

<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	RXM190516051-SF
Compiled by (+ signature)	Test Engineer: Zero Gao <i>Zero Gao</i>
Approved by (+ signature)	Project Engineer: Harrison Huang <i>Harrison Huang</i>
Date of issue	2019-05-21
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.....	2019-05-17
Test in period.....	2019-05-18
Procedure deviation	N.A.
Non-standard test method	N.A.
<p>Note: The test data was only valid for the test sample(s). This test report is prepared for the customer shown above and for the specific product described herein. It must not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).</p>	
Type of test object	BXKC Series COB
Trademark	Bridgelux.
Model/type reference	BXKC-***080* *-1*, BXKC-***150* *-1*
Manufacturer.....	Bridgelux Inc. 46430 Fremont Boulevard, Fremont CA 94538 USA
Rating	Refer to “ General Product Information ” for details.
<p>Copy of marking plate:</p> <p>None</p>	

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. List of test equipment must be kept on file and available for review. Remark: This report consists of 9 pages and following appendixes: Appendix A EUT photos Appendix B Test equipment list	

General product information:

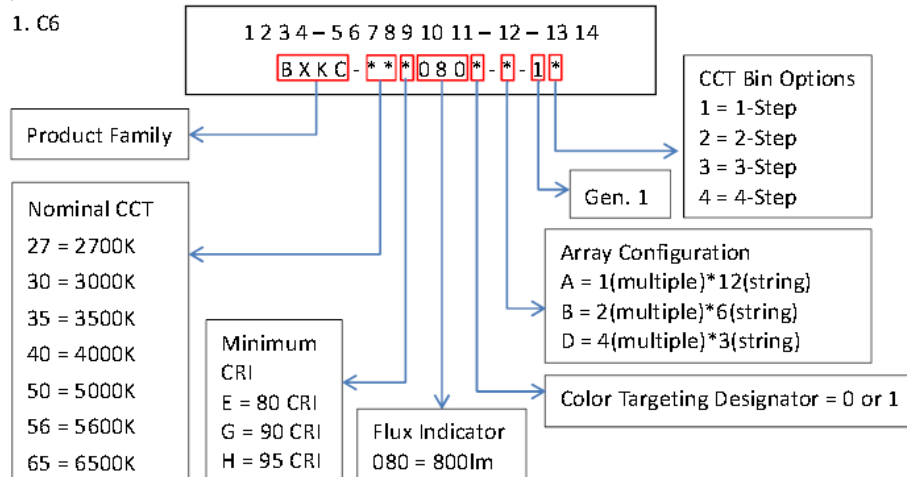
"EUT" as referred in this report are BXKC Series COB.

1. The difference of BXKC-***080* *-1* series are input rating, CCT and CRI. Specific information shown as below:

Product Nomenclature

[The part number designation for Bridgelux E Series LED arrays is explained as follows:

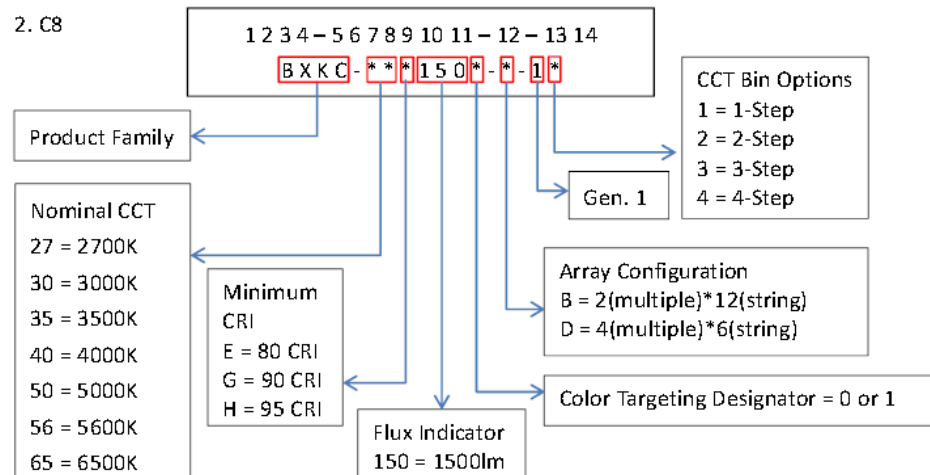
1. C6



BXKC-***080* *-1* series	Input rating	Size
BXKC-***080* -A-1*	36Vdc, 100mA	13.35mm(L)*13.35mm(W)*1.54mm(H)
BXKC-***080* -B-1*	18Vdc, 200mA	
BXKC-***080* -D-1*	9Vdc, 400mA	

2. The difference of BXKC-***150* *-1* series are input rating, CCT and CRI. Specific information shown as below:

2. C8



BXKC-***080* *-1* series	Input rating	Size
BXKC-***150* -B-1*	36Vdc, 200mA	15.85mm(L)*15.85mm(W)*1.54mm(H)
BXKC-***150* -D-1*	18Vdc, 400mA	

3. Unless otherwise specified, model **BXKC-65E0801-D-14** and **BXKC-65E1501-D-14** were chosen as the representative model No. to perform all tests.

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	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	For model BXKC-65E0801-D-14 and BXKC-65E1501-D-14	P
	- Risk Group 2 unlimited		N
	- E_{thr} (lx) : Distance to reach RG1(mm) :		N

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

	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	For model BXKC-65E0801-D-14 and BXKC-65E1501-D-14	—
	Test voltage (V)	For model BXKC-65E0801-D-14: 9Vdc For model BXKC-65E1501-D-14: 18Vdc	—
	Test current (mA)	For model BXKC-65E0801-D-14 and BXKC-65E1501-D-14: 400m A	—
	Test frequency (Hz)	--	—
	Ambient, t (°C)	25.0°C	—
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—
	Source size	<input checked="" type="checkbox"/> Non-small: For model BXKC-65E0801-D-14: 5.5mm For model BXKC-65E1501-D-14: 7.8mm <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)	—

IEC TR 62778			
Clause	Requirement + Test	Result - Remark	Verdict

For model BXKC-65E0801-D-14

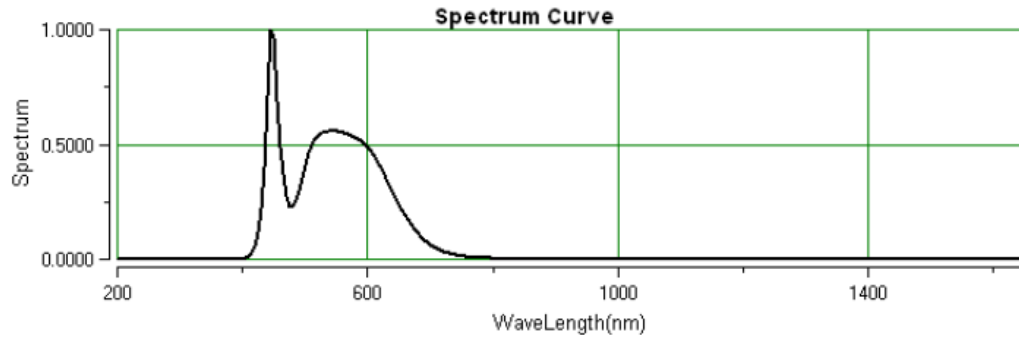
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	5893	--
x/y colour coordinates	x/y		0.3235/0.3471	--
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	2616	--
Blue light hazard irradiance	E _B	W/m ²	--	--
Luminance	L	cd/m ²	3.451 x 10 ⁶	--
Illuminance	E	lx	2886	--
Supplementary information: NA				

For model BXKC-65E1501-D-14

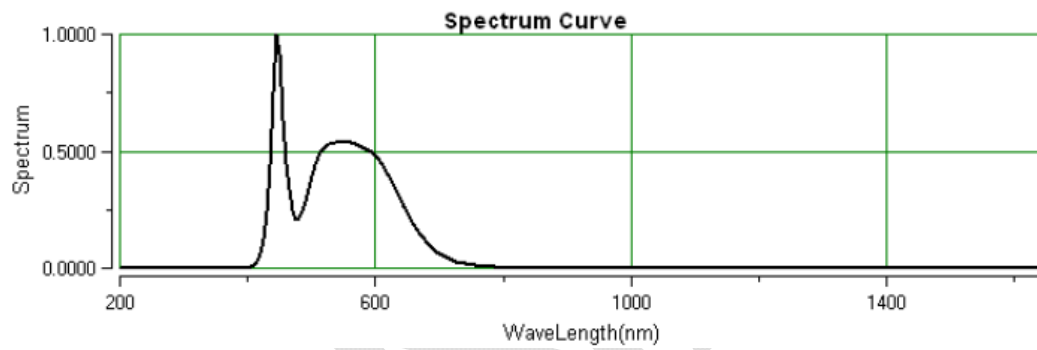
Item	Symb ol	Units	Result	Remark
Correlated colour temperature	CCT	K	5836	--
x/y colour coordinates	x/y		0.3248/0.3454	--
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	3268	--
Blue light hazard irradiance	E _B	W/m ²	--	--
Luminance	L	cd/m ²	4.257 x 10 ⁶	--
Illuminance	E	lx	5784	--
Supplementary information: NA				

TABLE: Angular light distribution

For model BXKC-65E0801-D-14

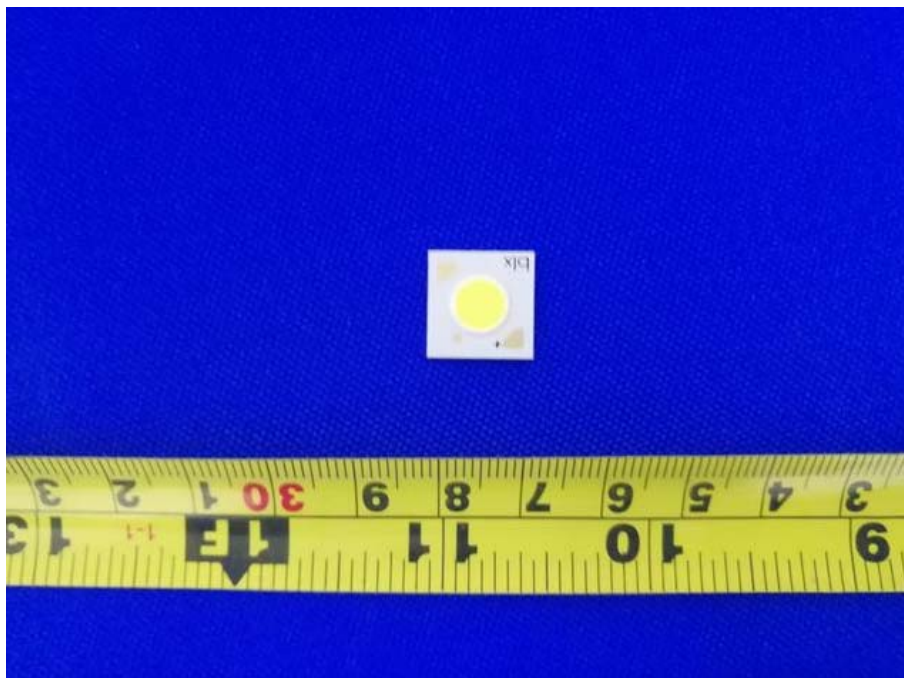


For model BXKC-65E1501-D-14

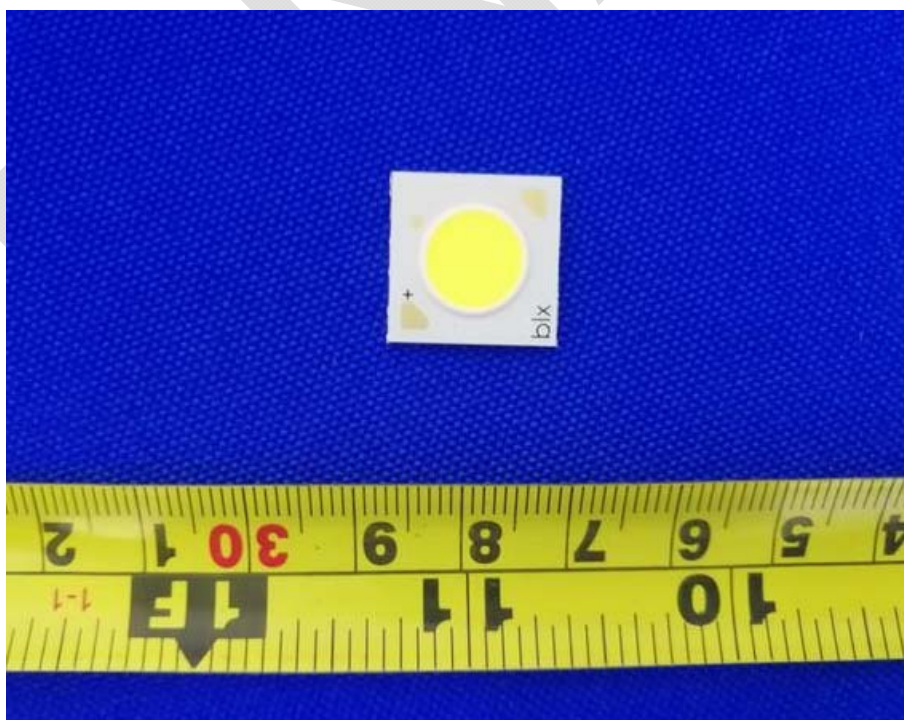


Appendix A - EUT Photos

1. Overall view for model BXKC-65E0801-D-14



2. Overall view for model BXKC-65E1501-D-14



Appendix B Test equipment list

Equipment Description	Model No	BACL#	Manufacturer	Last Cal	Cal Due
UV-VIS-near IR Spectrophotometer	PMS-2000	T-08-SF213	EVERFINE	2018-09-03	2019-09-03
Imaging luminance meter	CX-2K	T-08-SF213-1	EVERFINE	2018-09-03	2019-09-03
Radiation illuminance meter	RD-2000	T-08-SF213-2	EVERFINE	2018-09-03	2019-09-03
Radiation illuminance meter	RD-2000	T-08-SF213-3	EVERFINE	2018-09-03	2019-09-03
High Accuracy Array	HAAS-2000	T-08-SF213-4	EVERFINE	2018-09-03	2019-09-03
80mm sample integrating sphere	SMS-300	T-08-SF213-5	EVERFINE	2018-09-03	2019-09-03
Hygrothermograph	VC230	T-08-QA015	VICTOR	2019-03-17	2020-03-17
Steel tape	5m×19mm	T-08-SF197	B&Q	2016-02-25	2021-02-23
High power LED aging dc power supply	B12005	T-08-SF205	BACL	2019-03-26	2020-03-26
AC power supply	HPA-1103	F-08-SF129	EVERFINE	2018-07-23	2019-07-23

*** End of report ***