

# Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires

| Report reference No            | SZ2220908-40764E-SF  |  |  |  |  |
|--------------------------------|--|--|--|--|--|
| Compiled by (+ signature)      | Engineer: Zero Gao   |  |  |  |  |
| Approved by (+ signature)      | Team Leader: Harrison Huang  |  |  |  |  |
| Date of issue                  | 2022-09-15   |  |  |  |  |
| Testing laboratory             | Bay Area Compliance Laboratories Corp.(Dongguan)   |  |  |  |  |
| Address                        | No.12, Pulong East 1st Road, Tangxia Town, Dongguan, China                                 |  |  |  |  |
| Testing location               | Same as above  |  |  |  |  |
| Applicant                      | Hongli Zhihui Group Co., Ltd. Guangzhou Branch   |  |  |  |  |
| Address                        | Room316, Building 2, No.1,Xianke Yi Road, Huadong Town, Huadu                              |  |  |  |  |
|                                | District, Guangzhou,China  |  |  |  |  |
| Standard                       | IEC TR 62778:2014  |  |  |  |  |
| Test sample(s) received:       | 2022-09-13   |  |  |  |  |
| Test in period                 | 2022-09-15   |  |  |  |  |
| Procedure deviation            | N.A.   |  |  |  |  |
| Non-standard test method       | N.A.   |  |  |  |  |
| Type of test object            | LEDpackage   |  |  |  |  |
| Trademark                      | N.A.   |  |  |  |  |
| Model/type reference           | HL-AS-2835D3W-2C-S1-08L-PCT-HR3(R9)-XJ   |  |  |  |  |
| Multiple model                 | N.A.   |  |  |  |  |
| Manufacturer                   | Hongli Zhihui Group Co., Ltd. Guangzhou Branch   |  |  |  |  |
|                                | Room316, Building 2, No.1,Xianke Yi Road, Huadong Town, Huadu<br>District, Guangzhou,China |  |  |  |  |
| Rating:                        | Input: 6Vdc, 80mA  |  |  |  |  |
| Copy of marking plate:<br>None |  |  |  |  |  |



| Test item particulars  |   |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|
| Product evaluated:   | <ul> <li>☑LED package</li> <li>☑ LED module</li> <li>☑ Lamp</li> <li>☑ Luminaire</li> </ul> |  |  |  |  |  |  |
| Rated voltage (V)  | See rating  |  |  |  |  |  |  |
| Rated current (mA)   | See rating  |  |  |  |  |  |  |
| Rated Luminance (Mcd/m <sup>2</sup> )  | Not specified   |  |  |  |  |  |  |
| Component report data used   | <ul> <li>Not applicable</li> <li>LED package</li> <li>LED module</li> <li>Lamp</li> </ul>   |  |  |  |  |  |  |
| Possible test case verdicts:   |   |  |  |  |  |  |  |
| -test case does not apply to the test object:N(.A.)  |   |  |  |  |  |  |  |
| -test object does meet the requirementP(ass)   |   |  |  |  |  |  |  |
| -test object does not meet the requirement   |   |  |  |  |  |  |  |
| General remarks:   |   |  |  |  |  |  |  |
| The test results presented in this report relate only to the object tested.<br>This report shall not be reproduced, except in full, without the written approval of the Issuing testing<br>laboratory.<br>"(See Enclosure #)" refers to additional information appended to the report.<br>"(See appended table)" refers to a table appended to the report.<br>Throughout this report a point is used as the decimal separator.<br>List of test equipment must be kept on file and available for review.<br><b>Remark:</b><br>Appendix A EUT photos |   |  |  |  |  |  |  |
| General product information:   |   |  |  |  |  |  |  |
| "EUT" as referred in this report is a LEDpackage, and the input  | rating is 6Vdc, 80mA.   |  |  |  |  |  |  |



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Requirement + Test

Clause

Result - Remark Verdict

| 7   | MEASUREMENT INFORMATION FLOW   |               |   |  |  |  |
|-----|--|---------------|---|--|--|--|
| 7.1 | Basic flow   |               |   |  |  |  |
|     | 'Law of conservation of luminance' applied   |               |   |  |  |  |
|     | Use of only true luminance/radiance values   |               | Р |  |  |  |
|     | In case of luminaire:<br>The light source is operated in the luminaire under<br>similar conditions as when tested as a component |               | Р |  |  |  |
|     | In case E <sub>thr</sub> value for RG2 was established the peak value was derived from angular light distribution                |               |   |  |  |  |
| 7.2 | Conditions for the radiance measurement  |               |   |  |  |  |
|     | Standard condition applied (200mm distance, 0,011rad field of view)  |               | Р |  |  |  |
|     | Non-standard condition applied   |               | N |  |  |  |
| 7.3 | Special cases (I): Replacement by a lamp or LED module of another type   |               |   |  |  |  |
|     | Light source is a white light source   |               | N |  |  |  |
|     | Evaluation done based on highest luminance   |               | N |  |  |  |
|     | Evaluation done based on CCT value   |               | N |  |  |  |
| 7.4 | Special cases (II): Arrays and clusters of primary light sources   |               |   |  |  |  |
|     | LED package is evaluated as:   | RG0 unlimited | N |  |  |  |
|     | E <sub>thr</sub> of LED package applies to array   |               | N |  |  |  |
| 8   | RISK GROUP CLASSIFICATION  |               |   |  |  |  |
|     | Risk group achieved:   |               | Р |  |  |  |
|     | Risk Group 0 unlimited   |               | N |  |  |  |
|     | Risk Group 1 unlimited   |               | Ν |  |  |  |
|     | - E <sub>thr</sub> 1208 (lx) :<br>Distance to reach RG1136(mm) :   | RG1           | Р |  |  |  |



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IEC TR 62778
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Clause

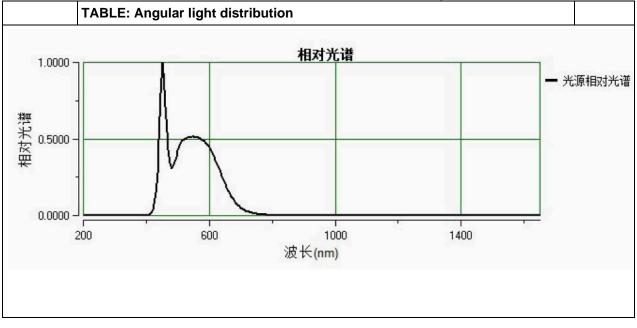
Requirement + Test

Result - Remark Verdict

|                               | TABLE: Spectroradiometric measurement    |                |  |   |                       |                 |  |  |
|-------------------------------|--|----------------|--|---|-----------------------|-----------------|--|--|
|                               | Measurement perf                         | ormed o        | on:  | <ul> <li>☑LED package</li> <li>□ LED module</li> <li>□ Lamp</li> <li>□ Luminaire</li> </ul> |                       |                 |  |  |
|                               | Model number                             |                |  | <br>HL-AS-2835D3W-2C-S1-08L-PCT-<br>HR3(R9)-XJ  |                       |                 |  |  |
|                               | Test voltage (V)                         |                |  | .6Vdc   |                       |                 |  |  |
|                               | Test current (mA)<br>Test frequency (Hz) |                |  |   |                       | .80mA           |  |  |
|                               |  |                |  |   |                       |                 |  |  |
|                               | Ambient, t(°C)                           |                |  |   |                       | .26             |  |  |
|                               | Measurement distance                     |                |  |   |                       | ⊠ 20 cm<br>□ cm |  |  |
|                               | Source size                              |                |  |   |                       |                 |  |  |
|                               | Field of view                            |                | . ☐ 100 mrad<br>☐ 11 mrad<br>⊠4.8 mrad (for small sources) |   | _                     |                 |  |  |
| Item                          |  | Symb<br>ol     | Units  |   | Result                | Remark          |  |  |
| Correlated colour temperature |  | ССТ            | к  | 660   | 4                     |                 |  |  |
| x/y colour coordinates        |  | x/y            |  | 0.31  | 01/0.3342             |                 |  |  |
| Blue light hazard radiance    |  | L <sub>B</sub> | W/(m <sup>2</sup> •sr <sup>1</sup> )                       | 8.16  | 64x10 <sup>3</sup>    |                 |  |  |
| Blue light hazard irradiance  |  | E <sub>B</sub> | W/m <sup>2</sup>   | 4.61  | 16 x 10 <sup>-1</sup> |                 |  |  |
| Luminance                     |  | L              | cd/m <sup>2</sup>  | 9.86  | 64x10 <sup>6</sup>    |                 |  |  |
| Illuminance                   |  | E              | lx   | 558   |                       |                 |  |  |
| Supplement                    | ary information: NA                      |                |  |   |                       |                 |  |  |



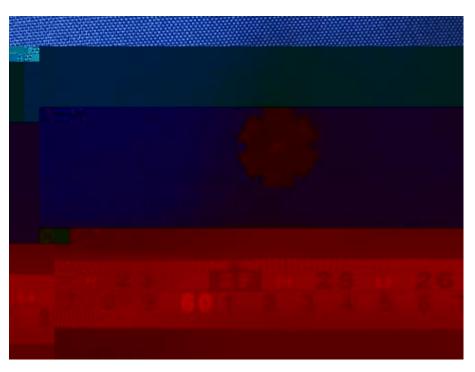
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# Appendix A - EUT Photos

#### Theoverall viewofEUT





#### **Directions:**

1. The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report.

2.Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

5. This report cannot be reproduced except in full, without prior written approval of the Company.

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\*\*\* End of report \*\*\*