TEST REPORT
INMETRO PORTARIA NO. 62 OF FEBRUARY 17, 2022
TECHNICAL QUALITY REGULATION
FOR LED LIGHT LAMPS WITH BASE-INTEGRATED CONTROL DEVICE

Report Reference No. ..... :	6176790.50P
Tested by (name + signature) ..... :	Zhijun Wang
Approved by (name + signature) ..... :	Bingshan Wang
Date of issue ..... :	2023-12-13
Number of pages ..... :	26
Testing Laboratory ..... :	DEKRA Testing and Certification (Shanghai) Ltd.
Address ..... :	3/F, #250, Jiangchangsan Road building 16 Headquarter Economy Park Shibei Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436
Test procedure ..... :	CBTL ☒ SMT ☐ TMP ☐
Applicant's name ..... :	RAJIX COMERCIAL LTDA
Address ..... :	Avenida Republica Argentina, 1505, Sala 2012, Curitiba, Parana, 80620-010, Brazil
Test specification:	
INMETRO PORTARIA No. ..... :	Portaria No. 62 of February 17, 2022
Test procedure ..... :	INMETRO
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	Portaria No. 62-2022 V1.1
Test item description:	
Trademark ..... :	RAJIX
Manufacturer ..... :	ZheJiang XuGuang Electronic Technology Co., Ltd. No 121 Yongxing Rd, Gushan Industrial Park,Qiandaohu Town, Chun'an County, Hangzhou City, Zhejiang Province, China
Factory ..... :	ZheJiang XuGuang Electronic Technology Co., Ltd. No 121 Yongxing Rd, Gushan Industrial Park,Qiandaohu Town, Chun'an County, Hangzhou City, Zhejiang Province, China
Model/Type reference ..... :	Details see Appendix I
Summary of testing:	
Performance testing refer to test report.	

Standard Reference:

☒ ABNT NBR 15129:2012	☒ ABNT NBR 5123:2016
☒ ABNT NBR 5101:2012	☒ ABNT NBR 16026:2012
☒ ASTM G154	☐ ABNT NBR IEC 60238:2005
☒ CISPR 15:2013	☒ ABNT NBR IEC 60598-1:2010
☒ BS EN 55015:2013	☐ ABNT NBR IEC 60662:1997
☒ IEC 61000-3-2:2014	☒ ABNT NBR IEC 62262:2015
☒ IES TM-21-11	☒ ABNT NBR IEC 61347-2-13:2012
☒ IESNA LM-79-08	☒ INMETRO Portaria No. 200 of 2021
☒ IESNA LM-80-08	

Test item particulars:

Light source using ..... :	☐ Discharge Lamps	☒ LED Technology		
a) Brand of origin ..... :	RAJIX			
c) Photometric classification	As below			
Energy Class ..... :	☒ Class A	☐ Class B	☐ Class C	☐ Class D
Lateral Light Distributions ..... :	☐ Type I	☒ Type II	☐ Type III	
Vertical Light Distributions ..... :	☐ Short	☒ Medium	☐ Long	
Lighting intensity distribution control . :	☐ Full cutoff	☒ Cutoff	☐ Semi-cutoff	
The corresponding elevation angle .... :	☒ 0°	☐ 5°	☐ 10°	☐ 15°
e) Rated voltage (V) ..... :	110 – 277V			
f) Rated frequency (Hz) ..... :	50 / 60 Hz			
h) Control device used (Brand / Model / Power / Rated electrical output) ..... :	N/A			
o) Rated expected life (h) corresponds to L_{70} or L_{80} ..... :	50000 (L_{70})			
Declared lumen maintenance (%) ..... :	95.8 at 6000 h			
LED light source (Brand/Model) ..... :	Shenzhen Zhongshan Semiconductor Optoelectronic Co., Ltd. S-g3030 Pct3030			
Rated expected life (h) corresponds to t_c for LED control device ..... :	50000 (t_c 90 °C)			

Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing:	
Date of receipt of test item ..... :	2023/11/03
Date (s) of performance of tests ..... :	2023/11/03 to 2023/12/11

The test results shown in this report relate only to the tests performed according to the test program. The test object has not been submitted to a full test program.

Number of the tested samples for each item		
Test	☐ Partial test	☒ Type Test
Safety		
Marking		1
Pakaging		
Electromagnetic interference and radio frequency		
Leakage Current		
Electric shock protection		
Torque resistance of screws and connections		
Internal and external wiring		1
Socket for photoelectric relay (when applicable)		
Degree of protection		
Dielectric strength		1
Insulation Resistance		
Wind force resistance		1
Vibration resistance		
Protection against external mechanical impacts		
Ultraviolet radiation resistance for polymer (UV) lenses and refractors		1
Energy Efficiency		
Power		3
Power factor		
Voltage and current output		
Supply current		
Harmonics Limit		
Energy efficiency		3
Correlated color temperature (TCC)		
Color reproduction index (IRC)		
Classification of distribution		
Classification of flux distribution control (CDL		
Maintenance of the luminous flux of the luminaire		1
Built-in control device durability		1
Standard / Regulation	As requested	Portaria No. 62-2022
Applicable Clauses which can be adopted for the application ☒Clause 4.1 – ELECTRICAL SAFETY REQUIREMENTS ☒Clause 4.2 – PERFOMRANCE REQUIREMENTS ☒Clause 5 – MARKING REQUIREMENTS AND INSTRUCTIONS		

General remarks:

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

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 testing laboratory.

- Appendix I: Technical Specification Spreadsheet - PET
- Appendix II: Test Results
- Appendix III: LED source LM-80 report
- Appendix IV: Photos

General product information:

N/A

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4	**TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY**		**P**
4.1	**Electrical safety requirements**		**P**
4.1.1	**Conditions of operation**		**P**
	a) altitude not exceeding 1,500 m; b) average ambient air temperature over a 24-hour period not exceeding +35 ℃; c) ambient air temperature between -5 ℃ and + 50 ℃; d) relative humidity up to 100%. ..... :	50 ℃	P
4.1.2	**Packaging**		**P**
	The luminaires must be individually packed in packages suitable for the type of transport (in which it is applied) and for the usual loading, unloading, handling and storage operations. ..... :		P
4.1.3	**Internal and external wiring**		**P**
	The luminaire must be provided with adequate anchoring, so that the conductors of the supply cables are relieved of mechanical stress at the points where they are connected to the terminals. ..... :		P
4.1.4	**Socket for photoelectric relay (when applicable)**		**P**
	The photoelectric relay socket (when applicable) must have insulation resistance, dielectric strength, ability to conduct currents from the appropriate contacts and adequate mechanical fixing of the conductors, in order to avoid the risk of electric shock, overheating and undue unlocking of the pins and cables. ..... :		P
4.1.5	**Degree of protection**		**P**
	The housing of the luminaire must ensure the degree of protection against the penetration of dust, solid objects and moisture, in accordance with the classification of the luminaire and the IP code marked on the luminaire. ..... :		P
	The housing of the vital parts (LED, secondary optical system and controller) must have at least a degree of protection IP-66, according to ABNT NBR IEC 60598-1:2010 (Light fixtures - Part 1: General requirements and tests). .....:		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	If the controller is IP-65 or higher, the controller housing in the luminaire must be at least IP-44....:		N/A
4.1.6	**Dielectric strength and Insulation Resistance**		**P**
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive. ..... :		P
4.1.7	**Leakage Current**		**P**
	The leakage current that may occur during normal use of the luminaire must not cause an electric shock hazard. ..... :		P
4.1.8	**Electric shock protection**		**P**
	Luminaires shall be constructed in such a way that their live parts are not accessible when the luminaire is installed and electrically connected for normal use. ..... :		P
4.1.9	**Electromagnetic interference and radio frequency**		**P**
	Filters must be provided in the controller (driver) to suppress electromagnetic and radio frequency interference. ..... :		P
4.1.10	**Protection against external mechanical impacts**		**P**
	Luminaires must have a resistance to external mechanical impacts to which they are subject under the conditions of use. ..... :		P
	Luminaires must have, at least, degree of protection IK08, according to the ABNT NBR IEC 62262:2015 standard (Degrees of protection ensured by electrical equipment enclosures against external mechanical impacts (IK Code). .....:		P
4.1.11	**Torque resistance of screws and connections**		**P**
	The screws used in the luminaires and in the connections intended for the installation of the luminaires must not show any deformation during tightening and loosening or cause deformation or breakage of the luminaire. ..... :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4.1.12	**Wind force resistance**		**P**
	Luminaires must be resistant to the wind force to which they are subjected when in normal use. .... :		P
4.1.13	**Vibration resistance**		**P**
	The luminaires must continue to work in situations of vibration to which they are subject when in normal use, not being able to present any electrical or mechanical failures such as cracks, breaks, warping, opening of the fasteners and others that may compromise their performance. ..... :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4	**TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY**		**P**
4.2	**Performance requirements**		P
4.2.1	**Power**		P
	The total power of the circuit, at rated voltage, must not exceed 110% of the declared value. ..... :	See table 1	P
4.2.2	**Power factor**		**P**
	The power factor of the luminaires must meet the following requirements: The measured power factor of the circuit cannot be less than the declared value by more than 0.05, when the luminaire is supplied with rated voltage and frequency. The power factor must be equal to or greater than 0.92. ..... :	See table 1	P
4.2.3	**Voltage and current output**		**N/A**
	The output voltage and current conditions of the control device during operation shall be as follows: For control devices with non-stabilized output voltage, when supplied with the rated voltage, the output voltage must not differ by more than ± 10% from the rated voltage of the LED modules. ..... :	See table 2	N/A
	For control devices with a stabilized output voltage, when powered at any voltage between 92% and 106% of the rated voltage, the output voltage cannot differ by more than ±1 0% from the rated voltage of the LED modules. ..... :	See table 2	N/A
	For control devices with non-stabilized output current, when supplied with the rated voltage, the output current cannot differ by more than ± 10 % from the rated current of the LED modules..... :	See table 2	N/A
	For control devices with stabilized output current, when powered at any voltage between 92% and 106% of the rated voltage, the output current cannot vary more than ±10% of the rated current of the LED modules..... :	See table 2	N/A
	The luminaire with LED technology must have a surge protection device. ..... :	See table 2	N/A
4.2.4	**Supply current and Harmonics Limit**		**P**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	The supply current, at rated voltage, must not differ by more than 10% from the value declared on the control device or in the supplier's literature ..... :	See table 1	P
	The harmonics of the supply current must comply with the IEC 61000-3-2:2014 standard ((Electromagnetic compatibility (EMC) - Limits for harmonic current emissions (equipment input current < 16 A per phase)). .....:		P
4.2.5	**Energy efficiency**		**P**
	The luminaires must meet the minimum energy efficiency (EE) of 68 lm/W, as well as be classified in the Energy Efficiency classes of Table 5: Table 5 LED Road Luminire EE **Classes** / **Energy EfficiencyLevel (lm/W)** / **Mininum Acceptable Value Measured (lm/W)** A: EE≥100: 98 B: 90≤EE<100: 88 C: 80≤EE<90: 78 D: 70≤EE<80: 68 ..... :	See table 1	P
	The average energy efficiency measured cannot be less than the minimum acceptable values defined in Table 5, nor less than 90% of the declared energy efficiency value.....:		P
4.2.6	**Correlated color temperature (TCC)**		**P**
	A temperatura de cor correlata (TCC) nominal de uma lâmpada deve se situar entre 2.700 K e 6.500 K, seguindo as variaçõ es estabelecidas na Tabela 6: Table 6 CCT **Minimum value (K)** / **Rated TCC (K)** / **Maximum Value (K)** 2580 / 2700 / 2870 2870 / 3000 / 3220 3220 / 3500 / 3710 3710 / 400 / 4260 4260 / 4500 / 4746 4746 / 5000 / 5312 5312 / 5700 / 6022 6022 / 6500 / 7042 Flexible TCC (2800 – 5600K) / $TF^{i} \pm \Delta T^{ii}$ / i) TF must be chosen in 100K steps (2800, 2900, ..., 6400K), excluding the TCC nominal values listed above. ii) ΔT must be calculated by $\Delta T = 1{,}1900 \times 10^{-8} \times T^3 - 1{,}5434 \times 10^{-4} \times T^2 + 0{,}7168 \times T - 902{,}55$ ..... :	See table 1	P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict

4.2.7	**Color reproduction index (IRC)**		**P**
	The General Color Reproduction Index (Ra), which characterizes the Color Reproduction Index (CRI), must be greater than or equal to 70 (Ra ≥ 70). ... :	See table 1	P

4.2.8	**Maintenance of the luminous flux of the luminaire**		**P**
	Minimum life expectancy for maintaining 70% luminous flux (L70) is 50,000 hours. ..... :		P

4.2.9	**Built-in control device durability**		**P**
	The built-in control device must have a durability commensurate with the rated life of the lamp. ..... :		P

4.2.10	**Classification of distribution**		**P**
	The luminaire must be classified according to the transverse and longitudinal light intensity distributions, according to the categories in Table 7, for an installation with an elevation angle of 0°. Table 7 Classification of light intensity distributions Distribution / Category of classification Transversal / Type I / II / III Longitudinal / Short / Mean / Long ..... :	See table 4	P

4.2.11	**Classification of luminous distribution control (CDL)**		**P**
	The luminaire must be classified as to the control of light distribution (CDL), for an installation with an elevation angle of 0°, in the categories specified in Table 8 Table 8 CDL Category Category / Criterion: Direction of light emitted by the light source / CDL Totally limited / over 90° / 0% Totally limited / over 80°up to 90° / ≤ 10% Limited / over 90° / ≤ 2,5% Limited / over 80°up to 90° / ≤ 10% ..... :	See table 4	P

4.2.12	**Ultraviolet radiation resistance for polymer (UV) lenses and refractors**	**N/A**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) Polymer lenses and refractors subject to weather exposure must not show premature degradation that compromises the operational performance of the luminaires; b) The transparency of polymer lenses and refractors must not be less than 90% of the initial value; c) The refractors must be designed against UV rays and with uniform thickness, in order to avoid distortions in the photometric curve. ..... :		N/A

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
5	**MARKING REQUIREMENTS AND INSTRUCTIONS**		**P**
5.1	**Marking**		**P**
	The markings must be legibly and indelibly indicated on the luminaire, by means of an adhesive, engraving or other method that guarantees legibility and indelibility. Additionally, the luminaires must present the following information, in addition to that established in the ABNT NBR 15129:2012 standard (Luminaires for Public Lighting - Particular requirements):		P
	a) Serial number of manufacture of the luminaire;		P
:	b) Luminaire model.		P
5.2	**Instruction leaflet**		**P**
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive.		P
	a) name and/or brand of the supplier;		P
	b) model or supplier code;		P
	c) photometric classification, with indication of the corresponding elevation angle;		P
	d) rated power, in watts;		P
	e) rated voltage range, in volts;		P
	f) rated frequency, in hertz;		P
	g) country of origin of the product;		P
	h) user instructions for electrical installation, recommended handling and care;		P
	i) information about the importer or distributor;		P
	j) product warranty, from the date of the sales note to the consumer, being at least 60 months;		P
	k) expiry date for storage: undetermined;		P
	l) type of protection against electric shock;		P
	m) guidelines for obtaining the IES file of photometry.		P
5. 3	**Additional marking for LED road luminaire**		**P**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) The instruction leaflet must also contain information about the controller (brand, model, power, rated electrical current) and life expectancy (h) that corresponds to maintaining a luminous flux of 70% (L70) or 80% (L80)		P
	b) The controller must be marked according to ABNT NBR IEC 61347-2-13:2012 (Lamp Control Device - Part 2-13: Particular requirements for dc or ac powered electronic control for LED modules) and ABNT NBR 16026:2012 (DC or AC electronic control device for LED modules – Performance requirements)		N/A
	c) Packages must be identified externally with the following minimum information, legibly and indelibly marked, by means of an adhesive, engraving or other method that guarantees legibility and indelibility: - name and/or factory brand; - model or light fixture type; - CNPJ and supplier address; - Gross weight; and - Capacity and pile position.		P

Appendix I: Technical Specification Spreadsheet - PET

01 – COMMERCIAL NAME	
BRAND	RAJIX
SUPPLIER	ZheJiang XuGuang Electronic Technology Co., Ltd.
MANUFACTURER	ZheJiang XuGuang Electronic Technology Co., Ltd.

02 - IDENTIFICATION OF FAMILY	
FAMILY (*)	**RAJIX/LED Technology/ Street light LED/ 500000h**
LED BRAND / MODEL	**LED Technology**
TYPE OF LIGHT	**Street light LED**
DECLARED LIFE (hr)	**50000h**

FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE

BARCODE	MODEL	TEST VOLTAGE(V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
7898727311775	RLP0305E	110-277	50/60	30	＞0.95	4200	/	140	＞70	5000	6176790.50P
7898727311782	RLP0505E	110-277	50/60	50	＞0.97	7000	/	140	＞70	5000	6176790.50P
7898727311799	RLP1005E	110-277	50/60	100	＞0.97	14000	/	140	＞70	5000	6176790.50P
7898727311805	RLP1505E	110-277	50/60	150	＞0.97	21000	/	140	＞70	5000	6176790.50P
7898727311812	RLP2005E	110-277	50/60	200	＞0.97	28000	/	140	＞70	5000	6176790.50P

Add/Delete Rows as Necessary

Appendix II: Test Results

Table 1: Initial Test Results:

Summary of test results (if applicable):

Test Results										
Model	Test Voltage (V)	Test Current (A)	Lamp Wattage (W)	Power factor	Luminous flux Φ (lm)	Efficacy (lm/W)	CRI	CCT (K)	Chromaticity	
									x	y
RLP200 5E	127	1,519	192,3	0,996	24495,7	127,4	73	5106	0,3428	0,3580
	220	0,882	188,78	0,9733	24477,1	129,7	73	5116	0,3429	0,3583
	277									
RLP150 5E	127	1,15	145,7	0,996	19173,2	131,6	71	4891	0,3501	0,3718
	220	0,679	143,7	0,962	19162,5	133,4	71	4898	0,3502	0,3719
	277									
RLP100 5E	127	0,771	97,6	0,9968	13155,6	134,8	72	5030	0,3451	0,3613
	220	0,449	96,4	0,9758	13180,85	136,7	72	5037	0,3453	0,3613
	277									
RLP050 5E	127	0,381	48,2	0,997	6555,89	136,0	72	5012	0,3458	0,3636
	220	0,223	47,6	0,9718	6564,4	137,9	72	5005	0,3456	0,3634
	277									
RLP030 5E	127	0,228	28,8	0,994	3999,2	138,9	72	4887	0,3499	0,3688
	220	0,136	28,5	0,953	4001,8	140,4	72	4893	0,3498	0,3689
	277									

Table 2: Output voltage and current of control device during operation:

Test Results					
Sample No	Input Voltage (V)	Output voltage (V)		Output current (A)	
		Stabilized	Non- Stabilized (Range)	Stabilized	Non- Stabilized (Range)
/	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
/	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
/	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
/	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/
/	/	/	/	/	/
	/	/	/	/	/
	/	/	/	/	/

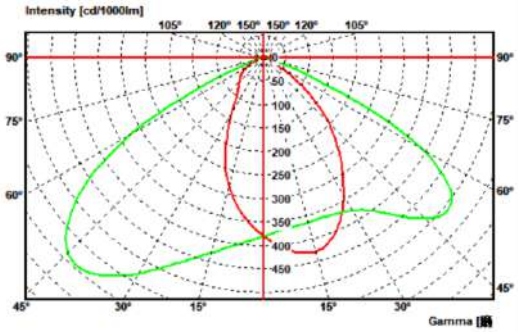
Table 3: Test Result of Lumen Maintenance:

Test Results				
Sample No	Test Voltage (V)	Φ(lm)		Lumen Maintenance
		Initial	6000 H	6000 H
1	/	/	/	/
2	/	/	/	/
3	/	/	/	/
Average / Result	/	/	/	/

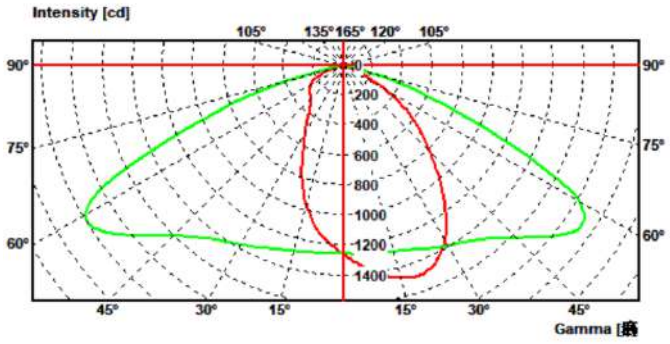
Table 4: Luminous Intensity Distribution:

C interval 5° (0°-360°); Gama interval 2,5° (0°-120°):

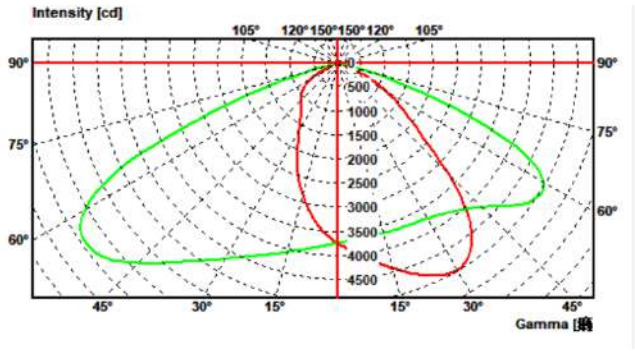
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP20 05E	14881.4	94.6	0.39%	0.62%



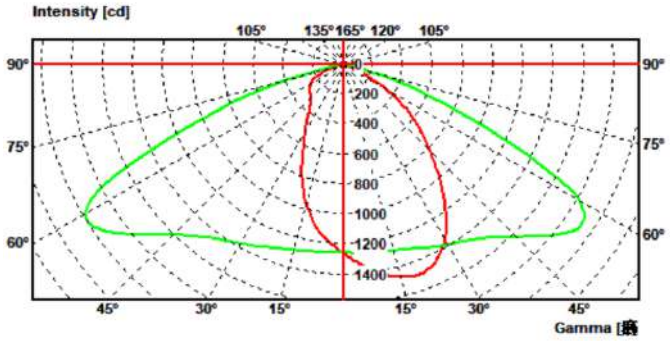
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP03 05E	1990.9	102.1	0.37%	0.40%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP05 05E	7215.6	101.6	0.43%	0.49%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP10 05E	10409.2	99.8	0.41%	0.58%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP15 05E	11072.6	96.8	0.40%	0.58%

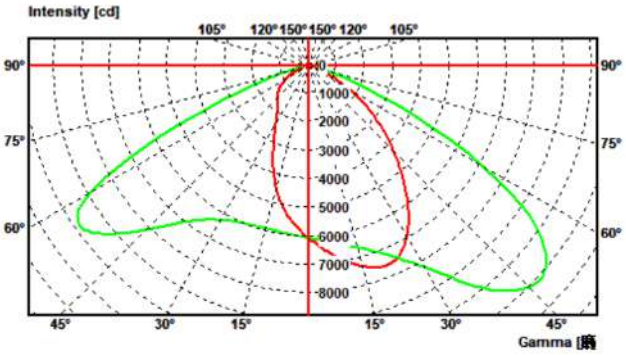


Table 5: In Situ Temperature Measurement Test and Qualification of the electronic control device:

Type reference .....:	RLP2005E
Lamp source used .....:	Refer to the **Test item particulars** mentioned on page 2
LM-80 report No. .....:	Refer to the **Test item particulars** mentioned on page 2
LED driver used.....:	Integrated
Mounting position .....:	Reference to the TMP_{LED} point base on the LM 80 report
Supply wattage (W) .....:	191.2
Supply current (A) .....:	0.891
Power factor .....:	0.968
Measured LED drive current (mA) .....:	87,8
Maximum LED current listed on LM-80 report (mA) ....:	100
Maximum temperature listed on LM-80 report (°C) .....:	115
Table: measured temperatures corrected for ta 1 = 25 C and ta 2 = 35 C (only for t_c)	
- test 1: rated voltage .....:	220

In-suit Temperature Measurement Point	In-suit Temperature (°C)	
	test 1 (ta 1)	test 1 (ta 2)
TMP_{LED} (T_s)	54.9	--
TMP_{driver} (t_c)	--	--

Time (t) at which to estimate lumen maintenance (hours):	50000
Lumen maintenance at time (t) (%):	80,78
Reported L70(6k) (hours):	54000

Appendix III: LED source LM-80 report

NVLAP TESTING NVLAP LAB CODE:600177-0 ilac-MRA

GTG Global Testing Group

Test Report Of ANSI/IES LM-80-15

Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules

Report Number	:	N02A23050461L00901
Client	:	SHENZHEN ZHONGSHUN SEMICONDUCTOR OPTOELECTRONIC CO., LTD.
Address	:	Room no. 1015, 10th Floor, Yizhan Business Building, No. 8 Yizhan 4th Road, Shapu Community, Songgang Street, Bao'an District Shenzhen, Postal code 518105, Guangdong Province, Republic of China
Test Product Family	:	PCT3030
Test Part Number	:	S-G3030
Brand Name	:	ZHONG SHUN
Testing Laboratory	:	Guangdong Meide Testing Technology Co., Ltd.
Address	:	1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,Songshan Lake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr., China.
Testing Location	:	As above
Date of receipt	:	2021-03-22
Date of test	:	2021-04-06 to 2023-06-12
Date of report	:	2023-06-12

Tested by:	Checked by:	Approved by:
Jarvis Zhang	Sandy Chen	
Jarvis Zhang/ Test Engineer	Sandy Chen/ Project Engineer	Jessie Li/ Technical Manager

Note 1: The test data was only valid for the test sample(s).This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP,NIST, or any agency of the Federal Government.
Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST,or any agency of the Federal Government.

TRF No.: 02-N005-1A
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TRF Date: 2022-07-01
Tel.: 86-400 755 8988

Appendix IV: Photos

RLP0305E

RLP0505E

RLP1005E

RLP1505E

RLP2005E

Appendix VIII: list of Uncertainty

Test	Uncertainty （U_{rel},K=2）	Uncertainty （U,K=2）
voltage	$2,2\times10^{-4}$	
power	$2,2\times10^{-4}$	
current	$8,2\times10^{-4}$	
power factor	$7,3\times10^{-5}$	
luminous flux	1,6%	
color temperature		18K

----------END----------

TEST REPORT
INMETRO PORTARIA NO. 62 OF FEBRUARY 17, 2022
TECHNICAL QUALITY REGULATION
FOR LED LIGHT LAMPS WITH BASE-INTEGRATED CONTROL DEVICE

Report Reference No. ..... :	6176617.50P
Tested by (name + signature) ..... :	Zhijun Wang
Approved by (name + signature) ..... :	Bingshan Wang
Date of issue ..... :	2023-12-13
Number of pages ..... :	31
Testing Laboratory ..... :	DEKRA Testing and Certification (Shanghai) Ltd.
Address ..... :	3/F, #250, Jiangchangsan Road building 16 Headquarter Economy Park Shibei Hi-Tech Park, Jing'an District, Shanghai, P.R.C 200436
Test procedure ..... :	CBTL ☒ SMT ☐ TMP ☐
Applicant's name ..... :	RAJIX COMERCIAL LTDA
Address ..... :	Avenida Republica Argentina, 1505, Sala 2012, Curitiba, Parana, 80620-010, Brazil
Test specification:	
INMETRO PORTARIA No. ..... :	Portaria No. 62 of February 17, 2022
Test procedure ..... :	INMETRO
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	Portaria No. 62-2022 V1.1
Test item description:	
Trademark ..... :	RAJIX
Manufacturer ..... :	ZheJiang XuGuang Electronic Technology Co., Ltd. No 121 Yongxing Rd, Gushan Industrial Park,Qiandaohu Town, Chun'an County, Hangzhou City, Zhejiang Province, China
Factory ..... :	ZheJiang XuGuang Electronic Technology Co., Ltd. No 121 Yongxing Rd, Gushan Industrial Park,Qiandaohu Town, Chun'an County, Hangzhou City, Zhejiang Province, China
Model/Type reference ..... :	Details see Appendix I
Summary of testing:	
Performance testing refer to test report.	

Standard Reference:

☒ ABNT NBR 15129:2012	☒ ABNT NBR 5123:2016
☒ ABNT NBR 5101:2012	☒ ABNT NBR 16026:2012
☒ ASTM G154	☐ ABNT NBR IEC 60238:2005
☒ CISPR 15:2013	☒ ABNT NBR IEC 60598-1:2010
☒ BS EN 55015:2013	☐ ABNT NBR IEC 60662:1997
☒ IEC 61000-3-2:2014	☒ ABNT NBR IEC 62262:2015
☒ IES TM-21-11	☒ ABNT NBR IEC 61347-2-13:2012
☒ IESNA LM-79-08	☒ INMETRO Portaria No. 200 of 2021
☒ IESNA LM-80-08	

Test item particulars:

Light source using ..... :	☐ Discharge Lamps	☒ LED Technology		
a) Brand of origin ..... :	RAJIX			
c) Photometric classification	As below			
Energy Class ..... :	☒ Class A	☐ Class B	☐ Class C	☐ Class D
Lateral Light Distributions ..... :	☐ Type I	☒ Type II	☐ Type III	
Vertical Light Distributions ..... :	☐ Short	☒ Medium	☐ Long	
Lighting intensity distribution control . :	☐ Full cutoff	☒ Cutoff	☐ Semi-cutoff	
The corresponding elevation angle .... :	☒ 0°	☐ 5°	☐ 10°	☐ 15°
e) Rated voltage (V) ..... :	110 – 277V			
f) Rated frequency (Hz) ..... :	50 / 60 Hz			
h) Control device used (Brand / Model / Power / Rated electrical output) ..... :	N/A			
o) Rated expected life (h) corresponds to L_{70} or L_{80} ..... :	97000 (L_{70})			
Declared lumen maintenance (%) ..... :	97,8 at 6000 h			
LED light source (Brand/Model) ..... :	Shenzhen Tongyifang Optoelectronic Technology Co., Ltd/ SE3			
Rated expected life (h) corresponds to t_c for LED control device ..... :	97000 (t_c 90 °C)			

Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing:	
Date of receipt of test item ..... :	2023/11/3
Date (s) of performance of tests ..... :	2023/11/3 to 2023/12/13

The test results shown in this report relate only to the tests performed according to the test program. The test object has not been submitted to a full test program.

Number of the tested samples for each item		
Test	☐ Partial test	☒ Type Test
Safety		
Marking		1
Pakaging		
Electromagnetic interference and radio frequency		
Leakage Current		
Electric shock protection		
Torque resistance of screws and connections		
Internal and external wiring		1
Socket for photoelectric relay (when applicable)		
Degree of protection		
Dielectric strength		1
Insulation Resistance		
Wind force resistance		1
Vibration resistance		
Protection against external mechanical impacts		
Ultraviolet radiation resistance for polymer (UV) lenses and refractors		1
Energy Efficiency		
Power		3
Power factor		
Voltage and current output		
Supply current		
Harmonics Limit		
Energy efficiency		3
Correlated color temperature (TCC)		
Color reproduction index (IRC)		
Classification of distribution		
Classification of flux distribution control (CDL		
Maintenance of the luminous flux of the luminaire		1
Built-in control device durability		1
Standard / Regulation	As requested	Portaria No. 62-2022

Applicable Clauses which can be adopted for the application

☒Clause 4.1 – ELECTRICAL SAFETY REQUIREMENTS

☒Clause 4.2 – PERFOMRANCE REQUIREMENTS

☒Clause 5 – MARKING REQUIREMENTS AND INSTRUCTIONS

General remarks:

Throughout this report a ☒ comma or ☐ point is used as the decimal separator.

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 testing laboratory.

- Appendix I: Technical Specification Spreadsheet - PET
- Appendix II: Test Results
- Appendix III: LED source LM-80 report
- Appendix IV: Photos

General product information:

N/A

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4	**TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY**		**P**
4.1	**Electrical safety requirements**		**P**
4.1.1	**Conditions of operation**		**P**
	a) altitude not exceeding 1,500 m; b) average ambient air temperature over a 24-hour period not exceeding +35 ℃; c) ambient air temperature between -5 ℃ and + 50 ℃; d) relative humidity up to 100%. ..... :	50 ℃	P
4.1.2	**Packaging**		**P**
	The luminaires must be individually packed in packages suitable for the type of transport (in which it is applied) and for the usual loading, unloading, handling and storage operations. ..... :		P
4.1.3	**Internal and external wiring**		**P**
	The luminaire must be provided with adequate anchoring, so that the conductors of the supply cables are relieved of mechanical stress at the points where they are connected to the terminals. ..... :		P
4.1.4	**Socket for photoelectric relay (when applicable)**		**P**
	The photoelectric relay socket (when applicable) must have insulation resistance, dielectric strength, ability to conduct currents from the appropriate contacts and adequate mechanical fixing of the conductors, in order to avoid the risk of electric shock, overheating and undue unlocking of the pins and cables. ..... :		P
4.1.5	**Degree of protection**		**P**
	The housing of the luminaire must ensure the degree of protection against the penetration of dust, solid objects and moisture, in accordance with the classification of the luminaire and the IP code marked on the luminaire. ..... :		P
	The housing of the vital parts (LED, secondary optical system and controller) must have at least a degree of protection IP-66, according to ABNT NBR IEC 60598-1:2010 (Light fixtures - Part 1: General requirements and tests). .....:		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	If the controller is IP-65 or higher, the controller housing in the luminaire must be at least IP-44....:		N/A
4.1.6	**Dielectric strength and Insulation Resistance**		**P**
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive. ..... :		P
4.1.7	**Leakage Current**		**P**
	The leakage current that may occur during normal use of the luminaire must not cause an electric shock hazard. ..... :		P
4.1.8	**Electric shock protection**		**P**
	Luminaires shall be constructed in such a way that their live parts are not accessible when the luminaire is installed and electrically connected for normal use. ..... :		P
4.1.9	**Electromagnetic interference and radio frequency**		**P**
	Filters must be provided in the controller (driver) to suppress electromagnetic and radio frequency interference. ..... :		P
4.1.10	**Protection against external mechanical impacts**		**P**
	Luminaires must have a resistance to external mechanical impacts to which they are subject under the conditions of use. ..... :		P
	Luminaires must have, at least, degree of protection IK08, according to the ABNT NBR IEC 62262:2015 standard (Degrees of protection ensured by electrical equipment enclosures against external mechanical impacts (IK Code). .....:		P
4.1.11	**Torque resistance of screws and connections**		**P**
	The screws used in the luminaires and in the connections intended for the installation of the luminaires must not show any deformation during tightening and loosening or cause deformation or breakage of the luminaire. ..... :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4.1.12	**Wind force resistance**		**P**
	Luminaires must be resistant to the wind force to which they are subjected when in normal use. .... :		P
4.1.13	**Vibration resistance**		**P**
	The luminaires must continue to work in situations of vibration to which they are subject when in normal use, not being able to present any electrical or mechanical failures such as cracks, breaks, warping, opening of the fasteners and others that may compromise their performance. ..... :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
4	**TECHNICAL REQUIREMENTS FOR LIGHTING FIXTURES WITH LED TECHNOLOGY**		**P**
4.2	**Performance requirements**		P
4.2.1	**Power**		P
	The total power of the circuit, at rated voltage, must not exceed 110% of the declared value. ..... :	See table 1	P
4.2.2	**Power factor**		**P**
	The power factor of the luminaires must meet the following requirements: The measured power factor of the circuit cannot be less than the declared value by more than 0.05, when the luminaire is supplied with rated voltage and frequency. The power factor must be equal to or greater than 0.92. ..... :	See table 1	P
4.2.3	**Voltage and current output**		**P**
	The output voltage and current conditions of the control device during operation shall be as follows: For control devices with non-stabilized output voltage, when supplied with the rated voltage, the output voltage must not differ by more than ± 10% from the rated voltage of the LED modules. ..... :	See table 2	N/A
	For control devices with a stabilized output voltage, when powered at any voltage between 92% and 106% of the rated voltage, the output voltage cannot differ by more than ±10% from the rated voltage of the LED modules. ..... :	See table 2	N/A
	For control devices with non-stabilized output current, when supplied with the rated voltage, the output current cannot differ by more than ± 10% from the rated current of the LED modules. ..... :	See table 2	N/A
	For control devices with stabilized output current, when powered at any voltage between 92% and 106% of the rated voltage, the output current cannot vary more than ±10% of the rate d current of the LED modules. ..... :	See table 2	P
	The luminaire with LED technology must have a surge protection device. ..... :	See table 2	P
4.2.4	**Supply current and Harmonics Limit**		**P**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	The supply current, at rated voltage, must not differ by more than 10% from the value declared on the control device or in the supplier's literature ..... :	See table 1	P
	The harmonics of the supply current must comply with the IEC 61000-3-2:2014 standard ((Electromagnetic compatibility (EMC) - Limits for harmonic current emissions (equipment input current < 16 A per phase)). .....:		P
4.2.5	**Energy efficiency**		**P**
	The luminaires must meet the minimum energy efficiency (EE) of 68 lm/W, as well as be classified in the Energy Efficiency classes of Table 5: Table 5 LED Road Luminire EE **Classes** / **Energy EfficiencyLevel (lm/W)** / **Mininum Acceptable Value Measured (lm/W)** A: EE≥100: 98 B: 90≤EE<100: 88 C: 80≤EE<90: 78 D: 70≤EE<80: 68 ..... :	See table 1	P
	The average energy efficiency measured cannot be less than the minimum acceptable values defined in Table 5, nor less than 90% of the declared energy efficiency value.....:		P
4.2.6	**Correlated color temperature (TCC)**		**P**
	A temperatura de cor correlata (TCC) nominal de uma lâmpada deve se situar entre 2.700 K e 6.500 K, seguindo as variaçõ es estabelecidas na Tabela 6: Table 6 CCT **Minimum value (K)** / **Rated TCC (K)** / **Maximum Value (K)** 2580 / 2700 / 2870 2870 / 3000 / 3220 3220 / 3500 / 3710 3710 / 4000 / 4260 4260 / 4500 / 4746 4746 / 5000 / 5312 5312 / 5700 / 6022 6022 / 6500 / 7042 Flexible TCC (2800 – 5600K) / $TF^{i} \pm \Delta T^{ii}$ / i) TF must be chosen in 100K steps (2800, 2900, ..., 6400K), excluding the TCC nominal values listed above. ii) ΔT must be calculated by $\Delta T = 1{,}1900 \times 10^{-8} \times T^3 - 1{,}5434 \times 10^{-4} \times T^2 + 0{,}7168 \times T - 902{,}55$ ..... :	See table 1	P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict

4.2.7	**Color reproduction index (IRC)**		**P**
	The General Color Reproduction Index (Ra), which characterizes the Color Reproduction Index (CRI), must be greater than or equal to 70 (Ra ≥ 70). ... :	See table 1	P

4.2.8	**Maintenance of the luminous flux of the luminaire**		**P**
	Minimum life expectancy for maintaining 70% luminous flux (L70) is 0,000 hours. ..... :		P

4.2.9	**Built-in control device durability**		**P**
	The built-in control device must have a durability commensurate with the rated life of the lamp. ..... :		P

4.2.10	**Classification of distribution**		**P**
	The luminaire must be classified according to the transverse and longitudinal light intensity distributions, according to the categories in Table 7, for an installation with an elevation angle of 0°. Table 7 Classification of light intensity distributions Distribution / Category of classification Transversal / Type I / II / III Longitudinal / Short / Mean / Long ..... :	See table 4	P

4.2.11	**Classification of luminous distribution control (CDL)**		**P**
	The luminaire must be classified as to the control of light distribution (CDL), for an installation with an elevation angle of 0°, in the categories specified in Table 8 Table 8 CDL Category Category / Criterion: Direction of light emitted by the light source / CDL Totally limited / over 90° / 0% Totally limited / over 80°up to 90° / ≤ 10% Limited / over 90° / ≤ 2,5% Limited / over 80°up to 90° / ≤ 10% ..... :	See table 4	P

4.2.12	**Ultraviolet radiation resistance for polymer (UV) lenses and refractors**		**P**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) Polymer lenses and refractors subject to weather exposure must not show premature degradation that compromises the operational performance of the luminaires; b) The transparency of polymer lenses and refractors must not be less than 90% of the initial value; c) The refractors must be designed against UV rays and with uniform thickness, in order to avoid distortions in the photometric curve. ..... :		P

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
5	**MARKING REQUIREMENTS AND INSTRUCTIONS**		**P**
5.1	**Marking**		**P**
	The markings must be legibly and indelibly indicated on the luminaire, by means of an adhesive, engraving or other method that guarantees legibility and indelibility. Additionally, the luminaires must present the following information, in addition to that established in the ABNT NBR 15129:2012 standard (Luminaires for Public Lighting - Particular requirements):		P
	a) Serial number of manufacture of the luminaire;		P
:	b) Luminaire model.		P
5.2	**Instruction leaflet**		**P**
	The insulation resistance and dielectric strength must be adequate, so that the luminaire is free from faults in the electrical insulation so that, at operating temperature, the leakage current from the device is not excessive.		P
	a) name and/or brand of the supplier;		P
	b) model or supplier code;		P
	c) photometric classification, with indication of the corresponding elevation angle;		P
	d) rated power, in watts;		P
	e) rated voltage range, in volts;		P
	f) rated frequency, in hertz;		P
	g) country of origin of the product;		P
	h) user instructions for electrical installation, recommended handling and care;		P
	i) information about the importer or distributor;		P
	j) product warranty, from the date of the sales note to the consumer, being at least 60 months;		P
	k) expiry date for storage: undetermined;		P
	l) type of protection against electric shock;		P
	m) guidelines for obtaining the IES file of photometry.		P
5. 3	**Additional marking for LED road luminaire**		**P**

INMETRO Portaria No. 62-2022			
Clause	Test Item and requirements	Results - Remark	Verdict
	a) The instruction leaflet must also contain information about the controller (brand, model, power, rated electrical current) and life expectancy (h) that corresponds to maintaining a luminous flux of 70% (L70) or 80% (L80)		P
	b) The controller must be marked according to ABNT NBR IEC 61347-2-13:2012 (Lamp Control Device - Part 2-13: Particular requirements for dc or ac powered electronic control for LED modules) and ABNT NBR 16026:2012 (DC or AC electronic control device for LED modules – Performance requirements)		P
	c) Packages must be identified externally with the following minimum information, legibly and indelibly marked, by means of an adhesive, engraving or other method that guarantees legibility and indelibility: - name and/or factory brand; - model or light fixture type; - CNPJ and supplier address; - Gross weight; and - Capacity and pile position.		P

Appendix I: Technical Specification Spreadsheet - PET

01 – COMMERCIAL NAME	
BRAND	RAJIX
SUPPLIER	ZheJiang XuGuang Electronic Technology Co., Ltd.
MANUFACTURER	ZheJiang XuGuang Electronic Technology Co., Ltd.

02 - IDENTIFICATION OF FAMILY	
FAMILY (*)	**RAJIX/LED Technology/ Street light LED/ 97000h**
LED BRAND / MODEL	**LED Technology**
TYPE OF LIGHT	**Street light LED**
DECLARED LIFE (hr)	**97000h**

FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE

BARCODE	MODEL	TEST VOLTAGE (V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
7898727310822	RLP0504	110-277V	50/60	50	＞0,92	7500	/	150	70	4000	6176617.50P
7898727310839	RLP1004	110-277V	50/60	100	＞0,95	15000	/	150	70	4000	6176617.50P
7898727310846	RLP1504	110-277V	50/60	150	＞0,95	22500	/	150	70	4000	6176617.50P
7898727310853	RLP2004	110-277V	50/60	200	＞0,95	30000	/	150	70	4000	6176617.50P
7898727310860	RLP2404	110-277V	50/60	240	＞0,95	36000	/	150	70	4000	6176617.50P
7898727310877	RLP0505	110-277V	50/60	50	＞0,92	7500	/	150	70	5000	6176617.50P

01 – COMMERCIAL NAME	
BRAND	RAJIX
SUPPLIER	ZheJiang XuGuang Electronic Technology Co., Ltd.
MANUFACTURER	ZheJiang XuGuang Electronic Technology Co., Ltd.

02 - IDENTIFICATION OF FAMILY	
FAMILY (*)	**RAJIX/LED Technology/ Street light LED/ 97000h**
LED BRAND / MODEL	**LED Technology**
TYPE OF LIGHT	**Street light LED**
DECLARED LIFE (hr)	**97000h**

FAMILY CODE: LED TECHNOLOGY/TYPE OF LIGHT/ DECLARED LIFE

BARCODE	MODEL	TEST VOLTAGE (V)	FREQ.(HZ)	POWER(W)	POWER FACTOR	LUMINOUS FLUX (lm)	Optical Yied Ratio (%)	EE (lm/W)	CRI	CCT (K)	TEST / LABORATORY REPORT
7898727310884	RLP1005	110-277V	50/60	100	＞0,95	15000	/	150	70	5000	6176617.50P
7898727310891	RLP1505	110-277V	50/60	150	＞0,95	22500	/	150	70	5000	6176617.50P
7898727310907	RLP2005	110-277V	50/60	200	＞0,95	30000	/	150	70	5000	6176617.50P
7898727310914	RLP2405	110-277V	50/60	240	＞0,95	36000	/	150	70	5000	6176617.50P

Add/Delete Rows as Necessary

Appendix II: Test Results

Table 1: Initial Test Results:

Summary of test results (if applicable):

Test Results										
Model	Test Voltage (V)	Test Current (A)	Lamp Wattage (W)	Power factor	Luminous flux Φ (lm)	Efficacy (lm/W)	CRI	CCT (K)	Chromaticity	
									x	y
RLP0504	127	0.381	47.9	0.990	7419.66	154.9	72.0	4202	0.3720	0.3712
	220	0.235	47.6	0.921	7449.77	156.5	72.1	4209	0.3719	0.3712
	277									
RLP1004	127	0.778	98.2	0.994	14561.5	148.3	71.0	4064	0.3786	0.385
	220	0.4571	96.3	0.958	14548.1	151.1	71.0	4069	0.3787	0.383
	277									
RLP1504	127	1.1	139.2	0.996	20849.8	149.8	71.0	4088	0.3777	0.3784
	220	0.642	136.9	0.969	20845.3	152.3	71.1	4080	0.3775	0.3785
	277									
RLP2004	127	1.478	187.15	0.997	28625.9	153.0	71.0	4093	0.3773	0.3777
	220	0.864	184.05	0.968	28647.9	155.7	71.0	4101	0.3776	0.3775
	277									
RLP2404	127	1.76	222.3	0.995	32342.2	145.5	71.0	4100	0.3768	0.3766
	220	1.022	219.2	0.975	32431.1	148.0	71.0	4107	0.3766	0.3765
	277									
RLP0505	127	0.391	49.1	0.987	7756.5	158.0	71.0	5109	0.3423	0.3525
	220	0.241	49.0	0.924	7763.0	158.4	71.0	5109	0.3424	0.3524
	277									

RLP1005	127	0.786	99.3	0.995	14871.5	149.8	71.0	4929	0.3479	0.3605
	220	0.462	97.3	0.958	14877.2	152.9	71.0	4919	0.3477	0.3606
	277									
RLP1505	127	1.16	147.3	0.996	22001.6	149.4	71.0	4972	0.3466	0.3597
	220	0.677	144.7	0.971	22011.4	152.1	71.0	4968	0.3468	0.3596
	277									
RLP2005	127	1.55	196.6	0.997	29733.9	151.2	71.0	4974	0.3465	0.3596
	220	0.904	193.2	0.971	29764.3	154.1	71.0	4970	0.3465	0.3598
	277									
RLP2405	127	1.79	226.6	0.997	33214.7	146.6	71.0	4951	0.3471	0.3590
	220	1.04	222.7	0.974	33241.8	149.3	71.0	4959	0.3470	0.3591
	277									

Table 2: Output voltage and current of control device during operation:

Test Results					
Sample No	Input Voltage (V)	Output voltage (V)		Output current (A)	
		Stabilized	Non- Stabilized (Range)	Stabilized	Non- Stabilized (Range)
RLP0504	101.0	/	/	0.9489	/
	220.0	/	/	0.95	/
	294.0	/	/	0.9528	/
RLP1004	101.0	/	/	1.918	/
	220.0	/	/	1.916	/
	294.0	/	/	1.916	/
RLP1504	101.0	/	/	2.8784	/
	220.0	/	/	2.878	/
	294.0	/	/	2.876	/
RLP2004	101.0	/	/	3.86	/
	220.0	/	/	3.86	/
	294.0	/	/	3.862	/
RLP2404	101.0	/	/	4.52	/
	220.0	/	/	4.51	/
	294.0	/	/	4.5	/

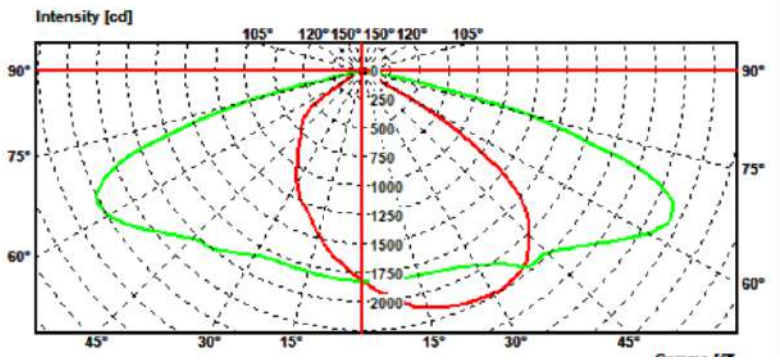
Table 3: Test Result of Lumen Maintenance:

Test Results				
Sample No	Test Voltage (V)	Φ(lm)		Lumen Maintenance
		Initial	6000 H	6000 H
1	/	/	/	/
2	/	/	/	/
3	/	/	/	/
Average / Result	/	/	/	/

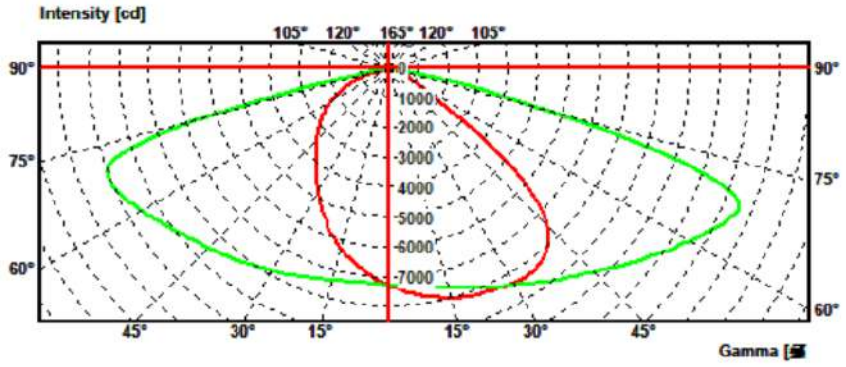
Table 4: Luminous Intensity Distribution:

C interval 5° (0°-360°); Gama interval 2,5° (0°-120°):

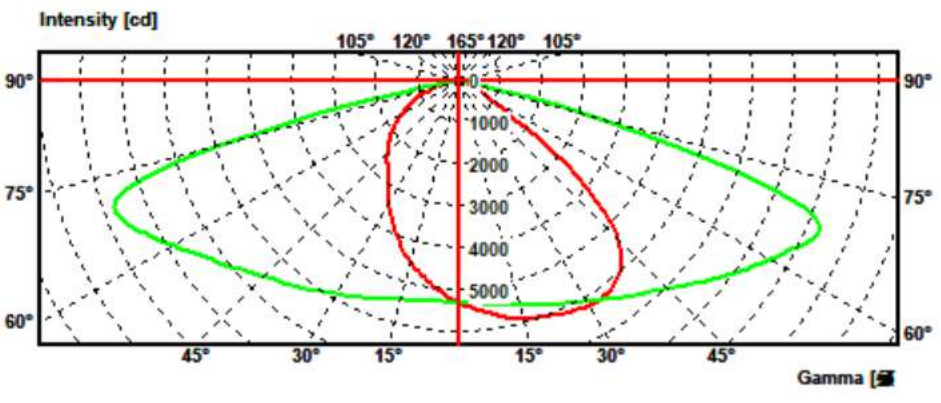
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP2404	16391.0	118.1	0.39%	0.44%



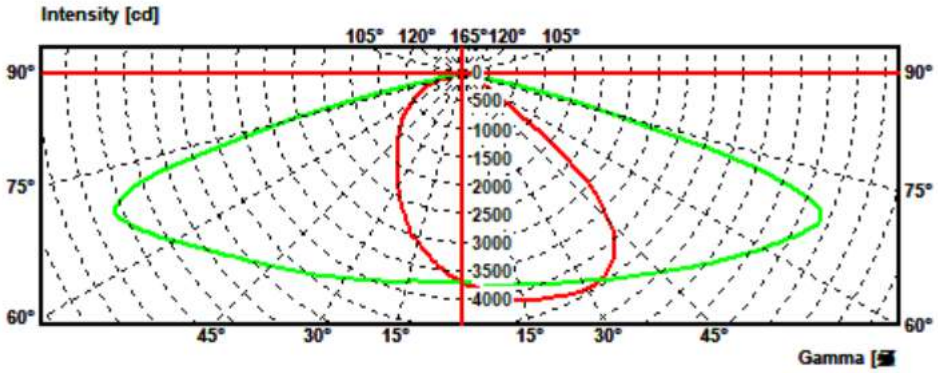
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP2004	14142.1	119.4	0.40%	0.52%



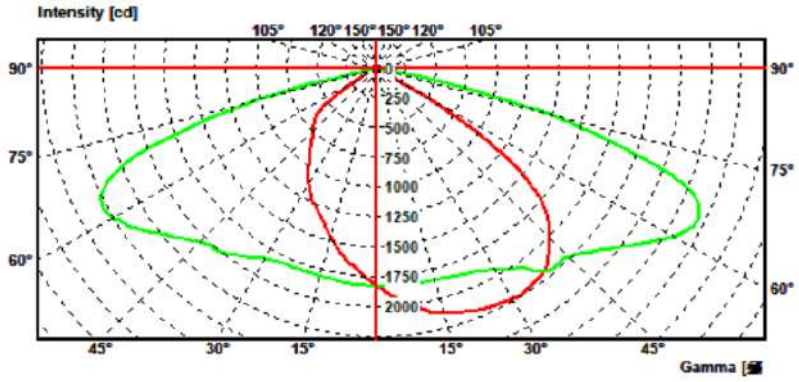
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP1504	10230.2	117.6	0.41%	0.45%



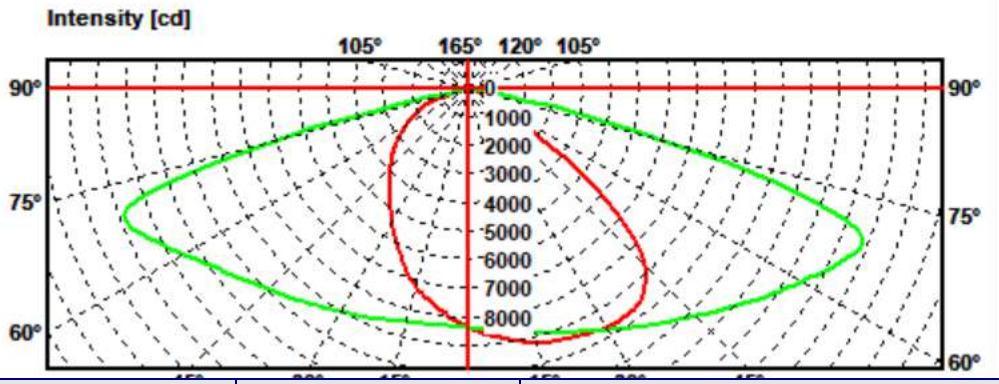
Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP1004	7155.1	115.8	0.45%	0.40%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP0504	4582.5	117.2	0.44%	0.55%

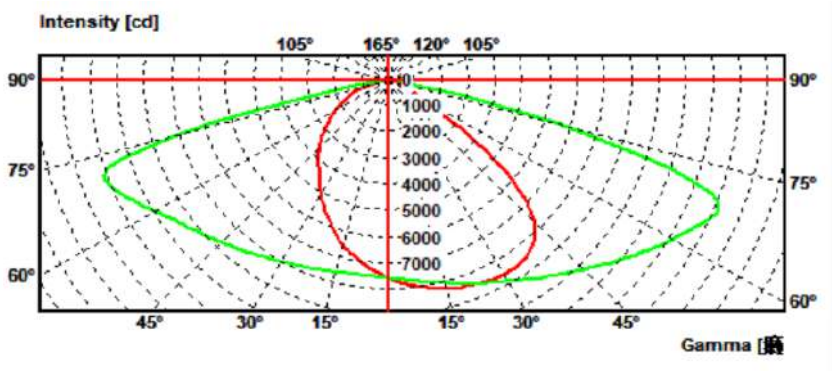


Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP2405	17380.1	118.9	0.40%	0.46%

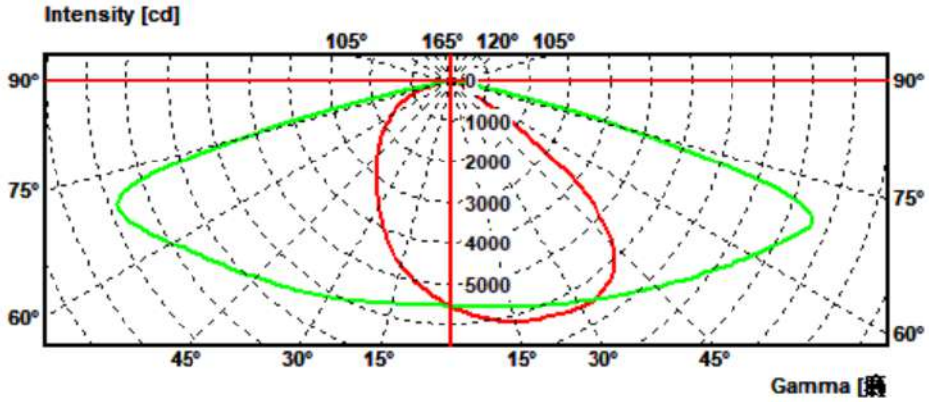


Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°

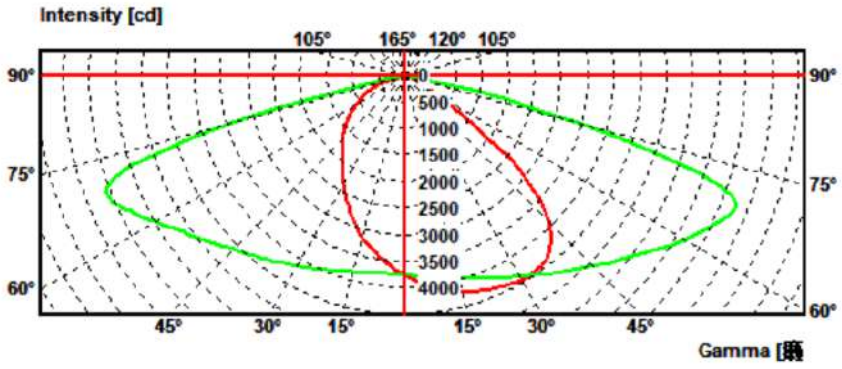
RLP20 05	14294.5	120.4	0.39%	0.51%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP15 05	10665.2	119.0	0.40%	0.32%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP10 05	7107.7	117.3	0.32%	0.40%



Model	I_{max} (cd)	Beam angle (°)	CDL (%)	
			Above 90°	Above 80° and until 90°
RLP05 05	4694.0	117.6	0.43%	0.54%

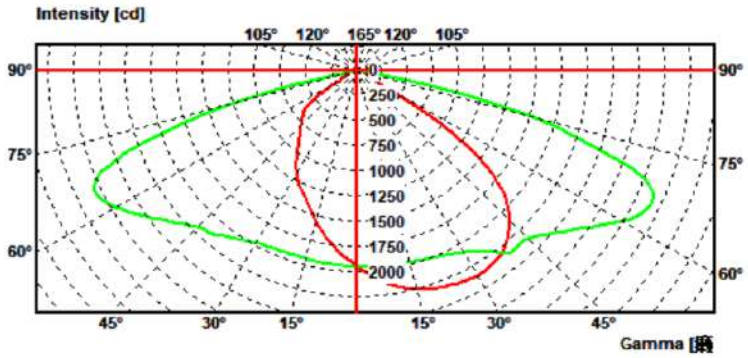

Intensity [cd]
105° 120° 165° 120° 105°
90°
75°
60°
0
250
500
750
1000
1250
1500
1750
2000
45° 30° 15° 15° 30° 45°
Gamma [°]

Table 5: In Situ Temperature Measurement Test and Qualification of the electronic control device:-4000K

Type reference .....:	RLP2404
Lamp source used .....:	Refer to the **Test item particulars** mentioned on page 2
LM-80 report No. .....:	Refer to the **Test item particulars** mentioned on page 2
LED driver used.....:	Integrated
Mounting position .....:	Reference to the TMP_{LED} point base on the LM 80 report
Supply wattage (W) .....:	219.4
Supply current (A) .....:	1.022
Power factor .....:	0.975
Measured LED drive current (mA) .....:	119,3
Maximum LED current listed on LM-80 report (mA) ....:	300
Maximum temperature listed on LM-80 report (°C) .....:	105
Table: measured temperatures corrected for ta 1 = 25 C and ta 2 = 35 C (only for t_c)	
- test 1: rated voltage .....:	220

In-suit Temperature Measurement Point	In-suit Temperature (°C)	
	test 1 (ta 1)	test 1 (ta 2)
TMP_{LED} (T_s)	55,2	--
TMP_{driver} (t_c)	55,0	--

Time (t) at which to estimate lumen maintenance (hours):	97000
Lumen maintenance at time (t) (%):	70,4
Reported L70(6k) (hours):	97000

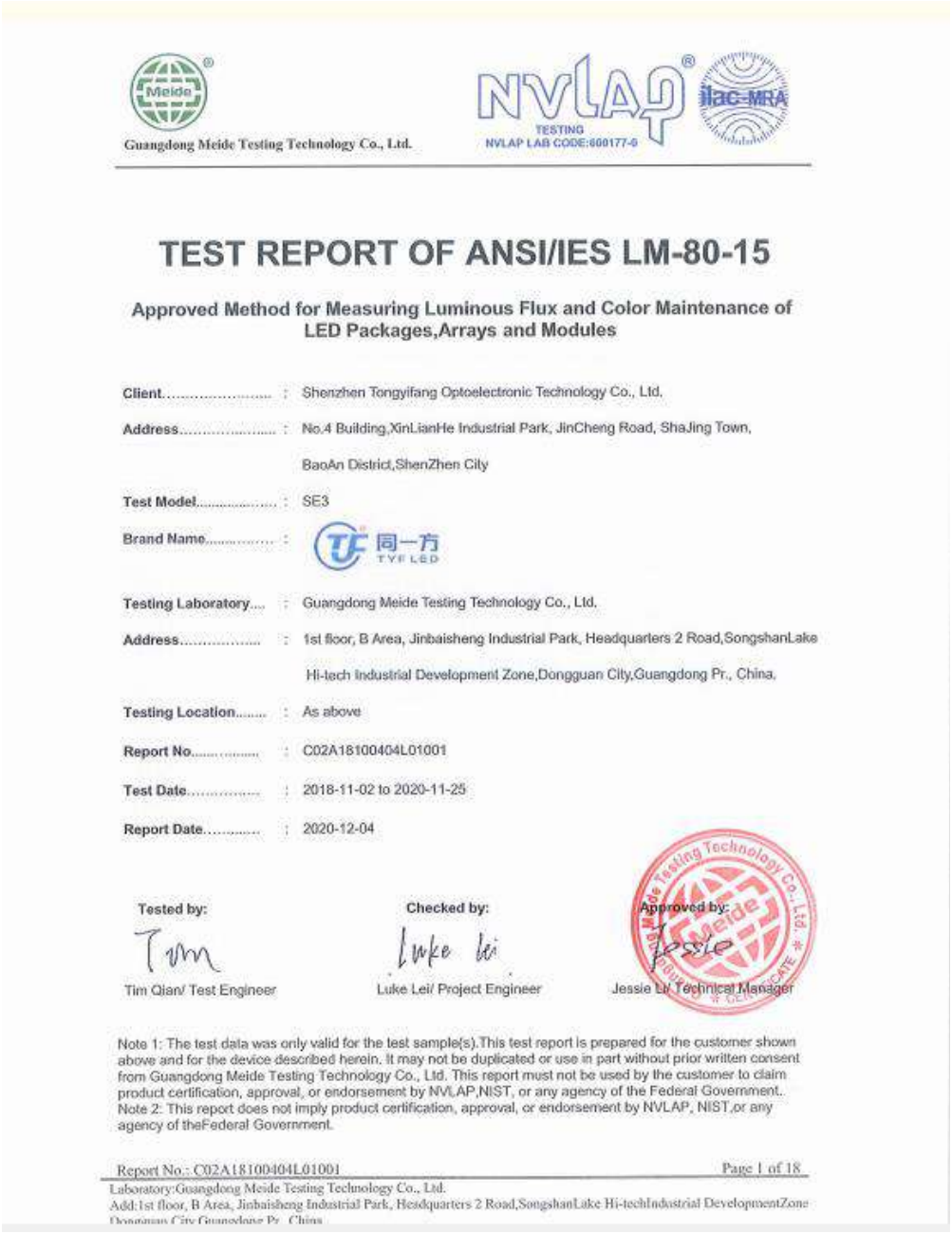
Table 5: In Situ Temperature Measurement Test and Qualification of the electronic control device:-5000K

Type reference .....:	RLP2405
Lamp source used .....:	Refer to the **Test item particulars** mentioned on page 2
LM-80 report No. .....:	Refer to the **Test item particulars** mentioned on page 2
LED driver used.....:	Integrated
Mounting position .....:	Reference to the TMP_{LED} point base on the LM 80 report
Supply wattage (W) .....:	220.0
Supply current (A) .....:	1.04
Power factor .....:	0.974
Measured LED drive current (mA) .....:	119,7
Maximum LED current listed on LM-80 report (mA) ....:	300
Maximum temperature listed on LM-80 report (°C) .....:	105
Table: measured temperatures corrected for ta 1 = 25 C and ta 2 = 35 C (only for t_c)	
- test 1: rated voltage .....:	220

In-suit Temperature Measurement Point	In-suit Temperature (°C)	
	test 1 (ta 1)	test 1 (ta 2)
TMP_{LED} (T_s)	55,8	--
TMP_{driver} (t_c)	55,2	--

Time (t) at which to estimate lumen maintenance (hours):	97000
Lumen maintenance at time (t) (%):	70,4
Reported L70(6k) (hours):	97000

Appendix III: LED source LM-80 report



Guangdong Meide Testing Technology Co., Ltd.

NVLAP TESTING NVLAP LAB CODE:600177-0

ilac-MRA

TEST REPORT OF ANSI/IES LM-80-15

Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages,Arrays and Modules

Client	:	Shenzhen Tongyifang Optoelectronic Technology Co., Ltd.
Address	:	No.4 Building,XinLianHe Industrial Park, JinCheng Road, ShaJing Town, BaoAn District,ShenZhen City
Test Model	:	SE3
Brand Name	:	同一方 TYF LED
Testing Laboratory	:	Guangdong Meide Testing Technology Co., Ltd.
Address	:	1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,SongshanLake Hi-tech Industrial Development Zone,Dongguan City,Guangdong Pr., China.
Testing Location	:	As above
Report No	:	C02A18100404L01001
Test Date	:	2018-11-02 to 2020-11-25
Report Date	:	2020-12-04

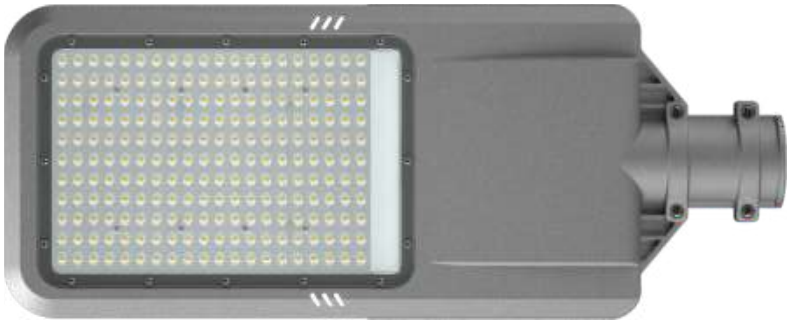
Tested by:	Checked by:	Approved by:
Tim Qian/ Test Engineer	Luke Lei/ Project Engineer	Jessie Lu/ Technical Manager

Note 1: The test data was only valid for the test sample(s).This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or use in part without prior written consent from Guangdong Meide Testing Technology Co., Ltd. This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP,NIST, or any agency of the Federal Government.
Note 2: This report does not imply product certification, approval, or endorsement by NVLAP, NIST,or any agency of theFederal Government.

Report No.: C02A18100404L01001 Page 1 of 18

Laboratory:Guangdong Meide Testing Technology Co., Ltd.
Add:1st floor, B Area, Jinbaisheng Industrial Park, Headquarters 2 Road,SongshanLake Hi-techIndustrial DevelopmentZone Dongguan City,Guangdong Pr., China

Appendix IV: Product images



RLP2404 and RLP2405

RLP2004 and RLP2005

RLP1504 and RLP1505

RLP1004 and RLP1005

RLP0504 and RLP0505

Appendix VIII: list of Uncertainty

Test	Uncertainty （U_{rel},K=2）	Uncertainty （U,K=2）
voltage	$2,2\times10^{-4}$	
power	$2,2\times10^{-4}$	
current	$8,2\times10^{-4}$	
power factor	$7,3\times10^{-5}$	
luminous flux	1,6%	
color temperature		18K

----------END----------

杭州创惠仪器有限公司
http://www.inventfine.com.cn
86-571-88091262
86-571-88262100

Report No.: Test Time: 2023-03-20 09:02

Luminaire Property

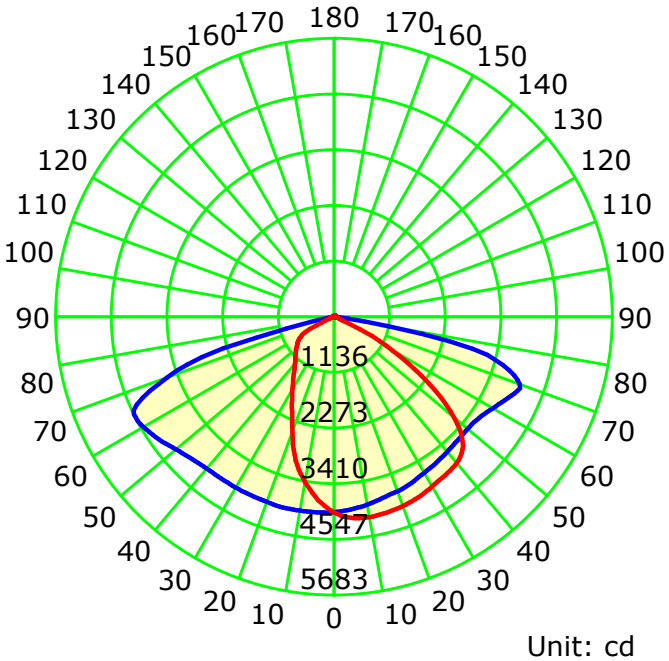
Luminaire Manufacturer:
Luminaire Category: 订单WHS22-0112 旭星067 100W 宽压高P无频闪过EMC 灌胶127V60HZ
Luminaire Description: 5000K
Lamp Catalog:
Lamp Description:
Number of Lamps:
Lumens per Lamp:
Luminous Length (mm):
Luminous Width (mm):
Luminous Height (mm):
Voltage: 127.1 V
Current: 0.783 A
Power: 99.13 W
Power Factor: 0.996

Photometric Results

CIE Class: Direct
Total Rated Lamp Lumens: 12820.1 lm
Measurement Flux: 12820.1 lm
Efficiency: 100%
Downward Ratio: 100%
Upward Ratio: 0%
Horizontal Diffuse Angle(50%): H152.7
Vertical Diffuse Angle(50%): V82.1
Luminaire Efficacy Rating (LER): 129.38
C0r0 Intensity: 3990.95 cd
Max. Intensity: 4547.09 cd
Pos of Max. Intensity: H180 V64
S/MH(C0/C180): 1.48
S/MH(C90/C270): 1.07

Picture Of Luminaire

Luminous Intensity Distribution Curve



Unit: cd
Average Diffuse Angle(50%): 116.7°
C0-C180 C90-C270

C Plane (°):0.0-360.0: 15.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 8.602 m [K=1.0000]
Temperature: 25
Humidity: 60
Operator: 张超
Inspector:

杭州创惠仪器有限公司
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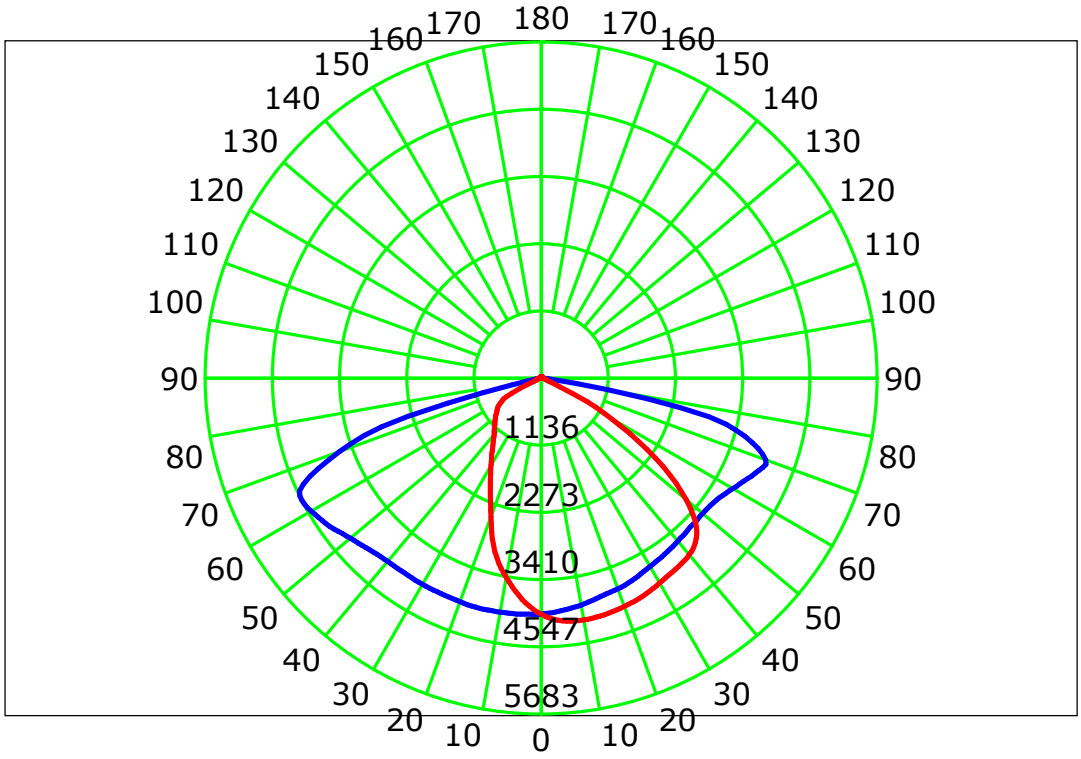
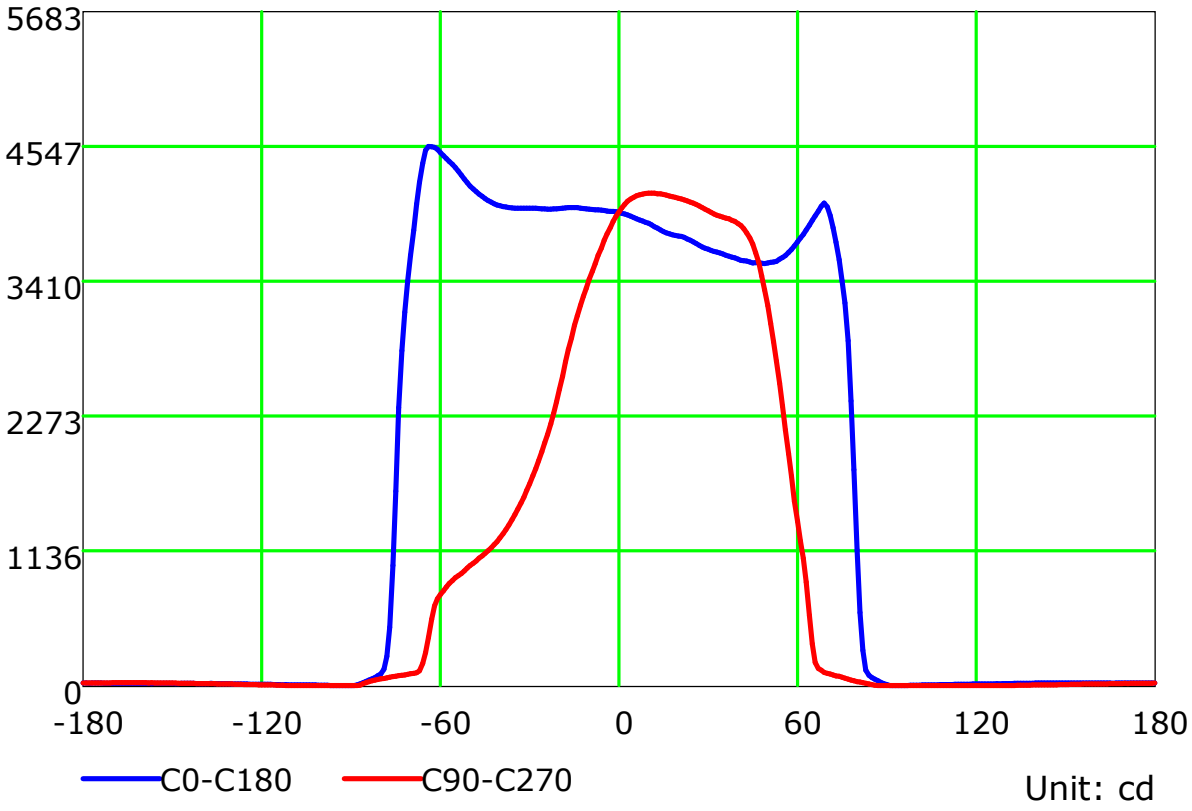
86-571-88262100

Luminous Intensity Distribution Curve





C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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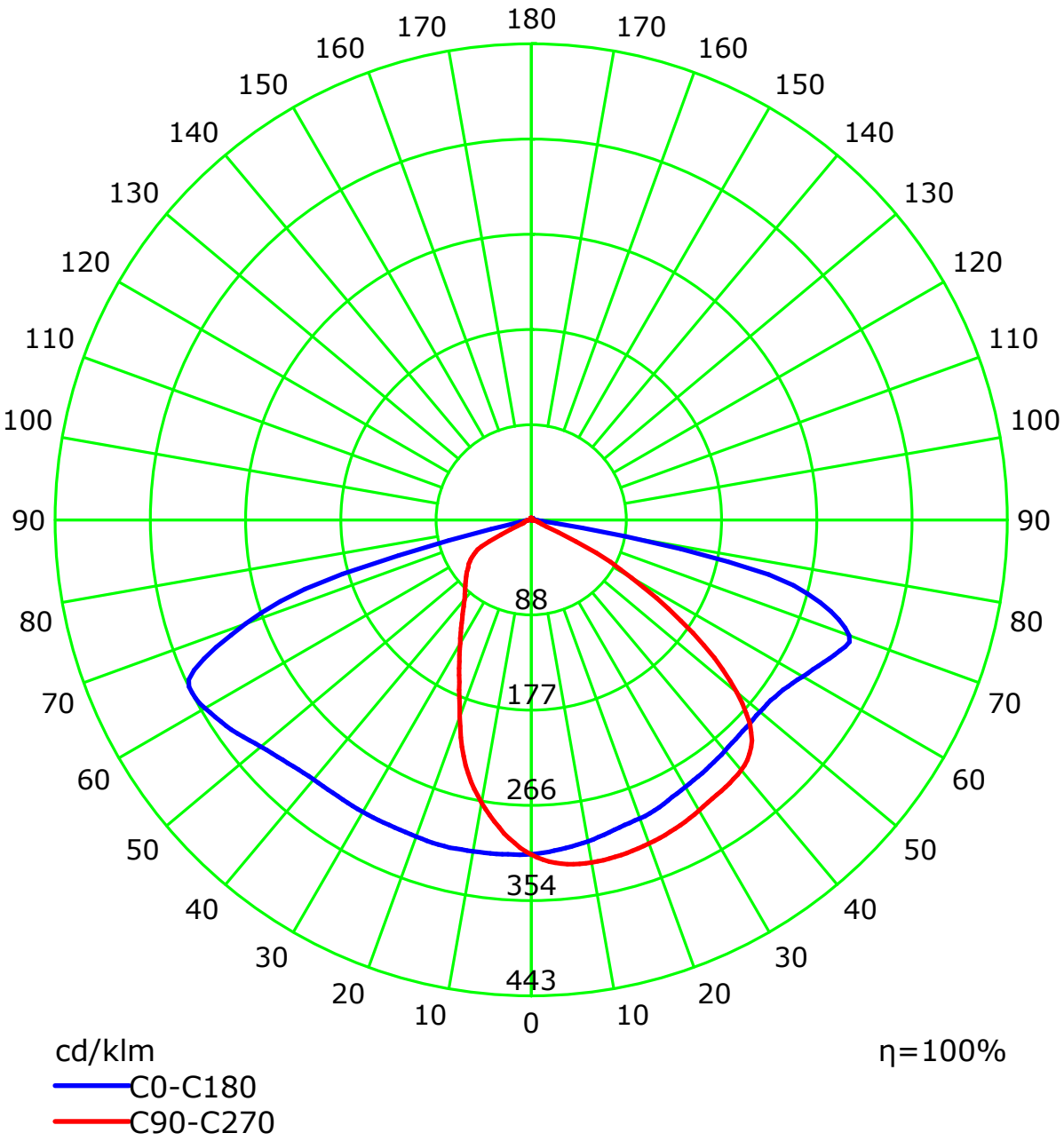
Luminous Intensity Distribution Curve(cd/klm)



C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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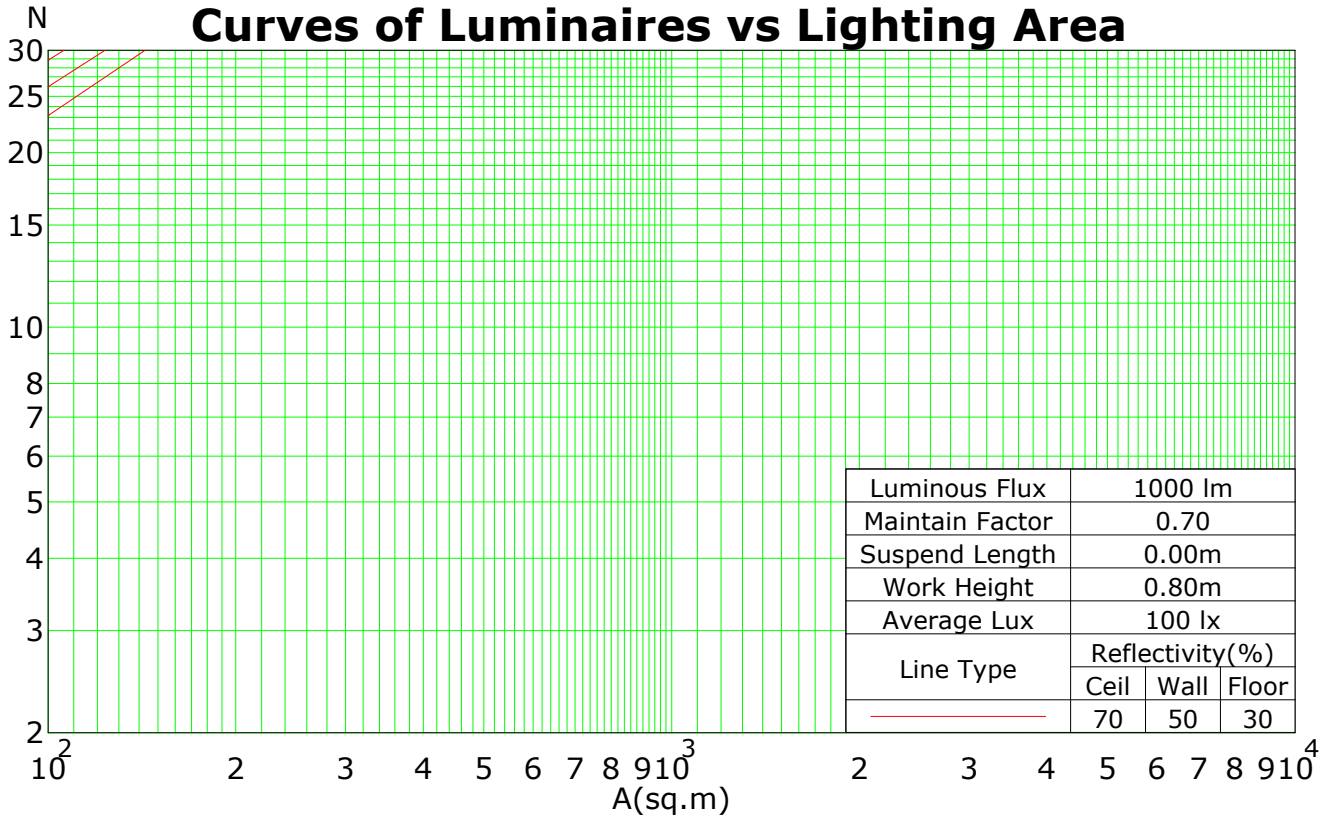
Coefficients Of Utilization - Zonal Cavity Method

RC	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0
RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
RCR	RF = 0.2																	
0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.09	1.04	1.00	0.96	1.06	1.02	0.98	0.94	0.97	0.94	0.91	0.93	0.91	0.88	0.90	0.87	0.85	0.83
2	0.98	0.90	0.83	0.77	0.96	0.88	0.81	0.76	0.84	0.79	0.74	0.81	0.76	0.72	0.78	0.74	0.71	0.68
3	0.89	0.78	0.70	0.63	0.86	0.76	0.69	0.62	0.73	0.67	0.61	0.71	0.65	0.60	0.68	0.63	0.59	0.57
4	0.81	0.69	0.59	0.52	0.79	0.67	0.59	0.52	0.65	0.57	0.51	0.62	0.56	0.51	0.60	0.54	0.50	0.48
5	0.74	0.61	0.51	0.45	0.72	0.60	0.51	0.44	0.57	0.50	0.44	0.55	0.49	0.43	0.53	0.47	0.43	0.40
6	0.68	0.54	0.45	0.38	0.66	0.53	0.45	0.38	0.51	0.44	0.38	0.50	0.43	0.37	0.48	0.42	0.37	0.35
7	0.63	0.49	0.40	0.34	0.61	0.48	0.40	0.33	0.47	0.39	0.33	0.45	0.38	0.33	0.44	0.37	0.33	0.31
8	0.59	0.45	0.36	0.30	0.57	0.44	0.35	0.30	0.42	0.35	0.29	0.41	0.34	0.29	0.40	0.34	0.29	0.27
9	0.55	0.41	0.32	0.27	0.53	0.40	0.32	0.26	0.39	0.31	0.26	0.38	0.31	0.26	0.37	0.30	0.26	0.24
10	0.51	0.37	0.29	0.24	0.50	0.37	0.29	0.24	0.36	0.29	0.24	0.35	0.28	0.24	0.34	0.28	0.23	0.22

Spacing Criteria (0-180): 1.48
Spacing Criteria (90-270): 1.07
Spacing Criteria (Diagonal): 1.46

Curves of Luminaires vs Lighting Area



C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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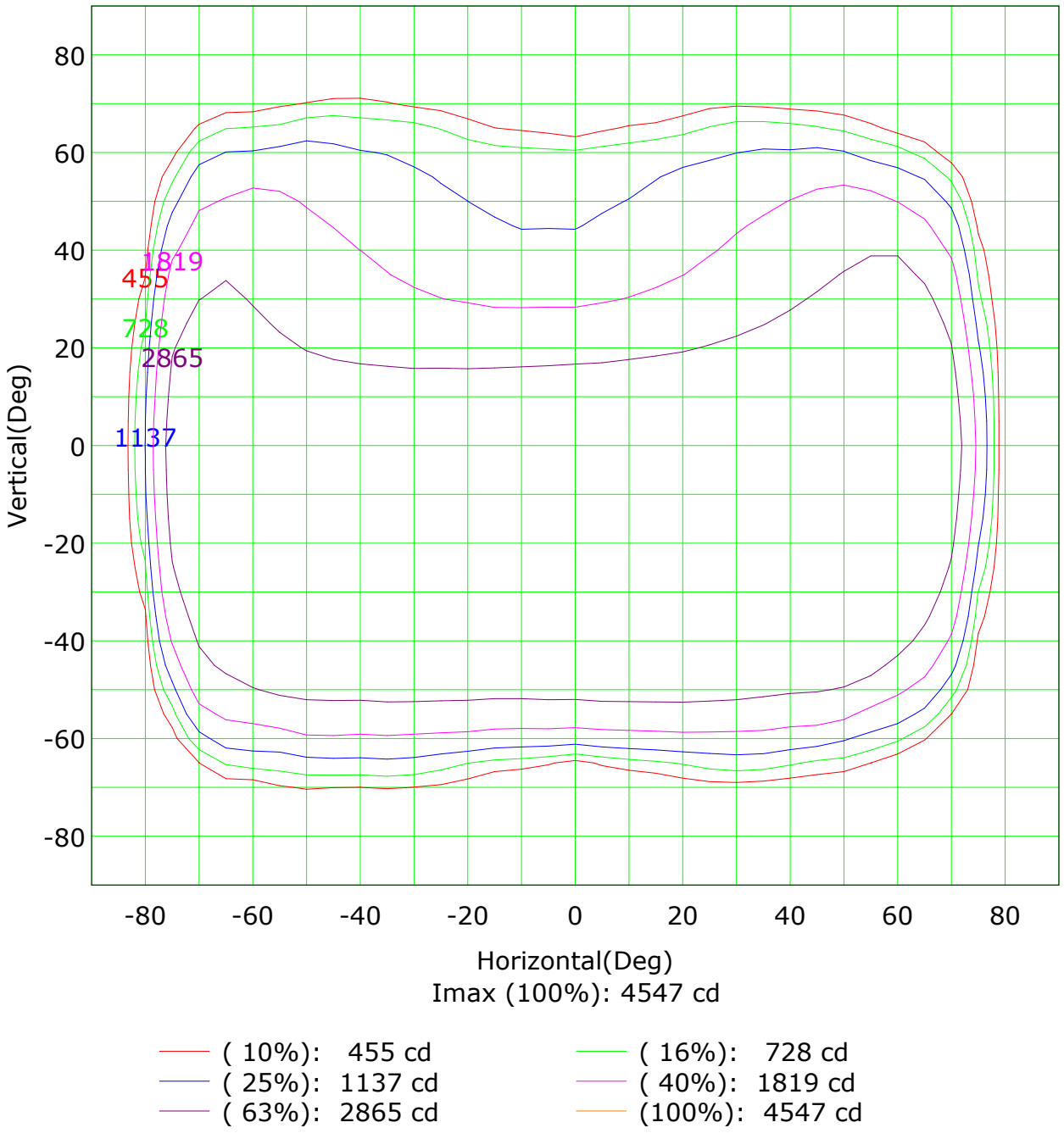
Isocandela (rectangle)



C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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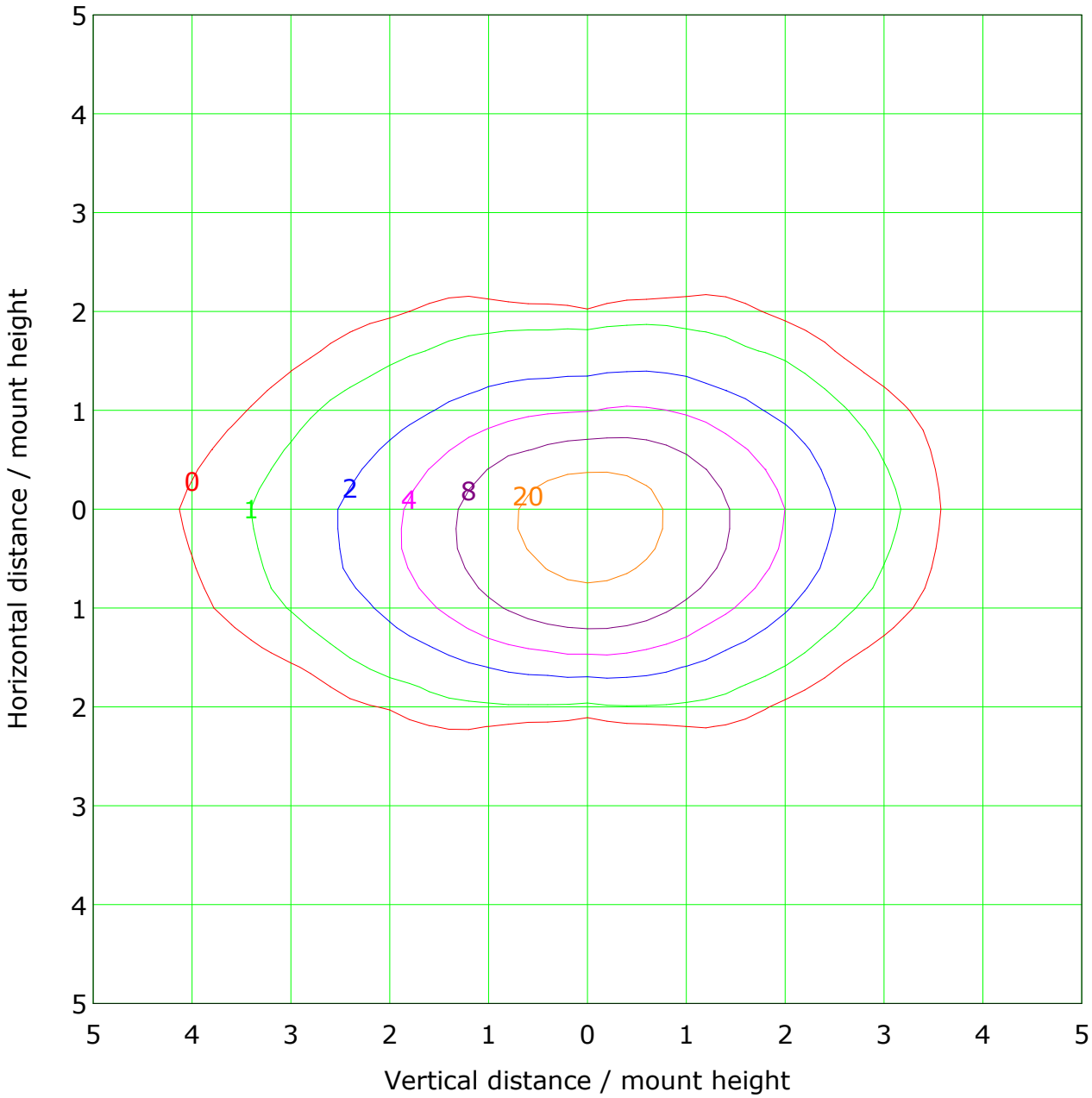
IsoLux Plot



Mounting Height: 10.0m Max Lux(100%): 40.8 lx

(1%): 0.4 lx	(2%): 0.8 lx
(5%): 2.0 lx	(10%): 4.1 lx
(20%): 8.2 lx	(50%): 20.4 lx
(100%): 40.8 lx	

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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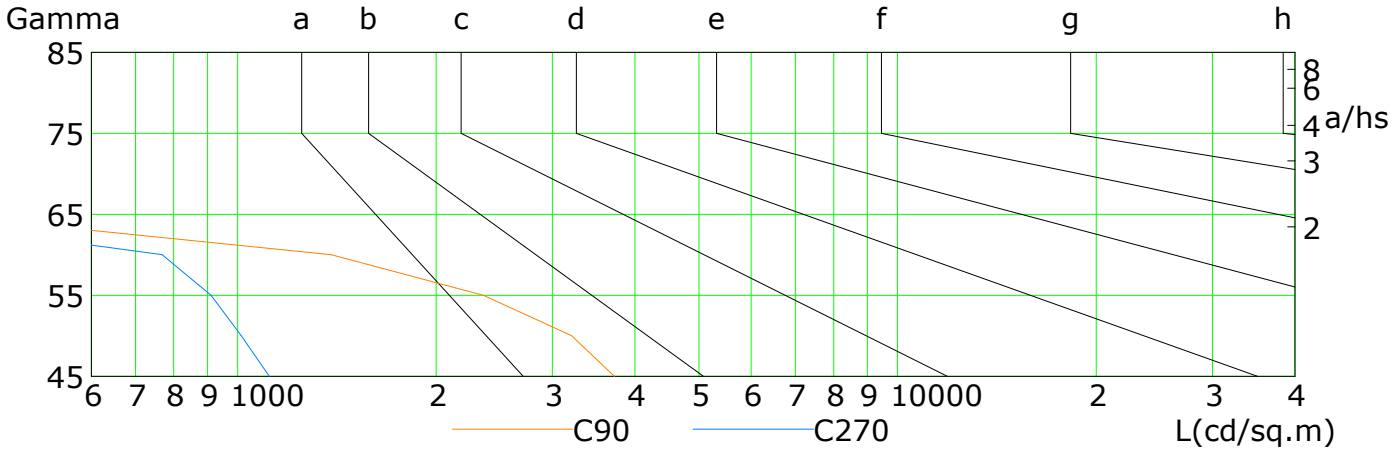
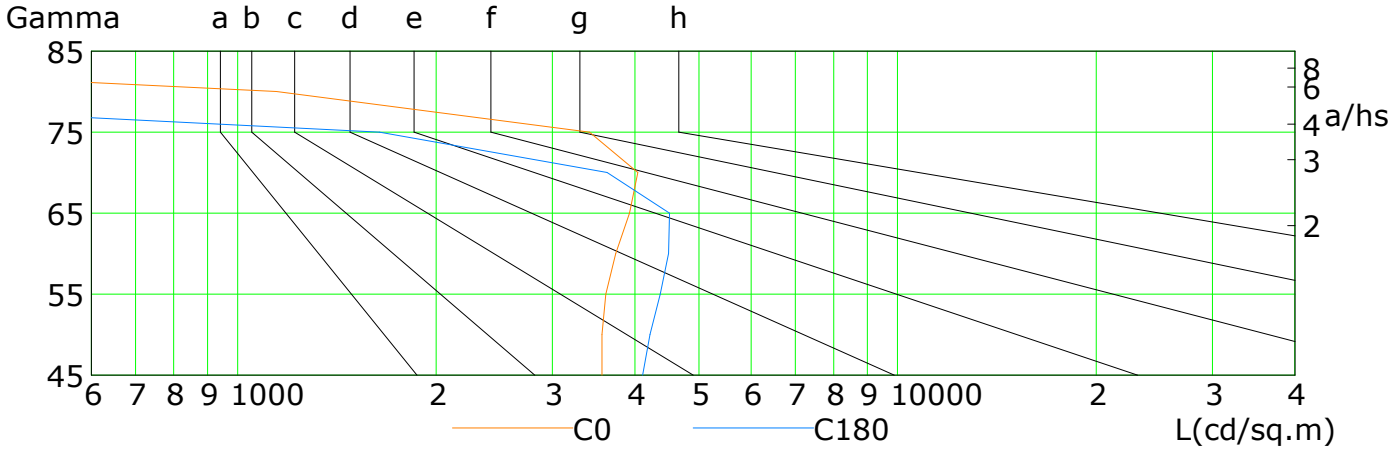
Lum Limit Curve

Dazzle	Quality	Illuminance (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h





L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	3567	3564	3612	3743	3924	4038	3415	1145	69
C90	3725	3206	2360	1386	352	105	72	35	10
C180	4109	4214	4371	4498	4515	3631	1641	98	36
C270	1117	1013	912	769	280	100	80	57	25

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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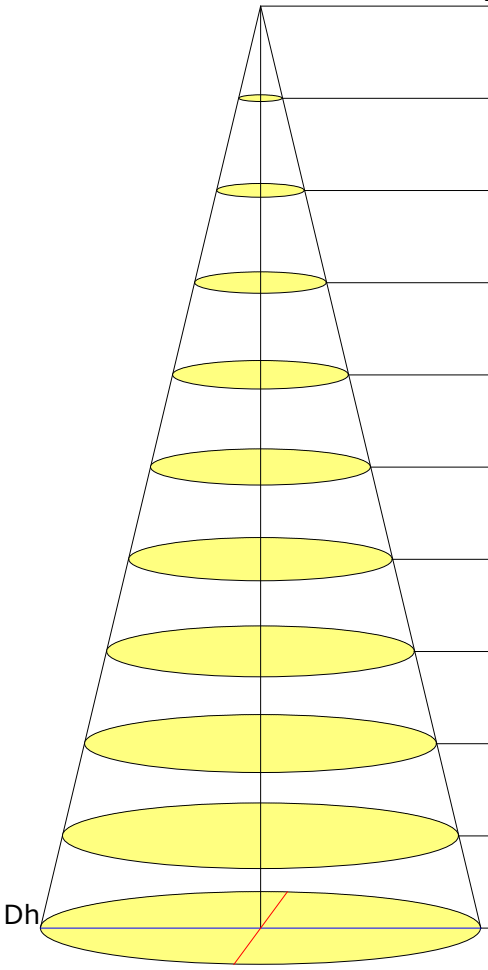
Illuminance at a Distance



Dist(m)	Enadir(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
1.0	3990.95	8.12/1.71	18.7	290.60
2.0	997.74	16.24/3.42	74.7	72.65
3.0	443.44	24.36/5.12	168.0	32.29
4.0	249.43	32.48/6.83	298.7	18.16
5.0	159.64	40.59/8.54	466.7	11.62
6.0	110.86	48.71/10.25	672.0	8.07
7.0	81.45	56.83/11.95	914.7	5.93
8.0	62.36	64.95/13.66	1194.7	4.54
9.0	49.27	73.07/15.37	1512.1	3.59
10.0	39.91	81.19/17.08	1866.8	2.91

Beam Angle(B): H152.3 V81.0 Field Angle(F): H158.7 V128.7

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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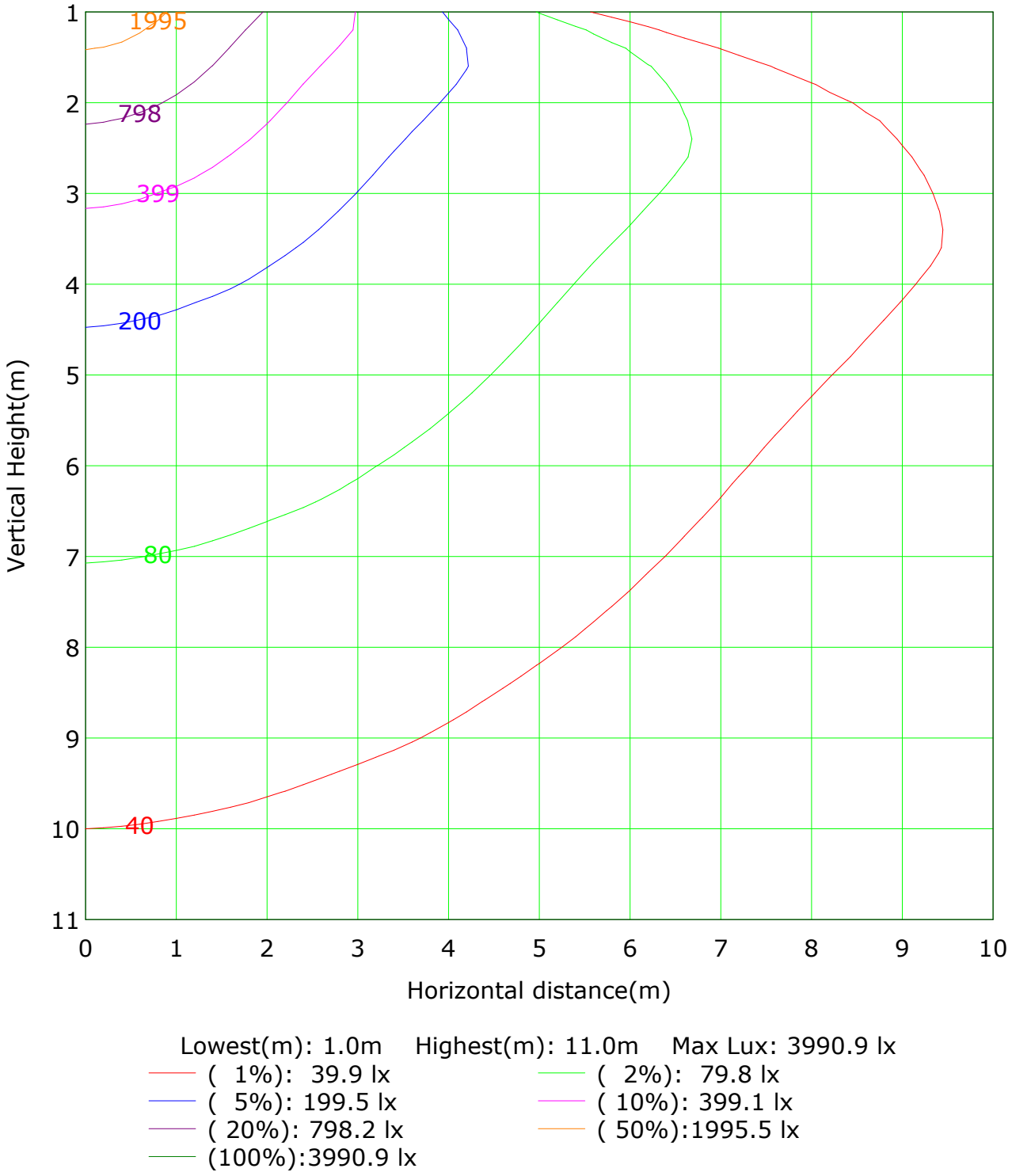
Vertical IsoLux Plot



Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 3990.9 lx

(1%): 39.9 lx
(2%): 79.8 lx
(5%): 199.5 lx
(10%): 399.1 lx
(20%): 798.2 lx
(50%):1995.5 lx
(100%):3990.9 lx

C Plane (°):0.0-360.0: 15.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 8.602 m [K=1.0000]
Temperature: 25
Humidity: 60
Operator: 张超
Inspector:

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Area Flux Table

Unit: lm

Vertical plane \ Horizontal plane	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90 Flux(T)	Flux(E)
-90	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.7	0.6	0.6	0.6	0.3	0.2	0.1	0.0	6.8	0.0
-80	0.0	0.2	0.6	1.1	2.8	3.8	3.9	2.5	2.3	2.4	2.6	3.7	4.9	4.7	2.5	1.5	0.5	0.1	39.9	1.2
-70	0.0	0.6	3.8	9.3	16.1	20.3	20.3	15.9	12.9	12.1	14.1	19.0	20.6	19.4	14.1	8.9	2.1	0.1	209.7	182.3
-60	0.1	2.2	13.7	26.2	34.8	36.4	35.5	32.6	29.3	27.7	28.4	30.5	31.9	31.7	28.4	19.4	6.0	0.2	415.1	412.9
-50	0.1	4.7	24.9	42.2	47.9	47.5	44.5	40.1	36.1	34.1	34.5	36.5	38.4	38.8	36.8	28.5	10.6	0.3	546.4	545.1
-40	0.1	7.5	35.0	53.1	58.1	57.9	54.4	49.9	46.0	44.0	43.6	44.6	45.9	45.3	43.0	35.2	15.1	0.4	679.0	677.9
-30	0.2	10.5	43.1	61.5	68.2	70.9	70.3	67.5	64.3	62.4	60.6	59.5	58.0	54.2	48.8	40.2	19.1	0.6	859.8	858.9
-20	0.2	13.2	49.1	67.8	77.9	84.9	90.1	92.5	92.4	90.3	86.0	80.3	73.2	64.1	54.6	44.3	22.4	0.7	1084.0	1082.9
-10	0.2	14.9	53.9	73.2	85.0	96.1	105.7	112.1	114.2	112.3	105.9	97.0	85.7	72.8	60.3	48.2	24.9	0.8	1263.2	1262.4
0	0.2	14.9	55.3	76.7	90.0	102.2	112.6	120.4	124.3	123.4	116.8	106.3	93.1	78.8	64.7	50.9	25.5	0.8	1356.9	1356.0
10	0.2	13.2	52.9	78.1	93.1	104.8	113.8	120.8	125.1	125.1	119.4	108.3	96.0	82.5	68.1	52.0	24.0	0.7	1378.2	1377.2
20	0.2	10.5	48.3	77.5	94.6	106.7	114.6	119.9	123.3	122.9	117.6	107.6	96.8	84.5	70.8	52.5	21.4	0.6	1370.1	1369.1
30	0.1	7.1	39.4	70.2	91.2	105.6	114.2	117.9	120.0	119.2	113.8	106.1	97.3	85.2	69.4	49.5	17.4	0.4	1324.2	1323.0
40	0.1	4.0	26.6	54.1	75.2	90.9	102.9	109.4	111.8	110.0	104.7	98.5	90.3	77.3	61.0	39.4	12.2	0.3	1168.6	1167.1
50	0.1	1.7	12.9	29.1	46.5	58.0	67.4	72.0	72.8	71.4	69.5	67.8	62.1	53.2	40.0	24.7	6.4	0.2	755.6	753.0
60	0.0	0.7	3.0	8.4	15.3	22.0	24.5	21.7	18.9	18.3	20.7	25.5	26.0	22.0	15.9	9.8	2.1	0.1	254.8	228.8
70	0.0	0.2	0.7	1.2	2.4	3.5	3.8	2.7	2.2	2.3	2.9	4.7	5.2	4.5	2.6	1.7	0.7	0.1	41.3	0.0
80	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.7	0.8	0.8	0.5	0.4	0.2	0.0	6.6	0.0
90 Flux(T)	1.7	106.2	463.3	730.1	899.7	1012.3	1079.6	1098.9	1097.0	1079.0	1042.4	997.1	926.8	820.3	681.8	507.2	210.7	6.4	12761	
Flux(E)	0.0	96.2	456.8	723.4	890.3	1001.8	1068.2	1086.5	1084.8	1066.5	1029.3	984.9	915.6	810.5	675.0	501.2	204.4	2.4		12598

C Plane (°):0.0-360.0: 15.0
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Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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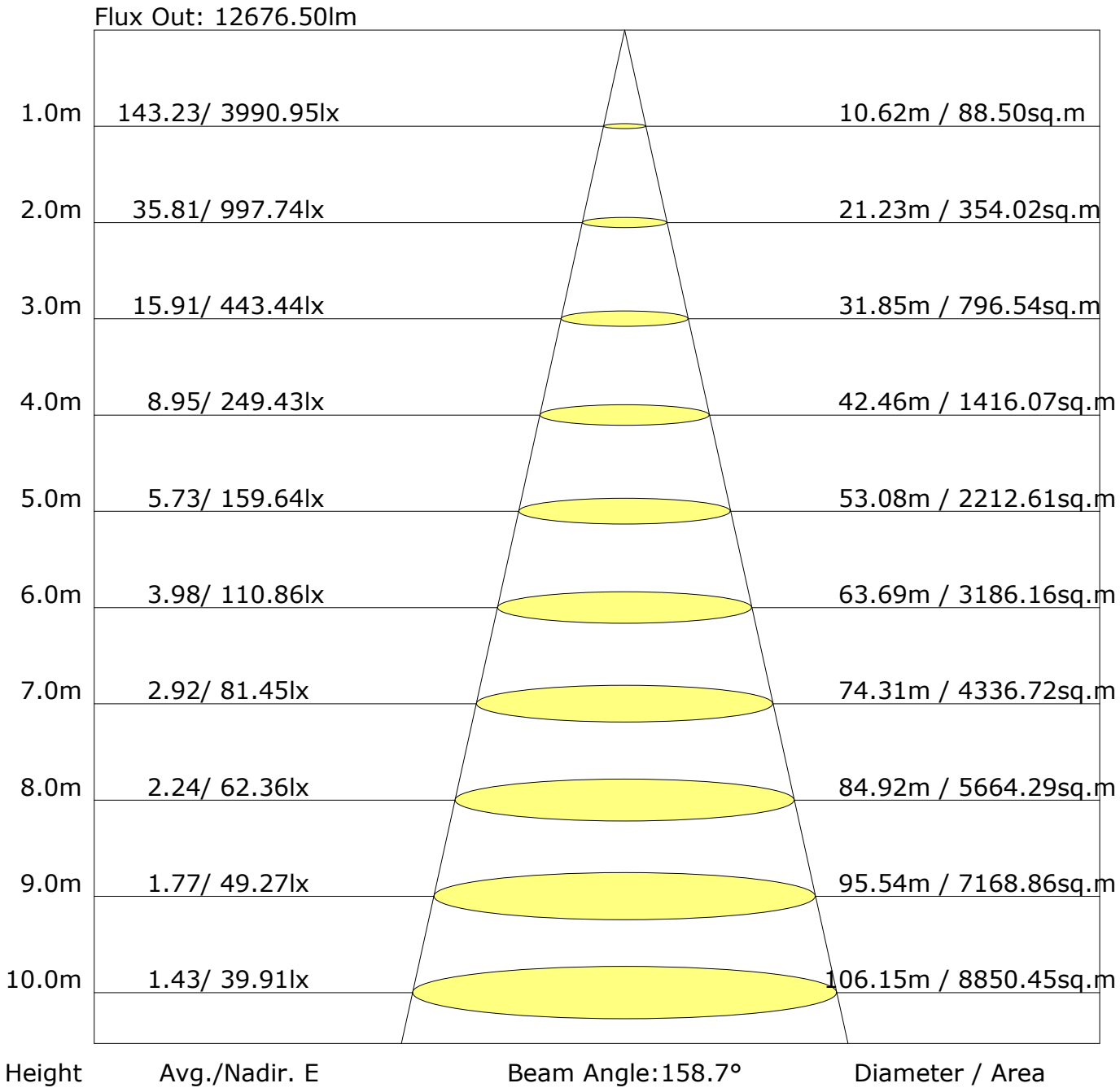
The Average Illuminance Effective Figure



C Plane (°):0.0-360.0: 15.0
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Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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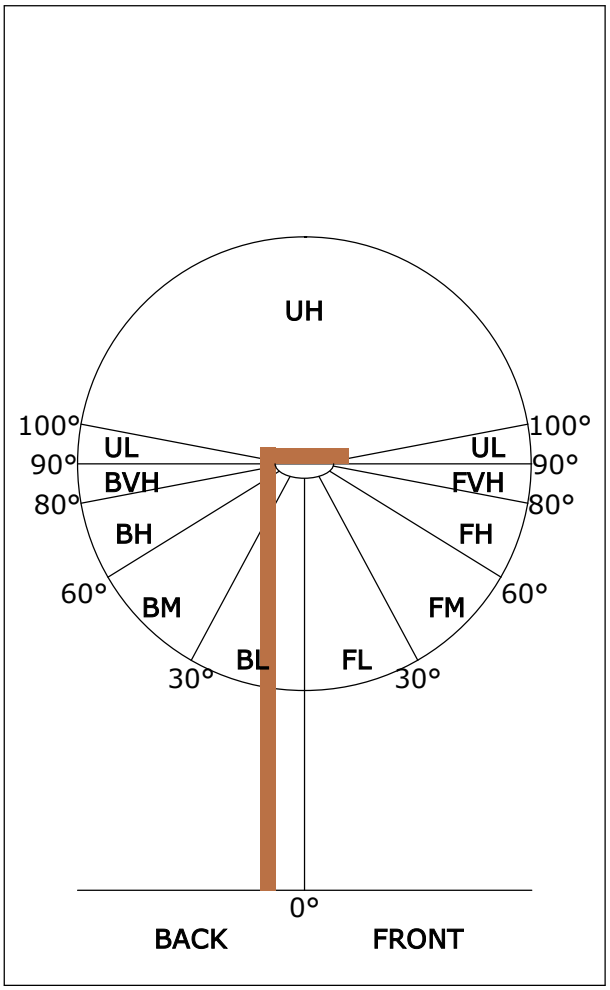
FLUX DISTRIBUTION TABLE BASED ON THE IESNA LUMINAIRE CLASSIFICATION SYSTEM



ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	7657	59.7
FL (0°-30°)	1709	13.3
FM (30°-60°)	4311	33.6
FH (60°-80°)	1603	12.5
FVH (80°-90°)	33	0.3
BACK LIGHT	5104	39.8
BL (0°-30°)	1315	10.3
BM (30°-60°)	2492	19.4
BH (60°-80°)	1264	9.9
BVH (80°-90°)	33	0.3
UP LIGHT	59	0.5
UL (90°-100°)	1	0.0
UH (100°-180°)	58	0.5
TRAPPED LIGHT	NA	NA

BUG(**B**acklight,**U**plight,**G**lare) Rating Base On TM-15-07	
Asymmetrical Luminaire Types (Type I,II,III,IV)	B3 U2 G3
Quadrilateral Symmetrical Luminaire Types (Type V,Area Light)	B3 U2 G1

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Zonal Lumen

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
0.0-1.0	3994.8	3.8	3.8	0.03	0.03
1.0-2.0	3992.9	11.5	15.3	0.09	0.12
2.0-3.0	3986.8	19.1	34.4	0.15	0.27
3.0-4.0	3977.3	26.6	61.0	0.21	0.48
4.0-5.0	3965.9	34.1	95.1	0.27	0.74
5.0-6.0	3952.2	41.5	136.6	0.32	1.07
6.0-7.0	3936.7	48.9	185.5	0.38	1.45
7.0-8.0	3919.7	56.1	241.6	0.44	1.88
8.0-9.0	3901.4	63.2	304.9	0.49	2.38
9.0-10.0	3883.0	70.3	375.1	0.55	2.93
10.0-11.0	3862.2	77.2	452.3	0.60	3.53
11.0-12.0	3840.0	84.0	536.3	0.65	4.18
12.0-13.0	3817.8	90.6	626.9	0.71	4.89
13.0-14.0	3793.3	97.1	724.0	0.76	5.65
14.0-15.0	3767.6	103.4	827.4	0.81	6.45
15.0-16.0	3740.2	109.6	937.0	0.85	7.31
16.0-17.0	3711.3	115.6	1052.6	0.90	8.21
17.0-18.0	3682.5	121.4	1174.1	0.95	9.16
18.0-19.0	3650.7	127.0	1301.1	0.99	10.15
19.0-20.0	3617.8	132.4	1433.5	1.03	11.18
20.0-21.0	3585.7	137.7	1571.2	1.07	12.26
21.0-22.0	3552.9	142.8	1714.0	1.11	13.37
22.0-23.0	3520.4	147.7	1861.8	1.15	14.52
23.0-24.0	3488.3	152.5	2014.3	1.19	15.71
24.0-25.0	3457.0	157.2	2171.5	1.23	16.94
25.0-26.0	3427.7	161.8	2333.3	1.26	18.20
26.0-27.0	3398.3	166.3	2499.6	1.30	19.50
27.0-28.0	3369.7	170.6	2670.2	1.33	20.83
28.0-29.0	3343.3	174.9	2845.2	1.36	22.19
29.0-30.0	3316.8	179.1	3024.3	1.40	23.59
30.0-31.0	3291.2	183.2	3207.5	1.43	25.02
31.0-32.0	3266.9	187.2	3394.6	1.46	26.48
32.0-33.0	3243.9	191.1	3585.8	1.49	27.97
33.0-34.0	3223.3	195.1	3780.9	1.52	29.49
34.0-35.0	3203.0	198.9	3979.8	1.55	31.04
35.0-36.0	3183.8	202.7	4182.6	1.58	32.63

C Plane (°):0.0-360.0: 15.0
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Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 1)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
36.0-37.0	3165.8	206.5	4389.1	1.61	34.24
37.0-38.0	3149.3	210.2	4599.3	1.64	35.88
38.0-39.0	3134.6	214.0	4813.3	1.67	37.54
39.0-40.0	3120.2	217.6	5030.9	1.70	39.24
40.0-41.0	3106.4	221.2	5252.2	1.73	40.97
41.0-42.0	3093.8	224.8	5477.0	1.75	42.72
42.0-43.0	3080.8	228.2	5705.2	1.78	44.50
43.0-44.0	3067.5	231.6	5936.8	1.81	46.31
44.0-45.0	3053.5	234.7	6171.5	1.83	48.14
45.0-46.0	3038.2	237.6	6409.1	1.85	49.99
46.0-47.0	3021.8	240.4	6649.5	1.87	51.87
47.0-48.0	3002.0	242.7	6892.2	1.89	53.76
48.0-49.0	2979.0	244.7	7136.9	1.91	55.67
49.0-50.0	2954.0	246.3	7383.2	1.92	57.59
50.0-51.0	2924.6	247.5	7630.7	1.93	59.52
51.0-52.0	2891.5	248.2	7878.8	1.94	61.46
52.0-53.0	2855.5	248.4	8127.2	1.94	63.39
53.0-54.0	2815.0	248.1	8375.4	1.94	65.33
54.0-55.0	2771.3	247.4	8622.8	1.93	67.26
55.0-56.0	2722.3	246.0	8868.8	1.92	69.18
56.0-57.0	2668.8	244.0	9112.9	1.90	71.08
57.0-58.0	2613.3	241.7	9354.6	1.89	72.97
58.0-59.0	2551.1	238.5	9593.1	1.86	74.83
59.0-60.0	2485.2	234.8	9827.9	1.83	76.66
60.0-61.0	2416.8	230.7	10058.6	1.80	78.46
61.0-62.0	2345.2	226.0	10284.6	1.76	80.22
62.0-63.0	2270.4	220.8	10505.4	1.72	81.95
63.0-64.0	2182.1	214.2	10719.6	1.67	83.62
64.0-65.0	2083.3	206.2	10925.8	1.61	85.22
65.0-66.0	1979.8	197.6	11123.3	1.54	86.76
66.0-67.0	1867.3	187.8	11311.1	1.46	88.23
67.0-68.0	1755.3	177.8	11489.0	1.39	89.62
68.0-69.0	1643.6	167.7	11656.7	1.31	90.92
69.0-70.0	1529.3	157.1	11813.7	1.23	92.15
70.0-71.0	1415.4	146.3	11960.1	1.14	93.29
71.0-72.0	1290.2	134.2	12094.2	1.05	94.34

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
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Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 2)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
72.0-73.0	1158.9	121.2	12215.4	0.95	95.28
73.0-74.0	1030.0	108.3	12323.7	0.84	96.13
74.0-75.0	893.9	94.5	12418.2	0.74	96.87
75.0-76.0	760.8	80.8	12499.0	0.63	97.50
76.0-77.0	633.7	67.6	12566.5	0.53	98.02
77.0-78.0	509.3	54.5	12621.1	0.43	98.45
78.0-79.0	398.3	42.8	12663.9	0.33	98.78
79.0-80.0	293.7	31.7	12695.5	0.25	99.03
80.0-81.0	202.4	21.9	12717.4	0.17	99.20
81.0-82.0	136.2	14.8	12732.2	0.12	99.31
82.0-83.0	91.1	9.9	12742.1	0.08	99.39
83.0-84.0	63.2	6.9	12749.0	0.05	99.45
84.0-85.0	44.6	4.9	12753.9	0.04	99.48
85.0-86.0	30.7	3.4	12757.2	0.03	99.51
86.0-87.0	20.0	2.2	12759.4	0.02	99.53
87.0-88.0	11.6	1.3	12760.7	0.01	99.54
88.0-89.0	5.5	0.6	12761.3	0.00	99.54
89.0-90.0	2.1	0.2	12761.5	0.00	99.54
90.0-91.0	0.6	0.1	12761.6	0.00	99.54
91.0-92.0	0.2	0.0	12761.6	0.00	99.54
92.0-93.0	0.1	0.0	12761.6	0.00	99.54
93.0-94.0	0.2	0.0	12761.6	0.00	99.54
94.0-95.0	0.4	0.0	12761.7	0.00	99.54
95.0-96.0	0.5	0.1	12761.7	0.00	99.54
96.0-97.0	0.6	0.1	12761.8	0.00	99.55
97.0-98.0	0.9	0.1	12761.9	0.00	99.55
98.0-99.0	1.1	0.1	12762.0	0.00	99.55
99.0-100.0	1.3	0.1	12762.2	0.00	99.55
100.0-101.0	1.6	0.2	12762.3	0.00	99.55
101.0-102.0	1.9	0.2	12762.5	0.00	99.55
102.0-103.0	2.2	0.2	12762.8	0.00	99.55
103.0-104.0	2.5	0.3	12763.0	0.00	99.55
104.0-105.0	2.8	0.3	12763.3	0.00	99.56
105.0-106.0	3.1	0.3	12763.7	0.00	99.56
106.0-107.0	3.4	0.4	12764.0	0.00	99.56
107.0-108.0	3.6	0.4	12764.4	0.00	99.57

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 3)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
108.0-109.0	4.0	0.4	12764.8	0.00	99.57
109.0-110.0	4.4	0.5	12765.3	0.00	99.57
110.0-111.0	4.7	0.5	12765.8	0.00	99.58
111.0-112.0	5.0	0.5	12766.3	0.00	99.58
112.0-113.0	5.4	0.5	12766.8	0.00	99.58
113.0-114.0	5.8	0.6	12767.4	0.00	99.59
114.0-115.0	6.2	0.6	12768.0	0.00	99.59
115.0-116.0	6.6	0.7	12768.7	0.01	99.60
116.0-117.0	7.0	0.7	12769.4	0.01	99.60
117.0-118.0	7.3	0.7	12770.1	0.01	99.61
118.0-119.0	7.7	0.7	12770.8	0.01	99.62
119.0-120.0	7.9	0.8	12771.6	0.01	99.62
120.0-121.0	8.3	0.8	12772.3	0.01	99.63
121.0-122.0	8.8	0.8	12773.2	0.01	99.63
122.0-123.0	9.2	0.8	12774.0	0.01	99.64
123.0-124.0	9.6	0.9	12774.9	0.01	99.65
124.0-125.0	9.9	0.9	12775.8	0.01	99.65
125.0-126.0	10.2	0.9	12776.7	0.01	99.66
126.0-127.0	10.7	0.9	12777.6	0.01	99.67
127.0-128.0	11.1	1.0	12778.6	0.01	99.68
128.0-129.0	11.5	1.0	12779.6	0.01	99.68
129.0-130.0	12.1	1.0	12780.6	0.01	99.69
130.0-131.0	12.4	1.0	12781.7	0.01	99.70
131.0-132.0	12.8	1.1	12782.7	0.01	99.71
132.0-133.0	13.2	1.1	12783.8	0.01	99.72
133.0-134.0	13.6	1.1	12784.9	0.01	99.73
134.0-135.0	14.1	1.1	12786.0	0.01	99.73
135.0-136.0	14.4	1.1	12787.1	0.01	99.74
136.0-137.0	14.8	1.1	12788.2	0.01	99.75
137.0-138.0	15.2	1.1	12789.3	0.01	99.76
138.0-139.0	15.5	1.1	12790.4	0.01	99.77
139.0-140.0	15.9	1.1	12791.6	0.01	99.78
140.0-141.0	16.3	1.1	12792.7	0.01	99.79
141.0-142.0	16.7	1.1	12793.8	0.01	99.80
142.0-143.0	16.9	1.1	12795.0	0.01	99.80
143.0-144.0	17.2	1.1	12796.1	0.01	99.81

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 4)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
144.0-145.0	17.5	1.1	12797.2	0.01	99.82
145.0-146.0	17.8	1.1	12798.3	0.01	99.83
146.0-147.0	18.1	1.1	12799.4	0.01	99.84
147.0-148.0	18.4	1.1	12800.5	0.01	99.85
148.0-149.0	18.7	1.1	12801.6	0.01	99.86
149.0-150.0	18.8	1.0	12802.6	0.01	99.86
150.0-151.0	19.1	1.0	12803.6	0.01	99.87
151.0-152.0	19.4	1.0	12804.7	0.01	99.88
152.0-153.0	19.6	1.0	12805.6	0.01	99.89
153.0-154.0	19.8	1.0	12806.6	0.01	99.89
154.0-155.0	20.0	0.9	12807.6	0.01	99.90
155.0-156.0	20.2	0.9	12808.5	0.01	99.91
156.0-157.0	20.4	0.9	12809.4	0.01	99.92
157.0-158.0	20.5	0.9	12810.2	0.01	99.92
158.0-159.0	20.6	0.8	12811.1	0.01	99.93
159.0-160.0	20.8	0.8	12811.9	0.01	99.94
160.0-161.0	20.9	0.8	12812.6	0.01	99.94
161.0-162.0	21.1	0.7	12813.4	0.01	99.95
162.0-163.0	21.3	0.7	12814.1	0.01	99.95
163.0-164.0	21.4	0.7	12814.7	0.01	99.96
164.0-165.0	21.5	0.6	12815.4	0.00	99.96
165.0-166.0	21.7	0.6	12816.0	0.00	99.97
166.0-167.0	21.8	0.6	12816.5	0.00	99.97
167.0-168.0	22.0	0.5	12817.0	0.00	99.98
168.0-169.0	22.0	0.5	12817.5	0.00	99.98
169.0-170.0	22.2	0.4	12818.0	0.00	99.98
170.0-171.0	22.2	0.4	12818.4	0.00	99.99
171.0-172.0	22.2	0.4	12818.7	0.00	99.99
172.0-173.0	22.4	0.3	12819.0	0.00	99.99
173.0-174.0	22.5	0.3	12819.3	0.00	99.99
174.0-175.0	22.5	0.2	12819.6	0.00	100.00
175.0-176.0	22.5	0.2	12819.8	0.00	100.00
176.0-177.0	22.5	0.2	12819.9	0.00	100.00
177.0-178.0	22.5	0.1	12820.0	0.00	100.00
178.0-179.0	22.4	0.1	12820.1	0.00	100.00
179.0-180.0	22.4	0.0	12820.1	0.00	100.00

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 5)

cone flux(90°): 6171.47 lm

%lum = 48.1%
%lamp = 48.1%

cone flux(120°): 9827.92 lm

%lum = 76.7%
%lamp = 76.7%

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Report No.: Test Time: 2023-03-20 08:07

Luminaire Property

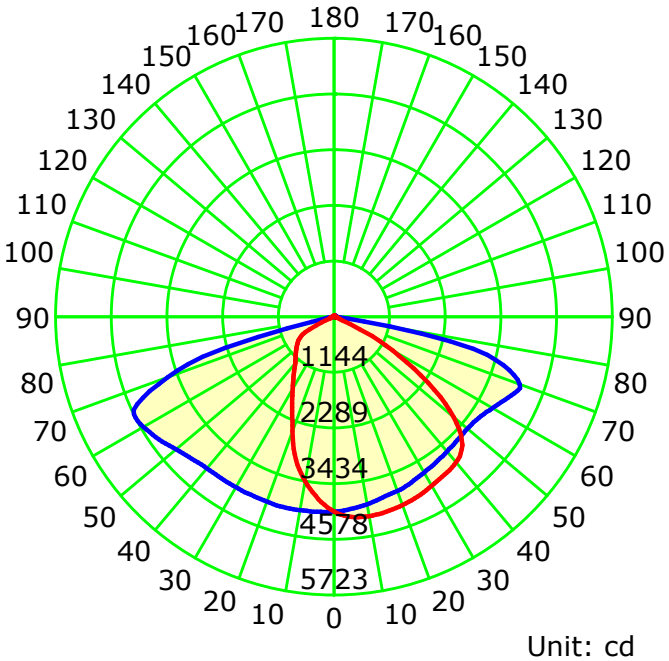
Luminaire Manufacturer:
Luminaire Category: 订单WHS22-0112 旭星067 100W 宽压高P无频闪过EMC 灌胶220V50HZ
Luminaire Description: 5000K
Lamp Catalog:
Lamp Description:
Number of Lamps:
Lumens per Lamp:
Luminous Length (mm):
Luminous Width (mm):
Luminous Height (mm):
Voltage: 220.3 V
Current: 0.456 A
Power: 97.59 W
Power Factor: 0.971

Photometric Results

CIE Class: Direct
Total Rated Lamp Lumens: 12861.5 lm
Measurement Flux: 12861.5 lm
Efficiency: 100%
Downward Ratio: 100%
Upward Ratio: 0%
Horizontal Diffuse Angle(50%): H152.7
Vertical Diffuse Angle(50%): V82.1
Luminaire Efficacy Rating (LER): 131.84
C0r0 Intensity: 4011.24 cd
Max. Intensity: 4578.96 cd
Pos of Max. Intensity: H180 V64
S/MH(C0/C180): 1.48
S/MH(C90/C270): 1.07

Picture Of Luminaire

Luminous Intensity Distribution Curve



Unit: cd
Average Diffuse Angle(50%): 116.6°
C0-C180 C90-C270

C Plane (°):0.0-360.0: 15.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 8.602 m [K=1.0000]
Temperature: 25
Humidity: 60
Operator: 张超
Inspector:

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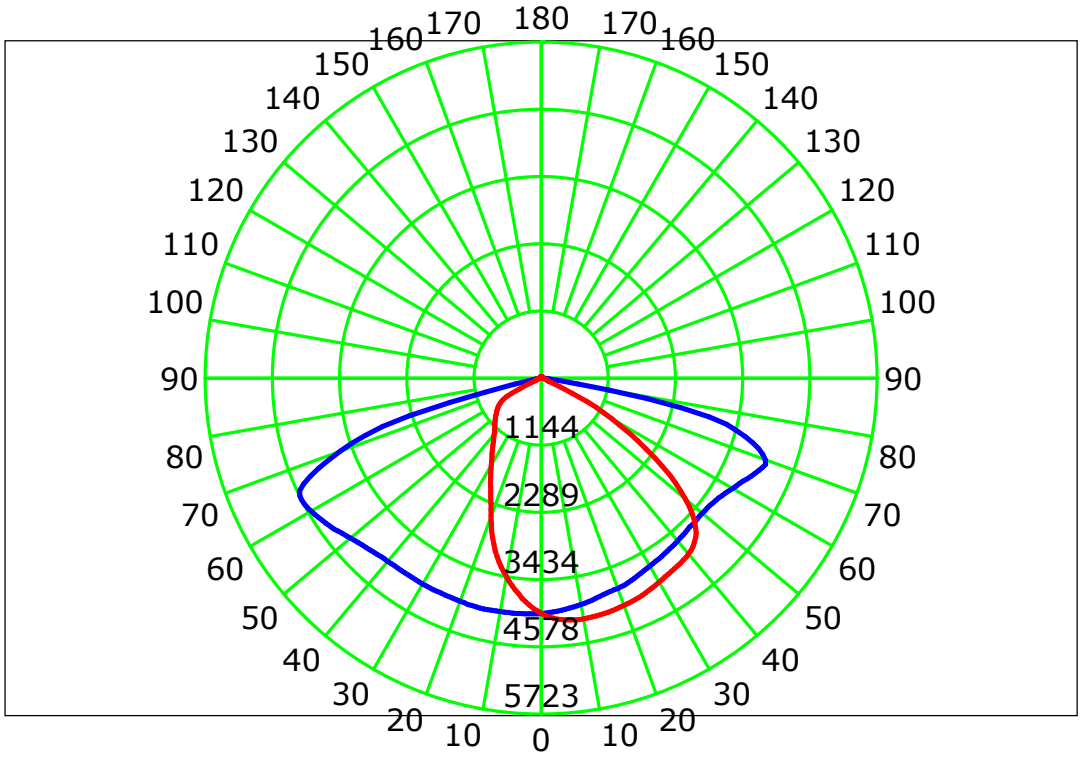
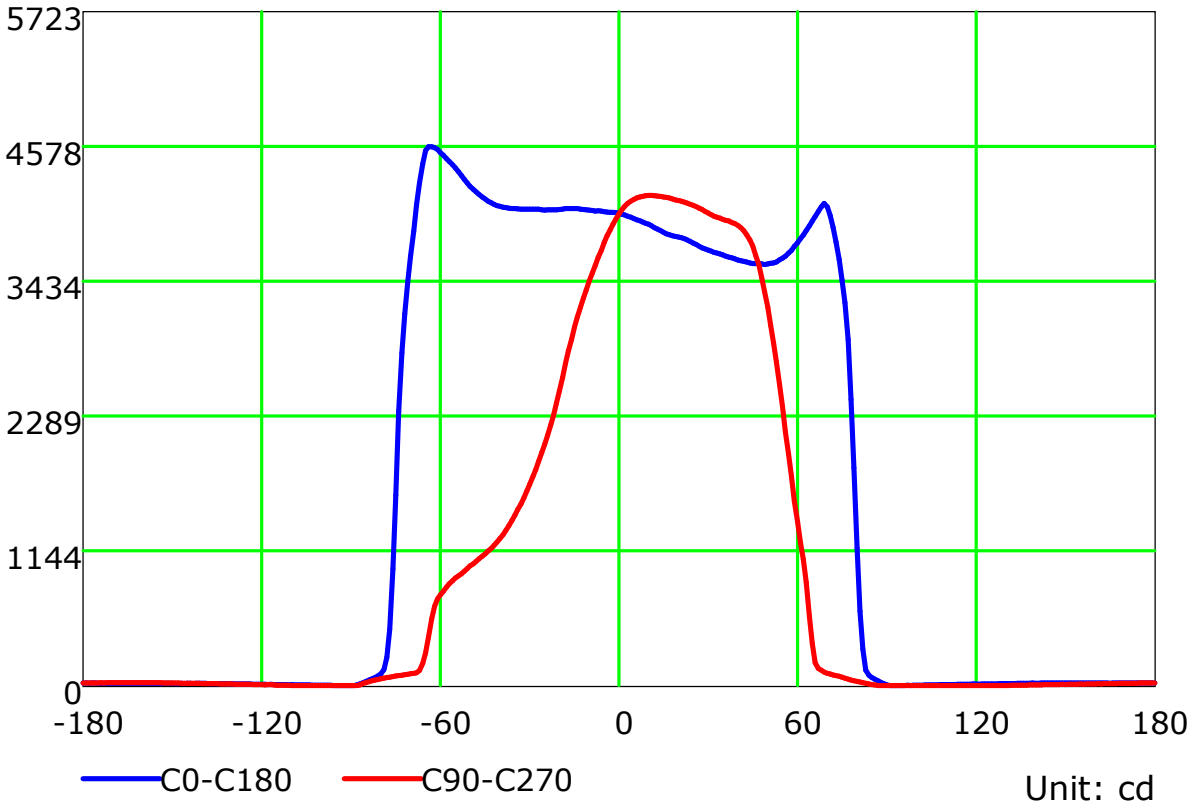
Luminous Intensity Distribution Curve





C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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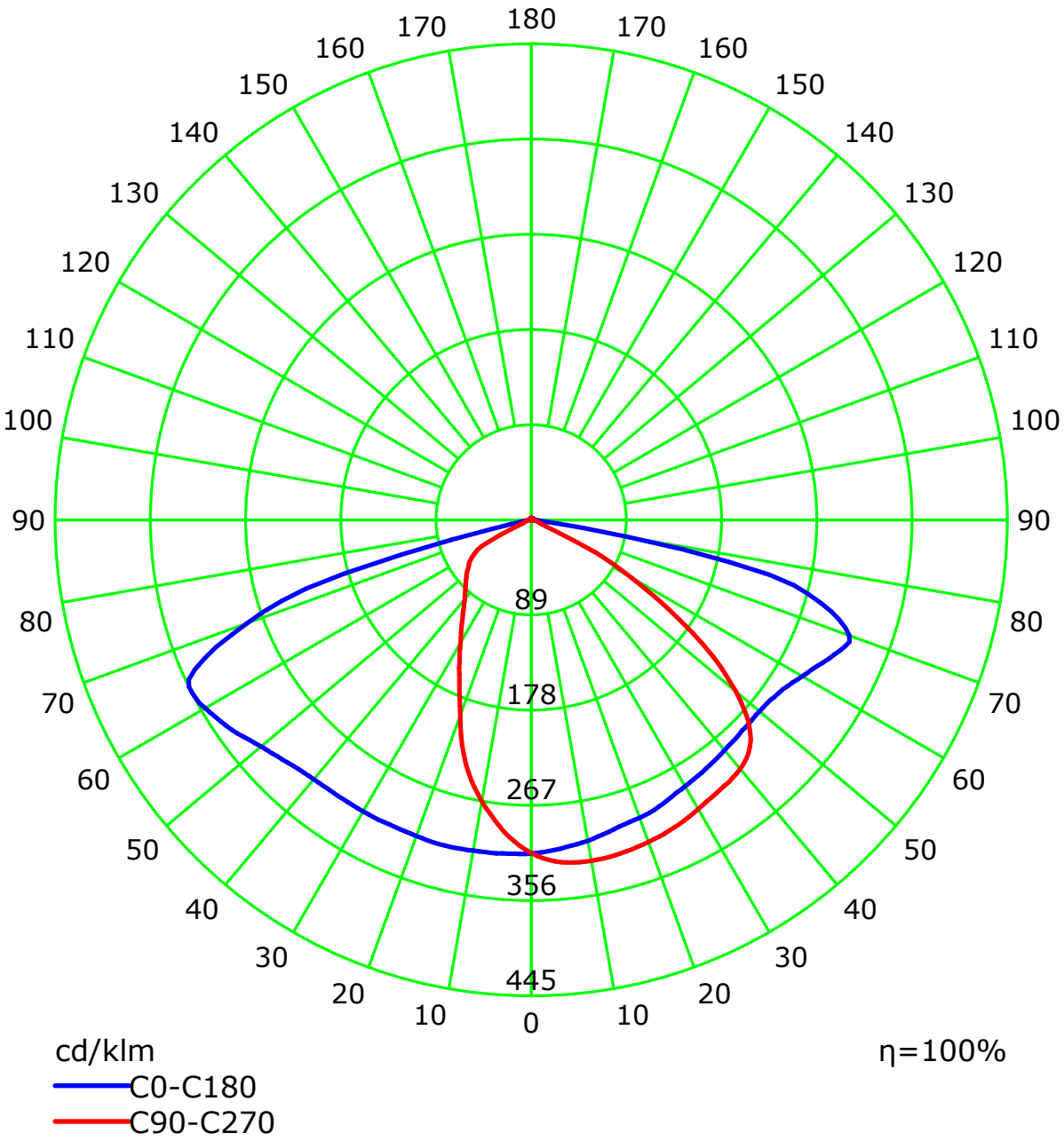
Luminous Intensity Distribution Curve(cd/klm)



C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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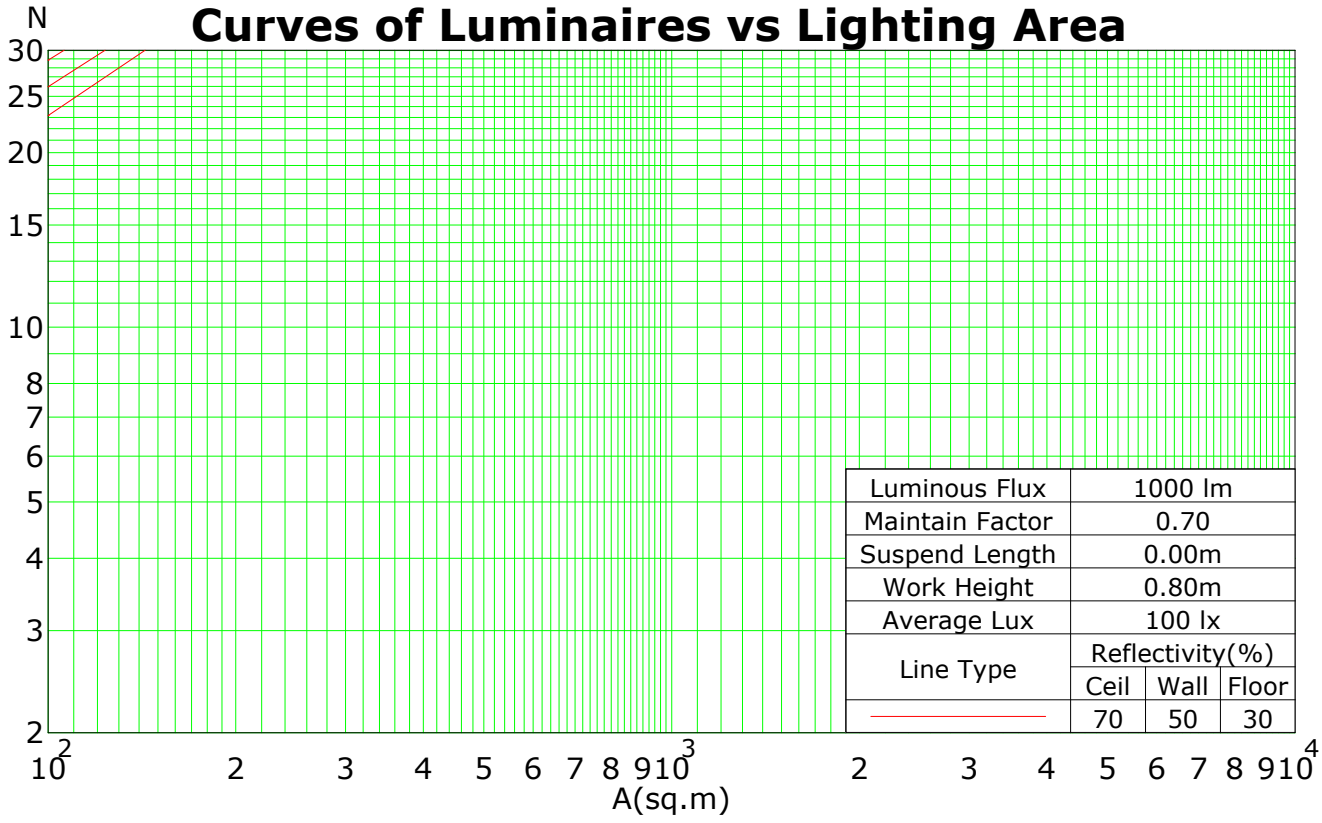
Coefficients Of Utilization - Zonal Cavity Method

RC	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.3	0.3	0.3	0.1	0.1	0.1	0
RW	0.7	0.5	0.3	0.1	0.7	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0.5	0.3	0.1	0
RCR	RF = 0.2																	
0	1.19	1.19	1.19	1.19	1.16	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1	1.09	1.04	1.00	0.96	1.06	1.02	0.98	0.94	0.97	0.94	0.91	0.93	0.91	0.88	0.90	0.87	0.85	0.83
2	0.98	0.90	0.83	0.77	0.96	0.88	0.81	0.76	0.84	0.79	0.74	0.81	0.76	0.72	0.78	0.74	0.71	0.68
3	0.89	0.78	0.70	0.63	0.86	0.76	0.69	0.62	0.73	0.67	0.61	0.70	0.65	0.60	0.68	0.63	0.59	0.57
4	0.81	0.69	0.59	0.52	0.79	0.67	0.59	0.52	0.65	0.57	0.51	0.62	0.56	0.51	0.60	0.54	0.50	0.48
5	0.74	0.61	0.51	0.45	0.72	0.60	0.51	0.44	0.57	0.50	0.44	0.55	0.49	0.43	0.53	0.47	0.43	0.40
6	0.68	0.54	0.45	0.38	0.66	0.53	0.45	0.38	0.51	0.44	0.38	0.50	0.43	0.37	0.48	0.42	0.37	0.35
7	0.63	0.49	0.40	0.34	0.61	0.48	0.40	0.33	0.47	0.39	0.33	0.45	0.38	0.33	0.44	0.37	0.33	0.31
8	0.59	0.45	0.36	0.30	0.57	0.44	0.35	0.30	0.42	0.35	0.29	0.41	0.34	0.29	0.40	0.34	0.29	0.27
9	0.55	0.41	0.32	0.27	0.53	0.40	0.32	0.26	0.39	0.31	0.26	0.38	0.31	0.26	0.37	0.30	0.26	0.24
10	0.51	0.37	0.29	0.24	0.50	0.37	0.29	0.24	0.36	0.29	0.24	0.35	0.28	0.24	0.34	0.28	0.23	0.22

Spacing Criteria (0-180): 1.48
Spacing Criteria (90-270): 1.07
Spacing Criteria (Diagonal): 1.46

Curves of Luminaires vs Lighting Area



C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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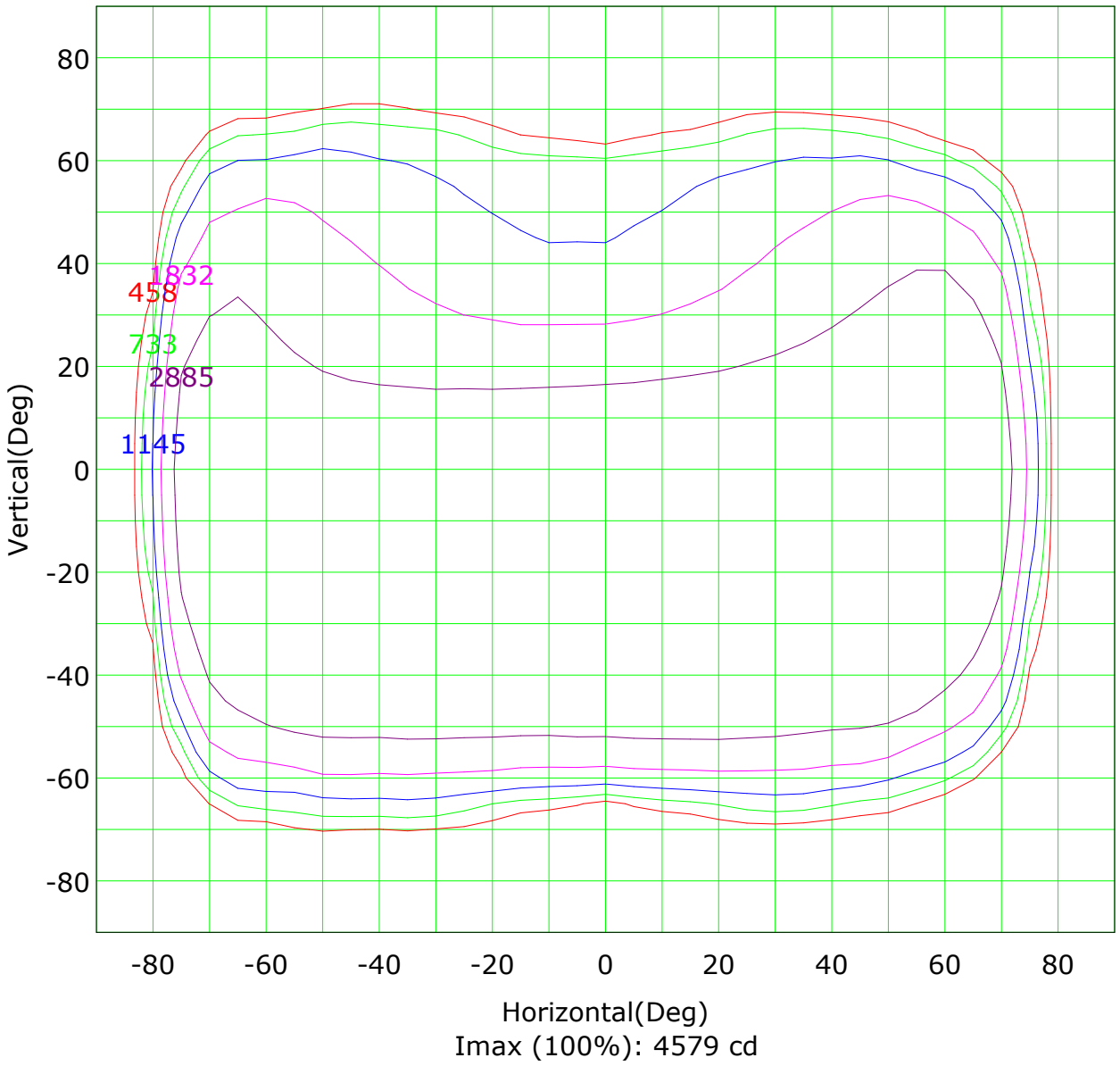
Isocandela (rectangle)



(10%): 458 cd
(16%): 733 cd
(25%): 1145 cd
(40%): 1832 cd
(63%): 2885 cd
(100%): 4579 cd

C Plane (°):0.0-360.0: 15.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 8.602 m [K=1.0000]
Temperature: 25
Humidity: 60
Operator: 张超
Inspector:

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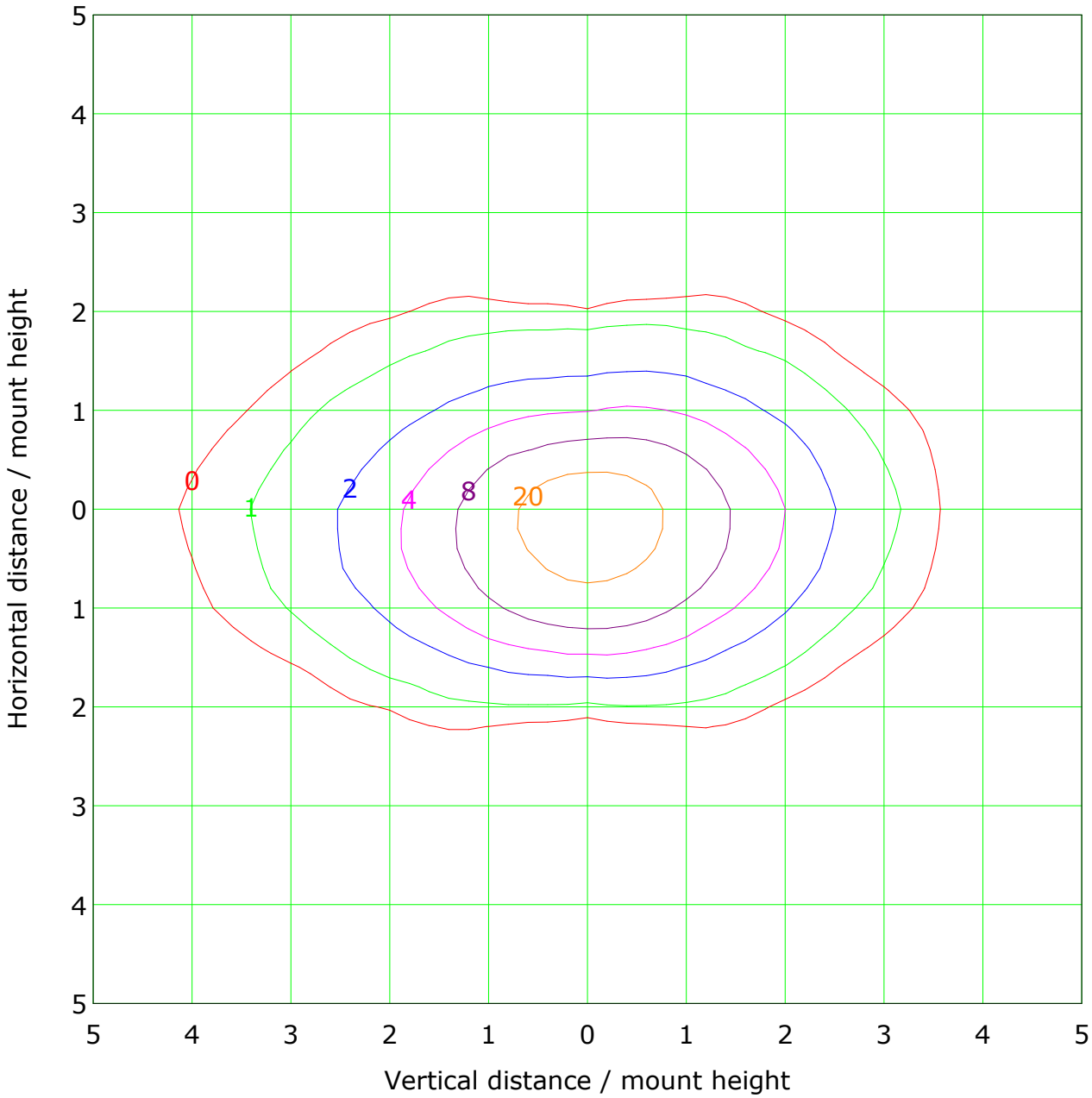
IsoLux Plot



Mounting Height: 10.0m Max Lux(100%): 40.9 lx

(1%): 0.4 lx	(2%): 0.8 lx
(5%): 2.0 lx	(10%): 4.1 lx
(20%): 8.2 lx	(50%): 20.4 lx
(100%): 40.9 lx	

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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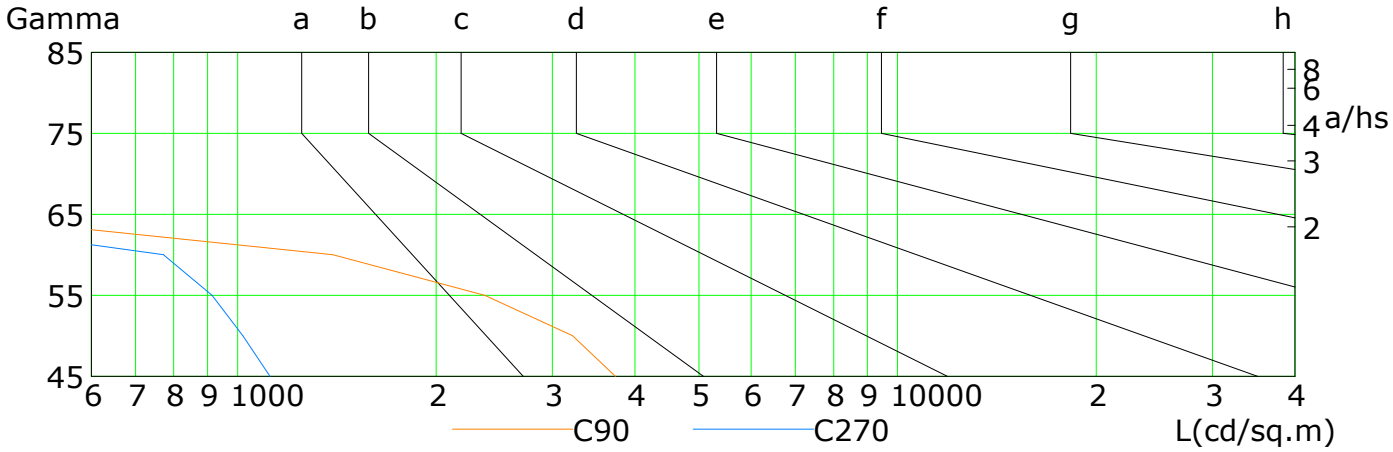
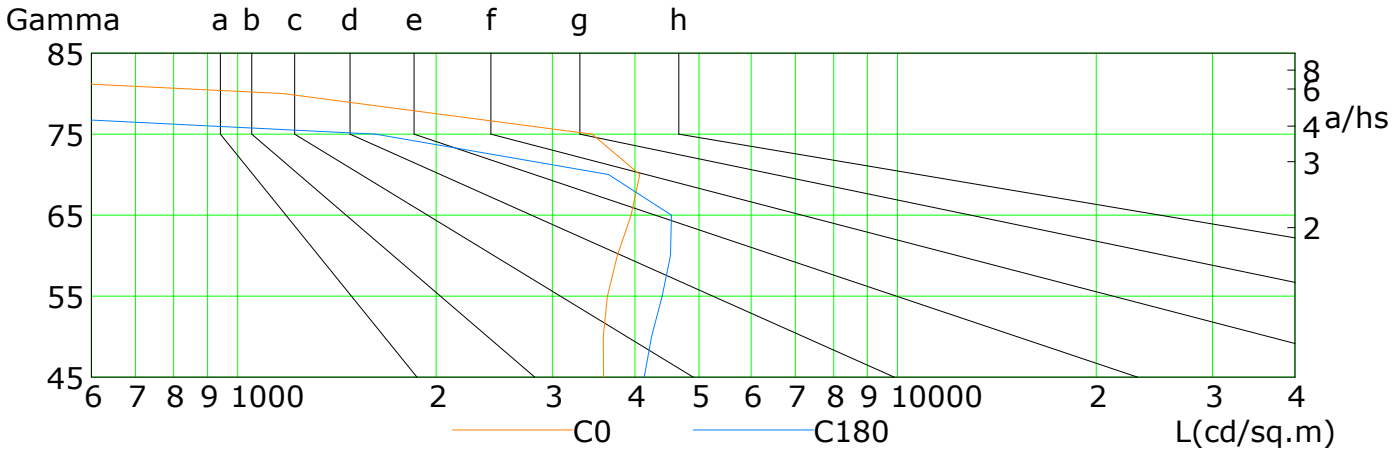
Lum Limit Curve

Dazzle	Quality	Illuminance (lx)							
1.15	A	2000	1000	500	<=300				
1.50	B		2000	1000	500	<=300			
1.85	C			2000	1000	500	<=300		
2.20	D				2000	1000	500	<=300	
2.55	E					2000	1000	500	<=300
		a	b	c	d	e	f	g	h





L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	3585	3582	3632	3763	3948	4066	3442	1169	69
C90	3735	3216	2369	1394	357	106	73	37	11
C180	4134	4241	4399	4530	4545	3647	1619	98	37
C270	1119	1018	915	772	279	101	82	58	26

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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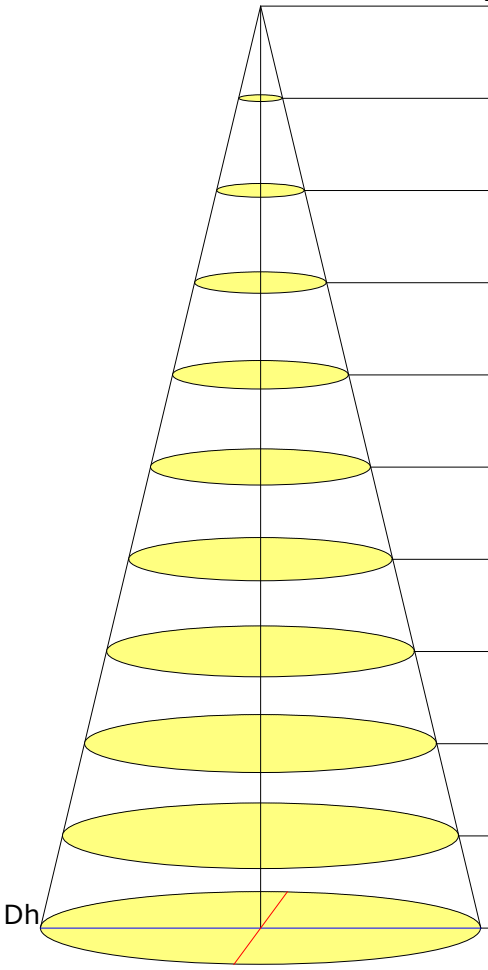
Illuminance at a Distance



Dist(m)	Enadir(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
1.0	4011.24	8.11/1.71	18.7	291.22
2.0	1002.81	16.23/3.41	74.7	72.80
3.0	445.69	24.34/5.12	168.2	32.36
4.0	250.70	32.46/6.83	299.0	18.20
5.0	160.45	40.57/8.54	467.1	11.65
6.0	111.42	48.68/10.24	672.7	8.09
7.0	81.86	56.80/11.95	915.6	5.94
8.0	62.68	64.91/13.66	1195.9	4.55
9.0	49.52	73.03/15.36	1513.6	3.60
10.0	40.11	81.14/17.07	1868.6	2.91

Beam Angle(B): H152.3 V81.0 Field Angle(F): H158.6 V128.7

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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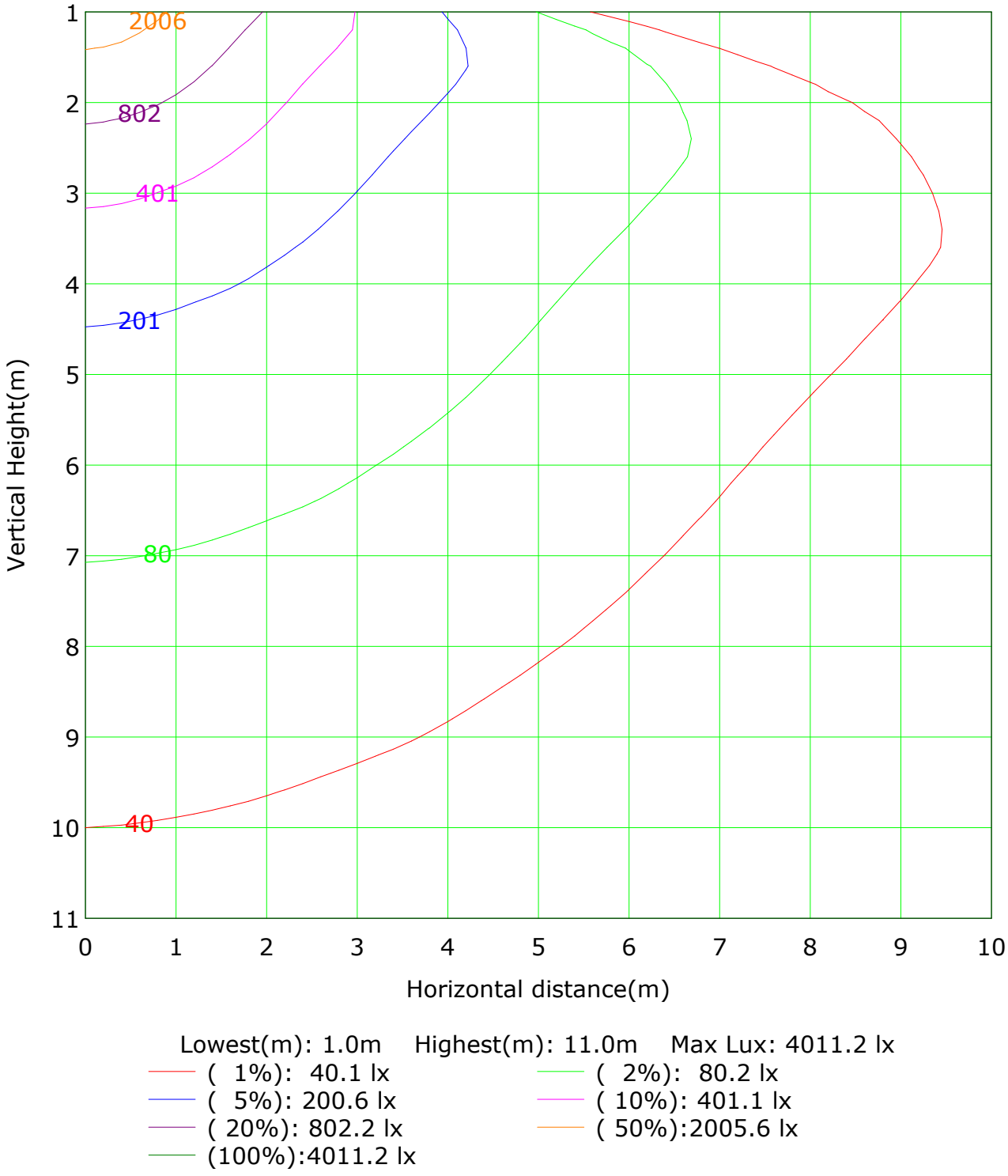
Vertical IsoLux Plot



Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 4011.2 lx

(1%): 40.1 lx
(2%): 80.2 lx
(5%): 200.6 lx
(10%): 401.1 lx
(20%): 802.2 lx
(50%):2005.6 lx
(100%):4011.2 lx

C Plane (°):0.0-360.0: 15.0
Gamma Plane (°):0.0-180.0:1.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Device: GPM-1600L
Test Type: TYPE C
Distance: 8.602 m [K=1.0000]
Temperature: 25
Humidity: 60
Operator: 张超
Inspector:

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Area Flux Table

Unit: lm

Vertical plane (rows) / Horizontal plane (columns)

Vertical \ Horizontal	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90 Flux(T)	Flux(E)
-90	0.0	0.0	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.8	0.7	0.6	0.6	0.6	0.3	0.2	0.1	0.0	6.8	0.0
-80	0.0	0.2	0.6	1.1	2.7	3.8	3.9	2.5	2.4	2.4	2.6	3.7	4.9	4.7	2.5	1.5	0.5	0.1	39.9	1.1
-70	0.0	0.6	3.7	9.3	16.1	20.4	20.3	15.9	12.9	12.2	14.1	19.0	20.6	19.5	14.1	8.9	2.1	0.1	209.9	181.5
-60	0.1	2.2	13.7	26.3	34.9	36.5	35.6	32.7	29.4	27.8	28.5	30.6	32.0	31.8	28.5	19.5	6.0	0.2	416.1	413.8
-50	0.1	4.7	24.9	42.3	48.1	47.7	44.7	40.3	36.2	34.2	34.6	36.5	38.5	38.8	36.9	28.6	10.6	0.3	548.0	546.5
-40	0.1	7.5	35.1	53.4	58.3	58.1	54.6	50.0	46.1	44.1	43.7	44.7	46.0	45.4	43.0	35.3	15.2	0.4	681.0	679.8
-30	0.2	10.5	43.3	61.8	68.6	71.1	70.6	67.7	64.5	62.5	60.7	59.6	58.1	54.2	48.9	40.3	19.2	0.6	862.5	861.6
-20	0.2	13.1	49.4	68.2	78.3	85.3	90.4	92.8	92.7	90.5	86.2	80.5	73.3	64.3	54.8	44.5	22.6	0.8	1087.6	1086.6
-10	0.2	14.8	54.2	73.7	85.5	96.6	106.2	112.6	114.5	112.5	106.2	97.3	86.1	73.1	60.6	48.5	25.1	0.8	1268.6	1267.8
0	0.2	14.9	55.6	77.1	90.4	102.6	113.0	120.7	124.6	123.8	117.3	106.8	93.6	79.2	65.1	51.1	25.7	0.8	1362.5	1361.7
10	0.2	13.2	53.2	78.4	93.4	105.0	114.0	121.1	125.3	125.4	119.8	108.8	96.4	82.9	68.4	52.3	24.2	0.8	1382.7	1381.7
20	0.2	10.5	48.4	77.6	94.7	106.9	114.9	120.2	123.6	123.2	118.0	108.0	97.2	84.9	71.1	52.8	21.6	0.6	1374.2	1373.2
30	0.1	7.1	39.5	70.3	91.4	105.8	114.5	118.2	120.3	119.5	114.1	106.4	97.7	85.6	69.8	49.8	17.6	0.4	1328.2	1326.9
40	0.1	4.0	26.6	54.2	75.4	91.1	103.2	109.6	112.0	110.3	105.0	98.8	90.6	77.6	61.4	39.7	12.3	0.3	1172.1	1170.5
50	0.1	1.7	12.9	29.2	46.5	58.2	67.5	72.2	73.0	71.6	69.7	68.0	62.3	53.4	40.3	24.9	6.5	0.2	757.9	755.3
60	0.0	0.7	3.0	8.4	15.3	22.0	24.5	21.7	18.9	18.3	20.8	25.6	26.1	22.1	16.0	9.9	2.1	0.1	255.5	229.4
70	0.0	0.3	0.7	1.2	2.4	3.5	3.8	2.7	2.3	2.3	2.9	4.7	5.2	4.5	2.7	1.7	0.7	0.1	41.5	0.0
80	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.7	0.8	0.8	0.5	0.4	0.2	0.0	6.7	0.0
90 Flux(T)	1.7	105.9	464.9	732.8	902.8	1015.3	1082.5	1101.7	1099.8	1081.8	1045.3	1000.1	929.9	823.4	684.8	510.0	212.5	6.5	12802	
Flux(E)	0.0	95.8	458.3	726.1	893.3	1004.6	1070.8	1089.2	1087.4	1069.2	1032.1	987.8	918.6	813.6	677.9	503.9	206.2	2.6		12637

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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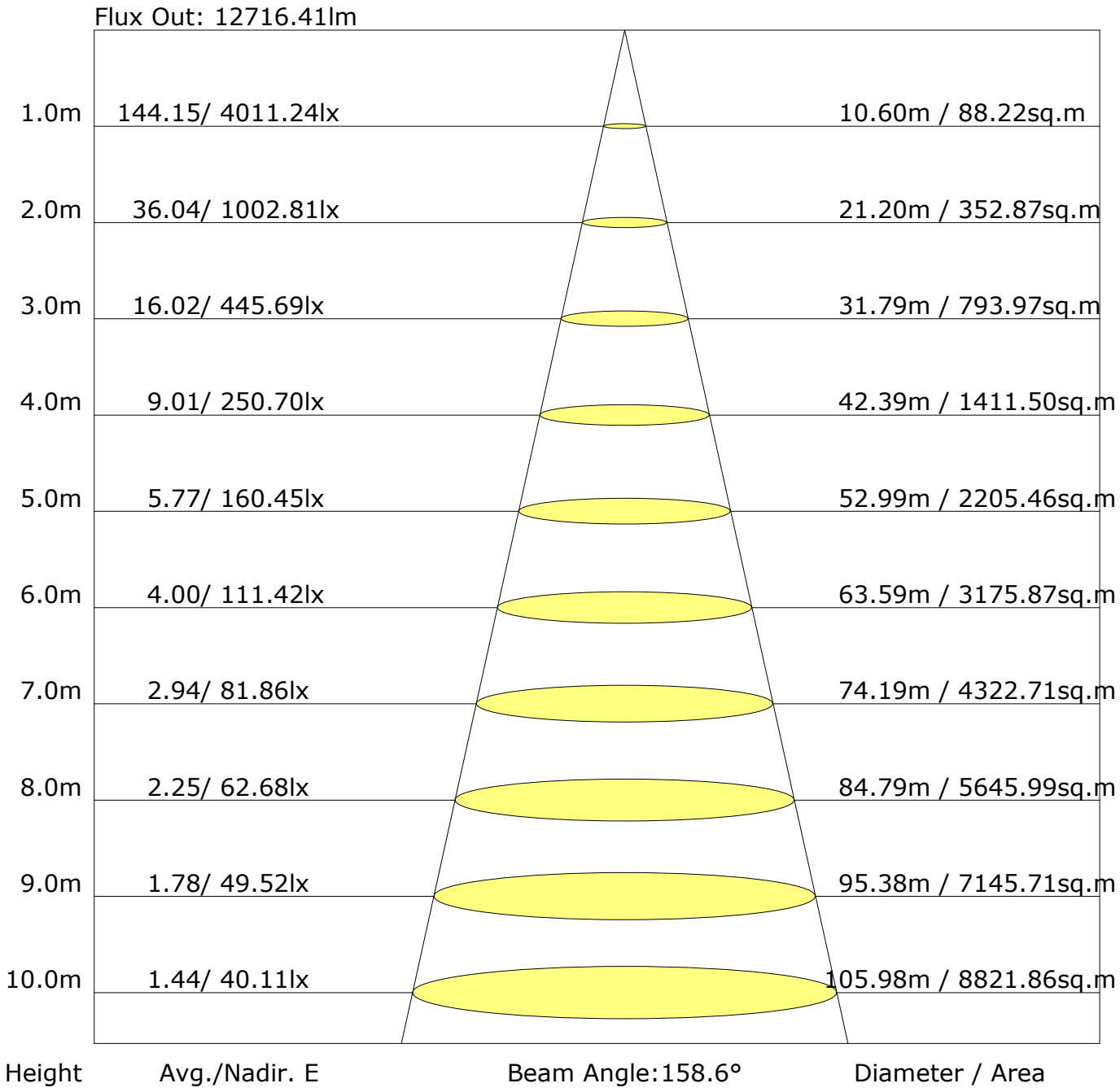
The Average Illuminance Effective Figure



C Plane (°):0.0-360.0: 15.0
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Temperature: 25
Operator: 张超

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Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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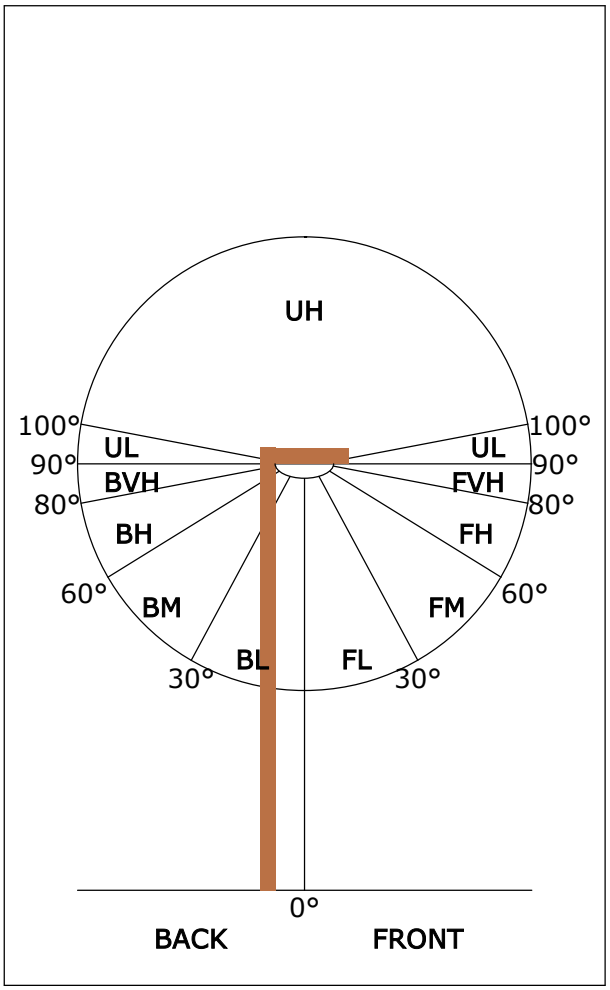
FLUX DISTRIBUTION TABLE BASED ON THE IESNA LUMINAIRE CLASSIFICATION SYSTEM



ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	7682	59.7
FL (0°-30°)	1714	13.3
FM (30°-60°)	4325	33.6
FH (60°-80°)	1610	12.5
FVH (80°-90°)	34	0.3
BACK LIGHT	5121	39.8
BL (0°-30°)	1319	10.3
BM (30°-60°)	2501	19.4
BH (60°-80°)	1268	9.9
BVH (80°-90°)	33	0.3
UP LIGHT	59	0.5
UL (90°-100°)	1	0.0
UH (100°-180°)	58	0.5
TRAPPED LIGHT	NA	NA

BUG(**B**acklight,**U**plight,**G**lare) Rating Base On TM-15-07	
Asymmetrical Luminaire Types (Type I,II,III,IV)	B3 U2 G3
Quadrilateral Symmetrical Luminaire Types (Type V,Area Light)	B3 U2 G1

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Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
0.0-1.0	4006.2	3.8	3.8	0.03	0.03
1.0-2.0	4003.9	11.5	15.3	0.09	0.12
2.0-3.0	3997.7	19.1	34.4	0.15	0.27
3.0-4.0	3988.4	26.7	61.2	0.21	0.48
4.0-5.0	3977.1	34.2	95.4	0.27	0.74
5.0-6.0	3963.1	41.7	137.0	0.32	1.07
6.0-7.0	3947.8	49.0	186.0	0.38	1.45
7.0-8.0	3930.9	56.3	242.3	0.44	1.88
8.0-9.0	3912.5	63.4	305.7	0.49	2.38
9.0-10.0	3893.8	70.5	376.2	0.55	2.92
10.0-11.0	3873.0	77.4	453.6	0.60	3.53
11.0-12.0	3850.8	84.2	537.8	0.65	4.18
12.0-13.0	3828.3	90.9	628.6	0.71	4.89
13.0-14.0	3803.9	97.4	726.0	0.76	5.64
14.0-15.0	3778.1	103.7	829.8	0.81	6.45
15.0-16.0	3750.6	109.9	939.7	0.85	7.31
16.0-17.0	3721.7	115.9	1055.6	0.90	8.21
17.0-18.0	3692.7	121.8	1177.3	0.95	9.15
18.0-19.0	3660.8	127.4	1304.7	0.99	10.14
19.0-20.0	3627.8	132.8	1437.5	1.03	11.18
20.0-21.0	3595.9	138.1	1575.6	1.07	12.25
21.0-22.0	3562.8	143.2	1718.8	1.11	13.36
22.0-23.0	3530.4	148.2	1867.0	1.15	14.52
23.0-24.0	3498.2	153.0	2019.9	1.19	15.71
24.0-25.0	3466.6	157.6	2177.6	1.23	16.93
25.0-26.0	3437.4	162.3	2339.9	1.26	18.19
26.0-27.0	3408.1	166.8	2506.6	1.30	19.49
27.0-28.0	3379.7	171.1	2677.8	1.33	20.82
28.0-29.0	3353.1	175.5	2853.2	1.36	22.18
29.0-30.0	3326.3	179.6	3032.8	1.40	23.58
30.0-31.0	3300.7	183.7	3216.5	1.43	25.01
31.0-32.0	3276.5	187.7	3404.3	1.46	26.47
32.0-33.0	3253.5	191.7	3596.0	1.49	27.96
33.0-34.0	3232.9	195.7	3791.6	1.52	29.48
34.0-35.0	3212.7	199.5	3991.2	1.55	31.03
35.0-36.0	3193.4	203.4	4194.5	1.58	32.61

C Plane (°):0.0-360.0: 15.0
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Gamma Plane (°):0.0-180.0:1.0
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Inspector:

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Zonal Lumen (Continue 1)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
36.0-37.0	3175.5	207.1	4401.7	1.61	34.22
37.0-38.0	3158.9	210.9	4612.6	1.64	35.86
38.0-39.0	3144.2	214.6	4827.2	1.67	37.53
39.0-40.0	3129.8	218.3	5045.5	1.70	39.23
40.0-41.0	3116.1	221.9	5267.5	1.73	40.96
41.0-42.0	3103.5	225.5	5493.0	1.75	42.71
42.0-43.0	3090.5	229.0	5721.9	1.78	44.49
43.0-44.0	3077.3	232.3	5954.2	1.81	46.29
44.0-45.0	3063.1	235.4	6189.7	1.83	48.13
45.0-46.0	3047.8	238.4	6428.0	1.85	49.98
46.0-47.0	3031.4	241.1	6669.2	1.87	51.85
47.0-48.0	3011.6	243.5	6912.7	1.89	53.75
48.0-49.0	2988.6	245.5	7158.1	1.91	55.66
49.0-50.0	2963.6	247.1	7405.2	1.92	57.58
50.0-51.0	2934.3	248.3	7653.5	1.93	59.51
51.0-52.0	2901.1	249.0	7902.5	1.94	61.44
52.0-53.0	2865.1	249.3	8151.8	1.94	63.38
53.0-54.0	2824.3	249.0	8400.7	1.94	65.32
54.0-55.0	2780.7	248.2	8649.0	1.93	67.25
55.0-56.0	2731.7	246.9	8895.9	1.92	69.17
56.0-57.0	2677.9	244.9	9140.8	1.90	71.07
57.0-58.0	2622.3	242.5	9383.3	1.89	72.96
58.0-59.0	2560.0	239.4	9622.6	1.86	74.82
59.0-60.0	2494.3	235.7	9858.3	1.83	76.65
60.0-61.0	2425.6	231.5	10089.8	1.80	78.45
61.0-62.0	2353.7	226.8	10316.7	1.76	80.21
62.0-63.0	2279.1	221.7	10538.4	1.72	81.94
63.0-64.0	2190.2	214.9	10753.3	1.67	83.61
64.0-65.0	2091.0	207.0	10960.3	1.61	85.22
65.0-66.0	1987.1	198.3	11158.5	1.54	86.76
66.0-67.0	1873.9	188.4	11347.0	1.47	88.22
67.0-68.0	1761.6	178.5	11525.5	1.39	89.61
68.0-69.0	1649.3	168.3	11693.7	1.31	90.92
69.0-70.0	1534.6	157.6	11851.4	1.23	92.15
70.0-71.0	1420.3	146.8	11998.2	1.14	93.29
71.0-72.0	1294.5	134.6	12132.8	1.05	94.33

C Plane (°):0.0-360.0: 15.0
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Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 2)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
72.0-73.0	1163.0	121.6	12254.4	0.95	95.28
73.0-74.0	1033.1	108.6	12363.1	0.84	96.12
74.0-75.0	896.3	94.7	12457.8	0.74	96.86
75.0-76.0	763.2	81.0	12538.8	0.63	97.49
76.0-77.0	635.5	67.8	12606.6	0.53	98.02
77.0-78.0	511.1	54.7	12661.3	0.43	98.44
78.0-79.0	400.4	43.0	12704.3	0.33	98.78
79.0-80.0	295.7	31.9	12736.2	0.25	99.03
80.0-81.0	204.2	22.1	12758.3	0.17	99.20
81.0-82.0	137.2	14.9	12773.2	0.12	99.31
82.0-83.0	91.4	9.9	12783.1	0.08	99.39
83.0-84.0	63.4	6.9	12790.0	0.05	99.44
84.0-85.0	45.0	4.9	12794.9	0.04	99.48
85.0-86.0	31.0	3.4	12798.3	0.03	99.51
86.0-87.0	20.1	2.2	12800.5	0.02	99.53
87.0-88.0	11.4	1.3	12801.8	0.01	99.54
88.0-89.0	5.5	0.6	12802.4	0.00	99.54
89.0-90.0	2.1	0.2	12802.6	0.00	99.54
90.0-91.0	0.6	0.1	12802.7	0.00	99.54
91.0-92.0	0.2	0.0	12802.7	0.00	99.54
92.0-93.0	0.2	0.0	12802.7	0.00	99.54
93.0-94.0	0.3	0.0	12802.7	0.00	99.54
94.0-95.0	0.4	0.0	12802.8	0.00	99.54
95.0-96.0	0.6	0.1	12802.8	0.00	99.54
96.0-97.0	0.8	0.1	12802.9	0.00	99.54
97.0-98.0	0.9	0.1	12803.0	0.00	99.55
98.0-99.0	1.2	0.1	12803.1	0.00	99.55
99.0-100.0	1.4	0.2	12803.3	0.00	99.55
100.0-101.0	1.6	0.2	12803.5	0.00	99.55
101.0-102.0	1.9	0.2	12803.7	0.00	99.55
102.0-103.0	2.2	0.2	12803.9	0.00	99.55
103.0-104.0	2.5	0.3	12804.2	0.00	99.55
104.0-105.0	2.7	0.3	12804.5	0.00	99.56
105.0-106.0	3.1	0.3	12804.8	0.00	99.56
106.0-107.0	3.4	0.4	12805.1	0.00	99.56
107.0-108.0	3.6	0.4	12805.5	0.00	99.56

C Plane (°):0.0-360.0: 15.0
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Zonal Lumen (Continue 3)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
108.0-109.0	4.0	0.4	12805.9	0.00	99.57
109.0-110.0	4.3	0.4	12806.4	0.00	99.57
110.0-111.0	4.7	0.5	12806.9	0.00	99.58
111.0-112.0	5.1	0.5	12807.4	0.00	99.58
112.0-113.0	5.4	0.5	12807.9	0.00	99.58
113.0-114.0	5.8	0.6	12808.5	0.00	99.59
114.0-115.0	6.2	0.6	12809.1	0.00	99.59
115.0-116.0	6.6	0.7	12809.8	0.01	99.60
116.0-117.0	7.0	0.7	12810.5	0.01	99.60
117.0-118.0	7.4	0.7	12811.2	0.01	99.61
118.0-119.0	7.7	0.7	12811.9	0.01	99.61
119.0-120.0	8.0	0.8	12812.7	0.01	99.62
120.0-121.0	8.3	0.8	12813.5	0.01	99.63
121.0-122.0	8.7	0.8	12814.3	0.01	99.63
122.0-123.0	9.2	0.8	12815.2	0.01	99.64
123.0-124.0	9.6	0.9	12816.0	0.01	99.65
124.0-125.0	9.9	0.9	12816.9	0.01	99.65
125.0-126.0	10.3	0.9	12817.9	0.01	99.66
126.0-127.0	10.7	0.9	12818.8	0.01	99.67
127.0-128.0	11.2	1.0	12819.8	0.01	99.68
128.0-129.0	11.6	1.0	12820.8	0.01	99.68
129.0-130.0	12.0	1.0	12821.8	0.01	99.69
130.0-131.0	12.4	1.0	12822.8	0.01	99.70
131.0-132.0	12.9	1.1	12823.9	0.01	99.71
132.0-133.0	13.4	1.1	12825.0	0.01	99.72
133.0-134.0	13.7	1.1	12826.1	0.01	99.72
134.0-135.0	14.2	1.1	12827.2	0.01	99.73
135.0-136.0	14.5	1.1	12828.3	0.01	99.74
136.0-137.0	14.8	1.1	12829.4	0.01	99.75
137.0-138.0	15.2	1.1	12830.5	0.01	99.76
138.0-139.0	15.7	1.1	12831.7	0.01	99.77
139.0-140.0	16.1	1.1	12832.8	0.01	99.78
140.0-141.0	16.5	1.1	12834.0	0.01	99.79
141.0-142.0	16.8	1.1	12835.1	0.01	99.79
142.0-143.0	17.0	1.1	12836.3	0.01	99.80
143.0-144.0	17.4	1.1	12837.4	0.01	99.81

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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86-571-88262100

Zonal Lumen (Continue 4)

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
144.0-145.0	17.8	1.1	12838.5	0.01	99.82
145.0-146.0	17.9	1.1	12839.6	0.01	99.83
146.0-147.0	18.2	1.1	12840.7	0.01	99.84
147.0-148.0	18.5	1.1	12841.8	0.01	99.85
148.0-149.0	18.7	1.1	12842.9	0.01	99.86
149.0-150.0	18.9	1.1	12843.9	0.01	99.86
150.0-151.0	19.2	1.0	12845.0	0.01	99.87
151.0-152.0	19.5	1.0	12846.0	0.01	99.88
152.0-153.0	19.6	1.0	12847.0	0.01	99.89
153.0-154.0	19.9	1.0	12848.0	0.01	99.89
154.0-155.0	20.1	0.9	12848.9	0.01	99.90
155.0-156.0	20.2	0.9	12849.8	0.01	99.91
156.0-157.0	20.4	0.9	12850.7	0.01	99.92
157.0-158.0	20.6	0.9	12851.6	0.01	99.92
158.0-159.0	20.8	0.8	12852.4	0.01	99.93
159.0-160.0	20.9	0.8	12853.2	0.01	99.94
160.0-161.0	21.0	0.8	12854.0	0.01	99.94
161.0-162.0	21.3	0.7	12854.7	0.01	99.95
162.0-163.0	21.4	0.7	12855.4	0.01	99.95
163.0-164.0	21.5	0.7	12856.1	0.01	99.96
164.0-165.0	21.6	0.6	12856.7	0.00	99.96
165.0-166.0	21.7	0.6	12857.3	0.00	99.97
166.0-167.0	21.8	0.6	12857.9	0.00	99.97
167.0-168.0	21.9	0.5	12858.4	0.00	99.98
168.0-169.0	22.1	0.5	12858.9	0.00	99.98
169.0-170.0	22.2	0.4	12859.3	0.00	99.98
170.0-171.0	22.3	0.4	12859.8	0.00	99.99
171.0-172.0	22.4	0.4	12860.1	0.00	99.99
172.0-173.0	22.4	0.3	12860.4	0.00	99.99
173.0-174.0	22.5	0.3	12860.7	0.00	99.99
174.0-175.0	22.6	0.2	12861.0	0.00	100.00
175.0-176.0	22.6	0.2	12861.1	0.00	100.00
176.0-177.0	22.5	0.2	12861.3	0.00	100.00
177.0-178.0	22.5	0.1	12861.4	0.00	100.00
178.0-179.0	22.5	0.1	12861.5	0.00	100.00
179.0-180.0	22.5	0.0	12861.5	0.00	100.00

C Plane (°):0.0-360.0: 15.0
Test Lab: 广东洪氏开尔照明科技有限公司
Test Type: TYPE C
Temperature: 25
Operator: 张超

Gamma Plane (°):0.0-180.0:1.0
Test Device: GPM-1600L
Distance: 8.602 m [K=1.0000]
Humidity: 60
Inspector:

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Zonal Lumen (Continue 5)

cone flux(90°): 6189.66 lm

%lum = 48.1%
%lamp = 48.1%

cone flux(120°): 9858.33 lm

%lum = 76.6%
%lamp = 76.6%