

TEST REPORT					
	IEC 62471:2006				
Photobiologic	al safety of lamps and lamp systems				
Report reference No	RSZ161229550-03A1				
Compiled by (+ signature)	Zero Gao Zero Gan				
Approved by (+ signature)	Harrison Huang Harrison Avans				
Date of issue	2016-12-29				
Testing laboratory	Bay Area Compliance Laboratories Corp. (Dongguan)				
Address:	No.69 Pulong Village Puxinhu Industry Zone Tangxia,Dongguan, China.				
Testing location	Same as above				
Applicant:	Hongli Zhihui Group Co.,Ltd.				
Address:	NO.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China				
Standard:	IEC 62471:2006				
Test sample(s) received	2016-12-29				
Test in period	2016-12-29				
Procedure deviation	N.A.				
Non-standard test method	N.A.				
<b>Note:</b> This test report is for the customed duplicated or used in part except in full Corp. (Dongguan).	er shown above and their specific product only. It may not be without prior written consent from Bay Area Compliance Laboratories				
Type of test object	LED				
Trademark	N.A.				
Model/type reference	HL-AT-2835FVW-S1-08-PCT-HR3				
Manufacturer:	Hongli Zhihui Group Co.,Ltd. NO.1, Xianke Yi Road, Huadong Town, Huadu District, Guangzhou, China				
Rating	Input: 9.5V <sub>dc,</sub> 150mA				
Copy of marking plate: None					



Test item particulars .....

Tested lamp	: LED
Tested lamp system	N.A.

Lamp classification group	: Exempt Group
Lamp cap:	N.A.
Bulb	N.A.
Rated of the lamp	N.A.
Furthermore marking on the lamp	N.A.
Seasoning of lamps according EN standard	No seasoning
Used measurement instrument:	See appendix B for details
Temperature by measurement	25.3°C
Information for safety use	: N.A

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 relates 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 15 pages and following appendixes: Appendix A EUT photos Appendix B Test equipment list

## General product information:

This product is LED chip, test model is HL-AT-2835FVW-S1-08-PCT-HR3. Rated input is 9.5Vdc, 150mA.

## **REMARK:**

This report is based on the BACL report No.: RSZ160505550-03, the differences are that the Applicant and Manufacturer changed from "Guangzhou Hongli Opto-Electronic Co.,Ltd." to "Hongli Zhihui Group Co.,Ltd.", t, and model No. Changed to "HL-AT-2835FVW-S1-08-PCT-HR3". So it don't need to add tests.

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## RSZ161229

IEC 62471:2006			
Clause	Requirement + Test	Result - Remark	
	t <sub>max</sub> ≤10000/E <sub>UVA</sub> s		N
4.3.3	Retinal blue light hazard exposure limit To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B(_), i.e., the		Р





	IEC 62471:2006				
Clause	Requirement + Test	Result - Remark	Verdict		
	$L_{\rm IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta \lambda \le \frac{6000}{\alpha} \qquad \qquad W \cdot m^{-2} \cdot {\rm sr}^{-1}$	See the Table 6.1	P		
4.3.7	Infrared radiation hazard exposure limits for the eye		Р		
	The avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis),ocular exposure to infrared radiation, EIR,over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		N		
	$E_{\rm IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 18000 \cdot t^{-0,75} \qquad \rm W \cdot m^{-2}$		N		
	For times greater than 1000 s the limit becomes:		Р		
	$E_{\rm IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta \lambda \le 100 \qquad \qquad \text{W} \cdot \text{m}^{-2}$	See the Table 6.1	Р		
4.3.8	Thermal hazard exposure limit for the skin		Р		
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		Р		
		Eu-t= 0.1			

$$E_{\rm H} \cdot t = \sum_{200}^{3000} \sum_{t} E_{\lambda}(\lambda, t) \cdot \Delta t \cdot \Delta \lambda \le 20000 \cdot t^{0,25} \qquad \qquad \text{J} \cdot \text{m}^{-2}$$

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	IEC 62471:2006		
Clause	Requirement + Test	Result - Remark	Verdict
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.		N
5.3.2	Calculations		Р
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		Р
5.3.3	Measurement uncertainty		Р
	The quality of all measurement results must be quantified by an analysis of the uncertainty.		Р
6	LAMP CLASSIFICATION		P
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0			P
	For the purposes of this standard it was decided that the values shall be reported as follows:		Р
	<ul> <li>for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm</li> </ul>		Ν
	<ul> <li>for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm</li> </ul>	At a distance of 200mm	Р
6.1	Continuous wave lamps		Р
6.1.1	Exempt Group		Р
	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:		Р
	<ul> <li>an actinic ultraviolet hazard (ES) within 8-hours exposure (30000 s), nor</li> </ul>		Р
	<ul> <li>– a near-UV hazard (EUVA) within 1000 s, (about 16 min), nor</li> </ul>		Р
	<ul> <li>– a retinal blue-light hazard (LB) within 10000 s (about 2,8 h), nor</li> </ul>		Р
	- a retinal thermal hazard (LR) within 10 s, nor		Р
	<ul> <li>an infrared radiation hazard for the eye (EIR) within 1000 s</li> </ul>		Р

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Clause

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Requirement + Test	Result - Remark

Verdict

Table 4.2	<b>4.2</b> Spectral weighting functions for assessing retinal hazards from broadband optical				
	sources		During the second form of the se		
	Wavelength	Blue-light hazard function	Burn hazard function		
nm		B()	R( )		
300		0.01	-		
305		0.01	-		
310		0.01	-		
315		0.01	-		
320		0.01	-		
325		0.01	-		
330		0.01	-		
335		0.01	-		
340		0.01	-		
345		0.01	-		
350		0.01	-		
	355	0.01	-		
	360	0.01	7		
	365	0.01	-		
	370	0.01	-		
	375	0.01	-		
	380	0.01	0.1		
	385	0.013	0.13		
	390	0.025	0.25		
395		0.05	0.5		
400		0.10	1.0		
405		0.20	2.0		
	410	0.40	4.0		
	415	0.80	8.0		
	420	0.90	9.0		
	425	0.95	9.5		
	430	0.98	9.8		
	435	1.00	10.0		
	440	1.00	10.0		
	445	0.97	9.7		
450		0.94	9.4		
455		0.90	9.0		
	460	0.80	8.0		
465		0.70	7.0		
	470	0.62	6.2		
	475	0.55	5.5		
	480	0.45	4 5		
	485	0.40	4.0		
405		0.22			
490		0.16	1.6		
	500-600	1Ω <sup>[(450-λ)/50]</sup>	1.0		
	600-700	0.001	1.0		
		0.001	1.0		
		0.013	1011 0.0		
	1050-1150	0.025	0.2		
	1150-1200	0.05	0.2		
	1200-1400	0.10	0.02		
1 Wavele * 1 interm	ngths chosen are repre ediate wavelengths.	esentative: other values should be obta	ined by logarithmic interpolationat		





