

<p align="center">TEST REPORT</p> <p align="center">IEC TR 62778</p> <p align="center">Application of IEC TR 62778 for the assessment of blue light hazard to light sources and luminaires</p>	
Report reference No	RXM200511065-SF
Compiled by (+ signature)	Test Engineer: Brandon Zhou <i>Brandon Zhou</i>
Approved by (+ signature)	Project Engineer: Harrison Huang
Date of issue	2020-05-15
Testing laboratory	Bay Area Compliance Laboratories Corp.(Dongguan)
Address	No.69, Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China
Testing location	Same as above
Applicant	Bridgelux Inc.
Address	46430 Fremont Boulevard, Fremont, CA 94538 USA
Standard	IEC TR 62778:2014
Test sample(s) received.....	2020-05-13
Test in period.....	2020-05-14
Procedure deviation	N.A.
Non-standard test method	N.A.
Type of test object	LED package
Trademark	Bridgelux
Model/type reference	BXEX-65C-11H-3A Multiple Model: BXEX-ABC-11H-3A
Manufacturer.....	Bridgelux Inc. 46430 Fremont Boulevard, Fremont, CA 94538 USA
Rating	Input: 3Vdc, 1.5A
Copy of marking plate:	None

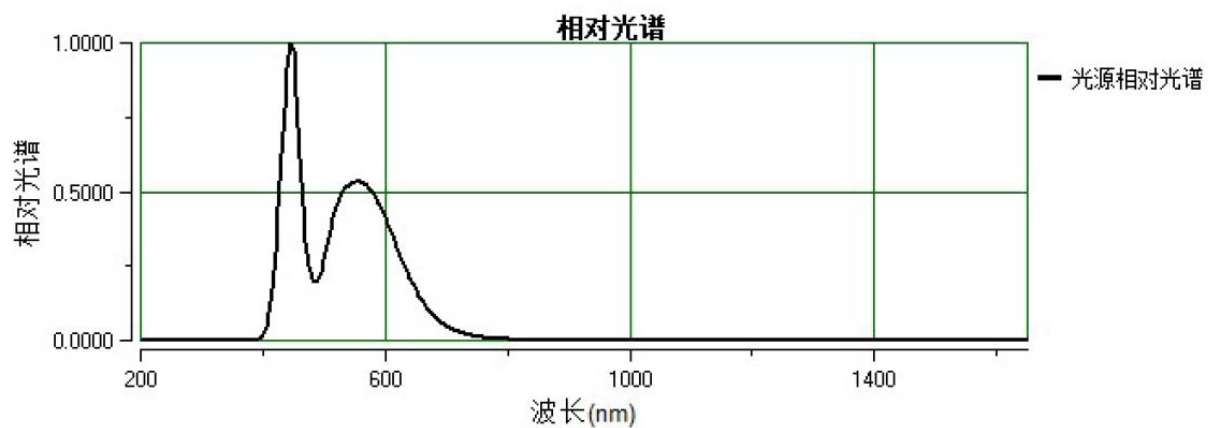
Test item particulars								
Product evaluated Rated voltage (V) Rated current (mA) Rated Luminance (Mcd/m²) Component report data used	<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire See rating See rating Not specified <input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp							
Possible test case verdicts: -test case does not apply to the test object.....:N(.A.) -test object does meet the requirement.....:P(ass) -test object does not meet the requirement.....:F(ail)								
General remarks: 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 testing laboratory. "(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 point is used as the decimal separator. Remark: This report consists of 7 pages and following appendixes: Appendix A EUT photos								
General product information: "EUT" as referred in this report is LED Packages, the test model is BXEX-65C-11H-3A with rating 3Vdc,1.5A. All models have the same circuits and structures except different CCT and CRI.The difference CCT and CRI between them are shown as below for details:								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Tested Model</th> <th style="width: 25%;">Multiple Model</th> <th style="width: 50%;">Difference description</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">BXEX-65C-11H-3A</td> <td style="text-align: center;">BXEX-ABC-11H-3A</td> <td>Where "AB" can be characters represents CCT(2200-6500K) and ranges from 22 to 65; "C" can be one letter represents CRI, where C=70,E=80,G=90 or H=95</td> </tr> </tbody> </table>			Tested Model	Multiple Model	Difference description	BXEX-65C-11H-3A	BXEX-ABC-11H-3A	Where "AB" can be characters represents CCT(2200-6500K) and ranges from 22 to 65; "C" can be one letter represents CRI, where C=70,E=80,G=90 or H=95
Tested Model	Multiple Model	Difference description						
BXEX-65C-11H-3A	BXEX-ABC-11H-3A	Where "AB" can be characters represents CCT(2200-6500K) and ranges from 22 to 65; "C" can be one letter represents CRI, where C=70,E=80,G=90 or H=95						
Unless otherwise specified, BXEX-65C-11H-3A was chosen as the representative models to perform all tests.								

IEC TR 62778			
Clause	Requirement + Test		Verdict
7	MEASUREMENT INFORMATION FLOW		P
7.1	Basic flow		P
	'Law of conservation of luminance' applied		P
	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		P
	In case E_{thr} value for RG2 was established the peak value was derived from angular light distribution		N
7.2	Conditions for the radiance measurement		P
	Standard condition applied (200mm distance, 0,011rad field of view)		P
	Non-standard condition applied		N
7.3	Special cases (I): Replacement by a lamp or LED module of another type		N
	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		N
	LED package is evaluated as : <input type="checkbox"/> RG0 unlimited <input type="checkbox"/> RG1 unlimited <input type="checkbox"/> RG2 unlimited		N
	E_{thr} of LED package applies to array		N
8	RISK GROUP CLASSIFICATION		P
	Risk group achieved:		P
	- .. Risk Group 0 unlimited		N
	- .. Risk Group 1 unlimited		N
	- Risk Group 2 unlimited		P
	- E_{thr} (lx) : Distance to reach RG1(mm) :	878lx 358mm	P

TABLE: Spectroradiometric measurement			P
Measurement performed on:		<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	—
Model number		BXEX-65C-11H-3A	—
Test voltage (V).....		-	—
Test current (mA)		1500mA	—
Test frequency (Hz).....		-	—
Ambient, t (°C).....		24.3°C	—
Measurement distance		<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—
Source size		<input checked="" type="checkbox"/> Non-small: 2.4mm <input type="checkbox"/> Small: mm	—
Field of view		<input type="checkbox"/> 100 mrad <input checked="" type="checkbox"/> 11 mrad <input type="checkbox"/> 1,7 mrad (for small sources)	—

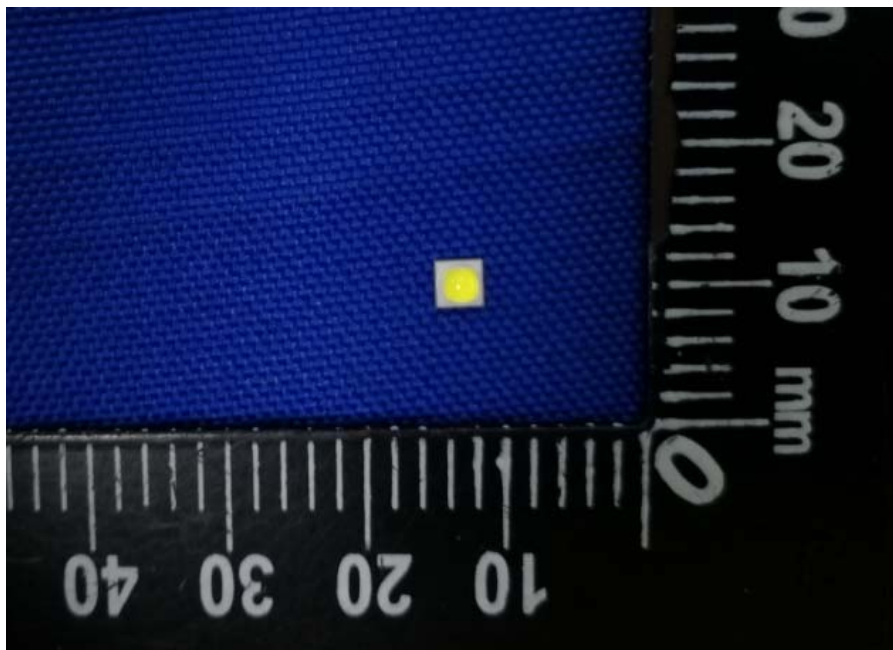
Item	Symbol	Units	Result	Remark
Correlated colour temperature	CCT	K	7903	
x/y colour coordinates	x/y		0.2975/0.3015	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	2.417x10 ⁴	RG2
Blue light hazard irradiance	E _B	W/m ²	-	
Luminance	L	cd/m ²	2.123x10 ⁷	
Illuminance	E	lx	2867	
Supplementary information: NA				

TABLE: Angular light distribution

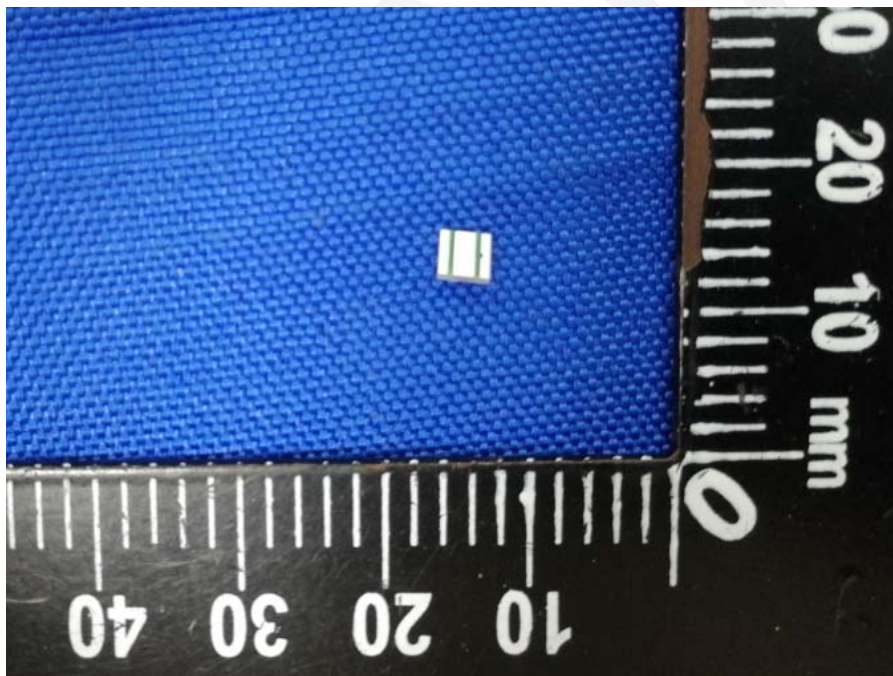


Appendix A - EUT Photos

The top view of EUT



The bottom view of EUT



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.
6. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

***** End of Report *****