, this specification
 - Establishes an allowance in Sleep Mode for multiple networking and control protocols, including Gigabit Ethernet or Wi-Fi protocols, and additional capabilities, such as occupancy sensors or memory, implemented in a single product,
 - Adds a definition for enhanced-performance displays and establishes an allowance in On Mode for products that meet that definition,
 - Establishes a hierarchy under the Test Method for testing network connected products in Sleep Mode and lighting conditions for testing products with automatic brightness control (ABC) enabled by default.

For future revisions EPA is interested in exploring expanding the scope of products to those greater than 61" in diagonal screen size in the next specification revision. EPA and DOE will explore with stakeholders whether touch screen functionality impacts On Mode power consumption to determine to what extent the next specification development process should address touch screen functionality.

TCO Certified Displays 6.0

- Title/Scope: TCO Certified Displays 6.0
- Organization: TCO Development
- Status/Year: March 2012
- Issues: In addition to all TCO Certified criteria, displays need to fulfil requirement for visual ergonomics, including luminance, contrast and colour performance. For best in class displays, the add-on “TCO Certified Edge” certification is available. It requires the display to show leading edge performance in a particular area (see below, TCO Certified Edge Displays 1.2). As part of TCO Development’s continued commitment to sustainable IT, the major changes in TCO Certified Displays 6 focus primarily on CSR requirements. Environmental and image quality criteria have also been enhanced as part of this update.
- Test Methods / Standards for TCO Certified Displays:
 - Own TCO Test Methods
 - Energy consumption measurements shall be taken in accordance with the most recently published version of the Energy Star standard for displays.
- Criteria:
 - Visual ergonomics
 - Work load ergonomics
 - Emissions
 - Electrical safety
 - Environmental requirements:
 - Climate (energy consumption)
 - Environmentally hazardous substances
 - Product lifetime (warranty and spare parts)
 - Preparation for recycling
 - Product packaging

- Corporate social responsibility (based on the eight ILO core conventions and local legislation).
- Revision: no information available

TCO Certified Edge Displays 1.2

- Title/Scope: TCO Certified Edge Displays 1.2
- Organization: TCO Development
- Status/Year: November 2012
- Issues: TCO Certified Edge is a supplemental certification for TCO Certified Displays - recognizing best in class displays in a specific sustainability attribute.
- Criteria: Current qualifying criteria are:
 - Halogen free display
 - Minimum 65% post-consumer recycled plastic content
 - Full function ergonomic display stand

To comply with TCO Certified Edge Displays it is enough to fulfil only one of the cutting edge criteria. To apply for a TCO Certified Edge certificate it is also necessary that the product is certified according to the regular TCO Certified program.

- Revision: no information available

Nordic Ecolabel (Nordic Swan)

- Title/Scope: Nordic Ecolabelling of Computers
- Organization: Nordic Ecolabelling organisation (the Nordic Ecolabel is the official Ecolabel of the Nordic countries, established by the Nordic Council of Ministers)
- Status/Year: Version 6.4 from 8 June 2009 – 30 June 2014
- Issues: Nordic Ecolabelled computers meet strict environmental requirements making their environmental impact among the lowest in their category. The

environmental issues associated with computers are mainly due to power consumption but also the amount of waste produced.

- Test Methods / Standards for Nordic Ecolabelling of Computers:
 - The power consumption requirements are fully or partially harmonised with the ENERGY STAR specification for computers (version 5.0) and ENERGY STAR specification for monitors/displays (version 5.0).
 - Sound power level: The sound power level of computers must be measured in accordance with ISO 7779 or RAL-UZ 78 and declared in accordance with ISO 9296. Alternatively displays must be certified according to TCO Displays 5.0 or later version
 - Ergonomics: must meet all relevant mandatory requirements in the latest valid version of the standards of ISO 9241-300 series.
 - Electric and magnetic fields: Displays and notebook computers must fulfil the requirements applicable to electrical and magnetic fields in accordance with prEN50279, category A.
- Criteria: The requirements focus on the following aspects:
 - power consumption
 - design (upgradeability and disassembling)
 - plastics and their additives, e.g. flame retardants
 - heavy metals
 - recycling of discarded products
 - performance such as noise level, ergonomics and electrical and magnetic fields
- Revision: In the next criteria revision, the following issues will be considered:
 - The possibility of further harmonization with other eco-labels.
 - The possibility to extend the product group and enable the Nordic Ecolabelling of PDAs, game consoles and computer accessories.
 - The possibility of requiring that the computer should be made of recycled plastic.

- Requirements as to recycling of materials in the production process and reductions in waste quantities during manufacture.
- The possibility to ban PVC.
- Requirements as to the use of rare metals.
- The possibility to tighten requirements on displays, such as by prohibiting the use of mercury.
- The possibility of tightening requirements relating to the use of flame retardants, other chemicals and heavy metals.
- The possibility of tightening requirements relating to power consumption.
- The possibility of tightening requirements relating to noise.

EPEAT

- Title/Scope: Computer-Display Criteria
- Organization: Green Electronics Council (GEC)
- Status/Year: no information available
- Issues: EPEAT®-registered electronic products meet environmental measures referred to as criteria. EPEAT criteria reflect several categories of environmental attributes that cover the full lifecycle of electronic products. Products are measured against both required and optional criteria. A product must meet all of the required criteria in its category to be added to the registry. It is then rated Bronze (meets all required criteria), Silver (meets all required plus at least 50% of optional criteria) or Gold (meets all required plus at least 75% of optional criteria).
- Test Methods / Standards for EPEAT of Computer-Display:
 - All of the criteria used in EPEAT are based on ANSI-approved public standards, which provide technical details for every criterion and specify how a manufacturer must demonstrate compliance.
 - Currently, EPEAT registration is based on the 1680 family of Environmental Assessment Standards. The related product standard 1680.1 and 1680.2

contain the specific criteria for “PCs and PC Displays” and “Imaging Equipment” respectively, upon which EPEAT registration and ratings are currently based.

- Criteria: The “PC and Displays” standards address²⁵:
 - Corporate performance
 - Materials selection
 - Reduction/elimination of environmentally sensitive materials
 - Design for end of life
 - Packaging
 - Energy conservation
 - Product longevity/life extension
 - End-of-life management
- Revision: no information available

Detailed criteria analysis of current ecolabelling schemes

The following table provides an in-depth analysis of the detailed criteria of current ecolabels for displays. The criteria are structured along their life-cycle phases. As the analysed ecolabels were developed subsequently to the current EU Ecolabel, diverging criteria are marked bold in order to point out possible amendments for the EU Ecolabel revision process.

²⁵

Source: <http://www.epeat.net/resources/criteria-discussion/pc-display-criteria/>

Table 5: Overview – Analysis of current ecolabel criteria for displays

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
Manufacturing	Corporate environm. and/or social responsibility	---	<ul style="list-style-type: none"> • Code of conduct => plan for ethical production (sub-contractors & producers => UN Global Compact) 	---	<ul style="list-style-type: none"> • Corporate Social responsibility (good labour relations and working conditions by proving accordance with ILO, UN Con-vention on the Rights of the Child, the health and safety legislation, the labour law in the manufacturing country • Environmental management certification (EMAS, ISO 14001) for each manufacturing plant 	---	<ul style="list-style-type: none"> • R: Demonstration of corporate environmental policy consistent with ISO 14001 • R: Self-certified environmental management system for design and manufacturing organizations • O: Third-party certified environmental management system for design and manufacturing organizations • R: Corporate report consistent with Performance Track or GRI • O: Corporate report based on GRI

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
Limitation of hazardous substances during production / in the product		<ul style="list-style-type: none"> • Products shall not contain <ul style="list-style-type: none"> ○ Substances or mixtures with certain risks (R phrases) ○ Substances of very high concern • Plastics shall additionally not contain <ul style="list-style-type: none"> ○ DNOP, DINP, DIDP ○ A chlorine content > 50% by weight ○ Biocidal products not included in Annex IA to Directive 98/8/EC • Limit value ≤ 0,1 mg for mercury in fluorescent lamps 	<ul style="list-style-type: none"> • Products shall not contain <ul style="list-style-type: none"> ○ Flame retardants <ul style="list-style-type: none"> ▪ Plastics: with certain risks (R phrases); incl. some exemptions ○ Chlorine based plastics (enclosure, chassis) • Limit value ≤ 14 mg for mercury content in background lighting of displays and integrated desktop computers; mercury prohibited in backlighting of notebook computers 	<ul style="list-style-type: none"> • Plastics shall not contain (incl. some exemptions) <ul style="list-style-type: none"> ○ Substances with certain risks (R phrases) ○ Flame retardants containing halogenated organic compounds ○ Halogenated polymers shall not be permitted • Plastic components < 25 g as well as the carrier material of printed circuit boards must not contain any PBBs, PBDEs or chlorinated paraffins. • The monitor backlight shall 	<ul style="list-style-type: none"> • Products shall not contain <ul style="list-style-type: none"> ○ PBB, PBDE and HBCDD ○ Flame retardants in plastics: <ul style="list-style-type: none"> ▪ with certain risks (R phrases); incl. some exemptions ▪ containing organically bound bromine or chlorine ▪ containing Antimony(III)oxide (Sb₂O₃) ▪ containing Tri-o-cresyl phospho 	<ul style="list-style-type: none"> • Harmonization with EU RoHS 	<ul style="list-style-type: none"> • R: Compliance with provisions of European RoHS Directive upon its effective date • O: Elimination of intentionally added cadmium • R: Reporting on amount of mercury used in light sources (mg) • O: Low threshold for amount of mercury used in light sources • O: Elimination of intentionally added mercury used in light sources • O: Elimination of intentionally added lead in certain applications • O: Elimination of intentionally

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
				not contain any mercury (limit value ≤ 0,1 mg)	<p>te</p> <ul style="list-style-type: none"> ○ Plastics with chlorine and bromine as part of the polymer (excluding printed wiring board laminates and cable insulation) • No RoHS-substances (Cd, Hg, Pb, CrVI), except for Limit values for mercury in background lightning system • Certified Edge criteria: halogen free plastics in the display 		<p>added hexavalent chromium</p> <ul style="list-style-type: none"> • R: Elimination of intentionally added SCCP flame retardants and plasticizers in certain applications • O: Large plastic parts free of certain flame retardants classified under European Council Directive 67/548/EEC • O: Batteries free of lead, cadmium and mercury • O: Large plastic parts free of PVC
	Ergonomics	---	<ul style="list-style-type: none"> • Requirements according ISO 9241-300 series or according 	<ul style="list-style-type: none"> • Requirements according ISO 9241-307 or according TCO Displays 	<ul style="list-style-type: none"> • Visual ergonomics; characteristics for 	---	---

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
			TCO Displays criteria	criteria	<ul style="list-style-type: none"> ○ Image detail ○ Luminance ○ Luminance contrast ○ Reflection ○ Screen colour ● Work load ergonomics <ul style="list-style-type: none"> ○ Vertical tilt ○ Vertical high ○ Certified Edge criteria: full function ergonomic display stand 		
	Design for recycling	<ul style="list-style-type: none"> ● Easy disassembly ● Circuit boards / other precious metal containing components shall be easily removable to enhance recovery of high value material ● Plastic material 	<ul style="list-style-type: none"> ● Easy disassembly ● Plastic parts: one polymer or compatible polymers for recycling; marking ● 90% by weight of plastics and metals in the enclosure and chassis must be technically 	<ul style="list-style-type: none"> ● Easy disassembly ● Information on hazardous substances ● No more than 2 different types of plastic material parts weighing more than 100 grams ● Material coding of plastics 	<ul style="list-style-type: none"> ● Information on hazardous substances ● No more than 2 different types of plastic material parts weighing more than 100 grams ● Material coding of plastics ● No external/internal metallization 	<ul style="list-style-type: none"> ● Easy disassembly 	<ul style="list-style-type: none"> ● R: Identification of materials with special handling needs ● R: Elimination of paints or coatings that are not compatible with recycling or reuse ● R: Easy disassembly of external

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
		<p>in covers / housings shall have no surface coatings incompatible with recycling or reuse</p> <ul style="list-style-type: none"> • Plastic parts: one polymer or compatible polymers for recycling; marking • Information on hazardous substances • External plastic case of the monitor shall have a post-consumer recycled content of not less than 10% by mass 	<p>suitable for material recovery (except incineration)</p> <ul style="list-style-type: none"> • Large plastic parts must not be painted or metallized • Information on hazardous substances 	<ul style="list-style-type: none"> • No external/internal metallization of the outer plastic casing • Disassembly instructions for end-of-life recyclers or treatment facilities to recover valuable resources 	<p>of the outer plastic casing</p> <ul style="list-style-type: none"> • Requirements for preparation for recycling of mercury lamps (avoidance of damage) • Certified Edge criteria: Product shall contain a minimum of 65% recycled plastic by weight of total weight of plastic parts in the product 		<p>enclosure</p> <ul style="list-style-type: none"> • R: Marking of plastic components • R: Identification and removal of components containing hazardous materials • O: Reduced number of plastic material types • O: Molded/glued in metal eliminated or removable • R: Minimum 65 percent reusable/recyclable • O: Minimum 90 percent reusable/recyclable • O: Manual separation of plastics • O: Marking of plastics • R: Declaration

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
							<ul style="list-style-type: none"> of postconsumer recycled plastic content (%) • O: Minimum content of postconsumer recycled plastic • O: Higher content of postconsumer recycled plastic • R: Declaration of renewable/bio-based plastic materials content (%) • O: Minimum content of renewable/bio-based plastic material • R: Declaration of product weight (lbs)
	Packaging	<ul style="list-style-type: none"> • Cardboards: at least 80% recycled material • Plastic bags: at least 75% recycled material or 	---	---	<ul style="list-style-type: none"> • The packaging shall not contain lead (Pb), cadmium (Cd), mercury (Hg) or hexavalent 	---	<ul style="list-style-type: none"> • R: Reduction/elimination of intentionally added toxics in packaging • R: Separable

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
		biodegradable / compostable			chromium (CrVI) <ul style="list-style-type: none"> • Plastic packaging material shall not contain organically bound halogens • Non-reusable packaging components > 25g shall be possible to separate into single material types without the use of tools 		packing materials <ul style="list-style-type: none"> • O: Packaging 90% recyclable and plastics labelled • R: Declaration of recycled content in packaging • O: Minimum postconsumer content guidelines • O: Provision of take-back program for packaging • O: Documentation of reusable packaging
Use	Energy savings	<ul style="list-style-type: none"> • Maximum energy consumption values for <ul style="list-style-type: none"> ○ Active-mode (exceeding Energy Star requirements) ○ Maximum 	<ul style="list-style-type: none"> • Clearly visible hard or soft on/off- switch • Requirements for energy efficiency referring to Energy Star specification • Energy Star requirements 	<ul style="list-style-type: none"> • Requirements for energy efficiency <ul style="list-style-type: none"> ○ On mode referring to Energy Star measurements ○ Maximum energy consumption 	<ul style="list-style-type: none"> • Requirements according to most recently published Energy Star • Requirements for external power supplies 	<ul style="list-style-type: none"> • Requirements for external power supplies • Maximum energy consumption values for <ul style="list-style-type: none"> ○ On-mode (calculation formula); 	<ul style="list-style-type: none"> • R: ENERGY STAR® • O: Early adoption of new ENERGY STAR® specification • O: Renewable energy accessory available

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
		<p>energy consumption in on mode (maximum brightness) ≤ 100 W</p> <ul style="list-style-type: none"> ○ Sleep mode ○ Off-Mode • Power management requirements (10 minutes inactivity => display sleep) 	<p>for external power supplies</p>	<p>n in on mode ≤ 16 W</p> <ul style="list-style-type: none"> ○ Sleep mode ○ Off mode • Power-saving requirements (15 minutes inactivity => sleep or off mode) 		<p>differentiation regarding Automatic Brightness Control (ABC)</p> <ul style="list-style-type: none"> ○ Sleep mode (incl. power allowances for bridging or network or additional capabilities) ○ Off-mode • Power management (15 minutes inactivity => sleep or off mode) • Luminance reporting requirements 	<ul style="list-style-type: none"> • O: Renewable energy accessory standard
	Emissions / electrical safety	---	<ul style="list-style-type: none"> • Requirements according prEN50279 regarding electrical and magnetic fields (TCO certificate) 	---	<ul style="list-style-type: none"> • Alternating electric fields • Alternating magnetic fields • Acoustic noise (applies 	---	---

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
End of life					only when FPD is equipped with integrated moving parts such as a fan) • Electrical safety		
	User instructions	<ul style="list-style-type: none"> • Power consumption & savings; • Tips for reducing energy consumption • Repair information 	<ul style="list-style-type: none"> • Power consumption & savings; • Tips for reducing energy consumption • Repair information 	<ul style="list-style-type: none"> • Power consumption & savings; • Tips for reducing energy consumption. (screen savers, reduction in monitor brightness) • A note stating that the computer draws power even when in off-mode • Repair information 	---	---	---
	Reduction of waste	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	<ul style="list-style-type: none"> • Information on proper disposal 	<ul style="list-style-type: none"> • Information on proper disposal and take-back policy 	---	<ul style="list-style-type: none"> • R: Provision of product take-back service • O: Auditing of recycling vendors

		EU Ecolabel 2011	Nordic Swan 2009	Blue Angel 2012	TCO 2012 / TCO Certified Edge 2012	Energy Star 2013	EPEAT (R: required; O: optional)
							<ul style="list-style-type: none"> • R: Provision of rechargeable battery take-back service
	Durability / life time extension	<ul style="list-style-type: none"> • Availability of spare parts should be ensured for at least 5 years from that time the production ceases 	---	<ul style="list-style-type: none"> • Requirements regarding warranty and spare parts (for 3 years) according to TCO Certified Displays 5.2 	<ul style="list-style-type: none"> • Product warranty for at least 1 year • Availability of replacement parts should be guaranteed for 3 years from that time the production ceases 	---	<ul style="list-style-type: none"> • R: Availability of additional three year warranty or service agreement • R: Upgradeable with common tools • O: Modular design • O: Availability of replacement parts

DRAFT - W

Summary of criteria analysis

- Manufacturing phase:
 - Corporate environmental and/or social responsibility: Nordic Swan, TCO and EPEAT require CSR aspects and an Environmental Management System during the manufacturing process of televisions.
 - Limitation of hazardous substances: The current ecolabelling schemes partially go beyond the EU Ecolabel criteria in terms of
 - Halogenated organic compounds (Nordic Swan, Blue Angel, TCO),
 - Halogenated polymers (Nordic Swan, Blue Angel, TCO)
 - PBB, PBDE, HBCDD and chlorinated paraffins (Blue Angel, TCO)
 - Antimony(III)oxide and Tri-o-cresyl phosphate (TCO)
 - Halogen free plastics in the displays (TCO Certified Edge), large plastic parts free of certain flame retardants classified under European Council Directive 67/548/EEC and/or free of PVC (optional, EPEAT)
 - Ergonomics: addressed by TCO criteria; Blue Angel and Nordic Swan refer to TCO criteria
 - Design for recycling:
 - Disassembly instructions for end-of-life recyclers or treatment facilities to recover valuable resources (Blue Angel)
 - Requirements for preparation for recycling of mercury lamps to avoid damage (TCO Certified Edge)
 - Product shall contain a minimum of 65% recycled plastic (TCO Certified Edge)
 - Quantitative requirement of plastics and metals that must be technically suitable for material recovery (Nordic Swan)
 - Packaging:

- TCO criteria have exclusion criteria for certain substances in packaging materials (RoHS substances, organically bound halogens); also EPEAT requires reduction/elimination of intentionally added toxics in packaging
 - Non-reusable packaging components > 25g shall be possible to separate into single material types without the use of tools
 - Provision of take-back program for packaging (Optional requirement EPEAT)
- Use phase
 - Energy savings
 - Criteria for External Power Supplies (TCO, Energy Star, Nordic Swan)
 - Only Nordic Swan requires a clearly visible on/off-switch
 - On mode: maximum energy consumption 16 W (Blue Angel); no maximum energy consumption (Nordic Swan rev. 2013, TCO, Energy Star)
 - Requirements for new features (automatic brightness control, power allowances for bridging or network or additional capabilities), as well as luminance requirements (Energy Star)
 - Renewable energy accessory available (optional criteria, EPEAT)
 - Emissions / electrical safety: addressed by TCO criteria; Nordic Swan refers to TCO
 - User instructions: Notification that the computer draws power even when in off-mode (Blue Angel)
- End of life phase:
 - Different requirements for guaranteed availability of replacement parts after production ceases (Blue Angel and TCO: 3 years);
 - Three year warranty or service agreement (EPEAT),
 - Products being upgradeable with common tools, modular design (EPEAT)

1.4 ANNEXES

1.4.1 ANNEX I: Analysis of mandatory standards and regulations

1.4.1.1 Ecodesign regulation EU 642/2009

The implementing measure for televisions referred to as the Commission Regulation EU 642/2009 entered into force on July 22nd 2009. The Regulation is **mandatory**. The full title of the document is called “*COMMISSION REGULATION (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions (Text with EEA relevance)*”.

Television means a television set or a television monitor.

Television set means a product designed primarily for the display and reception of audiovisual signals which is placed on the market under one model or system designation, and which consists of:

- (a) A display;
- (b) One or more tuner(s)/receiver(s) and optional additional functions for data storage and/or display such as digital versatile disc (DVD), hard disk drive (HDD) or videocassette recorder (VCR), either in a single unit combined with the display, or in one or more separate units.

Television monitor means a product designed to display on an integrated screen a video signal from a variety of sources, including television broadcast signals, which optionally controls and reproduces audio signals from an external source device, which is linked through standardised video signal paths including cinch (component, composite), SCART, HDMI, and future wireless standards (but excluding non-standardised video signal paths like DVI and SDI), but cannot receive and process broadcast signals.

The EuP Preparatory Study “Televisions” (EuP Lot 5 2007, Task 1 “Definition”) further proposed the following definition which might help to differentiate further products being able to display and receipt audiovisual signals:

TV Capable: A commercially available TV receiver component as PC or Laptop accessory (e.g. TV tuner card), receiver integrated in mobiles (e.g. TV capable Mobile Phones), as well as Beamer / Video projectors that are not specifically designed TVs but capable of displaying a TV/video signal from a Set top Box or PC.

The Guidelines accompanying the Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions (EU 642/2009 Guidelines) further explain:

- Products which provide SDI and/or DVI connectors are not considered to be "television monitors" and therefore not in the scope of the regulation, irrespective of any other signal connectors which are also fitted to the product. Explanation: Products which provide SDI are designed for professional use such as studio monitors, security monitors or medical monitors. Such professional monitors are produced and sold in small quantities (less than 20.000 units/year) for the dedicated purpose of serving the signal quality expected via a SDI signal path by an SDI module, which typically costs up to 2000€ /per unit. They are usually fixed installed and adjusted with the necessary hardware features for specialized functions. An SDI connector circuit if fitted to a product is used as the "main" signal path, while other signal paths such as HDMI are supplementary to the intended use. Monitors designed with DVI are specifically designed for connection to PCs and/or professional equipment.
- Products with integrated screen that are designed to be operated mainly by batteries are not in the scope of this regulation.

1.4.1.2 Energy Labelling Regulation 1062/2010

The EU 1062/2010 **mandatory** Regulation with regard to energy labelling of television entered into force on 20 December 2010. The full title of the document is called "COMMISSION DELEGATED REGULATION (EU) No 1062/2010 of 28

September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions (Text with EEA relevance)".

Television: Fully identical with the definitions under EU 642/2009

Television Set: Fully identical with the definitions under EU 642/2009

Television monitor: Fully identical with the definitions under EU 642/2009

1.4.1.3 *Review of the Ecodesign and Energy Labelling Regulations for televisions and on the draft Regulation on electronic displays, including computer monitors*

According to (EU review Ecodesign TVs 2012), *traditional product category definitions relied on different input signals and the presence of a tuner for televisions. Any display can be designed to accept a variety of input signals, including broadcast signals for which a tuner is required. Also the importance of the tuner/receiver regarding energy consumption has decreased significantly. Furthermore, the experience with the current definitions on televisions and television monitors in the Regulations is not positive regarding providing a clear distinction for products on the market. Therefore, it has been decided to merge the review work on the television Regulations with the work on the draft Regulation on display products and to prepare one set of ecodesign and energy labelling requirements for all electronic displays, including televisions, computer monitors and digital photo frames.*

Proposals of definitions to be included in the new (revised) Regulations on electronic displays:

“Electronic display means a product with a display and associated electronics of which the primary function is to display visual information and that is connected to the mains power source for its intended continuous use, either directly or via an external power supply.”

It is proposed that both Ecodesign and Energy Labelling Regulations shall apply to all “electronic displays” that can be connected to the mains power source either directly or via an external power supply.

Within this scope of coverage are several categories of products commonly known as televisions, television monitors, computer monitors, digital photo frames, and signage products. Furthermore, it is proposed that the Regulations shall apply to electronic displays used for advertising, specialised electronic displays intended for use primarily in commercial, professional fields, engineering, medicine and graphic arts, as well as to public displays.

The Regulation shall not apply to:

- *Products which are covered by the scope of the Commission Regulation implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers (under preparation),*
- *projectors,*
- *High performance electronic displays,*
- *Displays intended for and only available to medical and professional markets and providing specified features required by those markets.*

Currently, the proposals discussed at the Consultation Forum meeting in October 2012 are being amended taking into account stakeholders' comments expressed at and after the meeting, as well as further tests (mainly of small monitors) performed by the EC contractors at the end of 2012. This work also includes discussions with the representatives of displays industry on non-energy related aspects. Furthermore, it has been started drafting an impact assessment of the draft Regulations on electronic displays. It is expected that the final versions of the draft Regulations are prepared in February/March 2013 and the impact assessment in April/May 2013.

1.4.1.4 Japanese Top Runner Programme

There are no specific definitions of television categories in the documents. However, the classification and scope as well as exclusions are described as follows:

Included are television receivers (direct-view cathode-ray tube types or direct-view types with liquid crystal or plasma display panels) that run on alternating-current circuits (with a rated frequency of 50 Hz or 60 Hz and a rated voltage of 100 V).

The following shall be excluded from such application:

1. Televisions for industrial use

Equipment for broadcasting stations and similar special-purpose industrial-use equipment are excluded, due to their restricted specifications, small quantities, etc.

2. Televisions with extremely low usage in the market

- Those made specifically for tourists (The number of units shipped in 2007: Approximately 2,100 units)*
- CRT-based multi-scan type with horizontal frequency exceeding 33.8 kHz (The number of units shipped in 2007: 0 units)*
- Rear-projection type (The number of units shipped in 2007: 2,478 units)*
- Receiver size 10, 10V or smaller (The number of units shipped in 2007: 33,326 units)*
- Wireless type (The number of units shipped in 2007: 0 units)*

In general, the numbers of these television models shipped are small or non-existent, and consumer needs for these models are not always clear.

Consideration shall be given as necessary in the future when situations may change and it is determined appropriate to include them.

Note 1) Included is a type of equipment that is sold as a monitor alone but can receive television broadcasting simply by combining with a tuner of the same manufacturer.

Note 2) Excluded is a display for personal computers that can receive television broadcasting.

1.4.2 ANNEX II: Analysis of European ecolabelling schemes

1.4.2.1 *European Ecolabel (2009/300/EC)*

The Eco-label is a **voluntary** programme to reward products meeting criteria concerning environmental aspects. The full title of the document is called “COMMISSION DECISION of 12 March 2009 establishing the revised ecological criteria for the award of the Community Eco-label to televisions (notified under document number C(2009) 1830) (Text with EEA relevance) (2009/300/EC).”

Definitions of the European Ecolabel criteria for televisions:

*The product group ‘**televisions**’ shall comprise:*

Mains powered electronic equipment, the primary purpose and function of which is to receive, decode and display TV transmission signals.

1.4.2.2 *Blue Angel*

The current Version of **voluntary** German ecolabel Blue Angel for Televisions is from July 2012 / RAL-UZ 145. It is valid until December 31, 2014

Television: Fully identical with the definitions under EU 1062/2010 and EU 642/2009

Television Set: Fully identical with the definitions under EU 1062/2010 and EU 642/2009

Television Monitor: Fully identical with the definitions under EU 1062/2010 and EU 642/2009

1.4.2.3 *Nordic Swan*

The Nordic Swan label (Version 4.2) can be obtained for the categories “Televisions” and “Televisions in combination with other equipment such as DVD/ Blu-ray players”. Extra equipment that is delivered with the products (i.e. remote controls) shall follow the requirements.

Main powered electronic equipment; appliances that may also use other power sources such as batteries are excluded.

All equipment with CRT-displays is excluded.

Please note that currently the Nordic Ecolabelling of Audiovisual equipment is undergoing a revision process with a published proposal for a revised version 5.0 of the criteria. Regarding the scope, the harmonization with the EU Ecolabel for televisions is no longer available.

1.4.2.4 *TCO Development*

The products certified with *TCO Certified Edge* have also been verified to meet all the criteria in *TCO Certified*. *TCO Certified Edge* is a supplemental certification recognizing best in class products in a specific sustainable attribute.

The scope of *TCO Certified* and *TCO Certified Edge* is given as follows:

This document contains requirements, test methods and references for Flat Panel Displays, referred to as „FPD“. This means Visual Display Units (VDU) of LCD type. However, the measuring procedures may in many cases be applied to other types of flat panels with fixed positions of the pixels. The term FPD covers the display, the stand and external power supply as it is delivered to the end user, but not any peripherals.

Televisions shall be tested according to the criteria in this document.

However, the term televisions is not further specified.

1.4.3 ANNEX III: Analysis of third countries' ecolabelling schemes

1.4.3.1 *US ENERGY STAR Final Version 6.0*

The **voluntary** Energy Star Program Requirements for televisions are currently available as Version 5.3. However, as of January 16 2013, Certification Bodies (CBs) will no longer certify new products to Version 5.3, since the Version 6.0 specification for Televisions has been finalized and will take effect June 1, 2013. Manufacturers may elect to have their Certification Body (CB) certify their eligible products to the Version 6.0 requirements from now on (Energy Star 2013).

Definitions by Energy Star

Television (TV): A product designed to be powered primarily by mains power having a diagonal screen size of 15 inches or larger that is manufactured with a TV tuner, and that is capable of displaying dynamic visual information from wired or wireless sources including but not limited to:

- a) Broadcast and similar services for terrestrial, cable, satellite, and/or broadband transmission of analog and/or digital signals;
- b) Display-specific data connections, such as Video Graphics Array (VGA), Digital Visual Interface (DVI), High-Definition Multimedia Interface (HDMI), DisplayPort;
- c) Media storage devices such as a USB flash drive, a memory card, or a DVD; or
- d) Network connections, usually using Internet Protocol, typically carried over Ethernet or WiFi.

A TV may contain, but is not limited to, one of the following display technologies: liquid crystal display (LCD)²⁶, organic light-emitting diode (OLED), cathode-ray tube (CRT), or plasma display panel (PDP).

Rear-projection TV: A television product in which the display device is a projector that focuses images onto a screen located inside the TV enclosure.

Direct-view TV: A television product in which the display device emits light either directly from the screen surface or transmits light from a source mounted directly behind the screen.

TV Combination Unit: A television product in which the TV and one or more additional devices (e.g., DVD player, Blu-ray Disc player, Hard Disk Drive) are combined into a single enclosure, and which meets all of the following criteria:

²⁶ Includes LED- and cold-cathode fluorescent lamp (CCFL)-backlit LCD displays.

- a) *It is not possible to measure the power of the individual components without removing the product housing; and*
- b) *The product connects to a wall outlet via a single power cord.*

Component Television: *A television product composed of two or more separate components (e.g., display device and tuner) that is marketed and sold as a television under a single model or system designation. A component television may have more than one power cord.*

Hospitality Television: *A television product which includes the following features:*

- a) *A control port for bi-directional communication (DB-9, RJ11, RJ12, RJ45, coaxial cable, or HDMI-CEC);*
- b) *Activated hospitality protocol software (e.g., SmartPort, MPI, MTI, Serial Protocol) to provide direct access to Video-On-Demand (VOD) systems or a digital media player designed for hospitality-specific applications; and*
- c) *A power state that meets the definition of Download Acquisition Mode.*

Analog Television: *A television product which has an NTSC, PAL, or SECAM tuner, and may have analog video inputs (e.g., composite video, component video, S-video, RGB).*

Digital Television: *A television product which has at least one digital tuner or at least one digital video input (e.g., HDMI). Products with an analog tuner and both analog and digital inputs are considered digital products under this specification.*

Scope of Energy Star

- **Included Products**
 - *Products that are: (1) marketed to the consumer as a television (e.g., television is the primary function); (2) capable of being powered from either a wall outlet or a battery unit that is sold with an external power supply; and (3) meet one of the following product type definitions, are eligible for*

ENERGY STAR qualification, with the exception of products listed in the next section on excluded products:

- Televisions
- Television Combination Units
- Component Televisions
- Hospitality Televisions
- Products with a computer input port (e.g., VGA) that are marketed and sold primarily as televisions.
- Dual-function televisions / computer monitors that are marketed and sold as dual-function televisions / computer monitors.
- Excluded Products
 - Products that are covered under other ENERGY STAR product specifications are not eligible for qualification under this specification. The list of specifications currently in effect can be found at www.energystar.gov/specifications.
 - Products that satisfy one or more of the following conditions are not eligible for ENERGY STAR qualification under this specification:
 - Products with a computer input port (e.g., VGA) that are marketed and sold primarily as computer monitors,
 - Products that do not have a power state meeting the definition of Standby-Passive Mode (e.g., Public Alert CEA-2009-A certified models which offer 24/7/365 active public alert features), with the exception of Hospitality Televisions that meet the requirements specified in Section 3.8 of the Energy Star requirements for Televisions.

1.4.3.2 *Australian Ecolabel*

The current version of Australian ecolabel program *Good Environmental Choice for Australia* for audiovisual equipment including televisions is from January 2008. This standard is applicable to different categories of audiovisual equipment (TV Sets and

TV Combinations, Video Systems, Set Top Boxes, and Stereo Systems). For televisions, the following definition applies:

Television Sets and TV Combinations

This category includes television sets that are powered by mains power, equipped with the functions of receiving and displaying TV transmission signals, regardless of the method of signal transmission (e.g. analogue or digital) and displaying method (e.g. CRT, LCD, PDP or projection). The criteria also apply to the television sets integrated with other auxiliary functions (e.g. stereo speaker, video player, set-top box, etc.).

This standard excludes equipment solely powered by batteries.

1.4.3.3 Chinese environmental labelling

Colour television broadcasting receiver

It refers to the electronic product powered by electricity that is designed to receive, display and play analog and / or digital colour television broadcasting signals transmitted by terrestrial, cable, satellite, or network.

Cathode ray tube television

It refers to the colour television broadcasting receiver with cathode ray tube as its display unit.

Flat panel television

It refers to the television with a flat screen, generally including the colour television broadcasting receiver with LCD or plasma as its display unit.

1.4.3.4 Green Mark from Taiwan

This standard applies to televisions with cathode ray tube (CRT) screen or liquid crystal display (LCD) screen.

Apart from this, there are no specific definitions of televisions in the document.

1.4.4 ANNEX IV: Literature

Australian Ecolabel 2008	The Australian Ecolabel Program, Good Environmental Choice Australia Standard, Audiovisual Equipment, http://www.geca.org.au/products/types/television-sets-and-tv-combinations/
Blue Angel 2012	Basic Criteria for Award of the Environmental Label, Television Sets RAL-UZ 145, http://www.blauer-engel.de/en/products_brands/vergabegrundlage.php?id=254
Chinese Ecolabel 2011	China Ecolabel for Televisions, criteria 2011, http://kjs.mep.gov.cn/zghjbz/cpbz/
CLP Regulation 2008	Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 http://www.reach-clp-helpdesk.de/en/CLP-en/CLP-en.html
COM (2013) 196	COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL: Building the Single Market for Green Products - Facilitating better information on the environmental performance of products and organisations http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0196:FIN:EN:PDF
EMC Directive 2004	DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC
EPEAT (without year)	EPEAT's Computer-Display Criteria http://www.epeat.net/resources/criteria-discussion/pc-display-criteria/
EU Ecodesign Guidelines 2009	Guidelines accompanying Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions, http://ec.europa.eu/energy/efficiency/ecodesign/doc/regulations/guidelines_ecodesign_televisions_may_2011.pdf

EU Ecodesign Lot 5 2007	EuP Preparatory Studies “Televisions” (Lot 5); Final Report; compiled by Fraunhofer IZM 2007, http://www.ecotelevision.org/finalised_documents.php
EU Ecodesign Regulation 2009	COMMISSION REGULATION (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:191:0042:0052:EN:PDF
EU Ecodesign review TVs 2012	Discussion paper on the review of the Ecodesign and Energy Labelling Regulations for televisions and on the draft Regulation on electronic displays, including computer monitors. To be presented and discussed with stakeholders at the Consultation Forum meeting of 8 October 2012. August 2012, http://www.ebpg.bam.de/de/ebpg_medien/tren5/005_work_d_12-08_revision.pdf
EU Ecolabel TV 2009	COMMISSION DECISION of 12 March 2009 establishing the revised ecological criteria for the award of the Community Eco-label to televisions (notified under document number C(2009) 1830) (2009/300/EC) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:082:0003:0008:EN:PDF
EU Energy Labelling TVs 2010	COMMISSION DELEGATED REGULATION (EU) No 1062/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:314:0064:0080:EN:PDF F-gas Regulation 2006 Regulation (EC) No 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases; http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:161:0001:0011:EN:PDF
Green Mark Taiwan 2011	Green Mark in Taiwan, criteria 2011, http://greenliving.epa.gov.tw/GreenLife/eng/E_Criteria.aspx

Japanese TopRunner 2009	Energy Efficiency Standards Subcommittee, Advisory Committee for Natural Resources and Energy Television Receiver Evaluation Standards Subcommittee, Final Report http://www.eccj.or.jp/top_runner/
Low Voltage Directive 2006	DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits
Networked Standby regulation (Draft)	COMMISSION REGULATION (EU) No .../.. of XXX amending Commission Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Commission Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions http://www.eup-network.de/fileadmin/user_upload/Draft_Regulation_Networked_Standby_for_Regulatory_Committee.pdf
Nordic Ecolabelling 2009	Nordic Ecolabelling of Audiovisual equipment; Version 4.2 • 15 December 2009 – 31 October 2014, http://www.nordic-ecolabel.org/Templates/Pages/CriteriaPages/CriteriaGetFile.aspx?fileID=145828001
Nordic Ecolabelling 2012	About Nordic Ecolabelling of Audiovisual equipment; Version 5.0; Background, Final review proposal; 20 December 2012; http://www.svanen.se/Templates/Criteria/CriteriaGetFile.aspx?fileID=150419001
REACH Regulation 2006	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH); http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:136:0003:0280:en:PDF
RoHS Directive 2011	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (recast); http://eur-

Standby Regulation 2008	<p>lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0088:0110:en:PDF</p> <p>COMMISSION REGULATION (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment http://www.eup-network.de/fileadmin/user_upload/Produktgruppen/Lots/IM/Adopted_IM/1275_2008_Regulation_Lot_6_standby_en.pdf</p>
TCO Certified Displays 2012	<p>TCO Development – TCO Certified Displays 6.0 of 05.03.2012, http://tcodevelopment.com/files/2013/02/criteriadocument_displays_v60_2012-03-05_tcodevelopment.pdf</p>
TCO Cert. Edge Displays 2012	<p>TCO Development – TCO Certified Edge Displays 1.2 of 15.11.2012, http://tcodevelopment.com/files/2012/11/TCO-Certified-Edge-Displays-1.2.pdf</p>
US Energy Star 2013	<p>Energy Star Program Requirements for Televisions. Final Version 6.0. https://energystar.gov/products/specs/node/156</p>
WEEE Directive 2012	<p>DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste electrical and electronic equipment (WEEE) (recast); http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:197:0038:0071:en:PDF</p>

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