Hansecontrol
A QIMA COMPANY

# TEST REPORT
## Commission regulation (EU) 2019/2020 and (EU) 2019/2015 Ecodesign and Energy labelling requirements for Light sources and Separate Control Gear Implementation

| | |
|---|---|
| **Report Number. ..... :** | 22P-004564(A1) |
| Tested by (name + signature)..... | Edward Guo |
| Approved by (name + signature)..... | Joyce Liu |
| **Date of issue ..... :** | **2022-09-05** |
| **Total number of pages..... :** | **27 pages (incl. attachments)** |
| **Testing Laboratory..... :** | **Hermes Hansecontrol Technical Testing Service (Shanghai) Company Limited** |
| **Address ..... :** | **A-2, Lane 315, Jianye Road, Pudong District, Shanghai, China 201201** |
| **Applicant's name ..... :** | EGLO Leuchten GmbH |
| **Address ..... :** | Heiligkreuz 22, 6136 Pill, Austria |
| **Test specification:** | |
| **Standard..... :** | (EU) 2019/2020<br>(EU) 2019/2015<br>(EU) 2021/341<br>(EU) 2021/340 |
| **Test procedure ..... :** | ☒ Method A ☐ Method B |
| **Non-standard test method ..... :** | N/A |

**General disclaimer:**

The test results presented in this report relate only to the object tested.
This report shall not be reproduced, except in full, without the written approval of the Issuing Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the Testing Laboratory, responsible for this Test Report.

All results refer to the particular sample submitted for testing.

Additional Directives or standards may be relevant to the product. After verification of all relevant CE-mark directives the manufacturer may sign a declaration of conformity themselves.

The document shall not be reproduced except in full without prior authorisation from Hermes Hansecontrol Technical Testing Service (Shanghai) Company Limited. This document does not entitle to carry any mark on this or similar products.

**Summary of Testing & Conclusion**

Test samples tested full test.

After the relevant test items except for information requirements, no unsatisfactory findings.

| | |
|---|---|
| **Test item description..... :** | LED bulb |
| **Trade Mark..... :** | - |
| **Manufacturer ..... :** | EGLO Leuchten GmbH |
| **Model/Type reference..... :** | 12221, 12222, 12224 |

| | | |
|---|---|---|
| **Test item particulars:** | LED bulb | |
| **Directionality .....:** | ☐ Directional | ☒ Non-directional |
| **Containing product.....:** | ☐ Yes | ☒ No |
| **Ratings:** | | |
| **Rated voltage & frequency (V, Hz) .....:** | 220-240V~ 50/60Hz | |
| **Rated wattage (0.1 W).....:** | 4.9 | |
| **Rated current (mA) .....:** | 44 | |
| **Declared electrical parameter:** | | |
| **Displacement factor .....:** | - | |
| **Light output within in solid angle of π sr (%) .....:** | - | |
| **$P_{on}$ (W).....:** | 4.9 | |
| **$P_{no}$ (W).....:** | - | |
| **$P_{sb}$ (W).....:** | 0.5 | |
| **$P_{net}$ (W) .....:** | 0.5 | |
| **Weighted energy consumption (Ec) kWh/1000 h .....:** | 4.9 | |
| **New Energy Class.....:** | F | |
| **Colour rendering (Ra).....:** | 80 | |
| **R9 colour rendering.....:** | 0 | |
| **Colour consistence (SDCM) .....:** | ≤6 | |
| **Peak intensity in candela (cd) .....:** | - | |
| **Colour temperature (K) .....:** | 2200 | |
| **Beam angle (˚).....:** | - | |
| **Useful lumen $Φ_{use}$(lm).....:** | 500 | |
| **Light source life (hours).....:** | 15000 | |
| **Lumen maintenance at declared life (%) ....:** | 93.1 | |
| **Survival factor at declared life (%) .....:** | ≥90 | |
| **Application for outdoor.....:** | ☐ Yes | ☒ No |
| **Application for industrial .....:** | ☐ Yes | ☒ No |
| **LED light source (Brand/Model).....:** | XiaMen Dacol | |
| **Separated control gear** | ☐ Yes | ☒ No |

| | |
|---|---|
| **Model.....:** | - |
| **Brand/Manufacturer.....:** | - |
| **Input .....:** | - |
| **Output .....:** | - |

**Possible test case verdicts:**

**- test case does not apply to the test object.....:** N/A

**- test object does meet the requirement .....:** P (Pass)

**- test object does not meet the requirement.....:** F (Fail)

**Testing:**

**Tested on** ☐ Hermes Hansecontrol Shanghai
☒ Manufacturer

**Date of receipt of test item .....:** 2022-01-14

**Date (s) of performance of tests.....:** 2022-01-17 to 2022-06-22

**Copy of package or rating label:**

**-**

**General remarks:**

**Throughout this report a ☐ comma / ☒ point is used as the decimal separator.**

***The test result relate only to the tested items. Unless otherwise stated, the results are assessed on the basis of the above-mentioned requirements. If it is not further specified in the report, the decision rule for stating conformity is based on the Hansecontrol decision rule (https://www.hansecontrol.com/fileadmin/user_upload/CRD_HC_Decision_Rule_for_Hardlines_and_EE_products-V1.pdf).***

***The report shall not be reproduced except in full without the written approval of the testing laboratory.***

**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: test data (7 pages);

Attachment 2: Measurement and calculation (1 page);

Attachment 3: Calculation and comparison (1 page);

Attachment 4: Energy Efficiency Class of Light source (1 page)

Attachment 5: Spectral power distribution diagram (1 page)

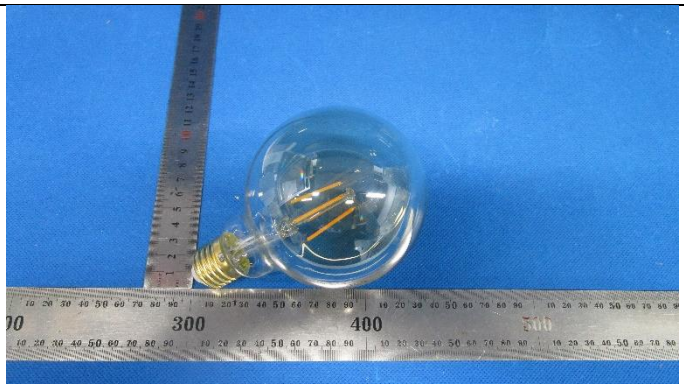
**General product information:**

The LED module intend to use on the final product which shall provide independent LED control gear. And the control gear shall fulfil the relevant requirements of Ecodesign.

**Pictures of test object:**


Overview of sample 12221


Overview of sample 12222




Overview of sample 12224

| Number of the tested samples for each method | | |
|---|---|---|
| **Test item** | ☒ **Method A** | ☐ **Method B** |
| Full-load on-mode power $P_{on}$ (W) | 10 | 5 |
| Displacement factor | 10 | 5 |
| Useful luminous flux $\Phi_{use}$ | 10 | 5 |
| No-load power $P_{no}$ | 10 | 5 |
| Standby power $P_{sb}$ | 10 | 5 |
| Networked standby power $P_{net}$ | 10 | 5 |
| CRI | 10 | 5 |
| Flick | 10 | 5 |
| Stroboscopic effect | 10 | 5 |
| Colour consistency | 10 | 5 |
| Beam angle | 10 | 5 |
| Control gear efficiency | 3 | 5 |
| Lumen maintenance factor | 10 | 5 |
| Survival factor | 10 | 5 |
| Excitation purity | 10 | 5 |
| Correlated colour temperature | 10 | 5 |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| | **(EU) 2019/2020 – Ecodesign requirements – Light Sources** | | P |
| | **Classification** | | - |
| | Lighting technology ..... | ☒ LED<br>☐ Others: | - |
| | Directional or non-directional ..... | ☐ Directional<br>☒ Non-directional | - |
| | Dimmable ..... | ☐ Dimmable<br>☒ Non-dimmable | - |
| | Light | | P |
| | Integrated with light source | | P |
| | Mains voltage (V) ..... : | 220-240V | P |
| | Frequency (Hz)..... : | 50/60Hz | P |

| **Annex I** | **Definitions applicable** | | **P** |
|---|---|---|---|
| 1 | Mains light source (MLS) | | P |
| 2 | Non-mains light source (NMLS) | | N/A |
| 3 | Directional light source (DLS) | | N/A |
| | At least 80% of total luminous flux within a solid angle of π sr (%) ..... : | | N/A |
| 4 | Non-directional light source (NDLS) | | P |
| 5 | Connected light source (CLS) | | P |
| 6 | Connected separated control gear (CSCG) | | N/A |
| 7 | Data-connection parts | | N/A |
| | Wired of wireless data signals | | N/A |
| | Sensed signals | | N/A |
| 8 | Colour-tuneable light source (CTLS) | | P |
| 9 | Excitation purity | | N/A |
| 10 | High-luminance light source (average luminance > 30 cd/mm$^2$) ..... : | | N/A |
| 11 | Luminance (cd/m$^2$) ..... : | | N/A |
| 12 | Average luminance (cd/m$^2$) ..... : | | N/A |
| 30-43 | Type of light source ..... : | LED | P |
| 50 | Flicker $P_{st}$ LM..... : | 0.014 | P |
| **Annex II** | **Energy efficiency requirements** | | |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 2.1 | From 1 September 2021, the declared power consumption of a light source $P_{on}$ shall not exceed the maximum allowed power $P_{onmax}$ (in W), defined as a function of the declared useful luminous flux $\Phi_{use}$ (in lm) and the declared colour rendering index CRI (-) as follows | $P_{on}$: 4.9W<br>$P_{on} \leq P_{onmax}$ | P |
| | $P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R$ ..... | 6.66W | P |
| | Standby power $P_{sb}$ and networked standby power $P_{net}$ of light source | | P |
| | The standby power $P_{sb}$ of a light source shall not exceed 0.5 W ..... | $P_{sb}$: 0.301W | P |
| | The networked standby power $P_{net}$ of a connected light source shall not exceed 0,5 W | $P_{net}$:0.306W | P |
| | The allowable values for $P_{sb}$ and $P_{net}$ shall not be added together | | P |
| | CLS and CSCG designed and marketed specifically for scene-lighting use in film-studios, TV-studios and locations, and photographic studios and locations, or for stage-lighting use in theatres, discos and during concerts or other entertainment events, for connection to high speed control networks (utilising signalling rates of 250 000 bits per second and higher) in always-listening mode, shall be exempt from the requirements on standby ($P_{sb}$) and on networked standby ($P_{net}$) of points 1(a) and 1(b) of Annex II | | N/A |
| 3 | Functional requirements | | P |
| 3.1 | Colour rendering | | P |
| | CRI ≥ 80 .....: | 80 | P |
| | except for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, when a clear indication to this effect is shown on the light source packaging and in all relevant printed and electronic documentation: | | N/A |
| 3.2 | Displacement factor (DF, cos $\varphi_1$) at power input $P_{on}$ for LED and OLED MLS | | N/A |
| | No limited at $P_{on} \leq 5$ W.....: | 4.9 | P |
| | DF ≥ 0.5 at 5 W < $P_{on} \leq$ 10 W .....: | $P_{on}$:<br>DF: | N/A |
| | DF ≥ 0.7 at 10 W < $P_{on} \leq$ 25 W .....: | $P_{on}$:<br>DF: | N/A |
| | DF ≥ 0.9 at 25 W < $P_{on}$ .....: | $P_{on}$:<br>DF: | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 3.3 | Lumen maintenance factor (for LED and OLED) | | P |
| | The lumen maintenance factor $X_{LMF}$% after endurance testing shall be at least $X_{LMF,MIN}$ % calculated as follows | | P |
| | $X_{LMF,MIN}\% = 100 \times e^{\frac{(3000 \times \ln(0.7))}{L_{70}}}$<br>where $L_{70}$ is the declared $L_{70}B_{50}$ lifetime (in hours) | | P |
| | If the calculated value for $X_{LMF,MIN}$ exceeds 96,0 %, an $X_{LMF,MIN}$ value of 96,0 % shall be used | | N/A |
| 3.4 | Survival factor (SF) (for LED and OLED) | | P |
| | At least 9 light sources of the 10 test samples must be operational after completing the endurance testing | | P |
| 3.5 | Colour consistency for LED and OLED light sources | | P |
| | Variation of chromaticity coordinates within a six-step MacAdam ellipse or less | | P |
| 3.6 | Flicker (for LED and OLED MLS) | | P |
| | $P_{st}$ LM ≤ 1.0 at full-load | 0.014 | P |
| 3.7 | Stroboscopic effect (for LED and OLED MLS) | | P |
| | SVM ≤ 0.9 at full-load | 0.001 | P |
| | SVM ≤ 0.4 at full-load (From 2024-09-01) | | N/A |
| | except for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI<80 | | N/A |
| 4 | Information requirements | | N/A |
| 4.1 | Information to be displayed on the light source itself | | N/A |
| | For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the value and physical unit of the useful luminous flux (lm) and correlated colour temperature (K) shall be displayed in a legible font on the surface if, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission | | N/A |
| | For directional light sources, the beam angle (°) shall also be indicated | | N/A |
| | If there is room for only two values, the useful luminous flux and the correlated colour temperature shall be displayed | | N/A |
| | If there is room for only one value, the useful luminous flux shall be displayed | | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| 4.2 | Information to be visibly displayed on the packaging | | N/A |
| 4.2.1 | Light source placed on the market, not in a containing product | | N/A |
| | If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging: | | N/A |
| (a) | the useful luminous flux ($\Phi_{use}$) in a font at least twice as large as the display of the on-mode power ($P_{on}$), clearly indicating if it refers to the flux in a sphere (360º), in a wide cone (120º) or in a narrow cone (90º) | | N/A |
| (b) | the correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set | | N/A |
| (c) | the beam angle in degrees (for directional light sources), or the range of beam angles that can be set | | N/A |
| (d) | electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC) | | N/A |
| (e) | the $L_{70}B_{50}$ lifetime for LED and OLED light sources, expressed in hours | | N/A |
| (f) | the on-mode power ($P_{on}$), expressed in W | | N/A |
| (g) | the standby power ($P_{sb}$), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging | | N/A |
| (h) | the networked standby power ($P_{net}$) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging | | N/A |
| (i) | the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set | | N/A |
| (j) | if CRI< 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, a clear indication to this effect. For HID light sources with useful luminous flux > 4 klm, this indication is not mandatory | | N/A |
| (k) | if the light source is designed for optimum use in non-standard conditions (such as ambient temperature ta≠ 25ºC or specific thermal management is necessary): information on those conditions | | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| (l) | a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods shall be provided on the manufacturer's website | | N/A |
| (m) | if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place | | N/A |
| (n) | if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste | | N/A |
| | Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer; for other items this is also recommended, if space permits | | N/A |
| | For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings.<br>In addition, a range of obtainable values may be indicated | | N/A |
| | The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols | | N/A |
| 5 | Circumvention (Article 7 of EU 2019/2020) | | N/A |
| | The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided. | | N/A |
| | The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update. | | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model:** | **12221** | | | | | | | | | | | |
| **Voltage (V):** | Details see the following | | | | | **Frequency (Hz):** | | | | **50** | | |
| **Φuse measured at:** | Effective luminous flux | | | | | **Ambient (T/air velocity) (°C / m/s)** | | | | 25 / <0.2 | | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| U (V) (1) | 230.0 | 230.1 | 230.0 | 230.0 | 230.0 | 230.0 | 230.1 | 230.0 | 230.0 | 230.1 | 230.0 | - |
| I (mA) (1) | 37 | 38 | 37 | 38 | 38 | 38 | 38 | 37 | 38 | 38 | 38 | - |
| P (W) (1) | 4.66 | 4.74 | 4.68 | 4.69 | 4.73 | 4.72 | 4.70 | 4.66 | 4.69 | 4.69 | 4.70 | - |
| DF (cos φ1) (1)(2)(7) | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.98 | - |
| $\Phi_{use}$ (lm) (1) | 511.1 | 527.8 | 514.3 | 520.6 | 522.1 | 513.7 | 516.3 | 516.7 | 519.7 | 515.0 | 517.7 | - |
| CCT (K) (1) | 2255 | 2234 | 2221 | 2233 | 2246 | 2223 | 2202 | 2226 | 2223 | 2227 | 2229 | - |
| CRI (1)(2) | 83.8 | 83.8 | 83.5 | 83.6 | 83.9 | 83.5 | 83.3 | 83.4 | 83.6 | 83.6 | 83.6 | ≥ 80 3) |
| R9(1) | 16 | 15 | 15 | 15 | 16 | 15 | 14 | 14 | 15 | 15 | 15 | - |
| Color consistency (2) | 1.0 | 0.6 | 1.4 | 0.9 | 0.5 | 1.2 | 2.6 | 1.3 | 1.3 | 0.9 | 1.2 | ≤ 6-step |
| Survival factor @ 3000h (2)(5)(8) | X | X | X | X | X | X | X | X | X | X | 100% | ≥90% |
| $\Phi_{use}$, @ 3000h (8) (lm) | 502.0 | 527.2 | 512.2 | 516.4 | 516.4 | 514.0 | 514.2 | 512.5 | 513.3 | 509.0 | 513.7 | - |
| $X_{LMF}$ @ 3000h (2)(8)(6) | 98.2% | 99.9% | 99.6% | 99.2% | 98.9% | 100.1% | 99.6% | 99.2% | 98.8% | 98.8% | 99.2% | ≥93.1% |
| Flicker (1)(2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | $P_{st}$ LM ≤ 1.0 at full-load |
| Stroboscopic effect (1)(2) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | SVM ≤ 0.4 at full-load 4) |
| Supplementary information: | | | | | | | | | | | | |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** |
|---|---|

(1) initial measurement value after aging of: 30 min
(2) for LED and OLED
(3) except for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(4) for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(5) 'survival factor' means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency. And "X" stands for the test sample still alive at the end of test, "F" stands for the test sample cannot normally operate before the end of test.
(6) 'lumen maintenance factor' ($X_{LMF}$) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux
(7) 'displacement factor (DF) (cos φ1)' means the cosine of the phase angle φ1 between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions
(8) '3000h' refers to the total operation time of the cycling test of (EU)2019/2020 Annex V, the total test time is 3600h (1200 cycle of 150min 'ON' and 30min 'OFF')

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model:** | **12221** | | | | | | | | | | | |
| **Voltage (V):** | | | Details see the above information | | | | | **Frequency (Hz):** | | | 50 | |
| **Φuse measured at:** | | | total luminous flux | | | | | **Ambient (T/air velocity) (°C / m/s)** | | | 25 / <0.2 | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| Chromaticity coordinates (x) (1) | 0.5004 | 0.5028 | 0.5043 | 0.5032 | 0.5015 | 0.5041 | 0.5065 | 0.5041 | 0.5042 | 0.5035 | 0.5035 | - |
| Chromaticity coordinates (y) (1) | 0.4157 | 0.4163 | 0.4165 | 0.4167 | 0.4160 | 0.4164 | 0.4167 | 0.4168 | 0.4164 | 0.4161 | 0.4164 | - |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Measured beam angel (˚) | - | - | - | - | - | - | - | - | - | - | - | - |
| Peak intensity (cd) (1) | - | - | - | - | - | - | - | - | - | - | - | - |
| $\Phi_{use}$ (lm) | - | - | - | - | - | - | - | - | - | - | - | - |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model:** | **12222** | | | | | | | | | | | |
| **Voltage (V):** | Details see the following | | | | | **Frequency (Hz):** | | | | **50** | | |
| **Φuse measured at:** | Effective luminous flux | | | | | **Ambient (T/air velocity) (°C / m/s)** | | | | 25 / <0.2 | | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| U (V) (1) | 230.0 | 230.0 | 230.1 | 230.0 | 230.1 | 230.1 | 230.0 | 230.1 | 230.0 | 230.0 | 230.0 | - |
| I (mA) (1) | 38 | 38 | 38 | 38 | 37 | 38 | 37 | 38 | 38 | 38 | 38 | - |
| P (W) (1) | 4.72 | 4.71 | 4.71 | 4.70 | 4.65 | 4.67 | 4.65 | 4.71 | 4.70 | 4.70 | 4.69 | - |
| DF (cos φ1) (1)(2)(7) | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.975 | 0.98 | - |
| $\Phi_{use}$ (lm) (1) | 506.9 | 507.9 | 510.2 | 508.3 | 499.6 | 506.1 | 496.0 | 514.2 | 512.0 | 505.5 | 506.7 | - |
| CCT (K) (1) | 2239 | 2213 | 2205 | 2229 | 2237 | 2239 | 2236 | 2229 | 2229 | 2237 | 2229 | - |
| CRI (1)(2) | 83.2 | 83.3 | 83.2 | 83.2 | 83.3 | 83.2 | 83.2 | 83.0 | 83.2 | 83.2 | 83.2 | ≥ 80 3) |
| R9(1) | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 14 | 14 | - |
| Color consistency (2) | 0.4 | 2.0 | 2.6 | 1.0 | 0.4 | 0.7 | 0.7 | 1.2 | 0.9 | 0.6 | 1.1 | ≤ 6-step |
| Survival factor @ 3000h (2)(5)(8) | X | X | X | X | X | X | X | X | X | X | 100% | ≥90% |
| $\Phi_{use}$, @ 3000h (8) (lm) | 506.3 | 502.4 | 500.9 | 507.8 | 500.1 | 507.5 | 495.1 | 512.5 | 511.7 | 506.8 | 505.1 | - |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $X_{LMF}$ @ 3000h (2)(8)(6) | 99.9% | 98.9% | 98.2% | 99.9% | 100.1% | 100.3% | 99.8% | 99.7% | 99.9% | 100.3% | 99.7% | ≥93.1% |
| Flicker (1)(2) | 0.005 | 0.003 | 0.002 | 0.001 | 0.003 | 0.002 | 0.001 | 0.003 | 0.004 | 0.002 | 0.003 | $P_{st}$ LM ≤ 1.0 at full-load |
| Stroboscopic effect (1)(2) | 0.001 | 0.002 | 0.002 | 0.001 | 0.004 | 0.002 | 0.001 | 0.001 | 0.03 | 0.001 | 0.005 | SVM ≤ 0.4 at full-load 4) |

Supplementary information:
(1) initial measurement value after aging of: 30 min
(2) for LED and OLED
(3) except for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(4) for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(5) 'survival factor' means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency. And "X" stands for the test sample still alive at the end of test, "F" stands for the test sample cannot normally operate before the end of test.
(6) 'lumen maintenance factor' ($X_{LMF}$) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux
(7) 'displacement factor (DF) (cos φ1)' means the cosine of the phase angle φ1 between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions
(8) '3000h' refers to the total operation time of the cycling test of (EU)2019/2020 Annex V, the total test time is 3600h (1200 cycle of 150min 'ON' and 30min 'OFF')

| **Attachment 1:** | **Test data** | | |
|---|---|---|---|
| **Model:** | **12222** | | |
| **Voltage (V):** | Details see the above information | **Frequency (Hz):** | 50 |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Φuse measured at:** | | total luminous flux | | | | | **Ambient (T/air velocity) (°C / m/s)** | | | 25 / <0.2 | | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| Chromaticity coordinates (x) (1) | 0.5023 | 0.5054 | 0.5066 | 0.5036 | 0.5025 | 0.5027 | 0.5029 | 0.5040 | 0.5034 | 0.5027 | 0.5036 | - |
| Chromaticity coordinates (y) (1) | 0.4162 | 0.4169 | 0.4173 | 0.4165 | 0.4161 | 0.4166 | 0.4166 | 0.4170 | 0.4163 | 0.4164 | 0.4166 | - |
| Measured beam angel (˚) | - | - | - | - | - | - | - | - | - | - | - | - |
| Peak intensity (cd) (1) | - | - | - | - | - | - | - | - | - | - | - | - |
| $\Phi_{use}$ (lm) | - | - | - | - | - | - | - | - | - | - | - | - |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model:** | **12224** | | | | | | | | | | | |
| **Voltage (V):** | | Details see the following | | | | | **Frequency (Hz):** | | | **50** | | |
| **Φuse measured at:** | | Effective luminous flux | | | | | **Ambient (T/air velocity) (°C / m/s)** | | | 25 / <0.2 | | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| U (V) (1) | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | 230.1 | - |
| I (mA) (1) | 37 | 38 | 37 | 37 | 37 | 37 | 37 | 38 | 37 | 38 | 37 | - |
| P (W) (1) | 4.64 | 4.69 | 4.70 | 4.73 | 4.70 | 4.69 | 4.67 | 4.71 | 4.71 | 4.73 | 4.70 | - |
| DF (cos φ1) (1)(2)(7) | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.98 | - |
| $\Phi_{use}$ (lm) (1) | 512.6 | 514.8 | 512.2 | 529.8 | 523.7 | 519.5 | 516.9 | 523.6 | 513.3 | 521.6 | 518.8 | - |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CCT (K) (1) | 2219 | 2236 | 2143 | 2225 | 2157 | 2212 | 2166 | 2164 | 2226 | 2163 | 2191 | - |
| CRI (1)(2) | 82.3 | 82.6 | 83.0 | 82.5 | 83.2 | 82.2 | 83.4 | 83.3 | 82.2 | 83.1 | 82.8 | ≥ 80 3) |
| R9(1) | 10 | 12 | 15 | 11 | 16 | 10 | 17 | 16 | 10 | 16 | 13 | - |
| Color consistency (2) | 1.3 | 0.6 | 6.2 | 0.9 | 5.2 | 1.8 | 4.6 | 4.7 | 1.2 | 4.8 | 3.1 | ≤ 6-step |
| Survival factor @ 3000h (2)(5)(8) | X | X | X | X | X | X | X | X | X | X | 100% | ≥90% |
| $\Phi_{use}$, @ 3000h (8) (lm) | 525.3 | 513.1 | 511.6 | 529.7 | 517.7 | 518.4 | 516.5 | 526.4 | 512.3 | 516.9 | 518.8 | - |
| $X_{LMF}$ @ 3000h (2)(8)(6) | 102.5% | 99.7% | 99.9% | 100.0% | 98.8% | 99.8% | 99.9% | 100.5% | 99.8% | 99.1% | 100.0% | ≥93.1% |
| Flicker (1)(2) | 0.001 | 0.002 | 0.001 | 0.001 | 0.003 | 0.001 | 0.002 | 0.001 | 0.001 | 0.002 | 0.002 | $P_{st}$ LM ≤ 1.0 at full-load |
| Stroboscopic effect (1)(2) | 0.002 | 0.003 | 0.004 | 0.002 | 0.002 | 0.001 | 0.003 | 0.002 | 0.004 | 0.003 | 0.003 | SVM ≤ 0.4 at full-load 4) |

Supplementary information:
(1) initial measurement value after aging of: 30 min
(2) for LED and OLED
(3) except for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(4) for HID with $\Phi_{use}$ > 4 klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80
(5) 'survival factor' means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency. And "X" stands for the test sample still alive at the end of test, "F" stands for the test sample cannot normally operate before the end of test.
(6) 'lumen maintenance factor' ($X_{LMF}$) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux
(7) 'displacement factor (DF) (cos φ1)' means the cosine of the phase angle φ1 between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor is

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 1:** | **Test data** |
|---|---|
| measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions<br>(8) '3000h' refers to the total operation time of the cycling test of (EU)2019/2020 Annex V, the total test time is 3600h (1200 cycle of 150min 'ON' and 30min 'OFF') | |

| **Attachment 1:** | **Test data** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Model:** | **12224** | | | | | | | | | | | |
| **Voltage (V):** | | Details see the above information | | | | **Frequency (Hz):** | | | | 50 | | |
| **Φuse measured at:** | | total luminous flux | | | | **Ambient (T/air velocity) (°C / m/s)** | | | | 25 / <0.2 | | |
| **Test item** | **Measured Value** | | | | | | | | | | **Average** | **Limit** |
| **Sample No.:** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | - | - |
| Chromaticity coordinates (x) (1) | 0.5041 | 0.5027 | 0.5111 | 0.5034 | 0.5096 | 0.5050 | 0.5080 | 0.5084 | 0.5039 | 0.5087 | 0.5065 | - |
| Chromaticity coordinates (y) (1) | 0.4158 | 0.4163 | 0.4144 | 0.4156 | 0.4144 | 0.4161 | 0.4134 | 0.4138 | 0.4165 | 0.4140 | 0.4150 | - |
| Measured beam angel (˚) | - | - | - | - | - | - | - | - | - | - | - | - |
| Peak intensity (cd) (1) | - | - | - | - | - | - | - | - | - | - | - | - |
| $\Phi_{use}$ (lm) | - | - | - | - | - | - | - | - | - | - | - | - |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | | | |
|---|---|---|---|
| | **(EU) 2019/2020 – Ecodesign requirements – Separate Control Gear** | | N/A |
| | Definition | | N/A |
| | Type of load.....: | ☐ LED<br>☐ OLED<br>☐ CFL<br>☐ HL<br>☐ FL<br>☐ LFL<br>☐ Magnetic induction light source<br>☐ HID | N/A |
| | Functionality .....: | ☐ Programmable<br>☐ Dimmable<br>☐ Multi-wattage | N/A |
| | Data connection .....: | ☐ Sensing connections<br>☐ Wired<br>☐ Wireless | N/A |
| | tc (ºC).....: | | N/A |
| | ta (ºC).....: | | N/A |
| 2 | Minimum energy efficiency requirements of separate control gear | | |
| | From 1 September 2021, the minimum energy efficiency requirements of a separate control gear operating at full-load shall apply (Annex II, cl.1, (b), table 3 of EU 2019/2020) (Based on: Declared output power of the control gear ($P_{cg}$) or declared power of the light source ($P_{ls}$) in W, as applicable) | | N/A |
| 2.1 | Control gear for HL light sources $P_{cg}$<br>Minimum energy efficiency 0.91 | $P_{cg}$:<br>Energy efficiency: | N/A |
| 2.2 | Control gear for FL light sources | | |
| | $P_{ls}$ ≤ 5W, Minimum energy efficiency 0.71 | $P_{ls}$:<br>Energy efficiency: | N/A |
| | 5W < $P_{ls}$ ≤ 100W, energy efficiency<br>$P_{ls}/(2 \times \sqrt{(Pls/36)} + 38/36 \times Pls+1)$ | $P_{ls}$:<br>Energy efficiency: | N/A |
| | 100W < $P_{ls}$, Minimum energy efficiency 0.91 | $P_{ls}$:<br>Energy efficiency: | N/A |
| 2.3 | Control gear for HID light sources | | N/A |
| | $P_{ls}$ ≤ 30W, Minimum energy efficiency 0.78 | $P_{ls}$:<br>Energy efficiency: | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | 30W < $P_{ls}$ ≤ 75W, energy efficiency 0.85 | $P_{ls}$:<br>Energy efficiency: | N/A |
| | 75W < $P_{ls}$ ≤ 105W, energy efficiency 0.87 | $P_{ls}$:<br>Energy efficiency: | N/A |
| | 105W < $P_{ls}$ ≤ 405W, energy efficiency 0.90 | $P_{ls}$:<br>Energy efficiency: | N/A |
| | 405W < $P_{ls}$, Minimum energy efficiency 0.92 | $P_{ls}$:<br>Energy efficiency: | N/A |
| | Control gear for LED or OLED light sources $P_{cg}$<br>Minimum energy efficiency<br>$P_{cg}^{0.81}/(1.09 \times P_{cg}^{0.81} + 2.10)$ | $P_{ls}$:<br>Energy efficiency: | N/A |
| 2.5 | Multi-wattage separate control gears shall comply with the requirements in Table 3 according to the maximum declared power on which they can operate | | N/A |
| 2.6 | The no-load power $P_{no}$ of a separate control gear shall not exceed 0.5 W. This applies only to separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for no-load mode | | N/A |
| 2.7 | The standby power $P_{sb}$ of a separate control gear shall not exceed 0.5 W | | N/A |
| 2.8 | The networked standby power $P_{net}$ of a connected separate control gear shall not exceed 0.5 W. The allowable values for $P_{sb}$ and $P_{net}$ shall not be added together | | N/A |
| 3 | Information requirements | | |
| (a) | the maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID) | | N/A |
| (b) | the type of light source(s) for which it is intended | | N/A |
| (c) | the efficiency in full-load, expressed in percentage | | N/A |
| (d) | the no-load power ($P_{no}$), expressed in W and rounded to the second decimal, or the indication that the gear is not intended to operate in no-load mode. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites | | N/A |
| (e) | the standby power ($P_{sb}$), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites | | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| (f) | where applicable, the networked standby power ($P_{net}$), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites | | N/A |
| (g) | a warning if the control gear is not suitable for dimming of light sources or can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods. In the latter cases, detailed information on the conditions in which the control gear can be used for dimming shall be provided on the manufacturer's or importer's website | | N/A |
| (h) | a QR-code redirecting to a free-access website of the manufacturer, importer or authorised representative, or the internet address for such a website, where full information on the control gear can be found | | N/A |
| | The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols | | N/A |
| 3.2 | Information to be visibly displayed on a free-access website of the manufacturer, importer or authorized representative | | N/A |
| (a) | the information specified in point 3.1, except 3.1(h) | | N/A |
| (b) | the outer dimensions in mm | | N/A |
| (c) | the mass in grams of the control gear, without packaging, and without lighting control parts and non-lighting parts, if any and if they can be physically separated from the control gear | | N/A |
| (d) | instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes | | N/A |
| (e) | if the control gear can be used with dimmable light sources, a list of minimum characteristics that the light sources should have to be fully compatible with the control gear during dimming, and possibly a list of compatible dimmable light sources | | N/A |
| (f) | recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU | | N/A |
| | The information does not need to use the exact wording in the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols | | N/A |
| 3.3 | Technical documentation | | N/A |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | The information specified in point 3.2 shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC | | N/A |
| 4 | Circumvention (Article 7 of EU 2019/2020) | | N/A |
| | The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided. | | N/A |
| | The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update. | | N/A |
| | | | |

| (EU) 2019/2020 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 2** | **Measurement and calculation** | | | | | N/A |
|---|---|---|---|---|---|---|
| **Model:** | | | | | | |
| | Wattage 1 | Wattage 2 | Wattage 3 | No-Load | Standby | Networked standby |
| | 100% | 100% | 100% | | | |
| ☐ Output #1 | | | | | | |
| Current (mA) | - | - | - | - | - | - |
| Voltage (V) | - | - | - | - | - | - |
| Power (W) | - | - | - | - | - | - |
| | | | | | | |
| ☐ Output #2 | | | | | | |
| Current (mA) | - | - | - | - | - | - |
| Voltage (V) | - | - | - | - | - | - |
| Power (W) | - | - | - | - | - | - |
| | | | | | | |
| Input | | | | | | |
| Input Voltage (V) | - | - | - | - | - | - |
| Input current (A) | - | - | - | - | - | - |
| Input Power (W) | - | - | - | - | - | - |
| Frequency (Hz) | - | - | - | - | - | - |
| True Power Factor | - | - | - | - | - | - |
| | | | | | | |
| Energies Efficiency | - | - | - | - | - | - |

Supplementary information:

'control gear efficiency' means the output power that supplies a light source divided by the input power of a separate control gear using the conditions and methods defined in standards.

Any lighting control parts and non-lighting parts are disconnected, switched off or set to minimum power consumption according to manufacturer's instructions and subtracting this power consumption from the overall input power.

| (EU) 2019/2015 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| | (EU) 2019/2015 – Energy Labelling requirements – Light sources | | P |
|---|---|---|---|
| 7 | Method for calculating the total mains efficacy (Annex II, EU 2019/2015) | | P |
| 7.1 | Calculation the total mains efficacy | | P |
| | The energy efficiency class of light sources shall be determined as set out in Annex II, Table 1 of EU 2020/2015 | Details see attachment 3 | P |
| | on the basis of the total mains efficacy $\eta_{TM}$, which is calculated by dividing the declared useful luminous flux $\Phi_{use}$ (expressed in lm) by the declared on mode power consumption $P_{on}$ (expressed in W) and multiplying by the applicable factor $F_{TM}$ of Annex II, Table 2 of EU 2019/2015 as follow:<br><br>$\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM}$ (lm/W) | Details see attachment 3 | P |
| | declared useful luminous flux $\Phi_{use}$ (expressed in lm) | Details see attachment 3 | P |
| | declared on mode power consumption $P_{on}$ (expressed in W) | Details see attachment 3 | P |
| | applicable factor $F_{TM}$ of Annex II, Table 2 of EU 2019/2015.....: | 1.000 | P |
| 7.2 | Calculation of the energy consumption | | P |
| | The weighted energy consumption (Ec) is calculated in kWh/1000 h as follows and is rounded to two decimal places:<br>$Ec=P_{on}\times1000h/1000$ | Details see attachment 3 | P |
| 8 | Evaluation | | P |
| | Declared values are not more favorable then value based on measured data | Details see attachment 4 | P |
| | | | |

| (EU) 2019/2015 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 3** | **Calculation and Comparison** | | **P** |
|---|---|---|---|
| **Model:** | **12221** | | |
| **Test item** | **Rated value** | **Measured value** | **Deviation** |
| Beam angel (º) | - | - | - |
| $\Phi_{use}$ (lm) | 500 | 517.7 | 3.5% |
| $P_{on}$ (W) | 4.9 | 4.70 | -4.1% |
| $\eta_{TM}$ | 102.0 | 110.1 | 7.9% |
| Energy efficiency class | F | E | - |
| EC (kWh/1000h) | 4.9 | 4.7 | -4.1% |
| Supplementary information: | | | |

| **Attachment 3** | **Calculation and Comparison** | | **P** |
|---|---|---|---|
| **Model:** | **12222** | | |
| **Test item** | **Rated value** | **Measured value** | **Deviation** |
| Beam angel (º) | - | - | - |
| $\Phi_{use}$ (lm) | 500 | 506.7 | 1.3% |
| $P_{on}$ (W) | 4.9 | 4.69 | -4.3% |
| $\eta_{TM}$ | 102.0 | 108.0 | 5.9% |
| Energy efficiency class | F | F | - |
| EC (kWh/1000h) | 4.9 | 4.69 | -4.3% |
| Supplementary information: | | | |

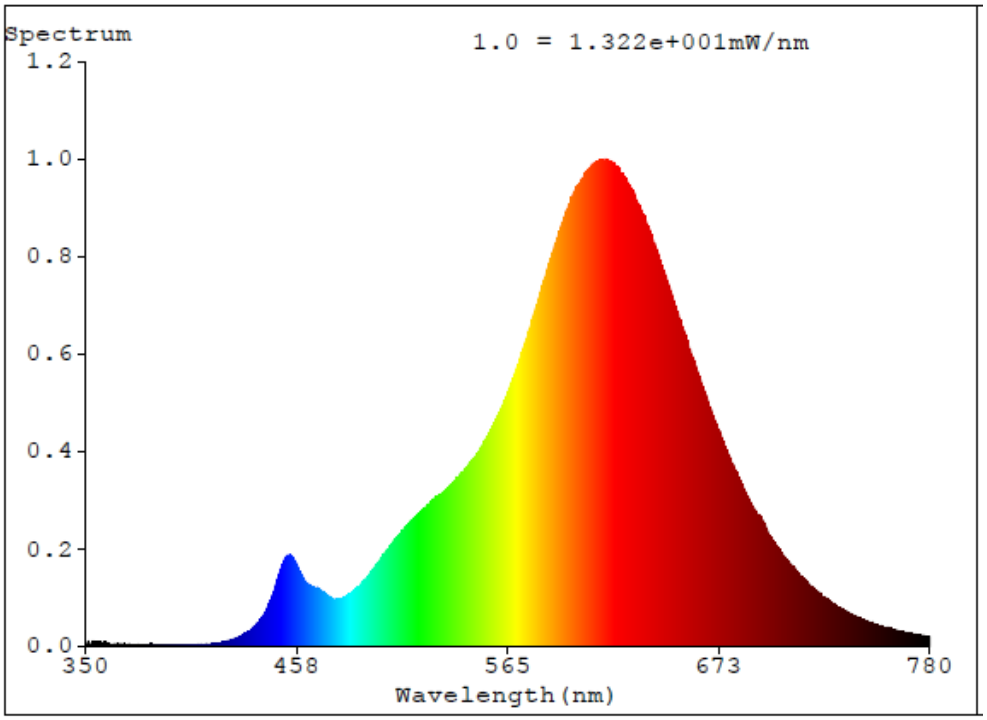
| **Attachment 3** | **Calculation and Comparison** | | **P** |
|---|---|---|---|
| **Model:** | **12224** | | |
| **Test item** | **Rated value** | **Measured value** | **Deviation** |
| Beam angel (º) | - | - | - |
| $\Phi_{use}$ (lm) | 500 | 518.8 | 3.8% |
| $P_{on}$ (W) | 4.9 | 4.70 | -4.1% |
| $\eta_{TM}$ | 102.0 | 110.4 | 8.2% |
| Energy efficiency class | F | E | - |
| EC (kWh/1000h) | 4.9 | 4.7 | -4.1% |
| Supplementary information: | | | |

| (EU) 2019/2015 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| **Attachment 4** | **Energy Efficiency Class of light source** | **-** |
|---|---|---|
| **Energy efficiency class** | **Total mains efficacy ηTM (lm/W)** | **-** |
| A | $210 \leq \eta_{TM}$ | ☐ |
| B | $185 \leq \eta_{TM} < 210$ | ☐ |
| C | $160 \leq \eta_{TM} < 185$ | ☐ |
| D | $135 \leq \eta_{TM} < 160$ | ☐ |
| E | $110 \leq \eta_{TM} < 135$ | ☐ |
| F | $85 \leq \eta_{TM} < 110$ | ☒ |
| G | $\eta_{TM} < 85$ | ☐ |

| (EU) 2019/2015 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |

| Attachment 5 | Spectral power distribution diagram | - |
|---|---|---|




**- END OF REPORT -**