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TEST REPORT No DHQA-ESH-P23100020

Evaluation of ecodesign requirements for electronic displays

Report Reference No:..... DHQA-ESH-P23100020
Date of issue: December 8, 2023
Number of pages:..... 28

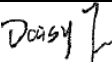

Testing Laboratory name: LCIE CHINA COMPANY LIMITED
Address:..... Building 4, No. 518, Xinzhuan Road, Caohejing High-Tech Park, Songjiang District, Shanghai, China

Applicant's name:..... ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
Address:..... No.1399, Binxing Road, Binjiang District, Hangzhou, P.R. China

Test item description
Test object:..... LED Monitor
Trade Mark: 
Type reference: DHI-LM27-U401A, DH-LM27-U401A, LM27-U401A, DHI-LM27-U401, LM27-U401, DHI-LM27-U400A, LM27-U400A, ****-LM27*****, LM27*****("*"=A-Z, a-z, 0-9, -, ., or blank)
Rated Voltage (V):..... 24VDC

Test specification:
Test Regulation :
 Commission Regulation (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009
 Commission Delegated Regulation (EU) 2019/2013 of 11 March 2019 supplementing Regulation(EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of electronic displays and repealing Commission Delegated Regulation (EU) No 1062/2010
 COMMISSION DELEGATED REGULATION (EU) 2021/340 of 17 December 2020 amending Delegated Regulations (EU) 2019/2013, (EU) 2019/2014, (EU) 2019/2015, (EU) 2019/2016, (EU) 2019/2017 and (EU) 2019/2018 with regard to energy labelling requirements
 COMMISSION REGULATION (EU) 2021/341 of 23 February 2021 amending Regulations (EU) 2019/424, (EU) 2019/1781, (EU) 2019/2019, (EU) 2019/2020, (EU) 2019/2021, (EU) 2019/2022, (EU) 2019/2023 and (EU) 2019/2024 with regard to ecodesign requirements

Test result: **Pass**

Test done by,  Approved by, 
Daisy FU/ Project Engineer Tom ZHANG / Project Manager

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

LCIE China Company Limited 必维欧亚电气技术服务（上海）有限公司	Building 4, No. 518, Xinzhuan Road, Caohejing High-Tech Park, Songjiang District, Shanghai, China	Tel: +86 21 6195 7000 Fax: +86 21 6195 7001 Email: BVLCIEMKT@bureauveritas.com
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Other Relevant Method Standard used:

- IEC 62087-1:2015 - Audio, video, and related equipment - Determination of power consumption - Part 1: General
- IEC 62087-2:2015-Audio, video, and related equipment - Determination of power consumption - Part 2: Signals and media
- IEC 62087-3:2015-Audio, video, and related equipment - Determination of power consumption - Part 3: Television sets
- IEC 62087-7:2018 - Audio, video and related equipment - Methods of measurement for power consumption - Part 7: Computer monitors
- EN 50564:2011- Electrical and electronic household and office equipment - Measurement of low power consumption

Name and address of Manufacturer:

Manufacturer name:	ZHEJIANG DAHUA VISION TECHNOLOGY CO., LTD.
Address:	No.1399, Binxing Road, Binjiang District, Hangzhou, P.R. China

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Possible test case verdicts:	
- Test object does meet the requirement:	P (Pass)
- Test case does not apply to the test object:	N/A (Not applicable)
- Test object does not meet the requirement:	F (Fail)
- Test object does not demand	N/D (Not demanded)
General remarks:	
<p>"(See remark #)" refers to a remark appended to the report. Throughout this report a dot is used as the decimal separator. The test results presented in this report relate only to the object tested. This report covers following model numbers: DHI-LM27-U401A, DH-LM27-U401A, LM27-U401A, DHI-LM27-U401, LM27-U401, DHI-LM27-U400A, LM27-U400A, ****-LM27****, LM27****("*"=A-Z, a-z, 0-9, , ., or blank). The differences of them are as follows: model name, market regions and customers. Test Model: DHI-LM27-U401A tests on behalf of all other models.</p>	

1. Product Description

Sample Size received:.....	1
Sample No.:.....	/
Date of receipt of test items:.....	October 7, 2023
Date of tests:.....	October 7, 2023 to October 17, 2023

Test item particulars	
Classification of installation and use	<input checked="" type="checkbox"/> Desk-top <input checked="" type="checkbox"/> Wall mounted
Supply Connection	EU plug
Network electronic display	No
Availability of HiNA functionality	No
Availability of easily visible switch.....	Yes
Availability of off mode.....	Yes
Availability of standby mode.....	Yes
Availability of display function in standby mode.....	No
Availability of network standby mode.....	No
Availability of another condition which does not exceed the applicable power demand requirements respectively for standby or networked standby mode ..	No



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Availability of automatic power-down.....	Yes
Availability of force menu	No

Description of equipment under test	
Visible Screen Dimensions (mm) (declared):	596.736 (H) × 335.664 (V)
Visible Screen Area (A/dm ²) (declared):.....	20
Screen diagonal (cm / inch) (declared):	68.5 / 27
Nominal aspect ratio:.....	16:9
Number of pixels (declared):	8294400 (3840H * 2160V)
Image refresh frequency rate (default):.....	60Hz
Screen technology:.....	LED LCD
Availability of Automatic Brightness Control (ABC):	No
ABC enabled by default:	N/A
Availability of touch functionality:	No
Availability of room presence sensor:	No
Availability of voice recognition sensor:.....	No
Availability of High Dynamic Range(HDR):	Yes
Power supply type:	<input type="checkbox"/> Internal <input checked="" type="checkbox"/> External <input type="checkbox"/> Standardised external
Minimum guaranteed availability of software and firmware updates (from the date of end of the placement on the market):	8 years
Minimum guaranteed availability of spare parts (from the date of end of the placement on the market):	7 years
Minimum guaranteed product support (from the date of end of the placement on the market):	15 years
Minimum duration of the general guarantee offered by the supplier:.....	3 years
Resolution:	<input type="checkbox"/> Resolution up to 2 138 400 pixels (HD) <input checked="" type="checkbox"/> Resolution above 2 138 400 pixels (HD) and up to 8 294 400 pixels (UHD-4k) <input type="checkbox"/> Resolution above 8 294 400 pixels (UHD-4k) and for MicroLED displays



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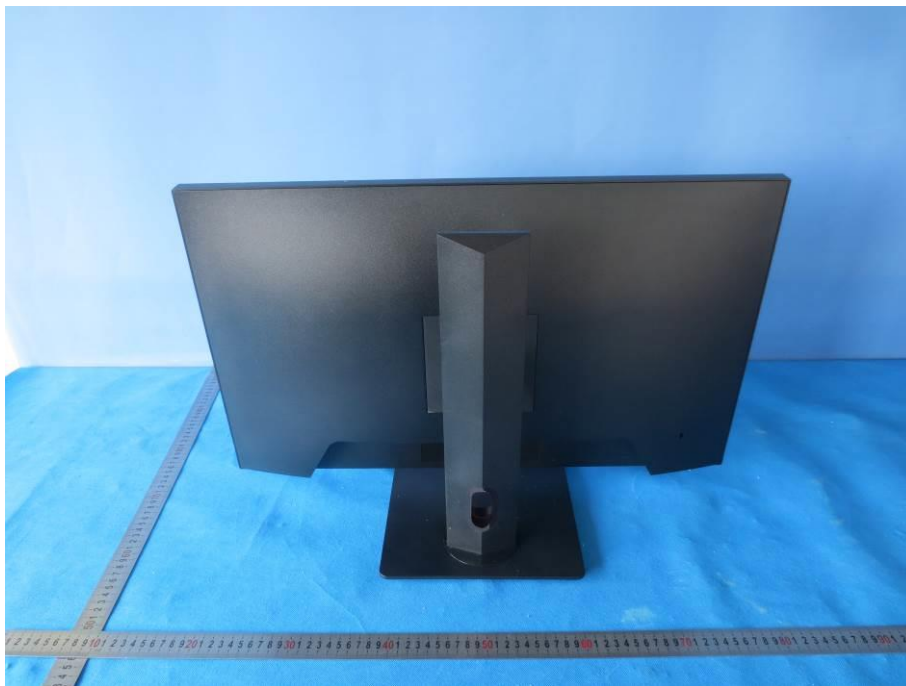
Product type:.....	<input type="checkbox"/> Televisions <input checked="" type="checkbox"/> Monitors <input type="checkbox"/> Digital signage displays <input type="checkbox"/> Broadcast displays; <input type="checkbox"/> Professional displays <input type="checkbox"/> Security displays <input type="checkbox"/> Digital interactive whiteboards <input type="checkbox"/> Digital photo frames
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TABLE: List of critical components					
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹
Panel of TFT-LCD	Hefei Huntkey Display Technology Co. Ltd.	HK270****_**** (*=0-9, A-Z, a-z or blank)	27" TFT-LCD	--	--
Switching Adapter	Shenzhen Huntkey Electric Co., Ltd	HKA12024050- 7B	Input: 100-240V~, 50/60Hz, 2.0A. Output: 24.0Vdc, 5.0A, 120.0W VI energy efficiency	--	--
Supplementary information: --					



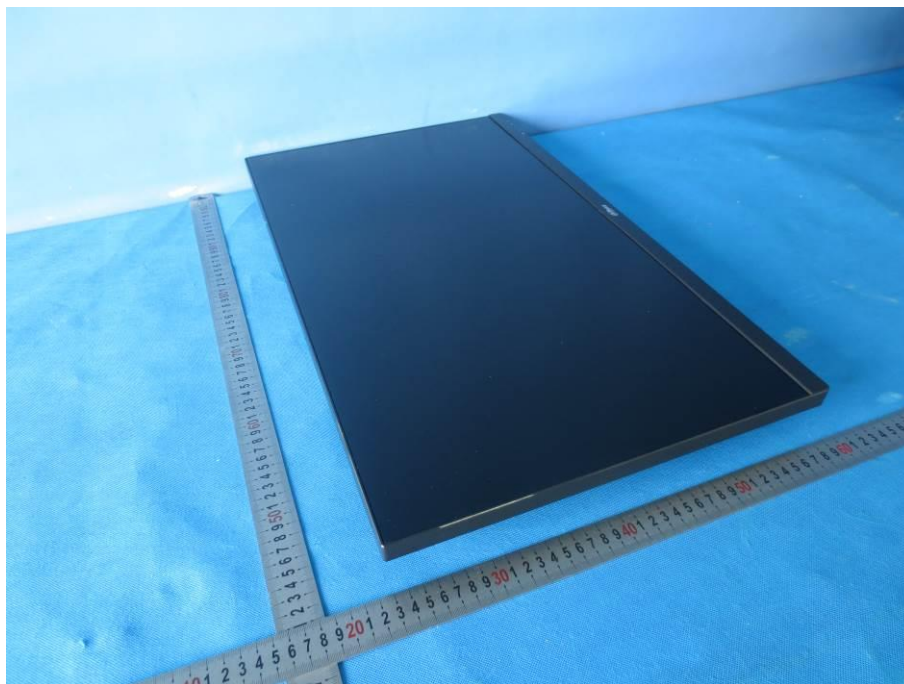
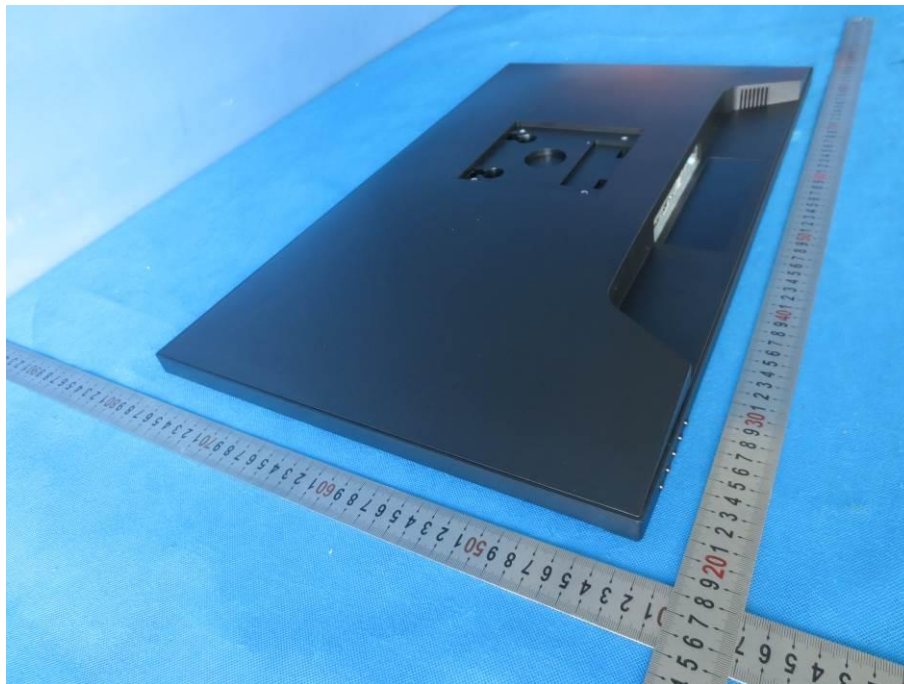
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Picture of Sample





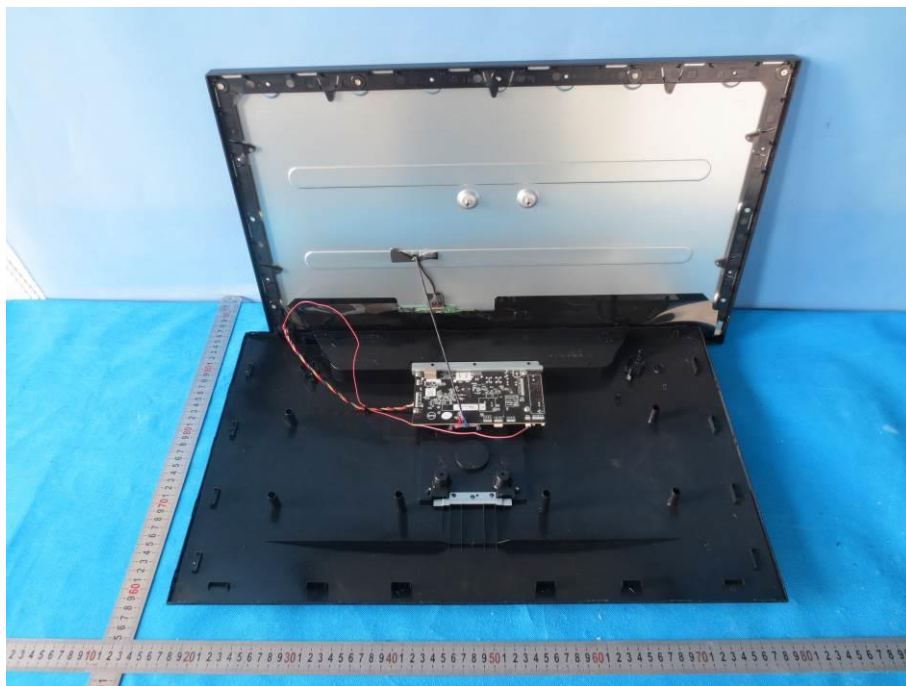
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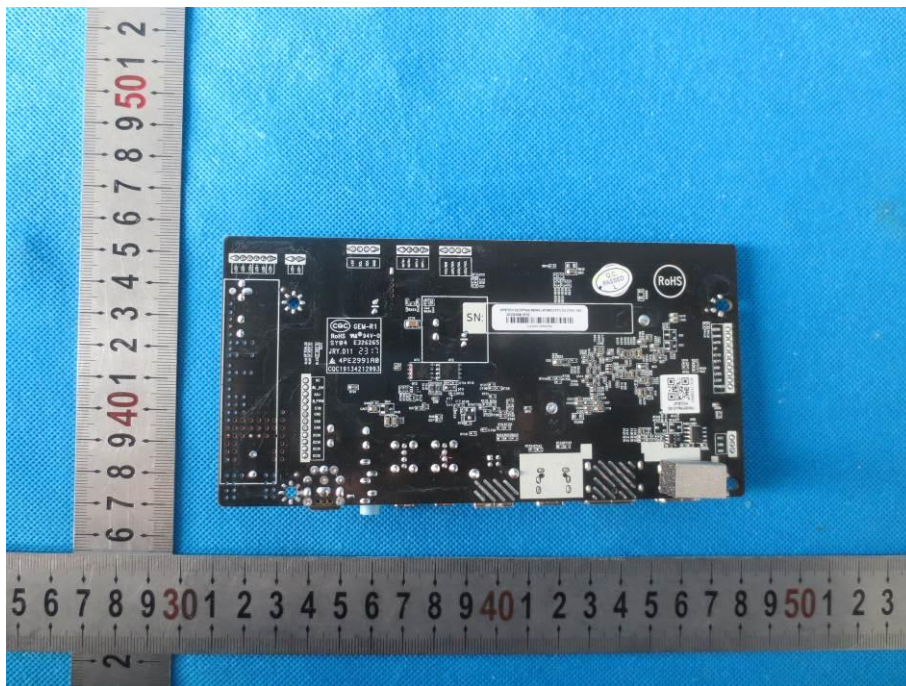
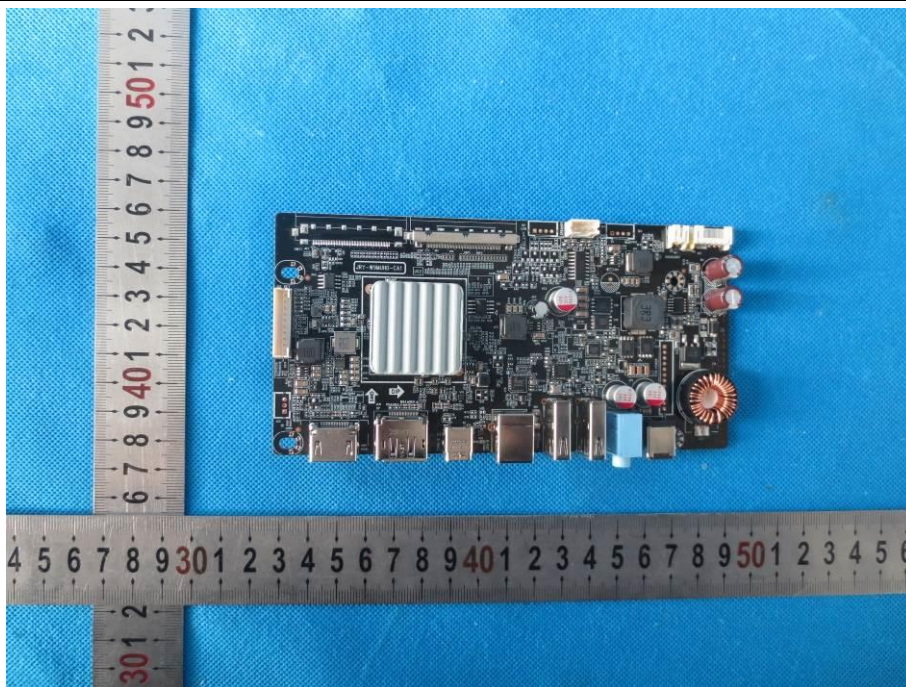


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Pictures of rating label



Note:

The instruction sheet and marking should be translated to the language where the product will be sold.

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2. General Conditions for measurement

Test Parameters	
Ambient Temperature (°C):	24.5°C
Test Voltage(s) (V):.....	230V
Test Frequency (ies) (Hz):.....	50Hz
THD of the electricity supply system:	0.791%
Input signal:	Dynamic broadcast-content video signal representing typical broadcast TV content
Input terminal for the audio and video test signals: .	HDMI signal input terminal

The power consumption of the sample has been tested in the following conditions:

- Off mode
- Standby mode
- On-mode(Home mode)

The unit was operated to the HDMI mode.

This unit model: DHI-LM27-U401A.

3. Results of measurements and evaluation

<p>COMMISSION REGULATION (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009</p>
--

3.1. Ecodesign requirements for electronic displays Commission Regulation (EU) 2019/2021

Clause	ANNEX II Ecodesign requirements	Result-Remark	Verdict												
A	ENERGY EFFICIENCY REQUIREMENTS		P												
1	<p>ENERGY EFFICIENCY INDEX LIMITS FOR ON-MODE</p> <p>The energy efficiency index (EEI) of an electronic display shall be calculated using the following equation: corr is a correction factor of 10 for OLED electronic displays that do not</p> $EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3) + corr}$ <p>A represents the screen area in dm² P_{measured} is the measured power in Watts in on mode in the normal configuration, in standard dynamic range (SDR)</p> <p>Apply the ABC allowance in point B (1). This shall apply until 28 February 2023. corr shall be zero in all other cases. The EEI of an electronic display shall not exceed the maximum EEI (EEI_{max}) according to the limits in Table 1 from the dates indicated.</p> <p style="text-align: center;">Table 1 EEI limits for on-mode</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>EEI_{max} for electronic displays with resolution up to 2 138 400 pixels (HD)</th> <th>EEI_{max} for electronic displays with resolution above 2 138 400 pixels (HD) and up to 8 294 400 pixels (UHD-4k)</th> <th>EEI_{max} for electronic displays with resolution above 8 294 400 pixels (UHD-4k) and for MicroLED displays</th> </tr> </thead> <tbody> <tr> <td>1 March 2021</td> <td style="text-align: center;">0,90</td> <td style="text-align: center;">1,10</td> <td style="text-align: center;">n.a.</td> </tr> <tr> <td>1 March 2023</td> <td style="text-align: center;">0,75</td> <td style="text-align: center;">0,90</td> <td style="text-align: center;">0,90</td> </tr> </tbody> </table>		EEI _{max} for electronic displays with resolution up to 2 138 400 pixels (HD)	EEI _{max} for electronic displays with resolution above 2 138 400 pixels (HD) and up to 8 294 400 pixels (UHD-4k)	EEI _{max} for electronic displays with resolution above 8 294 400 pixels (UHD-4k) and for MicroLED displays	1 March 2021	0,90	1,10	n.a.	1 March 2023	0,75	0,90	0,90	<p>Calculation base on measured value: EEI: 0.685</p> <p>Calculation base on declared value: EEI: 0.864</p>	P
		EEI _{max} for electronic displays with resolution up to 2 138 400 pixels (HD)	EEI _{max} for electronic displays with resolution above 2 138 400 pixels (HD) and up to 8 294 400 pixels (UHD-4k)	EEI _{max} for electronic displays with resolution above 8 294 400 pixels (UHD-4k) and for MicroLED displays											
1 March 2021	0,90	1,10	n.a.												
1 March 2023	0,75	0,90	0,90												
B	ALLOWANCES AND ADJUSTMENTS FOR THE PURPOSE OF THE EEI CALCULATION AND FUNCTIONAL REQUIREMENTS		N/A												
1	Electronic displays with automatic brightness control (ABC)		N/A												



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	<p>Electronic displays qualify for a 10 % reduction in P_{measured}, if they meet all of the following requirements:</p> <p>(a) ABC is enabled in the normal configuration of the electronic display and persists in any other standard dynamic range configuration available to the end-user</p> <p>(b) the value of P_{measured}, in the normal configuration, is measured with ABC disabled or, if ABC cannot be disabled, in an ambient light condition of 100 lux measured at the ABC sensor;</p> <p>(c) the value of P_{measured} with ABC disabled, if applicable, shall be equal to or greater than the on mode power measured with ABC enabled in an ambient light condition of 100 lux measured at the ABC sensor;</p> <p>(d) with ABC enabled, the measured value of the on mode power must decrease by 20 % or more when the ambient light condition, measured at the ABC sensor, is reduced from 100 lux to 12 lux; and</p> <p>(e) the ABC control of the display screen luminance meets all of the following characteristics when the ambient light condition measured at the ABC sensor changes:</p> <ul style="list-style-type: none"> —the measured screen luminance at 60 lux is between 65 % and 95 % of the screen luminance measured at 100 lux; —the measured screen luminance at 35 lux is between 50 % and 80 % of the screen luminance measured at 100 lux; and —the measured screen luminance at 12 lux is between 35 % and 70 % of the screen luminance measured at 100 lux. 		N/A
2	Forced menu and set up menus		P
	<p>Electronic displays may be placed on the market with a forced menu on initial activation proposing alternative settings. Where a forced menu is provided, the normal configuration shall be set as default choice, otherwise the normal configuration shall be the out-of-the-box setting.</p>		P
	<p>If the user selects a configuration other than the normal configuration and this configuration results in a higher power demand than the normal configuration, a warning message about the likely increase in energy use shall appear and confirmation of the action shall be explicitly requested.</p>		N/A
	<p>If the user selects a setting other than those that are part of the normal configuration and this setting results in a higher energy consumption than the normal configuration, a warning message about the likely increase in energy consumption shall appear and confirmation of the action explicitly requested.</p>		P
	<p>A change by the user in a single parameter in any setting shall not trigger any change in any other energy-relevant parameter, unless unavoidable. In such a case a warning message shall appear about the change of other parameters and the confirmation of the change shall be explicitly requested.</p>		P
3	Peak white luminance ratio		P



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	In the normal configuration, the peak white luminance of the electronic display in a 100 lux ambient light viewing environment shall not be less than 220 cd/m ² or, if the electronic display is primarily intended for close viewing by a single user, not less than 150 cd/m ² . If the electronic display's peak white luminance in the normal configuration is set to lower values, it shall not be less than 65 % of the peak white luminance of the display, in a 100 lux ambient light viewing environment in the brightest on mode configuration.	The electronic display is primarily intended for close viewing by a single user: Normal configuration luminance: 177.99cd/m²	P																																
C	OFF MODE, STANDBY AND NETWORKED STANDBY MODE REQUIREMENTS		P																																
1	<p>Power demand limits other than on-mode Electronic displays shall not exceed power demand limits in the different modes and conditions listed in Table 2:</p> <p style="text-align: center;">Table 2 power demand limits other than on-mode, in Watts</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Off mode</th> <th style="text-align: center;">Standby mode</th> <th style="text-align: center;">Networked standby mode</th> </tr> </thead> <tbody> <tr> <td>Maximum limits</td> <td style="text-align: center;">0,30</td> <td style="text-align: center;">0,50</td> <td style="text-align: center;">2,00</td> </tr> <tr> <td>Allowances for additional functions when present and enabled</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Status display</td> <td style="text-align: center;">0,0</td> <td style="text-align: center;">0,20</td> <td style="text-align: center;">0,20</td> </tr> <tr> <td> Deactivation using room presence detection</td> <td style="text-align: center;">0,0</td> <td style="text-align: center;">0,50</td> <td style="text-align: center;">0,50</td> </tr> <tr> <td> Touch functionality, if usable for activation</td> <td style="text-align: center;">0,0</td> <td style="text-align: center;">1,00</td> <td style="text-align: center;">1,00</td> </tr> <tr> <td> HiNA function</td> <td style="text-align: center;">0,0</td> <td style="text-align: center;">0,0</td> <td style="text-align: center;">4,00</td> </tr> <tr> <td>Total maximum power demand with all additional functions when present and enabled</td> <td style="text-align: center;">0,30</td> <td style="text-align: center;">2,20</td> <td style="text-align: center;">7,70</td> </tr> </tbody> </table>			Off mode	Standby mode	Networked standby mode	Maximum limits	0,30	0,50	2,00	Allowances for additional functions when present and enabled				Status display	0,0	0,20	0,20	Deactivation using room presence detection	0,0	0,50	0,50	Touch functionality, if usable for activation	0,0	1,00	1,00	HiNA function	0,0	0,0	4,00	Total maximum power demand with all additional functions when present and enabled	0,30	2,20	7,70	P
	Off mode	Standby mode	Networked standby mode																																
Maximum limits	0,30	0,50	2,00																																
Allowances for additional functions when present and enabled																																			
Status display	0,0	0,20	0,20																																
Deactivation using room presence detection	0,0	0,50	0,50																																
Touch functionality, if usable for activation	0,0	1,00	1,00																																
HiNA function	0,0	0,0	4,00																																
Total maximum power demand with all additional functions when present and enabled	0,30	2,20	7,70																																
	Off mode: P _{off} < 0.30 W (Max. limit)	Measured: 0.09W	P																																
	Standby mode: P _{standby} < 0.50 W (Max. limit)	Measured: 0.14W	P																																
	Networked Standby mode: P _{nsm} < 2.00 W (Max. limit)		N/A																																
	Standby mode , allowances for additional functions when present and enabled		N/A																																
	- Status display: P _{standby_adder} = 0.20 W		N/A																																
	- Deactivation using room presence detection: P _{standby_adder} = 0.50 W		N/A																																
	- Touch functionality, if usable for activation: P _{standby_adder} = 1.00 W		N/A																																
	Total maximum power demand with all additional functions when present and enabled < 2.20 W		N/A																																
	Networked Standby mode , allowances for additional functions when present and enabled		N/A																																
	- Status display: P _{nsb_adder} = 0.20 W		N/A																																
	- Deactivation using room presence detection: P _{nsb_adder} = 0.50 W		N/A																																

	- Touch functionality, if usable for activation: $P_{nsb_adder} = 1.00\text{ W}$		N/A
	- HiNA function: $P_{nsb_adder} = 4.00\text{ W}$		N/A
	Total maximum power demand with all additional functions when present and enabled: $P_{nsb} < 7.70\text{ W}$		N/A
2	Availability of off, standby and networked standby modes		P
	Electronic displays shall provide off mode or standby mode or a networked standby mode or other modes which do not exceed the applicable power demand requirements for standby mode.		P
	The configuration menu, instruction manuals and other documentation, if any, shall refer to off mode, standby mode or networked standby mode using those terms.		P
	Automatic switch to off mode and/or standby mode and/or another mode which does not exceed the applicable power demand requirements for standby mode shall be set as default, including for networked displays where the network interface is enabled when in on mode.		P
	Networked standby mode shall be disabled in 'normal configuration' of a networked television. The end user shall be prompted to confirm the activation of networked standby, if it is needed for a chosen remotely activated function, and must be able to disable it.		N/A
	Networked electronic displays shall comply with the requirements for networked standby mode with the reactivation trigger device connected to the network and ready to activate a trigger instruction when required to. With networked standby mode disabled, networked electronic displays shall comply with the requirements of standby mode.		N/A
3	Automatic standby in televisions		N/A
	(a) Televisions shall provide a power management function, enabled as delivered by the manufacturer that, within 4 hours following the last user interaction, shall switch the television from on mode into standby mode or networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode. Before such automatic switch, televisions shall show, for at least 20 seconds, an alert message warning the user of the impending switch, with possibility of delaying or temporarily cancelling it.		N/A
	(b) If the television provides a function allowing the user to shorten, extend or disable the 4-hour period for automatic mode transitions detailed in (a), a warning message shall appear about a potential increase in energy use and a confirmation of the new setting must be requested when an extension beyond the 4-hour period or disabling is selected.		N/A
	(c) If the television is equipped with a room presence sensor, the automatic transition from on mode into any mode as detailed in (a) applies if no presence is detected for no more than 1 hour.		N/A



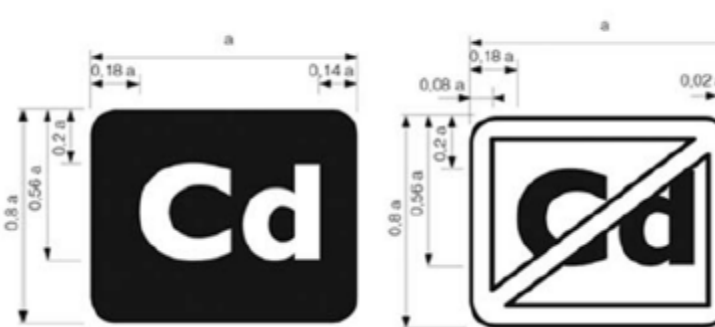
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	(d) Televisions with various selectable input sources shall prioritise the power management protocols of the signal source selected and displayed over those default power management mechanisms described in the paragraphs (a) to (c) above.		N/A
4	Automatic standby in displays other than televisions		P
	Electronic displays other than televisions, with various selectable input sources shall switch, as configured in the normal configuration, into standby mode, networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode when no input is detected by any input source for over 10 seconds and, for digital interactive whiteboards and for broadcast displays, for over 60 minutes.		P
	Before triggering such a switch, a warning message shall be displayed and the switch completed within 10 minutes.		P
D	MATERIAL EFFICIENCY REQUIREMENTS		P
1.	Design for dismantling, recycling and recovery		P
	(a) Manufacturers, importers or their authorised representatives shall ensure that joining, fastening or sealing techniques do not prevent the removal, using commonly available tools, of the components indicated in point 1 of Annex VII of Directive 2012/19/EU on WEEE or in Article 11 of Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, when present.		P
	(b) The derogations indicated in Article 11 of Directive 2006/66/EC about permanent connection between the electronic display and the battery or accumulator apply.		P
	(c) Manufacturers, importers or their authorised representatives shall, without prejudice to point 1 of Article 15 of Directive 2012/19/EU, make available, on a free-access website, the dismantling information needed to access any of the products components referred to in point 1 of Annex VII of Directive 2012/19/EU.		P
	(d) This dismantling information shall include the sequence of dismantling steps, tools or technologies needed to access the targeted components.		P
	(e) This end of life information shall be available until at least 15 years after the placing on the market of the last unit of a product model.		P
2.	Marking of plastic components		P
	Plastic components heavier than 50 g:		--



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	<p>(a) Shall be marked by specifying the type of polymer with the appropriate standard symbols or abbreviated terms set between the punctuation marks '>' and '<' as specified in available standards. The marking shall be legible.</p> <p>Plastic components are exempt from marking requirements in the following circumstances:</p> <p>(i) the marking is not possible because of the shape or size;</p> <p>(ii) the marking would impact on the performance or functionality of the plastic component; and</p> <p>(iii) marking is technically not possible because of the molding method.</p> <p>For the following plastic components no marking is required:</p> <p>(i) packaging, tape, labels and stretch wraps;</p> <p>(ii) wiring, cables and connectors, rubber parts and anywhere not enough appropriate surface area is available for the marking to be of a legible size;</p> <p>(iii) PCB assemblies, PMMA boards, optical components, electrostatic discharge components, electromagnetic interference components, speakers;</p> <p>(iv) transparent parts where the marking would obstruct the function of the part in question.</p>		P
	<p>(b) Components containing flame retardants shall additionally be marked with the abbreviated term of the polymer followed by hyphen, then the symbol 'FR' followed by the code number of the flame retardant in parentheses. The marking on the enclosure and stand components shall be clearly visible and readable.</p>		P
3.	Cadmium logo		P

	<p>Electronic displays with a screen panel in which concentration values of Cadmium (Cd) by weight in homogeneous materials exceed 0,01 % as defined in Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, shall be labelled with the 'Cadmium inside' logo. The logo shall be clearly visible durable, legible and indelible. The logo shall be in the form of the following graphic:</p> <p style="text-align: center;">Cadmium inside Cadmium free</p>  <p>The dimension of 'a' shall be greater than 9 mm and the typeface to be used is 'Gill Sans'.</p>		P
	<p>An additional 'Cadmium inside' logo shall be firmly attached internally on the display panel or molded in a position clearly visible to workers once the external back cover bearing the external logo is removed.</p>		N/A
	<p>A 'Cadmium free' logo shall be used if concentration values of Cadmium (Cd) by weight in any homogeneous material part of the display do not exceed 0,01 % as defined in Directive 2011/65/EU.</p>		P
4.	<p>Halogenated flame retardants</p>		P
	<p>The use of halogenated flame retardants is not allowed in the enclosure and stand of electronic displays.</p>		P
5.	<p>Design for repair and reuse</p>		P



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	<p>(a) Availability of spare parts:</p> <p>(1) manufacturers, importers or authorised representatives of electronic displays shall make available to professional repairers at least the following spare parts: internal power supply, connectors to connect external equipment (cable, antenna, USB, DVD and Blu-Ray), capacitors above 400 microfarads, batteries and accumulators, DVD/Blu-Ray module if applicable and HD/SSD module if applicable for a minimum period of seven years after placing the last unit of the model on the market;</p> <p>(2) manufacturers, importers or authorised representatives of electronic displays shall make available to professional repairers and end-users at least the following spare parts: external power supply and remote control for a minimum period of seven years after placing the last unit of the model on the market;</p> <p>(3) manufacturers shall ensure that these spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance;</p> <p>(4) the list of spare parts concerned by point 1 and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts; and</p> <p>(5) the list of spare parts concerned by point 2 and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.</p>		P
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	<p>(b) Access to repair and maintenance information</p> <p>After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:</p> <p>(1) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:</p> <p>(i) the professional repairer has the technical competence to repair electronic displays and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;</p> <p>(ii) the professional repairer is covered by insurance covering liabilities resulting from its activity, regardless of whether this is required by the Member State;</p> <p>(2) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request by the professional repairer;</p> <p>(3) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information.</p> <p>Once registered, a professional repairer shall have access to the requested repair and maintenance information within one working day after requesting it. The available repair and maintenance information shall include:</p> <ul style="list-style-type: none"> — the unequivocal appliance identification; — a disassembly map or exploded view; — list of necessary repair and test equipment; — component and diagnosis information (such as minimum and maximum theoretical values for measurements); — wiring and connection diagrams; — diagnostic fault and error codes (including manufacturer-specific codes, where applicable); and — data records of reported failure incidents stored on the electronic display (where applicable). 		P
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	<p>(c) Maximum delivery time of spare parts</p> <p>(1) during the period mentioned under point 5(a)(1) and point 5(a)(2), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for electronic displays within 15 working days after having received the order;</p> <p>(2) in the case of spare parts available only to professional repairers, this availability may be limited to professional repairers registered in accordance with point (b).</p>		P
E.	INFORMATION AVAILABILITY REQUIREMENTS		P
	<p>From 1 March 2021, the product manufacturer, importer or authorised representative shall make available the information set out below when placing on the market the first unit of a model or of an equivalent model.</p> <p>The information shall be provided free of charge to third parties dealing with professional repair and reuse of electronic displays (including third party maintenance actors, brokers and spare parts providers).</p>		P
1.	Availability of software and firmware updates		P
	<p>(a) The latest available version of the firmware shall be made available for a minimum period of eight years after the placing on the market of the last unit of a certain product model, free of charge or at a fair, transparent and non-discriminatory cost. The latest available security update to the firmware shall be made available until at least eight years after the placing on the market of the last product of a certain product model, free of charge.</p> <p>(b) Information on the minimum guaranteed availability of software and firmware updates, availability of spare parts and product support shall be indicated in the product information sheet as from Annex V of Regulation (EU) 2019/2013.</p>		P

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Clause	ANNEX III Measurement methods and calculations	Result-Remark	Verdict
	For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and in line with the following provisions.		P
	Where a parameter is declared pursuant to Article 4, its declared value shall be used by the manufacturer, importer or authorised representative for the calculations in this Annex. In the absence of existing relevant standards and until the publication of the references of the relevant harmonised standards in the Official Journal, the transitional testing methods set out in Annex IIIa or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, shall be used.		P
	Measurements and calculations shall meet the technical definitions, conditions, equations and parameters set out in this Annex. Electronic displays which can operate in both 2D and 3D modes shall be tested when they operate in 2D mode.		P
	An electronic display which is split into two or more physically separate units, but placed on the market in a single package, shall, for checking the conformity with the requirements of this Annex, be treated as a single electronic display. Where multiple electronic displays that can be placed on the market separately are combined in a single system, the individual electronic displays shall be treated as single displays.		P
1	General conditions Measurements shall be made at an ambient temperature of 23 °C +/- 5 °C		P



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<p>2</p>	<p>Measurements of on mode power demand Measurements of the power demand referred to in Annex II, point A (1) shall fulfil all of the following conditions: (a) measurements of power demand (P_{measured}) shall be made in the normal configuration; (b) measurements shall be made using a dynamic broadcast-content video signal representing typical broadcast content for electronic displays in standard dynamic range (SDR). The measurement shall be the average power consumed over 10 consecutive minutes; (c) measurements shall be made after the electronic display has been in the off mode or, if an off-mode is not available, in standby mode, for a minimum of 1 hour immediately followed by a minimum of 1 hour in the on mode and shall be completed before a maximum of 3 hours in on-mode. The relevant video signal shall be displayed during the entire on mode duration. For electronic displays that are known to stabilise within 1 hour, these durations may be reduced if the resulting measurement can be shown to be within 2 % of the results that would otherwise be achieved using the durations described here; (d) where ABC is available, measurements shall be made with it switched off. If ABC cannot be switched off, then the measurements shall be performed in an ambient light condition of 100 lux measured at the ABC sensor.</p>		<p>P</p>
<p>3</p>	<p>Measurements of peak white luminance Measurements of the peak white luminance referred to in Annex II, point B.3 shall be made: (a) with a luminance meter, detecting that portion of the screen exhibiting a full (100 %) white image, which is part of a 'full screen test' pattern that does not exceed the average picture level (APL) point where any power limiting or other irregularity occurs in the electronic display luminance drive system affecting the electronic display luminance; (b) without disturbing the luminance meter's detection point on the electronic display whilst switching between any of the conditions referred to in Annex II, point B.3</p>		<p>P</p>

3.2. Peak Luminance Ratio

Peak White Luminance	Measured	Declared	Requirement	Verdict
Home mode, Standard picture mode is the normal configuration, measured peak luminance:	177.99	--	≥ 220 cd/m ² , if the electronic display is primarily intended for close viewing by a single user, not less than 150 cd/m ² .	P
Home mode, Standard picture mode is the brightest on mode configuration, measured peak luminance:	311.41	--	N/A	N/A
Peak White Luminance Ratio	--	--	≥ 65 %	N/A

Comments:

In the normal configuration, the peak white luminance of the electronic display in a 100 lux ambient light viewing environment shall not be less than 220 cd/m² or, if the electronic display is primarily intended for close viewing by a single user, not less than 150 cd/m².

If the electronic display's peak white luminance in the normal configuration is set to lower values, it shall not be less than 65 % of the peak white luminance of the display, in a 100 lux ambient light viewing environment in the brightest on mode configuration.

3.3. Power Consumption Measurement

Operation condition	Measured (W)	Declared(W)	Remark
On mode (SDR)	19.63	25	--
On mode (HDR)	19.70	25	--
Off mode	0.09	0.3	--
Standby mode	0.14	0.5	--
Networked standby mode	--	--	--
Test item(s)	Calculation base on measured value	Calculation base on declared value	Limit
Energy Efficiency Index (EEI)	0.685	0.864	0.9 (from 1 March 2021)
	0.685	0.864	0.75 (from 1 March 2023)

3.4. Calculation of EEI_{label} and classification

Calculation of EEI_{label} and classification according to Energy label regulation (EU) 2019/2013 ANNEX II Energy efficiency class		
Operation condition	Calculation base on measured value	Calculation base on declared value
Viewing surface area, A	20	20
$P_{measuredSDR}$, W	19.63	25
$P_{measuredHDR}$, (if applicable)	19.70	25
$EEI_{label SDR}$	0.682	0.860
$EEI_{label HDR}$, (if applicable)	0.685	0.860
Energy efficiency class SDR	E	F
Energy efficiency class HDR, (if applicable)	E	F
<u>Comments:</u>		



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$$EEI_{label} = \frac{(P_{measured} + 1)}{(3 \times [90 \times \tanh(0,025 + 0,0035 \times (A - 11)) + 4] + 3) + corr_1}$$

A is represents the screen area in dm²

P_{measured} is the measured power in Watts in on mode in the normal configuration

Corr I is a correction factor set as indicated in Table 3

Table 3
corr₁ value

Electronic Display type	corr ₁ value
Television	0,0
Monitor	0,0
Digital signage	0,00062*(lum-500)*A where 'lum' is the peak white luminance, in cd/m ² , of the brightest on mode configuration of the electronic display and A is the screen area in dm ²

The energy efficiency class of an electronic display shall be determined on the basis of its energy efficiency index for labelling (*EEI_{label}*) as set out below.

Energy efficiency classes of electronic displays

Energy Efficiency Class	Energy Efficiency Index (<i>EEI_{label}</i>)
A	<i>EEI_{label}</i> < 0,30
B	0,30 ≤ <i>EEI_{label}</i> < 0,40
C	0,40 ≤ <i>EEI_{label}</i> < 0,50
D	0,50 ≤ <i>EEI_{label}</i> < 0,60
E	0,60 ≤ <i>EEI_{label}</i> < 0,75
F	0,75 ≤ <i>EEI_{label}</i> < 0,90
G	0,90 ≤ <i>EEI_{label}</i>



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4. Equipment used for measurements

Equipment	Model	Calibration due date
Power supply	AFC-31010	2024/5/25
Power Meter	WT310E	2025/5/28
Stop watch	278-682	2023/11/29