# TEST REPORT

**Report No.:** LST180868024R

**Product:** SMD 3030 LED

**Model No:** GT-M30302Y2100-0
GT-M30302W5150-0,GT-M30302W5140-0,GT-M30302W6150-0,
GT-M30302W6140-0,GT-M30302W4150-0,GT-M30302W4140-0,
GT-M30302W3140-0,GT-M30302W2140-0, GT-M30302W5160-0,
GT-M30302W6160-0

**Applicant:** Shenzhen Getian Opto-Electronics Co., Ltd

**Address:** Building 55, Baotian 3rd Road East, Xixiang, Bao'an District, Shenzhen, China, 518102

**Issued by:** Shenzhen LST Technology Co., Ltd.

**Lab location:** Huichao Building,Yintian Industry zone,Bao'an District, Shenzhen China

# TEST REPORT

## EN 62471

## Photobiological safety of lamps and lamps systems

**Administrative Data**

Report Reference No……...: LST180868024R

Testing laboratory……: Shenzhen LST Technology Co., Ltd.

Address……..……..: Huichao Building,Yintian Industry zone,Bao'an District, Shenzhen China

Tested by (name and signature)…….:

Approved by (name and signature)…..:.

Date of issue……: Nov. 22, 2018

Contents ……..……: 16 pages

**Test Specification……..**:

Standard……..…...: EN 62471:2008

Test procedure……..: LVD

Non-standard test method……..……: N/A

Test Report Form No……...: IEC/EN 62471

Applicant's name……..……: Shenzhen Getian Opto-Electronics Co., Ltd

Address……....: Building 55, Baotian 3rd Road East, Xixiang, Bao'an District, Shenzhen, China, 518102

Manufacturer name…….…….... : Shenzhen Getian Opto-Electronics Co., Ltd

Address……..…: Building 55, Baotian 3rd Road East, Xixiang, Bao'an District, Shenzhen, China, 518102

**Test item description.** ……..……..: SMD 3030 LED

Model and/or type reference..... : GT-M30302Y2100-0

Rating(s)..... : DC 2.8-3.4V, 350mA

| | | |
|---|---|---|
| Test item particulars: | | |
| Tested lamp ..... | : | ☒continuous wave lamps ☐pulsed lamps |
| Tested lamp system..... | : | -- |
| Lamp classification group ..... | : | ☒exempt ☐risk 1 ☐risk 2 ☐risk 3 |
| Lamp cap ..... | : | -- |
| Bulb..... | : | -- |
| Rated of the lamp ..... | : | -- |
| Furthermore marking on the lamp ..... | : | -- |
| Seasoning of lamps according IEC standard | | -- |
| Used measurement instrument ..... | : | Ref. to List of test equipment used |
| Temperature by measurement ..... | : | 25 ± 5℃ |
| Information for safety use ..... | : | -- |

**Possible test case verdicts:**

| | | |
|---|---|---|
| – test case does not apply to the test object . : | | N (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..... :Nov. 16, 2018

Date (s) of performance of tests ..... :Nov. 16, 2018 To Nov. 22, 2018

**General remarks:**

The test results presented in this report relate only to the object tested.

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"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

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

List of test equipment must be kept on file and available for review.

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| **Summary of testing:** | |
|---|---|
| **Tests performed (name of test and test clause):**<br>These tests fulfil the requirements of standard ISO/IEC 17025.<br>When determining the test conclusion, the Measurement Uncertainty of test has been considered.<br>Due to the physical properties of the Lamp, this product does not contain any radiation above 800nm.Therefore the measured spectral range has been limited from 200nm up to and including 800nm. | **Testing location:**<br>Shenzhen LST Technology Co., Ltd.<br>Huichao Building,Yintian Industry zone,Bao'an District, Shenzhen China |
| **Summary of compliance with National Differences:**<br>Compliance with the National requirements of EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES for EN 62471:2008. | |
| **Copy of marking plate:**<br>N/A | |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| **4** | EXPOSURE LIMITS | | -- |
| **4.1** | General remarks | | P |
| | The exposure limits in this standard is not less than 0,01 ms and not more than any 8-hour period and should be used as guides in the control of exposure | | P |
| | Detailed spectral data of a light source are generally required only if the luminance of the source exceeds $10^4$ cd.m$^{-2}$ | See clause 4.3 | P |
| **4.3** | Hazard exposure limits | | P |
| **4.3.1** | Actinic UV hazard exposure limit for the skin and eye | | P |
| | The exposure limit for effective radiant exposure is 30 J.m$^{-2}$ within any 8-hour period | | P |
| | To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broadband source, the effective integrated spectral irradiance, $E_S$, of the light source shall not exceed the levels defined by: | | P |
| | $E_s \cdot t = \sum_{200}^{400} \sum_{t} E_\lambda(\lambda,t) \cdot S_{UV}(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 30$ J m$^{-2}$ | | P |
| | The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by: | | P |
| | $t_{max} = \frac{30}{E_S}$ s | | P |
| **4.3.2** | Near-UV hazard exposure limit for eye | | P |
| | For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J.m$^{-2}$ for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, $E_{UVA}$, shall not exceed 10 W.m$^{-2}$. | | P |
| | The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by: | | P |
| | $t_{max} \le \frac{10\,000}{E_{UVA}}$ s | | P |
| **4.3.3** | Retinal blue light hazard exposure limit | | P |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B(λ), i.e., the blue-light weighted radiance , $L_B$, shall not exceed the levels defined by: | See table 4.2 | P |
| | $L_B \cdot t = \sum_{300}^{700} \sum_{t} L_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 10^6 \quad J \cdot m^{-2} \cdot sr^{-1}$ | For $t \le 10^4$ s $t_{max} = \frac{10^6}{L_B}$ | P |
| | | | N |
| **4.3.4** | Retinal blue light hazard exposure limit - small source | | N |
| | Thus the spectral irradiance at the eye $E_\lambda$, weighted against the blue-light hazard function B(λ) shall not exceed the levels defined by: | | N |
| | $E_B \cdot t = \sum_{300}^{700} \sum_{t} E_\lambda(\lambda,t) \cdot B(\lambda) \cdot \Delta t \cdot \Delta\lambda \le 100 \quad J \cdot m^{-2}$ | | N |
| | $E_B = \sum_{300}^{700} E_\lambda \cdot B(\lambda) \cdot \Delta\lambda \le 1 \quad W \cdot m^{-2}$ | | N |
| **4.3.5** | Retinal thermal hazard exposure limit | | P |
| | To protect against retinal thermal injury, the integrated spectral radiance of the light source, $L_\lambda$, weighted by the burn hazard weighting function R(λ) (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by: | | P |
| | $L_R = \sum_{380}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{50\,000}{\alpha \cdot t^{0,25}} \quad W \cdot m^{-2} \cdot sr^{-1}$ | | P |
| **4.3.6** | Retinal thermal hazard exposure limit - weak visual stimulus | | N |
| | For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, $L_{IR}$, as viewed by the eye for exposure times greater than 10 s shall be limited to: | | N |
| | $L_{IR} = \sum_{780}^{1400} L_\lambda \cdot R(\lambda) \cdot \Delta\lambda \le \frac{6\,000}{\alpha} \quad W \cdot m^{-2} \cdot sr^{-1}$ | | N |
| **4.3.7** | Infrared radiation hazard exposure limits for the eye | | N |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, $E_{IR}$, over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed: | | N |
| | $E_{IR} = \sum_{780}^{3000} E_\lambda \cdot \Delta\lambda \le 18000 \cdot t^{-0,75}$ $W \cdot m^{-2}$ | | N |
| | For times greater than 1000 s the limit becomes: | | N |
| | $E_{IR} = \sum_{780}^{3000} E_\lambda \cdot \Delta\lambda \le 100$ $W \cdot m^{-2}$ | | N |
| | | | |
| **4.3.8** | Thermal hazard exposure limit for the skin | | N |
| | Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to: | | N |
| | $E_H \cdot t = \sum_{380}^{3000} \sum_{t} E_\lambda(\lambda,t) \cdot \Delta t \cdot \Delta\lambda \le 20000 \cdot t^{0,25}$ $J \cdot m^{-2}$ | | N |

| | | | |
|---|---|---|---|
| **5** | **MEASUREMENT OF LAMPS AND LAMP SYSTEMS** | | -- |
| **5.1** | Measurement conditions | | P |
| | Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification. | | P |
| **5.1.1** | Lamp ageing (seasoning) | | N |
| | Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard. | | N |
| **5.1.2** | Test environment | | P |
| | For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations. | | P |
| **5.1.3** | Extraneous radiation | | P |
| | Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results. | | P |
| **5.1.4** | Lamp operation | | P |
| | Operation of the test lamp shall be provided in accordance with: | | P |
| | – the appropriate IEC lamp standard, or | | N |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | – the manufacturer' s recommendation | | P |
| **5.1.5** | Lamp system operation | | P |
| | The power source for operation of the test lamp shall be provided in accordance with: | | P |
| | – the appropriate IEC standard, or | | N |
| | – the manufacturer' s recommendation | | P |
| **5.2** | Measurement procedure | | P |
| **5.2.1** | Irradiance measurements | | P |
| | Minimum aperture diameter 7mm. | | P |
| | Maximum aperture diameter 50 mm. | | P |
| | The measurement shall be made in that position of the beam giving the maximum reading. | | P |
| | The measurement instrument is adequate calibrated. | | P |
| **5.2.2** | Radiance measurements | | P |
| **5.2.2.1** | Standard method | | N |
| | The measurements made with an optical system. | | N |
| | The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument. | | N |
| **5.2.2** | Alternative method | | P |
| | Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements. | | P |
| **5.2.3** | Measurement of source size | | P |
| | The determination of α, the angle subtended by a source, requires the determination of the 50% emission points of the source. | | P |
| **5.2.4** | Pulse width measurement for pulsed sources | | N |
| | 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. | | N |
| **5.3** | Analysis methods | | P |
| **5.3.1** | Weighting curve interpolations | | P |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired. | | P |
| **5.3.2** | Calculations | | P |
| | The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy. | | P |
| **5.3.3** | Measurement uncertainty | | P |
| | The quality of all measurement results must be quantified by an analysis of the uncertainty. | see Annex C in the norm | P |
| **6** | **LAMP CLASSIFICATION** | | - |
| | For the purposes of this standard it was decided that the values shall be reported as follows: | See table 6.1 | P |
| | – for lamps intended for general lighting service, 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 | | P |
| | – for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm | | N |
| **6.1** | Continuous wave lamps | | P |
| **6.1.1** | Exempt Group | | P |
| | In the exempt group are lamps, which does not pose any photo biological hazard. The requirement is met by any lamp that does not pose: | | P |
| | – an actinic ultraviolet hazard ($E_S$) within 8-hours exposure (30000 s), nor | | P |
| | – a near-UV hazard ($E_{UVA}$) within 1000 s, (about 16 min), nor | | P |
| | – a retinal blue-light hazard ($L_B$) within 10000 s (about 2,8 h), nor | | P |
| | – a retinal thermal hazard ($L_R$) within 10 s, nor | | P |
| | – an infrared radiation hazard for the eye ($E_{IR}$) within 1000 s | | N |
| **6.1.2** | Risk Group 1 (Low-Risk) | | N |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | In this group are lamps, which exceeds the limits for the exempt group but that does not pose: | | N |
| | – an actinic ultraviolet hazard ($E_S$) within 10000 s, nor | | N |
| | – a near ultraviolet hazard ($E_{UVA}$) within 300 s, nor | | N |
| | – a retinal blue-light hazard ($L_B$) within 100 s, nor | | N |
| | – a retinal thermal hazard ($L_{IR}$) within 10 s, nor | | N |
| | – an infrared radiation hazard for the eye ($E_{IR}$) within 100 s | | N |
| | Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard ($L_{IR}$), within 100 s are in Risk Group 1. | | N |
| **6.1.3** | Risk Group 2 (Moderate-Risk) | | N |
| | This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose: | | N |
| | – an actinic ultraviolet hazard ($E_S$) within 1000 s exposure, nor | | N |
| | – a near ultraviolet hazard (EUVA) within 100 s, nor | | N |
| | – a retinal blue-light hazard ($L_B$) within 0,25 s (aversion response), nor | | N |
| | – a retinal thermal hazard ($L_R$) within 0,25 s (aversion response), nor | | N |
| | – an infrared radiation hazard for the eye ($E_{IR}$) within 10 s | | N |
| | Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard ($L_{IR}$), within 10 s are in Risk Group 2. | | N |
| **6.1.4** | Risk Group 3 (High-Risk) | | N |
| | Lamps which exceed the limits for Risk Group 2 are in Group 3. | | N |
| **6.2** | Pulsed lamps | | N |
| | Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s. | | N |
| | A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer. | | N |
| | The risk group determination of the lamp being tested shall be made as follows: | | N |

| EN 62471 | | | |
|---|---|---|---|
| Clause | Requirement + Test | Result - Remark | Verdict |
| | – a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk) | | N |
| | – for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance does is below the EL shall be classified as belonging to the Exempt Group | | N |
| | – for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission | | N |

| Table 4.1 | Spectral weighting function for assessing ultraviolet hazards for skin and eye | | P |
|---|---|---|---|
| **Wavelength[1] λ, nm** | **UV hazard function $S_{UV}(\lambda)$** | **Wavelength λ, nm** | **UV hazard function $S_{UV}(\lambda)$** |
| 200 | 0,030 | 313* | 0,006 |
| 205 | 0,051 | 315 | 0,003 |
| 210 | 0,075 | 316 | 0,0024 |
| 215 | 0,095 | 317 | 0,0020 |
| 220 | 0,120 | 318 | 0,0016 |
| 225 | 0,150 | 319 | 0,0012 |
| 230 | 0,190 | 320 | 0,0010 |
| 235 | 0,240 | 322 | 0,00067 |
| 240 | 0,300 | 323 | 0,00054 |
| 245 | 0,360 | 325 | 0,00050 |
| 250 | 0,430 | 328 | 0,00044 |
| 254* | 0,500 | 330 | 0,00041 |
| 255 | 0,520 | 333* | 0,00037 |
| 260 | 0,650 | 335 | 0,00034 |
| 265 | 0,810 | 340 | 0,00028 |
| 270 | 1,000 | 345 | 0,00024 |
| 275 | 0,960 | 350 | 0,00020 |
| 280* | 0,880 | 355 | 0,00016 |
| 285 | 0,770 | 360 | 0,00013 |
| 290 | 0,640 | 365* | 0,00011 |
| 295 | 0,540 | 370 | 0,000093 |
| 297* | 0,460 | 375 | 0,000077 |
| 300 | 0,300 | 380 | 0,000064 |
| 303* | 0,120 | 385 | 0,000053 |
| 305 | 0,060 | 390 | 0,000044 |
| 308 | 0,026 | 395 | 0,000036 |
| 310 | 0,015 | 400 | 0,000030 |

1 Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.

* Emission lines of a mercury discharge spectrum.

| **Table 4.2** | Spectral weighting functions for assessing retinal hazards from broadband optical sources | P |
|---|---|---|
| **Wavelength nm** | **Blue-light hazard function B (λ)** | **Burn hazard function R (λ)** |
| 300 | 0,01 | -- |
| 305 | 0,01 | -- |
| 310 | 0,01 | -- |
| 315 | 0,01 | -- |
| 320 | 0,01 | -- |
| 325 | 0,01 | -- |
| 330 | 0,01 | -- |
| 335 | 0,01 | -- |
| 340 | 0,01 | -- |
| 345 | 0,01 | -- |
| 350 | 0,01 | -- |
| 355 | 0,01 | -- |
| 360 | 0,01 | -- |
| 365 | 0,01 | -- |
| 370 | 0,01 | -- |
| 375 | 0,01 | -- |
| 380 | 0,01 | 0,1 |
| 385 | 0,013 | 0,13 |
| 390 | 0,025 | 0,25 |
| 395 | 0,05 | 0,5 |
| 400 | 0,10 | 1,0 |
| 405 | 0,20 | 2,0 |
| 410 | 0,40 | 4,0 |
| 415 | 0,80 | 8,0 |
| 420 | 0,90 | 9,0 |
| 425 | 0,95 | 9,5 |
| 430 | 0,98 | 9,8 |
| 435 | 1,00 | 10,0 |
| 440 | 1,00 | 10,0 |
| 445 | 0,97 | 9,7 |
| 450 | 0,94 | 9,4 |
| 455 | 0,90 | 9,0 |
| 460 | 0,80 | 8,0 |
| 465 | 0,70 | 7,0 |
| 470 | 0,62 | 6,2 |
| 475 | 0,55 | 5,5 |
| 480 | 0,45 | 4,5 |
| 485 | 0,40 | 4,0 |
| 490 | 0,22 | 2,2 |
| 495 | 0,16 | 1,6 |

| | | |
|---|---|---|
| 500-600 | $10^{[(450-\lambda)/50]}$ | 1,0 |
| 600-700 | 0,001 | 1,0 |
| 700-1050 | -- | $10^{[(450-\lambda)/50]}$ |
| 1050-1150 | -- | 0,2 |
| 1150-1200 | -- | $0{,}2.10^{0{,}02(1150-\lambda)}$ |
| 1200-1400 | -- | 0,02 |
| 1 Wavelengths chosen are representative: other values should be obtained by logarithmic interpolation at intermediate wavelengths.<br>* Emission lines of a mercury discharge spectrum. | | |

| **Table 5.4** | Spectral weighting functions for assessing retinal hazards from broadband optical sources | | | | P |
|---|---|---|---|---|---|
| **Hazard Name** | **Relevant equation** | **Wavelength range** | **Exposure Duration sec** | **Limiting Aperture rad (deg)** | **EL in terms of constant irradiance $W \cdot m^{-2}$** |
| Actinic UV skin & eye | $E_S = \Sigma E_\lambda \cdot S(\lambda) \cdot \Delta\lambda$ | 200 – 400 | < 30000 | 1,4 (80) | 30/t |
| Eye UV-A | $E_{UVA} = \Sigma E_\lambda \cdot \Delta\lambda$ | 315 – 400 | ≤1000<br>>1000 | 1,4 (80) | 10000/t<br>10 |
| Blue-light small source | $E_B = \Sigma E_\lambda \cdot B(\lambda) \cdot \Delta\lambda$ | 300 – 700 | ≤100<br>>100 | < 0,011 | 100/t<br>1,0 |
| Eye IR | $E_{IR} = \Sigma E_\lambda \cdot \Delta\lambda$ | 780 –3000 | ≤1000<br>>1000 | 1,4 (80) | $18000/t^{0,75}$<br>100 |
| Skin thermal | $E_H = \Sigma E_\lambda \cdot \Delta\lambda$ | 380 – 3000 | < 10 | 2π sr | $20000/t^{0,75}$ |

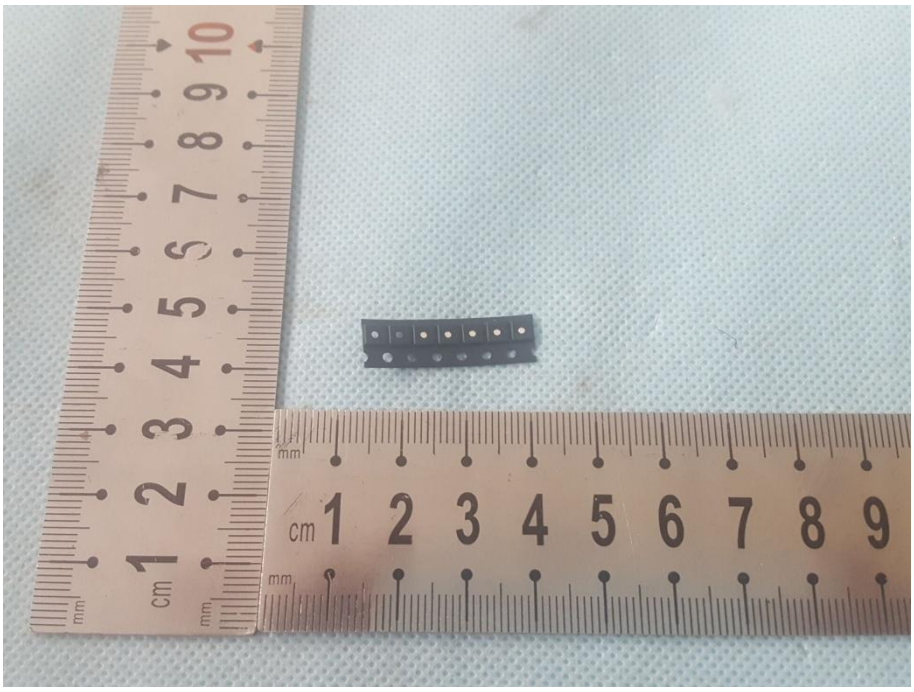
| **Table 5.5** | Summary of the ELs for the retina (radiance based values) | | | | P |
|---|---|---|---|---|---|
| **Hazard Name** | **Relevant equation** | **Wavelength Range nm** | **Exposure Duration sec** | **Field of view radians** | **EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$** |
| Blue light | $L_B = \Sigma L\lambda \cdot B(\lambda) \cdot \Delta\lambda$ | 300 – 700 | 0,25 - 10<br>10-100<br>100-10000<br>≥ 10000 | $0{,}011 \cdot \sqrt{(t/10)}$<br>0,011<br>$0{,}0011 \cdot \sqrt{t}$<br>0,1 | 106/t<br>106/t<br>106/t<br>100 |
| Retinal thermal | $L_R = \Sigma L\lambda \cdot R(\lambda) \cdot \Delta\lambda$ | 380 – 1400 | < 0,25<br>0,25 - 10 | 0,0017<br>$0{,}011 \cdot \sqrt{(t/10)}$ | $50000/(\alpha \cdot t^{0,25})$<br>$50000/(\alpha \cdot t^{0,25})$ |
| Retinal Thermal m(weak visual stimulus) | $L_{IR} = \Sigma L\lambda \cdot R(\lambda) \cdot \Delta\lambda$ | 780 – 1400 | > 10 | 0,011 | $6000/\alpha$ |

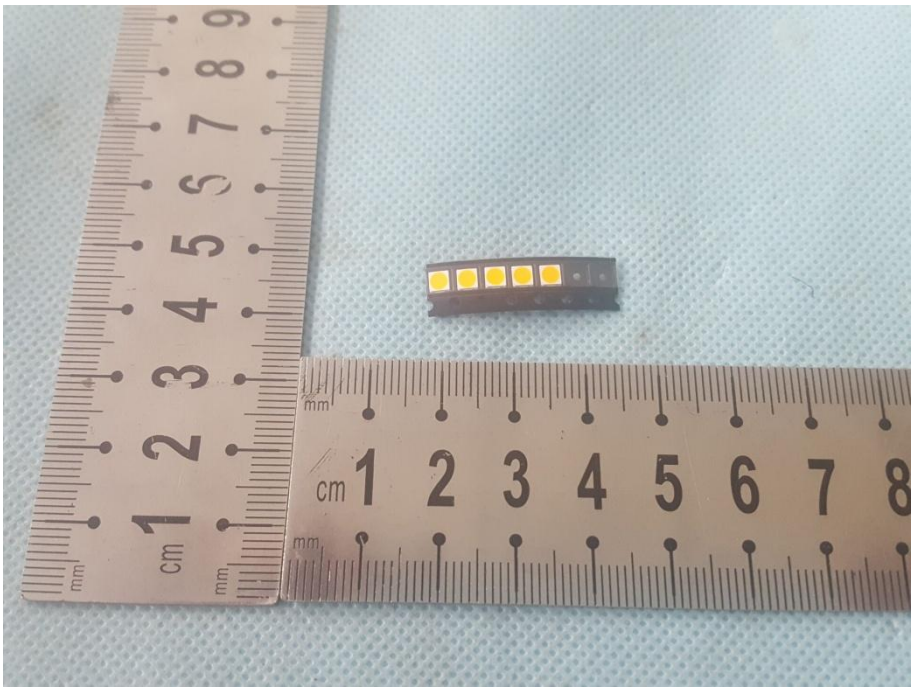
| **Table 6.1** | Emission limits for risk groups of continuous wave lamps | | | | | | | | | P |
|---|---|---|---|---|---|---|---|---|---|---|
| Risk | Action spectrum | Symbol | Units | Emission Measurement | | | | | | |
| | | | | Exempt | | Low risk | | Mod risk | | |
| | | | | Limit | Result | Limit | Result | Limit | Result | |
| Actinic UV | $S_{UV}(\lambda)$ | $E_S$ | $W \cdot m^{-2}$ | 0,001 | 0 | -- | -- | -- | -- | |
| Near UV | -- | $E_{UVA}$ | $W \cdot m^{-2}$ | 0.33 | 0．001 | -- | -- | -- | -- | |
| Blue light | B(λ) | $L_B$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 100 | 71,4 | 10000 | -- | 4000000 | -- | |
| Blue light, small source | B(λ) | $E_B$ | $W \cdot m^{-2}$ | 0.01* | -- | 1,0 | -- | 400 | -- | |
| Retinal thermal | R(λ) | $L_R$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 28000/α | 2459 | 28000/α | -- | 71000/α | -- | |
| Retinal thermal, Weak visual stimulus** | R(λ) | $L_{IR}$ | $W \cdot m^{-2} \cdot sr^{-1}$ | 6000/α | 0.19 | 6000/α | -- | 6000/α | -- | |
| IR radiation, eye | -- | $E_{IR}$ | $W \cdot m^{-2}$ | 100 | 0.01 | 570 | -- | 3200 | -- | |
| * Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian.<br>** Involves evaluation of non-GLS source | | | | | | | | | | |

**List of test equipment used:**

| **Clause** | **Measurement / testing** | **Testing / measuring equipment / material used** | **Range used** | **Calibration date** |
|---|---|---|---|---|
| 1 | Irradiance and Radiance measurements | Spectroradiometer | 200 - 800 nm | Last cal. date: 2018-04-08<br>Next cal. date: 2019-04-07 |

# Photographs of the EUT





(LST authenticate the photo on original report only)
*** End of Report ***