



Test Report issued under the responsibility of:



**TEST REPORT  
IEC TR 62778**

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

**Report Number.....** : 6162229.50P

**Date of issue .....** : 2023-06-30

**Total number of pages .....** 36

**Name of Testing Laboratory  
preparing the Report .....** : DEKRA Testing and Certification (Shanghai) Ltd.  
3/F, #250, Jiangchangsan Road building 16 Headquater  
Economy Park Shibe Hi-Tech Park, Jing'an District, Shanghai,  
P.R.C 200436

**Applicant's name .....** : Lumileds (Shanghai) Management Co., Ltd.

**Address.....** : Building 1-A, No. 19 & 20, Lane 299, Wenshui Road, Jing'an  
District, Shanghai, 200072, China

**Test specification:**

**Standard .....** : IEC TR 62778:2014 (Second Edition)

**Test procedure.....** : CB Scheme

**Non-standard test method .....** : N/A

**Test Report Form No.....** : IEC62778A

**Test Report Form(s) Originator....** : TÜV SÜD Product Service GmbH

**Master TRF .....** : Dated 2016-02

**Copyright © 2016 IEC System of Conformity Assessment Schemes for Electrotechnical  
Equipment and Components (IECEE System). All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

**This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory  
and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.**

**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 CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

The purpose of this report is only for export activities.

<b>Test item description</b>	LED package
<b>Trade Mark</b>	LUMILEDS
<b>Manufacturer</b>	Lumileds (Shanghai) Management Co., Ltd. Building 1-A, No. 19 & 20, Lane 299, Wenshui Road, Jing'an District, Shanghai, 200072, China
<b>Model/Type reference</b>	L2C4 series; L2C5 series (Detailed lists refer to Appendix 2: Model List)
<b>Ratings</b>	L2C4 series : Imax 1400 mA, Vmax 40 Vdc; L2C5 series : Imax 1650 mA, Vmax 62,3 Vdc

**Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):**

<input checked="" type="checkbox"/> <b>CB Testing Laboratory:</b>	DEKRA Testing and Certification (Shanghai) Ltd.	
<b>Testing location/ address</b>	3/F, #250, Jiangchangsan Road building 16 Headquater Economy Park Shibe Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436	
<input type="checkbox"/> <b>Associated CB Testing Laboratory:</b>		
<b>Testing location/ address</b>		
<b>Tested by (name, function, signature)</b>	Nancy Wang	
<b>Approved by (name, function, signature)</b>	Hanson Zhang	
<input type="checkbox"/> <b>Testing procedure: CTF Stage 1:</b>		
<b>Testing location/ address</b>		
<b>Tested by (name, function, signature)</b>		
<b>Approved by (name, function, signature)</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage 2:</b>		
<b>Testing location/ address</b>		
<b>Tested by (name + signature)</b>		
<b>Witnessed by (name, function, signature)</b>		
<b>Approved by (name, function, signature)</b>		
<input type="checkbox"/> <b>Testing procedure: CTF Stage</b>		

	3:	
<input type="checkbox"/>	Testing procedure: CTF Stage 4:	
Testing location/ address .....		
Tested by (name, function, signature) .....		
Witnessed by (name, function, signature) .....		
Approved by (name, function, signature) .....		
Supervised by (name, function, signature) .....		

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

- Appendix 1: Photo Documentation
- Appendix 2: Model List
- Appendix 3: Relative Spectrum Of Tested Sample(s)
- Appendix 4: Table 6.1 Based On IEC 62471:2006
- Appendix 5: Table 6.1 Based On EN62471:2008, Attachment To IEC 62471 European Group Differences And National Differences
- Appendix 6: Blue Light Hazard-forward Current Relationship (Non-mandatory Information)

**Summary of testing:**

Tests performed (name of test and test clause):	Testing location:
<p>These tests fulfil the requirements of standard ISO/IEC 17025.</p> <p>When determining the test conclusion, the Measurement Uncertainty of test has been considered.</p> <p>The tested sample of L2C4-57802S02F0600 Have been tested according to the IEC/TR 62778:2014 and been classified as <b>RG 2 for blue light hazard</b>.</p> <p>The sample of L2C4-57802S02F0600 was tested at 175mA, 350mA, 525mA and 700mA. Current at RG1 to RG2 boundary was deducted to be 131mA. (See appendix 6 for detail).</p>	<p>DEKRA Testing and Certification (Shanghai) Ltd. 3/F, #250, Jiangchangsan Road building 16 Headquater Economy Park Shibe Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436</p>

**Summary of compliance with National Differences (List of countries addressed): EN Standards**

EN 62471:2008

**The product fulfills the requirements**

**Copy of marking plate:**

**The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.**

N/A

<b>Test item particulars.....</b>	: See below
<b>Product evaluated.....</b>	: <input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire
<b>Rated voltage (V) .....</b>	: L2C4 series : Imax 1400 mA, Vmax 40Vdc; L2C5 series : Imax 1350 mA, Vmax 46Vdc
<b>Rated current (mA) .....</b>	: --
<b>Rated CCT (K).....</b>	: --
<b>Rated Luminance (Mcd/m<sup>2</sup>) .....</b>	: --
<b>Component report data used .....</b>	: <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp Report number: --
<b>Possible test case verdicts:</b>	
- 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)	
<b>Testing.....</b>	: --
<b>Date of receipt of test item .....</b>	: 2023-06
<b>Date (s) of performance of tests .....</b>	: 2023-06
<b>General remarks:</b>	
(See Enclosure #)" refers to additional information appended to the report. (See appended table)" refers to a table appended to the report.	
<b>Throughout this report a <input checked="" type="checkbox"/> comma / <input type="checkbox"/> point is used as the decimal separator.</b>	
The product complied with the following standards:	
<input checked="" type="checkbox"/> IEC 62471:2006 <input checked="" type="checkbox"/> EN 62471:2008 <input type="checkbox"/> IEC/TR 62471-2:2009 <input checked="" type="checkbox"/> IEC/TR 62778:2014	
Decision rules applied Procedure 2 "Accuracy Method" as stated in the IEC Guide 115:2007.	
<b>Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:</b>	

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided .....	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> Not applicable
<b>When differences exist; they shall be identified in the General product information section.</b>	
<b>Name and address of factory (ies)</b> ..... : Lumileds (Shanghai) Management Co., Ltd Building 1-A, No. 19 & 20, Lane 299, Wenshui Road, Jing'an District, Shanghai, 200072, China	
<b>General product information:</b>  Full tests were performed on model L2C4-57802S02F0600.  The product was considered as worst case which should be evaluated at 200mm.  The sample of L2C4-57802S02F0600 (175mA) was tested at 200mm from the light source. The CCT of spectral irradiance was found at 4941 K.  The sample of L2C4-57802S02F0600 (350mA) was tested at 200mm from the light source. The CCT of spectral irradiance was found at 4993 K.  The sample of L2C4-57802S02F0600 (525mA) was tested at 200mm from the light source. The CCT of spectral irradiance was found at 5057 K.  The sample of L2C4-57802S02F0600 (700mA) was tested at 200mm from the light source. The CCT of spectral irradiance was found at 5142 K.  Base on the Model list which listed on the appendix 2, The tested sample can be considered as <input type="checkbox"/> typical product <input checked="" type="checkbox"/> worst product Which the results can be reference used for the other models.  Type test was performed according to IEC 62471:2006 procedure.	
<b>Amendment 1 report:</b>  The original test report 6063421.50P, dated 2019-09-17 was modified to include the following additions: <ul style="list-style-type: none"> <li>- New models were added in model list with bold letters: L2C5 series.</li> </ul> After review, no additional tests were considered necessary.	

**Amendment 2 report:**

This report is issued to suspend the original test report 6116388.50P, dated on 2021-10-15, to include following changed and/or additions:

- Add an alternative factory as follows:

Name: Fujian Lightning Optoelectronic Co., Ltd

Address: Optoelectronic Industrial Park, Hutou Town, Anxi County, Quanzhou City, Fujian Province, China

After review, no test was considered necessary.

**Amendment 3 report:**

This report is issued to suspend the original test report 6133078.50P, dated on 2022-06-06, to include following changed and/or additions:

- New models were added in Model list with bold letters.

After review, no additional tests were considered necessary.

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict
<b>7</b>	<b>MEASUREMENT INFORMATION FLOW</b>		<b>P</b>
<b>7.1</b>	<b>Basic flow</b>		<b>P</b>
	'Law of conservation of luminance' applied		N/A
	Use of only true luminance/radiance values		P
	In case of luminaire: The light source is operated in the luminaire under similar conditions as when tested as a component		N/A
	In case $E_{thr}$ value for RG2 was established the peak value was derived from angular light distribution		N/A
<b>7.2</b>	<b>Conditions for the radiance measurement</b>		<b>P</b>
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N/A
<b>7.3</b>	<b>Special cases (I): Replacement by a lamp or LED module of another type</b>		<b>N/A</b>
	Light source is a white light source		N/A
	Evaluation done based on highest luminance		N/A
	Evaluation done based on CCT value		N/A
<b>7.4</b>	<b>Special cases (II): Arrays and clusters of primary light sources</b>		<b>N/A</b>
	LED package is evaluated as ..... : <input type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited		N/A
	$E_{thr}$ of LED package applies to array		N/A
<b>8</b>	<b>RISK GROUP CLASSIFICATION</b>		<b>P</b>
	Risk group achieved:		P
	- .. Risk Group 0 unlimited		N/A
	- .. Risk Group 1 unlimited		N/A
	- $E_{thr}$ ..... (lx) : Distance to reach RG1 ..... (m) :	Refer to the Supplementary information of <b>TABLE:Spectroradiometric measurement</b> as following	P

IEC TR 62778				
Clause	Requirement + Test		Result - Remark	Verdict
	<b>TABLE:Spectroradiometric measurement</b>			
	<b>Measurement performed on:</b>		<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	
	<b>Model number.....</b>		L2C4-57802S02F0600 (175mA)	
	<b>Test voltage (V) .....</b>		35 Vdc	
	<b>Test current (mA) .....</b>		175 mA	
	<b>Test frequency (Hz).....</b>		--	
	<b>Ambient, t(°C) .....</b>		25°C	
	<b>Measurement distance.....</b>		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	
	<b>Source size .....</b>		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small :	
	<b>Field of view .....</b>		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	4941	
x/y colour coordinates			0,3485/0,3701	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	1,33E+04	@11mrad
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	--	
Luminance	L	cd/m <sup>2</sup>	1,59E+07	@11mrad
Illuminance	E	lx	9,71E+03	
<b>Supplementary information:</b>				
Per IEC/TR 62778:2014				
Ethr= 1191 lx				
Dmin= 571 mm				

IEC TR 62778				
Clause	Requirement + Test		Result - Remark	Verdict
	<b>TABLE:Spectroradiometric measurement</b>			
	<b>Measurement performed on:</b>		<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	
	<b>Model number</b> .....		L2C4-57802S02F0600 (350mA)	
	<b>Test voltage (V)</b> .....		37,8 Vdc	
	<b>Test current (mA)</b> .....		350 mA	
	<b>Test frequency (Hz)</b> .....		--	
	<b>Ambient, t(°C)</b> .....		25°C	
	<b>Measurement distance</b> .....		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	
	<b>Source size</b> .....		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small :	
	<b>Field of view</b> .....		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	4993	
x/y colour coordinates			0,3468/0,3684	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>-1</sup> )	2,41E+04	@11mrad
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	--	
Luminance	L	cd/m <sup>2</sup>	2,75E+07	@11mrad
Illuminance	E	lx	1,77E+04	
<b>Supplementary information:</b>				
Per IEC/TR 62778:2014				
Ethr= 1144 lx				
Dmin= 787 mm				

IEC TR 62778				
Clause	Requirement + Test		Result - Remark	Verdict
<b>TABLE:Spectroradiometric measurement</b>				
<b>Measurement performed on:</b>		<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire		
<b>Model number</b> .....		L2C4-57802S02F0600 (525mA)		
<b>Test voltage (V)</b> .....		40,2 Vdc		—
<b>Test current (mA)</b> .....		525mA		—
<b>Test frequency (Hz)</b> .....		--		—
<b>Ambient, t(°C)</b> .....		25°C		—
<b>Measurement distance</b> .....		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm		—
<b>Source size</b> .....		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small :		—
<b>Field of view</b> .....		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)		—
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	5057	
x/y colour coordinates			0,3448/0,3657	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>-1</sup> )	3,38E+04	@11mrad
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	--	
Luminance	L	cd/m <sup>2</sup>	3,67E+07	@11mrad
Illuminance	E	lx	2,40E+04	
<b>Supplementary information:</b>				
Per IEC/TR 62778:2014				
Ethr= 1086 lx				
Dmin= 941 mm				

IEC TR 62778				
Clause	Requirement + Test		Result - Remark	Verdict
	<b>TABLE:Spectroradiometric measurement</b>			
	<b>Measurement performed on:</b>		<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	
	<b>Model number</b> .....		L2C4-57802S02F0600 (700mA)	
	<b>Test voltage (V)</b> .....		42,5 Vdc	
	<b>Test current (mA)</b> .....		700mA	
	<b>Test frequency (Hz)</b> .....		--	
	<b>Ambient, t(°C)</b> .....		25°C	
	<b>Measurement distance</b> .....		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	
	<b>Source size</b> .....		<input checked="" type="checkbox"/> Non-small <input type="checkbox"/> Small :	
	<b>Field of view</b> .....		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	5142	
x/y colour coordinates			0,3421/0,3623	
Blue light hazard radiance	L <sub>B</sub>	W/(m <sup>2</sup> •sr <sup>1</sup> )	4,02E+04	@11mrad
Blue light hazard irradiance	E <sub>B</sub>	W/m <sup>2</sup>	--	
Luminance	L	cd/m <sup>2</sup>	4,16E+07	@11mrad
Illuminance	E	lx	2,84E+04	
Supplementary information:				
Per IEC/TR 62778:2014				
Ethr= 1036 lx				
Dmin= 1047 mm				

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict
	<b>TABLE: Angular light distribution</b>		<b>N/A</b>

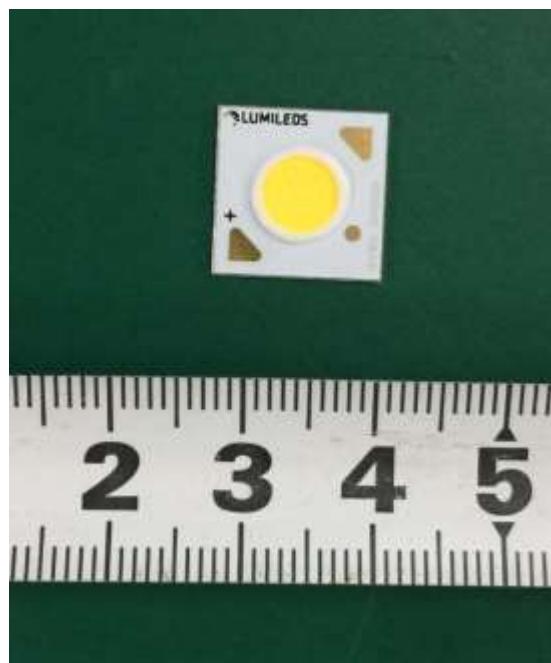
**List of test equipment used:**

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
7	Irradiance measurements Radiance measurements	IDR 300 Monochromator (SH 344)	200-3000nm	/	/
7	Radiance measurements	S009 Telescope (SH 345)	300-1400nm	/	/
7	Radiance measurements	SRS 12 Radiance Standard (SH 348)	300-1400nm	2022/2/25	2023/2/24
7	Irradiance measurements	CL6 Spectral irradiance standard (SH 350)	300-3000nm	2022/2/25	2023/2/24
7	Irradiance measurements	CL7 Spectral irradiance standard (SH 351)	200-400nm	2022/2/25	2023/2/24
7	Irradiance measurements	Photometric detector head (SH 359)	380nm-800nm	2022/2/26	2023/2/25
7	Irradiance measurements Radiance measurements	Watmeter (SH030)	500V,40A	2021/10/10	2022/10/10

Appendix 1: Photo Documentation



L2C4-57802S02F0600

## Appendix 2: Model List

The tested sample L2C4-57802S02F0600 is considered the worst case. Hence its rating RG2 (at 700mA) and RG1 (at 131mA) are applicable to all parts covered by the part number nomenclature mentioned below.

**LUXEON CX Plus CoB - High Density series (L2C4-AABBCDDDEFFGG):**

L 2 C 4 – A A B B C D D D E F F G G

Where:

A A: designates nominal CCT (27=2700K, 30=3000K, 35=3500K, 40=4000K, 50=5000K, 57=5700K);

B B: designates minimum CRI (80=80CRI, 90=90CRI, 96=95CRI);

C: designates color (2=2-step, 3=3-step);

D D D: designates product configuration (example: S01, S02, S04, M02, M03, L04, L05, L08);

**E: designates options for product specification;**

F F: designates light emitting surface (LES) size (04=4.5mm, 06=6mm, H6=6mm, 09=9mm, 12=12mm, 14=14mm);

G G: designates options for product specification (00=standard, B0=BBBL)

Commercial Part number	LES (mm)	Max Current (mA)	Max Voltage (V)	Nominal CCT (K)	Minimum CRI	Typical Flux (lm)	Typ Flux Density (lm/mm <sup>2</sup> )
L2C4-2780XS01F04XX	4,5	350	46	2700	80	725	46
L2C4-3080XS01F04XX	4,5	350	46	3000	80	775	49
L2C4-3580XS01F04XX	4,5	350	46	3500	80	790	50
L2C4-4080XS01F04XX	4,5	350	46	4000	80	815	51
L2C4-5080XS01F04XX	4,5	350	46	5000	80	815	51
L2C4-5780XS01F04XX	4,5	350	46	5700	80	815	51
L2C4-2790XS01F04XX	4,5	350	46	2700	90	630	40
L2C4-3090XS01F04XX	4,5	350	46	3000	90	655	41
L2C4-3590XS01F04XX	4,5	350	46	3500	90	695	44
L2C4-4090XS01F04XX	4,5	350	46	4000	90	710	45
L2C4-5090XS01F04XX	4,5	350	46	5000	90	700	44
L2C4-2780XS01FH6XX	6	350	46	2700	80	760	27
L2C4-3080XS01FH6XX	6	350	46	3000	80	805	28
L2C4-3580XS01FH6XX	6	350	46	3500	80	815	29
L2C4-4080XS01FH6XX	6	350	46	4000	80	825	29
L2C4-5080XS01FH6XX	6	350	46	5000	80	825	29
L2C4-5780XS01FH6XX	6	350	46	5700	80	825	29

Commercial Part number	LES (mm)	Max Current (mA)	Max Voltage (V)	Nominal CCT (K)	Minimum CRI	Typical Flux (lm)	Typ Flux Density (lm/mm <sup>2</sup> )
L2C4-2790XS01FH6XX	6	350	46	2700	90	645	23
L2C4-3090XS01FH6XX	6	350	46	3000	90	675	24
L2C4-3590XS01FH6XX	6	350	46	3500	90	705	25
L2C4-4090XS01FH6XX	6	350	46	4000	90	730	26
L2C4-5090XS01FH6XX	6	350	46	5000	90	725	26
L2C4-2780XS02F06XX	6	700	46	2700	80	1470	52
L2C4-3080XS02F06XX	6	700	46	3000	80	1550	55
L2C4-3580XS02F06XX	6	700	46	3500	80	1580	56
L2C4-4080XS02F06XX	6	700	46	4000	80	1650	58
L2C4-5080XS02F06XX	6	700	46	5000	80	1650	58
L2C4-5780XS02F06XX	6	700	46	5700	80	1650	58
L2C4-2790XS02F06XX	6	700	46	2700	90	1260	45
L2C4-3090XS02F06XX	6	700	46	3000	90	1335	47
L2C4-3590XS02F06XX	6	700	46	3500	90	1410	50
L2C4-4090XS02F06XX	6	700	46	4000	90	1450	51
L2C4-5090XS02F06XX	6	700	46	5000	90	1435	51
L2C4-2780XS04F09XX	9	1400	46	2700	80	3000	47
L2C4-3080XS04F09XX	9	1400	46	3000	80	3210	50
L2C4-3580XS04F09XX	9	1400	46	3500	80	3260	51
L2C4-4080XS04F09XX	9	1400	46	4000	80	3415	54
L2C4-5080XS04F09XX	9	1400	46	5000	80	3415	54
L2C4-5780XS04F09XX	9	1400	46	5700	80	3415	54
L2C4-2790XS04F09XX	9	1400	46	2700	90	2480	39
L2C4-3090XS04F09XX	9	1400	46	3000	90	2640	42
L2C4-3590XS04F09XX	9	1400	46	3500	90	2800	44
L2C4-4090XS04F09XX	9	1400	46	4000	90	2890	45
L2C4-5090XS04F09XX	9	1400	46	5000	90	2860	45

Commercial Part number	LES (mm)	Max Current (mA)	Max Voltage (V)	Nominal CCT (K)	Minimum CRI	Typical Flux (lm)	Typ Flux Density (lm/mm <sup>2</sup> )
L2C4-2795XS02F04XX	4,5	350	46	2700	95	552	35
L2C4-3095XS02F04XX	4,5	350	46	3000	95	587	37
L2C4-3595XS02F04XX	4,5	350	46	3500	95	606	38
L2C4-4095XS02F04XX	4,5	350	46	4000	95	628	40
L2C4-2795XS02FH6XX	6	350	46	2700	95	578	20
L2C4-3095XS02FH6XX	6	350	46	3000	95	613	22
L2C4-3595XS02FH6XX	6	350	46	3500	95	639	23
L2C4-4095XS02FH6XX	6	350	46	4000	95	662	23
L2C4-2795XS02F06XX	6	700	46	2700	95	1145	41
L2C4-3095XS02F06XX	6	700	46	3000	95	1200	42
L2C4-3595XS02F06XX	6	700	46	3500	95	1240	44
L2C4-4095XS02F06XX	6	700	46	4000	95	1285	45
L2C4-2795XS04F09XX	9	1400	46	2700	95	2360	37
L2C4-3095XS04F09XX	9	1400	46	3000	95	2510	39
L2C4-3595XS04F09XX	9	1400	46	3500	95	2600	41
L2C4-4095XS04F09XX	9	1400	46	4000	95	2700	42

**LUXEON CoB Core Range High Density (L2C5-AABBCCCCDEEFF):**

Model No	Drive Current (mA)	2200K/2700K	3000K	3500K	4000K	5000K	5700K	6500K
L2C5-AABB1202DEEFF	130	RG1	RG1	RG1	RG1	RG1	RG1	RG1
	350	RG2	RG2	RG2	RG2	RG2	RG2	RG2
	700	RG2	RG2	RG2	RG2	RG2	RG2	RG2
L2C5-AABB1204DEEFF	260	RG1	RG1	RG1	RG1	RG1	RG1	RG1
	700	RG2	RG2	RG2	RG2	RG2	RG2	RG2
	1350	RG2	RG2	RG2	RG2	RG2	RG2	RG2
L2C5-AABB1205DEEFF	325	RG1	RG1	RG1	RG1	RG1	RG1	RG1
	900	RG2	RG2	RG2	RG2	RG2	RG2	RG2
	1650	RG2	RG2	RG2	RG2	RG2	RG2	RG2

**LUXEON CoB Core Range High Density Gen 1 series (L2C5-AABBCCCCDEEFF):**

L2C5-AABBCCCCDEEFF

Where

AA: designates nominal CCT (example: 22=2200K, 27=2700K, 30=3000K, 3=3500K, 40=4000K, 50=5000K, 57=5700K, 65=6500K);

BB: designate minimum CRI (example : 70=70 CRI, 80=80 CRI, 90=90 CRI);

CCCC: designates product configuration (example: 1202,1204,1205 );

D: designates options for product specification;

EE: designates light emitting surface (LES) size (example : H6=6mm, 09=9mm, 11=11mm);

FF: designate options for product specification

PART NUMBER	NOMINAL CCT (K)	MINIMUM CRI	TYPICAL FLUX (lm)	LES (mm)	TYP FLUX DENSITY (lm/mm²)	TEST CURRENT (mA)	MAXIMUM CURRENT (mA)	MAX VALTAGE (V)
L2C5-40701202EH600	4000	70	1673	6,5	50	350	700	41,5
L2C5-50701202EH600	5000	70	1673	6,5	50	350	700	41,5
L2C5-27801202EH600	2700	80	1378	6,5	42	350	700	41,5
L2C5-30801202EH600	3000	80	1520	6,5	46	350	700	41,5
L2C5-35801202EH600	3500	80	1562	6,5	47	350	700	41,5
L2C5-40801202EH600	4000	80	1598	6,5	48	350	700	41,5
L2C5-50801202EH600	5000	80	1583	6,5	48	350	700	41,5
L2C5-57801202EH600	5700	80	1591	6,5	48	350	700	41,5
L2C5-27901202EH600	2700	90	1260	6,5	38	350	700	41,5
L2C5-30901202EH600	3000	90	1345	6,5	41	350	700	41,5
L2C5-35901202EH600	3500	90	1359	6,5	41	350	700	41,5
L2C5-40901202EH600	4000	90	1353	6,5	41	350	700	41,5
L2C5-30701204E0900	3000	70	3207	9	50	700	<b>1350</b>	41,5
L2C5-35701204E0900	3500	70	3111	9	49	700	<b>1350</b>	41,5
L2C5-40701204E0900	4000	70	3345	9	53	700	<b>1350</b>	41,5
L2C5-50701204E0900	5000	70	3345	9	53	700	<b>1350</b>	41,5
L2C5-57701204E0900	5700	70	3185	9	50	700	<b>1350</b>	41,5

TRF No. IEC62778A

PART NUMBER	NOMINAL CCT (K)	MINIMUM CRI	TYPICAL FLUX (lm)	LES (mm)	TYP FLUX DENSITY (lm/mm <sup>2</sup> )	TEST CURRENT (mA)	MAXIMUM CURRENT (mA)	MAX VALTAGE (V)
L2C5-65701204E0900	6500	70	3137	9	49	700	<b>1350</b>	41,5
L2C5-22801204E0900	2200	80	2378	9	37	700	<b>1350</b>	41,5
L2C5-27801204E0900	2700	80	2838	9	45	700	<b>1350</b>	41,5
L2C5-30801204E0900	3000	80	2987	9	47	700	<b>1350</b>	41,5
L2C5-35801204E0900	3500	80	3047	9	48	700	<b>1350</b>	41,5
L2C5-40801204E0900	4000	80	3167	9	50	700	<b>1350</b>	41,5
L2C5-50801204E0900	5000	80	3167	9	50	700	<b>1350</b>	41,5
L2C5-57801204E0900	5700	80	3212	9	51	700	<b>1350</b>	41,5
L2C5-22901204E0900	2200	90	2071	9	33	700	<b>1350</b>	41,5
L2C5-27901204E0900	2700	90	2430	9	38	700	<b>1350</b>	41,5
L2C5-30901204E0900	3000	90	2562	9	40	700	<b>1350</b>	41,5
L2C5-32901204E0900	3200	90	2600	9	41	700	<b>1350</b>	41,5
L2C5-35901204E0900	3500	90	2800	9	44	700	<b>1350</b>	41,5
L2C5-40901204E0900	4000	90	2834	9	45	700	<b>1350</b>	41,5
L2C5-40701205E1100	4000	70	4200	11	44	900	<b>1650</b>	41,5
L2C5-50701205E1100	5000	70	4200	11	44	900	<b>1650</b>	41,5
L2C5-27801205E1100	2700	80	3673	11	39	900	<b>1650</b>	41,5
L2C5-30801205E1100	3000	80	3848	11	41	900	<b>1650</b>	41,5
L2C5-35801205E1100	3500	80	3940	11	41	900	<b>1650</b>	41,5
L2C5-40801205E1100	4000	80	4056	11	43	900	<b>1650</b>	41,5
L2C5-50801205E1100	5000	80	3939	11	41	900	<b>1650</b>	41,5
L2C5-57801205E1100	5700	80	4114	11	43	900	<b>1650</b>	41,5
L2C5-27901205E1100	2700	90	3070	11	32	900	<b>1650</b>	41,5
L2C5-30901205E1100	3000	90	3250	11	34	900	<b>1650</b>	41,5
L2C5-40901205E1100	4000	90	3529	11	37	900	<b>1650</b>	41,5
L2C5-27901202EH6DH	2700	90	1177	6,5	35,5	<b>350</b>	<b>700</b>	41,5

PART NUMBER	NOMINAL CCT (K)	MINIMUM CRI	TYPICAL FLUX (lm)	LES (mm)	TYP FLUX DENSITY (lm/mm <sup>2</sup> )	TEST CURRENT (mA)	MAXIMUM CURRENT (mA)	MAX VALTAGE (V)
L2C5-35901202EH6DH	3500	90	1359	6,5	41,0	350	700	41,5
L2C5-40901202EH6DH	4000	90	1353	6,5	40,8	350	700	41,5
L2C5-50801204E09AX	5000	80	3167	9	49,8	700	1350	41,5
L2C5-24901204E09DZ	2400	90	2071	9	32,6	700	1350	41,5
L2C5-27901204E09DN	2700	90	2295	9	36,1	700	1350	41,5
L2C5-30901204E09DH	3000	90	2521	9	39,6	700	1350	41,5
L2C5-30901204E09DN	3000	90	2445	9	38,5	700	1350	41,5
L2C5-35901204E09DH	3500	90	2628	9	41,3	700	1350	41,5
L2C5-35901204E09DN	3500	90	2549	9	40,1	700	1350	41,5
L2C5-40901204E09DN	4000	90	2676	9	42,1	700	1350	41,5
L2C5-27901205E11DN	2700	90	2939	11	30,9	900	1650	41,5
L2C5-30901205E11DN	3000	90	3162	11	33,3	900	1650	41,5
L2C5-35901205E11DN	3500	90	3133	11	33,0	900	1650	41,5
L2C5-40901205E11DN	4000	90	3396	11	35,8	900	1650	41,5

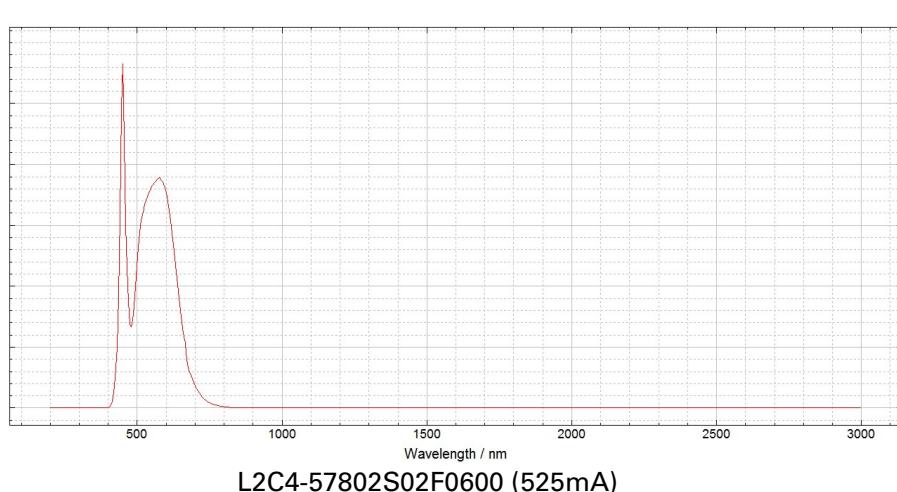
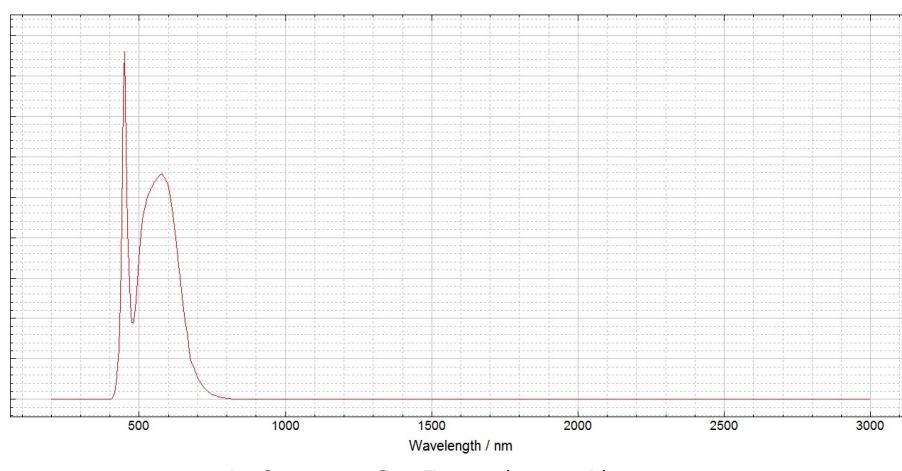
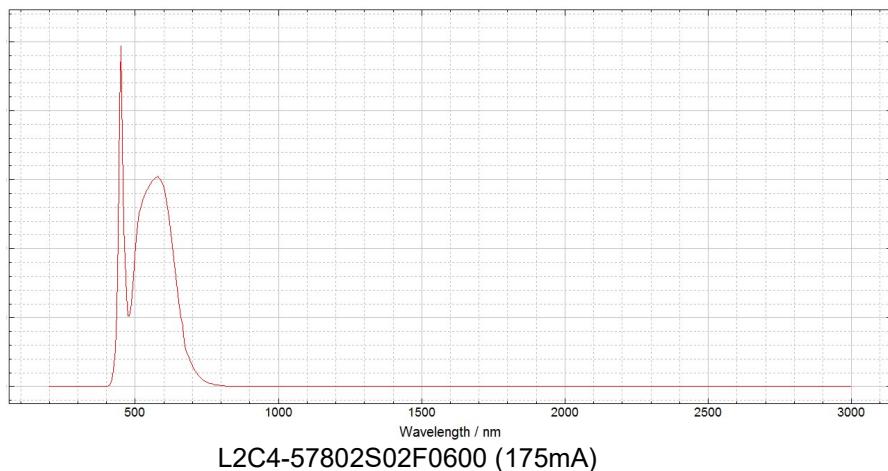
## LUXEON CoB Core Range High Density Gen 2 series (L2C5-AABBCCCCDEEFF):

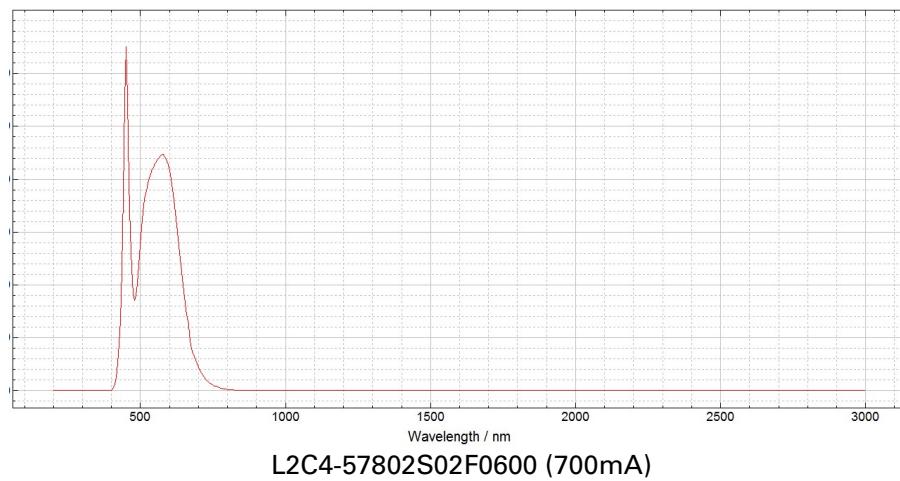
PART NUMBER	MINIMUM CRI	NOMINAL CCT (K)	TYPICAL FLUX (lm)	LES (mm)	TYPICAL FLUX DENSITY (lm/mm <sup>2</sup> )	TEST CURRENT (mA)	MAXIMUM CURRENT (mA)	MAXIMUM VOLTAGE (V)
L2C5-40701202FH600	4000K	70	1838	6.5	55.4	350	700	41.5
L2C5-50701202FH600	5000K	70	1838	6.5	55.4	350	700	41.5
L2C5-27801202FH600	2700K	80	1576	6.5	47.5	350	700	41.5
L2C5-30801202FH600	3000K	80	1637	6.5	49.3	350	700	41.5
L2C5-35801202FH600	3500K	80	1682	6.5	50.7	350	700	41.5
L2C5-40801202FH600	4000K	80	1721	6.5	51.9	350	700	41.5
L2C5-50801202FH600	5000K	80	1709	6.5	51.5	350	700	41.5
L2C5-57801202FH600	5700K	80	1709	6.5	51.5	350	700	41.5
L2C5-27901202FH600	2700K	90	1382	6.5	41.6	350	700	41.5
L2C5-30901202FH600	3000K	90	1443	6.5	43.5	350	700	41.5
L2C5-35901202FH600	3500K	90	1458	6.5	43.9	350	700	41.5
L2C5-40901202FH600	4000K	90	1461	6.5	44.0	350	700	41.5
L2C5-30701204F0900	3000K	70	3589	9	56.4	700	1350	41.5
L2C5-35701204F0900	3500K	70	3624	9	57.0	700	1350	41.5
L2C5-40701204F0900	4000K	70	3659	9	57.5	700	1350	41.5
L2C5-50701204F0900	5000K	70	3659	9	57.5	700	1350	41.5
L2C5-57701204F0900	5700K	70	3675	9	57.8	700	1350	41.5
L2C5-65701204F0900	6500K	70	3670	9	57.7	700	1350	41.5
L2C5-22801204F0900	2200K	80	2789	9	43.8	700	1350	41.5
L2C5-27801204F0900	2700K	80	3116	9	49.0	700	1350	41.5
L2C5-30801204F0900	3000K	80	3345	9	52.6	700	1350	41.5
L2C5-35801204F0900	3500K	80	3404	9	53.5	700	1350	41.5
L2C5-40801204F0900	4000K	80	3538	9	55.6	700	1350	41.5
L2C5-50801204F0900	5000K	80	3443	9	54.1	700	1350	41.5

TRF No. IEC62778A

PART NUMBER	MINIMUM CRI	NOMINAL CCT (K)	TYPICAL FLUX (lm)	LES (mm)	TYPICAL FLUX DENSITY (lm/mm <sup>2</sup> )	TEST CURRENT (mA)	MAXIMUM CURRENT (mA)	MAXIMUM VOLTAGE (V)
L2C5-57801204F0900	5700K	80	3443	9	54.1	700	1350	41.5
L2C5-22901204F0900	2200K	90	2423	9	38.1	700	1350	41.5
L2C5-27901204F0900	2700K	90	2712	9	42.6	700	1350	41.5
L2C5-30901204F0900	3000K	90	2875	9	45.2	700	1350	41.5
L2C5-35901204F0900	3500K	90	2918	9	45.9	700	1350	41.5
L2C5-40901204F0900	4000K	90	3047	9	47.9	700	1350	41.5
L2C5-40701205F1100	4000K	70	4805	11	50.6	900	1650	41.5
L2C5-50701205F1100	5000K	70	4805	11	50.6	900	1650	41.5
L2C5-27801205F1100	2700K	80	4037	11	42.5	900	1650	41.5
L2C5-30801205F1100	3000K	80	4229	11	44.5	900	1650	41.5
L2C5-35801205F1100	3500K	80	4440	11	46.7	900	1650	41.5
L2C5-40801205F1100	4000K	80	4449	11	46.8	900	1650	41.5
L2C5-50801205F1100	5000K	80	4321	11	45.5	900	1650	41.5
L2C5-57801205F1100	5700K	80	4321	11	45.5	900	1650	41.5
L2C5-27901205F1100	2700K	90	3530	11	37.1	900	1650	62.3
L2C5-30901205F1100	3000K	90	3682	11	38.7	900	1650	62.3
L2C5-40901205F1100	4000K	90	3998	11	42.1	900	1650	62.3

## Appendix 3: Relative Spectrum Of Tested Sample(s)





Appendix 4: Table 6.1 Based On IEC 62471:2006

DUT: L2C4-57802S02F0600 (175mA) Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

IEC 62471								
Clause	Requirement + Test			Result – Remark			Verdict	
Risk	Action spectrum	Symbol	Units	Emission Measurement				
				Exempt		Low risk		Mod risk
				Limit	Result	Limit	Result	Limit
Actinic UV	$S_{\text{Uv}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	0,003		0,03
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	10	0,0000	33		100
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	7,33E+02	10000	1,33E+04	4000000
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	1,0*	--	1,0		400
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	1,63E+05	$28000/\alpha$		$71000/\alpha$
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_{IR}$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$6000/\alpha$	--	$6000/\alpha$		$6000/\alpha$
IR radiation, eye		$E_{IR}$	$\text{W}\cdot\text{m}^{-2}$	100	0,09	570		3200

\* 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

DUT: L2C4-57802S02F0600 (350mA) Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

IEC 62471					
Clause	Requirement + Test		Result – Remark		Verdict

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	0,0000	0,003		0,03	
Near UV		$E_{UVA}$	$W \cdot m^{-2}$	10	0,0000	33		100	
Blue light	$B(\lambda)$	$L_B$	$W \cdot m^{-2} \cdot sr^{-1}$	100	1,37E+03	10000	2,41E+04	4000000	2,56E+04
Blue light, small source	$B(\lambda)$	$E_B$	$W \cdot m^{-2}$	1,0*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$W \cdot m^{-2} \cdot sr^{-1}$	$28000/\alpha$	2,92E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_{IR}$	$W \cdot m^{-2} \cdot sr^{-1}$	$6000/\alpha$	--	$6000/\alpha$		$6000/\alpha$	
IR radiation, eye		$E_{IR}$	$W \cdot m^{-2}$	100	0,11	570		3200	

\* 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

DUT: L2C4-57802S02F0600 (525mA) Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

IEC 62471							
Clause	Requirement + Test			Result – Remark			Verdict

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	0,0000	0,003		0,03	
Near UV		$E_{UVA}$	$W \cdot m^{-2}$	10	0,0000	33		100	
Blue light	$B(\lambda)$	$L_B$	$W \cdot m^{-2} \cdot sr^{-1}$	100	1,91E+03	10000	3,38E+04	4000000	4,20E+04
Blue light, small source	$B(\lambda)$	$E_B$	$W \cdot m^{-2}$	1,0*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$W \cdot m^{-2} \cdot sr^{-1}$	$28000/\alpha$	4,06E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_{IR}$	$W \cdot m^{-2} \cdot sr^{-1}$	$6000/\alpha$	--	$6000/\alpha$		$6000/\alpha$	
IR radiation, eye		$E_{IR}$	$W \cdot m^{-2}$	100	0,15	570		3200	

\* 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

DUT: L2C4-57802S02F0600 (700mA) Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

IEC 62471								
Clause	Requirement + Test			Result – Remark			Verdict	

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{\text{UV}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	0,003		0,03	
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	10	0,0000	33		100	
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	2,33E+03	10000	4,02E+04	4000000	4,75E+04
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	1,0*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	4,79E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_{IR}$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$6000/\alpha$	--	$6000/\alpha$		$6000/\alpha$	
IR radiation, eye		$E_{IR}$	$\text{W}\cdot\text{m}^{-2}$	100	0,18	570		3200	

\* 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

Appendix 5: Table 6.1 Based On EN62471:2008, Attachment To IEC 62471 European Group Differences And National Differences  
DUT: L2C4-57802S02F0600 (175mA), Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

EN 62471								
Clause	Requirement + Test			Result – Remark				Verdict
<b>Table 6.1</b> Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)								
Risk	Action spectrum	Symbol	Units	Emission Measurement				
				Exempt		Low risk		Mod risk
				Limit	Result	Limit	Result	Limit
Actinic UV	$S_{\text{Uv}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	--	--	--
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	0,33	0,0000	--	--	--
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	7,33E+02	10000	1,33E+04	4000000
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	0,01*	--	1,0		400
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	1,63E+05	$28000/\alpha$		$71000/\alpha$
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	545000 $0,0017 \leq \alpha \leq 0,011$	--			
				6000/ $\alpha$ $0,011 \leq \alpha \leq 0,1$	--			
IR radiation, eye		$E_{\text{IR}}$	$\text{W}\cdot\text{m}^{-2}$	100	0,09	570		3200
* 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								
NOTE The action functions: see Table 4.1 and Table 4.2 The applicable aperture diameters: see 4.2.1 The limitations for the angular subtenses: see 4.2.2 The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.								

DUT: L2C4-57802S02F0600 (350mA), Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

EN 62471								
Clause	Requirement + Test			Result – Remark				Verdict

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{\text{UV}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	--	--	--	--
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	0,33	0,0000	--	--	--	--
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	1,37E+03	10000	2,41E+04	4000000	2,56E+04
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	0,01*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	2,92E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	545000 $0,0017 \leq \alpha \leq 0,011$	--				
				6000/ $\alpha$ $0,011 \leq \alpha \leq 0,1$	--				
IR radiation, eye		$E_{\text{IR}}$	$\text{W}\cdot\text{m}^{-2}$	100	0,11	570		3200	

\* 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

NOTE The action functions: see Table 4.1 and Table 4.2

The applicable aperture diameters: see 4.2.1

The limitations for the angular subtenses: see 4.2.2

The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

DUT: L2C4-57802S02F0600 (525mA), Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

EN 62471								
Clause	Requirement + Test			Result – Remark				Verdict

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{\text{UV}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	--	--	--	--
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	0,33	0,0000	--	--	--	--
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	1,91E+03	10000	3,38E+04	4000000	4,20E+04
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	0,01*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	4,06E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_{IR}$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	545000 $0,0017 \leq \alpha \leq 0,011$					--
				6000/ $\alpha$ $0,011 \leq \alpha \leq 0,1$					--
IR radiation, eye		$E_{IR}$	$\text{W}\cdot\text{m}^{-2}$	100	0,15	570		3200	

\* 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

NOTE The action functions: see Table 4.1 and Table 4.2

The applicable aperture diameters: see 4.2.1

The limitations for the angular subtenses: see 4.2.2

The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

DUT: L2C4-57802S02F0600 (700mA), Evaluation Distance: 200mm, Angular subtense of the apparent source  $\alpha$ : 30 mrad

EN 62471								
Clause	Requirement + Test			Result – Remark				Verdict

Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	$S_{\text{UV}}(\lambda)$	$E_s$	$\text{W}\cdot\text{m}^{-2}$	0,001	0,0000	--	--	--	--
Near UV		$E_{\text{UVA}}$	$\text{W}\cdot\text{m}^{-2}$	0,33	0,0000	--	--	--	--
Blue light	$B(\lambda)$	$L_B$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	100	2,33E+03	10000	4,02E+04	4000000	4,75E+04
Blue light, small source	$B(\lambda)$	$E_B$	$\text{W}\cdot\text{m}^{-2}$	0,01*	--	1,0		400	
Retinal thermal	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	$28000/\alpha$	4,79E+05	$28000/\alpha$		$71000/\alpha$	
Retinal thermal, weak visual stimulus**	$R(\lambda)$	$L_R$	$\text{W}\cdot\text{m}^{-2}\cdot\text{sr}^{-1}$	545000 $0,0017 \leq \alpha \leq 0,011$	--				
				6000/ $\alpha$ $0,011 \leq \alpha \leq 0,1$	--				
IR radiation, eye		$E_{\text{IR}}$	$\text{W}\cdot\text{m}^{-2}$	100	0,18	570		3200	

\* 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

NOTE The action functions: see Table 4.1 and Table 4.2

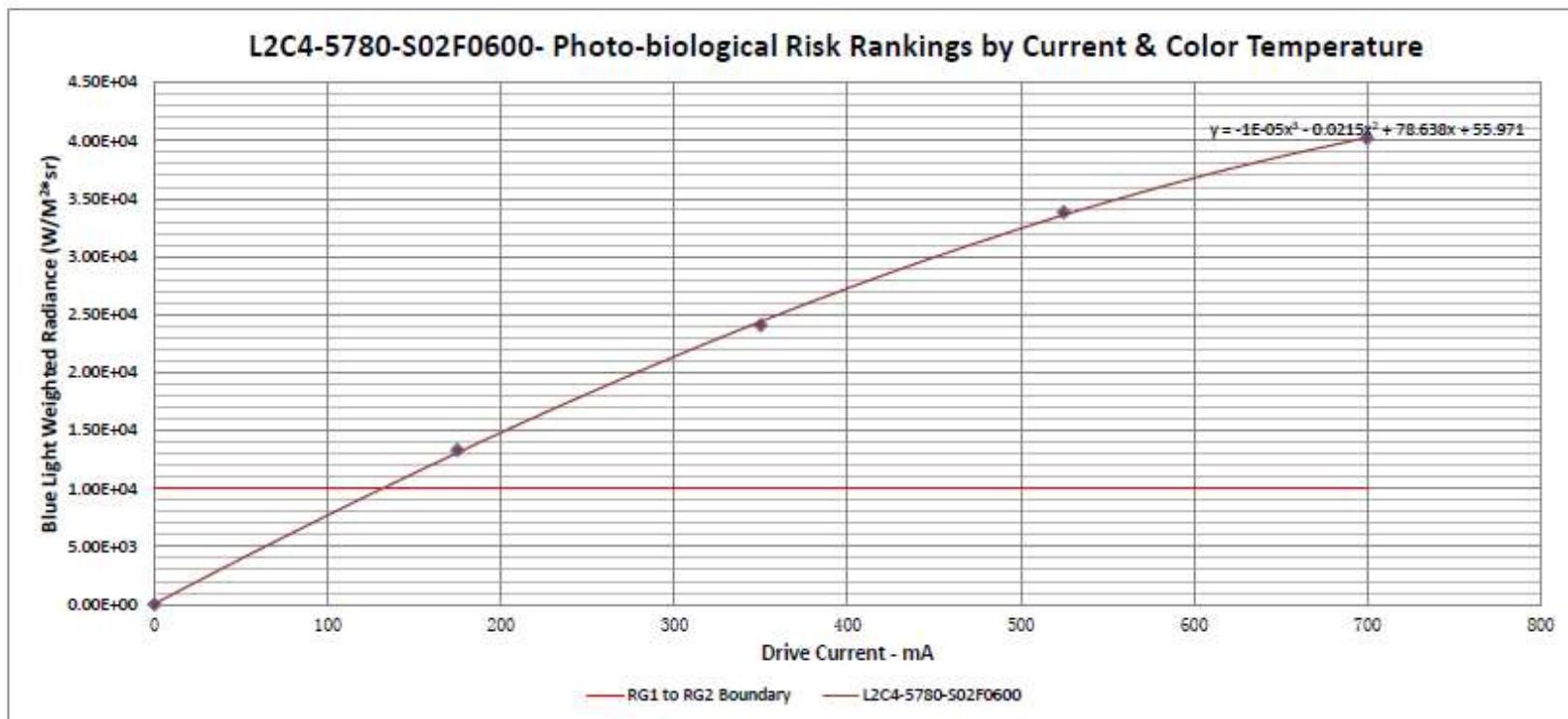
The applicable aperture diameters: see 4.2.1

The limitations for the angular subtenses: see 4.2.2

The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

### Appendix 6: Blue Light Hazard-Forward Current Relationship (Non-mandatory Information)

The diagram below shows the different blue light hazards against different forward currents. It is additional information for reference only.



-----The End-----