

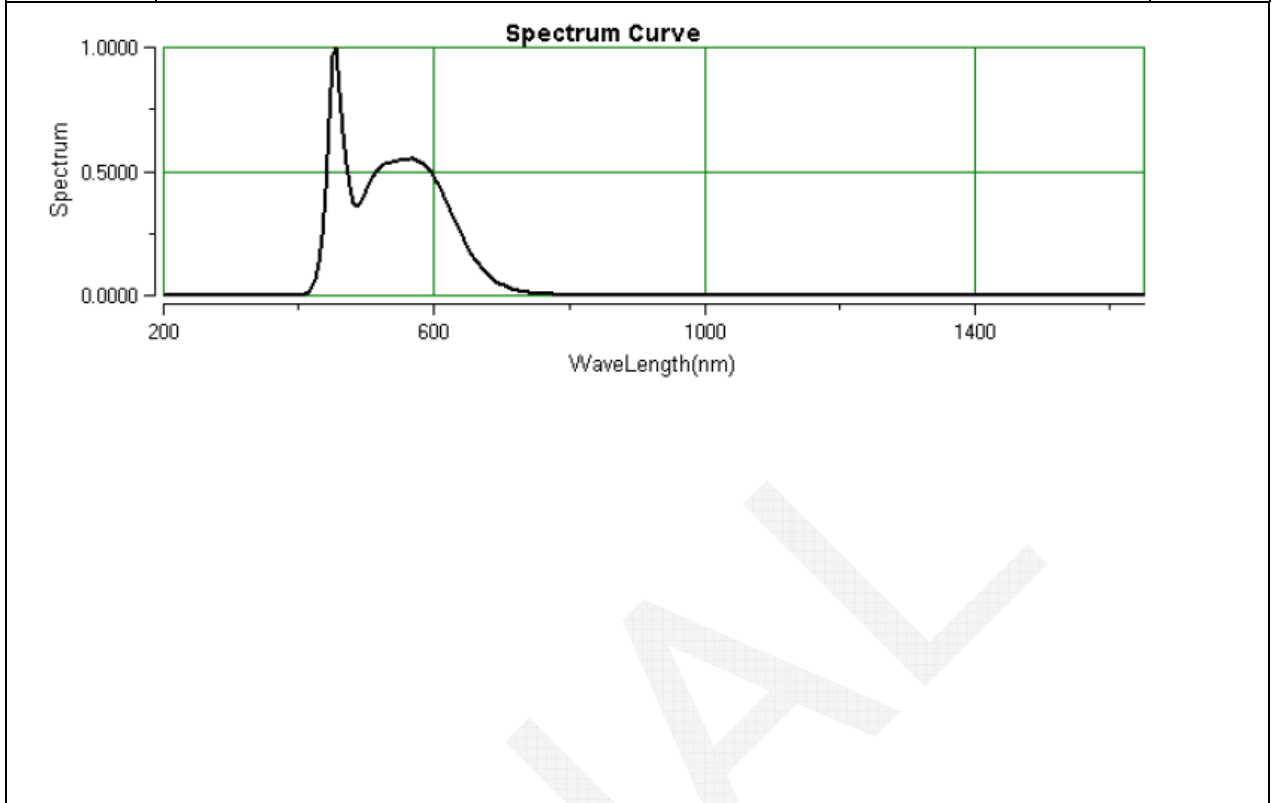
TEST REPORT IEC TR 62778 Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	
Report reference No	RSZ161229553-03
Compiled by (+ signature)	Zero Gao <i>Zero Gao</i>
Approved by (+ signature)	Harrison Huang <i>Harrison Huang</i>
Date of issue	2017-01-05
Testing laboratory	Bay Area Compliance Laboratories Corp.(Dongguan)
Address	No.69, Pulongcun, Puxinhu Industry Zone, Tangxia, Dongguan, Guangdong, China
Testing location	Same as above
Applicant	Hongli Zihui Group Co.,Ltd.
Address	No.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China
Standard	IEC TR 62778:2014 (Second Edition)
Test sample(s) received.....	2016-12-30
Test in period.....	2016-12-30~2017-01-05
Procedure deviation	N.A.
Non-standard test method	N.A.
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).	
Type of test object	LED
Trademark	N.A.
Model/type reference	HL-A-4014H489W-S1-HR3-DM-SX
Multiple Models.....	N.A.
Manufacturer.....	Hongli Zihui Group Co.,Ltd. No.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China
Rating	Input: 2.8-3.4Vdc, 60mA
Copy of marking plate:	None

Test item particulars	
Product evaluated	<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire
Rated voltage (V)	See rating
Rated current (mA)	See rating
Rated CCT (K)	See rating
Rated Luminance (Mcd/m²)	Not specified
Component report data used	<input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp Report number:
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:	
<p>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.</p> <p>Remark: This report consists of 7 pages and following appendixes: Appendix A EUT photos Appendix B Test equipment list</p>	
General product information:	
<p>This product is a LED and manufactured by "Hongli Zhihui Group Co.,Ltd.", Test model is HL-A-4014H489W-S1-HR3-DM-SX. Rated input is 2.8-3.4Vdc, 60mA.</p>	

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		P
	- Risk Group 2 unlimited		N
	- E_{thr} (lx) : Distance to reach RG2(mm) :	1251 lx 69 mm	P

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.....	HL-A-4014H489W-S1-HR3-DM-SX			—
	Test voltage (V)	2.8-3.4Vdc			—
	Test current (mA)	60mA			—
	Test frequency (Hz).....	-			—
	Ambient, t (°C).....	25.0°C			—
	Measurement distance	<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm			—
	Source size	<input type="checkbox"/> Non-small <input checked="" type="checkbox"/> Small : 0.30mm			—
	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	6527	--	
x/y colour coordinates	x/y		0.3109/0.3383	--	
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	1393	--	
Blue light hazard irradiance	E _B	W/m ²	1.194 x10 ⁻¹	--	
Luminance	L	cd/m ²	1.742x10 ⁶	--	
Illuminance	E	lx	149	--	
Supplementary information: NA					

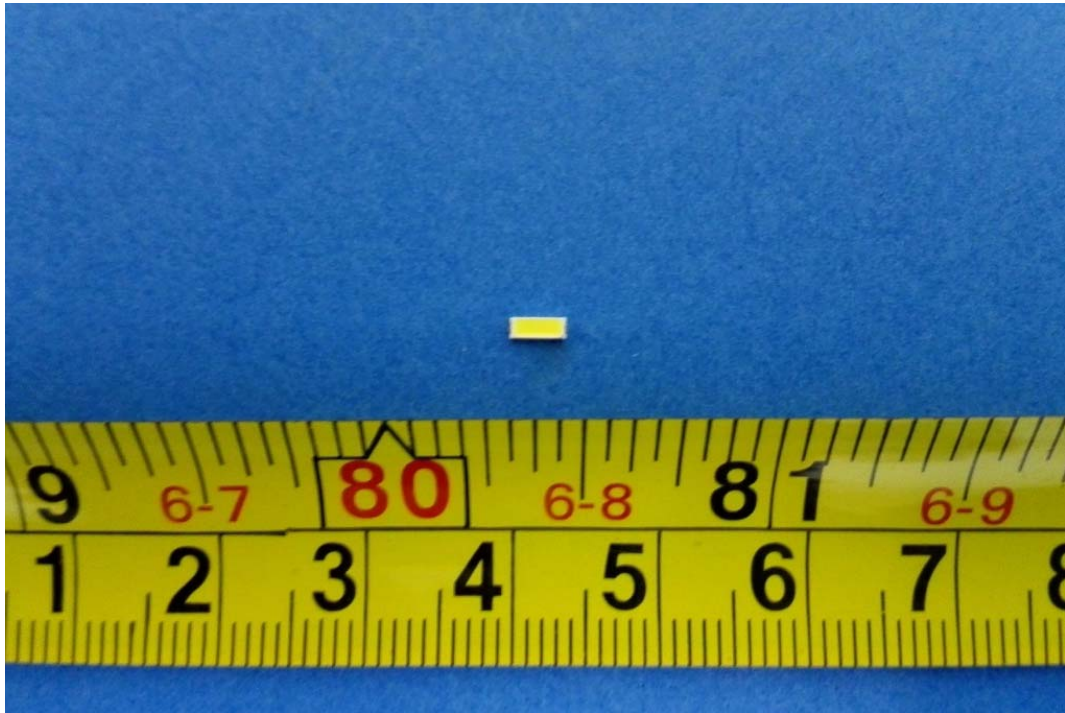
TABLE: Angular light distribution



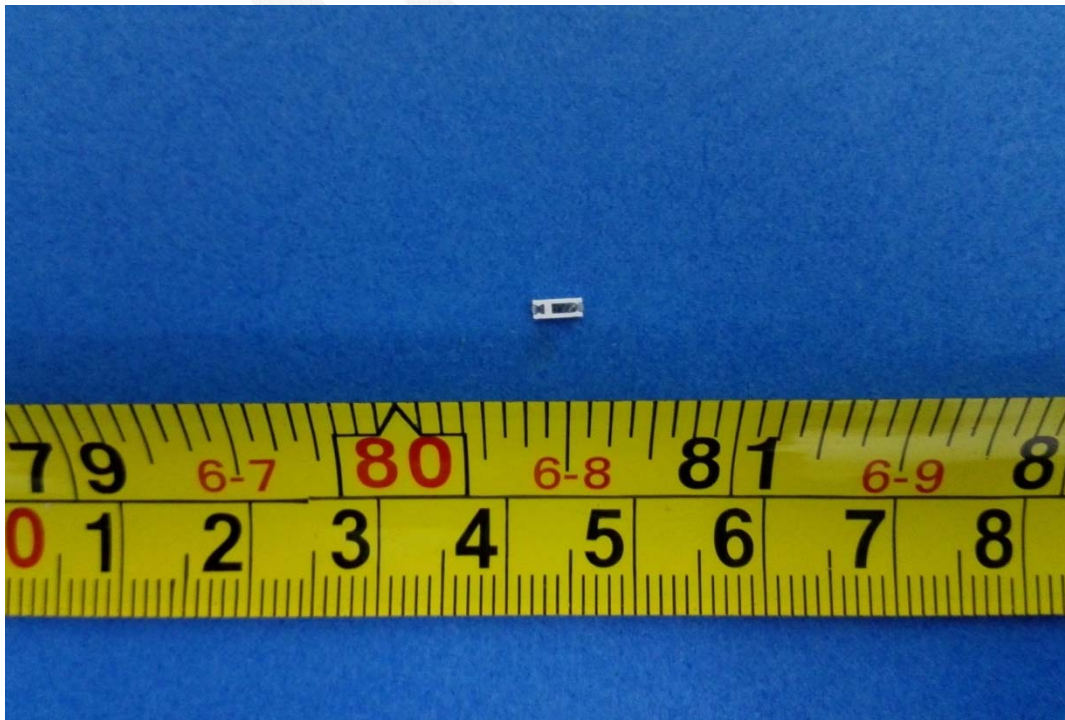
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Appendix A - EUT Photos

The front view of EUT



The bottom view of EUT



Appendix B Test equipment list

Equipment Description	Model No	BACL#	Manufacturer	Last Cal	Cal Due
UV-VIS-near IR Spectrophotocolori meter	PMS-2000	T-08-SF213	EVERFINE	2016-08-08	2017-08-08
Imaging luminance meter	CX-2K	T-08-SF140-1	EVERFINE	2016-08-08	2018-08-08
Radiation illuminance meter	RD-2000	T-08-SF140-2	EVERFINE	2016-08-08	2018-08-08
Radiation illuminance meter	RD-2000	T-08-SF140-3	EVERFINE	2016-08-08	2018-08-08
High Accuracy Array	HAAS-2000	T-08-SF140-4	EVERFINE	2016-08-08	2018-08-08
Hygrothermograph	PWS280	T-08-QA026	N/A	2016-03-21	2017-03-21
Standard power spectral UV radiation-specific	UVS-8003	T-08-EE048	EVERFINE	2016-03-21	2017-03-21
80mm sample integrating sphere	SMS-300	F-08-SF130	EVERFINE	2016-12-25	2018-12-24
Steel tape	HILOCK-19	T-08-SF100	TAJIMA	2013-4-18	2018-4-17

*** End of report ***