# Test Report

**Report No.: GZEE230500189431**
**Date: 2023-06-19**

The following sample(s) was/were submitted and identified on behalf of the client as:

| | |
|---|---|
| Applicant: | Guangzhou Tianxin Photoeletric Co., Ltd.<br>#15-1, JinGu Road South, Xiutang, Huadong Town, Huadu District, Guangzhou, Guangdong, China |
| Manufacturer: | Same as applicant |
| Factory: | Same as applicant |
| Testing location/address: | SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch<br>198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China |
| Standard(s): | IEC 62471-7: 2023<br>Photobiological safety of lamps and lamp systems ï Part 7: Light sources and luminaires primarily emitting visible radiation |
| Test item description: | LED chip |
| Trade Mark/Brand: | ð |
| Model/Type reference: | TX-2016W8VSA1-NP3CD-01H95 |
| Ratings: | Max DC 2 A; 9,25 W |
| Test result: | See page 11 |
| Remark: | Throughout this report a comma is used as the decimal separator. |

Alex Tan
Reviewer
E&E Safety Laboratory

Junny Huang
Project Engineer

**Copy of marking plate**
N/A

**Summary of testing:**
The LED chip was tested under DC 2 A.

**Use of uncertainty of measurement for decisions on conformity (decision rule) :**
No decision rule is specified by the standard, when comparing the measurement result with the applicable limit according to the specification in that standard. The decisions on conformity are made without applying the measurement uncertainty (ñsimple acceptanceò decision rule, previously known as ñaccuracy methodò).

**Test item particulars** ..... :

**Product evaluated .....:** ☒ **Light source**
☐ **Luminaire**

**Component report data used .....:** ☒ **Not applicable**
☐ **LED package**
☐ **LED module**
☐ **Lamp**
Report number:

**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**

Date of receipt of test item ..... : 2023-05-26

Date (s) of performance of tests ..... : 2023-05-27 to 2023-06-01

**General product information:**
LED chip, can emit the white light when powered.

| IEC 62471-7 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **4** | **Optical radiation hazards of light sources and luminaires** | | **P** |
| | The hazards considered in this document are summarized in Table 1 and described in detail in the remainder | | **P** |
| | If measurements are necessary, they shall be carried out in accordance with IEC 62471:2006 unless otherwise specified in this document. | | P |
| | For light sources with pulse width modulation (PWM), emission levels of continuous light (continuous wave (CW)) are applied. | | N/A |
| | For luminaires with adjustable beam angle the most severe condition shall be selected for each assessment. | | N/A |
| | The evaluation of a luminaire is understood to mean the evaluation of a luminaire with the intended normal use of the specified light sources or with the light sources installed | | N/A |
| **5** | **Actinic UV hazards exposure for skin and eye (200 nm to 400 nm)** | | **P** |
| 5.2 | Actinic UV assessment for light sources | | P |
| | Light sources shall be assessed and classified according to the three ranges as follows: | | P |
| | a) $K_{S,v}$ Ò2 mW·klmī 1 | | P |
| | b) 2 mW·klmī 1 < $K_{S,v}$ Ò6 mW·klmī 1 | | N/A |
| | c) $K_{S,v}$ > 6 mW·klmī 1 | | N/A |
| 5.3 | Actinic UV assessment for luminaires | | N/A |
| | The ultraviolet hazard efficacy of luminous radiation $K_{S,v}$ of luminaires shall not exceed 2 mW·klmī 1. | | N/A |
| | According to the actinic UV evaluation of the light source, the following requirements for luminaires shall be fulfilled so that the luminaire can be used without restrictions: | | N/A |
| | a) For luminaires operating with light sources whose evaluation has resulted in a value $K_{S,v}$ of Ò2 mW Ł klmī 1 no tests or evaluations are required. | | N/A |
| | b) For luminaires operating with light sources whose evaluation has resulted in a value 2 m mW·klmī 1 < $K_{S,v}$ Ò6 mW·klmī 1 a protective shield is required. | | N/A |

| IEC 62471-7 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | c) For luminaires operating with light sources whose evaluations have resulted in a value exceeding $K_{S,v}$ = 6 mW·klm$^{-1}$ a protective shield or front glass is required. | | N/A |
| | If no assessment results according to 5.2 are provided for the light source, the value of $K_{S,v}$ shall be calculated from the spectral irradiance measurements specified in IEC 62471 | | N/A |
| | Luminaires which are not able to generate an actinic UV irradiance $E_S$ higher than 0,001 W·m$^{-2}$ when assessed in accordance with IEC 62471:2006 at 200 mm distance, are deemed to comply with the requirements of this Subclause 5.3 | | N/A |
| **6** | **UV-A hazard assessment for the eye lens (315 nm to 400 nm)** | | P |
| 6.2 | UV-A light source and luminaire assessment | | P |
| | For light sources emitting visible radiation, a cumulative direct viewing duration into the light sources is expected to be no longer than 1 000 s over the course of 8 h. | | P |
| | No UV-A tests are necessary for light sources and luminaires except where UV-A is intentionally added to the visible light. | | N/A |
| | Luminaires shall be assessed as they are delivered and can be used by the user ï if functions cannot be switched off, they are also assessed. | | N/A |
| | The assessment of UV-A radiation shall be carried out in the direction with the highest UV-A irradiance.<br>Luminaires which are not able to generate an | | P |

| IEC 62471-7 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | The light sources shall be operated and evaluated under conditions with the highest luminous flux | | P |
| | When lamps are used in luminaires without additional focusing optics a FOV of 11 mrad at 200 mm distance may also be applied. | | N/A |
| | The technical documentation of the light sources shall indicate the maximum blue light hazard radiance measured under the above conditions or the corresponding application group for the luminaires according to Table 2. The measured emission value $L_B$ shall be the basis for the selection of the application group according to Table 2. | | N/A |
| 7.3 | Blue light hazard assessment for luminaires | | N/A |
| | Luminaires shall comply with the emission limits given in Table 2 relevant to that application group. | | N/A |
| | The procedure for blue light hazard assessment of luminaires is as follows: | | N/A |
| | ï Luminaires are assigned for specific applications (BLH-A to BLH-C) according to the technical design | | N/A |
| | ï Based on the exposure limits of the ICNIRP, the emission limits per application group are then specified as "Blue light radiance emission limits *L*B" in Table 2 | | N/A |
| | ï Luminaires are evaluated at the distance specified for the application. The measured emission level shall be below the emission limit value | | N/A |
| | If a light source is classified into an application group according to the procedure in 7.2, the data can be transferred to the luminaire without any additional test on the luminaire | | N/A |
| | The following restrictions and permissions shall apply to the transfer of blue light hazard radiance results from the light sources to the luminaire | | N/A |
| | ï The result of a light source specified for application group BLH-A can be used in luminaires and applications of groups BLH-A, BLH-B and BLH-C, without additional measurement. | | N/A |
| | ï The result of a light source specified for application group BLH-B can be used in luminaires and applications of groups BLH-B and BLH-C, without additional measurement. A measurement of the luminaire is necessary if the light source is used in application group BLH-A. | | N/A |

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**1 Measurement conditions**

Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.
The seasoning time for fluorescent or High Intensity Discharge (HID) types is typically 100 h, 0 h for LED lamp.

The sample was measured in a dark room with ambient temperature 25°C±1°C & Max. 65 % Rh.

Measure distance:

☒ $K_{S,v}$ : The hazard values shall be reported as either irradiance or radiance values at a distance of 200 mm;

☒ $E_S$, $E_{UVA}$, $L_R$, $E_{IR}$ : The hazard values shall be reported at a distance of 200 mm;

☒ $L_B$ : The hazard values shall be reported at a distance of 200 mm;

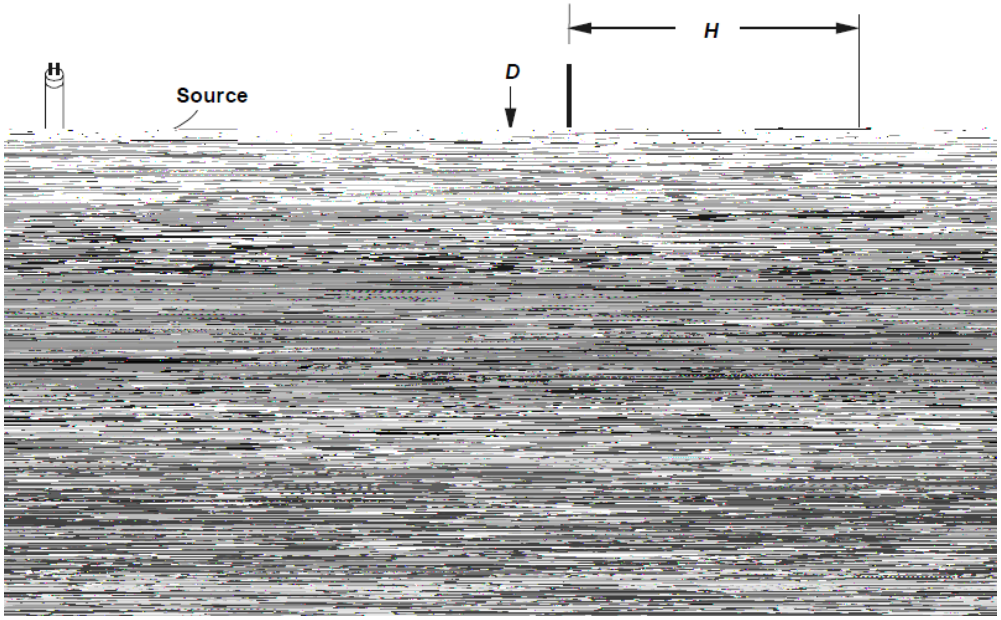
**2 Measurement procedure**



**Measurement procedureuuuuuuuuuuu (u)-(za)8(rd)8( )-7(va)8(l)8(u)8(e)8(s )-7(sh)8(a)8(l)8(l)8( )-7(b)8(e)8( )-6**

2.2 Radiance measurements - Standard method

As with irradiance measurements, the minimum aperture stop diameter *D*, as shown in Figure 5.2, corresponds to a 7 mm pupil diameter.
The instrument shall be calibrated to read in absolute incident radiant power per unit receiving area and per unit solid angle of acceptance averaged over the field of view (FOV) of the instrument. Summary of the ELs see table 5.5.




*2.3 Pulse width measurement for pulsed sources (only for Pulse lamp)*
The determination of $\alpha_t$, the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.

| TABLE: Emission measurement & limits of continuous wave | | | | | | |
|---|---|---|---|---|---|---|
| | **Measurement performed on:** | | | | ☒ **Light source** ☐ **Luminaire** | |
| | **Model number..... :** | | | | TX-2016W8VSA1-NP3CD-01H95 | |
| | **Test voltage (V)..... :** | | | | ½ | ½ |
| | **Test current (mA)..... :** | | | | 2000 | ½ |
| | **Test frequency (Hz) ..... :** | | | | ½ | ½ |
| | **Ambient, t (°C) ..... :** | | | | 25 | ½ |
| Risk | spectrum | Symbol | Units | FOV (mrad) | Emission Measurement | |

**Photo documentation:**

Details of: View of the product

View:

☒ general

☐ front

☐ rear

☐ right

☐ left

☐ top

☐ bottom

- - -