

TEST REPORT IEC TR 62778 Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires	
Report reference No	DG3221221-62989E-SF
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Approved by (+ signature)	Team Leader: Harrison Huang
Date of issue	2022-12-28
Testing laboratory	Bay Area Compliance Laboratories Corp.(Dongguan)
Address	No.12, Pulong East 1st Road, Tangxia Town, Dongguan, China
Testing location	Same as above
Applicant.....	Lumileds Holding B.V.
Address	370 W. Trimble Road, San Jose, CA 95131, USA
Standard	IEC TR 62778:2014
Test sample(s) received.....	2022-12-20
Test in period.....	2022-12-23
Procedure deviation	N.A.
Non-standard test method	N.A.
Type of test object	LED Package
Trademark	N.A.
Model/type reference	4014R
Multiple model.....	N.A.
Manufacturer.....	Lumileds Holding B.V. 370 W. Trimble Road, San Jose, CA 95131, USA
Rating	Input: 2.8-3.0Vdc, 60mA
Copy of marking plate:	None

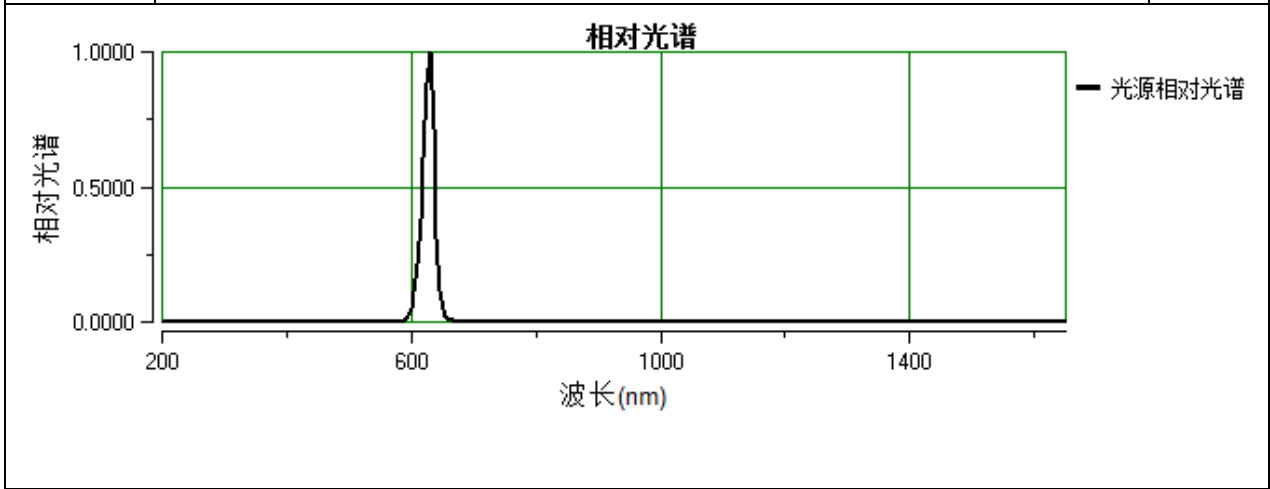
Test item particulars	
Product evaluated	<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire
Rated voltage (V)	See rating
Rated current (mA)	See rating
Rated Luminance (Mcd/m²)	Not specified
Component report data used	<input checked="" type="checkbox"/> Not applicable <input type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp
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.</p> <p>This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.</p> <p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a point is used as the decimal separator.</p> <p>List of test equipment must be kept on file and available for review.</p> <p>Remark: Appendix A EUT photos</p>	
General product information:	
"EUT" as referred in this report is a LEDpackage, and the input rating is 2.8-3.0Vdc, 60mA.	

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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		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
	- E_{thr}3772 (lx) : Distance to reach RG144 (mm) :	RG1	P

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Clause	Requirement + Test	Result - Remark	Verdict

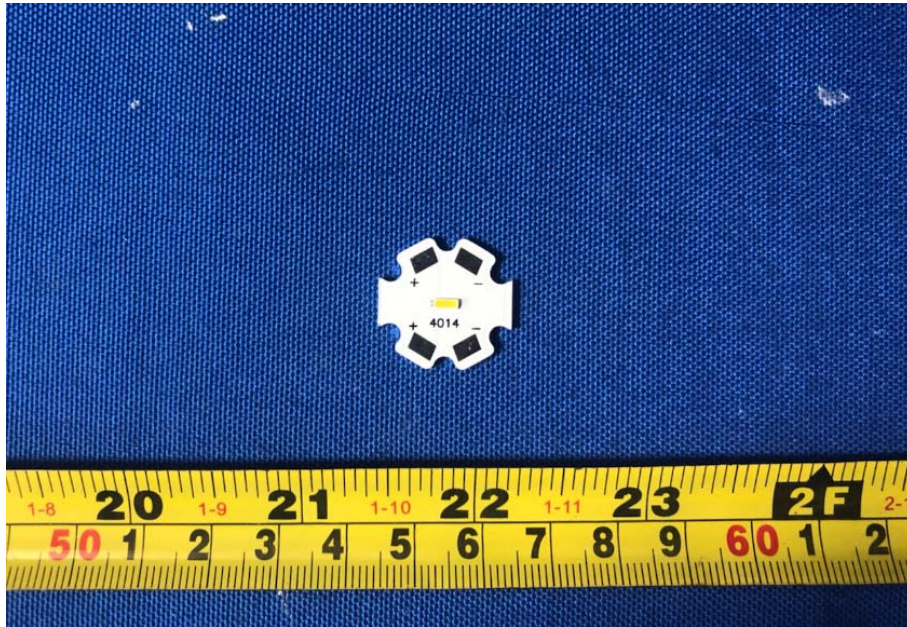
Item	Symbol	Units	Result	Remark
TABLE: Spectroradiometric measurement				
Measurement performed on:			<input checked="" type="checkbox"/> LED package <input type="checkbox"/> LED module <input type="checkbox"/> Lamp <input type="checkbox"/> Luminaire	P —
Model number			4014R	—
Test voltage (V).....			--	—
Test current (mA)			60mA	—
Test frequency (Hz).....			--	—
Ambient, t(°C)			24.5°C	—
Measurement distance			<input checked="" type="checkbox"/> 20 cm <input type="checkbox"/> ... cm	—
Source size			<input type="checkbox"/> Non-small:mm <input checked="" type="checkbox"/> Small: 0.56 mm	—
Field of view			<input type="checkbox"/> 100 mrad <input type="checkbox"/> 11 mrad <input checked="" type="checkbox"/> 2.8 mrad (for small sources)	—
Correlated colour temperature	CCT	K	2730	--
x/y colour coordinates	x/y		0.4554/0.4064	--
Blue light hazard radiance	L _B	W/(m ² •sr ¹)	--	--
Blue light hazard irradiance	E _B	W/m ²	4.836 x 10 ⁻²	--
Luminance	L	cd/m ²	7.831 x 10 ⁴	--
Illuminance	E	lx	182	--
Supplementary information: NA				

TABLE: Angular light distribution



Appendix A - EUT Photos

The overall 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.
- 7.For the difference between the tested model and the multiple models, the applicant had provided a statement and promised to be responsible for its authenticity. The laboratory has confirmed the difference of relevant samples before testing.

***** End of report *****