

# Test Report

**Report No.: GZEE231200489431**  
**Amendment 02 Date: 2026-03-31**

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

**Applicant:** Shenzhen Chengxing Electronic Technology Co., Ltd.  
Room 705 - 709, Nanguang Building, No.1004 Huafu Road, Futian District, Shenzhen, China

**Manufacturer:** XINGLIGHT  
Room 705 - 709, Nanguang Building, No.1004 Huafu Road, Futian District, Shenzhen, China

**Factory:** Same as manufacturer

**Testing location/address:** SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch  
198 Kezhu Road, Science City, Economic & Technology Development Area, Guangzhou, Guangdong, China

**Standard(s):** IEC 62471:2006  
Photobiological safety of lamps and lamp systems

**Test item description:** LED

**Trade Mark/Brand:** XINGLIGHT

**Model/Type reference:** XL-1608SURC, 0201, 0402, 0404, 0602, 0603, 0802, 0805, 0807, 1204, 1205, 1206, 1209, 1210, 1615, 3227, 4228, 2520, 2121, 3332, **0401, 3224, 1515, 3527, 2020, 15-22C, 15-22B, 70-01B, 70-01C, 26-21, 1816, 2016, 3220, 2008, 4437, 1217, 2522, 4335**

**Ratings:** DC 3 - 20 mA, 1,8 - 3,4 V

**Test result:** The test sample belongs to RG0

**Remark:** Throughout this report a comma is used as the decimal separator.

Alex Tan  
Reviewer  
E&E Safety Laboratory

Junny Huang  
Project Engineer



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Copy of marking plate N/A
Summary of testing: The test model XL-1608SURC was tested under 20 mA DC. It belongs to RG0 according to IEC 62471:2006.
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 ("simple acceptance" decision rule, previously known as "accuracy method").
Test item particulars ..... : Tested lamp..... : <input checked="" type="checkbox"/> continuous wave lamps <input type="checkbox"/> pulsed lamps Tested lamp system ..... : — Lamp cap ..... : — Bulb..... : — Seasoning of lamps according IEC standard ... : 0 h
Testing Date of receipt of test item ..... : 2023-12-19 Date (s) of performance of tests ..... : 2023-12-19 to 2023-12-29
General product information: The product can emit red light when powered. All models used the same die and they only differ in the package size. XL-1608SURC was selected to conduct the full test.  Revision History: 1 <sup>st</sup> Revision Summary: Based on and superseded the original summary report GZEE231200489431 dated 2024-01-08. This revision included the below changes: - Updated the Manufacturer and factory information on page 1. - Add new models 3332, it was same as model XL-1608SURC except package size. After reviewed, no additional test was considered necessary.  2 <sup>nd</sup> Revision Summary: Based on and superseded the original summary report GZEE231200489431 Amendment 01 dated 2025-04-03. This revision included the below changes: - Add new models 0401, 3224, 1515, 3527, 2020, 15-22C, 15-22B, 70-01B, 70-01C, 26-21, 1816, 2016,



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3220, 2008, 4437, 1217, 2522, 4335, it was same as model XL-1608SURC except package size.  
- Updated the applicant, manufacturer, factory information and Rating on page 1.  
After reviewed, no additional test was considered necessary.



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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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$  & Max. 65 % Rh.

Measure distance:

For lamps intended for general lighting service (GLS), the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm;

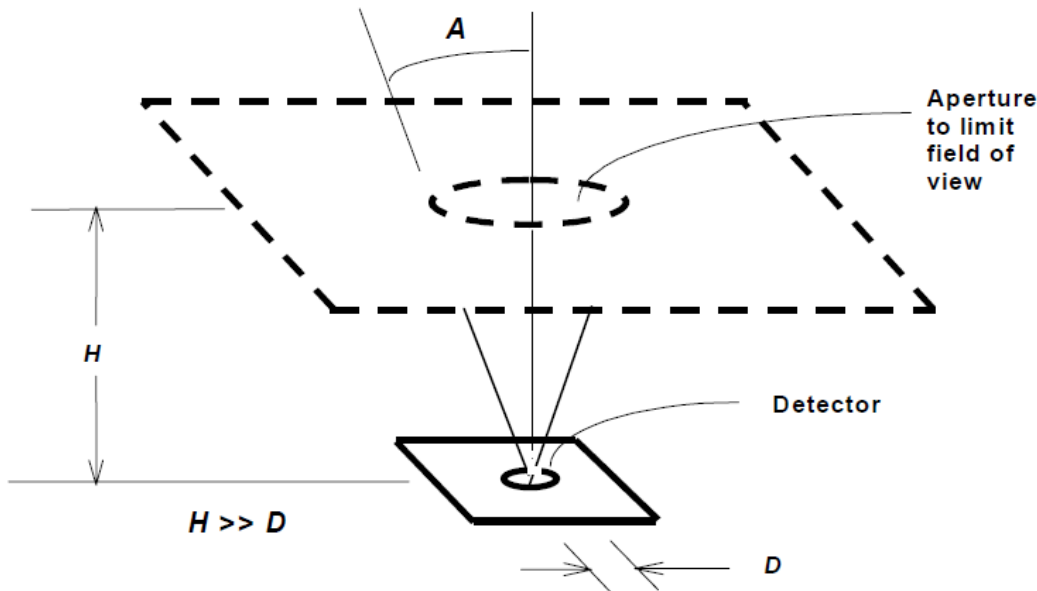
For all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm.

2 Measurement procedure

2.1 Irradiance measurements

The input aperture diameter was 7 mm Min. to 50 mm Max.

The measurement shall be made in that position of the beam giving the maximum reading. The instrument shall be calibrated to read in absolute incident radiant power per unit receiving area. Summary of the ELs see table 5.4



**Figure 5.1 Schematic - Irradiance measurements.**



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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.

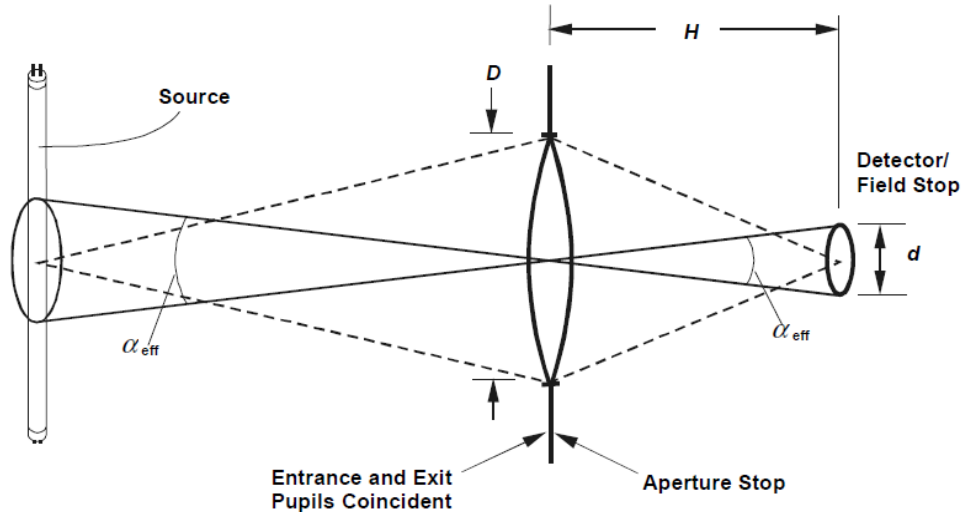


Figure 5.2 Example of an imaging device for radiance measurements.

2.3 Measurement of source size

The determination of  $\alpha$ , the angle subtended by a source, requires the determination of the 50% emission points of the source.

Due to physical limitations of the eye, the value for  $\alpha_{min}$  is 0,0017 radian &  $\alpha_{max}$  is 0,1 radian for all retinal hazards in this standard.

The angular subtense of an oblong source shall be determined by the arithmetic mean of the maximum and minimum angular dimensions of the source:

$$\alpha = (a+b)/2r$$

Any angular dimension larger than  $\alpha_{max}$  shall be limited to  $\alpha_{max}$  and any angular dimension smaller than  $\alpha_{min}$  shall be limited to  $\alpha_{min}$ , prior to the determination of the arithmetic mean.

2.4 Pulse width measurement for pulsed sources (only for Pulse lamp)

The determination of  $\Delta t$ , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.



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Table 5.4a Summary of the ELs for the surface of the skin or cornea (irradiance based values) for IEC 62471						
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Limiting aperture rad (deg)	EL in terms of constant irradiance $W \cdot m^{-2}$	Risk group exposure duration sec
Actinic UV skin & eye	$E_S = \sum E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t	RG2: t ≤ 1000 RG1: t ≤ 10000 RG0: t ≤ 30000
Eye UV-A	$E_{UVA} = \sum E_\lambda \cdot \Delta\lambda$	315 – 400	≤1000 >1000	1,4 (80)	10000/t 10	RG2: t ≤ 100 RG1: t ≤ 300 RG0: t ≤ 1000
Blue-light small source	$E_B = \sum E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤100 >100	< 0,011	100/t 1,0	RG2: t ≤ 100 RG0/1: t > 100
Eye IR	$E_{IR} = \sum E_\lambda \cdot \Delta\lambda$	780 – 3000	≤1000 >1000	1,4 (80)	18000/t <sup>0.75</sup> 100	RG2: t ≤ 10 RG1: t ≤ 100 RG0: t ≤ 1000
Skin thermal	$E_H = \sum E_\lambda \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	20000/t <sup>0.75</sup>	—

Table 5.5a Summary of the ELs for the retina (radiance based values) for IEC 62471						
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$	Risk group exposure duration sec
Blue light	$L_B = \sum L_\lambda \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10 10-100 100-10000 ≥ 10000	0,011·√(t/10) 0,011 0,0011·√t 0,1	10 <sup>6</sup> /t 10 <sup>6</sup> /t 10 <sup>6</sup> /t 100	RG2: t ≤ 0,25 RG1: t ≤ 100 RG0: t ≤ 10000
Retinal thermal	$L_R = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	< 0,25 0,25 – 10	0,0017 0,011·√(t/10)	50000/(α·t <sup>0.25</sup> ) 50000/(α·t <sup>0.25</sup> )	RG2: t ≤ 0,25 RG0/1: t ≤ 10
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_\lambda \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	6000/α	RG2: t ≤ 10 RG1: t ≤ 100 RG0: t ≤ 1000



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3 Emission limit & Test result:

Table 6.1a Emission limits for risk groups of continuous wave lamps (IEC 62471)									
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	SUV( $\lambda$ )	$E_s$	$W \cdot m^{-2}$	0,001	0	0,003	—	0,03	—
Near UV	—	$E_{UVA}$	$W \cdot m^{-2}$	10	0	33	—	100	—
Blue light	B( $\lambda$ )	$L_B$	$W \cdot m^{-2} \cdot sr^{-1}$	100	—	10000	—	4000000	—
Blue light, small source	B( $\lambda$ )	$E_B$	$W \cdot m^{-2}$	1,0*	$1,97 \times 10^{-4}$	1,0	—	400	—
Retinal thermal	R( $\lambda$ )	$L_R$	$W \cdot m^{-2} \cdot sr^{-1}$	$3,59 \times 10^6$ (28000/ $\alpha$ )	67,18	$3,59 \times 10^6$ (28000/ $\alpha$ )	—	$9,10 \times 10^6$ (71000/ $\alpha$ )	—
Retinal thermal, weak visual stimulus**	R( $\lambda$ )	$L_{IR}$	$W \cdot m^{-2} \cdot sr^{-1}$	$7,69 \times 10^5$ (6000/ $\alpha$ )	—	$7,69 \times 10^5$ (6000/ $\alpha$ )	—	$7,69 \times 10^5$ (6000/ $\alpha$ )	—
IR radiation, eye	—	$E_{IR}$	$W \cdot m^{-2}$	100	$3,59 \times 10^{-4}$	570	120	3200	—
Skin thermal	—	$E_H$	$W \cdot m^{-2}$	$3556,6$ (20000/ $t^{0.75}$ )	$1,24 \times 10^{-2}$	—	—	—	—

Angular subtense of apparent source  $\alpha = 0,0078$  rad

Only for pulse source: Frequency: -- Hz, Pulse duration: -- s, Constant duty factor: -- %

\* Small source defined as one with  $\alpha < 0,011$  radian. Averaging field of view at 10000 s is 0,1 radian.  
\*\* Involves evaluation of non-GLS source



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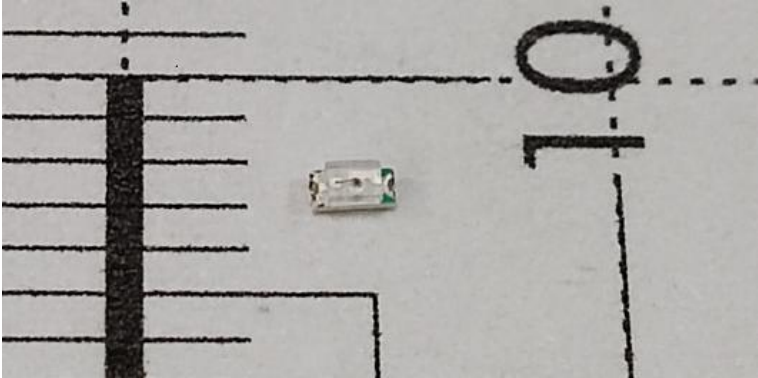
Report No.: GZEE231200489431  
Amendment 02 Date: 2026-03-31

Photo documentation:

Details of: View of model XL-1608SURC

View:

- general
- front
- rear
- right
- left
- top
- bottom



--- End of Report ---



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