LISUN GROUP

High Precision
Rotation Luminaire Goniophotometer
(LSG-1700B/LSG-1800B/LSG-1800X)

Brochure

Global Office of Lisun Electronics Inc.

http://www.Lisungroup.com

Lisun Group (Hong Kong) Limited
Add: Room 803, Chevalier House, 45-51 Chatham Road South, Tsim Sha Tsui, KL, HK
Tel: 00852-68852050 Fax: 00852-30785638
Email: SalesHK@Lisungroup.com

Lisun Electronics (Shanghai) Co., Ltd
Add: 113-114, No. 1 Building, Nanxiang Zhidi Industry Park, No. 1101, Huyi Road, Jiading District, Shanghai, 201802, China
Tel: +86(21)5108 3341 Fax: +86(21)5108 3342
Email: SalesSH@Lisungroup.com

Lisun Electronics Inc. (USA)
Add: 445 S. Figueroa Street, Los Angeless, CA 90071, U.S.A.
Email: Sales@Lisungroup.com

Lisun China Factory
Add: NO. 37, Xiangyuan Road, Hangzhou City, Zhejiang Province, China
Tel: +86-189-1799-6096
Email: Engineering@Lisungroup.com

Leader in Lighting & Electrical Test Instruments

Rev. 1/13/2020

System Configuration

A. Goniophotometric System:

- Goniometric Rotating Console:
  1) LSG-1800X/LSG-1800B: Japanese Mitsubishi Motor and German Angle encoder System to keep the test accuracy to 0.1degree
  2) LSG-1700B: Taiwan Motor and Angle encoder System to keep the test accuracy to 0.2degree
- The LSG-1800X/LSG-1800B has Goniometric Rotating Control Instrument in 19inch cabinet: It connects to the PC and was controlled by the software.
- The LSG-1800X/LSG-1800B has Goniometric Rotating Control Instrument in dark room: This can allow the customer to control the rotating in the dark room when install the lumainires but no need to control in the PC.
- Double Channel & High Precision Photometer
- Class A Constant Temperature Photo Detector (Option is Class L)
- Cross-beam Laser System for Calibrating
- English Measuring Software
- Two 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:

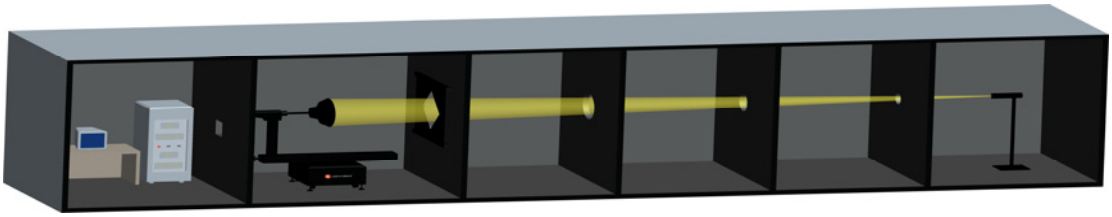
1) LSG-1800X/LSG-1800B has LS2010 Digital Power Meter: High Accuracy to measure AC voltage, current, power and PF, also measure harmonic.
2) LSG-1700B has LS2012 Digital Power Meter: High Accuracy to measure AC and DC voltage, current, power and PF

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: communicate with PC via software

1) LSG-1800X/LSG-1800B has LSP-1KVAS AC Power Source
2) LSG-1700B has LSP-500VAS AC Power Source

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



Full View for High Precision Rotation Luminaire Goniophotometer

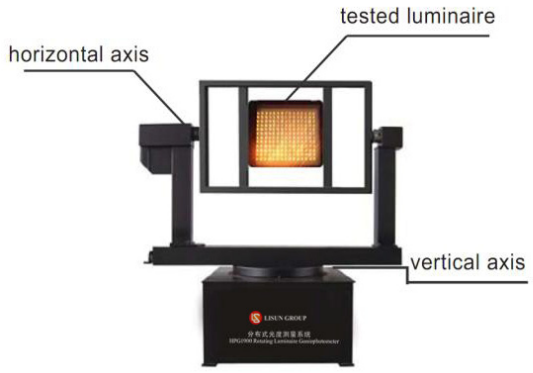
Note: PC and Printer prepared by the customer (request at least two USB ports)

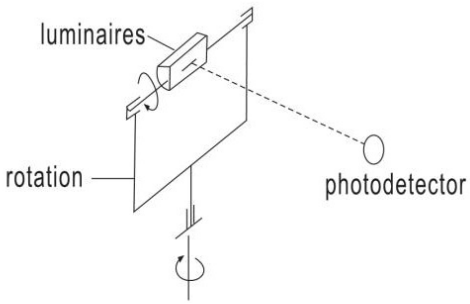
2. Working Principle

Goniophotometric System carries out measuring methods of fixed location and rotating luminaires. The measured luminaire 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 luminaires around a vertical axis and a horizontal axis. When tested luminaires 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.

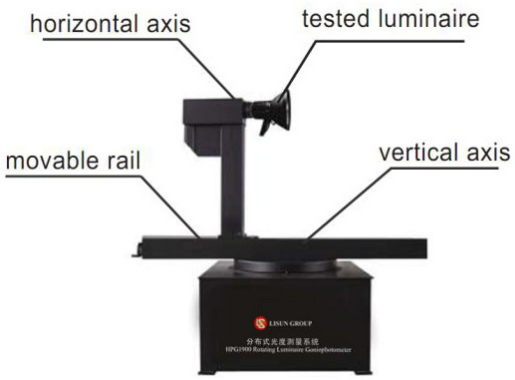


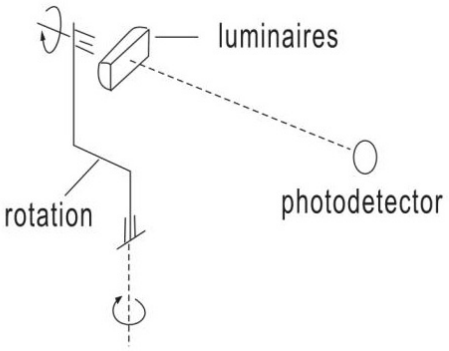


Double pillars structure

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-1800X/LSG-1800B/LSG-1700B Goniophotometer is high precision automatic goniophotometric instrument for luminous intensity distribution measurements with facility for turning the light source. The LSG-1800B use a constant temperature detector, Japanese Motor and Germany precision angle coder which keeps high test accuracy. It is for industrial laboratory measurements the photometric data of luminaires.

Constant Temperature Photo Detector

Be utilized to measure photometric parameters of luminaires 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, luminaire 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
- 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-1800X/LSG-1800B is 0.1°, LSG-1700B 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

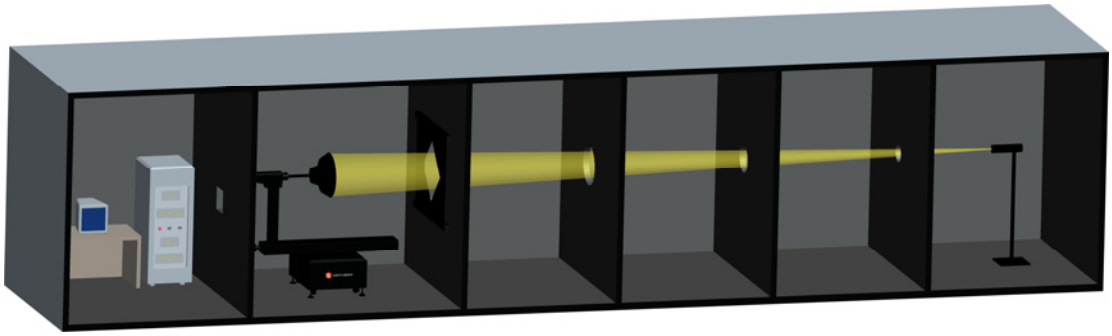
Model Number	The max size for the Testing Lamp(Unit: mm)		Max Weight
	C-Gamma Test with one Pillar	B-Beta Test with two Pillars	
LSG-1800X	⌀2500×550(Diameter*Depth)	700*600(Length*Width)	60kg
LSG-1800B	⌀1600×550(Diameter*Depth)	700*600(Length*Width)	50kg
LSG-1700B	⌀1600×550(Diameter*Depth)	700*600(Length*Width)	40kg

5. Laboratory Requirements

- **Room Requirements according to CIE**

Model	Dark Room (W*H*L)	Operation Room(W*L)
LSG-1800X	4*4*15~30m	3*3m
LSG-1800B	4*2.5*8~30m	3*3m
LSG-1700B	3*2.5*8~30m	3*3m

- 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 formal purchase order was confirmed



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:

3.1 CIE Pub. NO.70,"The Measurement of Absolute Luminous Intensity Distributions"

3.2 CIE DIV. Ⅱ -TC10,"Photometry of Luminaires"

3.3 IES LM-35-1989,"IES Approved Method for Photometric Testing of Floodlights"

3.4 IES LM-31,"IES Approved Method for Photometric Testing of Roadway Luminaires"

3.5 IES-LM-79, "Electrical and Photometric Measurements of Solid-State Lighting"

3.6 GB/T 7002-1986,"Luminosity Test of Flood Luminaires"

3.7 GB/T 9467-1988, "Luminosity Test of Indoor Luminaires"

3.8 GB/T 9468-1988, "Luminosity Test of Street Luminaires"

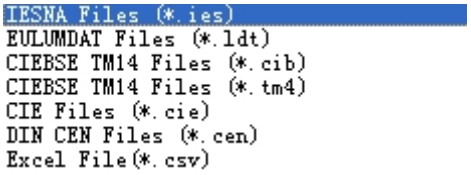
3.9 IES 61341 "Method of Measurement of Center Beam Intensity and Beam Angle(s) of Reflector Lamp"

3.10 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 luminaire 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, luminaire 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

Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

Report No.: LS1127 Test Time: 2017-08-31 13:12

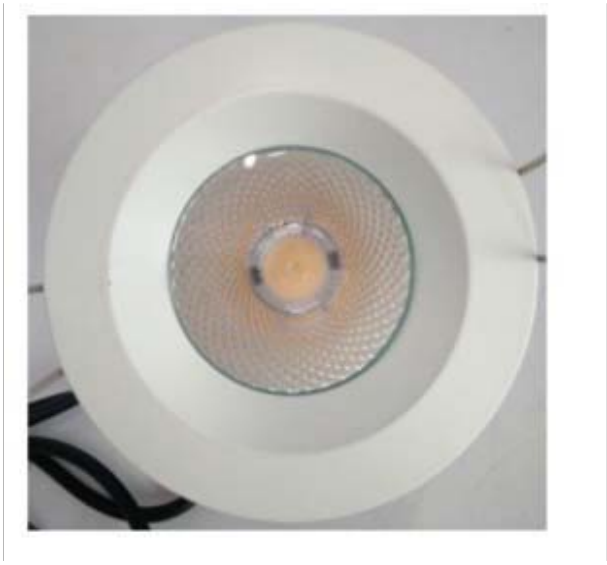
Luminaire Property

Luminaire Manufacturer: W.K.LIGHTING
Luminaire Category: WK-71-83-8077-85-IP65
Lamp Catalog: LUMINUS
Lamp Description: Philips
Number of Lamps: 1
Lumens per Lamp: 700
Luminous Length (mm): 8.5
Luminous Width (mm): 8.5
Luminous Height (mm): 12
Voltage: 220.6 V
Current: 0.071 A
Power: 8.69 W
Power Factor: 0.559

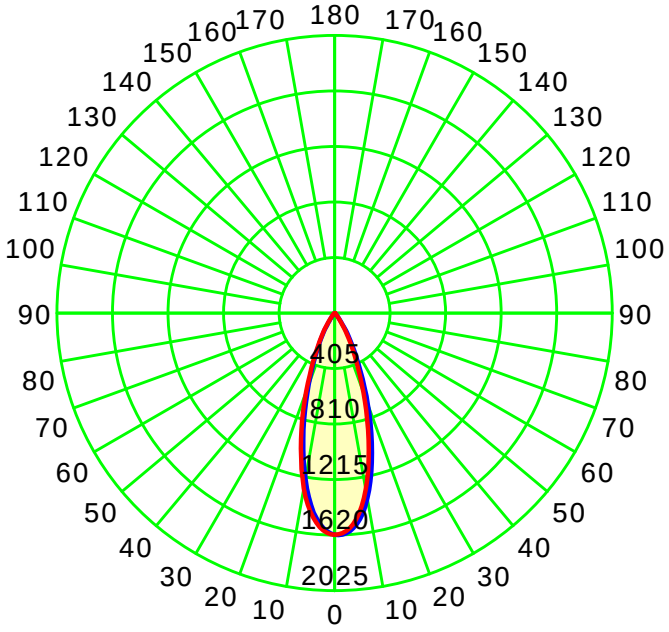
Photometric Results

CIE Class: Direct
Total Rated Lamp Lumens: 700.0 lm
Measurement Flux: 641.8 lm
Efficiency: 91.69%
Downward Ratio: 91.69%
Upward Ratio: 0.00%
Horizontal Diffuse Angle(50%): H34.6
Vertical Diffuse Angle(50%): V34.1
Luminaire Efficacy Rating (LER): 73.91
Central Intensity: 1617.64 cd
Max. Intensity: 1620.79 cd
Pos of Max. Intensity: H22.5 V1
S/MH(C0/C180): 0.57
S/MH(C90/C270): 0.56

Picture Of Luminaire



Luminous Intensity Distribution Curve

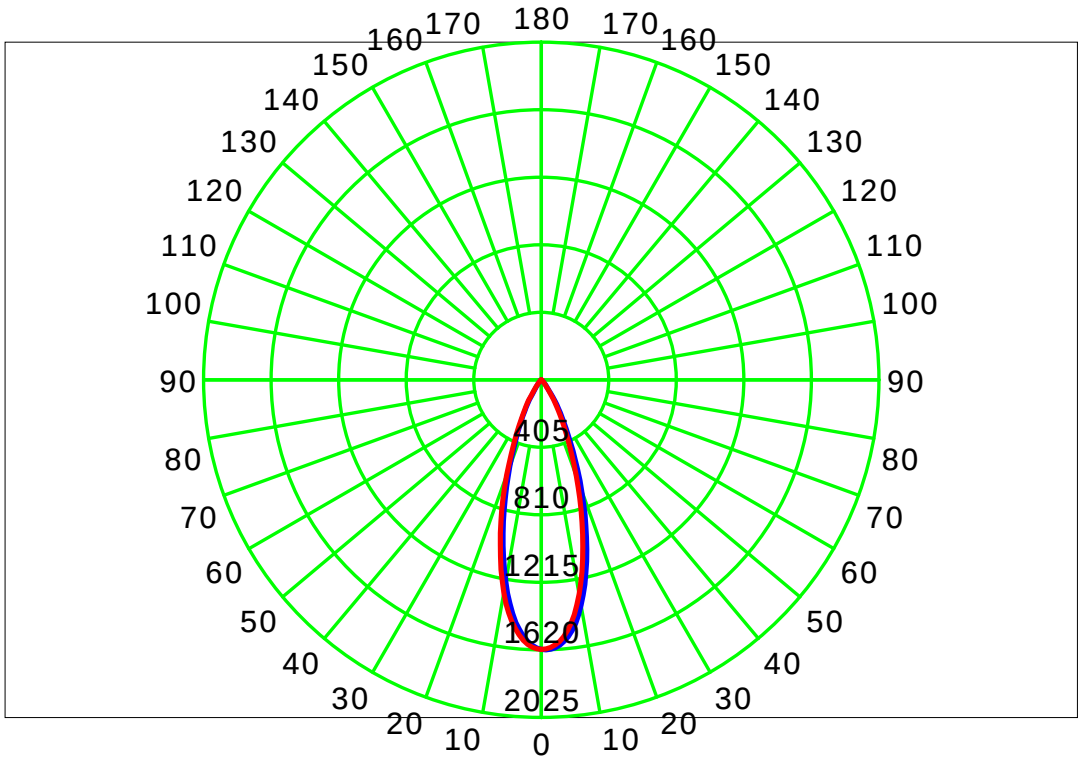


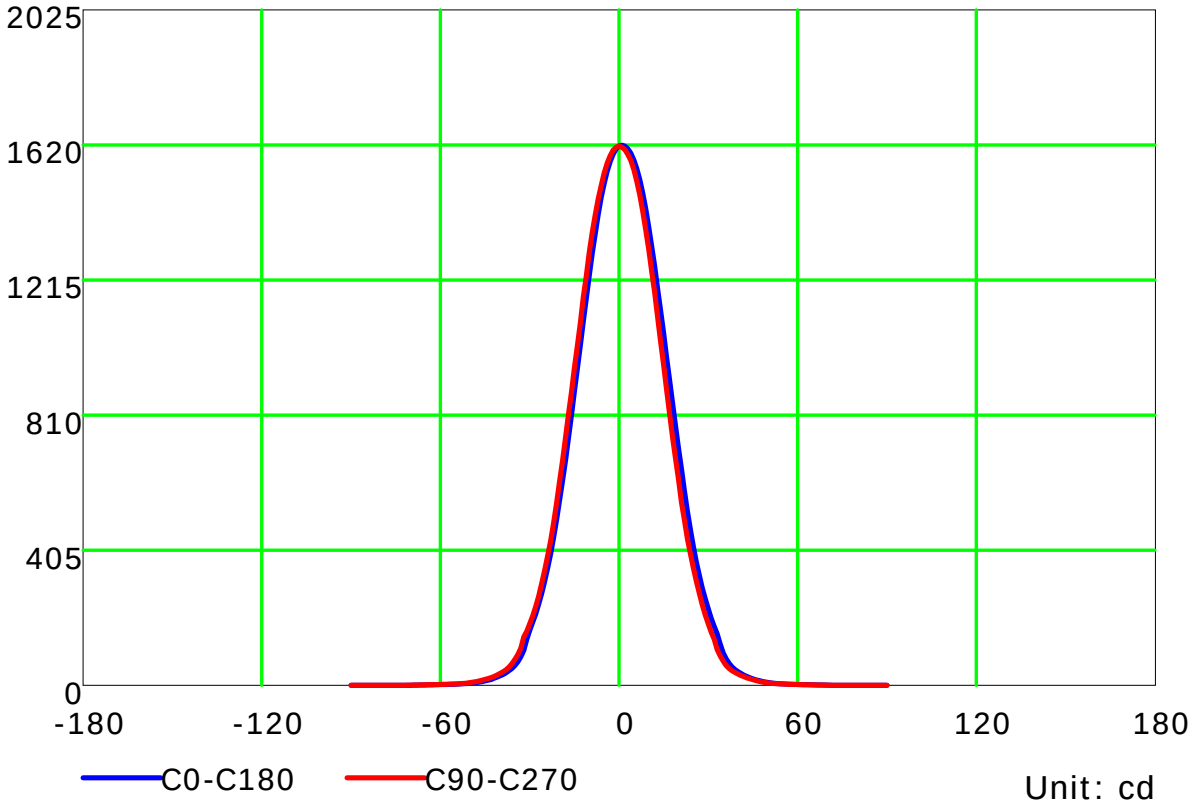
Unit: cd
Average Diffuse Angle(50%): 34.3°
C0-C180 C90-C270

C Plane (°):0.0-360.0: 22.5
Gamma Plane (°):0.0-90.0:1.0
Test Lab: LISUN
Test Device: LSG-1800B
Test Type: TYPE C
Distance: 8.300 m
Temperature: 24.5
Humidity: 60%
Operator: Joye
Inspector:

Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

Luminous Intensity Distribution Curve

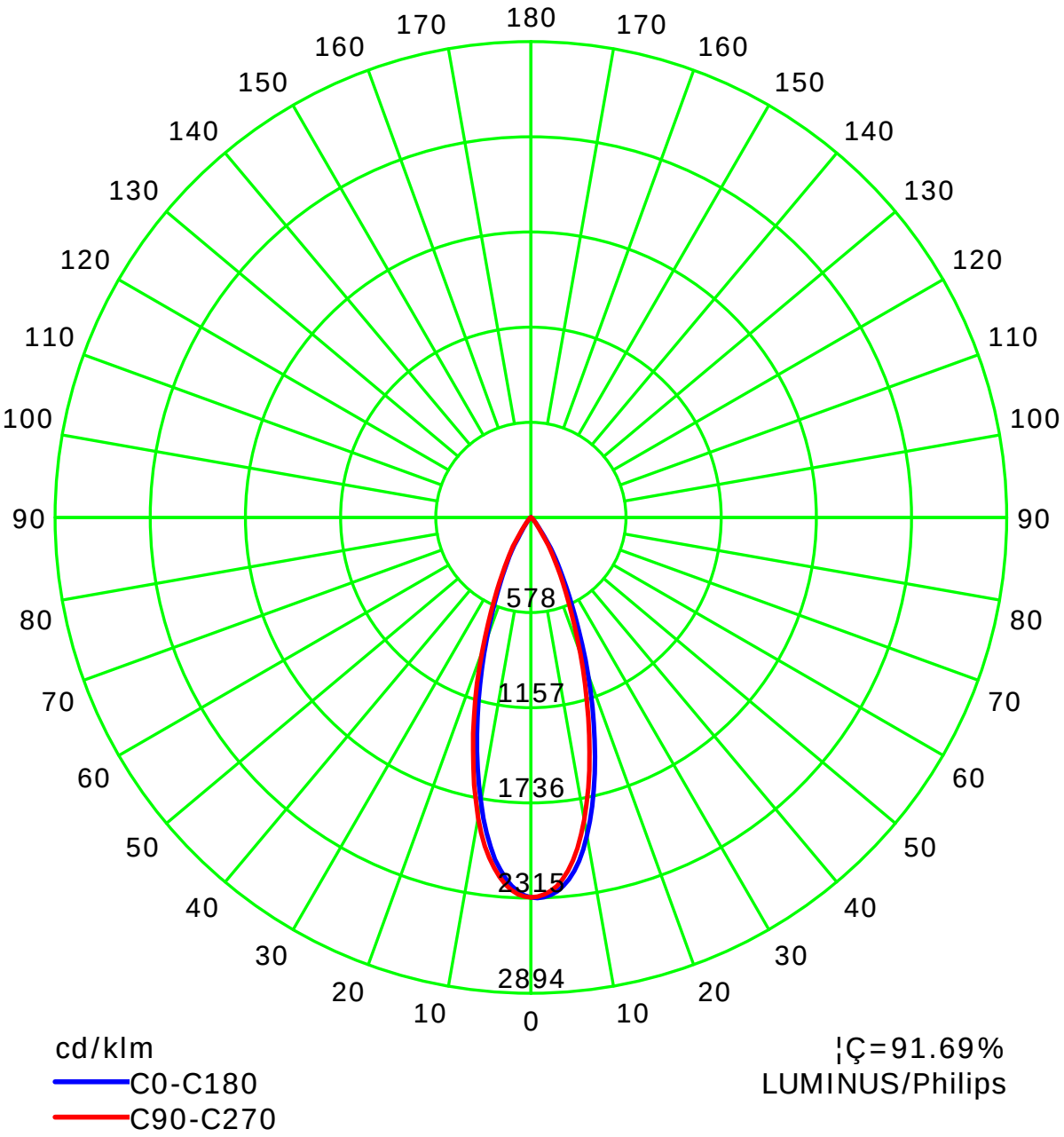




C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Luminous Intensity Distribution Curve(cd/klm)



C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

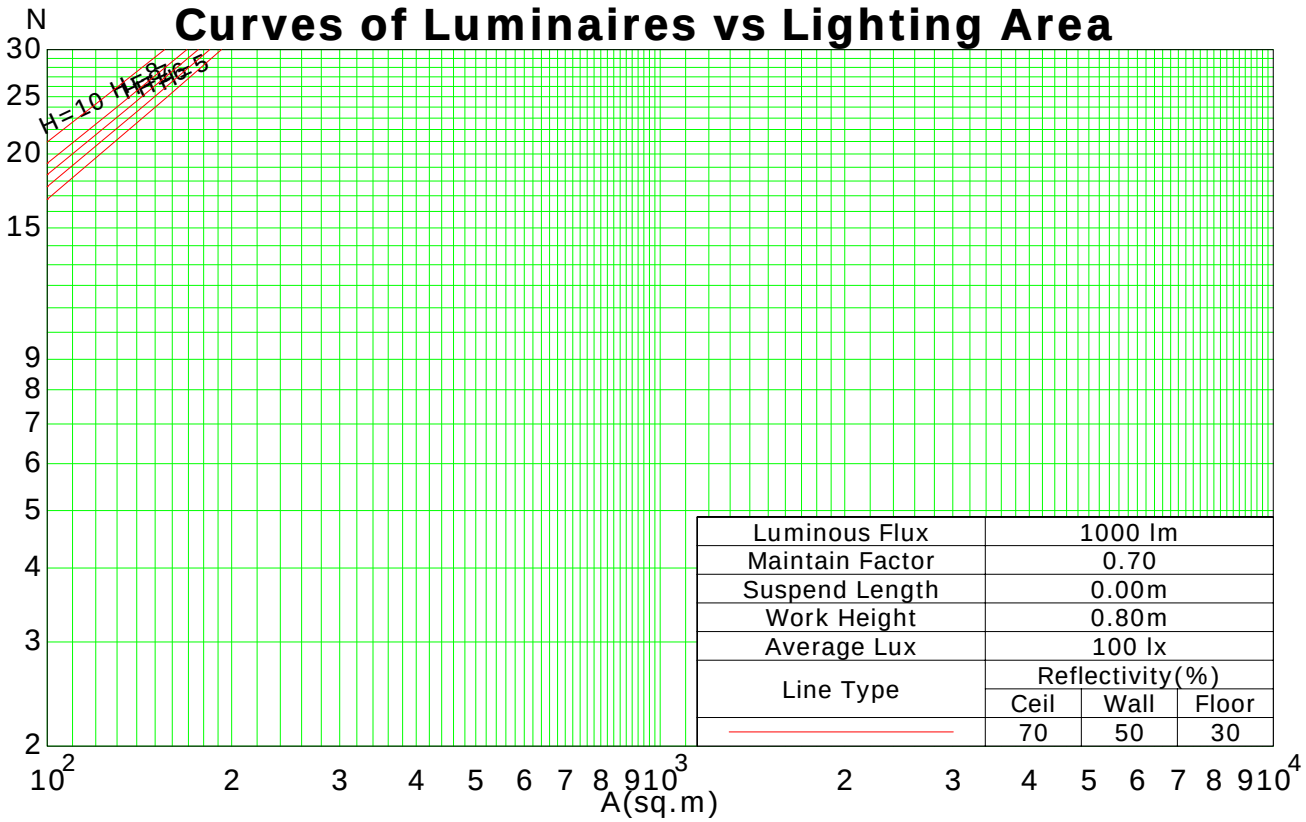
Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

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	109	109	109	109	107	107	107	107	102	102	102	98	98	98	94	94	94	92
1	105	103	101	99	103	101	99	97	97	96	94	94	93	92	91	90	89	87
2	101	97	94	91	99	95	93	90	93	90	88	90	88	86	87	86	85	83
3	97	92	88	85	95	91	87	84	88	85	83	86	84	82	84	82	80	79
4	93	87	83	80	91	86	82	79	84	81	78	83	80	78	81	79	77	75
5	89	83	79	75	88	82	78	75	81	77	74	79	76	74	78	75	73	72
6	86	79	75	72	85	79	74	71	77	74	71	76	73	70	75	72	70	69
7	83	76	71	68	82	75	71	68	74	70	68	73	70	67	72	69	67	66
8	80	73	68	65	79	72	68	65	71	68	65	71	67	65	70	67	64	63
9	77	70	65	62	76	69	65	62	69	65	62	68	64	62	67	64	62	61
10	74	67	63	60	74	67	63	60	66	62	60	66	62	60	65	62	59	58

Spacing Criteria (0-180): 0.57
Spacing Criteria (90-270): 0.56
Spacing Criteria (Diagonal): 0.57

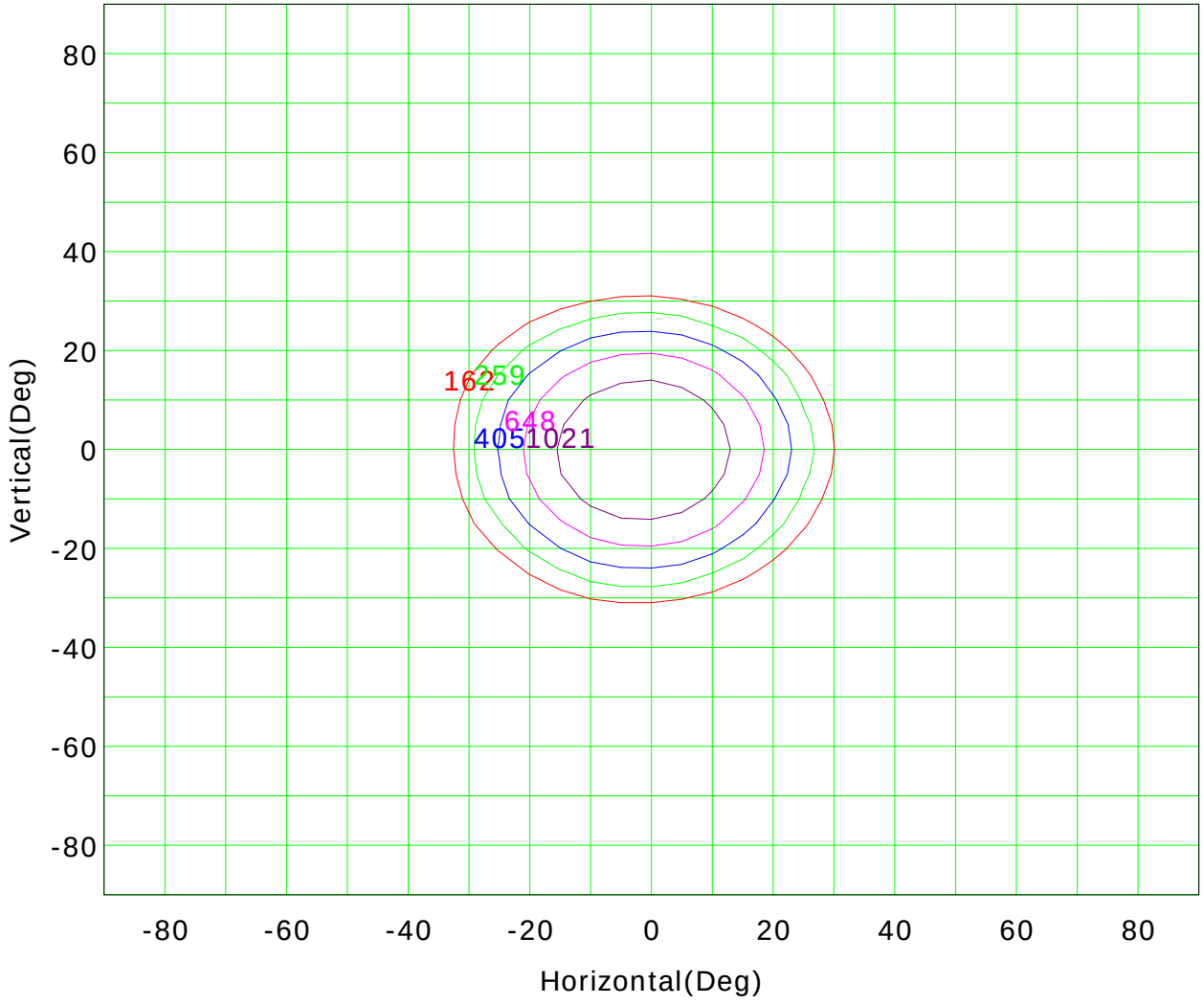
Curves of Luminaires vs Lighting Area



C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Isocandela (rectangle)



Imax (100%): 1621 cd

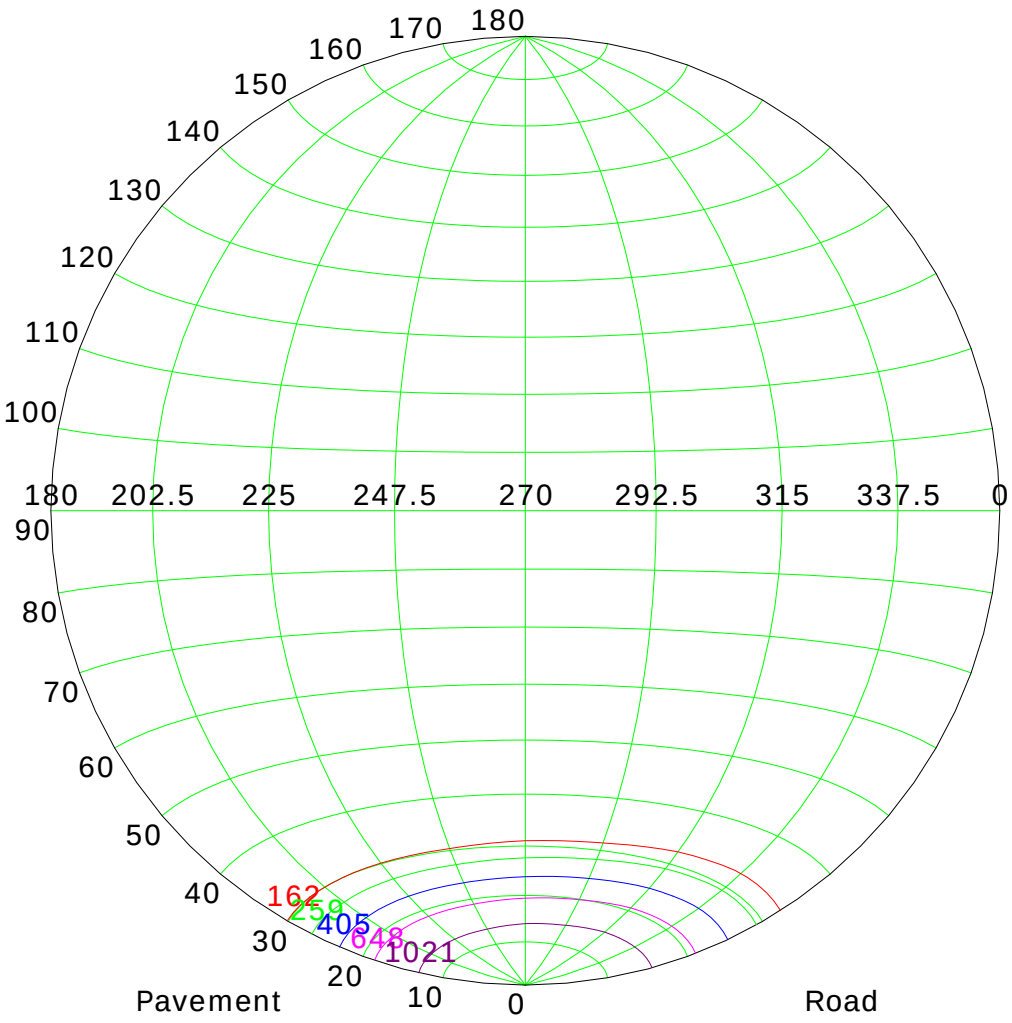
(10%): 162 cd	(16%): 259 cd
(25%): 405 cd	(40%): 648 cd
(63%): 1021 cd	(100%): 1621 cd

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

Isocandela (sphere)



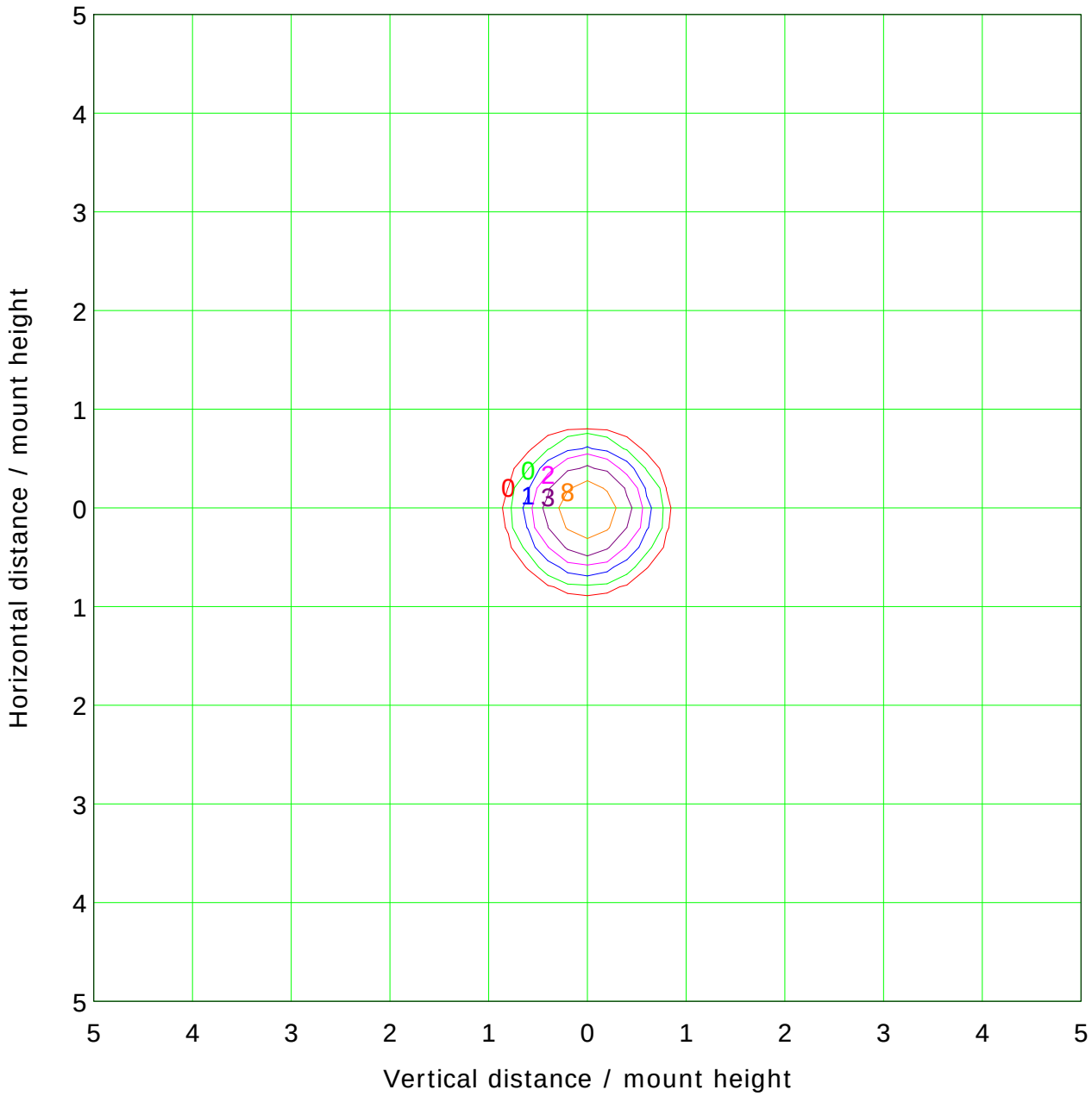
Imax (100%): 1621 cd

(10%): 162 cd	(16%): 259 cd
(25%): 405 cd	(40%): 648 cd
(63%): 1021 cd	(100%): 1621 cd

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

IsoLux Plot



Mounting Height: 10.0m Max Lux(100%): 16.2 lx

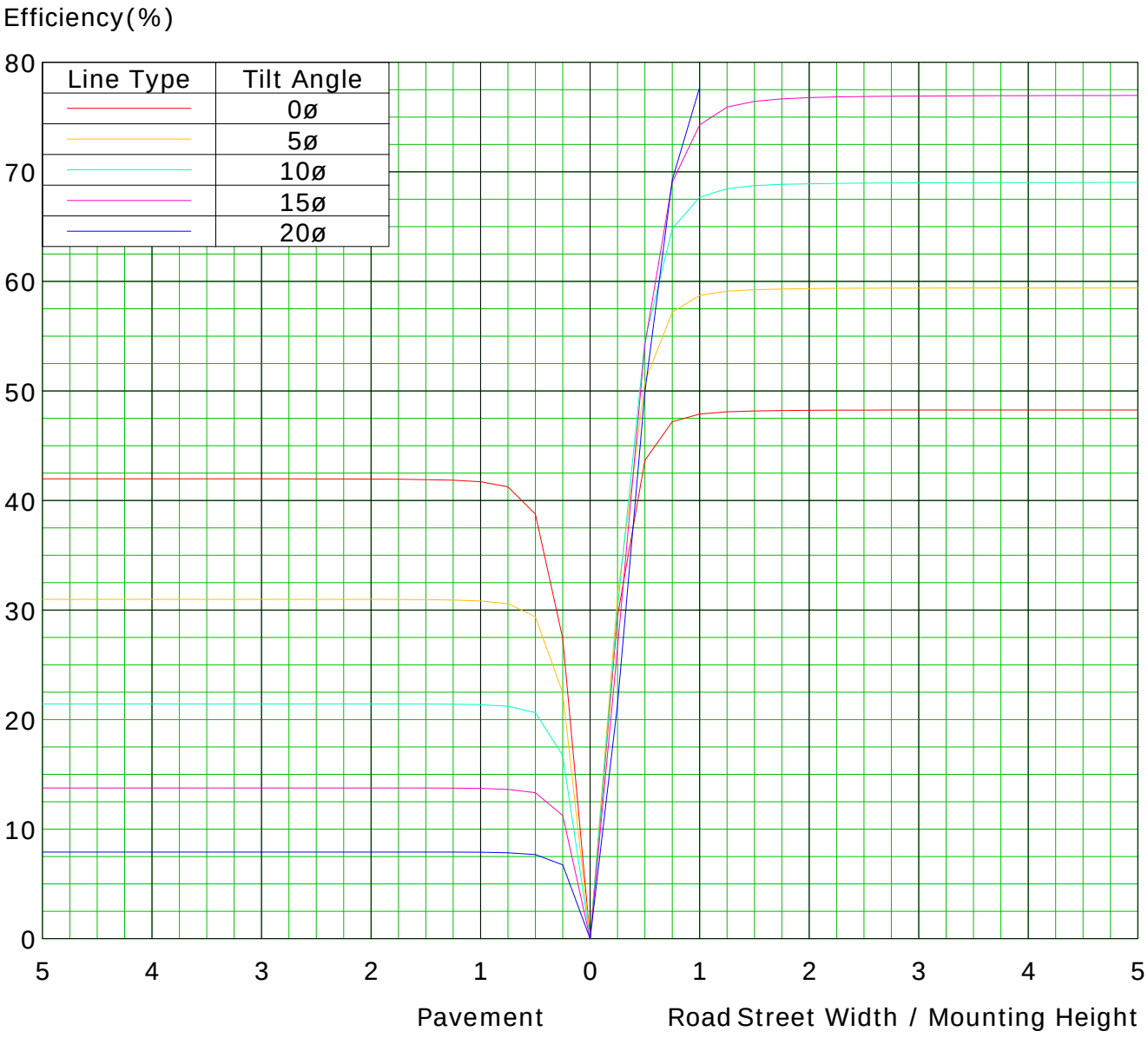
(1%): 0.2 lx	(2%): 0.3 lx
(5%): 0.8 lx	(10%): 1.6 lx
(20%): 3.2 lx	(50%): 8.1 lx
(100%): 16.2 lx	

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

Roadway CU Curve

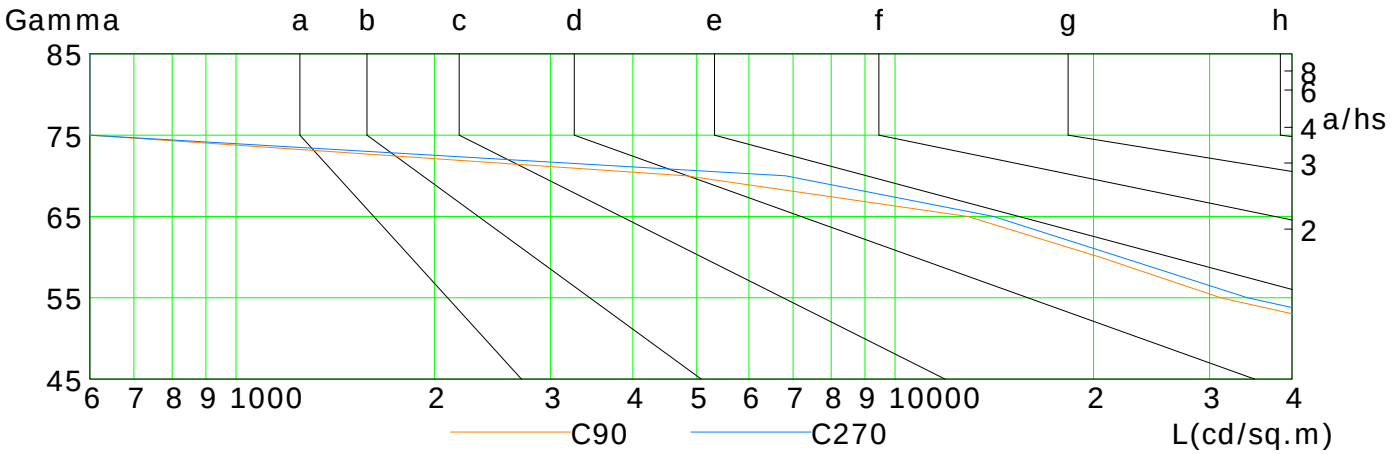


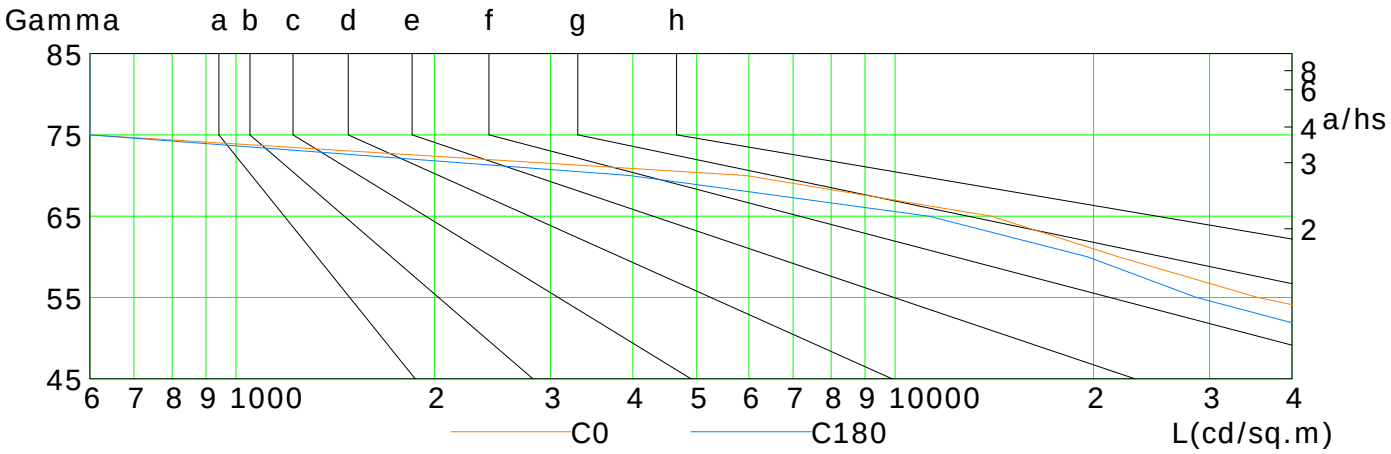
C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

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



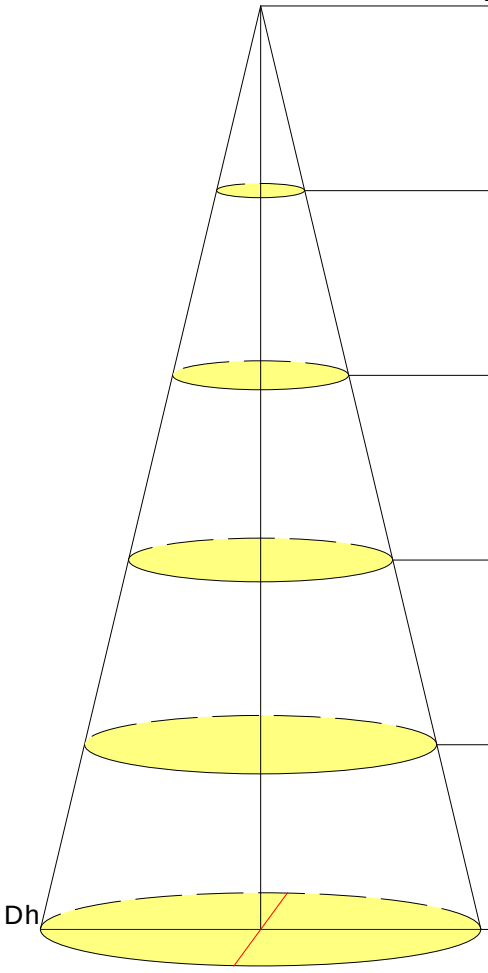


L(cd/sq.m)	G45	G50	G55	G60	G65	G70	G75	G80	G85
C0	159528	70823	35498	21822	13994	5939	0	0	0
C90	139360	59055	31193	20456	12880	4819	0	0	0
C180	109233	49030	28649	19581	11246	3957	0	0	0
C270	145544	65983	34242	21991	14100	6818	0	0	0

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Illuminance at a Distance



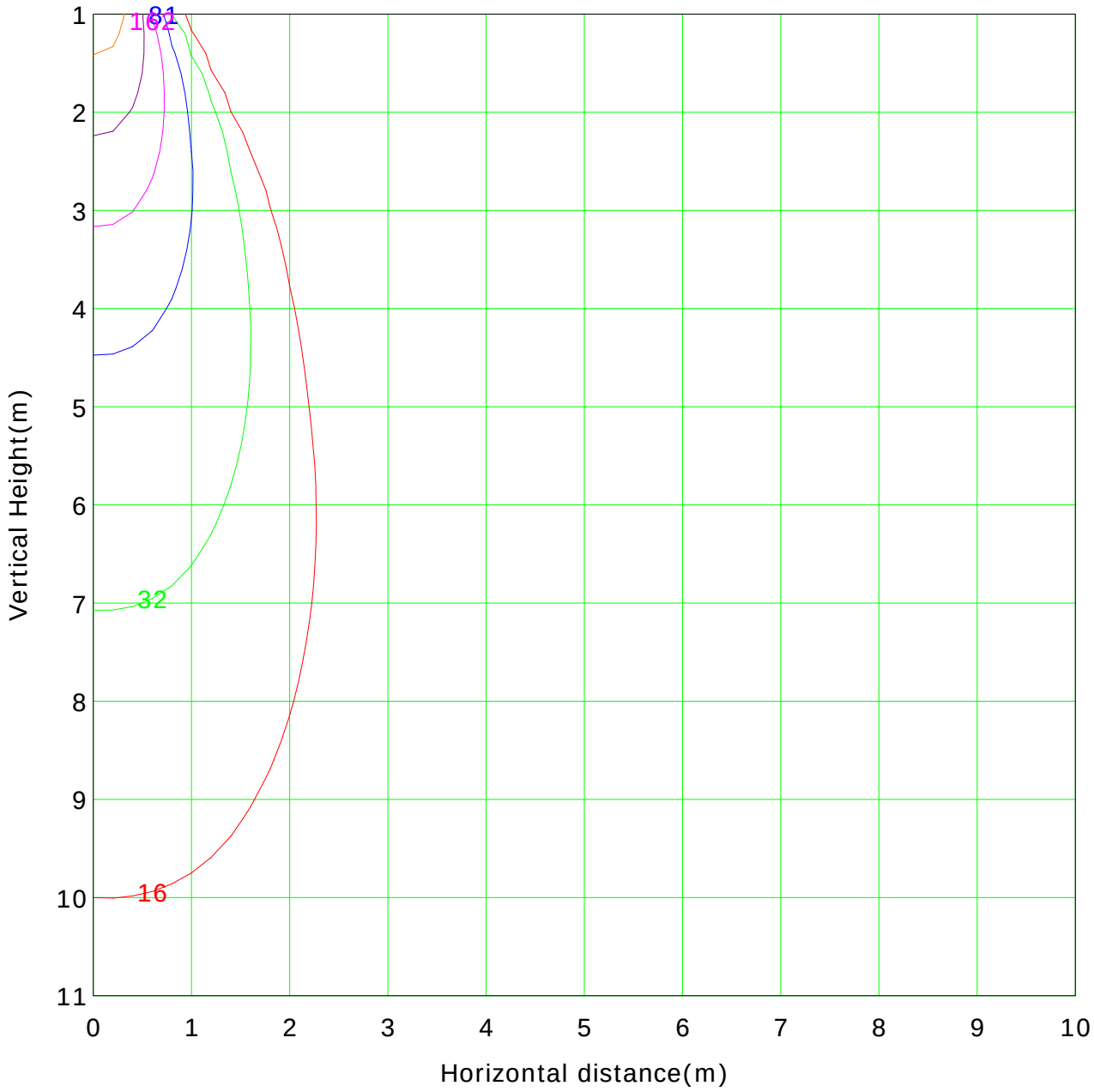
Dist(m)	Enadir(lx)	Dh/Dv_B(m)	S_B(sq.m)	Eav_B(lx)
1.0	1617.64	0.62/0.61	0.3	1002.83
2.0	404.41	1.24/1.23	1.2	250.71
3.0	179.74	1.87/1.84	2.7	111.43
4.0	101.10	2.49/2.46	4.8	62.68
5.0	64.71	3.11/3.07	7.5	40.11

Beam Angle(B): H34.5 V34.1 Field Angle(F): H62.8 V62.0

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Vertical IsoLux Plot



Lowest(m): 1.0m Highest(m): 11.0m Max Lux: 1617.6 lx

(1%): 16.2 lx	(2%): 32.4 lx
(5%): 80.9 lx	(10%): 161.8 lx
(20%): 323.5 lx	(50%): 808.8 lx
(100%):1617.6 lx	

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Area Flux Table

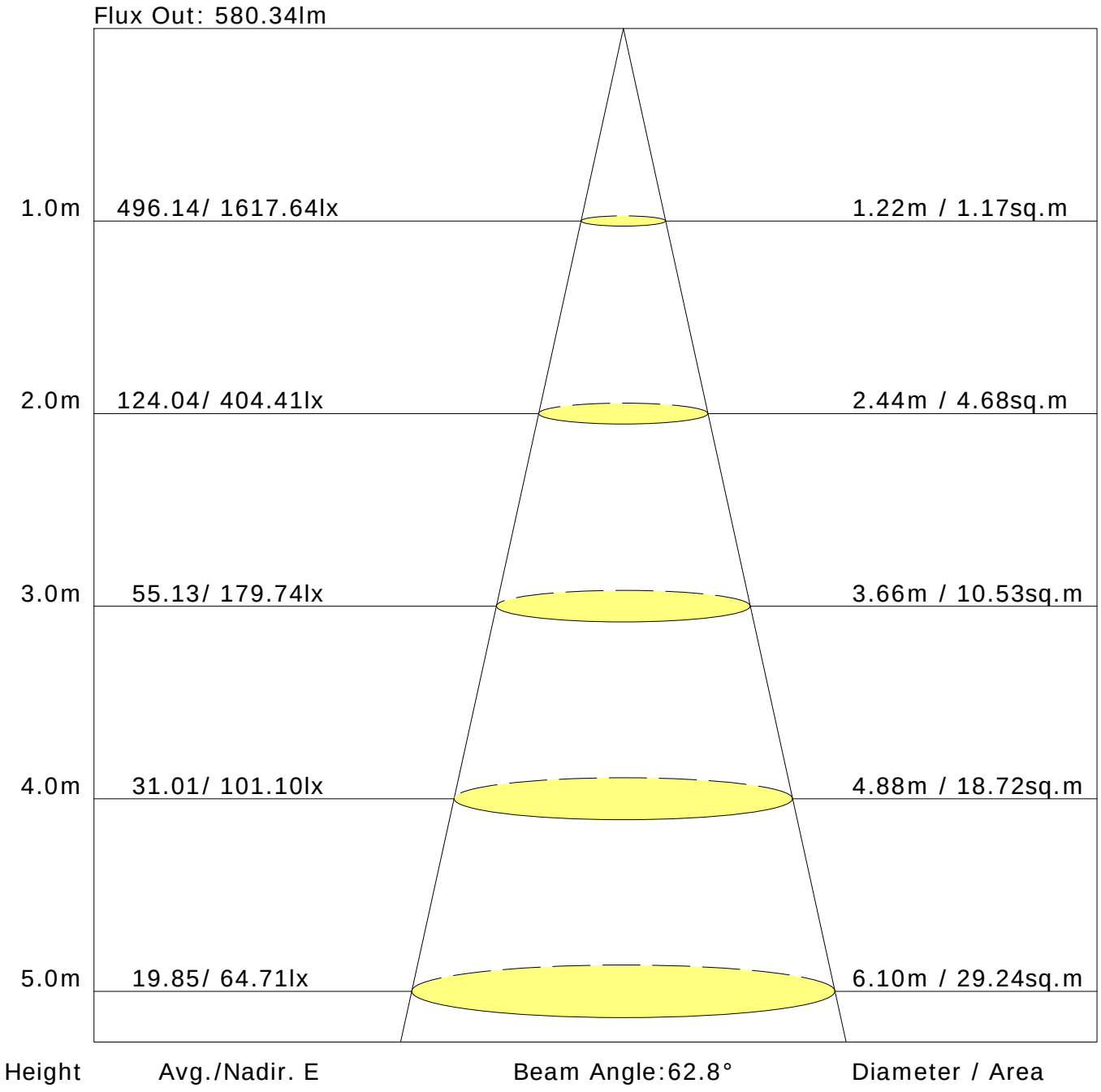
Unit: lm

Vertical plane \ Horizontal plane	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	Flux(T)	Flux(E)
-90	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
-60	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.9	0.0
-50	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.6	0.5	0.3	0.1	0.1	0.0	0.0	0.0	0.0	2.9	0.0
-40	0.0	0.0	0.0	0.0	0.1	0.3	0.7	1.4	2.4	2.6	1.7	0.9	0.4	0.1	0.0	0.0	0.0	0.0	10.8	0.6
-30	0.0	0.0	0.0	0.0	0.2	0.6	2.1	5.9	9.9	10.6	7.3	3.1	0.9	0.2	0.1	0.0	0.0	0.0	40.8	32.9
-20	0.0	0.0	0.0	0.1	0.2	1.1	5.3	14.9	25.8	27.3	18.0	7.5	1.8	0.4	0.1	0.0	0.0	0.0	102.6	97.4
-10	0.0	0.0	0.0	0.1	0.3	1.7	8.4	23.9	41.4	43.5	28.5	11.3	2.7	0.5	0.1	0.0	0.0	0.0	162.4	158.0
0	0.0	0.0	0.0	0.1	0.3	1.7	8.2	23.9	41.6	44.1	29.0	11.2	2.7	0.5	0.1	0.0	0.0	0.0	163.4	158.9
10	0.0	0.0	0.0	0.1	0.2	1.1	5.1	14.6	26.2	28.0	18.2	7.2	1.8	0.4	0.1	0.0	0.0	0.0	102.7	97.4
20	0.0	0.0	0.0	0.0	0.1	0.6	2.0	5.7	10.0	10.8	7.3	2.9	0.8	0.2	0.1	0.0	0.0	0.0	40.5	32.7
30	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.4	2.3	2.6	1.8	0.9	0.4	0.1	0.0	0.0	0.0	0.0	10.4	0.7
40	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.5	0.5	0.4	0.3	0.1	0.1	0.0	0.0	0.0	0.0	2.7	0.0
50	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.8	0.0
60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
70	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flux(T)	0.0	0.0	0.1	0.5	1.7	7.6	33.0	92.6	161.1	171.0	112.9	45.8	11.9	2.6	0.6	0.2	0.0	0.0	642	
Flux(E)	0.0	0.0	0.0	0.0	0.0	0.0	24.4	86.1	155.1	165.2	106.8	38.4	2.5	0.0	0.0	0.0	0.0	0.0		579

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

The Average Illuminance Effective Figure



C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

UGR Table

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	24.7	25.5	25.0	25.7	25.8	23.4	24.2	23.7	24.3	24.5
3H	24.6	25.3	24.9	25.5	25.7	23.3	24.0	23.6	24.2	24.4
4H	24.5	25.1	24.8	25.4	25.7	23.2	23.9	23.5	24.1	24.4
6H	24.5	25.0	24.8	25.3	25.6	23.2	23.7	23.5	24.0	24.3
8H	24.4	25.0	24.8	25.3	25.6	23.1	23.7	23.5	24.0	24.3
12H	24.4	24.9	24.7	25.2	25.5	23.1	23.6	23.4	23.9	24.2
X=4H Y=2H	24.5	25.2	24.9	25.4	25.7	23.2	23.9	23.6	24.1	24.4
3H	24.4	24.9	24.8	25.2	25.5	23.1	23.6	23.5	23.9	24.3
4H	24.3	24.8	24.7	25.1	25.5	23.0	23.5	23.4	23.8	24.2
6H	24.2	24.6	24.6	25.0	25.4	22.9	23.4	23.4	23.7	24.1
8H	24.2	24.6	24.6	25.0	25.4	22.9	23.3	23.3	23.7	24.1
12H	24.1	24.5	24.6	24.9	25.3	22.9	23.2	23.3	23.6	24.0
X=8H Y=4H	24.2	24.6	24.6	25.0	25.4	22.9	23.3	23.3	23.7	24.1
6H	24.1	24.4	24.5	24.8	25.3	22.8	23.1	23.3	23.5	24.0
8H	24.0	24.3	24.5	24.8	25.2	22.8	23.0	23.2	23.5	23.9
12H	24.0	24.2	24.5	24.7	25.2	22.7	22.9	23.2	23.4	23.9
X=12H Y=4H	24.1	24.5	24.6	24.9	25.3	22.9	23.2	23.3	23.6	24.0
6H	24.0	24.3	24.5	24.8	25.2	22.8	23.0	23.2	23.5	23.9
8H	24.0	24.2	24.5	24.7	25.2	22.7	22.9	23.2	23.4	23.9
Variations with the observer position at spacings:										
S=1.0H	+5.9/-11.2					+5.6/-10.1				
S=1.5H	+8.7/-13.5					+8.4/-12.2				
S=2.0H	+10.7/-16.4					+10.4/-14.8				

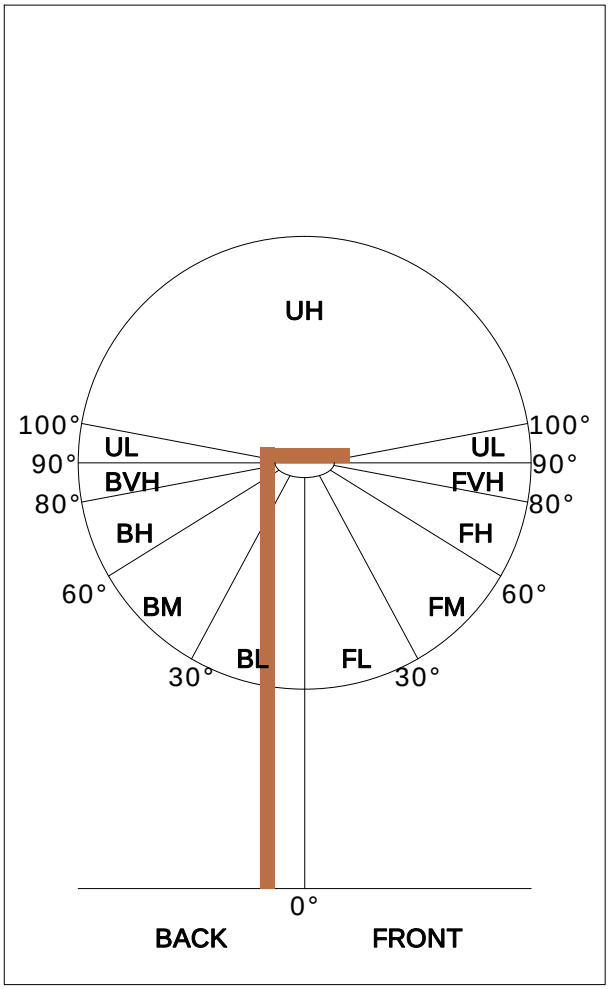
Calculate in accordance with CIE Pub.117. The table is revised with 700lm (8log(F/F0) = -1.2).

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Lisun Electronics Inc.
http://www.Lisungroup.com
Tel: +86(21)51083341
Fax: +86(21)51083342

FLUX DISTRIBUTION TABLE BASED ON THE IESNA LUMINAIRE CLASSIFICATION SYSTEM



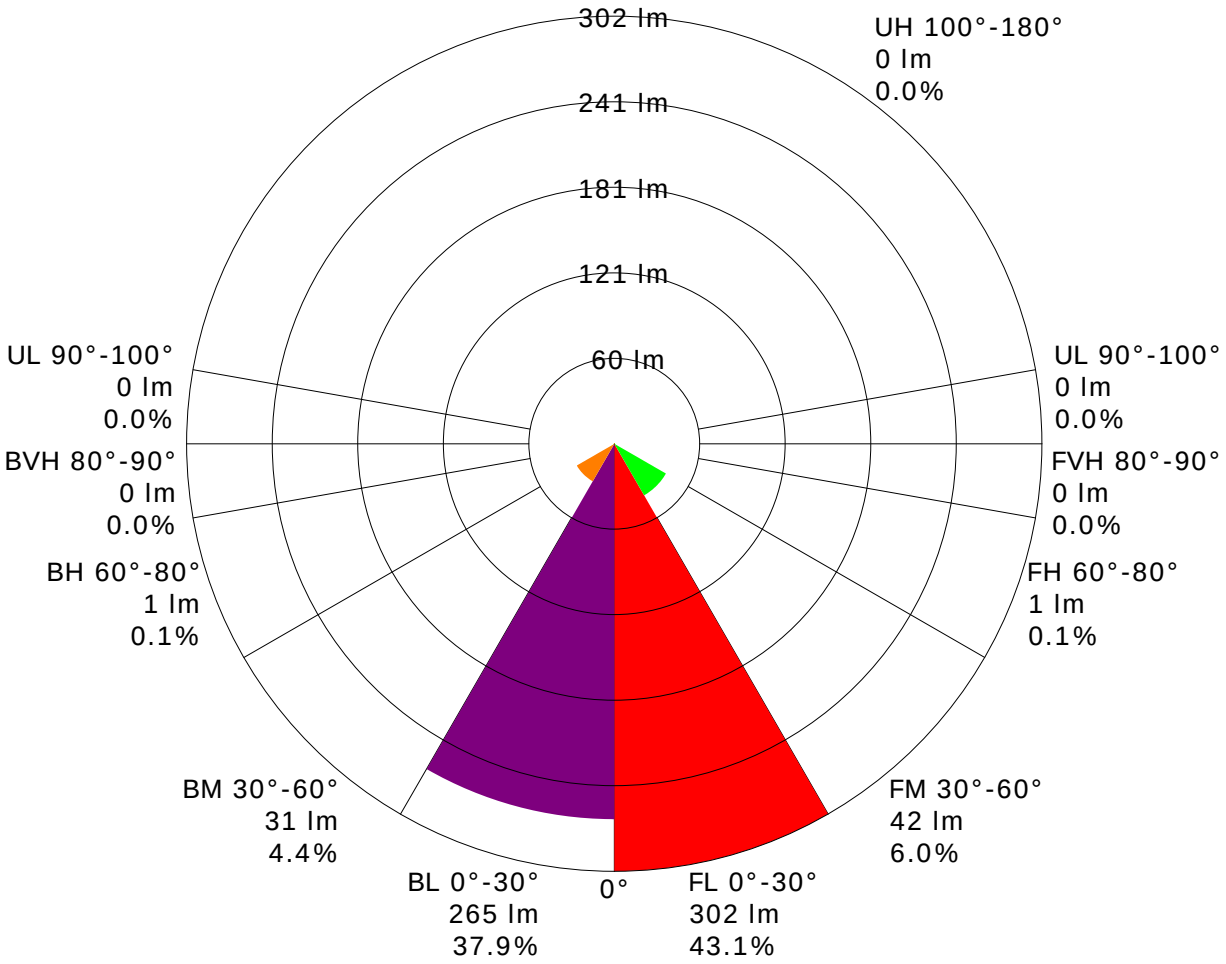
ZONE	LUMENS	% LAMP LUMENS
FORWARD LIGHT	345	49.3
FL (0°-30°)	302	43.1
FM (30°-60°)	42	6.0
FH (60°-80°)	1	0.1
FVH (80°-90°)	0	0.0
BACK LIGHT	297	42.4
BL (0°-30°)	265	37.9
BM (30°-60°)	31	4.4
BH (60°-80°)	1	0.1
BVH (80°-90°)	0	0.0
UP LIGHT	0	0.0
UL (90°-100°)	0	0.0
UH (100°-180°)	0	0.0
TRAPPED LIGHT	58	8.3

BUG(**B**acklight,**U**plight,**G**lare) Rating Base On TM-15-07	
Asymmetrical Luminaire Types (Type I,II,III,IV)	B1 U0 G0
Quadrilateral Symmetrical Luminaire Types (Type V,Area Light)	B1 U0 G0

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

LCS Graph



Back Light **Forward Light**

Scale= 302 lm

Trapped Light:58 lm,8.3%

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Utilisation Factor Table(Floor cavity)

Utilisation Factors UF(F)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.86	0.90	0.93	0.95	0.98	0.99	1.01	1.02	1.03
	0.30		0.82	0.87	0.90	0.92	0.95	0.97	0.99	1.01	1.02
	0.20		0.80	0.84	0.87	0.90	0.93	0.95	0.97	0.99	1.01
0.50	0.50	0.20	0.85	0.89	0.91	0.93	0.95	0.97	0.98	0.99	1.00
	0.30		0.82	0.86	0.88	0.90	0.93	0.95	0.96	0.97	0.98
	0.20		0.80	0.84	0.86	0.88	0.91	0.93	0.94	0.96	0.97
0.30	0.50	0.20	0.84	0.87	0.89	0.91	0.93	0.94	0.95	0.96	0.96
	0.30		0.81	0.85	0.87	0.89	0.91	0.92	0.93	0.95	0.95
	0.20		0.79	0.83	0.86	0.87	0.90	0.91	0.92	0.94	0.95
0.00	0.00	0.00	0.78	0.81	0.84	0.85	0.87	0.88	0.89	0.90	0.90

Rating:9W Photometrically tested without ceiling board.

Multiply UF values by service correction factors

Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Utilisation Factor Table(Wall)

Utilisation Factors UF(W)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.42	0.34	0.29	0.25	0.20	0.16	0.14	0.11	0.09
	0.30		0.35	0.29	0.25	0.22	0.18	0.15	0.13	0.10	0.08
	0.20		0.30	0.25	0.22	0.20	0.16	0.14	0.12	0.10	0.08
0.50	0.50	0.20	0.40	0.32	0.27	0.23	0.18	0.19	0.13	0.10	0.08
	0.30		0.33	0.28	0.24	0.21	0.16	0.14	0.12	0.09	0.08
	0.20		0.29	0.24	0.21	0.19	0.15	0.13	0.11	0.09	0.07
0.30	0.50	0.20	0.38	0.30	0.25	0.21	0.16	0.13	0.11	0.09	0.07
	0.30		0.32	0.26	0.22	0.19	0.15	0.13	0.11	0.08	0.07
	0.20		0.28	0.23	0.20	0.18	0.14	0.12	0.10	0.08	0.07
0.00	0.00	0.00	0.15	0.11	0.09	0.08	0.06	0.05	0.04	0.03	0.02

Rating:9W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Utilisation Factor Table(Ceiling cavity)

Utilisation Factors UF(C)			SHR NOM = 0.75								
Room Reflectance			Room Index(RI)								
Ceiling	Wall	Floor	0.75	1.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00
0.70	0.50	0.20	0.11	0.12	0.14	0.15	0.16	0.17	0.18	0.18	0.19
	0.30		0.08	0.10	0.11	0.12	0.14	0.15	0.16	0.17	0.18
	0.20		0.06	0.08	0.09	0.11	0.12	0.14	0.15	0.16	0.17
0.50	0.50	0.20	0.10	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.18
	0.30		0.08	0.10	0.11	0.12	0.14	0.15	0.15	0.17	0.17
	0.20		0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.16	0.16
0.30	0.50	0.20	0.10	0.12	0.13	0.14	0.15	0.16	0.16	0.17	0.17
	0.30		0.08	0.09	0.11	0.12	0.13	0.14	0.15	0.16	0.17
	0.20		0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.15	0.16
0.00	0.00	0.00	NA	NA	NA	NA	NA	NA	NA	NA	NA

Rating:9W Photometrically tested without ceiling board.
Multiply UF values by service correction factors
Calculate in accordance with CIBSE Technical Memorandum NO.5 1980

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Zonal Lumen

Gamma [°]	Imean [cd]	Zonal Flux [lm]	Sum Zonal Flux [lm]	Rel Zonal Flux [%]	Sum Rel Zonal Flux [%]
0.0-1.0	1616.0	1.5	1.5	0.22	0.22
1.0-2.0	1609.9	4.6	6.2	0.66	0.88
2.0-3.0	1597.9	7.6	13.8	1.09	1.97
3.0-4.0	1579.8	10.6	24.4	1.51	3.48
4.0-5.0	1555.1	13.4	37.8	1.91	5.40
5.0-6.0	1523.4	16.0	53.8	2.29	7.68
6.0-7.0	1485.0	18.4	72.2	2.63	10.32
7.0-8.0	1439.9	20.6	92.8	2.94	13.26
8.0-9.0	1388.2	22.5	115.3	3.21	16.47
9.0-10.0	1330.7	24.1	139.4	3.44	19.92
10.0-11.0	1268.9	25.4	164.8	3.62	23.54
11.0-12.0	1203.9	26.3	191.1	3.76	27.30
12.0-13.0	1135.9	27.0	218.1	3.85	31.15
13.0-14.0	1066.3	27.3	245.3	3.90	35.05
14.0-15.0	996.3	27.4	272.7	3.91	38.96
15.0-16.0	925.7	27.1	299.8	3.88	42.83
16.0-17.0	855.3	26.6	326.5	3.81	46.64
17.0-18.0	785.9	25.9	352.4	3.70	50.34
18.0-19.0	718.0	25.0	377.4	3.57	53.91
19.0-20.0	652.9	23.9	401.3	3.41	57.32
20.0-21.0	590.2	22.7	423.9	3.24	60.56
21.0-22.0	530.1	21.3	445.2	3.04	63.61
22.0-23.0	474.0	19.9	465.1	2.84	66.45
23.0-24.0	423.1	18.5	483.6	2.64	69.09
24.0-25.0	376.5	17.1	500.8	2.45	71.54
25.0-26.0	333.6	15.8	516.5	2.25	73.79
26.0-27.0	295.0	14.4	530.9	2.06	75.85
27.0-28.0	260.1	13.2	544.1	1.88	77.73
28.0-29.0	229.1	12.0	556.1	1.71	79.44
29.0-30.0	201.5	10.9	567.0	1.55	81.00
30.0-31.0	176.1	9.8	576.8	1.40	82.40
31.0-32.0	151.0	8.7	585.4	1.24	83.63
32.0-33.0	127.0	7.5	592.9	1.07	84.70
33.0-34.0	104.6	6.3	599.3	0.90	85.61
34.0-35.0	84.9	5.3	604.5	0.75	86.36
35.0-36.0	70.0	4.5	609.0	0.64	87.00

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

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	58.9	3.8	612.8	0.55	87.55
37.0-38.0	50.2	3.4	616.2	0.48	88.03
38.0-39.0	43.3	3.0	619.1	0.42	88.45
39.0-40.0	37.7	2.6	621.8	0.38	88.82
40.0-41.0	32.9	2.3	624.1	0.33	89.16
41.0-42.0	28.7	2.1	626.2	0.30	89.46
42.0-43.0	25.0	1.9	628.0	0.26	89.72
43.0-44.0	21.8	1.6	629.7	0.23	89.96
44.0-45.0	18.9	1.5	631.1	0.21	90.16
45.0-46.0	16.3	1.3	632.4	0.18	90.35
46.0-47.0	14.0	1.1	633.5	0.16	90.50
47.0-48.0	11.9	1.0	634.5	0.14	90.64
48.0-49.0	10.1	0.8	635.3	0.12	90.76
49.0-50.0	8.6	0.7	636.0	0.10	90.86
50.0-51.0	7.3	0.6	636.7	0.09	90.95
51.0-52.0	6.3	0.5	637.2	0.08	91.03
52.0-53.0	5.5	0.5	637.7	0.07	91.10
53.0-54.0	4.9	0.4	638.1	0.06	91.16
54.0-55.0	4.4	0.4	638.5	0.06	91.22
55.0-56.0	3.9	0.4	638.9	0.05	91.27
56.0-57.0	3.6	0.3	639.2	0.05	91.31
57.0-58.0	3.3	0.3	639.5	0.04	91.36
58.0-59.0	3.0	0.3	639.8	0.04	91.40
59.0-60.0	2.8	0.3	640.0	0.04	91.43
60.0-61.0	2.5	0.2	640.3	0.03	91.47
61.0-62.0	2.3	0.2	640.5	0.03	91.50
62.0-63.0	2.1	0.2	640.7	0.03	91.53
63.0-64.0	1.9	0.2	640.9	0.03	91.56
64.0-65.0	1.8	0.2	641.1	0.02	91.58
65.0-66.0	1.6	0.2	641.2	0.02	91.60
66.0-67.0	1.4	0.1	641.4	0.02	91.62
67.0-68.0	1.2	0.1	641.5	0.02	91.64
68.0-69.0	1.0	0.1	641.6	0.01	91.66
69.0-70.0	0.8	0.1	641.7	0.01	91.67
70.0-71.0	0.6	0.1	641.7	0.01	91.68
71.0-72.0	0.4	0.0	641.8	0.01	91.68

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

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	0.2	0.0	641.8	0.00	91.69
73.0-74.0	0.1	0.0	641.8	0.00	91.69
74.0-75.0	0.0	0.0	641.8	0.00	91.69
75.0-76.0	0.0	0.0	641.8	0.00	91.69
76.0-77.0	0.0	0.0	641.8	0.00	91.69
77.0-78.0	0.0	0.0	641.8	0.00	91.69
78.0-79.0	0.0	0.0	641.8	0.00	91.69
79.0-80.0	0.0	0.0	641.8	0.00	91.69
80.0-81.0	0.0	0.0	641.8	0.00	91.69
81.0-82.0	0.0	0.0	641.8	0.00	91.69
82.0-83.0	0.0	0.0	641.8	0.00	91.69
83.0-84.0	0.0	0.0	641.8	0.00	91.69
84.0-85.0	0.0	0.0	641.8	0.00	91.69
85.0-86.0	0.0	0.0	641.8	0.00	91.69
86.0-87.0	0.0	0.0	641.8	0.00	91.69
87.0-88.0	0.0	0.0	641.8	0.00	91.69
88.0-89.0	0.0	0.0	641.8	0.00	91.69
89.0-90.0	0.0	0.0	641.8	0.00	91.69

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table

Unit: cd

G\C	C0.0	C22.5	C45.0	C67.5	C90.0	C112.5	C135.0	C157.5	C180.0	C202.5
G0.0	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6
G1.0	1620.7	1620.8	1619.6	1618.0	1614.4	1612.5	1609.8	1609.4	1609.1	1607.4
G2.0	1617.3	1620.4	1618.4	1612.9	1606.6	1601.9	1596.2	1593.4	1593.3	1591.4
G3.0	1609.6	1613.9	1609.7	1604.2	1592.8	1584.6	1574.9	1572.7	1571.5	1567.7
G4.0	1596.1	1600.2	1595.7	1587.7	1574.3	1563.3	1549.2	1544.0	1542.2	1539.9
G5.0	1575.2	1581.0	1576.2	1565.7	1546.5	1531.8	1515.4	1509.5	1504.7	1502.0
G6.0	1549.8	1555.0	1548.9	1534.2	1512.0	1494.5	1472.2	1466.9	1464.7	1461.4
G7.0	1516.5	1524.9	1517.1	1498.5	1470.6	1451.1	1425.8	1416.8	1412.4	1411.0
G8.0	1477.2	1484.2	1475.4	1454.2	1422.9	1399.5	1371.5	1362.3	1356.5	1351.9
G9.0	1429.5	1441.8	1428.6	1403.8	1366.2	1342.3	1308.7	1301.5	1297.2	1290.3
G10.0	1373.9	1389.3	1373.7	1347.2	1307.2	1277.7	1245.5	1233.0	1228.7	1225.1
G11.0	1317.0	1332.8	1315.4	1287.8	1242.4	1212.6	1177.9	1162.9	1161.8	1157.0
G12.0	1256.5	1269.7	1251.4	1219.3	1177.3	1145.2	1108.9	1093.6	1092.3	1086.7
G13.0	1190.0	1206.2	1185.1	1151.7	1105.5	1072.3	1035.3	1023.2	1021.9	1015.2
G14.0	1123.8	1139.7	1114.3	1081.6	1030.3	1002.9	965.4	944.1	950.7	945.4
G15.0	1055.6	1071.2	1041.7	1008.3	960.2	933.6	890.3	876.9	880.5	875.2
G16.0	984.2	1001.3	970.1	939.8	887.7	857.7	818.6	803.1	810.6	801.5
G17.0	916.0	928.2	899.9	862.1	814.6	789.1	747.2	734.2	741.4	733.5
G18.0	848.4	850.9	823.2	794.6	746.3	721.3	680.1	663.9	675.4	668.3
G19.0	778.5	784.0	754.1	720.9	680.6	653.6	612.6	599.8	613.3	605.4
G20.0	709.7	716.0	686.5	655.4	617.0	589.7	551.9	539.1	553.4	550.1
G21.0	649.7	646.3	619.3	592.4	549.3	528.7	489.8	480.6	496.5	490.6
G22.0	582.2	579.1	558.2	532.7	494.6	470.4	433.7	425.5	442.6	437.4
G23.0	523.0	515.6	499.1	475.4	440.5	416.7	382.9	377.8	394.7	390.2
G24.0	467.6	461.4	447.8	425.8	394.8	368.4	341.7	333.8	351.8	348.6
G25.0	415.2	405.7	399.5	378.3	351.4	325.4	297.5	294.6	311.4	308.0
G26.0	369.8	361.6	352.5	337.6	312.8	286.5	262.0	258.4	276.0	267.9
G27.0	329.6	318.8	312.3	300.9	275.8	252.6	229.7	227.3	243.5	234.4
G28.0	292.0	281.7	273.4	264.2	241.8	220.1	202.7	198.9	214.7	205.9
G29.0	259.3	246.6	237.3	232.0	210.8	193.5	178.4	174.3	189.8	182.5
G30.0	228.6	216.9	206.8	203.8	183.9	168.1	155.5	154.6	164.9	160.7
G31.0	201.0	192.2	181.7	179.7	159.8	145.0	132.1	126.1	138.6	134.7
G32.0	176.6	170.9	158.7	158.1	138.1	114.9	102.8	100.3	104.9	106.1
G33.0	155.0	151.2	139.3	130.7	107.9	90.1	83.8	83.2	86.1	88.9
G34.0	124.2	123.9	108.2	101.4	88.5	73.7	69.1	68.7	70.9	73.2
G35.0	97.4	98.4	89.7	82.0	72.6	62.1	58.0	56.4	59.4	61.4
G36.0	79.7	82.3	73.6	67.1	59.8	52.9	49.7	48.3	50.7	51.5

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table (Continue 1)

Unit: cd

G\C	C0.0	C22.5	C45.0	C67.5	C90.0	C112.5	C135.0	C157.5	C180.0	C202.5
G37.0	66.2	68.8	61.8	56.3	50.5	46.1	42.9	41.8	44.1	44.7
G38.0	55.3	57.9	52.6	48.4	44.0	40.7	37.8	36.2	37.9	39.2
G39.0	47.5	49.0	45.7	42.6	38.7	35.7	32.8	31.7	32.5	34.2
G40.0	41.1	42.5	39.8	37.8	34.0	31.5	28.9	27.6	28.4	29.8
G41.0	35.6	37.0	35.1	32.6	29.7	27.4	25.3	23.8	24.8	26.0
G42.0	30.4	32.4	30.5	28.5	26.0	24.0	21.9	20.7	21.2	22.6
G43.0	26.7	28.1	26.6	24.9	22.5	21.1	19.3	17.8	17.8	19.7
G44.0	22.9	24.4	23.0	21.8	19.8	18.3	16.6	15.3	15.7	17.1
G45.0	19.7	21.5	20.3	18.9	17.2	15.8	14.1	12.8	13.5	14.7
G46.0	16.7	18.7	17.5	16.4	14.7	13.3	11.7	10.7	11.4	12.3
G47.0	14.6	16.1	15.0	14.0	12.4	11.1	10.0	9.0	9.7	10.5
G48.0	12.2	13.5	12.6	11.7	10.4	9.4	8.3	7.6	8.3	8.9
G49.0	10.3	11.3	10.6	9.9	8.7	7.9	7.2	6.7	7.2	7.7
G50.0	8.8	9.7	8.9	8.3	7.4	6.7	6.1	5.8	6.1	6.5
G51.0	7.5	8.1	7.6	7.1	6.3	5.9	5.4	5.2	5.4	5.7
G52.0	6.3	6.8	6.2	6.1	5.5	5.1	4.8	4.6	4.9	5.1
G53.0	5.5	5.9	5.5	5.3	4.9	4.6	4.3	4.0	4.4	4.5
G54.0	4.9	5.1	4.8	4.7	4.3	4.1	3.9	3.8	3.9	4.1
G55.0	4.4	4.5	4.3	4.2	3.9	3.8	3.5	3.5	3.6	3.7
G56.0	3.9	4.0	3.8	3.8	3.6	3.4	3.2	3.2	3.2	3.4
G57.0	3.6	3.6	3.5	3.5	3.3	3.1	3.0	3.0	3.0	3.2
G58.0	3.3	3.3	3.2	3.2	2.9	2.9	2.7	2.7	2.8	2.9
G59.0	3.1	3.0	2.9	3.0	2.7	2.7	2.5	2.5	2.6	2.7
G60.0	2.7	2.8	2.6	2.7	2.5	2.5	2.4	2.3	2.4	2.5
G61.0	2.5	2.5	2.4	2.5	2.4	2.3	2.2	2.1	2.2	2.3
G62.0	2.3	2.3	2.2	2.3	2.1	2.1	2.0	1.9	2.0	2.1
G63.0	2.1	2.2	2.0	2.2	1.9	1.9	1.8	1.7	1.9	1.9
G64.0	2.0	1.9	1.8	2.0	1.8	1.7	1.6	1.6	1.5	1.7
G65.0	1.7	1.8	1.6	1.8	1.6	1.5	1.4	1.4	1.4	1.5
G66.0	1.5	1.5	1.5	1.6	1.3	1.4	1.3	1.2	1.3	1.3
G67.0	1.3	1.3	1.3	1.3	1.2	1.2	1.1	0.9	1.1	1.1
G68.0	1.2	1.1	1.1	1.3	1.0	1.0	0.9	0.8	0.9	1.0
G69.0	1.0	1.0	0.9	1.1	0.8	0.8	0.7	0.6	0.7	0.8
G70.0	0.7	0.8	0.7	0.8	0.6	0.6	0.5	0.4	0.5	0.6
G71.0	0.5	0.6	0.6	0.6	0.4	0.4	0.2	0.1	0.2	0.3
G72.0	0.3	0.5	0.4	0.4	0.1	0.1	0.0	0.0	0.0	0.1
G73.0	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table (Continue 2)

Unit: cd

G\C	C0.0	C22.5	C45.0	C67.5	C90.0	C112.5	C135.0	C157.5	C180.0	C202.5
G74.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G76.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G81.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G82.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G84.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G85.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G86.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G87.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G88.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G89.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
G90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table (Continue 3)

Unit: cd

G\C	C225.0	C247.5	C270.0	C292.5	C315.0	C337.5	C360.0			
G0.0	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6	1617.6			
G1.0	1609.5	1610.7	1614.2	1615.9	1618.8	1619.7	1620.7			
G2.0	1594.9	1598.3	1605.0	1608.3	1613.7	1615.0	1617.3			
G3.0	1575.4	1578.7	1588.8	1593.5	1601.9	1604.6	1609.6			
G4.0	1546.0	1554.2	1566.2	1572.6	1586.1	1590.2	1596.1			
G5.0	1512.3	1519.4	1536.4	1546.5	1562.1	1569.7	1575.2			
G6.0	1470.8	1478.5	1499.6	1512.7	1531.9	1540.1	1549.8			
G7.0	1423.5	1433.4	1459.3	1470.7	1492.8	1503.2	1516.5			
G8.0	1366.8	1385.4	1412.6	1423.8	1446.7	1458.7	1477.2			
G9.0	1306.1	1325.5	1359.2	1370.0	1393.2	1409.4	1429.5			
G10.0	1242.7	1262.3	1298.4	1311.2	1338.5	1356.0	1373.9			
G11.0	1175.9	1197.2	1229.2	1247.1	1279.4	1298.6	1317.0			
G12.0	1107.2	1128.7	1164.9	1178.6	1216.2	1233.2	1256.5			
G13.0	1036.3	1055.9	1089.2	1112.6	1150.7	1169.6	1190.0			
G14.0	964.5	986.7	1019.1	1044.2	1084.3	1103.3	1123.8			
G15.0	893.8	914.1	951.6	975.2	1016.7	1034.9	1055.6			
G16.0	824.1	844.7	879.1	906.4	947.2	966.6	984.2			
G17.0	754.1	773.3	811.9	839.9	881.5	898.5	916.0			
G18.0	686.9	707.8	743.9	770.3	810.1	831.0	848.4			
G19.0	622.8	639.5	672.8	703.9	745.2	766.2	778.5			
G20.0	560.9	576.1	609.6	640.8	683.9	700.9	709.7			
G21.0	504.0	516.3	546.4	579.5	618.0	639.1	649.7			
G22.0	452.6	462.4	486.2	521.2	558.8	578.3	582.2			
G23.0	402.5	411.4	433.6	466.8	501.4	521.4	523.0			
G24.0	358.2	367.9	388.0	414.7	449.0	467.9	467.6			
G25.0	317.5	327.1	344.2	369.2	400.6	416.2	415.2			
G26.0	278.3	288.2	306.0	328.4	357.9	370.4	369.8			
G27.0	242.4	252.3	267.3	289.8	317.2	331.6	329.6			
G28.0	212.6	220.6	237.1	255.2	281.7	296.6	292.0			
G29.0	186.8	193.5	208.8	223.5	251.2	265.2	259.3			
G30.0	164.3	169.1	184.4	196.4	222.8	234.8	228.6			
G31.0	142.7	147.6	162.4	172.4	196.0	209.0	201.0			
G32.0	111.4	118.6	145.0	150.4	172.3	182.5	176.6			
G33.0	91.9	94.6	112.3	123.4	151.3	162.0	155.0			
G34.0	75.6	78.9	92.2	94.0	118.6	135.0	124.2			
G35.0	63.5	66.2	77.4	77.4	93.5	105.1	97.4			
G36.0	53.9	56.6	64.9	65.1	76.4	86.6	79.7			

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table (Continue 4)

Unit: cd

G\C	C225.0	C247.5	C270.0	C292.5	C315.0	C337.5	C360.0			
G37.0	46.8	49.1	54.7	56.3	63.0	71.2	66.2			
G38.0	41.1	42.8	46.8	48.6	53.9	59.2	55.3			
G39.0	35.8	37.4	40.8	42.6	46.4	50.3	47.5			
G40.0	31.1	32.3	35.5	37.5	40.9	43.6	41.1			
G41.0	27.1	28.2	30.9	32.7	36.0	38.4	35.6			
G42.0	23.5	24.6	26.9	28.6	31.9	33.3	30.4			
G43.0	20.5	21.6	23.4	25.1	27.9	29.4	26.7			
G44.0	17.9	18.8	20.5	21.9	24.4	25.7	22.9			
G45.0	15.6	16.2	17.9	19.4	21.5	22.4	19.7			
G46.0	13.1	13.7	15.6	17.0	18.9	19.6	16.7			
G47.0	11.1	11.9	13.4	14.8	16.5	17.0	14.6			
G48.0	9.4	10.0	11.3	12.6	14.2	14.5	12.2			
G49.0	8.0	8.5	9.7	10.6	12.0	12.4	10.3			
G50.0	6.9	7.3	8.2	9.1	10.3	10.4	8.8			
G51.0	6.0	6.3	7.0	7.7	8.7	8.9	7.5			
G52.0	5.3	5.6	6.1	6.5	7.5	7.5	6.3			
G53.0	4.8	4.9	5.4	5.8	6.4	6.4	5.5			
G54.0	4.3	4.5	4.8	5.1	5.6	5.6	4.9			
G55.0	4.0	4.0	4.3	4.5	4.9	4.9	4.4			
G56.0	3.5	3.7	3.9	4.0	4.4	4.5	3.9			
G57.0	3.3	3.4	3.5	3.7	3.9	3.9	3.6			
G58.0	3.0	3.1	3.2	3.4	3.6	3.6	3.3			
G59.0	2.8	2.9	3.0	3.1	3.3	3.2	3.1			
G60.0	2.6	2.6	2.7	2.9	3.0	2.9	2.7			
G61.0	2.3	2.5	2.5	2.7	2.8	2.6	2.5			
G62.0	2.2	2.3	2.4	2.5	2.6	2.5	2.3			
G63.0	2.1	2.1	2.2	2.3	2.4	2.3	2.1			
G64.0	1.9	1.9	2.0	2.1	2.2	2.1	2.0			
G65.0	1.6	1.7	1.7	1.9	2.0	1.9	1.7			
G66.0	1.5	1.5	1.5	1.7	1.9	1.6	1.5			
G67.0	1.2	1.3	1.3	1.5	1.7	1.4	1.3			
G68.0	1.1	1.1	1.2	1.3	1.5	1.3	1.2			
G69.0	0.9	0.9	1.0	1.2	1.3	1.1	1.0			
G70.0	0.6	0.7	0.8	1.0	1.2	0.9	0.7			
G71.0	0.5	0.6	0.6	0.8	0.9	0.7	0.5			
G72.0	0.2	0.3	0.4	0.6	0.8	0.5	0.3			
G73.0	0.0	0.1	0.2	0.3	0.5	0.3	0.1			

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector:

Candlepower Table (Continue 5)

Unit: cd

G\C	C225.0	C247.5	C270.0	C292.5	C315.0	C337.5	C360.0			
G74.0	0.0	0.0	0.0	0.1	0.3	0.1	0.0			
G75.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0			
G76.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G78.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G79.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G81.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G82.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G83.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G84.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G85.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G86.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G87.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G88.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G89.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
G90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

C Plane (°):0.0-360.0: 22.5
Test Lab: LISUN
Test Type: TYPE C
Temperature: 24.5
Operator: Joye

Gamma Plane (°):0.0-90.0:1.0
Test Device: LSG-1800B
Distance: 8.300 m
Humidity: 60%
Inspector: