

Selection Criteria television sets

Methodology

Topten.eu – Best Products of Europe – presents the most energy efficient television sets of Europe.

Technical criteria

To date, TVs with a high resolution (4K) are less efficient than conventional HD TVs. In order to be able to display also 4K TVs, Topten applies more relaxed selection criteria for these TVs. All television sets have to be declared according to the [Commission regulation on energy labelling of televisions](#) from September 2010 and to IEC 62087:2013. TVs complying with the following selection criteria are displayed on topten.eu:

TV models with HD resolution or lower:

- Energy efficiency (according to the following table)

Energy class	EEI
d < 70cm	A or better
70cm ≤ d < 100cm	A+ or better
d ≥ 100cm	A++

- Max. power in On mode, for all screen sizes: 64 Watt. (this corresponds to the max. power of a 100cm-A-class TV)

TV models with 4K or UHD resolution:

- Energy efficiency (according to the following table)

Energy class	EEI
d < 70cm	A or better
70cm ≤ d	A+ or better

- Max. power in On mode, for all screen sizes: 85 Watt.

All TVs:

- Max. power in Standby mode: 0.5W
- Available in at least one European country

Relevant values have to be provided by the producers. Producers who are not able to provide these values cannot claim to have their appliances displayed on topten.eu. All declarations can be verified by random measurements.

Data sources

- Producers' declarations
- National data-bases and Topten-sites

Order of presentation

Products are ranked according to their efficiency index. The order of presentation can be changed by clicking the tables' headings.

Glossary

Brand, Model, Similar Models

The brand names and model names are on the list. Products of similar construction and identical technical values are displayed only once. Similar models' names are listed under 'similar models'.

Electricity Costs

According to the following assumptions:

- Product's lifetime: 10 years
- Energy consumption: daily 4 hours in On mode according to the Energy label declaration
- Tariff of electricity: 0.20 €/kWh (this should be understood as order of magnitude as there can be large differences depending on country or electrical utility)

Screen diagonal

Diagonal of the visible screen in cm. In shops the diagonal is often indicated in inches (1 inch = 2.54 cm, example: 102 cm = 40 inch).

Resolution

Typical terms used for the resolution:

- HD-ready: at least 1280 x 720 pixels
- HD-ready 1080p: at least 1920 x 1080 pixels
- Full HD (True HD und Full HD 1080p): at least 1920 x 1080 pixels
- 4K: 3840x2160 pixels

Pixels

Maximum resolution in number of pixels (horizontal x vertical).

Brightness

The image's typical brightness (luminance) in candela per square meter (cd/m²).

DVB-Receivers

Receivers for digital TV integrated in the TV set:

- DVB-T: Terrestrial (for antenna)
- DVB-S: Satellite (for satellite dish)
- DVB-C: Cable (for cable)

Technology

In LCD TVs (LCD = Liquid Crystal Display) the LCD layer (=panel), which consists of millions of red, yellow and blue pixels individually varying their translucence, produces an image by selectively filtering light from a backlight. Today the most common backlight technology is LED (Light Emitting Diode), which is more efficient than the old CCFL (Cold Cathode Fluorescence Lamp) technology.

Power On

Power in On mode in Watt according to [IEC 62087:2008](#).

Power Standby

Power in Standby mode in Watt according to EN 50564:2011.

Networked Standby (W)

For TVs with network connectivity: Power in networked Standby mode, in Watt (according to the [Ecodesign regulation No 801/2013 on networked standby](#))

Annual energy consumption (kWh)

Energy consumption per year in kWh, according to the Energy Label. The consumption is based on the assumption that the TV is 4 hours per day in On mode.

Efficiency Index and Energy class

According to the [Commission regulation on energy labelling of televisions from 28. September 2010](#) and [IEC 62087:2008](#). The energy efficiency index (EEI) is the ratio between the annual energy consumption of the appliance and a standard consumption of a typical similar model of the same screen size. The smaller the index, the better a model's energy efficiency.

Available in countries

Countries in which a product is available according to producers declarations; country codes according to [ISO](#).

EU = available throughout the European Union

On demand = producers could not indicate the availability and consumers have to ask on their own

Infoplus

Publications

- [European TV market 2007 - 2013. Second report, complemented with 2013 sales data](#). Anette Michel, Sophie Attali, Eric Bush, July 2014.
- [European TV market 2007 - 2012](#). Energy efficiency before and during the implementation of the Ecodesign and Energy Labelling regulations. Topten International, July 2013, complemented October 2013.
- [What is an energy efficient TV? Trying to find the best TV in China and in Europe](#). Anette Michel, Eric Bush, Conrad U. Brunner, Hu Bo. Topten International Services. EEDAL 2013.
- [Electricity Consumption and Efficiency Trends in European Union – Status Report 2012](#). Paolo Bertoldi et al., 2012. [JRC](#).
- [Vergleichstest von Best-Fernsehgeräten. S.A.L.T.](#) in Zusammenarbeit mit [Home Electronic](#). Im Auftrag von [WWF Schweiz](#) und [Topten Schweiz](#), 17. November 2009.

Standards and Labels

- [Energy Labelling regulation for TVs, No 1062/2010](#)
- Amendment regarding [Online Energy Labels](#): Regulation No. 518/2014
- [Ecodesign regulation for TVs No 642/2009](#)
- [Ecodesign regulation No 801/2013 on networked Standby](#), amending regulation No 642/2009. It defines also maximum Standby power requirements for networked TVs. The amendment applies from 1 January 2015.
- [IEC 62087:2011](#): Methods of measurement for the power consumption of audio, video and related equipment.
- [Energy Label framework Directive No 2010/30](#)
- [Ecodesign framework Directive No 2009/125](#)

Institutions

- [S.A.F.E.](#) Swiss Agency for Efficient Energy Use, Zurich, Switzerland
- [S.A.L.T.](#) Swiss Alpine Laboratories for Testing of Energy Efficiency, Chur, Switzerland

Links

- European Commission: [Directorate-General for Energy](#), Brussels, Belgium
- European Commission: [Enterprise and Industry](#), Brussels, Belgium
- European Commission, [Eco-design of Energy related Products \(ErP\)](#)

- The European Council for an Energy Efficient Economy [eceee](#) provides a status overview on all products in the Ecodesign & Energy Labelling process

- [Coolproducts](#) informs about the EU Ecodesign process on TVs and other products. It is a coalition of NGOs' campaign for a stronger, fast Ecodesign Directive to save the climate and money.
- [CompliantTV](#): the project is assessing compliance of TVs with the Ecodesign and Energy Labelling regulations through shop visits and product tests. A database with information on all tested models will be created and guidance documents for market surveillance authorities and other stakeholders.
- [Ecopliant](#) aims at improving the coordination of market surveillance activities related to the Ecodesign Directive.
- [MarketWatch](#) aims at identifying companies that are not declaring correctly, through shop visits and product tests.
- [Come On Labels](#) visited some 900 shops in order to check the correct display of the new Energy Label and established comprehensive lists of product tests actually undertaken, of the results and action taken. The project was completed in June 2013.

Producers and retailers are kindly asked to contact [info\[at\]topten.info](mailto:info[at]topten.info) to inform about more products which meet the Euro-Topten selection criteria.

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