LISUN GROUP

High Precision
Rotation Luminaire Goniophotometer
(LSG-1890B/LSG-1800A)

Brochure

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Leader in Lighting & Electrical Test Instruments

Rev. 4/28/2021

System Configuration

A. Goniophotometric System:

- Goniometric Rotating Console:
  1) LSG-1890B: Japanese Mitsubishi Motor and German Angle encoder System to keep the test accuracy to 0.1degree
  2) LSG-1800A: Taiwan Motor and Angle encoder System to keep the test accuracy to 0.2degree
- The LSG-1890B has Goniometric Rotating Control Instrument in 19inch cabinet: It connects to the PC and was controlled by the software.
- The LSG-1890B/LSG-1800A has Goniometric Rotating Control Android App which can control it to rotating angle in the dark room easily.
- High Precision Photometer with Class A Constant Temperature Photo Detector (Option is Class L)
- Cross-beam Laser System for Calibrating
- English Measuring Software
- Three sets of luminaries Clamps: multi-functions
- Oversea Delivery and Packing: all of the instruments and accessories will be packed with Fumigation free three plywood, include the delivery cost to Shanghai sea port

B. SLS-150W DC Standard Light Intensity Lamp

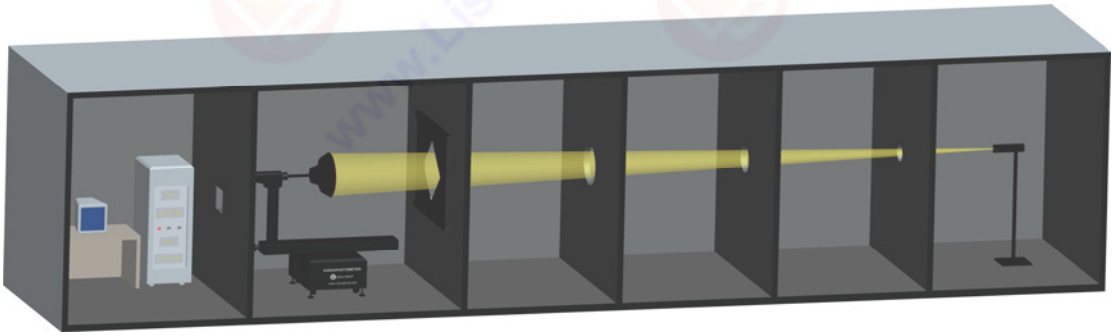
C. Digital Power Meter:

1) LSG-1890B has LS2050B Digital Power Meter: With LCD screen display, it is used to test AC/DC voltage, current, power, PF, DF and Harmonic
2) LSG-1800A has LS2012 Digital Power Meter: It is used to test AC/DC voltage, current, power and PF

D. DC3010 CC & CV DC Power Source: DC3010 output is 30V/10A, Option can be DC6010 (output is 60V/10A) and DC12010 (output is 120V/10A)

E. AC Power Source: LSP-500VARC Pure Sine Wave AC Power Source with LCD Screen: 500VA Output. It can communicate with PC via software

F. CASE-19IN 19inch Standard Instruments Cabinet.



Full View for High Precision Rotation Luminaries Goniophotometer

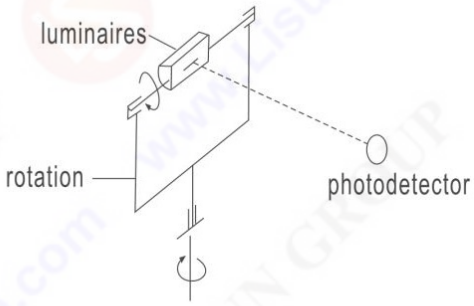
Note: PC and Printer prepared by the customer (request at least two USB ports)

2. Working Principle

Goniophotometric System carries out measuring methods of fixed location and rotating luminaries. The measured luminaries is installed on the rotating supported, the center of which is in line with the rotating supporter center with the help of Laser sight. The fixed photometry detector is testing the luminous intensity in various horizontal directions, while the light source rotating. The mechanical equipment allows turning the tested luminaries around a vertical axis and a horizontal axis. When the luminaries under test turn around horizontal axis, the detector which is at the same level with rotating table will measure the intensity of each direction at this surface. When rotating with vertical axis, the detector will measure the intensity at the vertical surface. The vertical and horizontal axis can be rotated continuously at -180° ～ +180° . According to the measurement requirements, the system can be operated in B-β, A-α and C-γ coordinates. When getting intensity distribution data, computer will calculate other photometric parameters automatically.

Double pillars structure (B-β, A-α coordinate system)

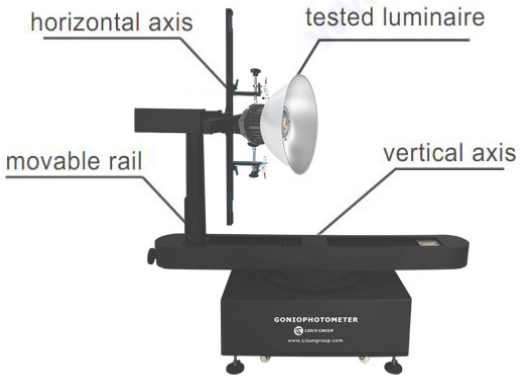
This type is applied to fixed grille lamp. The symmetry axis of lamp and the horizontal of rotating supporter is coaxial in the B-β coordinate system, and the two is vertical Cross in the A-α coordinate system.

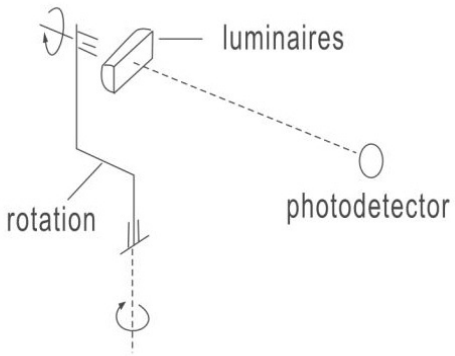


Double pillars structure

Single pillar structure (C-γ coordinate and Conic coordinate)

The single column structure will be gotten when the assistant column is taken down from double columns structure. This type is applied to fixed tube lamp, spot lamp etc. The axis radiation of lamp and the horizontal of rotating supporter is coaxial.

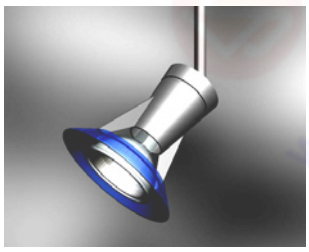


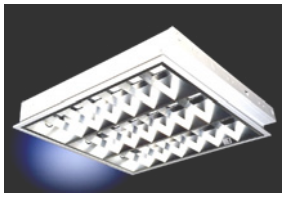


3. System Functions

LSG-1890B/LSG-1800A Goniophotometer is high precision automatic goniophotometric instrument for luminous intensity distribution measurements with facility for turning the light source. The LSG-1890B uses a constant temperature detector, Japanese Motor and Germany precision angle coder which keep high test accuracy. It is for industrial laboratory measurements the photometric data of luminaries.

Be utilized to measure photometric parameters of luminaries for LED road lighting fixture, room lighting fixture and projecting lighting fixture, such as spatial intensity distribution curve, spatial iso-intensity curve, intensity distribution curve on each section (represent by right-angled coordinates or polar coordinates, luminance limitation curve, luminaries efficiency, glare grade, effective beam angle, upward luminous flux ratio, downward luminous flux ratio, total luminous flux, effective luminous flux, utilization factor and electric parameters voltage, current, wattage, power factor and etc. The measured data meets IES standard format and can be applied for lighting design by lighting design software. The measurement system fully satisfies the requirement of lighting design work.



4. Specifications

- Meets the requirements of CIE, IEC, IES LM-79 & GB standards
- Reaching many measurement ways such as B-β and C-γ
- Test Max Luminaires size and weight: LSG-1890B is 1900mm/60kg and LSG-1800A is 1600mm/50kg
- The tested luminaries rotates around an angle of (γ)±180°(or 0-360°) and the tested luminaries rotates around itself with an angle of (C)±180°(or 0-360°)
- Luminosity Testing Range: Illuminance 0.001lx~99,999lx; Light Intensity 1.0cd～10^7cd(detector)
- Angle accuracy: LSG-1890B is 0.1°, LSG-1800A is 0.2°
- Photometry Accuracy: CIE Class A (Class L is option)
- Testing Accuracy: 2%(Under Standard lamp); Stray Light: less than 0.1%
- English version software can run in Win7, Win8 or Win10

5. Laboratory Requirements

LISUN MODEL	Center Height (A)	Total Height (B)	Total Depth(C)	Total Width(D)	The max size for the Testing Lamp(Unit: mm)		The max diameter of the mast rotating (G)	Max Testing Weight
					C-Gamma Test with one Pillar (Diameter E* Depth F)	B-Beta Test with two Pillars (Length*Width)		
LSG-1890B	1510	1600	922	1750	⌀1900×550	600*600	⌀1900	60kg
LSG-1800A	1370	1420	750	1650	⌀1600×550	600*600	⌀1700	50kg

Table 1 The Diamensions of the Goniophotometer Master

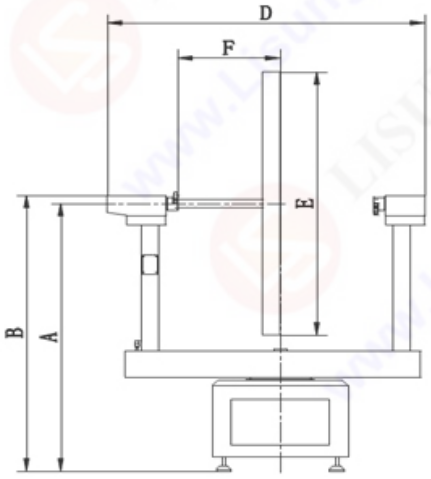


Figure 1 The Side View

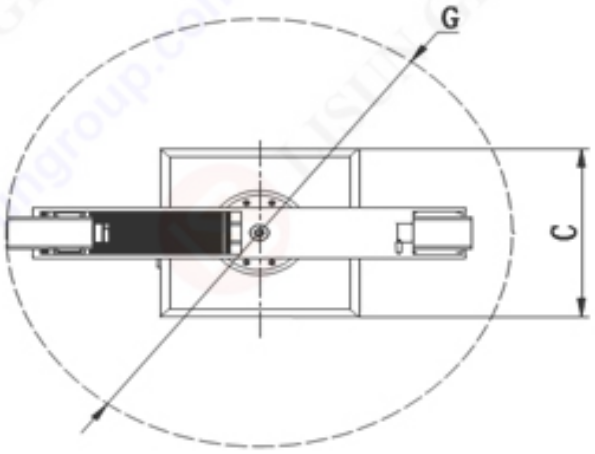
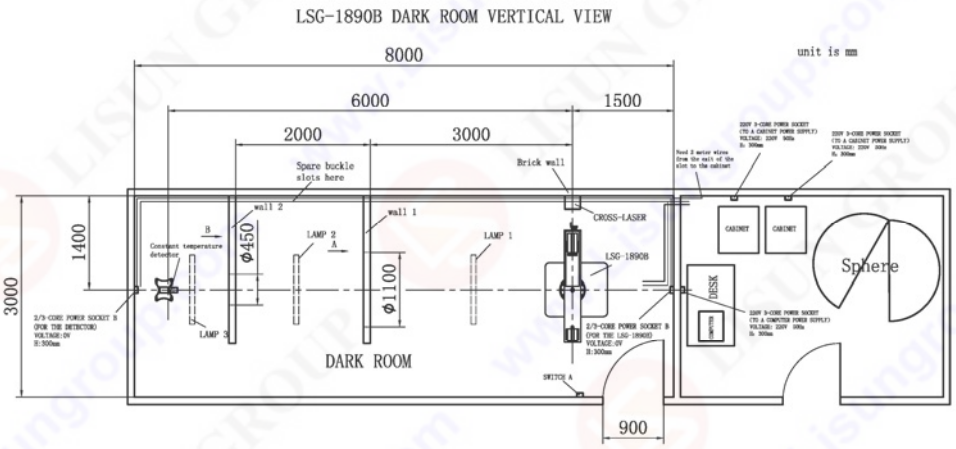


Figure 2 The Vertical View

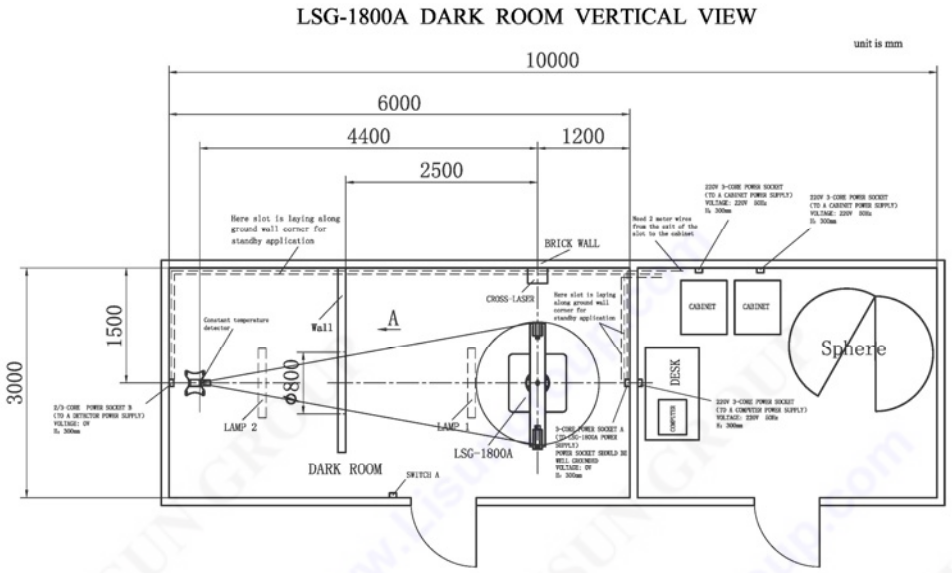
- Dark Room size request (The G, A and E please refer to the above table 1 and figure 1 and 2): The darkroom Width W=G+X (It recommends the X is min 500mm which can allow one person pass). The darkroom Height H=A+0.5*E+Y (It recommends the Y is min 100mm to the ceiling). The darkroom Length

L=6*E (According to CIE, it requests at least 6times than the testing lamps).

- Control Room size request: min=2000*2000*2000mm
- The wall, ceiling and floor should be all coated with dull black paint or be covered by black cloth and black carpet.
- Air-conditioner should be set in the dark room to control the temperature around lamps to the standard value upon the CIE requirements
- LISUN engineer dept will submit the Lab Design support documents according to the customer's lab size after the purchase order was confirmed (The below are two Typical Lab Design reference for LSG-1890B/LSG-1800A)



Technical requirements:
1. The walls and ceiling of the darkroom need to be painted matte black. Cover the floor with black carpet.
2. The wires for 3-core power socket A and 2/3-core power socket B are inside of the buckle slot from the cabinet. Need 2 meter wires from the exit of the slot to the cabinet. Another buckle slot at the same place for backup.
3. Switch A is for lamp 1、lamp 2 and lamp3. Lamps should be installed on the ceiling.
4. The 3-Core power socket for LSG-1890B must be well grounded or connected with the separate earthing terminal.
5. The dotted line buckle slot need to be easy tear open outfit and matte black.
6. The wall for cross laser is better to be brick. The cross laser togther with the holder is about 5kg and need to be fixed on the wall.
7. Diameter of all wires are at least $2mm^2$.
8. The air conditioner outlet must not close to the luminaries being measured or the light path.
9. The windows need to be blocked or covered by matte black curtain.
10. The width of dark room door above 900mm, so that LSG-1890B could enter into dark room.



Technical requirement:
1. **The walls, floors and ceilings of dark room must painted matt black paint and the ground spreads black carpet .**
2. The power lines of three-core power socket A and two / three-core power socket B laying along the wall and into the operating room, **requires power line head exposed ground 2 meter**, the other slot laying along and enter into operating room for standby application.
3. SwitchA used to control lamp 1、lamp 2 , Lamp installed in the ceiling.
4. **Three-core power socket A（Power to LSG-1800A) must be well grounded, or separate ground terminal .**
5. The slot where is refering by dotted line should be detachable ,and the width of the slot should be not less than 50mm .
6. The wall to install cross laser must be brick wall.
7. The windows are sealed off in the darkroom to make sure light cannot leak absolutely.
8. In the dark room where LSG-1800A main machine placed ,the air oulet of air set should not directly face to the tested lamp and the optical path.
9. All wire diameter ≥ 2mm².

6. Typical oversea market customers:

There are many world famous companies and lab institute choose Lisun Goniophtometer, Please get the reference customers' information from Lisun Group Oversea Sales Dept.

7. Design Standard of Device

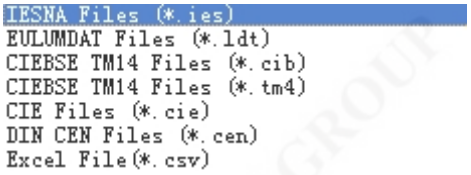
The construction, technical parameter, test & operate steps as well as data processing software of goniophotometer meet the following requirements:

- CIE Pub. NO.70,"The Measurement of Absolute Luminous Intensity Distributions"
- CIE DIV.Ⅱ-TC10,"Photometry of Luminaires"
- IES LM-35-1989,"IES Approved Method for Photometric Testing of Floodlights"
- IES LM-31,"IES Approved Method for Photometric Testing of Roadway Luminaires"
- IES-LM-79-19, "Electrical and Photometric Measurements of Solid-State Lighting Products"
- GB/T 7002-1986,"Luminosity Test of Flood Luminaires"
- GB/T 9467-1988, "Luminosity Test of Indoor Luminaires"
- GB/T 9468-1988, "Luminosity Test of Street Luminaires"
- IES 61341 "Method of Measurement of Center Beam Intensity and Beam Angle(s) of Reflector Lamp"
- CIE Pub.NO.76, "Photometry-the CIE System of Physical Photometry"

8. Application Software

All control of the goniophotometer operations can be realized by the software, including gonophotometer movement, data acquisition and processing, real-time display on screen, report print and etc, thus enabling the measurement easy and secure.

This system can export data files as following formats:



This kind of format files can be transferred by other illumination and luminaries design software such as DiaLux

Application software can also implement essential calculation for lighting design as iso-illuminance distribution curve on a working plane, luminance limitation curve, luminary's efficiency, effective beam angle, upward luminous flux ratio, downward luminous flux ratio, effective luminous flux, utilization factor curve etc.

The Next Page is the Test Report by software

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Lisun Goniophotometer Test Report

Product Info

Luminaire Category : **Indoor LED**
Lamp : **cree**
Manufacturer : **Philips Lighting B.V.**
Submitter : **Michael Aslami**
Nuber of Lamps : **1** Lumens per Lamp : **2100 lm**
Luminous Length : **100 mm** Luminous Width : **100 mm** Luminous Height : **0 mm**

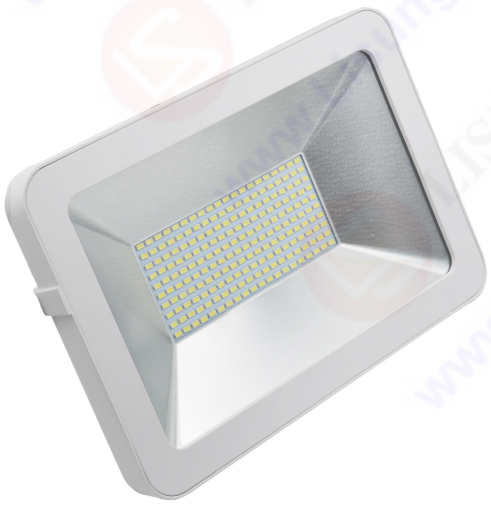
Electric Parameters

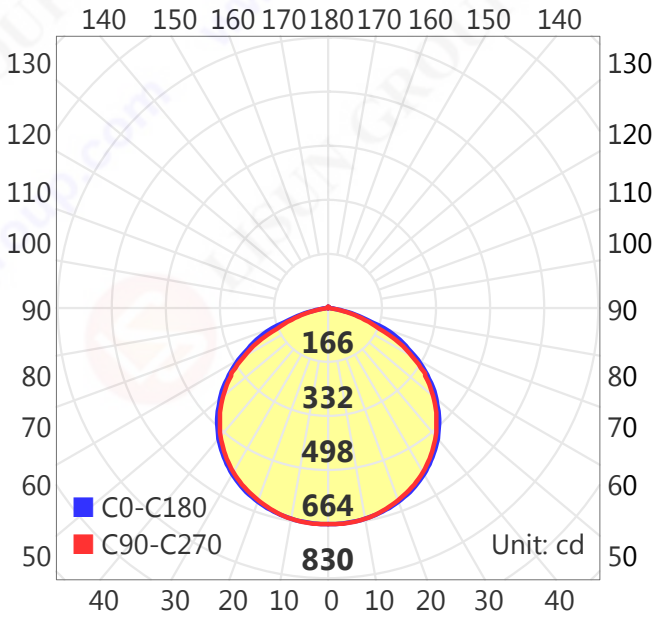
Voltage : **229.80 V** Current : **0.1320 A** Power : **28.56 W** Power Factor : **0.938** Frequency : **50.06 Hz**

Photometric Parameters

CIE Class : **Direct**
Measurement Flux : **1942.7 lm**
Upward Ratio : **6.67 %**
Maximum Intensity : **663.61 cd**
Central Intensity : **663.51 cd**
Luminaire Efficacy Rating (LER) : **68**
Beam Angle (C0-C180,C90-C270) : **117.9 °, 115.4 °**
Field Angle (C0-C180,C90-C270) : **155.6 °, 153.1 °**

Total Rated Lamp Lumens : **2100.0 lm**
Efficiency : **92.51 %**
Downward Ratio : **85.84 %**
Position Of Maximum Intensity : **C60° γ1°**
S/MH(C0-C180,C90-C270) : **1.32, 1.30**
Energy Efficiency Class : **A (EU 874/2012 EEI:0.247)**
Beam Angle (C45-C225,C135-C315) : **117.2 °, 117.2 °**
Field Angle (C45-C225,C135-C315) : **155.0 °, 155.0 °**

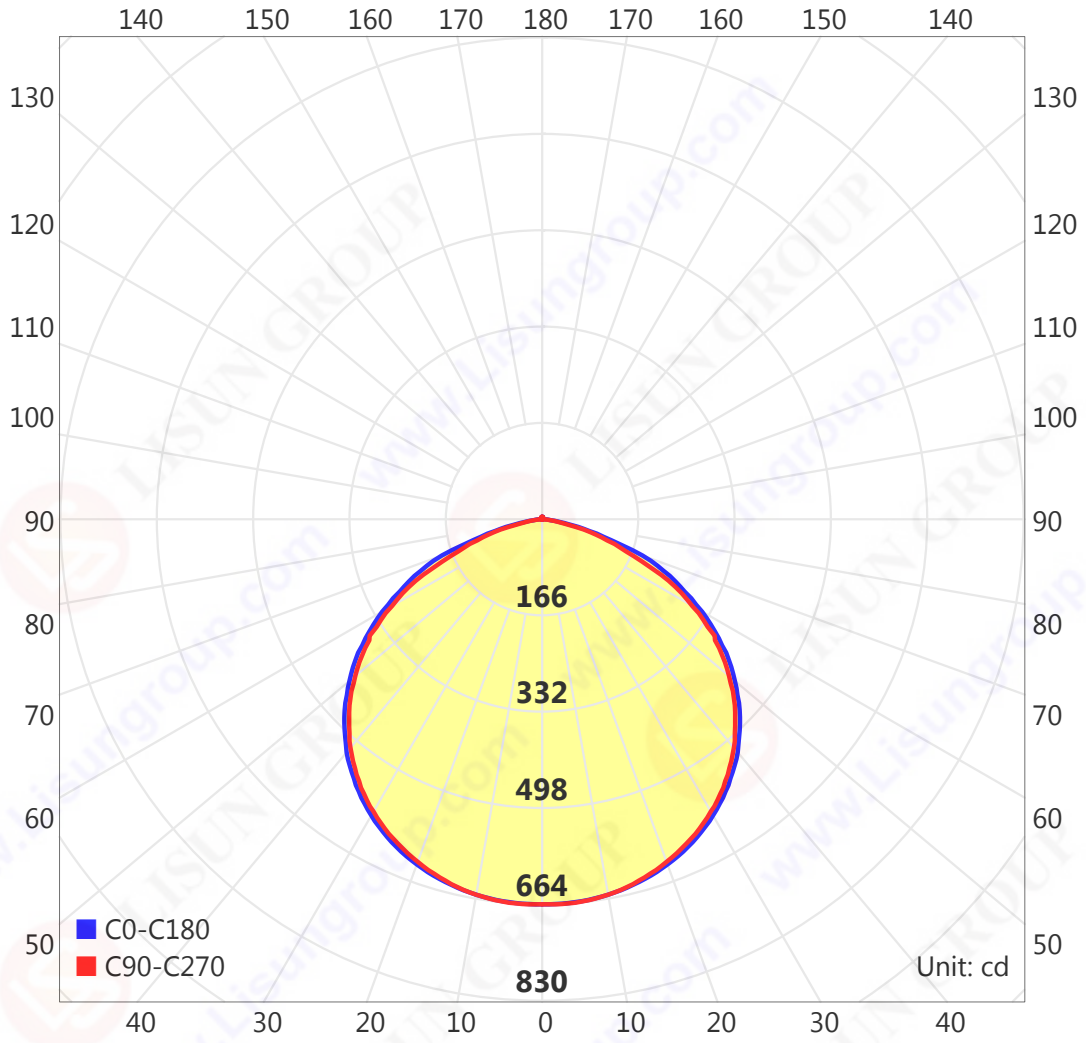


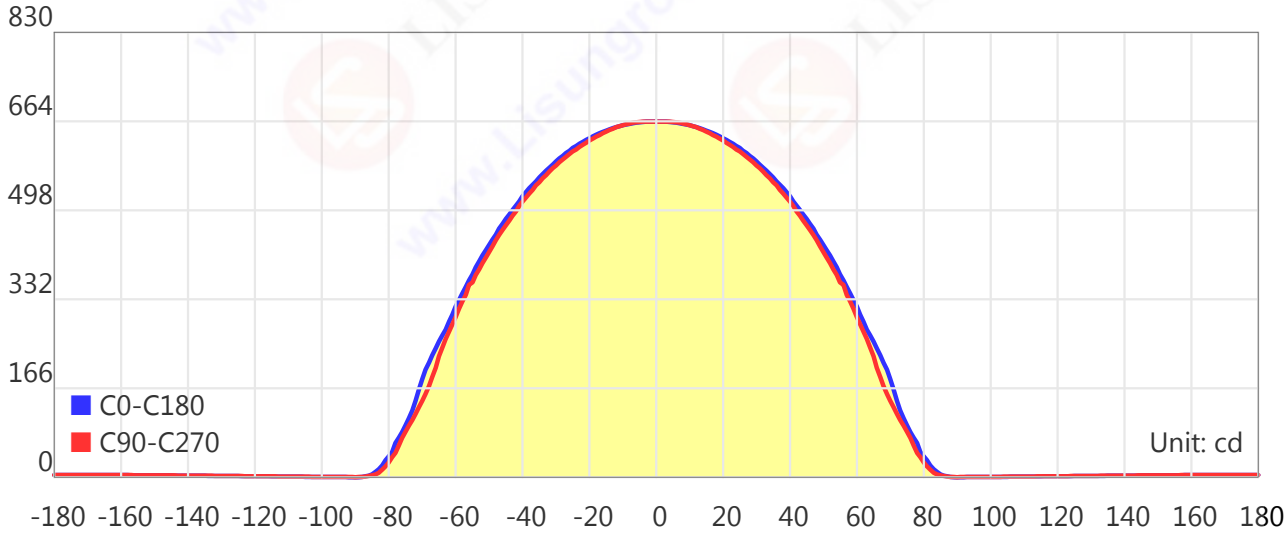


Average Beam Angle (50%): 116.9°

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Light Distribution Curve





Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
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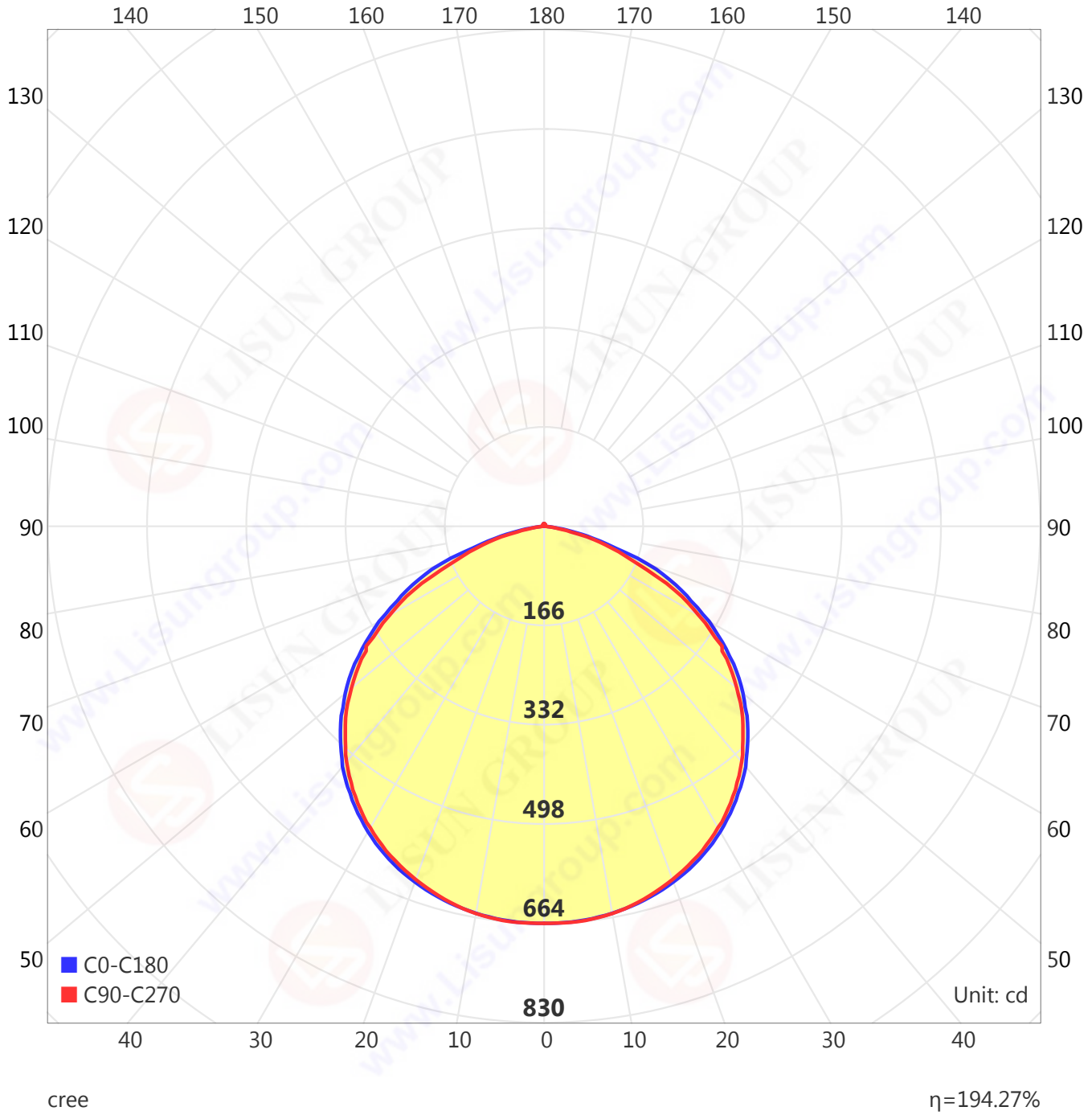
Light Distribution Curve (cd/klm)



cree η=194.27%

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Warmup Log

Stable time: 20:0 Uptime: 0:0

Parameters	Maximum	Minimum	Change
Luminous intensity ,cd	664.82	662.59	2.23
Power ,W	28.62	28.53	0.09

UGR

Reflectance											
Ceiling (cavity)		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	26.9	28.5	27.2	28.8	29.1	26.9	28.5	27.2	28.8	29.1
	3H	28.5	30.0	28.9	30.3	30.7	28.1	29.6	28.5	29.9	30.3
	4H	28.9	30.2	29.3	30.6	31.0	28.5	29.8	28.9	30.2	30.6
	6H	29.0	30.3	29.5	30.7	31.1	28.6	29.8	29.0	30.2	30.6
	8H	29.0	30.2	29.5	30.6	31.1	28.6	29.8	29.0	30.2	30.6
	12H	29.0	30.2	29.5	30.6	31.0	28.5	29.7	29.0	30.1	30.5
X=4H	Y=2H	27.4	28.8	27.9	29.2	29.6	27.4	28.8	27.8	29.2	29.5
	3H	29.3	30.4	29.7	30.8	31.2	28.9	30.0	29.3	30.5	30.9
	4H	29.7	30.7	30.1	31.1	31.6	29.4	30.4	29.8	30.8	31.2
	6H	29.9	30.8	30.4	31.2	31.7	29.5	30.4	30.0	30.9	31.3
	8H	29.9	30.7	30.4	31.2	31.7	29.5	30.3	30.0	30.8	31.3
	12H	29.9	30.6	30.4	31.1	31.6	29.5	30.2	30.0	30.7	31.2
X=8H	Y=4H	29.8	30.6	30.3	31.1	31.6	29.5	30.3	30.0	30.8	31.3
	6H	30.0	30.7	30.6	31.2	31.7	29.7	30.4	30.3	30.9	31.4
	8H	30.1	30.7	30.6	31.2	31.7	29.8	30.4	30.3	30.9	31.4
	12H	30.1	30.6	30.6	31.1	31.7	29.8	30.3	30.3	30.8	31.4
X=12H	Y=4H	29.8	30.6	30.3	31.0	31.5	29.5	30.3	30.0	30.7	31.2
	6H	30.0	30.7	30.6	31.1	31.7	29.8	30.4	30.3	30.8	31.4
	8H	30.1	30.6	30.6	31.1	31.7	29.8	30.3	30.3	30.8	31.4

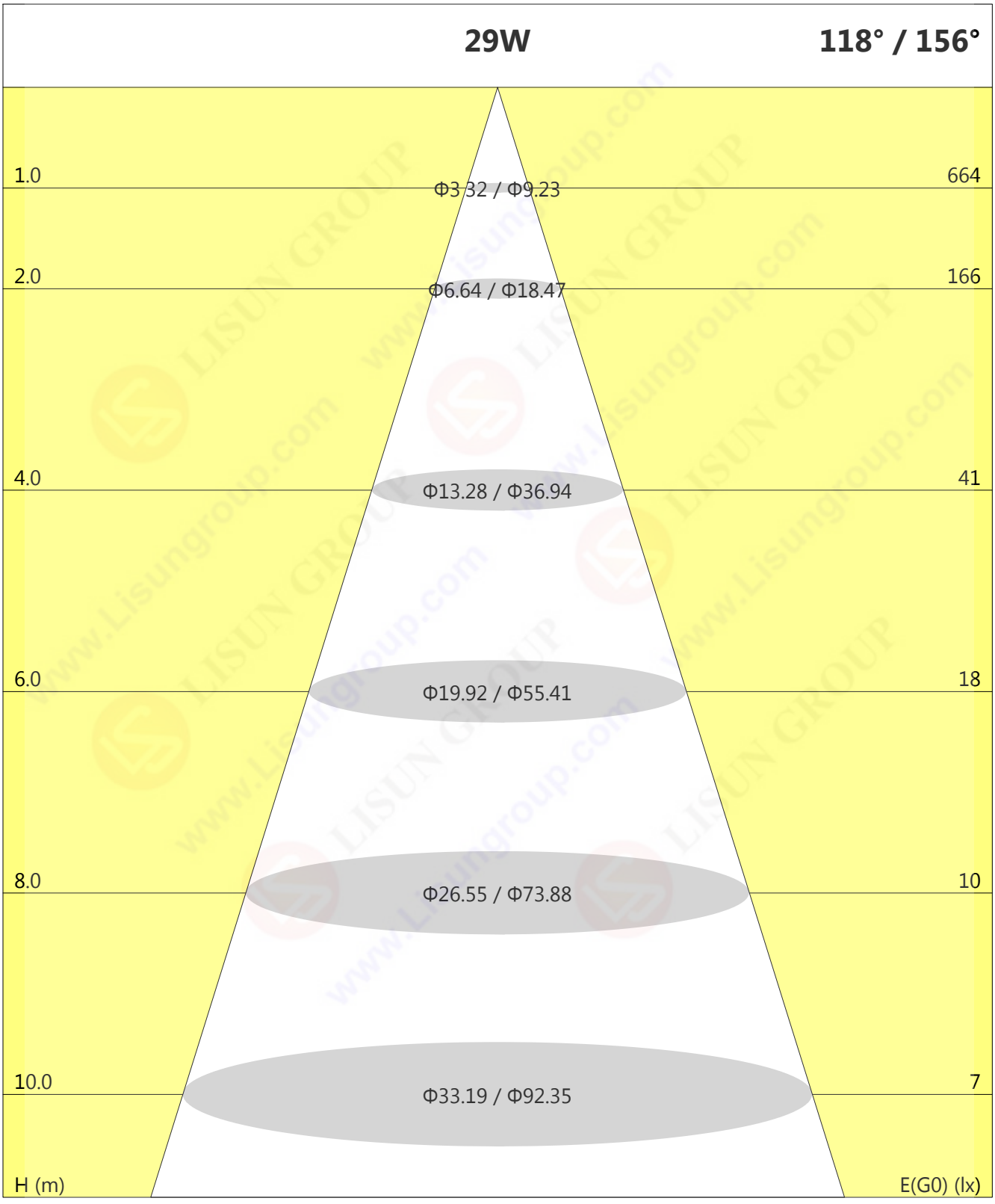
Calculate in accordance with CIE 190:2010. The table is corrected with 1000lm (8log(F/F0) = 0.0).

Reflectance											
Ceiling (cavity)		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	27.3	28.6	27.6	28.9	29.1	27.2	28.6	27.5	28.8	29.1
	3H	28.7	29.9	29.0	30.2	30.5	28.3	29.6	28.7	29.9	30.1
	4H	29.0	30.2	29.4	30.5	30.8	28.6	29.8	29.0	30.1	30.4
	6H	29.1	30.2	29.5	30.5	30.9	28.7	29.8	29.1	30.1	30.5
	8H	29.1	30.2	29.5	30.5	30.9	28.7	29.7	29.1	30.1	30.4
	12H	29.1	30.1	29.5	30.4	30.8	28.7	29.7	29.1	30.0	30.4
X=4H	Y=2H	27.9	29.1	28.3	29.4	29.7	27.8	29.0	28.2	29.3	29.6
	3H	29.4	30.4	29.8	30.8	31.1	29.1	30.1	29.5	30.5	30.8
	4H	29.8	30.7	30.3	31.1	31.5	29.5	30.4	30.0	30.8	31.2
	6H	30.0	30.8	30.5	31.2	31.6	29.7	30.5	30.1	30.9	31.3
	8H	30.0	30.7	30.5	31.2	31.6	29.7	30.4	30.1	30.8	31.3
	12H	30.0	30.7	30.5	31.1	31.5	29.7	30.3	30.1	30.7	31.2
X=8H	Y=4H	30.0	30.7	30.4	31.1	31.5	29.7	30.4	30.2	30.8	31.3
	6H	30.2	30.8	30.7	31.2	31.7	29.9	30.5	30.4	31.0	31.4
	8H	30.2	30.7	30.7	31.2	31.7	30.0	30.5	30.5	30.9	31.4
	12H	30.2	30.6	30.7	31.1	31.7	29.9	30.4	30.5	30.9	31.4
X=12H	Y=4H	30.0	30.6	30.4	31.0	31.5	29.7	30.3	30.2	30.8	31.2
	6H	30.2	30.7	30.7	31.2	31.7	29.9	30.4	30.4	30.9	31.4
	8H	30.2	30.7	30.7	31.1	31.7	30.0	30.4	30.5	30.9	31.4
Variations with the observer position at spacings											
S=1.0H		+0.1/-0.2					+0.2/-0.2				
S=1.5H		+0.4/-0.6					+0.4/-0.5				
S=2.0H		+0.6/-0.8					+0.7/-1.4				

Calculate in accordance with CIE Pub.117. The table is corrected with 1000lm (8log(F/F0) = 0.0).

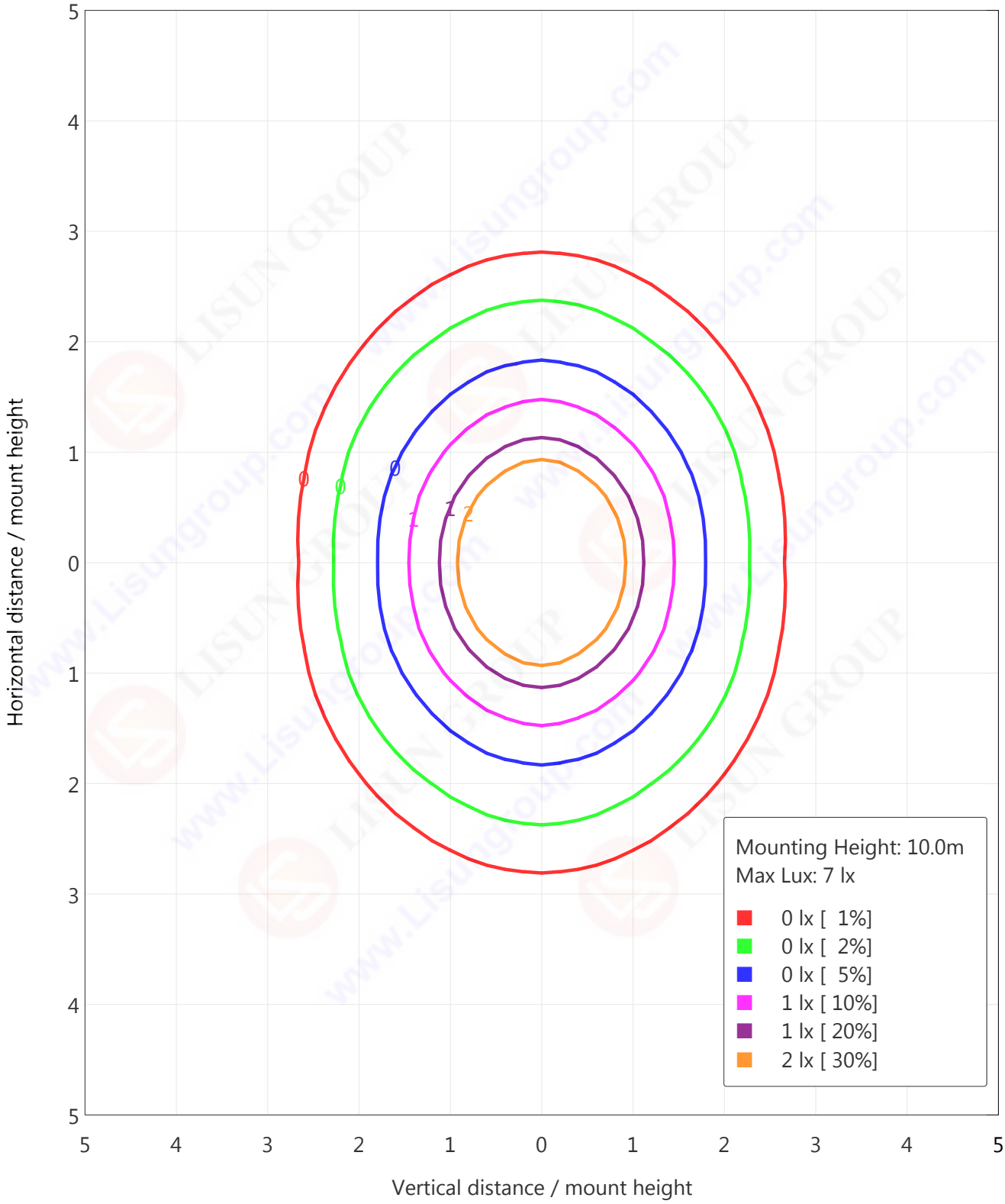
Report No. : 3 **Test Time :** 2021-02-05 17:50:34

Lux-Distance



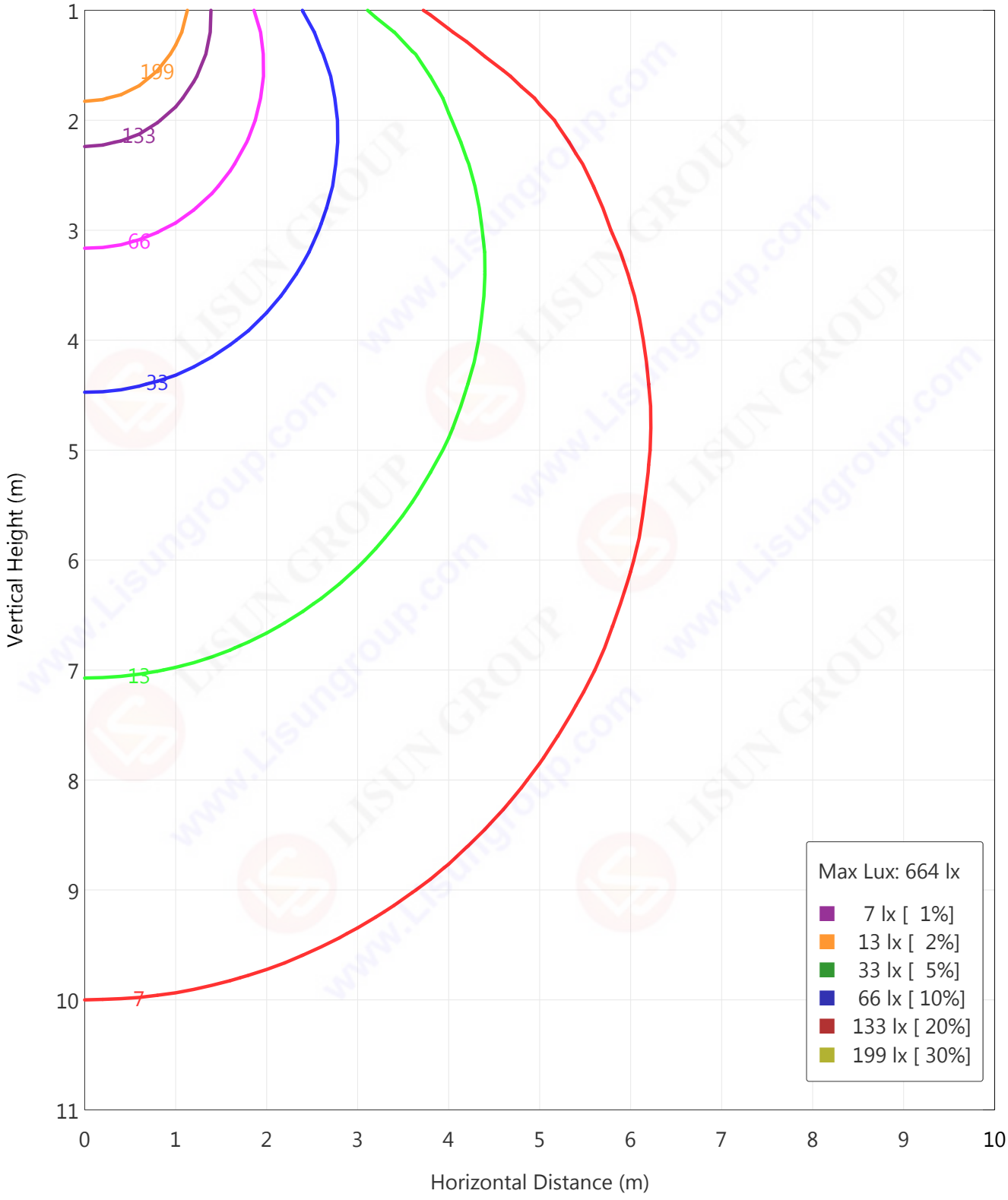
Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

IsoLux



Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

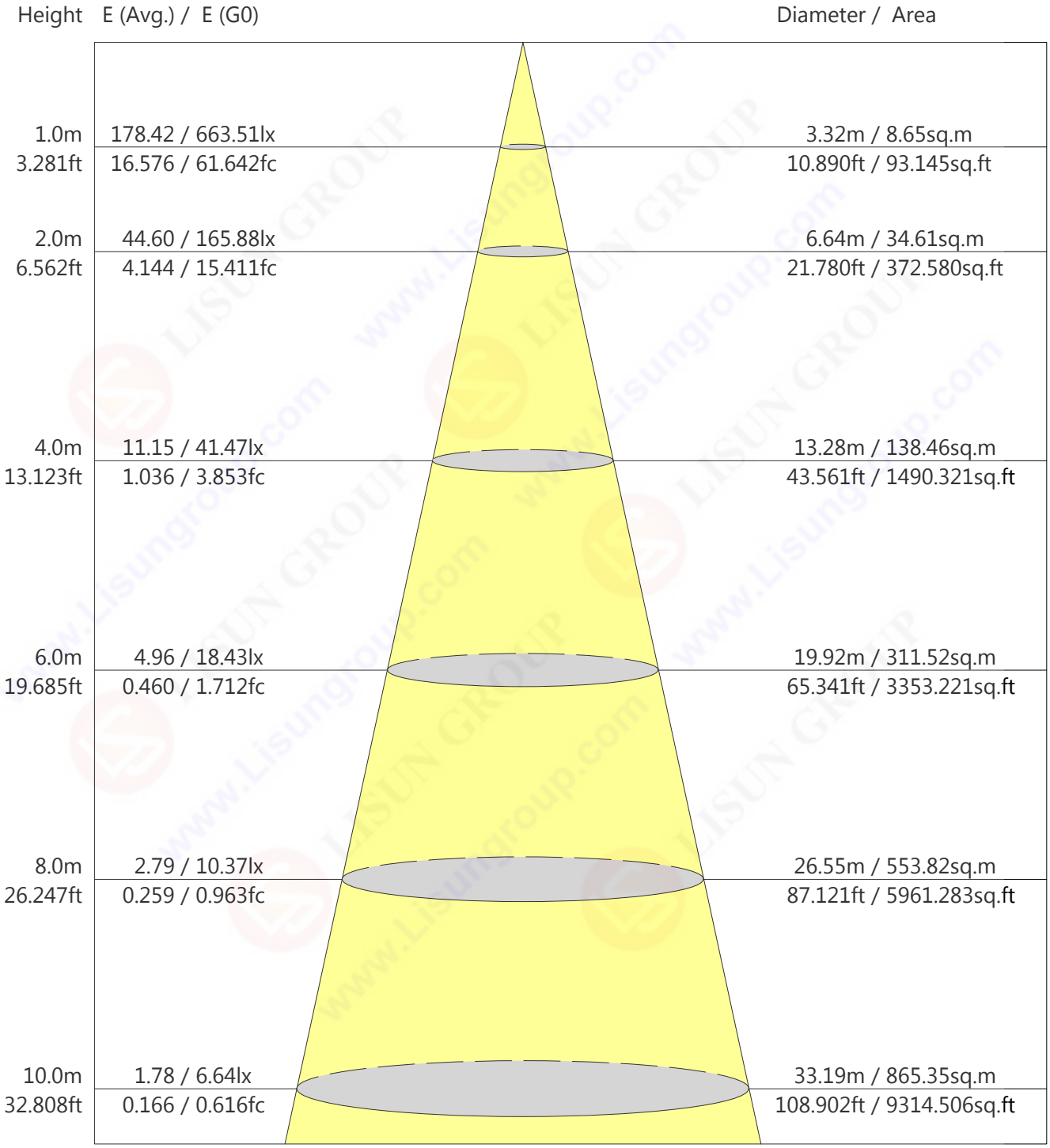
Vertical IsoLux Plot



Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Report No. : 3 **Test Time :** 2021-02-05 17:50:34

Average Illuminance Effective Figure



Beam Angle: 117.9° Flux Out: 1543.93lm

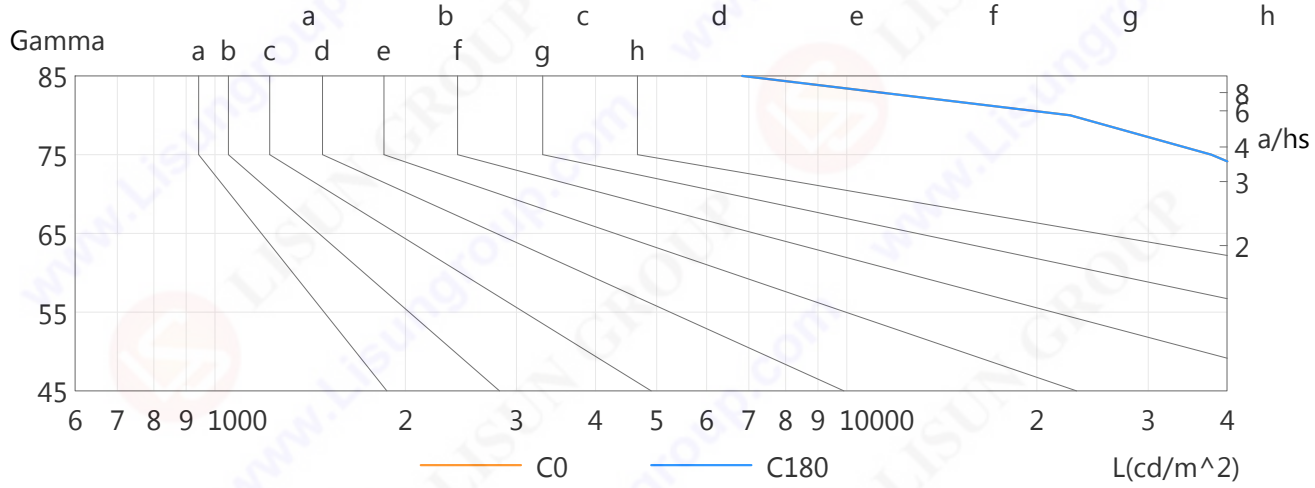
Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

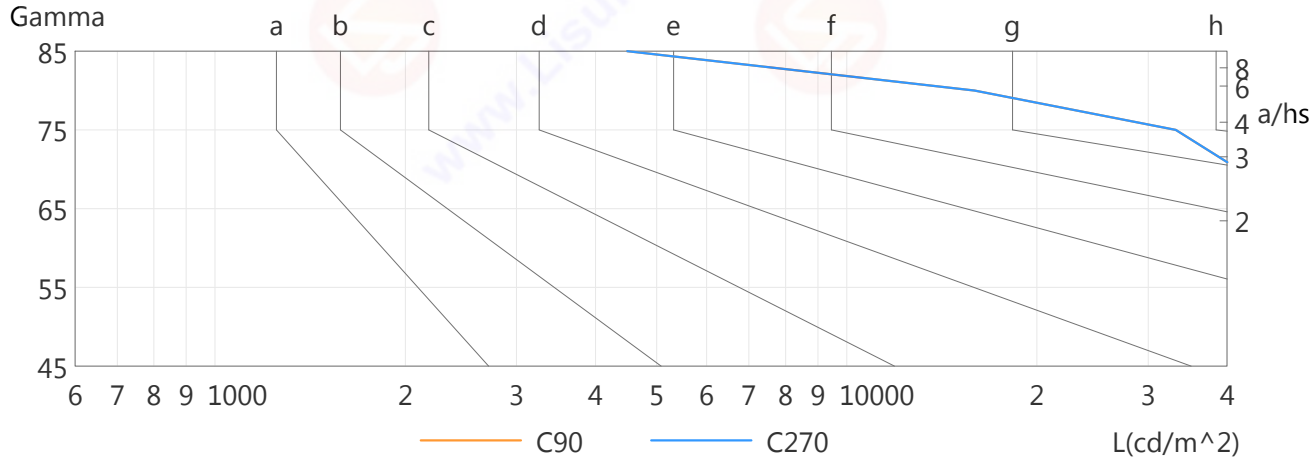
Report No. : 3 **Test Time :** 2021-02-05 17:50:34

Lumen Limit Curve

L (cd/m^2)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	68162	67473	66022	63724	59903	53693	37760	22582	6830
C90	66479	65400	63367	59763	53399	41798	33166	15921	4490
C270	68162	67473	66022	63724	59903	53693	37760	22582	6830
C90	66479	65400	63367	59763	53399	41798	33166	15921	4490

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





Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

TM5 UF Table

Utilisation Factors UF (F)						SHR NOM = 1.50				
Room Reflectance			Room Index(RI)							
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	1.17	1.34	1.49	1.60	1.74	1.83	1.89	1.97	2.03
	0.30		1.03	1.20	1.36	1.47	1.62	1.73	1.80	1.90	1.97
	0.20		0.93	1.09	1.25	1.37	1.53	1.64	1.73	1.84	1.91
0.50	0.50	0.20	1.14	1.30	1.44	1.54	1.67	1.76	1.82	1.90	1.95
	0.30		1.02	1.18	1.33	1.43	1.58	1.68	1.74	1.84	1.89
	0.20		0.92	1.08	1.24	1.35	1.50	1.61	1.68	1.78	1.85
0.30	0.50	0.20	1.12	1.26	1.40	1.49	1.62	1.69	1.75	1.82	1.87
	0.30		1.00	1.16	1.30	1.40	1.54	1.63	1.69	1.77	1.83
	0.20		0.92	1.07	1.22	1.33	1.47	1.57	1.64	1.73	1.79
0.00	0.00	0.00	0.87	1.02	1.17	1.27	1.40	1.49	1.56	1.64	1.70

Utilisation Factors UF (W)						SHR NOM = 1.50				
Room Reflectance			Room Index(RI)							
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	1.81	1.52	1.27	1.10	0.87	0.71	0.61	0.47	0.37
	0.30		1.51	1.30	1.11	0.97	0.78	0.65	0.56	0.44	0.36
	0.20		1.29	1.14	0.98	0.87	0.71	0.60	0.52	0.41	0.34
0.50	0.50	0.20	1.74	1.46	1.22	1.05	0.82	0.74	0.57	0.44	0.35
	0.30		1.47	1.26	1.07	0.94	0.75	0.63	0.54	0.42	0.34
	0.20		1.28	1.12	0.96	0.85	0.69	0.58	0.50	0.40	0.33
0.30	0.50	0.20	1.68	1.40	1.17	1.00	0.78	0.64	0.54	0.42	0.34
	0.30		1.44	1.23	1.04	0.91	0.72	0.60	0.51	0.40	0.32
	0.20		1.26	1.10	0.94	0.83	0.67	0.56	0.49	0.38	0.31
0.00	0.00	0.00	1.05	0.90	0.76	0.66	0.52	0.43	0.37	0.28	0.23

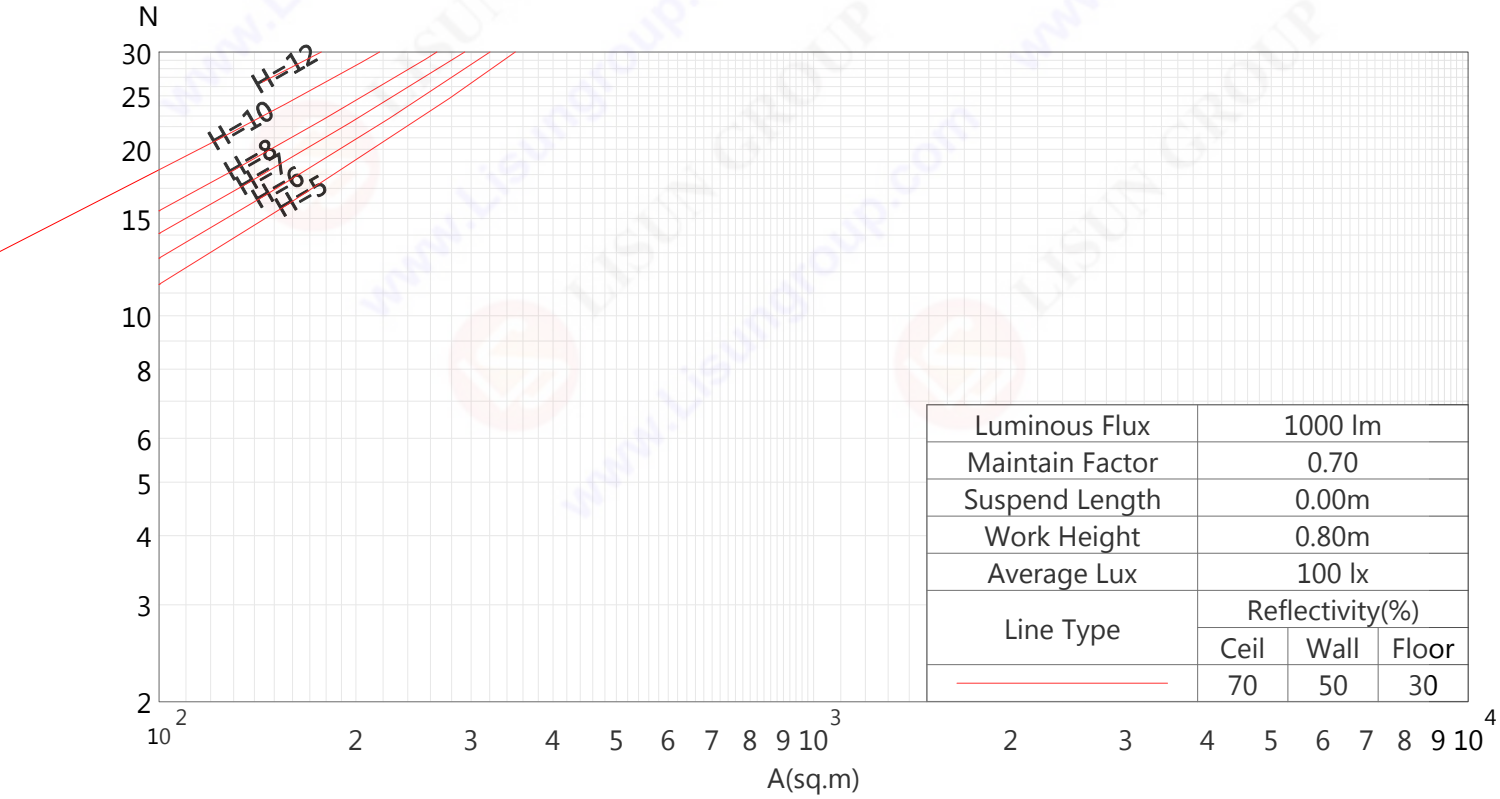
Utilisation Factors UF (C)						SHR NOM = 1.50				
Room Reflectance			Room Index(RI)							
C	W	F	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.32	0.35	0.36	0.37	0.39	0.40	0.41	0.42	0.43
	0.30		0.20	0.23	0.25	0.27	0.31	0.33	0.35	0.37	0.39
	0.20		0.11	0.14	0.17	0.19	0.23	0.27	0.29	0.32	0.34
0.50	0.50	0.20	0.31	0.33	0.35	0.36	0.38	0.39	0.40	0.41	0.41
	0.30		0.19	0.22	0.25	0.27	0.30	0.32	0.33	0.36	0.37
	0.20		0.11	0.14	0.17	0.19	0.23	0.26	0.28	0.31	0.33
0.30	0.50	0.20	0.30	0.32	0.34	0.35	0.36	0.37	0.38	0.39	0.39
	0.30		0.19	0.22	0.24	0.26	0.29	0.31	0.32	0.34	0.36
	0.20		0.11	0.14	0.16	0.19	0.22	0.25	0.27	0.30	0.32
0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Rating: 29W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum No.5/1980

Indoor CU, Curves of Luminaires vs Lighting Area

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	231	231	231	231	225	225	225	225	215	215	215	206	206	206	197	197	197	193
1	212	204	196	189	207	199	192	185	191	185	179	183	178	174	176	172	168	164
2	193	178	165	154	188	174	162	152	167	157	149	160	152	145	154	148	142	137
3	176	156	141	128	171	153	139	127	147	135	125	142	131	122	136	128	120	116
4	161	138	121	109	157	136	120	108	131	117	106	126	114	105	122	111	103	99
5	148	123	106	93	144	121	105	93	117	103	92	113	100	90	109	98	89	85
6	137	111	94	81	133	109	93	81	105	91	80	102	89	79	99	87	78	74
7	127	100	83	72	123	99	83	71	96	81	71	93	80	70	90	78	69	65
8	118	91	75	64	115	90	74	63	87	73	63	85	72	62	82	71	62	58
9	110	84	68	57	107	83	67	57	80	66	57	78	65	56	76	64	56	52
10	103	77	62	52	100	76	61	51	74	61	51	72	60	51	70	59	51	47

Spacing Criteria: 1.32 (0-180), 1.30 (90-270), 1.43 (Diagonal)



Luminous Flux	1000 lm		
Maintain Factor	0.70		
Suspend Length	0.00m		
Work Height	0.80m		
Average Lux	100 lx		
Line Type	Reflectivity(%)		
	Ceil	Wall	Floor
	70	50	30

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Zonal Flux

Gamma °	Imean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
0.0-1.0	663.5	0.6	0.6	0.06	0.06
1.0-2.0	663.4	1.9	2.5	0.19	0.25
2.0-3.0	663.3	3.2	5.7	0.32	0.57
3.0-4.0	663.1	4.4	10.2	0.44	1.02
4.0-5.0	662.8	5.7	15.9	0.57	1.59
5.0-6.0	662.2	7.0	22.8	0.70	2.28
6.0-7.0	661.5	8.2	31.0	0.82	3.10
7.0-8.0	660.5	9.5	40.5	0.95	4.05
8.0-9.0	659.3	10.7	51.2	1.07	5.12
9.0-10.0	658.0	11.9	63.1	1.19	6.31
10.0-11.0	656.5	13.1	76.2	1.31	7.62
11.0-12.0	654.8	14.3	90.5	1.43	9.05
12.0-13.0	652.9	15.5	106.0	1.55	10.60
13.0-14.0	650.6	16.7	122.7	1.67	12.27
14.0-15.0	648.2	17.8	140.5	1.78	14.05
15.0-16.0	645.4	18.9	159.4	1.89	15.94
16.0-17.0	642.6	20.0	179.4	2.00	17.94
17.0-18.0	639.6	21.1	200.5	2.11	20.05
18.0-19.0	636.3	22.1	222.6	2.21	22.26
19.0-20.0	632.9	23.2	245.8	2.32	24.58
20.0-21.0	629.3	24.2	270.0	2.42	27.00
21.0-22.0	625.6	25.1	295.1	2.51	29.51
22.0-23.0	621.7	26.1	321.2	2.61	32.12
23.0-24.0	617.6	27.0	348.2	2.70	34.82
24.0-25.0	613.2	27.9	376.1	2.79	37.61
25.0-26.0	608.7	28.7	404.8	2.87	40.48
26.0-27.0	603.9	29.5	434.4	2.95	43.44
27.0-28.0	599.0	30.3	464.7	3.03	46.47
28.0-29.0	593.9	31.1	495.8	3.11	49.58
29.0-30.0	588.4	31.8	527.5	3.18	52.75
30.0-31.0	582.7	32.4	560.0	3.24	56.00
31.0-32.0	576.9	33.1	593.0	3.31	59.30
32.0-33.0	571.0	33.6	626.7	3.36	62.67
33.0-34.0	564.9	34.2	660.9	3.42	66.09
34.0-35.0	558.4	34.7	695.5	3.47	69.55
35.0-36.0	551.7	35.1	730.7	3.51	73.07
36.0-37.0	544.7	35.5	766.2	3.55	76.62
37.0-38.0	537.6	35.9	802.1	3.59	80.21
38.0-39.0	530.5	36.2	838.3	3.62	83.83
39.0-40.0	523.0	36.5	874.8	3.65	87.48

Report No. : 3 **Test Time :** 2021-02-05 17:50:34

Zonal Flux

Gamma °	Imean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
40.0-41.0	514.9	36.7	911.5	3.67	91.15
41.0-42.0	506.7	36.8	948.3	3.68	94.83
42.0-43.0	498.5	36.9	985.2	3.69	98.52
43.0-44.0	490.2	37.0	1022.2	3.70	102.22
44.0-45.0	481.8	37.0	1059.3	3.70	105.93
45.0-46.0	472.8	37.0	1096.2	3.70	109.62
46.0-47.0	463.6	36.9	1133.1	3.69	113.31
47.0-48.0	453.9	36.7	1169.8	3.67	116.98
48.0-49.0	443.7	36.4	1206.2	3.64	120.62
49.0-50.0	433.8	36.2	1242.4	3.62	124.24
50.0-51.0	423.9	35.9	1278.3	3.59	127.83
51.0-52.0	413.8	35.5	1313.8	3.55	131.38
52.0-53.0	403.1	35.1	1348.9	3.51	134.89
53.0-54.0	391.3	34.5	1383.4	3.45	138.34
54.0-55.0	379.0	33.8	1417.2	3.38	141.72
55.0-56.0	369.1	33.4	1450.6	3.34	145.06
56.0-57.0	357.9	32.7	1483.3	3.27	148.33
57.0-58.0	344.2	31.8	1515.1	3.18	151.51
58.0-59.0	331.5	31.0	1546.1	3.10	154.61
59.0-60.0	318.9	30.1	1576.2	3.01	157.62
60.0-61.0	305.3	29.1	1605.4	2.91	160.54
61.0-62.0	290.5	28.0	1633.4	2.80	163.34
62.0-63.0	276.6	26.9	1660.3	2.69	166.03
63.0-64.0	263.1	25.8	1686.1	2.58	168.61
64.0-65.0	248.9	24.6	1710.7	2.46	171.07
65.0-66.0	234.8	23.4	1734.2	2.34	173.42
66.0-67.0	220.6	22.2	1756.3	2.22	175.63
67.0-68.0	206.4	20.9	1777.2	2.09	177.72
68.0-69.0	191.5	19.5	1796.8	1.95	179.68
69.0-70.0	176.1	18.1	1814.9	1.81	181.49
70.0-71.0	160.7	16.6	1831.5	1.66	183.15
71.0-72.0	145.0	15.1	1846.6	1.51	184.66
72.0-73.0	129.3	13.5	1860.1	1.35	186.01
73.0-74.0	114.2	12.0	1872.1	1.20	187.21
74.0-75.0	100.0	10.6	1882.7	1.06	188.27
75.0-76.0	87.4	9.3	1891.9	0.93	189.19
76.0-77.0	75.8	8.1	1900.0	0.81	190.00
77.0-78.0	64.7	6.9	1906.9	0.69	190.69
78.0-79.0	53.7	5.8	1912.7	0.58	191.27
79.0-80.0	42.4	4.6	1917.3	0.46	191.73

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Zonal Flux

Gamma °	Imean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
80.0-81.0	32.4	3.5	1920.8	0.35	192.08
81.0-82.0	24.5	2.7	1923.4	0.27	192.34
82.0-83.0	17.2	1.9	1925.3	0.19	192.53
83.0-84.0	11.3	1.2	1926.6	0.12	192.66
84.0-85.0	7.2	0.8	1927.3	0.08	192.73
85.0-86.0	4.4	0.5	1927.8	0.05	192.78
86.0-87.0	2.7	0.3	1928.1	0.03	192.81
87.0-88.0	1.7	0.2	1928.3	0.02	192.83
88.0-89.0	1.0	0.1	1928.4	0.01	192.84
89.0-90.0	0.7	0.1	1928.5	0.01	192.85
90.0-91.0	0.6	0.1	1928.6	0.01	192.86
91.0-92.0	0.6	0.1	1928.6	0.01	192.86
92.0-93.0	0.6	0.1	1928.7	0.01	192.87
93.0-94.0	0.7	0.1	1928.8	0.01	192.88
94.0-95.0	0.7	0.1	1928.8	0.01	192.88
95.0-96.0	0.7	0.1	1928.9	0.01	192.89
96.0-97.0	0.8	0.1	1929.0	0.01	192.90
97.0-98.0	0.8	0.1	1929.1	0.01	192.91
98.0-99.0	0.9	0.1	1929.2	0.01	192.92
99.0-100.0	0.9	0.1	1929.3	0.01	192.93
100.0-101.0	1.0	0.1	1929.4	0.01	192.94
101.0-102.0	1.0	0.1	1929.5	0.01	192.95
102.0-103.0	1.1	0.1	1929.6	0.01	192.96
103.0-104.0	1.1	0.1	1929.7	0.01	192.97
104.0-105.0	1.2	0.1	1929.9	0.01	192.99
105.0-106.0	1.2	0.1	1930.0	0.01	193.00
106.0-107.0	1.3	0.1	1930.1	0.01	193.01
107.0-108.0	1.4	0.1	1930.3	0.01	193.03
108.0-109.0	1.4	0.1	1930.4	0.01	193.04
109.0-110.0	1.5	0.2	1930.6	0.02	193.06
110.0-111.0	1.5	0.2	1930.7	0.02	193.07
111.0-112.0	1.6	0.2	1930.9	0.02	193.09
112.0-113.0	1.7	0.2	1931.1	0.02	193.11
113.0-114.0	1.7	0.2	1931.2	0.02	193.12
114.0-115.0	1.8	0.2	1931.4	0.02	193.14
115.0-116.0	1.8	0.2	1931.6	0.02	193.16
116.0-117.0	1.9	0.2	1931.8	0.02	193.18
117.0-118.0	2.0	0.2	1932.0	0.02	193.20
118.0-119.0	2.0	0.2	1932.2	0.02	193.22
119.0-120.0	2.1	0.2	1932.4	0.02	193.24

Zonal Flux

Gamma °	Imean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
120.0-121.0	2.1	0.2	1932.6	0.02	193.26
121.0-122.0	2.2	0.2	1932.8	0.02	193.28
122.0-123.0	2.3	0.2	1933.0	0.02	193.30
123.0-124.0	2.3	0.2	1933.2	0.02	193.32
124.0-125.0	2.4	0.2	1933.4	0.02	193.34
125.0-126.0	2.4	0.2	1933.6	0.02	193.36
126.0-127.0	2.5	0.2	1933.8	0.02	193.38
127.0-128.0	2.6	0.2	1934.1	0.02	193.41
128.0-129.0	2.6	0.2	1934.3	0.02	193.43
129.0-130.0	2.7	0.2	1934.5	0.02	193.45
130.0-131.0	2.8	0.2	1934.8	0.02	193.48
131.0-132.0	2.8	0.2	1935.0	0.02	193.50
132.0-133.0	2.9	0.2	1935.2	0.02	193.52
133.0-134.0	3.0	0.2	1935.5	0.02	193.55
134.0-135.0	3.0	0.2	1935.7	0.02	193.57
135.0-136.0	3.1	0.2	1935.9	0.02	193.59
136.0-137.0	3.1	0.2	1936.2	0.02	193.62
137.0-138.0	3.2	0.2	1936.4	0.02	193.64
138.0-139.0	3.3	0.2	1936.6	0.02	193.66
139.0-140.0	3.3	0.2	1936.9	0.02	193.69
140.0-141.0	3.4	0.2	1937.1	0.02	193.71
141.0-142.0	3.4	0.2	1937.3	0.02	193.73
142.0-143.0	3.5	0.2	1937.6	0.02	193.76
143.0-144.0	3.5	0.2	1937.8	0.02	193.78
144.0-145.0	3.6	0.2	1938.0	0.02	193.80
145.0-146.0	3.6	0.2	1938.3	0.02	193.83
146.0-147.0	3.7	0.2	1938.5	0.02	193.85
147.0-148.0	3.7	0.2	1938.7	0.02	193.87
148.0-149.0	3.8	0.2	1938.9	0.02	193.89
149.0-150.0	3.8	0.2	1939.1	0.02	193.91
150.0-151.0	3.9	0.2	1939.4	0.02	193.94
151.0-152.0	3.9	0.2	1939.6	0.02	193.96
152.0-153.0	4.0	0.2	1939.8	0.02	193.98
153.0-154.0	4.0	0.2	1940.0	0.02	194.00
154.0-155.0	4.1	0.2	1940.1	0.02	194.01
155.0-156.0	4.1	0.2	1940.3	0.02	194.03
156.0-157.0	4.1	0.2	1940.5	0.02	194.05
157.0-158.0	4.2	0.2	1940.7	0.02	194.07
158.0-159.0	4.2	0.2	1940.9	0.02	194.09
159.0-160.0	4.2	0.2	1941.0	0.02	194.10

Zonal Flux

Gamma °	Imean cd	Zonal Flux lm	Sum Zonal Flux lm	Rel Zonal Flux %	Sum Rel Zonal Flux %
160.0-161.0	4.3	0.2	1941.2	0.02	194.12
161.0-162.0	4.3	0.2	1941.3	0.02	194.13
162.0-163.0	4.3	0.1	1941.5	0.01	194.15
163.0-164.0	4.4	0.1	1941.6	0.01	194.16
164.0-165.0	4.4	0.1	1941.7	0.01	194.17
165.0-166.0	4.4	0.1	1941.9	0.01	194.19
166.0-167.0	4.5	0.1	1942.0	0.01	194.20
167.0-168.0	4.5	0.1	1942.1	0.01	194.21
168.0-169.0	4.5	0.1	1942.2	0.01	194.22
169.0-170.0	4.5	0.1	1942.3	0.01	194.23
170.0-171.0	4.5	0.1	1942.4	0.01	194.24
171.0-172.0	4.6	0.1	1942.4	0.01	194.24
172.0-173.0	4.6	0.1	1942.5	0.01	194.25
173.0-174.0	4.6	0.1	1942.5	0.01	194.25
174.0-175.0	4.6	0.0	1942.6	0.00	194.26
175.0-176.0	4.6	0.0	1942.6	0.00	194.26
176.0-177.0	4.6	0.0	1942.7	0.00	194.27
177.0-178.0	4.7	0.0	1942.7	0.00	194.27
178.0-179.0	4.7	0.0	1942.7	0.00	194.27
179.0-180.0	4.7	0.0	1942.7	0.00	194.27

Report No. : 3 **Test Time :** 2021-02-05 17:50:34

Light Distribution Data

Unit: cd

G\C	C0.0	C30.0	C60.0	C90.0
G0.0	663.5	663.5	663.5	663.5
G1.0	663.3	663.4	663.6	663.5
G2.0	663.2	663.3	663.5	663.5
G3.0	663.0	663.1	663.3	663.5
G4.0	662.8	662.8	663.1	663.3
G5.0	662.1	662.4	662.8	662.8
G6.0	661.3	661.7	662.2	662.1
G7.0	660.4	660.8	661.5	661.2
G8.0	659.2	659.7	660.7	659.9
G9.0	658.0	658.4	659.5	658.5
G10.0	656.6	657.0	658.2	656.8
G11.0	654.9	655.7	656.5	655.1
G12.0	653.2	654.1	654.6	653.0
G13.0	651.3	651.8	652.7	650.5
G14.0	648.9	649.9	650.1	648.0
G15.0	646.8	647.2	647.6	644.8
G16.0	644.1	644.7	644.6	641.6
G17.0	641.7	641.8	641.8	638.3
G18.0	638.7	638.5	638.3	635.3
G19.0	635.8	635.3	635.0	631.5
G20.0	632.5	631.8	631.1	628.0
G21.0	629.1	628.2	627.6	624.2
G22.0	625.5	624.3	623.8	620.3
G23.0	622.1	620.0	620.4	616.1
G24.0	617.9	615.4	615.9	611.6
G25.0	614.1	611.1	611.3	607.5
G26.0	609.2	605.8	606.9	603.1
G27.0	604.6	601.0	602.5	597.6
G28.0	599.7	595.9	597.5	592.8
G29.0	594.6	590.4	592.3	587.4
G30.0	589.2	584.4	586.8	581.6
G31.0	583.5	578.4	581.1	576.8
G32.0	577.5	573.0	574.9	570.4
G33.0	572.0	566.4	569.7	563.8
G34.0	565.2	560.5	563.1	557.9
G35.0	559.3	553.1	557.3	550.6
G36.0	551.9	546.6	550.2	544.3
G37.0	545.7	538.4	543.8	536.3
G38.0	538.9	531.2	537.0	529.2
G39.0	531.8	524.1	529.9	521.8

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Light Distribution Data

Unit: cd

G\C	C0.0	C30.0	C60.0	C90.0
G40.0	524.3	516.7	521.2	514.1
G41.0	515.0	507.9	513.8	506.2
G42.0	506.9	500.3	505.9	496.3
G43.0	498.7	492.3	497.8	487.7
G44.0	490.4	484.0	489.6	478.8
G45.0	482.0	475.2	481.3	470.1
G46.0	473.1	466.2	471.0	461.3
G47.0	464.2	457.2	461.8	452.1
G48.0	452.8	446.2	452.2	442.4
G49.0	443.3	436.6	442.4	430.6
G50.0	433.7	426.9	432.6	420.4
G51.0	423.9	417.0	423.0	410.3
G52.0	413.7	406.4	412.7	399.5
G53.0	402.9	395.3	402.0	388.5
G54.0	391.9	381.7	388.6	377.3
G55.0	378.7	370.3	377.6	363.5
G56.0	367.3	365.8	366.6	358.8
G57.0	355.3	348.4	355.5	340.4
G58.0	343.1	334.0	343.9	327.7
G59.0	330.9	321.8	331.5	314.6
G60.0	318.6	309.6	318.8	298.8
G61.0	303.7	297.0	303.1	285.6
G62.0	291.0	283.6	283.1	272.3
G63.0	275.4	269.6	274.6	258.2
G64.0	265.4	253.3	260.2	242.3
G65.0	253.2	240.8	245.8	225.7
G66.0	241.0	227.9	232.0	204.4
G67.0	227.4	215.3	218.1	187.3
G68.0	214.0	202.1	203.3	170.4
G69.0	201.0	188.7	184.3	155.4
G70.0	183.6	174.3	167.8	143.0
G71.0	165.0	158.8	151.8	131.9
G72.0	143.2	144.3	135.7	118.2
G73.0	125.3	127.5	121.4	107.0
G74.0	110.1	106.8	109.8	96.3
G75.0	97.7	90.4	97.8	85.8
G76.0	84.6	77.9	87.2	74.0
G77.0	74.0	65.9	77.6	59.7
G78.0	64.2	55.8	67.0	45.8
G79.0	47.3	45.1	56.6	37.9

Light Distribution Data

Unit: cd

G\C	C0.0	C30.0	C60.0	C90.0
G80.0	39.2	31.7	44.8	27.6
G81.0	32.2	25.2	33.0	20.9
G82.0	22.3	18.9	25.0	14.5
G83.0	15.4	12.7	16.4	8.6
G84.0	10.3	7.8	11.2	5.4
G85.0	6.0	4.6	7.1	3.9
G86.0	3.4	2.7	4.4	2.4
G87.0	2.0	1.6	3.0	1.5
G88.0	1.1	0.9	1.9	0.9
G89.0	0.6	0.6	1.1	0.7
G90.0	0.5	0.6	0.7	0.6
G91.0	0.5	0.6	0.6	0.6
G92.0	0.6	0.6	0.6	0.6
G93.0	0.6	0.6	0.6	0.7
G94.0	0.6	0.7	0.7	0.7
G95.0	0.7	0.7	0.7	0.8
G96.0	0.7	0.8	0.7	0.8
G97.0	0.8	0.8	0.8	0.8
G98.0	0.8	0.9	0.8	0.9
G99.0	0.9	0.9	0.9	1.0
G100.0	0.9	1.0	0.9	1.0
G101.0	1.0	1.0	1.0	1.0
G102.0	1.0	1.1	1.0	1.1
G103.0	1.1	1.1	1.1	1.2
G104.0	1.1	1.2	1.1	1.2
G105.0	1.2	1.2	1.2	1.3
G106.0	1.2	1.3	1.2	1.3
G107.0	1.3	1.3	1.3	1.4
G108.0	1.4	1.4	1.4	1.4
G109.0	1.4	1.4	1.4	1.5
G110.0	1.5	1.5	1.5	1.6
G111.0	1.5	1.6	1.5	1.6
G112.0	1.6	1.6	1.6	1.7
G113.0	1.7	1.7	1.7	1.8
G114.0	1.7	1.7	1.7	1.8
G115.0	1.8	1.8	1.8	1.9
G116.0	1.8	1.9	1.8	1.9
G117.0	1.9	1.9	1.9	2.0
G118.0	2.0	2.0	2.0	2.1
G119.0	2.0	2.0	2.0	2.1

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Light Distribution Data

Unit: cd

G\C	C0.0	C30.0	C60.0	C90.0
G120.0	2.1	2.1	2.1	2.2
G121.0	2.1	2.2	2.2	2.2
G122.0	2.2	2.2	2.2	2.3
G123.0	2.3	2.3	2.3	2.4
G124.0	2.3	2.4	2.3	2.4
G125.0	2.4	2.4	2.4	2.5
G126.0	2.4	2.5	2.5	2.6
G127.0	2.5	2.5	2.5	2.6
G128.0	2.6	2.6	2.6	2.7
G129.0	2.6	2.7	2.6	2.7
G130.0	2.7	2.7	2.7	2.8
G131.0	2.8	2.8	2.8	2.9
G132.0	2.8	2.8	2.8	2.9
G133.0	2.9	2.9	2.9	3.0
G134.0	2.9	3.0	3.0	3.1
G135.0	3.0	3.0	3.0	3.1
G136.0	3.1	3.1	3.1	3.2
G137.0	3.1	3.2	3.2	3.2
G138.0	3.2	3.2	3.2	3.3
G139.0	3.3	3.3	3.3	3.4
G140.0	3.3	3.3	3.3	3.4
G141.0	3.4	3.4	3.4	3.5
G142.0	3.4	3.5	3.5	3.5
G143.0	3.5	3.5	3.5	3.6
G144.0	3.5	3.6	3.6	3.6
G145.0	3.6	3.6	3.6	3.7
G146.0	3.6	3.7	3.7	3.7
G147.0	3.7	3.7	3.7	3.8
G148.0	3.8	3.8	3.8	3.8
G149.0	3.8	3.8	3.8	3.9
G150.0	3.8	3.9	3.9	3.9
G151.0	3.9	3.9	3.9	4.0
G152.0	3.9	3.9	4.0	4.0
G153.0	4.0	4.0	4.0	4.0
G154.0	4.0	4.0	4.0	4.1
G155.0	4.1	4.1	4.1	4.1
G156.0	4.1	4.1	4.1	4.2
G157.0	4.1	4.1	4.2	4.2
G158.0	4.2	4.2	4.2	4.2
G159.0	4.2	4.2	4.2	4.3

Test Type : Type C Test Distance : 8.160 m C Plane (°): 0.0-180.0:1.0 γ (°) : 0.0-180.0:1.0
Test Device : Lisun LSG-1890B (E312012J) Temperature : 25.0°C Humidity : 65.0%
Test Lab : LISUN Lab
Test By : David Review By :

Light Distribution Data

Unit: cd

G\C	C0.0	C30.0	C60.0	C90.0
G160.0	4.3	4.2	4.3	4.3
G161.0	4.3	4.3	4.3	4.3
G162.0	4.3	4.3	4.3	4.4
G163.0	4.4	4.4	4.4	4.4
G164.0	4.4	4.4	4.4	4.4
G165.0	4.4	4.4	4.4	4.5
G166.0	4.4	4.4	4.4	4.5
G167.0	4.5	4.4	4.5	4.5
G168.0	4.5	4.5	4.5	4.5
G169.0	4.5	4.5	4.5	4.6
G170.0	4.5	4.5	4.5	4.6
G171.0	4.6	4.5	4.6	4.6
G172.0	4.6	4.6	4.6	4.6
G173.0	4.6	4.6	4.6	4.6
G174.0	4.6	4.6	4.6	4.6
G175.0	4.6	4.6	4.6	4.7
G176.0	4.6	4.6	4.6	4.7
G177.0	4.7	4.6	4.6	4.7
G178.0	4.7	4.6	4.6	4.7
G179.0	4.7	4.6	4.7	4.7
G180.0	4.7	4.6	4.7	4.7